



Cutting Tool Solutions

2020 Product Catalog



osgtool.com

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Icon Guide

Tool Materials

| | | | | | |
|---------------|-----------------------|----------------|----------------------------------|----------------|------------------|
| HSS | HSS | HSSE | High Vanadium HSS | HSSE V3 | HSSE V3 |
| HSS-Co | HSS Cobalt | HSS-Co5 | HSS-Co5 | HSS-Co8 | HSS-Co8 |
| VC10 | Powder Metallurgy HSS | XPM | High Grade Powder Metallurgy HSS | CARBIDE | Tungsten Carbide |
| CBN | CBN | CERMET | CERMET | PCD | PCD |

Surface Treatment









| | | | | | |
|--------------|------------------------------|---------------|------------------------------|-------------|--------------------------------------|
| BR | Bright | HR | HR Coating | TiCN | TiCN Coating |
| CrN | CrN Coating | IchAda | IchAda Coating | TiN | TiN Coating |
| DIA | OSG Patented Diamond Coating | N | Nitride Coating | V | OSG Special Multi-Layer TiCN Coating |
| DLC | DLC Coating | N S/O | Nitride/ Steam Oxide Coating | WD1 | WD1 Coating |
| DUR | Duarise Coating | S/O | Steam Oxide Coating | WXL | WXL® Coating |
| EgiAs | EgiAs Coating | SS | Super Smooth | WXS | WXS® Coating |
| EXO | Multi-Layer TiAlN Coating | TiAlN | TiAlN Coating | | |

Other Icons

| | | | | | | | |
|-------------------|----------------|-------------------|------------|------------|-----|------------------|-----------|
| SPEED FEED | Speeds & Feeds | SHRINK FIT | Shrink Fit | NEW | New | NEW SIZES | New Sizes |
|-------------------|----------------|-------------------|------------|------------|-----|------------------|-----------|



Tool Dimensions

| | | | | | |
|-------------------|-------------------|---|---------------------|---|----------------------------|
| EXTRA LONG | Extra Long Length | LH | Left Hand |  | Milling Diameter Tolerance |
| LONG | Long Length | LHS | Left Hand Spiral |  | Coolant-Through |
| JOBBERS | Jobbers Length | STI | Screw Thread Insert |  | Straight Shank |
| MED | Medium Length |  | Center Cutting |  | Taper Shank |
| REG | Regular Length |  | Non-Center Cutting |  | Helix Angle |
| STUB | Stub Length |  | Radius Tolerance | | |

Tool Dimensions

| | | | | | |
|----------------|---------------------------------|-----------------|-------------------|---------------|----------|
| TYPE W | For Soft Materials | TYPE UNI | For Universal Use | TYPE N | Standard |
| TYPE H | For Hard Materials | TYPE GG | For Cast Iron | | |
| TYPE VA | For Steels and Stainless Steels | TYPE FS | Parabolic Flute | | |

Color Bands

| | | | | | |
|------------------|----------------------|--------------------|---------------|-------------------|------------------|
| RED BAND | For Alloy Steels | YELLOW BAND | For Aluminum | GREEN BAND | For Carbon Steel |
| BLUE BAND | For Stainless Steels | WHITE BAND | For Cast Iron | | |

Tour the New Catalog

Finding Your Tooling Needs

Master Index: P1

A snapshot of the entire catalog.

Surface Treatment Guide: P16-17

A complete list of all OSG surface treatments, their features and recommended applications.

Brand Index: P18-48

A complete list of all stocked OSG products organized by brand.

Featured Drilling Products: P52-53

A snapshot of OSG's featured drilling products to make tooling selection for any material fast and easy.

Drilling Application Guide: P54-55

Each of OSG's drill series recommendations according to materials

Drilling Illustrated Index: P56-65

All of OSG's drills listed according to length alongside their material recommendations.

Featured Threading Products: P404-405

A snapshot of OSG's featured threading products to make tooling selection for any material fast and easy.

Threading Application Guide: P406-407

OSG's threading products recommended according to materials with recommended SFM ranges. Compare tap performance to select your perfect tap.

Threading Illustrated Index: P408-431

All of OSG's threading products listed according to style alongside their material recommendations.

Featured Milling Products: P796-797

A snapshot of OSG's featured Milling products to make tooling selection for any material fast and easy.

Milling Illustrated Index: P798-829

All of OSG's Milling products listed according to brand alongside their material recommendations.

Indexable Illustrated Index: P1316-1321

All of OSG's Indexable products and their material recommendations.

List Number Index: P1533-1536

A complete list of all stocked OSG products organized by list number.

EDP Numerical Index: P1537-1696

A complete list of all stocked OSG products organized by EDP number.



OSG Online

www.osgtool.com

OSG is constantly striving to help you find what you need when you need it. Our website includes features that focus on functionality, usability and even appearance to make your experience as enjoyable as possible. We have recently updated the website so it is responsive across all your favorite devices!



OSG News: *See What's New at OSG*

- Press Releases
- New Products
- Social Media Blog

Resources: *Tools to Make it Easier*

- Product Search
- Tool Reconditioning
- Find a Distributor
- Competitor Crossover
- Fast Service Taps
- MSDS Download
- Tap-Drill Size Calculator

OSG's Tool Selector: *The Right Tool Right Now*

- With OSG's new tool selector, you are never more than 5 simple steps away from the right tool for your job.

Online Live Chat

- During regular business hours, OSG provides online support for customers looking for an alternative way to get their technical product assistance.

OSG Ozone: *Save BIG on Overstock*

- Browse through an array of premium OSG products being offered at special discount prices!

Social Media

Connect with OSG

Follow and interact with OSG on popular social media sites including Facebook, Twitter, LinkedIn, Instagram, and YouTube.

Facebook: facebook.com/osgtool

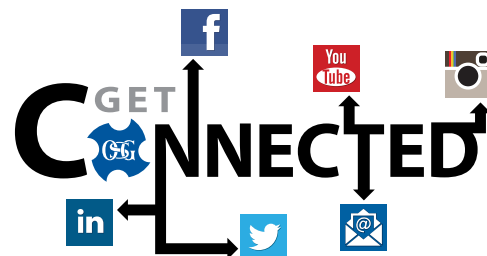
Twitter: twitter.com/OSGTOOL

LinkedIn: linkedin.com/company/osg-usa-inc

Instagram: instagram.com/osgtool/

YouTube: youtube.com/osgtool

OSG E-CLUB: Subscribe: eclub@osgtool.com



Philosophy & Business Model

Corporate Philosophy: Global Presence

As a comprehensive cutting tool manufacturer, we make products that at a fundamental level contribute to enhancing people's quality of life. Through continuous growth, we have established a production, sales and technical support network spanning 33 countries.

Our corporate aim is to continue to expand our operations globally and strengthen our contribution to manufacturing industries worldwide.

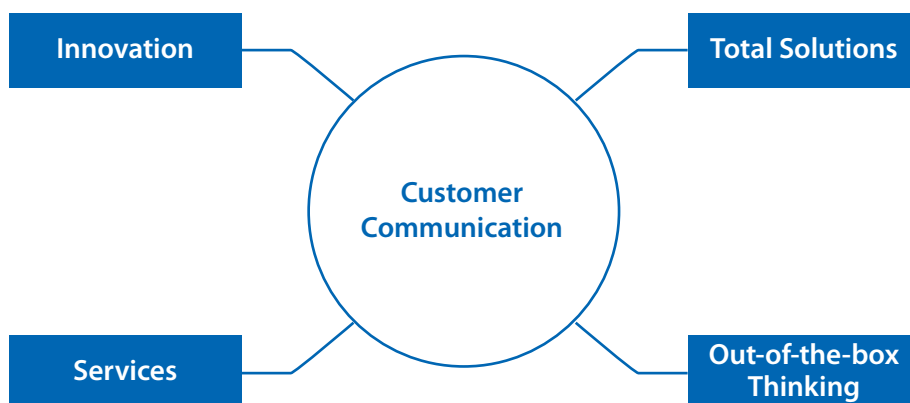
Business Model

Customer communication is at the heart of the OSG brand. We anticipate, listen and actively react to customer needs through on-site face-to-face support. OSG's vast global network provides our production sites with accurate feedback about user needs so that they can quickly design, develop, manufacture and deliver products that precisely meet those needs.

shaping your dreams

The power of OSG lies in our assured innovative technological know-how for producing high-quality and high-performance products; our exceptional services to respond to situations diligently; and our out-of-the-box thinking to provide total solutions that anticipate our customers' needs. We are committed to contribute to the advancement of the manufacturing industries by shaping our customers' dreams into reality.

The Power to Exceed Customers' Expectations



Message from the President

Shaping Customers' Dreams as a Comprehensive Cutting Tool Manufacturer

OSG Corporation has succeeded in maintaining steady growth over the past 80 years. We would like to express our heartfelt gratitude to the support of our customers, business partners and shareholders for contributing to OSG's tremendous global success today.

Ever since the company's establishment in 1938, OSG has been committed to developing quality products that truly exceed the expectations of each customer. This spirit remains alive in all facets of our operation today, and has given OSG the strength to challenge the status quo and deliver products and services in sync with manufacturing needs of the times. Our corporate tagline "shaping your dreams" summarizes this passion for new challenges and commitment to transforming each and every one of our customers' dreams into reality.

While the manufacturing industry is consistently evolving through the new discovery of materials and technologies, OSG is poised for continued growth by responding with new innovations. OSG will continue to support the global manufacturing industries while living up to our stakeholders' trust and expectations. We thank you for your continuous and enthusiastic support for OSG Corporation, a company that keeps evolving without forgetting its origin.



*Mike Grantham
President of OSG USA*

OSG USA's Mission

It is the role of OSG USA, as well as its subsidiary companies, to carry out the core philosophy of our parent company.

OSG USA's mission is to contribute to the advancement of the manufacturing industry and society through innovative technology and superior quality products.

At OSG we are committed to providing our customers with the most cost effective quality products and the best service in the industry.

Our experienced staff strives to not only provide solutions but also works with our customers to improve processes through innovative strategies.

A Commitment to Quality that Withstands the Test of Time

In March 1938, Hideo Osawa established OSG Grinding Co., Ltd. to achieve domestic production of high-quality taps. Thirty years later, OSG's first overseas subsidiary was established in the United States. Based on the corporate philosophy of "global presence," OSG has since then built a production, sales and technical support network spanning 33 countries. With over 50 years of experience in developing new markets and human assets, OSG will continue its global expansion and contribute to the advancement of the manufacturing industry worldwide.



March 1938

- Hideo Osawa established OSG Grinding Co., Ltd. in Tokyo
- Began manufacturing taps and dies

May 1942

- Began manufacturing and sales of screw gauges

May 1943

- Established Aichi Factory (now OSG Academy)



May 1963

- Began manufacturing and sales of flat rolling dies

August 1956

- Began manufacturing and sales of cylindrical rolling dies

April 1961

- Toyokawa Factory began operation



August 1970

- Began manufacturing and sales of HSS end mills

1970

December 1971

- Toyohashi Factory began operation

June 1968

- First overseas subsidiary, OSG Tap & Die, Inc., opens in the USA

March 1967

- Oike Factory began operation

June 1963

- Changed the company name to OSG MFG. Company

December 1963

- Separated sales department and established OSG Corporation



March 1984

• Began manufacturing and sales of drills

February 1987

• Began manufacturing and sales of cutter bodies

September 1980

• Began manufacturing and sales of carbide end mills

1990

November 1990

• Yana Factory began Operation

June 1982

• Shinshiro Factory began operation

1980

2000

June 2010

• Began sales of OSG Phoenix, an indexable tooling series

2010

September 2014

• Introduces "The A Brand" product brand

November 2014

• Achieved consolidation net sales of 100 billion yen in FY2014

December 2004

• Established Design Center

January 1998

• Established Hongu Center

December 2006

• Established Global Technology Center

September 2017

• Established D-Lab

December 1992

• OSG MFG. Company and OSG Corporation were merged into OSG Corporation

February 1993

• Relocated corporate headquarters to Toyokawa, Aichi

December 1998

• Established CS Center



2018

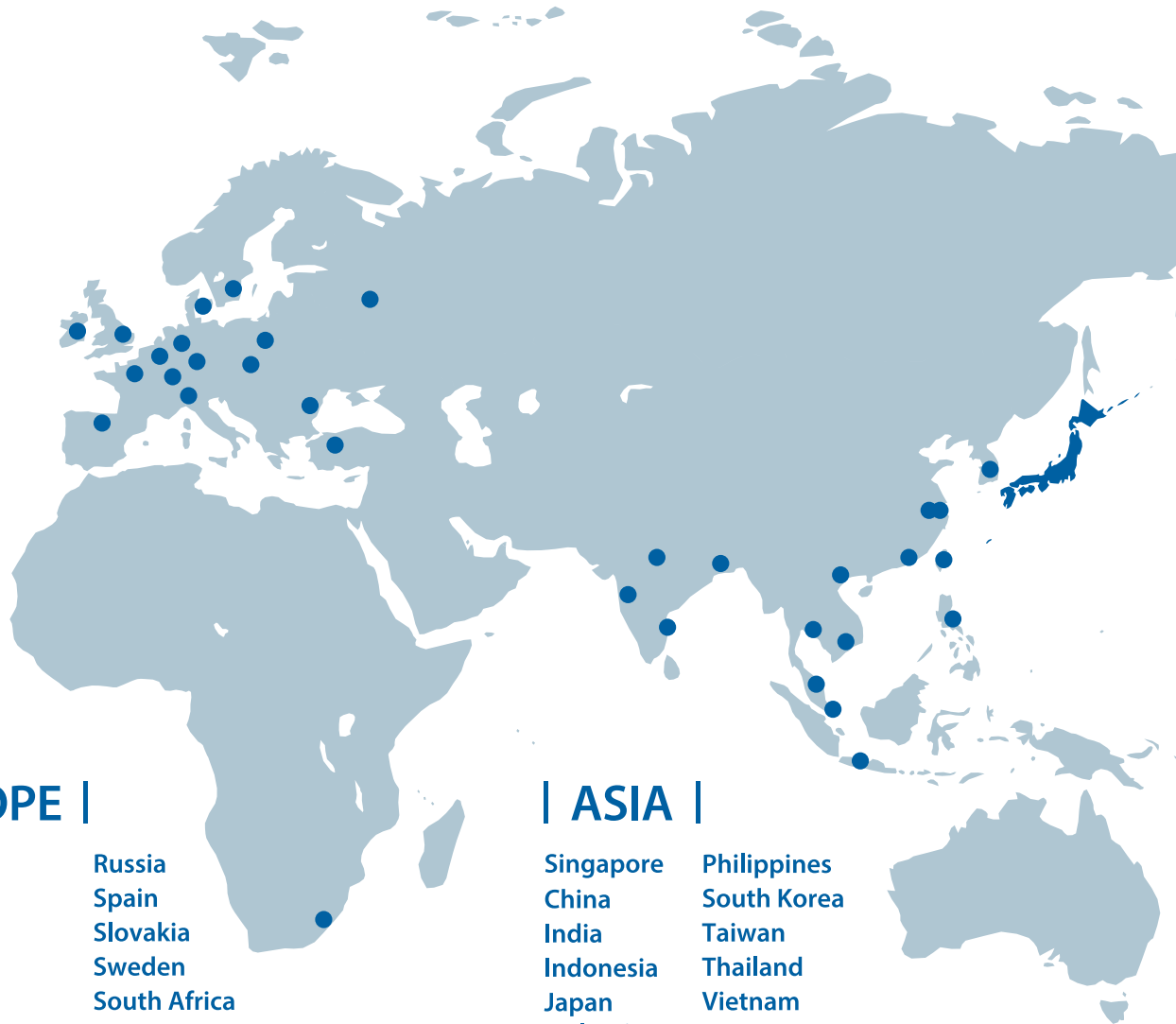
• OSG celebrates its 80th anniversary
• OSG USA, Inc. celebrates its 50th anniversary



Anniversary



Global Network



| EUROPE |

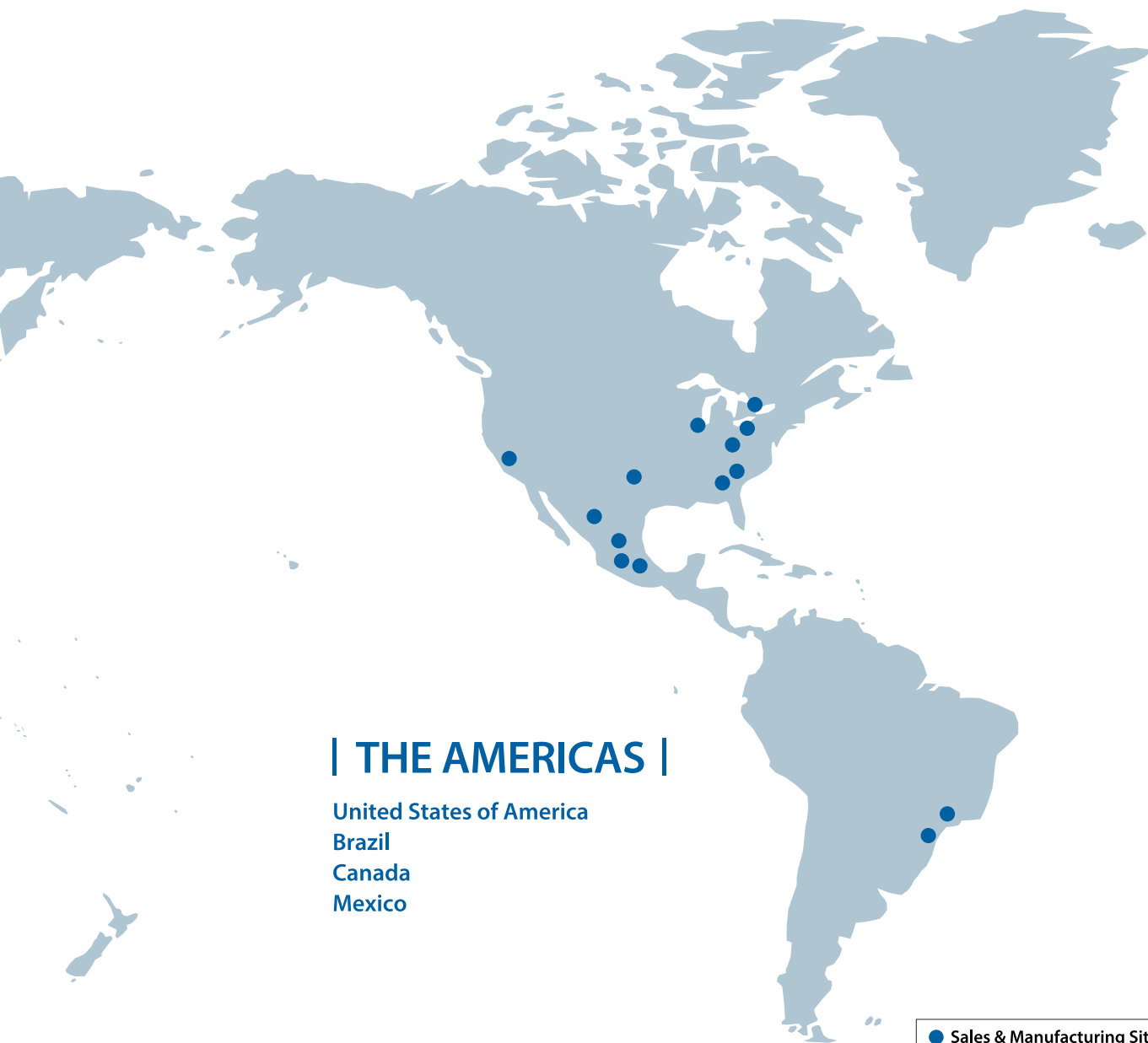
| | |
|-----------------|----------------|
| Belgium | Russia |
| Denmark | Spain |
| France | Slovakia |
| Germany | Sweden |
| Italy | South Africa |
| Ireland | Switzerland |
| The Netherlands | Turkey |
| Poland | United Kingdom |
| Romania | |

| ASIA |

| | |
|-----------|-------------|
| Singapore | Philippines |
| China | South Korea |
| India | Taiwan |
| Indonesia | Thailand |
| Japan | Vietnam |
| Malaysia | |

A Global Network that Accelerates International Business Development

In 1968, OSG Corporation established its very first overseas subsidiary in the United States. Since then, OSG has dynamically expanded its global presence, establishing a production, sales and technical support network spanning 33 countries.



| THE AMERICAS |

United States of America
Brazil
Canada
Mexico

● Sales & Manufacturing Sites

As of December 1, 2019

United States of America (OSG USA, Inc.)



Singapore (OSG Asia Pte Ltd.)



Belgium (OSG Europe Logistics S.A.)



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North America Locations

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Canada



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Mexico

Mexico



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S de R.L. de C.V.**
Calle Nicolas Gogol 11371
Complejo Industrial Chihuahua,
Chihuahua, 31136, Mexico
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Core Products

Supporting Global Manufacturing with Top Class Products and Technology

OSG maintains absolute control over every aspect of its manufacturing capabilities. OSG products are produced in-house - from the production of tool material, creation of tool geometry, to the development of its own proprietary coatings - the 3 vital elements in the manufacturing of superior cutting tools.



Taps

Taps are used to cut screw threads on the inside surfaces of holes, creating the "female" half (nut) of the screw. High precision is of vital importance, particularly in areas such as automobile engines, which require precision screws. OSG offers a lineup of taps with diameters in various sizes and with specifications suitable for a wide variety of uses.



Drills

Drills are used to make holes in a wide range of surfaces. OSG has received high acclaim for the development of high-precision, high-value-added products for manufacturing use in automotive and aircraft part manufacture, which demands advanced processing techniques and zero margin of error.

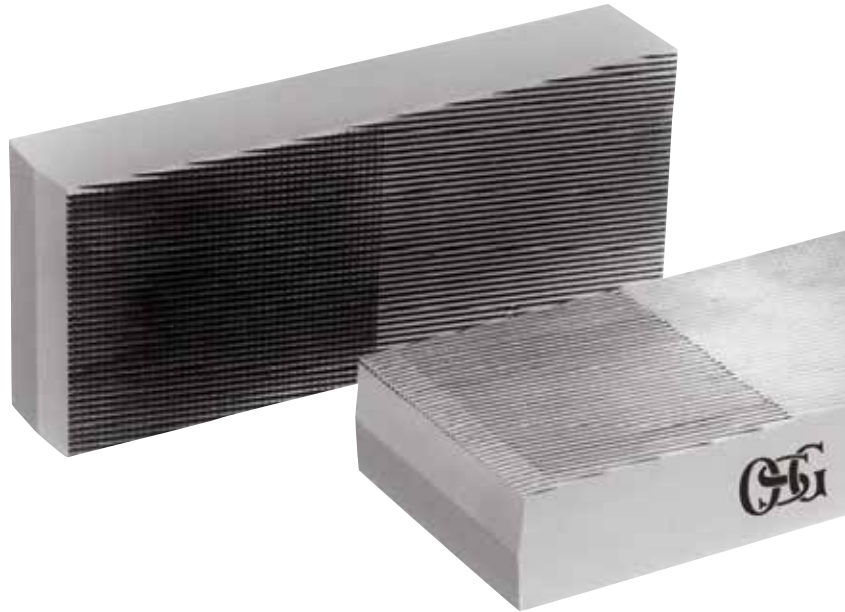
End Mills

End Mills are used to cut and contour molds for plastic parts, which include electric home appliances, die-casting dies for automotive parts and stamping molds. To meet today's demanding requirements (smaller size, lower weight and reduced cost), OSG has developed many carbide end mills that are excellent in both processing accuracy and durability.



Rolling Dies

Thread rolling dies are used to copy threading onto "Male" screws (bolts); the process consists of rolling a metal bar between two thread rolling dies tightly pressed to each side. OSG manufactures cylindrical and flat rolling dies for screws, worms and serrations, thread rolling planetary dies and contour-flow rolling dies, in accordance with their intended use.



Indexable Tools

Indexable tools are used to shape metal molds and machine parts. While end mills are used for finishing, indexable tools are intended for rough cutting and contouring, and use disposable inserts attached to the tool body.

Gauges

Gauges are used to inspect the final dimensions of screw threads and holes. OSG was an early adopter of changes in the Japan Industrial Standards (JIS). Today, we offer a range of screw gauges based on ISO standards. Precision checking is an extremely important process because of the trend toward increasing product precision and compliance with international standards.
















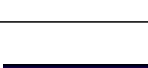


Surface Treatments




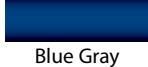









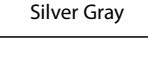

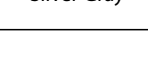



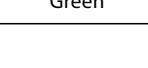

OSG Product Treatments

OSG's surface treatments are designed to meet customer needs through comprehensive technology by providing wear resistance, seizure resistance, corrosion resistance and mold release. OSG proprietary treatments provide a range of thicknesses, hardnesses and oxidation temperatures so you are sure to find the best match for any application.



| Coating | Coating Color | Type | Thickness (µm) | Hardness (HV) | Oxidation Temp. (°C) | Application |
|---|--|------------------|----------------|---------------|----------------------|---|
|  IchAda |  Black Gray | Cr | 1~5 | 3100 | 1100 | For drilling steel, stainless steel & hardened steel. A PVD coating with excellent surface smoothness and abrasion resistance, high surface hardness and heat resistance for small diameter tools. |
|  DUR |  Black Gray | Cr multilayer | 1~5 | 3100 | 1100 | For milling steel, stainless steel & hardened steel. A PVD coating with excellent surface hardness and wear resistance, excellent heat resistance and low coefficient of friction to reduce material adhesion. |
|  WD1 |  Iridescent Blue | Cr multilayer | 3~5 | 3300 | 1100 | For drilling steel, stainless steel, cast iron & hardened steel. A PVD coating with excellent surface hardness and wear resistance, excellent heat resistance and low coefficient of friction to reduce material adhesion. |
|  EgiAs |  Iridescent Red | Nano multilayer | 3~5 | 3200 | 1100 | For drilling steel, stainless steel, cast iron, aluminum & hardened steel. A PVD coating with excellent surface hardness and wear resistance, excellent heat resistance and low coefficient of friction to reduce material adhesion. |
|  WXS |  Black Gray | SiC | 1~5 | 3500 | 1300 | For drilling, tapping & milling steel, stainless steel & hardened steel. A PVD coating with excellent surface hardness and wear resistance, excellent heat resistance and low coefficient of friction to reduce material adhesion. |
|  WXL |  Black Gray | Cr | 1~5 | 3100 | 1100 | For drilling & milling steel, stainless steel & hardened steel. A PVD coating with excellent surface hardness and wear resistance, excellent heat resistance and low coefficient of friction to reduce material adhesion. |
|  EXO |  Black Violet | TiAlN multilayer | 3 | 2800 | 850 | For drilling, tapping & milling steel, stainless steel, cast iron & heat resistant alloys. A PVD coating with high surface hardness and wear resistance, very good heat resistance and low coefficient of friction to reduce material adhesion. |
|  TiAlN |  Black Violet | TiAlN | 3 | 2800 | 800 | For drilling, tapping & milling steel, stainless steel, cast iron & heat resistant alloys. A PVD coating with high surface hardness and wear resistance, very good heat resistance and low coefficient of friction to reduce material adhesion. |

Surface Treatments

| Coating | Coating Color | Type | Thickness (µm) | Hardness (HV) | Oxidation Temp. (°C) | Application |
|---|---|-----------------|----------------|---------------|----------------------|---|
|  V |  Blue Gray | TiCN multilayer | 3 | 2700 | 400 | For drilling & tapping steel, stainless steel, aluminum & heat resistant alloys. A PVD coating with high surface hardness and wear resistance, good heat resistance and low coefficient of friction to reduce material adhesion. |
|  TiCN |  Blue Gray | TiCN | 3 | 2700 | 400 | For drilling, tapping & milling steel, stainless steel, aluminum & heat resistant alloys. A PVD coating with high surface hardness and wear resistance, good heat resistance and low coefficient of friction to reduce material adhesion. |
|  TiN |  Gold | TiN | 3 | 2000 | 500 | For drilling, tapping & milling steel, stainless steel, tool & die steel & aluminum. A PVD coating with good surface hardness and wear resistance, good heat resistance and low coefficient of friction to reduce material adhesion. |
|  SS |  Black Violet | TiAlN | 1 | 2800 | 800 | For drilling & tapping steel, stainless steel, & heat resistant alloys. A PVD coating with high wear & abrasion resistance, very good heat resistance and high surface smoothness to reduce material adhesion. |
|  HR |  Silver Gray | Ti | 2 | 2800 | 700 | For tapping stainless steel & heat resistant alloys. A PVD coating with high wear & abrasion resistance, very good heat resistance and high surface smoothness to reduce material adhesion. |
|  S/O |  Black | Steam-Oxide | - | - | - | For tapping steel, stainless steel, tool & die steel & nickel-alloys. The oxidized surface layer is porous and increases lubricity by retaining cutting fluid on the working area of the tool. |
|  Ni |  Silver Gray | Nitride | 30~50 | 1000 | - | For tapping cast iron, cast aluminum, & plastic. The case-hardened surface layer increases wear resistance in abrasive and tough materials. |
|  CrN |  Silver Gray | CrN | 3 | 1800 | 700 | For tapping non-ferrous materials. A PVD coating with high surface lubricity to reduce material adhesion applied over a case-hardened surface layer with increased wear resistance. |
|  DIA |  Black | DIA | 20, 12 | 9000 | 600 | For drilling, tapping & milling non-ferrous & composite materials. A CVD coating with superior surface hardness and wear resistance, outstanding durability, and excellent smoothness to reduce material adhesion. |
|  DLC |  Iridescent Green | DLC | 0.2 | 6000 | 550 | For milling non-ferrous materials. A PVD coating with excellent surface hardness and wear resistance, and very low coefficient of friction to reduce material adhesion. |
|  BR | - | - | - | - | - | For general machining of all materials. The uncoated substrate provides good wear resistance and durability in general machining applications. |

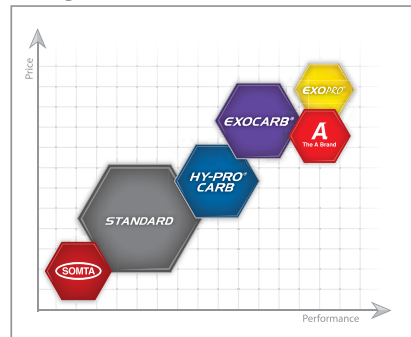
Brand Index

OSG Product Overview - The Total Solution

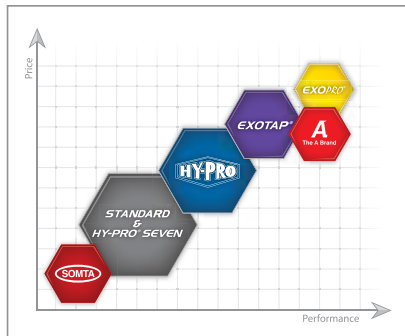
The purpose of this Brand Index is to illustrate OSG's Brand hierarchy and to better help you select the best tool for your machining needs.

From the value products under our Standard and HSS-Co brands to the high performance products under the V-Series, EXOCARB®, EXOPRO® and our new A Brand®, OSG offers a broad range of tools to meet your application requirements.

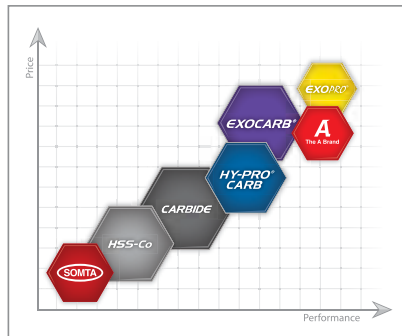
Drilling - Carbide



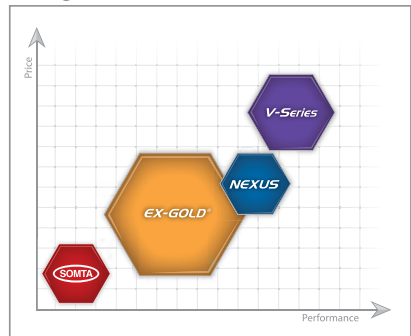
Threading



Milling



Drilling - HSS



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A Brand®



| DRILLS | 6600 | | A Brand® ADO-TRS | Inch & Metric | Carbide | EgiAs | 4mm - 20mm | 3D, Coolant-Through, 3 Flutes | 66-69 |
|--------|------|--|------------------|---------------|---------|-------|---------------|-----------------------------------|---------|
| | 6610 | | A Brand® ADO-TRS | Inch & Metric | Carbide | EgiAs | 4mm - 20mm | 5D, Coolant-Through, 3 Flutes | 70-73 |
| | 5720 | | A Brand® ADFO | Inch & Metric | Carbide | EgiAs | 3mm - 20mm | 3D, Coolant-Through, Flat Drill | 74-77 |
| | 5700 | | A Brand® ADF | Inch & Metric | Carbide | EgiAs | 0.2mm - 20mm | 2D, Solid, Flat Drill | 78-83 |
| | 5705 | | A Brand® ADFLS | Inch & Metric | Carbide | EgiAs | 3mm - 20mm | 2D, Solid, Flat Drill, Long Shank | 84-85 |
| | 6500 | | A Brand® ADO | Inch & Metric | Carbide | EgiAs | 2mm - 20mm | 3D, Coolant-Through | 86-91 |
| | 6510 | | A Brand® ADO | Inch & Metric | Carbide | EgiAs | 2mm - 20mm | 5D, Coolant-Through | 92-97 |
| | 6520 | | A Brand® ADO | Inch & Metric | Carbide | EgiAs | 2mm - 15.88mm | 8D, Coolant-Through | 98-101 |
| | 6530 | | A Brand® ADO | Inch & Metric | Carbide | EgiAs | 2mm - 14.29mm | 10D, Coolant-Through | 102-104 |
| | 6535 | | A Brand® ADO | Inch & Metric | Carbide | EgiAs | 3mm - 14.29mm | 15D, Coolant-Through | 105-106 |
| | 6540 | | A Brand® ADO | Inch & Metric | Carbide | EgiAs | 3mm - 14.29mm | 20D, Coolant-Through | 107-108 |



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A Brand® (Continued)

ADR ATP AEM

| DRILLS | 6550 |  | A Brand® ADO | Inch & Metric | Carbide | EgiAs | 3mm - 14.29mm | 30D, Coolant-Through | 109-110 |
|--------|------|---|---|---------------|---------|---------|---------------|--|----------------------------|
| | 6560 |  | A BRAND® ADO | Inch & Metric | Carbide | EgiAs | 3mm - 10mm | 40D, Coolant-Through | 111 |
| | 6570 |  | A BRAND® ADO | Inch & Metric | Carbide | EgiAs | 3mm - 8mm | 50D, Coolant-Through | 112 |
| | 6300 |  | A Brand® AD | Inch & Metric | Carbide | EgiAs | 2mm - 20mm | 2D, Solid | 113-116 |
| | 6310 |  | A Brand® AD | Inch & Metric | Carbide | EgiAs | 2mm - 20mm | 4D, Solid | 117-120 |
| | 5200 |  | A Brand® ADO-SUS | Inch & Metric | Carbide | WXL® | 2mm-20mm | 3D, Coolant-Through | 121-127 |
| | 5210 |  | A Brand® ADO-SUS | Inch & Metric | Carbide | WXL® | 2mm-20mm | 5D, Coolant-Through | 128-134 |
| | 5220 |  | A Brand® ADO-SUS | Inch & Metric | Carbide | WXL® | 2mm - 12.7mm | 8D, Coolant-Through | 135-139 |
| | 5190 |  | A Brand® AD-LDS | Inch & Metric | Carbide | EgiAs | 3mm - 25mm | Solid 90°, 120°, 140° Spot Drill | 140-141 |
| | TAPS | 16625 |  | A BRAND® AT-1 | Inch | Carbide | EgiAs | 1/4" - 1" | Thread Mill, Helical Flute |
| 16620 | |  | A BRAND® AT-1 | Metric | Carbide | EgiAs | M6 - M24 | Thread Mill, Helical Flute | 433 |
| 16630 | |  | A BRAND® AT-1 | Inch | Carbide | EgiAs | 1/16" - 2" | Thread Mill, NPT, Helical Flute | 434 |
| 16631 | |  | A BRAND® AT-1 | Inch | Carbide | EgiAs | 1/16" - 2" | Thread Mill, NPTF, Helical Flute | 435 |
| 16605 | |  | A BRAND® A-CSF | Inch | Carbide | Bright | 1/4" - 1/2" | Spiral Flute, Coolant-Through, DIN OAL | 490 |
| 16600 | |  | A BRAND® A-CSF | Metric | Carbide | Bright | M5 - M12 | Spiral Flute, Coolant-Through, DIN OAL | 491 |
| 16615 | |  | A BRAND® A-CHT | Inch | Carbide | Bright | No. 12 - 1/2" | Straight Flute, Coolant-Through, DIN OAL | 660 |
| 16610 | |  | A BRAND® A-CHT | Metric | Carbide | Bright | M5 - M12 | Straight Flute, Coolant-Through, DIN OAL | 661 |
| 16545 | |  | A BRAND® A-OIL-SFT | Inch | VC-10 | V | 1/4" - 2" | Spiral Flute, Variable Helix, Coolant-Through, DIN OAL | 498 |
| 16540 | |  | A BRAND® A-OIL-SFT | Metric | VC-10 | V | M6 - M56 | Spiral Flute, Variable Helix, Coolant-Through, DIN OAL | 499 |
| 16555 | |  | A BRAND® A-OIL-POT | Inch | VC-10 | V | 1/4" - 1" | Spiral point, Coolant-Through, DIN OAL | 581 |
| 16550 | |  | A BRAND® A-OIL-POT | Metric | VC-10 | V | M6 - M24 | Spiral point, Coolant-Through, DIN OAL | 582 |
| 16505 | |  | A BRAND® A-SFT | Inch | VC-10 | V | No. 4 - 2" | Spiral Flute, Variable Helix, DIN OAL | 492-494 |
| 16500 | |  | A BRAND® A-SFT | Metric | VC-10 | V | M1.4 - M56 | Spiral Flute, Variable Helix, DIN OAL | 495-497 |
| 16515 | |  | A BRAND® A-POT | Inch | VC-10 | V | No. 2 - 1" | Spiral point, DIN OAL | 577-578 |
| 16510 | |  | A BRAND® A-POT | Metric | VC-10 | V | M1.4 - M24 | Spiral point, DIN OAL | 579-580 |
| 16525 | |  | A BRAND® A-LT-SFT | Inch | VC-10 | V | No. 4 - 1" | Spiral Flute, Variable Helix, Long Shank | 500 |

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A Brand® (Continued)

ADR ATP AEM

| TAPS | 16520 |  | A BRAND® A-LT-SFT | Metric | VC-10 | V | M3 - M24 | Spiral Flute, Variable Helix, Long Shank | 501-502 |
|-----------|-------|---|-----------------------|--------|---------|---------|-------------|--|---------|
| | 16535 |  | A BRAND® A-LT-POT | Inch | VC-10 | V | No. 4 - 1" | Spiral point, Long Shank | 583 |
| | 16530 |  | A BRAND® A-LT-POT | Metric | VC-10 | V | M3 - M24 | Spiral point, Long Shank | 584-585 |
| | 16570 |  | A BRAND A-NPT | Inch | HSSE | V | 1/16" - 1" | NPT, Interrupted | 735 |
| | 16575 |  | A BRAND A-LT-NPT | Inch | HSSE | V | 1/16" - 1" | NPT, Long shank, Interrupted | 736 |
| | 16590 |  | A BRAND A-NPS | Inch | HSSE | V | 1/16" - 1" | NPS | 739 |
| | 16585 |  | A BRAND A-BSPT | Inch | HSSE | V | 1/8" - 1" | BSPT | 738 |
| | 16580 |  | A BRAND A-BSPP | Inch | HSSE | V | 1/8" - 1" | BSPP | 737 |
| END MILLS | 8200 |  | A BRAND® AE-VMS | Inch | Carbide | Durise | 5/64" - 1" | Anti-Vibration | 830 |
| | 8205 |  | A BRAND® AE-VMS | Metric | Carbide | Durise | 3mm - 25mm | Anti-Vibration | 831 |
| | 8210 |  | A BRAND® AE-CR-VMS | Inch | Carbide | Durise | 3/16" - 1" | Anti-Vibration, Corner Radius | 832 |
| | 8215 |  | A BRAND® AE-CR-VMS | Metric | Carbide | Durise | 3mm - 12mm | Anti-Vibration, Corner Radius | 833 |
| | 8220 |  | A BRAND® AE-LN-CR-VMS | Inch | Carbide | Durise | 1/4" - 1" | Anti-Vibration, Long Neck, Corner Radius | 834 |
| | 8206 |  | A BRAND® AE-VMSS | Metric | Carbide | Duarise | 1mm - 12mm | Anti-Vibration | 835 |
| | 8230 |  | A BRAND® AE-LN-VMSS | Inch | Carbide | Duarise | 1/4" - 1" | Anti-Vibration, Long Neck | 836 |
| | 8235 |  | A BRAND® AE-LN-VMSS | Metric | Carbide | Duarise | 6mm - 12mm | Anti-Vibration, Long Neck | 837 |
| | 8201 |  | A BRAND® AE-VML | Inch | Carbide | Duarise | 1/4" - 1/2" | Anti-Vibration, Long LOC | 838 |
| | 8207 |  | A BRAND® AE-VML | Metric | Carbide | Duarise | 6mm - 12mm | Anti-Vibration, Long LOC | 839 |
| | 8202 |  | A BRAND® AE-NIK-VML | Inch | Carbide | Duarise | 1/4" - 1/2" | Anti-Vibration, Long LOC, Nicks | 840 |
| | 8208 |  | A BRAND® AE-NIK-VML | Metric | Carbide | Duarise | 6mm - 12mm | Anti-Vibration, Long LOC, Nicks | 840 |

EXOPRO®

EP





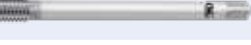
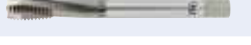

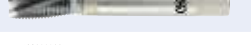
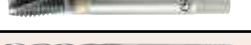


| DRILLS | 5600 |  | EXOPRO® Mega Muscle | Inch & Metric | Carbide | WD1 | 4mm-20mm | 3D, Coolant-Through, 3 Flutes | 142-143 |
|--------|--------|---|---------------------|---------------|---------|------|---------------|-------------------------------|---------|
| | 5610 |  | EXOPRO® Mega Muscle | Inch & Metric | Carbide | WD1 | 4mm-20mm | 5D, Coolant-Through, 3 Flutes | 144-145 |
| | 5630 |  | EXOPRO® Mega Muscle | Inch & Metric | Carbide | WD1 | 5mm - 15.88mm | 10D, Coolant-Through | 146-148 |
| | 5950Ni |  | EXOPRO® WHO-Ni | Inch & Metric | Carbide | WXS® | 3mm-12.7mm | 3D, Coolant-Through | 149-150 |
| | 5955Ni |  | EXOPRO® WHO-Ni | Inch & Metric | Carbide | WXS® | 3mm-12.7mm | 5D, Coolant-Through | 151-152 |



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EP

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| DRILLS | 7501 |  | EXOPRO® AERO-STAD | Inch | Carbide | Dia. | #40 - 1/2" | Composite, Triple Angle | 173 |
| | 7520 |  | EXOPRO® AERO-LHX | Inch | Carbide | Dia. | #40 - 1/2" | Composite, Low Helix | 174 |
| | 7500 |  | EXOPRO® AERO-D-REAM | Inch | Carbide | Dia. | #40 - 1/2" | Composite, Tapered Reamer | 175 |
| | 7530 |  | EXOPRO® AERO-S | Inch | Carbide | Dia. | #40 - 1/2" | Composite, High Helix, Stack Drill | 176 |
| | 7532 |  | EXOPRO® AERO-H | Inch | Carbide | Dia. | #40 - 1/2" | Composite, Stack Drill for All Stacks | 177 |
| TAPS | 16050 |  | EXOPRO® XPF-OIL | Inch | HSS-Co | V | 1/4" - 1-3/4" | Forming Tap, Coolant-Through, DIN OAL | 448-449 |
| | 16150 |  | EXOPRO® XPF-OIL | Metric | HSS-Co | V | M6 - M45 | Forming Tap, Coolant-Through, DIN OAL | 450-452 |
| | 16250 |  | EXOPRO® XPF | Inch | HSS-Co | V | No. 0 - 1-3/4" | Forming Tap, DIN OAL | 453-456 |
| | 16350 |  | EXOPRO® XPF | Metric | HSS-Co | V | M1 - M45 | Forming Tap, DIN OAL | 457-460 |
| | 16260 |  | EXOPRO® XPF | Inch | HSS-CO | V | No. 2 - 1" | STI, Forming Tap, DIN OAL | 705-706 |
| | 16360 |  | EXOPRO® XPF | Metric | HSS-CO | V | M2 - M24 | STI, Forming Tap, DIN OAL | 707 |
| | 16255 |  | EXOPRO® XPF-LS | Inch | HSS-Co | V | No. 5 - 1" | Forming Tap, Long Shank | 461-462 |
| | 16355 |  | EXOPRO® XPF-LS | Metric | HSS-Co | V | M3 - M20 | Forming Tap, Long Shank | 463-464 |
| | 16450 |  | EXOPRO® CC-SUS | Inch | HSSE | TiN | No. 2 - 1" | Spiral Flute, Variable Helix, DIN OAL | 503-504 |
| | 16455 |  | EXOPRO® CC-SUS | Metric | HSSE | TiN | M2 - M24 | Spiral Flute, Variable Helix, DIN OAL | 505 |
| | 335Ni |  | EXOPRO® WHR-Ni | Inch | VC10 | HR | No. 2 - 1" | Spiral Flute, DIN OAL | 506-507 |
| | 336Ni |  | EXOPRO® WHR-Ni | Metric | VC10 | HR | M2.5 - M24 | Spiral Flute, DIN OAL | 508 |
| | 337Ni |  | EXOPRO® WHR-Ni | Inch | VC-10 | HR | No. 2 - 1" | Spiral Point, DIN OAL | 588-589 |
| | 338Ni |  | EXOPRO® WHR-Ni | Metric | VC-10 | HR | M2.5 - M24 | Spiral Point, DIN OAL | 590 |
| | 13063 |  | EXOPRO® Ti | Inch | VC-10 | V | No. 2 - 1/2" | Spiral Flute, RHC/LHS | 586 |
| 13163 |  | EXOPRO® Ti | Metric | VC-10 | V | M2.5 - M12 | Spiral Flute, RHC/LHS | 587 | |
| END MILLS | 2055 |  | EXOPRO® UVX-Ni | Inch | Carbide | EXO® | 1/4" - 1" | Corner Radius | 841 |
| | 9510 |  | EXOPRO® PHX | Metric | Carbide | EXO® | 1mm - 20mm | Deep Feed, Ball End | 842 |
| | 9590 |  | EXOPRO® PHX | Metric | Carbide | WXS® | 0.06mm - 6mm | Long Neck, Ball End | 843 |
| | 9581 |  | EXOPRO® PHX | Metric | Carbide | WXS® | 1mm - 12mm | Pencil-Neck, Deep Feed, Ball End | 844-845 |
| | 9592 |  | EXOPRO® PHX | Metric | Carbide | WXS® | 0.8mm - 3mm | Pencil Neck, Deep Feed, Corner Radius | 846 |

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EXOPRO® (Continued)

EP

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|-----------|------|---|---------------------|--------|---------|------|---------------|---------------------------------------|---------|
| END MILLS | 9575 |  | EXOPRO® PHX | Metric | Carbide | WXS® | 6mm - 20mm | Deep Feed, Corner Radius | 847 |
| | 9576 |  | EXOPRO® PHX | Metric | Carbide | WXS® | 4mm - 16mm | Long Neck, Deep Feed, Corner Radius | 848 |
| | 9580 |  | EXOPRO® PHX | Metric | Carbide | WXS® | 2mm - 12mm | Pencil Neck, Deep Feed, Corner Radius | 849-851 |
| | 9570 |  | EXOPRO® PHX | Metric | Carbide | EXO® | 1mm - 20mm | High-Feed, Corner Radius | 852 |
| | 2061 |  | EXOPRO® AERO-BNC | Inch | Carbide | Dia. | 1/8" - 1/2" | Composite, Nicked Router | 952 |
| | 2066 |  | EXOPRO® AERO-HBC 30 | Inch | Carbide | Dia. | 1/8" - 1/2" | Composite, Compression Router | 953 |
| | 2064 |  | EXOPRO® AERO-HBC 45 | Inch | Carbide | Dia. | 1/4" - 1/2" | Composite, Compression Router | 954 |
| | 2068 |  | EXOPRO® AERO-HBC 60 | Inch | Carbide | Dia. | 1/4" - 1/2" | Composite, Compression Router | 955 |
| | 2680 |  | EXOPRO® AERO-REC | Inch | Carbide | Dia. | 15/64" - 1/2" | Composite, Roughing Router | 956 |
| | 2650 |  | EXOPRO® AERO-MFR | Inch | Carbide | Dia. | 1/4" - 1/2" | Composite, Finishing Router | 957 |

EXOCARB®

HTE







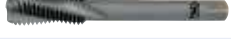
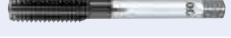

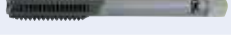
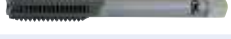


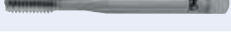

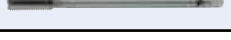
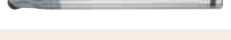
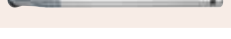
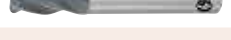
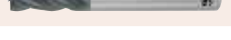
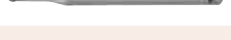





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| DRILLS | 5171 |  | EXOCARB® WH70 | Metric | Carbide | WXS® | 2mm-18.6mm | 5D | 153-155 |
| | 5172 |  | EXOCARB® XH | Metric | Carbide | Bright | 2mm-12mm | Solid, Tap Extractor | 156 |
| | 5275 |  | EXOCARB® MAX-OIL AL | Metric | Carbide | Bright | 3mm-10mm | 15-30D, Coolant-Through | 157 |
| | 5310 |  | EXOCARB® MAX-MINI | Metric | Carbide | EXO® | 1mm-3mm | 10-20D, Solid, Miniature, 3 Flutes | 158 |
| | 5315 |  | EXOCARB® MAX-MINI | Metric | Carbide | SS | 0.05mm | Solid, Miniature, Pilot Drill | 159 |
| | 5320 |  | EXOCARB® MAX-MINI | Metric | Carbide | SS | 0.02mm-0.08mm | 5D, Solid, Miniature | 160 |
| | 5325 |  | EXOCARB® MAX-MINI | Metric | Carbide | SS | 0.02mm-0.08mm | 10D, Solid, Miniature | 161 |
| | 5330 |  | EXOCARB® MAX-MINI | Inch & Metric | Carbide | TiAlN | 0.2mm-5mm | 3D, Solid, Miniature | 162-170 |
| | 5340 |  | EXOCARB® MAX-MINI | Inch & Metric | Carbide | SS | 0.5mm-3mm | 10D, Solid, Miniature | 171-172 |
| | 5732 |  | EXOCARB® AERO-H | Inch | Carbide | TiAlN | #11 - 1/2" | Composite, Stack Drill for All Stacks | 178 |
| TAPS | 41200 |  | EXOCARB® Mini | Inch | Carbide | WXS®, SS | No. 0 - No. 8 | Thread Mill, Miniature, Helical Flute | 436 |
| | 41300 |  | EXOCARB® Mini | Metric | Carbide | WXS®, SS | M1 - M5 | Thread Mill, Miniature, Helical Flute | 437 |
| | 41000 |  | EXOCARB® | Inch | Carbide | EXO® | No. 10 - 1" | Thread Mill, Helical Flute | 438-439 |
| | 41100 |  | EXOCARB® | Metric | Carbide | EXO® | M6 - M24 | Thread Mill, Helical Flute | 440 |
| | 41050 |  | EXOCARB® Oil | Inch | Carbide | EXO® | 1/4" - 1" | Thread Mill, Coolant-Through, Helical Flute | 441 |



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| | | 41150 |  | EXOCARB® Oil | Metric | Carbide | EXO® | M6 - M24 | Thread Mill, Coolant-Through, Helical Flute |
| | 42000 |  | EXOCARB® Pipe | Inch | Carbide | EXO® | 1/16" - 2-1/2" | Thread Mill, NPT, Helical Flute | 443 |
| | 42001 |  | EXOCARB® Pipe | Inch | Carbide | EXO® | 1/16" - 2-1/2" | Thread Mill, NPTF, Helical Flute | 444 |
| | 14153 |  | EXOCARB® | Metric | Carbide | Bright | M6 - M10 | Forming Tap, Carbide Inlaid, DIN/DIN | 465 |
| | 369 |  | EXOCARB® | Metric | Carbide | Bright | M3 - M12 | Forming Tap, JIS | 466 |
| | 357 |  | EXOCARB® | Metric | Carbide | Bright | M6 - M12 | Forming Tap, JIS, Long Shank | 467 |
| | 389 |  | EXOCARB® | Metric | Carbide | Bright | M3 - M12 | Spiral Flute, JIS | 509 |
| | 311 |  | EXOCARB® VX | Inch | Carbide | V | No. 4 - 1/2" | Straight Flute, DIN OAL | 662 |
| | 341 |  | EXOCARB® VX | Metric | Carbide | V | M2.6 - M20 | Straight Flute, JIS | 663 |
| | 329 |  | EXOCARB® Diamond | Inch | Carbide | Dia. | No. 4 - 1/2" | Straight Flute, UNJC, UNJF, DIN OAL | 664 |
| | 359 |  | EXOCARB® Diamond | Metric | Carbide | Dia. | M3 - M12 | Straight Flute, JIS | 665 |
| | 319 |  | EXOCARB® | Inch | Carbide | Bright | No. 4 - 1/2" | Straight Flute, DIN OAL | 666 |
| | 10059 |  | EXOCARB® | Inch | Carbide | Bright | No. 10 - 3/8" | Straight Flute | 667 |
| | 10061 |  | EXOCARB® | Metric | Carbide | Bright | M3 - M10 | Straight Flute, DIN OAL | 668 |
| | 349 |  | EXOCARB® | Metric | Carbide | Bright | M1.4 - M24 | Straight Flute, JIS | 669 |
| | 356 |  | EXOCARB® | Metric | Carbide | Bright | M6 - M12 | Straight Flute, JIS, Long Shank | 670 |
| END MILLS | 3610 |  | EXOCARB® WXL | Inch | Carbide | WXL® | 1/32" - 1/2" | Ball End | 853 |
| | 3710 |  | EXOCARB® WXL | Metric | Carbide | WXL® | 0.1mm - 20mm | Ball End | 854 |
| | 3670 |  | EXOCARB® WXL | Inch | Carbide | WXL® | 1/16" - 1" | Corner Radius | 855 |
| | 3604 |  | EXOCARB® WXL | Inch | Carbide | WXL® | 1/16" - 1" | Square End | 856 |
| | 3690 |  | EXOCARB® WXL | Inch | Carbide | WXL® | 1/64" - 1/4" | Ball End, Long Neck, ±5µm Radius Tolerance | 857 |
| | 3790 |  | EXOCARB® WXL | Metric | Carbide | WXL® | 0.1mm - 6mm | Ball End, Long Neck, ±5µm Radius Tolerance | 858-860 |
| | 3619 |  | EXOCARB® WXL | Inch | Carbide | WXL® | 1/16" - 1/2" | Square End | 861 |
| | 3620 |  | EXOCARB® WXL | Inch | Carbide | WXL® | 1/16" - 3/4" | Square End | 862 |
| | 3621 |  | EXOCARB® WXL | Inch | Carbide | WXL® | 1/16" - 3/4" | Square End | 863 |
| | 3704 |  | EXOCARB® WXL | Metric | Carbide | WXL® | 1mm - 12mm | Square End | 864 |

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| | 3742 | | EXOCARB® WXL | Metric | Carbide | WXL® | 3mm - 26mm | Square End | 865 |
| | 3791 | | EXOCARB® WXL | Metric | Carbide | WXL® | 0.2mm - 5mm | Long Neck | 866-867 |
| | 3711 | | EXOCARB® WXL | Metric | Carbide | WXL® | 1mm - 18mm | Ball End, Long Shank | 868 |
| | 3720 | | EXOCARB® WXL | Metric | Carbide | WXL® | 0.1mm - 6mm | Square End | 869 |
| | 3721 | | EXOCARB® WXL | Metric | Carbide | WXL® | 0.1mm - 20mm | Square End | 870 |
| | 3712 | | EXOCARB® WXL | Metric | Carbide | WXL® | 0.2mm - 6mm | Pencil Neck, Ball End | 871-876 |
| | 3722 | | EXOCARB® WXL | Metric | Carbide | WXL® | 0.1mm - 20mm | Square End | 877 |
| | 3723 | | EXOCARB® WXL | Metric | Carbide | WXL® | 0.2mm - 12mm | Square End | 878 |
| | 3770 | | EXOCARB® WXL | Metric | Carbide | WXL® | 0.6mm - 12mm | Corner Radius | 879 |
| | 3771 | | EXOCARB® WXL | Metric | Carbide | WXL® | 3mm - 12mm | Corner Radius | 880 |
| | 3794 | | EXOCARB® WXL | Metric | Carbide | WXL® | 1mm - 3mm | Long Neck | 881-882 |
| | 4445 | | EXOCARB® WXL | Inch | Carbide | WXL® | 1/8" - 1/2" | High Helix, Corner Radius | 883 |
| | 4410 | | EXOCARB® WXS | Inch | Carbide | WXS® | 1/32" - 1/2" | Ball End | 884 |
| | 4510 | | EXOCARB® WXS | Metric | Carbide | WXS® | 1mm - 12mm | Ball End | 885 |
| | 4440 | | EXOCARB® WXS | Inch | Carbide | WXS® | 1/16" - 3/4" | Square End | 886 |
| | 4540 | | EXOCARB® WXS | Metric | Carbide | WXS® | 1mm - 25mm | Square End | 887 |
| | 4471 | | EXOCARB® WXS | Inch | Carbide | WXS® | 1/16" - 1/2" | Corner Radius | 888 |
| | 4571 | | EXOCARB® WXS | Metric | Carbide | WXS® | 3mm - 12mm | Corner Radius | 889 |
| | 4470 | | EXOCARB® WXS | Inch | Carbide | WXS® | 1/8" - 1/2" | Corner Radius, High Feed | 890 |
| | 4570 | | EXOCARB® WXS | Metric | Carbide | WXS® | 2mm - 13mm | Corner Radius, High Feed | 890 |
| | 4472 | | EXOCARB® WXS | Inch | Carbide | WXS® | 1/8" - 1/2" | Corner Radius, High Feed | 891 |
| | 4572 | | EXOCARB® WXS | Metric | Carbide | WXS® | 2mm - 12mm | Corner Radius, High Feed | 892 |
| 4592 | | EXOCARB® WXS | Metric | Carbide | WXS® | 0.4mm - 3mm | Corner Radius, Long Neck, ±5µm Radius Tolerance | 893-895 | |
| 4590 | | EXOCARB® WXS | Metric | Carbide | WXS® | 0.1mm - 6mm | Ball End, Long Neck, ±5µm Radius Tolerance | 896-898 | |
| 4430 | | EXOCARB® WXS | Inch | Carbide | WXS® | 1/4" - 1/2" | Ball End, True 4 Flute | 899 | |
| 4530 | | EXOCARB® WXS | Metric | Carbide | WXS® | 6mm - 12mm | Ball End, True 4 Flute | 900 | |



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| | 4413 | | EXOCARB® WXS | Inch | Carbide | WXS® | 1/16" - 1/2" | Ball End, Sphere Type | 901 |
| | 4513 | | EXOCARB® WXS | Metric | Carbide | WXS® | 1mm - 12mm | Ball End, Sphere Type | 902 |
| | 4581 | | EXOCARB® WXS | Metric | Carbide | WXS® | 1mm - 2.5mm | Ball End, Tapered | 903 |
| | 4541 | | EXOCARB® WXS | Metric | Carbide | WXS® | 3mm - 12mm | Corner Radius | 904 |
| | 9010 | | EXOCARB® MAX | Inch | Carbide | WXS® | 1/32" - 1/2" | Ball End | 905 |
| | 9110 | | EXOCARB® MAX | Metric | Carbide | WXS® | 1mm - 10mm | Ball End | 905 |
| | 9011 | | EXOCARB® MAX | Inch | Carbide | WXS® | 1/32" - 3/8" | Ball End, Long Shank | 906 |
| | 9111 | | EXOCARB® MAX | Metric | Carbide | WXS® | 1mm - 10mm | Ball End, Long Shank | 906 |
| | 9140 | | EXOCARB® MAX | Metric | Carbide | WXS® | 3mm - 12mm | Square End | 907 |
| | 9144 | | EXOCARB® MAX | Metric | Carbide | WXS® | 6mm - 12mm | Corner Radius | 907 |
| | 9191 | | EXOCARB® MAX | Metric | CBN | Bright | 0.4mm - 3mm | CBN, Ball End | 908 |
| | 9192 | | EXOCARB® MAX | Metric | CBN | Bright | 0.4mm - 3mm | CBN, Super Long Neck, Ball Nose | 908 |
| | 9181 | | EXOCARB® MAX | Metric | CBN | Bright | 0.5mm - 3mm | CBN, Corner Radius | 909 |
| | 9182 | | EXOCARB® MAX | Metric | CBN | Bright | 0.5mm - 3mm | Long Neck, CBN, Corner Radius | 909 |
| | 7020 | | EXOCARB® Diamond | Inch | Carbide | Dia. | 1/64" - 1/2" | Square End | 910 |
| | 7120 | | EXOCARB® Diamond | Metric | Carbide | Dia. | 1mm - 12mm | Square End | 911 |
| | 7040 | | EXOCARB® Diamond | Inch | Carbide | Dia. | 1/16" - 1/2" | Square End | 911 |
| | 7041 | | EXOCARB® Diamond | Inch | Carbide | Dia. | 1/8" - 1/2" | Square End | 912 |
| | 7042 | | EXOCARB® Diamond | Inch | Carbide | Dia. | 1/16" - 1/2" | Long Shank | 912 |
| | 7072 | | EXOCARB® Diamond | Inch | Carbide | Dia. | 1/8" - 1/2" | Long Shank, Corner Radius | 913 |
| | 7010 | | EXOCARB® Diamond | Inch | Carbide | Dia. | 1/32" - 1/2" | Ball End | 913 |
| 7110 | | EXOCARB® Diamond | Metric | Carbide | Dia. | 1mm - 12mm | Ball End | 914 | |
| 7030 | | EXOCARB® Diamond | Inch | Carbide | Dia. | 1/32" - 1/2" | Ball End | 914 | |
| 7031 | | EXOCARB® Diamond | Inch | Carbide | Dia. | 3/16" - 1/2" | Ball End | 915 | |
| 7032 | | EXOCARB® Diamond | Inch | Carbide | Dia. | 1/16" - 1/2" | Ball End, Long Shank | 915 | |
| 7173 | | EXOCARB® Diamond | Metric | Carbide | Dia. | 0.5mm - 12mm | Ball End, Long Shank | 916 | |

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| | 7132 | | EXOCARB® Diamond | Metric | Carbide | Dia. | 3mm - 12mm | Long Shank, Corner Radius | 917 |
| | 7140 | | EXOCARB® Diamond | Metric | Carbide | Dia. | 0.5mm - 12mm | Square End | 917 |
| | 7230 | | EXOCARB® Diamond | Inch | Carbide | Dia. | 1/64" - 1/4" | High Precision, Ball End | 918 |
| | 7231 | | EXOCARB® Diamond | Inch | Carbide | Dia. | 1/64" - 1/4" | High Precision, Ball End, Long Reach | 918 |
| | 2050 | | EXOCARB® AERO UVX | Inch | Carbide | EXO® | 1/8" - 1" | Square End, for Exotics | 919 |
| | 2052 | | EXOCARB® AERO UVX | Inch | Carbide | EXO® | 1/8" - 1" | Corner Radius, for Exotics | 920 |
| | 3815 | | EXOCARB® AERO UVX Silent Rougher | Inch | Carbide | WXL® | 1/4" - 1" | Low Helix, Corner Chamfer | 921 |
| | 3820 | | EXOCARB® AERO UVX Silent Rougher | Inch | Carbide | WXL® | 1/4" - 1" | High Helix, Corner Chamfer | 921 |
| | 3915 | | EXOCARB® AERO UVX Silent Rougher | Metric | Carbide | WXL® | 6mm - 25mm | Low Helix | 922 |
| | 3920 | | EXOCARB® AERO UVX Silent Rougher | Metric | Carbide | WXL® | 6mm - 25mm | High Helix | 922 |
| | 3825 | | EXOCARB® AERO UVX Silent Rougher | Inch | Carbide | WXL® | 1/4" - 1" | Low Helix, Long Neck, Corner Chamfer | 923 |
| | 3830 | | EXOCARB® AERO UVX Silent Rougher | Inch | Carbide | WXL® | 1/4" - 1" | High Helix, Long Neck, Corner Chamfer | 923 |
| | 2015 | | EXOCARB® AERO Rougher | Inch | Carbide | TiAlN | 1/4" - 1" | Rougher, for Exotics | 924 |
| | 2100 | | EXOCARB® AERO UVX-Ti | Inch | Carbide | EXO® | 1/2" - 1-1/4" | Corner Radius, Rougher | 925 |
| | 2106 | | EXOCARB® AERO UVX-Ti | Inch | Carbide | EXO® | 1/2" - 1-1/4" | Corner Radius | 926- 927 |
| | 2104 | | EXOCARB® AERO UVX-Ti | Metric | Carbide | EXO® | 12mm - 25mm | Reduced Neck | 928 |
| | 2102 | | EXOCARB® AERO UVX-Ti | Inch | Carbide | EXO® | 1/2" - 1-1/4" | Reduced Neck, Corner Radius | 928 |
| | 2108 | | EXOCARB® AERO UVX-Ti | Inch | Carbide | EXO® | 1/2" - 1-1/4" | Reduced Neck, Corner Radius | 929 |
| | 2110 | | EXOCARB® AERO UVX-Ti | Metric | Carbide | EXO® | 12mm - 20mm | Reduced Neck, Corner Radius | 930 |
| | 2080 | | EXOCARB® AERO HFC-Ti | Inch | Carbide | Bright | 5/8" - 1" | High Feed Radius Cutter for Titanium | 931 |
| | 2081 | | EXOCARB® AERO HFC-Ti | Metric | Carbide | Bright | 16mm - 25mm | High Feed Radius Cutter for Titanium | 931 |
| 2863 | | EXOCARB® AERO DLC | Inch | Carbide | DLC | 1/2" - 1" | Corner Radius | 932 | |
| 2963 | | EXOCARB® AERO DLC | Metric | Carbide | DLC | 12mm - 25mm | Corner Radius | 933 | |
| 2873 | | EXOCARB® AERO DLC | Inch | Carbide | DLC | 1/2" - 1" | Square & Corner Radius | 934 | |
| 2973 | | EXOCARB® AERO DLC | Metric | Carbide | DLC | 12mm - 25mm | Square & Corner Radius | 935 | |
| 2874 | | EXOCARB® AERO DLC | Inch | Carbide | DLC | 5/8" - 1" | Coolant through, Square & Corner Radius | 936 | |



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| END MILLS | 2974 |  | EXOCARB® AERO DLC | Metric | Carbide | DLC | 20mm - 25mm | Coolant through, Square & Corner Radius | 937 |
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| | 2843 |  | EXOCARB® AERO DLC | Inch | Carbide | DLC | 1/2" - 1" | Long Length, Square & Corner Radius | 938 |
| | 2943 |  | EXOCARB® AERO DLC | Metric | Carbide | DLC | 12mm - 20mm | Long Length, Square & Corner Radius | 939 |
| | 2853 |  | EXOCARB® AERO DLC | Inch | Carbide | DLC | 3/4" | Extra Long Length, Square & Corner Radius | 940 |
| | 2953 |  | EXOCARB® AERO DLC | Metric | Carbide | DLC | 20mm | Extra Long Length, Square & Corner Radius | 941 |
| | 8120 |  | EXOCARB® AERO | Metric | Carbide | Bright | 1mm - 16mm | Square End | 951 |
| DISC CUTTERS | 6440 |  | EXOCARB® DISC CUTTER | Metric | Steel | - | 3.150"-4.921" 80mm - 125mm | S for Roughing | 1500 |
| | 6442 |  | EXOCARB® DISC CUTTER | Metric | Carbide | - | 9.52mm | S Inserts & Accessories | 1501 |
| | 6441 |  | EXOCARB® DISC CUTTER | Metric | Steel | - | 3.150"-4.921" 80mm - 125mm | Pro for Finishing | 1502 |
| | 6541 |  | EXOCARB® DISC CUTTER | Metric | Carbide | - | 9.52mm | Pro Inserts & Accessories | 1503 |
| | 6640 |  | EXOCARB® ARBOR | Inch & Metric | Steel | - | 1" / 25.4mm | Arbors & Accessories | 1504 |

OSG PHOENIX®



| INDEXABLE DRILLING | 52400 |  | OSG PHOENIX® PKD | Inch | - | - | 0.551- 1.023" | Exchangeable Head Drill, 3D & 5D | 1328 |
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| | 78310 | | | Metric | - | - | 14.00- 25.99mm | Exchangeable Head Drill, 3D & 5D | 1329 |
| | 78PXD | | | - | - | - | - | PXD Exchangeable Heads | 1330- 1334 |
| | 7808H | | | - | - | - | - | PXD Accessories | 1335 |
| | 52502 |  | OSG PHOENIX® PD | Inch | - | - | 0.594- 2.500" | Indexable Drill, 2D | 1337- 1338 |
| | 78031 | | | Metric | - | - | 15.00- 63.00mm | Indexable Drill, 2D | 1339- 1340 |
| | 52503 | | | Inch | - | - | 0.594- 2.500" | Indexable Drill, 3D | 1341- 1342 |
| | 78032 | | | Metric | - | - | 15.00- 63.00mm | Indexable Drill, 3D | 1343- 1344 |
| | 52504 | | | Inch | - | - | 0.594- 2.500" | Indexable Drill, 4D | 1345- 1346 |
| | 78033 | | | Metric | - | - | 15.00- 63.00mm | Indexable Drill, 4D | 1347- 1348 |
| 52505 | Inch | | | - | - | 0.594- 2.500" | Indexable Drill, 5D | 1349- 1350 | |
| 78027 | Metric | | | - | - | 15.00- 63.00mm | Indexable Drill, 5D | 1351- 1352 | |
| 78P5D | - | - | - | - | PD Inserts | 1353 | | | |

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| INDEXABLE DRILLING | 7808H |  | - | - | - | - | PD Accessories | 1354 |
| | 78001 |  | Metric | - | - | 14.00-40.00mm | High Performance Drill, 3D | 1361 |
| | 78PHP | | - | - | - | - | PHP Inserts | 1362 |
| | 7808H | | - | - | - | - | PHP Accessories | 1362 |
| | 52510 |  | Inch | - | - | 0.531-1.813" | Counterbore Cutter, SA | 1364 |
| | 78321 | | Metric | - | - | 14-48mm | Counterbore Cutter, SS | 1365 |
| | 52511 | | Inch | - | - | 2.000-3.125" | Counterbore Cutter, Bore | 1366 |
| | 78421 | | Metric | - | - | 54-82mm | Counterbore Cutter, Bore | 1367 |
| | 78PZAG | | - | - | - | - | PZAG Inserts | 1368 |
| | 7808H | | - | - | - | - | PZAG Accessories | 1368 |
| INDEXABLE MILLING | 52700 | |  | Inch | - | - | 2.000-6.000" | 45° Face Mill, 2-Sided Square Insert, Bore |
| | 78020 | Metric | | - | - | 50-125mm | 45° Face Mill, 2-Sided Square Insert, Bore | 1370 |
| | 78PAS | - | | - | - | - | PAS Inserts | 1371 |
| | 7808H | - | | - | - | - | PAS Accessories | 1371 |
| | 52800 |  | Inch | - | - | 2.000-8.000" | 45° Face Mill, 2-Sided Octagon Insert, Bore | 1373 |
| | 78120 | | Metric | - | - | 50-200mm | 45° Face Mill, 2-Sided Octagon Insert, Bore | 1374 |
| | 78PAO | | - | - | - | - | PAO Inserts | 1375 |
| | 7808H | | - | - | - | - | PAO Accessories | 1376 |
| | 78013 |  | Inch | - | - | 0.625-1.500" | 90° Shoulder Cutter, SA/FA | 1378 |
| | 78011 | | Metric | - | - | 16-36mm | 90° Shoulder Cutter, SS | 1379-1380 |
| | 78012 | | Inch | - | - | 2.000-6.000" | 90° Shoulder Cutter, Bore | 1381 |
| | 78010 | | Metric | - | - | 40-125mm | 90° Shoulder Cutter, Bore | 1382 |
| | 52601 | | Inch | - | - | 0.625-1.500" | 90° Shoulder Cutter, ASF | 1383 |
| 78016 | Metric | | - | - | 16-40mm | 90° Shoulder Cutter, SF | 1384 | |
| 78PSE | - | | - | - | - | PSE/PSEL Inserts | 1385 | |
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PXT PXI

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| INDEXABLE MILLING | 53000 |  | OSG PHOENIX® PSEL | Inch | - | - | 1.000- 1.500" | 90° Roughing Cutter, SA/FA | 1389 |
| | 78029 | | | Metric | - | - | 25-50mm | 90° Roughing Cutter, SS | 1390 |
| | 53001 | | | Inch | - | - | 2.000- 3.000" | 90° Roughing Cutter, Bore | 1391 |
| | 78028 | | | Metric | - | - | 50-80mm | 90° Roughing Cutter, Bore | 1391 |
| | 78PSE | | | - | - | - | - | PSE/PSEL Inserts | 1392 |
| | 7808H | | | - | - | - | - | PSEL Accessories | 1393 |
| | 52900 | | |  | OSG PHOENIX® PSF | Inch | - | - | 1.000- 1.500" |
| | 78030 | Metric | - | | | - | 25-40mm | 90° Shoulder Cutter, Square Insert, SS | 1396 |
| | 52901 | Inch | - | | | - | 2.000- 3.000" | 90° Shoulder Cutter, Square Insert, Bore | 1397 |
| | 78130 | Metric | - | | | - | 50-80mm | 90° Shoulder Cutter, Square Insert, Bore | 1397 |
| | 78PSF | - | - | | | - | - | PSF/PSFL Inserts | 1398 |
| | 7808H | - | - | | | - | - | PSF Accessories | 1398 |
| | 53200 |  | OSG PHOENIX® PSFL | | | Inch | - | - | 1.250- 1.500" |
| | 78037 | | | Metric | - | - | 32-40mm | 90° Roughing Cutter, Square Insert, SS | 1400 |
| | 53201 | | | Inch | - | - | 2.000- 4.000" | 90° Roughing Cutter, Square Insert, Bore | 1401 |
| | 78137 | | | Metric | - | - | 50-80mm | 90° Roughing Cutter, Square Insert, Bore | 1401 |
| | 78PSF | | | - | - | - | - | PSF/PSFL Inserts | 1402 |
| | 7808H | | | - | - | - | - | PSFL Accessories | 1402 |
| | 53100 | | |  | OSG PHOENIX® PSTW | Inch | - | - | 2.000- 6.000" |
| | 78131 | Metric | - | | | - | 50-125mm | 90° Shoulder Cutter, 2-Sided Triangle Insert, Bore | 1405 |
| | 78PSTW | - | - | | | - | - | PSTW Inserts | 1406 |
| | 7808H | - | - | | | - | - | PSTW Accessories | 1406 |
| | 78005 |  | OSG PHOENIX® PRC | Inch | - | - | 1.000- 1.500" | Radius Cutter, SA | 1408 |
| | 78003 | | | Metric | - | - | 20-63mm | Radius Cutter, SS | 1409 |
| 78004 | Inch | | | - | - | 2.000- 6.000" | Radius Cutter, Bore | 1410 | |
| 78002 | Metric | | | - | - | 50- 100mm | Radius Cutter, Bore | 1411 | |

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| INDEXABLE MILLING | 52602 |  | OSG PHOENIX® PRC | Inch | - | - | 1.000- 1.500" | Radius Cutter, ASF | 1412 |
| | 78017 | | | Metric | - | - | 20-40mm | Radius Cutter, SF | 1412 |
| | 78PRC | | | - | - | - | - | PRC Inserts | 1413 |
| | 7808H | | | - | - | - | - | PRC Accessories | 1413 |
| | 78009 |  | OSG PHOENIX® PHC | Inch | - | - | 0.625- 1.500" | High Feed Radius Cutter, SA/FA | 1416- 1417 |
| | 78007 | | | Metric | - | - | 16-63mm | High Feed Radius Cutter, SS | 1418- 1419 |
| | 78008 | | | Inch | - | - | 2.000- 6.000" | High Feed Radius Cutter, Bore | 1420 |
| | 78006 | | | Metric | - | - | 40- 100mm | High Feed Radius Cutter, Bore | 1421 |
| | 52603 | | | Inch | - | - | 0.625- 1.500" | High Feed Radius Cutter, ASF | 1423 |
| | 78015 | | | Metric | - | - | 16-40mm | High Feed Radius Cutter, SF | 1424 |
| | 78PHC | | | - | - | - | - | PHC Inserts | 1425 |
| | 7808H | | | - | - | - | - | PHC Accessories | 1425 |
| | 6420 |  | OSG PHOENIX® PDR | Metric | - | - | 40-50mm | Deep Feed Radius Cutter, SS | 1427 |
| | 6450 | | | Metric | - | - | 63-125mm | Deep Feed Radius Cutter, Bore | 1427 |
| | 78PDR | | | - | - | - | - | PDR Inserts | 1428 |
| | 7808H | | | - | - | - | - | PDR Accessories | 1428 |
| | 78036 |  | OSG PHOENIX® PFAL | Metric | - | - | 50- 160mm | Finishing Cutter for Aluminum, Bore | 1430 |
| | 78PFAL | | | - | - | - | - | PFAL Inserts | 1431 |
| | 7808H | | | - | - | - | - | PFAL Accessories | 1431 |
| | 52100 |  | OSG PHOENIX® PFB | Inch | - | - | 0.250- 1.250" | Finishing Ball End Mill, SA | 1433- 1434 |
| | 78014 | | | Metric | - | - | 6-32mm | Finishing Ball End Mill, SS | 1435 |
| | 52604 | | | Inch | - | - | 0.375- 1.000" | Finishing Ball End Mill, ASF | 1436 |
| | 78114 | | | Metric | - | - | 10-32mm | Finishing Ball End Mill, SF | 1436 |
| | 78PFB | | | - | - | - | - | PFB Inserts | 1437- 1438 |
| | 7808H | | | - | - | - | - | PFB Accessories | 1439 |
| | 52200 | | |  | OSG PHOENIX® PFR | Inch | - | - | 0.250- 1.250" |



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PXT **PXI**

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| INDEXABLE MILLING | 78320 |  | OSG PHOENIX® PFR | Metric | - | - | 6-32mm | Finishing Radius End Mill, SS | 1443 |
| | 52605 | | | Inch | - | - | 0.375-1.000" | Finishing Radius End Mill, ASF | 1444 |
| | 78220 | | | Metric | - | - | 10-32mm | Finishing Radius End Mill, SF | 1444 |
| | 78PFR | | | - | - | - | - | PFR Inserts | 1445-1449 |
| | 7808H | | | - | - | - | - | PFR Accessories | 1450 |
| | 52601 |  | OSG PHOENIX® SF | Inch | - | - | 0.625-1.500" | Screw Fit Cutter, PSE ASF | 1453 |
| | 78016 | | | Metric | - | - | 16-40mm | Screw Fit Cutter, PSE SF | 1454 |
| | 52602 | | | Inch | - | - | 1.000-1.500" | Screw Fit Cutter, PRC ASF | 1455 |
| | 78017 | | | Metric | - | - | 20-40mm | Screw Fit Cutter, PRC SF | 1455 |
| | 52603 | | | Inch | - | - | 0.625-1.500" | Screw Fit Cutter, PHC ASF | 1456 |
| | 78015 | | | Metric | - | - | 16-40mm | Screw Fit Cutter, PHC SF | 1457 |
| | 52604 | | | Inch | - | - | 0.375-1.000" | Screw Fit Cutter, PFB ASF | 1458 |
| | 78114 | | | Metric | - | - | 10-30mm | Screw Fit Cutter, PFB SF | 1459 |
| | 52605 | | | Inch | - | - | 0.375-1.000" | Screw Fit Cutter, PFR ASF | 1460 |
| | 78220 | | | Metric | - | - | 10-32mm | Screw Fit Cutter, PFR SF | 1460 |
| | 52600 | | | Inch | - | - | - | Screw Fit Cutter, SF Arbor SA | 1461 |
| | 78019 | | | Metric | - | - | - | Screw Fit Cutter, SF Arbor SS | 1462 |
| | 78025 | | | - | - | - | - | Screw Fit Cutter, SF Arbor BT | 1463 |
| | 78125 | | | - | - | - | - | Screw Fit Cutter, SF Arbor HSK | 1464 |
| | 78PXSE | | |  | OSG PHOENIX® PXM | Inch/ Metric | - | - | 0.375-1.000" 10-25mm |
| 78PXSE-O | Inch/ Metric | - | - | | | 0.500-1.000" 12-25mm | PXSE, 4 Flute, Square & CR, Coolant-Through | 1466 | |
| 78PXVC | Inch/ Metric | - | - | | | 0.375-1.250" 10-32mm | PXVC, 4 Flute, Square & CR | 1467-1468 | |
| 78PXSM | Inch/ Metric | - | - | | | 0.375-1.000" 10-25mm | PXSM, Multiple Flute, Square & CR | 1469-1470 | |
| 78PXNL | Inch/ Metric | - | - | | | 0.375-1.000" 10-25mm | PXNL, 4 Flute, Roughing, Low Helix | 1471 | |
| 78PXNL-O | Inch/ Metric | - | - | | | 0.500-1.000" 12-25mm | PXNL, 4 Flute, Roughing, Low Helix, Coolant-Through | 1471 | |
| 78PXNH | Inch/ Metric | - | - | | | 0.375-1.000" 10-25mm | PXNH, 4 Flute, Roughing, High Helix | 1472 | |


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PXT PXI

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| INDEXABLE MILLING | 78PXNH-O |  | OSG PHOENIX® PXM | Inch/ Metric | - | - | 0.500-1.000" 12-25mm | PXNH, 4 Flute, Roughing, High Helix, Coolant-Through | 1472 |
| | 78PXRE | | | Inch/ Metric | - | - | 0.375-1.000" 10-25mm | PXRE, Multiple Flute, Straight Flute, Corner Radius | 1473 |
| | 78PXDR | | | Inch/ Metric | - | - | 0.375-1.000" 10-25mm | PXDR, 3 Flute, Helical Flute, Corner Radius | 1473-1474 |
| | 78PXBE | | | Inch/ Metric | - | - | 0.375-1.000" 10-25mm | PXBE, 3 Flute, Ball End | 1475-1476 |
| | 78PXBE-O | | | Inch/ Metric | - | - | 0.500-0.750" 12-20mm | PXBE, 3 Flute, Ball End, Coolant-Through | 1476-1477 |
| | 78PXBMM | | | Inch/ Metric | - | - | 0.375-1.000" 10-25mm | PXBMM, Multiple Flute, Ball End | 1477 |
| | 52300 | | | Inch | - | - | - | PXM SA/TPA | 1478-1479 |
| | 52319 | | | Inch | - | - | - | PXM SA/TPA, Coolant-Through | 1480-1481 |
| | 78018 | | | Metric | - | - | - | PXM SS/TP | 1482-1483 |
| | 78035 | | | Metric | - | - | - | PXM SS/TP, Coolant-Through | 1484-1485 |
| | 78340 | | | Metric | - | - | - | PXMC | 1486 |
| | 7808H | | | - | - | - | - | - | PXM Accessories |



SynchroMaster

HDR

| | | | | | | | | | |
|---------|------|---|---------------------------|---------------|---|---|---|---|------|
| Holders | 9950 |  | SynchroMaster Tap Holders | Inch & Metric | - | - | - | Micro Float Tap Holders for Rigid tapping | 1511 |
| | 9953 |  | SynchroMaster Collet | Inch & Metric | - | - | - | Sealed Collets | 1511 |
| | 9955 |  | SynchroMaster Accessories | - | - | - | - | Accessories | 1512 |





HY-PRO® SHRINK

HTE

| | | | | | | | | | |
|---------|--------|---|----------------------|---------------|---|---|---|-------------------------------|-----------|
| Holders | 68802B |  | HR-B Handy Type Unit | - | - | - | - | Compact hot air shrink device | 1513 |
| | - | | HR-B Handy Type Unit | - | - | - | - | Accessories | 1514-1515 |
| | - |  | Shrink Holders | Inch & Metric | - | - | - | Standard and Coolant-through | 1521-1524 |
| | - | | Shrink Extensions | Inch & Metric | - | - | - | Multi Type Extensions | 1525-1532 |

BLIZZARD®

BLZ

| | | | | | | | | | |
|-----------|------|---|------------------------|------|---------|--------|-----------|--------------------------------------|-----|
| END MILLS | 2021 |  | EXOCARB® AERO BLIZZARD | Inch | Carbide | Bright | 1/8" - 1" | Square & Corner Radius | 942 |
| | 2022 |  | EXOCARB® AERO BLIZZARD | Inch | Carbide | Bright | 1/8" - 1" | Square & Corner Radius | 943 |
| | 2023 |  | EXOCARB® AERO BLIZZARD | Inch | Carbide | Bright | 1/4" - 1" | Reduced Neck, Square & Corner Radius | 944 |
| | 2024 |  | EXOCARB® AERO BLIZZARD | Inch | Carbide | Bright | 1/4" - 1" | Reduced Neck, Square & Corner Radius | 945 |



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| END MILLS | 2041 | | EXOCARB® AERO BLIZZARD | Inch | Carbide | Bright | 1/8" - 1" | Square & Corner Radius | 946 |
| | 2042 | | EXOCARB® AERO BLIZZARD | Inch | Carbide | Bright | 1/8" - 1" | Square & Corner Radius | 947 |
| | 2043 | | EXOCARB® AERO BLIZZARD | Inch | Carbide | Bright | 1/4" - 1" | Reduced Neck, Square & Corner Radius | 948 |
| | 2048 | | EXOCARB® AERO BLIZZARD | Inch | Carbide | Bright | 1/4" - 1" | Reduced Neck, Square & Corner Radius | 949 |
| | 2010 | | EXOCARB® AERO BLIZZARD | Inch | Carbide | Bright | 1/8" - 1" | Ball End | 950 |

HY-PRO® CARB

| | | | | | | | | | |
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| DRILLS | HP243 | | HY-PRO® CARB | Inch & Metric | Carbide | WD1 | 1mm-20mm | 3D, Solid | 182-185 |
| | HP253 | | HY-PRO® CARB | Inch & Metric | Carbide | WD1 | 3mm-20mm | 3D, Coolant-Through | 190-193 |
| | HP245 | | HY-PRO® CARB | Inch & Metric | Carbide | WD1 | 1mm-20mm | 5D, Solid | 186-189 |
| | HP255 | | HY-PRO® CARB | Inch & Metric | Carbide | WD1 | 3mm-20mm | 5D, Coolant-Through | 194-197 |
| | HP258 | | HY-PRO® CARB | Inch & Metric | Carbide | WD1 | 3mm-20mm | 8D, Coolant-Through | 198-201 |
| | HP700 | | HY-PRO® CARB NEPTUNE | Inch | Carbide | TiALN | #40 - 1/4" | Composite, Hand Drill | 179 |
| END MILLS | VG441 | | HY-PRO® VGX | Inch | Carbide | TiAIN | 1/8" - 1" | Square End | 960 |
| | VG434 | | HY-PRO® VGX | Inch | Carbide | TiAIN | 1/8" - 1" | Corner Radius | 961 |
| | VG436 | | HY-PRO® VGX | Inch | Carbide | TiAIN | 1/8" - 1" | Corner Chamfer | 962 |
| | VG446 | | HY-PRO® VGX | Inch | Carbide | TiAIN | 1/4" - 1" | Reduced Neck, Corner Radius/Corner Chamfer | 963 |
| | VG464 | | HY-PRO® VGX | Inch | Carbide | TiAIN | 1/4" - 1" | Extended Length, Square End/Corner Chamfer | 964 |
| | VG441BN | | HY-PRO® VGX | Inch | Carbide | TiAIN | 1/8" - 1-1/4" | Ball Nose | 965 |
| | VG541 | | HY-PRO® VGX | Inch | Carbide | TiAIN | 1/8" - 1" | Square End | 966 |
| | VG534 | | HY-PRO® VGX | Inch | Carbide | TiAIN | 3/16" - 1" | Corner Radius | 967-968 |
| | HP421 | | HY-PRO® CARB | Inch/ Metric | Carbide | TiAIN | 3/64" - 1" 3mm-25mm | Square End | 969-970 |
| | HP441 | | HY-PRO® CARB | Inch/ Metric | Carbide | TiAIN | 3/64" - 1" 3mm-25mm | Square End | 969-970 |
| | HP460 | | HY-PRO® CARB | Inch/ Metric | Carbide | TiAIN | 1/8" - 1" 3mm-25mm | High Helix | 971 |
| | HP450 | | HY-PRO® CARB | Inch/ Metric | Carbide | TiAIN | 1/8" - 1" 3mm-25mm | Square End | 972 |
| | HP453 | | HY-PRO® CARB | Metric | Carbide | TiAIN | 4mm - 20mm | Super Tough Mills | 973 |
| | HP456 | | HY-PRO® CARB | Metric | Carbide | TiAIN | 6mm - 12mm | Super Tough Mills, Corner Radius | 973 |

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| | HP451 | | HY-PRO® CARB | Inch/ Metric | Carbide | TiAIN | 1/8" - 1" 4mm-20mm | Super Tough Mills | 974 |
| | HP400 | | HY-PRO® CARB | Inch/ Metric | Carbide | TiAIN | 1/4" - 1" 3mm - 25mm | Rougher | 975 |
| | HP410 | | HY-PRO® CARB | Inch/ Metric | Carbide | TiAIN | 1/32" - 3/16" 0.5mm - 2.5mm | Short Length, Long Neck | 976- 977 |
| | HP411 | | HY-PRO® CARB | Inch/ Metric | Carbide | TiAIN | 1/8" - 1/4" 3mm - 6mm | Short Length, Long Neck | 978 |
| | HP455 | | HY-PRO® CARB | Inch/ Metric | Carbide | TiAIN | 1/8" - 1" 3mm - 25mm | Corner Protection | 979 |
| | HP421BN | | HY-PRO® CARB | Inch/ Metric | Carbide | TiAIN | 3/64" - 1" 1mm-25mm | Ball End | 980- 981 |
| | HP441BN | | HY-PRO® CARB | Inch/ Metric | Carbide | TiAIN | 3/64" - 1" 1mm-25mm | Ball End | 980- 981 |
| | HP416 | | HY-PRO® CARB | Inch/ Metric | Carbide | TiAIN | 1/32" - 1/2" 1mm-25mm | Ball End | 982 |
| | HP418 | | HY-PRO® CARB | Inch/ Metric | Carbide | TiAIN | 3/22" - 3/8" 1mm-12mm | Ball End, Pencil Neck | 983 |
| | HP419 | | HY-PRO® CARB | Inch/ Metric | Carbide | TiAIN | 1/32" - 3/16" 0.5mm-6mm | Ball End, Long Neck | 984 |
| | HP419L | | HY-PRO® CARB | Metric | Carbide | TiAIN | 0.6mm - 3mm | Ball End, Long Neck | 985 |
| | HP413 | | HY-PRO® CARB | Inch/ Metric | Carbide | TiAIN | 1/32" - 3/16" 1mm-6mm | Ball End | 986 |
| | HP432 | | HY-PRO® CARB | Inch/ Metric | Carbide | TiAIN | 1/8" - 1" 3mm-12mm | Corner Radius | 987- 988 |
| | HP434 | | HY-PRO® CARB | Inch/ Metric | Carbide | TiAIN | 1/8" - 1" 3mm-12mm | Corner Radius | 987- 988 |
| | HP433 | | HY-PRO® CARB | Metric | Carbide | TiAIN | 3mm - 12mm | Corner Radius | 989 |
| HP435 | | HY-PRO® CARB | Metric | Carbide | TiAIN | 3mm - 12mm | Corner Radius | 990 | |

CARBIDE



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| | 215 | | CARBIDE | Inch & Metric | Carbide | Bright | 1mm- 12.7mm | Jobbers, Solid, Slow Spiral | 204- 208 |
| | 220D | | CARBIDE | Inch & Metric | Carbide | Bright | 1.18mm- 12.7mm | Jobbers, Solid | 209- 211 |
| | 233 | | CARBIDE | Inch & Metric | Carbide | Bright | 3mm- 19.05mm | Jobbers, Solid, 3 Flutes | 212 |
| | 200 | | CARBIDE | Inch & Metric | Carbide | Bright | 1.18mm- 12.7mm | Jobbers, Solid, Straight Flute | 213- 215 |
| | 235 | | CARBIDE | Inch | Carbide | Bright | 3/64"- 7/32" | Solid, Drill/Countersink | 216- 221 |
| | 700 | | CARBIDE | Inch | Carbide | Bright | 1/8"-1" | Solid, Countersink, Single Flute | 223 |
| | 701 | | CARBIDE | Inch | Carbide | Bright | 1/4"-1" | Solid, Countersink, Multiple Flutes | 224 |
| | 706 | | CARBIDE | Inch | Carbide | Bright | 1/4"-1" | Solid, Countersink, Multiple Flutes | 225 |
| | 300D | | CARBIDE | Inch & Metric | Carbide | Bright | 0.80mm- 13mm | Reamer, Solid, Multiple Flutes, RH Cutting | 217- 221 |



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| | | 750 | | CARBIDE | Inch | Carbide | Bright | 1/16"-3/8" | Solid, Grinding/Deburring |
| | 257 | | AERO-D-REAM | Inch | Carbide | BRIGHT | #40 - 1/2" | Composite, Tapered Drill/ Reamer | 180- 181 |
| END MILLS | 400 | | CARBIDE | Inch/ Metric | Carbide | Bright* | 1/4" - 1" 6mm-25mm | Roughy Mills | 991 |
| | 415 | | CARBIDE | Inch | Carbide | Bright* | 1/8" - 1" | Toughy Mills, Standard Cut | 992 |
| | 415C | | CARBIDE | Inch | Carbide | Bright* | 1/8" - 1" | Toughy Mills, Coarse Cut | 992 |
| | 402 | | CARBIDE | Inch/ Metric | Carbide | TiAlN, TiCN, Bright* | 1/32" - 1" 0.5mm-25mm | General Purpose | 993- 995 |
| | 403 | | CARBIDE | Inch/ Metric | Carbide | TiAlN, Bright* | 1/32" - 1" 0.5mm-25mm | General Purpose | 993- 995 |
| | 404 | | CARBIDE | Inch/ Metric | Carbide | TiAlN, Bright* | 1/32" - 1" 0.5mm-25mm | General Purpose | 993- 995 |
| | 408 | | CARBIDE | Inch | Carbide | Bright* | 1/8" - 1" | Slow Spiral | 996 |
| | 409 | | CARBIDE | Inch | Carbide | Bright* | 1/16" - 1" | Slow Spiral | 996 |
| | 452 | | CARBIDE | Inch | Carbide | TiAlN, Bright* | 1/16" - 1" | Plus Tolerance | 997 |
| | 454 | | CARBIDE | Inch | Carbide | Bright* | 1/16" - 1" | Plus Tolerance | 997 |
| | 412 | | CARBIDE | Inch/ Metric | Carbide | Bright* | 1/32" - 3/4" 1mm-12mm | Stub Length | 998- 999 |
| | 414 | | CARBIDE | Inch/ Metric | Carbide | TiAlN, Bright* | 1/32" - 3/4" 1mm-12mm | Stub Length | 998- 999 |
| | 462 | | CARBIDE | Inch/ Metric | Carbide | TiCN, TiAlN, Bright* | 1/8" - 1" 3mm-25mm | Long Length | 1000- 1001 |
| | 464 | | CARBIDE | Inch/ Metric | Carbide | TiCN, TiAlN, Bright* | 1/8" - 1" 3mm-25mm | Long Length | 1000- 1001 |
| | 482 | | CARBIDE | Inch/ Metric | Carbide | TiCN, TiAlN, Bright* | 1/8" - 1" 3mm-25mm | Extra-Long Length | 1002- 1003 |
| | 484 | | CARBIDE | Inch/ Metric | Carbide | TiCN, TiAlN, Bright* | 1/8" - 1" 3mm-25mm | Extra-Long Length | 1002- 1003 |
| | 495 | | CARBIDE | Inch | Carbide | Bright* | 1/8" - 1" | Corner Radius | 1004 |
| | 496 | | CARBIDE | Inch | Carbide | TiAlN, Bright* | 1/8" - 1" | Corner Radius | 1004 |
| | 455C | | CARBIDE | Inch | Carbide | TiCN, TiAlN, Bright* | 1/8" - 1" | Corner Protection | 1005 |
| | 460C | | CARBIDE | Inch/ Metric | Carbide | Bright* | 1/8"-1" 6mm - 25mm | High Helix | 1006 |
| | 445 | | CARBIDE | Inch/ Metric | Carbide | Bright* | 1/16" - 1" 1mm-20mm | RHS/RHC | 1007 |
| | 461 | | CARBIDE | Inch/ Metric | Carbide | TiAlN, Bright* | 1/8" - 1" 3mm-25mm | RHS/RHC | 1008 |
| | 447 | | CARBIDE | Inch | Carbide | TiAlN, Bright* | 1/16" - 1" | LHS/RHC | 1009 |
| | 492 | | CARBIDE | Inch | Carbide | Bright* | 0.015" - 0.060" | Miniature | 1010 |

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CARBIDE (Continued)





| END MILLS | 494 | | CARBIDE | Inch | Carbide | Bright* | 0.015" - 0.060" | Miniature | 1010 |
|-----------|-------|--------------|---------|-----------------|---------|-------------------------|------------------------------------|-----------------------------------|---------------|
| | 402BN | | CARBIDE | Inch/ Metric | Carbide | TiAlN, Bright* | 1/32" - 1" 0.5mm-25mm | Ball End | 1011- 1013 |
| | 403BN | | CARBIDE | Inch/ Metric | Carbide | TiAlN, Bright* | 1/32" - 1" 0.5mm-25mm | Ball End | 1011- 1013 |
| | 404BN | | CARBIDE | Inch/ Metric | Carbide | TiAlN, Bright* | 1/32" - 1" 0.5mm-25mm | Ball End | 1011- 1013 |
| | 452BN | | CARBIDE | Inch | Carbide | Bright* | 1/16" - 1" | Ball End, Plus Tolerance | 1014 |
| | 412BN | | CARBIDE | Inch/ Metric | Carbide | TiAlN, Bright* | 1/32" - 3/4" 1mm - 12mm | Ball End, Stub Length | 1015- 1016 |
| | 414BN | | CARBIDE | Inch/ Metric | Carbide | TiCN, TiAlN, Bright* | 1/32" - 3/4" 1mm - 12mm | Ball End, Stub Length | 1015- 1016 |
| | 462BN | | CARBIDE | Inch/ Metric | Carbide | TiCN, Bright* | 1/8" - 1" 3mm-25mm | Ball End, Long Length | 1017 |
| | 464BN | | CARBIDE | Inch/ Metric | Carbide | TiCN, TiAlN, Bright* | 1/8" - 1" 3mm-25mm | Ball End, Long Length | 1017 |
| | 482BN | | CARBIDE | Inch/ Metric | Carbide | TiAlN, Bright* | 1/8" - 1" 3mm-25mm | Ball End, Extra Long Length | 1018- 1019 |
| | 484BN | | CARBIDE | Inch/ Metric | Carbide | TiAlN, Bright* | 1/8" - 1" 3mm-25mm | Ball End, Extra Long Length | 1018- 1019 |
| | 497 | | CARBIDE | Inch/ Metric | Carbide | Bright* | 1/8" - 1" 3mm-20mm | Ball End, Long Shank | 1020 |
| | 442 | | CARBIDE | Inch | Carbide | TiAlN, Bright* | 1/8" - 1/2" | Double End | 1021 |
| | 444 | | CARBIDE | Inch | Carbide | TiAlN, Bright* | 1/8" - 1/2" | Double End | 1021 |
| | 422 | | CARBIDE | Inch | Carbide | TiAlN, Bright* | 1/32" - 1/2" | Double End, Stub Length | 1022 |
| | 423 | | CARBIDE | Inch | Carbide | TiAlN, Bright* | 1/32" - 1/2" | Double End, Stub Length | 1022 |
| | 424 | | CARBIDE | Inch | Carbide | TiAlN, Bright* | 1/32" - 1/2" | Double End, Stub Length | 1022 |
| | 442BN | | CARBIDE | Inch | Carbide | Bright* | 1/8" - 1/2" | Double End, Ball End | 1023 |
| | 444BN | | CARBIDE | Inch | Carbide | TiAlN, Bright* | 1/8" - 1/2" | Double End, Ball End | 1023 |
| | 422BN | | CARBIDE | Inch | Carbide | TiAlN, Bright* | 1/32" - 1/2" | Double End, Ball End, Stub Length | 1024 |
| | 423BN | | CARBIDE | Inch | Carbide | Bright* | 1/32" - 1/2" | Double End, Ball End, Stub Length | 1024 |
| | 424BN | | CARBIDE | Inch | Carbide | TiAlN, Bright* | 1/32" - 1/2" | Double End, Ball End, Stub Length | 1024 |
| 500 | | CARBIDE | Inch | Carbide | Bright | 3/32" - 1/2" | 2 Flute, Straight Router | 1025 | |
| 502 | | CARBIDE | Inch | Carbide | Bright | 3/32" - 1/2" | 3 Flute, Straight Router | 1025 | |
| 640 | | CARBIDE | Inch | Carbide | Bright | 1/16" - 1/2" | Fiberglass Routers, Diamond Cut | 1026 | |
| 668 | | AERO-HBC 60° | Inch | Carbide | Bright | 1/4" - 1/2" | Compression Router | 958 | |



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CARBIDE (Continued)

HYE

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|------------------|-----------|---|--------------|-----------------|---------|--------|--------------|------------------------|---------------|
| END MILLS | 641R |  | AERO-HFR | Inch | Carbide | Bright | 3/16" - 1/2" | General Purpose Router | 959 |
| | 800 - 968 |  | CARBIDE BURS | Inch/ Metric | Carbide | Bright | - | Carbide Burs | 1089- 1110 |

HY-PRO® MULTI PURPOSE

HYM

| | | | | | | | | | |
|--------------|-----|---|--------------|------|---|--------|---|---|-------------|
| DRILL | 738 |  | HY-PRO® CARB | Inch | - | Bright | - | Indexable, Spot Drill/ Countersink/Chamfer | 202- 203 |
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EXOTAP®

EXT

| | | | | | | | | | |
|-------------|---|---|-------------------------|--------|--------|--------------|--------------|--|-------------|
| TAPS | 14050 |  | EXOTAP® NRT® | Inch | VC-10 | V | No. 0 - 3/8" | Forming Tap | 468- 470 |
| | 14150 |  | EXOTAP® NRT® | Metric | VC-10 | V | M1.6 - M12 | Forming Tap | 471- 472 |
| | 313Ti |  | EXOTAP® VC-10 Ti | Inch | VC-10 | V | No. 2 - 1" | Spiral Flute | 510- 511 |
| | 345Ti |  | EXOTAP® VC-10 Ti | Metric | VC-10 | V | M2.5 - M12 | Spiral Flute | 512 |
| | 312Ti |  | EXOTAP® VC-10 Ti | Inch | VC-10 | V | No. 2 - 1" | Spiral Point | 591- 592 |
| | 344Ti |  | EXOTAP® VC-10 Ti | Metric | VC-10 | V | M3 - M12 | Spiral Point | 593 |
| | 315Ti |  | EXOTAP® VC-10 Ti | Inch | VC-10 | V | No. 2 - 1/2" | STI, Spiral Fluted | 708 |
| | 314Ti |  | EXOTAP® VC-10 Ti | Inch | VC-10 | V | No. 2 - 1/2" | STI, Spiral Pointed | 720 |
| | 317Ti |  | EXOTAP® VC-10 Ti Oil | Inch | VC-10 | V | 1/4" - 1" | Spiral Flute, Coolant- Through, DIN OAL | 513 |
| | 348Ti |  | EXOTAP® VC-10 Ti Oil | Metric | VC-10 | V | M8 - M24 | Spiral Flute, Coolant- Through, DIN OAL | 514 |
| | 316Ti |  | EXOTAP® VC-10 Ti Oil | Inch | VC-10 | V | 1/4" - 1" | Spiral Point, Coolant- Through, DIN OAL | 594 |
| | 347Ti |  | EXOTAP® VC-10 Ti Oil | Metric | VC-10 | V | M8 - M24 | Spiral Point, Coolant- Through, DIN OAL | 595 |
| | 313Ni |  | EXOTAP® VC-10 Ni | Inch | VC-10 | V,S/O | No. 2 - 1" | Spiral Flute | 515- 516 |
| | 345Ni |  | EXOTAP® VC-10 Ni | Metric | VC-10 | S/O | M2.5 - M12 | Spiral Flute | 517 |
| | 312Ni |  | EXOTAP® VC-10 Ni | Inch | VC-10 | V, S/O | No. 2 - 1" | Spiral Point | 596- 597 |
| | 344Ni |  | EXOTAP® VC-10 Ni | Metric | VC-10 | V, S/O | M2.5 - M12 | Spiral Point | 598 |
| | 315Ni |  | EXOTAP® VC-10 Ni | Inch | VC-10 | V | No. 2 - 1/2" | STI, Spiral Fluted | 709 |
| | 314Ni |  | EXOTAP® VC-10 Ni | Inch | VC-10 | V | No. 2 - 1/2" | STI, Spiral Pointed | 721 |
| | 313 |  | EXOTAP® VC-10 | Inch | VC-10 | V, S/O | No. 2 - 1/2" | Spiral Flute | 518- 519 |
| | 345 |  | EXOTAP® VC-10 | Metric | VC-10 | V, S/O | M3 - M12 | Spiral Flute | 520 |
| 312 |  | EXOTAP® VC-10 | Inch | VC-10 | V, S/O | No. 2 - 3/4" | Spiral Point | 599- 600 | |

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EXT

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| TAPS | 344 |  | EXOTAP® VC-10 | Metric | VC-10 | V, S/O | M3 - M12 | Spiral Point | 601 |
| | 315 |  | EXOTAP® VC-10 | Inch | VC-10 | V, S/O | No. 2 - 1" | STI, Spiral Fluted | 710-711 |
| | 345STI |  | EXOTAP® VC-10 | Metric | VC-10 | V, S/O | M2 - M24 | STI, Spiral Fluted | 712 |
| | 314 |  | EXOTAP® VC-10 | Inch | VC-10 | V, S/O | No. 2 - 1" | STI, Spiral Pointed | 722-723 |
| | 344STI |  | EXOTAP® VC-10 | Metric | VC-10 | V, S/O | M2 - M24 | STI, Spiral Pointed | 724 |
| | 317 |  | EXOTAP® VC-10 Oil | Inch | VC-10 | V | 5/16" - 1" | Spiral Flute, Coolant-Through, DIN OAL | 521 |
| | 351 |  | EXOTAP® VC-10 Oil | Metric | VC-10 | V | M8 - M24 | Spiral Flute, Coolant-Through, DIN OAL | 522 |
| | 316 |  | EXOTAP® VC-10 Oil | Inch | VC-10 | V | 1/4" - 1" | Spiral Point, Coolant-Through, DIN OAL | 602 |
| | 350 |  | EXOTAP® VC-10 Oil | Metric | VC-10 | V | M6 - M24 | Spiral Point, Coolant-Through, DIN OAL | 603 |
| | 303 |  | EXOTAP VA-3° | Inch | HSSE | V, TiN, S/O | No. 2 - 1" | Spiral Flute | 523-525 |
| | 343 |  | EXOTAP VA-3° | Metric | HSSE | V, TiN, S/O | M3 - M18 | Spiral Flute | 526 |
| | 300 |  | EXOTAP VA-3° | Inch | HSSE | V, TiN, S/O | No. 2 - 1" | Spiral Point | 604-605 |
| | 342 |  | EXOTAP VA-3° | Metric | HSSE | V, TiN, S/O | M3 - M18 | Spiral Point | 606 |
| | 302 |  | EXOTAP VA-3° | Inch | HSSE | V, S/O | No. 2 - 1" | STI, Spiral Fluted | 713-714 |
| | 343STI |  | EXOTAP VA-3° | Metric | HSSE | V, S/O | M2 - M24 | STI, Spiral Fluted | 715 |
| | 301 |  | EXOTAP VA-3° | Inch | HSSE | V, S/O | No. 2 - 1" | STI, Spiral Pointed | 725-726 |
| | 342STI |  | EXOTAP VA-3° | Metric | HSSE | V, S/O | M2 - M24 | STI, Spiral Pointed | 727 |
| | 307 |  | EXOTAP® VA-3 Oil | Inch | HSSE | V | 1/4" - 1" | Spiral Flute, Coolant-Through, DIN OAL | 527 |
| | 347 |  | EXOTAP® VA-3 Oil | Metric | HSSE | V | M6 - M24 | Spiral Flute, Coolant-Through, DIN OAL | 528 |
| | 306 |  | EXOTAP® VA-3 Oil | Inch | HSSE | V | 1/4" - 1" | Spiral Point, Coolant-Through, DIN OAL | 607 |
| | 346 |  | EXOTAP® VA-3 Oil | Metric | HSSE | V | M6 - M24 | Spiral Point, Coolant-Through, DIN OAL | 608 |
| | 398 |  | EXOTAP VA-3° | Inch | HSSE | S/O | No. 4 - 5/8" | Spiral Flute, Long Shank | 529 |
| | 397 |  | EXOTAP VA-3° | Inch | HSSE | S/O | No. 4 - 5/8" | Spiral Point, Long Shank | 609 |
| | 320 |  | EXOTIN | Inch | HSSE | TiN | No. 4 - 3/4" | Spiral Point | 610 |
| | 10051 |  | EXOTAP® VCX | Inch | XPM | V | No. 6 - 1" | Straight Flute | 671 |
| | 11051 |  | EXOTAP® VCX | Metric | XPM | V | M3 - M24 | Straight Flute | 672 |



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EXOTAP® (Continued)

EXT

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|-------|---|---|----------------|--------|--------|----------|--------------------------------------|---|-----|
| TAPS | 305 |  | EXOTAP-MOLD® | Inch | HSS-CO | Bright | No. 4 - 3/4" | Straight Flute | 673 |
| | 10052 |  | EXOTAP® DC | Inch | VC-10 | V | 1/4" - 1" | Straight Flute, DIN OAL | 674 |
| | 11052 |  | EXOTAP® DC | Metric | VC-10 | V | M6 - M24 | Straight Flute, DIN OAL | 675 |
| | 11054 |  | EXOTAP® DC | Metric | VC-10 | V | M6 - M10 | Straight Flute, DIN Shank, DIN OAL | 678 |
| | 10056 |  | EXOTAP® DC | Inch | VC-10 | V | 1/4" - 3/4" | Straight Flute | 680 |
| | 11056 |  | EXOTAP® DC | Metric | VC-10 | V | M6 - M14 | Straight Flute | 681 |
| | 10053 |  | EXOTAP® DC-OIL | Inch | VC-10 | V | 1/4" - 1" | Straight Flute, Coolant-Through, DIN OAL | 676 |
| | 11053 |  | EXOTAP® DC-OIL | Metric | VC-10 | V | M6 - M24 | Straight Flute, Coolant-Through, DIN OAL | 677 |
| | 11055 |  | EXOTAP® DC-OIL | Metric | VC-10 | V | M6 - M12 | Straight Flute, Coolant-Through, DIN Shank, DIN OAL | 679 |
| | 10057 |  | EXOTAP® DC-OIL | Inch | VC-10 | V | 1/4" - 1/2" | Straight Flute, Coolant-Through | 682 |
| | 11057 |  | EXOTAP® DC-OIL | Metric | VC-10 | V | M6 - M14 | Straight Flute, Coolant-Through | 683 |
| | 308 |  | EXOPIPE® | Inch | HSSE | TiN, S/O | 1/16" - 1" | Pipe Tap, NPT | 740 |
| | 318 |  | EXOPIPE® | Inch | HSSE | TiN, S/O | 1/16" - 1" | Pipe Tap, NPTF | 741 |
| | 328 |  | EXOTAP-MOLD® | Inch | HSS-CO | Bright | 1/8" - 3/4" | Pipe Tap, NPT, ANPT | 743 |
| | 15001 |  | GENERAL | Inch | HSS | Bright | No. 2 - 1-1/2" | Gage, GO/NOGO Set, Class 2B | 757 |
| | 15002 |  | GENERAL | Metric | HSS | Bright | M3 - M24 | Gage, GO/NOGO Set, Class 6H | 758 |
| | 15015 |  | GENERAL | Inch | HSS | TiN | No.5 - 1" | Diameter Correction Tool | 445 |
| | 15010 |  | GENERAL | Metric | HSS | TiN | M3 - M16 | Diameter Correction Tool | 446 |
| 15020 |  | GENERAL | - | - | - | - | Diameter Correction Tool Accessories | 447 | |

EXOMINI/EXOMILL

EXM

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|-----------|-----|---|-----------------|------|-------|--------|---------------|--------------------------------|------|
| END MILLS | 673 |  | EXOMINI VC-10 | Inch | VC-10 | TiN | 1/32" - 3/16" | Square End | 1041 |
| | 676 |  | EXOMINI VC-10 | Inch | VC-10 | TiN | 1/16" - 3/16" | Center Hole (smaller than 1/8) | 1042 |
| | 677 |  | EXOMINI VC-10 | Inch | VC-10 | TiN | 1/16" - 3/16" | Center Hole (smaller than 1/8) | 1042 |
| | 690 |  | EXOTIN Roughing | Inch | HSSE | TiN | 1/4" - 2" | EXOTIN®, Center Hole | 1049 |
| | 620 |  | EXOMILL VC-10® | Inch | VC-10 | Bright | 1/8" - 1-1/2" | Square End | 1043 |
| | 621 |  | EXOMILL VC-10® | Inch | VC-10 | Bright | 1/8" - 1-1/2" | Ball End | 1043 |





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EXM

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| END MILLS | 641 |  | EXOMILL VC-10® | Inch | VC-10 | Bright | 1/8" - 2" | Square End | 1044 |
| | 644 |  | EXOMILL VC-10® | Inch | VC-10 | Bright | 3/8" - 1-1/2" | Ball End | 1045 |
| | 646 |  | EXOMILL VC-10® | Inch | VC-10 | Bright | 1/4" - 2" | Square End | 1046 |
| | 660 |  | EXOMILL VC-10® | Inch | VC-10 | Bright | 1/4" - 1" | High Helix | 1046 |


OIL-HOLE DRILL

OHD

| | | | | | | | | | |
|-------|------|---|----------|---------------|--------|---|----------------|--------------------------|---------|
| DRILL | 1700 |  | V-HO GDR | Inch & Metric | HSS-CO | V | 5.95mm-31.75mm | Jobbers, Coolant-Through | 243-244 |
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EX-GOLD®

EXD

| | | | | | | | | | |
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| DRILLS | 1750 |  | HELIOS® | Inch & Metric | HSS-CO | WXL® | 1.6mm-17.86mm | 10D, Solid, Parabolic | 245-247 |
| | 1760 |  | HELIOS® | Inch & Metric | HSS-CO | WXL® | 1.6mm-17.86mm | 15D, Solid, Parabolic | 248-249 |
| | 1770 |  | HELIOS® | Inch & Metric | HSS-CO | WXL® | 1.6mm-14.29mm | 20D, Solid, Parabolic | 250-251 |
| | 1900 |  | VPH GDS | Inch & Metric | XPM | V | 0.5mm-20mm | Stub, Solid | 230-236 |
| | 1950 |  | VPH GDR | Inch & Metric | XPM | V | 1.99mm-17.46mm | Jobbers, Solid | 237-239 |
| | 2000 |  | VP® GDR | Inch & Metric | XPM | V | 2mm-32mm | Jobbers, Solid, Parabolic | 240-242 |
| | 1800 |  | V-Select | Inch & Metric | HSSE | V | 2mm-13mm | Jobbers, Solid | 252-254 |
| | 1000 |  | EX-GOLD® | Inch & Metric | HSS-CO | TiN | 1.99mm-12.7mm | Stub, Solid | 260-262 |
| | 1500 |  | EX-GOLD® | Inch & Metric | HSS-CO | TiN | 1.99mm-19.05mm | Jobbers, Solid | 263-265 |
| | 1100 |  | EX-SUS-GOLD | Inch & Metric | HSSE | TiN, TiAlN | 0.5mm-32mm | Stub, Solid | 266-283 |
| | 1600 |  | EX-SUS-GOLD | Inch & Metric | HSSE | TiN, TiAlN | 2mm-32mm | Jobbers, Solid | 284-296 |
| | 1150 |  | NEXUS | Inch & Metric | HSSE | WD1 | 1mm-12.7mm | Stub, Solid | 255-257 |
| | 1650 |  | NEXUS | Inch & Metric | HSSE | WD1 | 2mm-12.7mm | Jobbers, Solid | 258-259 |
| | 1200 |  | EX-SPOT | Metric | HSS | Bright, TiN | 3mm-25mm | Solid, 60°/90°/120° Spot Drill | 297 |
| | 1250 |  | EX-SPOT | Metric | HSS | Bright | 3mm-25mm | Solid, 90° Spot Drill, Long Shank | 298 |

HY-PRO® TAP

HYT

| | | | | | | | | | |
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| TAPS | 14001 |  | HY-PRO® NRT® | Inch | HSS-CO | TiCN, TiN, Bright, S/O | No. 0 - 3/4" | Forming Tap | 473-485 |
| | 14101 |  | HY-PRO® NRT® | Metric | HSS-CO | TiCN, TiN, Bright, S/O | M1.6 - M12 | Forming Tap | 486-488 |
| | 290 |  | HY-PRO® | Inch | HSSE | TiCN, S/O, Bright | No. 2 - 1-1/2" | Spiral Flute | 550-552 |



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| TAPS | 299 |  | HY-PRO® | Metric | HSSE | TiCN, S/O, Bright | M3 - M30 | Spiral Flute | 553 |
| | 280 |  | HY-PRO® | Inch | HSSE | TiCN, S/O, Bright | No. 2 - 1-1/2" | Spiral Point | 629-631 |
| | 289 |  | HY-PRO® | Metric | HSSE | TiCN, S/O, Bright | M3 - M30 | Spiral Point | 632 |
| | 13039 |  | HYPRO® AL | Inch | HSSE | Bright, V | No. 2 - 1/2" | STI, Spiral Fluted | 716 |
| | 11036 |  | HYPRO® AL | Inch | HSSE | Bright, V | No. 2 - 1/2" | STI, Spiral Pointed | 728 |
| | 230 |  | HY-PRO® DIN | Inch | HSSE | TiN | 1/4" - 1" | Spiral Flute, Coolant-Through, DIN OAL | 532 |
| | 239 |  | HY-PRO® DIN | Metric | HSSE | TiN | M6 - M20 | Spiral Flute, Coolant-Through, DIN OAL | 533 |
| | 260 |  | HY-PRO® DIN | Inch | HSSE | TiN | 1/4" - 1" | Spiral Point, Coolant-Through, DIN OAL | 613 |
| | 269 |  | HY-PRO® DIN | Metric | HSSE | TiN | M6 - M20 | Spiral Point, Coolant-Through, DIN OAL | 614 |
| | 220 |  | HY-PRO® DIN | Inch | HSSE | S/O | No. 4 - 2" | Spiral Flute, DIN OAL | 530 |
| | 229 |  | HY-PRO® DIN | Metric | HSSE | S/O | M3 - M20 | Spiral Flute, DIN OAL | 531 |
| | 250 |  | HY-PRO® DIN | Inch | HSSE | S/O | No. 4 - 3/4" | Spiral Point, DIN OAL | 611 |
| | 259 |  | HY-PRO® DIN | Metric | HSSE | S/O | M3 - M20 | Spiral Point, DIN OAL | 612 |
| | 13013 |  | HY-PRO® ALLOY | Inch | HSSE | V | 1/4" - 3/4" | Spiral Flute, Coolant-Through, DIN OAL | 534 |
| | 13113 |  | HY-PRO® ALLOY | Metric | HSSE | V | M6 - M20 | Spiral Flute, Coolant-Through, DIN OAL | 535 |
| | 13058 |  | HY-PRO® SYNCHRO AL | Inch | HSSE | V | No. 6 - 1/2" | Spiral Flute, Synchronized | 544 |
| | 13158 |  | HY-PRO® SYNCHRO AL | Metric | HSSE | V | M3 - M12 | Spiral Flute, Synchronized | 545 |
| | 13059 |  | HY-PRO® SYNCHRO AL | Inch | HSSE | V | No. 6 - 1/2" | Spiral Point, Synchronized, RHC/LHS | 623 |
| | 13159 |  | HY-PRO® SYNCHRO AL | Metric | HSSE | V | M3 - M12 | Spiral Point, Synchronized, RHC/LHS | 624 |
| | 295 |  | HY-PRO® AL | Inch | HSSE | Bright | No. 4 - 3/8" | Spiral Flute | 546 |
| 296 |  | HY-PRO® AL | Metric | HSSE | Bright | M3 - M10 | Spiral Flute | 547 | |
| 13019 |  | HY-PRO® AL-DIN | Inch | HSSE | N | No. 2 - 1/2" | Spiral Flute, DIN OAL | 548 | |
| 13119 |  | HY-PRO® AL-DIN | Metric | HSSE | N | M3 - M12 | Spiral Flute, DIN OAL | 549 | |
| 11016 |  | HY-PRO®AL-DIN | Inch | HSSE | N | No. 2 - 1/2" | Spiral Point, DIN OAL | 625 | |
| 11116 |  | HY-PRO®AL-DIN | Metric | HSSE | N | M3 - M12 | Spiral Point, DIN OAL | 626 | |
| 11015 |  | HY-PRO® AERO-F | Inch | HSS-Co | TiN | No. 4 - 1" | Spiral Point | 615-619 | |

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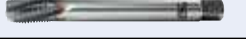
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HYT

| | | | | | | | | | |
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| TAPS | 11115 |  | HY-PRO® AERO-F | Metric | HSS-Co | TiN | M3 - M14 | Spiral Point | 620-621 |
| | 11017 |  | HY-PRO® V DIN | Inch | HSSE | V | No. 4 - 1/2" | Spiral Point, DIN OAL | 627 |
| | 11117 |  | HY-PRO® V DIN | Metric | HSSE | V | M3 - M12 | Spiral Point, DIN OAL | 628 |
| | 240 |  | HYPRO® DC | Inch | HSSE | N, Bright | No. 2 - 1/2" | Straight Flute | 684 |
| | 241 |  | HYPRO® DC | Metric | HSSE | N | M3 - M12 | Straight Flute | 685 |
| | 12053 |  | HY-PRO® PIPE | Inch | HSSE | TiCN | 1/8" - 1" | Pipe Tap, NPT, Interrupted | 742 |
| | 12054 |  | HY-PRO® PIPE | Inch | HSSE | TiCN | 1/8" - 1" | Pipe Tap, NPTF, Interrupted | 742 |







HY-PRO® LARGE

HYL

| | | | | | | | | | |
|------|-------|---|-------------------|--------|------|-----|---------------|--|-----|
| TAPS | 13014 |  | HY-PRO® HXL | Inch | HSSE | S/O | 1/2" - 2-1/2" | Spiral Flute, DIN OAL | 536 |
| | 13024 |  | HY-PRO® HXL-OIL | Inch | HSSE | S/O | 1/2" - 2-1/2" | Spiral Flute, Coolant-Through, DIN OAL | 537 |
| | 13015 |  | HY-PRO® VXL | Inch | HSSE | S/O | 1/2" - 2-1/2" | Spiral Flute, DIN OAL | 538 |
| | 13025 |  | HY-PRO® VXL-OIL | Inch | HSSE | S/O | 1/2" - 2-1/2" | Spiral Flute, Coolant-Through, DIN OAL | 539 |
| | 13116 |  | HY-PRO® HXL-W | Metric | HSSE | S/O | M16 - M42 | Spiral Flute, DIN OAL | 540 |
| | 13126 |  | HY-PRO® HXL-W-OIL | Metric | HSSE | S/O | M16 - M42 | Spiral Flute, Coolant-Through, DIN OAL | 541 |
| | 13117 |  | HY-PRO® VXL-W | Metric | HSSE | S/O | M16 - M42 | Spiral Flute, DIN OAL | 542 |
| | 13127 |  | HY-PRO® VXL-W-OIL | Metric | HSSE | S/O | M16 - M42 | Spiral Flute, Coolant-Through, DIN OAL | 543 |
| | 13118 |  | HY-PRO® RXL-W | Metric | HSSE | V | M16 - M42 | Spiral Point, DIN OAL & Extended OAL, For Through Holes, LHS | 544 |

HY-PRO® SEVEN

HY7


























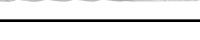
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| TAPS | 285 |  | HY-PRO® SEVEN | Inch | HSS | TiCN, TiN, Bright | No. 0 - 1/2" | Forming Tap | 489 |
| | 286 |  | HY-PRO® SEVEN | Metric | HSS | TiCN, TiN, Bright | M3 - M12 | Forming Tap | 489 |
| | 297 |  | HY-PRO® SEVEN | Inch | HSS | TiN, S/O, Bright | No. 3 - 1/2" | Spiral Flute | 554 |
| | 298 |  | HY-PRO® SEVEN | Metric | HSS | TiN, S/O, Bright | M3 - M12 | Spiral Flute | 555 |
| | 287 |  | HY-PRO® SEVEN | Inch | HSS | TiN, S/O, Bright | No. 0 - 1/2" | Spiral Point | 633 |
| | 288 |  | HY-PRO® SEVEN | Metric | HSS | TiN, S/O, Bright | M3 - M12 | Spiral Point | 634 |



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| | 573 |  | HY-PRO® V | Inch | HSSE | TiCN, Bright | 1/8" - 1" | Square End | 1047 |
| | 574 |  | HY-PRO® V | Inch | HSSE | TiCN, Bright | 1/8" - 1" | Square End | 1048 |
| | 450 |  | Roughing Cut | Inch | HSS-Co | TiCN, Bright | 3/16" - 2" | Fine Pitch, Center Hole | 1050 |
| | 455 |  | Roughing Cut | Inch | HSS-Co | TiCN, TiAlN | 1/4" - 2" | Fine Pitch | 1051 |
| | 420 |  | Roughing Cut | Inch | HSS-Co | Bright | 1/4" - 1-1/2" | Fine Pitch, Center Cutting | 1052 |
| | 460 |  | Roughing Cut | Inch | HSS-Co | Bright | 1/2" - 1-1/2" | Fine Pitch, Center Cutting | 1052 |
| | 410 |  | Roughing Cut | Inch | HSS-Co | Bright | 1/2" - 1" | Square End | 1053 |
| | 430E |  | Roughing Cut | Inch | HSS-Co | Bright | 3/8" - 1-1/2" | 3 Flute, Aluminum | 1053 |
| | 490 |  | Roughing Cut | Inch | HSS-Co | Bright | 1/4" - 2" | General Purpose, Center Hole | 1054 |
| | 440 |  | Roughing Cut | Inch | HSS-Co | Bright | 1/2" - 2" | Ball End, General Purpose | 1055 |
| | 470 |  | Roughing Cut | Inch | HSS-Co | Bright | 1/4" - 2" | Rough & Finish | 1056 |
| | 520 |  | Single End | Inch | HSS-Co | TiN, Bright | 1/8" - 2" | Square End | 1057 |
| | 580 |  | Single End | Metric | HSS-Co | Bright | 3mm - 50mm | Square End | 1058 |
| | 525 |  | Single End | Inch | HSS-Co | Bright | 3/8" - 2" | Square End | 1059 |
| | 527 |  | Single End | Inch | HSS-Co | Bright | 1/8" - 1-1/4" | Reduced Neck | 1059 |
| | 530 |  | Single End | Inch | HSS-Co | Bright | 1/4" - 2" | High Helix | 1060 |
| | 535 |  | Single End | Inch | HSS-Co | Bright | 1/4" - 2" | High Helix | 1060 |
| | 521 |  | Single End | Inch | HSS-Co | Bright | 1/8" - 1-1/2" | Ball End | 1061 |
| | 526 |  | Single End | Inch | HSS-Co | Bright | 1/8" - 1" | Ball End, Reduced Neck | 1061 |
| | 531 |  | Single End | Inch | HSS-Co | Bright | 1/8" - 2" | Square End | 1062 |
| | 581 |  | Single End | Metric | HSS-Co | Bright | 3mm - 45mm | Center Hole | 1063 |
| 536 |  | Single End | Inch | HSS-Co | Bright | 1/4" - 2" | Square End | 1064 | |
| 541 |  | Single End | Inch | HSS-Co | TiCN, TiN, TiAlN, Bright | 1/8" - 2" | Square End | 1065 | |
| 548 |  | Single End | Inch | HSS-Co | TiCN, Bright | 5/8" - 1-1/2" | Square End | 1066 | |
| 546 |  | Single End | Inch | HSS-Co | TiCN, Bright | 1/4" - 2" | Square End | 1066 | |
| 558 |  | Single End | Inch | HSS-Co | TiCN, Bright | 1/4" - 2" | Square End | 1067 | |

















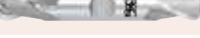








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| 544 |  | Single End | Inch | HSS-Co | Bright | 3/8" - 1-1/2" | Ball End | 1068 |
| 540 |  | Single End | Inch | HSS-Co | TiN, Bright | 1/8" - 2" | Center Hole | 1069 |
| 547 |  | Single End | Inch | HSS-Co | Bright | 1" - 2" | Center Hole | 1070 |
| 545 |  | Single End | Inch | HSS-Co | Bright | 1/4" - 2" | Center Hole | 1070 |
| 557 |  | Single End | Inch | HSS-Co | Bright | 1/4" - 2" | Center Hole | 1070 |
| 591 |  | Single End Tapered | Inch | HSS-Co | Bright | 1/16" - 5/8" | 1° Taper per Side | 1072 |
| 593 |  | Single End Tapered | Inch | HSS-Co | Bright | 1/16" - 5/8" | 2° Taper per Side | 1072 |
| 594 |  | Single End Tapered | Inch | HSS-Co | Bright | 3/32" - 1/2" | 3° Taper per Side | 1073 |
| 595 |  | Single End Tapered | Inch | HSS-Co | Bright | 3/32" - 1/2" | 3° Taper per Side | 1074 |
| 596 |  | Single End Tapered | Inch | HSS-Co | Bright | 5/64" - 1/2" | 7° Taper per Side | 1075 |
| 597 |  | Single End Tapered | Inch | HSS-Co | Bright | 3/32" - 1/4" | 10° Taper per Side | 1075 |
| 522 |  | Double End | Inch | HSS-Co | TiN, Bright | 1/8" - 1" | Square End | 1076 |
| 582 |  | Double End | Metric | HSS-Co | Bright | 1mm - 25mm | Square End | 1077 |
| 532 |  | Double End | Inch | HSS-Co | Bright | 1/8" - 1" | Square End | 1078 |
| 542 |  | Double End | Inch | HSS-Co | TiN, Bright | 1/8" - 1" | Center Hole | 1079 |
| 543 |  | Double End | Inch | HSS-Co | Bright | 1/8" - 1" | Square End | 1080 |
| 523 |  | Double End | Inch | HSS-Co | Bright | 1/8" - 1" | Ball End | 1080 |
| 562 |  | Double End | Inch | HSS-Co | Bright | 1/32" - 3/16" | Miniature | 1081 |
| 563 |  | Double End | Inch | HSS-Co | Bright | 1/32" - 3/16" | Miniature | 1081 |
| 564 |  | Double End | Inch | HSS-Co | Bright | 1/16" - 3/16" | Miniature | 1082 |
| 566 |  | Double End | Inch | HSS-Co | Bright | 1/16" - 3/16" | Miniature | 1082 |
| 567 |  | Double End | Inch | HSS-Co | Bright | 1/16" - 3/16" | Miniature | 1083 |
| 568 |  | Double End | Inch | HSS-Co | Bright | 1/16" - 3/16" | Miniature | 1083 |
| 570 |  | Double End | Inch | HSS-Co | Bright | 1/16" - 3/16" | Ball End, Miniature | 1084 |
| 571 |  | Double End | Inch | HSS-Co | Bright | 1/16" - 3/16" | Ball End, Miniature | 1084 |

END MILLS



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GENERAL PURPOSE TAP



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| TAPS | 107 | | GENERAL PURPOSE | Inch | HSS | TiCN, TiN, S/O, Bright | No. 3 - 3/4" | Spiral Flute | 556 |
| | 143 | | GENERAL PURPOSE | Metric | HSS | TiCN, TiN, S/O, Bright | M3 - M12 | Spiral Flute | 557 |
| | 13020 | | GENERAL PURPOSE | Inch | HSSE | S/O | No. 6 - 5/8" | Spiral Flute | 558 |
| | 105 | | GENERAL PURPOSE | Inch | HSS | TiCN, TiN, S/O, Bright | No. 0 - 3/4" | Spiral Point | 635-637 |
| | 142 | | GENERAL PURPOSE | Metric | HSS | TiCN, TiN, S/O, Bright | M1.6 - M20 | Spiral Point | 643 |
| | 101 | | GENERAL PURPOSE | Inch | HSS | TiCN, TiN, S/O, Bright | 1/4" - 1-1/2" | Straight Flute | 688-689 |
| | 102 | | GENERAL PURPOSE | Inch | HSS | TiCN, TiN, S/O, Bright | No. 0 - No. 12 | Straight Flute | 691-692 |
| | 141 | | GENERAL PURPOSE | Metric | HSS | S/O, Bright | M1.6 - M36 | Straight Flute | 697 |
| | S108 | | GENERAL PURPOSE | Inch | HSS | Bright | No. 2 - 1" | STI, Spiral Fluted | 717-718 |
| | S109 | | GENERAL PURPOSE | Metric | HSS | Bright | M2 - M24 | STI, Spiral Fluted | 719 |
| | 125 | | GENERAL PURPOSE | Inch | HSS | Bright | No. 2 - 1" | STI, Spiral Pointed | 729-730 |
| | 127 | | GENERAL PURPOSE | Metric | HSS | Bright | M2 - M24 | STI, Spiral Pointed | 731 |
| | 126 | | GENERAL PURPOSE | Inch | HSS | Bright | No. 2 - 1" | STI, Straight Fluted | 732-733 |
| | 128 | | GENERAL PURPOSE | Metric | HSS | Bright | M2 - M24 | STI, Straight Fluted | 734 |
| | 123 | | GENERAL PURPOSE | Metric | HSSE | Bright | M3 - M24 | Spiral Flute, JIS | 559 |
| | 122 | | GENERAL PURPOSE | Metric | HSSE | S/O, Bright | M3 - M24 | Spiral Point, JIS | 644 |
| | 121 | | GENERAL PURPOSE | Metric | HSS | S/O, Bright | M2 - M36 | Straight Flute, JIS | 698-699 |
| | S111 | | GENERAL PURPOSE | Inch | HSS | Bright | No. 00 | Spiral Point, Miniature | 647 |
| | S110 | | GENERAL PURPOSE | Inch | HSS | Bright | No. 00 - No. 000 | Straight Flute, Miniature | 701 |
| | 918 | | GENERAL PURPOSE | Inch | HSS | Bright | No. 4 - 5/8" | Spiral Flute, Long Shank | 560 |
| | 917 | | GENERAL PURPOSE | Inch | HSS | S/O, Bright | No. 4 - 5/8" | Spiral Point, Long Shank | 645 |
| | 11118 | | GENERAL PURPOSE | Metric | HSS | S/O | M4 - M12 | Spiral Point, Extended Length | 646 |
| | 916 | | GENERAL PURPOSE | Inch | HSS | S/O | 1/4" - 3/4" | Straight Flute, Pulley Taps, Long Shank | 700 |
| | 105B | | GENERAL PURPOSE | Inch | HSS | S/O, Bright | No. 0 - 7/16" | Spiral Point, Bottom Taps | 638 |
| | 105A | | GENERAL PURPOSE | Inch | HSS | S/O, Bright | No. 4 - 1/2" | Spiral Point, Assembly Type Taps | 639 |
| | 105+ | | GENERAL PURPOSE | Inch | HSS | TiN, Bright | No. 4 - No. 10 | Spiral Point, H7 Taps | 640 |




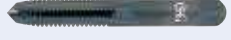

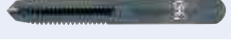

















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| TAPS | 105H |  | GENERAL PURPOSE | Inch | HSS | TiCN, S/O, Bright | No. 6 - 3/4" | Spiral Point, +.005" Oversize | 641 |
| | 142H |  | GENERAL PURPOSE | Metric | HSS | Bright | M4 - M12 | Spiral Point, +.005" Oversize | 642 |
| | 101C |  | GENERAL PURPOSE | Inch | HSS | N, S/O | 1/4" - 3/4" | Straight Flute, Cast Iron Tap | 686 |
| | 141C |  | GENERAL PURPOSE | Metric | HSS | N, S/O | M6 - M12 | Straight Flute, Cast Iron Tap | 687 |
| | 101H |  | GENERAL PURPOSE | Inch | HSS | TiCN, S/O, Bright | 1/4" - 3/4" | Straight Flute, +.005" Oversize | 690 |
| | 102H |  | GENERAL PURPOSE | Inch | HSS | S/O, Bright | No. 6 - No. 10 | Straight Flute, +.005" Oversize | 693 |
| | 103 |  | GENERAL PURPOSE | Inch | HSS | TiN, S/O, Bright | No. 8 - 1/2" | Straight Flute, Three Flutes | 694 |
| | 104 |  | GENERAL PURPOSE | Inch | HSS | S/O, Bright | No. 2 - 5/16" | Straight Flute, Two Flutes | 695 |
| | 101N |  | GENERAL PURPOSE | Inch | HSS | Bright | No. 12 - 1" | Straight Flute, UNEF | 696 |
| | 114 |  | GENERAL PURPOSE | Inch | HSS-CO | N | No. 2 - 1/4" | Straight Flute, For Plastics | 702 |
| | 180 |  | GENERAL PURPOSE | Inch | HSS | Bright | 1-1/8" - 2-1/4" | Straight Flute, 8 Pitch | 703 |
| | 101L |  | GENERAL PURPOSE | Inch | HSS | Bright | No. 6 - 1" | Straight Flute, Left Hand | 704 |
| | 108 |  | GENERAL PURPOSE | Inch | HSS | TiCN, TiN, S/O, Bright | 1/16" - 2" | Pipe Tap, NPT, ANPT | 744 |
| | 108AL |  | GENERAL PURPOSE | Inch | HSS | Bright | 1/8" - 1" | Pipe Tap, NPT | 745 |
| | 118 |  | GENERAL PURPOSE | Inch | HSS | TiCN, TiN, S/O, Bright | 1/16" - 2" | Pipe Tap, NPTF | 746 |
| | 108G |  | GENERAL PURPOSE | Inch | HSS | TiCN, S/O, Bright | 1/8" - 2" | Pipe Tap, NPT, NPTF, ANPT, Interrupted Thread | 747 |
| | S125 |  | GENERAL PURPOSE | Inch | HSS | TiCN, S/O, Bright | 1/8" - 1" | Pipe Tap, NPT, NPTF, Short Projection | 748 |
| | 12006 |  | GENERAL PURPOSE | Inch | HSS | Bright | 1/8" - 3/4" | Pipe Tap, NPTF, Special Short Projection | 749 |
| | 12007 |  | GENERAL PURPOSE | Inch | HSS | Bright | 1/8" - 3/4" | Pipe Tap, NPT | 750 |
| | 109 |  | GENERAL PURPOSE | Inch | HSS | S/O, Bright | 1/8" - 1" | Pipe Tap, NPS, NPSF | 751 |
| 134 |  | GENERAL | Inch | HSS | Bright | No. 0 - 1-1/2" | Solid & Adjustable Round Split Dies | 752-754 | |
| 134P |  | GENERAL | Inch | HSS | Bright | 1/8" - 1/2" | Adjustable Round Split Dies, Taper Pipe | 755 | |
| 135 |  | GENERAL | Metric | HSS | Bright | M2 - M30 | Adjustable Round Split Dies | 756 | |

SOMTA

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| DRILLS | OCS-SO |  | SOMTA | Inch & Metric | Carbide | TiALN | 6mm - 14mm | Stub, Coolant-Through | 226 |
| | 01S-SO |  | SOMTA | Inch & Metric | Carbide | TiALN | 1mm - 14mm | Stub, Solid | 228 |

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| DRILLS | 163-SO |  | SOMTA | Inch & Metric | HSS-Co5 | Bright/ TiALN | 1mm - 14mm | Stub, Solid | 299-304 |
| | 0CJ-SO |  | SOMTA | Inch & Metric | Carbide | TiALN | 6mm - 14mm | Jobbers, Coolant-Through | 227 |
| | 01J-SO |  | SOMTA | Inch & Metric | Carbide | TiALN | 1mm - 14mm | Jobbers, Solid | 229 |
| | 164-SO |  | SOMTA | Inch & Metric | HSS-Co5 | Bright/ TiALN | 1mm - 15.88mm | Jobbers, Solid | 305-310 |
| | 1R5-SO |  | SOMTA | Inch & Metric | HSS-Co5 | TiALN | 1mm - 13mm | Red Band, Ideal for Alloy Steel | 316-318 |
| | 1BB-SO |  | SOMTA | Inch & Metric | HSS-Co5 | TiALN | 1mm - 13mm | Blue Band, Ideal for Stainless Steel | 319-321 |
| | 1AQ-SO |  | SOMTA | Inch & Metric | HSS | Bright | 0.9mm - 13mm | Yellow Band, Ideal for Aluminum | 322-325 |
| | 1W6-SO |  | SOMTA | Inch & Metric | HSS-Co5 | TiALN | 1.984mm - 12.7mm | White Band, Ideal for Cast Iron | 326-327 |
| | 1G7-SO |  | SOMTA | Inch & Metric | HSS-Co5 | TiN | 1mm - 13mm | Green Band, Ideal for Carbon Steel | 328-331 |
| | 101-SO |  | SOMTA | Inch & Metric | HSS | Steam Oxide | 0.3mm - 20mm | Straight Shank Jobbers Drill | 332-337 |
| | 102-SO |  | SOMTA | Inch & Metric | HSS | Steam Oxide | 0.3mm - 20mm | Straight Shank Jobbers Drill | 332-337 |
| | 1X6-SO |  | SOMTA | Inch & Metric | HSS | TiN | 3.175mm - 15.875mm | X-Ratio Split Point Straight Shank Jobbers Drill | 338-340 |
| | 110-SO |  | SOMTA | Inch & Metric | HSS-Co5 | Bright | 1mm - 12.7mm | UDL Long Drill | 311-315 |
| | 1NA-SO |  | SOMTA | Inch | HSS | Bright | 3/64" - 1/4" | Center Drill | 341 |
| | 751-SO |  | SOMTA | Inch & Metric | HSS-Co5 | Bright | 2mm - 20mm | Parallel Shank Machine Chucking Reamer | 342-344 |
| | 752-SO |  | SOMTA | Inch & Metric | HSS-Co5 | Bright | 2mm - 20mm | Parallel Shank Machine Chucking Reamer | 342-344 |
| TAPS | 5BA-SO, 5BL-SO |  | SOMTA | Inch | HSSE-V3 | TiALN | No. 4 - 1-1/4 | Spiral Flute, Red Band, Ideal for Alloy Steel | 561-562 |
| | 5EA-SO, 5EL-SO |  | SOMTA | Metric | HSSE-V3 | TiALN | M3 - M24 | Spiral Flute, Red Band, Ideal for Alloy Steel | 563 |
| | 5BB-SO, 5BM-SO |  | SOMTA | Inch | HSSE-V3 | TiALN | No. 4 - 1-1/4 | Spiral Flute, Blue Band, Ideal for Stainless Steel | 564-565 |
| | 5EB-SO, 5EM-SO |  | SOMTA | Metric | HSSE-V3 | TiALN | M3 - M24 | Spiral Flute, Blue Band, Ideal for Stainless Steel | 566 |
| | 5BC-SO, 5BN-SO |  | SOMTA | Inch | HSSE-V3 | Bright | No. 4 - 1-1/4 | Spiral Flute, Yellow Band, Ideal for Aluminum | 567-568 |
| | 5EC-SO, 5EN-SO |  | SOMTA | Metric | HSSE-V3 | Bright | M3 - M24 | Spiral Flute, Yellow Band, Ideal for Aluminum | 569 |
| | 5BD-SO, 5BP-SO |  | SOMTA | Inch | HSSE-V3 | TiALN | No. 4 - 1-1/4 | Spiral Flute, White Band, Ideal for Cast Iron | 570-571 |
| | 5ED-SO, 5EP-SO |  | SOMTA | Metric | HSSE-V3 | TiALN | M3 - M24 | Spiral Flute, White Band, Ideal for Cast Iron | 572 |
| | 5BE-SO, 5BK-SO |  | SOMTA | Inch | HSSE-V3 | TiN | No. 4 - 1-1/4 | Spiral Flute, Green Band, Ideal for Carbon Steel | 573-574 |
| | 5EV-SO |  | SOMTA | Metric | HSSE-V3 | TiN | M3 - M24 | Spiral Flute, Green Band, Ideal for Carbon Steel | 575 |

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| TAPS | 5EW-SO |  | SOMTA | Metric | HSSE-V3 | TiN | M3 - M24 | Spiral Flute, Green Band , Ideal for Carbon Steel | 576 |
| | 5BF-SO, 5BS-SO |  | SOMTA | Inch | HSSE-V3 | TiALN | No. 4 - 1-1/4 | Spiral Point, Red Band , Ideal for Alloy Steel | 648-649 |
| | 5EF-SO, 5ES-SO |  | SOMTA | Metric | HSSE-V3 | TiALN | M3 - M24 | Spiral Point, Red Band , Ideal for Alloy Steel | 650 |
| | 5BG-SO, 5BT-SO |  | SOMTA | Inch | HSSE-V3 | TiALN | No. 4 - 1-1/4 | Spiral Point, Blue Band , Ideal for Stainless Steel | 651-652 |
| | 5EG-SO, 5ET-SO |  | SOMTA | Metric | HSSE-V3 | TiALN | M3 - M24 | Spiral Point, Blue Band , Ideal for Stainless Steel | 653 |
| | 5BH-SO, 5BU-SO |  | SOMTA | inch | HSSE-V3 | Bright | No. 4 - 1-1/4 | Spiral Point, Yellow Band , Ideal for Aluminum | 654-655 |
| | 5EH-SO, 5EU-SO |  | SOMTA | Metric | HSSE-V3 | Bright | M3 - M24 | Spiral Point, Yellow Band , Ideal for Aluminum | 656 |
| | 5BJ-SO, 5BV-SO |  | SOMTA | inch | HSSE-V3 | TiN | No. 4 - 1-1/4 | Spiral Point, Green Band , Ideal for Carbon Steel | 657-658 |
| | 5EX-SO |  | SOMTA | Metric | HSSE-V3 | TiN | M3 - M24 | Spiral Point, Green Band , Ideal for Carbon Steel | 659 |
| END MILLS | 04V-SO |  | SOMTA | Inch, Metric | Carbide | TiALN | 3/16" - 3/4", 5mm - 20mm | Variable Index | 1027 |
| | 03V-SO |  | SOMTA | Inch, Metric | Carbide | TiALN | 1/4" - 1", 5mm - 20mm | Variable Index | 1028-1029 |
| | 05V-SO |  | SOMTA | Inch, Metric | Carbide | TiALN | 3/16" - 3/4", 5mm - 20mm | Variable Index | 1030-1031 |
| | 03A-SO |  | SOMTA | Metric | Carbide | TiALN | 1mm - 20mm | Square | 1032 |
| | 03K-SO |  | SOMTA | Metric | Carbide | TiALN | 1mm - 20mm | Square | 1033 |
| | 03M-SO |  | SOMTA | Metric | Carbide | TiALN | 1mm - 20mm | Ball Nose | 1034 |
| | 03P-SO |  | SOMTA | Metric | Carbide | TiALN | 1mm - 20mm | Ball Nose | 1035 |
| | 03E-SO |  | SOMTA | Inch, Metric | Carbide | TiALN | 1/4" - 1", 6mm - 20mm | Fine Pitch Rougher | 1036 |
| | 03C-SO |  | SOMTA | Inch | Carbide | Bright | 1/4" - 1" | Coarse Pitch Rougher | 1037 |
| | 03F-SO |  | SOMTA | Inch, Metric | Carbide | TiALN | 1/4" - 1", 6mm - 20mm | Fine Pitch Flat Crest Rougher | 1038-1039 |
| | 03D-SO |  | SOMTA | Inch | Carbide | Bright | 1/4" - 1" | Coarse Pitch Flat Crest Rougher | 1040 |
| | 310-SO |  | SOMTA | Metric | HSS-Co8 | TiALN | 2mm - 25mm | Square | 1085 |
| | 314-SO |  | SOMTA | Metric | HSS Co8 | TiALN | 3mm - 25mm | Square | 1086 |
| | 312-SO |  | SOMTA | Metric | HSS Co8 | TiALN | 2mm - 25mm | Ball Nose | 1087 |



The A Brand Story

The A Brand® represent a new evolution in cutting tool technology. With a commitment to only the best, the A Brand® emanates innovations essential for shaping the future of global manufacturing.

The A Brand® is a premium tooling brand that represents OSG's quality assurance guarantee to each and every customer. The A Brand® products have been developed with attention to the finest details, while incorporating a versatility to enable a wide range of processing in various materials. With the capability to perform difficult processing tasks, and high efficiency the A Brand® products lend to shortened production time and cost savings.

The A Brand® products have been developed with OSG's latest tooling innovations in threading, drilling, and milling to bring an unparalleled experience to our manufacturers with the highest level of quality, reliability, and satisfaction that can only be delivered by the A Brand®, the tooling master class.



DRILLING

The A Brand®

OSG's premium tooling brand. Features products that are designed to exceed the evolving manufacturing needs of our customers.

EXOPRO®

OSG's ultra-premium tooling series. Features supreme performance carbide drills with OSG's proprietary coatings, like WD1, WXS® and DIA , for maximum cost-efficiency.

EXOCARB®

High performance sub-micrograin carbide drills with OSG's proprietary EXO®, WXS and SS coatings.

EXOCARB® MAX

Maximum performance carbide coolant-through drills for ultra high-speed drilling.

HY-PRO® CARB

Premium micrograin carbide drills with OSG WD1 coating. Perfect blend of performance and cost-efficiency.

CARBIDE

Micrograin carbide drills and reamers.

V Products

Premium powdered metal and cobalt high speed steel drills with OSG's proprietary V or WXL coating.

NEXUS

Premium high speed steel drills with OSG's proprietary WD1 coating.

EX-GOLD®

Premium high speed steel drills with TiN & TiAlN coating.

SOMTA

Value carbide and HSS-Co drills for a wide range of applications.







Featured Drilling Products

| A Brand® ADO | | | | | | | | | |
|------------------------------|-----------------|-----------|-------------|--------------|-------------|-----------|-----------|------------|-------------|
| List 6500 | List 6510 | List 6520 | List 6530 | List 6535 | List 6540 | List 6550 | List 6560 | List 6570 | |
| P86-91 | P92-97 | P98-101 | P102-104 | P105-106 | P107-108 | P109-110 | P111 | P112 | |
| | | | | | | | | | |
| Flute Length | 3D | 5D | 8D | 10D | 15D | 20D | 30D | 40D | 50D |
| Inch | 3/32 - 3/4" | | 3/32 - 5/8" | 3/32 - 9/16" | 1/8 - 9/16" | | | 1/8 - 3/8" | 1/8 - 5/16" |
| Metric | 2 - 20mm | | 2 - 15.88mm | 2 - 14.29mm | 3 - 14.29mm | | | 3 - 10mm | 3 - 8mm |
| Number of Flutes | 2 | | | | | | | | |
| Solid/Coolant-Through | Coolant-Through | | | | | | | | |
| Point Angle | 140° | | | | | | | | |
| Coating | EgiAs | | | | | | | | |

| | | |
|----------|--|--|
| P | Carbon Steels (1010, 1018) | |
| | Mild Steels, Alloy Steels (1050, 4140) | |
| | Die Steels (H13, D2) | |
| M | Stainless Steel (304SS, 420SS) | |
| K | Cast Iron | |
| | Ductile Cast Iron | |
| N | Aluminum Alloys (6061, 7075) | |
| S | Heat Resistant Alloys (Inconel 718) | |
| | Titanium Alloy (Ti-6Al-4V) | |
| H | Pre-Hardened Steel (P20) | |
| | Die Cast Steels (A2, S7) | |
| | Hardened Steels (D2) | |



Featured Drilling Products



| A Brand® ADO-TRS | | A Brand® ADO-SUS | | | EXOPRO® WHO-Ni | | EXOCARB® WH-70 | EXOCARB® MAX-OIL AL | EXOCARB® MAX-MINI | | |
|------------------|-----------|------------------|-----------|-------------|-----------------|-------------|----------------|---------------------|-------------------|------------|------------|
| List 6600 | List 6610 | List 5200 | List 5210 | List 5220 | List 5950Ni | List 5955Ni | List 5171 | List 5275 | List 5310 | List 5330 | List 5340 |
| P66-69 | P70-73 | P121-127 | P128-134 | P135-139 | P149-150 | P151-152 | P153-155 | P157 | P158 | P162-170 | P171-172 |
| | | | | | | | | | | | |
| 3D | 5D | 3D | 5D | 8D | 3D | 5D | Regular | 15-30D | 20D | Regular | Long |
| 1/8 - 3/4" | | 3/32 - 3/4" | | 3/32 - 1/2" | 1/8 - 1/2" | | - | - | - | - | - |
| 3 - 20mm | | 2 - 20mm | | 2 - 12.7mm | 3 - 12.7mm | | 2 - 18.6mm | 3 - 10mm | 1 - 3mm | 0.20 - 5mm | 0.50 - 3mm |
| 3 | | 2 | | | 2 | | 2 | 2 | 3 | 2 | 2 |
| Coolant-Through | | Coolant-Through | | | Coolant-Through | | Solid | Coolant-Through | Solid | Solid | Solid |
| 140° | | 140° | | | 140° | | 120° | 140° | 140°, 120° | 140°, 130° | 120° |
| EgiAs | | WXL | | | WXS | | WXS | Bright | EXO | TiAlN | SS |

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For OSG's complete drill offering please refer to the Illustrated Index on pages 56-65.

1st Choice 2nd Choice Recommended





| | Work Material | Material Designation | Material Condition | Hardness | |
|------------------|---------------------|-------------------------|--------------------|----------|-------|
| | | | | BHN | HRC |
| P | Low Carbon Steel | 1010, 1018 | Normalized | ~190 | ~10 |
| | Medium Carbon Steel | 1035, 1045 | Normalized | ~208 | ~15 |
| | High Carbon Steel | 1065, 1095 | Normalized | ~253 | ~25 |
| | Alloy Steel | 4140, 4340, 8620 | Normalized | 253~301 | 25~32 |
| 4140, 4340, 8620 | | Hardened | 327~390 | 35~42 | |
| M | Stainless Steel | 300 Series / 400 Series | Annealed | ~253 | ~25 |
| | | 300 Series / 400 Series | Hardened | 327~390 | 35~42 |
| | | 17-4, 15-5, A286 | Annealed | ~253 | ~25 |
| | | 17-4, 15-5, A286 | Hardened | 327~390 | 35~42 |
| K | Cast Iron | Nodular, Grey | As Cast | ~208 | ~15 |
| N | Aluminum Alloy | 6061, 7075, 2011 | Normalized | ~150 | |
| | Die Cast Aluminum | 356AL, 390AL | As Cast | ~150 | |
| S | Nickel Based Alloy | Inconel 718, 625 | Annealed | 253~301 | 25~32 |
| | | Inconel 718 | Hardened | 327~390 | 35~42 |
| | | Hastelloy, Waspaloy | Normalized | | 25~40 |
| | | Kovar | Normalized | | 25~40 |
| | Titanium Alloy | 6Al4V | Annealed | 253~301 | 25~32 |
| | | 6Al4V, 6Al6V | Hardened | 327~390 | 35~42 |
| H | Tool Steel | D2, H13, P20, S7 | Annealed | 190~253 | 10~25 |
| | | H13 | Hardened | 327~450 | 35~48 |
| | | D2, A2 | Hardened | | 48~55 |
| | | D2, A2 | Hardened | | 55~70 |
| Other | Magnesium | | | ~100 | |
| | Brass, Bronze | | | ~150 | |
| | Copper | | | ~150 | |
| | Beryllium Copper | | | ~253 | ~25 |
| | Cobalt-Chrome | Stellite | | | |



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| Carbide | | | | | | | | | | | | | | Powdered Metal | | HSS-Va & HSS-Co | | | | | |
|--|---|--------------|--|--|-------------|--|--|---------------|---|--|--|--------------|---------------|----------------|------------------------------------|-----------------|----------|---------|----------|-------------|--|
| 66-73 | 74-77 | 78-85 | 86-101 | 102-112 | 113-120 | 121-139 | 149-152 | 153-155 | 157 | 158-172 | 190-201 | 182-189 | 230-239 | 240-242 | 243-244 | 245-251 | 252-254 | 255-259 | 260-265 | 266-296 | |
| A Brand® ADO-TRS <i>Coolant-Through</i> | A Brand® ADFO <i>Coolant-Through</i> | A Brand® ADF | A Brand® ADO 3D-8D <i>Coolant-Through</i> | A Brand® ADO 10D-50D <i>Coolant-Through</i> | A Brand® AD | A Brand® ADO-SUS <i>Coolant-Through</i> | EXOPRO® WHO-Ni <i>Coolant-Through</i> | EXOCARB® WH70 | EXOCARB® MAX-OIL AL <i>Coolant-Through</i> | EXOCARB® MAX-MINI* <i>Coolant-Through</i> | HY-PRO® CARB <i>Coolant-Through</i> | HY-PRO® CARB | VPH GDS & GDR | VP® GDR | V-HO GDR <i>Coolant-Through</i> | HELIOS® | V-Select | NEXUS | EX-GOLD® | EX-SUS-GOLD | |
| ● | ● | ● | ● | ● | ● | ● | ○ | | | ● | ● | ● | ○ | ○ | ● | ● | ○ | ● | ● | ● | |
| ● | ● | ● | ● | ● | ● | ● | ○ | | | ● | ● | ● | ● | ○ | ● | ● | ○ | ● | ● | ○ | |
| ● | ● | ● | ● | ● | ○ | ● | ● | | | ○ | ● | ● | ● | ● | ● | ● | ○ | ● | ● | | |
| ● | ● | ● | ● | ○ | ○ | | ● | | | ○ | ● | ● | ● | ○ | ○ | ○ | | | ○ | | |
| ○ | ● | ○ | ○ | ○ | | ● | | | | ● | ○ | | | | ● | ○ | | ○ | | ● | |
| ○ | ● | ○ | ○ | ○ | | ● | | | | ● | ○ | | | | ● | ○ | | ○ | | ○ | |
| ○ | ● | ○ | ○ | ○ | | ● | | | | ● | ○ | | | | ○ | ○ | | ○ | | ○ | |
| ● | ● | ● | ● | ● | ● | ○ | ○ | | | | ● | ● | ● | ● | ○ | ● | ○ | ○ | ○ | | |
| | ○ | ○ | ○ | | | | | | ● | ● | | | ○ | ○ | ○ | ○ | ○ | ● | | ● | |
| ○ | ○ | ○ | ○ | | | ○ | | | | ● | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | ● | |
| | | | ○ | | | ● | ● | | | ● | ○ | | ● | | | | | | | | |
| | | | ○ | | | ● | ● | | | ○ | ○ | | ○ | ○ | ○ | ○ | ○ | ○ | | | |
| | | | ○ | | | ● | ● | | | ○ | ○ | | ○ | ○ | ○ | ○ | ○ | ○ | | | |
| | | | ○ | | | ● | ● | | | ○ | ○ | | ○ | ○ | ○ | ○ | ○ | ○ | | | |
| ● | ● | ● | ● | ○ | ○ | ○ | ○ | | | ○ | ○ | ● | ● | ● | ○ | ● | ○ | ● | ● | | |
| ○ | ○ | ○ | ○ | | | | ● | | | ○ | ○ | ○ | ○ | ○ | | ○ | | | | | |
| ○ | | | ○ | | | | ● | ● | | ● | | | | | | | | | | | |
| ○ | ○ | ○ | ○ | | | | ○ | | | ○ | ○ | ○ | ○ | ○ | ○ | | | ○ | ○ | ○ | |
| | ○ | ○ | ○ | | | | | | ● | ● | ○ | | ○ | ○ | | ○ | | ○ | ○ | ○ | |
| | ○ | ○ | ○ | | | | | | ● | ● | ○ | | | | | ○ | | ○ | ○ | ○ | |
| | | | ○ | | | | | ○ | | ○ | ○ | | ○ | ○ | | ○ | | ○ | ○ | ○ | |

*EXOCARB® MAX-MINI covers different materials for each list number. Verify recommended materials on each product page.





● = 1st Choice
○ = 2nd Choice





| List | Item | Brand | Inch/Metric | Material | Coating | Size Range | Features | Product Page | Tech Page |
|------|------|-------|-------------|----------|---------|------------|----------|--------------|-----------|
|------|------|-------|-------------|----------|---------|------------|----------|--------------|-----------|


≤2D

| | | | | | | | | | |
|------|--|----------------|---------------|---------|--------------|------------|-----------------------------------|---------|---------|
| 5700 |  NEW SIZES | A Brand® ADF | Inch & Metric | Carbide | EgiAs/IchAda | 0.2mm-20mm | 2D, Solid, Flat Drill | 78-83 | 348-349 |
| 5705 |  | A Brand® ADFLS | Inch & Metric | Carbide | EgiAs | 3mm-20mm | 2D, Solid, Flat Drill, Long Shank | 84-85 | 350 |
| 6300 |  | A Brand® AD | Inch & Metric | Carbide | EgiAs | 2mm-20mm | 2D, Solid | 113-116 | 357 |
| 5172 |  | EXOCARB® XH | Metric | Carbide | Bright | 2mm-12mm | Solid, Tap Extractor | 156 | 363 |

≤3D

| | | | | | | | | | |
|--------|--|---------------------|---------------|---------|--------------|---------------|---------------------------------|---------|---------|
| 6600 |  NEW SIZES | A Brand® ADO-TRS | Inch & Metric | Carbide | EgiAs | 3mm - 20mm | 3D, Coolant-Through, 3 Flutes | 66-69 | 346 |
| 5720 |  | A Brand® ADFO | Inch & Metric | Carbide | EgiAs | 3mm - 20mm | 3D, Coolant-Through, Flat Drill | 74-77 | 347 |
| 6500 |  | A Brand® ADO | Inch & Metric | Carbide | EgiAs | 2mm - 20mm | 3D, Coolant-Through | 86-91 | 351 |
| 5200 |  | A Brand® ADO-SUS | Inch & Metric | Carbide | WXL® | 2mm-20mm | 3D, Coolant-Through | 121-127 | 358 |
| 5600 |  | EXOPRO® Mega Muscle | Inch & Metric | Carbide | WD1 | 4.089mm-20mm | 3D, Coolant-Through, 3 Flutes | 142-143 | 360 |
| 5950Ni |  | EXOPRO® WHO-Ni | Inch & Metric | Carbide | WXS® | 3mm-12.7mm | 3D, Coolant-Through | 149-150 | 362 |
| 5330 |  | EXOCARB® MAX-MINI | Metric | Carbide | TiAlN | 0.2mm-5mm | 3D, Solid, Miniature | 162-170 | 367 |
| HP243 |  | HY-PRO® CARB | Inch & Metric | Carbide | WD1 | 1mm-20mm | 3D, Solid | 182-185 | 372-373 |
| HP253 |  | HY-PRO® CARB | Inch & Metric | Carbide | WD1 | 3mm-20mm | 3D, Coolant-Through | 190-193 | 374-375 |
| 0CS-SO |  NEW | SOMTA | Inch & Metric | Carbide | TiAlN | 6mm - 14mm | Stub, Coolant-Through | 226 | 380-381 |
| 01S-SO |  NEW | SOMTA | Inch & Metric | Carbide | TiAlN | 1mm - 14mm | Stub, Solid | 228 | 380-381 |
| 1900 |  | VPH GDS | Inch & Metric | XPM | V | 0.5mm-20mm | Stub, Solid | 230-236 | 382-383 |
| 1150 |  | NEXUS | Inch & Metric | HSSE | WD1 | 1mm-12.7mm | Stub, Solid | 255-257 | 388-389 |
| 1000 |  | EX-GOLD® | Inch & Metric | HSS-CO | TiN | 1.99mm-12.7mm | Stub, Solid | 260-262 | 390 |
| 1100 |  | EX-SUS-GOLD | Inch & Metric | HSSE | TiN, TiAlN | 0.5mm-32mm | Stub, Solid | 266-283 | 391 |
| 163-SO |  NEW | SOMTA | Inch & Metric | HSS-Co5 | Bright/TiAlN | 1mm - 14mm | Stub, Parabolic | 299-304 | 293 |

≤4D

| | | | | | | | | | |
|------|---|-------------|---------------|---------|-------|----------|-----------|---------|-----|
| 6310 |  | A Brand® AD | Inch & Metric | Carbide | EgiAs | 2mm-20mm | 4D, Solid | 117-120 | 357 |
|------|---|-------------|---------------|---------|-------|----------|-----------|---------|-----|



| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-----------|--------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |

≤2D

| | | | | | | | | | | | | | | | | | |
|------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--|--|-------------------------------------|--------------------------|--|--------------------------|
| 5700 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 5705 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 6300 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | | | | | <input type="checkbox"/> | | | |
| 5172 | | | | | | | | | | | | | | | | | <input type="checkbox"/> |

≤3D

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| 6600 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 5720 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 6500 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 5200 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |
| 5600 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 5950Ni | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5330 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | | | |
| HP243 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| HP253 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 0CS-S0 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 01S-S0 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 1900 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 1150 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| 1000 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 1100 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 163-S0 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |

≤4D

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|------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--|--|--|-------------------------------------|--|--|--|--|--------------------------|--|--|--|

good best



| List | Item | Brand | Inch/Metric | Material | Coating | Size Range | Features | Product Page | Tech Page |
|------|------|-------|-------------|----------|---------|------------|----------|--------------|-----------|
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≤5D

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|--------|--|---------------------|---------------|---------|--------------|------------------|--------------------------------|---------|---------|
| 6610 |  NEW SIZES | A Brand® ADO-TRS | Inch & Metric | Carbide | EgiAs | 3mm - 20mm | 5D, Coolant-Through, 3 Flutes | 70-73 | 346 |
| 6510 |  | A Brand® ADO | Inch & Metric | Carbide | EgiAs | 2mm - 20mm | 5D, Coolant-Through | 92-97 | 351 |
| 5210 |  | A Brand® ADO-SUS | Inch & Metric | Carbide | WXL® | 2mm - 20mm | 5D, Coolant-Through | 128-134 | 358 |
| 5610 |  | EXOPRO® Mega Muscle | Inch & Metric | Carbide | WD1 | 4.089mm - 20mm | 5D, Coolant-Through, 3 Flutes | 144-145 | 360 |
| 5955Ni |  | EXOPRO® WHO-Ni | Inch & Metric | Carbide | WXS® | 3mm - 12.7mm | 5D, Coolant-Through | 151-152 | 362 |
| 5171 |  | EXOCARB® WH70 | Metric | Carbide | WXS® | 2mm - 18.6mm | 5D | 153-155 | 363 |
| 5320 |  | EXOCARB® MAX-MINI | Metric | Carbide | SS | 0.02mm - 0.08mm | 5D, Solid, Miniature | 160 | 366 |
| HP245 |  | HY-PRO® CARB | Inch & Metric | Carbide | WD1 | 1mm - 20mm | 5D, Solid | 186-189 | 372-373 |
| HP255 |  | HY-PRO® CARB | Inch & Metric | Carbide | WD1 | 3mm - 20mm | 5D, Coolant-Through | 194-197 | 374-375 |
| 215 |  | CARBIDE | Inch & Metric | Carbide | Bright | 1mm - 12.7mm | Jobbers, Solid, Slow Spiral | 204-208 | 377-378 |
| 220D |  | CARBIDE | Inch & Metric | Carbide | Bright | 1.18mm - 12.7mm | Jobbers, Solid | 209-211 | 377-378 |
| 233 |  | CARBIDE | Inch & Metric | Carbide | Bright | 3mm - 19.05mm | Jobbers, Solid, 3 Flutes | 212 | 377-378 |
| 200 |  | CARBIDE | Inch & Metric | Carbide | Bright | 1.18mm - 12.7mm | Jobbers, Solid, Straight Flute | 213-215 | 377-378 |
| 0CJ-SO |  NEW | SOMTA | Inch & Metric | Carbide | TiALN | 6mm - 14mm | Jobbers, Coolant-Through | 227 | 380-381 |
| 01J-SO |  NEW | SOMTA | Inch & Metric | Carbide | TiALN | 1mm - 14mm | Jobbers, Solid | 229 | 380-381 |
| 1950 |  | VPH GDR | Inch & Metric | XPM | V | 1.99mm - 17.46mm | Jobbers, Solid | 237-239 | 382-383 |
| 2000 |  | VP® GDR | Inch & Metric | XPM | V | 2mm - 32mm | Jobbers, Solid, Parabolic | 240-242 | 384 |
| 1700 |  | V-HO GDR | Inch & Metric | HSS-CO | V | 5.95mm - 31.75mm | Jobbers, Coolant-Through | 243-244 | 385 |
| 1800 |  | V-Select | Inch & Metric | HSSE | V | 2mm - 13mm | Jobbers, Solid | 252-254 | 387 |
| 1650 |  | NEXUS | Inch & Metric | HSSE | WD1 | 2mm - 12.7mm | Jobbers, Solid | 258-259 | 388-389 |
| 1500 |  | EX-GOLD® | Inch & Metric | HSS-CO | TiN | 1.99mm - 19.05mm | Jobbers, Solid | 263-265 | 390 |
| 1600 |  | EX-SUS-GOLD | Inch & Metric | HSSE | TiN, TiALN | 2mm - 32mm | Jobbers, Solid | 284-296 | 391 |
| 164-SO |  NEW | SOMTA | Inch & Metric | HSS-Co5 | Bright/TiALN | 1mm - 15.88mm | Jobbers, Parabolic | 305-310 | 393 |





| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-----------|--------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1018 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |

≤5D

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| 5955Ni | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5171 | | | | | | | | | | | | | | | | | <input checked="" type="checkbox"/> |
| 5320 | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| HP245 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| HP255 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
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| 220D | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | | <input type="checkbox"/> | | | |
| 233 | <input type="checkbox"/> | | | | | | | | <input type="checkbox"/> | | | | | | | | |
| 200 | <input type="checkbox"/> | | | | | | | | <input type="checkbox"/> | | | | | | | | |
| 0CJ-SO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 01J-SO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 1950 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 2000 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 1700 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 1800 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 1650 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| 1500 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | | <input type="checkbox"/> | | | <input type="checkbox"/> | | | |
| 1600 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 164-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |









good best








| List | Item | Brand | Inch/Metric | Material | Coating | Size Range | Features | Product Page | Tech Page |
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≤5D

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|--------|---|-----|-------|---------------|---------|-------------|--------------|--------------------------------------|---------|---------|
| 1R5-SO |  | NEW | SOMTA | Inch & Metric | HSS-Co5 | TiALN | 1mm - 13mm | Red Band, Ideal for Alloy Steel | 316-318 | 394-395 |
| 1BB-SO |  | NEW | SOMTA | Inch & Metric | HSS-Co5 | TiALN | 1mm - 13mm | Blue Band, Ideal for Stainless Steel | 319-321 | 394-395 |
| 1AQ-SO |  | NEW | SOMTA | Inch & Metric | HSS | Bright | 0.9mm - 13mm | Yellow Band, Ideal for Aluminum | 322-325 | 394-395 |
| 1W6-SO |  | NEW | SOMTA | Inch & Metric | HSS-Co5 | TiALN | 5/64" - 1/2" | White Band, Ideal for Cast Iron | 326-327 | 394-395 |
| 1G7-SO |  | NEW | SOMTA | Inch & Metric | HSS-Co5 | TiN | 1mm - 13mm | Green Band, Ideal for Carbon Steel | 328-331 | 394-395 |
| 101-SO |  | NEW | SOMTA | Metric | HSS | Steam Oxide | 0.3mm - 20mm | Jobbers, Solid | 332-337 | 396 |
| 102-SO |  | NEW | SOMTA | Inch | HSS | Steam Oxide | 1/64" - 5/8" | Jobbers, Solid | 332-337 | 396 |
| 1X6-SO |  | NEW | SOMTA | Inch | HSS | TiN | 1/8" - 5/8" | Jobbers, Solid | 338-340 | 396 |

≤8D

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|-------|---|------------------|---------------|---------|-------|---------------|---------------------|---------|---------|
| 6520 |  | A Brand® ADO | Inch & Metric | Carbide | EgiAs | 2mm - 15.88mm | 8D, Coolant-Through | 98-101 | 351 |
| 5220 |  | A Brand® ADO-SUS | Inch & Metric | Carbide | WXL® | 2mm - 12.7mm | 8D, Coolant-Through | 135-139 | 358 |
| HP258 |  | HY-PRO® CARB | Inch & Metric | Carbide | WD1 | 3mm - 20mm | 8D, Coolant-Through | 198-201 | 374-375 |

>10D

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|------|---|---------------------|---------------|---------------|---------|-----------------|---------------------------------------|----------------------|---------|-----|
| 6530 |  | A Brand® ADO | Inch & Metric | Carbide | EgiAs | 2mm - 14.29mm | 10D, Coolant-Through | 102-104 | 352-353 | |
| 6535 |  | A Brand® ADO | Inch & Metric | Carbide | EgiAs | 3mm - 14.29mm | 15D, Coolant-Through | 105-106 | 352-353 | |
| 6540 |  | A Brand® ADO | Inch & Metric | Carbide | EgiAs | 3mm - 14.29mm | 20D, Coolant-Through | 107-108 | 352-353 | |
| 6550 |  | A Brand® ADO | Inch & Metric | Carbide | EgiAs | 3mm - 14.29mm | 30D, Coolant-Through | 109-110 | 352-353 | |
| 6560 |  | NEW | A Brand® ADO | Inch & Metric | Carbide | EgiAs | 3mm - 10mm | 40D, Coolant-Through | 111 | 354 |
| 6570 |  | NEW | A Brand® ADO | Inch & Metric | Carbide | EgiAs | 3mm - 8mm | 50D, Coolant-Through | 112 | 354 |
| 5630 |  | EXOPRO® Mega Muscle | Inch & Metric | Carbide | WD1 | 5mm - 15.88mm | 10D, Coolant-Through | 146-148 | 361 | |
| 5275 |  | EXOCARB® MAX-OIL AL | Metric | Carbide | Bright | 3mm - 10mm | 15-30D, Coolant-Through | 157 | 364 | |
| 5310 |  | EXOCARB® MAX-MINI | Metric | Carbide | EXO® | 1mm - 3mm | Up to 20D, Solid, Miniature, 3 Flutes | 158 | 365 | |
| 5325 |  | EXOCARB® MAX-MINI | Metric | Carbide | SS | 0.02mm - 0.08mm | 10D, Solid, Miniature | 161 | 366 | |





| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-----------|--------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |

≤5D

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| 1R5-SO | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
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| 1AQ-SO | <input type="checkbox"/> | | | | | | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 1W6-SO | | | | | | | | | <input checked="" type="checkbox"/> | | | | | | | | |
| 1G7-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | | | | | | | | | | | | |
| 101-SO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| 102-SO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| 1X6-SO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | |

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| 5220 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |
| HP258 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |

>10D



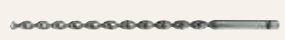


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|------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
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| 6540 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input type="checkbox"/> | | | |
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| 5275 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 5310 | | | | | | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5325 | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |

good best













| List | Item | Brand | Inch/Metric | Material | Coating | Size Range | Features | Product Page | Tech Page |
|------|------|-------|-------------|----------|---------|------------|----------|--------------|-----------|
|------|------|-------|-------------|----------|---------|------------|----------|--------------|-----------|




>10D

| | | | | | | | | | |
|--------|--|-------------------|---------------|---------|--------|---------------|-----------------------|---------|-----|
| 5340 |  | EXOCARB® MAX-MINI | Metric | Carbide | SS | 0.5mm-3mm | 10D, Solid, Miniature | 171-172 | 368 |
| 1750 |  | HELIOS® | Inch & Metric | HSS-CO | WXL® | 1.6mm-17.86mm | 10D, Solid, Parabolic | 245-247 | 386 |
| 1760 |  | HELIOS® | Inch & Metric | HSS-CO | WXL® | 1.6mm-17.86mm | 15D, Solid, Parabolic | 248-249 | 386 |
| 1770 |  | HELIOS® | Inch & Metric | HSS-CO | WXL® | 1.6mm-14.29mm | 20D, Solid, Parabolic | 250-251 | 386 |
| 110-SO |  NEW | SOMTA | Inch & Metric | HSS-Co5 | Bright | 1mm - 12.7mm | Long, Parabolic | 311-315 | 393 |


Centering/Countersinking

| | | | | | | | | | |
|--------|--|-------------------|---------------|---------|-------------|--------------|---|---------|-----|
| 5190 |  | A Brand® AD-LDS | Inch & Metric | Carbide | EgiAs | 3mm - 25mm | Solid, 90°, 120°, 140° Spot Drill | 140-141 | 359 |
| 5315 |  | EXOCARB® MAX-MINI | Metric | Carbide | SS | 0.05mm | Solid, Miniature, Pilot Drill | 159 | 366 |
| 738 |  | HY-PRO® CARB | Inch | - | Bright | - | Indexable, Spot Drill/Countersink/Chamfer | 202-203 | 376 |
| 235 |  | CARBIDE | Inch | Carbide | Bright | 3/64"-7/32" | Solid, Drill/Countersink | 216 | - |
| 700 |  | CARBIDE | Inch | Carbide | Bright | 1/8"-1" | Solid, Countersink, Single Flute | 223 | - |
| 701 |  | CARBIDE | Inch | Carbide | Bright | 1/4"-1" | Solid, Countersink, Multiple Flutes | 224 | - |
| 706 |  | CARBIDE | Inch | Carbide | Bright | 1/4"-1" | Solid, Countersink, 6 Flutes | 225 | - |
| 1200 |  | EX-SPOT | Metric | HSS | Bright, TiN | 3mm-25mm | Solid, 60°/90°/120° Spot Drill | 297 | 392 |
| 1250 |  | EX-SPOT | Metric | HSS | Bright | 3mm-25mm | Solid, 90° Spot Drill, Long Shank | 298 | 392 |
| 1NA-SO |  NEW | SOMTA | Inch | HSS | Bright | 3/64" - 1/4" | Center Drill | 341 | 397 |

Chucking Reamer

| | | | | | | | | | |
|--------|--|---------|---------------|---------|--------|-------------|------------------------------------|---------|-----|
| 300D |  | CARBIDE | Inch & Metric | Carbide | Bright | 0.80mm-13mm | Solid, Multiple Flutes, RH Cutting | 217-221 | 379 |
| 751-SO |  NEW | SOMTA | Metric | HSS-Co5 | Bright | 2mm - 20mm | Solid, RH Cutting | 342-344 | 398 |
| 752-SO |  NEW | SOMTA | Inch | HSS-Co5 | Bright | 1/8" - 3/4" | Solid, RH Cutting | 342-344 | 398 |

Boring Tools

| | | | | | | | | | |
|-----|---|---------|------|---------|--------|------------|---------------------------|-----|---|
| 750 |  | CARBIDE | Inch | Carbide | Bright | 1/16"-3/8" | Solid, Grinding/Deburring | 222 | - |
|-----|---|---------|------|---------|--------|------------|---------------------------|-----|---|

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-----------|--------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |

>10D

| | | | | | | | | | | | | | | | | | |
|--------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| 5340 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1750 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1760 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1770 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 110-S0 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Centering/Countersinking

| | | | | | | | | | | | | | | | | | |
|--------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| 5190 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5315 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 738 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 235 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 700 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 701 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 706 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1200 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1250 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1NA-S0 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Chucking Reamer

| | | | | | | | | | | | | | | | | | |
|--------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 300D | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 751-S0 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 752-S0 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |







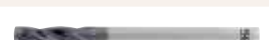

Boring Tools

| | | | | | | | | | | | | | | | | | |
|-----|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 750 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|-----|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|

good best

| List | Item | Brand | Inch/ Metric | Material | Coating | Size Range | Features | Product Page | Tech Page |
|------|------|-------|-----------------|----------|---------|---------------|----------|-----------------|--------------|
|------|------|-------|-----------------|----------|---------|---------------|----------|-----------------|--------------|

Composite Drills

| | | | | | | | | | |
|-------|---|--------------------------|------|---------|---------|---------------|-------------------------------|---------|-----|
| 7501 |  | EXOPRO® AERO-STAD | Inch | Carbide | Diamond | #40 - 1/2" | Triple Angle | 173 | 369 |
| 7520 |  | EXOPRO® AERO-LHX | Inch | Carbide | Diamond | #40 - 1/2" | Low Helix | 174 | 369 |
| 7500 |  | EXOPRO® AERO-D-REAM | Inch | Carbide | Diamond | #40 - 1/2" | Tapered Drill/ Reamer | 175 | 369 |
| 7530 |  | EXOPRO® AERO-S | Inch | Carbide | Diamond | #40 - 1/2" | High Helix, Stack Drill | 176 | 369 |
| 7532 |  | EXOPRO® AERO-H | Inch | Carbide | Diamond | #40 - 1/2" | Stack Drill for All Stacks | 177 | 370 |
| 5732 |  | EXOCARB® AERO-H | Inch | Carbide | TiAlN | #11 - 1/2" | Stack Drill for All Stacks | 178 | 370 |
| HP700 |  | HY-PRO® CARB NEPTUNE® | Inch | Carbide | TiAlN | #40 - 1/4" | Hand Drill | 179 | 371 |
| 257 |  | AERO-D-REAM | Inch | Carbide | Bright | #40 - 1/2" | Tapered Drill/ Reamer | 180-181 | 369 |

| List No. | Machine Type | | | Composite Type | | | | |
|----------|--------------|-----------|-----|----------------|-----------|-------------------|-------------------|---------------------|
| | Hand | Pneumatic | CNC | CFRP | Honeycomb | CFRP/ Al Stack | CFRP/ Ti Stack | CFRP/ CRES Stack |

Composite Drills

| | | | | | | | | |
|-------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| 7501 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 7520 | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| 7500 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| 7530 | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| 7532 | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5732 | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| HP700 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 257 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | |

Good Best



A Brand[®] ADO-TRS

Advanced Performance High Feed 3-Flute Carbide Drills

List 6600

ADO-TRS-3D, 3 Flute, Coolant-Through

| | | | | | | |
|------------------|---------------------------|----------------|--------------|--|------------|--------------------|
| NEW SIZES | SPEED FEED P346 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|------------------|---------------------------|----------------|--------------|--|------------|--------------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 3 ≤ D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8720300 | - | - | - | 3.000 | 0.11811 | 18 | 66 | 3 | |
| 660012517 | 1/8 | - | - | 3.175 | 0.12500 | 20 | 74 | 1/8 | |
| 8720330 | - | - | - | 3.300 | 0.12992 | 21 | | 4 | |
| 660013217 | - | - | - | 3.360 | 0.13228 | | | | |
| 660013517 | - | - | - | 3.440 | 0.13543 | | | | |
| 8720350 | - | - | - | 3.500 | 0.13780 | | | | |
| 660013817 | - | - | - | 3.520 | 0.13858 | | | | |
| 660014017 | - | - | - | 3.570 | 0.14055 | | | | |
| 8720366 | - | - | - | 3.660 | 0.14409 | | | | |
| 660014817 | - | - | - | 3.770 | 0.14843 | | | | |
| 8720386 | - | - | - | 3.860 | 0.15197 | | | | |
| 660015617 | 5/32 | - | - | 3.969 | 0.15625 | 24 | | | 5/32 |
| 8720400 | - | - | - | 4.000 | 0.15748 | 25 | | | 4 |
| 660015917 | - | - | - | 4.050 | 0.15945 | | | | |
| 660016117 | - | 20 | - | 4.089 | 0.16100 | | | | |
| 8720410 | - | - | - | 4.100 | 0.16142 | | | | |
| 660016317 | - | - | - | 4.160 | 0.16378 | | | | |
| 8720420 | - | - | - | 4.200 | 0.16535 | | | | |
| 660016817 | - | - | - | 4.270 | 0.16811 | | | | |
| 8720430 | - | - | - | 4.300 | 0.16929 | | | | |
| 660017217 | 11/64 | - | - | 4.366 | 0.17188 | | | | |
| 8720440 | - | - | - | 4.400 | 0.17323 | | | | |
| 660017517 | - | - | - | 4.460 | 0.17559 | | | | |
| 8720450 | - | - | - | 4.500 | 0.17717 | | | | |
| 8720460 | - | - | - | 4.600 | 0.18110 | | | | |
| 660018317 | - | - | - | 4.660 | 0.18346 | | | | |
| 8720470 | - | - | - | 4.700 | 0.18504 | | | | |
| 660018717 | 3/16 | - | - | 4.763 | 0.18750 | | | | |
| 8720480 | - | - | - | 4.800 | 0.18898 | | | | |
| 8720490 | - | - | - | 4.900 | 0.19291 | | | | |
| 8720500 | - | - | - | 5.000 | 0.19685 | | | | |
| 8720510 | - | - | - | 5.100 | 0.20079 | | | | |
| 660020317 | 13/64 | - | - | 5.159 | 0.20313 | | | | |
| 8720520 | - | - | - | 5.200 | 0.20472 | | | | |
| 8720530 | - | - | - | 5.300 | 0.20866 | | | | |
| 8720540 | - | - | - | 5.400 | 0.21260 | | | | |
| 660021317 | - | 3 | - | 5.410 | 0.21300 | | | | |
| 8720550 | - | - | - | 5.500 | 0.21654 | | | | |
| 660021817 | 7/32 | - | - | 5.556 | 0.21875 | | | | |
| 8720560 | - | - | - | 5.600 | 0.22047 | | | | |
| 8720570 | - | - | - | 5.700 | 0.22441 | | | | |
| 8720580 | - | - | - | 5.800 | 0.22835 | | | | |
| 8720590 | - | - | - | 5.900 | 0.23228 | | | | |
| 660023417 | 15/64 | - | - | 5.953 | 0.23438 | | | | |
| 8720600 | - | - | - | 6.000 | 0.23622 | | | | |

Packed: 1 pc.
Available EgiAs coating only.





List 6600 (Continued)

ADO-TRS-3D, 3 Flute, Coolant-Through

| | | | | | | |
|------------------|---------------------------|----------------|--------------|--|------------|--------------------|
| NEW SIZES | SPEED FEED P346 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|------------------|---------------------------|----------------|--------------|--|------------|--------------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8720610 | - | - | - | 6.100 | 0.24016 | 31 | 88 | 8 |
| 8720620 | - | - | - | 6.200 | 0.24409 | | | |
| 8720630 | - | - | - | 6.300 | 0.24803 | | | |
| 660025017 | 1/4 | - | E | 6.350 | 0.25000 | 32 | | 1/4 |
| 8720640 | - | - | - | 6.400 | 0.25197 | | | |
| 8720650 | - | - | - | 6.500 | 0.25591 | 33 | | 8 |
| 660025717 | - | - | F | 6.528 | 0.25700 | | | |
| 8720660 | - | - | - | 6.600 | 0.25984 | 34 | | 5/16 |
| 8720670 | - | - | - | 6.700 | 0.26378 | | | |
| 660026517 | 17/64 | - | - | 6.747 | 0.26563 | 35 | | 8 |
| 8720680 | - | - | - | 6.800 | 0.26772 | | | |
| 8720690 | - | - | - | 6.900 | 0.27165 | 36 | 94 | |
| 8720700 | - | - | - | 7.000 | 0.27559 | | | |
| 8720710 | - | - | - | 7.100 | 0.27953 | 37 | 8 | |
| 660028117 | 9/32 | - | - | 7.144 | 0.28125 | | | |
| 8720720 | - | - | - | 7.200 | 0.28346 | 38 | 5/16 | |
| 8720730 | - | - | - | 7.300 | 0.28740 | | | |
| 8720738 | - | - | - | 7.380 | 0.29055 | 39 | 8 | |
| 8720740 | - | - | - | 7.400 | 0.29134 | | | |
| 8720750 | - | - | - | 7.500 | 0.29528 | 40 | 94 | |
| 660029617 | 19/64 | - | - | 7.541 | 0.29688 | | | |
| 8720760 | - | - | - | 7.600 | 0.29921 | 41 | 8 | |
| 8720770 | - | - | - | 7.700 | 0.30315 | | | |
| 8720780 | - | - | - | 7.800 | 0.30709 | 42 | 5/16 | |
| 8720790 | - | - | - | 7.900 | 0.31102 | | | |
| 660031217 | 5/16 | - | - | 7.938 | 0.31250 | 43 | 8 | |
| 8720800 | - | - | - | 8.000 | 0.31496 | | | |
| 8720810 | - | - | - | 8.100 | 0.31890 | 44 | 10 | |
| 8720820 | - | - | - | 8.200 | 0.32283 | | | |
| 8720830 | - | - | - | 8.300 | 0.32677 | 45 | 3/8 | |
| 660032817 | 21/64 | - | - | 8.334 | 0.32813 | | | |
| 8720840 | - | - | - | 8.400 | 0.33071 | 46 | 10 | |
| 660033217 | - | - | Q | 8.433 | 0.33200 | | | |
| 8720850 | - | - | - | 8.500 | 0.33465 | 47 | 3/8 | |
| 8720860 | - | - | - | 8.600 | 0.33858 | | | |
| 8720870 | - | - | - | 8.700 | 0.34252 | 48 | 10 | |
| 660034317 | 11/32 | - | - | 8.731 | 0.34375 | | | |
| 8720880 | - | - | - | 8.800 | 0.34646 | 49 | 10 | |
| 8720890 | - | - | - | 8.900 | 0.35039 | | | |
| 8720900 | - | - | - | 9.000 | 0.35433 | 50 | 3/8 | |
| 8720910 | - | - | - | 9.100 | 0.35827 | | | |
| 660035917 | 23/64 | - | - | 9.128 | 0.35938 | 51 | 10 | |
| 8720920 | - | - | - | 9.200 | 0.36220 | | | |
| 8720925 | - | - | - | 9.250 | 0.36417 | 52 | 10 | |
| 8720930 | - | - | - | 9.300 | 0.36614 | | | |
| 8720938 | - | - | - | 9.380 | 0.36929 | 53 | 10 | |
| 8720940 | - | - | - | 9.400 | 0.37008 | | | |
| 8720950 | - | - | - | 9.500 | 0.37402 | | | |

Packed: 1 pc.
Available EgiAs coating only.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 6600 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





A Brand[®] ADO-TRS

Advanced Performance High Feed 3-Flute Carbide Drills

List 6600 (Continued)

ADO-TRS-3D, 3 Flute, Coolant-Through

| | | | | | | |
|------------------|---------------------------|----------------|--------------|--|------------|--------------------|
| NEW SIZES | SPEED FEED P346 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|------------------|---------------------------|----------------|--------------|--|------------|--------------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 3 ≤ D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 660037517 | 3/8 | - | - | 9.525 | 0.37500 | 48 | 106 | 3/8 |
| 8720960 | - | - | - | 9.600 | 0.37795 | 49 | | 10 |
| 8720970 | - | - | - | 9.700 | 0.38189 | | | |
| 8720980 | - | - | - | 9.800 | 0.38583 | 51 | | |
| 8720990 | - | - | - | 9.900 | 0.38976 | | 52 | 12 |
| 660039017 | 25/64 | - | - | 9.922 | 0.39063 | 53 | | |
| 8721000 | - | - | - | 10.000 | 0.39370 | | 54 | 10 |
| 8721010 | - | - | - | 10.100 | 0.39764 | 55 | | |
| 8721020 | - | - | - | 10.200 | 0.40157 | | 56 | 12 |
| 8721030 | - | - | - | 10.300 | 0.40551 | 57 | | |
| 660040617 | 13/32 | - | - | 10.319 | 0.40625 | | 58 | 12 |
| 8721040 | - | - | - | 10.400 | 0.40945 | 59 | | |
| 8721050 | - | - | - | 10.500 | 0.41339 | | 60 | 12 |
| 8721060 | - | - | - | 10.600 | 0.41732 | 61 | | |
| 8721070 | - | - | - | 10.700 | 0.42126 | | 62 | 12 |
| 660042217 | 27/64 | - | - | 10.716 | 0.42188 | 63 | | |
| 8721080 | - | - | - | 10.800 | 0.42520 | | 64 | 12 |
| 8721090 | - | - | - | 10.900 | 0.42913 | 65 | | |
| 8721100 | - | - | - | 11.000 | 0.43307 | | 66 | 12 |
| 8721110 | - | - | - | 11.100 | 0.43701 | 67 | | |
| 660043717 | 7/16 | - | - | 11.113 | 0.43750 | | 68 | 12 |
| 8721120 | - | - | - | 11.200 | 0.44094 | 69 | | |
| 8721125 | - | - | - | 11.250 | 0.44291 | | 70 | 12 |
| 8721130 | - | - | - | 11.300 | 0.44488 | 71 | | |
| 8721138 | - | - | - | 11.380 | 0.44803 | | 72 | 12 |
| 8721140 | - | - | - | 11.400 | 0.44882 | 73 | | |
| 8721150 | - | - | - | 11.500 | 0.45276 | | 74 | 12 |
| 660045317 | 29/64 | - | - | 11.509 | 0.45313 | 75 | | |
| 8721160 | - | - | - | 11.600 | 0.45669 | | 76 | 12 |
| 8721170 | - | - | - | 11.700 | 0.46063 | 77 | | |
| 8721180 | - | - | - | 11.800 | 0.46457 | | 78 | 12 |
| 8721190 | - | - | - | 11.900 | 0.46850 | 79 | | |
| 660046817 | 15/32 | - | - | 11.906 | 0.46875 | | 80 | 12 |
| 8721200 | - | - | - | 12.000 | 0.47244 | 81 | | |
| 660048417 | 31/64 | - | - | 12.303 | 0.48438 | | 82 | 12 |
| 8721250 | - | - | - | 12.500 | 0.49213 | 83 | | |
| 660050017 | 1/2 | - | - | 12.700 | 0.50000 | | 84 | 12 |
| 8721300 | - | - | - | 13.000 | 0.51181 | 85 | | |
| 8721325 | - | - | - | 13.250 | 0.52165 | | 86 | 12 |
| 8721330 | - | - | - | 13.300 | 0.52362 | 87 | | |
| 8721338 | - | - | - | 13.380 | 0.52677 | | 88 | 12 |
| 660053117 | 17/32 | - | - | 13.494 | 0.53125 | 89 | | |
| 8721350 | - | - | - | 13.500 | 0.53150 | | 90 | 12 |
| 8721400 | - | - | - | 14.000 | 0.55118 | 91 | | |
| 8721410 | - | - | - | 14.100 | 0.55512 | | 92 | 12 |
| 8721420 | - | - | - | 14.200 | 0.55906 | 93 | | |
| 660056217 | 9/16 | - | - | 14.288 | 0.56250 | | 94 | 12 |
| 8721430 | - | - | - | 14.300 | 0.56299 | 95 | | |
| 8721450 | - | - | - | 14.500 | 0.57087 | | 96 | 12 |
| 8721500 | - | - | - | 15.000 | 0.59055 | 97 | | |

Packed: 1 pc.
Available EgiAs coating only.





List 6600 (Continued)

ADO-TRS-3D, 3 Flute, Coolant-Through

| | | | | | | |
|------------------|---------------------------|----------------|--------------|--|------------|--------------------|
| NEW SIZES | SPEED FEED P346 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|------------------|---------------------------|----------------|--------------|--|------------|--------------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 660059317 | 19/32 | - | - | 15.081 | 0.59375 | 76 | 145 | 5/8 |
| 8721520 | - | - | - | 15.200 | 0.59843 | 76 | | 16 |
| 8721530 | - | - | - | 15.300 | 0.60236 | 77 | | 16 |
| 8721550 | - | - | - | 15.500 | 0.61024 | 78 | | 16 |
| 660062517 | 5/8 | - | - | 15.875 | 0.62500 | 80 | 150 | 5/8 |
| 8721600 | - | - | - | 16.000 | 0.62992 | 80 | | 16 |
| 8721650 | - | - | - | 16.500 | 0.64961 | 83 | | 18 |
| 660065617 | 21/32 | - | - | 16.669 | 0.65625 | 83 | | 3/4 |
| 660066317 | - | - | - | 16.840 | 0.66299 | 85 | 155 | 18 |
| 8721700 | - | - | - | 17.000 | 0.66929 | 85 | | 18 |
| 8721725 | - | - | - | 17.250 | 0.67913 | 87 | | 18 |
| 660068717 | 11/16 | - | - | 17.463 | 0.68750 | 88 | | 3/4 |
| 8721750 | - | - | - | 17.500 | 0.68898 | 88 | 160 | 18 |
| 660070317 | 45/64 | - | - | 17.859 | 0.70313 | 90 | | 3/4 |
| 8721800 | - | - | - | 18.000 | 0.70866 | 90 | | 18 |
| 660071817 | 23/32 | - | - | 18.256 | 0.71875 | 92 | | 3/4 |
| 8721850 | - | - | - | 18.500 | 0.72835 | 93 | 165 | 20 |
| 8721900 | - | - | - | 19.000 | 0.74803 | 95 | | 20 |
| 660075017 | 3/4 | - | - | 19.050 | 0.75000 | 95 | | 3/4 |
| 8721925 | - | - | - | 19.250 | 0.75787 | 97 | | 20 |
| 8721950 | - | - | - | 19.500 | 0.76772 | 98 | 170 | 20 |
| 8722000 | - | - | - | 20.000 | 0.78740 | 100 | | 20 |

Packed: 1 pc.
Available EgiAs coating only.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------|-------------------------------------|--------------------------|-------------------------------------|----------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-----------|
| | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 1010 | 1035 | 1065 | 4140 | 4340 | | | | | | | | | | | | | |
| 1018 | 1045 | | | | | | | | | | | | | | | | |
| 6600 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best





A Brand[®] ADO-TRS

Advanced Performance High Feed 3-Flute Carbide Drills

List 6610

ADO-TRS-5D, 3 Flute, Coolant-Through

| | | | | | | |
|------------------|---------------------------|----------------|--------------|--|------------|--------------------|
| NEW SIZES | SPEED FEED P346 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|------------------|---------------------------|----------------|--------------|--|------------|--------------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 3 ≤ D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8722300 | - | - | - | 3.000 | 0.11811 | 27 | 78 | 3 |
| 661012517 | 1/8 | - | - | 3.175 | 0.12500 | 29 | 86 | 1/8 |
| 8722330 | - | - | - | 3.300 | 0.12992 | 30 | | |
| 8722350 | - | - | - | 3.500 | 0.13780 | 32 | | |
| 8722366 | - | - | - | 3.660 | 0.14409 | 33 | | |
| 661015617 | 5/32 | - | - | 3.969 | 0.15625 | 36 | | |
| 8722400 | - | - | - | 4.000 | 0.15748 | 36 | 4 | |
| 661016117 | - | 20 | - | 4.089 | 0.16100 | 37 | 95 | 6 |
| 8722410 | - | - | - | 4.100 | 0.16142 | 37 | | |
| 8722420 | - | - | - | 4.200 | 0.16535 | 38 | | |
| 8722430 | - | - | - | 4.300 | 0.16929 | 39 | | |
| 661017217 | 11/64 | - | - | 4.366 | 0.17188 | 40 | | |
| 8722440 | - | - | - | 4.400 | 0.17323 | 40 | 100 | 6 |
| 8722450 | - | - | - | 4.500 | 0.17717 | 41 | | |
| 8722460 | - | - | - | 4.600 | 0.18110 | 42 | | |
| 8722470 | - | - | - | 4.700 | 0.18504 | 43 | | |
| 661018717 | 3/16 | - | - | 4.763 | 0.18750 | 43 | | |
| 8722480 | - | - | - | 4.800 | 0.18898 | 44 | 109 | 8 |
| 8722490 | - | - | - | 4.900 | 0.19291 | 45 | | |
| 8722500 | - | - | - | 5.000 | 0.19685 | 45 | | |
| 8722510 | - | - | - | 5.100 | 0.20079 | 41 | | |
| 661020317 | 13/64 | - | - | 5.159 | 0.20313 | 42 | | |
| 8722520 | - | - | - | 5.200 | 0.20472 | 43 | 118 | 8 |
| 8722530 | - | - | - | 5.300 | 0.20866 | 43 | | |
| 8722540 | - | - | - | 5.400 | 0.21260 | 44 | | |
| 661021317 | - | 3 | - | 5.410 | 0.21300 | 44 | | |
| 8722550 | - | - | - | 5.500 | 0.21654 | 45 | | |
| 661021817 | 7/32 | - | - | 5.556 | 0.21875 | 45 | 109 | 8 |
| 8722560 | - | - | - | 5.600 | 0.22047 | 46 | | |
| 8722570 | - | - | - | 5.700 | 0.22441 | 46 | | |
| 8722580 | - | - | - | 5.800 | 0.22835 | 47 | | |
| 8722590 | - | - | - | 5.900 | 0.23228 | 47 | | |
| 661023417 | 15/64 | - | - | 5.953 | 0.23438 | 48 | 109 | 8 |
| 8722600 | - | - | - | 6.000 | 0.23622 | 48 | | |
| 8722610 | - | - | - | 6.100 | 0.24016 | 49 | | |
| 8722620 | - | - | - | 6.200 | 0.24409 | 50 | | |
| 8722630 | - | - | - | 6.300 | 0.24803 | 51 | | |
| 661025017 | 1/4 | - | E | 6.350 | 0.25000 | 51 | 109 | 8 |
| 8722640 | - | - | - | 6.400 | 0.25197 | 52 | | |
| 8722650 | - | - | - | 6.500 | 0.25591 | 52 | | |
| 661025717 | - | - | F | 6.528 | 0.25700 | 53 | | |
| 8722660 | - | - | - | 6.600 | 0.25984 | 53 | | |
| 8722670 | - | - | - | 6.700 | 0.26378 | 54 | 109 | 8 |
| 661026517 | 17/64 | - | - | 6.747 | 0.26563 | 54 | | |
| 8722680 | - | - | - | 6.800 | 0.26772 | 55 | | |
| 8722690 | - | - | - | 6.900 | 0.27165 | 55 | | |
| 8722700 | - | - | - | 7.000 | 0.27559 | 56 | | |
| 8722710 | - | - | - | 7.100 | 0.27953 | 57 | | |

Packed: 1 pc.
Available EgiAs coating only.





List 6610 (Continued)

ADO-TRS-5D, 3 Flute, Coolant-Through

NEW SIZES

SPEED FEED
P346

CARBIDE

EgiAs

30°

h6

| EDP Number | Diameter | | | | | Flute Length | Overall Length | Shank Diameter |
|------------|-----------------|-----------|-------------|--------|---------|--------------|----------------|----------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | FL (mm) | L (mm) | d (mm/in) |
| 661028117 | 9/32 | - | - | 7.144 | 0.28125 | | | 5/16 |
| 8722720 | - | - | - | 7.200 | 0.28346 | 58 | 118 | 8 |
| 8722730 | - | - | - | 7.300 | 0.28740 | 59 | | |
| 8722738 | - | - | - | 7.380 | 0.29055 | 60 | | |
| 8722740 | - | - | - | 7.400 | 0.29134 | | | |
| 8722750 | - | - | - | 7.500 | 0.29528 | | | |
| 661029617 | 19/64 | - | - | 7.541 | 0.29688 | 61 | | |
| 8722760 | - | - | - | 7.600 | 0.29921 | 62 | | |
| 8722770 | - | - | - | 7.700 | 0.30315 | 63 | | |
| 8722780 | - | - | - | 7.800 | 0.30709 | 128 | | |
| 8722790 | - | - | - | 7.900 | 0.31102 | | | |
| 661031217 | 5/16 | - | - | 7.938 | 0.31250 | | 64 | |
| 8722800 | - | - | - | 8.000 | 0.31496 | | 65 | |
| 8722810 | - | - | - | 8.100 | 0.31890 | | | |
| 8722820 | - | - | - | 8.200 | 0.32283 | | 66 | |
| 8722830 | - | - | - | 8.300 | 0.32677 | | 67 | |
| 661032817 | 21/64 | - | - | 8.334 | 0.32813 | | 136 | |
| 8722840 | - | - | - | 8.400 | 0.33071 | | | |
| 661033217 | - | - | Q | 8.433 | 0.33200 | | | 68 |
| 8722850 | - | - | - | 8.500 | 0.33465 | 69 | | |
| 8722860 | - | - | - | 8.600 | 0.33858 | | | |
| 8722870 | - | - | - | 8.700 | 0.34252 | 70 | | |
| 661034317 | 11/32 | - | - | 8.731 | 0.34375 | 146 | | |
| 8722880 | - | - | - | 8.800 | 0.34646 | | | 71 |
| 8722890 | - | - | - | 8.900 | 0.35039 | | | 72 |
| 8722900 | - | - | - | 9.000 | 0.35433 | | | |
| 8722910 | - | - | - | 9.100 | 0.35827 | | 73 | |
| 661035917 | 23/64 | - | - | 9.128 | 0.35938 | | 10 | |
| 8722920 | - | - | - | 9.200 | 0.36220 | | | 74 |
| 8722925 | - | - | - | 9.250 | 0.36417 | | | 75 |
| 8722930 | - | - | - | 9.300 | 0.36614 | | | |
| 8722938 | - | - | - | 9.380 | 0.36929 | | | |
| 8722940 | - | - | - | 9.400 | 0.37008 | 76 | | |
| 8722950 | - | - | - | 9.500 | 0.37402 | | | |
| 661037517 | 3/8 | - | - | 9.525 | 0.37500 | 77 | | |
| 8722960 | - | - | - | 9.600 | 0.37795 | 78 | | |
| 8722970 | - | - | - | 9.700 | 0.38189 | 79 | | |
| 8722980 | - | - | - | 9.800 | 0.38583 | 12 | | |
| 8722990 | - | - | - | 9.900 | 0.38976 | | | |
| 661039017 | 25/64 | - | - | 9.922 | 0.39063 | | 80 | |
| 8723000 | - | - | - | 10.000 | 0.39370 | | 81 | |
| 8723010 | - | - | - | 10.100 | 0.39764 | | | |
| 8723020 | - | - | - | 10.200 | 0.40157 | | 82 | |
| 8723030 | - | - | - | 10.300 | 0.40551 | | 83 | |
| 661040617 | 13/32 | - | - | 10.319 | 0.40625 | | | |
| 8723040 | - | - | - | 10.400 | 0.40945 | | 84 | |
| 8723050 | - | - | - | 10.500 | 0.41339 | | 146 | |
| 8723060 | - | - | - | 10.600 | 0.41732 | | | |
| 8723070 | - | - | - | 10.700 | 0.42126 | | | |
| 661042217 | 27/64 | - | - | 10.716 | 0.42188 | | | |

Packed: 1 pc.
Available EgiAs coating only.

▶ continued on next page ▶

| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------|-------------------------------------|--------------------------|-------------------------------------|-----------|--------------------------|--------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 6610 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





A Brand[®] ADO-TRS

Advanced Performance High Feed 3-Flute Carbide Drills

List 6610 (Continued)

ADO-TRS-5D, 3 Flute, Coolant-Through

| | | | | | | |
|------------------|---------------------------|----------------|--------------|--|------------|--------------------|
| NEW SIZES | SPEED FEED P346 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|------------------|---------------------------|----------------|--------------|--|------------|--------------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 3 ≤ D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8723080 | - | - | - | 10.800 | 0.42520 | 87 | 146 | 12 |
| 8723090 | - | - | - | 10.900 | 0.42913 | 88 | | |
| 8723100 | - | - | - | 11.000 | 0.43307 | 89 | 7/16 | |
| 8723110 | - | - | - | 11.100 | 0.43701 | | | |
| 661043717 | 7/16 | - | - | 11.113 | 0.43750 | 90 | 12 | |
| 8723120 | - | - | - | 11.200 | 0.44094 | | | |
| 8723125 | - | - | - | 11.250 | 0.44291 | 91 | 12 | |
| 8723130 | - | - | - | 11.300 | 0.44488 | | | |
| 8723138 | - | - | - | 11.380 | 0.44803 | 92 | 12 | |
| 8723140 | - | - | - | 11.400 | 0.44882 | | | |
| 8723150 | - | - | - | 11.500 | 0.45276 | 93 | 1/2 | |
| 661045317 | 29/64 | - | - | 11.509 | 0.45313 | | | |
| 8723160 | - | - | - | 11.600 | 0.45669 | 94 | 12 | |
| 8723170 | - | - | - | 11.700 | 0.46063 | | | |
| 8723180 | - | - | - | 11.800 | 0.46457 | 95 | 12 | |
| 8723190 | - | - | - | 11.900 | 0.46850 | | | |
| 661046817 | 15/32 | - | - | 11.906 | 0.46875 | 96 | 1/2 | |
| 8723200 | - | - | - | 12.000 | 0.47244 | | | |
| 661048417 | 31/64 | - | - | 12.303 | 0.48438 | 99 | 1/2 | |
| 8723250 | - | - | - | 12.500 | 0.49213 | | | |
| 661050017 | 1/2 | - | - | 12.700 | 0.50000 | 100 | 14 | |
| 8723300 | - | - | - | 13.000 | 0.51181 | | | |
| 8723325 | - | - | - | 13.250 | 0.52165 | 102 | 1/2 | |
| 8723330 | - | - | - | 13.300 | 0.52362 | | | |
| 8723338 | - | - | - | 13.380 | 0.52677 | 104 | 14 | |
| 661053117 | 17/32 | - | - | 13.494 | 0.53125 | | | |
| 8723350 | - | - | - | 13.500 | 0.53150 | 106 | 14 | |
| 8723400 | - | - | - | 14.000 | 0.55118 | | | |
| 8723410 | - | - | - | 14.100 | 0.55512 | 107 | 16 | |
| 8723420 | - | - | - | 14.200 | 0.55906 | | | |
| 661056217 | 9/16 | - | - | 14.288 | 0.56250 | 108 | 5/8 | |
| 8723430 | - | - | - | 14.300 | 0.56299 | | | |
| 8723450 | - | - | - | 14.500 | 0.57087 | 109 | 16 | |
| 8723500 | - | - | - | 15.000 | 0.59055 | | | |
| 661059317 | 19/32 | - | - | 15.081 | 0.59375 | 110 | 5/8 | |
| 8723520 | - | - | - | 15.200 | 0.59843 | | | |
| 8723530 | - | - | - | 15.300 | 0.60236 | 111 | 16 | |
| 8723550 | - | - | - | 15.500 | 0.61024 | | | |
| 661062517 | 5/8 | - | - | 15.875 | 0.62500 | 112 | 5/8 | |
| 8723600 | - | - | - | 16.000 | 0.62992 | | | |
| 8723650 | - | - | - | 16.500 | 0.64961 | 113 | 18 | |
| 661065617 | 21/32 | - | - | 16.669 | 0.65625 | | | |
| 661066317 | - | - | - | 16.840 | 0.66299 | 114 | 3/4 | |
| 8723700 | - | - | - | 17.000 | 0.66929 | | | |
| 8723725 | - | - | - | 17.250 | 0.67913 | 115 | 18 | |
| 661068717 | 11/16 | - | - | 17.463 | 0.68750 | | | |
| 8723750 | - | - | - | 17.500 | 0.68898 | 116 | 3/4 | |
| 661070317 | 45/64 | - | - | 17.859 | 0.70313 | | | |
| 8723800 | - | - | - | 18.000 | 0.70866 | 117 | 18 | |

Packed: 1 pc.
Available EgiAs coating only.





List 6610 (Continued)

ADO-TRS-5D, 3 Flute, Coolant-Through

| | | | | | | |
|------------------|---------------------------|----------------|--------------|--|------------|--------------------|
| NEW SIZES | SPEED FEED P346 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|------------------|---------------------------|----------------|--------------|--|------------|--------------------|

| EDP Number | Diameter | | | | | Flute Length | Overall Length | Shank Diameter |
|------------|-----------------|-----------|-------------|--------|---------|--------------|----------------|----------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | FL (mm) | L (mm) | d (mm/in) |
| 661071817 | 23/32 | - | - | 18.256 | 0.71875 | 147 | 217 | 3/4 |
| 8723850 | - | - | - | 18.500 | 0.72835 | 148 | | 20 |
| 8723900 | - | - | - | 19.000 | 0.74803 | 152 | | 3/4 |
| 661075017 | 3/4 | - | - | 19.050 | 0.75000 | 154 | | 20 |
| 8723925 | - | - | - | 19.250 | 0.75787 | 156 | 225 | 20 |
| 8723950 | - | - | - | 19.500 | 0.76772 | | | |
| 8724000 | - | - | - | 20.000 | 0.78740 | | | |

Packed: 1 pc.
Available EgiAs coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------|-------------------------------------|--------------------------|-------------------------------------|----------|--------------------------|--------------|-------------------------------------|--------------------------|-----------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 6610 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |

good best

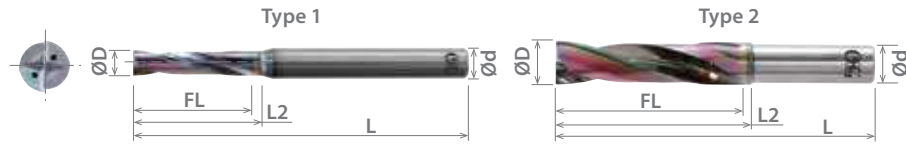




List 5720

ADFO-3D, Coolant-Through, Flat Drill

| | | | | | |
|---------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P347 | CARBIDE | EgiAs | | 20° | SHANK h6 |
|---------------------------|----------------|--------------|--|------------|--------------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 3 ≤ D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Neck Length L2 (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | Type |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|------------------------|--------------------------|-----------------------------|------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | |
| 3334300 | - | - | - | 3.000 | 0.11811 | 15 | 16 | 55 | 4 | 1 |
| 3334302 | - | - | - | 3.100 | 0.12205 | | | | | |
| 572012517 | 1/8 | - | - | 3.175 | 0.12500 | 16 | 17 | 60 | 1/8 | 2 |
| 3334304 | - | - | - | 3.200 | 0.12598 | | | | | |
| 3334305 | - | - | - | 3.300 | 0.12992 | 19 | 20 | 65 | 4 | 1 |
| 3334306 | - | - | - | 3.400 | 0.13386 | | | | | |
| 3334307 | - | - | - | 3.500 | 0.13780 | 21 | 22 | 70 | 6 | 1 |
| 3334309 | - | - | - | 3.600 | 0.14173 | | | | | |
| 3334312 | - | - | - | 3.700 | 0.14567 | 24 | 25 | 75 | 3/16 | 2 |
| 3334313 | - | - | - | 3.800 | 0.14961 | | | | | |
| 3334314 | - | - | - | 3.900 | 0.15354 | 27 | 28 | 80 | 4 | 1 |
| 572015617 | 5/32 | - | - | 3.969 | 0.15625 | | | | | |
| 3334315 | - | - | - | 4.000 | 0.15748 | 30 | 31 | 85 | 6 | 1 |
| 3334317 | - | - | - | 4.100 | 0.16142 | | | | | |
| 3334318 | - | - | - | 4.200 | 0.16535 | 33 | 34 | 90 | 8 | 1 |
| 3334319 | - | - | - | 4.300 | 0.16929 | | | | | |
| 3334320 | - | - | - | 4.400 | 0.17323 | 36 | 37 | 95 | 1/4 | 2 |
| 3334321 | - | - | - | 4.500 | 0.17717 | | | | | |
| 3334322 | - | - | - | 4.600 | 0.18110 | 39 | 40 | 100 | 6 | 1 |
| 3334326 | - | - | - | 4.700 | 0.18504 | | | | | |
| 572018717 | 3/16 | - | - | 4.763 | 0.18750 | 42 | 43 | 105 | 8 | 1 |
| 3334327 | - | - | - | 4.800 | 0.18898 | | | | | |
| 3334328 | - | - | - | 4.900 | 0.19291 | 45 | 46 | 110 | 1/4 | 2 |
| 3334329 | - | - | - | 5.000 | 0.19685 | | | | | |
| 3334331 | - | - | - | 5.100 | 0.20079 | 48 | 49 | 115 | 6 | 1 |
| 3334332 | - | - | - | 5.200 | 0.20472 | | | | | |
| 3334333 | - | - | - | 5.300 | 0.20866 | 51 | 52 | 120 | 8 | 1 |
| 3334334 | - | - | - | 5.400 | 0.21260 | | | | | |
| 3334335 | - | - | - | 5.500 | 0.21654 | 54 | 55 | 125 | 1/4 | 2 |
| 572021817 | 7/32 | - | - | 5.556 | 0.21875 | | | | | |
| 3334338 | - | - | - | 5.600 | 0.22047 | 57 | 58 | 130 | 6 | 1 |
| 3334339 | - | - | - | 5.700 | 0.22441 | | | | | |
| 3334340 | - | - | - | 5.800 | 0.22835 | 60 | 61 | 135 | 8 | 1 |
| 3334341 | - | - | - | 5.900 | 0.23228 | | | | | |
| 3334342 | - | - | - | 6.000 | 0.23622 | 63 | 64 | 140 | 1/4 | 2 |
| 3334344 | - | - | - | 6.100 | 0.24016 | | | | | |
| 3334345 | - | - | - | 6.200 | 0.24409 | 66 | 67 | 145 | 6 | 1 |
| 3334346 | - | - | - | 6.300 | 0.24803 | | | | | |
| 572025017 | 1/4 | - | E | 6.350 | 0.25000 | 69 | 70 | 150 | 8 | 1 |
| 3334347 | - | - | - | 6.400 | 0.25197 | | | | | |
| 3334348 | - | - | - | 6.500 | 0.25591 | 72 | 73 | 155 | 1/4 | 2 |
| 3334350 | - | - | - | 6.600 | 0.25984 | | | | | |
| 3334351 | - | - | - | 6.700 | 0.26378 | 75 | 76 | 160 | 6 | 1 |
| 3334352 | - | - | - | 6.800 | 0.26772 | | | | | |
| 3334353 | - | - | - | 6.900 | 0.27165 | 78 | 79 | 165 | 8 | 1 |
| 3334354 | - | - | - | 7.000 | 0.27559 | | | | | |
| 3334356 | - | - | - | 7.100 | 0.27953 | 81 | 82 | 170 | 1/4 | 2 |
| 572028117 | 9/32 | - | - | 7.144 | 0.28125 | | | | | |
| 3334357 | - | - | - | 7.200 | 0.28346 | 84 | 85 | 175 | 6 | 1 |
| 3334358 | - | - | - | 7.300 | 0.28740 | | | | | |
| 3334359 | - | - | - | 7.400 | 0.29134 | 87 | 88 | 180 | 8 | 1 |
| 3334360 | - | - | - | 7.500 | 0.29528 | | | | | |
| 3334361 | - | - | - | 7.600 | 0.29921 | | | | | |

Packed: 1 pc.
Available EgiAs coating only.



List 5720 (Continued)

ADFO-3D, Coolant-Through, Flat Drill

| | | | | |
|---------------|---------|-------|-----|-------------|
| SPEED FEED | CARBIDE | EgiAs | 20° | SHANK h6 |
| P347 | | | | |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Neck Length L2 (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | Type |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|------------------------|--------------------------|-----------------------------|------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | |
| 3334362 | - | - | - | 7.700 | 0.30315 | 34 | 35 | 75 | 8 | 1 |
| 3334363 | - | - | - | 7.800 | 0.30709 | | | | | |
| 3334364 | - | - | - | 7.900 | 0.31102 | | | | | |
| 572031217 | 5/16 | - | - | 7.938 | 0.31250 | 34 | 35 | 75 | 5/16 | 2 |
| 3334365 | - | - | - | 8.000 | 0.31496 | | | | | |
| 3334367 | - | - | - | 8.100 | 0.31890 | 38 | 39 | 80 | 10 | 1 |
| 3334368 | - | - | - | 8.200 | 0.32283 | | | | | |
| 3334369 | - | - | - | 8.300 | 0.32677 | | | | | |
| 572032817 | 21/64 | - | - | 8.334 | 0.32813 | | | | | |
| 3334370 | - | - | - | 8.400 | 0.33071 | | | | | |
| 3334371 | - | - | - | 8.500 | 0.33465 | | | | | |
| 3334373 | - | - | - | 8.600 | 0.33858 | | | | | |
| 3334374 | - | - | - | 8.700 | 0.34252 | | | | | |
| 3334375 | - | - | - | 8.800 | 0.34646 | | | | | |
| 3334376 | - | - | - | 8.900 | 0.35039 | | | | | |
| 3334377 | - | - | - | 9.000 | 0.35433 | | | | | |
| 3334379 | - | - | - | 9.100 | 0.35827 | 42 | 43 | 85 | 10 | 1 |
| 572035917 | 23/64 | - | - | 9.128 | 0.35938 | | | | | |
| 3334380 | - | - | - | 9.200 | 0.36220 | | | | | |
| 3334381 | - | - | - | 9.300 | 0.36614 | | | | | |
| 3334382 | - | - | - | 9.400 | 0.37008 | | | | | |
| 3334383 | - | - | - | 9.500 | 0.37402 | | | | | |
| 572037517 | 3/8 | - | - | 9.525 | 0.37500 | | | | | |
| 3334384 | - | - | - | 9.600 | 0.37795 | | | | | |
| 3334385 | - | - | - | 9.700 | 0.38189 | | | | | |
| 3334386 | - | - | - | 9.800 | 0.38583 | | | | | |
| 3334387 | - | - | - | 9.900 | 0.38976 | | | | | |
| 3334388 | - | - | - | 10.000 | 0.39370 | 46 | 47 | 90 | 12 | 1 |
| 3334390 | - | - | - | 10.100 | 0.39764 | | | | | |
| 3334391 | - | - | - | 10.200 | 0.40157 | | | | | |
| 3334392 | - | - | - | 10.300 | 0.40551 | | | | | |
| 572040617 | 13/32 | - | - | 10.319 | 0.40625 | | | | | |
| 3334393 | - | - | - | 10.400 | 0.40945 | | | | | |
| 3334394 | - | - | - | 10.500 | 0.41339 | | | | | |
| 3334395 | - | - | - | 10.600 | 0.41732 | | | | | |
| 3334396 | - | - | - | 10.700 | 0.42126 | | | | | |
| 3334397 | - | - | - | 10.800 | 0.42520 | | | | | |
| 3334398 | - | - | - | 10.900 | 0.42913 | | | | | |
| 3334399 | - | - | - | 11.000 | 0.43307 | 50 | 51 | 95 | 12 | 1 |
| 3334401 | - | - | - | 11.100 | 0.43701 | | | | | |
| 572043717 | 7/16 | - | - | 11.113 | 0.43750 | | | | | |
| 3334402 | - | - | - | 11.200 | 0.44094 | | | | | |
| 3334403 | - | - | - | 11.300 | 0.44488 | | | | | |
| 3334404 | - | - | - | 11.400 | 0.44882 | | | | | |
| 3334405 | - | - | - | 11.500 | 0.45276 | | | | | |
| 572045317 | 29/64 | - | - | 11.509 | 0.45313 | | | | | |

Packed: 1 pc.
Available EgiAs coating only.

➔ continued on next page ➔

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5720 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best

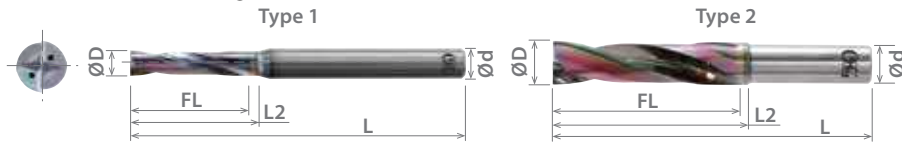




List 5720 (Continued)

ADFO-3D, Coolant-Through, Flat Drill

| | | | | | |
|---------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P347 | CARBIDE | EgiAs | | 20° | SHANK h6 |
|---------------------------|----------------|--------------|--|------------|--------------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 3 ≤ D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Neck Length L2 (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | Type |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|------------------------|--------------------------|-----------------------------|------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | |
| 3334406 | - | - | - | 11.600 | 0.45669 | 50 | 51 | 95 | 12 | 1 |
| 3334407 | - | - | - | 11.700 | 0.46063 | | | | | |
| 3334408 | - | - | - | 11.800 | 0.46457 | | | | | |
| 3334409 | - | - | - | 11.900 | 0.46850 | 50 | 51 | 95 | 12 | 1 |
| 572046817 | 15/32 | - | - | 11.906 | 0.46875 | | | | | |
| 3334410 | - | - | - | 12.000 | 0.47244 | | | | | |
| 3334412 | - | - | - | 12.100 | 0.47638 | 56 | 57 | 100 | 14 | 1 |
| 3334413 | - | - | - | 12.200 | 0.48031 | | | | | |
| 3334414 | - | - | - | 12.300 | 0.48425 | | | | | |
| 3334415 | - | - | - | 12.400 | 0.48819 | 56 | 57 | 100 | 14 | 1 |
| 3334416 | - | - | - | 12.500 | 0.49213 | | | | | |
| 3334417 | - | - | - | 12.600 | 0.49606 | | | | | |
| 3334418 | 1/2 | - | - | 12.700 | 0.50000 | 56 | 57 | 100 | 14 | 1 |
| 3334419 | - | - | - | 12.800 | 0.50394 | | | | | |
| 3334420 | - | - | - | 12.900 | 0.50787 | | | | | |
| 3334421 | - | - | - | 13.000 | 0.51181 | 60 | 61 | 105 | 14 | 1 |
| 3334422 | - | - | - | 13.100 | 0.51575 | | | | | |
| 3334423 | - | - | - | 13.200 | 0.51969 | | | | | |
| 3334424 | - | - | - | 13.300 | 0.52362 | 60 | 61 | 105 | 14 | 1 |
| 3334425 | - | - | - | 13.400 | 0.52756 | | | | | |
| 3334426 | - | - | - | 13.500 | 0.53150 | | | | | |
| 3334427 | - | - | - | 13.600 | 0.53543 | 60 | 61 | 105 | 14 | 1 |
| 3334428 | - | - | - | 13.700 | 0.53937 | | | | | |
| 3334429 | - | - | - | 13.800 | 0.54331 | | | | | |
| 3334430 | - | - | - | 13.900 | 0.54724 | 64 | 65 | 110 | 16 | 1 |
| 3334431 | - | - | - | 14.000 | 0.55118 | | | | | |
| 3334432 | - | - | - | 14.100 | 0.55512 | | | | | |
| 3334433 | - | - | - | 14.200 | 0.55906 | 64 | 65 | 110 | 16 | 1 |
| 572056217 | 9/16 | - | - | 14.288 | 0.56250 | | | | | |
| 3334434 | - | - | - | 14.300 | 0.56299 | | | | | |
| 3334435 | - | - | - | 14.400 | 0.56693 | 64 | 65 | 110 | 16 | 1 |
| 3334436 | - | - | - | 14.500 | 0.57087 | | | | | |
| 3334437 | - | - | - | 14.600 | 0.57480 | | | | | |
| 3334438 | - | - | - | 14.700 | 0.57874 | 64 | 65 | 110 | 16 | 1 |
| 3334439 | - | - | - | 14.800 | 0.58268 | | | | | |
| 3334440 | - | - | - | 14.900 | 0.58661 | | | | | |
| 3334441 | - | - | - | 15.000 | 0.59055 | 68 | 69 | 115 | 16 | 1 |
| 3334442 | - | - | - | 15.100 | 0.59449 | | | | | |
| 3334443 | - | - | - | 15.200 | 0.59843 | | | | | |
| 3334444 | - | - | - | 15.300 | 0.60236 | 68 | 69 | 115 | 16 | 1 |
| 3334445 | - | - | - | 15.400 | 0.60630 | | | | | |
| 3334446 | - | - | - | 15.500 | 0.61024 | | | | | |
| 3334447 | - | - | - | 15.600 | 0.61417 | 68 | 69 | 115 | 16 | 1 |
| 3334448 | - | - | - | 15.700 | 0.61811 | | | | | |
| 3334449 | - | - | - | 15.800 | 0.62205 | | | | | |
| 572062517 | 5/8 | - | - | 15.875 | 0.62500 | 68 | 69 | 115 | 16 | 1 |
| 3334450 | - | - | - | 15.900 | 0.62598 | | | | | |
| 3334451 | - | - | - | 16.000 | 0.62992 | | | | | |
| 3334452 | - | - | - | 16.500 | 0.64961 | 74 | 75 | 125 | 18 | 1 |
| 3334453 | - | - | - | 17.000 | 0.66929 | | | | | |
| 572068717 | 11/16 | - | - | 17.463 | 0.68750 | | | | | |
| 3334454 | - | - | - | 17.500 | 0.68898 | 78 | 79 | 130 | 18 | 2 |
| 3334455 | - | - | - | 18.000 | 0.70866 | | | | | |

Packed: 1 pc.
Available EgiAs coating only.





List 5720 (Continued)

ADFO-3D, Coolant-Through, Flat Drill

| | | | | | |
|---------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P347 | CARBIDE | EgiAs | | 20° | SHANK h6 |
|---------------------------|----------------|--------------|--|------------|--------------------|

| EDP Number | Diameter | | | | | Flute Length | Neck Length | Overall Length | Shank Diameter | Type |
|------------|-----------------|-----------|-------------|--------|---------|--------------|-------------|----------------|----------------|------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | FL (mm) | L2 (mm) | L (mm) | d (mm/in) | |
| 3334456 | - | - | - | 18.500 | 0.72835 | 84 | 85 | 135 | 20 | 1 |
| 3334457 | - | - | - | 19.000 | 0.74803 | | 90 | | 3/4 | |
| 572075017 | 3/4 | - | - | 19.050 | 0.75000 | 88 | 89 | 140 | 20 | 2 |
| 3334458 | - | - | - | 19.500 | 0.76772 | | | | 1 | |
| 3334459 | - | - | - | 20.000 | 0.78740 | | | | 2 | |

Packed: 1 pc.
Available EgiAs coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------|-------------------------------------|--------------------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5720 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |

good best

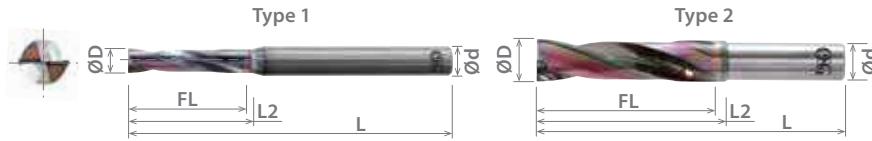




List 5700

ADF-2D, Flat Drill

| | | | | | | |
|------------------|-------------------------------|----------------|---------------|--------------|------------|--------------------|
| NEW SIZES | SPEED FEED P348-349 | CARBIDE | IchAda | EgiAs | 20° | SHANK h6 |
|------------------|-------------------------------|----------------|---------------|--------------|------------|--------------------|



| Cutting Diameter Tolerance | | |
|----------------------------|-------------|--------------|
| Size | mm | inch |
| D < 2 | +0 / -0.009 | +0 / -0.0004 |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length | | Neck Length | | Overall Length L (mm) | Shank Diameter | | Type |
|------------|-----------------|-----------|-------------|-------|---------|--------------|---------|-------------|---|--------------------------|----------------|--|------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | FL (mm) | L2 (mm) | d (mm/in) | | | | | |
| 3330020 | - | - | - | 0.200 | 0.00787 | 0.6 | 0.7 | 40 | 3 | 1 | | | |
| 3330025 | - | - | - | 0.250 | 0.00984 | 0.8 | 0.9 | | | | | | |
| 3330030 | - | - | - | 0.300 | 0.01181 | 0.9 | 1.0 | | | | | | |
| 3330035 | - | - | - | 0.350 | 0.01378 | 1.1 | 1.2 | | | | | | |
| 570001511 | 1/64 | - | - | 0.397 | 0.01563 | 1.2 | 1.3 | | | | | | |
| 3330040 | - | - | - | 0.400 | 0.01575 | 1.4 | 1.5 | | | | | | |
| 3330045 | - | - | - | 0.450 | 0.01772 | 1.7 | 1.9 | | | | | | |
| 3330050 | - | - | - | 0.500 | 0.01969 | 1.9 | 2.1 | | | | | | |
| 3330055 | - | - | - | 0.550 | 0.02165 | 2.0 | 2.2 | | | | | | |
| 3330060 | - | - | - | 0.600 | 0.02362 | 2.2 | 2.4 | | | | | | |
| 3330065 | - | - | - | 0.650 | 0.02559 | 2.4 | 2.6 | | | | | | |
| 3330070 | - | - | - | 0.700 | 0.02756 | 2.5 | 2.7 | | | | | | |
| 3330071 | - | - | - | 0.710 | 0.02795 | 2.6 | 2.8 | | | | | | |
| 3330072 | - | - | - | 0.720 | 0.02835 | 2.7 | 2.9 | | | | | | |
| 3330074 | - | - | - | 0.740 | 0.02913 | 2.8 | 3.0 | | | | | | |
| 3330075 | - | - | - | 0.750 | 0.02953 | 2.9 | 3.1 | | | | | | |
| 570003111 | 1/32 | - | - | 0.794 | 0.03125 | 3.0 | 3.2 | | | | | | |
| 3330080 | - | - | - | 0.800 | 0.03150 | 3.1 | 3.2 | | | | | | |
| 3330081 | - | - | - | 0.810 | 0.03189 | 3.2 | 3.3 | | | | | | |
| 3330085 | - | - | - | 0.850 | 0.03346 | 3.2 | 3.4 | | | | | | |
| 3330089 | - | - | - | 0.890 | 0.03504 | 4.0 | 4.3 | | | | | | |
| 3330090 | - | - | - | 0.900 | 0.03543 | 4.4 | 4.7 | | | | | | |
| 3330091 | - | - | - | 0.910 | 0.03583 | 4.5 | 4.8 | | | | | | |
| 3330092 | - | - | - | 0.920 | 0.03622 | 4.8 | 5.1 | | | | | | |
| 3330095 | - | - | - | 0.950 | 0.03740 | 5.0 | 5.3 | | | | | | |
| 3330100 | - | - | - | 1.000 | 0.03937 | 5.1 | 5.4 | | | | | | |
| 3330109 | - | - | - | 1.090 | 0.04291 | 5.2 | 5.5 | | | | | | |
| 3330110 | - | - | - | 1.100 | 0.04331 | 5.4 | 5.7 | | | | | | |
| 3330111 | - | - | - | 1.110 | 0.04370 | 5.6 | 5.9 | | | | | | |
| 3330112 | - | - | - | 1.120 | 0.04409 | 5.8 | 6.1 | | | | | | |
| 570004611 | 3/64 | - | - | 1.191 | 0.04688 | 5.9 | 6.2 | | | | | | |
| 3330120 | - | - | - | 1.200 | 0.04724 | 6.0 | 6.3 | | | | | | |
| 3330125 | - | - | - | 1.250 | 0.04921 | 6.1 | 6.4 | | | | | | |
| 3330126 | - | - | - | 1.260 | 0.04961 | 6.2 | 6.5 | | | | | | |
| 3330127 | - | - | - | 1.270 | 0.05000 | 6.2 | 6.5 | | | | | | |
| 3330128 | - | - | - | 1.280 | 0.05039 | 6.2 | 6.5 | | | | | | |
| 3330129 | - | - | - | 1.290 | 0.05079 | 6.2 | 6.5 | | | | | | |
| 3330130 | - | - | - | 1.300 | 0.05118 | 6.2 | 6.5 | | | | | | |
| 3330135 | - | - | - | 1.350 | 0.05315 | 6.2 | 6.5 | | | | | | |
| 3330140 | - | - | - | 1.400 | 0.05512 | 6.2 | 6.5 | | | | | | |
| 3330144 | - | - | - | 1.440 | 0.05669 | 6.2 | 6.5 | | | | | | |
| 3330145 | - | - | - | 1.450 | 0.05709 | 6.2 | 6.5 | | | | | | |
| 3330146 | - | - | - | 1.460 | 0.05748 | 6.2 | 6.5 | | | | | | |
| 3330147 | - | - | - | 1.470 | 0.05787 | 6.2 | 6.5 | | | | | | |
| 3330148 | - | - | - | 1.480 | 0.05827 | 6.2 | 6.5 | | | | | | |
| 3330150 | - | - | - | 1.500 | 0.05906 | 6.2 | 6.5 | | | | | | |
| 3330153 | - | - | - | 1.530 | 0.06024 | 6.2 | 6.5 | | | | | | |
| 3330154 | - | - | - | 1.540 | 0.06063 | 6.2 | 6.5 | | | | | | |
| 3330155 | - | - | - | 1.550 | 0.06102 | 6.2 | 6.5 | | | | | | |
| 3330156 | - | - | - | 1.560 | 0.06142 | 6.2 | 6.5 | | | | | | |

Packed: 1 pc.
 Sizes smaller than 2mm available with IchAda coating.
 Sizes 2mm and larger available with EgiAs coating.



List 5700 (Continued)

ADF-2D, Flat Drill

| | | | | | | |
|-----------|---------------------------------------|---------|--------|-------|-----|-------------|
| NEW SIZES | SPEED FEED <small>P348-349</small> | CARBIDE | IchAda | EgiAs | 20° | SHANK h6 |
|-----------|---------------------------------------|---------|--------|-------|-----|-------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Neck Length L2 (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | Type | | | |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|------------------------|--------------------------|-----------------------------|------|----|---|---|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | | | | |
| 3330157 | - | - | - | 1.570 | 0.06181 | 6.3 | 6.6 | 45 | 3 | 1 | | | |
| 3330158 | - | - | - | 1.580 | 0.06220 | | | | | | | | |
| 570006211 | 1/16 | - | - | 1.588 | 0.06250 | 6.4 | 6.7 | | | | | | |
| 3330160 | - | - | - | 1.600 | 0.06299 | | | | | | | | |
| 3330170 | - | - | - | 1.700 | 0.06693 | 6.8 | 7.1 | | | | | | |
| 3330175 | - | - | - | 1.750 | 0.06890 | 7.0 | 7.3 | | | | | | |
| 3330180 | - | - | - | 1.800 | 0.07087 | 7.2 | 7.5 | | | | | | |
| 3330182 | - | - | - | 1.820 | 0.07165 | 7.3 | 7.6 | | | | | | |
| 3330183 | - | - | - | 1.830 | 0.07205 | | | | | | | | |
| 3330184 | - | - | - | 1.840 | 0.07244 | 7.4 | 7.7 | | | | | | |
| 3330185 | - | - | - | 1.850 | 0.07283 | | | | | | | | |
| 3330186 | - | - | - | 1.860 | 0.07323 | | | | | | | | |
| 3330190 | - | - | - | 1.900 | 0.07480 | 7.6 | 7.9 | | | | | | |
| 3330195 | - | - | - | 1.950 | 0.07677 | 7.8 | 8.1 | | | | | | |
| 570007811 | 5/64 | - | - | 1.984 | 0.07813 | 7.9 | 8.2 | | | | | | |
| 3330200 | - | - | - | 2.000 | 0.07874 | 10 | 10.3 | 50 | 4 | 1 | | | |
| 3330210 | - | - | - | 2.100 | 0.08268 | | 10.5 | | | | | | |
| 3330220 | - | - | - | 2.200 | 0.08661 | | 10.6 | | | | | | |
| 3330230 | - | - | - | 2.300 | 0.09055 | 11 | 10.8 | | | | | | |
| 570009311 | 3/32 | - | - | 2.381 | 0.09375 | | 11.0 | | | | | | |
| 3330240 | - | - | - | 2.400 | 0.09449 | 12 | 11.2 | | | | | | |
| 3330250 | - | - | - | 2.500 | 0.09843 | | 11.4 | | | | | | |
| 3330260 | - | - | - | 2.600 | 0.10236 | 13 | 11.6 | | | | | | |
| 3330270 | - | - | - | 2.700 | 0.10630 | | 11.8 | | | | | | |
| 3330280 | - | - | - | 2.800 | 0.11024 | 14 | 11.9 | | | | | | |
| 3330290 | - | - | - | 2.900 | 0.11417 | | 11.4 | | | | | | |
| 3330300 | - | - | - | 3.000 | 0.11811 | | 11.6 | | | | | | |
| 3330310 | - | - | - | 3.100 | 0.12205 | 15 | 11.7 | | | | | | |
| 570012511 | 1/8 | - | - | 3.175 | 0.12500 | | 12.0 | | | | 55 | 6 | 2 |
| 3330320 | - | - | - | 3.200 | 0.12598 | | 12.1 | | | | | | |
| 3330330 | - | - | - | 3.300 | 0.12992 | 16 | 12.3 | | | | | | |
| 3330340 | - | - | - | 3.400 | 0.13386 | | 12.5 | | | | | | |
| 3330350 | - | - | - | 3.500 | 0.13780 | | 12.7 | | | | | | |
| 3330360 | - | - | - | 3.600 | 0.14173 | | 12.9 | | | | | | |
| 3330370 | - | - | - | 3.700 | 0.14567 | | 13.1 | | | | | | |
| 3330380 | - | - | - | 3.800 | 0.14961 | 19 | 13.3 | | | | | | |
| 3330390 | - | - | - | 3.900 | 0.15354 | | 13.5 | | | | | | |
| 570015611 | 5/32 | - | - | 3.969 | 0.15625 | | 13.7 | 60 | 6 | 1 | | | |
| 3330400 | - | - | - | 4.000 | 0.15748 | | 13.9 | | | | | | |
| 3330410 | - | - | - | 4.100 | 0.16142 | | 14.1 | | | | | | |
| 3330420 | - | - | - | 4.200 | 0.16535 | 21 | 14.3 | | | | | | |
| 3330430 | - | - | - | 4.300 | 0.16929 | | 14.5 | | | | | | |
| 3330440 | - | - | - | 4.400 | 0.17323 | | 14.7 | | | | | | |
| 3330450 | - | - | - | 4.500 | 0.17717 | | 14.9 | | | | | | |
| 3330460 | - | - | - | 4.600 | 0.18110 | | 15.1 | | | | | | |
| 3330470 | - | - | - | 4.700 | 0.18504 | | 15.3 | | | | | | |

Packed: 1 pc.
 Sizes smaller than 2mm available with IchAda coating.
 Sizes 2mm and larger available with EgiAs coating.

➔ continued on next page ➔

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5700 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best

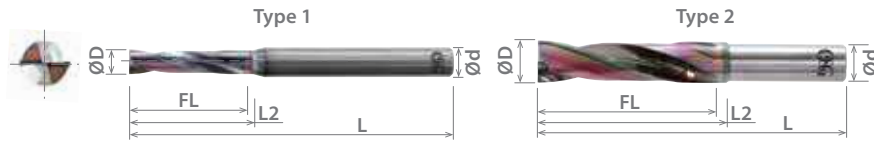




List 5700 (Continued)

| | | | | | | |
|------------------|-------------------------------|----------------|---------------|--------------|------------|---------------------------|
| NEW SIZES | SPEED FEED P348-349 | CARBIDE | IchAda | EgiAs | 20° | SHANK h6 |
|------------------|-------------------------------|----------------|---------------|--------------|------------|---------------------------|

ADF-2D, Flat Drill



| Cutting Diameter Tolerance | | |
|----------------------------|-------------|--------------|
| Size | mm | inch |
| D < 2 | +0 / -0.009 | +0 / -0.0004 |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Neck Length L2 (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | Type |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|------------------------|--------------------------|-----------------------------|------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | |
| 570018711 | 3/16 | - | - | 4.763 | 0.18750 | 24 | 27.0 | 65 | 3/16 | 2 |
| 3330480 | - | - | - | 4.800 | 0.18898 | | | | | |
| 3330490 | - | - | - | 4.900 | 0.19291 | | | | | |
| 3330500 | - | - | - | 5.000 | 0.19685 | | | | | |
| 3330510 | - | - | - | 5.100 | 0.20079 | | | | | |
| 3330520 | - | - | - | 5.200 | 0.20472 | | | | | |
| 3330530 | - | - | - | 5.300 | 0.20866 | | | | | |
| 3330540 | - | - | - | 5.400 | 0.21260 | | | | | |
| 3330550 | - | - | - | 5.500 | 0.21654 | | | | | |
| 570021811 | 7/32 | - | - | 5.556 | 0.21875 | | | | | |
| 3330560 | - | - | - | 5.600 | 0.22047 | | | | | |
| 3330570 | - | - | - | 5.700 | 0.22441 | | | | | |
| 3330580 | - | - | - | 5.800 | 0.22835 | | | | | |
| 3330590 | - | - | - | 5.900 | 0.23228 | | | | | |
| 3330600 | - | - | - | 6.000 | 0.23622 | | | | | |
| 3330610 | - | - | - | 6.100 | 0.24016 | | | | | |
| 3330620 | - | - | - | 6.200 | 0.24409 | | | | | |
| 3330630 | - | - | - | 6.300 | 0.24803 | | | | | |
| 570025011 | 1/4 | - | E | 6.350 | 0.25000 | | | | | |
| 3330640 | - | - | - | 6.400 | 0.25197 | | | | | |
| 3330650 | - | - | - | 6.500 | 0.25591 | | | | | |
| 3330660 | - | - | - | 6.600 | 0.25984 | | | | | |
| 3330670 | - | - | - | 6.700 | 0.26378 | | | | | |
| 3330680 | - | - | - | 6.800 | 0.26772 | | | | | |
| 3330690 | - | - | - | 6.900 | 0.27165 | | | | | |
| 3330700 | - | - | - | 7.000 | 0.27559 | | | | | |
| 3330710 | - | - | - | 7.100 | 0.27953 | | | | | |
| 570028111 | 9/32 | - | - | 7.144 | 0.28125 | | | | | |
| 3330720 | - | - | - | 7.200 | 0.28346 | | | | | |
| 3330730 | - | - | - | 7.300 | 0.28740 | | | | | |
| 3330740 | - | - | - | 7.400 | 0.29134 | | | | | |
| 3330750 | - | - | - | 7.500 | 0.29528 | | | | | |
| 3330760 | - | - | - | 7.600 | 0.29921 | | | | | |
| 3330770 | - | - | - | 7.700 | 0.30315 | | | | | |
| 3330780 | - | - | - | 7.800 | 0.30709 | | | | | |
| 3330790 | - | - | - | 7.900 | 0.31102 | | | | | |
| 570031211 | 5/16 | - | - | 7.938 | 0.31250 | | | | | |
| 3330800 | - | - | - | 8.000 | 0.31496 | | | | | |
| 3330810 | - | - | - | 8.100 | 0.31890 | | | | | |
| 3330820 | - | - | - | 8.200 | 0.32283 | | | | | |
| 3330830 | - | - | - | 8.300 | 0.32677 | | | | | |
| 570032811 | 21/64 | - | - | 8.334 | 0.32813 | | | | | |
| 3330840 | - | - | - | 8.400 | 0.33071 | | | | | |
| 3330850 | - | - | - | 8.500 | 0.33465 | | | | | |
| 3330860 | - | - | - | 8.600 | 0.33858 | | | | | |
| 3330870 | - | - | - | 8.700 | 0.34252 | | | | | |
| 3330880 | - | - | - | 8.800 | 0.34646 | | | | | |
| 3330890 | - | - | - | 8.900 | 0.35039 | | | | | |
| 3330900 | - | - | - | 9.000 | 0.35433 | | | | | |

Packed: 1 pc.
 Sizes smaller than 2mm available with IchAda coating.
 Sizes 2mm and larger available with EgiAs coating.





List 5700 (Continued)

ADF-2D, Flat Drill

| | | | | | | |
|------------------|-------------------------------|----------------|---------------|--------------|------------|--------------------|
| NEW SIZES | SPEED FEED P348-349 | CARBIDE | IchAda | EgiAs | 20° | SHANK h6 |
|------------------|-------------------------------|----------------|---------------|--------------|------------|--------------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Neck Length L2 (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | Type | |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|------------------------|--------------------------|-----------------------------|------|----|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | | |
| 3330910 | - | - | - | 9.100 | 0.35827 | 42 | 44.0 | 85 | 8 | 2 | |
| 570035911 | 23/64 | - | - | 9.128 | 0.35938 | | 43.3 | | 3/8 | 1 | |
| 3330920 | - | - | - | 9.200 | 0.36220 | | 46 | | 48.0 | 90 | 10 |
| 3330930 | - | - | - | 9.300 | 0.36614 | | | | | | |
| 3330940 | - | - | - | 9.400 | 0.37008 | | | | | | |
| 3330950 | - | - | - | 9.500 | 0.37402 | | | | | | |
| 570037511 | 3/8 | - | - | 9.525 | 0.37500 | | | | | | |
| 3330960 | - | - | - | 9.600 | 0.37795 | | | | | | |
| 3330970 | - | - | - | 9.700 | 0.38189 | | | | | | |
| 3330980 | - | - | - | 9.800 | 0.38583 | | | | | | |
| 3330990 | - | - | - | 9.900 | 0.38976 | | | | | | |
| 3331000 | - | - | - | 10.000 | 0.39370 | | | | | | |
| 3331010 | - | - | - | 10.100 | 0.39764 | | | | | | |
| 3331020 | - | - | - | 10.200 | 0.40157 | | | | | | |
| 3331030 | - | - | - | 10.300 | 0.40551 | | | | | | |
| 570040611 | 13/32 | - | - | 10.319 | 0.40625 | | | | | | |
| 3331040 | - | - | - | 10.400 | 0.40945 | | | | | | |
| 3331050 | - | - | - | 10.500 | 0.41339 | | | | | | |
| 3331060 | - | - | - | 10.600 | 0.41732 | | | | | | |
| 3331070 | - | - | - | 10.700 | 0.42126 | | | | | | |
| 3331080 | - | - | - | 10.800 | 0.42520 | | | | | | |
| 3331090 | - | - | - | 10.900 | 0.42913 | | | | | | |
| 3331100 | - | - | - | 11.000 | 0.43307 | | | | | | |
| 3331110 | - | - | - | 11.100 | 0.43701 | | | | | | |
| 570043711 | 7/16 | - | - | 11.113 | 0.43750 | | | | | | |
| 3331120 | - | - | - | 11.200 | 0.44094 | | | | | | |
| 3331130 | - | - | - | 11.300 | 0.44488 | | | | | | |
| 3331140 | - | - | - | 11.400 | 0.44882 | | | | | | |
| 3331150 | - | - | - | 11.500 | 0.45276 | | | | | | |
| 570045311 | 29/64 | - | - | 11.509 | 0.45313 | | | | | | |
| 3331160 | - | - | - | 11.600 | 0.45669 | | | | | | |
| 3331170 | - | - | - | 11.700 | 0.46063 | | | | | | |
| 3331180 | - | - | - | 11.800 | 0.46457 | | | | | | |
| 3331190 | - | - | - | 11.900 | 0.46850 | | | | | | |
| 570046811 | 15/32 | - | - | 11.906 | 0.46875 | | | | | | |
| 3331200 | - | - | - | 12.000 | 0.47244 | | | | | | |
| 3331210 | - | - | - | 12.100 | 0.47638 | | | | | | |
| 3331220 | - | - | - | 12.200 | 0.48031 | | | | | | |
| 3331230 | - | - | - | 12.300 | 0.48425 | | | | | | |
| 3331240 | - | - | - | 12.400 | 0.48819 | | | | | | |
| 3331250 | - | - | - | 12.500 | 0.49213 | | | | | | |
| 3331260 | - | - | - | 12.600 | 0.49606 | | | | | | |
| 3331270 | 1/2 | - | - | 12.700 | 0.50000 | | | | | | |
| 3331280 | - | - | - | 12.800 | 0.50394 | | | | | | |
| 3331290 | - | - | - | 12.900 | 0.50787 | | | | | | |
| 3331300 | - | - | - | 13.000 | 0.51181 | | | | | | |

Packed: 1 pc.
 Sizes smaller than 2mm available with IchAda coating.
 Sizes 2mm and larger available with EgiAs coating.

➔ continued on next page ➔ **ADR**

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5700 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

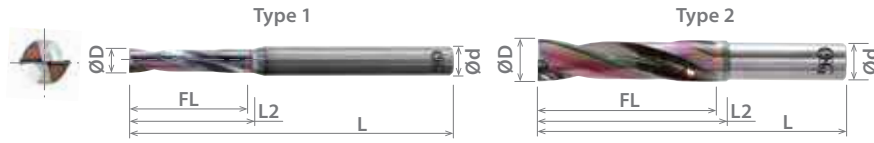




List 5700 (Continued)

| | | | | | | |
|------------------|-------------------------------|----------------|---------------|--------------|------------|--------------------|
| NEW SIZES | SPEED FEED P348-349 | CARBIDE | IchAda | EgiAs | 20° | SHANK h6 |
|------------------|-------------------------------|----------------|---------------|--------------|------------|--------------------|

ADF-2D, Flat Drill



| Cutting Diameter Tolerance | | |
|----------------------------|-------------|--------------|
| Size | mm | inch |
| D < 2 | +0 / -0.009 | +0 / -0.0004 |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Neck Length L2 (mm) | Overall Length L (mm) | Shank Diameter | | Type |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|------------------------|--------------------------|----------------|---|------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | d (mm/in) | | |
| 3331310 | - | - | - | 13.100 | 0.51575 | 60 | 62.0 | 105 | 12 | 2 | |
| 3331320 | - | - | - | 13.200 | 0.51969 | | | | | | |
| 3331330 | - | - | - | 13.300 | 0.52362 | | | | | | |
| 3331340 | - | - | - | 13.400 | 0.52756 | | | | | | |
| 3331350 | - | - | - | 13.500 | 0.53150 | | | | | | |
| 3331360 | - | - | - | 13.600 | 0.53543 | | | | | | |
| 3331370 | - | - | - | 13.700 | 0.53937 | | | | | | |
| 3331380 | - | - | - | 13.800 | 0.54331 | | | | | | |
| 3331390 | - | - | - | 13.900 | 0.54724 | | | | | | |
| 3331400 | - | - | - | 14.000 | 0.55118 | | | | | | |
| 3331410 | - | - | - | 14.100 | 0.55512 | 66.0 | 110 | 12 | 2 | | |
| 3331420 | - | - | - | 14.200 | 0.55906 | | | | | | |
| 570056211 | 9/16 | - | - | 14.288 | 0.56250 | 64 | 66.0 | 110 | 12 | 2 | |
| 3331430 | - | - | - | 14.300 | 0.56299 | | | | | | |
| 3331440 | - | - | - | 14.400 | 0.56693 | | | | | | |
| 3331450 | - | - | - | 14.500 | 0.57087 | | | | | | |
| 3331460 | - | - | - | 14.600 | 0.57480 | | | | | | |
| 3331470 | - | - | - | 14.700 | 0.57874 | | | | | | |
| 3331480 | - | - | - | 14.800 | 0.58268 | | | | | | |
| 3331490 | - | - | - | 14.900 | 0.58661 | | | | | | |
| 3331500 | - | - | - | 15.000 | 0.59055 | | | | | | |
| 3331510 | - | - | - | 15.100 | 0.59449 | | | | | | 68 |
| 3331520 | - | - | - | 15.200 | 0.59843 | | | | | | |
| 3331530 | - | - | - | 15.300 | 0.60236 | | | | | | |
| 3331540 | - | - | - | 15.400 | 0.60630 | | | | | | |
| 3331550 | - | - | - | 15.500 | 0.61024 | | | | | | |
| 3331560 | - | - | - | 15.600 | 0.61417 | | | | | | |
| 3331570 | - | - | - | 15.700 | 0.61811 | | | | | | |
| 3331580 | - | - | - | 15.800 | 0.62205 | | | | | | |
| 570062511 | 5/8 | - | - | 15.875 | 0.62500 | | | | | | |
| 3331590 | - | - | - | 15.900 | 0.62598 | | | | | | |
| 3331600 | - | - | - | 16.000 | 0.62992 | 74 | 76.0 | 125 | 16 | 2 | |
| 3331650 | - | - | - | 16.500 | 0.64961 | | | | | | |
| 3331700 | - | - | - | 17.000 | 0.66929 | | | | | | |

Packed: 1 pc.
 Sizes smaller than 2mm available with IchAda coating.
 Sizes 2mm and larger available with EgiAs coating.

➔ continued on next page ➔



List 5700 (Continued)

ADF-2D, Flat Drill

| | | | | | | |
|-----------|---------------------------------------|---------|--------|-------|-----|-------------|
| NEW SIZES | SPEED FEED <small>P348-349</small> | CARBIDE | IchAda | EgiAs | 20° | SHANK h6 |
|-----------|---------------------------------------|---------|--------|-------|-----|-------------|

| EDP Number | Diameter | | | | | Flute Length | Neck Length | Overall Length | Shank Diameter | Type |
|------------|-----------------|-----------|-------------|--------|---------|--------------|-------------|----------------|----------------|------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | FL (mm) | L2 (mm) | L (mm) | d (mm/in) | |
| 570068711 | 11/16 | - | - | 17.463 | 0.68750 | 78 | 77.1 | 130 | 3/4 | 1 |
| 3331750 | - | - | - | 17.500 | 0.68898 | | 80.0 | | | |
| 3331800 | - | - | - | 18.000 | 0.70866 | 84 | 86.0 | 135 | 16 | 2 |
| 3331850 | - | - | - | 18.500 | 0.72835 | | | | | |
| 3331900 | - | - | - | 19.000 | 0.74803 | | | | | |
| 570075011 | 3/4 | - | - | 19.050 | 0.75000 | 88 | 90.0 | 140 | 3/4 | 2 |
| 3331950 | - | - | - | 19.500 | 0.76772 | | | | | |
| 3332000 | - | - | - | 20.000 | 0.78740 | | | | | |

Packed: 1 pc.

Sizes smaller than 2mm available with IchAda coating.

Sizes 2mm and larger available with EgiAs coating.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-----------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5700 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best



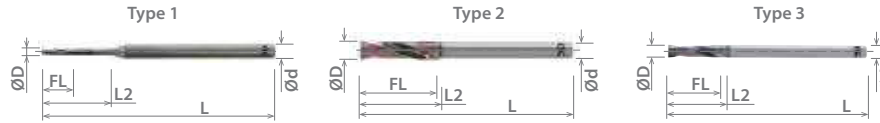


List 5705

ADFLS-2D, Long Shank, Flat Drill

| | | | | |
|---------------------------|----------------|--------------|------------|--------------------|
| SPEED FEED P350 | CARBIDE | EgiAs | 20° | SHANK h6 |
|---------------------------|----------------|--------------|------------|--------------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 3 ≤ D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |



| EDP Number | Diameter | | | | | Flute Length FL (mm) | Neck Length L2 (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | Type |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|------------------------|--------------------------|-----------------------------|------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | |
| 3332300 | - | - | - | 3.000 | 0.11811 | 15 | 30 | 100 | 6 | 1 |
| 3332310 | - | - | - | 3.100 | 0.12205 | | 31 | | 6 | |
| 570512517 | 1/8 | - | - | 3.175 | 0.12500 | 32 | 1/8 | 2 | | |
| 3332320 | - | - | - | 3.200 | 0.12598 | 16 | 33 | 6 | 1 | |
| 3332330 | - | - | - | 3.300 | 0.12992 | | 34 | | | |
| 3332340 | - | - | - | 3.400 | 0.13386 | 35 | | | | |
| 3332350 | - | - | - | 3.500 | 0.13780 | 36 | | | | |
| 3332360 | - | - | - | 3.600 | 0.14173 | 37 | | | | |
| 3332370 | - | - | - | 3.700 | 0.14567 | 38 | | | | |
| 3332380 | - | - | - | 3.800 | 0.14961 | 39 | | | | |
| 3332390 | - | - | - | 3.900 | 0.15354 | 40 | | | | |
| 570515617 | 5/32 | - | - | 3.969 | 0.15625 | 19 | 3/16 | 1 | | |
| 3332400 | - | - | - | 4.000 | 0.15748 | 21 | 41 | 6 | 1 | |
| 3332410 | - | - | - | 4.100 | 0.16142 | | 42 | | | |
| 3332420 | - | - | - | 4.200 | 0.16535 | 43 | | | | |
| 3332430 | - | - | - | 4.300 | 0.16929 | 44 | | | | |
| 3332440 | - | - | - | 4.400 | 0.17323 | 45 | | | | |
| 3332450 | - | - | - | 4.500 | 0.17717 | 46 | | | | |
| 3332460 | - | - | - | 4.600 | 0.18110 | 47 | | | | |
| 3332470 | - | - | - | 4.700 | 0.18504 | 48 | | | | |
| 570518717 | 3/16 | - | - | 4.763 | 0.18750 | 24 | 3/16 | 2 | | |
| 3332480 | - | - | - | 4.800 | 0.18898 | 27 | 49 | 6 | 1 | |
| 3332490 | - | - | - | 4.900 | 0.19291 | | 50 | | | |
| 3332500 | - | - | - | 5.000 | 0.19685 | 51 | | | | |
| 3332510 | - | - | - | 5.100 | 0.20079 | 52 | | | | |
| 3332520 | - | - | - | 5.200 | 0.20472 | 53 | | | | |
| 3332530 | - | - | - | 5.300 | 0.20866 | 54 | | | | |
| 3332540 | - | - | - | 5.400 | 0.21260 | 55 | | | | |
| 3332550 | - | - | - | 5.500 | 0.21654 | 56 | | | | |
| 570521817 | 7/32 | - | - | 5.556 | 0.21875 | 27 | 1/4 | 1 | | |
| 3332560 | - | - | - | 5.600 | 0.22047 | 30 | 57 | 6 | 2 | |
| 3332570 | - | - | - | 5.700 | 0.22441 | | 58 | | | |
| 3332580 | - | - | - | 5.800 | 0.22835 | 59 | | | | |
| 3332590 | - | - | - | 5.900 | 0.23228 | 29 | 120 | 1/4 | 2 | |
| 3332600 | - | - | - | 6.000 | 0.23622 | 60 | | | | |
| 3334060 | - | - | - | 6.000 | 0.23622 | 64 | 3 | | | |
| 570525017 | 1/4 | - | E | 6.350 | 0.25000 | 30 | 1/4 | 2 | | |
| 3332650 | - | - | - | 6.500 | 0.25591 | 34 | 32 | 6 | 1 | |
| 3332680 | - | - | - | 6.800 | 0.26772 | | 72 | | | |
| 3332700 | - | - | - | 7.000 | 0.27559 | 36 | 130 | 5/16 | 2 | |
| 570528117 | 9/32 | - | - | 7.144 | 0.28125 | 79 | | | | |
| 3332750 | - | - | - | 7.500 | 0.29528 | 38 | 80 | 8 | 3 | |
| 3332780 | - | - | - | 7.800 | 0.30709 | | 83 | | | |
| 570531217 | 5/16 | - | - | 7.938 | 0.31250 | 40 | 3/8 | 1 | | |
| 3332800 | - | - | - | 8.000 | 0.31496 | 140 | 40 | 8 | 2 | |
| 3334080 | - | - | - | 8.000 | 0.31496 | | | | | |
| 570532817 | 21/64 | - | - | 8.334 | 0.32813 | 38 | 40 | 8 | 2 | |
| 3332850 | - | - | - | 8.500 | 0.33465 | | | | | |
| 3332880 | - | - | - | 8.800 | 0.34646 | | | | | |
| 3332900 | - | - | - | 9.000 | 0.35433 | | | | | |

Packed: 1 pc.
Available EgiAs coating only.



List 5705 (Continued)

ADFLS-2D, Long Shank, Flat Drill

| | | | | |
|-----------------------|---------|-------|-----|-------------|
| SPEED FEED P350 | CARBIDE | EgiAs | 20° | SHANK h6 |
|-----------------------|---------|-------|-----|-------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Neck Length L2 (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | Type | | | | | |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|------------------------|--------------------------|-----------------------------|------|-----|------|-----|-----|------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | | | | | | |
| 570535917 | 23/64 | - | - | 9.128 | 0.35938 | 42 | 91 | 150 | 3/8 | 1 | | | | | |
| 3332950 | - | - | - | 9.500 | 0.37402 | | | | 8 | | | | | | |
| 570537517 | 3/8 | - | - | 9.525 | 0.37500 | | | | 95 | 3/8 | 2 | | | | |
| 3332980 | - | - | - | 9.800 | 0.38583 | | | | 44 | 8 | | | | | |
| 3333000 | - | - | - | 10.000 | 0.39370 | | | | 100 | 10 | 3 | | | | |
| 3334100 | - | - | - | 10.319 | 0.40625 | | | | | 103 | | 7/16 | | | |
| 570540617 | 13/32 | - | - | 10.500 | 0.41339 | | | | 46 | 48 | 160 | 10 | 2 | | |
| 3333050 | - | - | - | 10.800 | 0.42520 | | | | | | | 111 | | 170 | 7/16 |
| 3333080 | - | - | - | 11.000 | 0.43307 | | | | | | | | 115 | | 1/2 |
| 3333100 | - | - | - | 11.113 | 0.43750 | | | | | | | | 52 | | 10 |
| 570543717 | 7/16 | - | - | 11.509 | 0.45313 | 50 | 119 | 180 | | | | 1/2 | 1 | | |
| 570545317 | 29/64 | - | - | 11.800 | 0.46457 | | | | 52 | 10 | 2 | | | | |
| 3333180 | - | - | - | 11.906 | 0.46875 | | | | 119 | 1/2 | 1 | | | | |
| 570546817 | 15/32 | - | - | 12.000 | 0.47244 | | | | 52 | 12 | 2 | 3 | | | |
| 3333200 | - | - | - | 12.500 | 0.49213 | | | | | | | | 120 | 12 | |
| 3334120 | - | - | - | 12.700 | 0.50000 | | | | 58 | 180 | 1/2 | 2 | | | |
| 3333250 | - | - | - | 13.000 | 0.51181 | | | | | | | | 127 | 58 | |
| 570550017 | 1/2 | - | - | 13.500 | 0.53150 | | | | 60 | 62 | 190 | 12 | 2 | | |
| 3333300 | - | - | - | 14.000 | 0.55118 | | | | | | | | | 58 | 58 |
| 3333350 | - | - | - | 14.288 | 0.56250 | | | | 64 | 143 | 200 | 5/8 | 1 | | |
| 3333400 | - | - | - | 15.000 | 0.59055 | 66 | 12 | | | | | | | | |
| 570556217 | 9/16 | - | - | 15.875 | 0.62500 | 68 | 159 | 210 | 5/8 | 2 | | | | | |
| 3333500 | - | - | - | 16.000 | 0.62992 | | | | 70 | | 16 | 3 | | | |
| 570562517 | 5/8 | - | - | 17.000 | 0.66929 | | | | 160 | 16 | | | | | |
| 3333600 | - | - | - | 17.500 | 0.68750 | 74 | 76 | 220 | 2 | 2 | | | | | |
| 3334160 | - | - | - | 17.750 | 0.68898 | | | | 175 | | 3/4 | 1 | | | |
| 3333700 | - | - | - | 18.000 | 0.70866 | 78 | 80 | 230 | 16 | 2 | | | | | |
| 570568717 | 11/16 | - | - | 19.050 | 0.75000 | | | | 191 | | 3/4 | 2 | | | |
| 3333750 | - | - | - | 20.000 | 0.78740 | | | | 90 | 20 | 3 | | | | |
| 3333800 | - | - | - | | | | | | | | | | | | |
| 570575017 | 3/4 | - | - | | | | | | | | | | | | |
| 3334000 | - | - | - | | | | | | | | | | | | |
| 3334200 | - | - | - | | | | | | | | | | | | |

Packed: 1 pc.
Available EgiAs coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|------------------------------|--------------------------|------------------|-----|---------|--------------------------|--------------------------|--------------------------|-------------------------|-------------------------------|--------------------------|--------------------------|--------------------------|-----------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5705 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best





List 6500

ADO-3D, Coolant-Through

| | | | | | |
|---------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P351 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|---------------------------|----------------|--------------|--|------------|--------------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2≤D≤3 | +0 / -0.014 | +0 / -0.0006 |
| 3<D≤6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤18 | +0 / -0.027 | +0 / -0.0011 |
| 18<D≤20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 650007812 | - | - | - | 2.000 | 0.07874 | 12 | 66 | 3 |
| 650008212 | - | - | - | 2.100 | 0.08268 | 13 | | |
| 650008612 | - | - | - | 2.200 | 0.08661 | 14 | | |
| 8690230 | - | - | - | 2.300 | 0.09055 | | | |
| 650009312 | 3/32 | - | - | 2.381 | 0.09375 | 15 | | |
| 650009412 | - | - | - | 2.400 | 0.09449 | | | |
| 8690250 | - | - | - | 2.500 | 0.09843 | 16 | | |
| 8690260 | - | - | - | 2.600 | 0.10236 | | | |
| 650010612 | - | - | - | 2.700 | 0.10630 | 17 | | |
| 650010912 | 7/64 | - | - | 2.778 | 0.10938 | | | |
| 8690280 | - | - | - | 2.800 | 0.11024 | 18 | | |
| 650011161 | - | - | - | 2.830 | 0.11142 | | | |
| 8690290 | - | - | - | 2.900 | 0.11417 | 19 | | |
| 650011631 | - | - | - | 2.950 | 0.11614 | | | |
| 8690300 | - | - | - | 3.000 | 0.11811 | 20 | | |
| 8690310 | - | - | - | 3.100 | 0.12205 | | | |
| 650012511 | 1/8 | - | - | 3.175 | 0.12500 | 74 | 4 | |
| 8690320 | - | - | - | 3.200 | 0.12598 | | | |
| 8690330 | - | - | - | 3.300 | 0.12992 | | | 21 |
| 650013231 | - | - | - | 3.360 | 0.13228 | | | |
| 8690340 | - | - | - | 3.400 | 0.13386 | | | 22 |
| 650013561 | - | - | - | 3.440 | 0.13543 | | | |
| 8690350 | - | - | - | 3.500 | 0.13780 | | | 23 |
| 650013871 | - | - | - | 3.520 | 0.13858 | | | |
| 650014051 | - | - | - | 3.570 | 0.14055 | | | 24 |
| 8690360 | - | - | - | 3.600 | 0.14173 | | | |
| 8690370 | - | - | - | 3.700 | 0.14567 | 25 | | |
| 650014841 | - | - | - | 3.770 | 0.14843 | | | |
| 8690380 | - | - | - | 3.800 | 0.14961 | 26 | | |
| 650015211 | - | - | - | 3.860 | 0.15197 | | | |
| 8690390 | - | - | - | 3.900 | 0.15354 | 27 | | |
| 650015511 | 5/32 | - | - | 3.969 | 0.15625 | | | |
| 8690400 | - | - | - | 4.000 | 0.15748 | 28 | | |
| 650015911 | - | - | - | 4.050 | 0.15945 | | | |
| 650016011 | - | 20 | - | 4.089 | 0.16100 | 29 | | |
| 8690410 | - | - | - | 4.100 | 0.16142 | | | |
| 8700410 | - | - | - | 4.160 | 0.16378 | 80 | 6 | |
| 650016311 | - | - | - | 4.160 | 0.16378 | | | |
| 8690420 | - | - | - | 4.200 | 0.16535 | 5 | | |
| 8700420 | - | - | - | 4.200 | 0.16535 | | | |
| 650016711 | - | - | - | 4.270 | 0.16811 | 6 | | |
| 8690430 | - | - | - | 4.300 | 0.16929 | | | |
| 8700430 | - | - | - | 4.300 | 0.16929 | 3/16 | | |
| 650017111 | 11/64 | - | - | 4.366 | 0.17188 | | | |
| 8690440 | - | - | - | 4.400 | 0.17323 | 5 | | |
| 8700440 | - | - | - | 4.400 | 0.17323 | | | |
| 650017511 | - | - | - | 4.460 | 0.17559 | 6 | | |
| 8690450 | - | - | - | 4.500 | 0.17717 | | | |
| 8700450 | - | - | - | 4.500 | 0.17717 | 5 | | |
| 8690460 | - | - | - | 4.600 | 0.18110 | | | |
| 8700460 | - | - | - | 4.600 | 0.18110 | 6 | | |
| 650018311 | - | - | - | 4.660 | 0.18346 | | | |

Packed: 1 pc.
Available EgiAs coating only.





List 6500 (Continued)

ADO-3D, Coolant-Through

| | | | | | |
|---------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P351 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|---------------------------|----------------|--------------|--|------------|--------------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | | |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|-------|-------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | |
| 8690470 | - | - | - | 4.700 | 0.18504 | 29 | 80 | 5 | | |
| 8700470 | - | - | - | 4.700 | 0.18504 | | | 6 | | |
| 650018711 | 3/16 | - | - | 4.763 | 0.18750 | | | 3/16 | | |
| 8690480 | - | - | - | 4.800 | 0.18898 | 5 | | | | |
| 8700480 | - | - | - | 4.800 | 0.18898 | 6 | | | | |
| 8690490 | - | - | - | 4.900 | 0.19291 | 5 | | | | |
| 8700490 | - | - | - | 4.900 | 0.19291 | 6 | | | | |
| 8690500 | - | - | - | 5.000 | 0.19685 | 5 | | | | |
| 8700500 | - | - | - | 5.000 | 0.19685 | 5 | | | | |
| 8690510 | - | - | - | 5.100 | 0.20079 | 26 | | 82 | 6 | |
| 650020291 | - | - | - | 5.150 | 0.20276 | | 5.150 | | | |
| 650020211 | 13/64 | - | - | 5.159 | 0.20313 | | 5.159 | | | |
| 8690520 | - | - | - | 5.200 | 0.20472 | 27 | 82 | | 6 | |
| 650020701 | - | - | - | 5.260 | 0.20709 | | | | 5.260 | |
| 8690530 | - | - | - | 5.300 | 0.20866 | | | | 5.300 | |
| 8690540 | - | - | - | 5.400 | 0.21260 | 28 | | | 82 | 6 |
| 650021211 | - | 3 | - | 5.410 | 0.21300 | | | | | 5.410 |
| 650021521 | - | - | - | 5.470 | 0.21535 | | | | | 5.470 |
| 8690550 | - | - | - | 5.500 | 0.21654 | 30 | | | | 88 |
| 650021711 | 7/32 | - | - | 5.556 | 0.21875 | | | 5.556 | | |
| 8690560 | - | - | - | 5.600 | 0.22047 | | | 5.600 | | |
| 8690570 | - | - | - | 5.700 | 0.22441 | 29 | | 88 | | |
| 8690580 | - | - | - | 5.800 | 0.22835 | | 5.800 | | | |
| 8690590 | - | - | - | 5.900 | 0.23228 | | 5.900 | | | |
| 650023311 | 15/64 | - | - | 5.953 | 0.23438 | 31 | 88 | | | |
| 8690600 | - | - | - | 6.000 | 0.23622 | | | | 6.000 | |
| 8690610 | - | - | - | 6.100 | 0.24016 | | | | 6.100 | |
| 8700610 | - | - | - | 6.100 | 0.24016 | 32 | | | 88 | |
| 650024211 | - | - | - | 6.150 | 0.24213 | | | | | 6.150 |
| 8690620 | - | - | - | 6.200 | 0.24409 | | | | | 6.200 |
| 8700620 | - | - | - | 6.200 | 0.24409 | 33 | | | | 88 |
| 8690630 | - | - | - | 6.300 | 0.24803 | | | 6.300 | | |
| 8700630 | - | - | - | 6.300 | 0.24803 | | | 6.300 | | |
| 650025011 | 1/4 | - | E | 6.350 | 0.25000 | 34 | | 88 | | |
| 8690640 | - | - | - | 6.400 | 0.25197 | | 6.400 | | | |
| 8700640 | - | - | - | 6.400 | 0.25197 | | 6.400 | | | |
| 8690650 | - | - | - | 6.500 | 0.25591 | 35 | 88 | | | |
| 8700650 | - | - | - | 6.500 | 0.25591 | | | | 6.500 | |
| 650025611 | - | - | F | 6.528 | 0.25700 | | | | 6.528 | |
| 8690660 | - | - | - | 6.600 | 0.25984 | 34 | | | 88 | |
| 8700660 | - | - | - | 6.600 | 0.25984 | | | | | 6.600 |
| 650026211 | - | - | - | 6.650 | 0.26181 | | | | | 6.650 |
| 8690670 | - | - | - | 6.700 | 0.26378 | 34 | | | | 88 |
| 8700670 | - | - | - | 6.700 | 0.26378 | | | 6.700 | | |
| 650026411 | 17/64 | - | - | 6.747 | 0.26563 | | | 6.747 | | |
| 8690680 | - | - | - | 6.800 | 0.26772 | 35 | | 88 | | |
| 8700680 | - | - | - | 6.800 | 0.26772 | | 6.800 | | | |
| 650026911 | - | - | - | 6.860 | 0.27008 | | 6.860 | | | |

Packed: 1 pc.
Available EgiAs coating only.

continued on next page **ADR**

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 6500 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 6500 (Continued)

ADO-3D, Coolant-Through



| | | | | | |
|---------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P351 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|---------------------------|----------------|--------------|--|------------|--------------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | | |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|--|------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | |
| 8690690 | - | - | - | 6.900 | 0.27165 | 35 | 88 | 7 | | |
| 8700690 | - | - | - | | | | | 8 | | |
| 8690700 | - | - | - | 7.000 | 0.27559 | | | 7 | | |
| 8700700 | - | - | - | | | | | | | |
| 650027701 | - | - | - | 7.040 | 0.27717 | 36 | 94 | 8 | | |
| 8690710 | - | - | - | 7.100 | 0.27953 | | | | | |
| 650028011 | 9/32 | - | - | 7.144 | 0.28125 | | | | | 5/16 |
| 8690720 | - | - | - | 7.200 | 0.28346 | 37 | 94 | 8 | | |
| 8690730 | - | - | - | 7.300 | 0.28740 | | | | | |
| 8690740 | - | - | - | 7.400 | 0.29134 | | | | | |
| 8690750 | - | - | - | 7.500 | 0.29528 | 38 | 94 | 5/16 | | |
| 650029611 | 19/64 | - | - | 7.541 | 0.29688 | | | | | |
| 8690760 | - | - | - | 7.600 | 0.29921 | | | | | |
| 8690770 | - | - | - | 7.700 | 0.30315 | 39 | 94 | 8 | | |
| 8690780 | - | - | - | 7.800 | 0.30709 | | | | | |
| 8690790 | - | - | - | 7.900 | 0.31102 | | | | | |
| 650031211 | 5/16 | - | - | 7.938 | 0.31250 | 40 | 94 | 5/16 | | |
| 8690800 | - | - | - | 8.000 | 0.31496 | | | | | 8 |
| 8690810 | - | - | - | | | | | | | 9 |
| 8700810 | - | - | - | 8.100 | 0.31890 | 41 | 94 | 10 | | |
| 650032111 | - | - | - | 8.150 | 0.32087 | | | | | |
| 8690820 | - | - | - | 8.200 | 0.32283 | | | | | 9 |
| 8700820 | - | - | - | | | | | 10 | | |
| 8690830 | - | - | - | | | 42 | 94 | 9 | | |
| 8700830 | - | - | - | 8.300 | 0.32677 | | | | | 10 |
| 650032711 | 21/64 | - | - | 8.334 | 0.32813 | | | | | 3/8 |
| 8690840 | - | - | - | 8.400 | 0.33071 | 43 | 94 | 9 | | |
| 8700840 | - | - | - | | | | | | | 10 |
| 650033011 | - | - | Q | 8.433 | 0.33200 | | | | | 10 |
| 8690850 | - | - | - | | | 44 | 94 | 9 | | |
| 8700850 | - | - | - | 8.500 | 0.33465 | | | | | 10 |
| 650033611 | - | - | - | 8.560 | 0.33701 | | | | | 9 |
| 8690860 | - | - | - | | | 45 | 94 | 10 | | |
| 8700860 | - | - | - | 8.600 | 0.33858 | | | | | |
| 650034011 | - | - | - | 8.640 | 0.34016 | | | | | 10 |
| 650034111 | - | - | - | 8.680 | 0.34173 | 46 | 94 | 9 | | |
| 8690870 | - | - | - | | | | | | | 10 |
| 8700870 | - | - | - | 8.700 | 0.34252 | | | | | 3/8 |
| 650034211 | 11/32 | - | - | 8.731 | 0.34375 | 47 | 94 | 9 | | |
| 8690880 | - | - | - | | | | | | | 10 |
| 8700880 | - | - | - | 8.800 | 0.34646 | | | | | |
| 650034811 | - | - | - | 8.860 | 0.34882 | 48 | 94 | 10 | | |
| 8690890 | - | - | - | | | | | | | 9 |
| 8700890 | - | - | - | 8.900 | 0.35039 | | | | | 10 |
| 8690900 | - | - | - | | | 49 | 94 | 9 | | |
| 8700900 | - | - | - | 9.000 | 0.35433 | | | | | 10 |
| 8690910 | - | - | - | 9.100 | 0.35827 | | | | | 10 |
| 650035811 | 23/64 | - | - | 9.128 | 0.35938 | 50 | 94 | 3/8 | | |
| 8690920 | - | - | - | 9.200 | 0.36220 | | | | | |
| 8690930 | - | - | - | 9.300 | 0.36614 | | | | | 10 |
| 8690940 | - | - | - | 9.400 | 0.37008 | 51 | 94 | | | |
| 8690950 | - | - | - | 9.500 | 0.37402 | | | | | |
| 650037511 | 3/8 | - | - | 9.525 | 0.37500 | | | | | 3/8 |

Packed: 1 pc.
Available EgiAs coating only.





List 6500 (Continued)

ADO-3D, Coolant-Through

| | | | | | |
|---------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P351 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|---------------------------|----------------|--------------|--|------------|--------------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 650037601 | - | - | - | 9.550 | 0.37598 | 48 | 106 | 10 | |
| 8690960 | - | - | - | 9.600 | 0.37795 | 49 | | | |
| 8690970 | - | - | - | 9.700 | 0.38189 | | | | |
| 8690980 | - | - | - | 9.800 | 0.38583 | 50 | | | |
| 8690990 | - | - | - | 9.900 | 0.38976 | | | | |
| 650038911 | 25/64 | - | - | 9.922 | 0.39063 | 51 | | | 7/16 |
| 8691000 | - | - | - | 10.000 | 0.39370 | | | | 10 |
| 8691010 | - | - | - | 10.100 | 0.39764 | 52 | | | 11 |
| 8701010 | - | - | - | 10.200 | 0.40157 | | | | 12 |
| 8691020 | - | - | - | 10.200 | 0.40157 | 53 | | | 11 |
| 8701020 | - | - | - | 10.300 | 0.40551 | | 12 | | |
| 8691030 | - | - | - | 10.300 | 0.40551 | 54 | 11 | | |
| 8701030 | - | - | - | 10.319 | 0.40625 | | 12 | | |
| 650040511 | 13/32 | - | - | 10.319 | 0.40625 | 55 | 7/16 | | |
| 8691040 | - | - | - | 10.400 | 0.40945 | | 11 | | |
| 8701040 | - | - | - | 10.400 | 0.40945 | 56 | 12 | | |
| 650041011 | - | - | - | 10.440 | 0.41102 | | 57 | 11 | |
| 8691050 | - | - | - | 10.500 | 0.41339 | 12 | | | |
| 8701050 | - | - | - | 10.500 | 0.41339 | 58 | 11 | | |
| 8691060 | - | - | - | 10.600 | 0.41732 | | 12 | | |
| 8701060 | - | - | - | 10.600 | 0.41732 | 59 | 11 | | |
| 8691070 | - | - | - | 10.700 | 0.42126 | | 12 | | |
| 8701070 | - | - | - | 10.700 | 0.42126 | 60 | 12 | | |
| 650042111 | 27/64 | - | - | 10.716 | 0.42188 | | 61 | 7/16 | |
| 8691080 | - | - | - | 10.800 | 0.42520 | 11 | | | |
| 8701080 | - | - | - | 10.800 | 0.42520 | 62 | 12 | | |
| 650042661 | - | - | - | 10.860 | 0.42756 | | 63 | 11 | |
| 8691090 | - | - | - | 10.900 | 0.42913 | 12 | | | |
| 8701090 | - | - | - | 10.900 | 0.42913 | 64 | 11 | | |
| 8691100 | - | - | - | 11.000 | 0.43307 | | 12 | | |
| 8701100 | - | - | - | 11.000 | 0.43307 | 65 | 12 | | |
| 8691110 | - | - | - | 11.100 | 0.43701 | | 11 | | |
| 650043711 | 7/16 | - | - | 11.113 | 0.43750 | 66 | 7/16 | | |
| 8691120 | - | - | - | 11.200 | 0.44094 | | 67 | 12 | |
| 8691130 | - | - | - | 11.300 | 0.44488 | 11 | | | |
| 8691140 | - | - | - | 11.400 | 0.44882 | 68 | 12 | | |
| 8691150 | - | - | - | 11.500 | 0.45276 | | 11 | | |
| 650045211 | 29/64 | - | - | 11.509 | 0.45313 | 69 | 1/2 | | |
| 8691160 | - | - | - | 11.600 | 0.45669 | | 70 | 12 | |
| 8691170 | - | - | - | 11.700 | 0.46063 | 11 | | | |
| 8691180 | - | - | - | 11.800 | 0.46457 | 71 | 12 | | |
| 8691190 | - | - | - | 11.900 | 0.46850 | | 11 | | |
| 650046711 | 15/32 | - | - | 11.906 | 0.46875 | 72 | 1/2 | | |
| 8691200 | - | - | - | 12.000 | 0.47244 | | 12 | | |
| 8691210 | - | - | - | 12.100 | 0.47638 | 73 | 13 | | |
| 8701210 | - | - | - | 12.100 | 0.47638 | | 14 | | |
| 8691220 | - | - | - | 12.200 | 0.48031 | 74 | 13 | | |
| 8701220 | - | - | - | 12.200 | 0.48031 | | 14 | | |

Packed: 1 pc.
Available EgiAs coating only.

➔ continued on next page ➔

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 6500 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 6500 (Continued)

ADO-3D, Coolant-Through

| | | | | | |
|---------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P351 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|---------------------------|----------------|--------------|--|------------|--------------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8691230 | - | - | - | 12.300 | 0.48425 | 62 | 128 | 1/2 |
| 8701230 | - | - | - | 12.300 | 0.48425 | | | 13 |
| 650048411 | 31/64 | - | - | 12.303 | 0.48438 | | | 14 |
| 8691240 | - | - | - | 12.400 | 0.48819 | 63 | | 13 |
| 8701240 | - | - | - | 12.400 | 0.48819 | | | 14 |
| 650049011 | - | - | - | 12.450 | 0.49016 | | | 14 |
| 8691250 | - | - | - | 12.500 | 0.49213 | 64 | | 13 |
| 8701250 | - | - | - | 12.500 | 0.49213 | | | 14 |
| 8691260 | - | - | - | 12.600 | 0.49606 | | | 13 |
| 8701260 | - | - | - | 12.600 | 0.49606 | 65 | | 14 |
| 650049811 | - | - | - | 12.680 | 0.49921 | | | 14 |
| 650050011 | 1/2 | - | - | 12.700 | 0.50000 | | | 66 |
| 8691270 | - | - | - | 12.700 | 0.50000 | 13 | | |
| 8701270 | - | - | - | 12.700 | 0.50000 | 14 | | |
| 8691280 | - | - | - | 12.800 | 0.50394 | 67 | 13 | |
| 8701280 | - | - | - | 12.800 | 0.50394 | | 14 | |
| 8691290 | - | - | - | 12.900 | 0.50787 | | 68 | 13 |
| 8701290 | - | - | - | 12.900 | 0.50787 | 14 | | |
| 8691300 | - | - | - | 13.000 | 0.51181 | 69 | | 13 |
| 8701300 | - | - | - | 13.000 | 0.51181 | | 14 | |
| 650051501 | - | - | - | 13.080 | 0.51496 | | 70 | 14 |
| 8691310 | - | - | - | 13.100 | 0.51575 | 14 | | |
| 8691320 | - | - | - | 13.200 | 0.51969 | 71 | | 14 |
| 8691330 | - | - | - | 13.300 | 0.52362 | | 14 | |
| 8691340 | - | - | - | 13.400 | 0.52756 | | 72 | 5/8 |
| 650053011 | 17/32 | - | - | 13.494 | 0.53125 | 14 | | |
| 8691350 | - | - | - | 13.500 | 0.53150 | 73 | | 14 |
| 8691360 | - | - | - | 13.600 | 0.53543 | | 14 | |
| 8691370 | - | - | - | 13.700 | 0.53937 | | 74 | 14 |
| 8691380 | - | - | - | 13.800 | 0.54331 | 14 | | |
| 650054601 | - | - | - | 13.870 | 0.54606 | 75 | | 14 |
| 8691390 | - | - | - | 13.900 | 0.54724 | | 14 | |
| 8691400 | - | - | - | 14.000 | 0.55118 | | 76 | 14 |
| 8691410 | - | - | - | 14.100 | 0.55512 | 15 | | |
| 8701410 | - | - | - | 14.100 | 0.55512 | 16 | | |
| 8691420 | - | - | - | 14.200 | 0.55906 | 77 | 15 | |
| 8701420 | - | - | - | 14.200 | 0.55906 | | 16 | |
| 650056111 | 9/16 | - | - | 14.288 | 0.56250 | | 78 | 5/8 |
| 8691430 | - | - | - | 14.300 | 0.56299 | 15 | | |
| 8701430 | - | - | - | 14.300 | 0.56299 | 16 | | |
| 8691440 | - | - | - | 14.400 | 0.56693 | 79 | 15 | |
| 8701440 | - | - | - | 14.400 | 0.56693 | | 16 | |
| 8691450 | - | - | - | 14.500 | 0.57087 | | 80 | 15 |
| 8701450 | - | - | - | 14.500 | 0.57087 | 16 | | |
| 8691460 | - | - | - | 14.600 | 0.57480 | 81 | | 15 |
| 8701460 | - | - | - | 14.600 | 0.57480 | | 16 | |
| 650057711 | 37/64 | - | - | 14.684 | 0.57813 | | 82 | 5/8 |
| 8691470 | - | - | - | 14.700 | 0.57874 | 15 | | |
| 8701470 | - | - | - | 14.700 | 0.57874 | 16 | | |
| 8691480 | - | - | - | 14.800 | 0.58268 | 83 | 15 | |
| 8701480 | - | - | - | 14.800 | 0.58268 | | 16 | |
| 8691490 | - | - | - | 14.900 | 0.58661 | | 84 | 15 |
| 8701490 | - | - | - | 14.900 | 0.58661 | 16 | | |

Packed: 1 pc.
Available EgiAs coating only.





List 6500 (Continued)

ADO-3D, Coolant-Through

| | | | | | |
|---------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P351 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|---------------------------|----------------|--------------|--|------------|--------------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8691500 | - | - | - | 15.000 | 0.59055 | 75 | 140 | 15 |
| 8701500 | - | - | - | 15.100 | 0.59449 | 76 | 145 | 16 |
| 8691510 | - | - | - | 15.200 | 0.59843 | | | |
| 8691520 | - | - | - | 15.300 | 0.60236 | 77 | | |
| 8691530 | - | - | - | 15.400 | 0.60630 | | | |
| 8691540 | - | - | - | 15.500 | 0.61024 | 78 | | |
| 8691550 | - | - | - | 15.600 | 0.61417 | | | |
| 8691560 | - | - | - | 15.700 | 0.61811 | 79 | | |
| 8691570 | - | - | - | 15.800 | 0.62205 | | | |
| 8691580 | - | - | - | 15.875 | 0.62500 | 80 | | |
| 650062511 | 5/8 | - | - | 15.900 | 0.62598 | | | |
| 8691590 | - | - | - | 16.000 | 0.62992 | 150 | 16 | |
| 8691600 | - | - | - | 16.100 | 0.63386 | | 18 | |
| 650063311 | - | - | - | 16.500 | 0.64961 | | 83 | 17 |
| 8691650 | - | - | - | 16.669 | 0.65625 | | | 85 |
| 650065511 | 21/32 | - | - | 16.840 | 0.66299 | | 85 | |
| 650066311 | - | - | - | 17.000 | 0.66929 | | | 88 |
| 8691700 | - | - | - | 17.500 | 0.68898 | | 90 | |
| 8701700 | - | - | - | 17.610 | 0.69331 | | | 90 |
| 8691750 | - | - | - | 17.680 | 0.69606 | | 90 | |
| 650069321 | - | - | - | 17.730 | 0.69803 | | | 90 |
| 650069601 | - | - | - | 18.000 | 0.70866 | 93 | 19 | |
| 650069801 | - | - | - | 18.500 | 0.72835 | | 95 | 20 |
| 8691800 | - | - | - | 18.640 | 0.73386 | 95 | | 19 |
| 8691850 | - | - | - | 19.000 | 0.74803 | | 95 | 20 |
| 8701850 | - | - | - | 19.050 | 0.75000 | 97 | | 3/4 |
| 650073311 | - | - | - | 19.250 | 0.75787 | | 97 | 3/4 |
| 8691900 | - | - | - | 19.500 | 0.76772 | 98 | | 20 |
| 8701900 | - | - | - | 19.660 | 0.77402 | | 100 | 20 |
| 650075011 | 3/4 | - | - | 19.730 | 0.77677 | 100 | | 20 |
| 650075711 | - | - | - | 19.760 | 0.77795 | | 100 | 20 |
| 8691950 | - | - | - | 20.000 | 0.78740 | 100 | | 20 |
| 650077401 | - | - | - | | | | | |
| 650077661 | - | - | - | | | | | |
| 650077801 | - | - | - | | | | | |
| 8692000 | - | - | - | | | | | |

Packed: 1 pc.
Available EgiAs coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 6500 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 6510

ADO-5D, Coolant-Through

| | | | | | |
|---------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P351 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|---------------------------|----------------|--------------|--|------------|--------------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 651007812 | - | - | - | 2.000 | 0.07874 | 18 | 70 | 3 |
| 651008212 | - | - | - | 2.100 | 0.08268 | 19 | | |
| 651008612 | - | - | - | 2.200 | 0.08661 | 20 | | |
| 8692230 | - | - | - | 2.300 | 0.09055 | 21 | | |
| 651009312 | 3/32 | - | - | 2.381 | 0.09375 | 22 | | |
| 651009412 | - | - | - | 2.400 | 0.09449 | 23 | | |
| 8692250 | - | - | - | 2.500 | 0.09843 | 24 | | |
| 8692260 | - | - | - | 2.600 | 0.10236 | 25 | | |
| 651010612 | - | - | - | 2.700 | 0.10630 | 26 | | |
| 8692278 | 7/64 | - | - | 2.778 | 0.10938 | 27 | | |
| 8692280 | - | - | - | 2.800 | 0.11024 | 28 | | |
| 8692290 | - | - | - | 2.900 | 0.11417 | 29 | | |
| 8692300 | - | - | - | 3.000 | 0.11811 | 30 | | |
| 8692310 | - | - | - | 3.100 | 0.12205 | 31 | | |
| 651012511 | 1/8 | - | - | 3.175 | 0.12500 | 32 | | |
| 8692320 | - | - | - | 3.200 | 0.12598 | 33 | | |
| 8692330 | - | - | - | 3.300 | 0.12992 | 34 | | |
| 8692340 | - | - | - | 3.400 | 0.13386 | 35 | | |
| 8692350 | - | - | - | 3.500 | 0.13780 | 36 | | |
| 8692360 | - | - | - | 3.600 | 0.14173 | 37 | | |
| 8692370 | - | - | - | 3.700 | 0.14567 | 38 | | |
| 8692380 | - | - | - | 3.800 | 0.14961 | 39 | | |
| 8692390 | - | - | - | 3.900 | 0.15354 | 40 | | |
| 651015511 | 5/32 | - | - | 3.969 | 0.15625 | 41 | | |
| 8692400 | - | - | - | 4.000 | 0.15748 | 42 | | |
| 651016011 | - | 20 | - | 4.089 | 0.16100 | 43 | | |
| 8692410 | - | - | - | 4.100 | 0.16142 | 44 | | |
| 8702410 | - | - | - | - | - | 45 | | |
| 8692420 | - | - | - | 4.200 | 0.16535 | 46 | | |
| 8702420 | - | - | - | - | - | 47 | | |
| 8692430 | - | - | - | 4.300 | 0.16929 | 48 | | |
| 8702430 | - | - | - | - | - | 49 | | |
| 651017111 | 11/64 | - | - | 4.366 | 0.17188 | 50 | | |
| 8692440 | - | - | - | 4.400 | 0.17323 | 51 | | |
| 8702440 | - | - | - | - | - | 52 | | |
| 8692450 | - | - | - | 4.500 | 0.17717 | 53 | | |
| 8702450 | - | - | - | - | - | 54 | | |
| 8692460 | - | - | - | 4.600 | 0.18110 | 55 | | |
| 8702460 | - | - | - | - | - | 56 | | |
| 8692470 | - | - | - | 4.700 | 0.18504 | 57 | | |
| 8702470 | - | - | - | - | - | 58 | | |
| 651018711 | 3/16 | - | - | 4.763 | 0.18750 | 59 | | |
| 8692480 | - | - | - | 4.800 | 0.18898 | 60 | | |
| 8702480 | - | - | - | - | - | 61 | | |
| 8692490 | - | - | - | 4.900 | 0.19291 | 62 | | |
| 8702490 | - | - | - | - | - | 63 | | |
| 8692500 | - | - | - | 5.000 | 0.19685 | 64 | | |
| 8702500 | - | - | - | - | - | 65 | | |
| 8692510 | - | - | - | 5.100 | 0.20079 | 66 | | |

Packed: 1 pc.
Available EgiAs coating only.





List 6510 (Continued)

ADO-5D, Coolant-Through

| | | | | |
|---------------|---------|-------|-----|-------------|
| SPEED FEED | CARBIDE | EgiAs | 30° | SHANK h6 |
| P351 | | | | |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 651020211 | 13/64 | - | - | 5.159 | 0.20313 | 42 | 100 | 1/4 |
| 8692520 | - | - | - | 5.200 | 0.20472 | 42 | | 6 |
| 8692530 | - | - | - | 5.300 | 0.20866 | 43 | | |
| 8692540 | - | - | - | 5.400 | 0.21260 | 43 | | 1/4 |
| 651021311 | - | 3 | - | 5.410 | 0.21300 | 44 | | |
| 8692550 | - | - | - | 5.500 | 0.21654 | 44 | | 6 |
| 651021711 | 7/32 | - | - | 5.556 | 0.21875 | 45 | | 1/4 |
| 8692560 | - | - | - | 5.600 | 0.22047 | 45 | | 6 |
| 8692570 | - | - | - | 5.700 | 0.22441 | 46 | | |
| 8692580 | - | - | - | 5.800 | 0.22835 | 47 | | |
| 8692590 | - | - | - | 5.900 | 0.23228 | 47 | | |
| 651023311 | 15/64 | - | - | 5.953 | 0.23438 | 48 | 1/4 | |
| 8692600 | - | - | - | 6.000 | 0.23622 | 48 | 6 | |
| 8692610 | - | - | - | 6.100 | 0.24016 | 49 | 7 | |
| 8702610 | - | - | - | 6.100 | 0.24016 | 49 | 8 | |
| 8692620 | - | - | - | 6.200 | 0.24409 | 50 | 7 | |
| 8702620 | - | - | - | 6.200 | 0.24409 | 50 | 8 | |
| 8692630 | - | - | - | 6.300 | 0.24803 | 51 | 7 | |
| 8702630 | - | - | - | 6.300 | 0.24803 | 51 | 8 | |
| 651025011 | 1/4 | - | E | 6.350 | 0.25000 | 52 | 1/4 | |
| 8692640 | - | - | - | 6.400 | 0.25197 | | 7 | |
| 8702640 | - | - | - | 6.400 | 0.25197 | | 8 | |
| 8692650 | - | - | - | 6.500 | 0.25591 | | 7 | |
| 8702650 | - | - | - | 6.500 | 0.25591 | 7 | 8 | |
| 651025611 | - | - | F | 6.528 | 0.25700 | 53 | | |
| 8692660 | - | - | - | 6.600 | 0.25984 | | 7 | |
| 8702660 | - | - | - | 6.600 | 0.25984 | 8 | | |
| 8692670 | - | - | - | 6.700 | 0.26378 | 54 | 7 | |
| 8702670 | - | - | - | 6.700 | 0.26378 | 54 | 8 | |
| 651026411 | 17/64 | - | - | 6.747 | 0.26563 | 55 | 5/16 | |
| 8692680 | - | - | - | 6.800 | 0.26772 | | 7 | |
| 8702680 | - | - | - | 6.800 | 0.26772 | 55 | 8 | |
| 8692690 | - | - | - | 6.900 | 0.27165 | 56 | 7 | |
| 8702690 | - | - | - | 6.900 | 0.27165 | | 8 | |
| 8692700 | - | - | - | 7.000 | 0.27559 | | 7 | |
| 8702700 | - | - | - | 7.000 | 0.27559 | | 7 | |
| 8692710 | - | - | - | 7.100 | 0.27953 | 57 | 8 | |
| 651028011 | 9/32 | - | - | 7.144 | 0.28125 | 58 | 5/16 | |
| 8692720 | - | - | - | 7.200 | 0.28346 | | 58 | |
| 8692730 | - | - | - | 7.300 | 0.28740 | 59 | 8 | |
| 8692740 | - | - | - | 7.400 | 0.29134 | | | |
| 8692750 | - | - | - | 7.500 | 0.29528 | 60 | 5/16 | |
| 651029611 | 19/64 | - | - | 7.541 | 0.29688 | | | |
| 8692760 | - | - | - | 7.600 | 0.29921 | 61 | | |
| 8692770 | - | - | - | 7.700 | 0.30315 | 62 | 8 | |
| 8692780 | - | - | - | 7.800 | 0.30709 | 63 | | |
| 8692790 | - | - | - | 7.900 | 0.31102 | 63 | | |
| 651031211 | 5/16 | - | - | 7.938 | 0.31250 | 64 | | 5/16 |
| 8692800 | - | - | - | 8.000 | 0.31496 | | 64 | 8 |

Packed: 1 pc.
Available EgiAs coating only.

➔ continued on next page ➔

| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 6510 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 6510 (Continued)

ADO-5D, Coolant-Through



| | | | | | |
|---------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P351 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|---------------------------|----------------|--------------|--|------------|--------------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8692810 | - | - | - | 8.100 | 0.31890 | 65 | 128 | 9 |
| 8702810 | - | - | - | 8.200 | 0.32283 | 66 | | 10 |
| 8692820 | - | - | - | 8.300 | 0.32677 | 67 | | 9 |
| 8702820 | - | - | - | 8.334 | 0.32813 | 67 | | 10 |
| 8692830 | - | - | - | 8.400 | 0.33071 | 68 | | 9 |
| 8702830 | - | - | - | 8.433 | 0.33200 | 68 | | 10 |
| 651032711 | 21/64 | - | - | 8.500 | 0.33465 | 69 | | 11/32 |
| 8692840 | - | - | - | 8.600 | 0.33858 | 69 | | 9 |
| 8702840 | - | - | - | 8.700 | 0.34252 | 70 | | 10 |
| 651033111 | - | - | Q | 8.731 | 0.34375 | 70 | | 9 |
| 8692850 | - | - | - | 8.800 | 0.34646 | 71 | | 10 |
| 8702850 | - | - | - | 8.900 | 0.35039 | 71 | | 9 |
| 8692860 | - | - | - | 9.000 | 0.35433 | 72 | 10 | |
| 8702860 | - | - | - | 9.100 | 0.35827 | 72 | 9 | |
| 8692870 | - | - | - | 9.128 | 0.35938 | 73 | 10 | |
| 8702870 | - | - | - | 9.200 | 0.36220 | 73 | 9 | |
| 651034211 | 11/32 | - | - | 9.300 | 0.36614 | 74 | 136 | 3/8 |
| 8692880 | - | - | - | 9.400 | 0.37008 | 75 | | 10 |
| 8692880 | - | - | - | 9.500 | 0.37402 | 75 | | 9 |
| 8692890 | - | - | - | 9.525 | 0.37500 | 76 | | 10 |
| 8702890 | - | - | - | 9.600 | 0.37795 | 76 | | 9 |
| 8692900 | - | - | - | 9.700 | 0.38189 | 77 | | 10 |
| 8702900 | - | - | - | 9.800 | 0.38583 | 77 | | 9 |
| 8692910 | - | - | - | 9.900 | 0.38976 | 78 | | 10 |
| 651035811 | 23/64 | - | - | 9.922 | 0.39063 | 78 | | 7/16 |
| 8692920 | - | - | - | 10.000 | 0.39370 | 79 | | 10 |
| 8692920 | - | - | - | 10.100 | 0.39764 | 80 | | 11 |
| 8692930 | - | - | - | 10.200 | 0.40157 | 81 | | 12 |
| 8692940 | - | - | - | 10.300 | 0.40551 | 82 | 11 | |
| 8692950 | - | - | - | 10.319 | 0.40625 | 82 | 12 | |
| 651037511 | 3/8 | - | - | 10.400 | 0.40945 | 83 | 11 | |
| 8692960 | - | - | - | 10.500 | 0.41339 | 83 | 12 | |
| 8692970 | - | - | - | 10.600 | 0.41732 | 84 | 11 | |
| 8692980 | - | - | - | 10.700 | 0.42126 | 84 | 12 | |
| 8692990 | - | - | - | 10.716 | 0.42188 | 85 | 11 | |
| 651038911 | 25/64 | - | - | | | 85 | 12 | |
| 8693000 | - | - | - | | | 86 | 11 | |
| 8693010 | - | - | - | | | 86 | 12 | |
| 8703010 | - | - | - | | | | 11 | |
| 8693020 | - | - | - | | | | 12 | |
| 8703020 | - | - | - | | | | 11 | |
| 8693030 | - | - | - | | | | 12 | |
| 8703030 | - | - | - | | | | 11 | |
| 651040511 | 13/32 | - | - | | | | 12 | |
| 8693040 | - | - | - | | | | 7/16 | |
| 8703040 | - | - | - | | | | 11 | |
| 8693050 | - | - | - | | | | 12 | |
| 8703050 | - | - | - | | | | 11 | |
| 8693060 | - | - | - | | | | 12 | |
| 8703060 | - | - | - | | | | 11 | |
| 8693070 | - | - | - | | | | 12 | |
| 8703070 | - | - | - | | | | 11 | |
| 651042111 | 27/64 | - | - | | | | 12 | |
| | | | | | | | 7/16 | |

Packed: 1 pc.
Available EgiAs coating only.





List 6510 (Continued)

ADO-5D, Coolant-Through

| | | | | | |
|---------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P351 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|---------------------------|----------------|--------------|--|------------|--------------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8693080 | - | - | - | 10.800 | 0.42520 | 87 | 146 | 11 |
| 8703080 | - | - | - | | | | | 12 |
| 8693090 | - | - | - | 10.900 | 0.42913 | 88 | | 11 |
| 8703090 | - | - | - | | | | | 12 |
| 8693100 | - | - | - | 11.000 | 0.43307 | | 11 | |
| 8703100 | - | - | - | | | | 12 | |
| 8693110 | - | - | - | 11.100 | 0.43701 | 89 | 156 | |
| 651043711 | 7/16 | - | - | 11.113 | 0.43750 | | | |
| 8693120 | - | - | - | 11.200 | 0.44094 | 90 | | |
| 8693130 | - | - | - | 11.300 | 0.44488 | 91 | | 12 |
| 8693140 | - | - | - | 11.400 | 0.44882 | | | |
| 8693150 | - | - | - | 11.500 | 0.45276 | 92 | | |
| 651045211 | 29/64 | - | - | 11.509 | 0.45313 | | | 1/2 |
| 8693160 | - | - | - | 11.600 | 0.45669 | 93 | 12 | |
| 8693170 | - | - | - | 11.700 | 0.46063 | 94 | | |
| 8693180 | - | - | - | 11.800 | 0.46457 | 95 | | |
| 8693190 | - | - | - | 11.900 | 0.46850 | | | |
| 651046711 | 15/32 | - | - | 11.906 | 0.46875 | 96 | | 1/2 |
| 8693200 | - | - | - | 12.000 | 0.47244 | | | 12 |
| 8693210 | - | - | - | 12.100 | 0.47638 | 97 | 167 | 13 |
| 8703210 | - | - | - | | | | | 14 |
| 8693220 | - | - | - | 12.200 | 0.48031 | 98 | | 13 |
| 8703220 | - | - | - | | | | | |
| 8693230 | - | - | - | 12.300 | 0.48425 | 99 | 1/2 | |
| 8703230 | - | - | - | | | | | 13 |
| 651048411 | 31/64 | - | - | 12.303 | 0.48438 | | 14 | |
| 8693240 | - | - | - | 12.400 | 0.48819 | 100 | 13 | |
| 8703240 | - | - | - | | | | | 14 |
| 8693250 | - | - | - | 12.500 | 0.49213 | 101 | 13 | |
| 8703250 | - | - | - | | | | | 14 |
| 8693260 | - | - | - | 12.600 | 0.49606 | 102 | 13 | |
| 8703260 | - | - | - | | | | | 14 |
| 651050011 | 1/2 | - | - | 12.700 | 0.50000 | | 1/2 | |
| 8693270 | - | - | - | 12.700 | 0.50000 | 103 | 13 | |
| 8703270 | - | - | - | | | | | 14 |
| 8693280 | - | - | - | 12.800 | 0.50394 | 104 | 13 | |
| 8703280 | - | - | - | | | | | 14 |
| 8693290 | - | - | - | 12.900 | 0.50787 | 104 | 13 | |
| 8703290 | - | - | - | | | | | 14 |
| 8693300 | - | - | - | 13.000 | 0.51181 | | 13 | |
| 8703300 | - | - | - | | | | 14 | |

Packed: 1 pc.
Available EgiAs coating only.

continued on next page **ADR**

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | 4140 4340 | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 6510 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

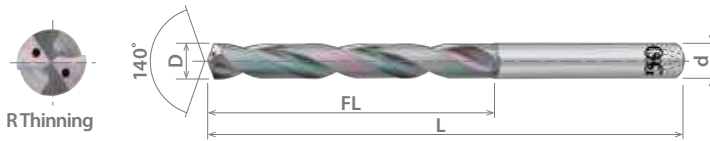
good best





List 6510 (Continued)

ADO-5D, Coolant-Through



| | | | | | |
|---------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P351 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|---------------------------|----------------|--------------|--|------------|--------------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2≤D≤3 | +0 / -0.014 | +0 / -0.0006 |
| 3<D≤6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤18 | +0 / -0.027 | +0 / -0.0011 |
| 18<D≤20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|-----|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8693310 | - | - | - | 13.100 | 0.51575 | 105 | 176 | 14 | |
| 8693320 | - | - | - | 13.200 | 0.51969 | 106 | | | |
| 8693330 | - | - | - | 13.300 | 0.52362 | 107 | | | |
| 8693340 | - | - | - | 13.400 | 0.52756 | 108 | | 5/8 | |
| 651053011 | 17/32 | - | - | 13.494 | 0.53125 | | | | |
| 8693350 | - | - | - | 13.500 | 0.53150 | 109 | | 14 | |
| 8693360 | - | - | - | 13.600 | 0.53543 | | | | |
| 8693370 | - | - | - | 13.700 | 0.53937 | 110 | | | |
| 8693380 | - | - | - | 13.800 | 0.54331 | 111 | | | |
| 8693390 | - | - | - | 13.900 | 0.54724 | 112 | | 14 | |
| 8693400 | - | - | - | 14.000 | 0.55118 | | | | |
| 8693410 | - | - | - | 14.100 | 0.55512 | 113 | 185 | 15 | |
| 8703410 | - | - | - | 14.200 | 0.55906 | 114 | | 16 | |
| 8693420 | - | - | - | | | | | 15 | |
| 8703420 | - | - | - | | | | | 16 | |
| 651056111 | 9/16 | - | - | 14.288 | 0.56250 | 115 | | 5/8 | |
| 8693430 | - | - | - | 14.300 | 0.56299 | | | 116 | 15 |
| 8703430 | - | - | - | 14.400 | 0.56693 | 16 | | | |
| 8693440 | - | - | - | | | 15 | | | |
| 8703440 | - | - | - | 14.500 | 0.57087 | 16 | | | |
| 8693450 | - | - | - | | | 15 | | | |
| 8703450 | - | - | - | 14.600 | 0.57480 | 16 | | | |
| 8693460 | - | - | - | | | 15 | | | |
| 8703460 | - | - | - | 14.700 | 0.57874 | 16 | | | |
| 8693470 | - | - | - | | | 15 | | | |
| 8693480 | - | - | - | 14.800 | 0.58268 | 16 | | | |
| 8703480 | - | - | - | | | 15 | | | |
| 8693490 | - | - | - | 14.900 | 0.58661 | 16 | | | |
| 8703490 | - | - | - | | | 15 | | | |
| 8693500 | - | - | - | 15.000 | 0.59055 | 16 | | | |
| 8703500 | - | - | - | | | 15 | | | |
| 8693510 | - | - | - | 15.100 | 0.59449 | 121 | 193 | 16 | |
| 8693520 | - | - | - | 15.200 | 0.59843 | 122 | | | |
| 8693530 | - | - | - | 15.300 | 0.60236 | 123 | | | |
| 8693540 | - | - | - | 15.400 | 0.60630 | 124 | | | |
| 8693550 | - | - | - | 15.500 | 0.61024 | | | | |
| 8693560 | - | - | - | 15.600 | 0.61417 | 125 | | | |
| 8693570 | - | - | - | 15.700 | 0.61811 | 126 | | | |
| 8693580 | - | - | - | 15.800 | 0.62205 | 127 | | | |
| 651062511 | 5/8 | - | - | 15.875 | 0.62500 | 128 | | | 5/8 |
| 8693590 | - | - | - | 15.900 | 0.62598 | | | | |
| 8693600 | - | - | - | 16.000 | 0.62992 | | | | |
| 651063311 | - | - | - | 16.100 | 0.63386 | 129 | 201 | 18 | |
| 8693650 | - | - | - | 16.500 | 0.64961 | 17 | | | |
| 8703650 | - | - | - | | | 18 | | | |
| 651065511 | 21/32 | - | - | 16.669 | 0.65625 | 134 | | 3/4 | |
| 8693700 | - | - | - | 17.000 | 0.66929 | 17 | | | |
| 8703700 | - | - | - | | | 18 | | | |
| 8693750 | - | - | - | 17.500 | 0.68898 | 140 | 209 | 18 | |
| 8693800 | - | - | - | 18.000 | 0.70866 | 144 | | | |

Packed: 1 pc.
Available EgiAs coating only.





List 6510 (Continued)

ADO-5D, Coolant-Through

| | | | | | |
|---------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P351 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|---------------------------|----------------|--------------|--|------------|--------------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8693850 | - | - | - | 18.500 | 0.72835 | 148 | 217 | 19 |
| 8703850 | - | - | - | | | | | 20 |
| 8693900 | - | - | - | 19.000 | 0.74803 | 152 | | 19 |
| 8703900 | - | - | - | | | | | 20 |
| 651075011 | 3/4 | - | - | 19.050 | 0.75000 | 154 | | 3/4 |
| 651075711 | - | - | - | 19.250 | 0.75787 | | | |
| 8693950 | - | - | - | 19.500 | 0.76772 | 156 | 225 | 20 |
| 8694000 | - | - | - | 20.000 | 0.78740 | 160 | | |

Packed: 1 pc.
Available EgiAs coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 6510 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



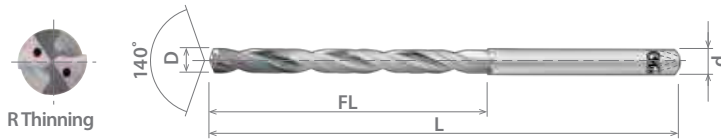


List 6520

ADO-8D, Coolant-Through

| | | | | | |
|---------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P351 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|---------------------------|----------------|--------------|--|------------|--------------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 15.88 | +0 / -0.027 | +0 / -0.0011 |



| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| *8694200 | - | - | - | 2.000 | 0.07874 | 22 | 75 | 3 |
| *8694210 | - | - | - | 2.100 | 0.08268 | 24 | | |
| *8694220 | - | - | - | 2.200 | 0.08661 | 25 | | |
| *8694230 | - | - | - | 2.300 | 0.09055 | 26 | | |
| *652009312 | 3/32 | - | - | 2.381 | 0.09375 | 27 | | |
| *8694240 | - | - | - | 2.400 | 0.09449 | 28 | | |
| *8694250 | - | - | - | 2.500 | 0.09843 | 28 | | |
| *8694260 | - | - | - | 2.600 | 0.10236 | 29 | | |
| *8694270 | - | - | - | 2.700 | 0.10630 | 30 | | |
| *652010911 | 7/64 | - | - | 2.778 | 0.10938 | 31 | | |
| *8694280 | - | - | - | 2.800 | 0.11024 | 31 | | |
| *8694290 | - | - | - | 2.900 | 0.11417 | 32 | | |
| 8694300 | - | - | - | 3.000 | 0.11811 | 33 | | |
| 8694310 | - | - | - | 3.100 | 0.12205 | 34 | | |
| 652012511 | 1/8 | - | - | 3.175 | 0.12500 | 35 | 95 | 4 |
| 8694320 | - | - | - | 3.200 | 0.12598 | 36 | | |
| 8694330 | - | - | - | 3.300 | 0.12992 | 37 | | |
| 8694340 | - | - | - | 3.400 | 0.13386 | 37 | | |
| 8694350 | - | - | - | 3.500 | 0.13780 | 39 | | |
| 8694360 | - | - | - | 3.600 | 0.14173 | 40 | | |
| 8694370 | - | - | - | 3.700 | 0.14567 | 41 | | |
| 8694380 | - | - | - | 3.800 | 0.14961 | 42 | | |
| 8694390 | - | - | - | 3.900 | 0.15354 | 43 | | |
| 652015511 | 5/32 | - | - | 3.969 | 0.15625 | 44 | | |
| 8694400 | - | - | - | 4.000 | 0.15748 | 44 | | |
| 652016011 | - | 20 | - | 4.089 | 0.16100 | 45 | 105 | 6 |
| 8704410 | - | - | - | 4.100 | 0.16142 | 46 | | |
| 8704420 | - | - | - | 4.200 | 0.16535 | 46 | | |
| 8704430 | - | - | - | 4.300 | 0.16929 | 47 | | |
| 652017111 | 11/64 | - | - | 4.366 | 0.17188 | 47 | | |
| 8704440 | - | - | - | 4.400 | 0.17323 | 48 | | |
| 8694450 | - | - | - | 4.500 | 0.17717 | 50 | | |
| 8704450 | - | - | - | 4.600 | 0.18110 | 51 | | |
| 8704460 | - | - | - | 4.700 | 0.18504 | 52 | | |
| 8704470 | - | - | - | 4.763 | 0.18750 | 52 | | |
| 652018711 | 3/16 | - | - | 4.763 | 0.18750 | 53 | 115 | 6 |
| 8704480 | - | - | - | 4.800 | 0.18898 | 53 | | |
| 8704490 | - | - | - | 4.900 | 0.19291 | 54 | | |
| 8694500 | - | - | - | 5.000 | 0.19685 | 55 | | |
| 8704500 | - | - | - | 5.100 | 0.20079 | 56 | | |
| 652020211 | 13/64 | - | - | 5.159 | 0.20313 | 57 | | |
| 8704520 | - | - | - | 5.200 | 0.20472 | 57 | | |
| 8704530 | - | - | - | 5.300 | 0.20866 | 58 | | |
| 8704540 | - | - | - | 5.400 | 0.21260 | 59 | | |
| 652021311 | - | 3 | - | 5.410 | 0.21300 | 60 | | |
| 8694550 | - | - | - | 5.500 | 0.21654 | 61 | | |
| 652021711 | 7/32 | - | - | 5.556 | 0.21875 | 61 | 115 | 1/4 |
| 8704560 | - | - | - | 5.600 | 0.22047 | 62 | | |
| 8704570 | - | - | - | 5.700 | 0.22441 | 63 | | |
| 8704570 | - | - | - | 5.700 | 0.22441 | 63 | | |

Packed: 1 pc.
 Available EgiAs coating only.
 * Sizes ≤ 2.90 mm have a single margin. Sizes ≥ 3 mm have a double margin.





List 6520 (Continued)

ADO-8D, Coolant-Through

| | | | | | |
|---------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P351 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|---------------------------|----------------|--------------|--|------------|--------------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8704580 | - | - | - | 5.800 | 0.22835 | 64 | 115 | 6 |
| 8704590 | - | - | - | 5.900 | 0.23228 | 65 | | 6 |
| 652023311 | 15/64 | - | - | 5.953 | 0.23438 | 66 | | 1/4 |
| 8694600 | - | - | - | 6.000 | 0.23622 | 66 | 6 | 6 |
| 8704610 | - | - | - | 6.100 | 0.24016 | 67 | 125 | 8 |
| 8704620 | - | - | - | 6.200 | 0.24409 | 68 | | 8 |
| 8704630 | - | - | - | 6.300 | 0.24803 | 69 | | 8 |
| 652025011 | 1/4 | - | E | 6.350 | 0.25000 | 70 | 1/4 | 8 |
| 8704640 | - | - | - | 6.400 | 0.25197 | 70 | 8 | 7 |
| 8694650 | - | - | - | 6.500 | 0.25591 | 72 | 125 | 8 |
| 8704650 | - | - | - | | | | | 6.528 |
| 652025611 | - | - | F | 6.600 | 0.25984 | 73 | | 8 |
| 8704660 | - | - | - | 6.700 | 0.26378 | 74 | 8 | 5/16 |
| 8704670 | - | - | - | 6.747 | 0.26563 | 74 | 8 | 8 |
| 652026411 | 17/64 | - | - | 6.800 | 0.26772 | 75 | 8 | 7 |
| 8704680 | - | - | - | 6.900 | 0.27165 | 76 | 8 | 8 |
| 8704690 | - | - | - | 7.000 | 0.27559 | 77 | 140 | 8 |
| 8694700 | - | - | - | | | | | 7.100 |
| 8704700 | - | - | - | 7.144 | 0.28125 | 79 | | 5/16 |
| 8704710 | - | - | - | 7.200 | 0.28346 | 80 | 8 | 8 |
| 652028011 | 9/32 | - | - | 7.300 | 0.28740 | 80 | 8 | 5/16 |
| 8704720 | - | - | - | 7.400 | 0.29134 | 81 | 8 | 8 |
| 8704730 | - | - | - | 7.500 | 0.29528 | 83 | 8 | 8 |
| 8704740 | - | - | - | 7.541 | 0.29688 | 84 | 8 | 5/16 |
| 8694750 | - | - | - | 7.600 | 0.29921 | 84 | 8 | 8 |
| 652029611 | 19/64 | - | - | 7.700 | 0.30315 | 85 | 8 | 8 |
| 8704760 | - | - | - | 7.800 | 0.30709 | 86 | 8 | 8 |
| 8704770 | - | - | - | 7.900 | 0.31102 | 87 | 8 | 5/16 |
| 8704780 | - | - | - | 7.938 | 0.31250 | 87 | 8 | 8 |
| 8704790 | - | - | - | 8.000 | 0.31496 | 88 | 8 | 5/16 |
| 652031211 | 5/16 | - | - | 8.100 | 0.31890 | 89 | 8 | 8 |
| 8694800 | - | - | - | 8.200 | 0.32283 | 90 | 8 | 10 |
| 8704810 | - | - | - | 8.300 | 0.32677 | 91 | 8 | 3/8 |
| 8704820 | - | - | - | 8.334 | 0.32813 | 92 | 8 | 10 |
| 8704830 | - | - | - | 8.400 | 0.33071 | 92 | 8 | 10 |
| 652032711 | 21/64 | - | - | 8.433 | 0.33200 | 93 | 8 | 11/32 |
| 8704840 | - | - | - | 8.500 | 0.33465 | 94 | 8 | 9 |
| 652033111 | - | - | Q | 8.600 | 0.33858 | 95 | 8 | 10 |
| 8694850 | - | - | - | 8.700 | 0.34252 | 96 | 8 | 10 |
| 8704850 | - | - | - | 8.733 | 0.34375 | 96 | 8 | 3/8 |
| 8704860 | - | - | - | 8.800 | 0.34646 | 97 | 8 | 10 |
| 8704870 | - | - | - | 8.900 | 0.35039 | 98 | 8 | 10 |
| 652035211 | 11/32 | - | - | | | | | |
| 8704880 | - | - | - | | | | | |
| 8704890 | - | - | - | | | | | |

Packed: 1 pc.

Available EgiAs coating only.

* Sizes ≤ 2.90 mm have a single margin. Sizes ≥ 3 mm have a double margin.

continued on next page



| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 6520 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

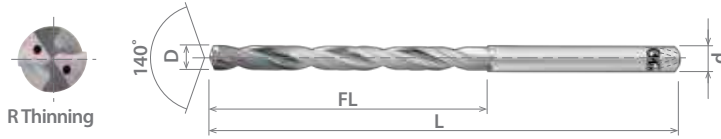




List 6520 (Continued)

ADO-8D, Coolant-Through

| | | | | | |
|---------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P351 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|---------------------------|----------------|--------------|--|------------|--------------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 15.88 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8694900 | - | - | - | 9.000 | 0.35433 | 99 | 150 | 9 |
| 8704900 | - | - | - | 9.100 | 0.35827 | 100 | | 10 |
| 8704910 | - | - | - | 9.128 | 0.35938 | 101 | | 3/8 |
| 652035711 | 23/64 | - | - | 9.200 | 0.36220 | 102 | 160 | 10 |
| 8704920 | - | - | - | 9.300 | 0.36614 | 103 | | 10 |
| 8704930 | - | - | - | 9.400 | 0.37008 | 105 | | 10 |
| 8704940 | - | - | - | 9.500 | 0.37402 | 106 | | 10 |
| 8694950 | - | - | - | 9.600 | 0.37795 | 107 | | 10 |
| 652037511 | 3/8 | - | - | 9.700 | 0.38189 | 108 | | 10 |
| 8704960 | - | - | - | 9.800 | 0.38583 | 109 | | 10 |
| 8704970 | - | - | - | 9.900 | 0.38976 | 110 | | 10 |
| 8704980 | - | - | - | 9.922 | 0.39063 | 111 | | 7/16 |
| 8704990 | - | - | - | 10.000 | 0.39370 | 112 | | 10 |
| 652038811 | 25/64 | - | - | 10.100 | 0.39764 | 113 | 182 | 12 |
| 8695000 | - | - | - | 10.200 | 0.40157 | 114 | | 12 |
| 8705010 | - | - | - | 10.300 | 0.40551 | 115 | | 12 |
| 8705020 | - | - | - | 10.319 | 0.40625 | 116 | | 7/16 |
| 8705030 | - | - | - | 10.400 | 0.40945 | 117 | | 12 |
| 652040711 | 13/32 | - | - | 10.500 | 0.41339 | 118 | | 11 |
| 8705040 | - | - | - | 10.600 | 0.41732 | 119 | | 12 |
| 8695050 | - | - | - | 10.700 | 0.42126 | 120 | | 12 |
| 8705050 | - | - | - | 10.716 | 0.42188 | 121 | | 7/16 |
| 8705060 | - | - | - | 10.800 | 0.42520 | 122 | | 12 |
| 8705070 | - | - | - | 10.900 | 0.42913 | 123 | 12 | |
| 652042111 | 27/64 | - | - | 11.000 | 0.43307 | 124 | 194 | 11 |
| 8705080 | - | - | - | 11.100 | 0.43701 | 125 | | 12 |
| 8705090 | - | - | - | 11.113 | 0.43750 | 126 | | 12 |
| 8695100 | - | - | - | 11.200 | 0.44094 | 127 | | 12 |
| 8705100 | - | - | - | 11.300 | 0.44488 | 128 | | 12 |
| 8705110 | - | - | - | 11.400 | 0.44882 | 129 | | 12 |
| 652043811 | 7/16 | - | - | 11.500 | 0.45276 | 130 | | 1/2 |
| 8705120 | - | - | - | 11.509 | 0.45313 | 131 | | 1/2 |
| 8705130 | - | - | - | 11.600 | 0.45669 | 132 | | 1/2 |
| 8705140 | - | - | - | 11.700 | 0.46063 | 133 | | 1/2 |
| 8695150 | - | - | - | 11.800 | 0.46457 | 134 | 12 | |
| 652045211 | 29/64 | - | - | 11.900 | 0.46850 | 135 | 206 | 14 |
| 8705160 | - | - | - | 12.000 | 0.47244 | 136 | | 14 |
| 8705170 | - | - | - | 12.100 | 0.47638 | 137 | | 14 |
| 8705180 | - | - | - | 12.200 | 0.48031 | 138 | | 14 |
| 8705190 | - | - | - | 12.300 | 0.48425 | 139 | | 14 |
| 8695200 | - | - | - | 12.400 | 0.48819 | 140 | | 14 |
| 8705210 | - | - | - | 12.500 | 0.49213 | 141 | | 13 |
| 8705220 | - | - | - | 12.600 | 0.49606 | 142 | | 14 |
| 8705230 | - | - | - | 12.700 | 0.50000 | 143 | | 14 |
| 8705240 | - | - | - | 12.700 | 0.50000 | 144 | | 1/2 |

Packed: 1 pc.
 Available EgiAs coating only.
 * Sizes ≤ 2.90 mm have a single margin. Sizes ≥ 3 mm have a double margin.





List 6520 (Continued)

ADO-8D, Coolant-Through

| | | | | | |
|---------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P351 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|---------------------------|----------------|--------------|--|------------|--------------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 652053011 | 17/32 | - | - | 13.494 | 0.53125 | 149 | 218 | 5/8 |
| 8705350 | - | - | - | 13.500 | 0.53150 | | | 14 |
| 8705400 | - | - | - | 14.000 | 0.55118 | | | 154 |
| 652056111 | 9/16 | - | - | 14.288 | 0.56250 | 157 | 230 | 5/8 |
| 8705450 | - | - | - | 14.500 | 0.57087 | 160 | | 16 |
| 652062511 | 5/8 | - | - | 15.875 | 0.62500 | 175 | | 5/8 |

Packed: 1 pc.

Available EgiAs coating only.

* Sizes ≤ 2.90 mm have a single margin. Sizes ≥ 3 mm have a double margin.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 6520 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 6530

ADO-10D, Coolant-Through

| | | | | | |
|-------------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P352-353 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|-------------------------------|----------------|--------------|--|------------|--------------------|



| Cutting Diameter Tolerance (e8) | | |
|---------------------------------|-----------------|-------------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | -0.014 / -0.028 | -0.0006 / -0.0011 |
| 3 < D ≤ 6 | -0.020 / -0.038 | -0.0008 / -0.0015 |
| 6 < D ≤ 10 | -0.025 / -0.047 | -0.0010 / -0.0019 |
| 10 < D ≤ 14.29 | -0.032 / -0.059 | -0.0013 / -0.0023 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | | | | |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|-----|-----|-----|------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | | | |
| *653007812 | - | - | - | 2.000 | 0.07874 | 26 | 75 | 3 | | | | |
| *653008212 | - | - | - | 2.100 | 0.08268 | | | | | | | |
| *653008612 | - | - | - | 2.200 | 0.08661 | | | | | | | |
| *653009012 | - | - | - | 2.300 | 0.09055 | | | | | | | |
| *653009312 | 3/32 | - | - | 2.381 | 0.09375 | | | | | | | |
| *653009412 | - | - | - | 2.400 | 0.09449 | | | | | | | |
| *653009812 | - | - | - | 2.500 | 0.09843 | | | | | | | |
| *653010212 | - | - | - | 2.600 | 0.10236 | | | | | | | |
| *653010612 | - | - | - | 2.700 | 0.10630 | | | | | | | |
| *653010912 | 7/64 | - | - | 2.778 | 0.10938 | | | | | | | |
| *653011012 | - | - | - | 2.800 | 0.11024 | | | | | | | |
| *653011412 | - | - | - | 2.900 | 0.11417 | | | | | | | |
| 8696300 | - | - | - | 3.000 | 0.11811 | 45 | 100 | 4 | | | | |
| 653012212 | - | - | - | 3.100 | 0.12205 | | | | | | | |
| 653012512 | 1/8 | - | - | 3.175 | 0.12500 | 45 | | 100 | 1/8 | | | |
| 653012612 | - | - | - | 3.200 | 0.12598 | | | | | | | |
| 653012912 | - | - | - | 3.300 | 0.12992 | 50 | | | 100 | 4 | | |
| 653013312 | - | - | - | 3.400 | 0.13386 | | | | | | | |
| 8696350 | - | - | - | 3.500 | 0.13780 | 50 | | | | 100 | 4 | |
| 653014112 | - | - | - | 3.600 | 0.14173 | | | | | | | |
| 653014512 | - | - | - | 3.700 | 0.14567 | 55 | | | | | 115 | 5 |
| 653014912 | - | - | - | 3.800 | 0.14961 | | | | | | | |
| 653015312 | - | - | - | 3.900 | 0.15354 | 55 | 115 | | | | | 6 |
| 653015612 | 5/32 | - | - | 3.969 | 0.15625 | | | | | | | |
| 8696400 | - | - | - | 4.000 | 0.15748 | 60 | | 115 | | | | 6 |
| 653016012 | - | 20 | - | 4.089 | 0.16100 | | | | | | | |
| 8710410 | - | - | - | 4.100 | 0.16142 | 60 | | | 115 | | | 6 |
| 8710420 | - | - | - | 4.200 | 0.16535 | | | | | | | |
| 8710430 | - | - | - | 4.300 | 0.16929 | 65 | | | | 128 | | 3/16 |
| 8710440 | - | - | - | 4.400 | 0.17323 | | | | | | | |
| 8696450 | - | - | - | 4.500 | 0.17717 | 65 | | | | | 128 | 6 |
| 8710450 | - | - | - | 4.600 | 0.18110 | | | | | | | |
| 8710460 | - | - | - | 4.700 | 0.18504 | 70 | 128 | | | | | 6 |
| 8710470 | - | - | - | 4.763 | 0.18750 | | | | | | | |
| 653018712 | 3/16 | - | - | 4.800 | 0.18898 | 70 | | 128 | | | | 6 |
| 8710480 | - | - | - | 4.800 | 0.18898 | | | | | | | |
| 8710490 | - | - | - | 4.900 | 0.19291 | 78 | | | 128 | | | 6 |
| 8696500 | - | - | - | 5.000 | 0.19685 | | | | | | | |
| 8710500 | - | - | - | 5.100 | 0.20079 | 78 | | | | 128 | | 1/4 |
| 653020012 | - | - | - | 5.159 | 0.20313 | | | | | | | |
| 653020212 | 13/64 | - | - | 5.200 | 0.20472 | 78 | | | | | 128 | 6 |
| 653020412 | - | - | - | 5.300 | 0.20866 | | | | | | | |
| 653020812 | - | - | - | 5.400 | 0.21260 | 78 | 128 | | | | | 6 |
| 653021212 | - | - | - | 5.410 | 0.21300 | | | | | | | |
| 653021112 | - | 3 | - | 5.500 | 0.21654 | 78 | | 128 | | | | 1/4 |
| 8696550 | - | - | - | 5.556 | 0.21875 | | | | | | | |
| 653021712 | 7/32 | - | - | 5.600 | 0.22047 | 78 | | | 128 | | | 6 |
| 653022012 | - | - | - | 5.700 | 0.22441 | | | | | | | |
| 653022412 | - | - | - | 5.800 | 0.22835 | 78 | | | | 128 | | 6 |
| 653022812 | - | - | - | 5.800 | 0.22835 | | | | | | | |

Packed: 1 pc.
 Available EgiAs coating only.
 * Sizes ≤ 2.90 mm have a single margin. Sizes ≥ 3 mm have a double margin.





List 6530 (Continued)

ADO-10D, Coolant-Through

| | | | | | |
|-------------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P352-353 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|-------------------------------|----------------|--------------|--|------------|--------------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | | | |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|-----|------|-----|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | | |
| 653023212 | - | - | - | 5.900 | 0.23228 | 78 | 128 | 6 | | | |
| 8696600 | - | - | - | 6.000 | 0.23622 | | | | | | |
| 8710610 | - | - | - | 6.100 | 0.24016 | 87 | 140 | 8 | | | |
| 8696620 | - | - | - | 6.200 | 0.24409 | | | 7 | | | |
| 8710620 | - | - | - | 6.300 | 0.24803 | | | 8 | | | |
| 653025012 | 1/4 | - | E | 6.350 | 0.25000 | | | 1/4 | | | |
| 8710640 | - | - | - | 6.400 | 0.25197 | | | 8 | | | |
| 8696650 | - | - | - | 6.500 | 0.25591 | | | 7 | | | |
| 8710650 | - | - | - | 6.528 | 0.25700 | | | 8 | | | |
| 653025612 | - | - | F | 6.600 | 0.25984 | | | | | | |
| 8710660 | - | - | - | 6.700 | 0.26378 | | | 90 | 165 | 5/16 | |
| 8710670 | - | - | - | 6.747 | 0.26563 | | | | | 8 | |
| 653026412 | 17/64 | - | - | 6.800 | 0.26772 | 8 | | | | | |
| 8710680 | - | - | - | 6.900 | 0.27165 | 7 | | | | | |
| 8710690 | - | - | - | 7.000 | 0.27559 | 8 | | | | | |
| 8696700 | - | - | - | 7.100 | 0.27953 | 5/16 | | | | | |
| 8710700 | - | - | - | 7.144 | 0.28125 | | | | | | |
| 653027912 | - | - | - | 7.200 | 0.28346 | 100 | 155 | | | 8 | |
| 653028012 | 9/32 | - | - | 7.300 | 0.28740 | | | | | | |
| 653028312 | - | - | - | 7.400 | 0.29134 | | | | | | |
| 653028712 | - | - | - | 7.500 | 0.29528 | | | | | | |
| 653029112 | - | - | - | 7.600 | 0.29921 | | | | | | |
| 8696750 | - | - | - | 7.700 | 0.30315 | | | | | | |
| 653029912 | - | - | - | 7.800 | 0.30709 | | | | | | |
| 653030312 | - | - | - | 7.900 | 0.31102 | | | | | | |
| 653030712 | - | - | - | 7.938 | 0.31250 | | | 5/16 | | | |
| 653031112 | - | - | - | 8.000 | 0.31496 | | | | | | |
| 653031212 | 5/16 | - | - | 8.100 | 0.31890 | 110 | 165 | 10 | | | |
| 8696800 | - | - | - | 8.200 | 0.32283 | | | 9 | | | |
| 8710810 | - | - | - | 8.300 | 0.32677 | | | 10 | | | |
| 8710820 | - | - | - | 8.400 | 0.33071 | | | 9 | | | |
| 8696830 | - | - | - | 8.433 | 0.33200 | | | 10 | | | |
| 8710830 | - | - | - | 8.500 | 0.33465 | | | 9 | | | |
| 8710840 | - | - | - | 8.600 | 0.33858 | | | 10 | | | |
| 653033112 | - | - | Q | 8.700 | 0.34252 | | | 115 | 165 | 10 | |
| 8696850 | - | - | - | 8.731 | 0.34375 | | | | | | 3/8 |
| 8710850 | - | - | - | 8.800 | 0.34646 | | | | | | 10 |
| 8710860 | - | - | - | 8.900 | 0.35039 | 9 | | | | | |
| 8710870 | - | - | - | 9.000 | 0.35433 | 10 | | | | | |
| 653034212 | 11/32 | - | - | | | 9 | | | | | |
| 8710880 | - | - | - | | | 10 | | | | | |
| 8710890 | - | - | - | | | 10 | | | | | |
| 8696900 | - | - | - | | | 9 | | | | | |
| 8710900 | - | - | - | | | 10 | | | | | |

Packed: 1 pc.

Available EgiAs coating only.

* Sizes ≤ 2.90 mm have a single margin. Sizes ≥ 3 mm have a double margin.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-----------|---------|--------------|--------------------------|-----------------|----------------|---------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 6530 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | | | | |

good best





List 6530 (Continued)

ADO-10D, Coolant-Through

| | | | | | |
|-------------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P352-353 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|-------------------------------|----------------|--------------|--|------------|--------------------|



| Cutting Diameter Tolerance (e8) | | |
|---------------------------------|-----------------|-------------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | -0.014 / -0.028 | -0.0006 / -0.0011 |
| 3 < D ≤ 6 | -0.020 / -0.038 | -0.0008 / -0.0015 |
| 6 < D ≤ 10 | -0.025 / -0.047 | -0.0010 / -0.0019 |
| 10 < D ≤ 14.29 | -0.032 / -0.059 | -0.0013 / -0.0023 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 653035812 | - | - | - | 9.100 | 0.35827 | 125 | 190 | 10 |
| 653036212 | - | - | - | 9.200 | 0.36220 | | | |
| 653036612 | - | - | - | 9.300 | 0.36614 | | | |
| 653037012 | - | - | - | 9.400 | 0.37008 | | | |
| 8696950 | - | - | - | 9.500 | 0.37402 | | | |
| 653037512 | 3/8 | - | - | 9.525 | 0.37500 | | | |
| 653037812 | - | - | - | 9.600 | 0.37795 | | | |
| 653038112 | - | - | - | 9.700 | 0.38189 | | | |
| 653038512 | - | - | - | 9.800 | 0.38583 | | | |
| 653038912 | - | - | - | 9.900 | 0.38976 | | | |
| 8697000 | - | - | - | 10.000 | 0.39370 | | | |
| 8711010 | - | - | - | 10.100 | 0.39764 | | | |
| 8711020 | - | - | - | 10.200 | 0.40157 | | | |
| 8711030 | - | - | - | 10.300 | 0.40551 | | | |
| 8711040 | - | - | - | 10.400 | 0.40945 | | | |
| 8711050 | - | - | - | 10.500 | 0.41339 | | | |
| 8711060 | - | - | - | 10.600 | 0.41732 | | | |
| 8711070 | - | - | - | 10.700 | 0.42126 | | | |
| 653042312 | 27/64 | - | - | 10.716 | 0.42188 | | | |
| 8711080 | - | - | - | 10.800 | 0.42520 | | | |
| 8711090 | - | - | - | 10.900 | 0.42913 | | | |
| 8697100 | - | - | - | 11.000 | 0.43307 | | | |
| 8711100 | - | - | - | 11.100 | 0.43701 | | | |
| 653043712 | 7/16 | - | - | 11.113 | 0.43750 | | | |
| 653044012 | - | - | - | 11.200 | 0.44094 | | | |
| 653044412 | - | - | - | 11.300 | 0.44488 | | | |
| 653044812 | - | - | - | 11.400 | 0.44882 | | | |
| 653045212 | - | - | - | 11.500 | 0.45276 | | | |
| 653045412 | 29/64 | - | - | 11.509 | 0.45313 | | | |
| 653045612 | - | - | - | 11.600 | 0.45669 | | | |
| 653046012 | - | - | - | 11.700 | 0.46063 | | | |
| 653046412 | - | - | - | 11.800 | 0.46457 | | | |
| 653046812 | - | - | - | 11.900 | 0.46850 | | | |
| 8697200 | - | - | - | 12.000 | 0.47244 | | | |
| 8711250 | - | - | - | 12.500 | 0.49213 | | | |
| 653050012 | 1/2 | - | - | 12.700 | 0.50000 | | | |
| 653056112 | 9/16 | - | - | 14.288 | 0.56250 | | | |

Packed: 1 pc.
 Available EgiAs coating only.
 * Sizes ≤ 2.90 mm have a single margin. Sizes ≥ 3 mm have a double margin.



| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 6530 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 6535

ADO-15D, Coolant-Through

| | | | | | |
|-------------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P352-353 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|-------------------------------|----------------|--------------|--|------------|--------------------|



| Cutting Diameter Tolerance (e8) | | |
|---------------------------------|-----------------|-------------------|
| Size | mm | inch |
| D=3 | -0.014 / -0.028 | -0.0006 / -0.0011 |
| 3 < D ≤ 6 | -0.020 / -0.038 | -0.0008 / -0.0015 |
| 6 < D ≤ 10 | -0.025 / -0.047 | -0.0010 / -0.0019 |
| 10 < D ≤ 14.29 | -0.032 / -0.059 | -0.0013 / -0.0023 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8698300 | - | - | - | 3.000 | 0.11811 | 55 | 105 | 3 |
| 653512512 | 1/8 | - | - | 3.175 | 0.12500 | 60 | 125 | 1/8 |
| 8698320 | - | - | - | 3.200 | 0.12598 | 65 | | 4 |
| 8698350 | - | - | - | 3.500 | 0.13780 | | | 5/32 |
| 653514112 | 9/64 | - | - | 3.572 | 0.14063 | 75 | 3/16 | |
| 653515612 | 5/32 | - | - | 3.969 | 0.15625 | | 4 | |
| 8698400 | - | - | - | 4.000 | 0.15748 | 85 | 3/16 | |
| 653517212 | 11/64 | - | - | 4.366 | 0.17188 | | 85 | 6 |
| 8712440 | - | - | - | 4.400 | 0.17323 | | | 3/16 |
| 8712450 | - | - | - | 4.500 | 0.17717 | 90 | 6 | |
| 653518712 | 3/16 | - | - | 4.763 | 0.18750 | | 90 | 6 |
| 8712480 | - | - | - | 4.800 | 0.18898 | | | 6 |
| 8712500 | - | - | - | 5.000 | 0.19685 | 95 | 1/4 | |
| 8712510 | - | - | - | 5.100 | 0.20079 | | 95 | 6 |
| 653520312 | 13/64 | - | - | 5.159 | 0.20313 | | | 1/4 |
| 8712520 | - | - | - | 5.200 | 0.20472 | 110 | 6 | |
| 653521312 | - | - | - | 5.410 | 0.21299 | | 110 | 6 |
| 8698550 | - | - | - | 5.500 | 0.21654 | | | 6 |
| 653521912 | 7/32 | - | - | 5.556 | 0.21875 | 120 | 1/4 | |
| 653523412 | 15/64 | - | - | 5.953 | 0.23438 | | 120 | 6 |
| 8698600 | - | - | - | 6.000 | 0.23622 | | | 8 |
| 8712620 | - | - | - | 6.200 | 0.24409 | 125 | 1/4 | |
| 653525012 | 1/4 | - | E | 6.350 | 0.25000 | | 125 | 8 |
| 8712650 | - | - | - | 6.500 | 0.25591 | | | 8 |
| 653526612 | 17/64 | - | - | 6.747 | 0.26563 | 135 | 5/16 | |
| 8712700 | - | - | - | 7.000 | 0.27559 | | 135 | 8 |
| 653528112 | 9/32 | - | - | 7.144 | 0.28125 | | | 5/16 |
| 8698750 | - | - | - | 7.500 | 0.29528 | 145 | 8 | |
| 653529712 | 19/64 | - | - | 7.541 | 0.29688 | | 145 | 5/16 |
| 653531312 | 5/16 | - | - | 7.938 | 0.31250 | | | 8 |
| 8698800 | - | - | - | 8.000 | 0.31496 | 155 | 10 | |
| 8712810 | - | - | - | 8.100 | 0.31890 | | 155 | 10 |
| 8712820 | - | - | - | 8.200 | 0.32283 | | | 10 |
| 653532812 | 21/64 | - | - | 8.334 | 0.32813 | 160 | 3/8 | |
| 8712850 | - | - | - | 8.500 | 0.33465 | | 160 | 10 |
| 653534412 | 11/32 | - | - | 8.731 | 0.34375 | | | 3/8 |
| 8712900 | - | - | - | 9.000 | 0.35433 | 170 | 10 | |
| 653535912 | 23/64 | - | - | 9.128 | 0.35938 | | 170 | 3/8 |
| 8712940 | - | - | - | 9.400 | 0.37008 | | | 10 |
| 8698950 | - | - | - | 9.500 | 0.37402 | | | |

Packed: 1 pc.
Available EgiAs coating only.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 6535 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 6535 (Continued)

ADO-15D, Coolant-Through

| | | | | | |
|-------------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P352-353 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|-------------------------------|----------------|--------------|--|------------|--------------------|



| Cutting Diameter Tolerance (e8) | | |
|---------------------------------|---------------|-----------------|
| Size | mm | inch |
| D=3 | -0.014/-0.028 | -0.0006/-0.0011 |
| 3<D≤6 | -0.020/-0.038 | -0.0008/-0.0015 |
| 6<D≤10 | -0.025/-0.047 | -0.0010/-0.0019 |
| 10<D≤14.29 | -0.032/-0.059 | -0.0013/-0.0023 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 653537512 | 3/8 | - | - | 9.525 | 0.37500 | 180 | 240 | 3/8 |
| 8712980 | - | - | - | 9.800 | 0.38583 | | | 10 |
| 653539112 | 25/64 | - | - | 9.922 | 0.39063 | | | 7/16 |
| 8699000 | - | - | - | 10.000 | 0.39370 | 190 | 260 | 10 |
| 653540612 | 13/32 | - | - | 10.319 | 0.40625 | | | 7/16 |
| 8713050 | - | - | - | 10.500 | 0.41339 | | | 12 |
| 653542212 | 27/64 | - | - | 10.716 | 0.42188 | 200 | 280 | 7/16 |
| 8713100 | - | - | - | 11.000 | 0.43307 | | | 12 |
| 653543712 | 7/16 | - | - | 11.113 | 0.43750 | | | 7/16 |
| 8713150 | - | - | - | 11.500 | 0.45276 | 210 | 300 | 12 |
| 653545312 | 29/64 | - | - | 11.509 | 0.45313 | | | 1/2 |
| 653546912 | 15/32 | - | - | 11.906 | 0.46875 | | | 12 |
| 8699200 | - | - | - | 12.000 | 0.47244 | 215 | 315 | 12 |
| 8713250 | - | - | - | 12.500 | 0.49213 | | | 14 |
| 653550012 | 1/2 | - | - | 12.700 | 0.50000 | | | 230 |
| 653553112 | 17/32 | - | - | 13.494 | 0.53125 | 245 | 330 | 5/8 |
| 653556312 | 9/16 | - | - | 14.288 | 0.56250 | | | |

Packed: 1 pc.
Available EgiAs coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-----------|---------|--------------|--------------------------|-----------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 6535 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | | | | |

good best





List 6540

ADO-20D, Coolant-Through

| | | | | | |
|-------------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P352-353 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|-------------------------------|----------------|--------------|--|------------|--------------------|



| Cutting Diameter Tolerance (e8) | | |
|---------------------------------|-----------------|-------------------|
| Size | mm | inch |
| D=3 | -0.014 / -0.028 | -0.0006 / -0.0011 |
| 3<D≤6 | -0.020 / -0.038 | -0.0008 / -0.0015 |
| 6<D≤10 | -0.025 / -0.047 | -0.0010 / -0.0019 |
| 10<D≤14.29 | -0.032 / -0.059 | -0.0013 / -0.0023 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8706300 | - | - | - | 3.000 | 0.11811 | 70 | 120 | 3 |
| 654012512 | 1/8 | - | - | 3.175 | 0.12500 | 80 | 140 | 1/8 |
| 8706320 | - | - | - | 3.200 | 0.12598 | 85 | 140 | 4 |
| 8706350 | - | - | - | 3.500 | 0.13780 | 90 | 140 | 5/32 |
| 654014012 | 9/64 | - | - | 3.572 | 0.14063 | 90 | 140 | 3/16 |
| 654015612 | 5/32 | - | - | 3.969 | 0.15625 | 110 | 165 | 4 |
| 8706400 | - | - | - | 4.000 | 0.15748 | 110 | 165 | 3/16 |
| 654017212 | 11/64 | - | - | 4.366 | 0.17188 | 115 | 165 | 5 |
| 8706450 | - | - | - | 4.500 | 0.17717 | 115 | 165 | 6 |
| 8714450 | - | - | - | 4.500 | 0.17717 | 115 | 165 | 3/16 |
| 654018712 | 3/16 | - | - | 4.763 | 0.18750 | 120 | 190 | 6 |
| 8714480 | - | - | - | 4.800 | 0.18898 | 120 | 190 | 6 |
| 8706500 | - | - | - | 5.000 | 0.19685 | 140 | 190 | 5 |
| 8714500 | - | - | - | 5.000 | 0.19685 | 140 | 190 | 6 |
| 8714510 | - | - | - | 5.100 | 0.20079 | 140 | 190 | 1/4 |
| 654020212 | 13/64 | - | - | 5.159 | 0.20313 | 150 | 210 | 6 |
| 8714520 | - | - | - | 5.200 | 0.20472 | 150 | 210 | 1/4 |
| 654021312 | - | - | - | 5.410 | 0.21299 | 155 | 210 | 6 |
| 8706550 | - | - | - | 5.500 | 0.21654 | 160 | 210 | 7 |
| 654021712 | 7/32 | - | - | 5.556 | 0.21875 | 160 | 210 | 8 |
| 654023412 | 15/64 | - | - | 5.953 | 0.23438 | 170 | 230 | 5/16 |
| 8706600 | - | - | - | 6.000 | 0.23622 | 170 | 230 | 7 |
| 8714620 | - | - | - | 6.200 | 0.24409 | 180 | 230 | 8 |
| 654025012 | 1/4 | - | E | 6.350 | 0.25000 | 180 | 230 | 5/16 |
| 8706650 | - | - | - | 6.500 | 0.25591 | 180 | 230 | 8 |
| 8714650 | - | - | - | 6.500 | 0.25591 | 180 | 230 | 5/16 |
| 654026412 | 17/64 | - | - | 6.747 | 0.26563 | 180 | 230 | 7 |
| 8706700 | - | - | - | 7.000 | 0.27559 | 180 | 230 | 8 |
| 8714700 | - | - | - | 7.000 | 0.27559 | 180 | 230 | 5/16 |
| 654028012 | 9/32 | - | - | 7.144 | 0.28125 | 180 | 230 | 8 |
| 8706750 | - | - | - | 7.500 | 0.29528 | 180 | 230 | 5/16 |
| 654029612 | 19/64 | - | - | 7.541 | 0.29688 | 180 | 230 | 8 |
| 654031212 | 5/16 | - | - | 7.938 | 0.31250 | 180 | 230 | 5/16 |
| 8706800 | - | - | - | 8.000 | 0.31496 | 180 | 230 | 8 |

Packed: 1 pc.
Available EgiAs coating only.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 6540 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 6540 (Continued)

ADO-20D, Coolant-Through

| | | | | | |
|-------------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P352-353 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|-------------------------------|----------------|--------------|--|------------|--------------------|



| Cutting Diameter Tolerance (e8) | | |
|---------------------------------|-----------------|-------------------|
| Size | mm | inch |
| D=3 | -0.014 / -0.028 | -0.0006 / -0.0011 |
| 3 < D ≤ 6 | -0.020 / -0.038 | -0.0008 / -0.0015 |
| 6 < D ≤ 10 | -0.025 / -0.047 | -0.0010 / -0.0019 |
| 10 < D ≤ 14.29 | -0.032 / -0.059 | -0.0013 / -0.0023 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8714810 | - | - | - | 8.100 | 0.31890 | 195 | 260 | 10 |
| 654032812 | 21/64 | - | - | 8.334 | 0.32813 | | | 3/8 |
| 8706850 | - | - | - | 8.500 | 0.33465 | | | 9 |
| 8714850 | - | - | - | 8.500 | 0.33465 | 210 | | 10 |
| 654034212 | 11/32 | - | - | 8.731 | 0.34375 | | | 3/8 |
| 8706900 | - | - | - | 9.000 | 0.35433 | 9 | | |
| 8714900 | - | - | - | 9.000 | 0.35433 | 10 | | |
| 654035912 | 23/64 | - | - | 9.128 | 0.35938 | 220 | 290 | 3/8 |
| 8714940 | - | - | - | 9.400 | 0.37008 | | | 10 |
| 8706950 | - | - | - | 9.500 | 0.37402 | | | 3/8 |
| 654037512 | 3/8 | - | - | 9.525 | 0.37500 | 230 | | 10 |
| 8714980 | - | - | - | 9.800 | 0.38583 | | | 7/16 |
| 654039012 | 25/64 | - | - | 9.922 | 0.39063 | 10 | | |
| 8707000 | - | - | - | 10.000 | 0.39370 | 250 | 310 | 7/16 |
| 654040612 | 13/32 | - | - | 10.319 | 0.40625 | | | 12 |
| 8715050 | - | - | - | 10.500 | 0.41339 | | | 7/16 |
| 654042112 | 27/64 | - | - | 10.716 | 0.42188 | 270 | | 11 |
| 8707100 | - | - | - | 11.000 | 0.43307 | | | 12 |
| 8715100 | - | - | - | 11.000 | 0.43307 | 280 | | 330 |
| 654043712 | 7/16 | - | - | 11.113 | 0.43750 | | 12 | |
| 654045212 | - | - | - | 11.500 | 0.45276 | | 1/2 | |
| 654045412 | 29/64 | - | - | 11.509 | 0.45313 | | 12 | |
| 654046812 | 15/32 | - | - | 11.906 | 0.46875 | | 14 | |
| 8707200 | - | - | - | 12.000 | 0.47244 | | 1/2 | |
| 8715250 | - | - | - | 12.500 | 0.49213 | 310 | 365 | 5/8 |
| 654050012 | 1/2 | - | - | 12.700 | 0.50000 | | | 380 |
| 654053112 | 17/32 | - | - | 13.494 | 0.53125 | | | 315 |
| 654056112 | 9/16 | - | - | 14.288 | 0.56250 | 365 | | |

Packed: 1 pc.
Available EgiAs coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------|--------------------------|--------------------------|--------------------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 6540 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best

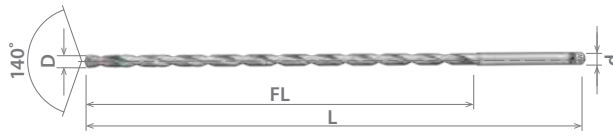




List 6550

ADO-30D, Coolant-Through

| | | | | | |
|-------------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P352-353 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|-------------------------------|----------------|--------------|--|------------|--------------------|



| Cutting Diameter Tolerance (e8) | | |
|---------------------------------|-----------------|-------------------|
| Size | mm | inch |
| D=3 | -0.014 / -0.028 | -0.0006 / -0.0011 |
| 3 < D ≤ 6 | -0.020 / -0.038 | -0.0008 / -0.0015 |
| 6 < D ≤ 10 | -0.025 / -0.047 | -0.0010 / -0.0019 |
| 10 < D ≤ 14.29 | -0.032 / -0.059 | -0.0013 / -0.0023 |

| EDP Number | Diameter | | | | | xD | Flute Length | Overall Length | Shank Diameter |
|------------|-----------------|-----------|-------------|-------|---------|--------|--------------|----------------|----------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | FL (mm) | L (mm) | d (mm/in) |
| 655011812 | - | - | - | 3.000 | 0.11811 | 25 x D | 85 | 135 | 3 |
| 655012512 | 1/8 | - | - | 3.175 | 0.12500 | | 95 | 165 | 1/8 |
| 8708320 | - | - | - | 3.200 | 0.12598 | | 105 | 185 | 4 |
| 8708350 | - | - | - | 3.500 | 0.13780 | | 116 | | 5/32 |
| 655014012 | 9/64 | - | - | 3.572 | 0.14063 | | | | 132 |
| 655015612 | 5/32 | - | - | 3.969 | 0.15625 | | 150 | | |
| 8708400 | - | - | - | 4.000 | 0.15748 | | | 155 | 3/16 |
| 655017212 | 11/64 | - | - | 4.366 | 0.17188 | | 165 | | 5 |
| 8708450 | - | - | - | 4.500 | 0.17717 | | | 165 | 6 |
| 8716450 | - | - | - | 4.763 | 0.18750 | | 180 | | 3/16 |
| 655018712 | 3/16 | - | - | 4.800 | 0.18898 | | | 200 | 6 |
| 8716480 | - | - | - | 5.000 | 0.19685 | | 215 | | 1/4 |
| 8708500 | - | - | - | 5.100 | 0.20079 | | | 250 | 6 |
| 655020212 | 13/64 | - | - | 5.159 | 0.20313 | | 280 | | 1/4 |
| 8716520 | - | - | - | 5.200 | 0.20472 | | | 280 | 8 |
| 655021312 | - | - | - | 5.410 | 0.21299 | | 280 | | 7 |
| 8708550 | - | - | - | 5.500 | 0.21654 | 280 | | 8 | |
| 655021712 | 7/32 | - | - | 5.556 | 0.21875 | | 280 | 5/16 | |
| 655023412 | 15/64 | - | - | 5.953 | 0.23438 | 315 | | 7 | |
| 8708600 | - | - | - | 6.000 | 0.23622 | | 315 | 8 | |
| 8716620 | - | - | - | 6.200 | 0.24409 | 315 | | 5/16 | |
| 655025012 | 1/4 | - | E | 6.350 | 0.25000 | | 350 | 7 | |
| 8708650 | - | - | - | 6.500 | 0.25591 | 350 | | 8 | |
| 8716650 | - | - | - | 6.747 | 0.26563 | | 350 | 8 | |
| 655026412 | 17/64 | - | - | 7.000 | 0.27559 | 350 | | 10 | |
| 8708700 | - | - | - | 7.144 | 0.28125 | | 350 | 3/8 | |
| 8716700 | - | - | - | 7.500 | 0.29528 | 350 | | 9 | |
| 655028012 | 9/32 | - | - | 7.541 | 0.29688 | | 350 | 10 | |
| 8708750 | - | - | - | 7.938 | 0.31250 | 350 | | 3/8 | |
| 655029612 | 19/64 | - | - | 8.000 | 0.31496 | | 350 | 9 | |
| 655031212 | 5/16 | - | - | 8.100 | 0.31890 | 350 | | 10 | |
| 8708800 | - | - | - | 8.334 | 0.32813 | | 350 | 3/8 | |
| 8716810 | - | - | - | 8.500 | 0.33465 | 350 | | 10 | |
| 655032812 | 21/64 | - | - | 8.733 | 0.34375 | | 350 | 3/8 | |
| 8708850 | - | - | - | | | | | | |
| 8716850 | - | - | - | | | | | | |
| 655034212 | 11/32 | - | - | | | | | | |

Packed: 1 pc.
Available EgiAs coating only.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 6550 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

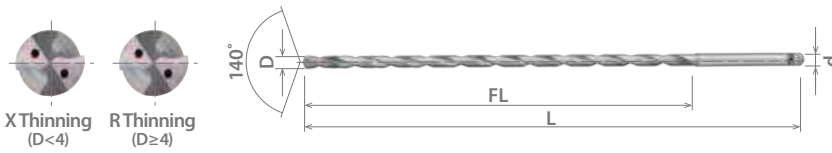




List 6550 (Continued)

ADO-30D, Coolant-Through

| | | | | | |
|-------------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P352-353 | CARBIDE | EgiAs | | 30° | SHANK h6 |
|-------------------------------|----------------|--------------|--|------------|--------------------|



| Cutting Diameter Tolerance (e8) | | |
|---------------------------------|-----------------|-------------------|
| Size | mm | inch |
| D=3 | -0.014 / -0.028 | -0.0006 / -0.0011 |
| 3<D≤6 | -0.020 / -0.038 | -0.0008 / -0.0015 |
| 6<D≤10 | -0.025 / -0.047 | -0.0010 / -0.0019 |
| 10<D≤14.29 | -0.032 / -0.059 | -0.0013 / -0.0023 |

| EDP Number | Diameter | | | | | xD | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | |
|------------|-----------------|-----------|-------------|--------|---------|--------|-------------------------|--------------------------|-----------------------------|-----|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | |
| 8708900 | - | - | - | 9.000 | 0.35433 | 30 x D | 300 | 350 | 9 | |
| 8716900 | - | - | - | | | | | | 10 | |
| 655035912 | 23/64 | - | - | 9.128 | 0.35938 | | | | 3/8 | |
| 8716940 | - | - | - | 9.400 | 0.37008 | | 315 | 390 | 10 | |
| 8708950 | - | - | - | 9.500 | 0.37402 | | | | 3/8 | |
| 655037512 | 3/8 | - | - | 9.525 | 0.37500 | | | | 10 | |
| 8716980 | - | - | - | 9.800 | 0.38583 | | | | 7/16 | |
| 655039012 | 25/64 | - | - | 9.922 | 0.39063 | | | | 10 | |
| 8709000 | - | - | - | 10.000 | 0.39370 | | | | 7/16 | |
| 655040612 | 13/32 | - | - | 10.319 | 0.40625 | | 340 | 400 | 12 | |
| 655041212 | - | - | - | 10.500 | 0.41339 | | | | 7/16 | |
| 655042112 | 27/64 | - | - | 10.716 | 0.42188 | | | | 12 | |
| 655043212 | - | - | - | 11.000 | 0.43307 | | | | 7/16 | |
| 655043712 | 7/16 | - | - | 11.113 | 0.43750 | | | | 12 | |
| 655045212 | - | - | - | 11.500 | 0.45276 | | | | 7/16 | |
| 655045412 | 29/64 | - | - | 11.509 | 0.45313 | | | | 12 | |
| 655046812 | 15/32 | - | - | 11.906 | 0.46875 | | | | 25 x D | 1/2 |
| 655047212 | - | - | - | 12.000 | 0.47244 | | | | 26 x D | 12 |
| 655049112 | - | - | - | 12.500 | 0.49213 | 25 x D | | | 14 | |
| 655050012 | 1/2 | - | - | 12.700 | 0.50000 | 22 x D | | | 340 | 1/2 |
| 655053112 | 17/32 | - | - | 13.494 | 0.53125 | | | | | 5/8 |
| 655056112 | 9/16 | - | - | 14.288 | 0.56250 | | 350 | | | |

Packed: 1 pc.
Available EgiAs coating only.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|----------|---------|--------------|--------------------------|-----------------|-----------|-----------|-----------|
| | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 6550 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | | | | |

good best





List 6560

ADO-40D, Coolant-Through

NEW SPEED FEED P354 CARBIDE EgiAs 25° SHANK h6



| Cutting Diameter Tolerance (e8) | | |
|---------------------------------|---------------|-----------------|
| Size | mm | inch |
| D=3 | -0.014/-0.028 | -0.0006/-0.0011 |
| 3<D≤6 | -0.020/-0.038 | -0.0008/-0.0015 |
| 6<D≤10 | -0.025/-0.047 | -0.0010/-0.0019 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8717300 | - | - | - | 3.000 | 0.11811 | 129 | 179 | 3 |
| 656012512 | 1/8 | - | - | 3.175 | 0.12500 | 137 | 187 | 1/8 |
| 656015612 | 5/32 | - | - | 3.969 | 0.15625 | 171 | 221 | 3/16 |
| 8717400 | - | - | - | 4.000 | 0.15748 | 172 | 222 | 4 |
| 656018712 | 3/16 | - | - | 4.763 | 0.18750 | 205 | 255 | 3/16 |
| 8717500 | - | - | - | 5.000 | 0.19685 | 215 | 265 | 5 |
| 8717600 | - | - | - | 6.000 | 0.23622 | 258 | 308 | 6 |
| 656025012 | 1/4 | - | - | 6.350 | 0.25000 | 273 | 323 | 1/4 |
| 656031212 | 5/16 | - | - | 7.938 | 0.31250 | 341 | 391 | 5/16 |
| 8717800 | - | - | - | 8.000 | 0.31496 | 344 | 394 | 8 |
| 656037512 | 3/8 | - | - | 9.525 | 0.37500 | 410 | 460 | 3/8 |
| 8718000 | - | - | - | 10.000 | 0.39370 | 430 | 490 | 10 |

Packed: 1 pc.
Available EgiAs coating only.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|----------|---------|--------------|--------------------------|-----------------|-----------|-----------|-----------|
| | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 6560 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | | | | |

good best





List 6570

ADO-50D, Coolant-Through

| | | | | | | |
|------------|---------------------------|----------------|--------------|--|------------|--------------------|
| NEW | SPEED FEED P354 | CARBIDE | EgiAs | | 25° | SHANK h6 |
|------------|---------------------------|----------------|--------------|--|------------|--------------------|



| Cutting Diameter Tolerance (e8) | | |
|---------------------------------|---------------|-----------------|
| Size | mm | inch |
| D=3 | -0.014/-0.028 | -0.0006/-0.0011 |
| 3<D≤6 | -0.020/-0.038 | -0.0008/-0.0015 |
| 6<D≤8 | -0.025/-0.047 | -0.0010/-0.0019 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8718300 | - | - | - | 3.000 | 0.11811 | 159 | 209 | 3 |
| 657012512 | 1/8 | - | - | 3.175 | 0.12500 | 169 | 219 | 1/8 |
| 657015612 | 5/32 | - | - | 3.969 | 0.15625 | 210 | 260 | 3/16 |
| 8718400 | - | - | - | 4.000 | 0.15748 | 212 | 262 | 4 |
| 657018712 | 3/16 | - | - | 4.763 | 0.18750 | 252 | 302 | 3/16 |
| 8718500 | - | - | - | 5.000 | 0.19685 | 265 | 315 | 5 |
| 8718600 | - | - | - | 6.000 | 0.23622 | 318 | 368 | 6 |
| 657025012 | 1/4 | - | - | 6.350 | 0.25000 | 337 | 387 | 1/4 |
| 657031212 | 5/16 | - | - | 7.938 | 0.31250 | 421 | 471 | 5/16 |
| 8718800 | - | - | - | 8.000 | 0.31496 | 424 | 474 | 8 |

Packed: 1 pc.
Available EgiAs coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|----------|---------|--------------|--------------------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 6570 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | | | | |

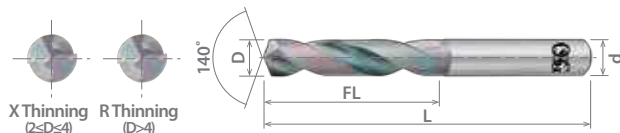
good best





List 6300

AD-2D



| | | | | |
|---------------------------|----------------|--------------|------------|--------------------|
| SPEED FEED P357 | CARBIDE | EgiAs | 30° | SHANK h6 |
|---------------------------|----------------|--------------|------------|--------------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | | | |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|----|----|-----|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | | |
| 8670200 | - | - | - | 2.000 | 0.07874 | 14 | 62 | 4 | | | |
| 8670210 | - | - | - | 2.100 | 0.08268 | | | | | | |
| 8670220 | - | - | - | 2.200 | 0.08661 | | | | | | |
| 8670230 | - | - | - | 2.300 | 0.09055 | | | | | | |
| 8670240 | - | - | - | 2.400 | 0.09449 | | | | | | |
| 8670250 | - | - | - | 2.500 | 0.09843 | | | | | | |
| 8670260 | - | - | - | 2.600 | 0.10236 | | | | | | |
| 8670270 | - | - | - | 2.700 | 0.10630 | | | | | | |
| 8670280 | - | - | - | 2.800 | 0.11024 | | | | | | |
| 8670290 | - | - | - | 2.900 | 0.11417 | | | | | | |
| 8670300 | - | - | - | 3.000 | 0.11811 | | | | | | |
| 8670310 | - | - | - | 3.100 | 0.12205 | | | | | | |
| 630012311 | 1/8 | - | - | 3.175 | 0.12500 | | | | 20 | 66 | 1/8 |
| 8670320 | - | - | - | 3.200 | 0.12598 | | | | | | |
| 8670330 | - | - | - | 3.300 | 0.12992 | | | | | | |
| 8670340 | - | - | - | 3.400 | 0.13386 | | | | | | |
| 8670350 | - | - | - | 3.500 | 0.13780 | | | | | | |
| 8670360 | - | - | - | 3.600 | 0.14173 | | | | | | |
| 8670370 | - | - | - | 3.700 | 0.14567 | | | | | | |
| 8670380 | - | - | - | 3.800 | 0.14961 | | | | | | |
| 8670390 | - | - | - | 3.900 | 0.15354 | | | | | | |
| 630015511 | 5/32 | - | - | 3.969 | 0.15625 | | | | | | |
| 8670400 | - | - | - | 4.000 | 0.15748 | | | | | | |
| 630016111 | - | 20 | - | 4.089 | 0.16100 | 24 | 66 | 6 | | | |
| 8670410 | - | - | - | 4.100 | 0.16142 | | | | | | |
| 8670420 | - | - | - | 4.200 | 0.16535 | | | | | | |
| 8670430 | - | - | - | 4.300 | 0.16929 | | | | | | |
| 630017111 | 11/64 | - | - | 4.366 | 0.17188 | | | | | | |
| 8670440 | - | - | - | 4.400 | 0.17323 | | | | | | |
| 8670450 | - | - | - | 4.500 | 0.17717 | | | | | | |
| 8670460 | - | - | - | 4.600 | 0.18110 | | | | | | |
| 8670470 | - | - | - | 4.700 | 0.18504 | | | | | | |
| 630018611 | 3/16 | - | - | 4.763 | 0.18750 | | | | | | |
| 8670480 | - | - | - | 4.800 | 0.18898 | | | | | | |
| 8670490 | - | - | - | 4.900 | 0.19291 | | | | | | |
| 8670500 | - | - | - | 5.000 | 0.19685 | | | | | | |
| 8670510 | - | - | - | 5.100 | 0.20079 | | | | | | |
| 630020211 | 13/64 | - | - | 5.159 | 0.20313 | 28 | 66 | 6 | | | |
| 8670520 | - | - | - | 5.200 | 0.20472 | | | | | | |
| 8670530 | - | - | - | 5.300 | 0.20866 | | | | | | |

Packed: 1 pc.
Available EgiAs coating only.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|------------------|-----|---------|-------------------------------------|-----------|---------|--------------|--------------------------|-----------------|----------------|---------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 6300 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | | | | |

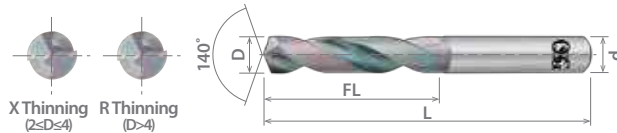
good best





List 6300 (Continued)

AD-2D



| | | | | |
|---------------------------|----------------|--------------|------------|--------------------|
| SPEED FEED P357 | CARBIDE | EgiAs | 30° | SHANK h6 |
|---------------------------|----------------|--------------|------------|--------------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8670540 | - | - | - | 5.400 | 0.21260 | 28 | 66 | 6 |
| 630021311 | - | 3 | - | 5.410 | 0.21300 | | | |
| 8670550 | - | - | - | 5.500 | 0.21654 | | | |
| 630021711 | 7/32 | - | - | 5.556 | 0.21875 | | | |
| 8670560 | - | - | - | 5.600 | 0.22047 | | | |
| 8670570 | - | - | - | 5.700 | 0.22441 | | | |
| 8670580 | - | - | - | 5.800 | 0.22835 | | | |
| 8670590 | - | - | - | 5.900 | 0.23228 | | | |
| 630023311 | 15/64 | - | - | 5.953 | 0.23438 | | | |
| 8670600 | - | - | - | 6.000 | 0.23622 | | | |
| 8670610 | - | - | - | 6.100 | 0.24016 | 34 | 79 | 8 |
| 8670620 | - | - | - | 6.200 | 0.24409 | | | |
| 8670630 | - | - | - | 6.300 | 0.24803 | | | |
| 630024911 | 1/4 | - | E | 6.350 | 0.25000 | | | |
| 8670640 | - | - | - | 6.400 | 0.25197 | | | |
| 8670650 | - | - | - | 6.500 | 0.25591 | | | |
| 630025711 | - | - | F | 6.528 | 0.25700 | | | |
| 8670660 | - | - | - | 6.600 | 0.25984 | | | |
| 8670670 | - | - | - | 6.700 | 0.26378 | | | |
| 630026411 | 17/64 | - | - | 6.747 | 0.26563 | | | |
| 8670680 | - | - | - | 6.800 | 0.26772 | 41 | 89 | 10 |
| 8670690 | - | - | - | 6.900 | 0.27165 | | | |
| 8670700 | - | - | - | 7.000 | 0.27559 | | | |
| 8670710 | - | - | - | 7.100 | 0.27953 | | | |
| 630028011 | 9/32 | - | - | 7.144 | 0.28125 | | | |
| 8670720 | - | - | - | 7.200 | 0.28346 | | | |
| 8670730 | - | - | - | 7.300 | 0.28740 | | | |
| 8670740 | - | - | - | 7.400 | 0.29134 | | | |
| 8670750 | - | - | - | 7.500 | 0.29528 | | | |
| 630029511 | 19/64 | - | - | 7.541 | 0.29688 | | | |
| 8670760 | - | - | - | 7.600 | 0.29921 | 47 | 89 | 10 |
| 8670770 | - | - | - | 7.700 | 0.30315 | | | |
| 8670780 | - | - | - | 7.800 | 0.30709 | | | |
| 8670790 | - | - | - | 7.900 | 0.31102 | | | |
| 630031111 | 5/16 | - | - | 7.938 | 0.31250 | | | |
| 8670800 | - | - | - | 8.000 | 0.31496 | | | |
| 8670810 | - | - | - | 8.100 | 0.31890 | | | |
| 8670820 | - | - | - | 8.200 | 0.32283 | | | |
| 8670830 | - | - | - | 8.300 | 0.32677 | | | |
| 630032711 | 21/64 | - | - | 8.334 | 0.32813 | | | |
| 8670840 | - | - | - | 8.400 | 0.33071 | 47 | 89 | 10 |
| 630033111 | - | - | Q | 8.433 | 0.33200 | | | |
| 8670850 | - | - | - | 8.500 | 0.33465 | | | |
| 8670860 | - | - | - | 8.600 | 0.33858 | | | |
| 8670870 | - | - | - | 8.700 | 0.34252 | | | |
| 630034211 | 11/32 | - | - | 8.731 | 0.34375 | | | |
| 8670880 | - | - | - | 8.800 | 0.34646 | | | |
| 8670890 | - | - | - | 8.900 | 0.35039 | | | |
| 8670900 | - | - | - | 9.000 | 0.35433 | | | |

Packed: 1 pc.
Available EgiAs coating only.



List 6300 (Continued)

AD-2D

| | | | | |
|-----------------------|---------|-------|-----|-------------|
| SPEED FEED P357 | CARBIDE | EgiAs | 30° | SHANK h6 |
|-----------------------|---------|-------|-----|-------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8670910 | - | - | - | 9.100 | 0.35827 | 47 | 89 | 10 |
| 630035811 | 23/64 | - | - | 9.128 | 0.35938 | | | 3/8 |
| 8670920 | - | - | - | 9.200 | 0.36220 | | | 10 |
| 8670930 | - | - | - | 9.300 | 0.36614 | | | |
| 8670940 | - | - | - | 9.400 | 0.37008 | | | |
| 8670950 | - | - | - | 9.500 | 0.37402 | | | |
| 630037411 | 3/8 | - | - | 9.525 | 0.37500 | | | 3/8 |
| 8670960 | - | - | - | 9.600 | 0.37795 | | | 10 |
| 8670970 | - | - | - | 9.700 | 0.38189 | | | |
| 8670980 | - | - | - | 9.800 | 0.38583 | | | |
| 8670990 | - | - | - | 9.900 | 0.38976 | | | |
| 630038911 | 25/64 | - | - | 9.922 | 0.39063 | 7/16 | | |
| 8671000 | - | - | - | 10.000 | 0.39370 | 10 | | |
| 8671010 | - | - | - | 10.100 | 0.39764 | 12 | | |
| 8671020 | - | - | - | 10.200 | 0.40157 | | | |
| 8671030 | - | - | - | 10.300 | 0.40551 | | | |
| 630040511 | 13/32 | - | - | 10.319 | 0.40625 | | 7/16 | |
| 8671040 | - | - | - | 10.400 | 0.40945 | | 12 | |
| 8671050 | - | - | - | 10.500 | 0.41339 | | | |
| 8671060 | - | - | - | 10.600 | 0.41732 | | | |
| 8671070 | - | - | - | 10.700 | 0.42126 | | | |
| 630042111 | 27/64 | - | - | 10.716 | 0.42188 | | 7/16 | |
| 8671080 | - | - | - | 10.800 | 0.42520 | | 12 | |
| 8671090 | - | - | - | 10.900 | 0.42913 | | | |
| 8671100 | - | - | - | 11.000 | 0.43307 | | | |
| 8671110 | - | - | - | 11.100 | 0.43701 | | | |
| 630043711 | 7/16 | - | - | 11.113 | 0.43750 | 7/16 | | |
| 8671120 | - | - | - | 11.200 | 0.44094 | 12 | | |
| 8671130 | - | - | - | 11.300 | 0.44488 | | | |
| 8671140 | - | - | - | 11.400 | 0.44882 | | | |
| 8671150 | - | - | - | 11.500 | 0.45276 | | | |
| 630045211 | 29/64 | - | - | 11.509 | 0.45313 | 1/2 | | |
| 8671160 | - | - | - | 11.600 | 0.45669 | 12 | | |
| 8671170 | - | - | - | 11.700 | 0.46063 | | | |
| 8671180 | - | - | - | 11.800 | 0.46457 | | | |
| 8671190 | - | - | - | 11.900 | 0.46850 | | | |
| 630046811 | 15/32 | - | - | 11.906 | 0.46875 | 1/2 | | |
| 8671200 | - | - | - | 12.000 | 0.47244 | 12 | | |
| 630047611 | - | - | - | 12.100 | 0.47638 | 14 | | |
| 630048011 | - | - | - | 12.200 | 0.48031 | | | |
| 630048311 | 31/64 | - | - | 12.303 | 0.48438 | | 1/2 | |
| 630048811 | - | - | - | 12.400 | 0.48819 | | 14 | |
| 630049211 | - | - | - | 12.500 | 0.49213 | | | |
| 630049611 | - | - | - | 12.600 | 0.49606 | | | |
| 630049911 | 1/2 | - | - | 12.700 | 0.50000 | | | |
| 630050311 | - | - | - | 12.800 | 0.50394 | | 1/2 | |
| | | | | | | | 14 | |

Packed: 1 pc.
Available EgiAs coating only.

➔ continued on next page ➔

| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------------------|--------------------------|------------------|-----|---------|-------------------------------------|--------------|---------|--------------|-------------------|--------------------------|--------------|--------------|--------------|--|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 6300 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | | | | | <input type="checkbox"/> | | | | |

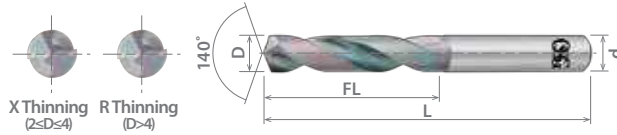
good best





List 6300 (Continued)

AD-2D



| | | | | |
|--------------------|---------|-------|-----|-------------|
| SPEED FEED P357 | CARBIDE | EgiAs | 30° | SHANK h6 |
|--------------------|---------|-------|-----|-------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|-----------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 630050711 | - | - | - | 12.900 | 0.50787 | 60 | 107 | 14 | |
| 630051111 | - | - | - | 13.000 | 0.51181 | | | 5/8 | |
| 630051411 | 33/64 | - | - | 13.097 | 0.51563 | | | 14 | |
| 630051911 | - | - | - | 13.200 | 0.51969 | | | 5/8 | |
| 630052311 | - | - | - | 13.300 | 0.52362 | | | 16 | |
| 630052711 | - | - | - | 13.400 | 0.52756 | 65 | 115 | 14 | |
| 630053211 | - | - | - | 13.500 | 0.53150 | | | 5/8 | |
| 630055111 | - | - | - | 14.000 | 0.55118 | | | 16 | |
| 630056111 | 9/16 | - | - | 14.288 | 0.56250 | | | 5/8 | |
| 630057011 | - | - | - | 14.500 | 0.57087 | | | 16 | |
| 630059011 | - | - | - | 15.000 | 0.59055 | 73 | 123 | 16 | |
| 630061011 | - | - | - | 15.500 | 0.61024 | | | 5/8 | |
| 630062311 | 5/8 | - | - | 15.875 | 0.62500 | | | 16 | |
| 630062911 | - | - | - | 16.000 | 0.62992 | | | 18 | |
| 630064911 | - | - | - | 16.500 | 0.64961 | | | 79 | 131 |
| 630066911 | - | - | - | 17.000 | 0.66929 | 20 | | | |
| 630068911 | - | - | - | 17.500 | 0.68898 | 3/4 | | | |
| 630070811 | - | - | - | 18.000 | 0.70866 | 20 | | | |
| 630072811 | - | - | - | 18.500 | 0.72835 | 3/4 | | | |
| 630074811 | - | - | - | 19.000 | 0.74803 | 6061 7075 | Casting | 20 | |
| 630074911 | 3/4 | - | - | 19.050 | 0.75000 | | | ~35 HRC | |
| 630076711 | - | - | - | 19.500 | 0.76772 | | | 35-45 HRC | |
| 630078711 | - | - | - | 20.000 | 0.78740 | Inconel | 6Al4V (30 HRC) | 45-50 HRC | 50-70 HRC |

Packed: 1 pc.
Available EgiAs coating only.



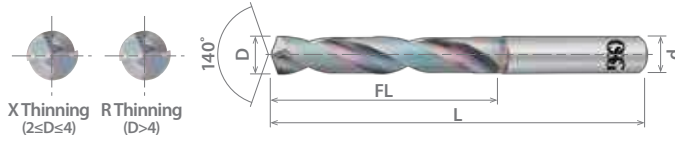
| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|------------------|-----|---------|-------------------------------------|--------------|---------|--------------|--------------------------|-----------------|-----------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | 4140 4340 | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 6300 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | | | | |

good best



List 6310

AD-4D



| | | | | |
|--------------------|---------|-------|-----|-------------|
| SPEED FEED P357 | CARBIDE | EgiAs | 30° | SHANK h6 |
|--------------------|---------|-------|-----|-------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8672200 | - | - | - | 2.000 | 0.07874 | 20 | 66 | 4 |
| 8672210 | - | - | - | 2.100 | 0.08268 | | | |
| 8672220 | - | - | - | 2.200 | 0.08661 | | | |
| 8672230 | - | - | - | 2.300 | 0.09055 | | | |
| 8672240 | - | - | - | 2.400 | 0.09449 | | | |
| 8672250 | - | - | - | 2.500 | 0.09843 | | | |
| 8672260 | - | - | - | 2.600 | 0.10236 | | | |
| 8672270 | - | - | - | 2.700 | 0.10630 | | | |
| 8672280 | - | - | - | 2.800 | 0.11024 | | | |
| 8672290 | - | - | - | 2.900 | 0.11417 | | | |
| 8672300 | - | - | - | 3.000 | 0.11811 | 28 | 74 | 4 |
| 8672310 | - | - | - | 3.100 | 0.12205 | | | |
| 631012311 | 1/8 | - | - | 3.175 | 0.12500 | | | |
| 8672320 | - | - | - | 3.200 | 0.12598 | | | |
| 8672330 | - | - | - | 3.300 | 0.12992 | | | |
| 8672340 | - | - | - | 3.400 | 0.13386 | | | |
| 8672350 | - | - | - | 3.500 | 0.13780 | | | |
| 8672360 | - | - | - | 3.600 | 0.14173 | | | |
| 8672370 | - | - | - | 3.700 | 0.14567 | | | |
| 8672380 | - | - | - | 3.800 | 0.14961 | | | |
| 8672390 | - | - | - | 3.900 | 0.15354 | 36 | 82 | 6 |
| 631015511 | 5/32 | - | - | 3.969 | 0.15625 | | | |
| 8672400 | - | - | - | 4.000 | 0.15748 | | | |
| 631016111 | - | 20 | - | 4.089 | 0.16100 | | | |
| 8672410 | - | - | - | 4.100 | 0.16142 | | | |
| 8672420 | - | - | - | 4.200 | 0.16535 | | | |
| 8672430 | - | - | - | 4.300 | 0.16929 | | | |
| 631017111 | 11/64 | - | - | 4.366 | 0.17188 | | | |
| 8672440 | - | - | - | 4.400 | 0.17323 | | | |
| 8672450 | - | - | - | 4.500 | 0.17717 | | | |
| 8672460 | - | - | - | 4.600 | 0.18110 | | | |
| 8672470 | - | - | - | 4.700 | 0.18504 | 44 | 82 | 6 |
| 631018611 | 3/16 | - | - | 4.763 | 0.18750 | | | |
| 8672480 | - | - | - | 4.800 | 0.18898 | | | |
| 8672490 | - | - | - | 4.900 | 0.19291 | | | |
| 8672500 | - | - | - | 5.000 | 0.19685 | | | |
| 8672510 | - | - | - | 5.100 | 0.20079 | | | |
| 631020211 | 13/64 | - | - | 5.159 | 0.20313 | | | |
| 8672520 | - | - | - | 5.200 | 0.20472 | | | |
| 8672530 | - | - | - | 5.300 | 0.20866 | | | |

Packed: 1 pc.
Available EgiAs coating only.

▶ continued on next page ▶

| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|------------------|-----|---------|-------------------------------------|-----------|---------|--------------|----------------|--------------------------|-----------|-----------|-----------|--|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 6310 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | | | | | <input type="checkbox"/> | | | | |

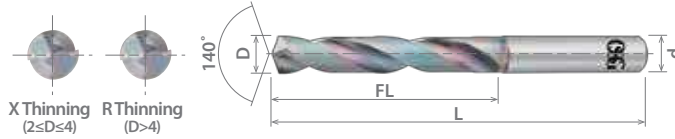
good best





List 6310 (Continued)

AD-4D



| | | | | |
|--------------------|---------|-------|-----|-------------|
| SPEED FEED P357 | CARBIDE | EgiAs | 30° | SHANK h6 |
|--------------------|---------|-------|-----|-------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8672540 | - | - | - | 5.400 | 0.21260 | 44 | 82 | 6 |
| 631021311 | - | 3 | - | 5.410 | 0.21300 | | | |
| 8672550 | - | - | - | 5.500 | 0.21654 | | | |
| 631021711 | 7/32 | - | - | 5.556 | 0.21875 | | | |
| 8672560 | - | - | - | 5.600 | 0.22047 | | | |
| 8672570 | - | - | - | 5.700 | 0.22441 | | | |
| 8672580 | - | - | - | 5.800 | 0.22835 | | | |
| 8672590 | - | - | - | 5.900 | 0.23228 | | | |
| 631023311 | 15/64 | - | - | 5.953 | 0.23438 | | | |
| 8672600 | - | - | - | 6.000 | 0.23622 | | | |
| 8672610 | - | - | - | 6.100 | 0.24016 | | | |
| 8672620 | - | - | - | 6.200 | 0.24409 | | | |
| 8672630 | - | - | - | 6.300 | 0.24803 | | | |
| 631024911 | 1/4 | - | E | 6.350 | 0.25000 | | | |
| 8672640 | - | - | - | 6.400 | 0.25197 | | | |
| 8672650 | - | - | - | 6.500 | 0.25591 | | | |
| 631025711 | - | - | F | 6.258 | 0.25700 | | | |
| 8672660 | - | - | - | 6.600 | 0.25984 | | | |
| 8672670 | - | - | - | 6.700 | 0.26378 | | | |
| 631026411 | 17/64 | - | - | 6.747 | 0.26563 | | | |
| 8672680 | - | - | - | 6.800 | 0.26772 | | | |
| 8672690 | - | - | - | 6.900 | 0.27165 | | | |
| 8672700 | - | - | - | 7.000 | 0.27559 | | | |
| 8672710 | - | - | - | 7.100 | 0.27953 | | | |
| 631028011 | 9/32 | - | - | 7.144 | 0.28125 | | | |
| 8672720 | - | - | - | 7.200 | 0.28346 | | | |
| 8672730 | - | - | - | 7.300 | 0.28740 | | | |
| 8672740 | - | - | - | 7.400 | 0.29134 | | | |
| 8672750 | - | - | - | 7.500 | 0.29528 | | | |
| 631029511 | 19/64 | - | - | 7.541 | 0.29688 | | | |
| 8672760 | - | - | - | 7.600 | 0.29921 | | | |
| 8672770 | - | - | - | 7.700 | 0.30315 | | | |
| 8672780 | - | - | - | 7.800 | 0.30709 | | | |
| 8672790 | - | - | - | 7.900 | 0.31102 | | | |
| 631031111 | 5/16 | - | - | 7.938 | 0.31250 | | | |
| 8672800 | - | - | - | 8.000 | 0.31496 | | | |
| 8672810 | - | - | - | 8.100 | 0.31890 | | | |
| 8672820 | - | - | - | 8.200 | 0.32283 | | | |
| 8672830 | - | - | - | 8.300 | 0.32677 | | | |
| 631032711 | 21/64 | - | - | 8.334 | 0.32813 | | | |
| 8672840 | - | - | - | 8.400 | 0.33071 | | | |
| 631033111 | - | - | Q | 8.433 | 0.33200 | | | |
| 8672850 | - | - | - | 8.500 | 0.33465 | | | |
| 8672860 | - | - | - | 8.600 | 0.33858 | | | |
| 8672870 | - | - | - | 8.700 | 0.34252 | | | |
| 631034211 | 11/32 | - | - | 8.731 | 0.34375 | | | |
| 8672880 | - | - | - | 8.800 | 0.34646 | | | |
| 8672890 | - | - | - | 8.900 | 0.35039 | | | |
| 8672900 | - | - | - | 9.000 | 0.35433 | | | |
| 8672910 | - | - | - | 9.100 | 0.35827 | | | |

Packed: 1 pc.
Available EgiAs coating only.



List 6310 (Continued)

AD-4D

| | | | | |
|-----------------------|---------|-------|-----|-------------|
| SPEED FEED P357 | CARBIDE | EgiAs | 30° | SHANK h6 |
|-----------------------|---------|-------|-----|-------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 631035811 | 23/64 | - | - | 9.128 | 0.35938 | 61 | 103 | 3/8 |
| 8672920 | - | - | - | 9.200 | 0.36220 | | | 10 |
| 8672930 | - | - | - | 9.300 | 0.36614 | | | 10 |
| 8672940 | - | - | - | 9.400 | 0.37008 | | | 10 |
| 8672950 | - | - | - | 9.500 | 0.37402 | | | 10 |
| 631037411 | 3/8 | - | - | 9.525 | 0.37500 | | | 3/8 |
| 8672960 | - | - | - | 9.600 | 0.37795 | | | 10 |
| 8672970 | - | - | - | 9.700 | 0.38189 | | | 10 |
| 8672980 | - | - | - | 9.800 | 0.38583 | | | 10 |
| 8672990 | - | - | - | 9.900 | 0.38976 | | | 10 |
| 631038911 | 25/64 | - | - | 9.922 | 0.39063 | 71 | 118 | 7/16 |
| 8673000 | - | - | - | 10.000 | 0.39370 | | | 10 |
| 8673010 | - | - | - | 10.100 | 0.39764 | | | 12 |
| 8673020 | - | - | - | 10.200 | 0.40157 | | | 12 |
| 8673030 | - | - | - | 10.300 | 0.40551 | | | 12 |
| 631040511 | 13/32 | - | - | 10.319 | 0.40625 | | | 7/16 |
| 8673040 | - | - | - | 10.400 | 0.40945 | | | 12 |
| 8673050 | - | - | - | 10.500 | 0.41339 | | | 12 |
| 8673060 | - | - | - | 10.600 | 0.41732 | | | 12 |
| 8673070 | - | - | - | 10.700 | 0.42126 | | | 12 |
| 631042111 | 27/64 | - | - | 10.716 | 0.42188 | 77 | 124 | 7/16 |
| 8673080 | - | - | - | 10.800 | 0.42520 | | | 12 |
| 8673090 | - | - | - | 10.900 | 0.42913 | | | 12 |
| 8673100 | - | - | - | 11.000 | 0.43307 | | | 12 |
| 8673110 | - | - | - | 11.100 | 0.43701 | | | 12 |
| 631043711 | 7/16 | - | - | 11.113 | 0.43750 | | | 7/16 |
| 8673120 | - | - | - | 11.200 | 0.44094 | | | 12 |
| 8673130 | - | - | - | 11.300 | 0.44488 | | | 12 |
| 8673140 | - | - | - | 11.400 | 0.44882 | | | 12 |
| 8673150 | - | - | - | 11.500 | 0.45276 | | | 12 |
| 631045211 | 29/64 | - | - | 11.509 | 0.45313 | 77 | 124 | 1/2 |
| 8673160 | - | - | - | 11.600 | 0.45669 | | | 12 |
| 8673170 | - | - | - | 11.700 | 0.46063 | | | 12 |
| 8673180 | - | - | - | 11.800 | 0.46457 | | | 12 |
| 8673190 | - | - | - | 11.900 | 0.46850 | | | 12 |
| 631046811 | 15/32 | - | - | 11.906 | 0.46875 | | | 1/2 |
| 8673200 | - | - | - | 12.000 | 0.47244 | | | 12 |
| 8673210 | - | - | - | 12.100 | 0.47638 | | | 14 |
| 8673220 | - | - | - | 12.200 | 0.48031 | | | 14 |
| 8673230 | - | - | - | 12.300 | 0.48425 | | | 1/2 |
| 631048411 | 31/64 | - | - | 12.303 | 0.48438 | 77 | 124 | 14 |
| 8673240 | - | - | - | 12.400 | 0.48819 | | | 14 |
| 8673250 | - | - | - | 12.500 | 0.49213 | | | 14 |
| 8673260 | - | - | - | 12.600 | 0.49606 | | | 14 |
| 631050011 | 1/2 | - | - | 12.700 | 0.50000 | | | 1/2 |
| 8673270 | 1/2 | - | - | 12.700 | 0.50000 | | | 14 |
| 8673280 | - | - | - | 12.800 | 0.50394 | | | 14 |

Packed: 1 pc.
Available EgiAs coating only.

▶ continued on next page ▶

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------------------|--------------------------|------------------|-----|---------|-------------------------------------|--------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 6310 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | | | | |

good best

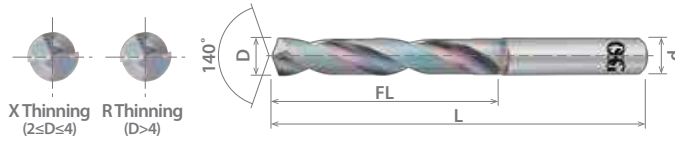




List 6310 (Continued)

| | | | | |
|---------------------------|----------------|--------------|------------|--------------------|
| SPEED FEED P357 | CARBIDE | EgiAs | 30° | SHANK h6 |
|---------------------------|----------------|--------------|------------|--------------------|

AD-4D



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2<D<=3 | +0 / -0.014 | +0 / -0.0006 |
| 3<D<=6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D<=10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D<=18 | +0 / -0.027 | +0 / -0.0011 |
| 18<D<=20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | | |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|-----|-----|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | |
| 8673290 | - | - | - | 12.900 | 0.50787 | 77 | 124 | 14 | | |
| 8673300 | - | - | - | 13.000 | 0.51181 | | | 5/8 | | |
| 631051511 | 33/64 | - | - | 13.097 | 0.51563 | | | 83 | 133 | 14 |
| 8673310 | - | - | - | 13.100 | 0.51575 | | | | | 16 |
| 8673320 | - | - | - | 13.200 | 0.51969 | | | | | 5/8 |
| 8673330 | - | - | - | 13.300 | 0.52362 | | | | | 16 |
| 8673340 | - | - | - | 13.400 | 0.52756 | | | | | 5/8 |
| 8673350 | - | - | - | 13.500 | 0.53150 | | | | | 16 |
| 8673400 | - | - | - | 14.000 | 0.55118 | | | | | 5/8 |
| 631056111 | 9/16 | - | - | 14.288 | 0.56250 | | | | | 93 |
| 8673450 | - | - | - | 14.500 | 0.57087 | 5/8 | | | | |
| 8673500 | - | - | - | 15.000 | 0.59055 | 16 | | | | |
| 8673550 | - | - | - | 15.500 | 0.61024 | 5/8 | | | | |
| 631062311 | 5/8 | - | - | 15.875 | 0.62500 | 16 | | | | |
| 8673600 | - | - | - | 16.000 | 0.62992 | 101 | 153 | 18 | | |
| 8673650 | - | - | - | 16.500 | 0.64961 | | | 20 | | |
| 8673700 | - | - | - | 17.000 | 0.66929 | | | 3/4 | | |
| 8673750 | - | - | - | 17.500 | 0.68898 | | | 20 | | |
| 8673800 | - | - | - | 18.000 | 0.70866 | | | 3/4 | | |
| 8673850 | - | - | - | 18.500 | 0.72835 | | | 20 | | |
| 8673900 | - | - | - | 19.000 | 0.74803 | | | 3/4 | | |
| 631074911 | 3/4 | - | - | 19.050 | 0.75000 | | | 20 | | |
| 8673950 | - | - | - | 19.500 | 0.76772 | | | 20 | | |
| 8674000 | - | - | - | 20.000 | 0.78740 | | | | | |

Packed: 1 pc.
Available EgiAs coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|------------------|-----|---------|-------------------------------------|-----------|---------|--------------|----------|--------------------------|----------------|---------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 6310 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | | | | | <input type="checkbox"/> | | | | |

good best





List 5200

ADO-SUS-3D, Coolant-Through

| | | | | | |
|---------------------------|----------------|------------|--|------------|--------------------|
| SPEED FEED P358 | CARBIDE | WXL | | 30° | SHANK h6 |
|---------------------------|----------------|------------|--|------------|--------------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|---|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8665200 | - | - | - | 2.000 | 0.07874 | 12 | 66 | 3 | |
| 8665210 | - | - | - | 2.100 | 0.08268 | 13 | | | |
| 8665220 | - | - | - | 2.200 | 0.08661 | 14 | | | |
| 8665230 | - | - | - | 2.300 | 0.09055 | | | | |
| 520009312 | 3/32 | - | - | 2.381 | 0.09375 | 15 | | | |
| 8665240 | - | - | - | 2.400 | 0.09449 | | | | |
| 8665250 | - | - | - | 2.500 | 0.09843 | | | | |
| 8665260 | - | - | - | 2.600 | 0.10236 | 16 | | | |
| 8665270 | - | - | - | 2.700 | 0.10630 | 17 | | | |
| 520010912 | 7/64 | - | - | 2.778 | 0.10938 | | | | |
| 8665280 | - | - | - | 2.800 | 0.11024 | | | | |
| 8665290 | - | - | - | 2.900 | 0.11417 | 18 | | | |
| 520011612 | - | - | - | 2.950 | 0.11614 | | | | |
| 8665300 | - | - | - | 3.000 | 0.11811 | 19 | | | 4 |
| 8665310 | - | - | - | 3.100 | 0.12205 | | | | |
| 8665315 | - | - | - | 3.150 | 0.12402 | | | | |
| 520012512 | 1/8 | - | - | 3.175 | 0.12500 | 20 | 1/8 | | |
| 8665320 | - | - | - | 3.200 | 0.12598 | | | | |
| 8665326 | - | - | - | 3.260 | 0.12835 | | 21 | | |
| 8665330 | - | - | - | 3.300 | 0.12992 | | | | |
| 520013212 | - | - | - | 3.360 | 0.13228 | 22 | | | |
| 8665340 | - | - | - | 3.400 | 0.13386 | | | | |
| 520013512 | - | - | - | 3.440 | 0.13543 | | 23 | | |
| 8665350 | - | - | - | 3.500 | 0.13780 | | | | |
| 520013812 | - | - | - | 3.520 | 0.13858 | 24 | | | |
| 520014012 | 9/64 | - | - | 3.572 | 0.14063 | | | | |
| 8665360 | - | - | - | 3.600 | 0.14173 | | 25 | | |
| 8665370 | - | - | - | 3.700 | 0.14567 | | | | |
| 8665375 | - | - | - | 3.750 | 0.14764 | | | | |
| 520014812 | - | - | - | 3.770 | 0.14843 | 80 | | | |
| 8665380 | - | - | - | 3.800 | 0.14961 | | | | |
| 520015212 | - | - | - | 3.860 | 0.15197 | | 6 | | |
| 8665390 | - | - | - | 3.900 | 0.15354 | | | | |
| 520015612 | 5/32 | - | - | 3.969 | 0.15625 | 5 | | | |
| 8665400 | - | - | - | 4.000 | 0.15748 | | | | |
| 520015912 | - | - | - | 4.050 | 0.15945 | | | | |
| 520016112 | - | 20 | - | 4.089 | 0.16100 | | | | |
| 8665410 | - | - | - | 4.100 | 0.16142 | | | | |

Packed: 1 pc.
Available WXL[®] coating only.
MEGA COOLER™ applies only to diameter sizes over 6 mm.

continued on next page



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|--------------------------|------------------------------|------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------|--------------------------|-------------------------------------|-------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | | Stainless Steels | | | | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5200 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 5200 (Continued)

ADO-SUS-3D, Coolant-Through

| | | | | | |
|---------------------------|----------------|------------|--|------------|--------------------|
| SPEED FEED P358 | CARBIDE | WXL | | 30° | SHANK h6 |
|---------------------------|----------------|------------|--|------------|--------------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2≤D≤3 | +0 / -0.014 | +0 / -0.0006 |
| 3<D≤6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤18 | +0 / -0.027 | +0 / -0.0011 |
| 18<D≤20 | +0 / -0.033 | +0 / -0.0013 |



| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8680410 | - | - | - | - | - | 25 | 80 | 6 | |
| 520016312 | - | - | - | 4.160 | 0.16378 | 26 | | 5 | |
| 8665420 | - | - | - | 4.200 | 0.16535 | | | 6 | |
| 8680420 | - | - | - | 4.270 | 0.16811 | | | 5 | |
| 520016812 | - | - | - | 4.300 | 0.16929 | | | 6 | |
| 8665430 | - | - | - | 4.366 | 0.17188 | 27 | | 3/16 | |
| 8680430 | - | - | - | 4.400 | 0.17323 | | | 5 | |
| 520017112 | 11/64 | - | - | 4.460 | 0.17559 | | | 6 | |
| 8665440 | - | - | - | 4.500 | 0.17717 | | | 5 | |
| 8680440 | - | - | - | 4.600 | 0.18110 | 28 | | 6 | |
| 520017512 | - | - | - | 4.660 | 0.18346 | | | 5 | |
| 8665450 | - | - | - | 4.700 | 0.18504 | | | 6 | |
| 8680450 | - | - | - | 4.763 | 0.18750 | | | 29 | 3/16 |
| 8665460 | - | - | - | 4.800 | 0.18898 | 5 | | | |
| 520018312 | - | - | - | 4.850 | 0.19094 | 6 | | | |
| 8665470 | - | - | - | 4.900 | 0.19291 | 30 | | | 5 |
| 8680470 | - | - | - | 5.000 | 0.19685 | | | 6 | |
| 520018712 | 3/16 | - | - | 5.100 | 0.20079 | | | 25 | 5 |
| 8665480 | - | - | - | 5.150 | 0.20276 | | | | 6 |
| 8680480 | - | - | - | 5.159 | 0.20313 | 26 | | | 1/4 |
| 8665485 | - | - | - | 5.200 | 0.20472 | | 6 | | |
| 8665490 | - | - | - | 5.250 | 0.20669 | | 27 | 6 | |
| 8680490 | - | - | - | 5.260 | 0.20709 | | | 6 | |
| 8665500 | - | - | - | 5.300 | 0.20866 | 28 | | 6 | |
| 8680500 | - | - | - | 5.400 | 0.21260 | | | 6 | |
| 8665510 | - | - | - | 5.410 | 0.21300 | | 29 | 6 | |
| 520020212 | - | - | - | 5.470 | 0.21535 | | | 6 | |
| 520020312 | 13/64 | - | - | 5.500 | 0.21654 | 30 | | 1/4 | |
| 8665520 | - | - | - | 5.556 | 0.21875 | | | 6 | |
| 8665525 | - | - | - | 5.600 | 0.22047 | | 31 | 6 | |
| 8680520 | - | - | - | 5.700 | 0.22441 | | | 6 | |
| 520020712 | - | - | - | 5.800 | 0.22835 | 31 | | 6 | |
| 8665530 | - | - | - | 5.900 | 0.23228 | | | 6 | |
| 8665540 | - | - | - | 5.953 | 0.23438 | | 88 | 1/4 | |
| 520021312 | - | 3 | - | 6.000 | 0.23622 | | | 6 | |
| 520021512 | - | - | - | 6.100 | 0.24016 | 7 | | | |
| 8665550 | - | - | - | 6.150 | 0.24213 | 8 | | | |
| 520021812 | 7/32 | - | - | - | - | - | - | - | |
| 8665560 | - | - | - | - | - | - | - | - | |
| 8665570 | - | - | - | - | - | - | - | - | |
| 8665580 | - | - | - | - | - | - | - | - | |
| 8665590 | - | - | - | - | - | - | - | - | |
| 520023412 | 15/64 | - | - | - | - | - | - | - | |
| 8665600 | - | - | - | - | - | - | - | - | |
| 8665610 | - | - | - | - | - | - | - | - | |
| 8680610 | - | - | - | - | - | - | - | - | |
| 520024212 | - | - | - | - | - | - | - | - | |

Packed: 1 pc.
 Available WXL[®] coating only.
 MEGA COOLER™ applies only to diameter sizes over 6 mm.





List 5200 (Continued)

ADO-SUS-3D, Coolant-Through



| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8665620 | - | - | - | 6.200 | 0.24409 | 31 | 88 | 7 |
| 8680620 | - | - | - | 6.200 | 0.24409 | 31 | | 8 |
| 8665625 | - | - | - | 6.250 | 0.24606 | 32 | | 7 |
| 8665630 | - | - | - | 6.300 | 0.24803 | | | 8 |
| 8680630 | - | - | - | 6.300 | 0.24803 | 8 | | |
| 8665635 | 1/4 | - | E | 6.350 | 0.25000 | 32 | | 1/4 |
| 8665640 | - | - | - | 6.400 | 0.25197 | 33 | | 7 |
| 8680640 | - | - | - | 6.400 | 0.25197 | | | 8 |
| 8665650 | - | - | - | 6.500 | 0.25591 | 33 | | 7 |
| 8680650 | - | - | - | 6.500 | 0.25591 | 33 | | 8 |
| 520025712 | - | - | F | 6.528 | 0.25700 | 34 | | 8 |
| 8665660 | - | - | - | 6.600 | 0.25984 | | | 7 |
| 8680660 | - | - | - | 6.600 | 0.25984 | 7 | | |
| 520026112 | - | - | - | 6.650 | 0.26181 | 34 | | 8 |
| 8665670 | - | - | - | 6.700 | 0.26378 | | | 7 |
| 8680670 | - | - | - | 6.700 | 0.26378 | 8 | | |
| 8665675 | - | - | - | 6.750 | 0.26575 | 34 | 7 | |
| 520026512 | 17/64 | - | - | 6.747 | 0.26563 | 35 | 5/16 | |
| 8665680 | - | - | - | 6.800 | 0.26772 | | 7 | |
| 8680680 | - | - | - | 6.800 | 0.26772 | 8 | | |
| 520027012 | - | - | - | 6.860 | 0.27008 | 35 | 7 | |
| 8665690 | - | - | - | 6.900 | 0.27165 | | 8 | |
| 8680690 | - | - | - | 6.900 | 0.27165 | 7 | | |
| 8665700 | - | - | - | 7.000 | 0.27559 | 36 | 8 | |
| 8680700 | - | - | - | 7.000 | 0.27559 | | 8 | |
| 520027712 | - | - | - | 7.040 | 0.27717 | 36 | 5/16 | |
| 8665710 | - | - | - | 7.100 | 0.27953 | | 7 | |
| 520028112 | 9/32 | - | - | 7.144 | 0.28125 | 37 | 8 | |
| 8665720 | - | - | - | 7.200 | 0.28346 | | 7 | |
| 8665725 | - | - | - | 7.250 | 0.28543 | 37 | 8 | |
| 8665730 | - | - | - | 7.300 | 0.28740 | | 7 | |
| 8665740 | - | - | - | 7.400 | 0.29134 | 38 | 5/16 | |
| 8665750 | - | - | - | 7.500 | 0.29528 | | 8 | |
| 520029612 | 19/64 | - | - | 7.541 | 0.29688 | 38 | 5/16 | |
| 8665760 | - | - | - | 7.600 | 0.29921 | | 7 | |
| 8665770 | - | - | - | 7.700 | 0.30315 | 39 | 8 | |
| 8665775 | - | - | - | 7.750 | 0.30512 | | 7 | |
| 8665780 | - | - | - | 7.800 | 0.30709 | 40 | 5/16 | |
| 8665790 | - | - | - | 7.900 | 0.31102 | | 8 | |
| 520031212 | 5/16 | - | - | 7.938 | 0.31250 | 40 | 5/16 | |
| 8665800 | - | - | - | 8.000 | 0.31496 | | 8 | |
| 8665810 | - | - | - | 8.100 | 0.31890 | 41 | 9 | |
| 8680810 | - | - | - | 8.100 | 0.31890 | | 10 | |

Packed: 1 pc.
Available WXL[®] coating only.
MEGA COOLER™ applies only to diameter sizes over 6 mm.

continued on next page



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 5200 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 5200 (Continued)

ADO-SUS-3D, Coolant-Through

| | | | | | |
|---------------------------|----------------|------------|--|------------|--------------------|
| SPEED FEED P358 | CARBIDE | WXL | | 30° | SHANK h6 |
|---------------------------|----------------|------------|--|------------|--------------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 520032012 | - | - | - | 8.150 | 0.32087 | 41 | 101 | 10 |
| 8665820 | - | - | - | 8.200 | 0.32283 | | | 9 |
| 8680820 | - | - | - | | | | | 10 |
| 8665825 | - | - | - | 8.250 | 0.32480 | 42 | | 9 |
| 8665830 | - | - | - | 8.300 | 0.32677 | | | 10 |
| 8680830 | - | - | - | 8.334 | 0.32813 | 3/8 | | |
| 520032812 | 21/64 | - | - | | | 9 | | |
| 8665840 | - | - | - | | | 8.400 | | 0.33071 |
| 8680840 | - | - | - | 8.433 | 0.33200 | 9 | | |
| 520033212 | - | - | Q | | | 8.500 | | 0.33465 |
| 8665850 | - | - | - | 8.560 | 0.33701 | 9 | | |
| 8680850 | - | - | - | | | 8.600 | 0.33858 | 10 |
| 520033712 | - | - | - | | | 8.640 | 0.34016 | 44 |
| 8665860 | - | - | - | 8.680 | 0.34173 | 9 | | |
| 520034012 | - | - | - | 8.700 | 0.34252 | 10 | | |
| 8680870 | - | - | - | | | 8.731 | 0.34375 | 3/8 |
| 8680870 | - | - | - | | | 8.750 | 0.34449 | 9 |
| 520034312 | 11/32 | - | - | 8.800 | 0.34646 | 45 | 10 | |
| 8665875 | - | - | - | 8.860 | 0.34882 | | 9 | |
| 8665880 | - | - | - | 8.900 | 0.35039 | | 10 | |
| 8680880 | - | - | - | 9.000 | 0.35433 | 9 | | |
| 520034812 | - | - | - | | | 9.100 | 0.35827 | 10 |
| 8665890 | - | - | - | | | 9.128 | 0.35938 | 3/8 |
| 8680890 | - | - | - | 9.200 | 0.36220 | 47 | 106 | 10 |
| 8665900 | - | - | - | 9.250 | 0.36417 | | | |
| 8680900 | - | - | - | 9.300 | 0.36614 | | | |
| 8665910 | - | - | - | 9.400 | 0.37008 | 48 | | 3/8 |
| 520035912 | 23/64 | - | - | 9.500 | 0.37402 | | | |
| 8665920 | - | - | - | 9.525 | 0.37500 | 49 | | |
| 8665925 | - | - | - | 9.550 | 0.37598 | | | |
| 8665930 | - | - | - | 9.600 | 0.37795 | | | |
| 8665940 | - | - | - | 9.700 | 0.38189 | 50 | | 7/16 |
| 8665950 | - | - | - | 9.750 | 0.38386 | | | |
| 520037512 | 3/8 | - | - | 9.800 | 0.38583 | | | |
| 8665960 | - | - | - | 9.900 | 0.38976 | 51 | 113 | 11 |
| 8665970 | - | - | - | 9.922 | 0.39063 | | | |
| 8665975 | - | - | - | 10.000 | 0.39370 | | | |
| 8665980 | - | - | - | 10.100 | 0.39764 | 51 | 113 | 12 |
| 8665990 | - | - | - | 10.200 | 0.40157 | | | 11 |
| 520039012 | 25/64 | - | - | | | | | |
| 8666000 | - | - | - | | | | | |
| 8666010 | - | - | - | | | | | |
| 8681010 | - | - | - | | | | | |
| 8666020 | - | - | - | | | | | |

Packed: 1 pc.
 Available WXL[®] coating only.
 MEGA COOLER™ applies only to diameter sizes over 6 mm.





List 5200 (Continued)

ADO-SUS-3D, Coolant-Through



| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8681020 | - | - | - | 10.200 | 0.40157 | 51 | 113 | 12 |
| 8666025 | - | - | - | 10.250 | 0.40354 | 52 | | 11 |
| 8666030 | - | - | - | 10.300 | 0.40551 | | | 12 |
| 8681030 | - | - | - | 10.319 | 0.40625 | | | 7/16 |
| 520040612 | 13/32 | - | - | 10.400 | 0.40945 | | | 11 |
| 8666040 | - | - | - | 10.440 | 0.41102 | 53 | | 12 |
| 8681040 | - | - | - | 10.500 | 0.41339 | | | 11 |
| 520041112 | - | - | - | 10.600 | 0.41732 | | | 12 |
| 8666050 | - | - | - | 10.700 | 0.42126 | | | 11 |
| 8681050 | - | - | - | 10.716 | 0.42188 | 54 | | 12 |
| 8666060 | - | - | - | 10.750 | 0.42323 | | | 7/16 |
| 8681060 | - | - | - | 10.800 | 0.42520 | | | 11 |
| 8666070 | - | - | - | 10.860 | 0.42756 | | | 12 |
| 8681070 | - | - | - | 10.900 | 0.42913 | 55 | | 11 |
| 520042212 | 27/64 | - | - | 11.000 | 0.43307 | | | 12 |
| 8666075 | - | - | - | 11.100 | 0.43701 | | | 11 |
| 8666080 | - | - | - | 11.113 | 0.43750 | | | 12 |
| 520042712 | - | - | - | 11.200 | 0.44094 | 56 | | 11 |
| 8666090 | - | - | - | 11.300 | 0.44488 | | | 12 |
| 8681090 | - | - | - | 11.400 | 0.44882 | | 57 | 11 |
| 8666100 | - | - | - | 11.500 | 0.45276 | | | 12 |
| 8681100 | - | - | - | 11.509 | 0.45313 | 58 | | 12 |
| 8666110 | - | - | - | 11.600 | 0.45669 | | | 1/2 |
| 520043712 | 7/16 | - | - | 11.700 | 0.46063 | | 59 | 12 |
| 8666120 | - | - | - | 11.800 | 0.46457 | | | 12 |
| 8666130 | - | - | - | 11.900 | 0.46850 | 60 | | 12 |
| 8666140 | - | - | - | 11.906 | 0.46875 | | | 1/2 |
| 8666150 | - | - | - | 12.000 | 0.47244 | | 12 | |
| 520045312 | 29/64 | - | - | 12.100 | 0.47638 | | 61 | 13 |
| 8666160 | - | - | - | 12.200 | 0.48031 | 14 | | |
| 8666170 | - | - | - | 12.200 | 0.48031 | 13 | | |
| 8666180 | - | - | - | 12.300 | 0.48425 | 14 | | |
| 8666190 | - | - | - | 12.300 | 0.48425 | 62 | 13 | |
| 520046912 | 15/32 | - | - | 12.303 | 0.48438 | | 14 | |
| 8666200 | - | - | - | | | | 12 | |
| 8666210 | - | - | - | | | | 13 | |
| 8681210 | - | - | - | | | 128 | 14 | |
| 8666220 | - | - | - | | | | 13 | |
| 8681220 | - | - | - | | | | 14 | |
| 8666230 | - | - | - | | | | 13 | |
| 8681230 | - | - | - | | | 14 | | |
| 520048512 | 31/64 | - | - | | | 62 | 1/2 | |

Packed: 1 pc.
Available WXL[®] coating only.
MEGA COOLER™ applies only to diameter sizes over 6 mm.

continued on next page



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5200 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 5200 (Continued)

ADO-SUS-3D, Coolant-Through

| | | | | | |
|---------------------------|----------------|------------|--|------------|--------------------|
| SPEED FEED P358 | CARBIDE | WXL | | 30° | SHANK h6 |
|---------------------------|----------------|------------|--|------------|--------------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8666240 | - | - | - | 12.400 | 0.48819 | 62 | 128 | 13 |
| 8681240 | - | - | - | 12.450 | 0.49016 | | | 14 |
| 520049012 | - | - | - | 12.500 | 0.49213 | 63 | 128 | 13 |
| 8666250 | - | - | - | 12.600 | 0.49606 | | | 14 |
| 8681250 | - | - | - | 12.680 | 0.49921 | 64 | 128 | 13 |
| 8666260 | - | - | - | 12.700 | 0.50000 | | | 1/2 |
| 8681260 | - | - | - | 12.750 | 0.50197 | 65 | 128 | 13 |
| 520049912 | - | - | - | 12.800 | 0.50394 | | | 14 |
| 8666270 | - | - | - | 12.900 | 0.50787 | 66 | 128 | 13 |
| 520050012 | 1/2 | - | - | 13.000 | 0.51181 | | | 14 |
| 8666275 | - | - | - | 13.080 | 0.51496 | 67 | 128 | 13 |
| 8666280 | - | - | - | 13.100 | 0.51575 | | | 14 |
| 8681280 | - | - | - | 13.200 | 0.51969 | 68 | 128 | 13 |
| 8666290 | - | - | - | 13.300 | 0.52362 | | | 14 |
| 8681290 | - | - | - | 13.400 | 0.52756 | 69 | 128 | 13 |
| 8666300 | - | - | - | 13.494 | 0.53125 | | | 14 |
| 8681300 | - | - | - | 13.500 | 0.53150 | 70 | 128 | 13 |
| 520051512 | - | - | - | 13.600 | 0.53543 | | | 14 |
| 8666310 | - | - | - | 13.700 | 0.53937 | 71 | 128 | 13 |
| 8666320 | - | - | - | 13.800 | 0.54331 | | | 14 |
| 8666330 | - | - | - | 13.870 | 0.54606 | 72 | 128 | 13 |
| 8666340 | - | - | - | 13.900 | 0.54724 | | | 14 |
| 520053112 | 17/32 | - | - | 14.000 | 0.55118 | 73 | 128 | 13 |
| 8666350 | - | - | - | 14.100 | 0.55512 | | | 14 |
| 8666360 | - | - | - | 14.200 | 0.55906 | 74 | 128 | 13 |
| 8666370 | - | - | - | 14.288 | 0.56250 | | | 14 |
| 8666380 | - | - | - | 14.300 | 0.56299 | 75 | 128 | 13 |
| 8666390 | - | - | - | 14.300 | 0.56299 | | | 14 |
| 8666400 | - | - | - | 14.400 | 0.56693 | 76 | 128 | 13 |
| 8666410 | - | - | - | 14.400 | 0.56693 | | | 14 |
| 520055512 | - | - | - | 14.500 | 0.57087 | 77 | 128 | 13 |
| 8666420 | - | - | - | 14.500 | 0.57087 | | | 14 |
| 520055912 | - | - | - | 14.600 | 0.57480 | 78 | 128 | 13 |
| 520056212 | 9/16 | - | - | 14.600 | 0.57480 | | | 14 |
| 8666430 | - | - | - | 14.684 | 0.57813 | 79 | 128 | 13 |
| 520056312 | - | - | - | 14.684 | 0.57813 | | | 14 |
| 8666440 | - | - | - | 14.700 | 0.57874 | 80 | 128 | 13 |
| 520056612 | - | - | - | 14.700 | 0.57874 | | | 14 |
| 8666450 | - | - | - | 14.800 | 0.58268 | 81 | 128 | 13 |
| 8681450 | - | - | - | 14.800 | 0.58268 | | | 14 |
| 8666460 | - | - | - | 14.800 | 0.58268 | 14 | | |
| 520057412 | - | - | - | 14.800 | 0.58268 | 14 | | |
| 520057812 | 37/64 | - | - | 14.800 | 0.58268 | 14 | | |
| 8666470 | - | - | - | 14.800 | 0.58268 | 14 | | |
| 520057912 | - | - | - | 14.800 | 0.58268 | 14 | | |
| 8666480 | - | - | - | 14.800 | 0.58268 | 14 | | |

Packed: 1 pc.
 Available WXL® coating only.
 MEGA COOLER™ applies only to diameter sizes over 6 mm.





List 5200 (Continued)

ADO-SUS-3D, Coolant-Through



| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|---------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 520058212 | - | - | - | 14.800 | 0.58268 | 74 | 140 | 16 | |
| 8666490 | - | - | - | 14.900 | 0.58661 | 75 | | 15 | |
| 520058612 | - | - | - | | | | | 15.000 | 0.59055 |
| 8666500 | - | - | - | 15.100 | 0.59449 | 76 | 15 | | |
| 8681500 | - | - | - | | | | 15.200 | 0.59843 | 16 |
| 8666510 | - | - | - | | | | 15.300 | 0.60236 | |
| 8666520 | - | - | - | 15.400 | 0.60630 | 145 | | | |
| 8666530 | - | - | - | 15.500 | 0.61024 | | 78 | | |
| 8666540 | - | - | - | 15.600 | 0.61417 | | | | |
| 8666550 | - | - | - | 15.700 | 0.61811 | 79 | | | |
| 8666560 | - | - | - | 15.800 | 0.62205 | | 80 | | |
| 8666570 | - | - | - | 15.875 | 0.62500 | | | 150 | |
| 8666580 | - | - | - | 15.900 | 0.62598 | 18 | | | |
| 520062512 | 5/8 | - | - | 16.000 | 0.62992 | | 81 | | 5/8 |
| 8666590 | - | - | - | 16.100 | 0.63386 | | | 83 | 16 |
| 8666600 | - | - | - | 16.500 | 0.64961 | 85 | | | 17 |
| 520063312 | - | - | - | 16.669 | 0.65625 | | 88 | | 18 |
| 8666650 | - | - | - | 16.840 | 0.66299 | | | 90 | 17 |
| 8681650 | - | - | - | 17.000 | 0.66929 | 93 | | | 18 |
| 520065612 | 21/32 | - | - | 17.500 | 0.68898 | | 97 | | 3/4 |
| 520066312 | - | - | - | 17.610 | 0.69331 | | | 99 | 18 |
| 8666700 | - | - | - | 17.680 | 0.69606 | 100 | | | 17 |
| 8681700 | - | - | - | 17.730 | 0.69803 | | 100 | | 18 |
| 8666750 | - | - | - | 18.000 | 0.70866 | | | 100 | 18 |
| 520069312 | - | - | - | 18.500 | 0.72835 | 100 | | | 19 |
| 520069612 | - | - | - | 18.640 | 0.73386 | | 100 | | 20 |
| 520069812 | - | - | - | 19.000 | 0.74803 | | | 100 | 19 |
| 8666800 | - | - | - | 19.050 | 0.75000 | 100 | | | 20 |
| 8666850 | - | - | - | 19.250 | 0.75787 | | 100 | | 20 |
| 8681850 | - | - | - | 19.500 | 0.76772 | | | 100 | 3/4 |
| 520073312 | - | - | - | 19.660 | 0.77402 | 100 | | | 19 |
| 8666900 | - | - | - | 19.730 | 0.77677 | | 100 | | 20 |
| 8681900 | - | - | - | 19.760 | 0.77795 | | | 100 | 20 |
| 520075012 | 3/4 | - | - | 19.760 | 0.77795 | 100 | | | 20 |
| 520075712 | - | - | - | 20.000 | 0.78740 | | 100 | | 20 |
| 8666950 | - | - | - | | | | | | |
| 520077412 | - | - | - | | | | | | |
| 520077612 | - | - | - | | | | | | |
| 520077812 | - | - | - | | | | | | |
| 8667000 | - | - | - | | | | | | |

Packed: 1 pc.
Available WXL[®] coating only.
MEGA COOLER™ applies only to diameter sizes over 6 mm.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5200 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 5210

ADO-SUS-5D, Coolant-Through



| | | | | | |
|---------------------------|----------------|------------|--|------------|--------------------|
| SPEED FEED P358 | CARBIDE | WXL | | 30° | SHANK h6 |
|---------------------------|----------------|------------|--|------------|--------------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8667200 | - | - | - | 2.000 | 0.07874 | 18 | 70 | 3 |
| 8667210 | - | - | - | 2.100 | 0.08268 | 19 | | |
| 8667220 | - | - | - | 2.200 | 0.08661 | 20 | | |
| 8667230 | - | - | - | 2.300 | 0.09055 | 21 | | |
| 521009312 | 3/32 | - | - | 2.381 | 0.09375 | 22 | | |
| 8667240 | - | - | - | 2.400 | 0.09449 | 23 | | |
| 8667250 | - | - | - | 2.500 | 0.09843 | 24 | | |
| 8667260 | - | - | - | 2.600 | 0.10236 | 25 | | |
| 8667270 | - | - | - | 2.700 | 0.10630 | 26 | | |
| 8667276 | - | - | - | 2.760 | 0.10866 | 27 | | |
| 8667278 | - | - | - | 2.780 | 0.10945 | 28 | | |
| 8667280 | - | - | - | 2.800 | 0.11024 | 29 | | |
| 8667290 | - | - | - | 2.900 | 0.11417 | 30 | | |
| 8667300 | - | - | - | 3.000 | 0.11811 | 31 | | |
| 8667310 | - | - | - | 3.100 | 0.12205 | 32 | | |
| 8667315 | - | - | - | 3.150 | 0.12402 | 33 | | |
| 521012512 | 1/8 | - | - | 3.175 | 0.12500 | 34 | | |
| 8667320 | - | - | - | 3.200 | 0.12598 | 35 | | |
| 8667326 | - | - | - | 3.260 | 0.12835 | 36 | | |
| 8667330 | - | - | - | 3.300 | 0.12992 | 37 | | |
| 8667340 | - | - | - | 3.400 | 0.13386 | 38 | | |
| 8667350 | - | - | - | 3.500 | 0.13780 | 39 | | |
| 8667360 | - | - | - | 3.600 | 0.14173 | 40 | | |
| 8667366 | - | - | - | 3.660 | 0.14409 | 41 | | |
| 8667368 | - | - | - | 3.680 | 0.14488 | 42 | | |
| 8667370 | - | - | - | 3.700 | 0.14567 | 43 | | |
| 8667375 | - | - | - | 3.750 | 0.14764 | 44 | | |
| 8667380 | - | - | - | 3.800 | 0.14961 | 45 | | |
| 8667390 | - | - | - | 3.900 | 0.15354 | 46 | | |
| 521015612 | 5/32 | - | - | 3.969 | 0.15625 | 47 | | |
| 8667400 | - | - | - | 4.000 | 0.15748 | 48 | | |
| 521016112 | - | 20 | - | 4.089 | 0.16100 | 49 | | |
| 8667410 | - | - | - | 4.100 | 0.16142 | 50 | | |
| 8682410 | - | - | - | 4.200 | 0.16535 | 51 | | |
| 8667420 | - | - | - | 4.300 | 0.16929 | 52 | | |
| 8682420 | - | - | - | 4.366 | 0.17188 | 53 | | |
| 8667430 | - | - | - | 4.400 | 0.17323 | 54 | | |
| 8682430 | - | - | - | 4.500 | 0.17717 | 55 | | |
| 521017112 | 11/64 | - | - | 4.575 | 0.18043 | 56 | | |
| 8667440 | - | - | - | 4.600 | 0.18110 | 57 | | |
| 8682440 | - | - | - | 4.700 | 0.18504 | 58 | | |
| 8667450 | - | - | - | 4.800 | 0.18898 | 59 | | |
| 8682450 | - | - | - | 4.900 | 0.19292 | 60 | | |
| 8667460 | - | - | - | 5.000 | 0.19686 | 61 | | |
| 8682460 | - | - | - | 5.100 | 0.20080 | 62 | | |

Packed: 1 pc.
 Available WXL[®] coating only.
 MEGA COOLER[™] applies only to diameter sizes over 6 mm.





List 5210 (Continued)

ADO-SUS-5D, Coolant-Through



| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8667462 | - | - | - | 4.620 | 0.18189 | 42 | 95 | 5 |
| 8667464 | - | - | - | 4.640 | 0.18268 | | | |
| 8667470 | - | - | - | 4.700 | 0.18504 | 43 | | 6 |
| 8682470 | - | - | - | | | | | |
| 521018712 | 3/16 | - | - | 4.763 | 0.18750 | 44 | | 3/16 |
| 8667480 | - | - | - | 4.800 | 0.18898 | | | |
| 8682480 | - | - | - | 4.850 | 0.19094 | 45 | | 5 |
| 8667485 | - | - | - | | | | | |
| 8667490 | - | - | - | 4.900 | 0.19291 | 41 | | 6 |
| 8682490 | - | - | - | | | | | |
| 8667500 | - | - | - | 5.000 | 0.19685 | 42 | 5 | |
| 8682500 | - | - | - | | | | | |
| 8667510 | - | - | - | 5.100 | 0.20079 | 43 | 5 | |
| 521020312 | 13/64 | - | - | 5.159 | 0.20313 | | | |
| 8667520 | - | - | - | 5.200 | 0.20472 | 44 | 6 | |
| 8667525 | - | - | - | 5.250 | 0.20669 | | | |
| 8667530 | - | - | - | 5.300 | 0.20866 | 45 | 1/4 | |
| 8667540 | - | - | - | 5.400 | 0.21260 | | | |
| 521021312 | - | 3 | - | 5.410 | 0.21300 | 46 | 109 | |
| 8667550 | - | - | - | 5.500 | 0.21654 | | | |
| 8667552 | - | - | - | 5.520 | 0.21732 | | | |
| 8667554 | - | - | - | 5.540 | 0.21811 | | | |
| 521021812 | 7/32 | - | - | 5.556 | 0.21875 | 47 | | 6 |
| 8667560 | - | - | - | 5.600 | 0.22047 | | | |
| 8667570 | - | - | - | 5.700 | 0.22441 | 48 | | 1/4 |
| 8667580 | - | - | - | 5.800 | 0.22835 | | | |
| 8667590 | - | - | - | 5.900 | 0.23228 | 49 | | 7 |
| 521023412 | 15/64 | - | - | 5.953 | 0.23438 | | | |
| 8667600 | - | - | - | 6.000 | 0.23622 | 50 | 6 | |
| 8667610 | - | - | - | 6.100 | 0.24016 | | | |
| 8682610 | - | - | - | 6.200 | 0.24409 | 51 | 7 | |
| 8667620 | - | - | - | | | | | |
| 8682620 | - | - | - | 6.250 | 0.24606 | 52 | 8 | |
| 8667625 | - | - | - | | | | | |
| 8667630 | - | - | - | 6.300 | 0.24803 | 53 | 7 | |
| 8682630 | - | - | - | | | | | |
| 8667635 | 1/4 | - | E | 6.350 | 0.25000 | 54 | 8 | |
| 8667640 | - | - | - | 6.400 | 0.25197 | | | |
| 8682640 | - | - | - | 6.500 | 0.25591 | 55 | 1/4 | |
| 8667650 | - | - | - | | | | | |
| 8682650 | - | - | - | 6.528 | 0.25700 | 56 | 7 | |
| 521025712 | - | - | F | 6.528 | 0.25700 | | | |
| 8667660 | - | - | - | 6.600 | 0.25984 | 53 | 8 | |
| | | | | | | | 7 | |

Packed: 1 pc.
Available WXL[®] coating only.
MEGA COOLER[™] applies only to diameter sizes over 6 mm.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|
| | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 5210 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best





List 5210 (Continued)

ADO-SUS-5D, Coolant-Through



| | | | | | |
|---------------------------|----------------|------------|--|------------|--------------------|
| SPEED FEED P358 | CARBIDE | WXL | | 30° | SHANK h6 |
|---------------------------|----------------|------------|--|------------|--------------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8682660 | - | - | - | 6.600 | 0.25984 | 53 | 109 | 8 |
| 8667670 | - | - | - | 6.700 | 0.26378 | 54 | | 7 |
| 8682670 | - | - | - | 6.700 | 0.26378 | 54 | | 8 |
| 521026512 | 17/64 | - | - | 6.747 | 0.26563 | 55 | | 55 |
| 8667675 | - | - | - | 6.750 | 0.26575 | 54 | | 7 |
| 8667680 | - | - | - | 6.800 | 0.26772 | 55 | | 7 |
| 8682680 | - | - | - | 6.800 | 0.26772 | 55 | | 8 |
| 8667690 | - | - | - | 6.900 | 0.27165 | 56 | | 7 |
| 8682690 | - | - | - | 6.900 | 0.27165 | 56 | | 8 |
| 8667700 | - | - | - | 7.000 | 0.27559 | 57 | | 7 |
| 8682700 | - | - | - | 7.000 | 0.27559 | 57 | 8 | |
| 8667710 | - | - | - | 7.100 | 0.27953 | 58 | 118 | 5/16 |
| 521028112 | 9/32 | - | - | 7.144 | 0.28125 | 58 | | 8 |
| 8667720 | - | - | - | 7.200 | 0.28346 | 59 | | 7 |
| 8667725 | - | - | - | 7.250 | 0.28543 | 59 | | 8 |
| 8667730 | - | - | - | 7.300 | 0.28740 | 60 | | 7 |
| 8667736 | - | - | - | 7.360 | 0.28976 | 60 | | 8 |
| 8667738 | - | - | - | 7.380 | 0.29055 | 61 | | 7 |
| 8667740 | - | - | - | 7.400 | 0.29134 | 61 | | 8 |
| 8667750 | - | - | - | 7.500 | 0.29528 | 62 | | 9 |
| 8667752 | - | - | - | 7.520 | 0.29606 | 63 | | 10 |
| 8667754 | - | - | - | 7.540 | 0.29685 | 64 | 9 | |
| 521029612 | 19/64 | - | - | 7.541 | 0.29688 | 64 | 5/16 | |
| 8667760 | - | - | - | 7.600 | 0.29921 | 65 | 128 | 8 |
| 8667770 | - | - | - | 7.700 | 0.30315 | 66 | | 9 |
| 8667775 | - | - | - | 7.750 | 0.30512 | 67 | | 10 |
| 8667780 | - | - | - | 7.800 | 0.30709 | 68 | | 9 |
| 8667790 | - | - | - | 7.900 | 0.31102 | 69 | | 10 |
| 521031212 | 5/16 | - | - | 7.938 | 0.31250 | 70 | | 3/8 |
| 8667800 | - | - | - | 8.000 | 0.31496 | 71 | | 9 |
| 8667810 | - | - | - | 8.100 | 0.31890 | 72 | | 10 |
| 8682810 | - | - | - | 8.100 | 0.31890 | 72 | | 9 |
| 8667820 | - | - | - | 8.200 | 0.32283 | 73 | | 10 |
| 8682820 | - | - | - | 8.200 | 0.32283 | 73 | 9 | |
| 8667825 | - | - | - | 8.250 | 0.32480 | 74 | 10 | |
| 8667830 | - | - | - | 8.300 | 0.32677 | 75 | 9 | |
| 8682830 | - | - | - | 8.300 | 0.32677 | 75 | 10 | |
| 521032812 | 21/64 | - | - | 8.334 | 0.32813 | 76 | 3/8 | |
| 8667840 | - | - | - | 8.400 | 0.33071 | 77 | 9 | |
| 8682840 | - | - | - | 8.400 | 0.33071 | 77 | 10 | |
| 521033212 | - | - | Q | 8.433 | 0.33200 | 78 | 9 | |
| 8667850 | - | - | - | 8.500 | 0.33465 | 79 | 10 | |
| 8682850 | - | - | - | 8.500 | 0.33465 | 79 | 9 | |
| 8667860 | - | - | - | 8.600 | 0.33858 | 80 | 10 | |
| 8682860 | - | - | - | 8.600 | 0.33858 | 80 | 9 | |
| 8667870 | - | - | - | 8.700 | 0.34252 | 81 | 10 | |

Packed: 1 pc.
 Available WXL[®] coating only.
 MEGA COOLER™ applies only to diameter sizes over 6 mm.





List 5210 (Continued)

ADO-SUS-5D, Coolant-Through



| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | | | | | | | | |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|-----|------|----|----|----|----|----|-----|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | | | | | | | |
| 8682870 | - | - | - | 8.700 | 0.34252 | 70 | 128 | 10 | | | | | | | | |
| 521034312 | 11/32 | - | - | 8.731 | 0.34375 | | | 3/8 | | | | | | | | |
| 8667875 | - | - | - | 8.750 | 0.34449 | | | 9 | | | | | | | | |
| 8667880 | - | - | - | 8.800 | 0.34646 | 71 | | 10 | | | | | | | | |
| 8667890 | - | - | - | 8.900 | 0.35039 | 72 | | 9 | | | | | | | | |
| 8682880 | - | - | - | | | | | 10 | | | | | | | | |
| 8667900 | - | - | - | 9.000 | 0.35433 | 73 | | 9 | | | | | | | | |
| 8682900 | - | - | - | | | | | 10 | | | | | | | | |
| 8667910 | - | - | - | 9.100 | 0.35827 | 74 | | 9 | | | | | | | | |
| 521035912 | 23/64 | - | - | 9.128 | 0.35938 | | | 10 | | | | | | | | |
| 8667920 | - | - | - | 9.200 | 0.36220 | 75 | | 136 | 3/8 | | | | | | | |
| 8667924 | - | - | - | 9.240 | 0.36378 | | | | 74 | | | | | | | |
| 8667925 | - | - | - | 9.250 | 0.36417 | 76 | 10 | | 10 | | | | | | | |
| 8667926 | - | - | - | 9.260 | 0.36457 | | | | | 75 | | | | | | |
| 8667930 | - | - | - | 9.300 | 0.36614 | 77 | | | | 146 | 11 | | | | | |
| 8667936 | - | - | - | 9.360 | 0.36850 | | | | | | | 74 | | | | |
| 8667938 | - | - | - | 9.380 | 0.36929 | 78 | | | | | | 10 | 10 | | | |
| 8667940 | - | - | - | 9.400 | 0.37008 | | | | | | | | | 76 | | |
| 8667950 | - | - | - | 9.500 | 0.37402 | 79 | | | | | | | | 10 | 10 | |
| 8667952 | - | - | - | 9.520 | 0.37480 | | | | | | | | | | | 75 |
| 521037512 | 3/8 | - | - | 9.525 | 0.37500 | 80 | | | | | | | | | | 3/8 |
| 8667954 | - | - | - | 9.540 | 0.37559 | 81 | | | | | | | | | | 10 |
| 8667960 | - | - | - | 9.600 | 0.37795 | | | 77 | | | | | | | | |
| 8667970 | - | - | - | 9.700 | 0.38189 | 82 | | 10 | | | | | | | | |
| 8667975 | - | - | - | 9.750 | 0.38386 | | 78 | | | | | | | | | |
| 8667980 | - | - | - | 9.800 | 0.38583 | 83 | 10 | | 10 | | | | | | | |
| 8667990 | - | - | - | 9.900 | 0.38976 | | | | | 79 | | | | | | |
| 521039012 | 25/64 | - | - | 9.922 | 0.39063 | 80 | | | | 7/16 | | | | | | |
| 8668000 | - | - | - | 10.000 | 0.39370 | 81 | | | | 10 | 10 | | | | | |
| 8668010 | - | - | - | 10.100 | 0.39764 | | | | | | | 81 | | | | |
| 8683010 | - | - | - | 10.200 | 0.40157 | 82 | | | | | | 10 | 10 | | | |
| 8668020 | - | - | - | | | | | | | | | | | 11 | | |
| 8683020 | - | - | - | 10.250 | 0.40354 | 83 | | | | | | | | 10 | 10 | |
| 8668025 | - | - | - | 12 | | | | | | | | | | | | |
| 8668030 | - | - | - | 10.300 | 0.40551 | 84 | | | | | | | | | | 10 |
| 8683030 | - | - | - | 11 | | | | | | | | | | | | |
| 521040612 | 13/32 | - | - | 10.319 | 0.40625 | 83 | | 7/16 | | | | | | | | |
| 8668040 | - | - | - | 10.400 | 0.40945 | 84 | 10 | 10 | | | | | | | | |
| 8683040 | - | - | - | 12 | | | | | | | | | | | | |
| 8668050 | - | - | - | 10.500 | 0.41339 | 85 | | | 10 | | | | | | | |
| 8683050 | - | - | - | | | | | | | 11 | | | | | | |
| 8668060 | - | - | - | 10.600 | 0.41732 | 85 | | | | 12 | | | | | | |
| | | | | | | | | | | | 11 | | | | | |

Packed: 1 pc.
Available WXL® coating only.
MEGA COOLER™ applies only to diameter sizes over 6 mm.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 5210 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 5210 (Continued)

ADO-SUS-5D, Coolant-Through



| | | | | |
|-------------------|----------------|------------|------------|--------------|
| SPEED FEED | CARBIDE | WXL | 30° | SHANK |
| P358 | | | | h6 |

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8683060 | - | - | - | 10.600 | 0.41732 | 85 | 146 | 12 |
| 8668070 | - | - | - | 10.700 | 0.42126 | 86 | | 11 |
| 8683070 | - | - | - | 10.716 | 0.42188 | | | 12 |
| 521042212 | 27/64 | - | - | 10.716 | 0.42188 | 7/16 | | |
| 8668075 | - | - | - | 10.750 | 0.42323 | 87 | 11 | |
| 8668080 | - | - | - | 10.800 | 0.42520 | | 12 | |
| 8683080 | - | - | - | 10.800 | 0.42520 | | 11 | |
| 8668090 | - | - | - | 10.900 | 0.42913 | | 12 | |
| 8683090 | - | - | - | 10.900 | 0.42913 | 88 | 12 | |
| 8668100 | - | - | - | 11.000 | 0.43307 | | 11 | |
| 8683100 | - | - | - | 11.000 | 0.43307 | 89 | 12 | |
| 8668110 | - | - | - | 11.100 | 0.43701 | | 12 | |
| 521043812 | 7/16 | - | - | 11.113 | 0.43750 | | 7/16 | |
| 8668120 | - | - | - | 11.200 | 0.44094 | | 90 | 12 |
| 8668122 | - | - | - | 11.220 | 0.44173 | | | |
| 8668124 | - | - | - | 11.240 | 0.44252 | | | |
| 8668130 | - | - | - | 11.300 | 0.44488 | | | |
| 8668136 | - | - | - | 11.360 | 0.44724 | 91 | 12 | |
| 8668138 | - | - | - | 11.380 | 0.44803 | | | |
| 8668140 | - | - | - | 11.400 | 0.44882 | 92 | 156 | |
| 8668150 | - | - | - | 11.500 | 0.45276 | | | |
| 521045312 | 29/64 | - | - | 11.509 | 0.45313 | | | |
| 8668160 | - | - | - | 11.600 | 0.45669 | | | |
| 8668170 | - | - | - | 11.700 | 0.46063 | 93 | 12 | |
| 8668180 | - | - | - | 11.800 | 0.46457 | | | |
| 8668190 | - | - | - | 11.900 | 0.46850 | 94 | 12 | |
| 521046912 | 15/32 | - | - | 11.906 | 0.46875 | | | |
| 8668200 | - | - | - | 12.000 | 0.47244 | 95 | 12 | |
| 8668210 | - | - | - | 12.100 | 0.47638 | | | |
| 8683210 | - | - | - | 12.100 | 0.47638 | | | |
| 8668220 | - | - | - | 12.200 | 0.48031 | | | |
| 8683220 | - | - | - | 12.200 | 0.48031 | 96 | 13 | |
| 8668230 | - | - | - | 12.300 | 0.48425 | | | |
| 8683230 | - | - | - | 12.300 | 0.48425 | 97 | 14 | |
| 521048512 | 31/64 | - | - | 12.303 | 0.48438 | | | |
| 8668240 | - | - | - | 12.400 | 0.48819 | 98 | 13 | |
| 8683240 | - | - | - | 12.400 | 0.48819 | | | |
| 8668250 | - | - | - | 12.500 | 0.49213 | | | |
| 8683250 | - | - | - | 12.500 | 0.49213 | | | |
| 8668260 | - | - | - | 12.600 | 0.49606 | 99 | 14 | |
| 8683260 | - | - | - | 12.600 | 0.49606 | | | |
| 8668270 | - | - | - | 12.700 | 0.50000 | 100 | 13 | |
| 521050012 | 1/2 | - | - | 12.700 | 0.50000 | | | |
| 8668275 | - | - | - | 12.750 | 0.50197 | | | |
| 8668280 | - | - | - | 12.800 | 0.50394 | | | |
| 8683280 | - | - | - | 12.800 | 0.50394 | 103 | 13 | |
| | | | | | | | 167 | 1/2 |
| | | | | | | | 100 | 13 |
| | | | | | | | 101 | 14 |
| | | | | | | | 102 | 13 |
| | | | | | | | 103 | 13 |
| | | | | | | | | 14 |

Packed: 1 pc.
 Available WXL[®] coating only.
 MEGA COOLER™ applies only to diameter sizes over 6 mm.





List 5210 (Continued)

ADO-SUS-5D, Coolant-Through

| | | | | | |
|---------------------------|----------------|------------|--|------------|--------------------|
| SPEED FEED P358 | CARBIDE | WXL | | 30° | SHANK h6 |
|---------------------------|----------------|------------|--|------------|--------------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8668290 | - | - | - | 12.900 | 0.50787 | 104 | 167 | 13 |
| 8683290 | - | - | - | 12.900 | 0.50787 | | | 14 |
| 8668300 | - | - | - | 13.000 | 0.51181 | | | 13 |
| 8683300 | - | - | - | 13.100 | 0.51575 | 105 | 176 | 14 |
| 8668310 | - | - | - | 13.200 | 0.51969 | 106 | | |
| 8668320 | - | - | - | 13.250 | 0.52165 | | | |
| 8668325 | - | - | - | 13.300 | 0.52362 | 107 | | |
| 8668330 | - | - | - | 13.400 | 0.52756 | | | |
| 8668340 | - | - | - | 13.494 | 0.53125 | 108 | | |
| 521053112 | 17/32 | - | - | 13.500 | 0.53150 | | 109 | 5/8 |
| 8668350 | - | - | - | 13.600 | 0.53543 | | | |
| 8668360 | - | - | - | 13.700 | 0.53937 | 110 | 185 | 14 |
| 8668370 | - | - | - | 13.800 | 0.54331 | | | |
| 8668380 | - | - | - | 13.900 | 0.54724 | 111 | | |
| 8668390 | - | - | - | 14.000 | 0.55118 | | | |
| 8668400 | - | - | - | 14.100 | 0.55512 | 112 | | |
| 8668410 | - | - | - | 14.200 | 0.55906 | | | |
| 521055512 | - | - | - | 14.288 | 0.56250 | 114 | 16 | |
| 8668420 | - | - | - | 14.300 | 0.56299 | | 115 | 15 |
| 521055912 | - | - | - | 14.300 | 0.56299 | 116 | | 16 |
| 521056212 | 9/16 | - | - | 14.400 | 0.56693 | | 117 | 5/8 |
| 8668430 | - | - | - | 14.400 | 0.56693 | 118 | | 15 |
| 521056312 | - | - | - | 14.500 | 0.57087 | | 119 | 16 |
| 8668440 | - | - | - | 14.600 | 0.57480 | 120 | | 15 |
| 8668440 | - | - | - | 14.600 | 0.57480 | | 121 | 16 |
| 521056612 | - | - | - | 14.700 | 0.57874 | 122 | | 15 |
| 8668450 | - | - | - | 14.800 | 0.58268 | | 123 | 16 |
| 8668450 | - | - | - | 14.800 | 0.58268 | 124 | | 15 |
| 8668460 | - | - | - | 14.900 | 0.58661 | | 125 | 16 |
| 521057412 | - | - | - | 15.000 | 0.59055 | 126 | | 15 |
| 8668470 | - | - | - | 15.100 | 0.59449 | | 127 | 16 |
| 8668470 | - | - | - | 15.200 | 0.59843 | 128 | | 15 |
| 521057812 | - | - | - | 15.250 | 0.60039 | | 129 | 16 |
| 8668480 | - | - | - | 15.300 | 0.60236 | 130 | | 15 |
| 521058212 | - | - | - | 15.400 | 0.60630 | | 131 | 16 |
| 8668490 | - | - | - | 15.500 | 0.61024 | 132 | | 15 |
| 8668490 | - | - | - | 15.500 | 0.61024 | | 133 | 16 |
| 521058612 | - | - | - | 15.000 | 0.59055 | 134 | | 15 |
| 8668500 | - | - | - | 15.100 | 0.59449 | | 135 | 16 |
| 8683500 | - | - | - | 15.200 | 0.59843 | 136 | | 15 |
| 8668510 | - | - | - | 15.250 | 0.60039 | | 137 | 16 |
| 8668520 | - | - | - | 15.300 | 0.60236 | 138 | | 15 |
| 8668525 | - | - | - | 15.400 | 0.60630 | | 139 | 16 |
| 8668530 | - | - | - | 15.500 | 0.61024 | 140 | | 15 |
| 8668540 | - | - | - | 15.500 | 0.61024 | | 141 | 16 |
| 8668550 | - | - | - | 15.500 | 0.61024 | 142 | | 15 |
| 8668550 | - | - | - | 15.500 | 0.61024 | | 143 | 16 |

Packed: 1 pc.
Available WXL[®] coating only.
MEGA COOLER™ applies only to diameter sizes over 6 mm.

continued on next page **ADR**

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 5210 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 5210 (Continued)

ADO-SUS-5D, Coolant-Through



| | | | | | |
|---------------------------|----------------|------------|--|------------|--------------------|
| SPEED FEED P358 | CARBIDE | WXL | | 30° | SHANK h6 |
|---------------------------|----------------|------------|--|------------|--------------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8668560 | - | - | - | 15.600 | 0.61417 | 125 | 193 | 16 |
| 8668570 | - | - | - | 15.700 | 0.61811 | 126 | | |
| 8668580 | - | - | - | 15.800 | 0.62205 | 127 | | |
| 521062512 | 5/8 | - | - | 15.875 | 0.62500 | 128 | 16 | 5/8 |
| 8668590 | - | - | - | 15.900 | 0.62598 | | | |
| 8668600 | - | - | - | 16.000 | 0.62992 | 113 | 184 | 16 |
| 521063312 | - | - | - | 16.100 | 0.63386 | | | |
| 8668650 | - | - | - | 16.500 | 0.64961 | 116 | 18 | 17 |
| 8683650 | - | - | - | 16.500 | 0.64961 | | | |
| 521065612 | 21/32 | - | - | 16.669 | 0.65625 | 117 | 18 | 3/4 |
| 8668700 | - | - | - | 17.000 | 0.66929 | | | |
| 8683700 | - | - | - | 17.000 | 0.66929 | 119 | 191 | 17 |
| 8668750 | - | - | - | 17.500 | 0.68898 | | | |
| 8668800 | - | - | - | 18.000 | 0.70866 | 123 | 198 | 18 |
| 8668850 | - | - | - | 18.500 | 0.72835 | | | |
| 8683850 | - | - | - | 18.500 | 0.72835 | 130 | 19 | 20 |
| 8668900 | - | - | - | 19.000 | 0.74803 | | | |
| 8683900 | - | - | - | 19.000 | 0.74803 | 133 | 205 | 19 |
| 521075012 | 3/4 | - | - | 19.050 | 0.75000 | | | |
| 521075712 | - | - | - | 19.250 | 0.75787 | 135 | 20 | 3/4 |
| 8668950 | - | - | - | 19.500 | 0.76772 | | | |
| 8669000 | - | - | - | 20.000 | 0.78740 | 140 | 20 | 20 |
| | | | | | | | | |

Packed: 1 pc.
Available WXL[®] coating only.
MEGA COOLER™ applies only to diameter sizes over 6 mm.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|--------------------------|------------------------------|------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------|--------------------------|-------------------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5210 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | |

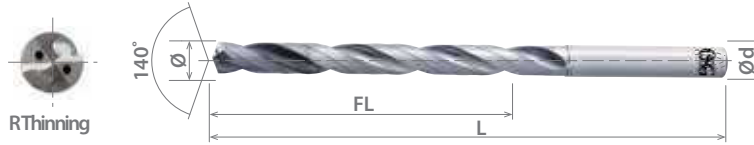
good best





List 5220

ADO-SUS-8D, Coolant-Through



| | | | | | |
|---------------------------|----------------|------------|--|------------|--------------------|
| SPEED FEED P358 | CARBIDE | WXL | | 30° | SHANK h6 |
|---------------------------|----------------|------------|--|------------|--------------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 12.7 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8686200 | - | - | - | 2.000 | 0.07874 | 22 | 75 | 3 | |
| 8686210 | - | - | - | 2.100 | 0.08268 | 24 | | | |
| 8686220 | - | - | - | 2.200 | 0.08661 | 25 | | | |
| 8686230 | - | - | - | 2.300 | 0.09055 | 26 | | | |
| 522009312 | 3/32 | - | - | 2.381 | 0.09375 | 27 | | | |
| 8686240 | - | - | - | 2.400 | 0.09449 | | | | |
| 8686250 | - | - | - | 2.500 | 0.09843 | 28 | | | |
| 8686260 | - | - | - | 2.600 | 0.10236 | 29 | | | |
| 8686270 | - | - | - | 2.700 | 0.10630 | 30 | | | |
| 522010912 | 7/64 | - | - | 2.778 | 0.10938 | 31 | | | |
| 8686280 | - | - | - | 2.800 | 0.11024 | | | | |
| 8686290 | - | - | - | 2.900 | 0.11417 | 32 | | | |
| 8686300 | - | - | - | 3.000 | 0.11811 | 33 | | | |
| 8684310 | - | - | - | 3.100 | 0.12205 | 34 | | | |
| 522012512 | 1/8 | - | - | 3.175 | 0.12500 | 35 | | | |
| 8684320 | - | - | - | 3.200 | 0.12598 | 36 | 4 | | |
| 8684330 | - | - | - | 3.300 | 0.12992 | | | | |
| 8684340 | - | - | - | 3.400 | 0.13386 | | | | |
| 8684350 | - | - | - | 3.500 | 0.13780 | | | | |
| 8684360 | - | - | - | 3.600 | 0.14173 | | | | |
| 8684370 | - | - | - | 3.700 | 0.14567 | | | | |
| 8684380 | - | - | - | 3.800 | 0.14961 | | | | |
| 8684390 | - | - | - | 3.900 | 0.15354 | | | | |
| 522015612 | 5/32 | - | - | 3.970 | 0.15630 | | | 44 | 3/16 |
| 8684400 | - | - | - | 4.000 | 0.15748 | | | | |
| 522016112 | - | 20 | - | 4.089 | 0.16100 | 45 | 6 | | |
| 8686410 | - | - | - | 4.100 | 0.16142 | | 5 | | |
| 8684410 | - | - | - | 4.100 | 0.16142 | | 6 | | |
| 8686420 | - | - | - | 4.200 | 0.16535 | | 5 | | |
| 8684420 | - | - | - | 4.200 | 0.16535 | | 6 | | |
| 8686430 | - | - | - | 4.300 | 0.16929 | | 5 | | |
| 8684430 | - | - | - | 4.300 | 0.16929 | | 6 | | |
| 522017212 | 11/64 | - | - | 4.366 | 0.17188 | | 47 | 3/16 | |
| 8686440 | - | - | - | 4.400 | 0.17323 | | | 5 | |
| 8684440 | - | - | - | 4.400 | 0.17323 | | 6 | | |
| 8686450 | - | - | - | 4.500 | 0.17717 | 5 | | | |
| 8684450 | - | - | - | 4.500 | 0.17717 | 6 | | | |

Packed: 1 pc.
Available WXL® coating only.

➔ continued on next page ➔ **ADR**

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 5220 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

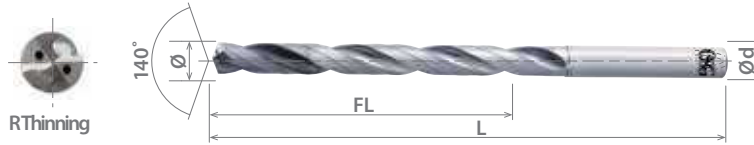
good best





List 5220 (Continued)

ADO-SUS-8D, Coolant-Through



| | | | | |
|-------------------|----------------|------------|------------|--------------|
| SPEED FEED | CARBIDE | WXL | 30° | SHANK |
| P358 | | | | h6 |

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 12.7 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8686460 | - | - | - | 4.600 | 0.18110 | 51 | 105 | 5 |
| 8684460 | - | - | - | 4.600 | 0.18110 | 51 | | 6 |
| 8686470 | - | - | - | 4.700 | 0.18504 | 52 | | 5 |
| 8684470 | - | - | - | 4.700 | 0.18504 | | | 6 |
| 522018712 | 3/16 | - | - | 4.763 | 0.18750 | 53 | | 3/16 |
| 8686480 | - | - | - | 4.800 | 0.18898 | | | 5 |
| 8684480 | - | - | - | 4.800 | 0.18898 | 53 | | 6 |
| 8686490 | - | - | - | 4.900 | 0.19291 | 54 | | 5 |
| 8684490 | - | - | - | 4.900 | 0.19291 | | | 6 |
| 8686500 | - | - | - | 5.000 | 0.19685 | 55 | | 5 |
| 8684500 | - | - | - | 5.000 | 0.19685 | | 5 | |
| 8684510 | - | - | - | 5.100 | 0.20079 | 56 | 6 | |
| 522020312 | 13/64 | - | - | 5.159 | 0.20313 | 57 | 1/4 | |
| 8684520 | - | - | - | 5.200 | 0.20472 | | 57 | 6 |
| 8684530 | - | - | - | 5.300 | 0.20866 | 58 | 6 | |
| 8684540 | - | - | - | 5.400 | 0.21260 | | 58 | 6 |
| 522021312 | - | 3 | - | 5.410 | 0.21300 | 59 | 1/4 | |
| 8684550 | - | - | - | 5.500 | 0.21654 | | 59 | 6 |
| 522021812 | 7/32 | - | - | 5.556 | 0.21875 | 60 | 1/4 | |
| 8684560 | - | - | - | 5.600 | 0.22047 | | 60 | 6 |
| 8684570 | - | - | - | 5.700 | 0.22441 | 61 | 6 | |
| 8684580 | - | - | - | 5.800 | 0.22835 | | 61 | 6 |
| 8684590 | - | - | - | 5.900 | 0.23228 | 62 | 6 | |
| 522023412 | 15/64 | - | - | 5.953 | 0.23438 | | 62 | 6 |
| 8684600 | - | - | - | 6.000 | 0.23622 | 63 | 1/4 | |
| 8686610 | - | - | - | 6.100 | 0.24016 | | 63 | 6 |
| 8684610 | - | - | - | 6.100 | 0.24016 | 64 | 7 | |
| 8686620 | - | - | - | 6.200 | 0.24409 | | 64 | 8 |
| 8684620 | - | - | - | 6.200 | 0.24409 | 65 | 7 | |
| 8686630 | - | - | - | 6.300 | 0.24803 | | 65 | 8 |
| 8684630 | - | - | - | 6.300 | 0.24803 | 66 | 7 | |
| 522025012 | 1/4 | - | E | 6.350 | 0.25000 | | 66 | 8 |
| 8686640 | - | - | - | 6.400 | 0.25197 | 67 | 1/4 | |
| 8684640 | - | - | - | 6.400 | 0.25197 | | 67 | 7 |
| 8686650 | - | - | - | 6.500 | 0.25591 | 68 | 8 | |
| 8684650 | - | - | - | 6.500 | 0.25591 | | 68 | 7 |
| 522025712 | - | - | F | 6.528 | 0.25700 | 69 | 8 | |
| 8686660 | - | - | - | 6.600 | 0.25984 | | 69 | 7 |
| 8684660 | - | - | - | 6.600 | 0.25984 | 70 | 8 | |
| 8686670 | - | - | - | 6.700 | 0.26378 | | 70 | 7 |
| 8684670 | - | - | - | 6.700 | 0.26378 | 71 | 8 | |
| 522026512 | 17/64 | - | - | 6.747 | 0.26563 | | 71 | 8 |
| 8686680 | - | - | - | 6.800 | 0.26772 | 72 | 5/16 | |
| 8684680 | - | - | - | 6.800 | 0.26772 | | 72 | 7 |
| 8686690 | - | - | - | 6.900 | 0.27165 | 73 | 8 | |
| 8684690 | - | - | - | 6.900 | 0.27165 | | 73 | 7 |

Packed: 1 pc.
Available WXL[®] coating only.





List 5220 (Continued)

ADO-SUS-8D, Coolant-Through



| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8686700 | - | - | - | 7.000 | 0.27559 | 77 | 125 | 7 |
| 8684700 | - | - | - | 7.000 | 0.27559 | 77 | | 8 |
| 8684710 | - | - | - | 7.100 | 0.27953 | 78 | | 8 |
| 522028112 | 9/32 | - | - | 7.144 | 0.28125 | 79 | 140 | 5/16 |
| 8684720 | - | - | - | 7.200 | 0.28346 | | | 80 |
| 8684730 | - | - | - | 7.300 | 0.28740 | 81 | | 8 |
| 8684740 | - | - | - | 7.400 | 0.29134 | 83 | 140 | 5/16 |
| 8684750 | - | - | - | 7.500 | 0.29528 | 84 | | |
| 522029612 | 19/64 | - | - | 7.541 | 0.29688 | 85 | | |
| 8684760 | - | - | - | 7.600 | 0.29921 | 86 | 140 | 8 |
| 8684770 | - | - | - | 7.700 | 0.30315 | 87 | | |
| 8684780 | - | - | - | 7.800 | 0.30709 | 88 | | |
| 8684790 | - | - | - | 7.900 | 0.31102 | 89 | 140 | 5/16 |
| 522031212 | 5/16 | - | - | 7.938 | 0.31250 | 90 | | |
| 8684800 | - | - | - | 8.000 | 0.31496 | 91 | | |
| 8686810 | - | - | - | 8.100 | 0.31890 | 92 | 150 | 9 |
| 8684810 | - | - | - | 8.100 | 0.31890 | 93 | | 10 |
| 8686820 | - | - | - | 8.200 | 0.32283 | 94 | | 9 |
| 8684820 | - | - | - | 8.200 | 0.32283 | 95 | 10 | |
| 8686830 | - | - | - | 8.300 | 0.32677 | 96 | 9 | |
| 8684830 | - | - | - | 8.300 | 0.32677 | 97 | 10 | |
| 522032812 | 21/64 | - | - | 8.334 | 0.32813 | 98 | 150 | 3/8 |
| 8686840 | - | - | - | 8.400 | 0.33071 | 99 | | 9 |
| 8684840 | - | - | - | 8.400 | 0.33071 | 100 | | 10 |
| 522033112 | - | - | Q | 8.433 | 0.33200 | 101 | 150 | 11/32 |
| 8686850 | - | - | - | 8.500 | 0.33465 | 102 | | 9 |
| 8684850 | - | - | - | 8.500 | 0.33465 | 103 | | 10 |
| 8686860 | - | - | - | 8.600 | 0.33858 | 104 | 150 | 9 |
| 8684860 | - | - | - | 8.600 | 0.33858 | 105 | | 10 |
| 8686870 | - | - | - | 8.700 | 0.34252 | 106 | | 9 |
| 8684870 | - | - | - | 8.700 | 0.34252 | 107 | 10 | |
| 522034312 | 11/32 | - | - | 8.731 | 0.34375 | 108 | 150 | 3/8 |
| 8686880 | - | - | - | 8.800 | 0.34646 | 109 | | 9 |
| 8684880 | - | - | - | 8.800 | 0.34646 | 110 | | 10 |
| 8686890 | - | - | - | 8.900 | 0.35039 | 111 | 150 | 9 |
| 8684890 | - | - | - | 8.900 | 0.35039 | 112 | | 10 |
| 8686900 | - | - | - | 9.000 | 0.35433 | 113 | | 9 |
| 8684900 | - | - | - | 9.000 | 0.35433 | 114 | 160 | 10 |
| 8684910 | - | - | - | 9.100 | 0.35827 | 115 | | 10 |
| 522035912 | 23/64 | - | - | 9.128 | 0.35938 | 116 | | 160 |
| 8684920 | - | - | - | 9.200 | 0.36220 | 117 | 10 | |
| 8684930 | - | - | - | 9.300 | 0.36614 | 118 | 10 | |
| 8684940 | - | - | - | 9.400 | 0.37008 | 119 | 10 | |

Packed: 1 pc.
Available WXL[®] coating only.

continued on next page **ADR**

| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|--------------------------|--------------|-------------------------------------|--------------------------|----------------|---------|-----------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 5220 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | |

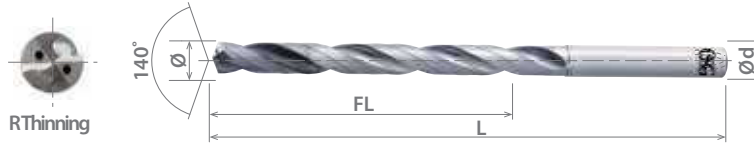
good best





List 5220 (Continued)

ADO-SUS-8D, Coolant-Through



| | | | | |
|-------------------|----------------|------------|------------|-----------------|
| SPEED FEED | CARBIDE | WXL | 30° | SHANK h6 |
| P358 | | | | |

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 12.7 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|---------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8684950 | - | - | - | 9.500 | 0.37402 | 105 | 160 | 10 | |
| 522037512 | 3/8 | - | - | 9.525 | 0.37500 | | | 3/8 | |
| 8684960 | - | - | - | 9.600 | 0.37795 | | | 106 | 10 |
| 8684970 | - | - | - | 9.700 | 0.38189 | | | 107 | |
| 8684980 | - | - | - | 9.800 | 0.38583 | | | 108 | |
| 8684990 | - | - | - | 9.900 | 0.38976 | | | 109 | |
| 522039012 | 25/64 | - | - | 9.922 | 0.39063 | 110 | 7/16 | | |
| 8685000 | - | - | - | 10.000 | 0.39370 | | 10 | | |
| 8687010 | - | - | - | 10.100 | 0.39764 | 111 | 11 | | |
| 8685010 | - | - | - | | | | 12 | | |
| 8687020 | - | - | - | 10.200 | 0.40157 | 112 | 11 | | |
| 8685020 | - | - | - | | | | 12 | | |
| 8687030 | - | - | - | 10.300 | 0.40551 | 113 | 11 | | |
| 8685030 | - | - | - | | | | 12 | | |
| 522040612 | 13/32 | - | - | 10.319 | 0.40625 | 114 | 7/16 | | |
| 8687040 | - | - | - | 10.400 | 0.40945 | | 11 | | |
| 8685040 | - | - | - | 10.500 | 0.41339 | 116 | 12 | | |
| 8687050 | - | - | - | | | | 11 | | |
| 8685050 | - | - | - | 10.600 | 0.41732 | 117 | 12 | | |
| 8687060 | - | - | - | | | | 11 | | |
| 8685060 | - | - | - | 10.700 | 0.42126 | 118 | 12 | | |
| 8687070 | - | - | - | | | | 11 | | |
| 8685070 | - | - | - | 10.716 | 0.42188 | 119 | 7/16 | | |
| 522042212 | 27/64 | - | - | | | | 10.800 | 0.42520 | 12 |
| 8687080 | - | - | - | 10.800 | 0.42913 | 120 | 11 | | |
| 8685080 | - | - | - | | | | 12 | | |
| 8687090 | - | - | - | 10.900 | 0.43307 | 121 | 11 | | |
| 8685090 | - | - | - | | | | 12 | | |
| 8687100 | - | - | - | 11.000 | 0.43701 | 122 | 11 | | |
| 8685100 | - | - | - | | | | 12 | | |
| 8685110 | - | - | - | 11.100 | 0.43750 | 123 | 12 | | |
| 522043712 | 7/16 | - | - | 11.113 | 0.43750 | | | 7/16 | |
| 8685120 | - | - | - | 11.200 | 0.44094 | 124 | 12 | | |
| 8685130 | - | - | - | | | | | 11.300 | 0.44488 |
| 8685140 | - | - | - | 11.400 | 0.44882 | 125 | 12 | | |
| 8685150 | - | - | - | 11.500 | 0.45276 | | | | |
| 522045312 | 29/64 | - | - | 11.509 | 0.45313 | 127 | 1/2 | | |
| 8685160 | - | - | - | 11.600 | 0.45669 | | | | |
| 8685170 | - | - | - | 11.700 | 0.46063 | 129 | 12 | | |
| 8685180 | - | - | - | 11.800 | 0.46457 | | | | |
| 8685190 | - | - | - | 11.900 | 0.46850 | 131 | 12 | | |
| 8685200 | - | - | - | 12.000 | 0.47244 | | | | |
| 522047612 | - | - | - | 12.100 | 0.47638 | 133 | 14 | | |
| 522048012 | - | - | - | 12.200 | 0.48031 | | | | |
| 522048412 | - | - | - | 12.300 | 0.48425 | 135 | 14 | | |
| 522048812 | - | - | - | 12.400 | 0.48819 | | | | |

Packed: 1 pc.
Available WXL[®] coating only.





List 5220 (Continued)

ADO-SUS-8D, Coolant-Through



| EDP Number | Diameter | | | | | Flute Length | Overall Length | Shank Diameter |
|------------|-----------------|-----------|-------------|--------|---------|--------------|----------------|----------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | FL (mm) | L (mm) | d (mm/in) |
| 522049212 | - | - | - | 12.500 | 0.49213 | 138 | 206 | 13 |
| 522049312 | - | - | - | | | 139 | | 14 |
| 522049612 | - | - | - | 12.700 | 0.50000 | 140 | | 1/2 |
| 522050012 | 1/2 | - | - | | | | | |

Packed: 1 pc.
Available WXL[®] coating only.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------|--------------------------|-------------------------------------|--------------------------|-----------------|-------------------|------------|--------------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 5220 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | |

good best





A Brand[®] AD-LDS

Advanced Performance Spot Drills

List 5190

| | | | | | |
|---------------------------|----------------|--------------|------------|------------|--------------------|
| SPEED FEED P359 | CARBIDE | EgiAs | 12° | 25° | SHANK h7 |
|---------------------------|----------------|--------------|------------|------------|--------------------|

AD-LDS



| EDP Number | Diameter | | | | | Min. Drill Hole Size | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | Point Angle a | Helix |
|------------|-----------------|-----------|-------------|--------|---------|----------------------|-------------------------|--------------------------|-----------------------------|------------------|-------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | | |
| 8688933 | - | - | - | 3.000 | 0.11811 | 1.2 | 9 | 48 | 3 | 90° | 12° |
| 8688957 | - | - | - | | | | | | | 120° | 25° |
| 8688966 | - | - | - | | | | | | | 140° | 25° |
| 8688934 | - | - | - | 4.000 | 0.15748 | 1.5 | 12 | 54 | 4 | 90° | 12° |
| 8688958 | - | - | - | | | | | | | 120° | 25° |
| 8688967 | - | - | - | | | | | | | 140° | 25° |
| 519012017 | - | - | - | 5.000 | 0.19685 | 1.7 | 14 | 70 | 5 | 90° | 12° |
| 519022017 | - | - | - | | | | | | | 120° | 25° |
| 519032017 | - | - | - | | | | | | | 140° | 25° |
| 8688935 | - | - | - | 6.000 | 0.23622 | 1.9 | 15 | 72 | 6 | 90° | 12° |
| 8688959 | - | - | - | | | | | | | 120° | 25° |
| 8688968 | - | - | - | | | | | | | 140° | 25° |
| 519012517 | - | - | - | 6.350 | 0.25000 | 2.1 | 17 | 75 | 1/4 | 90° | 12° |
| 519022517 | 1/4 | - | E | | | | | | | 120° | 25° |
| 519032517 | - | - | - | | | | | | | 140° | 25° |
| 8688936 | - | - | - | 8.000 | 0.31496 | 2.1 | 20 | 81 | 8 | 90° | 12° |
| 8688960 | - | - | - | | | | | | | 120° | 25° |
| 8688969 | - | - | - | | | | | | | 140° | 25° |
| 519013817 | - | - | - | 9.525 | 0.37500 | 2.3 | 24 | 93 | 3/8 | 90° | 12° |
| 519023817 | 3/8 | - | - | | | | | | | 120° | 25° |
| 519033817 | - | - | - | | | | | | | 140° | 25° |
| 8688937 | - | - | - | 10.000 | 0.39370 | 2.5 | 24 | 93 | 10 | 90° | 12° |
| 8688961 | - | - | - | | | | | | | 120° | 25° |
| 8688970 | - | - | - | | | | | | | 140° | 25° |
| 8688938 | - | - | - | 12.000 | 0.47244 | 2.5 | 28 | 108 | 12 | 90° | 12° |
| 8688962 | - | - | - | | | | | | | 120° | 25° |
| 8688971 | - | - | - | | | | | | | 140° | 25° |
| 519015017 | - | - | - | 12.700 | 0.50000 | 3.0 | 36 | 111 | 1/2 | 90° | 12° |
| 519025017 | 1/2 | - | - | | | | | | | 120° | 25° |
| 519035017 | - | - | - | | | | | | | 140° | 25° |
| 519016217 | - | - | - | 15.875 | 0.62500 | 5.0 | 41 | 118 | 5/8 | 90° | 12° |
| 519026217 | 5/8 | - | - | | | | | | | 120° | 25° |
| 519036217 | - | - | - | | | | | | | 140° | 25° |
| 519016317 | - | - | - | 16.000 | 0.62992 | 5.0 | 41 | 118 | 16 | 90° | 12° |
| 519026317 | - | - | - | | | | | | | 120° | 25° |
| 519036317 | - | - | - | | | | | | | 140° | 25° |
| 519017517 | - | - | - | 19.050 | 0.75000 | 5.0 | 46 | 132 | 3/4 | 90° | 12° |
| 519027517 | 3/4 | - | - | | | | | | | 120° | 25° |
| 519037517 | - | - | - | | | | | | | 140° | 25° |
| 519017917 | - | - | - | 20.000 | 0.78740 | 5.0 | 46 | 132 | 20 | 90° | 12° |
| 519027917 | - | - | - | | | | | | | 120° | 25° |
| 519037917 | - | - | - | | | | | | | 140° | 25° |

Packed: 1 pc.
Available EgiAs coating only.
Minimum drill hole size is recommended for chamfering operations.





List 5190 (Continued)

AD-LDS

| | | | | | |
|---------------------------|----------------|--------------|------------|------------|--------------------|
| SPEED FEED P359 | CARBIDE | EgiAs | 12° | 25° | SHANK h7 |
|---------------------------|----------------|--------------|------------|------------|--------------------|

| EDP Number | Diameter | | | | | Min. Drill Hole Size | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | Point Angle a | Helix |
|------------|-----------------|-----------|-------------|--------|---------|----------------------|-------------------------|--------------------------|-----------------------------|------------------|-------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | | |
| 519019817 | - | - | - | 25.000 | 0.98425 | 5.0 | 53 | 151 | 25 | 90° | 12° |
| 519029817 | - | - | - | | | | | | | 120° | 25° |
| 519039817 | - | - | - | | | | | | | 140° | 25° |

Packed: 1 pc.

Available EgiAs coating only.

Minimum drill hole size is recommended for chamfering operations.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------|-----|---------|-------------------------------------|--------------|--------------------------|--------------------------|-------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5190 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |

good best



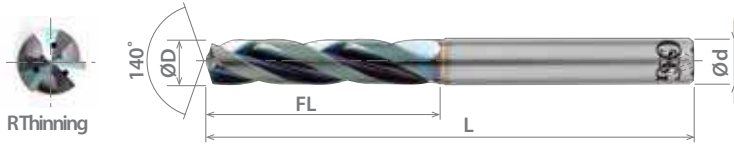


List 5600

WHILE SUPPLIES LAST

| | | | | |
|---------------------------|----------------|------------|------------|--------------------|
| SPEED FEED P360 | CARBIDE | WD1 | 30° | SHANK h6 |
|---------------------------|----------------|------------|------------|--------------------|

TRS-HO-3D, 3 Flute, Coolant-Through



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 4 ≤ D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | | | | | |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|-------|-------|-----|-----|----|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | | | | |
| 560016011 | - | 20 | - | 4.089 | 0.16100 | 25 | 80 | 5 | | | | | |
| 560016111 | - | - | - | 4.100 | 0.16142 | | | | | | | | |
| 560016311 | - | - | - | 4.160 | 0.16378 | | | | | | | | |
| 560016511 | - | - | - | 4.200 | 0.16535 | | | | | | | | |
| 560016811 | - | - | - | 4.270 | 0.16811 | | | | | | | | |
| 560016911 | - | - | - | 4.300 | 0.16929 | | | | | | | | |
| 560017211 | 11/64 | - | - | 4.366 | 0.17188 | 26 | | 3/16 | | | | | |
| 560017311 | - | - | - | 4.400 | 0.17323 | | | | | | | | |
| 560017511 | - | - | - | 4.460 | 0.17559 | 27 | | 5 | | | | | |
| 560017711 | - | - | - | 4.500 | 0.17717 | | | | | | | | |
| 560018511 | - | - | - | 4.700 | 0.18504 | | | | | | | | |
| 560018711 | 3/16 | - | - | 4.763 | 0.18750 | 29 | 3/16 | | | | | | |
| 560018911 | - | - | - | 4.800 | 0.18898 | | | | | | | | |
| 560019211 | - | - | - | 4.900 | 0.19291 | 30 | 5 | | | | | | |
| 560020311 | 13/64 | - | - | 5.159 | 0.20313 | 26 | 82 | 15/64 | | | | | |
| 8660530 | - | - | - | 5.300 | 0.20866 | 27 | | 7 | | | | | |
| 8660540 | - | - | - | 5.400 | 0.21260 | | | | | | | | |
| 560021311 | - | 3 | - | 5.410 | 0.21300 | 28 | | | 1/4 | | | | |
| 560021911 | 7/32 | - | - | 5.558 | 0.21880 | | | | 29 | 15/64 | | | |
| 8660570 | - | - | - | 5.700 | 0.22441 | 30 | | | | 6 | | | |
| 560023411 | 15/64 | - | - | 5.953 | 0.23438 | | | | 31 | 15/64 | | | |
| 8660610 | - | - | - | 6.100 | 0.24016 | 32 | | | | 88 | 7 | | |
| 8660620 | - | - | - | 6.200 | 0.24409 | | | | | | | | |
| 8660630 | - | - | - | 6.300 | 0.24803 | | | | | | | | |
| 8660660 | - | - | - | 6.600 | 0.25984 | | | | | | | | |
| 8660670 | - | - | - | 6.700 | 0.26378 | | | | | | | | |
| 8660760 | - | - | - | 7.600 | 0.29921 | 33 | 8 | | | | | | |
| 8660770 | - | - | - | 7.700 | 0.30315 | | | | | | | | |
| 8660780 | - | - | - | 7.800 | 0.30709 | 34 | | 101 | 11/32 | | | | |
| 560032811 | 21/64 | - | - | 8.334 | 0.32813 | | | | | | | | |
| 8660840 | - | - | - | 8.400 | 0.33071 | 42 | | | 9 | | | | |
| 8660980 | - | - | - | 9.800 | 0.38583 | | 49 | | | 106 | 10 | | |
| 8660990 | - | - | - | 9.900 | 0.38976 | | | | | | | | |
| 8661000 | - | - | - | 10.000 | 0.39370 | 50 | 113 | | 11 | | | | |
| 8661010 | - | - | - | 10.100 | 0.39764 | | | | | | | | |
| 8661050 | - | - | - | 10.500 | 0.41339 | 51 | | | | | | 128 | 13 |
| 8661060 | - | - | - | 10.600 | 0.41732 | | | | | | | | |
| 8661070 | - | - | - | 10.700 | 0.42126 | 52 | | | | | 128 | | |
| 560045311 | 29/64 | - | - | 11.509 | 0.45313 | | | | | | | | |
| 8661190 | - | - | - | 11.900 | 0.46850 | 53 | | 128 | 13 | | | | |
| 560046911 | 15/32 | - | - | 11.906 | 0.46875 | | | | | | | | |
| 8661210 | - | - | - | 12.100 | 0.47638 | 54 | | | | 128 | | | 13 |
| 8661220 | - | - | - | 12.200 | 0.48031 | | | | | | | | |
| 8661230 | - | - | - | 12.300 | 0.48425 | 55 | 128 | | | | | | |
| 8661250 | - | - | - | 12.500 | 0.49213 | | | | | | | | |
| 8661260 | - | - | - | 12.600 | 0.49606 | 56 | | | 128 | | | 13 | |
| 560050011 | 1/2 | - | - | 12.700 | 0.50000 | | | | | | | | |
| 8661270 | - | - | - | 13.097 | 0.51563 | 57 | | | | | 134 | | 14 |
| 8661310 | 33/64 | - | - | 13.200 | 0.51969 | | | | | | | | |
| 8661320 | - | - | - | 13.200 | 0.51969 | 66 | | 134 | | | | | |
| 8661340 | - | - | - | 13.400 | 0.52756 | | | | | | | | |

Packed: 1 pc.
Available WD1 coating only.





List 5600 (Continued)

WHILE SUPPLIES LAST

| | | | | | |
|---------------------------|----------------|------------|--|------------|--------------------|
| SPEED FEED P360 | CARBIDE | WD1 | | 30° | SHANK h6 |
|---------------------------|----------------|------------|--|------------|--------------------|

TRS-HO-3D, 3 Flute, Coolant-Through

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8661420 | - | - | - | 14.200 | 0.55906 | 71 | 140 | 15 |
| 8661430 | - | - | - | 14.300 | 0.56299 | 72 | | |
| 8661440 | - | - | - | 14.400 | 0.56693 | 73 | | |
| 8661450 | - | - | - | 14.500 | 0.57087 | 74 | | |
| 8661460 | - | - | - | 14.600 | 0.57480 | 75 | | |
| 8661470 | - | - | - | 14.700 | 0.57874 | 76 | | |
| 8661480 | - | - | - | 14.800 | 0.58268 | 77 | | |
| 8661490 | - | - | - | 14.900 | 0.58661 | 78 | | |
| 8661500 | - | - | - | 15.000 | 0.59055 | 79 | | |
| 560059311 | 19/32 | - | - | 15.081 | 0.59375 | 80 | | |
| 8661540 | - | - | - | 15.400 | 0.60630 | 81 | 145 | 16 |
| 8661570 | - | - | - | 15.700 | 0.61811 | 82 | | |
| 8661580 | - | - | - | 15.800 | 0.62205 | 83 | | |
| 560063311 | - | - | - | 16.100 | 0.63386 | 84 | 150 | 18 |
| 560066311 | - | - | - | 16.840 | 0.66299 | 85 | | |
| 560071811 | 23/32 | - | - | 18.256 | 0.71875 | 92 | 160 | 3/4 |
| 8661850 | - | - | - | 18.500 | 0.72835 | 93 | | |
| 560075711 | - | - | - | 19.250 | 0.75787 | 97 | 165 | 20 |
| 8661950 | - | - | - | 19.500 | 0.76772 | 98 | | |
| 8662000 | - | - | - | 20.000 | 0.78740 | 100 | | |

Packed: 1 pc.
Available WD1 coating only.



Additional Offerings

Looking for more sizes? Try A Brand® ADO-TRS 3D (p. 66-69)

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------|-------------------------------------|--------------------------|-------------------------------------|--------------|--------------------------|--------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5600 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





EXOPRO® Mega Muscle®

Extreme Performance High Feed Carbide Drills

List 5610 WHILE SUPPLIES LAST

| | | | | | |
|---------------------------|----------------|------------|--|------------|--------------------|
| SPEED FEED P360 | CARBIDE | WD1 | | 30° | SHANK h6 |
|---------------------------|----------------|------------|--|------------|--------------------|

TRS-HO-5D, 3 Flute, Coolant-Through



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 4 ≤ D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|-------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 561016011 | - | 20 | - | 4.089 | 0.16100 | 37 | 95 | 5 | |
| 561016111 | - | - | - | 4.100 | 0.16142 | | | | |
| 561016511 | - | - | - | 4.200 | 0.16535 | 38 | | | |
| 561017211 | 11/64 | - | - | 4.366 | 0.17188 | 40 | | 3/16 | |
| 561018111 | - | - | - | 4.600 | 0.18110 | 42 | | 5 | |
| 561018511 | - | - | - | 4.700 | 0.18504 | 43 | | 3/16 | |
| 561018711 | 3/16 | - | - | 4.763 | 0.18750 | | | | |
| 561018911 | - | - | - | 4.800 | 0.18898 | 44 | | 5 | |
| 561019211 | - | - | - | 4.900 | 0.19291 | 45 | | 100 | |
| 561021311 | - | 3 | - | 5.410 | 0.21300 | 44 | | | 1/4 |
| 561021911 | 7/32 | - | - | 5.556 | 0.21875 | 45 | 15/64 | | |
| 8662570 | - | - | - | 5.700 | 0.22441 | 46 | 6 | | |
| 8662590 | - | - | - | 5.900 | 0.23228 | 48 | 15/64 | | |
| 561023411 | 15/64 | - | - | 5.953 | 0.23438 | | | | |
| 561025011 | 1/4 | - | E | 6.350 | 0.25000 | 52 | 109 | | 1/4 |
| 8662640 | - | - | - | 6.400 | 0.25197 | | | | 7 |
| 8662710 | - | - | - | 7.100 | 0.27953 | 57 | 8 | | |
| 8662720 | - | - | - | 7.200 | 0.28346 | 58 | 8 | | |
| 8662740 | - | - | - | 7.400 | 0.29134 | | | | |
| 561029711 | 19/64 | - | - | 7.541 | 0.29688 | 60 | 118 | 5/16 | |
| 8662760 | - | - | - | 7.600 | 0.29921 | 61 | | 8 | |
| 8662770 | - | - | - | 7.700 | 0.30315 | 62 | | | |
| 8662790 | - | - | - | 7.900 | 0.31102 | 64 | | 8 | |
| 8662800 | - | - | - | 8.000 | 0.31496 | | | | |
| 8662830 | - | - | - | 8.300 | 0.32677 | 67 | | 128 | 11/32 |
| 561032811 | 21/64 | - | - | 8.334 | 0.32813 | | | | |
| 561033211 | - | - | Q | 8.433 | 0.33200 | 68 | | 9 | |
| 8662860 | - | - | - | 8.600 | 0.33858 | 69 | | | |
| 8662880 | - | - | - | 8.800 | 0.34646 | 71 | | | |
| 561035911 | 23/64 | - | - | 9.128 | 0.35938 | 73 | 136 | 25/64 | |
| 8662990 | - | - | - | 9.900 | 0.38976 | 80 | | 10 | |
| 8663070 | - | - | - | 10.700 | 0.42126 | 86 | 146 | 11 | |
| 8663080 | - | - | - | 10.800 | 0.42520 | 87 | | | |
| 8663090 | - | - | - | 10.900 | 0.42913 | 88 | | | |
| 8663120 | - | - | - | 11.200 | 0.44094 | 90 | | | |
| 8663130 | - | - | - | 11.300 | 0.44488 | 91 | 156 | 12 | |
| 8663160 | - | - | - | 11.600 | 0.45669 | 93 | | | |
| 561046911 | 15/32 | - | - | 11.906 | 0.46875 | 96 | | | 15/32 |
| 8663210 | - | - | - | 12.100 | 0.47638 | 97 | 13 | | |
| 8663230 | - | - | - | 12.300 | 0.48425 | 99 | | | |
| 561048411 | 31/64 | - | - | 12.303 | 0.48438 | | 167 | 1/2 | |
| 8663240 | - | - | - | 12.400 | 0.48819 | 100 | | | |
| 8663270 | - | - | - | 12.700 | 0.50000 | 102 | | 13 | |
| 8663280 | - | - | - | 12.800 | 0.50394 | 103 | | | |
| 8663290 | - | - | - | 12.900 | 0.50787 | 104 | | 176 | 14 |
| 8663310 | 33/64 | - | - | 13.097 | 0.51563 | 105 | | | |
| 8663320 | - | - | - | 13.200 | 0.51969 | 106 | | | |
| 8663330 | - | - | - | 13.300 | 0.52362 | 107 | | | |
| 8663340 | - | - | - | 13.400 | 0.52756 | 108 | | | |
| 8663390 | - | - | - | 13.900 | 0.54724 | 112 | | | |

Packed: 1 pc.
Available WD1 coating only.





List 5610 (Continued)

WHILE SUPPLIES LAST

| | | | | | |
|---------------------------|----------------|------------|--|------------|--------------------|
| SPEED FEED P360 | CARBIDE | WD1 | | 30° | SHANK h6 |
|---------------------------|----------------|------------|--|------------|--------------------|

TRS-HO-5D, 3 Flute, Coolant-Through

| EDP Number | Diameter | | | | | Flute Length | Overall Length | Shank Diameter |
|------------|-----------------|-----------|-------------|--------|---------|--------------|----------------|----------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8663410 | - | - | - | 14.100 | 0.55512 | 113 | 185 | 15 |
| 8663430 | - | - | - | 14.300 | 0.56299 | 115 | | |
| 8663450 | - | - | - | 14.500 | 0.57087 | 117 | | |
| 8663460 | - | - | - | 14.600 | 0.57480 | 118 | | |
| 8663470 | - | - | - | 14.700 | 0.57874 | 119 | | |
| 8663480 | - | - | - | 14.800 | 0.58268 | 120 | | |
| 8663490 | - | - | - | 14.900 | 0.58661 | 121 | | |
| 8663500 | - | - | - | 15.000 | 0.59055 | 122 | | |
| 561059311 | 19/32 | - | - | 15.081 | 0.59375 | 123 | | |
| 8663530 | - | - | - | 15.300 | 0.60236 | 124 | | |
| 8663540 | - | - | - | 15.400 | 0.60630 | 125 | | |
| 8663560 | - | - | - | 15.600 | 0.61417 | 126 | | |
| 8663570 | - | - | - | 15.700 | 0.61811 | 127 | | |
| 8663580 | - | - | - | 15.800 | 0.62205 | 128 | | |
| 561062511 | 5/8 | - | - | 15.875 | 0.62500 | 132 | 193 | 16 |
| 8663590 | - | - | - | 15.900 | 0.62598 | 132 | | |
| 8663600 | - | - | - | 16.000 | 0.62992 | 132 | 201 | 17 |
| 8663650 | - | - | - | 16.500 | 0.64961 | 140 | | |
| 561068711 | 11/16 | - | - | 17.463 | 0.68750 | 144 | 209 | 3/4 |
| 8663800 | - | - | - | 18.000 | 0.70866 | 147 | | |
| 561071811 | 23/32 | - | - | 18.256 | 0.71875 | 148 | 217 | 19 |
| 8663850 | - | - | - | 18.500 | 0.72835 | 152 | | |
| 8663900 | - | - | - | 19.000 | 0.74803 | 154 | | |
| 561075011 | 3/4 | - | - | 19.050 | 0.75000 | 156 | | |
| 561075711 | - | - | - | 19.250 | 0.75787 | 160 | | |
| 8663950 | - | - | - | 19.500 | 0.76772 | 160 | | |
| 8664000 | - | - | - | 20.000 | 0.78740 | 160 | 225 | 20 |

Packed: 1 pc.
Available WD1 coating only.



Additional Offerings

Looking for more sizes? Try A Brand® ADO-TRS 5D (p. 70-73)

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------|-------------------------------------|--------------------------|-------------------------------------|-----------|--------------------------|--------------|--------------------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5610 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | <input type="checkbox"/> | | | | |

good best





List 5630

TRS-HO-10D, 3 Flute, Coolant-Through

| | | | | | |
|-------------------|----------------|------------|--|------------|--------------|
| SPEED FEED | CARBIDE | WD1 | | 30° | SHANK |
| P361 | | | | | h6 |



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-----------------|-------------------|
| Size | mm | inch |
| 5 ≤ D ≤ 6 | -0.020 / -0.038 | -0.0007 / -0.0014 |
| 6 < D ≤ 10 | -0.025 / -0.047 | -0.0009 / -0.0018 |
| 10 < D ≤ 15.88 | -0.032 / -0.059 | -0.0012 / -0.0023 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 48159050 | - | - | - | 5.000 | 0.19685 | 65 | 115 | 6 |
| 563020011 | - | - | - | 5.100 | 0.20079 | 70 | 128 | |
| 563020311 | 13/64 | - | - | 5.159 | 0.20313 | | | |
| 563020411 | - | - | - | 5.200 | 0.20472 | | | |
| 563020811 | - | - | - | 5.300 | 0.20866 | | | |
| 563021211 | - | - | - | 5.400 | 0.21260 | | | |
| 563021311 | - | 3 | - | 5.410 | 0.21299 | | | |
| 8664055 | - | - | - | 5.500 | 0.21654 | | | |
| 563021811 | 7/32 | - | - | 5.558 | 0.21880 | | | |
| 563022011 | - | - | - | 5.600 | 0.22047 | | | |
| 563022411 | - | - | - | 5.700 | 0.22441 | | | |
| 563022811 | - | - | - | 5.800 | 0.22835 | | | |
| 563023211 | - | - | - | 5.900 | 0.23228 | | | |
| 563023411 | 15/64 | - | - | 5.953 | 0.23438 | | | |
| 8664060 | - | - | - | 6.000 | 0.23622 | | | |
| 563024011 | - | - | - | 6.100 | 0.24016 | | | |
| 563024411 | - | - | - | 6.200 | 0.24409 | | | |
| 563024811 | - | - | - | 6.300 | 0.24803 | | | |
| 563025011 | 1/4 | - | E | 6.350 | 0.25000 | 87 | 140 | 8 |
| 563025211 | - | - | - | 6.400 | 0.25197 | | | |
| 48159065 | - | - | - | 6.500 | 0.25591 | | | |
| 563025711 | - | - | - | 6.530 | 0.25709 | | | |
| 563025911 | - | - | - | 6.600 | 0.25984 | | | |
| 563026311 | - | - | - | 6.700 | 0.26378 | | | |
| 563026511 | 17/64 | - | - | 6.747 | 0.26563 | | | |
| 563026711 | - | - | - | 6.800 | 0.26772 | | | |
| 563027111 | - | - | - | 6.900 | 0.27165 | | | |
| 48159070 | - | - | - | 7.000 | 0.27559 | | | |
| 563027911 | - | - | - | 7.100 | 0.27953 | | | |
| 563028111 | 9/32 | - | - | 7.144 | 0.28125 | | | |
| 563028311 | - | - | - | 7.200 | 0.28346 | | | |
| 563028711 | - | - | - | 7.300 | 0.28740 | | | |
| 563029111 | - | - | - | 7.400 | 0.29134 | | | |
| 8664075 | - | - | - | 7.500 | 0.29528 | | | |
| 563029611 | 19/64 | - | - | 7.541 | 0.29688 | | | |
| 563029911 | - | - | - | 7.600 | 0.29921 | | | |
| 563030311 | - | - | - | 7.700 | 0.30315 | | | |
| 563030711 | - | - | - | 7.800 | 0.30709 | | | |
| 563031111 | - | - | - | 7.900 | 0.31102 | | | |
| 563031211 | 5/16 | - | - | 7.938 | 0.31250 | | | |
| 8664080 | - | - | - | 8.000 | 0.31496 | | | |
| 563031811 | - | - | - | 8.100 | 0.31890 | | | |
| 563032211 | - | - | - | 8.200 | 0.32283 | | | |
| 563032611 | - | - | - | 8.300 | 0.32677 | | | |
| 563032811 | 21/64 | - | - | 8.334 | 0.32813 | | | |
| 563033011 | - | - | - | 8.400 | 0.33071 | | | |
| 563033111 | - | - | Q | 8.433 | 0.33200 | | | |
| 48159085 | - | - | - | 8.500 | 0.33465 | | | |
| 563033811 | - | - | - | 8.600 | 0.33858 | | | |
| 563034211 | - | - | - | 8.700 | 0.34252 | | | |
| 563034311 | 11/32 | - | - | 8.733 | 0.34380 | | | |
| 563034611 | - | - | - | 8.800 | 0.34646 | | | |
| | | | | | | 105 | 155 | 8 |
| | | | | | | 110 | 165 | 5/16 |
| | | | | | | | | 8 |
| | | | | | | 115 | 165 | 3/8 |
| | | | | | | | | 10 |
| | | | | | | | | 3/8 |
| | | | | | | | | 10 |

Packed: 1 pc.
Available WD1 coating only.





List 5630 (Continued)

TRS-HO-10D, 3 Flute, Coolant-Through

| | | | | | |
|---------------------------|----------------|------------|--|------------|--------------------|
| SPEED FEED P361 | CARBIDE | WD1 | | 30° | SHANK h6 |
|---------------------------|----------------|------------|--|------------|--------------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 563035011 | - | - | - | 8.900 | 0.35039 | 115 | 165 | 10 |
| 48159090 | - | - | - | 9.000 | 0.35433 | | | |
| 563035811 | - | - | - | 9.100 | 0.35827 | 125 | 190 | 3/8 |
| 563035911 | 23/64 | - | - | 9.128 | 0.35938 | | | |
| 563036211 | - | - | - | 9.200 | 0.36220 | | | |
| 563036611 | - | - | - | 9.300 | 0.36614 | | | |
| 563037011 | - | - | - | 9.400 | 0.37008 | | | |
| 8664095 | - | - | - | 9.500 | 0.37402 | | | |
| 563037511 | 3/8 | - | - | 9.525 | 0.37500 | 130 | 190 | 3/8 |
| 563037811 | - | - | - | 9.600 | 0.37795 | | | |
| 563038111 | - | - | - | 9.700 | 0.38189 | | | |
| 563038511 | - | - | - | 9.800 | 0.38583 | | | |
| 563038911 | - | - | - | 9.900 | 0.38976 | | | |
| 563039011 | 25/64 | - | - | 9.922 | 0.39063 | | | |
| 8664100 | - | - | - | 10.000 | 0.39370 | 140 | 205 | 10 |
| 563039711 | - | - | - | 10.100 | 0.39764 | | | |
| 563040111 | - | - | - | 10.200 | 0.40157 | | | |
| 563040511 | - | - | - | 10.300 | 0.40551 | | | |
| 563040611 | 13/32 | - | - | 10.319 | 0.40625 | | | |
| 563040911 | - | - | - | 10.400 | 0.40945 | | | |
| 563041311 | - | - | - | 10.500 | 0.41339 | 145 | 205 | 12 |
| 563041711 | - | - | - | 10.600 | 0.41732 | | | |
| 563041211 | - | - | - | 10.700 | 0.42126 | | | |
| 563042211 | 27/64 | - | - | 10.716 | 0.42188 | | | |
| 563042511 | - | - | - | 10.800 | 0.42520 | | | |
| 563042911 | - | - | - | 10.900 | 0.42913 | | | |
| 563043311 | - | - | - | 11.000 | 0.43307 | 155 | 215 | 12 |
| 563043711 | - | - | - | 11.100 | 0.43701 | | | |
| 563043811 | 7/16 | - | - | 11.113 | 0.43750 | | | |
| 563044011 | - | - | - | 11.200 | 0.44094 | | | |
| 563044411 | - | - | - | 11.300 | 0.44488 | | | |
| 563044811 | - | - | - | 11.400 | 0.44882 | | | |
| 8664115 | - | - | - | 11.500 | 0.45276 | 175 | 225 | 14 |
| 563045311 | 29/64 | - | - | 11.509 | 0.45313 | | | |
| 563045611 | - | - | - | 11.600 | 0.45669 | | | |
| 563046011 | - | - | - | 11.700 | 0.46063 | | | |
| 563046411 | - | - | - | 11.800 | 0.46457 | | | |
| 563056811 | - | - | - | 11.900 | 0.46850 | | | |
| 8664120 | - | - | - | 12.000 | 0.47244 | 14 | 215 | 12 |
| 563047611 | - | - | - | 12.100 | 0.47638 | | | |
| 563048011 | - | - | - | 12.200 | 0.48031 | | | |
| 563048411 | - | - | - | 12.300 | 0.48425 | | | |
| 563048811 | - | - | - | 12.400 | 0.48819 | | | |
| 563049211 | - | - | - | 12.500 | 0.49213 | | | |
| 563049611 | - | - | - | 12.600 | 0.49606 | 14 | 215 | 14 |
| 563050011 | 1/2 | - | - | 12.700 | 0.50000 | | | |
| 563053111 | 17/32 | - | - | 13.494 | 0.53125 | 175 | 225 | 5/8 |
| 563053211 | - | - | - | 13.500 | 0.53150 | | | |

Packed: 1 pc.
Available WD1 coating only.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------|--------------------------|--------------------------|-------------------------------------|-----------|--------------------------|--------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 5630 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 5630 (Continued)

TRS-HO-10D, 3 Flute, Coolant-Through

| | | | | | |
|---------------------------|----------------|------------|--|------------|--------------------|
| SPEED FEED P361 | CARBIDE | WD1 | | 30° | SHANK h6 |
|---------------------------|----------------|------------|--|------------|--------------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-----------------|-------------------|
| Size | mm | inch |
| 5 ≤ D ≤ 6 | -0.020 / -0.038 | -0.0007 / -0.0014 |
| 6 < D ≤ 10 | -0.025 / -0.047 | -0.0009 / -0.0018 |
| 10 < D ≤ 15.88 | -0.032 / -0.059 | -0.0012 / -0.0023 |



| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 563055111 | - | - | - | 14.000 | 0.55118 | 180 | 230 | 14 |
| 563056211 | 9/16 | - | - | 14.288 | 0.56250 | | | 5/8 |
| 563057011 | - | - | - | 14.500 | 0.57087 | 190 | 240 | 16 |
| 563062511 | 5/8 | - | - | 15.875 | 0.62500 | 210 | 260 | 5/8 |

Packed: 1 pc.
Available WD1 coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------|--------------------------|--------------------------|-------------------------------------|----------|--------------------------|--------------|--------------------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5630 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | <input type="checkbox"/> | | | | |

good best





List 5950Ni

WHO55-3D, Coolant-Through

| | | | | |
|---------------------------|----------------|------------|---------------|--------------------|
| SPEED FEED P362 | CARBIDE | WXS | 12-20° | SHANK h6 |
|---------------------------|----------------|------------|---------------|--------------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| D=3 | +0 / -0.014 | +0 / -0.0006 |
| 3<D≤6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤12.7 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 595011811 | - | - | - | 3.000 | 0.11811 | 20 | 62 | 6 |
| 595012511 | 1/8 | - | - | 3.175 | 0.12500 | | | |
| 595013011 | - | - | - | 3.300 | 0.12992 | | | |
| 595013411 | - | - | - | 3.400 | 0.13386 | | | |
| 595013711 | - | - | - | 3.490 | 0.13740 | | | |
| 595013811 | - | - | - | 3.500 | 0.13780 | | | |
| 595013911 | - | - | - | 3.510 | 0.13819 | | | |
| 595014211 | - | - | - | 3.600 | 0.14173 | | | |
| 595014611 | - | - | - | 3.700 | 0.14567 | | | |
| 595015011 | - | - | - | 3.800 | 0.14961 | | | |
| 595015411 | - | - | - | 3.900 | 0.15354 | | | |
| 595015611 | 5/32 | - | - | 3.969 | 0.15625 | | | |
| 595015711 | - | - | - | 4.000 | 0.15748 | | | |
| 595016111 | - | - | - | 4.100 | 0.16142 | | | |
| 595016311 | - | - | - | 4.150 | 0.16339 | | | |
| 595016511 | - | - | - | 4.200 | 0.16535 | | | |
| 595016911 | - | - | - | 4.300 | 0.16929 | | | |
| 595017111 | 11/64 | - | - | 4.366 | 0.17188 | | | |
| 595017311 | - | - | - | 4.400 | 0.17323 | | | |
| 595017711 | - | - | - | 4.500 | 0.17717 | | | |
| 595018111 | - | - | - | 4.600 | 0.18110 | | | |
| 595018511 | - | - | - | 4.700 | 0.18504 | | | |
| 595018711 | 3/16 | - | - | 4.763 | 0.18750 | | | |
| 595018911 | - | - | - | 4.800 | 0.18898 | | | |
| 595019311 | - | - | - | 4.900 | 0.19291 | | | |
| 595019711 | - | - | - | 5.000 | 0.19685 | | | |
| 595020111 | - | - | - | 5.100 | 0.20079 | | | |
| 595020311 | 13/64 | - | - | 5.159 | 0.20313 | | | |
| 595020511 | - | - | - | 5.200 | 0.20472 | | | |
| 595020611 | - | - | - | 5.220 | 0.20550 | | | |
| 595020911 | - | - | - | 5.300 | 0.20866 | | | |
| 595021311 | - | - | - | 5.400 | 0.21260 | | | |
| 595021711 | - | - | - | 5.500 | 0.21654 | | | |
| 595021611 | - | - | - | 5.530 | 0.21772 | | | |
| 595021811 | 7/32 | - | - | 5.556 | 0.21875 | | | |
| 595021911 | - | - | - | 5.560 | 0.21890 | | | |
| 595022011 | - | - | - | 5.600 | 0.22047 | | | |
| 595022411 | - | - | - | 5.700 | 0.22441 | | | |
| 595022811 | - | - | - | 5.800 | 0.22835 | | | |
| 595023211 | - | - | - | 5.900 | 0.23228 | | | |
| 595023411 | 15/64 | - | - | 5.953 | 0.23438 | | | |
| 595023611 | - | - | - | 6.000 | 0.23622 | | | |

Packed: 1 pc.
Available WXS[®] coating only.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|------------------|-----|---------|--------------------------|-----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|
| | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| 5950Ni | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 300 | 400 | 17-4 PH | <input type="checkbox"/> | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |

good best





List 5950Ni (Continued)



WHO55-3D, Coolant-Through

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 595025011 | 1/4 | - | - | 6.350 | 0.25000 | 33 | 83 | 8 |
| 595025611 | - | - | - | 6.500 | 0.25591 | | | |
| 595026211 | - | - | - | 6.650 | 0.26181 | 34 | | |
| 595026511 | 17/64 | - | - | 6.747 | 0.26563 | | | |
| 595026811 | - | - | - | 6.800 | 0.26772 | 35 | | |
| 595027411 | - | - | - | 6.960 | 0.27402 | | | |
| 595027611 | - | - | - | 7.000 | 0.27559 | 36 | 94 | |
| 595028111 | 9/32 | - | - | 7.144 | 0.28125 | | | |
| 595029511 | - | - | - | 7.500 | 0.29528 | 38 | | |
| 595029611 | 19/64 | - | - | 7.541 | 0.29688 | | | |
| 595030711 | - | - | - | 7.800 | 0.30709 | 39 | | |
| 595031211 | 5/16 | - | - | 7.938 | 0.31250 | | | |
| 595031511 | - | - | - | 8.000 | 0.31496 | 40 | | |
| 595031711 | - | - | - | 8.040 | 0.31654 | | | |
| 595032811 | 21/64 | - | - | 8.334 | 0.32813 | 43 | 101 | |
| 595033411 | - | - | - | 8.500 | 0.33465 | | | |
| 595033511 | - | - | - | 8.520 | 0.33543 | 44 | | |
| 595033811 | - | - | - | 8.580 | 0.33780 | | | |
| 595034211 | - | - | - | 8.700 | 0.34252 | 45 | | |
| 595034311 | 11/32 | - | - | 8.731 | 0.34375 | | | |
| 595034611 | - | - | - | 8.800 | 0.34646 | 46 | 106 | |
| 595035411 | - | - | - | 9.000 | 0.35433 | | | |
| 595035911 | 23/64 | - | - | 9.128 | 0.35938 | 48 | | |
| 595037011 | - | - | - | 9.390 | 0.36969 | | | |
| 595037411 | - | - | - | 9.500 | 0.37402 | 49 | | |
| 595037511 | 3/8 | - | - | 9.525 | 0.37500 | | | |
| 595038611 | - | - | - | 9.800 | 0.38583 | 50 | | |
| 595038911 | - | - | - | 9.900 | 0.38976 | | | |
| 595039011 | 25/64 | - | - | 9.922 | 0.39063 | 53 | 113 | |
| 595039311 | - | - | - | 9.970 | 0.39252 | | | |
| 595039411 | - | - | - | 10.000 | 0.39370 | 55 | | |
| 595040511 | - | - | - | 10.300 | 0.40551 | | | |
| 595040611 | 13/32 | - | - | 10.319 | 0.40625 | 56 | | |
| 595041311 | - | - | - | 10.500 | 0.41339 | | | |
| 595042211 | 27/64 | - | - | 10.716 | 0.42188 | 58 | 120 | |
| 595042511 | - | - | - | 10.800 | 0.42520 | | | |
| 595042611 | - | - | - | 10.830 | 0.42638 | 59 | | |
| 595043311 | - | - | - | 11.000 | 0.43307 | | | |
| 595043711 | 7/16 | - | - | 11.113 | 0.43750 | 60 | | |
| 595045211 | - | - | - | 11.470 | 0.45157 | | | |
| 595045411 | - | - | - | 11.500 | 0.45276 | 63 | 128 | |
| 595045311 | 29/64 | - | - | 11.509 | 0.45313 | | | |
| 595045511 | - | - | - | 11.560 | 0.45512 | 65 | | |
| 595046511 | - | - | - | 11.800 | 0.46457 | | | |
| 595046811 | 15/32 | - | - | 11.906 | 0.46875 | 66 | | |
| 595047211 | - | - | - | 12.000 | 0.47244 | | | |
| 595048411 | 31/64 | - | - | 12.303 | 0.48438 | 65 | | |
| 595050011 | 1/2 | - | - | 12.700 | 0.50000 | | | |

Packed: 1 pc.
Available WXS[®] coating only.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|------------------|-----|---------|--------------------------|--------------|---------|-------------------------------------|-------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5950Ni | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

good best

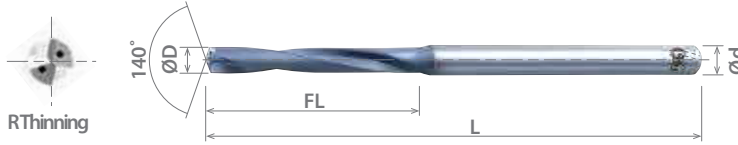




List 5955Ni

WHO55-5D, Coolant-Through

| | | | | |
|---------------------------|----------------|------------|---------------|--------------------|
| SPEED FEED P362 | CARBIDE | WXS | 12-20° | SHANK h6 |
|---------------------------|----------------|------------|---------------|--------------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| D=3 | +0 / -0.014 | +0 / -0.0006 |
| 3<D≤6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤12.7 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | | | | |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|----|---|----|---|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | | | |
| 595511811 | - | - | - | 3.000 | 0.11811 | 29 | 78 | 6 | | | | |
| 595512511 | 1/8 | - | - | 3.175 | 0.12500 | | | | | | | |
| 3316330 | - | - | - | 3.300 | 0.12992 | | | | | | | |
| 3316340 | - | - | - | 3.400 | 0.13386 | | | | | | | |
| 3316349 | - | - | - | 3.490 | 0.13740 | | | | | | | |
| 3316350 | - | - | - | 3.500 | 0.13780 | | | | | | | |
| 595513911 | - | - | - | 3.510 | 0.13819 | | | | | | | |
| 3316360 | - | - | - | 3.600 | 0.14173 | | | | | | | |
| 3316370 | - | - | - | 3.700 | 0.14567 | | | | | | | |
| 3316380 | - | - | - | 3.800 | 0.14961 | | | | | | | |
| 3316390 | - | - | - | 3.900 | 0.15354 | | | | | | | |
| 595515611 | 5/32 | - | - | 3.969 | 0.15625 | 36 | 88 | 6 | | | | |
| 3316400 | - | - | - | 4.000 | 0.15748 | | | | | | | |
| 3316410 | - | - | - | 4.100 | 0.16142 | | | | | | | |
| 3316415 | - | - | - | 4.150 | 0.16339 | | | | | | | |
| 3316420 | - | - | - | 4.200 | 0.16535 | | | | | | | |
| 3316430 | - | - | - | 4.300 | 0.16929 | | | | | | | |
| 595517111 | 11/64 | - | - | 4.366 | 0.17188 | | | | | | | |
| 3316440 | - | - | - | 4.400 | 0.17323 | | | | | | | |
| 3316450 | - | - | - | 4.500 | 0.17717 | | | | | | | |
| 3316460 | - | - | - | 4.600 | 0.18110 | | | | | | | |
| 3316470 | - | - | - | 4.700 | 0.18504 | | | | | | | |
| 595518711 | 3/16 | - | - | 4.763 | 0.18750 | 41 | 92 | 6 | | | | |
| 3316480 | - | - | - | 4.800 | 0.18898 | | | | | | | |
| 3316490 | - | - | - | 4.900 | 0.19291 | | | | | | | |
| 3316500 | - | - | - | 5.000 | 0.19685 | | | | | | | |
| 3316510 | - | - | - | 5.100 | 0.20079 | | | | | | | |
| 595520311 | 13/64 | - | - | 5.159 | 0.20313 | 42 | | | 92 | 6 | | |
| 3316520 | - | - | - | 5.200 | 0.20472 | | | | | | | |
| 595520611 | - | - | - | 5.220 | 0.20550 | | | | | | | |
| 3316530 | - | - | - | 5.300 | 0.20866 | | | | | | | |
| 3316540 | - | - | - | 5.400 | 0.21260 | | | | | | | |
| 3316550 | - | - | - | 5.500 | 0.21654 | | | | | | | |
| 595521611 | - | - | - | 5.530 | 0.21772 | | | | | | | |
| 595521811 | 7/32 | - | - | 5.556 | 0.21875 | 44 | 92 | 6 | | | | |
| 3316556 | - | - | - | 5.560 | 0.21890 | | | | | | | |
| 3316560 | - | - | - | 5.600 | 0.22047 | | | | | | | |
| 3316570 | - | - | - | 5.700 | 0.22441 | | | | | | | |
| 3316580 | - | - | - | 5.800 | 0.22835 | | | | | | | |
| 3316590 | - | - | - | 5.900 | 0.23228 | | | | | | | |
| 595523411 | 15/64 | - | - | 5.953 | 0.23438 | 46 | | | 92 | 6 | | |
| 3316600 | - | - | - | 6.000 | 0.23622 | | | | | | | |
| 3316600 | - | - | - | 6.000 | 0.23622 | 48 | | | | | 92 | 6 |
| 3316600 | - | - | - | 6.000 | 0.23622 | | | | | | | |

Packed: 1 pc.
Available WXS[®] coating only.

continued on next page **EP**

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|------------------|-----|---------|--------------------------|----------|---------|-------------------------------------|----------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 5955Ni | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

good best





List 5955Ni (Continued)

| | | | | | |
|---------------------------|----------------|------------|--|---------------|--------------------|
| SPEED FEED P362 | CARBIDE | WXS | | 12-20° | SHANK h6 |
|---------------------------|----------------|------------|--|---------------|--------------------|

WHO55-5D, Coolant-Through

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 595525011 | 1/4 | - | - | 6.350 | 0.25000 | 52 | 102 | 8 |
| 3316650 | - | - | - | 6.500 | 0.25591 | | | |
| 595526211 | - | - | - | 6.650 | 0.26181 | 54 | | |
| 595526511 | 17/64 | - | - | 6.747 | 0.26563 | 55 | | |
| 3316680 | - | - | - | 6.800 | 0.26772 | 56 | | |
| 595527411 | - | - | - | 6.960 | 0.27402 | | | |
| 3316700 | - | - | - | 7.000 | 0.27559 | 58 | | |
| 595528111 | 9/32 | - | - | 7.144 | 0.28125 | | | |
| 3316750 | - | - | - | 7.500 | 0.29528 | 60 | | |
| 595529611 | 19/64 | - | - | 7.541 | 0.29688 | 62 | | |
| 3316780 | - | - | - | 7.800 | 0.30709 | 64 | | |
| 595531211 | 5/16 | - | - | 7.938 | 0.31250 | | | |
| 3316800 | - | - | - | 8.000 | 0.31496 | 66 | | |
| 595531711 | - | - | - | 8.040 | 0.31654 | | | |
| 595532811 | 21/64 | - | - | 8.334 | 0.32813 | 68 | | |
| 3316850 | - | - | - | 8.500 | 0.33465 | | | |
| 595533511 | - | - | - | 8.520 | 0.33543 | 70 | | |
| 3316858 | - | - | - | 8.580 | 0.33780 | | | |
| 3316870 | - | - | - | 8.700 | 0.34252 | 72 | | |
| 595534311 | 11/32 | - | - | 8.731 | 0.34375 | | | |
| 3316880 | - | - | - | 8.800 | 0.34646 | 74 | | |
| 3316900 | - | - | - | 9.000 | 0.35433 | | | |
| 595535911 | 23/64 | - | - | 9.128 | 0.35938 | 76 | | |
| 595537011 | - | - | - | 9.390 | 0.36969 | | | |
| 3316950 | - | - | - | 9.500 | 0.37402 | 78 | | |
| 595537511 | 3/8 | - | - | 9.525 | 0.37500 | | | |
| 3316980 | - | - | - | 9.800 | 0.38583 | 80 | | |
| 595538911 | - | - | - | 9.900 | 0.38976 | | | |
| 595539011 | 25/64 | - | - | 9.922 | 0.39063 | 84 | | |
| 3316997 | - | - | - | 9.970 | 0.39252 | | | |
| 3317000 | - | - | - | 10.000 | 0.39370 | 88 | | |
| 3317030 | - | - | - | 10.300 | 0.40551 | | | |
| 595540611 | 13/32 | - | - | 10.319 | 0.40625 | 90 | | |
| 3317050 | - | - | - | 10.500 | 0.41339 | | | |
| 595542211 | 27/64 | - | - | 10.716 | 0.42188 | 92 | | |
| 3317080 | - | - | - | 10.800 | 0.42520 | | | |
| 595542611 | - | - | - | 10.830 | 0.42638 | 94 | | |
| 3317100 | - | - | - | 11.000 | 0.43307 | | | |
| 595543711 | 7/16 | - | - | 11.113 | 0.43750 | 96 | | |
| 595545211 | - | - | - | 11.470 | 0.45157 | | | |
| 3317150 | - | - | - | 11.500 | 0.45276 | 100 | | |
| 595545311 | 29/64 | - | - | 11.509 | 0.45313 | | | |
| 3317156 | - | - | - | 11.560 | 0.45512 | 104 | | |
| 3317180 | - | - | - | 11.800 | 0.46457 | | | |
| 595546811 | 15/32 | - | - | 11.906 | 0.46875 | 167 | | |
| 3317200 | - | - | - | 12.000 | 0.47244 | | | |
| 595548411 | 31/64 | - | - | 12.303 | 0.48438 | 14 | | |
| 595550011 | 1/2 | - | - | 12.700 | 0.50000 | | | |

Packed: 1 pc.
Available WXS[®] coating only.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|------------------|-----|---------|--------------------------|-----------|---------|-------------------------------------|----------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5955Ni | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

good best

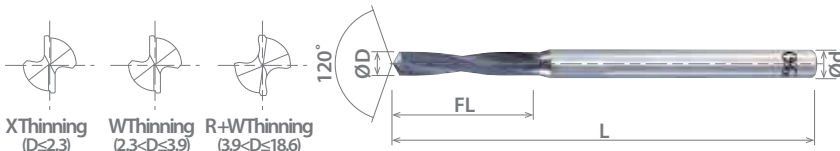




List 5171

WH70-DRL, 55-70 HRC

| | | | | |
|---------------------------|----------------|------------|------------|--------------------|
| SPEED FEED P363 | CARBIDE | WXS | 12° | SHANK h6 |
|---------------------------|----------------|------------|------------|--------------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 18.6 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 3318200 | - | - | - | 2.000 | 0.07874 | 12 | 42 | 3 |
| 3318210 | - | - | - | 2.100 | 0.08268 | | | |
| 3318220 | - | - | - | 2.200 | 0.08661 | 13 | 43 | |
| 3318230 | - | - | - | 2.300 | 0.09055 | | | |
| 3318240 | - | - | - | 2.400 | 0.09449 | 14 | 44 | |
| 3318250 | - | - | - | 2.500 | 0.09843 | | | |
| 3318260 | - | - | - | 2.600 | 0.10236 | 16 | 46 | |
| 3318270 | - | - | - | 2.700 | 0.10630 | | | |
| 3318280 | - | - | - | 2.800 | 0.11024 | 18 | 48 | |
| 3318290 | - | - | - | 2.900 | 0.11417 | | | |
| 3318300 | - | - | - | 3.000 | 0.11811 | 20 | 50 | |
| 3318310 | - | - | - | 3.100 | 0.12205 | | | |
| 3318320 | - | - | - | 3.200 | 0.12598 | 22 | 52 | |
| 3318330 | - | - | - | 3.300 | 0.12992 | | | |
| 3318340 | - | - | - | 3.400 | 0.13386 | 25 | 54 | |
| 3318350 | - | - | - | 3.500 | 0.13780 | | | |
| 3318360 | - | - | - | 3.600 | 0.14173 | 28 | 56 | |
| 3318370 | - | - | - | 3.700 | 0.14567 | | | |
| 3318380 | - | - | - | 3.800 | 0.14961 | 32 | 58 | |
| 3318390 | - | - | - | 3.900 | 0.15354 | | | |
| 3318400 | - | - | - | 4.000 | 0.15748 | 35 | 60 | |
| 3318410 | - | - | - | 4.100 | 0.16142 | | | |
| 3318420 | - | - | - | 4.200 | 0.16535 | 40 | 62 | |
| 3318430 | - | - | - | 4.300 | 0.16929 | | | |
| 3318440 | - | - | - | 4.400 | 0.17323 | 45 | 64 | |
| 3318450 | - | - | - | 4.500 | 0.17717 | | | |
| 3318460 | - | - | - | 4.600 | 0.18110 | 50 | 66 | |
| 3318470 | - | - | - | 4.700 | 0.18504 | | | |
| 3318480 | - | - | - | 4.800 | 0.18898 | 55 | 68 | |
| 3318490 | - | - | - | 4.900 | 0.19291 | | | |
| 3318500 | - | - | - | 5.000 | 0.19685 | 60 | 70 | |
| 3318510 | - | - | - | 5.100 | 0.20079 | | | |
| 3318520 | - | - | - | 5.200 | 0.20472 | 65 | 72 | |
| 3318530 | - | - | - | 5.300 | 0.20866 | | | |
| 3318540 | - | - | - | 5.400 | 0.21260 | 70 | 74 | |
| 3318550 | - | - | - | 5.500 | 0.21654 | | | |
| 3318560 | - | - | - | 5.600 | 0.22047 | 75 | 76 | |
| 3318570 | - | - | - | 5.700 | 0.22441 | | | |
| 3318580 | - | - | - | 5.800 | 0.22835 | 80 | 78 | |
| 3318590 | - | - | - | 5.900 | 0.23228 | | | |
| 3318600 | - | - | - | 6.000 | 0.23622 | 85 | 80 | |
| 3318610 | - | - | - | 6.100 | 0.24016 | | | |

Packed: 1 pc.
Available WXS coating only.
EXOCARB® VX taps recommended.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-----------|--------------|---------|--------------|-------------------|-----------------|--------------|--------------|--------------|--|
| | P | | | | | M | | | K | N | | S | H | | | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 5171 | | | | | | | | | | | | | | | | | | |

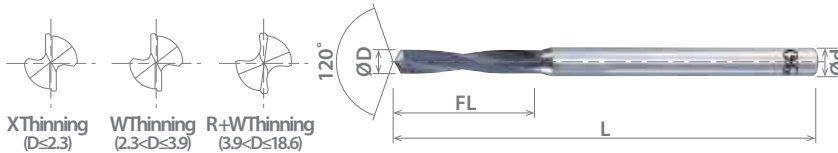
good best





List 5171 (Continued)

WH70-DRL, 55-70 HRC



| | | | | |
|---------------------------|----------------|------------|------------|--------------------|
| SPEED FEED P363 | CARBIDE | WXS | 12° | SHANK h6 |
|---------------------------|----------------|------------|------------|--------------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2≤D≤3 | +0 / -0.014 | +0 / -0.0006 |
| 3<D≤6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤18 | +0 / -0.027 | +0 / -0.0011 |
| 18<D≤18.6 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 3318620 | - | - | - | 6.200 | 0.24409 | 40 | 83 | 7 |
| 3318630 | - | - | - | 6.300 | 0.24803 | | | |
| 3318640 | - | - | - | 6.400 | 0.25197 | | | |
| 3318650 | - | - | - | 6.500 | 0.25591 | | | |
| 3318660 | - | - | - | 6.600 | 0.25984 | | | |
| 3318670 | - | - | - | 6.700 | 0.26378 | | | |
| 3318680 | - | - | - | 6.800 | 0.26772 | | | |
| 3318690 | - | - | - | 6.900 | 0.27217 | | | |
| 3318700 | - | - | - | 7.000 | 0.27559 | | | |
| 3318710 | - | - | - | 7.100 | 0.27953 | | | |
| 3318720 | - | - | - | 7.200 | 0.28346 | | | |
| 3318730 | - | - | - | 7.300 | 0.28740 | | | |
| 3318740 | - | - | - | 7.400 | 0.29134 | | | |
| 3318750 | - | - | - | 7.500 | 0.29528 | | | |
| 3318760 | - | - | - | 7.600 | 0.29921 | | | |
| 3318770 | - | - | - | 7.700 | 0.30315 | | | |
| 3318780 | - | - | - | 7.800 | 0.30709 | | | |
| 3318790 | - | - | - | 7.900 | 0.31102 | | | |
| 3318800 | - | - | - | 8.000 | 0.31496 | | | |
| 3318810 | - | - | - | 8.100 | 0.31890 | | | |
| 3318820 | - | - | - | 8.200 | 0.32283 | | | |
| 3318830 | - | - | - | 8.300 | 0.32677 | | | |
| 3318840 | - | - | - | 8.400 | 0.33071 | | | |
| 3318850 | - | - | - | 8.500 | 0.33465 | | | |
| 3318860 | - | - | - | 8.600 | 0.33858 | | | |
| 3318870 | - | - | - | 8.700 | 0.34252 | | | |
| 3318880 | - | - | - | 8.800 | 0.34646 | | | |
| 3318890 | - | - | - | 8.900 | 0.35039 | | | |
| 3318900 | - | - | - | 9.000 | 0.35433 | | | |
| 3318910 | - | - | - | 9.100 | 0.35827 | | | |
| 3318920 | - | - | - | 9.200 | 0.36220 | | | |
| 3318930 | - | - | - | 9.300 | 0.36614 | | | |
| 3318940 | - | - | - | 9.400 | 0.37008 | | | |
| 3318950 | - | - | - | 9.500 | 0.37402 | | | |
| 3318960 | - | - | - | 9.600 | 0.37795 | | | |
| 3318970 | - | - | - | 9.700 | 0.38189 | | | |
| 3318980 | - | - | - | 9.800 | 0.38583 | | | |
| 3318990 | - | - | - | 9.900 | 0.38976 | | | |
| 3319000 | - | - | - | 10.000 | 0.39370 | | | |
| 3319010 | - | - | - | 10.100 | 0.39764 | | | |
| 3319020 | - | - | - | 10.200 | 0.40157 | | | |
| 3319030 | - | - | - | 10.300 | 0.40551 | | | |
| 3319040 | - | - | - | 10.400 | 0.40945 | | | |
| 3319050 | - | - | - | 10.500 | 0.41339 | | | |
| 3319060 | - | - | - | 10.600 | 0.41732 | | | |
| 3319070 | - | - | - | 10.700 | 0.42126 | | | |
| 3319080 | - | - | - | 10.800 | 0.42520 | | | |
| 3319090 | - | - | - | 10.900 | 0.42913 | | | |
| 3319100 | - | - | - | 11.000 | 0.43307 | | | |
| 3319110 | - | - | - | 11.100 | 0.43701 | | | |
| 3319120 | - | - | - | 11.200 | 0.44094 | | | |
| 3319130 | - | - | - | 11.300 | 0.44488 | | | |

Packed: 1 pc.
 Available WXS coating only.
 EXOCARB® VX taps recommended.





List 5171 (Continued)

WH70-DRL, 55-70 HRC

| | | | | |
|-----------------------|---------|-----|-----|-------------|
| SPEED FEED P363 | CARBIDE | WXS | 12° | SHANK h6 |
|-----------------------|---------|-----|-----|-------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|----|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 3319140 | - | - | - | 11.400 | 0.44882 | 71 | 120 | 12 | |
| 3319150 | - | - | - | 11.500 | 0.45276 | | | | |
| 3319160 | - | - | - | 11.600 | 0.45669 | | | | |
| 3319170 | - | - | - | 11.700 | 0.46063 | | | | |
| 3319180 | - | - | - | 11.800 | 0.46457 | | | | |
| 3319190 | - | - | - | 11.900 | 0.46850 | | | | |
| 3319200 | - | - | - | 12.000 | 0.47244 | 76 | 136 | 16 | |
| 517112113 | - | - | - | 12.100 | 0.47638 | | | | |
| 517112613 | - | - | - | 12.600 | 0.49606 | 79 | 139 | | |
| 517114113 | - | - | - | 14.100 | 0.55512 | 90 | 150 | | |
| 517114613 | - | - | - | 14.600 | 0.57480 | | | | |
| 517115613 | - | - | - | 15.600 | 0.61417 | 96 | 156 | | |
| 517116113 | - | - | - | 16.100 | 0.63386 | 102 | 162 | | 20 |
| 517116613 | - | - | - | 16.600 | 0.65354 | | | | |
| 517117613 | - | - | - | 17.600 | 0.69291 | 108 | 168 | | |
| 517118613 | - | - | - | 18.600 | 0.73228 | 114 | 174 | | |

Packed: 1 pc.
Available WXS coating only.
EXOCARB® VX taps recommended.



| Work Material | | | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|----------|---------|--------------|-------------------|-----------------|-----------|-----------|-----------|--|-------------------------------------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 5171 | 1010 | 1035 | 1065 | 4140 | 4340 | | | | | | | | | | | | | | <input checked="" type="checkbox"/> |

good best





List 5172

EX-H-DRL, Tap Extractor

| | | | |
|---------------------------|----------------|-----------|--------------------|
| SPEED FEED P363 | CARBIDE | BR | SHANK h7 |
|---------------------------|----------------|-----------|--------------------|



| EDP Number | Diameter mm | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Tap Types | | | | | |
|------------|----------------|-------------------------|--------------------------|--------------------------|-----------------|------------|----------------|---------|---------------|--------------|
| | | | | | Straight Fluted | | Spiral Pointed | | Spiral Fluted | |
| | | | | | Metric | ANSI | Metric | ANSI | Metric | ANSI |
| 87702 | 2.000 | 10 | 30 | 2 | M3 | #4, #5, #6 | M3 | #4, #5 | M3 | #4, #5, #6 |
| 87703 | 3.000 | 15 | 40 | 3 | M4, M5 | #8, #10 | M4 | #8, #10 | M4, M5 | #8, #10 |
| 87704 | 4.000 | 20 | 45 | 4 | M6 | 1/4, 5/16 | M5, M6 | 1/4 | M6 | 1/4 and 5/16 |
| 87705 | 5.000 | 25 | 50 | 5 | M8, M10 | 3/8 | - | 5/16 | M8, M10 | 3/8 |
| 87706 | 6.000 | 30 | 60 | 6 | M12 | 7/16, 1/2 | M8 | 3/8 | M12 | 7/16, 1/2 |
| 87707 | 7.000 | 35 | 80 | 7 | M14 | 9/16 | M10 | 7/16 | M14 | 9/16 |
| 87708 | 8.000 | 40 | 80 | 8 | M16 | 5/8 | M12 | 1/2 | M16 | 5/8 |
| 87709 | 9.000 | 45 | 100 | 9 | M18 | 3/4 | M14 | 9/16 | M18 | 3/4 |
| 87710 | 10.000 | 50 | 100 | 10 | M20 | - | M16 | 5/8 | M20 | - |
| 87781 | 11.000 | 55 | 110 | 11 | M22 | 7/8 | M18 | - | M22 | 7/8 |
| 87782 | 12.000 | 60 | 110 | 12 | M24 | 1.00 | M20 | 3/4 | M24 | 1.00 |
| 87700 | 2-6 Set | - | - | - | - | - | - | - | - | - |

Packed: 1 pc.

Drills are available in 5pc sets (EDP 87700) for ØD through Ø6.

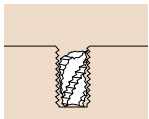
For drill diameter selection, use the method outlined below.

Straight Fluted & Spiral Fluted Taps: $0.46(\text{Tap } \varnothing) < (\text{Drill } \varnothing) < 0.75(\text{Tap } \varnothing)$

Spiral Pointed Taps: $0.6(\text{Tap } \varnothing) < (\text{Drill } \varnothing) < 0.75(\text{Tap } \varnothing)$

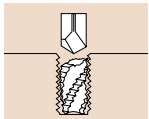


1. Broken Tap



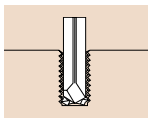
Check how tap is broken. If any portion of the tap is protruding, grind the damaged surface of the tap flush with the workpiece. This will allow the damaged tap to be drilled easier.

2. Centering of Drill



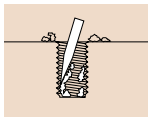
Position the drill over the center of the tap. Please make sure both the workpiece and drill are properly secured. Make an initial light drill approach, and then quickly retract the drill. For this step, do not use lubrication.

3. Hole Processing



Drill the hole at a fixed feed and speed, stopping the operation occasionally to remove broken chips. In addition, use plenty of high quality cutting oil.

4. Chip Removal



Once the tap has been broken up, the remaining portions of the tap can be removed. For best results, use a scribe. Once the hole is cleaned, tapping can be resumed.

Cutting Conditions and Procedures to Note

1. Use a drilling speed of 65-80SFM.
2. Hand feed of 0.0005~0.001 in/rev is normal.
3. Use a rigid holder.
4. Select a high quality cutting oil and apply in sufficient amounts.
5. This tool should not be used to drill soft steels, aluminum alloys or other soft materials.
6. Resharpener should be done periodically.
7. For through hole processing of heat treated steels, use a spare piece of material underneath the material being drilled as this will prevent breakage caused by sudden torque.
8. **Cannot be used to remove forming taps.**

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|--|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 5172 | 1010 | 1035 | 1065 | 4140 | 4340 | | | | | | | | | | | | | | |

good best

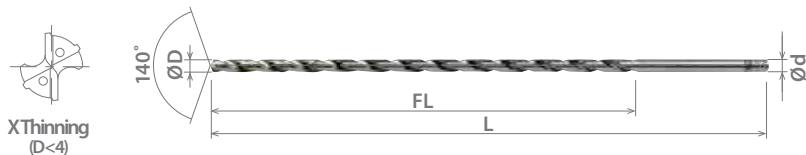




List 5275

CAO-GDXL, 15D-30D, Coolant-Through

| | | | | | |
|---------------------------|----------------|-----------|--|------------|--------------------|
| SPEED FEED P364 | CARBIDE | BR | | 30° | SHANK h6 |
|---------------------------|----------------|-----------|--|------------|--------------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-----------|------------|
| Size | mm | inch |
| D=3 | +0/-0.014 | +0/-0.0006 |
| 3<D≤6 | +0/-0.018 | +0/-0.0007 |
| 6<D≤10 | +0/-0.022 | +0/-0.0009 |

| EDP Number | Diameter | | | | | xD | Flute Length | Overall Length | Shank Diameter |
|------------|-----------------|-----------|-------------|--------|---------|--------|--------------|----------------|----------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | FL (mm) | L (mm) | d (mm) |
| 8567130 | - | - | - | 3.000 | 0.11811 | 15 x D | 55 | 105 | 3 |
| 8567140 | - | - | - | 4.000 | 0.15748 | | 75 | 125 | 4 |
| 8567340 | - | - | - | 4.500 | 0.17717 | 20 x D | 90 | 140 | 5 |
| 8567345 | - | - | - | 5.000 | 0.19685 | | 110 | 165 | |
| 8567150 | - | - | - | 5.000 | 0.19685 | 15 x D | 90 | 140 | 6 |
| 8567350 | - | - | - | | | 20 x D | 115 | 165 | |
| 8567450 | - | - | - | | | 30 x D | 165 | 215 | |
| 8567355 | - | - | - | 5.500 | 0.21654 | 20 x D | 140 | 190 | 7 |
| 8567455 | - | - | - | | | 30 x D | 200 | 250 | |
| 8567160 | - | - | - | | | 15 x D | 110 | 160 | |
| 8567360 | - | - | - | 6.000 | 0.23622 | 20 x D | 140 | 190 | 8 |
| 8567460 | - | - | - | | | 30 x D | 200 | 250 | |
| 8567165 | - | - | - | | | 6.500 | 0.25591 | 15 x D | |
| 8567170 | - | - | - | 7.000 | 0.27559 | 20 x D | 125 | 210 | 9 |
| 8567370 | - | - | - | | | 30 x D | 160 | 280 | |
| 8567470 | - | - | - | | | 15 x D | 145 | 195 | |
| 8567180 | - | - | - | 8.000 | 0.31496 | 20 x D | 180 | 230 | 10 |
| 8567380 | - | - | - | | | 30 x D | 265 | 315 | |
| 8567480 | - | - | - | | | 15 x D | 160 | 210 | |
| 8567190 | - | - | - | 9.000 | 0.35433 | 20 x D | 210 | 260 | 11 |
| 8567390 | - | - | - | | | 15 x D | 180 | 240 | |
| 8567200 | - | - | - | 10.000 | 0.39370 | 20 x D | 230 | 290 | 12 |
| 8567400 | - | - | - | | | 15 x D | 180 | 240 | |

Packed: 1 pc.
Available Bright finish only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|-------------------------------------|-------------------------------------|--------------|----------------|-----------------|-----------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5275 | 1010 | 1035 | 1065 | 4140 | 4340 | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |

good best





EXOCARB® MAX-MINI

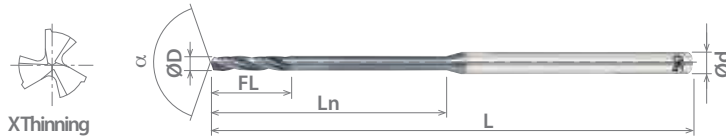
High Performance Micro Carbide Drills

List 5310

FHL-GDTS, Miniature, 3 Flute, Up to 20D, 40-65 HRC

| | | | | |
|---------------------------|----------------|-------------|------------|--------------------|
| SPEED FEED P365 | CARBIDE | EXO® | 25° | SHANK h6 |
|---------------------------|----------------|-------------|------------|--------------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-----------|------------|
| Size | mm | inch |
| 1 ≤ D ≤ 3 | +0/-0.014 | +0/-0.0006 |



| EDP Number | Diameter | | | | | Flute Length FL (mm) | Neck Length L1 (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|------------------------|--------------------------|--------------------------|------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | |
| 8569010 | - | - | - | 1.000 | 0.03937 | 5.0 | 20 | 57 | 3 | 140° |
| 8569011 | - | - | - | 1.100 | 0.04331 | 5.5 | | | | |
| 8569012 | - | - | - | 1.200 | 0.04724 | 6.0 | | | | |
| 8569013 | - | - | - | 1.300 | 0.05118 | 6.5 | | | | |
| 8569014 | - | - | - | 1.400 | 0.05512 | 7.0 | | | | |
| 8569015 | - | - | - | 1.500 | 0.05906 | 7.5 | | | | |
| 8569016 | - | - | - | 1.600 | 0.06299 | 8.0 | | | | |
| 8569017 | - | - | - | 1.700 | 0.06693 | 8.5 | | | | |
| 8569018 | - | - | - | 1.800 | 0.07087 | 9.0 | 30 | 65 | 120° | |
| 8569019 | - | - | - | 1.900 | 0.07480 | 9.5 | | | | |
| 8569020 | - | - | - | 2.000 | 0.07874 | 10.0 | | | | |
| 8569025 | - | - | - | 2.500 | 0.09843 | 13.0 | | | | |
| 8569030 | - | - | - | 3.000 | 0.11811 | 15.0 | | | | |

Packed: 1 pc.
 Available EXO® coating only.
 Shrink fit holders recommended.
 Must utilize recommended peck cycle for optimum tool life.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|---------------|--------------|------|--------------|------------|------------------|-----|---------|-----------|----------|---------|--------------|----------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5310 | 1010 1018 | 1035 1045 | 1065 | 4140 4340 | | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

good best





List 5315

UVM-LDS, Miniature, Pilot

| | | | | |
|--------------------|---------|----|-----|-------------|
| SPEED FEED P366 | CARBIDE | SS | 30° | SHANK h3 |
|--------------------|---------|----|-----|-------------|

| Cutting Diameter Tolerance | | |
|----------------------------|-----------|------------|
| Size | mm | inch |
| 0.05 | +0/-0.003 | +0/-0.0001 |



| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8589205 | - | - | - | 0.050 | 0.00197 | 0.075 | 38 | 3 |
| 8589255 | - | - | - | | | | | 1/8 |

Packed: 1 pc.
Available Super Smooth coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
|----------|---------------|--------------|------|--------------|------------|------------------|-----|---------|-----------|----------|---------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 5315 | 1010 1018 | 1035 1045 | 1065 | 4140 4340 | | | | | | | | | | | | | | |

good best





EXOCARB® MAX-MINI

High Performance Micro Carbide Drills

List 5320

UVM-DRL-5D, Miniature

| | | | | |
|---------------------------|----------------|-----------|------------|--------------------|
| SPEED FEED P366 | CARBIDE | SS | 30° | SHANK h3 |
|---------------------------|----------------|-----------|------------|--------------------|

| Cutting Diameter Tolerance | | |
|----------------------------|-----------|------------|
| Size | mm | inch |
| 0.02≤D≤0.08 | +0/-0.003 | +0/-0.0001 |



| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8589002 | - | - | - | 0.020 | 0.00079 | 0.12 | 38 | 3 |
| 8589052 | - | - | - | 0.030 | 0.00118 | 0.18 | | 1/8 |
| 8589003 | - | - | - | | | | | 3 |
| 8589053 | - | - | - | 0.040 | 0.00157 | 0.24 | | 1/8 |
| 8589004 | - | - | - | | | | | 3 |
| 8589054 | - | - | - | 0.050 | 0.00197 | 0.30 | | 1/8 |
| 8589005 | - | - | - | | | | | 3 |
| 8589055 | - | - | - | 0.080 | 0.00315 | 0.48 | | 1/8 |
| 8589008 | - | - | - | | | | | 3 |
| 8589058 | - | - | - | | | | | 1/8 |

Packed: 1 pc.
Available Super Smooth coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
|----------|---------------|-----------|------|--------------|------------|------------------|-----|---------|-----------|-----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 5320 | 1010 1018 | 1035 1045 | 1065 | 4140 4340 | | | | | | | | | | | | | | |

good best





List 5325

UVM-DRL-10D, Miniature

| | | | | |
|--------------------|---------|----|-----|-------------|
| SPEED FEED P366 | CARBIDE | SS | 30° | SHANK h3 |
|--------------------|---------|----|-----|-------------|

| Cutting Diameter Tolerance | | |
|----------------------------|-----------|------------|
| Size | mm | inch |
| 0.02≤D≤0.08 | +0/-0.003 | +0/-0.0001 |



| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8589102 | - | - | - | 0.020 | 0.00079 | 0.22 | 38 | 3 |
| 8589152 | - | - | - | 0.030 | 0.00118 | | | 1/8 |
| 8589103 | - | - | - | | | 0.040 | | 0.00157 |
| 8589153 | - | - | - | 0.050 | 0.00197 | | | |
| 8589104 | - | - | - | | | 0.080 | | 0.00315 |
| 8589154 | - | - | - | 0.080 | 0.00315 | | | |
| 8589105 | - | - | - | | | | | |
| 8589155 | - | - | - | | | 1/8 | | |
| 8589108 | - | - | - | | | 3 | | |
| 8589158 | - | - | - | | | 1/8 | | |

Packed: 1 pc.
Available Super Smooth coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|--|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 5325 | 1010 | 1035 | 1065 | 4140 | | | | | | | | | | | | | | | |
| | 1018 | 1045 | | 4340 | | | | | | | | | | | | | | | |

good best



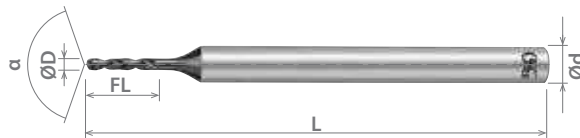


EXOCARB® MAX-MINI

High Performance Miniature Carbide Drills

List 5330

WX-MS-GDS, Precision Drill



| | | | | |
|---------------------------|----------------|--------------|------------|--------------------|
| SPEED FEED P367 | CARBIDE | TiAlN | 30° | SHANK h6 |
|---------------------------|----------------|--------------|------------|--------------------|

| Cutting Diameter Tolerance | | |
|----------------------------|-------------|--------------|
| Size | mm | inch |
| 0.2 ≤ D ≤ 5.00 | +0 / -0.010 | +0 / -0.0004 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 3300020 | - | - | - | 0.200 | 0.00787 | 1.5 | 38 | 3 | 140° |
| 3300021 | - | - | - | 0.210 | 0.00827 | | | | |
| 3300022 | - | - | - | 0.220 | 0.00866 | | | | |
| 3300023 | - | - | - | 0.230 | 0.00906 | | | | |
| 3300024 | - | - | - | 0.240 | 0.00945 | | | | |
| 3300025 | - | - | - | 0.250 | 0.00984 | | | | |
| 3300026 | - | - | - | 0.260 | 0.01024 | | | | |
| 3300027 | - | - | - | 0.270 | 0.01063 | | | | |
| 3300028 | - | - | - | 0.280 | 0.01102 | | | | |
| 3300029 | - | - | - | 0.290 | 0.01142 | | | | |
| 3300030 | - | - | - | 0.300 | 0.01181 | 2.0 | 38 | 3 | 140° |
| 3300031 | - | - | - | 0.310 | 0.01220 | | | | |
| 3300032 | - | - | - | 0.320 | 0.01260 | | | | |
| 3300033 | - | - | - | 0.330 | 0.01299 | | | | |
| 3300034 | - | - | - | 0.340 | 0.01339 | | | | |
| 3300035 | - | - | - | 0.350 | 0.01378 | | | | |
| 3300036 | - | - | - | 0.360 | 0.01417 | | | | |
| 3300037 | - | - | - | 0.370 | 0.01457 | | | | |
| 3300038 | - | - | - | 0.380 | 0.01496 | | | | |
| 3300039 | - | - | - | 0.390 | 0.01535 | | | | |
| 3300040 | - | - | - | 0.400 | 0.01575 | 2.5 | 38 | 3 | 140° |
| 3300041 | - | - | - | 0.410 | 0.01614 | | | | |
| 3300042 | - | - | - | 0.420 | 0.01654 | | | | |
| 3300043 | - | - | - | 0.430 | 0.01693 | | | | |
| 3300044 | - | - | - | 0.440 | 0.01732 | | | | |
| 3300045 | - | - | - | 0.450 | 0.01772 | | | | |
| 3300046 | - | - | - | 0.460 | 0.01811 | | | | |
| 3300047 | - | - | - | 0.470 | 0.01850 | | | | |
| 3300048 | - | - | - | 0.480 | 0.01890 | | | | |
| 3300049 | - | - | - | 0.490 | 0.01929 | | | | |
| 3300050 | - | - | - | 0.500 | 0.01969 | 3.0 | 38 | 3 | 140° |
| 3300051 | - | - | - | 0.510 | 0.02008 | | | | |
| 3300052 | - | - | - | 0.520 | 0.02047 | | | | |
| 3300053 | - | - | - | 0.530 | 0.02087 | | | | |
| 3300054 | - | - | - | 0.540 | 0.02126 | | | | |
| 3300055 | - | - | - | 0.550 | 0.02165 | | | | |
| 3300056 | - | - | - | 0.560 | 0.02205 | | | | |
| 3300057 | - | - | - | 0.570 | 0.02244 | | | | |
| 3300058 | - | - | - | 0.580 | 0.02283 | | | | |
| 3300059 | - | - | - | 0.590 | 0.02323 | | | | |
| 3300060 | - | - | - | 0.600 | 0.02362 | 3.5 | 38 | 3 | 140° |
| 3300061 | - | - | - | 0.610 | 0.02402 | | | | |
| 3300062 | - | - | - | 0.620 | 0.02441 | | | | |
| 3300063 | - | - | - | 0.630 | 0.02480 | | | | |
| 3300064 | - | - | - | 0.640 | 0.02520 | | | | |
| 3300065 | - | - | - | 0.650 | 0.02559 | | | | |
| 3300066 | - | - | - | 0.660 | 0.02598 | | | | |
| 3300067 | - | - | - | 0.670 | 0.02638 | | | | |
| 3300068 | - | - | - | 0.680 | 0.02677 | | | | |
| 3300069 | - | - | - | 0.690 | 0.02717 | | | | |

Packed: 1 pc.
Available TiAlN coating only.





List 5330 (Continued)

WX-MS-GDS, Precision Drill

| | | | | |
|-----------------------|---------|-------|-----|-------------|
| SPEED FEED P367 | CARBIDE | TiAlN | 30° | GRANK h6 |
|-----------------------|---------|-------|-----|-------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|---------------|--------------------|-----------|----------------|-------|---------|----------------------------|-----------------------------|-----------------------------|---------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 3300070 | - | - | - | 0.700 | 0.02756 | 4.5 | 38 | 3 | 140° |
| 3300071 | - | - | - | 0.710 | 0.02795 | | | | |
| 3300072 | - | - | - | 0.720 | 0.02835 | | | | |
| 3300073 | - | - | - | 0.730 | 0.02874 | | | | |
| 3300074 | - | - | - | 0.740 | 0.02913 | 5.0 | | | |
| 3300075 | - | - | - | 0.750 | 0.02953 | | | | |
| 3300076 | - | - | - | 0.760 | 0.02992 | | | | |
| 3300077 | - | - | - | 0.770 | 0.03031 | | | | |
| 3300078 | - | - | - | 0.780 | 0.03071 | 5.5 | | | |
| 3300079 | - | - | - | 0.790 | 0.03110 | | | | |
| 3300080 | - | - | - | 0.800 | 0.03150 | | | | |
| 3300081 | - | - | - | 0.810 | 0.03189 | | | | |
| 3300082 | - | - | - | 0.820 | 0.03228 | 6.0 | | | |
| 3300083 | - | - | - | 0.830 | 0.03268 | | | | |
| 3300084 | - | - | - | 0.840 | 0.03307 | | | | |
| 3300085 | - | - | - | 0.850 | 0.03346 | | | | |
| 3300086 | - | - | - | 0.860 | 0.03386 | 7.0 | | | |
| 3300087 | - | - | - | 0.870 | 0.03425 | | | | |
| 3300088 | - | - | - | 0.880 | 0.03465 | | | | |
| 3300089 | - | - | - | 0.890 | 0.03504 | | | | |
| 3300090 | - | - | - | 0.900 | 0.03543 | 42 | | | |
| 3300091 | - | - | - | 0.910 | 0.03583 | | | | |
| 3300092 | - | - | - | 0.920 | 0.03622 | | | | |
| 3300093 | - | - | - | 0.930 | 0.03661 | | | | |
| 3300094 | - | - | - | 0.940 | 0.03701 | 7.0 | | | |
| 3300095 | - | - | - | 0.950 | 0.03740 | | | | |
| 3300096 | - | - | - | 0.960 | 0.03780 | | | | |
| 3300097 | - | - | - | 0.970 | 0.03819 | | | | |
| 3300098 | - | - | - | 0.980 | 0.03858 | 7.0 | | | |
| 3300099 | - | - | - | 0.990 | 0.03898 | | | | |
| 3300100 | - | - | - | 1.000 | 0.03937 | | | | |
| 3300101 | - | - | - | 1.010 | 0.03976 | | | | |
| 3300102 | - | - | - | 1.020 | 0.04016 | 7.0 | | | |
| 3300103 | - | - | - | 1.030 | 0.04055 | | | | |
| 3300104 | - | - | - | 1.040 | 0.04094 | | | | |
| 3300105 | - | - | - | 1.050 | 0.04134 | | | | |
| 3300106 | - | - | - | 1.060 | 0.04173 | 7.0 | | | |
| 3300107 | - | - | - | 1.070 | 0.04213 | | | | |
| 3300108 | - | - | - | 1.080 | 0.04252 | | | | |
| 3300109 | - | - | - | 1.090 | 0.04291 | | | | |
| 3300110 | - | - | - | 1.100 | 0.04331 | 7.0 | | | |
| 3300111 | - | - | - | 1.110 | 0.04370 | | | | |
| 3300112 | - | - | - | 1.120 | 0.04409 | | | | |
| 3300113 | - | - | - | 1.130 | 0.04449 | | | | |
| 3300114 | - | - | - | 1.140 | 0.04488 | 7.0 | | | |
| 3300115 | - | - | - | 1.150 | 0.04528 | | | | |

Packed: 1 pc.
Available TiAlN coating only.

continued on next page



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5330 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



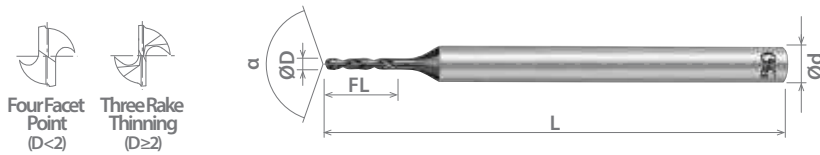


List 5330 (Continued)

WX-MS-GDS, Precision Drill

| | | | | |
|---------------------------|----------------|--------------|------------|--------------------|
| SPEED FEED P367 | CARBIDE | TiAlN | 30° | SHANK h6 |
|---------------------------|----------------|--------------|------------|--------------------|

| Cutting Diameter Tolerance | | |
|----------------------------|-------------|--------------|
| Size | mm | inch |
| 0.2≤D≤5.00 | +0 / -0.010 | +0 / -0.0004 |



| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 3300116 | - | - | - | 1.160 | 0.04567 | 7.0 | 42 | 3 | 140° |
| 3300117 | - | - | - | 1.170 | 0.04606 | | | | |
| 3300118 | - | - | - | 1.180 | 0.04646 | | | | |
| 3300119 | - | - | - | 1.190 | 0.04685 | | | | |
| 3300120 | - | - | - | 1.200 | 0.04724 | | | | |
| 3300121 | - | - | - | 1.210 | 0.04764 | | | | |
| 3300122 | - | - | - | 1.220 | 0.04803 | | | | |
| 3300123 | - | - | - | 1.230 | 0.04843 | | | | |
| 3300124 | - | - | - | 1.240 | 0.04882 | | | | |
| 3300125 | - | - | - | 1.250 | 0.04921 | | | | |
| 3300126 | - | - | - | 1.260 | 0.04961 | | | | |
| 3300127 | - | - | - | 1.270 | 0.05000 | | | | |
| 3300128 | - | - | - | 1.280 | 0.05039 | | | | |
| 3300129 | - | - | - | 1.290 | 0.05079 | | | | |
| 3300130 | - | - | - | 1.300 | 0.05118 | | | | |
| 3300131 | - | - | - | 1.310 | 0.05157 | | | | |
| 3300132 | - | - | - | 1.320 | 0.05197 | | | | |
| 3300133 | - | - | - | 1.330 | 0.05236 | | | | |
| 3300134 | - | - | - | 1.340 | 0.05276 | | | | |
| 3300135 | - | - | - | 1.350 | 0.05315 | | | | |
| 3300136 | - | - | - | 1.360 | 0.05354 | | | | |
| 3300137 | - | - | - | 1.370 | 0.05394 | | | | |
| 3300138 | - | - | - | 1.380 | 0.05433 | | | | |
| 3300139 | - | - | - | 1.390 | 0.05472 | | | | |
| 3300140 | - | - | - | 1.400 | 0.05512 | | | | |
| 3300141 | - | - | - | 1.410 | 0.05551 | | | | |
| 3300142 | - | - | - | 1.420 | 0.05591 | | | | |
| 3300143 | - | - | - | 1.430 | 0.05630 | | | | |
| 3300144 | - | - | - | 1.440 | 0.05669 | | | | |
| 3300145 | - | - | - | 1.450 | 0.05709 | | | | |
| 3300146 | - | - | - | 1.460 | 0.05748 | | | | |
| 3300147 | - | - | - | 1.470 | 0.05787 | | | | |
| 3300148 | - | - | - | 1.480 | 0.05827 | | | | |
| 3300149 | - | - | - | 1.490 | 0.05866 | | | | |
| 3300150 | - | - | - | 1.500 | 0.05906 | | | | |
| 3300151 | - | - | - | 1.510 | 0.05945 | | | | |
| 3300152 | - | - | - | 1.520 | 0.05984 | | | | |
| 3300153 | - | - | - | 1.530 | 0.06024 | | | | |
| 3300154 | - | - | - | 1.540 | 0.06063 | | | | |
| 3300155 | - | - | - | 1.550 | 0.06102 | | | | |
| 3300156 | - | - | - | 1.560 | 0.06142 | | | | |
| 3300157 | - | - | - | 1.570 | 0.06181 | | | | |
| 3300158 | - | - | - | 1.580 | 0.06220 | | | | |
| 3300159 | - | - | - | 1.590 | 0.06260 | | | | |
| 3300160 | - | - | - | 1.600 | 0.06299 | | | | |
| 3300161 | - | - | - | 1.610 | 0.06339 | | | | |
| 3300162 | - | - | - | 1.620 | 0.06378 | | | | |
| 3300163 | - | - | - | 1.630 | 0.06417 | | | | |
| 3300164 | - | - | - | 1.640 | 0.06457 | | | | |
| 3300165 | - | - | - | 1.650 | 0.06496 | | | | |

Packed: 1 pc.
Available TiAlN coating only.





List 5330 (Continued)

WX-MS-GDS, Precision Drill

| | | | | |
|--------------------|---------|-------|-----|-------------|
| SPEED FEED P367 | CARBIDE | TiAlN | 30° | SHANK h6 |
|--------------------|---------|-------|-----|-------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 3300166 | - | - | - | 1.660 | 0.06535 | 10 | 42 | 3 | 140° |
| 3300167 | - | - | - | 1.670 | 0.06575 | | | | |
| 3300168 | - | - | - | 1.680 | 0.06614 | | | | |
| 3300169 | - | - | - | 1.690 | 0.06654 | | | | |
| 3300170 | - | - | - | 1.700 | 0.06693 | | | | |
| 3300171 | - | - | - | 1.710 | 0.06732 | | | | |
| 3300172 | - | - | - | 1.720 | 0.06772 | | | | |
| 3300173 | - | - | - | 1.730 | 0.06811 | | | | |
| 3300174 | - | - | - | 1.740 | 0.06850 | | | | |
| 3300175 | - | - | - | 1.750 | 0.06890 | | | | |
| 3300176 | - | - | - | 1.760 | 0.06929 | | | | |
| 3300177 | - | - | - | 1.770 | 0.06969 | | | | |
| 3300178 | - | - | - | 1.780 | 0.07008 | | | | |
| 3300179 | - | - | - | 1.790 | 0.07047 | | | | |
| 3300180 | - | - | - | 1.800 | 0.07087 | | | | |
| 3300181 | - | - | - | 1.810 | 0.07126 | | | | |
| 3300182 | - | - | - | 1.820 | 0.07165 | | | | |
| 3300183 | - | - | - | 1.830 | 0.07205 | | | | |
| 3300184 | - | - | - | 1.840 | 0.07244 | | | | |
| 3300185 | - | - | - | 1.850 | 0.07283 | | | | |
| 3300186 | - | - | - | 1.860 | 0.07323 | | | | |
| 3300187 | - | - | - | 1.870 | 0.07362 | | | | |
| 3300188 | - | - | - | 1.880 | 0.07402 | | | | |
| 3300189 | - | - | - | 1.890 | 0.07441 | | | | |
| 3300190 | - | - | - | 1.900 | 0.07480 | | | | |
| 3300191 | - | - | - | 1.910 | 0.07520 | | | | |
| 3300192 | - | - | - | 1.920 | 0.07559 | | | | |
| 3300193 | - | - | - | 1.930 | 0.07598 | | | | |
| 3300194 | - | - | - | 1.940 | 0.07638 | | | | |
| 3300195 | - | - | - | 1.950 | 0.07677 | | | | |
| 3300196 | - | - | - | 1.960 | 0.07717 | | | | |
| 3300197 | - | - | - | 1.970 | 0.07756 | | | | |
| 3300198 | - | - | - | 1.980 | 0.07795 | | | | |
| 3300199 | - | - | - | 1.990 | 0.07835 | | | | |
| 3300200 | - | - | - | 2.000 | 0.07874 | | | | |
| 48172201 | - | - | - | 2.010 | 0.07913 | | | | |
| 48172202 | - | - | - | 2.020 | 0.07953 | | | | |
| 48172203 | - | - | - | 2.030 | 0.07992 | | | | |
| 48172204 | - | - | - | 2.040 | 0.08031 | | | | |
| 3300205 | - | - | - | 2.050 | 0.08071 | | | | |
| 48172206 | - | - | - | 2.060 | 0.08110 | | | | |
| 48172207 | - | - | - | 2.070 | 0.08150 | | | | |
| 48172208 | - | - | - | 2.080 | 0.08189 | | | | |
| 48172209 | - | - | - | 2.090 | 0.08228 | | | | |
| 3300210 | - | - | - | 2.100 | 0.08268 | | | | |
| 48172211 | - | - | - | 2.110 | 0.08307 | | | | |
| | | | | | 12 | 50 | | | |

Packed: 1 pc.
Available TiAlN coating only.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | H | | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5330 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

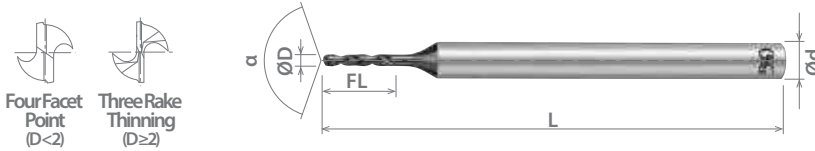
good best





List 5330 (Continued)

WX-MS-GDS, Precision Drill



| | | | | |
|---------------------------|----------------|--------------|------------|--------------------|
| SPEED FEED P367 | CARBIDE | TiAlN | 30° | SHANK h6 |
|---------------------------|----------------|--------------|------------|--------------------|

| Cutting Diameter Tolerance | | |
|----------------------------|-------------|--------------|
| Size | mm | inch |
| 0.2 ≤ D ≤ 5.00 | +0 / -0.010 | +0 / -0.0004 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 48172212 | - | - | - | 2.120 | 0.08346 | 12 | 50 | 3 | 140° |
| 48172213 | - | - | - | 2.130 | 0.08386 | 13 | | | |
| 48172214 | - | - | - | 2.140 | 0.08425 | | | | |
| 3300215 | - | - | - | 2.150 | 0.08465 | | | | |
| 48172216 | - | - | - | 2.160 | 0.08504 | | | | |
| 48172217 | - | - | - | 2.170 | 0.08543 | | | | |
| 48172218 | - | - | - | 2.180 | 0.08583 | | | | |
| 48172219 | - | - | - | 2.190 | 0.08622 | | | | |
| 3300220 | - | - | - | 2.200 | 0.08661 | | | | |
| 48172221 | - | - | - | 2.210 | 0.08701 | | | | |
| 48172222 | - | - | - | 2.220 | 0.08740 | | | | |
| 48172223 | - | - | - | 2.230 | 0.08780 | | | | |
| 48172224 | - | - | - | 2.240 | 0.08819 | | | | |
| 3300225 | - | - | - | 2.250 | 0.08858 | | | | |
| 48172226 | - | - | - | 2.260 | 0.08898 | | | | |
| 48172227 | - | - | - | 2.270 | 0.08937 | | | | |
| 48172228 | - | - | - | 2.280 | 0.08976 | | | | |
| 48172229 | - | - | - | 2.290 | 0.09016 | | | | |
| 3300230 | - | - | - | 2.300 | 0.09055 | | | | |
| 48172231 | - | - | - | 2.310 | 0.09094 | | | | |
| 48172232 | - | - | - | 2.320 | 0.09134 | | | | |
| 48172233 | - | - | - | 2.330 | 0.09173 | | | | |
| 48172234 | - | - | - | 2.340 | 0.09213 | | | | |
| 3300235 | - | - | - | 2.350 | 0.09252 | | | | |
| 48172236 | - | - | - | 2.360 | 0.09291 | | | | |
| 48172237 | - | - | - | 2.370 | 0.09331 | | | | |
| 48172238 | - | - | - | 2.380 | 0.09370 | | | | |
| 48172239 | - | - | - | 2.390 | 0.09409 | | | | |
| 3300240 | - | - | - | 2.400 | 0.09449 | | | | |
| 48172241 | - | - | - | 2.410 | 0.09488 | | | | |
| 48172242 | - | - | - | 2.420 | 0.09528 | | | | |
| 48172243 | - | - | - | 2.430 | 0.09567 | | | | |
| 48172244 | - | - | - | 2.440 | 0.09606 | | | | |
| 3300245 | - | - | - | 2.450 | 0.09646 | | | | |
| 48172246 | - | - | - | 2.460 | 0.09685 | | | | |
| 48172247 | - | - | - | 2.470 | 0.09724 | | | | |
| 48172248 | - | - | - | 2.480 | 0.09764 | | | | |
| 48172249 | - | - | - | 2.490 | 0.09803 | | | | |
| 3300250 | - | - | - | 2.500 | 0.09843 | | | | |
| 48172251 | - | - | - | 2.510 | 0.09882 | | | | |
| 48172252 | - | - | - | 2.520 | 0.09921 | | | | |
| 48172253 | - | - | - | 2.530 | 0.09961 | | | | |
| 48172254 | - | - | - | 2.540 | 0.10000 | | | | |
| 3300255 | - | - | - | 2.550 | 0.10039 | | | | |
| 48172256 | - | - | - | 2.560 | 0.10079 | | | | |
| 48172257 | - | - | - | 2.570 | 0.10118 | | | | |
| 48172258 | - | - | - | 2.580 | 0.10157 | | | | |
| 48172259 | - | - | - | 2.590 | 0.10197 | | | | |
| 3300260 | - | - | - | 2.600 | 0.10236 | | | | |
| 48172261 | - | - | - | 2.610 | 0.10276 | 14 | 130° | | |
| | | | | | | | | | |

Packed: 1 pc.
Available TiAlN coating only.





List 5330 (Continued)

WX-MS-GDS, Precision Drill

| | | | | |
|--------------------|---------|-------|-----|-------------|
| SPEED FEED P367 | CARBIDE | TiAlN | 30° | SHANK h6 |
|--------------------|---------|-------|-----|-------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 48172262 | - | - | - | 2.620 | 0.10315 | 14 | 50 | 3 | 130° |
| 48172263 | - | - | - | 2.630 | 0.10354 | | | | |
| 48172264 | - | - | - | 2.640 | 0.10394 | | | | |
| 3300265 | - | - | - | 2.650 | 0.10433 | | | | |
| 48172266 | - | - | - | 2.660 | 0.10472 | | | | |
| 48172267 | - | - | - | 2.670 | 0.10512 | | | | |
| 48172268 | - | - | - | 2.680 | 0.10551 | | | | |
| 48172269 | - | - | - | 2.690 | 0.10591 | | | | |
| 3300270 | - | - | - | 2.700 | 0.10630 | | | | |
| 48172271 | - | - | - | 2.710 | 0.10669 | | | | |
| 48172272 | - | - | - | 2.720 | 0.10709 | | | | |
| 48172273 | - | - | - | 2.730 | 0.10748 | | | | |
| 48172274 | - | - | - | 2.740 | 0.10787 | | | | |
| 3300275 | - | - | - | 2.750 | 0.10827 | | | | |
| 48172276 | - | - | - | 2.760 | 0.10866 | | | | |
| 48172277 | - | - | - | 2.770 | 0.10906 | | | | |
| 48172278 | - | - | - | 2.780 | 0.10945 | | | | |
| 48172279 | - | - | - | 2.790 | 0.10984 | | | | |
| 3300280 | - | - | - | 2.800 | 0.11024 | 16 | 56 | 4 | 130° |
| 48172281 | - | - | - | 2.810 | 0.11063 | | | | |
| 48172282 | - | - | - | 2.820 | 0.11102 | | | | |
| 48172283 | - | - | - | 2.830 | 0.11142 | | | | |
| 48172284 | - | - | - | 2.840 | 0.11181 | | | | |
| 3300285 | - | - | - | 2.850 | 0.11220 | | | | |
| 48172286 | - | - | - | 2.860 | 0.11260 | | | | |
| 48172287 | - | - | - | 2.870 | 0.11299 | | | | |
| 48172288 | - | - | - | 2.880 | 0.11339 | | | | |
| 48172289 | - | - | - | 2.890 | 0.11378 | | | | |
| 3300290 | - | - | - | 2.900 | 0.11417 | | | | |
| 48172291 | - | - | - | 2.910 | 0.11457 | | | | |
| 48172292 | - | - | - | 2.920 | 0.11496 | | | | |
| 48172293 | - | - | - | 2.930 | 0.11535 | | | | |
| 48172294 | - | - | - | 2.940 | 0.11575 | | | | |
| 3300295 | - | - | - | 2.950 | 0.11614 | | | | |
| 48172296 | - | - | - | 2.960 | 0.11654 | | | | |
| 48172297 | - | - | - | 2.970 | 0.11693 | | | | |
| 48172298 | - | - | - | 2.980 | 0.11732 | | | | |
| 48172299 | - | - | - | 2.990 | 0.11772 | | | | |
| 3300300 | - | - | - | 3.000 | 0.11811 | 18 | 56 | 4 | 130° |
| 48172301 | - | - | - | 3.010 | 0.11850 | | | | |
| 48172302 | - | - | - | 3.020 | 0.11890 | | | | |
| 48172303 | - | - | - | 3.030 | 0.11929 | | | | |
| 48172304 | - | - | - | 3.040 | 0.11969 | | | | |
| 3300305 | - | - | - | 3.050 | 0.12008 | | | | |
| 48172306 | - | - | - | 3.060 | 0.12047 | | | | |
| 48172307 | - | - | - | 3.070 | 0.12087 | | | | |

Packed: 1 pc.
Available TiAlN coating only.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | H | | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 5330 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

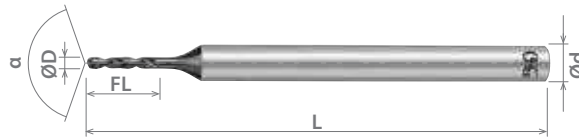
good best





List 5330 (Continued)

WX-MS-GDS, Precision Drill



| | | | | |
|-------------------|----------------|--------------|------------|--------------|
| SPEED FEED | CARBIDE | TiAlN | 30° | SHANK |
| P367 | | | | h6 |

| Cutting Diameter Tolerance | | |
|----------------------------|-------------|--------------|
| Size | mm | inch |
| 0.2 ≤ D ≤ 5.00 | +0 / -0.010 | +0 / -0.0004 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 48172308 | - | - | - | 3.080 | 0.12126 | 18 | 56 | 4 | 130° |
| 48172309 | - | - | - | 3.090 | 0.12165 | | | | |
| 3300310 | - | - | - | 3.100 | 0.12205 | | | | |
| 48172311 | - | - | - | 3.110 | 0.12244 | | | | |
| 48172312 | - | - | - | 3.120 | 0.12283 | | | | |
| 48172313 | - | - | - | 3.130 | 0.12323 | | | | |
| 48172314 | - | - | - | 3.140 | 0.12362 | | | | |
| 3300315 | - | - | - | 3.150 | 0.12402 | | | | |
| 48172316 | - | - | - | 3.160 | 0.12441 | | | | |
| 48172317 | - | - | - | 3.170 | 0.12480 | | | | |
| 48172318 | - | - | - | 3.180 | 0.12520 | | | | |
| 48172319 | - | - | - | 3.190 | 0.12559 | | | | |
| 3300320 | - | - | - | 3.200 | 0.12598 | | | | |
| 48172321 | - | - | - | 3.210 | 0.12638 | | | | |
| 48172322 | - | - | - | 3.220 | 0.12677 | | | | |
| 48172323 | - | - | - | 3.230 | 0.12717 | | | | |
| 48172324 | - | - | - | 3.240 | 0.12756 | | | | |
| 3300325 | - | - | - | 3.250 | 0.12795 | | | | |
| 48172326 | - | - | - | 3.260 | 0.12835 | | | | |
| 48172327 | - | - | - | 3.270 | 0.12874 | | | | |
| 48172328 | - | - | - | 3.280 | 0.12913 | | | | |
| 48172329 | - | - | - | 3.290 | 0.12953 | | | | |
| 3300330 | - | - | - | 3.300 | 0.12992 | | | | |
| 48172331 | - | - | - | 3.310 | 0.13031 | | | | |
| 48172332 | - | - | - | 3.320 | 0.13071 | | | | |
| 48172333 | - | - | - | 3.330 | 0.13110 | | | | |
| 48172334 | - | - | - | 3.340 | 0.13150 | | | | |
| 3300335 | - | - | - | 3.350 | 0.13189 | | | | |
| 48172336 | - | - | - | 3.360 | 0.13228 | | | | |
| 48172337 | - | - | - | 3.370 | 0.13268 | | | | |
| 48172338 | - | - | - | 3.380 | 0.13307 | | | | |
| 48172339 | - | - | - | 3.390 | 0.13346 | | | | |
| 3300340 | - | - | - | 3.400 | 0.13386 | | | | |
| 48172341 | - | - | - | 3.410 | 0.13425 | | | | |
| 48172342 | - | - | - | 3.420 | 0.13465 | | | | |
| 48172343 | - | - | - | 3.430 | 0.13504 | | | | |
| 48172344 | - | - | - | 3.440 | 0.13543 | | | | |
| 3300345 | - | - | - | 3.450 | 0.13583 | | | | |
| 48172346 | - | - | - | 3.460 | 0.13622 | | | | |
| 48172347 | - | - | - | 3.470 | 0.13661 | | | | |
| 48172348 | - | - | - | 3.480 | 0.13701 | | | | |
| 48172349 | - | - | - | 3.490 | 0.13740 | | | | |
| 3300350 | - | - | - | 3.500 | 0.13780 | | | | |
| 48172351 | - | - | - | 3.510 | 0.13819 | | | | |
| 48172352 | - | - | - | 3.520 | 0.13858 | | | | |
| 48172353 | - | - | - | 3.530 | 0.13898 | | | | |
| 48172354 | - | - | - | 3.540 | 0.13937 | | | | |
| 3300355 | - | - | - | 3.550 | 0.13976 | | | | |
| 48172356 | - | - | - | 3.560 | 0.14016 | | | | |
| 48172357 | - | - | - | 3.570 | 0.14055 | | | | |

Packed: 1 pc.
Available TiAlN coating only.





List 5330 (Continued)

WX-MS-GDS, Precision Drill

| | | | | |
|--------------------|---------|-------|-----|-------------|
| SPEED FEED P367 | CARBIDE | TiAlN | 30° | SHANK h6 |
|--------------------|---------|-------|-----|-------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 48172358 | - | - | - | 3.580 | 0.14094 | 20 | 56 | 4 | 130° |
| 48172359 | - | - | - | 3.590 | 0.14134 | | | | |
| 3300360 | - | - | - | 3.600 | 0.14173 | | | | |
| 48172361 | - | - | - | 3.610 | 0.14213 | | | | |
| 48172362 | - | - | - | 3.620 | 0.14252 | | | | |
| 48172363 | - | - | - | 3.630 | 0.14291 | | | | |
| 48172364 | - | - | - | 3.640 | 0.14331 | | | | |
| 3300365 | - | - | - | 3.650 | 0.14370 | | | | |
| 48172366 | - | - | - | 3.660 | 0.14409 | | | | |
| 48172367 | - | - | - | 3.670 | 0.14449 | | | | |
| 48172368 | - | - | - | 3.680 | 0.14488 | | | | |
| 48172369 | - | - | - | 3.690 | 0.14528 | | | | |
| 3300370 | - | - | - | 3.700 | 0.14567 | | | | |
| 48172371 | - | - | - | 3.710 | 0.14606 | | | | |
| 48172372 | - | - | - | 3.720 | 0.14646 | | | | |
| 48172373 | - | - | - | 3.730 | 0.14685 | | | | |
| 48172374 | - | - | - | 3.740 | 0.14724 | | | | |
| 3300375 | - | - | - | 3.750 | 0.14764 | | | | |
| 48172376 | - | - | - | 3.760 | 0.14803 | | | | |
| 48172377 | - | - | - | 3.770 | 0.14843 | | | | |
| 48172378 | - | - | - | 3.780 | 0.14882 | | | | |
| 48172379 | - | - | - | 3.790 | 0.14921 | | | | |
| 3300380 | - | - | - | 3.800 | 0.14961 | | | | |
| 48172381 | - | - | - | 3.810 | 0.15000 | | | | |
| 48172382 | - | - | - | 3.820 | 0.15039 | | | | |
| 48172383 | - | - | - | 3.830 | 0.15079 | | | | |
| 48172384 | - | - | - | 3.840 | 0.15118 | | | | |
| 3300385 | - | - | - | 3.850 | 0.15157 | | | | |
| 48172386 | - | - | - | 3.860 | 0.15197 | | | | |
| 48172387 | - | - | - | 3.870 | 0.15236 | | | | |
| 48172388 | - | - | - | 3.880 | 0.15276 | | | | |
| 48172389 | - | - | - | 3.890 | 0.15315 | | | | |
| 3300390 | - | - | - | 3.900 | 0.15354 | | | | |
| 48172391 | - | - | - | 3.910 | 0.15394 | | | | |
| 48172392 | - | - | - | 3.920 | 0.15433 | | | | |
| 48172393 | - | - | - | 3.930 | 0.15472 | | | | |
| 48172394 | - | - | - | 3.940 | 0.15512 | | | | |
| 3300395 | - | - | - | 3.950 | 0.15551 | | | | |
| 48172396 | - | - | - | 3.960 | 0.15591 | | | | |
| 48172397 | - | - | - | 3.970 | 0.15630 | | | | |
| 48172398 | - | - | - | 3.980 | 0.15669 | | | | |
| 48172399 | - | - | - | 3.990 | 0.15709 | | | | |
| 3300400 | - | - | - | 4.000 | 0.15748 | | | | |
| 3300405 | - | - | - | 4.050 | 0.15945 | | | | |
| 3300410 | - | - | - | 4.100 | 0.16142 | | | | |
| 3300415 | - | - | - | 4.150 | 0.16339 | | | | |
| | | | | | | 64 | 5 | | |

Packed: 1 pc.
Available TiAlN coating only.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | H | | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 5330 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





EXOCARB® MAX-MINI

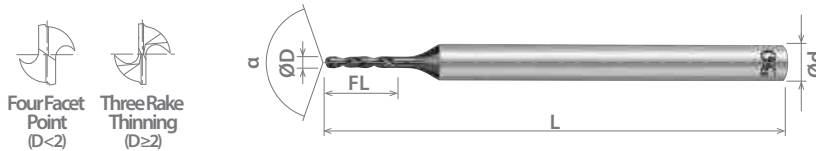
High Performance Miniature Carbide Drills

List 5330 (Continued)

WX-MS-GDS, Precision Drill

| | | | | |
|--------------------|---------|-------|-----|-------------|
| SPEED FEED P367 | CARBIDE | TiAlN | 30° | SHANK h6 |
|--------------------|---------|-------|-----|-------------|

| Cutting Diameter Tolerance | | |
|----------------------------|-------------|--------------|
| Size | mm | inch |
| 0.2 ≤ D ≤ 5.00 | +0 / -0.010 | +0 / -0.0004 |



| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 3300420 | - | - | - | 4.200 | 0.16535 | 22 | 64 | 5 | 130° |
| 3300425 | - | - | - | 4.250 | 0.16732 | | | | |
| 3300430 | - | - | - | 4.300 | 0.16929 | | | | |
| 3300435 | - | - | - | 4.350 | 0.17126 | | | | |
| 3300440 | - | - | - | 4.400 | 0.17323 | | | | |
| 3300445 | - | - | - | 4.450 | 0.17520 | | | | |
| 3300450 | - | - | - | 4.500 | 0.17717 | 24 | | | |
| 3300455 | - | - | - | 4.550 | 0.17913 | | | | |
| 3300460 | - | - | - | 4.600 | 0.18110 | | | | |
| 3300465 | - | - | - | 4.650 | 0.18307 | | | | |
| 3300470 | - | - | - | 4.700 | 0.18504 | | | | |
| 3300475 | - | - | - | 4.750 | 0.18701 | 26 | | | |
| 3300480 | - | - | - | 4.800 | 0.18898 | | | | |
| 3300485 | - | - | - | 4.850 | 0.19094 | | | | |
| 3300490 | - | - | - | 4.900 | 0.19291 | | | | |
| 3300495 | - | - | - | 4.950 | 0.19488 | | | | |
| 3300500 | - | - | - | 5.000 | 0.19685 | | | | |

Packed: 1 pc.
Available TiAlN coating only.



| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 5330 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



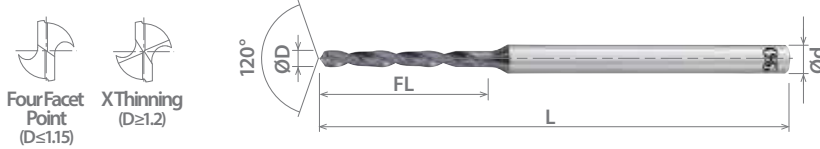


List 5340

MRS-GDL, Precision Drill

| | | | | |
|---------------------------|----------------|-----------|------------|--------------------|
| SPEED FEED P368 | CARBIDE | SS | 30° | SHANK h6 |
|---------------------------|----------------|-----------|------------|--------------------|

| Cutting Diameter Tolerance | | |
|----------------------------|-------------|--------------|
| Size | mm | inch |
| 0.50 ≤ D ≤ 3.00 | +0 / -0.008 | +0 / -0.0003 |



Four Facet Point (D ≤ 1.15)
XThinning (D ≥ 1.2)

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8577050 | - | - | - | 0.500 | 0.01969 | 6.0 | 42 | 3 |
| 8577054 | - | - | - | 0.540 | 0.02126 | 6.6 | | |
| 8577055 | - | - | - | 0.550 | 0.02165 | 7.2 | | |
| 8577056 | - | - | - | 0.560 | 0.02205 | | | |
| 8577060 | - | - | - | 0.600 | 0.02362 | 7.8 | | |
| 8577063 | - | - | - | 0.630 | 0.02480 | | | |
| 8577064 | - | - | - | 0.640 | 0.02520 | | | |
| 8577065 | - | - | - | 0.650 | 0.02559 | | | |
| 8577070 | - | - | - | 0.700 | 0.02756 | 8.4 | | |
| 8577071 | - | - | - | 0.710 | 0.02795 | | | |
| 8577072 | - | - | - | 0.720 | 0.02835 | 9.0 | | |
| 8577073 | - | - | - | 0.730 | 0.02874 | | | |
| 8577074 | - | - | - | 0.740 | 0.02913 | | | |
| 8577075 | - | - | - | 0.750 | 0.02953 | | | |
| 8577080 | - | - | - | 0.800 | 0.03150 | 9.6 | | |
| 8577081 | - | - | - | 0.810 | 0.03189 | | | |
| 8577082 | - | - | - | 0.820 | 0.03228 | 10.2 | | |
| 8577090 | - | - | - | 0.900 | 0.03543 | | | |
| 8577091 | - | - | - | 0.910 | 0.03583 | | | |
| 8577092 | - | - | - | 0.920 | 0.03622 | | | |
| 8577100 | - | - | - | 1.000 | 0.03937 | 12.0 | | |
| 8577110 | - | - | - | 1.100 | 0.04331 | | | |
| 8577111 | - | - | - | 1.110 | 0.04370 | 13.8 | | |
| 8577112 | - | - | - | 1.120 | 0.04409 | | | |
| 8577115 | - | - | - | 1.150 | 0.04528 | | | |
| 8577120 | - | - | - | 1.200 | 0.04724 | | | |
| 8577127 | - | - | - | 1.270 | 0.05000 | 14.4 | | |
| 8577128 | - | - | - | 1.280 | 0.05039 | | | |
| 8577129 | - | - | - | 1.290 | 0.05079 | 15.6 | | |
| 8577130 | - | - | - | 1.300 | 0.05118 | | | |
| 8577140 | - | - | - | 1.400 | 0.05512 | | | |
| 8577145 | - | - | - | 1.450 | 0.05709 | | | |
| 8577146 | - | - | - | 1.460 | 0.05748 | 17.4 | | |
| 8577147 | - | - | - | 1.470 | 0.05787 | | | |
| 8577150 | - | - | - | 1.500 | 0.05906 | 18.0 | | |
| 8577151 | - | - | - | 1.510 | 0.05945 | | | |
| 8577152 | - | - | - | 1.520 | 0.05984 | | | |
| 8577153 | - | - | - | 1.530 | 0.06024 | | | |
| 8577155 | - | - | - | 1.550 | 0.06102 | 18.6 | | |
| 8577156 | - | - | - | 1.560 | 0.06142 | | | |

Packed: 1 pc.
Available Super Smooth coating only.

continued on next page

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5340 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





EXOCARB® MAX-MINI

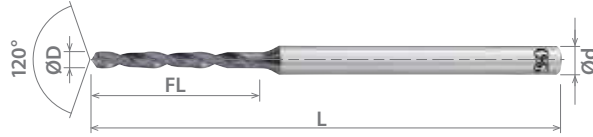
High Performance Miniature Carbide Drills

List 5340 (Continued)

MRS-GDL, Precision Drill

| | | | | |
|--------------------|---------|----|-----|-------------|
| SPEED FEED P368 | CARBIDE | SS | 30° | SHANK h6 |
|--------------------|---------|----|-----|-------------|

| Cutting Diameter Tolerance | | |
|----------------------------|-------------|--------------|
| Size | mm | inch |
| 0.50 ≤ D ≤ 3.00 | +0 / -0.008 | +0 / -0.0003 |



| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8577157 | - | - | - | 1.570 | 0.06181 | 19.2 | 54 | 3 |
| 8577160 | - | - | - | 1.600 | 0.06299 | 20.4 | | |
| 8577170 | - | - | - | 1.700 | 0.06693 | | 21.6 | |
| 8577180 | - | - | - | 1.800 | 0.07087 | 22.2 | | |
| 8577181 | - | - | - | 1.810 | 0.07126 | | 22.8 | |
| 8577182 | - | - | - | 1.820 | 0.07165 | 24.0 | | |
| 8577183 | - | - | - | 1.830 | 0.07205 | | 25.2 | |
| 8577190 | - | - | - | 1.900 | 0.07480 | 25.8 | | |
| 8577198 | - | - | - | 1.980 | 0.07795 | | 26.4 | |
| 8577199 | - | - | - | 1.990 | 0.07835 | 27.6 | | |
| 8577200 | - | - | - | 2.000 | 0.07874 | | 28.2 | |
| 8577210 | - | - | - | 2.100 | 0.08268 | 28.8 | | |
| 8577212 | - | - | - | 2.120 | 0.08346 | | 29.4 | |
| 8577213 | - | - | - | 2.130 | 0.08386 | 30.0 | | |
| 8577214 | - | - | - | 2.140 | 0.08425 | | 30.6 | |
| 8577220 | - | - | - | 2.200 | 0.08661 | 31.2 | | |
| 8577229 | - | - | - | 2.290 | 0.09016 | | 32.4 | |
| 8577230 | - | - | - | 2.300 | 0.09055 | 33.6 | | |
| 8577231 | - | - | - | 2.310 | 0.09094 | | 34.8 | |
| 8577239 | - | - | - | 2.390 | 0.09409 | 36.0 | | |
| 8577240 | - | - | - | 2.400 | 0.09449 | | | |
| 8577241 | - | - | - | 2.410 | 0.09488 | | | |
| 8577242 | - | - | - | 2.420 | 0.09528 | | | |
| 8577250 | - | - | - | 2.500 | 0.09843 | | | |
| 8577255 | - | - | - | 2.550 | 0.10039 | | | |
| 8577256 | - | - | - | 2.560 | 0.10079 | | | |
| 8577257 | - | - | - | 2.570 | 0.10118 | | | |
| 8577260 | - | - | - | 2.600 | 0.10236 | | | |
| 8577270 | - | - | - | 2.700 | 0.10630 | | | |
| 8577277 | - | - | - | 2.770 | 0.10906 | | | |
| 8577278 | - | - | - | 2.780 | 0.10945 | | | |
| 8577279 | - | - | - | 2.790 | 0.10984 | | | |
| 8577280 | - | - | - | 2.800 | 0.11024 | | | |
| 8577290 | - | - | - | 2.900 | 0.11417 | | | |
| 8577300 | - | - | - | 3.000 | 0.11811 | | | |

Packed: 1 pc.
Available Super Smooth coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|-------------------------------------|-------------------------------------|--------------------------|--------------|----------|-----------------|---------|-----------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | 6061 7075 | | Casting | Inconel | | | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 5340 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | |

good best





List 7501

Triple Angle

| | | | |
|---------------------------|----------------|------------|-----------|
| SPEED FEED P369 | CARBIDE | DIA | 0° |
|---------------------------|----------------|------------|-----------|

| |
|--------------------------------|
| Tolerance +0/-0.001" |
|--------------------------------|



| EDP Number | Approximate Hole Size | | | Drill Size | | Flute Length | Taper Length | Overall Length | Shank Diameter |
|------------|-----------------------|-----------|-------------|------------|---------|--------------|--------------|----------------|----------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | FL (mm) | I (mm) | L (mm) | d (mm) |
| 750109816 | - | #40 | - | 2.502 | 0.09850 | 15.2 | 3.8 | 50.8 | 2.50 |
| 750112916 | - | #30 | - | 3.277 | 0.12900 | 20.3 | 4.8 | | 3.27 |
| 750116116 | - | #20 | - | 4.102 | 0.16150 | 25.4 | 5.9 | 76.2 | 4.10 |
| 750119116 | - | #11 | - | 4.864 | 0.19150 | 27.9 | 7.0 | 101.6 | 4.86 |
| 750119216 | - | #11 | - | | | 48.2 | | | |
| 750122116 | - | #2 | - | 5.626 | 0.22150 | 33.0 | 8.0 | 88.9 | 5.62 |
| 750125116 | 1/4 | - | - | 6.375 | 0.25100 | 38.1 | 9.0 | 139.7 | 6.37 |
| 750125216 | 1/4 | - | - | | | 63.5 | | | |
| 750131316 | 5/16 | - | - | 7.963 | 0.31350 | 48.2 | 11.2 | 101.6 | 7.96 |
| 750137616 | 3/8 | - | - | 9.550 | 0.37600 | 58.4 | 13.4 | 152.4 | 9.55 |
| 750137716 | 3/8 | - | - | | | 96.5 | | | |
| 750143816 | 7/16 | - | - | 11.138 | 0.43850 | 66.0 | 15.5 | 101.6 | 11.13 |
| 750150116 | 1/2 | - | - | 12.725 | 0.50100 | 76.2 | 17.7 | 127.0 | 12.72 |

Packed: 1 pc.
Available Diamond coating only.
Drills are oversize over nominal.
Tri-Flat shank available upon request.



| Work Material | | | | | | | | | | | | |
|---------------|-------------------------------------|--------------------------|---------------------|-------------------------------------|-------------------------------------|------|-------------------------------------|--------------------------|-------------------------------------|-----------------------------|-----------------------------|-------------------------------|
| List No. | Carbon Fiber (CFRP) | Glass Fiber (GFRP) | Aramid Fiber (AFRP) | Honeycomb | | | | | Carbon/Carbon | Carbon Fiber/Aluminum Stack | Carbon Fiber/Titanium Stack | Carbon Fiber/Al/Ti/CRES Stack |
| | | | | CFRP/Nomex | GFRP/Nomex | AFRP | CFRP/Al | Al/Al | | | | |
| 7501 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |

Good Best





List 7520

Low Helix

| | | | |
|--------------------|---------|-----|----|
| SPEED FEED P369 | CARBIDE | DIA | 5° |
|--------------------|---------|-----|----|

| |
|------------------|
| Tolerance |
| +0/-0.001" |



| EDP Number | Approximate Hole Size | | | Drill Size | | Flute Length | Taper Length | Overall Length | Shank Diameter |
|------------|-----------------------|-----------|-------------|------------|---------|--------------|--------------|----------------|----------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | FL (mm) | I (mm) | L (mm) | d (mm) |
| 752009816 | - | #40 | - | 2.502 | 0.09850 | 15.2 | 7.0 | 50.8 | 2.50 |
| 752012916 | - | #30 | - | 3.277 | 0.12900 | 20.3 | 9.0 | | 3.27 |
| 752016116 | - | #20 | - | 4.102 | 0.16150 | 25.4 | 11.2 | 76.2 | 4.10 |
| 752019216 | - | #11 | - | 4.864 | 0.19150 | 27.9 | 13.2 | | 4.86 |
| 752022116 | - | #2 | - | 5.626 | 0.22150 | 33.0 | 15.2 | 88.9 | 5.62 |
| 752025116 | 1/4 | - | - | 6.375 | 0.25100 | 38.1 | 17.2 | | 6.37 |
| 752031316 | 5/16 | - | - | 7.963 | 0.31350 | 48.2 | 21.4 | 101.6 | 7.96 |
| 752037616 | 3/8 | - | - | 9.550 | 0.37600 | 58.4 | 25.6 | | 9.55 |
| 752043816 | 7/16 | - | - | 11.138 | 0.43850 | 66.0 | 29.8 | 127.0 | 11.13 |
| 752050116 | 1/2 | - | - | 12.725 | 0.50100 | 76.2 | 34.0 | | 12.72 |

Packed: 1 pc.
 Available Diamond coating only.
 Drills are oversize over nominal.



| Work Material | | | | | | | | | | | | |
|---------------|-------------------------------------|--------------------------|---------------------|-------------------------------------|-------------------------------------|------|-------------------------------------|-------|-------------------------------------|-----------------------------|-----------------------------|-------------------------------|
| List No. | Carbon Fiber (CFRP) | Glass Fiber (GFRP) | Aramid Fiber (AFRP) | Honeycomb | | | | | Carbon/Carbon | Carbon Fiber/Aluminum Stack | Carbon Fiber/Titanium Stack | Carbon Fiber/Al/Ti/CRES Stack |
| | | | | CFRP/Nomex | GFRP/Nomex | AFRP | CFRP/Al | Al/Al | | | | |
| 7520 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | | |

Good Best





List 7500

Tapered Drill/Reamer

| | | | |
|---------------------------|----------------|------------|-----------|
| SPEED FEED P369 | CARBIDE | DIA | 0° |
|---------------------------|----------------|------------|-----------|

| |
|--------------------------------|
| Tolerance +0/-0.001" |
|--------------------------------|



| EDP Number | Approximate Hole Size | | | Drill Size | | Flute Length | Taper Length | Overall Length | Shank Diameter | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------|-----------------------|-----------|-------------|------------|---------|--------------|--------------|----------------|----------------|-------|-------|------|-------|-------|-------|---------|---------|------|-------|-------|-------|---------|------|-------|-------|-------|---------|-------|---------|---------|-------|---------|-------|-------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | FL (mm) | I (mm) | L (mm) | d (mm) | | | | | | | | | | | | | | | | | | | | | | | | | |
| 750009816 | - | #40 | - | 2.502 | 0.09850 | 14.5 | 5.0 | 76.2 | 2.50 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 750012816 | - | #30 | - | 3.264 | 0.12850 | 18.9 | 6.5 | | 152.4 | 3.26 | | | | | | | | | | | | | | | | | | | | | | | | |
| 750012916 | - | | - | | | - | | 31.9 | | 8.1 | 76.2 | 4.10 | | | | | | | | | | | | | | | | | | | | | | |
| 750016116 | - | #20 | - | 4.102 | 0.16150 | 23.8 | 9.4 | 152.4 | 4.76 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 750016216 | - | - | - | - | - | 40.1 | | | | 9.5 | 101.6 | 4.82 | | | | | | | | | | | | | | | | | | | | | | |
| 750018716 | 3/16 | - | - | 4.763 | 0.18750 | 46.7 | 9.6 | 152.4 | 4.85 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 750019016 | - | #11 | - | 4.826 | 0.19000 | 47.3 | | | | 9.6 | 101.6 | 4.87 | | | | | | | | | | | | | | | | | | | | | | |
| 750019116 | - | | - | | | | - | 4.851 | 0.19100 | | | | 28.3 | 101.6 | 4.87 | | | | | | | | | | | | | | | | | | | |
| 750019216 | - | | - | | | | - | | | | | | | | | 4.864 | 0.19200 | 47.7 | 101.6 | 4.87 | | | | | | | | | | | | | | |
| 750019316 | - | | - | | | | - | | | | | | | | | | | | | | 4.864 | 0.19200 | 47.7 | 101.6 | 4.87 | | | | | | | | | |
| 750019416 | - | | - | | | | - | | | | | | | | | | | | | | | | | | | 4.864 | 0.19200 | 47.7 | 101.6 | 4.87 | | | | |
| 750019516 | - | | - | | | | - | | | | | | | | | | | | | | | | | | | | | | | | 4.864 | 0.19200 | 47.7 | 101.6 |
| 750019716 | - | - | - | 4.864 | 0.19200 | 47.7 | 101.6 | | | 4.87 | | | | | | | | | | | | | | | | | | | | | | | | |
| 750021816 | 7/32 | - | - | | | | | 5.537 | 0.21800 | | 54.3 | 10.9 | 4.864 | 5.53 | | | | | | | | | | | | | | | | | | | | |
| 750022116 | - | #2 | - | | | | | 5.626 | 0.22150 | | 55.2 | 11.1 | 101.6 | 5.62 | | | | | | | | | | | | | | | | | | | | |
| 750025016 | 1/4 | - | - | | | | | 6.350 | 0.25000 | | 62.3 | 12.5 | 152.4 | 6.35 | | | | | | | | | | | | | | | | | | | | |
| 750025116 | | - | - | | | | | | | | | | | | 6.375 | 0.25100 | 37.1 | 15.5 | 101.6 | 7.93 | | | | | | | | | | | | | | |
| 750025316 | | - | - | | | | | | | | | | | | | | | | | | 6.375 | 0.25100 | 62.6 | 15.6 | 152.4 | 7.96 | | | | | | | | |
| 750025416 | | - | - | 6.375 | 0.25100 | 62.6 | 15.6 | | | 152.4 | | | | | | | | | | | | | | | | | 7.96 | | | | | | | |
| 750025516 | | - | - | | | | | | | | | | | | | | | | | | | | | | | | | 6.375 | 0.25100 | 62.6 | 15.6 | 152.4 | 7.96 | |
| 750031216 | | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 6.375 |
| 750031316 | 5/16 | - | - | | | | | 7.938 | 0.31250 | | 46.2 | 18.6 | 101.6 | 9.52 | | | | | | | | | | | | | | | | | | | | |
| 750031416 | | - | - | | | | | | | | | | | | 7.938 | 0.31250 | 62.0 | 18.7 | 152.4 | 9.55 | | | | | | | | | | | | | | |
| 750031416 | | - | - | | | | | | | | | | | | | | | | | | 7.963 | 0.31350 | 46.3 | 18.7 | 101.6 | 9.55 | | | | | | | | |
| 750031516 | | - | - | 7.963 | 0.31350 | 62.2 | 18.7 | | | 152.4 | | | | | | | | | | | | | | | | | 9.55 | | | | | | | |
| 750037516 | | 3/8 | - | | | | | | | | | | | | | | | | | | | | | | | | | - | 9.525 | 0.37500 | 55.4 | 21.7 | 101.6 | |
| 750037616 | | | - | | | | | | | | | | | | | | | | | | | | | | | | | - | | | | | | 9.525 |
| 750037716 | - | | - | | | | | 9.525 | 0.37500 | | 55.5 | 21.7 | 101.6 | 11.13 | | | | | | | | | | | | | | | | | | | | |
| 750037716 | - | | - | | | | | | | | | | | | 9.550 | 0.37600 | 74.6 | 21.7 | 101.6 | 11.13 | | | | | | | | | | | | | | |
| 750037816 | - | | - | | | | | | | | | | | | | | | | | | 9.550 | 0.37600 | 74.6 | 21.7 | 101.6 | 11.13 | | | | | | | | |
| 750043816 | 7/16 | | - | - | 11.138 | 0.43850 | 64.8 | | | 21.7 | | | | | | | | | | | | | | | | | 101.6 | 11.13 | | | | | | |
| 750050116 | 1/2 | - | - | 12.725 | 0.50100 | 99.5 | 24.8 | | | 152.4 | | | | | | | | | | | | | | | | | 12.72 | | | | | | | |

Packed: 1 pc.
Available Diamond coating only.
Drills are oversize over nominal.
Tri-Flat shank available upon request.



| Work Material | | | | | | | | | | | | |
|---------------|-------------------------------------|--------------------------|---------------------|-------------------------------------|-------------------------------------|------|-------------------------------------|-------|-------------------------------------|-----------------------------|-----------------------------|-------------------------------|
| List No. | Carbon Fiber (CFRP) | Glass Fiber (GFRP) | Aramid Fiber (AFRP) | Honeycomb | | | | | Carbon/Carbon | Carbon Fiber/Aluminum Stack | Carbon Fiber/Titanium Stack | Carbon Fiber/Al/Ti/CFES Stack |
| | | | | CFRP/Nomex | GFRP/Nomex | AFRP | CFRP/Al | Al/Al | | | | |
| 7500 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | | |

Good Best





List 7530

High Helix

| | | | |
|---------------------------|----------------|------------|------------|
| SPEED FEED P369 | CARBIDE | DIA | 40° |
|---------------------------|----------------|------------|------------|

| |
|--------------------------------|
| Tolerance +0/-0.001" |
|--------------------------------|



| EDP Number | Approximate Hole Size | | | Drill Size | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------------|-----------|-------------|------------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | D | | | | |
| | | | | mm | Inch | | | |
| 753009816 | - | #40 | - | 2.502 | 0.09850 | 15.2 | 50.8 | 2.50 |
| 753012916 | - | #30 | - | 3.277 | 0.12900 | 20.3 | 76.2 | 3.27 |
| 753016116 | - | #20 | - | 4.102 | 0.16150 | 25.4 | 101.6 | 4.10 |
| 753019116 | - | #11 | - | 4.864 | 0.19150 | 27.9 | | 4.86 |
| 753022116 | - | #2 | - | 5.626 | 0.22150 | 33.0 | | 5.62 |
| 753025116 | 1/4 | - | - | 6.375 | 0.25100 | 38.1 | | 6.37 |
| 753031316 | 5/16 | - | - | 7.963 | 0.31350 | 48.2 | 152.4 | 7.96 |
| 753037616 | 3/8 | - | - | 9.550 | 0.37600 | 58.4 | | 9.55 |
| 753043816 | 7/16 | - | - | 11.138 | 0.43850 | 66.0 | | 11.13 |
| 753050116 | 1/2 | - | - | 12.725 | 0.50100 | 76.2 | | 12.72 |

Packed: 1 pc.
Available Diamond coating only.
Drills are oversize over nominal.



| Work Material | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|---------------------|--------------------------|--------------------------|------|-------------------------------------|-------------------------------------|---------------|-------------------------------------|-----------------------------|-------------------------------|
| List No. | Carbon Fiber (CFRP) | Glass Fiber (GFRP) | Aramid Fiber (AFRP) | Honeycomb | | | | | Carbon/Carbon | Carbon Fiber/Aluminum Stack | Carbon Fiber/Titanium Stack | Carbon Fiber/Al/Ti/CRES Stack |
| | | | | CFRP/Nomex | GFRP/Nomex | AFRP | CFRP/Al | Al/Al | | | | |
| 7530 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | |

Good Best





List 7532

Stack Drill

| | | | |
|---------------------------|----------------|------------|------------|
| SPEED FEED P370 | CARBIDE | DIA | 40° |
|---------------------------|----------------|------------|------------|

| |
|--------------------------------|
| Tolerance +0/-0.001" |
|--------------------------------|



| EDP Number | Approximate Hole Size | | | Drill Size | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------------|-----------|-------------|------------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | D | | | | |
| | | | | mm | Inch | | | |
| 753209816 | - | #40 | - | 2.502 | 0.09850 | 15.2 | 50.8 | 2.50 |
| 753212916 | - | #30 | - | 3.277 | 0.12900 | 20.3 | 76.2 | 3.27 |
| 753216116 | - | #20 | - | 4.102 | 0.16150 | 25.4 | 101.6 | 4.10 |
| 753219116 | - | #11 | - | 4.864 | 0.19150 | 27.9 | | 4.86 |
| 753222116 | - | #2 | - | 5.626 | 0.22150 | 33.0 | | 5.62 |
| 753225116 | 1/4 | - | - | 6.375 | 0.25100 | 38.1 | | 6.37 |
| 753231316 | 5/16 | - | - | 7.963 | 0.31350 | 48.2 | 152.4 | 7.96 |
| 753237616 | 3/8 | - | - | 9.550 | 0.37600 | 58.4 | | 9.55 |
| 753243816 | 7/16 | - | - | 11.138 | 0.43850 | 66.0 | | 11.13 |
| 753250116 | 1/2 | - | - | 12.725 | 0.50100 | 76.2 | | 12.72 |

Packed: 1 pc.
Available Diamond coating only.
Drills are oversize over nominal.



| Work Material | | | | | | | | | | | | |
|---------------|-------------------------------------|--------------------|---------------------|------------|------------|------|---------|-------|---------------|-------------------------------------|-------------------------------------|-------------------------------|
| List No. | Carbon Fiber (CFRP) | Glass Fiber (GFRP) | Aramid Fiber (AFRP) | Honeycomb | | | | | Carbon/Carbon | Carbon Fiber/Aluminum Stack | Carbon Fiber/Titanium Stack | Carbon Fiber/Al/Ti/CRES Stack |
| | | | | CFRP/Nomex | GFRP/Nomex | AFRP | CFRP/Al | Al/Al | | | | |
| 7532 | <input checked="" type="checkbox"/> | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |

Good Best





EXOCARB® AERO-H

Stack Drill for All Stack Applications

List 5732

Stack Drill

| | | | |
|---------------------------|----------------|--------------|------------|
| SPEED FEED P370 | CARBIDE | TiAlN | 40° |
|---------------------------|----------------|--------------|------------|

| |
|---------------------------------|
| Tolerance +0/-0.0011" |
|---------------------------------|



| EDP Number | Approximate Hole Size | | | Drill Size | | Flute Length | Overall Length | Shank Diameter |
|------------|-----------------------|-----------|-------------|------------|---------|--------------|----------------|----------------|
| | Fractional Size | Wire Gage | Letter Size | D | | | | |
| | | | | mm | Inch | FL (mm) | L (mm) | d (mm) |
| 573219111 | - | #11 | - | 4.864 | 0.19150 | | | 4.86 |
| 573225111 | 1/4 | - | - | 6.375 | 0.25100 | 50.8 | 101.6 | 6.37 |
| 573237611 | 3/8 | - | - | 9.550 | 0.37600 | | | 9.55 |
| 573250111 | 1/2 | - | - | 12.725 | 0.50100 | 101.6 | 152.4 | 12.72 |

Packed: 1 pc.
Available TiAlN coating only.
Drills are oversize over nominal.



| Work Material | | | | | | | | | | | | |
|---------------|-------------------------------------|--------------------|---------------------|------------|------------|------|---------|-------|---------------|-----------------------------|-------------------------------------|-------------------------------------|
| List No. | Carbon Fiber (CFRP) | Glass Fiber (GFRP) | Aramid Fiber (AFRP) | Honeycomb | | | | | Carbon/Carbon | Carbon Fiber/Aluminum Stack | Carbon Fiber/Titanium Stack | Carbon Fiber/Al/Ti/CRES Stack |
| | | | | CFRP/Nomex | GFRP/Nomex | AFRP | CFRP/Al | Al/Al | | | | |
| 5732 | <input checked="" type="checkbox"/> | | | | | | | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

Good Best



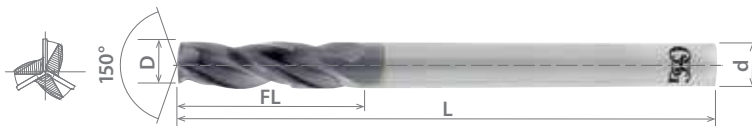


List HP700

Three Flute Drill

| | | | |
|---------------------------|----------------|--------------|------------|
| SPEED FEED P371 | CARBIDE | TiAIN | 30° |
|---------------------------|----------------|--------------|------------|

| |
|--------------------------------|
| Tolerance +0/-0.001" |
|--------------------------------|



| EDP Number | Approximate Hole Size | | | Drill Size | | Flute Length | Overall Length | Shank Diameter |
|------------|-----------------------|-----------|-------------|---------------|------------------|--------------|----------------|----------------|
| | Fractional Size | Wire Gage | Letter Size | D | | | | |
| | | | | mm | Inch | FL (mm) | L (mm) | d (mm) |
| HP700-0980 | - | #40 | - | 2.490 | 0.09800 | 12.7 | 38.1 | 2.48 |
| HP700-1285 | - | #30 | - | 3.260 | 0.12850 | | | 3.26 |
| HP700-1610 | - | #20 | - | 4.090 | 0.16100 | | | 4.08 |
| HP700-1910 | - | #11 | - | 4.850 | 0.19100 | | | 4.85 |
| HP700-2500 | 1/4 | - | - | 6.350 | 0.25000 | 15.8 | | 6.35 |
| HP700-2512 | 1/4 | - | - | 4.090 x 6.350 | #20 x 0.250 Step | | | |

Packed: 1 pc.
Available TiAIN coating only.
Tri-Flat shank available upon request.



| Work Material | | | | | | | | | | | | |
|---------------|-------------------------------------|--------------------|---------------------|------------|------------|------|---------|-------|---------------|-------------------------------------|-------------------------------------|-------------------------------------|
| List No. | Carbon Fiber (CFRP) | Glass Fiber (GFRP) | Aramid Fiber (AFRP) | Honeycomb | | | | | Carbon/Carbon | Carbon Fiber/Aluminum Stack | Carbon Fiber/Titanium Stack | Carbon Fiber/Al/Ti/CRES Stack |
| | | | | CFRP/Nomex | GFRP/Nomex | AFRP | CFRP/Al | Al/Al | | | | |
| HP700 | <input checked="" type="checkbox"/> | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

Good Best





CARBIDE AERO-D-REAM

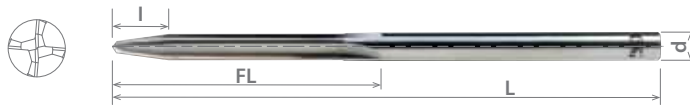
Carbide Drill/Reamer for Composites

List 257

Tapered Drill/Reamer

| | | | |
|---------------------------|----------------|-----------|-----------|
| SPEED FEED P369 | CARBIDE | BR | 0° |
|---------------------------|----------------|-----------|-----------|

| |
|---------------------------------|
| Tolerance +0.0005"/-0 |
|---------------------------------|



| EDP Number | Approximate Hole Size | | | | | Flute Length FL (mm) | Taper Length I (mm) | Overall Length L (mm) | Shank Diameter d (mm) | |
|------------|-----------------------|-----------|-------------|-------|---------|-------------------------|------------------------|--------------------------|--------------------------|------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | |
| 257-0980 | - | 40 | - | 2.489 | 0.09800 | 14.4 | 5.1 | 76.2 | 2.48 | |
| 257-1094 | 7/64 | - | - | 2.779 | 0.10940 | 16.1 | 5.6 | | 2.77 | |
| 257-1250 | 1/8 | - | - | 3.175 | 0.12500 | 18.4 | 6.4 | | 3.17 | |
| 257-1280 | - | - | - | 3.251 | 0.12800 | 31.9 | 6.5 | 152.4 | 3.25 | |
| 257-1285 | - | 30 | - | 3.264 | 0.12850 | 18.9 | 6.6 | 76.2 | 3.26 | |
| 257-1286 | - | - | - | 3.299 | 0.12990 | 32.0 | | 152.4 | 3.29 | |
| 257-1299 | - | - | - | 3.299 | 0.12990 | 19.2 | 7.2 | 76.2 | 3.29 | |
| 257-1406 | 9/64 | - | - | 3.571 | 0.14060 | 20.7 | | | 3.57 | |
| 257-1440 | - | 27 | - | 3.658 | 0.14400 | 21.2 | | | 3.65 | |
| 257-1562 | 5/32 | - | - | 3.970 | 0.15630 | 23.0 | 7.9 | 76.2 | 3.96 | |
| 257-1570 | - | 22 | - | 3.988 | 0.15700 | 23.2 | 8.0 | | 3.98 | |
| 257-1610 | - | 20 | - | 4.089 | 0.16100 | 23.7 | 8.2 | | 152.4 | 4.08 |
| 257-1616 | - | - | - | 4.140 | 0.16300 | 40.1 | | 4.14 | | |
| 257-1630 | - | - | - | 4.366 | 0.17190 | 24.1 | 8.3 | 76.2 | 4.36 | |
| 257-1719 | 11/64 | - | - | 4.366 | 0.17190 | 25.4 | 8.7 | | 4.74 | |
| 257-1870 | - | - | - | 4.750 | 0.18700 | 27.6 | 9.4 | | 4.76 | |
| 257-1875 | 3/16 | - | - | 4.763 | 0.18750 | 27.7 | 9.5 | 101.6 | 4.82 | |
| 257-1900 | - | - | - | 4.826 | 0.19000 | 47.3 | 9.6 | | 152.4 | 4.85 |
| 257-1906 | - | - | - | 4.851 | 0.19100 | 47.6 | | | 76.2 | 4.87 |
| 257-1916 | - | 11 | - | 4.877 | 0.19200 | 47.8 | 9.7 | 101.6 | 4.90 | |
| 257-1920 | - | - | - | 4.902 | 0.19300 | 48.1 | | | 4.91 | |
| 257-1930 | - | - | - | 4.915 | 0.19350 | 48.2 | | | 9.8 | 4.92 |
| 257-1935 | - | 10 | - | 4.928 | 0.19400 | 48.3 | 5.10 | | | |
| 257-1940 | - | - | - | 5.105 | 0.20100 | 50.1 | 10.1 | 101.6 | 5.15 | |
| 257-2010 | - | 7 | - | 5.159 | 0.20310 | 50.6 | 10.2 | | 5.18 | |
| 257-2031 | 13/64 | - | - | 5.182 | 0.20400 | 50.8 | 10.3 | | 5.21 | |
| 257-2040 | - | 6 | - | 5.220 | 0.20550 | 51.2 | 10.4 | 152.4 | 5.53 | |
| 257-2055 | - | 5 | - | 5.537 | 0.21800 | 54.3 | 11.0 | | 5.55 | |
| 257-2180 | - | - | - | 5.558 | 0.21880 | 54.5 | | | 5.61 | |
| 257-2188 | 7/32 | - | - | 5.613 | 0.22100 | 54.3 | 11.1 | 101.6 | 5.79 | |
| 257-2210 | - | 2 | - | 5.613 | 0.22100 | 55.1 | | | 5.95 | |
| 257-2280 | - | 1 | - | 5.791 | 0.22800 | 56.8 | | | 11.5 | 6.35 |
| 257-2344 | 15/64 | - | - | 5.954 | 0.23440 | 58.4 | 11.8 | 152.4 | 6.37 | |
| 257-2500 | - | - | - | 6.350 | 0.25000 | 54.3 | 12.5 | | 101.6 | 6.40 |
| 257-2506 | 1/4 | - | - | 6.375 | 0.25100 | 62.3 | 12.6 | | 152.4 | 6.42 |
| 257-2510 | - | - | - | 6.375 | 0.25100 | 62.6 | | 101.6 | 6.42 | |
| 257-2516 | - | - | - | 6.401 | 0.25200 | 62.8 | | 12.7 | 6.74 | |
| 257-2520 | - | - | - | 6.426 | 0.25300 | 63.0 | 13.3 | 101.6 | 7.14 | |
| 257-2530 | - | - | - | 6.746 | 0.26560 | 66.2 | | | 14.1 | 7.54 |
| 257-2656 | 17/64 | - | - | 7.145 | 0.28130 | 70.1 | | | 14.9 | 7.92 |
| 257-2812 | 9/32 | - | - | 7.541 | 0.29690 | 74.0 | 15.6 | 101.6 | 7.93 | |
| 257-2969 | 19/64 | - | - | 7.925 | 0.31200 | 46.1 | | | 15.7 | 8.33 |
| 257-3120 | - | - | - | 7.938 | 0.31250 | 46.2 | | | 16.4 | 8.73 |
| 257-3125 | 5/16 | - | - | 7.963 | 0.31350 | 46.3 | 17.2 | 101.6 | 8.89 | |
| 257-3135 | - | - | - | 8.334 | 0.32810 | 48.4 | | | 17.5 | 9.12 |
| 257-3280 | 21/64 | - | - | 8.733 | 0.34380 | 50.8 | | | 17.7 | 9.12 |
| 257-3438 | 11/32 | - | - | 8.733 | 0.34380 | 50.8 | 17.9 | 101.6 | 8.89 | |
| 257-3500 | - | - | - | 8.890 | 0.35000 | 51.7 | | | 17.5 | 9.12 |
| 257-3594 | 23/64 | - | - | 9.129 | 0.35940 | 53.1 | | | 17.9 | 9.12 |

Packed: 1 pc.
Brazed shanks available on request: Threaded, Quick Change and Tri-Flat.





List 257 (Continued)

Tapered Drill/Reamer

| | | | |
|-----------------------|---------|----|----|
| SPEED FEED P369 | CARBIDE | BR | 0° |
|-----------------------|---------|----|----|

| EDP Number | Approximate Hole Size | | | | | Flute Length FL (mm) | Taper Length l (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------------|-----------|-------------|--------|---------|-------------------------|------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 257-3750 | 3/8 | - | - | 9.525 | 0.37500 | 55.4 | 18.7 | 101.6 | 9.52 |
| 257-3756 | | - | - | | | 74.4 | | | |
| 257-3906 | 25/64 | - | - | 9.921 | 0.39060 | 77.4 | 19.4 | 152.4 | 9.90 |
| 257-4066 | 13/32 | - | - | 10.320 | 0.40630 | 80.6 | 20.2 | | 10.31 |
| 257-4376 | 7/16 | - | - | 11.113 | 0.43750 | 86.8 | 21.8 | | 11.11 |
| 257-5006 | 1/2 | - | - | 12.700 | 0.50000 | 99.3 | 24.9 | | 12.70 |

Packed: 1 pc.

Brazed shanks available on request: Threaded, Quick Change and Tri-Flat.



| Work Material | | | | | | | | | | | | |
|---------------|-------------------------------------|--------------------------|---------------------|-------------------------------------|-------------------------------------|------|-------------------------------------|-------------------------------------|-------------------------------------|-----------------------------|-----------------------------|-------------------------------|
| List No. | Carbon Fiber (CFRP) | Glass Fiber (GFRP) | Aramid Fiber (AFRP) | Honeycomb | | | | | Carbon/Carbon | Carbon Fiber/Aluminum Stack | Carbon Fiber/Titanium Stack | Carbon Fiber/Al/Ti/CRES Stack |
| | | | | CFRP/Nomex | GFRP/Nomex | AFRP | CFRP/Al | Al/Al | | | | |
| 257 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | |

good best





List HP243

3D



| | | | | |
|-------------------------------|----------------|------------|------------|--------------------|
| SPEED FEED P372-373 | CARBIDE | WD1 | 30° | SHANK h6 |
|-------------------------------|----------------|------------|------------|--------------------|

| Cutting Diameter Tolerance (m7) | | |
|---------------------------------|-----------------|-------------------|
| Size | mm | inch |
| 1 ≤ D ≤ 3 | +0.002 / +0.012 | +0.0001 / +0.0005 |
| 3 < D ≤ 6 | +0.004 / +0.016 | +0.0002 / +0.0006 |
| 6 < D ≤ 10 | +0.006 / +0.021 | +0.0002 / +0.0008 |
| 10 < D ≤ 18 | +0.007 / +0.025 | +0.0003 / +0.0010 |
| 18 < D ≤ 20 | +0.008 / +0.029 | +0.0003 / +0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | | | |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|---|---|---|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | | |
| HP243-0394 | - | - | - | 1.000 | 0.03937 | 7 | 35 | 3 | | | |
| HP243-0433 | - | - | - | 1.100 | 0.04331 | | | | | | |
| HP243-0469 | 3/64 | - | - | 1.191 | 0.04688 | | | | | | |
| HP243-0472 | - | - | - | 1.200 | 0.04724 | 8 | 35 | | 3 | | |
| HP243-0512 | - | - | - | 1.300 | 0.05118 | | | | | | |
| HP243-0551 | - | - | - | 1.400 | 0.05512 | | | | | | |
| HP243-0591 | - | - | - | 1.500 | 0.05906 | 9 | 35 | | | 3 | |
| HP243-0626 | 1/16 | - | - | 1.588 | 0.06250 | | | | | | |
| HP243-0630 | - | - | - | 1.600 | 0.06299 | | | | | | |
| HP243-0669 | - | - | - | 1.700 | 0.06693 | 10 | 40 | | | | 3 |
| HP243-0709 | - | - | - | 1.800 | 0.07087 | | | | | | |
| HP243-0748 | - | - | - | 1.900 | 0.07480 | | | | | | |
| HP243-0780 | 5/64 | - | - | 1.984 | 0.07813 | 11 | 40 | 3 | | | |
| HP243-0787 | - | - | - | 2.000 | 0.07874 | | | | | | |
| HP243-0827 | - | - | - | 2.100 | 0.08268 | | | | | | |
| HP243-0866 | - | - | - | 2.200 | 0.08661 | 13 | 45 | | 3 | | |
| HP243-0906 | - | - | - | 2.300 | 0.09055 | | | | | | |
| HP243-0937 | 3/32 | - | - | 2.381 | 0.09375 | | | | | | |
| HP243-0945 | - | - | - | 2.400 | 0.09449 | 15 | 50 | | | 3 | |
| HP243-0984 | - | - | - | 2.500 | 0.09843 | | | | | | |
| HP243-1024 | - | - | - | 2.600 | 0.10236 | | | | | | |
| HP243-1063 | - | - | - | 2.700 | 0.10630 | 17 | 50 | | | | 3 |
| HP243-1094 | 7/64 | - | - | 2.778 | 0.10938 | | | | | | |
| HP243-1102 | - | - | - | 2.800 | 0.11024 | | | | | | |
| HP243-1142 | - | - | - | 2.900 | 0.11417 | 20 | 62 | 3 | | | |
| HP243-1181 | - | - | - | 3.000 | 0.11811 | | | | | | |
| HP243-1220 | - | - | - | 3.100 | 0.12205 | | | | | | |
| HP243-1248 | 1/8 | - | - | 3.175 | 0.12500 | 20 | 62 | | 3 | | |
| HP243-1260 | - | - | - | 3.200 | 0.12598 | | | | | | |
| HP243-1299 | - | - | - | 3.300 | 0.12992 | | | | | | |
| HP243-1339 | - | - | - | 3.400 | 0.13386 | 24 | 66 | | | 6 | |
| HP243-1378 | - | - | - | 3.500 | 0.13780 | | | | | | |
| HP243-1406 | 9/64 | - | - | 3.572 | 0.14063 | | | | | | |
| HP243-1417 | - | - | - | 3.600 | 0.14173 | 24 | 66 | | | | 6 |
| HP243-1457 | - | - | - | 3.700 | 0.14567 | | | | | | |
| HP243-1496 | - | - | - | 3.800 | 0.14961 | | | | | | |
| HP243-1535 | - | - | - | 3.900 | 0.15354 | 28 | 66 | 6 | | | |
| HP243-1563 | 5/32 | - | - | 3.969 | 0.15625 | | | | | | |
| HP243-1575 | - | - | - | 4.000 | 0.15748 | | | | | | |
| HP243-1610 | - | 20 | - | 4.089 | 0.16100 | 28 | 66 | | 6 | | |
| HP243-1614 | - | - | - | 4.100 | 0.16142 | | | | | | |
| HP243-1654 | - | - | - | 4.200 | 0.16535 | | | | | | |
| HP243-1693 | - | - | - | 4.300 | 0.16929 | 28 | 66 | | | 6 | |
| HP243-1720 | 11/64 | - | - | 4.366 | 0.17188 | | | | | | |
| HP243-1732 | - | - | - | 4.400 | 0.17323 | | | | | | |
| HP243-1772 | - | - | - | 4.500 | 0.17717 | 28 | 66 | | | | 6 |
| HP243-1811 | - | - | - | 4.600 | 0.18110 | | | | | | |
| HP243-1831 | - | - | - | 4.650 | 0.18307 | | | | | | |
| HP243-1850 | - | - | - | 4.700 | 0.18504 | 28 | 66 | 6 | | | |
| HP243-1874 | 3/16 | - | - | 4.763 | 0.18750 | | | | | | |

Packed: 1 pc.
Available WD1 coating only.





List HP243 (Continued)



3D

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| HP243-1890 | - | - | - | 4.800 | 0.18898 | 28 | 66 | 6 |
| HP243-1929 | - | - | - | 4.900 | 0.19291 | | | |
| HP243-1969 | - | - | - | 5.000 | 0.19685 | | | |
| HP243-2008 | - | - | - | 5.100 | 0.20079 | | | |
| HP243-2031 | 13/64 | - | - | 5.159 | 0.20313 | | | |
| HP243-2047 | - | - | - | 5.200 | 0.20472 | | | |
| HP243-2087 | - | - | - | 5.300 | 0.20866 | | | |
| HP243-2126 | - | - | - | 5.400 | 0.21260 | | | |
| HP243-2130 | - | 3 | - | 5.410 | 0.21300 | | | |
| HP243-2165 | - | - | - | 5.500 | 0.21654 | | | |
| HP243-2189 | 7/32 | - | - | 5.556 | 0.21875 | | | |
| HP243-2205 | - | - | - | 5.600 | 0.22047 | | | |
| HP243-2244 | - | - | - | 5.700 | 0.22441 | | | |
| HP243-2283 | - | - | - | 5.800 | 0.22835 | | | |
| HP243-2323 | - | - | - | 5.900 | 0.23228 | | | |
| HP243-2343 | 15/64 | - | - | 5.953 | 0.23438 | | | |
| HP243-2362 | - | - | - | 6.000 | 0.23622 | | | |
| HP243-2402 | - | - | - | 6.100 | 0.24016 | | | |
| HP243-2441 | - | - | - | 6.200 | 0.24409 | | | |
| HP243-2480 | - | - | - | 6.300 | 0.24803 | | | |
| HP243-2500 | 1/4 | - | E | 6.350 | 0.25000 | | | |
| HP243-2520 | - | - | - | 6.400 | 0.25197 | | | |
| HP243-2559 | - | - | - | 6.500 | 0.25591 | | | |
| HP243-2571 | - | - | F | 6.528 | 0.25700 | | | |
| HP243-2598 | - | - | - | 6.600 | 0.25984 | | | |
| HP243-2638 | - | - | - | 6.700 | 0.26378 | | | |
| HP243-2657 | 17/64 | - | - | 6.747 | 0.26563 | | | |
| HP243-2677 | - | - | - | 6.800 | 0.26772 | | | |
| HP243-2717 | - | - | - | 6.900 | 0.27165 | | | |
| HP243-2756 | - | - | - | 7.000 | 0.27559 | | | |
| HP243-2795 | - | - | - | 7.100 | 0.27953 | | | |
| HP243-2811 | 9/32 | - | - | 7.144 | 0.28125 | | | |
| HP243-2835 | - | - | - | 7.200 | 0.28346 | | | |
| HP243-2874 | - | - | - | 7.300 | 0.28740 | | | |
| HP243-2913 | - | - | - | 7.400 | 0.29134 | | | |
| HP243-2953 | - | - | - | 7.500 | 0.29528 | | | |
| HP243-2969 | 19/64 | - | - | 7.541 | 0.29688 | | | |
| HP243-2992 | - | - | - | 7.600 | 0.29921 | | | |
| HP243-3031 | - | - | - | 7.700 | 0.30315 | | | |
| HP243-3071 | - | - | - | 7.800 | 0.30709 | | | |
| HP243-3110 | - | - | - | 7.900 | 0.31102 | | | |
| HP243-3126 | 5/16 | - | - | 7.938 | 0.31250 | | | |
| HP243-3150 | - | - | - | 8.000 | 0.31496 | | | |
| HP243-3189 | - | - | - | 8.100 | 0.31890 | | | |
| HP243-3228 | - | - | - | 8.200 | 0.32283 | | | |
| HP243-3268 | - | - | - | 8.300 | 0.32677 | | | |

Packed: 1 pc.
Available WD1 coating only.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------|-----|---------|-------------------------------------|--------------|--------------------------|--------------|-------------------------------------|--------------------------|--------------|--------------|--------------|
| | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| HP243 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |

good best





List HP243 (Continued)

3D



| | | | | |
|-------------------------------|----------------|------------|------------|--------------------|
| SPEED FEED P372-373 | CARBIDE | WD1 | 30° | SHANK h6 |
|-------------------------------|----------------|------------|------------|--------------------|

| Cutting Diameter Tolerance (m7) | | |
|---------------------------------|-----------------|-------------------|
| Size | mm | inch |
| 1≤D≤3 | +0.002 / +0.012 | +0.0001 / +0.0005 |
| 3<D≤6 | +0.004 / +0.016 | +0.0002 / +0.0006 |
| 6<D≤10 | +0.006 / +0.021 | +0.0002 / +0.0008 |
| 10<D≤18 | +0.007 / +0.025 | +0.0003 / +0.0010 |
| 18<D≤20 | +0.008 / +0.029 | +0.0003 / +0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| HP243-3280 | 21/64 | - | - | 8.334 | 0.32813 | 47 | 89 | 10 |
| HP243-3307 | - | - | - | 8.400 | 0.33071 | | | |
| HP243-3319 | - | - | Q | 8.433 | 0.33200 | | | |
| HP243-3346 | - | - | - | 8.500 | 0.33465 | | | |
| HP243-3386 | - | - | - | 8.600 | 0.33858 | | | |
| HP243-3425 | - | - | - | 8.700 | 0.34252 | | | |
| HP243-3437 | 11/32 | - | - | 8.731 | 0.34375 | | | |
| HP243-3465 | - | - | - | 8.800 | 0.34646 | | | |
| HP243-3504 | - | - | - | 8.900 | 0.35039 | | | |
| HP243-3543 | - | - | - | 9.000 | 0.35433 | | | |
| HP243-3583 | - | - | - | 9.100 | 0.35827 | | | |
| HP243-3594 | 23/64 | - | - | 9.128 | 0.35938 | | | |
| HP243-3622 | - | - | - | 9.200 | 0.36220 | | | |
| HP243-3642 | - | - | - | 9.250 | 0.36417 | | | |
| HP243-3661 | - | - | - | 9.300 | 0.36614 | | | |
| HP243-3701 | - | - | - | 9.400 | 0.37008 | | | |
| HP243-3740 | - | - | - | 9.500 | 0.37402 | | | |
| HP243-3748 | 3/8 | - | - | 9.525 | 0.37500 | | | |
| HP243-3780 | - | - | - | 9.600 | 0.37795 | | | |
| HP243-3819 | - | - | - | 9.700 | 0.38189 | | | |
| HP243-3858 | - | - | - | 9.800 | 0.38583 | | | |
| HP243-3898 | - | - | - | 9.900 | 0.38976 | | | |
| HP243-3906 | 25/64 | - | - | 9.922 | 0.39063 | | | |
| HP243-3937 | - | - | - | 10.000 | 0.39370 | | | |
| HP243-3976 | - | - | - | 10.100 | 0.39764 | | | |
| HP243-4016 | - | - | - | 10.200 | 0.40157 | | | |
| HP243-4055 | - | - | - | 10.300 | 0.40551 | | | |
| HP243-4063 | 13/32 | - | - | 10.319 | 0.40625 | | | |
| HP243-4094 | - | - | - | 10.400 | 0.40945 | | | |
| HP243-4134 | - | - | - | 10.500 | 0.41339 | | | |
| HP243-4173 | - | - | - | 10.600 | 0.41732 | | | |
| HP243-4213 | - | - | - | 10.700 | 0.42126 | | | |
| HP243-4220 | 27/64 | - | - | 10.716 | 0.42188 | | | |
| HP243-4252 | - | - | - | 10.800 | 0.42520 | | | |
| HP243-4291 | - | - | - | 10.900 | 0.42913 | | | |
| HP243-4331 | - | - | - | 11.000 | 0.43307 | | | |
| HP243-4370 | - | - | - | 11.100 | 0.43701 | | | |
| HP243-4374 | 7/16 | - | - | 11.113 | 0.43750 | | | |
| HP243-4409 | - | - | - | 11.200 | 0.44094 | | | |
| HP243-4449 | - | - | - | 11.300 | 0.44488 | | | |
| HP243-4488 | - | - | - | 11.400 | 0.44882 | | | |
| HP243-4528 | - | - | - | 11.500 | 0.45276 | | | |
| HP243-4531 | 29/64 | - | - | 11.509 | 0.45313 | | | |
| HP243-4567 | - | - | - | 11.600 | 0.45669 | | | |
| HP243-4606 | - | - | - | 11.700 | 0.46063 | | | |
| HP243-4646 | - | - | - | 11.800 | 0.46457 | | | |
| HP243-4685 | - | - | - | 11.900 | 0.46850 | | | |
| HP243-4689 | 15/32 | - | - | 11.906 | 0.46875 | | | |
| HP243-4724 | - | - | - | 12.000 | 0.47244 | | | |
| | | | | | | 55 | 102 | 12 |

Packed: 1 pc.
Available WD1 coating only.





List HP243 (Continued)

| | | | | |
|------------------------|---------|-----|-----|-------------|
| SPEED FEED P372-373 | CARBIDE | WD1 | 30° | SHANK h6 |
|------------------------|---------|-----|-----|-------------|

3D

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| HP243-4764 | - | - | - | 12.100 | 0.47638 | 60 | 107 | 14 |
| HP243-4803 | - | - | - | 12.200 | 0.48031 | | | |
| HP243-4843 | 31/64 | - | - | 12.303 | 0.48438 | | | |
| HP243-4882 | - | - | - | 12.400 | 0.48819 | | | |
| HP243-4921 | - | - | - | 12.500 | 0.49213 | | | |
| HP243-4961 | - | - | - | 12.600 | 0.49606 | | | |
| HP243-5000 | 1/2 | - | - | 12.700 | 0.50000 | | | |
| HP243-5039 | - | - | - | 12.800 | 0.50394 | | | |
| HP243-5079 | - | - | - | 12.900 | 0.50787 | | | |
| HP243-5118 | - | - | - | 13.000 | 0.51181 | | | |
| HP243-5157 | 33/64 | - | - | 13.097 | 0.51563 | | | |
| HP243-5197 | - | - | - | 13.200 | 0.51969 | | | |
| HP243-5236 | - | - | - | 13.300 | 0.52362 | | | |
| HP243-5276 | - | - | - | 13.400 | 0.52756 | | | |
| HP243-5311 | 17/32 | - | - | 13.494 | 0.53125 | | | |
| HP243-5315 | - | - | - | 13.500 | 0.53150 | | | |
| HP243-5394 | - | - | - | 13.700 | 0.53937 | | | |
| HP243-5512 | - | - | - | 14.000 | 0.55118 | | | |
| HP243-5626 | 9/16 | - | - | 14.288 | 0.56250 | | | |
| HP243-5709 | - | - | - | 14.500 | 0.57087 | | | |
| HP243-5780 | 37/64 | - | - | 14.684 | 0.57813 | | | |
| HP243-5787 | - | - | - | 14.700 | 0.57874 | | | |
| HP243-5906 | - | - | - | 15.000 | 0.59055 | | | |
| HP243-5937 | 19/32 | - | - | 15.081 | 0.59375 | | | |
| HP243-6102 | - | - | - | 15.500 | 0.61024 | | | |
| HP243-6181 | - | - | - | 15.700 | 0.61811 | | | |
| HP243-6248 | 5/8 | - | - | 15.875 | 0.62500 | | | |
| HP243-6299 | - | - | - | 16.000 | 0.62992 | | | |
| HP243-6339 | - | - | - | 16.100 | 0.63386 | | | |
| HP243-6496 | - | - | - | 16.500 | 0.64961 | | | |
| HP243-6563 | 21/32 | - | - | 16.669 | 0.65625 | | | |
| HP243-6693 | - | - | - | 17.000 | 0.66929 | | | |
| HP243-6890 | - | - | - | 17.500 | 0.68898 | | | |
| HP243-7087 | - | - | - | 18.000 | 0.70866 | | | |
| HP243-7283 | - | - | - | 18.500 | 0.72835 | | | |
| HP243-7480 | - | - | - | 19.000 | 0.74803 | | | |
| HP243-7500 | 3/4 | - | - | 19.050 | 0.75000 | | | |
| HP243-7579 | - | - | - | 19.250 | 0.75787 | | | |
| HP243-7677 | - | - | - | 19.500 | 0.76772 | | | |
| HP243-7874 | - | - | - | 20.000 | 0.78740 | | | |

Packed: 1 pc.
Available WD1 coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------|-----|---------|-------------------------------------|--------------|--------------------------|-------------------------|-------------------------------------|--------------------------|--------------|--------------|--------------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| HP243 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |

good best





List HP245

5D



| | | | | |
|-------------------------------|----------------|------------|------------|--------------------|
| SPEED FEED P372-373 | CARBIDE | WD1 | 30° | SHANK h6 |
|-------------------------------|----------------|------------|------------|--------------------|

| Cutting Diameter Tolerance (m7) | | |
|---------------------------------|-----------------|-------------------|
| Size | mm | inch |
| 1 ≤ D ≤ 3 | +0.002 / +0.012 | +0.0001 / +0.0005 |
| 3 < D ≤ 6 | +0.004 / +0.016 | +0.0002 / +0.0006 |
| 6 < D ≤ 10 | +0.006 / +0.021 | +0.0002 / +0.0008 |
| 10 < D ≤ 18 | +0.007 / +0.025 | +0.0003 / +0.0010 |
| 18 < D ≤ 20 | +0.008 / +0.029 | +0.0003 / +0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| HP245-0394 | - | - | - | 1.000 | 0.03937 | 9 | 38 | 3 |
| HP245-0433 | - | - | - | 1.100 | 0.04331 | | | |
| HP245-0469 | 3/64 | - | - | 1.191 | 0.04688 | | | |
| HP245-0472 | - | - | - | 1.200 | 0.04724 | | | |
| HP245-0512 | - | - | - | 1.300 | 0.05118 | 11 | | |
| HP245-0551 | - | - | - | 1.400 | 0.05512 | | | |
| HP245-0591 | - | - | - | 1.500 | 0.05906 | 12 | | |
| HP245-0626 | 1/16 | - | - | 1.588 | 0.06250 | | | |
| HP245-0630 | - | - | - | 1.600 | 0.06299 | 14 | | |
| HP245-0669 | - | - | - | 1.700 | 0.06693 | | | |
| HP245-0709 | - | - | - | 1.800 | 0.07087 | 16 | | |
| HP245-0748 | - | - | - | 1.900 | 0.07480 | | | |
| HP245-0780 | 5/64 | - | - | 1.984 | 0.07813 | 18 | 52 | |
| HP245-0787 | - | - | - | 2.000 | 0.07874 | | 50 | |
| HP245-0827 | - | - | - | 2.100 | 0.08268 | 20 | | |
| HP245-0866 | - | - | - | 2.200 | 0.08661 | | | |
| HP245-0906 | - | - | - | 2.300 | 0.09055 | 22 | | |
| HP245-0937 | 3/32 | - | - | 2.381 | 0.09375 | | | |
| HP245-0945 | - | - | - | 2.400 | 0.09449 | 23 | | |
| HP245-0984 | - | - | - | 2.500 | 0.09843 | | | |
| HP245-1024 | - | - | - | 2.600 | 0.10236 | 28 | | |
| HP245-1063 | - | - | - | 2.700 | 0.10630 | | | |
| HP245-1094 | 7/64 | - | - | 2.778 | 0.10938 | 28 | | |
| HP245-1102 | - | - | - | 2.800 | 0.11024 | | | |
| HP245-1142 | - | - | - | 2.900 | 0.11417 | 36 | | |
| HP245-1181 | - | - | - | 3.000 | 0.11811 | | | |
| HP245-1220 | - | - | - | 3.100 | 0.12205 | 36 | | |
| HP245-1248 | 1/8 | - | - | 3.175 | 0.12500 | | | |
| HP245-1260 | - | - | - | 3.200 | 0.12598 | 36 | | |
| HP245-1299 | - | - | - | 3.300 | 0.12992 | | | |
| HP245-1339 | - | - | - | 3.400 | 0.13386 | 36 | | |
| HP245-1378 | - | - | - | 3.500 | 0.13780 | | | |
| HP245-1406 | 9/64 | - | - | 3.572 | 0.14063 | 36 | | |
| HP245-1417 | - | - | - | 3.600 | 0.14173 | | | |
| HP245-1457 | - | - | - | 3.700 | 0.14567 | 36 | | |
| HP245-1496 | - | - | - | 3.800 | 0.14961 | | | |
| HP245-1535 | - | - | - | 3.900 | 0.15354 | 36 | | |
| HP245-1563 | 5/32 | - | - | 3.969 | 0.15625 | | | |
| HP245-1575 | - | - | - | 4.000 | 0.15748 | 36 | | |
| HP245-1610 | - | 20 | - | 4.089 | 0.16100 | | | |
| HP245-1614 | - | - | - | 4.100 | 0.16142 | 36 | | |
| HP245-1654 | - | - | - | 4.200 | 0.16535 | | | |
| HP245-1693 | - | - | - | 4.300 | 0.16929 | 36 | | |
| HP245-1720 | 11/64 | - | - | 4.366 | 0.17188 | | | |
| HP245-1732 | - | - | - | 4.400 | 0.17323 | 36 | | |
| HP245-1772 | - | - | - | 4.500 | 0.17717 | | | |
| HP245-1811 | - | - | - | 4.600 | 0.18110 | 36 | | |
| HP245-1831 | - | - | - | 4.650 | 0.18307 | | | |
| HP245-1850 | - | - | - | 4.700 | 0.18504 | 36 | | |
| HP245-1874 | 3/16 | - | - | 4.763 | 0.18750 | | | |
| | | | | | | 44 | 82 | |

Packed: 1 pc.
Available WD1 coating only.





List HP245 (Continued)

5D

| | | | | |
|------------------------|---------|-----|-----|-------------|
| SPEED FEED P372-373 | CARBIDE | WD1 | 30° | SHANK h6 |
|------------------------|---------|-----|-----|-------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| HP245-1890 | - | - | - | 4.800 | 0.18898 | 44 | 82 | 6 |
| HP245-1929 | - | - | - | 4.900 | 0.19291 | | | |
| HP245-1969 | - | - | - | 5.000 | 0.19685 | | | |
| HP245-2008 | - | - | - | 5.100 | 0.20079 | | | |
| HP245-2031 | 13/64 | - | - | 5.159 | 0.20313 | | | |
| HP245-2047 | - | - | - | 5.200 | 0.20472 | | | |
| HP245-2087 | - | - | - | 5.300 | 0.20866 | | | |
| HP245-2126 | - | - | - | 5.400 | 0.21260 | | | |
| HP245-2130 | - | 3 | - | 5.410 | 0.21300 | | | |
| HP245-2165 | - | - | - | 5.500 | 0.21654 | | | |
| HP245-2189 | 7/32 | - | - | 5.556 | 0.21875 | | | |
| HP245-2205 | - | - | - | 5.600 | 0.22047 | | | |
| HP245-2244 | - | - | - | 5.700 | 0.22441 | | | |
| HP245-2283 | - | - | - | 5.800 | 0.22835 | | | |
| HP245-2323 | - | - | - | 5.900 | 0.23228 | | | |
| HP245-2343 | 15/64 | - | - | 5.953 | 0.23438 | | | |
| HP245-2362 | - | - | - | 6.000 | 0.23622 | | | |
| HP245-2402 | - | - | - | 6.100 | 0.24016 | | | |
| HP245-2441 | - | - | - | 6.200 | 0.24409 | | | |
| HP245-2480 | - | - | - | 6.300 | 0.24803 | | | |
| HP245-2500 | 1/4 | - | E | 6.350 | 0.25000 | | | |
| HP245-2520 | - | - | - | 6.400 | 0.25197 | | | |
| HP245-2559 | - | - | - | 6.500 | 0.25591 | | | |
| HP245-2571 | - | - | F | 6.528 | 0.25700 | | | |
| HP245-2598 | - | - | - | 6.600 | 0.25984 | | | |
| HP245-2638 | - | - | - | 6.700 | 0.26378 | | | |
| HP245-2657 | 17/64 | - | - | 6.747 | 0.26563 | | | |
| HP245-2677 | - | - | - | 6.800 | 0.26772 | | | |
| HP245-2717 | - | - | - | 6.900 | 0.27165 | | | |
| HP245-2756 | - | - | - | 7.000 | 0.27559 | | | |
| HP245-2795 | - | - | - | 7.100 | 0.27953 | | | |
| HP245-2811 | 9/32 | - | - | 7.144 | 0.28125 | | | |
| HP245-2835 | - | - | - | 7.200 | 0.28346 | | | |
| HP245-2874 | - | - | - | 7.300 | 0.28740 | | | |
| HP245-2913 | - | - | - | 7.400 | 0.29134 | | | |
| HP245-2953 | - | - | - | 7.500 | 0.29528 | | | |
| HP245-2969 | 19/64 | - | - | 7.541 | 0.29688 | | | |
| HP245-2992 | - | - | - | 7.600 | 0.29921 | | | |
| HP245-3031 | - | - | - | 7.700 | 0.30315 | | | |
| HP245-3071 | - | - | - | 7.800 | 0.30709 | | | |
| HP245-3110 | - | - | - | 7.900 | 0.31102 | | | |
| HP245-3126 | 5/16 | - | - | 7.938 | 0.31250 | | | |
| HP245-3150 | - | - | - | 8.000 | 0.31496 | | | |
| HP245-3189 | - | - | - | 8.100 | 0.31890 | | | |
| HP245-3228 | - | - | - | 8.200 | 0.32283 | | | |
| HP245-3268 | - | - | - | 8.300 | 0.32677 | | | |
| | | | | | | 61 | 103 | 10 |

Packed: 1 pc.
Available WD1 coating only.

continued on next page

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------|-----|---------|-------------------------------------|--------------|--------------------------|--------------|-------------------------------------|--------------------------|--------------|--------------|--------------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| HP245 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |

good best





List HP245 (Continued)

5D



| | | | | |
|-------------------------------|----------------|------------|------------|--------------------|
| SPEED FEED P372-373 | CARBIDE | WD1 | 30° | SHANK h6 |
|-------------------------------|----------------|------------|------------|--------------------|

| Cutting Diameter Tolerance (m7) | | |
|---------------------------------|-----------------|-------------------|
| Size | mm | inch |
| 1 ≤ D ≤ 3 | +0.002 / +0.012 | +0.0001 / +0.0005 |
| 3 < D ≤ 6 | +0.004 / +0.016 | +0.0002 / +0.0006 |
| 6 < D ≤ 10 | +0.006 / +0.021 | +0.0002 / +0.0008 |
| 10 < D ≤ 18 | +0.007 / +0.025 | +0.0003 / +0.0010 |
| 18 < D ≤ 20 | +0.008 / +0.029 | +0.0003 / +0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| HP245-3280 | 21/64 | - | - | 8.334 | 0.32813 | 61 | 103 | 10 |
| HP245-3307 | - | - | - | 8.400 | 0.33071 | | | |
| HP245-3319 | - | - | Q | 8.433 | 0.33200 | | | |
| HP245-3346 | - | - | - | 8.500 | 0.33465 | | | |
| HP245-3386 | - | - | - | 8.600 | 0.33858 | | | |
| HP245-3425 | - | - | - | 8.700 | 0.34252 | | | |
| HP245-3437 | 11/32 | - | - | 8.731 | 0.34375 | | | |
| HP245-3465 | - | - | - | 8.800 | 0.34646 | | | |
| HP245-3504 | - | - | - | 8.900 | 0.35039 | | | |
| HP245-3543 | - | - | - | 9.000 | 0.35433 | | | |
| HP245-3583 | - | - | - | 9.100 | 0.35827 | | | |
| HP245-3594 | 23/64 | - | - | 9.128 | 0.35938 | | | |
| HP245-3622 | - | - | - | 9.200 | 0.36220 | | | |
| HP245-3642 | - | - | - | 9.250 | 0.36417 | | | |
| HP245-3661 | - | - | - | 9.300 | 0.36614 | | | |
| HP245-3701 | - | - | - | 9.400 | 0.37008 | | | |
| HP245-3740 | - | - | - | 9.500 | 0.37402 | | | |
| HP245-3748 | 3/8 | - | - | 9.525 | 0.37500 | | | |
| HP245-3780 | - | - | - | 9.600 | 0.37795 | | | |
| HP245-3819 | - | - | - | 9.700 | 0.38189 | | | |
| HP245-3858 | - | - | - | 9.800 | 0.38583 | | | |
| HP245-3898 | - | - | - | 9.900 | 0.38976 | | | |
| HP245-3906 | 25/64 | - | - | 9.922 | 0.39063 | | | |
| HP245-3937 | - | - | - | 10.000 | 0.39370 | | | |
| HP245-3976 | - | - | - | 10.100 | 0.39764 | | | |
| HP245-4016 | - | - | - | 10.200 | 0.40157 | | | |
| HP245-4055 | - | - | - | 10.300 | 0.40551 | | | |
| HP245-4063 | 13/32 | - | - | 10.319 | 0.40625 | | | |
| HP245-4094 | - | - | - | 10.400 | 0.40945 | | | |
| HP245-4134 | - | - | - | 10.500 | 0.41339 | | | |
| HP245-4173 | - | - | - | 10.600 | 0.41732 | | | |
| HP245-4213 | - | - | - | 10.700 | 0.42126 | | | |
| HP245-4220 | 27/64 | - | - | 10.716 | 0.42188 | | | |
| HP245-4252 | - | - | - | 10.800 | 0.42520 | | | |
| HP245-4291 | - | - | - | 10.900 | 0.42913 | | | |
| HP245-4331 | - | - | - | 11.000 | 0.43307 | | | |
| HP245-4370 | - | - | - | 11.100 | 0.43701 | | | |
| HP245-4374 | 7/16 | - | - | 11.113 | 0.43750 | | | |
| HP245-4409 | - | - | - | 11.200 | 0.44094 | | | |
| HP245-4449 | - | - | - | 11.300 | 0.44488 | | | |
| HP245-4488 | - | - | - | 11.400 | 0.44882 | | | |
| HP245-4528 | - | - | - | 11.500 | 0.45276 | | | |
| HP245-4531 | 29/64 | - | - | 11.509 | 0.45313 | | | |
| HP245-4567 | - | - | - | 11.600 | 0.45669 | | | |
| HP245-4606 | - | - | - | 11.700 | 0.46063 | | | |
| HP245-4646 | - | - | - | 11.800 | 0.46457 | | | |
| HP245-4685 | - | - | - | 11.900 | 0.46850 | | | |
| HP245-4689 | 15/32 | - | - | 11.906 | 0.46875 | | | |
| HP245-4724 | - | - | - | 12.000 | 0.47244 | | | |

Packed: 1 pc.
Available WD1 coating only.





List HP245 (Continued)

5D

| | | | | |
|---------------------------|---------|-----|-----|-------------|
| SPEED FEED P372-373 | CARBIDE | WD1 | 30° | SHANK h6 |
|---------------------------|---------|-----|-----|-------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| HP245-4764 | - | - | - | 12.100 | 0.47638 | 77 | 124 | 14 |
| HP245-4803 | - | - | - | 12.200 | 0.48031 | | | |
| HP245-4843 | 31/64 | - | - | 12.303 | 0.48438 | | | |
| HP245-4882 | - | - | - | 12.400 | 0.48819 | | | |
| HP245-4921 | - | - | - | 12.500 | 0.49213 | | | |
| HP245-4961 | - | - | - | 12.600 | 0.49606 | | | |
| HP245-5000 | 1/2 | - | - | 12.700 | 0.50000 | | | |
| HP245-5039 | - | - | - | 12.800 | 0.50394 | | | |
| HP245-5079 | - | - | - | 12.900 | 0.50787 | | | |
| HP245-5118 | - | - | - | 13.000 | 0.51181 | | | |
| HP245-5157 | 33/64 | - | - | 13.097 | 0.51563 | | | |
| HP245-5197 | - | - | - | 13.200 | 0.51969 | | | |
| HP245-5236 | - | - | - | 13.300 | 0.52362 | | | |
| HP245-5394 | - | - | - | 13.700 | 0.53937 | | | |
| HP245-5276 | - | - | - | 13.400 | 0.52756 | | | |
| HP245-5311 | 17/32 | - | - | 13.494 | 0.53125 | | | |
| HP245-5315 | - | - | - | 13.500 | 0.53150 | | | |
| HP245-5512 | - | - | - | 14.000 | 0.55118 | | | |
| HP245-5626 | 9/16 | - | - | 14.288 | 0.56250 | | | |
| HP245-5709 | - | - | - | 14.500 | 0.57087 | | | |
| HP245-5780 | 37/64 | - | - | 14.684 | 0.57813 | | | |
| HP245-5787 | - | - | - | 14.700 | 0.57874 | | | |
| HP245-5906 | - | - | - | 15.000 | 0.59055 | | | |
| HP245-5937 | 19/32 | - | - | 15.081 | 0.59375 | | | |
| HP245-6102 | - | - | - | 15.500 | 0.61024 | | | |
| HP245-6181 | - | - | - | 15.700 | 0.61811 | | | |
| HP245-6248 | 5/8 | - | - | 15.875 | 0.62500 | | | |
| HP245-6299 | - | - | - | 16.000 | 0.62992 | | | |
| HP245-6339 | - | - | - | 16.100 | 0.63386 | | | |
| HP245-6496 | - | - | - | 16.500 | 0.64961 | | | |
| HP245-6563 | 21/32 | - | - | 16.669 | 0.65625 | | | |
| HP245-6693 | - | - | - | 17.000 | 0.66929 | | | |
| HP245-6890 | - | - | - | 17.500 | 0.68898 | | | |
| HP245-7087 | - | - | - | 18.000 | 0.70866 | | | |
| HP245-7283 | - | - | - | 18.500 | 0.72835 | | | |
| HP245-7480 | - | - | - | 19.000 | 0.74803 | | | |
| HP245-7500 | 3/4 | - | - | 19.050 | 0.75000 | | | |
| HP245-7579 | - | - | - | 19.250 | 0.75787 | | | |
| HP245-7677 | - | - | - | 19.500 | 0.76772 | | | |
| HP245-7874 | - | - | - | 20.000 | 0.78740 | | | |

Packed: 1 pc.
Available WD1 coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------|-----|---------|-------------------------------------|--------------|--------------------------|-------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| HP245 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best





HY-PRO[®] CARB

Performance Coolant-Through Carbide Drills

List HP253

3D, Coolant-Through

| | | | | | |
|-------------------------------|----------------|------------|--|------------|--------------------|
| SPEED FEED P374-375 | CARBIDE | WD1 | | 30° | SHANK h6 |
|-------------------------------|----------------|------------|--|------------|--------------------|



| Cutting Diameter Tolerance (m7) | | |
|---------------------------------|-----------------|-------------------|
| Size | mm | inch |
| D=3 | +0.002 / +0.012 | +0.0001 / +0.0005 |
| 3<D≤6 | +0.004 / +0.016 | +0.0002 / +0.0006 |
| 6<D≤10 | +0.006 / +0.021 | +0.0002 / +0.0008 |
| 10<D≤18 | +0.007 / +0.025 | +0.0003 / +0.0010 |
| 18<D≤20 | +0.008 / +0.029 | +0.0003 / +0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| HP253-1181 | - | - | - | 3.000 | 0.11811 | 20 | 62 | 6 |
| HP253-1220 | - | - | - | 3.100 | 0.12205 | | | |
| HP253-1248 | 1/8 | - | - | 3.175 | 0.12500 | | | |
| HP253-1260 | - | - | - | 3.200 | 0.12598 | | | |
| HP253-1299 | - | - | - | 3.300 | 0.12992 | | | |
| HP253-1339 | - | - | - | 3.400 | 0.13386 | | | |
| HP253-1378 | - | - | - | 3.500 | 0.13780 | | | |
| HP253-1406 | 9/64 | - | - | 3.572 | 0.14063 | | | |
| HP253-1417 | - | - | - | 3.600 | 0.14173 | | | |
| HP253-1457 | - | - | - | 3.700 | 0.14567 | | | |
| HP253-1496 | - | - | - | 3.800 | 0.14961 | | | |
| HP253-1535 | - | - | - | 3.900 | 0.15354 | | | |
| HP253-1563 | 5/32 | - | - | 3.969 | 0.15625 | | | |
| HP253-1575 | - | - | - | 4.000 | 0.15748 | | | |
| HP253-1610 | - | 20 | - | 4.089 | 0.16100 | | | |
| HP253-1614 | - | - | - | 4.100 | 0.16142 | | | |
| HP253-1654 | - | - | - | 4.200 | 0.16535 | | | |
| HP253-1693 | - | - | - | 4.300 | 0.16929 | | | |
| HP253-1720 | 11/64 | - | - | 4.366 | 0.17188 | | | |
| HP253-1732 | - | - | - | 4.400 | 0.17323 | | | |
| HP253-1772 | - | - | - | 4.500 | 0.17717 | | | |
| HP253-1811 | - | - | - | 4.600 | 0.18110 | | | |
| HP253-1831 | - | - | - | 4.650 | 0.18307 | | | |
| HP253-1850 | - | - | - | 4.700 | 0.18504 | | | |
| HP253-1874 | 3/16 | - | - | 4.763 | 0.18750 | | | |
| HP253-1890 | - | - | - | 4.800 | 0.18898 | | | |
| HP253-1929 | - | - | - | 4.900 | 0.19291 | | | |
| HP253-1969 | - | - | - | 5.000 | 0.19685 | | | |
| HP253-2008 | - | - | - | 5.100 | 0.20079 | | | |
| HP253-2031 | 13/64 | - | - | 5.159 | 0.20313 | | | |
| HP253-2047 | - | - | - | 5.200 | 0.20472 | | | |
| HP253-2087 | - | - | - | 5.300 | 0.20866 | | | |
| HP253-2126 | - | - | - | 5.400 | 0.21260 | | | |
| HP253-2130 | - | 3 | - | 5.410 | 0.21300 | | | |
| HP253-2165 | - | - | - | 5.500 | 0.21654 | | | |
| HP253-2189 | 7/32 | - | - | 5.556 | 0.21875 | | | |
| HP253-2205 | - | - | - | 5.600 | 0.22047 | | | |
| HP253-2244 | - | - | - | 5.700 | 0.22441 | | | |
| HP253-2283 | - | - | - | 5.800 | 0.22835 | | | |
| HP253-2323 | - | - | - | 5.900 | 0.23228 | | | |
| HP253-2343 | 15/64 | - | - | 5.953 | 0.23438 | | | |
| HP253-2362 | - | - | - | 6.000 | 0.23622 | | | |
| HP253-2402 | - | - | - | 6.100 | 0.24016 | | | |
| HP253-2441 | - | - | - | 6.200 | 0.24409 | | | |
| HP253-2480 | - | - | - | 6.300 | 0.24803 | | | |
| HP253-2500 | 1/4 | - | E | 6.350 | 0.25000 | | | |
| HP253-2520 | - | - | - | 6.400 | 0.25197 | | | |
| HP253-2559 | - | - | - | 6.500 | 0.25591 | | | |
| HP253-2571 | - | - | F | 6.528 | 0.25700 | | | |
| HP253-2598 | - | - | - | 6.600 | 0.25984 | | | |

Packed: 1 pc.
Available WD1 coating only.



List HP253 (Continued)

3D, Coolant-Through



| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| HP253-2638 | - | - | - | 6.700 | 0.26378 | 34 | 79 | 8 |
| HP253-2657 | 17/64 | - | - | 6.747 | 0.26563 | | | |
| HP253-2677 | - | - | - | 6.800 | 0.26772 | | | |
| HP253-2717 | - | - | - | 6.900 | 0.27165 | | | |
| HP253-2756 | - | - | - | 7.000 | 0.27559 | | | |
| HP253-2795 | - | - | - | 7.100 | 0.27953 | | | |
| HP253-2811 | 9/32 | - | - | 7.144 | 0.28125 | | | |
| HP253-2835 | - | - | - | 7.200 | 0.28346 | | | |
| HP253-2874 | - | - | - | 7.300 | 0.28740 | | | |
| HP253-2913 | - | - | - | 7.400 | 0.29134 | | | |
| HP253-2953 | - | - | - | 7.500 | 0.29528 | | | |
| HP253-2969 | 19/64 | - | - | 7.541 | 0.29688 | | | |
| HP253-2992 | - | - | - | 7.600 | 0.29921 | | | |
| HP253-3031 | - | - | - | 7.700 | 0.30315 | | | |
| HP253-3071 | - | - | - | 7.800 | 0.30709 | | | |
| HP253-3110 | - | - | - | 7.900 | 0.31102 | | | |
| HP253-3126 | 5/16 | - | - | 7.938 | 0.31250 | | | |
| HP253-3150 | - | - | - | 8.000 | 0.31496 | | | |
| HP253-3189 | - | - | - | 8.100 | 0.31890 | | | |
| HP253-3228 | - | - | - | 8.200 | 0.32283 | | | |
| HP253-3268 | - | - | - | 8.300 | 0.32677 | | | |
| HP253-3280 | 21/64 | - | - | 8.334 | 0.32813 | | | |
| HP253-3307 | - | - | - | 8.400 | 0.33071 | | | |
| HP253-3319 | - | - | Q | 8.433 | 0.33200 | | | |
| HP253-3346 | - | - | - | 8.500 | 0.33465 | | | |
| HP253-3386 | - | - | - | 8.600 | 0.33858 | | | |
| HP253-3425 | - | - | - | 8.700 | 0.34252 | | | |
| HP253-3437 | 11/32 | - | - | 8.731 | 0.34375 | | | |
| HP253-3465 | - | - | - | 8.800 | 0.34646 | | | |
| HP253-3504 | - | - | - | 8.900 | 0.35039 | | | |
| HP253-3543 | - | - | - | 9.000 | 0.35433 | | | |
| HP253-3583 | - | - | - | 9.100 | 0.35827 | | | |
| HP253-3594 | 23/64 | - | - | 9.128 | 0.35938 | | | |
| HP253-3622 | - | - | - | 9.200 | 0.36220 | | | |
| HP253-3642 | - | - | - | 9.250 | 0.36417 | | | |
| HP253-3661 | - | - | - | 9.300 | 0.36614 | | | |
| HP253-3701 | - | - | - | 9.400 | 0.37008 | | | |
| HP253-3740 | - | - | - | 9.500 | 0.37402 | | | |
| HP253-3748 | 3/8 | - | - | 9.525 | 0.37500 | | | |
| HP253-3780 | - | - | - | 9.600 | 0.37795 | | | |
| HP253-3819 | - | - | - | 9.700 | 0.38189 | | | |
| HP253-3858 | - | - | - | 9.800 | 0.38583 | | | |
| HP253-3898 | - | - | - | 9.900 | 0.38976 | | | |
| HP253-3906 | 25/64 | - | - | 9.922 | 0.39063 | | | |
| HP253-3937 | - | - | - | 10.000 | 0.39370 | | | |
| HP253-3976 | - | - | - | 10.100 | 0.39764 | | | |
| | | | | | | 55 | 102 | 12 |

Packed: 1 pc.
Available WD1 coating only.

▶ continued on next page ▶

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| HP253 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List HP253 (Continued)

3D, Coolant-Through

| | | | | | |
|-------------------------------|----------------|------------|--|------------|--------------------|
| SPEED FEED P374-375 | CARBIDE | WD1 | | 30° | GRIND h6 |
|-------------------------------|----------------|------------|--|------------|--------------------|



| Cutting Diameter Tolerance (m7) | | |
|---------------------------------|-----------------|-------------------|
| Size | mm | inch |
| D=3 | +0.002 / +0.012 | +0.0001 / +0.0005 |
| 3<D≤6 | +0.004 / +0.016 | +0.0002 / +0.0006 |
| 6<D≤10 | +0.006 / +0.021 | +0.0002 / +0.0008 |
| 10<D≤18 | +0.007 / +0.025 | +0.0003 / +0.0010 |
| 18<D≤20 | +0.008 / +0.029 | +0.0003 / +0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| HP253-4016 | - | - | - | 10.200 | 0.40157 | 55 | 102 | 12 |
| HP253-4055 | - | - | - | 10.300 | 0.40551 | | | |
| HP253-4063 | 13/32 | - | - | 10.319 | 0.40625 | | | |
| HP253-4094 | - | - | - | 10.400 | 0.40945 | | | |
| HP253-4134 | - | - | - | 10.500 | 0.41339 | | | |
| HP253-4173 | - | - | - | 10.600 | 0.41732 | | | |
| HP253-4213 | - | - | - | 10.700 | 0.42126 | | | |
| HP253-4220 | 27/64 | - | - | 10.716 | 0.42188 | | | |
| HP253-4252 | - | - | - | 10.800 | 0.42520 | | | |
| HP253-4291 | - | - | - | 10.900 | 0.42913 | | | |
| HP253-4331 | - | - | - | 11.000 | 0.43307 | | | |
| HP253-4370 | - | - | - | 11.100 | 0.43701 | | | |
| HP253-4374 | 7/16 | - | - | 11.113 | 0.43750 | | | |
| HP253-4409 | - | - | - | 11.200 | 0.44094 | | | |
| HP253-4449 | - | - | - | 11.300 | 0.44488 | | | |
| HP253-4488 | - | - | - | 11.400 | 0.44882 | | | |
| HP253-4528 | - | - | - | 11.500 | 0.45276 | | | |
| HP253-4531 | 29/64 | - | - | 11.509 | 0.45313 | | | |
| HP253-4567 | - | - | - | 11.600 | 0.45669 | | | |
| HP253-4606 | - | - | - | 11.700 | 0.46063 | | | |
| HP253-4646 | - | - | - | 11.800 | 0.46457 | | | |
| HP253-4685 | - | - | - | 11.900 | 0.46850 | | | |
| HP253-4689 | 15/32 | - | - | 11.906 | 0.46875 | | | |
| HP253-4724 | - | - | - | 12.000 | 0.47244 | | | |
| HP253-4764 | - | - | - | 12.100 | 0.47638 | | | |
| HP253-4803 | - | - | - | 12.200 | 0.48031 | | | |
| HP253-4843 | 31/64 | - | - | 12.303 | 0.48438 | | | |
| HP253-4882 | - | - | - | 12.400 | 0.48819 | | | |
| HP253-4921 | - | - | - | 12.500 | 0.49213 | | | |
| HP253-4961 | - | - | - | 12.600 | 0.49606 | | | |
| HP253-5000 | 1/2 | - | - | 12.700 | 0.50000 | | | |
| HP253-5039 | - | - | - | 12.800 | 0.50394 | | | |
| HP253-5079 | - | - | - | 12.900 | 0.50787 | | | |
| HP253-5118 | - | - | - | 13.000 | 0.51181 | | | |
| HP253-5157 | 33/64 | - | - | 13.097 | 0.51563 | | | |
| HP253-5197 | - | - | - | 13.200 | 0.51969 | | | |
| HP253-5236 | - | - | - | 13.300 | 0.52362 | | | |
| HP253-5276 | - | - | - | 13.400 | 0.52756 | | | |
| HP253-5311 | 17/32 | - | - | 13.494 | 0.53125 | | | |
| HP253-5315 | - | - | - | 13.500 | 0.53150 | | | |
| HP253-5394 | - | - | - | 13.700 | 0.53937 | | | |
| HP253-5512 | - | - | - | 14.000 | 0.55118 | | | |
| HP253-5626 | 9/16 | - | - | 14.288 | 0.56250 | | | |
| HP253-5709 | - | - | - | 14.500 | 0.57087 | | | |
| HP253-5780 | 37/64 | - | - | 14.684 | 0.57813 | | | |
| HP253-5787 | - | - | - | 14.700 | 0.57874 | | | |
| HP253-5906 | - | - | - | 15.000 | 0.59055 | | | |
| HP253-5937 | 19/32 | - | - | 15.081 | 0.59375 | | | |
| HP253-6102 | - | - | - | 15.500 | 0.61024 | | | |
| HP253-6181 | - | - | - | 15.700 | 0.61811 | | | |
| | | | | | | 60 | 107 | 14 |
| | | | | | | 65 | 115 | 16 |

Packed: 1 pc.
Available WD1 coating only.





List HP253 (Continued)

3D, Coolant-Through

| | | | | | |
|-------------------------------|----------------|------------|--|------------|--------------------|
| SPEED FEED P374-375 | CARBIDE | WD1 | | 30° | SHANK h6 |
|-------------------------------|----------------|------------|--|------------|--------------------|

| EDP Number | Diameter | | | | | Flute Length | Overall Length | Shank Diameter |
|------------|-----------------|-----------|-------------|--------|---------|--------------|----------------|----------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | FL (mm) | L (mm) | d (mm) |
| HP253-6248 | 5/8 | - | - | 15.875 | 0.62500 | 65 | 115 | 16 |
| HP253-6299 | - | - | - | 16.000 | 0.62992 | | | |
| HP253-6339 | - | - | - | 16.100 | 0.63386 | | | |
| HP253-6496 | - | - | - | 16.500 | 0.64961 | 73 | 123 | 18 |
| HP253-6563 | 21/32 | - | - | 16.669 | 0.65625 | | | |
| HP253-6693 | - | - | - | 17.000 | 0.66929 | | | |
| HP253-6890 | - | - | - | 17.500 | 0.68898 | 79 | 131 | 20 |
| HP253-7087 | - | - | - | 18.000 | 0.70866 | | | |
| HP253-7283 | - | - | - | 18.500 | 0.72835 | | | |
| HP253-7480 | - | - | - | 19.000 | 0.74803 | 79 | 131 | 20 |
| HP253-7500 | 3/4 | - | - | 19.050 | 0.75000 | | | |
| HP253-7579 | - | - | - | 19.250 | 0.75787 | | | |
| HP253-7677 | - | - | - | 19.500 | 0.76772 | | | |
| HP253-7874 | - | - | - | 20.000 | 0.78740 | | | |

Packed: 1 pc.
Available WD1 coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| HP253 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List HP255

5D, Coolant-Through

| | | | | | |
|-------------------------------|----------------|------------|--|------------|--------------------|
| SPEED FEED P374-375 | CARBIDE | WD1 | | 30° | SHANK h6 |
|-------------------------------|----------------|------------|--|------------|--------------------|

| Cutting Diameter Tolerance (m7) | | |
|---------------------------------|-----------------|-------------------|
| Size | mm | inch |
| D=3 | +0.002 / +0.012 | +0.0001 / +0.0005 |
| 3<D≤6 | +0.004 / +0.016 | +0.0002 / +0.0006 |
| 6<D≤10 | +0.006 / +0.021 | +0.0002 / +0.0008 |
| 10<D≤18 | +0.007 / +0.025 | +0.0003 / +0.0010 |
| 18<D≤20 | +0.008 / +0.029 | +0.0003 / +0.0011 |



| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| HP255-1181 | - | - | - | 3.000 | 0.11811 | 28 | 66 | 6 |
| HP255-1220 | - | - | - | 3.100 | 0.12205 | | | |
| HP255-1248 | 1/8 | - | - | 3.175 | 0.12500 | | | |
| HP255-1260 | - | - | - | 3.200 | 0.12598 | | | |
| HP255-1299 | - | - | - | 3.300 | 0.12992 | | | |
| HP255-1339 | - | - | - | 3.400 | 0.13386 | | | |
| HP255-1378 | - | - | - | 3.500 | 0.13780 | | | |
| HP255-1406 | 9/64 | - | - | 3.572 | 0.14063 | | | |
| HP255-1417 | - | - | - | 3.600 | 0.14173 | | | |
| HP255-1457 | - | - | - | 3.700 | 0.14567 | | | |
| HP255-1496 | - | - | - | 3.800 | 0.14961 | | | |
| HP255-1535 | - | - | - | 3.900 | 0.15354 | | | |
| HP255-1563 | 5/32 | - | - | 3.969 | 0.15625 | 36 | 74 | 6 |
| HP255-1575 | - | - | - | 4.000 | 0.15748 | | | |
| HP255-1610 | - | 20 | - | 4.089 | 0.16100 | | | |
| HP255-1614 | - | - | - | 4.100 | 0.16142 | | | |
| HP255-1654 | - | - | - | 4.200 | 0.16535 | | | |
| HP255-1693 | - | - | - | 4.300 | 0.16929 | | | |
| HP255-1720 | 11/64 | - | - | 4.366 | 0.17188 | | | |
| HP255-1732 | - | - | - | 4.400 | 0.17323 | | | |
| HP255-1772 | - | - | - | 4.500 | 0.17717 | | | |
| HP255-1811 | - | - | - | 4.600 | 0.18110 | | | |
| HP255-1831 | - | - | - | 4.650 | 0.18307 | | | |
| HP255-1850 | - | - | - | 4.700 | 0.18504 | | | |
| HP255-1874 | 3/16 | - | - | 4.763 | 0.18750 | 44 | 82 | 6 |
| HP255-1890 | - | - | - | 4.800 | 0.18898 | | | |
| HP255-1929 | - | - | - | 4.900 | 0.19291 | | | |
| HP255-1969 | - | - | - | 5.000 | 0.19685 | | | |
| HP255-2008 | - | - | - | 5.100 | 0.20079 | | | |
| HP255-2031 | 13/64 | - | - | 5.159 | 0.20313 | | | |
| HP255-2047 | - | - | - | 5.200 | 0.20472 | | | |
| HP255-2087 | - | - | - | 5.300 | 0.20866 | | | |
| HP255-2126 | - | - | - | 5.400 | 0.21260 | | | |
| HP255-2130 | - | 3 | - | 5.410 | 0.21300 | | | |
| HP255-2165 | - | - | - | 5.500 | 0.21654 | | | |
| HP255-2189 | 7/32 | - | - | 5.556 | 0.21875 | | | |
| HP255-2205 | - | - | - | 5.600 | 0.22047 | | | |
| HP255-2244 | - | - | - | 5.700 | 0.22441 | | | |
| HP255-2283 | - | - | - | 5.800 | 0.22835 | | | |
| HP255-2323 | - | - | - | 5.900 | 0.23228 | | | |
| HP255-2343 | 15/64 | - | - | 5.953 | 0.23438 | 53 | 91 | 8 |
| HP255-2362 | - | - | - | 6.000 | 0.23622 | | | |
| HP255-2402 | - | - | - | 6.100 | 0.24016 | | | |
| HP255-2441 | - | - | - | 6.200 | 0.24409 | | | |
| HP255-2480 | - | - | - | 6.300 | 0.24803 | | | |
| HP255-2500 | 1/4 | - | E | 6.350 | 0.25000 | | | |
| HP255-2520 | - | - | - | 6.400 | 0.25197 | | | |
| HP255-2559 | - | - | - | 6.500 | 0.25591 | | | |
| HP255-2571 | - | - | F | 6.528 | 0.25700 | | | |
| HP255-2598 | - | - | - | 6.600 | 0.25984 | | | |

Packed: 1 pc.
Available WD1 coating only.





List HP255 (Continued)

5D, Coolant-Through

| | | | | | |
|-------------------------------|----------------|------------|--|------------|--------------------|
| SPEED FEED P374-375 | CARBIDE | WD1 | | 30° | SHANK h6 |
|-------------------------------|----------------|------------|--|------------|--------------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| HP255-2638 | - | - | - | 6.700 | 0.26378 | 53 | 91 | 8 |
| HP255-2657 | 17/64 | - | - | 6.746 | 0.26560 | | | |
| HP255-2677 | - | - | - | 6.800 | 0.26772 | | | |
| HP255-2717 | - | - | - | 6.900 | 0.27165 | | | |
| HP255-2756 | - | - | - | 7.000 | 0.27559 | | | |
| HP255-2795 | - | - | - | 7.100 | 0.27953 | | | |
| HP255-2811 | 9/32 | - | - | 7.145 | 0.28130 | | | |
| HP255-2835 | - | - | - | 7.200 | 0.28346 | | | |
| HP255-2874 | - | - | - | 7.300 | 0.28740 | | | |
| HP255-2913 | - | - | - | 7.400 | 0.29134 | | | |
| HP255-2953 | - | - | - | 7.500 | 0.29528 | | | |
| HP255-2969 | 19/64 | - | - | 7.541 | 0.29690 | | | |
| HP255-2992 | - | - | - | 7.600 | 0.29921 | | | |
| HP255-3031 | - | - | - | 7.700 | 0.30315 | | | |
| HP255-3071 | - | - | - | 7.800 | 0.30709 | | | |
| HP255-3110 | - | - | - | 7.900 | 0.31102 | | | |
| HP255-3126 | 5/16 | - | - | 7.938 | 0.31250 | | | |
| HP255-3150 | - | - | - | 8.000 | 0.31496 | | | |
| HP255-3189 | - | - | - | 8.100 | 0.31890 | | | |
| HP255-3228 | - | - | - | 8.200 | 0.32283 | | | |
| HP255-3268 | - | - | - | 8.300 | 0.32677 | | | |
| HP255-3280 | 21/64 | - | - | 8.334 | 0.32810 | | | |
| HP255-3307 | - | - | - | 8.400 | 0.33071 | | | |
| HP255-3319 | - | - | Q | 8.433 | 0.33200 | | | |
| HP255-3346 | - | - | - | 8.500 | 0.33465 | | | |
| HP255-3386 | - | - | - | 8.600 | 0.33858 | | | |
| HP255-3425 | - | - | - | 8.700 | 0.34252 | | | |
| HP255-3437 | 11/32 | - | - | 8.733 | 0.34380 | | | |
| HP255-3465 | - | - | - | 8.800 | 0.34646 | | | |
| HP255-3504 | - | - | - | 8.900 | 0.35039 | | | |
| HP255-3543 | - | - | - | 9.000 | 0.35433 | | | |
| HP255-3583 | - | - | - | 9.100 | 0.35827 | | | |
| HP255-3594 | 23/64 | - | - | 9.129 | 0.35940 | | | |
| HP255-3622 | - | - | - | 9.200 | 0.36220 | | | |
| HP255-3642 | - | - | - | 9.250 | 0.36417 | | | |
| HP255-3661 | - | - | - | 9.300 | 0.36614 | | | |
| HP255-3701 | - | - | - | 9.400 | 0.37008 | | | |
| HP255-3740 | - | - | - | 9.500 | 0.37402 | | | |
| HP255-3748 | 3/8 | - | - | 9.525 | 0.37500 | | | |
| HP255-3780 | - | - | - | 9.600 | 0.37795 | | | |
| HP255-3819 | - | - | - | 9.700 | 0.38189 | | | |
| HP255-3858 | - | - | - | 9.800 | 0.38583 | | | |
| HP255-3898 | - | - | - | 9.900 | 0.38976 | | | |
| HP255-3906 | 25/64 | - | - | 9.921 | 0.39060 | | | |
| HP255-3937 | - | - | - | 10.000 | 0.39370 | | | |
| | | | | | | 61 | 103 | 10 |

Packed: 1 pc.
Available WD1 coating only.

continued on next page

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| HP255 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List HP255 (Continued)

5D, Coolant-Through

| | | | | | |
|-------------------------------|----------------|------------|--|------------|--------------------|
| SPEED FEED P374-375 | CARBIDE | WD1 | | 30° | SHANK h6 |
|-------------------------------|----------------|------------|--|------------|--------------------|



| Cutting Diameter Tolerance (m7) | | |
|---------------------------------|-----------------|-------------------|
| Size | mm | inch |
| D=3 | +0.002 / +0.012 | +0.0001 / +0.0005 |
| 3<D≤6 | +0.004 / +0.016 | +0.0002 / +0.0006 |
| 6<D≤10 | +0.006 / +0.021 | +0.0002 / +0.0008 |
| 10<D≤18 | +0.007 / +0.025 | +0.0003 / +0.0010 |
| 18<D≤20 | +0.008 / +0.029 | +0.0003 / +0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| HP255-3976 | - | - | - | 10.100 | 0.39764 | 71 | 118 | 12 |
| HP255-4016 | - | - | - | 10.200 | 0.40157 | | | |
| HP255-4055 | - | - | - | 10.300 | 0.40551 | | | |
| HP255-4063 | 13/32 | - | - | 10.319 | 0.40625 | | | |
| HP255-4094 | - | - | - | 10.400 | 0.40945 | | | |
| HP255-4134 | - | - | - | 10.500 | 0.41339 | | | |
| HP255-4173 | - | - | - | 10.600 | 0.41732 | | | |
| HP255-4213 | - | - | - | 10.700 | 0.42126 | | | |
| HP255-4220 | 27/64 | - | - | 10.716 | 0.42190 | | | |
| HP255-4252 | - | - | - | 10.800 | 0.42520 | | | |
| HP255-4291 | - | - | - | 10.900 | 0.42913 | | | |
| HP255-4331 | - | - | - | 11.000 | 0.43307 | | | |
| HP255-4370 | - | - | - | 11.100 | 0.43701 | | | |
| HP255-4374 | 7/16 | - | - | 11.113 | 0.43750 | | | |
| HP255-4409 | - | - | - | 11.200 | 0.44094 | | | |
| HP255-4449 | - | - | - | 11.300 | 0.44488 | | | |
| HP255-4488 | - | - | - | 11.400 | 0.44882 | | | |
| HP255-4528 | - | - | - | 11.500 | 0.45276 | | | |
| HP255-4531 | 29/64 | - | - | 11.509 | 0.45310 | | | |
| HP255-4567 | - | - | - | 11.600 | 0.45669 | | | |
| HP255-4606 | - | - | - | 11.700 | 0.46063 | | | |
| HP255-4646 | - | - | - | 11.800 | 0.46457 | | | |
| HP255-4685 | - | - | - | 11.900 | 0.46850 | | | |
| HP255-4689 | 15/32 | - | - | 11.908 | 0.46880 | | | |
| HP255-4724 | - | - | - | 12.000 | 0.47244 | | | |
| HP255-4764 | - | - | - | 12.100 | 0.47638 | | | |
| HP255-4803 | - | - | - | 12.200 | 0.48031 | | | |
| HP255-4843 | - | - | - | 12.300 | 0.48425 | | | |
| HP255-4882 | - | - | - | 12.400 | 0.48819 | | | |
| HP255-4921 | - | - | - | 12.500 | 0.49213 | | | |
| HP255-4961 | - | - | - | 12.600 | 0.49606 | | | |
| HP255-5000 | 1/2 | - | - | 12.700 | 0.50000 | | | |
| HP255-5039 | - | - | - | 12.800 | 0.50394 | | | |
| HP255-5079 | - | - | - | 12.900 | 0.50787 | | | |
| HP255-5118 | - | - | - | 13.000 | 0.51181 | | | |
| HP255-5157 | - | - | - | 13.100 | 0.51575 | | | |
| HP255-5197 | - | - | - | 13.200 | 0.51969 | | | |
| HP255-5236 | - | - | - | 13.300 | 0.52362 | | | |
| HP255-5276 | - | - | - | 13.400 | 0.52756 | | | |
| HP255-5311 | 17/32 | - | - | 13.495 | 0.53130 | | | |
| HP255-5315 | - | - | - | 13.500 | 0.53150 | | | |
| HP255-5394 | - | - | - | 13.700 | 0.53937 | | | |
| HP255-5512 | - | - | - | 14.000 | 0.55118 | | | |
| HP255-5626 | 9/16 | - | - | 14.288 | 0.56250 | | | |
| HP255-5709 | - | - | - | 14.500 | 0.57087 | | | |
| HP255-5780 | 37/64 | - | - | 14.684 | 0.57810 | | | |
| HP255-5787 | - | - | - | 14.700 | 0.57874 | | | |
| HP255-5906 | - | - | - | 15.000 | 0.59055 | | | |
| HP255-5937 | 19/32 | - | - | 15.083 | 0.59380 | | | |
| HP255-6102 | - | - | - | 15.500 | 0.61024 | | | |
| | | | | | | 83 | 133 | 16 |

Packed: 1 pc.
Available WD1 coating only.



List HP255 (Continued)

5D, Coolant-Through

| | | | | | |
|---------------------------|---------|-----|--|-----|-------------|
| SPEED FEED P374-375 | CARBIDE | WD1 | | 30° | SHANK h6 |
|---------------------------|---------|-----|--|-----|-------------|

| EDP Number | Diameter | | | | | Flute Length | Overall Length | Shank Diameter |
|------------|-----------------|-----------|-------------|--------|---------|--------------|----------------|----------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | FL (mm) | L (mm) | d (mm) |
| HP255-6181 | - | - | - | 15.700 | 0.61811 | 83 | 133 | 16 |
| HP255-6248 | 5/8 | - | - | 15.875 | 0.62500 | | | |
| HP255-6299 | - | - | - | 16.000 | 0.62992 | | | |
| HP255-6339 | - | - | - | 16.100 | 0.63386 | 93 | 143 | 18 |
| HP255-6496 | - | - | - | 16.500 | 0.64961 | | | |
| HP255-6563 | 21/32 | - | - | 16.669 | 0.65625 | | | |
| HP255-6693 | - | - | - | 17.000 | 0.66929 | | | |
| HP255-6890 | - | - | - | 17.500 | 0.68898 | | | |
| HP255-7087 | - | - | - | 18.000 | 0.70866 | | | |
| HP255-7283 | - | - | - | 18.500 | 0.72835 | 101 | 153 | 20 |
| HP255-7480 | - | - | - | 19.000 | 0.74803 | | | |
| HP255-7500 | 3/4 | - | - | 19.050 | 0.75000 | | | |
| HP255-7579 | - | - | - | 19.250 | 0.75787 | | | |
| HP255-7677 | - | - | - | 19.500 | 0.76772 | | | |
| HP255-7874 | - | - | - | 20.000 | 0.78740 | | | |

Packed: 1 pc.
Available WD1 coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| HP255 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List HP258

8D, Coolant-Through

| | | | | | |
|-------------------------------|----------------|------------|--|------------|--------------------|
| SPEED FEED P374-375 | CARBIDE | WD1 | | 30° | SHANK h6 |
|-------------------------------|----------------|------------|--|------------|--------------------|



| Cutting Diameter Tolerance (m7) | | |
|---------------------------------|-----------------|-------------------|
| Size | mm | inch |
| D=3 | +0.002 / +0.012 | +0.0001 / +0.0005 |
| 3<D≤6 | +0.004 / +0.016 | +0.0002 / +0.0006 |
| 6<D≤10 | +0.006 / +0.021 | +0.0002 / +0.0008 |
| 10<D≤18 | +0.007 / +0.025 | +0.0003 / +0.0010 |
| 18<D≤20 | +0.008 / +0.029 | +0.0003 / +0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| HP258-1181 | - | - | - | 3.000 | 0.11811 | 34 | 77 | 4 |
| HP258-1220 | - | - | - | 3.100 | 0.12205 | 36 | | |
| HP258-1248 | 1/8 | - | - | 3.175 | 0.12500 | 43 | | |
| HP258-1260 | - | - | - | 3.200 | 0.12598 | 36 | 77 | |
| HP258-1299 | - | - | - | 3.300 | 0.12992 | | | |
| HP258-1339 | - | - | - | 3.400 | 0.13386 | 43 | 81 | |
| HP258-1378 | - | - | - | 3.500 | 0.13780 | | | |
| HP258-1406 | 9/64 | - | - | 3.572 | 0.14063 | 36 | 77 | |
| HP258-1417 | - | - | - | 3.600 | 0.14173 | | | |
| HP258-1457 | - | - | - | 3.700 | 0.14567 | 45 | 85 | |
| HP258-1496 | - | - | - | 3.800 | 0.14961 | | | |
| HP258-1535 | - | - | - | 3.900 | 0.15354 | 43 | 81 | |
| HP258-1563 | 5/32 | - | - | 3.969 | 0.15625 | | | |
| HP258-1575 | - | - | - | 4.000 | 0.15748 | 45 | 85 | |
| HP258-1610 | - | 20 | - | 4.089 | 0.16100 | | | |
| HP258-1614 | - | - | - | 4.100 | 0.16142 | 45 | 85 | |
| HP258-1654 | - | - | - | 4.200 | 0.16535 | | | |
| HP258-1693 | - | - | - | 4.300 | 0.16929 | 50 | 90 | |
| HP258-1720 | 11/64 | - | - | 4.366 | 0.17188 | | | |
| HP258-1732 | - | - | - | 4.400 | 0.17323 | 45 | 85 | |
| HP258-1772 | - | - | - | 4.500 | 0.17717 | | | |
| HP258-1811 | - | - | - | 4.600 | 0.18110 | 50 | 90 | |
| HP258-1831 | - | - | - | 4.650 | 0.18307 | | | |
| HP258-1850 | - | - | - | 4.700 | 0.18504 | 45 | 85 | |
| HP258-1874 | 3/16 | - | - | 4.763 | 0.18750 | | | |
| HP258-1890 | - | - | - | 4.800 | 0.18898 | 50 | 90 | |
| HP258-1929 | - | - | - | 4.900 | 0.19291 | | | |
| HP258-1969 | - | - | - | 5.000 | 0.19685 | 57 | 97 | |
| HP258-2008 | - | - | - | 5.100 | 0.20079 | | | |
| HP258-2031 | 13/64 | - | - | 5.159 | 0.20313 | 66 | 106 | |
| HP258-2047 | - | - | - | 5.200 | 0.20472 | | | |
| HP258-2087 | - | - | - | 5.300 | 0.20866 | 6.300 | 0.24803 | |
| HP258-2126 | - | - | - | 5.400 | 0.21260 | | | |
| HP258-2130 | - | 3 | - | 5.410 | 0.21300 | 6.350 | 0.25000 | |
| HP258-2165 | - | - | - | 5.500 | 0.21654 | | | |
| HP258-2189 | 7/32 | - | - | 5.556 | 0.21875 | 6.400 | 0.25197 | |
| HP258-2205 | - | - | - | 5.600 | 0.22047 | | | |
| HP258-2244 | - | - | - | 5.700 | 0.22441 | 6.500 | 0.25591 | |
| HP258-2283 | - | - | - | 5.800 | 0.22835 | | | |
| HP258-2323 | - | - | - | 5.900 | 0.23228 | 6.528 | 0.25700 | |
| HP258-2343 | 15/64 | - | - | 5.953 | 0.23438 | | | |
| HP258-2362 | - | - | - | 6.000 | 0.23622 | 6.600 | 0.25984 | |
| HP258-2402 | - | - | - | 6.100 | 0.24016 | | | |
| HP258-2441 | - | - | - | 6.200 | 0.24409 | 6.300 | 0.24803 | |
| HP258-2480 | - | - | - | 6.300 | 0.24803 | | | |
| HP258-2500 | 1/4 | - | E | 6.350 | 0.25000 | 6.400 | 0.25197 | |
| HP258-2520 | - | - | - | 6.400 | 0.25197 | | | |
| HP258-2559 | - | - | - | 6.500 | 0.25591 | 6.528 | 0.25700 | |
| HP258-2571 | - | - | F | 6.528 | 0.25700 | | | |
| HP258-2598 | - | - | - | 6.600 | 0.25984 | | | |

Packed: 1 pc.
Available WD1 coating only.



List HP258 (Continued)

8D, Coolant-Through

| | | | | |
|---------------------------|---------|-----|-----|-------------|
| SPEED FEED P374-375 | CARBIDE | WD1 | 30° | SHANK h6 |
|---------------------------|---------|-----|-----|-------------|

| EDP Number | Diameter | | | | | Flute Length | Overall Length | Shank Diameter | | | |
|------------|-----------------|-----------|-------------|--------|---------|--------------|----------------|----------------|----|-----|----|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | FL (mm) | L (mm) | d (mm) | | | |
| HP258-2638 | - | - | - | 6.700 | 0.26378 | 66 | 106 | 8 | | | |
| HP258-2657 | 17/64 | - | - | 6.746 | 0.26560 | | | | | | |
| HP258-2677 | - | - | - | 6.800 | 0.26772 | | | | | | |
| HP258-2717 | - | - | - | 6.900 | 0.27165 | | | | | | |
| HP258-2756 | - | - | - | 7.000 | 0.27559 | | | | | | |
| HP258-2795 | - | - | - | 7.100 | 0.27953 | | | | | | |
| HP258-2811 | 9/32 | - | - | 7.145 | 0.28130 | | | | | | |
| HP258-2835 | - | - | - | 7.200 | 0.28346 | | | | | | |
| HP258-2874 | - | - | - | 7.300 | 0.28740 | | | | | | |
| HP258-2913 | - | - | - | 7.400 | 0.29134 | | | | | | |
| HP258-2953 | - | - | - | 7.500 | 0.29528 | 76 | 116 | 8 | | | |
| HP258-2969 | 19/64 | - | - | 7.541 | 0.29690 | | | | | | |
| HP258-2992 | - | - | - | 7.600 | 0.29921 | | | | | | |
| HP258-3031 | - | - | - | 7.700 | 0.30315 | | | | | | |
| HP258-3071 | - | - | - | 7.800 | 0.30709 | | | | | | |
| HP258-3110 | - | - | - | 7.900 | 0.31102 | | | | | | |
| HP258-3126 | 5/16 | - | - | 7.938 | 0.31250 | | | | | | |
| HP258-3150 | - | - | - | 8.000 | 0.31496 | | | | | | |
| HP258-3189 | - | - | - | 8.100 | 0.31890 | | | | 87 | 131 | 10 |
| HP258-3228 | - | - | - | 8.200 | 0.32283 | | | | | | |
| HP258-3268 | - | - | - | 8.300 | 0.32677 | | | | | | |
| HP258-3280 | 21/64 | - | - | 8.334 | 0.32810 | | | | | | |
| HP258-3307 | - | - | - | 8.400 | 0.33071 | | | | | | |
| HP258-3319 | - | - | Q | 8.433 | 0.33200 | | | | | | |
| HP258-3346 | - | - | - | 8.500 | 0.33465 | | | | | | |
| HP258-3386 | - | - | - | 8.600 | 0.33858 | | | | | | |
| HP258-3425 | - | - | - | 8.700 | 0.34252 | | | | | | |
| HP258-3437 | 11/32 | - | - | 8.733 | 0.34380 | | | | | | |
| HP258-3465 | - | - | - | 8.800 | 0.34646 | 95 | 139 | 10 | | | |
| HP258-3504 | - | - | - | 8.900 | 0.35039 | | | | | | |
| HP258-3543 | - | - | - | 9.000 | 0.35433 | | | | | | |
| HP258-3583 | - | - | - | 9.100 | 0.35827 | | | | | | |
| HP258-3594 | 23/64 | - | - | 9.129 | 0.35940 | | | | | | |
| HP258-3622 | - | - | - | 9.200 | 0.36220 | | | | | | |
| HP258-3642 | - | - | - | 9.250 | 0.36417 | | | | | | |
| HP258-3661 | - | - | - | 9.300 | 0.36614 | | | | | | |
| HP258-3701 | - | - | - | 9.400 | 0.37008 | | | | | | |
| HP258-3740 | - | - | - | 9.500 | 0.37402 | | | | | | |
| HP258-3748 | 3/8 | - | - | 9.525 | 0.37500 | | | | | | |
| HP258-3780 | - | - | - | 9.600 | 0.37795 | | | | | | |
| HP258-3819 | - | - | - | 9.700 | 0.38189 | | | | | | |
| HP258-3858 | - | - | - | 9.800 | 0.38583 | | | | | | |
| HP258-3898 | - | - | - | 9.900 | 0.38976 | | | | | | |
| HP258-3906 | 25/64 | - | - | 9.921 | 0.39060 | | | | | | |
| HP258-3937 | - | - | - | 10.000 | 0.39370 | | | | | | |

Packed: 1 pc.
Available WD1 coating only.

➔ continued on next page ➔

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| HP258 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List HP258 (Continued)

8D, Coolant-Through

| | | | | | |
|-------------------------------|----------------|------------|--|------------|--------------------|
| SPEED FEED P374-375 | CARBIDE | WD1 | | 30° | SHANK h6 |
|-------------------------------|----------------|------------|--|------------|--------------------|



| Cutting Diameter Tolerance (m7) | | |
|---------------------------------|-----------------|-------------------|
| Size | mm | inch |
| D=3 | +0.002 / +0.012 | +0.0001 / +0.0005 |
| 3<D≤6 | +0.004 / +0.016 | +0.0002 / +0.0006 |
| 6<D≤10 | +0.006 / +0.021 | +0.0002 / +0.0008 |
| 10<D≤18 | +0.007 / +0.025 | +0.0003 / +0.0010 |
| 18<D≤20 | +0.008 / +0.029 | +0.0003 / +0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| HP258-3976 | - | - | - | 10.100 | 0.39764 | 106 | 155 | 12 |
| HP258-4016 | - | - | - | 10.200 | 0.40157 | | | |
| HP258-4055 | - | - | - | 10.300 | 0.40551 | | | |
| HP258-4063 | 13/32 | - | - | 10.319 | 0.40625 | | | |
| HP258-4094 | - | - | - | 10.400 | 0.40945 | | | |
| HP258-4134 | - | - | - | 10.500 | 0.41339 | | | |
| HP258-4173 | - | - | - | 10.600 | 0.41732 | | | |
| HP258-4213 | - | - | - | 10.700 | 0.42126 | | | |
| HP258-4220 | 27/64 | - | - | 10.716 | 0.42190 | | | |
| HP258-4252 | - | - | - | 10.800 | 0.42520 | | | |
| HP258-4291 | - | - | - | 10.900 | 0.42913 | | | |
| HP258-4331 | - | - | - | 11.000 | 0.43307 | | | |
| HP258-4370 | - | - | - | 11.100 | 0.43701 | 114 | 163 | 12 |
| HP258-4374 | 7/16 | - | - | 11.113 | 0.43750 | | | |
| HP258-4409 | - | - | - | 11.200 | 0.44094 | | | |
| HP258-4449 | - | - | - | 11.300 | 0.44488 | | | |
| HP258-4488 | - | - | - | 11.400 | 0.44882 | | | |
| HP258-4528 | - | - | - | 11.500 | 0.45276 | | | |
| HP258-4531 | 29/64 | - | - | 11.509 | 0.45310 | | | |
| HP258-4567 | - | - | - | 11.600 | 0.45669 | | | |
| HP258-4606 | - | - | - | 11.700 | 0.46063 | | | |
| HP258-4646 | - | - | - | 11.800 | 0.46457 | | | |
| HP258-4685 | - | - | - | 11.900 | 0.46850 | | | |
| HP258-4689 | 15/32 | - | - | 11.908 | 0.46880 | | | |
| HP258-4724 | - | - | - | 12.000 | 0.47244 | | | |
| HP258-4764 | - | - | - | 12.100 | 0.47638 | | | |
| HP258-4803 | - | - | - | 12.200 | 0.48031 | | | |
| HP258-4843 | - | - | - | 12.300 | 0.48425 | | | |
| HP258-4882 | - | - | - | 12.400 | 0.48819 | | | |
| HP258-4921 | - | - | - | 12.500 | 0.49213 | | | |
| HP258-4961 | - | - | - | 12.600 | 0.49606 | | | |
| HP258-5000 | 1/2 | - | - | 12.700 | 0.50000 | | | |
| HP258-5039 | - | - | - | 12.800 | 0.50394 | | | |
| HP258-5079 | - | - | - | 12.900 | 0.50787 | | | |
| HP258-5118 | - | - | - | 13.000 | 0.51181 | | | |
| HP258-5157 | - | - | - | 13.100 | 0.51575 | | | |
| HP258-5197 | - | - | - | 13.200 | 0.51969 | | | |
| HP258-5236 | - | - | - | 13.300 | 0.52362 | | | |
| HP258-5276 | - | - | - | 13.400 | 0.52756 | | | |
| HP258-5311 | 17/32 | - | - | 13.495 | 0.53130 | 152 | 204 | 16 |
| HP258-5315 | - | - | - | 13.500 | 0.53150 | | | |
| HP258-5394 | - | - | - | 13.700 | 0.53937 | | | |
| HP258-5512 | - | - | - | 14.000 | 0.55118 | | | |
| HP258-5626 | 9/16 | - | - | 14.288 | 0.56250 | | | |
| HP258-5709 | - | - | - | 14.500 | 0.57087 | | | |
| HP258-5780 | 37/64 | - | - | 14.684 | 0.57810 | | | |
| HP258-5787 | - | - | - | 14.700 | 0.57874 | | | |
| HP258-5906 | - | - | - | 15.000 | 0.59055 | | | |
| HP258-5937 | 19/32 | - | - | 15.083 | 0.59380 | | | |
| HP258-6102 | - | - | - | 15.500 | 0.61024 | | | |

Packed: 1 pc.
Available WD1 coating only.





List HP258 (Continued)

8D, Coolant-Through

| | | | | | |
|-------------------------------|----------------|------------|--|------------|--------------------|
| SPEED FEED P374-375 | CARBIDE | WD1 | | 30° | SHANK h6 |
|-------------------------------|----------------|------------|--|------------|--------------------|

| EDP Number | Diameter | | | | | Flute Length | Overall Length | Shank Diameter |
|------------|-----------------|-----------|-------------|--------|---------|--------------|----------------|----------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | FL (mm) | L (mm) | d (mm) |
| HP258-6181 | - | - | - | 15.700 | 0.61811 | 152 | 204 | 16 |
| HP258-6248 | 5/8 | - | - | 15.875 | 0.62500 | | | |
| HP258-6299 | - | - | - | 16.000 | 0.62992 | | | |
| HP258-6496 | - | - | - | 16.500 | 0.64961 | 171 | 223 | 18 |
| HP258-6563 | 21/32 | - | - | 16.669 | 0.65625 | | | |
| HP258-6693 | - | - | - | 17.000 | 0.66929 | | | |
| HP258-6890 | - | - | - | 17.500 | 0.68898 | 190 | 244 | 20 |
| HP258-7087 | - | - | - | 18.000 | 0.70866 | | | |
| HP258-7283 | - | - | - | 18.500 | 0.72835 | | | |
| HP258-7480 | - | - | - | 19.000 | 0.74803 | 190 | 244 | 20 |
| HP258-7500 | 3/4 | - | - | 19.050 | 0.75000 | | | |
| HP258-7677 | - | - | - | 19.500 | 0.76772 | | | |
| HP258-7874 | - | - | - | 20.000 | 0.78740 | | | |

Packed: 1 pc.
Available WD1 coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| HP258 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





HY-PRO[®] CARB

CNC Multi-Purpose Centering Drill and Chamfering Tool

SPEED
FEED
P376

List 738

CNC Multi-Purpose Centering Drill & Chamfering Tool



60°

| Holders | | | | |
|------------|-------------|----------------|--------------------|----------------|
| EDP Number | Point Angle | Overall Length | Max. Diameter (in) | Shank Diameter |
| | | L (in) | | d (in) |
| 73808100 | 60° | 4-21/64 | 0.418 | 5/8 |

Packed: 1 pc.

| Precise Ground Inserts | | |
|------------------------|-----------|---------------------------|
| EDP Number | Type | Application |
| 73818119 | NK1010-60 | Aluminum, Cast Iron AlCrN |
| 73801300 | - | L-15 Replacement Screw |

Packed: 10 pcs.
Insert Radius: 0.4 mm



90°



118°

| Holders | | | | |
|------------|-------------|----------------|--------------------|----------------|
| EDP Number | Point Angle | Overall Length | Max. Diameter (in) | Shank Diameter |
| | | L (in) | | d (in) |
| 73801000 | 90° | 4-1/2 | 0.500 | 5/8 |
| 73802000 | 118° | | 0.625 | |
| 73804000 | 100° | 0.550 | | |
| 73805000 | 90° | 8 | 0.500 | |
| 73806000 | 118° | | 0.625 | |

Packed: 1 pc.

| Precise Ground Inserts | | |
|------------------------|--------|-----------------------|
| EDP Number | Type | Application |
| 73811000 | NK1010 | Aluminum, Cast Iron |
| 73812000 | NK2020 | Steel |
| 73801100 | - | L-6 Replacement Screw |

Packed: 10 pcs.
Insert Radius: 0.6 mm



90°



120°

| Holders | | | | |
|------------|-------------|----------------|-----------------------|----------------|
| EDP Number | Point Angle | Overall Length | Max. Diameter (in/mm) | Shank Diameter |
| | | L (in) | | d (in) |
| 73809000 | 90° | 5-1/8 | 0.866 (22mm) | 3/4 |
| 73809100 | 120° | | 0.984 (25mm) | 1 |
| 73809200 | 90° | 8 | 0.866 (22mm) | 1 |
| 73809300 | 120° | | 0.984 (25mm) | 1-1/4 |

Packed: 1 pc.

| Precise Ground Inserts | | |
|------------------------|--------|---------------------------|
| EDP Number | Type | Application |
| 73819000 | NK2020 | For Steel |
| 73819100 | NK1010 | For Cast & Aluminum |
| 73819011 | NK6060 | For Steel TiAlN |
| 73819111 | NK8080 | For Cast & Aluminum TiAlN |
| 73801200 | - | L-10 Replacement Screw |

Packed: 10 pcs.
Insert Radius: 0.6 mm



List 738 (Continued)

SPEED
FEED
P376

CNC Multi-Purpose Centering Drill & Chamfering Tool



90°

| Holders | | | | |
|------------|-------------|----------------|--------------------|----------------|
| EDP Number | Point Angle | Overall Length | Max. Diameter (in) | Shank Diameter |
| | | L (in) | | d (in) |
| 73803000 | 90° | 4-1/8 | 0.315 | 3/8 |
| 73803500 | | 6-1/2 | | |

Packed: 1 pc.

| Precise Ground Inserts | | |
|------------------------|--------|------------------------|
| EDP Number | Type | Application |
| 73813005 | NK5050 | Aluminum, Cast Iron |
| 73801400 | - | L-13 Replacement Screw |

Packed: 10 pcs.
Insert Radius: 0.2 mm



90°

| Holders | | | | |
|------------|-------------|----------------|--------------------|----------------|
| EDP Number | Point Angle | Overall Length | Max. Diameter (in) | Shank Diameter |
| | | L (in) | | d (in) |
| 73807000 | 90° | 5-1/8 | 1.18 | 3/4 |

Packed: 1 pc.

| Precise Ground Inserts | | |
|------------------------|------|-----------------------|
| EDP Number | Type | Application |
| 73817000 | 2001 | General Purpose |
| 73801100 | - | L-6 Replacement Screw |

Packed: 10 pcs.
Holder requires 2 inserts.
Inserts have 3 edges per side and are 2 sided.
Insert Radius: 0.6mm



List 738 (Accessories)

| Accessories | |
|-------------|----------------------------------|
| EDP Number | Application |
| 73801500 | N-5 Wrench for L-13 screws |
| 73801600 | K-3 Wrench for L-6 & L-10 screws |
| 73801700 | N-6 Wrench for L-15 screws |

Packed: 1 pcs.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 738 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 215

| | | | |
|-------------------------------|----------------|-----------|------------|
| SPEED FEED P377-378 | CARBIDE | BR | 15° |
|-------------------------------|----------------|-----------|------------|

| Cutting Diameter Tolerance | | |
|----------------------------|-------------|--------------|
| Size | mm | inch |
| 1.0≤D≤12.7 | +0 / -0.013 | +0 / -0.0005 |



| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 215-0394 | - | - | - | 1.000 | 0.03937 | 11.1 | | 1.00 |
| 215-0433 | - | - | - | 1.100 | 0.04331 | | | 1.10 |
| 215-0465 | - | 56 | - | 1.181 | 0.04650 | | | 1.18 |
| 215-0469 | 3/64 | - | - | 1.191 | 0.04688 | | | 3/64 |
| 215-0472 | - | - | - | 1.200 | 0.04724 | | | 1.20 |
| 215-0512 | - | - | - | 1.300 | 0.05118 | 12.7 | 38.1 | 1.30 |
| 215-0520 | - | 55 | - | 1.321 | 0.05200 | | | 1.32 |
| 215-0550 | - | 54 | - | 1.397 | 0.05500 | | | 1.40 |
| 215-0551 | - | - | - | 1.400 | 0.05512 | | | |
| 215-0591 | - | - | - | 1.500 | 0.05906 | | | 1.50 |
| 215-0595 | - | 53 | - | 1.511 | 0.05950 | | | 1.51 |
| 215-0625 | 1/16 | - | - | 1.588 | 0.06250 | 15.9 | 41.3 | 1/16 |
| 215-0630 | - | - | - | 1.600 | 0.06299 | | 42.9 | 1.60 |
| 215-0635 | - | 52 | - | 1.613 | 0.06350 | | 42.7 | 1.61 |
| 215-0669 | - | - | - | 1.700 | 0.06693 | 17.5 | | |
| 215-0670 | - | 51 | - | 1.702 | 0.06700 | | 42.9 | |
| 215-0700 | - | 50 | - | 1.778 | 0.07000 | | | 1.78 |
| 215-0709 | - | - | - | 1.800 | 0.07087 | 18.0 | 43.0 | 1.80 |
| 215-0730 | - | 49 | - | 1.854 | 0.07300 | | | 1.85 |
| 215-0748 | - | - | - | 1.900 | 0.07480 | 17.5 | 42.9 | 1.90 |
| 215-0760 | - | 48 | - | 1.930 | 0.07600 | | | 1.93 |
| 215-0781 | 5/64 | - | - | 1.984 | 0.07813 | | | 5/64 |
| 215-0785 | - | 47 | - | 1.994 | 0.07850 | | | 1.99 |
| 215-0787 | - | - | - | 2.000 | 0.07874 | | | 2.00 |
| 215-0810 | - | 46 | - | 2.057 | 0.08100 | | | 2.06 |
| 215-0820 | - | 45 | - | 2.083 | 0.08200 | | | 2.08 |
| 215-0827 | - | - | - | 2.100 | 0.08268 | | | 2.10 |
| 215-0860 | - | 44 | - | 2.184 | 0.08600 | 19.1 | 44.5 | 2.18 |
| 215-0866 | - | - | - | 2.200 | 0.08661 | | | 2.20 |
| 215-0890 | - | 43 | - | 2.261 | 0.08900 | | | 2.26 |
| 215-0906 | - | - | - | 2.300 | 0.09055 | | | 2.30 |
| 215-0935 | - | 42 | - | 2.375 | 0.09350 | | | 2.37 |
| 215-0938 | 3/32 | - | - | 2.381 | 0.09375 | | | 3/32 |
| 215-0945 | - | - | - | 2.400 | 0.09449 | | | 2.40 |
| 215-0960 | - | 41 | - | 2.438 | 0.09600 | | | 2.44 |
| 215-0980 | - | 40 | - | 2.489 | 0.09800 | | | 2.49 |
| 215-0984 | - | - | - | 2.500 | 0.09843 | | | 2.50 |
| 215-0995 | - | 39 | - | 2.527 | 0.09950 | | | 2.53 |
| 215-1015 | - | 38 | - | 2.578 | 0.10150 | 20.6 | 46.0 | 2.58 |
| 215-1024 | - | - | - | 2.600 | 0.10236 | | | 2.60 |
| 215-1040 | - | 37 | - | 2.642 | 0.10400 | | | 2.64 |
| 215-1063 | - | - | - | 2.700 | 0.10630 | | | 2.70 |
| 215-1065 | - | 36 | - | 2.705 | 0.10650 | | | 2.71 |
| 215-1094 | 7/64 | - | - | 2.778 | 0.10938 | | | 7/64 |
| 215-1100 | - | 35 | - | 2.794 | 0.11000 | | | 2.79 |
| 215-1102 | - | - | - | 2.800 | 0.11024 | | | 2.80 |
| 215-1110 | - | 34 | - | 2.819 | 0.11100 | 22.2 | 47.6 | 2.82 |
| 215-1130 | - | 33 | - | 2.870 | 0.11300 | | | 2.87 |
| 215-1142 | - | - | - | 2.900 | 0.11417 | | | 2.90 |
| 215-1160 | - | 32 | - | 2.946 | 0.11600 | | | 2.95 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 05 = TiN, 08 = TiCN, 11 = TiAlN.





List 215 (Continued)

| | | | |
|------------------------|---------|----|-----|
| SPEED FEED P377-378 | CARBIDE | BR | 15° |
|------------------------|---------|----|-----|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 215-1181 | - | - | - | 3.000 | 0.11811 | 22.2 | 47.6 | 3.00 |
| 215-1200 | - | 31 | - | 3.048 | 0.12000 | | | 3.05 |
| 215-1220 | - | - | - | 3.100 | 0.12205 | | | 3.10 |
| 215-1250 | 1/8 | - | - | 3.175 | 0.12500 | 23.8 | 49.2 | 1/8 |
| 215-1260 | - | - | - | 3.200 | 0.12598 | | | 3.20 |
| 215-1285 | - | 30 | - | 3.264 | 0.12850 | | | 3.26 |
| 215-1299 | - | - | - | 3.300 | 0.12992 | | | 3.30 |
| 215-1339 | - | - | - | 3.400 | 0.13386 | | | 3.40 |
| 215-1360 | - | 29 | - | 3.454 | 0.13600 | | | 3.45 |
| 215-1378 | - | - | - | 3.500 | 0.13780 | | | 3.50 |
| 215-1405 | - | 28 | - | 3.569 | 0.14050 | | | 3.57 |
| 215-1406 | 9/64 | - | - | 3.572 | 0.14063 | | | 9/64 |
| 215-1417 | - | - | - | 3.600 | 0.14173 | | | 3.60 |
| 215-1440 | - | 27 | - | 3.658 | 0.14400 | | | 3.66 |
| 215-1457 | - | - | - | 3.700 | 0.14567 | | | 3.70 |
| 215-1470 | - | 26 | - | 3.734 | 0.14700 | 3.73 | | |
| 215-1495 | - | 25 | - | 3.797 | 0.14950 | 25.4 | 52.4 | 3.80 |
| 215-1496 | - | - | - | 3.800 | 0.14961 | | | 3.80 |
| 215-1520 | - | 24 | - | 3.861 | 0.15200 | | | 3.86 |
| 215-1535 | - | - | - | 3.900 | 0.15354 | | | 3.90 |
| 215-1540 | - | 23 | - | 3.912 | 0.15400 | | | 3.91 |
| 215-1562 | 5/32 | - | - | 3.969 | 0.15625 | | | 5/32 |
| 215-1570 | - | 22 | - | 3.988 | 0.15700 | | | 3.99 |
| 215-1575 | - | - | - | 4.000 | 0.15748 | | | 4.00 |
| 215-1590 | - | 21 | - | 4.039 | 0.15900 | | | 4.04 |
| 215-1610 | - | 20 | - | 4.089 | 0.16100 | | | 4.09 |
| 215-1614 | - | - | - | 4.100 | 0.16142 | | | 4.10 |
| 215-1654 | - | - | - | 4.200 | 0.16535 | | | 4.20 |
| 215-1660 | - | 19 | - | 4.216 | 0.16600 | 4.22 | | |
| 215-1693 | - | - | - | 4.300 | 0.16929 | 4.30 | | |
| 215-1695 | - | 18 | - | 4.305 | 0.16950 | 4.31 | | |
| 215-1719 | 11/64 | - | - | 4.366 | 0.17188 | 11/64 | | |
| 215-1730 | - | 17 | - | 4.394 | 0.17300 | 4.39 | | |
| 215-1732 | - | - | - | 4.400 | 0.17323 | 4.40 | | |
| 215-1770 | - | 16 | - | 4.496 | 0.17700 | 27.0 | 54.0 | 4.50 |
| 215-1772 | - | - | - | 4.501 | 0.17720 | | | 4.50 |
| 215-1800 | - | 15 | - | 4.572 | 0.18000 | | | 4.57 |
| 215-1811 | - | - | - | 4.600 | 0.18110 | | | 4.60 |
| 215-1820 | - | 14 | - | 4.623 | 0.18200 | | | 4.62 |
| 215-1850 | - | 13 | - | 4.699 | 0.18500 | | | 4.70 |
| 215-1875 | 3/16 | - | - | 4.763 | 0.18750 | | | 3/16 |
| 215-1890 | - | 12 | - | 4.801 | 0.18900 | | | 4.80 |
| 215-1910 | - | 11 | - | 4.851 | 0.19100 | | | 4.85 |
| 215-1929 | - | - | - | 4.900 | 0.19291 | | | 4.90 |
| 215-1935 | - | 10 | - | 4.915 | 0.19350 | | | 4.91 |
| 215-1960 | - | 9 | - | 4.978 | 0.19600 | | | 4.98 |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order: 05 = TiN, 08 = TiCN, 11 = TiAlN.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 215 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best





List 215 (Continued)

| | | | |
|-------------------------------|----------------|-----------|------------|
| SPEED FEED P377-378 | CARBIDE | BR | 15° |
|-------------------------------|----------------|-----------|------------|

| Cutting Diameter Tolerance | | |
|----------------------------|-------------|--------------|
| Size | mm | inch |
| 1.0≤D≤12.7 | +0 / -0.013 | +0 / -0.0005 |



FourFacet Point (D≤1.5)

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 215-1968 | - | - | - | 5.000 | 0.19685 | 30.2 | 57.2 | 5.00 |
| 215-1990 | - | 8 | - | 5.055 | 0.19900 | | | 5.05 |
| 215-2008 | - | - | - | 5.100 | 0.20079 | | | 5.10 |
| 215-2010 | - | 7 | - | 5.105 | 0.20100 | | | 5.11 |
| 215-2031 | 13/64 | - | - | 5.159 | 0.20313 | 31.8 | 60.3 | 13/64 |
| 215-2040 | - | 6 | - | 5.182 | 0.20400 | | | 5.18 |
| 215-2047 | - | - | - | 5.200 | 0.20472 | | | 5.20 |
| 215-2055 | - | 5 | - | 5.220 | 0.20550 | | | 5.22 |
| 215-2087 | - | - | - | 5.300 | 0.20866 | | | 5.30 |
| 215-2090 | - | 4 | - | 5.309 | 0.20900 | | | 5.31 |
| 215-2126 | - | - | - | 5.400 | 0.21260 | | | 5.40 |
| 215-2130 | - | 3 | - | 5.410 | 0.21300 | | | 5.41 |
| 215-2165 | - | - | - | 5.500 | 0.21654 | | | 5.50 |
| 215-2188 | 7/32 | - | - | 5.556 | 0.21875 | | | 7/32 |
| 215-2205 | - | - | - | 5.600 | 0.22047 | | | 5.60 |
| 215-2210 | - | 2 | - | 5.613 | 0.22100 | | | 5.61 |
| 215-2244 | - | - | - | 5.700 | 0.22441 | 5.70 | | |
| 215-2280 | - | 1 | - | 5.791 | 0.22800 | 5.79 | | |
| 215-2283 | - | - | - | 5.800 | 0.22835 | 5.80 | | |
| 215-2323 | - | - | - | 5.900 | 0.23228 | 5.90 | | |
| 215-2340 | - | - | A | 5.944 | 0.23400 | 5.94 | | |
| 215-2344 | 15/64 | - | - | 5.953 | 0.23438 | 15/64 | | |
| 215-2362 | - | - | - | 6.000 | 0.23622 | 6.00 | | |
| 215-2380 | - | - | B | 6.045 | 0.23800 | 6.05 | | |
| 215-2402 | - | - | - | 6.100 | 0.24016 | 6.10 | | |
| 215-2420 | - | - | C | 6.147 | 0.24200 | 6.15 | | |
| 215-2441 | - | - | - | 6.200 | 0.24409 | 6.20 | | |
| 215-2460 | - | - | D | 6.248 | 0.24600 | 6.25 | | |
| 215-2480 | - | - | - | 6.300 | 0.24803 | 6.30 | | |
| 215-2500 | 1/4 | - | E | 6.350 | 0.25000 | 1/4 | | |
| 215-2520 | - | - | - | 6.400 | 0.25197 | 6.40 | | |
| 215-2559 | - | - | - | 6.500 | 0.25591 | 6.50 | | |
| 215-2570 | - | - | F | 6.528 | 0.25700 | 6.53 | | |
| 215-2598 | - | - | - | 6.600 | 0.25984 | 6.60 | | |
| 215-2610 | - | - | G | 6.629 | 0.26100 | 6.63 | | |
| 215-2638 | - | - | - | 6.700 | 0.26378 | 6.70 | | |
| 215-2656 | 17/64 | - | - | 6.747 | 0.26563 | 17/64 | | |
| 215-2660 | - | - | H | 6.756 | 0.26600 | 6.76 | | |
| 215-2677 | - | - | - | 6.800 | 0.26772 | 6.80 | | |
| 215-2717 | - | - | - | 6.900 | 0.27165 | 6.90 | | |
| 215-2720 | - | - | I | 6.909 | 0.27200 | 6.91 | | |
| 215-2756 | - | - | - | 7.000 | 0.27559 | 7.00 | | |
| 215-2770 | - | - | J | 7.036 | 0.27700 | 7.04 | | |
| 215-2795 | - | - | - | 7.100 | 0.27953 | 7.10 | | |
| 215-2810 | - | - | K | 7.137 | 0.28100 | 7.14 | | |
| 215-2812 | 9/32 | - | - | 7.144 | 0.28125 | 9/32 | | |
| 215-2835 | - | - | - | 7.200 | 0.28346 | 7.20 | | |
| 215-2874 | - | - | - | 7.300 | 0.28740 | 7.30 | | |
| 215-2900 | - | - | L | 7.366 | 0.29000 | 7.37 | | |
| 215-2913 | - | - | - | 7.400 | 0.29134 | 7.40 | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 05 = TiN, 08 = TiCN, 11 = TiAlN.





List 215 (Continued)

| | | | |
|------------------------|---------|----|-----|
| SPEED FEED P377-378 | CARBIDE | BR | 15° |
|------------------------|---------|----|-----|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 215-2950 | - | - | M | 7.493 | 0.29500 | 39.7 | 69.9 | 7.49 |
| 215-2953 | - | - | - | 7.500 | 0.29528 | | | 7.50 |
| 215-2969 | 19/64 | - | - | 7.541 | 0.29688 | | | 19/64 |
| 215-2992 | - | - | - | 7.600 | 0.29921 | 41.3 | 71.4 | 7.60 |
| 215-3020 | - | - | N | 7.671 | 0.30200 | | | 7.67 |
| 215-3031 | - | - | - | 7.700 | 0.30315 | | | 7.70 |
| 215-3071 | - | - | - | 7.800 | 0.30709 | 42.9 | 74.6 | 7.80 |
| 215-3110 | - | - | - | 7.900 | 0.31102 | | | 7.90 |
| 215-3125 | 5/16 | - | - | 7.938 | 0.31250 | | | 5/16 |
| 215-3150 | - | - | - | 8.000 | 0.31496 | 44.5 | 77.8 | 8.00 |
| 215-3160 | - | - | O | 8.026 | 0.31600 | | | 8.03 |
| 215-3189 | - | - | - | 8.100 | 0.31890 | | | 8.10 |
| 215-3228 | - | - | - | 8.200 | 0.32283 | 46.0 | 79.4 | 8.20 |
| 215-3230 | - | - | P | 8.204 | 0.32300 | | | 8.30 |
| 215-3268 | - | - | - | 8.300 | 0.32677 | | | 8.30 |
| 215-3281 | 21/64 | - | - | 8.334 | 0.32813 | 47.6 | 82.6 | 21/64 |
| 215-3307 | - | - | - | 8.400 | 0.33071 | | | 8.40 |
| 215-3320 | - | - | Q | 8.433 | 0.33200 | | | 8.43 |
| 215-3346 | - | - | - | 8.500 | 0.33465 | 48.0 | 83.0 | 8.50 |
| 215-3386 | - | - | - | 8.600 | 0.33858 | | | 8.60 |
| 215-3390 | - | - | R | 8.611 | 0.33900 | | | 8.61 |
| 215-3425 | - | - | - | 8.700 | 0.34252 | 49.2 | 84.1 | 8.70 |
| 215-3438 | 11/32 | - | - | 8.731 | 0.34375 | | | 8.80 |
| 215-3465 | - | - | - | 8.800 | 0.34646 | | | 8.80 |
| 215-3480 | - | - | S | 8.839 | 0.34800 | 46.0 | 79.0 | 8.84 |
| 215-3504 | - | - | - | 8.900 | 0.35039 | | | 8.90 |
| 215-3543 | - | - | - | 9.000 | 0.35433 | | | 9.00 |
| 215-3580 | - | - | T | 9.093 | 0.35800 | 46.0 | 79.4 | 9.09 |
| 215-3583 | - | - | - | 9.100 | 0.35827 | | | 9.10 |
| 215-3594 | 23/64 | - | - | 9.128 | 0.35938 | | | 23/64 |
| 215-3622 | - | - | - | 9.200 | 0.36220 | 47.6 | 82.6 | 9.20 |
| 215-3661 | - | - | - | 9.300 | 0.36614 | | | 9.30 |
| 215-3680 | - | - | U | 9.347 | 0.36800 | | | 9.35 |
| 215-3701 | - | - | - | 9.400 | 0.37008 | 47.6 | 82.6 | 9.40 |
| 215-3740 | - | - | - | 9.500 | 0.37402 | | | 9.50 |
| 215-3750 | 3/8 | - | - | 9.525 | 0.37500 | | | 3/8 |
| 215-3770 | - | - | V | 9.576 | 0.37700 | 48.0 | 83.0 | 9.58 |
| 215-3780 | - | - | - | 9.600 | 0.37795 | | | 9.60 |
| 215-3819 | - | - | - | 9.700 | 0.38189 | | | 9.70 |
| 215-3858 | - | - | - | 9.800 | 0.38583 | 49.2 | 84.1 | 9.80 |
| 215-3860 | - | - | W | 9.804 | 0.38600 | | | 9.90 |
| 215-3898 | - | - | - | 9.900 | 0.38976 | | | 9.90 |
| 215-3906 | 25/64 | - | - | 9.922 | 0.39063 | 48.0 | 83.0 | 25/64 |
| 215-3937 | - | - | - | 10.000 | 0.39370 | | | 10.00 |
| 215-3970 | - | - | X | 10.084 | 0.39700 | | | 10.08 |
| 215-3976 | - | - | - | 10.100 | 0.39764 | 49.2 | 84.1 | 10.10 |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order: 05 = TiN, 08 = TiCN, 11 = TiAlN.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 215 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

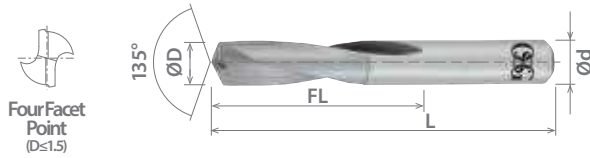




List 215 (Continued)

| | | | |
|------------------------|---------|----|-----|
| SPEED FEED P377-378 | CARBIDE | BR | 15° |
|------------------------|---------|----|-----|

| Cutting Diameter Tolerance | | |
|----------------------------|-------------|--------------|
| Size | mm | inch |
| 1.0 ≤ D ≤ 12.7 | +0 / -0.013 | +0 / -0.0005 |



| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 215-4016 | - | - | - | 10.200 | 0.40157 | 49.2 | 84.1 | 10.20 |
| 215-4040 | - | - | Y | 10.262 | 0.40400 | | | 10.26 |
| 215-4055 | - | - | - | 10.300 | 0.40551 | | | 10.30 |
| 215-4062 | 13/32 | - | - | 10.319 | 0.40625 | | | 13/32 |
| 215-4094 | - | - | - | 10.400 | 0.40945 | 50.8 | 85.7 | 10.40 |
| 215-4130 | - | - | Z | 10.490 | 0.41300 | | | 10.49 |
| 215-4134 | - | - | - | 10.500 | 0.41339 | | | 10.50 |
| 215-4173 | - | - | - | 10.600 | 0.41732 | | | 10.60 |
| 215-4213 | - | - | - | 10.700 | 0.42126 | 52.4 | 87.3 | 10.70 |
| 215-4219 | 27/64 | - | - | 10.716 | 0.42188 | | | 27/64 |
| 215-4252 | - | - | - | 10.800 | 0.42520 | | | 10.80 |
| 215-4291 | - | - | - | 10.900 | 0.42913 | | | 10.90 |
| 215-4331 | - | - | - | 11.000 | 0.43307 | 54.0 | 90.5 | 11.00 |
| 215-4370 | - | - | - | 11.100 | 0.43701 | | | 11.10 |
| 215-4375 | 7/16 | - | - | 11.113 | 0.43750 | | | 7/16 |
| 215-4409 | - | - | - | 11.200 | 0.44094 | | | 11.20 |
| 215-4449 | - | - | - | 11.300 | 0.44488 | 54.0 | 92.1 | 11.30 |
| 215-4488 | - | - | - | 11.400 | 0.44882 | | | 11.40 |
| 215-4528 | - | - | - | 11.500 | 0.45276 | | | 11.50 |
| 215-4531 | 29/64 | - | - | 11.509 | 0.45313 | | | 29/64 |
| 215-4567 | - | - | - | 11.600 | 0.45669 | 55.6 | 93.7 | 11.60 |
| 215-4606 | - | - | - | 11.700 | 0.46063 | | | 11.70 |
| 215-4646 | - | - | - | 11.800 | 0.46457 | | | 11.80 |
| 215-4685 | - | - | - | 11.900 | 0.46850 | | | 11.90 |
| 215-4688 | 15/32 | - | - | 11.906 | 0.46875 | 57.2 | 95.3 | 15/32 |
| 215-4724 | - | - | - | 12.000 | 0.47244 | | | 12.00 |
| 215-4844 | 31/64 | - | - | 12.303 | 0.48438 | | | 31/64 |
| 215-5000 | 1/2 | - | - | 12.700 | 0.50000 | | | 1/2 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 05 = TiN, 08 = TiCN, 11 = TiAlN.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | 4140 4340 | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 215 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

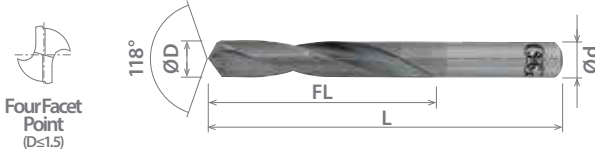
good best





List 220D

| | | | |
|-------------------------------|----------------|-----------|------------|
| SPEED FEED P377-378 | CARBIDE | BR | 20° |
|-------------------------------|----------------|-----------|------------|



FourFacet Point (D≤1.5)

| Cutting Diameter Tolerance | | |
|----------------------------|-------------|--------------|
| Size | mm | inch |
| 1.18≤D≤12.7 | +0 / -0.013 | +0 / -0.0005 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 220-0465 | - | 56 | - | 1.181 | 0.04650 | 19.1 | 38.1 | 1.18 |
| 220-0469 | 3/64 | - | - | 1.191 | 0.04688 | | | 3/64 |
| 220-0520 | - | 55 | - | 1.321 | 0.05200 | | | 1.32 |
| 220-0550 | - | 54 | - | 1.397 | 0.05500 | | | 1.40 |
| 220-0591 | - | - | - | 1.500 | 0.05906 | | | 1.50 |
| 220-0595 | - | 53 | - | 1.511 | 0.05950 | | | 1.51 |
| 220-0625 | 1/16 | - | - | 1.588 | 0.06250 | | | 1/16 |
| 220-0635 | - | 52 | - | 1.613 | 0.06350 | | | 1.61 |
| 220-0670 | - | 51 | - | 1.702 | 0.06700 | | | 1.70 |
| 220-0700 | - | 50 | - | 1.778 | 0.07000 | | | 1.78 |
| 220-0730 | - | 49 | - | 1.854 | 0.07300 | 1.85 | | |
| 220-0760 | - | 48 | - | 1.930 | 0.07600 | 1.93 | | |
| 220-0781 | 5/64 | - | - | 1.984 | 0.07813 | 22.2 | 44.5 | 5/64 |
| 220-0785 | - | 47 | - | 1.994 | 0.07850 | | | 1.99 |
| 220-0787 | - | - | - | 2.000 | 0.07874 | | | 2.00 |
| 220-0810 | - | 46 | - | 2.057 | 0.08100 | | | 2.06 |
| 220-0820 | - | 45 | - | 2.083 | 0.08200 | | | 2.08 |
| 220-0860 | - | 44 | - | 2.184 | 0.08600 | | | 2.18 |
| 220-0890 | - | 43 | - | 2.261 | 0.08900 | | | 2.26 |
| 220-0935 | - | 42 | - | 2.375 | 0.09350 | | | 2.37 |
| 220-0938 | 3/32 | - | - | 2.291 | 0.09375 | | | 3/32 |
| 220-0960 | - | 41 | - | 2.438 | 0.09600 | | | 2.44 |
| 220-0980 | - | 40 | - | 2.489 | 0.09800 | 2.49 | | |
| 220-0984 | - | - | - | 2.500 | 0.09843 | 2.50 | | |
| 220-0995 | - | 39 | - | 2.527 | 0.09950 | 2.53 | | |
| 220-1015 | - | 38 | - | 2.578 | 0.10150 | 2.58 | | |
| 220-1040 | - | 37 | - | 2.642 | 0.10400 | 2.64 | | |
| 220-1065 | - | 36 | - | 2.705 | 0.10650 | 2.71 | | |
| 220-1094 | 7/64 | - | - | 2.778 | 0.10938 | 25.4 | 50.8 | 7/64 |
| 220-1100 | - | 35 | - | 2.794 | 0.11000 | | | 2.79 |
| 220-1110 | - | 34 | - | 2.819 | 0.11100 | | | 2.82 |
| 220-1130 | - | 33 | - | 2.870 | 0.11300 | | | 2.87 |
| 220-1160 | - | 32 | - | 2.946 | 0.11600 | | | 2.95 |
| 220-1181 | - | - | - | 3.000 | 0.11811 | | | 3.00 |
| 220-1200 | - | 31 | - | 3.048 | 0.12000 | | | 3.05 |
| 220-1250 | 1/8 | - | - | 3.175 | 0.12500 | | | 1/8 |
| 220-1285 | - | 30 | - | 3.264 | 0.12850 | | | 3.26 |
| 220-1360 | - | 29 | - | 3.454 | 0.13600 | | | 3.45 |
| 220-1378 | - | - | - | 3.500 | 0.13780 | 34.9 | 63.5 | 3.50 |
| 220-1405 | - | 28 | - | 3.569 | 0.14050 | | | 3.57 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 05 = TiN, 08 = TiCN, 11 = TiAlN.

continued on next page

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|--------------------------|------------|------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------|--------------------------|-----------------|----------------|---------|-----------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 220D | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | | | |

good best

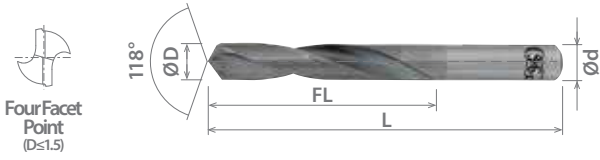




List 220D (Continued)

| | | | |
|-------------------------------|----------------|-----------|------------|
| SPEED FEED P377-378 | CARBIDE | BR | 20° |
|-------------------------------|----------------|-----------|------------|

| Cutting Diameter Tolerance | | |
|----------------------------|-------------|--------------|
| Size | mm | inch |
| 1.18≤D≤12.7 | +0 / -0.013 | +0 / -0.0005 |



| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 220-1406 | 9/64 | - | - | 3.572 | 0.14063 | 34.9 | 63.5 | 9/64 |
| 220-1440 | - | 27 | - | 3.658 | 0.14400 | | | 3.66 |
| 220-1470 | - | 26 | - | 3.734 | 0.14700 | | | 3.73 |
| 220-1495 | - | 25 | - | 3.797 | 0.14950 | | | 3.80 |
| 220-1520 | - | 24 | - | 3.861 | 0.15200 | | | 3.86 |
| 220-1540 | - | 23 | - | 3.912 | 0.15400 | | | 3.91 |
| 220-1562 | 5/32 | - | - | 3.969 | 0.15625 | | | 5/32 |
| 220-1570 | - | 22 | - | 3.988 | 0.15700 | | | 3.99 |
| 220-1575 | - | - | - | 4.000 | 0.15748 | | | 4.00 |
| 220-1590 | - | 21 | - | 4.039 | 0.15900 | | | 4.04 |
| 220-1610 | - | 20 | - | 4.089 | 0.16100 | | | 4.09 |
| 220-1660 | - | 19 | - | 4.216 | 0.16600 | | | 4.22 |
| 220-1695 | - | 18 | - | 4.305 | 0.16950 | | | 4.31 |
| 220-1719 | 11/64 | - | - | 4.366 | 0.17188 | | | 11/64 |
| 220-1730 | - | 17 | - | 4.394 | 0.17300 | 4.39 | | |
| 220-1770 | - | 16 | - | 4.496 | 0.17700 | 4.50 | | |
| 220-1772 | - | - | - | 4.500 | 0.17720 | | | |
| 220-1800 | - | 15 | - | 4.572 | 0.18000 | | 4.57 | |
| 220-1820 | - | 14 | - | 4.623 | 0.18200 | | 4.62 | |
| 220-1850 | - | 13 | - | 4.699 | 0.18500 | | 4.70 | |
| 220-1875 | 3/16 | - | - | 4.763 | 0.18750 | | 3/16 | |
| 220-1890 | - | 12 | - | 4.801 | 0.18900 | | 4.80 | |
| 220-1910 | - | 11 | - | 4.851 | 0.19100 | | 4.85 | |
| 220-1935 | - | 10 | - | 4.915 | 0.19350 | | 4.91 | |
| 220-1960 | - | 9 | - | 4.978 | 0.19600 | | 4.98 | |
| 220-1968 | - | - | - | 5.000 | 0.19685 | | 5.00 | |
| 220-1990 | - | 8 | - | 5.055 | 0.19900 | | 5.05 | |
| 220-2010 | - | 7 | - | 5.105 | 0.20100 | | 5.11 | |
| 220-2031 | 13/64 | - | - | 5.159 | 0.20313 | | 13/64 | |
| 220-2040 | - | 6 | - | 5.182 | 0.20400 | 5.18 | | |
| 220-2055 | - | 5 | - | 5.220 | 0.20550 | 5.22 | | |
| 220-2090 | - | 4 | - | 5.309 | 0.20900 | 5.31 | | |
| 220-2130 | - | 3 | - | 5.410 | 0.21300 | 5.41 | | |
| 220-2165 | - | - | - | 5.500 | 0.21654 | 5.50 | | |
| 220-2188 | 7/32 | - | - | 5.556 | 0.21875 | 7/32 | | |
| 220-2210 | - | 2 | - | 5.613 | 0.22100 | 5.61 | | |
| 220-2280 | - | 1 | - | 5.791 | 0.22800 | 5.79 | | |
| 220-2340 | - | - | A | 5.944 | 0.23400 | 5.94 | | |
| 220-2344 | 15/64 | - | - | 5.953 | 0.23438 | 15/64 | | |
| 220-2362 | - | - | - | 6.000 | 0.23622 | 6.00 | | |
| 220-2380 | - | - | B | 6.045 | 0.23800 | 6.05 | | |
| 220-2420 | - | - | C | 6.147 | 0.24200 | 6.15 | | |
| 220-2460 | - | - | D | 6.248 | 0.24600 | 6.25 | | |
| 220-2500 | 1/4 | - | E | 6.350 | 0.25000 | 1/4 | | |
| 220-2559 | - | - | - | 6.500 | 0.25591 | 6.50 | | |
| 220-2570 | - | - | F | 6.528 | 0.25700 | 6.53 | | |
| 220-2610 | - | - | G | 6.629 | 0.26100 | 6.63 | | |
| 220-2656 | 17/64 | - | - | 6.747 | 0.26563 | 17/64 | | |
| 220-2660 | - | - | H | 6.756 | 0.26600 | 6.76 | | |
| 220-2720 | - | - | I | 6.909 | 0.27200 | 6.91 | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 05 = TiN, 08 = TiCN, 11 = TiAIN.



List 220D (Continued)

| | | | |
|---------------------------|---------|----|-----|
| SPEED FEED P377-378 | CARBIDE | BR | 20° |
|---------------------------|---------|----|-----|

| EDP Number | Diameter | | | | | Flute Length | Overall Length | Shank Diameter |
|------------|-----------------|-----------|-------------|--------|---------|--------------|----------------|----------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | FL (mm) | L (mm) | d (mm/in) |
| 220-2756 | - | - | - | 7.000 | 0.27559 | 54.0 | 88.9 | 7.00 |
| 220-2770 | - | - | J | 7.036 | 0.27700 | | | 7.04 |
| 220-2810 | - | - | K | 7.137 | 0.28100 | | | 7.14 |
| 220-2812 | 9/32 | - | - | 7.144 | 0.28125 | | | 9/32 |
| 220-2900 | - | - | L | 7.366 | 0.29000 | 60.3 | 95.3 | 7.37 |
| 220-2950 | - | - | M | 7.493 | 0.29500 | | | 7.49 |
| 220-2953 | - | - | - | 7.500 | 0.29528 | | | 7.50 |
| 220-2969 | 19/64 | - | - | 7.541 | 0.29688 | | | 19/64 |
| 220-3020 | - | - | N | 7.671 | 0.30200 | | | 7.67 |
| 220-3125 | 5/16 | - | - | 7.938 | 0.31250 | | | 7.94 |
| 220-3150 | - | - | - | 8.000 | 0.31496 | | | 8.00 |
| 220-3160 | - | - | O | 8.026 | 0.31600 | | | 8.03 |
| 220-3230 | - | - | P | 8.204 | 0.32300 | | | 8.20 |
| 220-3281 | 21/64 | - | - | 8.334 | 0.32813 | | | 21/64 |
| 220-3320 | - | - | Q | 8.433 | 0.33200 | | | 8.43 |
| 220-3346 | - | - | - | 8.500 | 0.33465 | | | 8.50 |
| 220-3390 | - | - | R | 8.611 | 0.33900 | 8.61 | | |
| 220-3438 | 11/32 | - | - | 8.731 | 0.34375 | 11/32 | | |
| 220-3480 | - | - | S | 8.839 | 0.34800 | 8.84 | | |
| 220-3543 | - | - | - | 9.000 | 0.35433 | 9.00 | | |
| 220-3580 | - | - | T | 9.093 | 0.35800 | 69.9 | 108.0 | 9.09 |
| 220-3594 | 23/64 | - | - | 9.128 | 0.35938 | 63.5 | 101.6 | 23/64 |
| 220-3680 | - | - | U | 9.347 | 0.36800 | 69.9 | 108.0 | 9.35 |
| 220-3740 | - | - | - | 9.500 | 0.37402 | | | 9.50 |
| 220-3750 | 3/8 | - | - | 9.525 | 0.37500 | | | 9.53 |
| 220-3770 | - | - | V | 9.576 | 0.37700 | | | 9.58 |
| 220-3860 | - | - | W | 9.804 | 0.38600 | | | 9.80 |
| 220-3906 | 25/64 | - | - | 9.922 | 0.39063 | | | 25/64 |
| 220-3937 | - | - | - | 10.000 | 0.39370 | | | 10.00 |
| 220-3970 | - | - | X | 10.084 | 0.39700 | | | 10.08 |
| 220-4040 | - | - | Y | 10.262 | 0.40400 | 10.26 | | |
| 220-4062 | 13/32 | - | - | 10.319 | 0.40625 | 13/32 | | |
| 220-4130 | - | - | Z | 10.490 | 0.41300 | 10.49 | | |
| 220-4134 | - | - | - | 10.500 | 0.41339 | 10.50 | | |
| 220-4219 | 27/64 | - | - | 10.716 | 0.42188 | 17/64 | | |
| 220-4331 | - | - | - | 11.000 | 0.43307 | 11.00 | | |
| 220-4375 | 7/16 | - | - | 11.113 | 0.43750 | 7/16 | | |
| 220-4528 | - | - | - | 11.500 | 0.45276 | 11.50 | | |
| 220-4531 | 29/64 | - | - | 11.509 | 0.45313 | 29/64 | | |
| 220-4688 | 15/32 | - | - | 11.906 | 0.46875 | 15/32 | | |
| 220-4724 | - | - | - | 12.000 | 0.47244 | 12.00 | | |
| 220-4844 | 31/64 | - | - | 12.303 | 0.48438 | 31/64 | | |
| 220-5000 | 1/2 | - | - | 12.700 | 0.50000 | 76.2 | 120.7 | 1/2 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 05 = TiN, 08 = TiCN, 11 = TiAlN.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|------------------------------|------------|------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | H | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | | Stainless Steels | | | | Aluminum | | | | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 220D | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | | | |

good best





List 233

Three Flute



| | | | |
|-------------------------------|----------------|-----------|------------|
| SPEED FEED P377-378 | CARBIDE | BR | 30° |
|-------------------------------|----------------|-----------|------------|

| Cutting Diameter Tolerance | | |
|----------------------------|-------------|--------------|
| Size | mm | inch |
| 3.00 ≤ D ≤ 19.05 | +0 / -0.013 | +0 / -0.0005 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 233-1181 | - | - | - | 3.000 | 0.11811 | 31.8 | 57.2 | 3.00 |
| 233-1250 | 1/8 | - | - | 3.175 | 0.12500 | | | 1/8 |
| 233-1406 | 9/64 | - | - | 0.357 | 0.14063 | 34.9 | 63.5 | 9/64 |
| 233-1562 | 5/32 | - | - | 3.969 | 0.15625 | | | 5/32 |
| 233-1719 | 11/64 | - | - | 4.366 | 0.17188 | 41.3 | 69.9 | 11/64 |
| 233-1875 | 3/16 | - | - | 4.763 | 0.18750 | | | 3/16 |
| 233-2031 | 13/64 | - | - | 5.159 | 0.20313 | 44.5 | 76.2 | 13/64 |
| 233-2188 | 7/32 | - | - | 5.556 | 0.21875 | | | 7/32 |
| 233-2344 | 15/64 | - | - | 5.953 | 0.23438 | 50.8 | 82.6 | 15/64 |
| 233-2362 | - | - | - | 6.000 | 0.23622 | | | 6.00 |
| 233-2500 | 1/4 | - | E | 6.350 | 0.25000 | 54.0 | 88.9 | 1/4 |
| 233-2656 | 17/64 | - | - | 6.747 | 0.26563 | | | 17/64 |
| 233-2812 | 9/32 | - | - | 7.144 | 0.28125 | 60.3 | 95.3 | 9/32 |
| 233-2969 | 19/64 | - | - | 7.541 | 0.29688 | | | 19/64 |
| 233-3125 | 5/16 | - | - | 7.938 | 0.31250 | 63.5 | 101.6 | 5/16 |
| 233-3150 | - | - | - | 8.000 | 0.31496 | | | 8.00 |
| 233-3281 | 21/64 | - | - | 8.334 | 0.32813 | 69.9 | 108.0 | 21/64 |
| 233-3438 | 11/32 | - | - | 8.733 | 0.34380 | | | 11/32 |
| 233-3594 | 23/64 | - | - | 9.128 | 0.35938 | 73.0 | 114.3 | 23/64 |
| 233-3750 | 3/8 | - | - | 9.525 | 0.37500 | | | 3/8 |
| 233-3906 | 25/64 | - | - | 9.922 | 0.39063 | 76.2 | 120.7 | 25/64 |
| 233-3937 | - | - | - | 10.000 | 0.39370 | | | 10.00 |
| 233-4062 | 13/32 | - | - | 10.319 | 0.40625 | 77.0 | 120.7 | 13/32 |
| 233-4219 | 27/64 | - | - | 10.716 | 0.42188 | | | 27/64 |
| 233-4375 | 7/16 | - | - | 11.113 | 0.43750 | 88.9 | 146.1 | 7/16 |
| 233-4531 | 29/64 | - | - | 11.509 | 0.45313 | | | 29/64 |
| 233-4688 | 15/32 | - | - | 11.906 | 0.46875 | 108.0 | 146.1 | 15/32 |
| 233-4724 | - | - | - | 12.000 | 0.47244 | | | 12.00 |
| 233-4844 | 31/64 | - | - | 12.303 | 0.48438 | 108.0 | 146.1 | 31/64 |
| 233-5000 | 1/2 | - | - | 12.700 | 0.50000 | | | 1/2 |
| 233-5312 | 17/32 | - | - | 13.494 | 0.43125 | 108.0 | 146.1 | 17/32 |
| 233-5512 | - | - | - | 14.000 | 0.55118 | | | 14.00 |
| 233-5625 | 9/16 | - | - | 14.288 | 0.56250 | 108.0 | 146.1 | 9/16 |
| 233-6250 | 5/8 | - | - | 15.875 | 0.62500 | | | 5/8 |
| 233-6299 | - | - | - | 16.000 | 0.62992 | 108.0 | 146.1 | 16.00 |
| 233-7500 | 3/4 | - | - | 19.050 | 0.75000 | | | 3/4 |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order: 05 = TiN, 08 = TiCN, 11 = TiAlN.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|------|------|--------------|------------|------------------|-----|---------|--------------------------|-----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 233 | <input type="checkbox"/> | | | | | | | | <input type="checkbox"/> | | | | | | | | |

good best





List 200

| | | | |
|------------------------|---------|----|----|
| SPEED FEED P377-378 | CARBIDE | BR | 0° |
|------------------------|---------|----|----|



FourFacet Point (D≤1.5)

| Cutting Diameter Tolerance | | |
|----------------------------|-----------|------------|
| Size | mm | inch |
| 1.18≤D≤12.7 | +0/-0.013 | +0/-0.0005 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 200-0465 | - | 56 | - | 1.181 | 0.04650 | 12.7 | 38.1 | 1.18 |
| 200-0469 | 3/64 | - | - | 1.191 | 0.04688 | | | 3/64 |
| 200-0520 | - | 55 | - | 1.321 | 0.05200 | | | 1.32 |
| 200-0550 | - | 54 | - | 1.397 | 0.05500 | | | 1.40 |
| 200-0591 | - | - | - | 1.500 | 0.05906 | | | 1.50 |
| 200-0595 | - | 53 | - | 1.511 | 0.05950 | 1.51 | | |
| 200-0625 | 1/16 | - | - | 1.588 | 0.06250 | 15.9 | 41.3 | 1/16 |
| 200-0635 | - | 52 | - | 1.613 | 0.06350 | 17.5 | 42.9 | 1.61 |
| 200-0670 | - | 51 | - | 1.702 | 0.06700 | | | 1.70 |
| 200-0700 | - | 50 | - | 1.778 | 0.07000 | | | 1.78 |
| 200-0730 | - | 49 | - | 1.854 | 0.07300 | | | 1.85 |
| 200-0760 | - | 48 | - | 1.930 | 0.07600 | | | 1.93 |
| 200-0781 | 5/64 | - | - | 1.984 | 0.07813 | 19.1 | 44.5 | 5/64 |
| 200-0785 | - | 47 | - | 1.994 | 0.07850 | | | 1.99 |
| 200-0787 | - | - | - | 2.000 | 0.07874 | | | 2.00 |
| 200-0810 | - | 46 | - | 2.057 | 0.08100 | | | 2.06 |
| 200-0820 | - | 45 | - | 2.083 | 0.08200 | | | 2.08 |
| 200-0860 | - | 44 | - | 2.184 | 0.08600 | 20.6 | 46.0 | 2.18 |
| 200-0890 | - | 43 | - | 2.261 | 0.08900 | | | 2.26 |
| 200-0935 | - | 42 | - | 2.375 | 0.09350 | | | 2.37 |
| 200-0938 | 3/32 | - | - | 2.381 | 0.09375 | | | 3/32 |
| 200-0960 | - | 41 | - | 2.438 | 0.09600 | | | 2.44 |
| 200-0980 | - | 40 | - | 2.489 | 0.09800 | 2.49 | | |
| 200-0984 | - | - | - | 2.500 | 0.09843 | 2.50 | | |
| 200-0995 | - | 39 | - | 2.527 | 0.09950 | 2.53 | | |
| 200-1015 | - | 38 | - | 2.578 | 0.10150 | 2.58 | | |
| 200-1040 | - | 37 | - | 2.642 | 0.10400 | 2.64 | | |
| 200-1065 | - | 36 | - | 2.705 | 0.10650 | 2.71 | | |
| 200-1094 | 7/64 | - | - | 2.778 | 0.10938 | 22.2 | 47.6 | 7/64 |
| 200-1100 | - | 35 | - | 2.794 | 0.11000 | | | 2.79 |
| 200-1110 | - | 34 | - | 2.819 | 0.11100 | | | 2.82 |
| 200-1130 | - | 33 | - | 2.870 | 0.11300 | | | 2.87 |
| 200-1160 | - | 32 | - | 2.946 | 0.11600 | | | 2.95 |
| 200-1181 | - | - | - | 3.000 | 0.11811 | 3.00 | | |
| 200-1200 | - | 31 | - | 3.048 | 0.12000 | 3.05 | | |
| 200-1250 | 1/8 | - | - | 3.175 | 0.12500 | 23.8 | 49.2 | 1/8 |
| 200-1285 | - | 30 | - | 3.264 | 0.12850 | | | 3.26 |
| 200-1360 | - | 29 | - | 3.454 | 0.13600 | | | 3.45 |
| 200-1378 | - | - | - | 3.500 | 0.13780 | | | 3.50 |
| 200-1405 | - | 28 | - | 3.569 | 0.14050 | | | 3.57 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 05 = TiN, 08 = TiCN, 11 = TiAlN.

continued on next page

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|--------------------------|--------------|---------|--------------|-------------------|-----------------|--------------|--------------|--------------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 200 | <input type="checkbox"/> | | | | | | | | <input type="checkbox"/> | | | | | | | | |

good best





List 200 (Continued)

| | | | |
|-------------------------------|----------------|-----------|-----------|
| SPEED FEED P377-378 | CARBIDE | BR | 0° |
|-------------------------------|----------------|-----------|-----------|



| Cutting Diameter Tolerance | | |
|----------------------------|-------------|--------------|
| Size | mm | inch |
| 1.18≤D≤12.7 | +0 / -0.013 | +0 / -0.0005 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 200-1406 | 9/64 | - | - | 3.572 | 0.14063 | 23.8 | 49.2 | 9/64 |
| 200-1440 | - | 27 | - | 3.658 | 0.14400 | | | 3.66 |
| 200-1470 | - | 26 | - | 3.734 | 0.14700 | 25.4 | 52.4 | 3.73 |
| 200-1495 | - | 25 | - | 3.797 | 0.14950 | | | 3.80 |
| 200-1520 | - | 24 | - | 3.861 | 0.15200 | | | 3.86 |
| 200-1540 | - | 23 | - | 3.912 | 0.15400 | | | 3.91 |
| 200-1562 | 5/32 | - | - | 3.969 | 0.15625 | | | 5/32 |
| 200-1570 | - | 22 | - | 3.988 | 0.15700 | | | 3.99 |
| 200-1575 | - | - | - | 4.000 | 0.15748 | 27.0 | 54.0 | 4.00 |
| 200-1590 | - | 21 | - | 4.039 | 0.15900 | | | 4.04 |
| 200-1610 | - | 20 | - | 4.089 | 0.16100 | | | 4.09 |
| 200-1660 | - | 19 | - | 4.216 | 0.16600 | | | 4.22 |
| 200-1695 | - | 18 | - | 4.305 | 0.16950 | | | 4.31 |
| 200-1719 | 11/64 | - | - | 4.366 | 0.17188 | | | 11/64 |
| 200-1730 | - | 17 | - | 4.394 | 0.17300 | 28.6 | 55.6 | 4.39 |
| 200-1770 | - | 16 | - | 4.496 | 0.17700 | | | 4.50 |
| 200-1772 | - | - | - | 4.500 | 1.77200 | | | 4.50 |
| 200-1800 | - | 15 | - | 4.572 | 0.18000 | | | 4.57 |
| 200-1820 | - | 14 | - | 4.623 | 0.18200 | | | 4.62 |
| 200-1850 | - | 13 | - | 4.699 | 0.18500 | | | 4.70 |
| 200-1875 | 3/16 | - | - | 4.763 | 0.18750 | 3/16 | | |
| 200-1890 | - | 12 | - | 4.801 | 0.18900 | 30.2 | 57.2 | 4.80 |
| 200-1910 | - | 11 | - | 4.851 | 0.19100 | | | 4.85 |
| 200-1935 | - | 10 | - | 4.915 | 0.19350 | | | 4.91 |
| 200-1960 | - | 9 | - | 4.978 | 0.19600 | | | 4.98 |
| 200-1968 | - | - | - | 5.000 | 0.19685 | | | 5.00 |
| 200-1990 | - | 8 | - | 5.055 | 0.19900 | | | 5.05 |
| 200-2010 | - | 7 | - | 5.105 | 0.20100 | 5.11 | | |
| 200-2031 | 13/64 | - | - | 5.159 | 0.20313 | 31.8 | 60.3 | 13/64 |
| 200-2040 | - | 6 | - | 5.182 | 0.20400 | | | 5.18 |
| 200-2055 | - | 5 | - | 5.220 | 0.20550 | | | 5.22 |
| 200-2090 | - | 4 | - | 5.309 | 0.20900 | | | 5.31 |
| 200-2130 | - | 3 | - | 5.410 | 0.21300 | | | 5.41 |
| 200-2165 | - | - | - | 5.500 | 0.21654 | | | 5.50 |
| 200-2188 | 7/32 | - | - | 5.556 | 0.21875 | 7/32 | | |
| 200-2210 | - | 2 | - | 5.613 | 0.22100 | 33.3 | 61.9 | 5.61 |
| 200-2280 | - | 1 | - | 5.791 | 0.22800 | | | 5.79 |
| 200-2340 | - | - | A | 5.944 | 0.23400 | | | 5.94 |
| 200-2344 | 15/64 | - | - | 5.953 | 0.23438 | | | 15/64 |
| 200-2362 | - | - | - | 6.000 | 0.23622 | | | 6.00 |
| 200-2380 | - | - | B | 6.045 | 0.23800 | | | 6.05 |
| 200-2420 | - | - | C | 6.147 | 0.24200 | 6.15 | | |
| 200-2460 | - | - | D | 6.248 | 0.24600 | 34.9 | 63.5 | 6.25 |
| 200-2500 | 1/4 | - | E | 6.350 | 0.25000 | | | 1/4 |
| 200-2559 | - | - | - | 6.500 | 0.25591 | | | 6.50 |
| 200-2570 | - | - | F | 6.528 | 0.25700 | | | 6.53 |
| 200-2610 | - | - | G | 6.629 | 0.26100 | | | 6.63 |
| 200-2656 | 17/64 | - | - | 6.747 | 0.26563 | | | 17/64 |
| 200-2660 | - | - | H | 6.756 | 0.26600 | 38.1 | 68.3 | 6.76 |
| 200-2720 | - | - | I | 6.909 | 0.27200 | | | 6.91 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 05 = TiN, 08 = TiCN, 11 = TiAlN.



List 200 (Continued)

| | | | |
|---------------------------|---------|----|----|
| SPEED FEED P377-378 | CARBIDE | BR | 0° |
|---------------------------|---------|----|----|

| EDP Number | Diameter | | | | | Flute Length | Overall Length | Shank Diameter |
|------------|-----------------|-----------|-------------|--------|---------|--------------|----------------|----------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | FL (mm) | L (mm) | d (mm/in) |
| 200-2756 | - | - | - | 7.000 | 0.27559 | 38.1 | 68.3 | 7.00 |
| 200-2770 | - | - | J | 7.036 | 0.27700 | | | 7.04 |
| 200-2810 | - | - | K | 7.137 | 0.28100 | | | 7.14 |
| 200-2812 | 9/32 | - | - | 7.144 | 0.28125 | 39.7 | 69.9 | 9/32 |
| 200-2900 | - | - | L | 7.366 | 0.29000 | | | 7.37 |
| 200-2950 | - | - | M | 7.493 | 0.29500 | | | 7.49 |
| 200-2953 | - | - | - | 7.500 | 0.29528 | 41.3 | 71.4 | 7.50 |
| 200-2969 | 19/64 | - | - | 7.541 | 0.29688 | | | 19/64 |
| 200-3020 | - | - | N | 7.671 | 0.30200 | | | 7.67 |
| 200-3125 | 5/16 | - | - | 7.938 | 0.31250 | 62.9 | 74.6 | 7.94 |
| 200-3150 | - | - | - | 8.000 | 0.31496 | | | 8.00 |
| 200-3160 | - | - | O | 8.026 | 0.31600 | | | 8.03 |
| 200-3230 | - | - | P | 8.204 | 0.32300 | 76.2 | 76.2 | 8.20 |
| 200-3281 | 21/64 | - | - | 8.334 | 0.32813 | | | 21/64 |
| 200-3320 | - | - | Q | 8.433 | 0.33200 | | | 8.43 |
| 200-3346 | - | - | - | 8.500 | 0.33465 | 44.5 | 77.8 | 8.50 |
| 200-3390 | - | - | R | 8.611 | 0.33900 | | | 8.61 |
| 200-3438 | 11/32 | - | - | 8.731 | 0.34375 | | | 11/32 |
| 200-3480 | - | - | S | 8.839 | 0.34800 | 46.0 | 79.4 | 8.84 |
| 200-3543 | - | - | - | 9.000 | 0.35433 | | | 9.00 |
| 200-3580 | - | - | T | 9.093 | 0.35800 | | | 9.09 |
| 200-3594 | 23/64 | - | - | 9.128 | 0.35938 | 47.6 | 82.6 | 9.13 |
| 200-3680 | - | - | U | 9.347 | 0.36800 | | | 9.35 |
| 200-3740 | - | - | - | 9.500 | 0.37402 | | | 9.50 |
| 200-3750 | 3/8 | - | - | 9.525 | 0.37500 | 49.2 | 84.1 | 9.53 |
| 200-3770 | - | - | V | 9.576 | 0.37700 | | | 9.58 |
| 200-3860 | - | - | W | 9.804 | 0.38600 | | | 9.80 |
| 200-3906 | 25/64 | - | - | 9.922 | 0.39063 | 50.8 | 85.7 | 9.92 |
| 200-3937 | - | - | - | 10.000 | 0.39370 | | | 10.00 |
| 200-3970 | - | - | X | 10.084 | 0.39700 | | | 10.08 |
| 200-4040 | - | - | Y | 10.262 | 0.40400 | 52.4 | 87.3 | 10.26 |
| 200-4062 | 13/32 | - | - | 10.319 | 0.40625 | | | 10.32 |
| 200-4130 | - | - | Z | 10.490 | 0.41300 | | | 10.49 |
| 200-4134 | - | - | - | 10.500 | 0.41339 | 54.0 | 90.5 | 10.50 |
| 200-4219 | 27/64 | - | - | 10.716 | 0.42188 | | | 10.72 |
| 200-4331 | - | - | - | 11.000 | 0.43307 | | | 11.00 |
| 200-4375 | 7/16 | - | - | 11.113 | 0.43750 | 55.6 | 93.7 | 11.11 |
| 200-4528 | - | - | - | 11.500 | 0.45276 | | | 11.50 |
| 200-4531 | 29/64 | - | - | 11.509 | 0.45313 | | | 11.51 |
| 200-4688 | 15/32 | - | - | 11.906 | 0.46875 | 57.2 | 95.3 | 11.91 |
| 200-4724 | - | - | - | 12.000 | 0.47244 | | | 12.00 |
| 200-4844 | 31/64 | - | - | 12.303 | 0.48438 | | | 12.30 |
| 200-5000 | 1/2 | - | - | 12.700 | 0.50000 | | | 1/2 |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order: 05 = TiN, 08 = TiCN, 11 = TiAlN.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|--------------------------|--------------|---------|--------------|-------------------|-----------------|--------------|--------------|--------------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 200 | <input type="checkbox"/> | | | | | | | | <input type="checkbox"/> | | | | | | | | |

good best

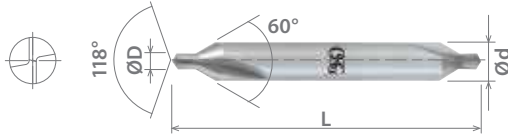




CARBIDE

Combination Drill/Countersink

List 235



| Cutting Diameter Tolerance | | |
|----------------------------|-------------|-------------|
| Size | mm | inch |
| 3/64 ≤ D ≤ 7/32 | +0.076 / -0 | +0.003 / -0 |

| EDP Number | Diameter (in) | Tool Number | Overall Length | Shank Diameter |
|------------|---------------|-------------|----------------|----------------|
| | | | L (in) | d (in) |
| 235-0010 | 3/64 | 1 | 1.47 | 1/8 |
| 235-0020 | 5/64 | 2 | 1.83 | 3/16 |
| 235-0030 | 7/64 | 3 | 1.87 | 1/4 |
| 235-0040 | 1/8 | 4 | 2.43 | 5/16 |
| 235-0050 | 3/16 | 5 | 2.64 | 7/16 |
| 235-0060 | 7/32 | 6 | 2.87 | 1/2 |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order: 05 = TiN, 08 = TiCN, 11 = TiAlN.



Work Material

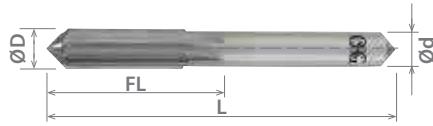
| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 235 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



List 300D

| | | |
|--------------------|---------|----|
| SPEED FEED P379 | CARBIDE | BR |
|--------------------|---------|----|



| Cutting Diameter Tolerance | | | |
|----------------------------|---------------|---------------|---------------|
| Size | mm | Inch | No. of Flutes |
| 0.80mm-6.45mm | +0.025/+0.102 | +0.001/+0.004 | 4 |
| 6.451mm-13mm | +0.025/+0.127 | +0.001/+0.005 | 6 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 300-0315 | - | - | - | 0.800 | 0.03150 | 9.5 | 38.1 | 0.79 |
| 300-0354 | - | - | - | 0.900 | 0.03543 | | | 0.87 |
| 300-0394 | - | - | - | 1.000 | 0.03937 | | | 0.80 |
| 300-0433 | - | - | - | 1.100 | 0.04331 | 9.5 | 38.1 | 1.04 |
| 300-0465 | - | 56 | - | 1.181 | 0.04650 | | | |
| 300-0469 | 3/64 | - | - | 1.191 | 0.04688 | | | |
| 300-0472 | - | - | - | 1.200 | 0.04724 | | | |
| 300-0512 | - | - | - | 1.300 | 0.05118 | | | |
| 300-0520 | - | 55 | - | 1.321 | 0.05200 | | | |
| 300-0550 | - | 54 | - | 1.397 | 0.05500 | | | |
| 300-0551 | - | - | - | 1.400 | 0.05510 | | | |
| 300-0591 | - | - | - | 1.500 | 0.05906 | | | |
| 300-0595 | - | 53 | - | 1.511 | 0.05950 | | | |
| 300-0625 | 1/16 | - | - | 1.588 | 0.06250 | 9.5 | 38.1 | 1.32 |
| 300-0630 | - | - | - | 1.600 | 0.06299 | | | |
| 300-0635 | - | 52 | - | 1.613 | 0.06350 | 12.7 | 44.5 | 1.59 |
| 300-0669 | - | - | - | 1.700 | 0.06693 | | | |
| 300-0670 | - | 51 | - | 1.702 | 0.06700 | | | |
| 300-0700 | - | 50 | - | 1.778 | 0.07000 | | | |
| 300-0709 | - | - | - | 1.800 | 0.07087 | | | |
| 300-0730 | - | 49 | - | 1.854 | 0.07300 | | | |
| 300-0748 | - | - | - | 1.900 | 0.07480 | | | |
| 300-0760 | - | 48 | - | 1.930 | 0.07600 | | | |
| 300-0781 | 5/64 | - | - | 1.984 | 0.07813 | | | |
| 300-0785 | - | 47 | - | 1.994 | 0.07850 | | | |
| 300-0787 | - | - | - | 2.000 | 0.07874 | | | |
| 300-0810 | - | 46 | - | 2.057 | 0.08100 | 50.8 | 57.2 | 1.98 |
| 300-0820 | - | 45 | - | 2.083 | 0.08200 | | | |
| 300-0827 | - | - | - | 2.100 | 0.08268 | | | |
| 300-0860 | - | 44 | - | 2.184 | 0.08600 | | | |
| 300-0866 | - | - | - | 2.200 | 0.08661 | | | |
| 300-0890 | - | 43 | - | 2.261 | 0.08900 | | | |
| 300-0906 | - | - | - | 2.300 | 0.09055 | | | |
| 300-0935 | - | 42 | - | 2.375 | 0.09350 | | | |
| 300-0938 | 3/32 | - | - | 2.381 | 0.09375 | | | |
| 300-0945 | - | - | - | 2.400 | 0.09449 | | | |
| 300-0960 | - | 41 | - | 2.438 | 0.09600 | 15.9 | 57.2 | 2.38 |
| 300-0980 | - | 40 | - | 2.489 | 0.09800 | | | |
| 300-0984 | - | - | - | 2.500 | 0.09843 | | | |
| 300-0995 | - | 39 | - | 2.527 | 0.09950 | | | |
| 300-1015 | - | 38 | - | 2.578 | 0.10150 | | | |

Packed: 1 pc.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | 4140 4340 | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 300D | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

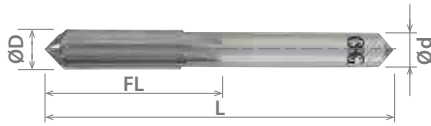
good best





List 300D (Continued)

| | | |
|-------------------|----------------|-----------|
| SPEED FEED | CARBIDE | BR |
| P379 | | |



| Cutting Diameter Tolerance | | | |
|----------------------------|----------------|---------------|---------------|
| Size | mm | Inch | No. of Flutes |
| 0.80mm-6.45mm | +0.025/+0.012 | +0.001/+0.004 | 4 |
| 6.451mm-13mm | +0.025/+0.0127 | +0.001/+0.005 | 6 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 300-1024 | - | - | - | 2.600 | 0.10236 | 15.9 | 57.2 | 2.38 |
| 300-1040 | - | 37 | - | 2.642 | 0.10400 | | | |
| 300-1063 | - | - | - | 2.700 | 0.10630 | | | |
| 300-1065 | - | 36 | - | 2.705 | 0.10650 | | | |
| 300-1094 | 7/64 | - | - | 2.778 | 0.10938 | | | |
| 300-1100 | - | 35 | - | 2.794 | 0.11000 | | | |
| 300-1102 | - | - | - | 2.800 | 0.11024 | | | |
| 300-1110 | - | 34 | - | 2.819 | 0.11100 | | | |
| 300-1130 | - | 33 | - | 2.870 | 0.11300 | | | |
| 300-1142 | - | - | - | 2.900 | 0.11417 | | | |
| 300-1160 | - | 32 | - | 2.946 | 0.11600 | | | |
| 300-1181 | - | - | - | 3.000 | 0.11811 | | | |
| 300-1200 | - | 31 | - | 3.048 | 0.12000 | | | |
| 300-1220 | - | - | - | 3.100 | 0.12205 | | | |
| 300-1250 | 1/8 | - | - | 3.175 | 0.12500 | | | |
| 300-1260 | - | - | - | 3.200 | 0.12598 | | | |
| 300-1285 | - | 30 | - | 3.264 | 0.12850 | | | |
| 300-1299 | - | - | - | 3.300 | 0.12992 | | | |
| 300-1339 | - | - | - | 3.400 | 0.13386 | | | |
| 300-1360 | - | 29 | - | 3.454 | 0.13600 | | | |
| 300-1378 | - | - | - | 3.500 | 0.13780 | | | |
| 300-1405 | - | 28 | - | 3.569 | 0.14050 | | | |
| 300-1406 | 9/64 | - | - | 3.572 | 0.14063 | | | |
| 300-1417 | - | - | - | 3.600 | 0.14173 | | | |
| 300-1440 | - | 27 | - | 3.658 | 0.14400 | | | |
| 300-1457 | - | - | - | 3.700 | 0.14567 | | | |
| 300-1470 | - | 26 | - | 3.734 | 0.14700 | | | |
| 300-1495 | - | 25 | - | 3.797 | 0.14950 | | | |
| 300-1496 | - | - | - | 3.800 | 0.14960 | | | |
| 300-1520 | - | 24 | - | 3.861 | 0.15200 | | | |
| 300-1535 | - | - | - | 3.900 | 0.15354 | | | |
| 300-1540 | - | 23 | - | 3.912 | 0.15400 | | | |
| 300-1562 | 5/32 | - | - | 3.969 | 0.15625 | | | |
| 300-1570 | - | 22 | - | 3.988 | 0.15700 | | | |
| 300-1575 | - | - | - | 4.000 | 0.15748 | | | |
| 300-1590 | - | 21 | - | 4.039 | 0.15900 | | | |
| 300-1610 | - | 20 | - | 4.089 | 0.16100 | | | |
| 300-1614 | - | - | - | 4.100 | 0.16142 | | | |
| 300-1654 | - | - | - | 4.200 | 0.16535 | | | |
| 300-1660 | - | 19 | - | 4.216 | 0.16600 | | | |
| 300-1693 | - | - | - | 4.300 | 0.16929 | | | |
| 300-1695 | - | 18 | - | 4.305 | 0.16950 | | | |
| 300-1719 | 11/64 | - | - | 4.366 | 0.17188 | | | |
| 300-1730 | - | 17 | - | 4.394 | 0.17300 | | | |
| 300-1732 | - | - | - | 4.400 | 0.17323 | | | |
| 300-1770 | - | 16 | - | 4.496 | 0.17700 | | | |
| 300-1772 | - | - | - | 4.500 | 0.17720 | | | |
| 300-1800 | - | 15 | - | 4.572 | 0.18000 | | | |
| 300-1811 | - | - | - | 4.600 | 0.18110 | | | |
| 300-1820 | - | 14 | - | 4.623 | 0.18200 | | | |

Packed: 1 pc.



List 300D (Continued)

| | | |
|--------------------|---------|----|
| SPEED FEED P379 | CARBIDE | BR |
|--------------------|---------|----|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 300-1850 | - | 13 | - | 4.699 | 0.18500 | 22.2 | 69.9 | 4.37 | |
| 300-1875 | 3/16 | - | - | 4.763 | 0.18750 | | | | |
| 300-1890 | - | 12 | - | 4.801 | 0.18900 | | | | |
| 300-1910 | - | 11 | - | 4.851 | 0.19100 | 25.4 | 76.2 | 4.76 | |
| 300-1929 | - | - | - | 4.900 | 0.19291 | 22.2 | 69.9 | | |
| 300-1935 | - | 10 | - | 4.915 | 0.19350 | | | | |
| 300-1960 | - | 9 | - | 4.978 | 0.19600 | | | | |
| 300-1969 | - | - | - | 5.000 | 0.19685 | | | | |
| 300-1990 | - | 8 | - | 5.055 | 0.19900 | | | | |
| 300-2008 | - | - | - | 5.100 | 0.20079 | | | | |
| 300-2010 | - | 7 | - | 5.105 | 0.20100 | | | | |
| 300-2031 | 13/64 | - | - | 5.159 | 0.20313 | | | | |
| 300-2040 | - | 6 | - | 5.182 | 0.20400 | | | | |
| 300-2047 | - | - | - | 5.200 | 0.20472 | | | | |
| 300-2055 | - | 5 | - | 5.220 | 0.20550 | | | | |
| 300-2087 | - | - | - | 5.300 | 0.20866 | | | | |
| 300-2090 | - | 4 | - | 5.309 | 0.20900 | | | | |
| 300-2126 | - | - | - | 5.400 | 0.21260 | | | | |
| 300-2130 | - | 3 | - | 5.410 | 0.21300 | | | | |
| 300-2165 | - | - | - | 5.500 | 0.21654 | 25.4 | 76.2 | 4.76 | |
| 300-2188 | 7/32 | - | - | 5.556 | 0.21875 | | | | |
| 300-2205 | - | - | - | 5.600 | 0.22047 | | | | |
| 300-2210 | - | 2 | - | 5.613 | 0.22100 | | | | |
| 300-2244 | - | - | - | 5.700 | 0.22441 | | | | |
| 300-2280 | - | 1 | - | 5.791 | 0.22800 | | | | |
| 300-2283 | - | - | - | 5.800 | 0.22835 | | | | |
| 300-2323 | - | - | - | 5.900 | 0.23228 | | | | |
| 300-2340 | - | - | A | 5.944 | 0.23400 | | | | |
| 300-2344 | 15/64 | - | - | 5.953 | 0.23438 | | | | |
| 300-2362 | - | - | - | 6.000 | 0.23622 | | | | |
| 300-2380 | - | - | B | 6.045 | 0.23800 | | | | |
| 300-2402 | - | - | - | 6.100 | 0.24016 | | | | |
| 300-2420 | - | - | C | 6.147 | 0.24200 | | | | |
| 300-2441 | - | - | - | 6.200 | 0.24409 | 25.0 | 75.9 | 5.56 | |
| 300-2460 | - | - | D | 6.248 | 0.24600 | | | | |
| 300-2480 | - | - | - | 6.300 | 0.24803 | 25.4 | 76.2 | | |
| 300-2500 | 1/4 | - | E | 6.350 | 0.25000 | | | | |
| 300-2520 | - | - | - | 6.400 | 0.25197 | 29.0 | 83.0 | | 6.35 |
| 300-2559 | - | - | - | 6.500 | 0.25591 | | | | |
| 300-2570 | - | - | F | 6.528 | 0.25700 | | | | |
| 300-2598 | - | - | - | 6.600 | 0.25984 | | | | |
| 300-2610 | - | - | G | 6.629 | 0.26100 | | | | |
| 300-2638 | - | - | - | 6.700 | 0.26378 | | | | |
| 300-2656 | 17/64 | - | - | 6.747 | 0.26563 | | | | |
| 300-2660 | - | - | H | 6.756 | 0.26600 | | | | |
| 300-2677 | - | - | - | 6.800 | 0.26772 | | | | |

Packed: 1 pc.

continued on next page 

| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 300D | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

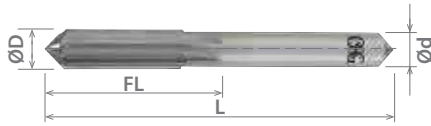
good best





List 300D (Continued)

| | | |
|-------------------|----------------|-----------|
| SPEED FEED | CARBIDE | BR |
| P379 | | |



| Cutting Diameter Tolerance | | | |
|----------------------------|----------------|---------------|---------------|
| Size | mm | Inch | No. of Flutes |
| 0.80mm-6.45mm | +0.025/+0.012 | +0.001/+0.004 | 4 |
| 6.451mm-13mm | +0.025/+0.0127 | +0.001/+0.005 | 6 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 300-2717 | - | - | - | 6.900 | 0.27165 | 28.6 | 82.6 | 6.35 |
| 300-2720 | - | - | I | 6.909 | 0.27200 | | | |
| 300-2756 | - | - | - | 7.000 | 0.27559 | | | |
| 300-2770 | - | - | J | 7.036 | 0.27700 | | | |
| 300-2795 | - | - | - | 7.100 | 0.27953 | | | |
| 300-2810 | - | - | K | 7.137 | 0.28100 | | | |
| 300-2812 | 9/32 | - | - | 7.144 | 0.28125 | | | |
| 300-2835 | - | - | - | 7.200 | 0.28346 | | | |
| 300-2874 | - | - | - | 7.300 | 0.28740 | | | |
| 300-2900 | - | - | L | 7.366 | 0.29000 | | | |
| 300-2913 | - | - | - | 7.400 | 0.29134 | | | |
| 300-2950 | - | - | M | 7.493 | 0.29500 | | | |
| 300-2953 | - | - | - | 7.500 | 0.29528 | | | |
| 300-2969 | 19/64 | - | - | 7.541 | 0.29688 | | | |
| 300-2992 | - | - | - | 7.600 | 0.29921 | | | |
| 300-3020 | - | - | N | 7.671 | 0.30200 | | | |
| 300-3031 | - | - | - | 7.700 | 0.30315 | | | |
| 300-3071 | - | - | - | 7.800 | 0.30709 | | | |
| 300-3110 | - | - | - | 7.900 | 0.31102 | | | |
| 300-3125 | 5/16 | - | - | 7.938 | 0.31250 | | | |
| 300-3150 | - | - | - | 8.000 | 0.31496 | | | |
| 300-3160 | - | - | O | 8.026 | 0.31600 | | | |
| 300-3189 | - | - | - | 8.100 | 0.31890 | | | |
| 300-3228 | - | - | - | 8.200 | 0.32283 | | | |
| 300-3230 | - | - | P | 8.204 | 0.32300 | | | |
| 300-3268 | - | - | - | 8.300 | 0.32677 | | | |
| 300-3281 | 21/64 | - | - | 8.334 | 0.32813 | | | |
| 300-3307 | - | - | - | 8.400 | 0.33071 | | | |
| 300-3320 | - | - | Q | 8.433 | 0.33200 | | | |
| 300-3346 | - | - | - | 8.500 | 0.33465 | | | |
| 300-3386 | - | - | - | 8.600 | 0.33858 | | | |
| 300-3390 | - | - | R | 8.611 | 0.33900 | | | |
| 300-3425 | - | - | - | 8.700 | 0.34252 | | | |
| 300-3438 | 11/32 | - | - | 8.733 | 0.34380 | | | |
| 300-3465 | - | - | - | 8.800 | 0.34646 | | | |
| 300-3480 | - | - | S | 8.839 | 0.34800 | | | |
| 300-3504 | - | - | - | 8.900 | 0.35039 | | | |
| 300-3543 | - | - | - | 9.000 | 0.35433 | | | |
| 300-3580 | - | - | T | 9.093 | 0.35800 | | | |
| 300-3583 | - | - | - | 9.100 | 0.35827 | | | |
| 300-3594 | 23/64 | - | - | 9.128 | 0.35938 | | | |
| 300-3622 | - | - | - | 9.200 | 0.36220 | | | |
| 300-3661 | - | - | - | 9.300 | 0.36614 | | | |
| 300-3680 | - | - | U | 9.347 | 0.36800 | | | |
| 300-3701 | - | - | - | 9.400 | 0.37008 | | | |
| 300-3740 | - | - | - | 9.500 | 0.37402 | | | |
| 300-3750 | 3/8 | - | - | 9.525 | 0.37500 | | | |
| 300-3770 | - | - | V | 9.576 | 0.37700 | | | |
| 300-3780 | - | - | - | 9.600 | 0.37795 | | | |
| 300-3819 | - | - | - | 9.700 | 0.38189 | | | |

Packed: 1 pc.



List 300D (Continued)

| | | |
|-----------------------|---------|----|
| SPEED FEED P379 | CARBIDE | BR |
|-----------------------|---------|----|

| EDP Number | Diameter | | | | | Flute Length | Overall Length | Shank Diameter | | | |
|------------|-----------------|-----------|-------------|--------|---------|--------------|----------------|----------------|------|------|-------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | FL (mm) | L (mm) | d (mm) | | | |
| 300-3858 | - | - | - | 9.800 | 0.38583 | 31.8 | 88.9 | 9.13 | | | |
| 300-3860 | - | - | W | 9.804 | 0.38600 | | | | | | |
| 300-3898 | - | - | - | 9.900 | 0.38976 | | | | | | |
| 300-3906 | 25/64 | - | - | 9.922 | 0.39063 | | | | | | |
| 300-3937 | - | - | - | 10.000 | 0.39370 | | | | | | |
| 300-3970 | - | - | X | 10.084 | 0.39700 | | | | | | |
| 300-3976 | - | - | - | 10.100 | 0.39764 | | | | | | |
| 300-4016 | - | - | - | 10.200 | 0.40157 | | | | | | |
| 300-4040 | - | - | Y | 10.262 | 0.40400 | | | | | | |
| 300-4055 | - | - | - | 10.300 | 0.40551 | | | | | | |
| 300-4062 | 13/32 | - | - | 10.319 | 0.40625 | | | | | | |
| 300-4094 | - | - | - | 10.400 | 0.40945 | | | | | | |
| 300-4130 | - | - | Z | 10.490 | 0.41300 | | | | | | |
| 300-4134 | - | - | - | 10.500 | 0.41339 | | | | | | |
| 300-4173 | - | - | - | 10.600 | 0.41732 | 34.9 | 95.3 | 9.53 | | | |
| 300-4213 | - | - | - | 10.700 | 0.42126 | | | | | | |
| 300-4219 | 27/64 | - | - | 10.716 | 0.42188 | | | | | | |
| 300-4252 | - | - | - | 10.800 | 0.42520 | | | | | | |
| 300-4291 | - | - | - | 10.900 | 0.42913 | | | | | | |
| 300-4331 | - | - | - | 11.000 | 0.43307 | | | | 35.0 | | |
| 300-4370 | - | - | - | 11.100 | 0.43701 | | | | 34.9 | 95.3 | 11.11 |
| 300-4375 | 7/16 | - | - | 11.113 | 0.43750 | | | | | | |
| 300-4409 | - | - | - | 11.200 | 0.44094 | | | | | | |
| 300-4449 | - | - | - | 11.300 | 0.44488 | | | | | | |
| 300-4488 | - | - | - | 11.400 | 0.44882 | | | | | | |
| 300-4528 | - | - | - | 11.500 | 0.45276 | | | | | | |
| 300-4531 | 29/64 | - | - | 11.509 | 0.45313 | | | | | | |
| 300-4567 | - | - | - | 11.600 | 0.45669 | | | | | | |
| 300-4606 | - | - | - | 11.700 | 0.46063 | | | | | | |
| 300-4646 | - | - | - | 11.800 | 0.46457 | | | | | | |
| 300-4685 | - | - | - | 11.900 | 0.46850 | | | | | | |
| 300-4688 | 15/32 | - | - | 11.906 | 0.46875 | | | | | | |
| 300-4724 | - | - | - | 12.000 | 0.47244 | | | | | | |
| 300-4764 | - | - | - | 12.100 | 0.47638 | | | | | | |
| 300-4803 | - | - | - | 12.200 | 0.48031 | | | | | | |
| 300-4843 | - | - | - | 12.300 | 0.48425 | | | | | | |
| 300-4844 | 31/64 | - | - | 12.303 | 0.48438 | | | | | | |
| 300-4882 | - | - | - | 12.400 | 0.48819 | | | | | | |
| 300-4921 | - | - | - | 12.500 | 0.49213 | | | | | | |
| 300-4961 | - | - | - | 12.600 | 0.49606 | | | | | | |
| 300-5000 | 1/2 | - | - | 12.700 | 0.50000 | | | | | | |
| 300-5079 | - | - | - | 12.900 | 0.50787 | | | | | | |
| 300-5118 | - | - | - | 13.000 | 0.51181 | | | | | | |

Packed: 1 pc.



| Work Material | | | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 300D | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

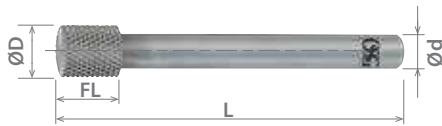




List 750

CARBIDE

BR



| EDP Number | Diameter (in) | Flute Length | Max DOC (in) | Overall Length | Shank Diameter |
|------------|---------------|--------------|--------------|----------------|----------------|
| | | FL (in) | | L (in) | d (in) |
| 750-0625 | 1/16 | 1/8 | 1/2 | 1-1/2 | 1/8 |
| 750-0781 | 5/64 | 5/32 | | | |
| 750-0938 | 3/32 | | | | |
| 750-1094 | 7/64 | | | | |
| 750-1250 | 1/8 | | | | |
| 750-1406 | 9/64 | 7/32 | 5/8 | 2 | 3/16 |
| 750-1562 | 5/32 | | | | |
| 750-1719 | 11/64 | | | | |
| 750-1875 | 3/16 | | | | |
| 750-2031 | 13/64 | | | | |
| 750-2188 | 7/32 | 9/32 | 3/4 | 2 | 1/4 |
| 750-2344 | 15/64 | | | | |
| 750-2500 | 1/4 | | | | |
| 750-2812 | 9/32 | | | | |
| 750-3125 | 5/16 | | | | |
| 750-3438 | 11/32 | 11/32 | - | 2-1/2 | 1/4 |
| 750-3750 | 3/8 | | | | |
| | | | | | |

Packed: 1 pc.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
|----------|---------------|--------------|------|--------------|------------|------------------|-----|---------|-----------|----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 750 | 1010 1018 | 1035 1045 | 1065 | 4140 4340 | | | | | | | | | | | | | | |

good best



List 700

CARBIDE BR

Single Flute



| EDP Number | Diameter | Overall Length | Shank Diameter | Included Angle Degree | |
|------------|----------|----------------|----------------|-----------------------|----|
| | D (in) | L (in) | d (in) | α | |
| 700-1250 | 1/8* | 1-1/2 | 1/8 | 60 | |
| 700-1251 | | | | 82 | |
| 700-1252 | | | | 90 | |
| 700-1875 | 3/16* | 2 | 3/16 | 60 | |
| 700-1871 | | | | 82 | |
| 700-1872 | | | | 90 | |
| 700-2500 | 1/4* | 2-9/16 | 1/4 | 60 | |
| 700-2501 | | | | 82 | |
| 700-2502 | | | | 90 | |
| 700-3750 | 3/8 | 2-9/16 | 1/4 | 60 | |
| 700-3751 | | 2-7/16 | | 82 | |
| 700-3752 | | | | 90 | |
| 700-5000 | 1/2 | 2-5/8 | 1/4 | 60 | |
| 700-5001 | | | | | 82 |
| 700-5002 | | | | | 90 |
| 700-6250 | 5/8 | 2-13/16 | 3/8 | 60 | |
| 700-6251 | | 2-5/8 | | 82 | |
| 700-6252 | | 3-1/16 | | 90 | |
| 700-6253 | | 2-7/8 | | 60 | |
| 700-6254 | | | | 82 | |
| 700-6255 | | | | 90 | |
| 700-7500 | 3/4 | 3 | 1/2 | 60 | |
| 700-7501 | | 2-7/8 | | 82 | |
| 700-7502 | | | | 90 | |
| 700-1000 | 1 | 3-1/4 | 1/2 | 60 | |
| 700-1001 | | 3 | | 82 | |
| 700-1002 | | | | 90 | |

Packed: 1 pc.

*Indicates Solid Carbide. All others have hardened steel shanks.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|------|--------------------------|------------|------------------|-----|--------------------------|--------------------------|--------------------------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 700 | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |

good best

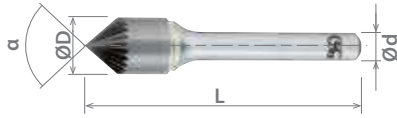




List 701

CARBIDE BR

Multiple Flute



| EDP Number | Diameter | Overall Length | Shank Diameter | Included Angle Degree | No. of Flutes | |
|------------|----------|----------------|----------------|-----------------------|---------------|----|
| | D (in) | L (in) | d (in) | α | | |
| 701-2500 | 1/4* | 2 | 1/4 | 60 | 18 | |
| 701-2501 | | | | 82 | | |
| 701-2502 | | | | 90 | | |
| 701-3750 | 3/8 | 2-3/16 | | 60 | 20 | |
| 701-3751 | | 2-5/16 | | 82 | | |
| 701-3752 | | | | 90 | | |
| 701-5000 | 1/2 | 2-1/8 | | 3/8 | 60 | 24 |
| 701-5001 | | | | | 82 | |
| 701-5002 | | | | | 90 | |
| 701-6250 | 5/8 | 3 | 60 | | 30 | |
| 701-6251 | | 2-7/8 | 82 | | | |
| 701-6252 | | 90 | | | | |
| 701-7500 | 3/4 | 3 | 60 | | 36 | |
| 701-7501 | | 2-7/8 | 82 | | | |
| 701-7502 | | | 90 | | | |
| 701-1000 | 1 | 3 | 1/2 | 60 | 46 | |
| 701-1001 | | | | 82 | | |
| 701-1002 | | | | 90 | | |

Packed: 1 pc.

*Indicates Solid Carbide. All others have hardened steel shanks.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|---------------|------|--------------------------|--------------------------|------------|------------------|-----|---------|--------------------------|-----------|---------|--------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 701 | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best



List 706

CARBIDE BR

6 Flute



| EDP Number | Diameter | | Overall Length | Shank Diameter | Included Angle Degree |
|--------------|----------|--------|----------------|----------------|-----------------------|
| | D (in) | L (in) | d (in) | α | |
| 706-2500-060 | 1/4* | 2 | 1/4 | 60 | |
| 706-2500-082 | | | | | 82 |
| 706-2500-090 | | | | | |
| 706-3750-060 | 2-1/2 | 60 | | | |
| 706-3750-082 | | | 82 | | |
| 706-3750-090 | | | | | 90 |
| 706-5000-060 | 2-5/8 | | | | |
| 706-5000-082 | | | 82 | | |
| 706-5000-090 | | | | | 90 |
| 706-6250-060 | 3 | | | 60 | |
| 706-6250-082 | | | 82 | | |
| 706-6250-090 | | | | | 90 |
| 706-7500-060 | 3 | 60 | | | |
| 706-7500-082 | | | 82 | | |
| 706-7500-090 | | | | | 90 |
| 706-1000-060 | 3-1/4 | | | | |
| 706-1000-082 | | | 82 | | |
| 706-1000-090 | | | | | 90 |
| 706-1000-060 | 3 | | | 60 | |
| 706-1000-082 | | | 82 | | |
| 706-1000-090 | | | | | 90 |

Packed: 1 pc.

*Indicates Solid Carbide. All others have hardened steel shanks.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|------|--------------------------|------------------|------------|----------|---------|--------------|--------------------------|--------------------------|-----------------|----------------|---------|-----------|-----------|-----------|--|
| List No. | P | | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Stainless Steels | | Aluminum | | Nickel Alloy | | Titanium | Hardened Steels | | | | | | |
| | Low | Med. | High | | | | 6061 | Casting | | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 706 | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |

good best





List OCS-SO

Coolant-Through, Stub Length Drills



| | | | | | | | |
|------------|-------------------------------|----------------|---------------|--------------|-------------|--|--|
| NEW | SPEED FEED P380-381 | CARBIDE | TYPE N | TiAIN | STUB | | |
|------------|-------------------------------|----------------|---------------|--------------|-------------|--|--|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤14 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|-------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 0CS0600F-SO | - | - | - | 6.000 | 0.23622 | 28 | 66 | 6 |
| 0CS0630F-SO | - | - | - | 6.300 | 0.24803 | 34 | 79 | 8 |
| 0CS0650F-SO | - | - | - | 6.500 | 0.25591 | | | |
| 0CS0680F-SO | - | - | - | 6.800 | 0.26772 | | | |
| 0CS0700F-SO | - | - | - | 7.000 | 0.27559 | | | |
| 0CS0750F-SO | - | - | - | 7.500 | 0.29528 | 41 | 89 | 10 |
| 0CS0800F-SO | - | - | - | 8.000 | 0.31496 | | | |
| 0CS0850F-SO | - | - | - | 8.500 | 0.33465 | | | |
| 0CS0900F-SO | - | - | - | 9.000 | 0.35433 | | | |
| 0CS0950F-SO | - | - | - | 9.500 | 0.37402 | 47 | 102 | 12 |
| 0CS1000F-SO | - | - | - | 10.000 | 0.39370 | | | |
| 0CS1020F-SO | - | - | - | 10.200 | 0.40157 | | | |
| 0CS1050F-SO | - | - | - | 10.500 | 0.41339 | | | |
| 0CS1100F-SO | - | - | - | 11.000 | 0.43307 | 55 | 107 | 14 |
| 0CS1150F-SO | - | - | - | 11.500 | 0.45276 | | | |
| 0CS1200F-SO | - | - | - | 12.000 | 0.47244 | | | |
| 0CS1250F-SO | - | - | - | 12.500 | 0.49213 | | | |
| 0CS1270F-SO | 1/2 | - | - | 12.700 | 0.50000 | 60 | 107 | 14 |
| 0CS1300F-SO | - | - | - | 13.000 | 0.51181 | | | |
| 0CS1350F-SO | - | - | - | 13.500 | 0.53150 | | | |
| 0CS1400F-SO | - | - | - | 14.000 | 0.55118 | | | |

Packed: 1 pc.
Available TiAIN coating only.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|------------------------------|------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------|--------------------------|--------------------------|--------------------------|--------------|
| | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 0CS-SO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best





List 0CJ-SO



NEW SPEED FEED P380-381 CARBIDE TYPE N TiAIN JOBBERS 30°

Coolant-Through, Jobber Length Drills



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤14 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|-------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 0CJ0600F-SO | - | - | - | 6.000 | 0.23622 | 44 | 82 | 6 |
| 0CJ0630F-SO | - | - | - | 6.300 | 0.24803 | | | |
| 0CJ0650F-SO | - | - | - | 6.500 | 0.25591 | | | |
| 0CJ0680F-SO | - | - | - | 6.800 | 0.26772 | | | |
| 0CJ0700F-SO | - | - | - | 7.000 | 0.27559 | | | |
| 0CJ0750F-SO | - | - | - | 7.500 | 0.29528 | | | |
| 0CJ0800F-SO | - | - | - | 8.000 | 0.31496 | 53 | 91 | 8 |
| 0CJ0850F-SO | - | - | - | 8.500 | 0.33465 | | | |
| 0CJ0900F-SO | - | - | - | 9.000 | 0.35433 | | | |
| 0CJ0950F-SO | - | - | - | 9.500 | 0.37402 | | | |
| 0CJ1000F-SO | - | - | - | 10.000 | 0.39370 | | | |
| 0CJ1020F-SO | - | - | - | 10.200 | 0.40157 | | | |
| 0CJ1050F-SO | - | - | - | 10.500 | 0.41339 | 61 | 103 | 10 |
| 0CJ1100F-SO | - | - | - | 11.000 | 0.43307 | | | |
| 0CJ1150F-SO | - | - | - | 11.500 | 0.45276 | | | |
| 0CJ1200F-SO | - | - | - | 12.000 | 0.47244 | | | |
| 0CJ1250F-SO | - | - | - | 12.500 | 0.49213 | | | |
| 0CJ1270F-SO | 1/2 | - | - | 12.700 | 0.50000 | | | |
| 0CJ1300F-SO | - | - | - | 13.000 | 0.51181 | 71 | 118 | 12 |
| 0CJ1350F-SO | - | - | - | 13.500 | 0.53150 | | | |
| 0CJ1400F-SO | - | - | - | 14.000 | 0.55118 | | | |
| 0CJ1400F-SO | - | - | - | 14.000 | 0.55118 | | | |
| 0CJ1300F-SO | - | - | - | 13.000 | 0.51181 | 77 | 124 | 14 |
| 0CJ1350F-SO | - | - | - | 13.500 | 0.53150 | | | |
| 0CJ1400F-SO | - | - | - | 14.000 | 0.55118 | | | |
| 0CJ1400F-SO | - | - | - | 14.000 | 0.55118 | | | |

Packed: 1 pc.
Available TiAIN coating only.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | Alloy Steels | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 0CJ-SO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best





List 01S-SO



| | | | | | | |
|------------|-------------------------------|----------------|---------------|--------------|-------------|------------|
| NEW | SPEED FEED P380-381 | CARBIDE | TYPE N | TiAIN | STUB | 30° |
|------------|-------------------------------|----------------|---------------|--------------|-------------|------------|

Stub Length Drills



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 14 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|-------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 01S0100F-SO | - | - | - | 1.000 | 0.03937 | 6 | 26 | 1.0 |
| 01S0150F-SO | - | - | - | 1.500 | 0.05906 | 9 | 32 | 1.5 |
| 01S0200F-SO | - | - | - | 2.000 | 0.07874 | 12 | 38 | 2.0 |
| 01S0250F-SO | - | - | - | 2.500 | 0.09843 | 14 | 43 | 2.5 |
| 01S0300F-SO | - | - | - | 3.000 | 0.11811 | 20 | 62 | 6.0 |
| 01S0330F-SO | - | - | - | 3.300 | 0.12992 | | | |
| 01S0350F-SO | - | - | - | 3.500 | 0.13780 | | | |
| 01S0400F-SO | - | - | - | 4.000 | 0.15748 | 24 | 66 | 6.0 |
| 01S0420F-SO | - | - | - | 4.200 | 0.16535 | | | |
| 01S0450F-SO | - | - | - | 4.500 | 0.17717 | | | |
| 01S0500F-SO | - | - | - | 5.000 | 0.19685 | 28 | 79 | 8.0 |
| 01S0550F-SO | - | - | - | 5.500 | 0.21654 | | | |
| 01S0600F-SO | - | - | - | 6.000 | 0.23622 | | | |
| 01S0630F-SO | - | - | - | 6.300 | 0.24803 | 34 | 102 | 12.0 |
| 01S0650F-SO | - | - | - | 6.500 | 0.25591 | | | |
| 01S0680F-SO | - | - | - | 6.800 | 0.26772 | | | |
| 01S0700F-SO | - | - | - | 7.000 | 0.27559 | 41 | 107 | 14.0 |
| 01S0750F-SO | - | - | - | 7.500 | 0.29528 | | | |
| 01S0800F-SO | - | - | - | 8.000 | 0.31496 | | | |
| 01S0850F-SO | - | - | - | 8.500 | 0.33465 | 47 | 120 | 10.0 |
| 01S0900F-SO | - | - | - | 9.000 | 0.35433 | | | |
| 01S0950F-SO | - | - | - | 9.500 | 0.37402 | | | |
| 01S1000F-SO | - | - | - | 10.000 | 0.39370 | 55 | 140 | 14.0 |
| 01S1020F-SO | - | - | - | 10.200 | 0.40157 | | | |
| 01S1050F-SO | - | - | - | 10.500 | 0.41339 | | | |
| 01S1100F-SO | - | - | - | 11.000 | 0.43307 | 60 | 170 | 14.0 |
| 01S1150F-SO | - | - | - | 11.500 | 0.45276 | | | |
| 01S1200F-SO | - | - | - | 12.000 | 0.47244 | | | |
| 01S1250F-SO | - | - | - | 12.500 | 0.49213 | 60 | 107 | 14.0 |
| 01S1270F-SO | 1/2 | - | - | 12.700 | 0.50000 | | | |
| 01S1300F-SO | - | - | - | 13.000 | 0.51181 | | | |
| 01S1350F-SO | - | - | - | 13.500 | 0.53150 | 60 | 107 | 14.0 |
| 01S1400F-SO | - | - | - | 14.000 | 0.55118 | | | |

Packed: 1 pc.
Available TiAIN coating only.



| List No. | Work Material | | | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | H | | | | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 01S-SO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 01J-SO

Jobber Length Drills



| | | | | | | |
|------------|-------------------------------|----------------|---------------|--------------|----------------|------------|
| NEW | SPEED FEED P380-381 | CARBIDE | TYPE N | TiAlN | JOBBERS | 30° |
|------------|-------------------------------|----------------|---------------|--------------|----------------|------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 14 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|-------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 01J0100F-SO | - | - | - | 1.000 | 0.03937 | 8 | 55 | 4 |
| 01J0150F-SO | - | - | - | 1.500 | 0.05906 | 12 | | |
| 01J0200F-SO | - | - | - | 2.000 | 0.07874 | 21 | | |
| 01J0250F-SO | - | - | - | 2.500 | 0.09843 | 28 | 66 | |
| 01J0300F-SO | - | - | - | 3.000 | 0.11811 | | | |
| 01J0330F-SO | - | - | - | 3.300 | 0.12992 | | | |
| 01J0350F-SO | - | - | - | 3.500 | 0.13780 | 36 | 74 | |
| 01J0400F-SO | - | - | - | 4.000 | 0.15748 | | | |
| 01J0420F-SO | - | - | - | 4.200 | 0.16535 | | | |
| 01J0450F-SO | - | - | - | 4.500 | 0.17717 | 44 | 82 | |
| 01J0500F-SO | - | - | - | 5.000 | 0.19685 | | | |
| 01J0550F-SO | - | - | - | 5.500 | 0.21654 | | | |
| 01J0600F-SO | - | - | - | 6.000 | 0.23622 | 53 | 91 | |
| 01J0630F-SO | - | - | - | 6.300 | 0.24803 | | | |
| 01J0650F-SO | - | - | - | 6.500 | 0.25591 | | | |
| 01J0680F-SO | - | - | - | 6.800 | 0.26772 | 61 | 103 | |
| 01J0700F-SO | - | - | - | 7.000 | 0.27559 | | | |
| 01J0750F-SO | - | - | - | 7.500 | 0.29528 | | | |
| 01J0800F-SO | - | - | - | 8.000 | 0.31496 | 71 | 118 | |
| 01J0850F-SO | - | - | - | 8.500 | 0.33465 | | | |
| 01J0900F-SO | - | - | - | 9.000 | 0.35433 | | | |
| 01J0950F-SO | - | - | - | 9.500 | 0.37402 | 77 | 124 | |
| 01J1000F-SO | - | - | - | 10.000 | 0.39370 | | | |
| 01J1020F-SO | - | - | - | 10.200 | 0.40157 | | | |
| 01J1050F-SO | - | - | - | 10.500 | 0.41339 | 8 | 10 | |
| 01J1100F-SO | - | - | - | 11.000 | 0.43307 | | | |
| 01J1150F-SO | - | - | - | 11.500 | 0.45276 | | | |
| 01J1200F-SO | - | - | - | 12.000 | 0.47244 | 12 | 14 | |
| 01J1250F-SO | - | - | - | 12.500 | 0.49213 | | | |
| 01J1270F-SO | 1/2 | - | - | 12.700 | 0.50000 | | | |
| 01J1300F-SO | - | - | - | 13.000 | 0.51181 | 14 | 14 | |
| 01J1350F-SO | - | - | - | 13.500 | 0.53150 | | | |
| 01J1400F-SO | - | - | - | 14.000 | 0.55118 | | | |

Packed: 1 pc.
Available TiAlN coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|------------------------------|------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------|--------------------------|--------------------------|--------------------------|--------------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 01J-SO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best

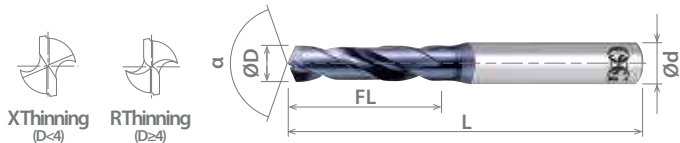




List 1900

VPH-GDS, Ideal for Difficult to Machine Materials

| | | | | |
|-------------------------------|------------|----------|-------------|------------|
| SPEED FEED P382-383 | XPM | V | STUB | 30° |
|-------------------------------|------------|----------|-------------|------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 0.5≤D≤3 | +0 / -0.014 | +0 / -0.0006 |
| 3<D≤6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤18 | +0 / -0.027 | +0 / -0.0011 |
| 18<D≤20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α | |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|---|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | |
| 8599005 | - | - | - | 0.500 | 0.01969 | 3.0 | 38 | 3 | 130° | |
| 8608055 | - | - | - | 0.550 | 0.02165 | 3.5 | | | | 4 |
| 8608056 | - | - | - | 0.560 | 0.02205 | | | | | |
| 8608057 | - | - | - | 0.570 | 0.02244 | 4.0 | | | | 3 |
| 8599006 | - | - | - | 0.600 | 0.02362 | | | | | |
| 8608061 | - | - | - | 0.610 | 0.02402 | | | | | |
| 8608063 | - | - | - | 0.630 | 0.02480 | 4.5 | | 4 | | |
| 8608065 | - | - | - | 0.650 | 0.02559 | | | | | |
| 8608066 | - | - | - | 0.660 | 0.02598 | 5.0 | | 3 | | |
| 8608068 | - | - | - | 0.680 | 0.02677 | | | | | |
| 8608069 | - | - | - | 0.690 | 0.02717 | | | | | |
| 8599007 | - | - | - | 0.700 | 0.02756 | 5.5 | | 4 | | |
| 8608071 | - | - | - | 0.710 | 0.02795 | | | | | |
| 8608074 | - | - | - | 0.740 | 0.02913 | 6.0 | | 3 | | |
| 8608075 | - | - | - | 0.750 | 0.02953 | | | | | |
| 8599008 | - | - | - | 0.800 | 0.03150 | | | | | |
| 8608082 | - | - | - | 0.820 | 0.03228 | 7.0 | | 4 | | |
| 8608083 | - | - | - | 0.830 | 0.03268 | | | | | |
| 8608085 | - | - | - | 0.850 | 0.03346 | 8.0 | 5 | | | |
| 8608088 | - | - | - | 0.880 | 0.03465 | | | | | |
| 8608089 | - | - | - | 0.890 | 0.03504 | | | | | |
| 8599009 | - | - | - | 0.900 | 0.03543 | 9.0 | 3 | | | |
| 8608094 | - | - | - | 0.940 | 0.03701 | | | | | |
| 8608095 | - | - | - | 0.950 | 0.03740 | 41 | 4 | | | |
| 8608099 | - | - | - | 0.990 | 0.03898 | | | | | |
| 8599010 | - | - | - | 1.000 | 0.03937 | | | | | |
| 8608102 | - | - | - | 1.020 | 0.04016 | 9.0 | 5 | | | |
| 8608104 | - | - | - | 1.040 | 0.04094 | | | | | |
| 8608105 | - | - | - | 1.050 | 0.04134 | 10.0 | 3 | | | |
| 8608106 | - | - | - | 1.060 | 0.04173 | | | | | |
| 8608107 | - | - | - | 1.070 | 0.04213 | | | | | |
| 8608109 | - | - | - | 1.090 | 0.04291 | 11.0 | 4 | | | |
| 8608113 | - | - | - | 1.130 | 0.04449 | | | | | |
| 8608114 | - | - | - | 1.140 | 0.04488 | 12.0 | 5 | | | |
| 8608118 | - | - | - | 1.180 | 0.04646 | | | | | |
| 8608119 | - | - | - | 1.190 | 0.04685 | | | | | |
| 8608122 | - | - | - | 1.220 | 0.04803 | 13.0 | 3 | | | |
| 8608124 | - | - | - | 1.240 | 0.04882 | | | | | |
| 8608125 | - | - | - | 1.250 | 0.04921 | 14.0 | 4 | | | |
| 8608126 | - | - | - | 1.260 | 0.04961 | | | | | |
| 8608127 | - | - | - | 1.270 | 0.05000 | | | | | |
| 8608128 | - | - | - | 1.280 | 0.05039 | 15.0 | 5 | | | |
| 8608129 | - | - | - | 1.290 | 0.05079 | | | | | |
| 8599013 | - | - | - | 1.300 | 0.05118 | 16.0 | 3 | | | |
| 8608131 | - | - | - | 1.310 | 0.05157 | | | | | |
| 8608132 | - | - | - | 1.320 | 0.05197 | | | | | |
| 8599014 | - | - | - | 1.400 | 0.05512 | 17.0 | 4 | | | |
| 8608146 | - | - | - | 1.460 | 0.05748 | | | | | |
| 8608147 | - | - | - | 1.470 | 0.05787 | 18.0 | 5 | | | |
| 8608148 | - | - | - | 1.480 | 0.05827 | | | | | |

Packed: 1 pc.
Available V coating only.





List 1900 (Continued)

| | | | | |
|------------------------|-----|---|------|-----|
| SPEED FEED P382-383 | XPM | V | STUB | 30° |
|------------------------|-----|---|------|-----|

VPH-GDS, Ideal for Difficult to Machine Materials

| EDP Number | Diameter | | | | | Flute Length | Overall Length | Shank Diameter | Point Angle | | | |
|------------|-----------------|-----------|-------------|-------|---------|--------------|----------------|----------------|-------------|------|----|---|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | | | |
| 8599015 | - | - | - | 1.500 | 0.05906 | 9.0 | 41 | 3 | 130° | | | |
| 8608151 | - | - | - | 1.510 | 0.05945 | 10.0 | 42 | | | | | |
| 8608153 | - | - | - | 1.530 | 0.06024 | | | | | | | |
| 8608155 | - | - | - | 1.550 | 0.06102 | | | | | | | |
| 8608159 | - | - | - | 1.590 | 0.06260 | | | | | | | |
| 8608161 | - | - | - | 1.610 | 0.06339 | | | | | | | |
| 8608162 | - | - | - | 1.620 | 0.06378 | | | | | | | |
| 8608163 | - | - | - | 1.630 | 0.06417 | | | | | | | |
| 8608164 | - | - | - | 1.640 | 0.06457 | | | | | | | |
| 8608166 | - | - | - | 1.660 | 0.06535 | | | | | | | |
| 8608169 | - | - | - | 1.690 | 0.06654 | | | | | | | |
| 8599017 | - | - | - | 1.700 | 0.06693 | 11.0 | 43 | 3 | 130° | | | |
| 8608176 | - | - | - | 1.760 | 0.06929 | | | | | | | |
| 8608177 | - | - | - | 1.770 | 0.06969 | | | | | | | |
| 8608178 | - | - | - | 1.780 | 0.07008 | | | | | | | |
| 8599018 | - | - | - | 1.800 | 0.07087 | | | | | | | |
| 8608182 | - | - | - | 1.820 | 0.07165 | | | | | | | |
| 8608185 | - | - | - | 1.850 | 0.07283 | | | | | | | |
| 8608193 | - | - | - | 1.930 | 0.07598 | | | | | 12.0 | 44 | 4 |
| 8608198 | - | - | - | 1.980 | 0.07795 | | | | | | | |
| 8608199 | - | - | - | 1.990 | 0.07835 | | | | | | | |
| 9599020 | - | - | - | 2.000 | 0.07874 | | | | | | | |
| 8608203 | - | - | - | 2.030 | 0.07992 | | | | | | | |
| 8608204 | - | - | - | 2.040 | 0.08031 | | | | | | | |
| 8608206 | - | - | - | 2.060 | 0.08110 | | | | | | | |
| 8608208 | - | - | - | 2.080 | 0.08189 | | | | | | | |
| 9599021 | - | - | - | 2.100 | 0.08268 | | | | | | | |
| 8608213 | - | - | - | 2.130 | 0.08386 | 13.0 | 45 | 3 | 130° | | | |
| 8608215 | - | - | - | 2.150 | 0.08465 | | | | | | | |
| 8608216 | - | - | - | 2.160 | 0.08504 | | | | | | | |
| 8608218 | - | - | - | 2.180 | 0.08583 | | | | | | | |
| 9599022 | - | - | - | 2.200 | 0.08661 | | | | | | | |
| 8608222 | - | - | - | 2.220 | 0.08740 | | | | | | | |
| 8608226 | - | - | - | 2.260 | 0.08898 | | | | | | | |
| 9599023 | - | - | - | 2.300 | 0.09055 | | | | | | | |
| 8608231 | - | - | - | 2.310 | 0.09094 | | | | | | | |
| 8608233 | - | - | - | 2.330 | 0.09173 | | | | | 14.0 | 46 | 4 |
| 8608237 | - | - | - | 2.370 | 0.09331 | | | | | | | |
| 8608238 | - | - | - | 2.380 | 0.09370 | | | | | | | |
| 9599024 | - | - | - | 2.400 | 0.09449 | | | | | | | |
| 8608244 | - | - | - | 2.440 | 0.09606 | | | | | | | |
| 8608246 | - | - | - | 2.460 | 0.09685 | | | | | | | |
| 8608249 | - | - | - | 2.490 | 0.09803 | | | | | | | |
| 9599025 | - | - | - | 2.500 | 0.09843 | | | | | | | |
| 8608253 | - | - | - | 2.530 | 0.09961 | | | | | | | |
| 8608258 | - | - | - | 2.580 | 0.10157 | | | | | | | |

Packed: 1 pc.
Available V coating only.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 1900 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

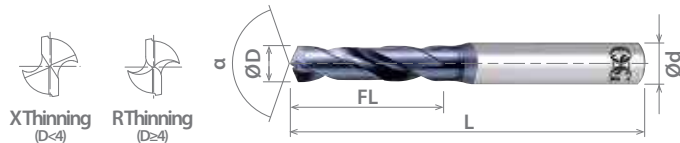




List 1900 (Continued)

VPH-GDS, Ideal for Difficult to Machine Materials

| | | | | |
|-------------------------------|------------|----------|-------------|------------|
| SPEED FEED P382-383 | XPM | V | STUB | 30° |
|-------------------------------|------------|----------|-------------|------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 0.5≤D≤3 | +0 / -0.014 | +0 / -0.0006 |
| 3<D≤6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤18 | +0 / -0.027 | +0 / -0.0011 |
| 18<D≤20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 9599026 | - | - | - | 2.600 | 0.10236 | 14.0 | 46 | 3 | 130° |
| 8608264 | - | - | - | 2.640 | 0.10394 | | | | |
| 9599027 | - | - | - | 2.700 | 0.10630 | | | | |
| 8608271 | - | - | - | 2.710 | 0.10669 | | | | |
| 8608278 | - | - | - | 2.780 | 0.10945 | | | | |
| 8608279 | - | - | - | 2.790 | 0.10984 | | | | |
| 9599028 | - | - | - | 2.800 | 0.11024 | 16.0 | 48 | | |
| 8608281 | - | - | - | 2.810 | 0.11063 | | | | |
| 8608282 | - | - | - | 2.820 | 0.11102 | | | | |
| 8608287 | - | - | - | 2.870 | 0.11299 | | | | |
| 9599029 | - | - | - | 2.900 | 0.11417 | | | | |
| 8608295 | - | - | - | 2.950 | 0.11614 | | | | |
| 9599030 | - | - | - | 3.000 | 0.11811 | 18.0 | 50 | | |
| 8608305 | - | - | - | 3.050 | 0.12008 | | | | |
| 9599031 | - | - | - | 3.100 | 0.12205 | | | | |
| 8608318 | 1/8 | - | - | 3.180 | 0.12520 | | | | |
| 8608319 | - | - | - | 3.190 | 0.12559 | | | | |
| 9599032 | - | - | - | 3.200 | 0.12598 | | | | |
| 8608326 | - | - | - | 3.260 | 0.12835 | 20.0 | 52 | | |
| 9599033 | - | - | - | 3.300 | 0.12992 | | | | |
| 8608336 | - | - | - | 3.360 | 0.13228 | | | | |
| 9599034 | - | - | - | 3.400 | 0.13386 | | | | |
| 8608345 | - | - | - | 3.450 | 0.13583 | | | | |
| 9599035 | - | - | - | 3.500 | 0.13780 | | | | |
| 8608352 | - | - | - | 3.520 | 0.13858 | 22.0 | 54 | | |
| 8608357 | - | - | - | 3.570 | 0.14055 | | | | |
| 9599036 | - | - | - | 3.600 | 0.14173 | | | | |
| 8608366 | - | - | - | 3.660 | 0.14409 | | | | |
| 9599037 | - | - | - | 3.700 | 0.14567 | | | | |
| 8608373 | - | - | - | 3.730 | 0.14685 | | | | |
| 8608377 | - | - | - | 3.770 | 0.14843 | 24.0 | 66 | | |
| 9599038 | - | - | - | 3.800 | 0.14961 | | | | |
| 8608386 | - | - | - | 3.860 | 0.15197 | | | | |
| 9599039 | - | - | - | 3.900 | 0.15354 | | | | |
| 8608391 | - | - | - | 3.910 | 0.15394 | | | | |
| 8608397 | - | - | - | 3.970 | 0.15630 | | | | |
| 8608399 | - | - | - | 3.990 | 0.15709 | 24.0 | 68 | | |
| 9599040 | - | - | - | 4.000 | 0.15748 | | | | |
| 8608404 | - | - | - | 4.040 | 0.15906 | | | | |
| 8608409 | - | - | - | 4.090 | 0.16102 | | | | |
| 9599041 | - | - | - | 4.100 | 0.16142 | | | | |
| 8608415 | - | - | - | 4.150 | 0.16339 | | | | |
| 9599042 | - | - | - | 4.200 | 0.16535 | 24.0 | 68 | | |
| 8608422 | - | - | - | 4.220 | 0.16614 | | | | |
| 8608427 | - | - | - | 4.270 | 0.16811 | | | | |
| 9599043 | - | - | - | 4.300 | 0.16929 | | | | |
| 8608431 | - | - | - | 4.310 | 0.16969 | | | | |
| 8608437 | 11/64 | - | - | 4.370 | 0.17205 | | | | |
| 8608439 | - | - | - | 4.390 | 0.17283 | 24.0 | 68 | | |
| 9599044 | - | - | - | 4.400 | 0.17323 | | | | |

Packed: 1 pc.
Available V coating only.





List 1900 (Continued)

VPH-GDS, Ideal for Difficult to Machine Materials

| | | | | |
|------------------------|-----|---|------|-----|
| SPEED FEED P382-383 | XPM | V | STUB | 30° |
|------------------------|-----|---|------|-----|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8608445 | - | - | - | 4.450 | 0.17520 | 24.0 | 68 | 6 | 130° |
| 9599045 | - | - | - | 4.500 | 0.17717 | | | | |
| 8608457 | - | - | - | 4.570 | 0.17992 | | | | |
| 9599046 | - | - | - | 4.600 | 0.18110 | | | | |
| 8608462 | - | - | - | 4.620 | 0.18189 | | | | |
| 8608466 | - | - | - | 4.660 | 0.18346 | | | | |
| 9599047 | - | - | - | 4.700 | 0.18504 | | | | |
| 8608476 | - | - | - | 4.760 | 0.18740 | | | | |
| 8608479 | - | - | - | 4.790 | 0.18858 | | | | |
| 9599048 | - | - | - | 4.800 | 0.18898 | | | | |
| 8608485 | - | - | - | 4.850 | 0.19094 | | | | |
| 9599049 | - | - | - | 4.900 | 0.19291 | | | | |
| 8608491 | - | - | - | 4.910 | 0.19331 | | | | |
| 8608498 | - | - | - | 4.980 | 0.19606 | | | | |
| 9599050 | - | - | - | 5.000 | 0.19685 | | | | |
| 8608505 | - | - | - | 5.050 | 0.19882 | | | | |
| 9599051 | - | - | - | 5.100 | 0.20079 | | | | |
| 8608511 | - | - | - | 5.110 | 0.20118 | | | | |
| 8608515 | - | - | - | 5.150 | 0.20276 | | | | |
| 8608516 | - | - | - | 5.160 | 0.20315 | | | | |
| 8608518 | - | - | - | 5.180 | 0.20394 | | | | |
| 9599052 | - | - | - | 5.200 | 0.20472 | | | | |
| 8608522 | - | - | - | 5.220 | 0.20551 | | | | |
| 8608526 | - | - | - | 5.260 | 0.20709 | | | | |
| 9599053 | - | - | - | 5.300 | 0.20866 | | | | |
| 8608531 | - | - | - | 5.310 | 0.20906 | | | | |
| 9599054 | - | - | - | 5.400 | 0.21260 | | | | |
| 8608541 | - | - | - | 5.410 | 0.21299 | | | | |
| 8608546 | - | - | - | 5.460 | 0.21496 | | | | |
| 9599055 | - | - | - | 5.500 | 0.21654 | | | | |
| 8608556 | - | - | - | 5.560 | 0.21890 | | | | |
| 9599056 | - | - | - | 5.600 | 0.22047 | | | | |
| 8608561 | - | - | - | 5.610 | 0.22087 | | | | |
| 9599057 | - | - | - | 5.700 | 0.22441 | | | | |
| 8608579 | - | - | - | 5.790 | 0.22795 | | | | |
| 9599058 | - | - | - | 5.800 | 0.22835 | | | | |
| 9599059 | - | - | - | 5.900 | 0.23228 | | | | |
| 8608595 | 15/64 | - | - | 5.953 | 0.23438 | | | | |
| 9599060 | - | - | - | 6.000 | 0.23622 | | | | |
| 9599061 | - | - | - | 6.100 | 0.24016 | | | | |
| 9598615 | - | - | - | 6.150 | 0.24213 | | | | |
| 9599062 | - | - | - | 6.200 | 0.24409 | | | | |
| 9599063 | - | - | - | 6.300 | 0.24803 | | | | |
| 8608635 | 1/4 | - | E | 6.350 | 0.25000 | | | | |
| 9599064 | - | - | - | 6.400 | 0.25197 | | | | |
| 9599065 | - | - | - | 6.500 | 0.25591 | | | | |

Packed: 1 pc.
Available V coating only.

continued on next page

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 1900 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

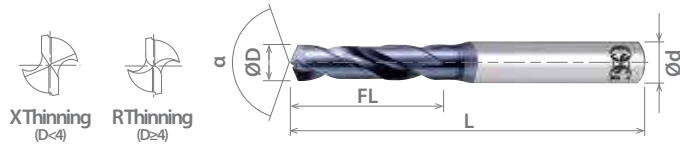




List 1900 (Continued)

VPH-GDS, Ideal for Difficult to Machine Materials

| | | | | |
|-------------------------------|------------|----------|-------------|------------|
| SPEED FEED P382-383 | XPM | V | STUB | 30° |
|-------------------------------|------------|----------|-------------|------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 0.5≤D≤3 | +0 / -0.014 | +0 / -0.0006 |
| 3<D≤6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤18 | +0 / -0.027 | +0 / -0.0011 |
| 18<D≤20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α | | | | |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|------|----|----|--|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | | | | |
| 9599066 | - | - | - | 6.600 | 0.25984 | 31.0 | 75 | | | | | | |
| 9598665 | - | - | - | 6.650 | 0.26181 | | | | | | | | |
| 9599067 | - | - | - | 6.700 | 0.26378 | | | | | | | | |
| 8608675 | 17/64 | - | - | 6.747 | 0.26563 | | | | | | | | |
| 9599068 | - | - | - | 6.800 | 0.26772 | | | | | | | | |
| 9598686 | - | - | - | 6.860 | 0.27008 | | | | | | | | |
| 9599069 | - | - | - | 6.900 | 0.27165 | | | | | | | | |
| 9599070 | - | - | - | 7.000 | 0.27559 | | | | | | | | |
| 9598704 | - | - | - | 7.040 | 0.27717 | | | | | | | | |
| 9599071 | - | - | - | 7.100 | 0.27953 | | | | | | | | |
| 8608714 | 9/32 | - | - | 7.144 | 0.28125 | 34.0 | 78 | 8 | | | | | |
| 9599072 | - | - | - | 7.200 | 0.28346 | | | | | | | | |
| 9599073 | - | - | - | 7.300 | 0.28740 | | | | | | | | |
| 9599074 | - | - | - | 7.400 | 0.29134 | | | | | | | | |
| 9599075 | - | - | - | 7.500 | 0.29528 | | | | | | | | |
| 8608754 | 19/64 | - | - | 7.541 | 0.29688 | | | | | | | | |
| 9599076 | - | - | - | 7.600 | 0.29921 | | | | | 37.0 | 81 | | |
| 9599077 | - | - | - | 7.700 | 0.30315 | | | | | | | | |
| 9599078 | - | - | - | 7.800 | 0.30709 | | | | | | | | |
| 9599079 | - | - | - | 7.900 | 0.31102 | | | | | | | | |
| 8608794 | 5/16 | - | - | 7.938 | 0.31250 | | | | | | | | |
| 9599080 | - | - | - | 8.000 | 0.31496 | | | | | | | | |
| 9599081 | - | - | - | 8.100 | 0.31890 | | | | | | | | |
| 9598815 | - | - | - | 8.150 | 0.32087 | | | | | | | | |
| 9599082 | - | - | - | 8.200 | 0.32283 | | | | | | | | |
| 9599083 | - | - | - | 8.300 | 0.32677 | 37.0 | 87 | | 130° | | | | |
| 8608833 | 21/64 | - | - | 8.334 | 0.32813 | | | | | | | | |
| 9599084 | - | - | - | 8.400 | 0.33071 | | | | | | | | |
| 9599085 | - | - | - | 8.500 | 0.33465 | | | | | | | | |
| 9598856 | - | - | - | 8.560 | 0.33701 | | | | | | | | |
| 9599086 | - | - | - | 8.600 | 0.33858 | | | | | | | | |
| 9598868 | - | - | - | 8.680 | 0.34173 | | | | | | | | |
| 9599087 | - | - | - | 8.700 | 0.34252 | | | | | | | | |
| 8608873 | 11/32 | - | - | 8.731 | 0.34375 | | | | | | | | |
| 9599088 | - | - | - | 8.800 | 0.34646 | | | | | 40.0 | 90 | 10 | |
| 9598886 | - | - | - | 8.860 | 0.34882 | | | | | | | | |
| 9599089 | - | - | - | 8.900 | 0.35039 | | | | | | | | |
| 9599090 | - | - | - | 9.000 | 0.35433 | | | | | | | | |
| 9599091 | - | - | - | 9.100 | 0.35827 | | | | | | | | |
| 8608913 | 23/64 | - | - | 9.128 | 0.35938 | | | | | | | | |
| 9599092 | - | - | - | 9.200 | 0.36220 | | | | | | | | |
| 9599093 | - | - | - | 9.300 | 0.36614 | | | | | | | | |
| 9599094 | - | - | - | 9.400 | 0.37008 | | | | | | | | |
| 9599095 | - | - | - | 9.500 | 0.37402 | | | | | | | | |
| 8608952 | 3/8 | - | - | 9.525 | 0.37500 | 43.0 | 93 | | | | | | |
| 9598955 | - | - | - | 9.550 | 0.37598 | | | | | | | | |
| 9599096 | - | - | - | 9.600 | 0.37795 | | | | | | | | |
| 9599097 | - | - | - | 9.700 | 0.38189 | | | | | | | | |
| 9599098 | - | - | - | 9.800 | 0.38583 | | | | | | | | |
| 9599099 | - | - | - | 9.900 | 0.38976 | | | | | | | | |

Packed: 1 pc.
Available V coating only.



List 1900 (Continued)

VPH-GDS, Ideal for Difficult to Machine Materials

| | | | | |
|-------------------------------|------------|----------|-------------|------------|
| SPEED FEED P382-383 | XPM | V | STUB | 30° |
|-------------------------------|------------|----------|-------------|------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8608992 | 25/64 | - | - | 9.922 | 0.39063 | 43.0 | 93 | 10 | 130° |
| 9599100 | - | - | - | 10.000 | 0.39370 | | | | |
| 9599101 | - | - | - | 10.100 | 0.39764 | | | | |
| 9599102 | - | - | - | 10.200 | 0.40157 | | | | |
| 9599103 | - | - | - | 10.300 | 0.40551 | | | | |
| 8609032 | 13/32 | - | - | 10.319 | 0.40625 | | | | |
| 9599104 | - | - | - | 10.400 | 0.40945 | | | | |
| 9599144 | - | - | - | 10.440 | 0.41102 | | | | |
| 9599105 | - | - | - | 10.500 | 0.41339 | | | | |
| 9599106 | - | - | - | 10.600 | 0.41732 | | | | |
| 9599107 | - | - | - | 10.700 | 0.42126 | 47.0 | 104 | 12 | |
| 8609072 | 27/64 | - | - | 10.716 | 0.42188 | | | | |
| 9599108 | - | - | - | 10.800 | 0.42520 | | | | |
| 9599186 | - | - | - | 10.860 | 0.42756 | | | | |
| 9599109 | - | - | - | 10.900 | 0.42913 | | | | |
| 9599110 | - | - | - | 11.000 | 0.43307 | | | | |
| 9599111 | - | - | - | 11.100 | 0.43701 | | | | |
| 8609111 | 7/16 | - | - | 11.113 | 0.43750 | | | | |
| 9599112 | - | - | - | 11.200 | 0.44094 | | | | |
| 9599113 | - | - | - | 11.300 | 0.44488 | | | | |
| 9599114 | - | - | - | 11.400 | 0.44882 | | | | |
| 9599115 | - | - | - | 11.500 | 0.45276 | | | | |
| 8609151 | 29/64 | - | - | 11.509 | 0.45313 | | | | |
| 9599116 | - | - | - | 11.600 | 0.45669 | | | | |
| 9599117 | - | - | - | 11.700 | 0.46063 | | | | |
| 9599118 | - | - | - | 11.800 | 0.46457 | | | | |
| 9599119 | - | - | - | 11.900 | 0.46850 | | | | |
| 8609191 | 15/32 | - | - | 11.906 | 0.46875 | 51.0 | 108 | 111 | |
| 9599120 | - | - | - | 12.000 | 0.47244 | | | | |
| 9599121 | - | - | - | 12.100 | 0.47638 | | | | |
| 9599122 | - | - | - | 12.200 | 0.48031 | | | | |
| 9599123 | - | - | - | 12.300 | 0.48425 | | | | |
| 9599124 | - | - | - | 12.400 | 0.48819 | | | | |
| 9599245 | - | - | - | 12.450 | 0.49016 | | | | |
| 9599125 | - | - | - | 12.500 | 0.49213 | | | | |
| 9599126 | - | - | - | 12.600 | 0.49606 | | | | |
| 9599268 | - | - | - | 12.680 | 0.49921 | | | | |
| 9599127 | 1/2 | - | - | 12.700 | 0.50000 | | | | |
| 9599128 | - | - | - | 12.800 | 0.50394 | | | | |
| 9599129 | - | - | - | 12.900 | 0.50787 | | | | |
| 9599130 | - | - | - | 13.000 | 0.51181 | | | | |
| 9599308 | - | - | - | 13.080 | 0.51496 | | | | |
| 8609349 | 17/32 | - | - | 13.494 | 0.53125 | 54.0 | 114 | 16 | 120° |
| 8599135 | - | - | - | 13.500 | 0.53150 | | | | |
| 8599136 | - | - | - | 13.600 | 0.53543 | | | | |
| 8608954 | - | - | - | 13.790 | 0.54291 | | | | |

Packed: 1 pc.
Available V coating only.

continued on next page **EXD**

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 1900 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

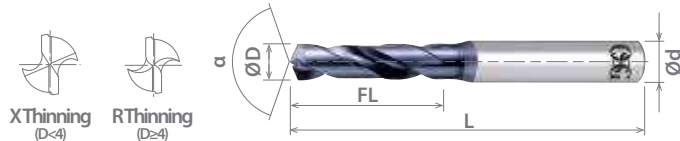




List 1900 (Continued)

VPH-GDS, Ideal for Difficult to Machine Materials

| | | | | |
|-------------------------------|------------|----------|-------------|------------|
| SPEED FEED P382-383 | XPM | V | STUB | 30° |
|-------------------------------|------------|----------|-------------|------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 0.5 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 9599387 | - | - | - | 13.870 | 0.54606 | 54.0 | 114 | 16 | |
| 8599140 | - | - | - | 14.000 | 0.55118 | | | | |
| 8599142 | - | - | - | 14.200 | 0.55906 | | | | |
| 8609429 | 9/16 | - | - | 14.288 | 0.56250 | | | | |
| 8599145 | - | - | - | 14.500 | 0.57087 | | | | |
| 8599146 | - | - | - | 14.600 | 0.57480 | | | | |
| 8608956 | - | - | - | 14.610 | 0.57520 | | | | |
| 9599468 | - | - | - | 14.680 | 0.57795 | | | | |
| 8599150 | - | - | - | 15.000 | 0.59055 | | | | |
| 8599155 | - | - | - | 15.500 | 0.61024 | | | | |
| 8599157 | - | - | - | 15.700 | 0.61811 | | | | |
| 8609588 | 5/8 | - | - | 15.875 | 0.62500 | | | | |
| 8599160 | - | - | - | 16.000 | 0.62992 | | | | |
| 8599165 | - | - | - | 16.500 | 0.64961 | | | | |
| 8609667 | 21/32 | - | - | 16.669 | 0.65625 | | | | |
| 8608958 | - | - | - | 16.760 | 0.65984 | | | | |
| 9599684 | - | - | - | 16.840 | 0.66299 | | | | |
| 8599170 | - | - | - | 17.000 | 0.66929 | | | | |
| 8599175 | - | - | - | 17.500 | 0.68898 | | | | |
| 8608960 | - | - | - | 17.630 | 0.69409 | | | | |
| 8608962 | - | - | - | 17.680 | 0.69606 | | | | |
| 8599177 | - | - | - | 17.700 | 0.69685 | | | | |
| 8599180 | - | - | - | 18.000 | 0.70866 | | | | |
| 8599185 | - | - | - | 18.500 | 0.72835 | | | | |
| 8608964 | - | - | - | 18.640 | 0.73386 | | | | |
| 8599190 | - | - | - | 19.000 | 0.74803 | | | | |
| 8609905 | 3/4 | - | - | 19.050 | 0.75000 | | | | |
| 8599195 | - | - | - | 19.500 | 0.76772 | | | | |
| 8608966 | - | - | - | 19.660 | 0.77402 | | | | |
| 8608968 | - | - | - | 19.740 | 0.77717 | | | | |
| 9599976 | - | - | - | 19.760 | 0.77795 | | | | |
| 8599200 | - | - | - | 20.000 | 0.78740 | | | | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 1900 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

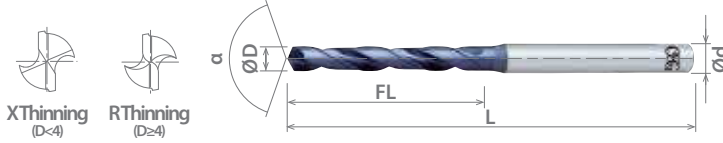
good best





List 1950

VPH-GDR, Ideal for Difficult to Machine Materials



| | | | | |
|-------------------------------|------------|----------|----------------|------------|
| SPEED FEED P382-383 | XPM | V | JOBBERS | 30° |
|-------------------------------|------------|----------|----------------|------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1.99≤D≤3 | +0 / -0.014 | +0 / -0.0006 |
| 3<D≤6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤17.46 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8612199 | - | 47 | - | 1.994 | 0.07850 | 24 | 56 | 3 | 130° |
| 8612206 | - | 46 | - | 2.057 | 0.08100 | | | | |
| 8612208 | - | 45 | - | 2.083 | 0.08200 | | | | |
| 8612218 | - | 44 | - | 2.184 | 0.08600 | 27 | 59 | | |
| 8612226 | - | 43 | - | 2.261 | 0.08900 | | | | |
| 8612237 | - | 42 | - | 2.375 | 0.09350 | 30 | 62 | | |
| 8612238 | 3/32 | - | - | 2.381 | 0.09375 | | | | |
| 8612244 | - | 41 | - | 2.438 | 0.09600 | | | | |
| 8612249 | - | 40 | - | 2.489 | 0.09800 | | | | |
| 8612253 | - | 39 | - | 2.527 | 0.09950 | | | | |
| 8612258 | - | 38 | - | 2.578 | 0.10150 | 33 | 65 | | |
| 8612264 | - | 37 | - | 2.642 | 0.10400 | | | | |
| 8612271 | - | 36 | - | 2.705 | 0.10650 | | | | |
| 8612278 | 7/64 | - | - | 2.778 | 0.10938 | | | | |
| 8612279 | - | 35 | - | 2.794 | 0.11000 | | | | |
| 8612282 | - | 34 | - | 2.819 | 0.11100 | | | | |
| 8612287 | - | 33 | - | 2.870 | 0.11300 | | | | |
| 8612295 | - | 32 | - | 2.946 | 0.11600 | 36 | 68 | | |
| 8612305 | - | 31 | - | 3.048 | 0.12000 | | | | |
| 8612317 | 1/8 | - | - | 3.175 | 0.12500 | | | | |
| 8612326 | - | 30 | - | 3.264 | 0.12850 | 39 | 71 | | |
| 8612345 | - | 29 | - | 3.454 | 0.13600 | | | | |
| 8612357 | 9/64 | - | - | 3.572 | 0.14063 | | | | |
| 8612366 | - | 27 | - | 3.658 | 0.14400 | | | | |
| 8612373 | - | 26 | - | 3.734 | 0.14700 | | | | |
| 8612380 | - | 25 | - | 3.797 | 0.14950 | 43 | 75 | | |
| 8612386 | - | 24 | - | 3.861 | 0.15200 | | | | |
| 8612391 | - | 23 | - | 3.912 | 0.15400 | | | | |
| 8612397 | 5/32 | - | - | 3.969 | 0.15625 | | | | |
| 8612399 | - | 22 | - | 3.988 | 0.15700 | 47 | 91 | | |
| 8612404 | - | 21 | - | 4.039 | 0.15900 | | | | |
| 8612409 | - | 20 | - | 4.089 | 0.16100 | | | | |
| 8612422 | - | 19 | - | 4.216 | 0.16600 | 47 | 91 | | |
| 8612430 | - | - | - | 4.300 | 0.16929 | | | | |
| 8612437 | 11/64 | - | - | 4.366 | 0.17188 | | | | |
| 8612439 | - | 17 | - | 4.394 | 0.17300 | | | | |
| 8612450 | - | 16 | - | 4.496 | 0.17700 | | | | |
| 8612457 | - | 15 | - | 4.572 | 0.18000 | | | | |
| 8612462 | - | 14 | - | 4.623 | 0.18200 | | | | |
| 8612470 | - | 13 | - | 4.699 | 0.18500 | | | | |

Packed: 1 pc.
Available V coating only.

continued on next page **EXD**

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 1950 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

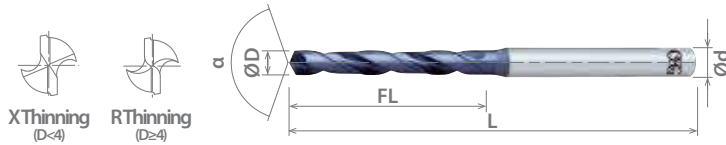
good best





List 1950 (Continued)

VPH-GDR, Ideal for Difficult to Machine Materials



| | | | | |
|------------------------|-----|---|---------|-----|
| SPEED FEED P382-383 | XPM | V | JOBBERS | 30° |
|------------------------|-----|---|---------|-----|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1.99 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 17.46 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8612476 | 3/16 | - | - | 4.763 | 0.18750 | 52 | 96 | 6 | 130° |
| 8612480 | - | 12 | - | 4.801 | 0.18900 | | | | |
| 8612485 | - | 11 | - | 4.851 | 0.19100 | | | | |
| 8612491 | - | - | - | 4.910 | 0.19331 | | | | |
| 8612498 | - | 9 | - | 4.978 | 0.19600 | | | | |
| 8612505 | - | 8 | - | 5.055 | 0.19900 | | | | |
| 8612511 | - | 7 | - | 5.105 | 0.20100 | | | | |
| 8612516 | 13/64 | - | - | 5.159 | 0.20313 | | | | |
| 8612518 | - | 6 | - | 5.182 | 0.20400 | | | | |
| 8612522 | - | 5 | - | 5.220 | 0.20550 | | | | |
| 8612531 | - | 4 | - | 5.309 | 0.20900 | 57 | 101 | 8 | 130° |
| 8612541 | - | 3 | - | 5.410 | 0.21300 | | | | |
| 8612556 | 7/32 | - | - | 5.556 | 0.21875 | | | | |
| 8612561 | - | 2 | - | 5.613 | 0.22100 | | | | |
| 8612579 | - | 1 | - | 5.791 | 0.22800 | | | | |
| 8612594 | - | - | A | 5.944 | 0.23400 | | | | |
| 8612595 | 15/64 | - | - | 5.953 | 0.23438 | | | | |
| 8612604 | - | - | - | 6.040 | 0.23780 | | | | |
| 8612615 | - | - | C | 6.147 | 0.24200 | | | | |
| 8612625 | - | - | D | 6.248 | 0.24600 | | | | |
| 8612635 | 1/4 | - | E | 6.350 | 0.25000 | 63 | 107 | 8 | 130° |
| 8612653 | - | - | F | 6.528 | 0.25700 | | | | |
| 8612663 | - | - | G | 6.629 | 0.26100 | | | | |
| 8612675 | 17/64 | - | - | 6.747 | 0.26563 | | | | |
| 8612690 | - | - | I | 6.909 | 0.27200 | | | | |
| 8612703 | - | - | J | 7.036 | 0.27700 | | | | |
| 8612714 | 9/32 | - | - | 7.144 | 0.28125 | | | | |
| 8612737 | - | - | L | 7.366 | 0.29000 | | | | |
| 8612749 | - | - | M | 7.493 | 0.29500 | | | | |
| 8612754 | 19/64 | - | - | 7.541 | 0.29688 | | | | |
| 8612767 | - | - | N | 7.671 | 0.30200 | 75 | 119 | 10 | 130° |
| 8612794 | 5/16 | - | - | 7.938 | 0.31250 | | | | |
| 8612803 | - | - | O | 8.026 | 0.31600 | | | | |
| 8612820 | - | - | P | 8.204 | 0.32300 | | | | |
| 8612833 | 21/64 | - | - | 8.334 | 0.32813 | | | | |
| 8612843 | - | - | Q | 8.433 | 0.33200 | | | | |
| 8612861 | - | - | R | 8.611 | 0.33900 | | | | |
| 8612873 | 11/32 | - | - | 8.731 | 0.34375 | | | | |
| 8612884 | - | - | S | 8.839 | 0.34800 | | | | |
| 8612909 | - | - | T | 9.093 | 0.35800 | | | | |
| 8612913 | 23/64 | - | - | 9.128 | 0.35938 | | | | |
| 8612934 | - | - | - | 9.340 | 0.36772 | | | | |
| 8612952 | 3/8 | - | - | 9.525 | 0.37500 | | | | |
| 8612957 | - | - | V | 9.576 | 0.37700 | | | | |
| 8612980 | - | - | W | 9.804 | 0.38600 | | | | |
| 8612992 | 25/64 | - | - | 9.922 | 0.39063 | | | | |
| 8613008 | - | - | X | 10.084 | 0.39700 | | | | |
| 8613026 | - | - | Y | 10.262 | 0.40400 | | | | |
| 8613032 | 13/32 | - | - | 10.319 | 0.40625 | 87 | 144 | 12 | 130° |
| 8613049 | - | - | Z | 10.490 | 0.41300 | | | | |

Packed: 1 pc.
Available V coating only.





List 1950 (Continued)

VPH-GDR, Ideal for Difficult to Machine Materials

| | | | | |
|------------------------|-----|---|---------|-----|
| SPEED FEED P382-383 | XPM | V | JOBBERS | 30° |
|------------------------|-----|---|---------|-----|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8613072 | 27/64 | - | - | 10.716 | 0.42188 | 94 | 151 | 12 | 130° |
| 8613111 | 7/16 | - | - | 11.113 | 0.43750 | | | | |
| 8613151 | 29/64 | - | - | 11.509 | 0.45313 | | | | |
| 8613191 | 15/32 | - | - | 11.906 | 0.46875 | 101 | 158 | | |
| 8613230 | 31/64 | - | - | 12.303 | 0.48438 | | | | |
| 8613270 | 1/2 | - | - | 12.700 | 0.50000 | 106 | 166 | | |
| 8613349 | 17/32 | - | - | 13.494 | 0.53125 | 109 | 169 | 16 | 120° |
| 8613429 | 9/16 | - | - | 14.288 | 0.56250 | 115 | 175 | | |
| 8613588 | 5/8 | - | - | 15.875 | 0.62500 | | 118 | 181 | |
| 8613667 | 21/32 | - | - | 16.669 | 0.65625 | 118 | | 184 | |
| 8613746 | 11/16 | - | - | 17.463 | 0.68750 | | | | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 1950 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

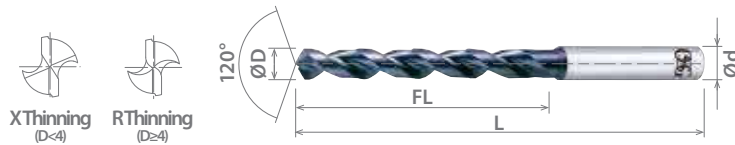
good best





List 2000

VP-GDR, Parabolic



| | | | | |
|---------------------------|------------|----------|----------------|------------|
| SPEED FEED P384 | XPM | V | JOBBERS | 40° |
|---------------------------|------------|----------|----------------|------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2≤D≤3 | +0 / -0.014 | +0 / -0.0006 |
| 3<D≤6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤18 | +0 / -0.027 | +0 / -0.0011 |
| 18<D≤30 | +0 / -0.033 | +0 / -0.0013 |
| 30<D≤32 | +0 / -0.039 | +0 / -0.0015 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8593020 | - | - | - | 2.000 | 0.07874 | 24 | 56 | 3 |
| 8593021 | - | - | - | 2.100 | 0.08268 | | | |
| 8593022 | - | - | - | 2.200 | 0.08661 | 27 | 59 | |
| 8593023 | - | - | - | 2.300 | 0.09055 | | | |
| 8593024 | - | - | - | 2.400 | 0.09449 | 30 | 62 | |
| 8593025 | - | - | - | 2.500 | 0.09843 | | | |
| 8593026 | - | - | - | 2.600 | 0.10236 | 33 | 65 | |
| 8593027 | - | - | - | 2.700 | 0.10630 | | | |
| 8593028 | - | - | - | 2.800 | 0.11024 | 36 | 68 | |
| 8593029 | - | - | - | 2.900 | 0.11417 | | | |
| 8593030 | - | - | - | 3.000 | 0.11811 | 39 | 71 | |
| 8593031 | - | - | - | 3.100 | 0.12205 | | | |
| 8593032 | - | - | - | 3.200 | 0.12598 | 43 | 75 | |
| 8593033 | - | - | - | 3.300 | 0.12992 | | | |
| 8593034 | - | - | - | 3.400 | 0.13386 | 47 | 91 | |
| 8593035 | - | - | - | 3.500 | 0.13780 | | | |
| 8593036 | - | - | - | 3.600 | 0.14173 | 52 | 96 | |
| 8593037 | - | - | - | 3.700 | 0.14567 | | | |
| 8593038 | - | - | - | 3.800 | 0.14961 | 57 | 101 | |
| 8593039 | - | - | - | 3.900 | 0.15354 | | | |
| 8593040 | - | - | - | 4.000 | 0.15748 | 63 | 107 | |
| 8593041 | - | - | - | 4.100 | 0.16142 | | | |
| 8593042 | - | - | - | 4.200 | 0.16535 | 69 | 113 | |
| 8593043 | - | - | - | 4.300 | 0.16929 | | | |
| 8593044 | - | - | - | 4.400 | 0.17323 | 63 | 107 | |
| 8593045 | - | - | - | 4.500 | 0.17717 | | | |
| 8593046 | - | - | - | 4.600 | 0.18110 | 69 | 113 | |
| 8593047 | - | - | - | 4.700 | 0.18504 | | | |
| 8593048 | - | - | - | 4.800 | 0.18898 | 52 | 96 | |
| 8593049 | - | - | - | 4.900 | 0.19291 | | | |
| 8593050 | - | - | - | 5.000 | 0.19685 | 57 | 101 | |
| 8593051 | - | - | - | 5.100 | 0.20079 | | | |
| 8593052 | - | - | - | 5.200 | 0.20472 | 63 | 107 | |
| 8593053 | - | - | - | 5.300 | 0.20866 | | | |
| 8593054 | - | - | - | 5.400 | 0.21260 | 69 | 113 | |
| 8593055 | - | - | - | 5.500 | 0.21654 | | | |
| 8593056 | - | - | - | 5.600 | 0.22047 | 63 | 107 | |
| 8593057 | - | - | - | 5.700 | 0.22441 | | | |
| 8593058 | - | - | - | 5.800 | 0.22835 | 69 | 113 | |
| 8593059 | - | - | - | 5.900 | 0.23228 | | | |
| 8593060 | - | - | - | 6.000 | 0.23622 | 63 | 107 | |
| 8593061 | - | - | - | 6.100 | 0.24016 | | | |
| 8593062 | - | - | - | 6.200 | 0.24409 | 69 | 113 | |
| 8593063 | - | - | - | 6.300 | 0.24803 | | | |
| 8593064 | - | - | - | 6.400 | 0.25197 | 63 | 107 | |
| 8593065 | - | - | - | 6.500 | 0.25591 | | | |
| 8593066 | - | - | - | 6.600 | 0.25984 | 69 | 113 | |
| 8593067 | - | - | - | 6.700 | 0.26378 | | | |
| 8593068 | - | - | - | 6.800 | 0.26772 | 63 | 107 | |
| 8593069 | - | - | - | 6.900 | 0.27165 | | | |
| 8593070 | - | - | - | 7.000 | 0.27559 | 69 | 113 | |
| 8593071 | - | - | - | 7.100 | 0.27953 | | | |
| 8593072 | - | - | - | 7.200 | 0.28346 | | | |

Packed: 1 pc.
Available V coating only.





List 2000 (Continued)

VP-GDR, Parabolic

| | | | | |
|--------------------|-----|---|---------|-----|
| SPEED FEED P384 | XPM | V | JOBBERS | 40° |
|--------------------|-----|---|---------|-----|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | | |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|----|-----|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | |
| 8593073 | - | - | - | 7.300 | 0.28740 | 69 | 113 | 8 | | |
| 8593074 | - | - | - | 7.400 | 0.29134 | | | | | |
| 8593075 | - | - | - | 7.500 | 0.29528 | | | | | |
| 8593076 | - | - | - | 7.600 | 0.29921 | 75 | 119 | | 8 | |
| 8593077 | - | - | - | 7.700 | 0.30315 | | | | | |
| 8593078 | - | - | - | 7.800 | 0.30709 | | | | | |
| 8593079 | - | - | - | 7.900 | 0.31102 | | | | | |
| 8593080 | - | - | - | 8.000 | 0.31496 | | | | | |
| 8593081 | - | - | - | 8.100 | 0.31890 | 75 | 125 | | | 8 |
| 8593082 | - | - | - | 8.200 | 0.32283 | | | | | |
| 8593083 | - | - | - | 8.300 | 0.32677 | | | | | |
| 8593084 | - | - | - | 8.400 | 0.33071 | 81 | 131 | 10 | | |
| 8593085 | - | - | - | 8.500 | 0.33465 | | | | | |
| 8593086 | - | - | - | 8.600 | 0.33858 | | | | | |
| 8593087 | - | - | - | 8.700 | 0.34252 | | | | | |
| 8593088 | - | - | - | 8.800 | 0.34646 | | | | | |
| 8593089 | - | - | - | 8.900 | 0.35039 | | | | | |
| 8593090 | - | - | - | 9.000 | 0.35433 | | | | | |
| 8593091 | - | - | - | 9.100 | 0.35827 | | | | | |
| 8593092 | - | - | - | 9.200 | 0.36220 | | | | | |
| 8593093 | - | - | - | 9.300 | 0.36614 | | | | 87 | 137 |
| 8593094 | - | - | - | 9.400 | 0.37008 | | | | | |
| 8593095 | - | - | - | 9.500 | 0.37402 | | | | | |
| 8593096 | - | - | - | 9.600 | 0.37795 | | | | | |
| 8593097 | - | - | - | 9.700 | 0.38189 | | | | | |
| 8593098 | - | - | - | 9.800 | 0.38583 | | | | | |
| 8593099 | - | - | - | 9.900 | 0.38976 | | | | | |
| 8593100 | - | - | - | 10.000 | 0.39370 | | | | | |
| 8593101 | - | - | - | 10.100 | 0.39764 | | | | | |
| 8593102 | - | - | - | 10.200 | 0.40157 | 87 | 144 | 10 | | |
| 8593103 | - | - | - | 10.300 | 0.40551 | | | | | |
| 8593104 | - | - | - | 10.400 | 0.40945 | | | | | |
| 8593105 | - | - | - | 10.500 | 0.41339 | | | | | |
| 8593106 | - | - | - | 10.600 | 0.41732 | | | | | |
| 8593107 | - | - | - | 10.700 | 0.42126 | | | | | |
| 8593108 | - | - | - | 10.800 | 0.42520 | | | | | |
| 8593109 | - | - | - | 10.900 | 0.42913 | | | | | |
| 8593110 | - | - | - | 11.000 | 0.43307 | | | | | |
| 8593111 | - | - | - | 11.100 | 0.43701 | | | | 94 | 151 |
| 8593112 | - | - | - | 11.200 | 0.44094 | | | | | |
| 8593113 | - | - | - | 11.300 | 0.44488 | | | | | |
| 8593114 | - | - | - | 11.400 | 0.44882 | | | | | |
| 8593115 | - | - | - | 11.500 | 0.45276 | | | | | |
| 8593116 | - | - | - | 11.600 | 0.45669 | | | | | |
| 8593117 | - | - | - | 11.700 | 0.46063 | | | | | |
| 8593118 | - | - | - | 11.800 | 0.46457 | | | | | |
| 8593119 | - | - | - | 11.900 | 0.46850 | | | | | |
| 8593120 | - | - | - | 12.000 | 0.47244 | 101 | 158 | 12 | | |
| 8593121 | - | - | - | 12.100 | 0.47638 | | | | | |

Packed: 1 pc.
Available V coating only.

continued on next page **EXD**

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------|-----|---------|-------------------------------------|--------------------------|--------------------------|--------------------------|----------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 2000 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

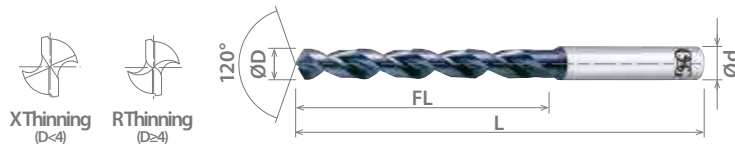
good best





List 2000 (Continued)

VP-GDR, Parabolic



| | | | | |
|---------------------------|------------|----------|----------------|------------|
| SPEED FEED P384 | XPM | V | JOBBERS | 40° |
|---------------------------|------------|----------|----------------|------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2≤D≤3 | +0 / -0.014 | +0 / -0.0006 |
| 3<D≤6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤18 | +0 / -0.027 | +0 / -0.0011 |
| 18<D≤30 | +0 / -0.033 | +0 / -0.0013 |
| 30<D≤32 | +0 / -0.039 | +0 / -0.0015 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8593122 | - | - | - | 12.200 | 0.48031 | 101 | 158 | 12 |
| 8593123 | - | - | - | 12.300 | 0.48425 | | | |
| 8593124 | - | - | - | 12.400 | 0.48819 | | | |
| 8593125 | - | - | - | 12.500 | 0.49213 | | | |
| 8593126 | - | - | - | 12.600 | 0.49606 | | | |
| 8593127 | 1/2 | - | - | 12.700 | 0.50000 | | | |
| 8593128 | - | - | - | 12.800 | 0.50394 | | | |
| 8593129 | - | - | - | 12.900 | 0.50787 | | | |
| 8593130 | - | - | - | 13.000 | 0.51181 | | | |
| 8593135 | - | - | - | 13.500 | 0.53150 | | | |
| 8593140 | - | - | - | 14.000 | 0.55118 | 106 | 166 | 16 |
| 8593145 | - | - | - | 14.500 | 0.57087 | 109 | 169 | |
| 8593150 | - | - | - | 15.000 | 0.59055 | 112 | 172 | |
| 8593155 | - | - | - | 15.500 | 0.61024 | 115 | 181 | 20 |
| 8593160 | - | - | - | 16.000 | 0.62992 | | | |
| 8593165 | - | - | - | 16.500 | 0.64961 | | | |
| 8593170 | - | - | - | 17.000 | 0.66929 | | | |
| 8593175 | - | - | - | 17.500 | 0.68898 | | | |
| 8593180 | - | - | - | 18.000 | 0.70866 | | | |
| 8593185 | - | - | - | 18.500 | 0.72835 | | | |
| 8593190 | - | - | - | 19.000 | 0.74803 | | | |
| 8593195 | - | - | - | 19.500 | 0.76772 | | | |
| 8593200 | - | - | - | 20.000 | 0.78740 | | | |
| 8593205 | - | - | - | 20.500 | 0.80709 | 128 | 204 | 25 |
| 8593210 | - | - | - | 21.000 | 0.82677 | | | |
| 8593215 | - | - | - | 21.500 | 0.84646 | | | |
| 8593220 | - | - | - | 22.000 | 0.86614 | | | |
| 8593225 | - | - | - | 22.500 | 0.88583 | | | |
| 8593230 | - | - | - | 23.000 | 0.90551 | | | |
| 8593235 | - | - | - | 23.500 | 0.92520 | | | |
| 8593240 | - | - | - | 24.000 | 0.94488 | | | |
| 8593245 | - | - | - | 24.500 | 0.96457 | | | |
| 8593250 | - | - | - | 25.000 | 0.98425 | | | |
| 8593255 | - | - | - | 25.500 | 1.00394 | | | |
| 8593260 | - | - | - | 26.000 | 1.02362 | | | |
| 8593265 | - | - | - | 26.500 | 1.04331 | | | |
| 8593270 | - | - | - | 27.000 | 1.06299 | | | |
| 8593280 | - | - | - | 28.000 | 1.10236 | 150 | 230 | 32 |
| 8593290 | - | - | - | 29.000 | 1.14173 | | | |
| 8593300 | - | - | - | 30.000 | 1.18110 | | | |
| 8593310 | - | - | - | 31.000 | 1.22047 | | | |
| 8593320 | - | - | - | 32.000 | 1.25984 | | | |
| | | | | | | 165 | 240 | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------|-----|---------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 2000 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 1700

V-HO-GDR, Coolant-Through

| | | | | | |
|---------------------------|---------------|----------|----------------|--|------------|
| SPEED FEED P385 | HSS-Co | V | JOBBERS | | 30° |
|---------------------------|---------------|----------|----------------|--|------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 5.95<D≤6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤18 | +0 / -0.027 | +0 / -0.0011 |
| 18<D≤30 | +0 / -0.033 | +0 / -0.0013 |
| 30<D≤31.75 | +0 / -0.039 | +0 / -0.0015 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 17234408 | 15/64 | - | - | 5.953 | 0.23438 | 66 | 112 | 15/64 |
| 17236208 | - | - | - | 6.000 | 0.23622 | 69 | 115 | 6.00 |
| 17250008 | 1/4 | - | E | 6.350 | 0.25000 | | | 1/4 |
| 17257008 | - | - | F | 6.528 | 0.25700 | 73 | 119 | 6.53 |
| 17265608 | 17/64 | - | - | 6.747 | 0.26563 | | | 17/64 |
| 17272008 | - | - | I | 6.909 | 0.27200 | | | 6.91 |
| 17281208 | 9/32 | - | - | 7.144 | 0.28125 | 74 | 120 | 9/32 |
| 17296908 | 19/64 | - | - | 7.541 | 0.29688 | 77 | 123 | 19/64 |
| 17312508 | 5/16 | - | - | 7.938 | 0.31250 | 80 | 127 | 5/16 |
| 17315008 | - | - | - | 8.000 | 0.31496 | | | 8.00 |
| 17328108 | 21/64 | - | - | 8.334 | 0.32813 | 84 | 130 | 21/64 |
| 17343808 | 11/32 | - | - | 8.731 | 0.34375 | 87 | 133 | 11/32 |
| 17359408 | 23/64 | - | - | 9.128 | 0.35938 | 88 | 134 | 23/64 |
| 17375008 | 3/8 | - | - | 9.525 | 0.37500 | 92 | 138 | 3/8 |
| 17377008 | - | - | V | 9.576 | 0.37700 | | | 145 |
| 17390608 | 25/64 | - | - | 9.922 | 0.39063 | 95 | 148 | 25/64 |
| 17393708 | - | - | - | 10.000 | 0.39370 | | | 10.00 |
| 17406208 | 13/32 | - | - | 10.319 | 0.40625 | 98 | 151 | 13/32 |
| 17421908 | 27/64 | - | - | 10.716 | 0.42188 | 100 | 153 | 27/64 |
| 17437508 | 7/16 | - | - | 11.113 | 0.43750 | 103 | 156 | 7/16 |
| 17453108 | 29/64 | - | - | 11.509 | 0.45313 | 106 | 159 | 29/64 |
| 17468808 | 15/32 | - | - | 11.906 | 0.46875 | 109 | 162 | 15/32 |
| 17484408 | 31/64 | - | - | 12.303 | 0.48438 | 111 | 164 | 31/64 |
| 17500008 | 1/2 | - | - | 12.700 | 0.50000 | 114 | 167 | 1/2 |
| 17531208 | 17/32 | - | - | 13.494 | 0.53125 | 122 | 182 | 5/8 |
| 17562508 | 9/16 | - | - | 14.288 | 0.56250 | | | |
| 17578108 | 37/64 | - | - | 14.684 | 0.57813 | 131 | 192 | 3/4 |
| 17593808 | 19/32 | - | - | 15.081 | 0.59375 | | | |
| 17625008 | 5/8 | - | - | 15.875 | 0.62500 | 142 | 199 | 7/8 |
| 17656208 | 21/32 | - | - | 16.669 | 0.65625 | | | |
| 17687508 | 11/16 | - | - | 17.463 | 0.68750 | 149 | 210 | 1 |
| 17718808 | 23/32 | - | - | 18.256 | 0.71875 | | | |
| 17750008 | 3/4 | - | - | 19.050 | 0.75000 | 152 | 219 | 7/8 |
| 17781308 | 25/32 | - | - | 19.844 | 0.78125 | | | |
| 17812508 | 13/16 | - | - | 20.638 | 0.81250 | 155 | 223 | 1 |
| 17843808 | 27/32 | - | - | 21.431 | 0.84375 | | | |
| 17875008 | 7/8 | - | - | 22.225 | 0.87500 | 161 | 233 | 1 |
| 17906208 | 29/32 | - | - | 23.019 | 0.90625 | | | |
| 17937508 | 15/16 | - | - | 23.813 | 0.93750 | 165 | 242 | 1-1/4 |
| 17968808 | 31/32 | - | - | 24.606 | 0.96875 | | | |
| 18000008 | 1 | - | - | 25.400 | 1.00000 | | | |
| 18031208 | 1-1/32 | - | - | 26.194 | 1.03125 | | | |

Packed: 1 pc.
Available V coating only.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 1700 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





V-HO GDR

Cobalt High Speed Steel

List 1700 (Continued)

V-HO-GDR, Coolant-Through

| | | | | | |
|---------------------------|---------------|----------|----------------|--|------------|
| SPEED FEED P385 | HSS-Co | V | JOBBERS | | 30° |
|---------------------------|---------------|----------|----------------|--|------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 5.95<D≤6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤18 | +0 / -0.027 | +0 / -0.0011 |
| 18<D≤30 | +0 / -0.033 | +0 / -0.0013 |
| 30<D≤31.75 | +0 / -0.039 | +0 / -0.0015 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 18062508 | 1-1/16 | - | - | 26.988 | 1.06250 | 168 | 246 | 1-1/4 |
| 18093808 | 1-3/32 | - | - | 27.781 | 1.09375 | 174 | 252 | |
| 18125008 | 1-1/8 | - | - | 28.575 | 1.12500 | 180 | 258 | |
| 18218808 | 1-7/32 | - | - | 30.956 | 1.21875 | 190 | 268 | |
| 18250008 | 1-1/4 | - | - | 31.750 | 1.25000 | 200 | 277 | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 1700 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

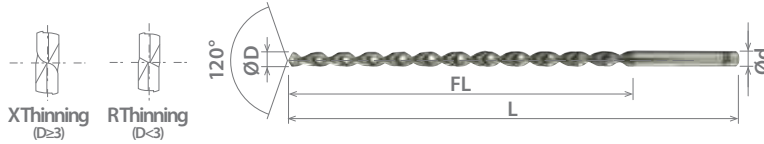
good best



List 1750

TDXL-10D

| | | | |
|---------------------------|---------------|------------|------------|
| SPEED FEED P386 | HSS-Co | WXL | 40° |
|---------------------------|---------------|------------|------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1.6≤D≤3 | +0 / -0.014 | +0 / -0.0006 |
| 3<D≤6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤17.86 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8622816 | - | - | - | 1.600 | 0.06299 | 26 | 75 | 1.6 |
| 8622818 | - | - | - | 1.800 | 0.07087 | | | 1.8 |
| 17542411 | 5/64 | - | - | 1.984 | 0.07813 | | | 5/64 |
| 8622820 | - | - | - | 2.000 | 0.07874 | 2.0 | | |
| 8622821 | - | - | - | 2.100 | 0.08268 | 2.1 | | |
| 8622822 | - | - | - | 2.200 | 0.08661 | 2.2 | | |
| 8622823 | - | - | - | 2.300 | 0.09055 | 2.3 | | |
| 17543111 | 3/32 | - | - | 2.381 | 0.09375 | 33 | 3/32 | |
| 8622824 | - | - | - | 2.400 | 0.09449 | | 2.4 | |
| 8622825 | - | - | - | 2.500 | 0.09843 | | 2.5 | |
| 8622826 | - | - | - | 2.600 | 0.10236 | 2.6 | | |
| 8622827 | - | - | - | 2.700 | 0.10630 | 2.7 | | |
| 17543811 | 7/64 | - | - | 2.778 | 0.10938 | 40 | 7/64 | |
| 8622828 | - | - | - | 2.800 | 0.11024 | | 2.8 | |
| 8622829 | - | - | - | 2.900 | 0.11417 | | 2.9 | |
| 8622830 | - | - | - | 3.000 | 0.11811 | 3.0 | | |
| 8622831 | - | - | - | 3.100 | 0.12205 | 3.1 | | |
| 17544411 | 1/8 | - | - | 3.175 | 0.12500 | 45 | 1/8 | |
| 8622832 | - | - | - | 3.200 | 0.12598 | | 3.2 | |
| 8622833 | - | - | - | 3.300 | 0.12992 | | 3.3 | |
| 8622834 | - | - | - | 3.400 | 0.13386 | 3.4 | | |
| 8622835 | - | - | - | 3.500 | 0.13780 | 3.5 | | |
| 17544711 | 9/64 | - | - | 3.572 | 0.14063 | 50 | 9/64 | |
| 8622836 | - | - | - | 3.600 | 0.14173 | | 3.6 | |
| 8622837 | - | - | - | 3.700 | 0.14567 | | 3.7 | |
| 8622838 | - | - | - | 3.800 | 0.14961 | 3.8 | | |
| 8622839 | - | - | - | 3.900 | 0.15354 | 3.9 | | |
| 17545311 | 5/32 | - | - | 3.969 | 0.15625 | 55 | 5/32 | |
| 8622840 | - | - | - | 4.000 | 0.15748 | | 4.0 | |
| 8622841 | - | - | - | 4.100 | 0.16142 | | 4.1 | |
| 8622842 | - | - | - | 4.200 | 0.16535 | 4.2 | | |
| 8622843 | - | - | - | 4.300 | 0.16929 | 4.3 | | |
| 17545911 | 11/64 | - | - | 4.366 | 0.17188 | 60 | 11/64 | |
| 8622844 | - | - | - | 4.400 | 0.17323 | | 4.4 | |
| 8622845 | - | - | - | 4.500 | 0.17717 | | 4.5 | |
| 8622846 | - | - | - | 4.600 | 0.18110 | 4.6 | | |
| 8622847 | - | - | - | 4.700 | 0.18504 | 4.7 | | |
| 17546511 | 3/16 | - | - | 4.763 | 0.18750 | 65 | 3/16 | |
| 8622848 | - | - | - | 4.800 | 0.18898 | | 4.8 | |
| 8622849 | - | - | - | 4.900 | 0.19291 | | 4.9 | |
| 8622850 | - | - | - | 5.000 | 0.19685 | 5.0 | | |
| 8622851 | - | - | - | 5.100 | 0.20079 | 70 | 128 | 5.1 |

Packed: 1 pc.
Available WXL® coating only.

➔ continued on next page ➔ **EXD**

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 1750 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

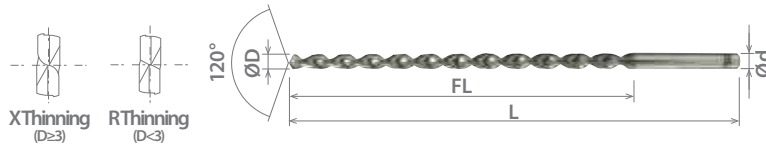




List 1750 (Continued)

| | | | |
|--------------------|--------|-----|-----|
| SPEED FEED P386 | HSS-Co | WXL | 40° |
|--------------------|--------|-----|-----|

TDXL-10D



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1.6≤D≤3 | +0 / -0.014 | +0 / -0.0006 |
| 3<D≤6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤17.86 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 17547211 | 13/64 | - | - | 5.159 | 0.20313 | 70 | 128 | 13/64 |
| 8622852 | - | - | - | 5.200 | 0.20472 | | | 5.2 |
| 8622853 | - | - | - | 5.300 | 0.20866 | | | 5.3 |
| 8622854 | - | - | - | 5.400 | 0.21260 | 78 | | 5.4 |
| 8622855 | - | - | - | 5.500 | 0.21654 | | | 5.5 |
| 17547711 | 7/32 | - | - | 5.556 | 0.21875 | | | 7/32 |
| 8622856 | - | - | - | 5.600 | 0.22047 | 5.6 | | |
| 8622857 | - | - | - | 5.700 | 0.22441 | 5.7 | | |
| 8622858 | - | - | - | 5.800 | 0.22835 | 5.8 | | |
| 8622859 | - | - | - | 5.900 | 0.23228 | 5.9 | | |
| 17548111 | 15/64 | - | - | 5.953 | 0.23438 | 87 | | 15/64 |
| 8622860 | - | - | - | 6.000 | 0.23622 | | | 6.0 |
| 8622861 | - | - | - | 6.100 | 0.24016 | | 6.1 | |
| 8622862 | - | - | - | 6.200 | 0.24409 | 90 | 6.2 | |
| 8622863 | - | - | - | 6.300 | 0.24803 | | 6.3 | |
| 17548511 | 1/4 | - | E | 6.350 | 0.25000 | | 1/4 | |
| 8622864 | - | - | - | 6.400 | 0.25197 | 140 | 6.4 | |
| 8622865 | - | - | - | 6.500 | 0.25591 | | 6.5 | |
| 8622866 | - | - | - | 6.600 | 0.25984 | | 6.6 | |
| 8622867 | - | - | - | 6.700 | 0.26378 | 6.7 | | |
| 17548811 | 17/64 | - | - | 6.747 | 0.26563 | 90 | 17/64 | |
| 8622868 | - | - | - | 6.800 | 0.26772 | | 6.8 | |
| 8622869 | - | - | - | 6.900 | 0.27165 | | 6.9 | |
| 8622870 | - | - | - | 7.000 | 0.27559 | 100 | 7.0 | |
| 8622871 | - | - | - | 7.100 | 0.27953 | | 7.1 | |
| 17549111 | 9/32 | - | - | 7.144 | 0.28125 | | 9/32 | |
| 8622872 | - | - | - | 7.200 | 0.28346 | 155 | 7.2 | |
| 8622873 | - | - | - | 7.300 | 0.28740 | | 7.3 | |
| 8622874 | - | - | - | 7.400 | 0.29134 | | 7.4 | |
| 8622875 | - | - | - | 7.500 | 0.29528 | 105 | 7.5 | |
| 17549411 | 19/64 | - | - | 7.541 | 0.29688 | | 19/64 | |
| 8622876 | - | - | - | 7.600 | 0.29921 | | 7.6 | |
| 8622877 | - | - | - | 7.700 | 0.30315 | 110 | 7.7 | |
| 8622878 | - | - | - | 7.800 | 0.30709 | | 7.8 | |
| 8622879 | - | - | - | 7.900 | 0.31102 | | 7.9 | |
| 17549611 | 5/16 | - | - | 7.938 | 0.31250 | 115 | 5/16 | |
| 8622880 | - | - | - | 8.000 | 0.31496 | | 8.0 | |
| 8622881 | - | - | - | 8.100 | 0.31890 | | 8.1 | |
| 8622882 | - | - | - | 8.200 | 0.32283 | 165 | 8.2 | |
| 8622883 | - | - | - | 8.300 | 0.32677 | | 8.3 | |
| 17549911 | 21/64 | - | - | 8.334 | 0.32813 | | 21/64 | |
| 8622884 | - | - | - | 8.400 | 0.33071 | 115 | 8.4 | |
| 8622885 | - | - | - | 8.500 | 0.33465 | | 8.5 | |
| 8622886 | - | - | - | 8.600 | 0.33858 | | 8.6 | |
| 8622887 | - | - | - | 8.700 | 0.34252 | 125 | 8.7 | |
| 17550211 | 11/32 | - | - | 8.731 | 0.34375 | | 11/32 | |
| 8622888 | - | - | - | 8.800 | 0.34646 | | 8.8 | |
| 8622889 | - | - | - | 8.900 | 0.35039 | 190 | 8.9 | |
| 8622890 | - | - | - | 9.000 | 0.35433 | | 9.0 | |
| 8622891 | - | - | - | 9.100 | 0.35827 | | 9.1 | |
| 17550511 | 23/64 | - | - | 9.128 | 0.35938 | 125 | 23/64 | |
| 8622892 | - | - | - | 9.200 | 0.36220 | | 9.2 | |

Packed: 1 pc.
Available WXL® coating only.



List 1750 (Continued)

| | | | |
|--------------------|--------|-----|-----|
| SPEED FEED P386 | HSS-Co | WXL | 40° |
|--------------------|--------|-----|-----|

TDXL-10D

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8622893 | - | - | - | 9.300 | 0.36614 | 125 | 190 | 9.3 |
| 8622894 | - | - | - | 9.400 | 0.37008 | | | 9.4 |
| 8622895 | - | - | - | 9.500 | 0.37402 | | | 9.5 |
| 17550711 | 3/8 | - | - | 9.525 | 0.37500 | 130 | 190 | 3/8 |
| 8622896 | - | - | - | 9.600 | 0.37795 | | | 9.6 |
| 8622897 | - | - | - | 9.700 | 0.38189 | | | 9.7 |
| 8622898 | - | - | - | 9.800 | 0.38583 | 140 | 205 | 9.8 |
| 8622899 | - | - | - | 9.900 | 0.38976 | | | 9.9 |
| 17551011 | 25/64 | - | - | 9.922 | 0.39063 | | | 25/64 |
| 8622900 | - | - | - | 10.000 | 0.39370 | 140 | 205 | 10.0 |
| 8622901 | - | - | - | 10.100 | 0.39764 | | | 10.1 |
| 8622902 | - | - | - | 10.200 | 0.40157 | | | 10.2 |
| 8622903 | - | - | - | 10.300 | 0.40551 | 145 | 215 | 10.3 |
| 17551311 | 13/32 | - | - | 10.319 | 0.40625 | | | 13/32 |
| 8622904 | - | - | - | 10.400 | 0.40945 | | | 10.4 |
| 8622905 | - | - | - | 10.500 | 0.41339 | 155 | 215 | 10.5 |
| 8622906 | - | - | - | 10.600 | 0.41732 | | | 10.6 |
| 8622907 | - | - | - | 10.700 | 0.42126 | | | 10.7 |
| 17551511 | 27/64 | - | - | 10.716 | 0.42188 | 145 | 205 | 27/64 |
| 8622908 | - | - | - | 10.800 | 0.42520 | | | 10.8 |
| 8622909 | - | - | - | 10.900 | 0.42913 | | | 10.9 |
| 8622910 | - | - | - | 11.000 | 0.43307 | 155 | 215 | 11.0 |
| 8622911 | - | - | - | 11.100 | 0.43701 | | | 11.1 |
| 17551611 | 7/16 | - | - | 11.113 | 0.43750 | | | 7/16 |
| 8622912 | - | - | - | 11.200 | 0.44094 | 145 | 205 | 11.2 |
| 8622913 | - | - | - | 11.300 | 0.44488 | | | 11.3 |
| 8622914 | - | - | - | 11.400 | 0.44882 | | | 11.4 |
| 8622915 | - | - | - | 11.500 | 0.45276 | 155 | 215 | 11.5 |
| 17551711 | 29/64 | - | - | 11.509 | 0.45313 | | | 29/64 |
| 8622916 | - | - | - | 11.600 | 0.45669 | | | 11.6 |
| 8622917 | - | - | - | 11.700 | 0.46063 | 160 | 220 | 11.7 |
| 8622918 | - | - | - | 11.800 | 0.46457 | | | 11.8 |
| 8622919 | - | - | - | 11.900 | 0.46850 | | | 11.9 |
| 17551811 | 15/32 | - | - | 11.906 | 0.46875 | 175 | 225 | 15/32 |
| 8622920 | - | - | - | 12.000 | 0.47244 | | | 12.0 |
| 17552011 | 1/2 | - | - | 12.700 | 0.50000 | | | 1/2 |
| 17525111 | 17/32 | - | - | 13.494 | 0.53125 | 186 | 236 | 17/32 |
| 17525311 | 9/16 | - | - | 14.288 | 0.56250 | | | 9/16 |
| 17525511 | 45/64 | - | - | 17.859 | 0.70313 | | | 45/64 |

Packed: 1 pc.
Available WXL® coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 1750 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

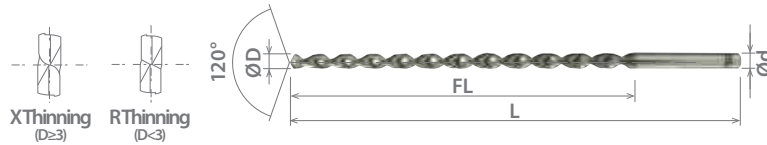
good best





List 1760

TDXL-15D



| | | | |
|-------------------|---------------|------------|------------|
| SPEED FEED | HSS-Co | WXL | 40° |
| P386 | | | |

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1.6≤D≤3 | +0 / -0.014 | +0 / -0.0006 |
| 3<D≤6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤17.86 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) | |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|-------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8623016 | - | - | - | 1.600 | 0.06299 | 30 | 70 | 1.6 | |
| 8623018 | - | - | - | 1.800 | 0.07087 | 34 | 75 | 1.8 | |
| 17502411 | 5/64 | - | - | 1.984 | 0.07813 | 36 | 80 | 5/64 | |
| 8623020 | - | - | - | 2.000 | 0.07874 | | | 2.0 | |
| 8623021 | - | - | - | 2.100 | 0.08268 | 38 | | 2.1 | |
| 8623022 | - | - | - | 2.200 | 0.08661 | 40 | | 2.2 | |
| 8623023 | - | - | - | 2.300 | 0.09055 | 42 | 85 | 2.3 | |
| 17503111 | 3/32 | - | - | 2.381 | 0.09375 | 44 | | 3/32 | |
| 8623024 | - | - | - | 2.400 | 0.09449 | 46 | 100 | 2.4 | |
| 8623025 | - | - | - | 2.500 | 0.09843 | | | 48 | 2.5 |
| 8623026 | - | - | - | 2.600 | 0.10236 | 50 | | 2.6 | |
| 8623027 | - | - | - | 2.700 | 0.10630 | | | 54 | 2.7 |
| 17503811 | 7/64 | - | - | 2.778 | 0.10938 | 56 | 105 | 7/64 | |
| 8623028 | - | - | - | 2.800 | 0.11024 | | | 58 | 2.8 |
| 8623029 | - | - | - | 2.900 | 0.11417 | 60 | | 110 | 2.9 |
| 8623030 | - | - | - | 3.000 | 0.11811 | | | | 62 |
| 8623031 | - | - | - | 3.100 | 0.12205 | 64 | 115 | | 3.1 |
| 17504411 | 1/8 | - | - | 3.175 | 0.12500 | | | | 66 |
| 8623032 | - | - | - | 3.200 | 0.12598 | 68 | | 120 | 3.2 |
| 8623033 | - | - | - | 3.300 | 0.12992 | | | | 70 |
| 8623034 | - | - | - | 3.400 | 0.13386 | 72 | 135 | | 3.4 |
| 8623035 | - | - | - | 3.500 | 0.13780 | | | | 74 |
| 17504711 | 9/64 | - | - | 3.572 | 0.14063 | 76 | | 140 | 9/64 |
| 8623036 | - | - | - | 3.600 | 0.14173 | | | | 78 |
| 8623037 | - | - | - | 3.700 | 0.14567 | 80 | 145 | | 3.7 |
| 8623038 | - | - | - | 3.800 | 0.14961 | | | | 82 |
| 8623039 | - | - | - | 3.900 | 0.15354 | 84 | | 150 | 3.9 |
| 17505311 | 5/32 | - | - | 3.969 | 0.15625 | | | | 86 |
| 8623040 | - | - | - | 4.000 | 0.15748 | 88 | 155 | | 4.0 |
| 8623041 | - | - | - | 4.100 | 0.16142 | | | | 90 |
| 8623042 | - | - | - | 4.200 | 0.16535 | 92 | | 160 | 4.2 |
| 8623043 | - | - | - | 4.300 | 0.16929 | | | | 94 |
| 17505911 | 11/64 | - | - | 4.366 | 0.17188 | 96 | 165 | | 11/64 |
| 8623044 | - | - | - | 4.400 | 0.17323 | | | | 98 |
| 8623045 | - | - | - | 4.500 | 0.17717 | 100 | | 170 | 4.5 |
| 8623046 | - | - | - | 4.600 | 0.18110 | | | | 102 |
| 8623047 | - | - | - | 4.700 | 0.18504 | 104 | 175 | | 4.7 |
| 17506511 | 3/16 | - | - | 4.763 | 0.18750 | | | | 106 |
| 8623048 | - | - | - | 4.800 | 0.18898 | 108 | | 180 | 4.8 |
| 8623049 | - | - | - | 4.900 | 0.19291 | | | | 110 |
| 8623050 | - | - | - | 5.000 | 0.19685 | 112 | 185 | | 5.0 |
| 8623051 | - | - | - | 5.100 | 0.20079 | | | | 114 |
| 17507211 | 13/64 | - | - | 5.159 | 0.20313 | 116 | | 190 | 13/64 |
| 8623052 | - | - | - | 5.200 | 0.20472 | | | | 118 |
| 8623053 | - | - | - | 5.300 | 0.20866 | 120 | 195 | | 5.3 |
| 8623054 | - | - | - | 5.400 | 0.21260 | | | | 122 |
| 8623055 | - | - | - | 5.500 | 0.21654 | 124 | | 200 | 5.5 |
| 17507711 | 7/32 | - | - | 5.556 | 0.21875 | | | | 126 |
| 8623056 | - | - | - | 5.600 | 0.22047 | 128 | 205 | | 5.6 |
| 8623057 | - | - | - | 5.700 | 0.22441 | | | | 130 |
| 8623058 | - | - | - | 5.800 | 0.22835 | 132 | | 210 | 5.8 |
| 17508111 | - | - | - | 5.950 | 0.23425 | | | | 134 |

Packed: 1 pc.
Available WXL® coating only.



List 1760 (Continued)

TDXL-15D

| | | | |
|-----------------------|--------|-----|-----|
| SPEED FEED P386 | HSS-Co | WXL | 40° |
|-----------------------|--------|-----|-----|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8623060 | - | - | - | 6.000 | 0.23622 | 108 | 170 | 6.0 |
| 8623062 | - | - | - | 6.200 | 0.24409 | 112 | | 6.2 |
| 8623063 | - | - | - | 6.300 | 0.24803 | 114 | 175 | 6.3 |
| 17508511 | 1/4 | - | E | 6.350 | 0.25000 | | | 118 |
| 8623065 | - | - | - | 6.500 | 0.25591 | 120 | 200 | 6.5 |
| 8623066 | - | - | - | 6.600 | 0.25984 | | | 124 |
| 17508811 | 17/64 | - | - | 6.747 | 0.26563 | 126 | 205 | 17/64 |
| 8623068 | - | - | - | 6.800 | 0.26772 | | | 130 |
| 8623069 | - | - | - | 6.900 | 0.27165 | 136 | 215 | 6.9 |
| 8623070 | - | - | - | 7.000 | 0.27559 | | | 144 |
| 8623071 | - | - | - | 7.100 | 0.27953 | 148 | 220 | 7.1 |
| 17509111 | 9/32 | - | - | 7.144 | 0.28125 | | | 150 |
| 8623075 | - | - | - | 7.500 | 0.29528 | 154 | 225 | 7.5 |
| 17509411 | 19/64 | - | - | 7.541 | 0.29688 | | | 156 |
| 17509611 | 5/16 | - | - | 7.938 | 0.31250 | 160 | 230 | 5/16 |
| 8623080 | - | - | - | 8.000 | 0.31496 | | | 162 |
| 8623081 | - | - | - | 8.100 | 0.31890 | 165 | 235 | 8.1 |
| 8623082 | - | - | - | 8.200 | 0.32283 | | | 168 |
| 17509911 | 21/64 | - | - | 8.334 | 0.32813 | 172 | 240 | 21/64 |
| 8623085 | - | - | - | 8.500 | 0.33465 | | | 176 |
| 8623086 | - | - | - | 8.600 | 0.33858 | 178 | 245 | 8.6 |
| 17510211 | 11/32 | - | - | 8.731 | 0.34375 | | | 180 |
| 8623088 | - | - | - | 8.800 | 0.34646 | 185 | 250 | 8.8 |
| 8623090 | - | - | - | 9.000 | 0.35433 | | | 190 |
| 17510511 | 23/64 | - | - | 9.128 | 0.35938 | 195 | 255 | 23/64 |
| 8623093 | - | - | - | 9.300 | 0.36614 | | | 200 |
| 8623095 | - | - | - | 9.500 | 0.37402 | 208 | 260 | 9.5 |
| 17510711 | 3/8 | - | - | 9.525 | 0.37500 | | | 210 |
| 8623097 | - | - | - | 9.700 | 0.38189 | 214 | 265 | 9.7 |
| 8623098 | - | - | - | 9.800 | 0.38583 | | | 215 |
| 17511011 | 25/64 | - | - | 9.922 | 0.39063 | 216 | 270 | 25/64 |
| 8623100 | - | - | - | 10.000 | 0.39370 | | | 218 |
| 17511311 | 13/32 | - | - | 10.319 | 0.40625 | 220 | 275 | 13/32 |
| 8623105 | - | - | - | 10.500 | 0.41339 | | | 225 |
| 17511511 | 27/64 | - | - | 10.716 | 0.42188 | 230 | 280 | 27/64 |
| 8623110 | - | - | - | 11.000 | 0.43307 | | | 235 |
| 17511611 | 7/16 | - | - | 11.113 | 0.43750 | 243 | 285 | 7/16 |
| 8623115 | - | - | - | 11.500 | 0.45276 | | | 245 |
| 17511711 | 29/64 | - | - | 11.509 | 0.45313 | 247 | 290 | 29/64 |
| 8623118 | - | - | - | 11.800 | 0.46457 | | | 249 |
| 17511811 | 15/32 | - | - | 11.906 | 0.46875 | 251 | 295 | 15/32 |
| 8623120 | - | - | - | 12.000 | 0.47244 | | | 253 |
| 17512011 | 1/2 | - | - | 12.700 | 0.50000 | 257 | 300 | 1/2 |
| 17525711 | 17/32 | - | - | 13.494 | 0.53125 | | | 259 |
| 17525911 | 9/16 | - | - | 14.288 | 0.56250 | 322 | 372 | 9/16 |
| 17526111 | 45/64 | - | - | 17.859 | 0.70313 | | | 372 |

Packed: 1 pc.
Available WXL® coating only.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 1760 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

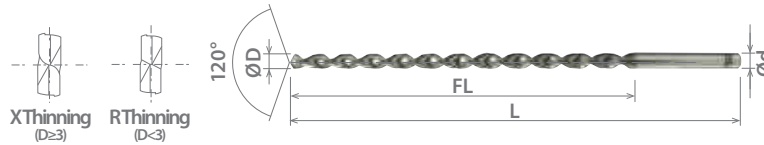
good best





List 1770

TDXL-20D



| | | | |
|---------------------------|---------------|------------|------------|
| SPEED FEED P386 | HSS-Co | WXL | 40° |
|---------------------------|---------------|------------|------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1.6≤D≤3 | +0 / -0.014 | +0 / -0.0006 |
| 3<D≤6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤14.29 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8623216 | - | - | - | 1.600 | 0.06299 | 38 | 85 | 1.6 |
| 8623218 | - | - | - | 1.800 | 0.07087 | 42 | | 1.8 |
| 17515311 | 5/64 | - | - | 1.984 | 0.07813 | 46 | 5/64 | |
| 8623220 | - | - | - | 2.000 | 0.07874 | 50 | 2.0 | |
| 8623221 | - | - | - | 2.100 | 0.08268 | | 2.1 | |
| 8623222 | - | - | - | 2.200 | 0.08661 | 52 | 2.2 | |
| 8623223 | - | - | - | 2.300 | 0.09055 | 54 | 2.3 | |
| 17516011 | 3/32 | - | - | 2.381 | 0.09375 | 56 | 3/32 | |
| 8623224 | - | - | - | 2.400 | 0.09449 | | 2.4 | |
| 8623225 | - | - | - | 2.500 | 0.09843 | 58 | 2.5 | |
| 8623226 | - | - | - | 2.600 | 0.10236 | 60 | 2.6 | |
| 8623227 | - | - | - | 2.700 | 0.10630 | 64 | 2.7 | |
| 17516711 | 7/64 | - | - | 2.778 | 0.10938 | 66 | 7/64 | |
| 8623228 | - | - | - | 2.800 | 0.11024 | | 2.8 | |
| 8623229 | - | - | - | 2.900 | 0.11417 | 68 | 2.9 | |
| 8623230 | - | - | - | 3.000 | 0.11811 | | 3.0 | |
| 8623231 | - | - | - | 3.100 | 0.12205 | 72 | 3.1 | |
| 17517311 | 1/8 | - | - | 3.175 | 0.12500 | 74 | 1/8 | |
| 8623232 | - | - | - | 3.200 | 0.12598 | | 3.2 | |
| 8623233 | - | - | - | 3.300 | 0.12992 | 76 | 3.3 | |
| 8623234 | - | - | - | 3.400 | 0.13386 | 80 | 3.4 | |
| 8623235 | - | - | - | 3.500 | 0.13780 | 82 | 3.5 | |
| 17517611 | 9/64 | - | - | 3.572 | 0.14063 | | 9/64 | |
| 8623237 | - | - | - | 3.700 | 0.14567 | 86 | 3.7 | |
| 8623238 | - | - | - | 3.800 | 0.14961 | 88 | 3.8 | |
| 17518211 | 5/32 | - | - | 3.969 | 0.15625 | 92 | 5/32 | |
| 8623240 | - | - | - | 4.000 | 0.15748 | | 4.0 | |
| 8623241 | - | - | - | 4.100 | 0.16142 | 96 | 4.1 | |
| 8623242 | - | - | - | 4.200 | 0.16535 | 98 | 4.2 | |
| 8623243 | - | - | - | 4.300 | 0.16929 | | 4.3 | |
| 17518811 | 11/64 | - | - | 4.366 | 0.17188 | 100 | 11/64 | |
| 8623245 | - | - | - | 4.500 | 0.17717 | 104 | 4.5 | |
| 8623246 | - | - | - | 4.600 | 0.18110 | 106 | 4.6 | |
| 17519411 | 3/16 | - | - | 4.763 | 0.18750 | 110 | 3/16 | |
| 8623248 | - | - | - | 4.800 | 0.18898 | 112 | 4.8 | |
| 8623250 | - | - | - | 5.000 | 0.19685 | 116 | 5.0 | |
| 8623251 | - | - | - | 5.100 | 0.20079 | 118 | 5.1 | |
| 17520111 | 13/64 | - | - | 5.159 | 0.20313 | 120 | 13/64 | |
| 8623252 | - | - | - | 5.200 | 0.20472 | | 5.2 | |
| 8623255 | - | - | - | 5.500 | 0.21654 | 128 | 5.5 | |
| 17520611 | 7/32 | - | - | 5.556 | 0.21875 | | 7/32 | |
| 8623257 | - | - | - | 5.700 | 0.22441 | 132 | 5.7 | |
| 8623258 | - | - | - | 5.800 | 0.22835 | 134 | 5.8 | |
| 17521011 | 15/64 | - | - | 5.953 | 0.23438 | 138 | 15/64 | |
| 8623260 | - | - | - | 6.000 | 0.23622 | | 6.0 | |
| 17521411 | 1/4 | - | E | 6.350 | 0.25000 | 146 | 1/4 | |
| 8623265 | - | - | - | 6.500 | 0.25591 | 150 | 6.5 | |
| 17521711 | 17/64 | - | - | 6.747 | 0.26563 | 156 | 17/64 | |
| 8623270 | - | - | - | 7.000 | 0.27559 | 162 | 7.0 | |
| 17522011 | 9/32 | - | - | 7.144 | 0.28125 | 164 | 9/32 | |
| 8623275 | - | - | - | 7.500 | 0.29528 | 174 | 7.5 | |
| 17522311 | 19/64 | - | - | 7.541 | 0.29688 | | 19/64 | |

Packed: 1 pc.
Available WXL® coating only.





List 1770 (Continued)

| | | | |
|--------------------|--------|-----|-----|
| SPEED FEED P386 | HSS-Co | WXL | 40° |
|--------------------|--------|-----|-----|

TDXL-20D

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm/in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|-----------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 17522511 | 5/16 | - | - | 7.938 | 0.31250 | 184 | 255 | 5/16 |
| 8623280 | - | - | - | 8.000 | 0.31496 | | | 8.0 |
| 8623281 | - | - | - | 8.100 | 0.31890 | 188 | 260 | 8.1 |
| 8623282 | - | - | - | 8.200 | 0.32283 | 190 | | 8.2 |
| 17522811 | 21/64 | - | - | 8.334 | 0.32813 | 192 | 265 | 21/64 |
| 8623285 | - | - | - | 8.500 | 0.33465 | 196 | | 8.5 |
| 17523111 | 11/32 | - | - | 8.731 | 0.34375 | 200 | 270 | 11/32 |
| 8623290 | - | - | - | 9.000 | 0.35433 | 208 | | 9.0 |
| 17523411 | 23/64 | - | - | 9.128 | 0.35938 | 210 | 275 | 23/64 |
| 17523611 | 3/8 | - | - | 9.525 | 0.37500 | 220 | | 3/8 |
| 17523911 | 25/64 | - | - | 9.922 | 0.39063 | 230 | 300 | 25/64 |
| 8623300 | - | - | - | 10.000 | 0.39370 | | | 238 |
| 17524211 | 13/32 | - | - | 10.319 | 0.40625 | 246 | 340 | 13/32 |
| 17524411 | 27/64 | - | - | 10.716 | 0.42188 | 254 | | 27/64 |
| 8623310 | - | - | - | 11.000 | 0.43307 | 255 | 350 | 11.0 |
| 17524511 | 7/16 | - | - | 11.113 | 0.43750 | 265 | | 7/16 |
| 17524611 | 29/64 | - | - | 11.509 | 0.45313 | 274 | 360 | 29/64 |
| 17524711 | 15/32 | - | - | 11.906 | 0.46875 | 276 | | 15/32 |
| 8623320 | - | - | - | 12.000 | 0.47244 | 292 | 378 | 12.0 |
| 17524911 | 1/2 | - | - | 12.700 | 0.50000 | 310 | | 1/2 |
| 17526311 | 17/32 | - | - | 13.494 | 0.53125 | 328 | 17/32 | |
| 17526511 | 9/16 | - | - | 14.288 | 0.56250 | | 9/16 | |

Packed: 1 pc.
Available WXL® coating only.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 1770 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

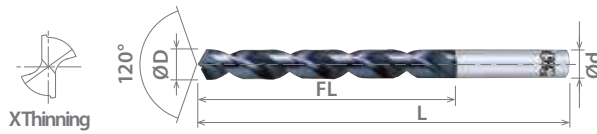
good best





List 1800

V-SDR



| | | | | |
|-------------------|-------------|----------|----------------|------------|
| SPEED FEED | HSSE | V | JOBBERS | 35° |
| P387 | | | | |

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 13 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8594020 | - | - | - | 2.000 | 0.07874 | 24 | 49 | 2.0 |
| 8594021 | - | - | - | 2.100 | 0.08268 | | | 2.1 |
| 8594022 | - | - | - | 2.200 | 0.08661 | 27 | 53 | 2.2 |
| 8594023 | - | - | - | 2.300 | 0.09055 | | | 2.3 |
| 8594024 | - | - | - | 2.400 | 0.09449 | 30 | 57 | 2.4 |
| 8594025 | - | - | - | 2.500 | 0.09843 | | | 2.5 |
| 8594026 | - | - | - | 2.600 | 0.10236 | 33 | 61 | 2.6 |
| 8594027 | - | - | - | 2.700 | 0.10630 | | | 2.7 |
| 8594028 | - | - | - | 2.800 | 0.11024 | 36 | 65 | 2.8 |
| 8594029 | - | - | - | 2.900 | 0.11417 | | | 2.9 |
| 8594030 | - | - | - | 3.000 | 0.11811 | 39 | 70 | 3.0 |
| 8594031 | - | - | - | 3.100 | 0.12205 | | | 3.1 |
| 8594032 | - | - | - | 3.200 | 0.12598 | 43 | 75 | 3.2 |
| 8594033 | - | - | - | 3.300 | 0.12992 | | | 3.3 |
| 8594034 | - | - | - | 3.400 | 0.13386 | 47 | 80 | 3.4 |
| 8594035 | - | - | - | 3.500 | 0.13780 | | | 3.5 |
| 8594036 | - | - | - | 3.600 | 0.14173 | 52 | 86 | 3.6 |
| 8594037 | - | - | - | 3.700 | 0.14567 | | | 3.7 |
| 8594038 | - | - | - | 3.800 | 0.14961 | 57 | 93 | 3.8 |
| 8594039 | - | - | - | 3.900 | 0.15354 | | | 3.9 |
| 8594040 | - | - | - | 4.000 | 0.15748 | 63 | 101 | 4.0 |
| 8594041 | - | - | - | 4.100 | 0.16142 | | | 4.1 |
| 8594042 | - | - | - | 4.200 | 0.16535 | 69 | 109 | 4.2 |
| 8594043 | - | - | - | 4.300 | 0.16929 | | | 4.3 |
| 8594044 | - | - | - | 4.400 | 0.17323 | 71 | 111 | 4.4 |
| 8594045 | - | - | - | 4.500 | 0.17717 | | | 4.5 |
| 8594046 | - | - | - | 4.600 | 0.18110 | 77 | 117 | 4.6 |
| 8594047 | - | - | - | 4.700 | 0.18504 | | | 4.7 |
| 8594048 | - | - | - | 4.800 | 0.18898 | 83 | 123 | 4.8 |
| 8594049 | - | - | - | 4.900 | 0.19291 | | | 4.9 |
| 8594050 | - | - | - | 5.000 | 0.19685 | 89 | 129 | 5.0 |
| 8594051 | - | - | - | 5.100 | 0.20079 | | | 5.1 |
| 8594052 | - | - | - | 5.200 | 0.20472 | 95 | 135 | 5.2 |
| 8594053 | - | - | - | 5.300 | 0.20866 | | | 5.3 |
| 8594054 | - | - | - | 5.400 | 0.21260 | 101 | 141 | 5.4 |
| 8594055 | - | - | - | 5.500 | 0.21654 | | | 5.5 |
| 8594056 | - | - | - | 5.600 | 0.22047 | 107 | 147 | 5.6 |
| 8594057 | - | - | - | 5.700 | 0.22441 | | | 5.7 |
| 8594058 | - | - | - | 5.800 | 0.22835 | 113 | 153 | 5.8 |
| 8594059 | - | - | - | 5.900 | 0.23228 | | | 5.9 |
| 8594060 | - | - | - | 6.000 | 0.23622 | 119 | 159 | 6.0 |
| 8594061 | - | - | - | 6.100 | 0.24016 | | | 6.1 |
| 8594062 | - | - | - | 6.200 | 0.24409 | 125 | 165 | 6.2 |
| 8594063 | - | - | - | 6.300 | 0.24803 | | | 6.3 |
| 8594064 | - | - | - | 6.400 | 0.25197 | 131 | 171 | 6.4 |
| 8594065 | - | - | - | 6.500 | 0.25591 | | | 6.5 |
| 8594066 | - | - | - | 6.600 | 0.25984 | 137 | 177 | 6.6 |
| 8594067 | - | - | - | 6.700 | 0.26378 | | | 6.7 |
| 8594068 | - | - | - | 6.800 | 0.26772 | 143 | 183 | 6.8 |
| 8594069 | - | - | - | 6.900 | 0.27165 | | | 6.9 |
| 8594070 | - | - | - | 7.000 | 0.27559 | 149 | 189 | 7.0 |
| 8594071 | - | - | - | 7.100 | 0.27953 | | | 7.1 |

Packed: 1 pc.
Available V coating only.





List 1800 (Continued)

V-SDR

| | | | | |
|---------------------------|-------------|----------|---------------|------------|
| SPEED FEED P387 | HSSE | V | JOBBER | 35° |
|---------------------------|-------------|----------|---------------|------------|

| EDP Number | Diameter | | | | | Flute Length | Overall Length | Shank Diameter |
|------------|-----------------|-----------|-------------|--------|---------|--------------|----------------|----------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | FL (mm) | L (mm) | d (mm) |
| 8594072 | - | - | - | 7.200 | 0.28346 | 69 | 109 | 7.2 |
| 8594073 | - | - | - | 7.300 | 0.28740 | | | 7.3 |
| 8594074 | - | - | - | 7.400 | 0.29134 | | | 7.4 |
| 8594075 | - | - | - | 7.500 | 0.29528 | | | 7.5 |
| 8594076 | - | - | - | 7.600 | 0.29921 | | | 7.6 |
| 8594077 | - | - | - | 7.700 | 0.30315 | 75 | 117 | 7.7 |
| 8594078 | - | - | - | 7.800 | 0.30709 | | | 7.8 |
| 8594079 | - | - | - | 7.900 | 0.31102 | | | 7.9 |
| 8594080 | - | - | - | 8.000 | 0.31496 | | | 8.0 |
| 8594081 | - | - | - | 8.100 | 0.31890 | | | 8.1 |
| 8594082 | - | - | - | 8.200 | 0.32283 | | | 8.2 |
| 8594083 | - | - | - | 8.300 | 0.32677 | | | 8.3 |
| 8594084 | - | - | - | 8.400 | 0.33071 | | | 8.4 |
| 8594085 | - | - | - | 8.500 | 0.33465 | | | 8.5 |
| 8594086 | - | - | - | 8.600 | 0.33858 | | | 8.6 |
| 8594087 | - | - | - | 8.700 | 0.34252 | 8.7 | | |
| 8594088 | - | - | - | 8.800 | 0.34646 | 8.8 | | |
| 8594089 | - | - | - | 8.900 | 0.35039 | 8.9 | | |
| 8594090 | - | - | - | 9.000 | 0.35433 | 9.0 | | |
| 8594091 | - | - | - | 9.100 | 0.35827 | 9.1 | | |
| 8594092 | - | - | - | 9.200 | 0.36220 | 9.2 | | |
| 8594093 | - | - | - | 9.300 | 0.36614 | 9.3 | | |
| 8594094 | - | - | - | 9.400 | 0.37008 | 9.4 | | |
| 8594095 | - | - | - | 9.500 | 0.37402 | 9.5 | | |
| 8594096 | - | - | - | 9.600 | 0.37795 | 9.6 | | |
| 8594097 | - | - | - | 9.700 | 0.38189 | 9.7 | | |
| 8594098 | - | - | - | 9.800 | 0.38583 | 9.8 | | |
| 8594099 | - | - | - | 9.900 | 0.38976 | 9.9 | | |
| 8594100 | - | - | - | 10.000 | 0.39370 | 10.0 | | |
| 8594101 | - | - | - | 10.100 | 0.39764 | 10.1 | | |
| 8594102 | - | - | - | 10.200 | 0.40157 | 10.2 | | |
| 8594103 | - | - | - | 10.300 | 0.40551 | 10.3 | | |
| 8594104 | - | - | - | 10.400 | 0.40945 | 10.4 | | |
| 8594105 | - | - | - | 10.500 | 0.41339 | 10.5 | | |
| 8594106 | - | - | - | 10.600 | 0.41732 | 10.6 | | |
| 8594107 | - | - | - | 10.700 | 0.42126 | 10.7 | | |
| 8594108 | - | - | - | 10.800 | 0.42520 | 10.8 | | |
| 8594109 | - | - | - | 10.900 | 0.42913 | 10.9 | | |
| 8594110 | - | - | - | 11.000 | 0.43307 | 11.0 | | |
| 8594111 | - | - | - | 11.100 | 0.43701 | 11.1 | | |
| 8594112 | - | - | - | 11.200 | 0.44094 | 11.2 | | |
| 8594113 | - | - | - | 11.300 | 0.44488 | 11.3 | | |
| 8594114 | - | - | - | 11.400 | 0.44882 | 11.4 | | |
| 8594115 | - | - | - | 11.500 | 0.45276 | 11.5 | | |
| 8594116 | - | - | - | 11.600 | 0.45669 | 11.6 | | |
| 8594117 | - | - | - | 11.700 | 0.46063 | 11.7 | | |
| 8594118 | - | - | - | 11.800 | 0.46457 | 11.8 | | |
| 8594119 | - | - | - | 11.900 | 0.46850 | 101 | 151 | 11.9 |

Packed: 1 pc.
Available V coating only.

continued on next page **EXD**

| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------------|-----|--------------------------|--------------------------|--------------------------|--------------------------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 1800 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |

good best





List 1800 (Continued)

V-SDR



| | | | | |
|-------------------|-------------|----------|----------------|------------|
| SPEED FEED | HSSE | V | JOBBERS | 35° |
| P387 | | | | |

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 13 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 8594120 | - | - | - | 12.000 | 0.47244 | 101 | 151 | 12.0 |
| 8594121 | - | - | - | 12.100 | 0.47638 | | | 12.1 |
| 8594122 | - | - | - | 12.200 | 0.48031 | | | 12.2 |
| 8594123 | - | - | - | 12.300 | 0.48425 | | | 12.3 |
| 8594124 | - | - | - | 12.400 | 0.48819 | | | 12.4 |
| 8594125 | - | - | - | 12.500 | 0.49213 | | | 12.5 |
| 8594126 | - | - | - | 12.600 | 0.49606 | | | 12.6 |
| 8594127 | 1/2 | - | - | 12.700 | 0.50000 | | | 12.7 |
| 8594128 | - | - | - | 12.800 | 0.50394 | | | 12.8 |
| 8594129 | - | - | - | 12.900 | 0.50787 | | | 12.9 |
| 8594130 | - | - | - | 13.000 | 0.51181 | | | 13.0 |

Packed: 1 pc.
Available V coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------------|-----|--------------------------|--------------------------|--------------------------|--------------------------|--------------|----------------|-----------------|-----------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 1800 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |

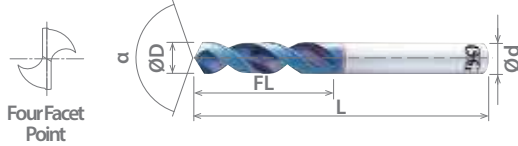
good best





List 1150

NEXUS-GDS, Designed for a Wide Range of Materials



Four Facet Point

| | | | | |
|-------------------------------|-------------|------------|-------------|------------|
| SPEED FEED P388-389 | HSSE | WD1 | STUB | 40° |
|-------------------------------|-------------|------------|-------------|------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 12.7 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8650100 | - | - | - | 1.000 | 0.03937 | 6 | 38 | 3 | 140° |
| 11507615 | - | - | - | 1.250 | 0.04921 | 8 | 40 | | |
| 11509115 | - | 54 | - | 1.397 | 0.05500 | 9 | 41 | | |
| 8650150 | - | - | - | 1.500 | 0.05906 | 10 | 42 | | |
| 11511115 | - | - | - | 1.600 | 0.06299 | 11 | 43 | | |
| 11511615 | - | - | - | 1.650 | 0.06496 | 11 | 43 | | |
| 11512915 | - | 50 | - | 1.778 | 0.07000 | 12 | 44 | | |
| 8650180 | - | - | - | 1.800 | 0.07087 | 13 | 45 | | |
| 8650181 | - | - | - | 1.810 | 0.07126 | 13 | 45 | | |
| 8650183 | - | - | - | 1.830 | 0.07205 | 13 | 45 | | |
| 11513615 | - | 49 | - | 1.854 | 0.07300 | 14 | 46 | | |
| 11514915 | 5/64 | - | - | 1.984 | 0.07813 | 14 | 46 | | |
| 8650200 | - | - | - | 2.000 | 0.07874 | 16 | 48 | | |
| 11515915 | - | 45 | - | 2.083 | 0.08200 | 16 | 48 | | |
| 8650211 | - | - | - | 2.110 | 0.08307 | 18 | 50 | | |
| 8650213 | - | - | - | 2.130 | 0.08386 | 18 | 50 | | |
| 11516915 | - | 44 | - | 2.184 | 0.08600 | 20 | 52 | | |
| 11517715 | - | 43 | - | 2.261 | 0.08900 | 20 | 52 | | |
| 8650228 | - | - | - | 2.280 | 0.08976 | 20 | 52 | | |
| 8650230 | - | - | - | 2.300 | 0.09055 | 20 | 52 | | |
| 11518815 | - | 42 | - | 2.375 | 0.09350 | 20 | 52 | | |
| 8650238 | - | - | - | 2.380 | 0.09370 | 20 | 52 | | |
| 8650240 | - | - | - | 2.400 | 0.09449 | 20 | 52 | | |
| 8650250 | - | - | - | 2.500 | 0.09843 | 20 | 52 | | |
| 11520415 | - | 39 | - | 2.527 | 0.09950 | 20 | 52 | | |
| 11520915 | - | 38 | - | 2.578 | 0.10150 | 20 | 52 | | |
| 8650260 | - | - | - | 2.600 | 0.10236 | 20 | 52 | | |
| 11521515 | - | 37 | - | 2.642 | 0.10400 | 20 | 52 | | |
| 11522215 | - | 36 | - | 2.705 | 0.10650 | 20 | 52 | | |
| 8650276 | - | - | - | 2.760 | 0.10866 | 20 | 52 | | |
| 8650278 | - | - | - | 2.780 | 0.10945 | 20 | 52 | | |
| 8650280 | - | - | - | 2.800 | 0.11024 | 20 | 52 | | |
| 11523815 | - | 33 | - | 2.870 | 0.11300 | 20 | 52 | | |
| 11524115 | - | - | - | 2.900 | 0.11417 | 20 | 52 | | |
| 8650300 | - | - | - | 3.000 | 0.11811 | 20 | 52 | | |
| 11526115 | - | - | - | 3.100 | 0.12205 | 20 | 52 | | |
| 11526915 | 1/8 | - | - | 3.175 | 0.12500 | 20 | 52 | | |
| 8650320 | - | - | - | 3.200 | 0.12598 | 20 | 52 | | |
| 8650325 | - | - | - | 3.250 | 0.12795 | 20 | 52 | | |
| 8650330 | - | - | - | 3.300 | 0.12992 | 20 | 52 | | |
| 8650340 | - | - | - | 3.400 | 0.13386 | 20 | 52 | | |
| 11529615 | - | 29 | - | 3.454 | 0.13600 | 20 | 52 | | |

Packed: 1 pc.
Available WD1 coating only.

continued on next page **EXD**

| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 1150 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

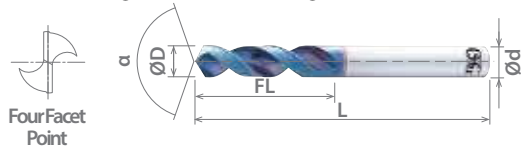
good best





List 1150 (Continued)

NEXUS-GDS, Designed for a Wide Range of Materials



| | | | | |
|------------------------|------|-----|------|-----|
| SPEED FEED P388-389 | HSSE | WD1 | STUB | 40° |
|------------------------|------|-----|------|-----|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 12.7 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8650350 | - | - | - | 3.500 | 0.13780 | 20 | 52 | 4 | 130° |
| 11530815 | 9/64 | - | - | 3.572 | 0.14063 | | | | |
| 8650365 | - | - | - | 3.650 | 0.14370 | | | | |
| 8650367 | - | - | - | 3.670 | 0.14449 | | | | |
| 11533115 | - | 25 | - | 3.797 | 0.14950 | 22 | 54 | 4 | 130° |
| 8650390 | - | - | - | 3.900 | 0.15354 | | | | |
| 11534815 | 5/32 | - | - | 3.969 | 0.15625 | | | | |
| 8650400 | - | - | - | 4.000 | 0.15748 | | | | |
| 11535515 | - | 21 | - | 4.039 | 0.15900 | 24 | 68 | 6 | 120° |
| 8650410 | - | - | - | 4.100 | 0.16142 | | | | |
| 8650420 | - | - | - | 4.200 | 0.16535 | | | | |
| 8650430 | - | - | - | 4.300 | 0.16929 | | | | |
| 11538815 | 11/64 | - | - | 4.366 | 0.17188 | 26 | 70 | 8 | 120° |
| 8650450 | - | - | - | 4.500 | 0.17717 | | | | |
| 8650459 | - | - | - | 4.590 | 0.18071 | | | | |
| 11541315 | - | 14 | - | 4.623 | 0.18200 | | | | |
| 8650463 | - | - | - | 4.630 | 0.18228 | 28 | 72 | 8 | 120° |
| 11542715 | 3/16 | - | - | 4.763 | 0.18750 | | | | |
| 8650500 | - | - | - | 5.000 | 0.19685 | | | | |
| 11545615 | - | 8 | - | 5.055 | 0.19900 | | | | |
| 8650510 | - | - | - | 5.100 | 0.20079 | 31 | 75 | 8 | 120° |
| 11546215 | - | 7 | - | 5.105 | 0.20100 | | | | |
| 11546715 | 13/64 | - | - | 5.159 | 0.20313 | | | | |
| 8650520 | - | - | - | 5.200 | 0.20472 | | | | |
| 11549215 | - | 3 | - | 5.410 | 0.21300 | 34 | 78 | 8 | 120° |
| 8650548 | - | - | - | 5.480 | 0.21575 | | | | |
| 8650550 | - | - | - | 5.500 | 0.21654 | | | | |
| 11550715 | 7/32 | - | - | 5.556 | 0.21875 | | | | |
| 11551115 | - | - | - | 5.600 | 0.22047 | 37 | 81 | 10 | 120° |
| 11553015 | - | 1 | - | 5.791 | 0.22800 | | | | |
| 11554615 | 15/64 | - | - | 5.953 | 0.23438 | | | | |
| 8650600 | - | - | - | 6.000 | 0.23622 | | | | |
| 11555815 | 1/4 | - | E | 6.350 | 0.25000 | 40 | 90 | 10 | 120° |
| 11556115 | - | - | - | 6.500 | 0.25591 | | | | |
| 11556215 | - | - | - | 6.520 | 0.25669 | | | | |
| 8650680 | - | - | - | 6.800 | 0.26772 | | | | |
| 8650690 | - | - | - | 6.900 | 0.27165 | 37 | 87 | 10 | 120° |
| 8650700 | - | - | - | 7.000 | 0.27559 | | | | |
| 11557815 | - | - | - | 7.300 | 0.28740 | | | | |
| 8650734 | - | - | - | 7.340 | 0.28898 | | | | |
| 8650738 | - | - | - | 7.380 | 0.29055 | 40 | 90 | 10 | 120° |
| 11558315 | - | - | - | 7.450 | 0.29331 | | | | |
| 11559315 | 5/16 | - | - | 7.938 | 0.31250 | | | | |
| 8650800 | - | - | - | 8.000 | 0.31496 | | | | |
| 8650810 | - | - | - | 8.100 | 0.31890 | 40 | 90 | 10 | 120° |
| 11559915 | - | - | P | 8.204 | 0.32300 | | | | |
| 11560415 | - | - | - | 8.430 | 0.33189 | | | | |
| 8650850 | - | - | - | 8.500 | 0.33465 | | | | |
| 8650860 | - | - | - | 8.600 | 0.33858 | 40 | 90 | 10 | 120° |
| 8650880 | - | - | - | 8.800 | 0.34646 | | | | |
| 11561315 | - | - | - | 8.830 | 0.34764 | | | | |
| 8650900 | - | - | - | 9.000 | 0.35433 | | | | |

Packed: 1 pc.
Available WD1 coating only.



List 1150 (Continued)

| | | | | |
|-------------------------------|-------------|------------|-------------|------------|
| SPEED FEED P388-389 | HSSE | WD1 | STUB | 40° |
|-------------------------------|-------------|------------|-------------|------------|

NEXUS-GDS, Designed for a Wide Range of Materials

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 11561815 | - | - | - | 9.050 | 0.35630 | 40 | 90 | 10 | 120° |
| 8650918 | - | - | - | 9.180 | 0.36142 | | | | |
| 8650920 | - | - | - | 9.200 | 0.36220 | | | | |
| 8650924 | - | - | - | 9.240 | 0.36378 | | | | |
| 8650934 | - | - | - | 9.340 | 0.36772 | | | | |
| 8650936 | - | - | - | 9.360 | 0.36850 | | | | |
| 11563215 | 3/8 | - | - | 9.525 | 0.37500 | | | | |
| 11564115 | 25/64 | - | - | 9.922 | 0.39063 | | | | |
| 8651000 | - | - | - | 10.000 | 0.39370 | | | | |
| 11564715 | - | - | - | 10.200 | 0.40157 | | | | |
| 8651030 | - | - | - | 10.300 | 0.40551 | 43 | 93 | 12 | |
| 11565015 | 13/32 | - | - | 10.319 | 0.40625 | | | | |
| 8651040 | - | - | - | 10.400 | 0.40945 | | | | |
| 8651050 | - | - | - | 10.500 | 0.41339 | | | | |
| 11565915 | 27/64 | - | - | 10.716 | 0.42188 | | | | |
| 8651100 | - | - | - | 11.000 | 0.43307 | 47 | 104 | | |
| 11566815 | 7/16 | - | - | 11.113 | 0.43750 | | | | |
| 11567715 | 29/64 | - | - | 11.509 | 0.45313 | | | | |
| 11568415 | - | - | - | 11.850 | 0.46654 | 51 | 108 | | |
| 8651200 | - | - | - | 12.000 | 0.47244 | | | | |
| 11568815 | - | - | - | 12.100 | 0.47638 | | | | |
| 11569415 | 1/2 | - | - | 12.700 | 0.50000 | | | | |

Packed: 1 pc.
Available WD1 coating only.



| Work Material | | | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 1150 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

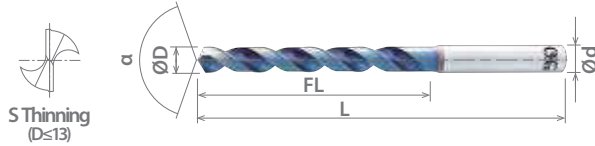
good best





List 1650

NEXUS-GDR, Designed for a Wide Range of Materials



| | | | | |
|-------------------------------|-------------|------------|----------------|------------|
| SPEED FEED P388-389 | HSSE | WD1 | JOBBERS | 40° |
|-------------------------------|-------------|------------|----------------|------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2≤D≤3 | +0 / -0.014 | +0 / -0.0006 |
| 3<D≤6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤12.7 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8655200 | - | - | - | 2.000 | 0.07874 | 24 | 56 | 3 | 130° |
| 16502715 | - | 43 | - | 2.261 | 0.08900 | 27 | 59 | | |
| 8655230 | - | - | - | 2.300 | 0.09055 | | | | |
| 16503915 | 3/32 | - | - | 2.381 | 0.09375 | 30 | 62 | | |
| 8655250 | - | - | - | 2.500 | 0.09843 | | | | |
| 16505915 | - | 38 | - | 2.578 | 0.10150 | | | | |
| 8655260 | - | - | - | 2.600 | 0.10236 | 33 | 65 | | |
| 8655280 | - | - | - | 2.800 | 0.11024 | | | | |
| 16508815 | - | 33 | - | 2.870 | 0.11300 | | | | |
| 8655300 | - | - | - | 3.000 | 0.11811 | 36 | 68 | | |
| 16511915 | 1/8 | - | - | 3.175 | 0.12500 | | | | |
| 8655330 | - | - | - | 3.300 | 0.12992 | | | | |
| 8655340 | - | - | - | 3.400 | 0.13386 | 39 | 71 | | |
| 16514615 | - | 29 | - | 3.454 | 0.13600 | | | | |
| 8655350 | - | - | - | 3.500 | 0.13780 | | | | |
| 16515815 | 9/64 | - | - | 3.572 | 0.14063 | 43 | 75 | | |
| 16518115 | - | 25 | - | 3.797 | 0.14950 | | | | |
| 16519815 | 5/32 | - | - | 3.969 | 0.15625 | | | | |
| 8655400 | - | - | - | 4.000 | 0.15748 | 47 | 91 | | |
| 16520515 | - | 21 | - | 4.039 | 0.15900 | | | | |
| 8655420 | - | - | - | 4.200 | 0.16535 | | | | |
| 8655430 | - | - | - | 4.300 | 0.16929 | 52 | 96 | | |
| 8655450 | - | - | - | 4.500 | 0.17717 | | | | |
| 16527715 | 3/16 | - | - | 4.763 | 0.18750 | | | | |
| 8655500 | - | - | - | 5.000 | 0.19685 | 57 | 101 | | |
| 8655510 | - | - | - | 5.100 | 0.20079 | | | | |
| 16531215 | - | 7 | - | 5.105 | 0.20100 | | | | |
| 16531715 | 13/64 | - | - | 5.159 | 0.20313 | 63 | 107 | | |
| 8655520 | - | - | - | 5.200 | 0.20472 | | | | |
| 16534215 | - | 3 | - | 5.410 | 0.21300 | | | | |
| 8655550 | - | - | - | 5.500 | 0.21654 | 69 | 113 | | |
| 16535715 | 7/32 | - | - | 5.556 | 0.21875 | | | | |
| 8655600 | - | - | - | 6.000 | 0.23622 | | | | |
| 16540815 | 1/4 | - | E | 6.350 | 0.25000 | 75 | 119 | | |
| 8655680 | - | - | - | 6.800 | 0.26772 | | | | |
| 8655690 | - | - | - | 6.900 | 0.27165 | | | | |
| 8655700 | - | - | - | 7.000 | 0.27559 | 81 | 131 | | |
| 16544015 | 5/16 | - | - | 7.938 | 0.31250 | | | | |
| 8655800 | - | - | - | 8.000 | 0.31496 | | | | |
| 8655850 | - | - | - | 8.500 | 0.33465 | 87 | 144 | | |
| 8655860 | - | - | - | 8.600 | 0.33858 | | | | |
| 8655880 | - | - | - | 8.800 | 0.34646 | | | | |
| 8655900 | - | - | - | 9.000 | 0.35433 | 87 | 144 | | |
| 16547315 | 3/8 | - | - | 9.525 | 0.37500 | | | | |
| 8656000 | - | - | - | 10.000 | 0.39370 | | | | |
| 8656030 | - | - | - | 10.300 | 0.40551 | | | | |
| 8656040 | - | - | - | 10.400 | 0.40945 | | | | |

Packed: 1 pc.
Available WD1 coating only.



List 1650 (Continued)

| | | | | |
|-------------------------------|-------------|------------|----------------|------------|
| SPEED FEED P388-389 | HSSE | WD1 | JOBBERS | 40° |
|-------------------------------|-------------|------------|----------------|------------|

NEXUS-GDR, Designed for a Wide Range of Materials

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8656050 | - | - | - | 10.500 | 0.41339 | 87 | 144 | 12 | 120° |
| 8656100 | - | - | - | 11.000 | 0.43307 | 94 | 151 | | |
| 16550615 | 7/16 | - | - | 11.113 | 0.43750 | | | | |
| 8656200 | - | - | - | 12.000 | 0.47244 | 101 | 158 | | |
| 16553115 | 1/2 | - | - | 12.700 | 0.50000 | | | | |

Packed: 1 pc.
Available WD1 coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
|----------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 1650 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

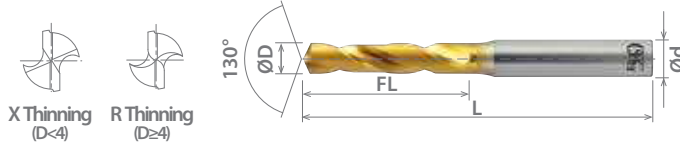
good best





List 1000

EX-GDS, Ideal for General Applications



| | | | | |
|-------------------|---------------|------------|-------------|------------|
| SPEED FEED | HSS-Co | TiN | STUB | 25° |
| P390 | | | | |

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1.99 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 12.7 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 10078505 | - | 47 | - | 1.994 | 0.07850 | 17 | 33 | 1/8 |
| 10081005 | - | 46 | - | 2.057 | 0.08100 | | | |
| 10082005 | - | 45 | - | 2.083 | 0.08200 | | | |
| 10086005 | - | 44 | - | 2.184 | 0.08600 | | | |
| 10089005 | - | 43 | - | 2.261 | 0.08900 | | | |
| 10093505 | - | 42 | - | 2.375 | 0.09350 | | | |
| 10093805 | 3/32 | - | - | 2.381 | 0.09375 | | | |
| 10096005 | - | 41 | - | 2.438 | 0.09600 | | | |
| 10098005 | - | 40 | - | 2.489 | 0.09800 | | | |
| 10099505 | - | 39 | - | 2.527 | 0.09950 | | | |
| 10101505 | - | 38 | - | 2.578 | 0.10150 | 20 | 52 | 3/16 |
| 10104005 | - | 37 | - | 2.642 | 0.10400 | | | |
| 10106505 | - | 36 | - | 2.705 | 0.10650 | | | |
| 10109405 | 7/64 | - | - | 2.778 | 0.10938 | | | |
| 10110005 | - | 35 | - | 2.794 | 0.11000 | | | |
| 10111005 | - | 34 | - | 2.819 | 0.11100 | | | |
| 10113005 | - | 33 | - | 2.870 | 0.11300 | | | |
| 10116005 | - | 32 | - | 2.946 | 0.11600 | | | |
| 10120005 | - | 31 | - | 3.048 | 0.12000 | | | |
| 10125005 | 1/8 | - | - | 3.175 | 0.12500 | | | |
| 10128505 | - | 30 | - | 3.264 | 0.12850 | | | |
| 10136005 | - | 29 | - | 3.454 | 0.13600 | | | |
| 10140505 | - | 28 | - | 3.569 | 0.14050 | | | |
| 10140605 | 9/64 | - | - | 3.572 | 0.14063 | | | |
| 10144005 | - | 27 | - | 3.658 | 0.14400 | | | |
| 10147005 | - | 26 | - | 3.734 | 0.14700 | | | |
| 10149505 | - | 25 | - | 3.797 | 0.14950 | | | |
| 10152005 | - | 24 | - | 3.861 | 0.15200 | | | |
| 10154005 | - | 23 | - | 3.912 | 0.15400 | | | |
| 10156205 | 5/32 | - | - | 3.969 | 0.15625 | | | |
| 10157005 | - | 22 | - | 3.988 | 0.15700 | | | |
| 10159005 | - | 21 | - | 4.039 | 0.15900 | | | |
| 10161005 | - | 20 | - | 4.089 | 0.16100 | | | |
| 10166005 | - | 19 | - | 4.216 | 0.16600 | | | |
| 10169505 | - | 18 | - | 4.305 | 0.16950 | | | |
| 10171905 | 11/64 | - | - | 4.366 | 0.17188 | | | |
| 10173005 | - | 17 | - | 4.394 | 0.17300 | | | |
| 10177005 | - | 16 | - | 4.496 | 0.17700 | | | |
| 10180005 | - | 15 | - | 4.572 | 0.18000 | | | |
| 10182005 | - | 14 | - | 4.623 | 0.18200 | | | |
| 10185005 | - | 13 | - | 4.699 | 0.18500 | | | |
| 10187505 | 3/16 | - | - | 4.763 | 0.18750 | | | |
| 10189005 | - | 12 | - | 4.801 | 0.18900 | | | |
| 10191005 | - | 11 | - | 4.851 | 0.19100 | | | |
| 10193505 | - | 10 | - | 4.915 | 0.19350 | | | |
| 10196005 | - | 9 | - | 4.978 | 0.19600 | | | |
| 10199005 | - | 8 | - | 5.055 | 0.19900 | | | |

Packed: 1 pc.
Available TiN coating only.





List 1000 (Continued)

EX-GDS, Ideal for General Applications

| | | | | |
|--------------------|--------|-----|------|-----|
| SPEED FEED P390 | HSS-Co | TiN | STUB | 25° |
|--------------------|--------|-----|------|-----|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (in) | | |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|-----|-----|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | |
| 10201005 | - | 7 | - | 5.105 | 0.20100 | 30 | 76 | 1/4 | | |
| 10203105 | 13/64 | - | - | 5.159 | 0.20313 | | | | | |
| 10204005 | - | 6 | - | 5.182 | 0.20400 | | | | | |
| 10205505 | - | 5 | - | 5.220 | 0.20550 | 31 | 77 | | 1/4 | |
| 10209005 | - | 4 | - | 5.309 | 0.20900 | | | | | |
| 10213005 | - | 3 | - | 5.410 | 0.21300 | | | | | |
| 10218805 | 7/32 | - | - | 5.556 | 0.21875 | 33 | 79 | | | 1/4 |
| 10221005 | - | 2 | - | 5.613 | 0.22100 | | | | | |
| 10228005 | - | 1 | - | 5.791 | 0.22800 | | | | | |
| 10234005 | - | - | A | 5.944 | 0.23400 | 34 | 80 | | | |
| 10234405 | 15/64 | - | - | 5.953 | 0.23438 | | | | | |
| 10238005 | - | - | B | 6.045 | 0.23800 | | | | | |
| 10242005 | - | - | C | 6.147 | 0.24200 | 36 | 82 | 3/8 | | |
| 10246005 | - | - | D | 6.248 | 0.24600 | | | | | |
| 10250005 | 1/4 | - | E | 6.350 | 0.25000 | | | | | |
| 10257005 | - | - | F | 6.528 | 0.25700 | 38 | 84 | | 3/8 | |
| 10261005 | - | - | G | 6.629 | 0.26100 | | | | | |
| 10265605 | 17/64 | - | - | 6.747 | 0.26563 | | | | | |
| 10272005 | - | - | I | 6.909 | 0.27200 | 39 | 85 | | | 3/8 |
| 10277005 | - | - | J | 7.036 | 0.27700 | | | | | |
| 10281205 | 9/32 | - | - | 7.144 | 0.28125 | | | | | |
| 10290005 | - | - | L | 7.366 | 0.29000 | 41 | 87 | | | |
| 10295005 | - | - | M | 7.493 | 0.29500 | | | | | |
| 10296905 | 19/64 | - | - | 7.541 | 0.29688 | | | | | |
| 10302005 | - | - | N | 7.671 | 0.30200 | 42 | 88 | 3/8 | | |
| 10312505 | 5/16 | - | - | 7.938 | 0.31250 | | | | | |
| 10316005 | - | - | O | 8.026 | 0.31600 | | | | | |
| 10323005 | - | - | P | 8.204 | 0.32300 | 44 | 90 | | 1/2 | |
| 10328105 | 21/64 | - | - | 8.334 | 0.32813 | | | | | |
| 10332005 | - | - | Q | 8.433 | 0.33200 | | | | | |
| 10339005 | - | - | R | 8.611 | 0.33900 | 46 | 92 | | | 1/2 |
| 10343805 | 11/32 | - | - | 8.731 | 0.34375 | | | | | |
| 10348005 | - | - | S | 8.839 | 0.34800 | | | | | |
| 10358005 | - | - | T | 9.093 | 0.35800 | 47 | 100 | | | |
| 10359405 | 23/64 | - | - | 9.128 | 0.35938 | | | | | |
| 10368005 | - | - | U | 9.347 | 0.36800 | | | | | |
| 10375005 | 3/8 | - | - | 9.525 | 0.37500 | 49 | 102 | 1/2 | | |
| 10377005 | - | - | V | 9.576 | 0.37700 | | | | | |
| 10386005 | - | - | W | 9.804 | 0.38600 | | | | | |
| 10390605 | 25/64 | - | - | 9.922 | 0.39063 | 49 | 102 | | 1/2 | |
| 10397005 | - | - | X | 10.084 | 0.39700 | | | | | |
| 10404005 | - | - | Y | 10.262 | 0.40400 | | | | | |
| 10406205 | 13/32 | - | - | 10.319 | 0.40625 | | | | | |

Packed: 1 pc.
Available TiN coating only.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|------------------|-----|--------------------------|-----------|--------------------------|---------|-------------------------|-------------------------------|--------------------------|--------------------------|--------------------------|--------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 1000 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

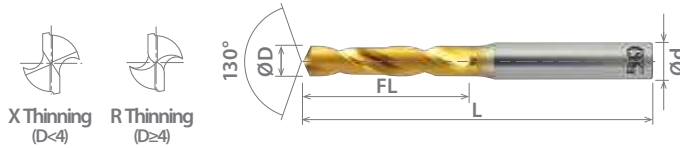
good best





List 1000 (Continued)

EX-GDS, Ideal for General Applications



| | | | | |
|------------|--------|-----|------|-----|
| SPEED FEED | HSS-Co | TiN | STUB | 25° |
| P390 | | | | |

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1.99 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 12.7 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 10413005 | - | - | Z | 10.490 | 0.41300 | 50 | 103 | 1/2 |
| 10421905 | 27/64 | - | - | 10.716 | 0.42188 | 52 | 105 | |
| 10437505 | 7/16 | - | - | 11.113 | 0.43750 | | | |
| 10453105 | 29/64 | - | - | 11.509 | 0.45313 | 53 | 107 | |
| 10468805 | 15/32 | - | - | 11.906 | 0.46875 | | | |
| 10484405 | 31/64 | - | - | 12.303 | 0.48438 | 55 | 108 | |
| 10500005 | 1/2 | - | - | 12.700 | 0.50000 | | | |
| | | | | | | 57 | 110 | |

Packed: 1 pc.
Available TiN coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|------------------|-----|--------------------------|--------------------------|-----------|--------------------------|--------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 1000 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

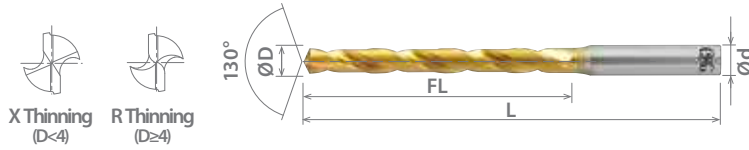
good best





List 1500

EX-GDR, Ideal for General Applications



| | | | | |
|---------------------------|---------------|------------|----------------|------------|
| SPEED FEED P390 | HSS-Co | TiN | JOBBERS | 30° |
|---------------------------|---------------|------------|----------------|------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1.99 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 19.05 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (in) | |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|----|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 15078505 | - | 47 | - | 1.994 | 0.07850 | 25 | 57 | 1/8 | |
| 15081005 | - | 46 | - | 2.057 | 0.08100 | 28 | 60 | | |
| 15082005 | - | 45 | - | 2.083 | 0.08200 | | | | |
| 15086005 | - | 44 | - | 2.184 | 0.08600 | 31 | 63 | | |
| 15089005 | - | 43 | - | 2.261 | 0.08900 | | | | |
| 15093505 | - | 42 | - | 2.375 | 0.09350 | 34 | 66 | | |
| 15093805 | 3/32 | - | - | 2.381 | 0.09375 | | | | |
| 15096005 | - | 41 | - | 2.438 | 0.09600 | 36 | 71 | | |
| 15098005 | - | 40 | - | 2.489 | 0.09800 | | | | |
| 15099505 | - | 39 | - | 2.527 | 0.09950 | 38 | 74 | | |
| 15101505 | - | 38 | - | 2.578 | 0.10150 | | | | |
| 15104005 | - | 37 | - | 2.642 | 0.10400 | | | | |
| 15106505 | - | 36 | - | 2.705 | 0.10650 | | | 41 | 77 |
| 15109405 | 7/64 | - | - | 2.778 | 0.10938 | | | | |
| 15110005 | - | 35 | - | 2.794 | 0.11000 | | | | |
| 15111005 | - | 34 | - | 2.819 | 0.11100 | | | | |
| 15113005 | - | 33 | - | 2.870 | 0.11300 | | | | |
| 15116005 | - | 32 | - | 2.946 | 0.11600 | | | 44 | 80 |
| 15120005 | - | 31 | - | 3.048 | 0.12000 | | | | |
| 15125005 | 1/8 | - | - | 3.175 | 0.12500 | 50 | 87 | | |
| 15128505 | - | 30 | - | 3.264 | 0.12850 | | | | |
| 15136005 | - | 29 | - | 3.454 | 0.13600 | | | | |
| 15140505 | - | 28 | - | 3.569 | 0.14050 | | | | |
| 15140605 | 9/64 | - | - | 3.572 | 0.14063 | | | | |
| 15144005 | - | 27 | - | 3.658 | 0.14400 | | | | |
| 15147005 | - | 26 | - | 3.734 | 0.14700 | | | | |
| 15149505 | - | 25 | - | 3.797 | 0.14950 | | | 53 | 90 |
| 15152005 | - | 24 | - | 3.861 | 0.15200 | | | | |
| 15154005 | - | 23 | - | 3.912 | 0.15400 | | | | |
| 15156205 | 5/32 | - | - | 3.969 | 0.15625 | 55 | 92 | | |
| 15157005 | - | 22 | - | 3.988 | 0.15700 | | | | |
| 15159005 | - | 21 | - | 4.039 | 0.15900 | | | | |
| 15161005 | - | 20 | - | 4.089 | 0.16100 | | | | |
| 15166005 | - | 19 | - | 4.216 | 0.16600 | | | | |
| 15169505 | - | 18 | - | 4.305 | 0.16950 | | | | |
| 15171905 | 11/64 | - | - | 4.366 | 0.17188 | | | | |
| 15173005 | - | 17 | - | 4.394 | 0.17300 | | | | |
| 15177005 | - | 16 | - | 4.496 | 0.17700 | | | | |

Packed: 1 pc.
Available TiN coating only.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|------------------|-----|--------------------------|--------------------------|--------------|--------------------------|--------------|-------------------|--------------------------|--------------|--------------|--------------|
| | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | 4140 4340 | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 1500 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | | <input type="checkbox"/> | | | |

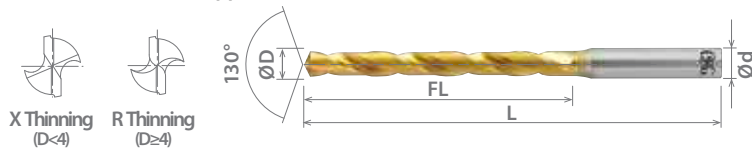
good best





List 1500 (Continued)

EX-GDR, Ideal for General Applications



| | | | | |
|---------------------------|---------------|------------|----------------|------------|
| SPEED FEED P390 | HSS-Co | TiN | JOBBERS | 30° |
|---------------------------|---------------|------------|----------------|------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1.99 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 19.05 | +0 / -0.033 | +0 / -0.0013 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (in) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 15180005 | - | 15 | - | 4.572 | 0.18000 | 55 | 92 | 3/16 |
| 15182005 | - | 14 | - | 4.623 | 0.18200 | | | |
| 15185005 | - | 13 | - | 4.699 | 0.18500 | 58 | 95 | 3/16 |
| 15187505 | 3/16 | - | - | 4.763 | 0.18750 | | | |
| 15189005 | - | 12 | - | 4.801 | 0.18900 | 61 | 107 | 3/16 |
| 15191005 | - | 11 | - | 4.851 | 0.19100 | | | |
| 15193505 | - | 10 | - | 4.915 | 0.19350 | 63 | 109 | 1/4 |
| 15196005 | - | 9 | - | 4.978 | 0.19600 | | | |
| 15199005 | - | 8 | - | 5.055 | 0.19900 | 66 | 112 | 1/4 |
| 15201005 | - | 7 | - | 5.105 | 0.20100 | | | |
| 15203105 | 13/64 | - | - | 5.159 | 0.20313 | 69 | 115 | 1/4 |
| 15204005 | - | 6 | - | 5.182 | 0.20400 | | | |
| 15205505 | - | 5 | - | 5.220 | 0.20550 | 73 | 119 | 3/8 |
| 15209005 | - | 4 | - | 5.309 | 0.20900 | | | |
| 15213005 | - | 3 | - | 5.410 | 0.21300 | 74 | 120 | 3/8 |
| 15218805 | 7/32 | - | - | 5.556 | 0.21875 | | | |
| 15221005 | - | 2 | - | 5.613 | 0.22100 | 77 | 123 | 3/8 |
| 15228005 | - | 1 | - | 5.791 | 0.22800 | | | |
| 15234005 | - | - | A | 5.944 | 0.23400 | 80 | 127 | 3/8 |
| 15234405 | 15/64 | - | - | 5.953 | 0.23438 | | | |
| 15238005 | - | - | B | 6.045 | 0.23800 | 84 | 130 | 3/8 |
| 15242005 | - | - | C | 6.147 | 0.24200 | | | |
| 15246005 | - | - | D | 6.248 | 0.24600 | 87 | 133 | 3/8 |
| 15250005 | 1/4 | - | E | 6.350 | 0.25000 | | | |
| 15257005 | - | - | F | 6.528 | 0.25700 | 88 | 134 | 3/8 |
| 15261005 | - | - | G | 6.629 | 0.26100 | | | |
| 15265605 | 17/64 | - | - | 6.747 | 0.26563 | 92 | 138 | 1/2 |
| 15272005 | - | - | I | 6.909 | 0.27200 | | | |
| 15277005 | - | - | J | 7.036 | 0.27700 | 92 | 145 | 1/2 |
| 15281205 | 9/32 | - | - | 7.144 | 0.28125 | | | |
| 15290005 | - | - | L | 7.366 | 0.29000 | 84 | 130 | 3/8 |
| 15295005 | - | - | M | 7.493 | 0.29500 | | | |
| 15296905 | 19/64 | - | - | 7.541 | 0.29688 | 87 | 133 | 3/8 |
| 15302005 | - | - | N | 7.671 | 0.30200 | | | |
| 15312505 | 5/16 | - | - | 7.938 | 0.31250 | 88 | 134 | 3/8 |
| 15316005 | - | - | O | 8.026 | 0.31600 | | | |
| 15323005 | - | - | P | 8.204 | 0.32300 | 92 | 138 | 1/2 |
| 15328105 | 21/64 | - | - | 8.334 | 0.32813 | | | |
| 15332005 | - | - | Q | 8.433 | 0.33200 | 87 | 133 | 3/8 |
| 15339005 | - | - | R | 8.611 | 0.33900 | | | |
| 15343805 | 11/32 | - | - | 8.731 | 0.34375 | 88 | 134 | 3/8 |
| 15348005 | - | - | S | 8.839 | 0.34800 | | | |
| 15358005 | - | - | T | 9.093 | 0.35800 | 92 | 145 | 1/2 |
| 15359405 | 23/64 | - | - | 9.128 | 0.35938 | | | |
| 15368005 | - | - | U | 9.347 | 0.36800 | 92 | 145 | 1/2 |
| 15375005 | 3/8 | - | - | 9.525 | 0.37500 | | | |
| 15377005 | - | - | V | 9.576 | 0.37700 | | | |

Packed: 1 pc.
Available TiN coating only.





List 1500 (Continued)

EX-GDR, Ideal for General Applications

| | | | | |
|--------------------|--------|-----|---------|-----|
| SPEED FEED P390 | HSS-Co | TiN | JOBBERS | 30° |
|--------------------|--------|-----|---------|-----|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (in) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 15386005 | - | - | W | 9.804 | 0.38600 | 95 | 148 | 1/2 |
| 15390605 | 25/64 | - | - | 9.922 | 0.39063 | | | |
| 15397005 | - | - | X | 10.084 | 0.39700 | | | |
| 15404005 | - | - | Y | 10.262 | 0.40400 | | | |
| 15406205 | 13/32 | - | - | 10.319 | 0.40625 | | | |
| 15413005 | - | - | Z | 10.490 | 0.41300 | | | |
| 15421905 | 27/64 | - | - | 10.716 | 0.42188 | | | |
| 15437505 | 7/16 | - | - | 11.113 | 0.43750 | | | |
| 15453105 | 29/64 | - | - | 11.509 | 0.45313 | | | |
| 15468805 | 15/32 | - | - | 11.906 | 0.46875 | | | |
| 15484405 | 31/64 | - | - | 12.303 | 0.48438 | | | |
| 15500005 | 1/2 | - | - | 12.700 | 0.50000 | 98 | 151 | 1/2 |
| 15531205 | 17/32 | - | - | 13.494 | 0.53125 | | | |
| 15562505 | 9/16 | - | - | 14.288 | 0.56250 | 100 | 153 | 1/2 |
| 15578105 | 37/64 | - | - | 14.684 | 0.57813 | | | |
| 15593805 | 19/32 | - | - | 15.081 | 0.59375 | | | |
| 15625005 | 5/8 | - | - | 15.875 | 0.62500 | 103 | 156 | 1/2 |
| 15656205 | 21/32 | - | - | 16.669 | 0.65625 | | | |
| 15687505 | 11/16 | - | - | 17.463 | 0.68750 | 106 | 159 | 1/2 |
| 15718805 | 23/32 | - | - | 18.256 | 0.71875 | | | |
| 15750005 | 3/4 | - | - | 19.050 | 0.75000 | 109 | 162 | 1/2 |
| | | | | | | | | |
| | | | | | | 111 | 164 | 1/2 |
| | | | | | | | | |
| | | | | | | 114 | 167 | 1/2 |
| | | | | | | | | |
| | | | | | | 122 | 182 | 5/8 |
| | | | | | | | | |
| | | | | | | 131 | 199 | 3/4 |
| | | | | | | | | |
| | | | | | | 142 | 210 | 7/8 |
| | | | | | | | | |
| | | | | | | 149 | 216 | 7/8 |
| | | | | | | | | |

Packed: 1 pc.
Available TiN coating only.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|------------------|-----|--------------------------|-----------|----------|--------------------------|--------------|--------------------------|-----------------|----------------|---------|-----------|
| | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 1500 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | | | <input type="checkbox"/> | | <input type="checkbox"/> | | | | |

good best

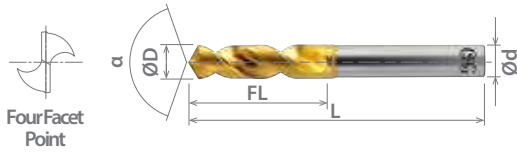




List 1100

EX-SUS-GDS, Ideal for Stainless Steel

| | | | | | |
|-------------------|-------------|------------|--------------|-------------|------------|
| SPEED FEED | HSSE | TiN | TiAlN | STUB | 40° |
| P391 | | | | | |



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 0.5 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 30 | +0 / -0.033 | +0 / -0.0013 |
| 30 < D ≤ 32 | +0 / -0.039 | +0 / -0.0015 |

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|----------------|------------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 61505 | 6150511 | - | - | - | 0.500 | 0.01969 | 3 | 38 | 3 | 150° |
| 8595051 | 859505111 | - | - | - | 0.510 | 0.02008 | | | | |
| 8595052 | - | - | - | - | 0.520 | 0.02047 | | | | |
| 8595053 | - | - | - | - | 0.530 | 0.02087 | | | | |
| 8595054 | - | - | - | - | 0.540 | 0.02126 | | | | |
| 8595055 | - | - | - | - | 0.550 | 0.02165 | | | | |
| 8595056 | - | - | - | - | 0.560 | 0.02205 | | | | |
| 8595057 | 859505711 | - | - | - | 0.570 | 0.02244 | | | | |
| 8595058 | - | - | - | - | 0.580 | 0.02283 | | | | |
| 8595059 | - | - | - | - | 0.590 | 0.02323 | | | | |
| 61506 | 6150611 | - | - | - | 0.600 | 0.02362 | | | | |
| 8595061 | - | - | - | - | 0.610 | 0.02402 | | | | |
| 8595062 | - | - | - | - | 0.620 | 0.02441 | | | | |
| 8595063 | - | - | - | - | 0.630 | 0.02480 | | | | |
| 8595064 | 859506411 | - | - | - | 0.640 | 0.02520 | | | | |
| 8595065 | 859506511 | - | - | - | 0.650 | 0.02559 | | | | |
| 8595066 | - | - | - | - | 0.660 | 0.02598 | | | | |
| 8595067 | - | - | - | - | 0.670 | 0.02638 | | | | |
| 8595068 | - | - | - | - | 0.680 | 0.02677 | | | | |
| 8595069 | - | - | - | - | 0.690 | 0.02717 | | | | |
| 61507 | 6150711 | - | - | - | 0.700 | 0.02756 | | | | |
| 8595071 | 859507111 | - | - | - | 0.710 | 0.02795 | | | | |
| 8595072 | - | - | - | - | 0.720 | 0.02835 | | | | |
| 8595073 | - | - | - | - | 0.730 | 0.02874 | | | | |
| 8595074 | - | - | - | - | 0.740 | 0.02913 | | | | |
| 8595075 | - | - | - | - | 0.750 | 0.02953 | | | | |
| 8595076 | - | - | - | - | 0.760 | 0.02992 | | | | |
| 8595077 | - | - | - | - | 0.770 | 0.03031 | | | | |
| 8595078 | - | - | - | - | 0.780 | 0.03071 | | | | |
| 8595079 | 859507911 | - | - | - | 0.790 | 0.03110 | | | | |
| 61508 | - | - | - | - | 0.800 | 0.03150 | | | | |
| 8595081 | 859508111 | - | - | - | 0.810 | 0.03189 | | | | |
| 8595082 | - | - | - | - | 0.820 | 0.03228 | | | | |
| 8595083 | - | - | - | - | 0.830 | 0.03268 | | | | |
| 8595084 | 859508411 | - | - | - | 0.840 | 0.03307 | | | | |
| 8595085 | - | - | - | - | 0.850 | 0.03346 | | | | |
| 8595086 | - | - | - | - | 0.860 | 0.03386 | | | | |
| 8595087 | - | - | - | - | 0.870 | 0.03425 | | | | |
| 8595088 | - | - | - | - | 0.880 | 0.03465 | | | | |
| 8595089 | - | - | - | - | 0.890 | 0.03504 | | | | |
| 61509 | - | - | - | - | 0.900 | 0.03543 | | | | |
| 8595091 | 859509111 | - | - | - | 0.910 | 0.03583 | | | | |
| 8595092 | - | - | - | - | 0.920 | 0.03622 | | | | |
| 8595093 | - | - | - | - | 0.930 | 0.03661 | | | | |
| 8595094 | - | - | - | - | 0.940 | 0.03701 | | | | |
| 8595095 | - | - | - | - | 0.950 | 0.03740 | | | | |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order: 11 = TiAlN.





List 1100 (Continued)

EX-SUS-GDS, Ideal for Stainless Steel

| | | | | | |
|---------------------------|-------------|------------|--------------|-------------|------------|
| SPEED FEED P391 | HSSE | TiN | TiAlN | STUB | 40° |
|---------------------------|-------------|------------|--------------|-------------|------------|

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|----------------|------------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8595096 | - | - | - | - | 0.960 | 0.03780 | 6 | 38 | 3 | 150° |
| 8595097 | - | - | - | - | 0.970 | 0.03819 | | | | |
| 8595098 | - | - | - | - | 0.980 | 0.03858 | | | | |
| 8595099 | - | - | - | - | 0.990 | 0.03898 | | | | |
| 61510 | 6151011 | - | - | - | 1.000 | 0.03937 | | | | |
| 8595101 | - | - | - | - | 1.010 | 0.03976 | | | | |
| 8595102 | 859510211 | - | - | - | 1.020 | 0.04016 | | | | |
| 8595103 | 859510311 | - | - | - | 1.030 | 0.04055 | | | | |
| 8595104 | - | - | - | - | 1.040 | 0.04094 | | | | |
| 8595105 | - | - | - | - | 1.050 | 0.04134 | | | | |
| 8595106 | - | - | - | - | 1.060 | 0.04173 | | | | |
| 8595107 | - | - | - | - | 1.070 | 0.04213 | | | | |
| 8595108 | - | - | - | - | 1.080 | 0.04252 | | | | |
| 8595109 | 859510911 | - | - | - | 1.090 | 0.04291 | | | | |
| 61511 | 6151111 | - | - | - | 1.100 | 0.04331 | | | | |
| 8595111 | - | - | - | - | 1.110 | 0.04370 | | | | |
| 8595112 | - | - | - | - | 1.120 | 0.04409 | | | | |
| 8595113 | - | - | - | - | 1.130 | 0.04449 | | | | |
| 8595114 | 859511411 | - | - | - | 1.140 | 0.04488 | | | | |
| 8595115 | - | - | - | - | 1.150 | 0.04528 | | | | |
| 8595116 | - | - | - | - | 1.160 | 0.04567 | | | | |
| 8595117 | - | - | - | - | 1.170 | 0.04606 | | | | |
| 8595118 | 859511811 | - | - | - | 1.180 | 0.04646 | | | | |
| 8595119 | 859511911 | - | - | - | 1.190 | 0.04685 | | | | |
| 61512 | 6151211 | - | - | - | 1.200 | 0.04724 | | | | |
| 8595121 | - | - | - | - | 1.210 | 0.04764 | | | | |
| 8595122 | 859512211 | - | - | - | 1.220 | 0.04803 | | | | |
| 8595123 | - | - | - | - | 1.230 | 0.04843 | | | | |
| 8595124 | - | - | - | - | 1.240 | 0.04882 | | | | |
| 8595125 | 859512511 | - | - | - | 1.250 | 0.04921 | | | | |
| 8595126 | - | - | - | - | 1.260 | 0.04961 | | | | |
| 8595127 | 859512711 | - | - | - | 1.270 | 0.05000 | | | | |
| 8595128 | - | - | - | - | 1.280 | 0.05039 | | | | |
| 8595129 | - | - | - | - | 1.290 | 0.05079 | | | | |
| 61513 | - | - | - | - | 1.300 | 0.05118 | | | | |
| 8595131 | - | - | - | - | 1.310 | 0.05157 | | | | |
| 8595132 | 859513211 | - | - | - | 1.320 | 0.05197 | | | | |
| 8595133 | - | - | - | - | 1.330 | 0.05236 | | | | |
| 8595134 | - | - | - | - | 1.340 | 0.05276 | | | | |
| 8595135 | 859513511 | - | - | - | 1.350 | 0.05315 | | | | |
| 8595136 | - | - | - | - | 1.360 | 0.05354 | | | | |
| 8595137 | - | - | - | - | 1.370 | 0.05394 | | | | |
| 8595138 | - | - | - | - | 1.380 | 0.05433 | | | | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order: 11 = TiAlN.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|--------------------------|------|--------------|------------|-------------------------------------|-------------------------------------|--------------------------|-----------|-------------------------------------|-------------------------------------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 1100 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |

good best

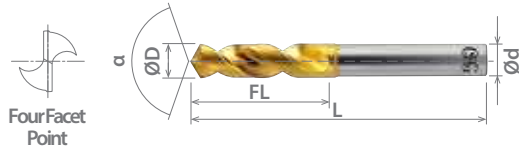




List 1100 (Continued)

| | | | | | |
|-------------------|-------------|------------|--------------|-------------|------------|
| SPEED FEED | HSSE | TiN | TiAlN | STUB | 40° |
| P391 | | | | | |

EX-SUS-GDS, Ideal for Stainless Steel



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 0.5 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 30 | +0 / -0.033 | +0 / -0.0013 |
| 30 < D ≤ 32 | +0 / -0.039 | +0 / -0.0015 |

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|----------------|------------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8595139 | - | - | - | - | 1.390 | 0.05472 | 9 | 41 | 3 | 140° |
| 61514 | 6151411 | - | - | - | 1.400 | 0.05512 | | | | |
| 8595141 | 859514111 | - | - | - | 1.410 | 0.05551 | | | | |
| 8595142 | - | - | - | - | 1.420 | 0.05591 | | | | |
| 8595143 | - | - | - | - | 1.430 | 0.05630 | | | | |
| 8595144 | 859514411 | - | - | - | 1.440 | 0.05669 | | | | |
| 8595145 | 859514511 | - | - | - | 1.450 | 0.05709 | | | | |
| 8595146 | - | - | - | - | 1.460 | 0.05748 | | | | |
| 8595147 | - | - | - | - | 1.470 | 0.05787 | | | | |
| 8595148 | - | - | - | - | 1.480 | 0.05827 | | | | |
| 8595149 | - | - | - | - | 1.490 | 0.05866 | | | | |
| 61515 | 6151511 | - | - | - | 1.500 | 0.05906 | | | | |
| 8595151 | 859515111 | - | - | - | 1.510 | 0.05945 | | | | |
| 8595152 | 859515211 | - | - | - | 1.520 | 0.05984 | | | | |
| 8595153 | - | - | - | - | 1.530 | 0.06024 | | | | |
| 8595154 | - | - | - | - | 1.540 | 0.06063 | | | | |
| 8595155 | 859515511 | - | - | - | 1.550 | 0.06102 | | | | |
| 8595156 | 859515611 | - | - | - | 1.560 | 0.06142 | | | | |
| 8595157 | 859515711 | - | - | - | 1.570 | 0.06181 | | | | |
| 8595158 | 859515811 | - | - | - | 1.580 | 0.06220 | | | | |
| 8595159 | 859515911 | - | - | - | 1.590 | 0.06260 | | | | |
| 61516 | 6151611 | - | - | - | 1.600 | 0.06299 | | | | |
| 8595161 | 859516111 | - | - | - | 1.610 | 0.06339 | | | | |
| 8595162 | 859516211 | - | - | - | 1.620 | 0.06378 | | | | |
| 8595163 | - | - | - | - | 1.630 | 0.06417 | | | | |
| 8595164 | - | - | - | - | 1.640 | 0.06457 | | | | |
| 8595165 | 859516511 | - | - | - | 1.650 | 0.06496 | | | | |
| 8595166 | - | - | - | - | 1.660 | 0.06535 | | | | |
| 8595167 | - | - | - | - | 1.670 | 0.06575 | | | | |
| 8595168 | - | - | - | - | 1.680 | 0.06614 | | | | |
| 8595169 | - | - | - | - | 1.690 | 0.06654 | | | | |
| 61517 | 6151711 | - | - | - | 1.700 | 0.06693 | | | | |
| 8595171 | 859517111 | - | - | - | 1.710 | 0.06732 | | | | |
| 8595172 | 859517211 | - | - | - | 1.720 | 0.06772 | | | | |
| 8595173 | - | - | - | - | 1.730 | 0.06811 | | | | |
| 8595174 | 859517411 | - | - | - | 1.740 | 0.06850 | | | | |
| 8595175 | 859517511 | - | - | - | 1.750 | 0.06890 | | | | |
| 8595176 | 859517611 | - | - | - | 1.760 | 0.06929 | | | | |
| 8595177 | 859517711 | - | - | - | 1.770 | 0.06969 | | | | |
| 8595178 | 859517811 | - | - | - | 1.780 | 0.07008 | | | | |
| 8595179 | - | - | - | - | 1.790 | 0.07047 | | | | |
| 61518 | 6151811 | - | - | - | 1.800 | 0.07087 | | | | |
| 8595181 | - | - | - | - | 1.810 | 0.07126 | | | | |
| 8595182 | - | - | - | - | 1.820 | 0.07165 | | | | |
| 8595183 | - | - | - | - | 1.830 | 0.07205 | | | | |
| 8595184 | - | - | - | - | 1.840 | 0.07244 | | | | |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order: 11 = TiAlN.





List 1100 (Continued)

EX-SUS-GDS, Ideal for Stainless Steel

| | | | | | |
|---------------------------|-------------|------------|--------------|-------------|------------|
| SPEED FEED P391 | HSSE | TiN | TiAlN | STUB | 40° |
|---------------------------|-------------|------------|--------------|-------------|------------|

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|----------------|------------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8595185 | 859518511 | - | - | - | 1.850 | 0.07283 | 11 | 43 | 3 | 140° |
| 8595186 | - | - | - | - | 1.860 | 0.07323 | | | | |
| 8595187 | - | - | - | - | 1.870 | 0.07362 | | | | |
| 8595188 | - | - | - | - | 1.880 | 0.07402 | | | | |
| 8595189 | - | - | - | - | 1.890 | 0.07441 | | | | |
| 61519 | 6151911 | - | - | - | 1.900 | 0.07480 | | | | |
| 8595191 | 859519111 | - | - | - | 1.910 | 0.07520 | | | | |
| 8595192 | - | - | - | - | 1.920 | 0.07559 | | | | |
| 8595193 | - | - | - | - | 1.930 | 0.07598 | | | | |
| 8595194 | - | - | - | - | 1.940 | 0.07638 | | | | |
| 8595195 | 859519511 | - | - | - | 1.950 | 0.07677 | | | | |
| 8595196 | - | - | - | - | 1.960 | 0.07717 | | | | |
| 8595197 | 859519711 | - | - | - | 1.970 | 0.07756 | | | | |
| 8595198 | 859519811 | - | - | - | 1.980 | 0.07795 | | | | |
| 8595199 | 859519911 | - | - | - | 1.990 | 0.07835 | | | | |
| 61520 | 6152011 | - | - | - | 2.000 | 0.07874 | | | | |
| 8595201 | - | - | - | - | 2.010 | 0.07913 | | | | |
| 8595202 | - | - | - | - | 2.020 | 0.07953 | | | | |
| 8595203 | - | - | - | - | 2.030 | 0.07992 | | | | |
| 8595204 | - | - | - | - | 2.040 | 0.08031 | | | | |
| 8595205 | 859520511 | - | - | - | 2.050 | 0.08071 | | | | |
| 8595206 | - | - | - | - | 2.060 | 0.08110 | | | | |
| 8595207 | - | - | - | - | 2.070 | 0.08150 | | | | |
| 8595208 | 859520811 | - | - | - | 2.080 | 0.08189 | | | | |
| 8595209 | - | - | - | - | 2.090 | 0.08228 | | | | |
| 61521 | - | - | - | - | 2.100 | 0.08268 | | | | |
| 8595211 | - | - | - | - | 2.110 | 0.08307 | | | | |
| 8595212 | - | - | - | - | 2.120 | 0.08346 | | | | |
| 8595213 | - | - | - | - | 2.130 | 0.08386 | | | | |
| 8595214 | - | - | - | - | 2.140 | 0.08425 | | | | |
| 8595215 | 859521511 | - | - | - | 2.150 | 0.08465 | | | | |
| 8595216 | - | - | - | - | 2.160 | 0.08504 | | | | |
| 8595217 | - | - | - | - | 2.170 | 0.08543 | | | | |
| 8595218 | - | - | - | - | 2.180 | 0.08583 | | | | |
| 8595219 | 859521911 | - | - | - | 2.190 | 0.08622 | | | | |
| 61522 | 6152211 | - | - | - | 2.200 | 0.08661 | | | | |
| 8595221 | - | - | - | - | 2.210 | 0.08701 | | | | |
| 8595222 | - | - | - | - | 2.220 | 0.08740 | | | | |
| 8595223 | - | - | - | - | 2.230 | 0.08780 | | | | |
| 8595224 | - | - | - | - | 2.240 | 0.08819 | | | | |
| 8595225 | 859522511 | - | - | - | 2.250 | 0.08858 | | | | |
| 8595226 | 859522611 | - | - | - | 2.260 | 0.08898 | | | | |
| 8595227 | - | - | - | - | 2.270 | 0.08937 | | | | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order: 11 = TiAlN.

continued on next page

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|--------------------------|--------------|------------------------------|-------------------------------------|-------------------------------------|--------------------------|---------|-------------------------------------|-------------------------------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 1100 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |

good best

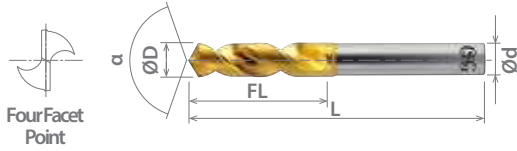




List 1100 (Continued)

| | | | | | |
|-------------------|-------------|------------|--------------|-------------|------------|
| SPEED FEED | HSSE | TiN | TiAlN | STUB | 40° |
| P391 | | | | | |

EX-SUS-GDS, Ideal for Stainless Steel



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 0.5 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 30 | +0 / -0.033 | +0 / -0.0013 |
| 30 < D ≤ 32 | +0 / -0.039 | +0 / -0.0015 |

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|----------------|------------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8595228 | - | - | - | - | 2.280 | 0.08976 | 13 | 45 | 3 | 130° |
| 8595229 | - | - | - | - | 2.290 | 0.09016 | | | | |
| 61523 | 6152311 | - | - | - | 2.300 | 0.09055 | | | | |
| 8595231 | - | - | - | - | 2.310 | 0.09094 | | | | |
| 8595232 | - | - | - | - | 2.320 | 0.09134 | | | | |
| 8595233 | - | - | - | - | 2.330 | 0.09173 | | | | |
| 8595234 | - | - | - | - | 2.340 | 0.09213 | | | | |
| 8595235 | - | - | - | - | 2.350 | 0.09252 | | | | |
| 8595236 | - | - | - | - | 2.360 | 0.09291 | | | | |
| 8595237 | 859523711 | - | - | - | 2.370 | 0.09331 | | | | |
| 8595238 | 859523811 | - | - | - | 2.380 | 0.09370 | | | | |
| 8595239 | 859523911 | - | - | - | 2.390 | 0.09409 | | | | |
| 61524 | 6152411 | - | - | - | 2.400 | 0.09449 | | | | |
| 8595241 | 859524111 | - | - | - | 2.410 | 0.09488 | | | | |
| 8595242 | 859524211 | - | - | - | 2.420 | 0.09528 | | | | |
| 8595243 | - | - | - | - | 2.430 | 0.09567 | | | | |
| 8595244 | 859524411 | - | - | - | 2.440 | 0.09606 | | | | |
| 8595245 | 859524511 | - | - | - | 2.450 | 0.09646 | | | | |
| 8595246 | 859524611 | - | - | - | 2.460 | 0.09685 | | | | |
| 8595247 | - | - | - | - | 2.470 | 0.09724 | | | | |
| 8595248 | - | - | - | - | 2.480 | 0.09764 | | | | |
| 8595249 | 859524911 | - | - | - | 2.490 | 0.09803 | | | | |
| 61525 | 6152511 | - | - | - | 2.500 | 0.09843 | | | | |
| 8595251 | - | - | - | - | 2.510 | 0.09882 | | | | |
| 8595252 | 859525211 | - | - | - | 2.520 | 0.09921 | | | | |
| 8595253 | 859525311 | - | - | - | 2.530 | 0.09961 | | | | |
| 8595254 | - | - | - | - | 2.540 | 0.10000 | | | | |
| 8595255 | 859525511 | - | - | - | 2.550 | 0.10039 | | | | |
| 8595256 | - | - | - | - | 2.560 | 0.10079 | | | | |
| 8595257 | - | - | - | - | 2.570 | 0.10118 | | | | |
| 8595258 | 859525811 | - | - | - | 2.580 | 0.10157 | | | | |
| 8595259 | - | - | - | - | 2.590 | 0.10197 | | | | |
| 61526 | 6152611 | - | - | - | 2.600 | 0.10236 | | | | |
| 8595261 | - | - | - | - | 2.610 | 0.10276 | | | | |
| 8595262 | - | - | - | - | 2.620 | 0.10315 | | | | |
| 8595263 | - | - | - | - | 2.630 | 0.10354 | | | | |
| 8595264 | 859526411 | - | - | - | 2.640 | 0.10394 | | | | |
| 8595265 | 859526511 | - | - | - | 2.650 | 0.10433 | | | | |
| 8595266 | 859526611 | - | - | - | 2.660 | 0.10472 | | | | |
| 8595267 | - | - | - | - | 2.670 | 0.10512 | | | | |
| 8595268 | - | - | - | - | 2.680 | 0.10551 | | | | |
| 8595269 | - | - | - | - | 2.690 | 0.10591 | | | | |
| 61527 | 6152711 | - | - | - | 2.700 | 0.10630 | | | | |
| 8595271 | 859527111 | - | - | - | 2.710 | 0.10669 | | | | |
| 8595272 | - | - | - | - | 2.720 | 0.10709 | | | | |
| 8595273 | - | - | - | - | 2.730 | 0.10748 | | | | |
| | | | | | | 16 | 48 | | | |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order: 11 = TiAlN.





List 1100 (Continued)

EX-SUS-GDS, Ideal for Stainless Steel

| | | | | | |
|-----------------------|------|-----|-------|------|-----|
| SPEED FEED P391 | HSSE | TiN | TiAlN | STUB | 40° |
|-----------------------|------|-----|-------|------|-----|

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|----------------|------------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8595274 | - | - | - | - | 2.740 | 0.10787 | 16 | 48 | 3 | 130° |
| 8595275 | - | - | - | - | 2.750 | 0.10827 | | | | |
| 8595276 | - | - | - | - | 2.760 | 0.10866 | | | | |
| 8595277 | - | - | - | - | 2.770 | 0.10906 | | | | |
| 8595278 | 859527811 | - | - | - | 2.780 | 0.10945 | | | | |
| 8595279 | 859527911 | - | - | - | 2.790 | 0.10984 | | | | |
| 61528 | 6152811 | - | - | - | 2.800 | 0.11024 | | | | |
| 8595281 | - | - | - | - | 2.810 | 0.11063 | | | | |
| 8595282 | 859528211 | - | - | - | 2.820 | 0.11102 | | | | |
| 8595283 | 859528311 | - | - | - | 2.830 | 0.11142 | | | | |
| 8595284 | - | - | - | - | 2.840 | 0.11181 | | | | |
| 8595285 | 859528511 | - | - | - | 2.850 | 0.11220 | | | | |
| 8595286 | 859528611 | - | - | - | 2.860 | 0.11260 | | | | |
| 8595287 | - | - | - | - | 2.870 | 0.11299 | | | | |
| 8595288 | - | - | - | - | 2.880 | 0.11339 | | | | |
| 8595289 | - | - | - | - | 2.890 | 0.11378 | | | | |
| 61529 | 6152911 | - | - | - | 2.900 | 0.11417 | | | | |
| 8595291 | - | - | - | - | 2.910 | 0.11457 | | | | |
| 8595292 | - | - | - | - | 2.920 | 0.11496 | | | | |
| 8595293 | - | - | - | - | 2.930 | 0.11535 | | | | |
| 8595294 | - | - | - | - | 2.940 | 0.11575 | | | | |
| 8595295 | 859529511 | - | - | - | 2.950 | 0.11614 | | | | |
| 8595296 | - | - | - | - | 2.960 | 0.11654 | | | | |
| 8595297 | - | - | - | - | 2.970 | 0.11693 | | | | |
| 8595298 | - | - | - | - | 2.980 | 0.11732 | | | | |
| 8595299 | - | - | - | - | 2.990 | 0.11772 | | | | |
| 61530 | 6153011 | - | - | - | 3.000 | 0.11811 | | | | |
| 8595301 | - | - | - | - | 3.010 | 0.11850 | | | | |
| 8595302 | - | - | - | - | 3.020 | 0.11890 | | | | |
| 8595303 | - | - | - | - | 3.030 | 0.11929 | | | | |
| 8595304 | - | - | - | - | 3.040 | 0.11969 | | | | |
| 8595305 | 859530511 | - | - | - | 3.050 | 0.12008 | | | | |
| 8595306 | - | - | - | - | 3.060 | 0.12047 | | | | |
| 8595307 | - | - | - | - | 3.070 | 0.12087 | | | | |
| 8595308 | - | - | - | - | 3.080 | 0.12126 | | | | |
| 8595309 | - | - | - | - | 3.090 | 0.12165 | | | | |
| 61531 | 6153111 | - | - | - | 3.100 | 0.12205 | | | | |
| 8595311 | - | - | - | - | 3.110 | 0.12244 | | | | |
| 8595312 | - | - | - | - | 3.120 | 0.12283 | | | | |
| 8595313 | - | - | - | - | 3.130 | 0.12323 | | | | |
| 8595314 | - | - | - | - | 3.140 | 0.12362 | | | | |
| 8595315 | 859531511 | - | - | - | 3.150 | 0.12402 | | | | |
| 8595316 | - | - | - | - | 3.160 | 0.12441 | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAlN.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|--------------------------|------|--------------|------------|-------------------------------------|-------------------------------------|--------------------------|-----------|-------------------------------------|-------------------------------------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 1100 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |

good best

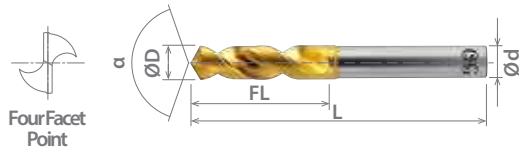




List 1100 (Continued)

| | | | | | |
|-------------------|-------------|------------|--------------|-------------|------------|
| SPEED FEED | HSSE | TiN | TiAlN | STUB | 40° |
| P391 | | | | | |

EX-SUS-GDS, Ideal for Stainless Steel



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 0.5 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 30 | +0 / -0.033 | +0 / -0.0013 |
| 30 < D ≤ 32 | +0 / -0.039 | +0 / -0.0015 |

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|----------------|------------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8595317 | - | - | - | - | 3.170 | 0.12480 | 18 | 50 | 4 | 130° |
| 8595318 | 859531811 | - | - | - | 3.180 | 0.12520 | | | | |
| 8595319 | - | - | - | - | 3.190 | 0.12559 | | | | |
| 61532 | 6153211 | - | - | - | 3.200 | 0.12598 | | | | |
| 8595321 | - | - | - | - | 3.210 | 0.12638 | | | | |
| 8595322 | 859532211 | - | - | - | 3.220 | 0.12677 | | | | |
| 8595323 | - | - | - | - | 3.230 | 0.12717 | | | | |
| 8595324 | - | - | - | - | 3.240 | 0.12756 | | | | |
| 8595325 | 859532511 | - | - | - | 3.250 | 0.12795 | | | | |
| 8595326 | 859532611 | - | - | - | 3.260 | 0.12835 | | | | |
| 8595327 | 859532711 | - | - | - | 3.270 | 0.12874 | | | | |
| 8595328 | - | - | - | - | 3.280 | 0.12913 | | | | |
| 8595329 | 859532911 | - | - | - | 3.290 | 0.12953 | | | | |
| 61533 | 6153311 | - | - | - | 3.300 | 0.12992 | | | | |
| 8595331 | - | - | - | - | 3.310 | 0.13031 | | | | |
| 8595332 | - | - | - | - | 3.320 | 0.13071 | | | | |
| 8595333 | - | - | - | - | 3.330 | 0.13110 | | | | |
| 8595334 | - | - | - | - | 3.340 | 0.13150 | | | | |
| 8595335 | 859533511 | - | - | - | 3.350 | 0.13189 | | | | |
| 8595336 | - | - | - | - | 3.360 | 0.13228 | | | | |
| 8595337 | - | - | - | - | 3.370 | 0.13268 | | | | |
| 8595338 | - | - | - | - | 3.380 | 0.13307 | | | | |
| 8595339 | - | - | - | - | 3.390 | 0.13346 | | | | |
| 61534 | 6153411 | - | - | - | 3.400 | 0.13386 | | | | |
| 8595341 | - | - | - | - | 3.410 | 0.13425 | | | | |
| 8595342 | - | - | - | - | 3.420 | 0.13465 | | | | |
| 8595343 | - | - | - | - | 3.430 | 0.13504 | | | | |
| 8595344 | - | - | - | - | 3.440 | 0.13543 | | | | |
| 8595345 | 859534511 | - | - | - | 3.450 | 0.13583 | | | | |
| 8595346 | 859534611 | - | - | - | 3.460 | 0.13622 | | | | |
| 8595347 | 859534711 | - | - | - | 3.470 | 0.13661 | | | | |
| 8595348 | - | - | - | - | 3.480 | 0.13701 | | | | |
| 8595349 | - | - | - | - | 3.490 | 0.13740 | | | | |
| 61535 | 6153511 | - | - | - | 3.500 | 0.13780 | | | | |
| 8595351 | - | - | - | - | 3.510 | 0.13819 | | | | |
| 8595352 | - | - | - | - | 3.520 | 0.13858 | | | | |
| 8595353 | - | - | - | - | 3.530 | 0.13898 | | | | |
| 8595354 | - | - | - | - | 3.540 | 0.13937 | | | | |
| 8595355 | - | - | - | - | 3.550 | 0.13976 | | | | |
| 8595356 | - | - | - | - | 3.560 | 0.14016 | | | | |
| 8595357 | 859535711 | - | - | - | 3.570 | 0.14055 | | | | |
| 8595358 | - | - | - | - | 3.580 | 0.14094 | | | | |
| 8595359 | - | - | - | - | 3.590 | 0.14134 | | | | |
| 61536 | - | - | - | - | 3.600 | 0.14173 | | | | |
| 8595361 | - | - | - | - | 3.610 | 0.14213 | | | | |
| 8595362 | - | - | - | - | 3.620 | 0.14252 | | | | |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order: 11 = TiAlN.



List 1100 (Continued)

EX-SUS-GDS, Ideal for Stainless Steel

| | | | | | |
|---------------|------|-----|-------|------|-----|
| SPEED FEED | HSSE | TiN | TiAlN | STUB | 40° |
| P391 | | | | | |

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|----------------|------------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8595363 | - | - | - | - | 3.630 | 0.14291 | 20 | 52 | 4 | 130° |
| 8595364 | - | - | - | - | 3.640 | 0.14331 | | | | |
| 8595365 | - | - | - | - | 3.650 | 0.14370 | | | | |
| 8595366 | 859536611 | - | - | - | 3.660 | 0.14409 | | | | |
| 8595367 | - | - | - | - | 3.670 | 0.14449 | | | | |
| 8595368 | - | - | - | - | 3.680 | 0.14488 | | | | |
| 8595369 | - | - | - | - | 3.690 | 0.14528 | | | | |
| 61537 | 6153711 | - | - | - | 3.700 | 0.14567 | | | | |
| 8595371 | - | - | - | - | 3.710 | 0.14606 | | | | |
| 8595372 | - | - | - | - | 3.720 | 0.14646 | | | | |
| 8595373 | 859537311 | - | - | - | 3.730 | 0.14685 | | | | |
| 8595374 | - | - | - | - | 3.740 | 0.14724 | | | | |
| 8595375 | 859537511 | - | - | - | 3.750 | 0.14764 | | | | |
| 8595376 | - | - | - | - | 3.760 | 0.14803 | | | | |
| 8595377 | - | - | - | - | 3.770 | 0.14843 | | | | |
| 8595378 | - | - | - | - | 3.780 | 0.14882 | | | | |
| 8595379 | - | - | - | - | 3.790 | 0.14921 | | | | |
| 61538 | 6153811 | - | - | - | 3.800 | 0.14961 | | | | |
| 8595381 | - | - | - | - | 3.810 | 0.15000 | | | | |
| 8595382 | - | - | - | - | 3.820 | 0.15039 | | | | |
| 8595383 | - | - | - | - | 3.830 | 0.15079 | | | | |
| 8595384 | - | - | - | - | 3.840 | 0.15118 | | | | |
| 8595385 | 859538511 | - | - | - | 3.850 | 0.15157 | | | | |
| 8595386 | 859538611 | - | - | - | 3.860 | 0.15197 | | | | |
| 8595387 | - | - | - | - | 3.870 | 0.15236 | | | | |
| 8595388 | - | - | - | - | 3.880 | 0.15276 | | | | |
| 8595389 | - | - | - | - | 3.890 | 0.15315 | | | | |
| 61539 | - | - | - | - | 3.900 | 0.15354 | | | | |
| 8595391 | 859539111 | - | - | - | 3.910 | 0.15394 | | | | |
| 8595392 | - | - | - | - | 3.920 | 0.15433 | | | | |
| 8595393 | - | - | - | - | 3.930 | 0.15472 | | | | |
| 8595394 | - | - | - | - | 3.940 | 0.15512 | | | | |
| 8595395 | 859539511 | - | - | - | 3.950 | 0.15551 | | | | |
| 8595396 | - | - | - | - | 3.960 | 0.15591 | | | | |
| 8595397 | 859539711 | - | - | - | 3.970 | 0.15630 | | | | |
| 8595398 | - | - | - | - | 3.980 | 0.15669 | | | | |
| 8595399 | 859539911 | - | - | - | 3.990 | 0.15709 | | | | |
| 61540 | 6154011 | - | - | - | 4.000 | 0.15748 | | | | |
| 8595401 | - | - | - | - | 4.010 | 0.15787 | | | | |
| 8595402 | - | - | - | - | 4.020 | 0.15827 | | | | |
| 8595403 | - | - | - | - | 4.030 | 0.15866 | | | | |
| 8595404 | 859540411 | - | - | - | 4.040 | 0.15906 | | | | |
| 8595405 | - | - | - | - | 4.050 | 0.15945 | | | | |
| | | | | | | | 22 | 54 | 6 | 120° |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAlN.

➔ continued on next page ➔ **EXD**

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|--------------------------|--------------|--------------|-------------------------------------|-------------------------------------|--------------------------|-----|-------------------------------------|-------------------------------------|--------------|--------------|----------|-------------------|------------|--------------|--------------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 4140 4340 | 300 | 400 | | 17-4 PH | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 1100 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |

good best

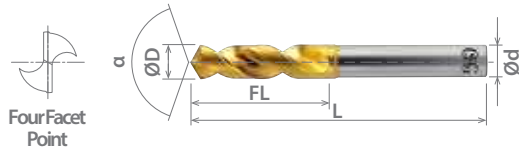




List 1100 (Continued)

| | | | | | |
|-------------------|-------------|------------|--------------|-------------|------------|
| SPEED FEED | HSSE | TiN | TiAlN | STUB | 40° |
| P391 | | | | | |

EX-SUS-GDS, Ideal for Stainless Steel



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 0.5 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 30 | +0 / -0.033 | +0 / -0.0013 |
| 30 < D ≤ 32 | +0 / -0.039 | +0 / -0.0015 |

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|----------------|------------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8595406 | - | - | - | - | 4.060 | 0.15984 | 22 | 66 | 6 | 120° |
| 8595407 | - | - | - | - | 4.070 | 0.16024 | | | | |
| 8595408 | - | - | - | - | 4.080 | 0.16063 | | | | |
| 8595409 | 859540911 | - | - | - | 4.090 | 0.16102 | | | | |
| 61541 | 6154111 | - | - | - | 4.100 | 0.16142 | | | | |
| 8595411 | - | - | - | - | 4.110 | 0.16181 | | | | |
| 8595412 | - | - | - | - | 4.120 | 0.16220 | | | | |
| 8595413 | - | - | - | - | 4.130 | 0.16260 | | | | |
| 8595414 | - | - | - | - | 4.140 | 0.16299 | | | | |
| 8595415 | 859541511 | - | - | - | 4.150 | 0.16339 | | | | |
| 8595416 | - | - | - | - | 4.160 | 0.16378 | | | | |
| 8595417 | 859541711 | - | - | - | 4.170 | 0.16417 | | | | |
| 8595418 | - | - | - | - | 4.180 | 0.16457 | | | | |
| 8595419 | - | - | - | - | 4.190 | 0.16496 | | | | |
| 61542 | 6154211 | - | - | - | 4.200 | 0.16535 | | | | |
| 8595421 | - | - | - | - | 4.210 | 0.16575 | | | | |
| 8595422 | 859542211 | - | - | - | 4.220 | 0.16614 | | | | |
| 8595423 | - | - | - | - | 4.230 | 0.16654 | | | | |
| 8595424 | - | - | - | - | 4.240 | 0.16693 | | | | |
| 8595425 | - | - | - | - | 4.250 | 0.16732 | | | | |
| 8595426 | - | - | - | - | 4.260 | 0.16772 | | | | |
| 8595427 | - | - | - | - | 4.270 | 0.16811 | | | | |
| 8595428 | - | - | - | - | 4.280 | 0.16850 | | | | |
| 8595429 | - | - | - | - | 4.290 | 0.16890 | | | | |
| 61543 | 6154311 | - | - | - | 4.300 | 0.16929 | | | | |
| 8595431 | - | - | - | - | 4.310 | 0.16969 | | | | |
| 8595432 | - | - | - | - | 4.320 | 0.17008 | | | | |
| 8595433 | 859543311 | - | - | - | 4.330 | 0.17047 | | | | |
| 8595434 | - | - | - | - | 4.340 | 0.17087 | | | | |
| 8595435 | - | - | - | - | 4.350 | 0.17126 | | | | |
| 8595436 | - | - | - | - | 4.360 | 0.17165 | | | | |
| 8595437 | 859543711 | - | - | - | 4.370 | 0.17205 | | | | |
| 8595438 | - | - | - | - | 4.380 | 0.17244 | | | | |
| 8595439 | - | - | - | - | 4.390 | 0.17283 | | | | |
| 61544 | 6154411 | - | - | - | 4.400 | 0.17323 | | | | |
| 8595441 | 859544111 | - | - | - | 4.410 | 0.17362 | | | | |
| 8595442 | - | - | - | - | 4.420 | 0.17402 | | | | |
| 8595443 | - | - | - | - | 4.430 | 0.17441 | | | | |
| 8595444 | - | - | - | - | 4.440 | 0.17480 | | | | |
| 8595445 | 859544511 | - | - | - | 4.450 | 0.17520 | | | | |
| 8595446 | - | - | - | - | 4.460 | 0.17559 | | | | |
| 8595447 | - | - | - | - | 4.470 | 0.17598 | | | | |
| 8595448 | - | - | - | - | 4.480 | 0.17638 | | | | |
| 8595449 | - | - | - | - | 4.490 | 0.17677 | | | | |
| 61545 | 6154511 | - | - | - | 4.500 | 0.17717 | | | | |
| 8595451 | - | - | - | - | 4.510 | 0.17756 | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAlN.





List 1100 (Continued)

EX-SUS-GDS, Ideal for Stainless Steel

| | | | | | |
|---------------------------|-------------|------------|--------------|-------------|------------|
| SPEED FEED P391 | HSSE | TiN | TiAlN | STUB | 40° |
|---------------------------|-------------|------------|--------------|-------------|------------|

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|----------------|------------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8595452 | - | - | - | - | 4.520 | 0.17795 | 24 | 68 | 6 | 120° |
| 8595453 | - | - | - | - | 4.530 | 0.17835 | | | | |
| 8595454 | - | - | - | - | 4.540 | 0.17874 | | | | |
| 8595455 | - | - | - | - | 4.550 | 0.17913 | | | | |
| 8595456 | - | - | - | - | 4.560 | 0.17953 | | | | |
| 8595457 | 859545711 | - | - | - | 4.570 | 0.17992 | | | | |
| 8595458 | - | - | - | - | 4.580 | 0.18031 | | | | |
| 8595459 | - | - | - | - | 4.590 | 0.18071 | | | | |
| 61546 | 6154611 | - | - | - | 4.600 | 0.18110 | | | | |
| 8595461 | - | - | - | - | 4.610 | 0.18150 | | | | |
| 8595462 | 859546211 | - | - | - | 4.620 | 0.18189 | | | | |
| 8595463 | - | - | - | - | 4.630 | 0.18228 | | | | |
| 8595464 | - | - | - | - | 4.640 | 0.18268 | | | | |
| 8595465 | - | - | - | - | 4.650 | 0.18307 | | | | |
| 8595466 | - | - | - | - | 4.660 | 0.18346 | | | | |
| 8595467 | - | - | - | - | 4.670 | 0.18386 | | | | |
| 8595468 | - | - | - | - | 4.680 | 0.18425 | | | | |
| 8595469 | - | - | - | - | 4.690 | 0.18465 | | | | |
| 61547 | 6154711 | - | - | - | 4.700 | 0.18504 | | | | |
| 8595471 | - | - | - | - | 4.710 | 0.18543 | | | | |
| 8595472 | - | - | - | - | 4.720 | 0.18583 | | | | |
| 8595473 | - | - | - | - | 4.730 | 0.18622 | | | | |
| 8595474 | - | - | - | - | 4.740 | 0.18661 | | | | |
| 8595475 | 859547511 | - | - | - | 4.750 | 0.18701 | | | | |
| 8595476 | 859547611 | - | - | - | 4.760 | 0.18740 | | | | |
| 8595477 | - | - | - | - | 4.770 | 0.18780 | | | | |
| 8595478 | - | - | - | - | 4.780 | 0.18819 | | | | |
| 8595479 | - | - | - | - | 4.790 | 0.18858 | | | | |
| 61548 | 6154811 | - | - | - | 4.800 | 0.18898 | | | | |
| 8595481 | - | - | - | - | 4.810 | 0.18937 | | | | |
| 8595482 | - | - | - | - | 4.820 | 0.18976 | | | | |
| 8595483 | - | - | - | - | 4.830 | 0.19016 | | | | |
| 8595484 | - | - | - | - | 4.840 | 0.19055 | | | | |
| 8595485 | - | - | - | - | 4.850 | 0.19094 | | | | |
| 8595486 | 859548611 | - | - | - | 4.860 | 0.19134 | | | | |
| 8595487 | 859548711 | - | - | - | 4.870 | 0.19173 | | | | |
| 8595488 | 859548811 | - | - | - | 4.880 | 0.19213 | | | | |
| 8595489 | - | - | - | - | 4.890 | 0.19252 | | | | |
| 61549 | 6154911 | - | - | - | 4.900 | 0.19291 | | | | |
| 8595491 | - | - | - | - | 4.910 | 0.19331 | | | | |
| 8595492 | - | - | - | - | 4.920 | 0.19370 | | | | |
| 8595493 | - | - | - | - | 4.930 | 0.19409 | | | | |
| 8595494 | - | - | - | - | 4.940 | 0.19449 | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAlN.

continued on next page

| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|--------------------------|------|--------------|------------|-------------------------------------|-------------------------------------|--------------------------|-----------|-------------------------------------|-------------------------------------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 1100 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |

good best

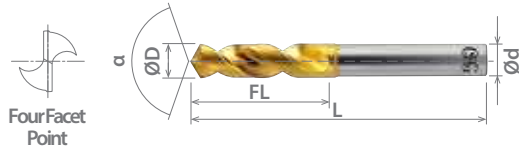




List 1100 (Continued)

EX-SUS-GDS, Ideal for Stainless Steel

| | | | | | |
|-------------------|-------------|------------|--------------|-------------|------------|
| SPEED FEED | HSSE | TiN | TiAlN | STUB | 40° |
| P391 | | | | | |



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 0.5 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 30 | +0 / -0.033 | +0 / -0.0013 |
| 30 < D ≤ 32 | +0 / -0.039 | +0 / -0.0015 |

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|----------------|------------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8595495 | - | - | - | - | 4.950 | 0.19488 | 26 | 70 | 6 | 120° |
| 8595496 | 859549611 | - | - | - | 4.960 | 0.19528 | | | | |
| 8595497 | - | - | - | - | 4.970 | 0.19567 | | | | |
| 8595498 | 859549811 | - | - | - | 4.980 | 0.19606 | | | | |
| 8595499 | - | - | - | - | 4.990 | 0.19646 | | | | |
| 61550 | 6155011 | - | - | - | 5.000 | 0.19685 | | | | |
| 8595501 | - | - | - | - | 5.010 | 0.19724 | | | | |
| 8595502 | - | - | - | - | 5.020 | 0.19764 | | | | |
| 8595503 | - | - | - | - | 5.030 | 0.19803 | | | | |
| 8595504 | - | - | - | - | 5.040 | 0.19843 | | | | |
| 8595505 | 859550511 | - | - | - | 5.050 | 0.19882 | | | | |
| 8595506 | - | - | - | - | 5.060 | 0.19921 | | | | |
| 8595507 | - | - | - | - | 5.070 | 0.19961 | | | | |
| 8595508 | - | - | - | - | 5.080 | 0.20000 | | | | |
| 8595509 | - | - | - | - | 5.090 | 0.20039 | | | | |
| 61551 | 6155111 | - | - | - | 5.100 | 0.20079 | | | | |
| 8595511 | 859551111 | - | - | - | 5.110 | 0.20118 | | | | |
| 8595512 | - | - | - | - | 5.120 | 0.20157 | | | | |
| 8595513 | - | - | - | - | 5.130 | 0.20197 | | | | |
| 8595514 | - | - | - | - | 5.140 | 0.20236 | | | | |
| 8595515 | - | - | - | - | 5.150 | 0.20276 | | | | |
| 8595516 | 859551611 | - | - | - | 5.160 | 0.20315 | | | | |
| 8595517 | - | - | - | - | 5.170 | 0.20354 | | | | |
| 8595518 | 859551811 | - | - | - | 5.180 | 0.20394 | | | | |
| 8595519 | - | - | - | - | 5.190 | 0.20433 | | | | |
| 61552 | 6155211 | - | - | - | 5.200 | 0.20472 | | | | |
| 8595521 | - | - | - | - | 5.210 | 0.20512 | | | | |
| 8595522 | 859552211 | - | - | - | 5.220 | 0.20551 | | | | |
| 8595523 | - | - | - | - | 5.230 | 0.20591 | | | | |
| 8595524 | - | - | - | - | 5.240 | 0.20630 | | | | |
| 8595525 | - | - | - | - | 5.250 | 0.20669 | | | | |
| 8595526 | - | - | - | - | 5.260 | 0.20709 | | | | |
| 8595527 | - | - | - | - | 5.270 | 0.20748 | | | | |
| 8595528 | - | - | - | - | 5.280 | 0.20787 | | | | |
| 8595529 | - | - | - | - | 5.290 | 0.20827 | | | | |
| 61553 | 6155311 | - | - | - | 5.300 | 0.20866 | | | | |
| 8595531 | - | - | - | - | 5.310 | 0.20906 | | | | |
| 8595532 | - | - | - | - | 5.320 | 0.20945 | | | | |
| 8595533 | - | - | - | - | 5.330 | 0.20984 | | | | |
| 8595534 | - | - | - | - | 5.340 | 0.21024 | | | | |
| 8595535 | - | - | - | - | 5.350 | 0.21063 | | | | |
| 8595536 | - | - | - | - | 5.360 | 0.21102 | | | | |
| 8595537 | - | - | - | - | 5.370 | 0.21142 | | | | |
| 8595538 | - | - | - | - | 5.380 | 0.21181 | | | | |
| 8595539 | - | - | - | - | 5.390 | 0.21220 | | | | |
| 61554 | - | - | - | - | 5.400 | 0.21260 | | | | |
| 8595541 | - | - | - | - | 5.410 | 0.21299 | | | | |
| | | | | | | 28 | 72 | | | |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order: 11 = TiAlN.





List 1100 (Continued)

EX-SUS-GDS, Ideal for Stainless Steel

| | | | | | |
|---------------------------|-------------|------------|--------------|-------------|------------|
| SPEED FEED P391 | HSSE | TiN | TiAlN | STUB | 40° |
|---------------------------|-------------|------------|--------------|-------------|------------|

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|----------------|------------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8595542 | - | - | - | - | 5.420 | 0.21339 | 28 | 72 | 6 | 120° |
| 8595543 | - | - | - | - | 5.430 | 0.21378 | | | | |
| 8595544 | - | - | - | - | 5.440 | 0.21417 | | | | |
| 8595545 | 859554511 | - | - | - | 5.450 | 0.21457 | | | | |
| 8595546 | - | - | - | - | 5.460 | 0.21496 | | | | |
| 8595547 | - | - | - | - | 5.470 | 0.21535 | | | | |
| 8595548 | 859554811 | - | - | - | 5.480 | 0.21575 | | | | |
| 8595549 | - | - | - | - | 5.490 | 0.21614 | | | | |
| 61555 | 6155511 | - | - | - | 5.500 | 0.21654 | | | | |
| 8595551 | - | - | - | - | 5.510 | 0.21693 | | | | |
| 8595552 | - | - | - | - | 5.520 | 0.21732 | | | | |
| 8595553 | - | - | - | - | 5.530 | 0.21772 | | | | |
| 8595554 | - | - | - | - | 5.540 | 0.21811 | | | | |
| 8595555 | - | - | - | - | 5.550 | 0.21850 | | | | |
| 8595556 | 859555611 | - | - | - | 5.560 | 0.21890 | | | | |
| 8595557 | - | - | - | - | 5.570 | 0.21929 | | | | |
| 8595558 | - | - | - | - | 5.580 | 0.21969 | | | | |
| 8595559 | - | - | - | - | 5.590 | 0.22008 | | | | |
| 61556 | 6155611 | - | - | - | 5.600 | 0.22047 | | | | |
| 8595561 | - | - | - | - | 5.610 | 0.22087 | | | | |
| 8595562 | - | - | - | - | 5.620 | 0.22126 | | | | |
| 8595563 | - | - | - | - | 5.630 | 0.22165 | | | | |
| 8595564 | - | - | - | - | 5.640 | 0.22205 | | | | |
| 8595565 | 859556511 | - | - | - | 5.650 | 0.22244 | | | | |
| 8595566 | - | - | - | - | 5.660 | 0.22283 | | | | |
| 8595567 | - | - | - | - | 5.670 | 0.22323 | | | | |
| 8595568 | - | - | - | - | 5.680 | 0.22362 | | | | |
| 8595569 | - | - | - | - | 5.690 | 0.22402 | | | | |
| 61557 | - | - | - | - | 5.700 | 0.22441 | | | | |
| 8595571 | - | - | - | - | 5.710 | 0.22480 | | | | |
| 8595572 | 859557211 | - | - | - | 5.720 | 0.22520 | | | | |
| 8595573 | - | - | - | - | 5.730 | 0.22559 | | | | |
| 8595574 | - | - | - | - | 5.740 | 0.22598 | | | | |
| 8595575 | 859557511 | - | - | - | 5.750 | 0.22638 | | | | |
| 8595576 | - | - | - | - | 5.760 | 0.22677 | | | | |
| 8595577 | - | - | - | - | 5.770 | 0.22717 | | | | |
| 8595578 | 859557811 | - | - | - | 5.780 | 0.22756 | | | | |
| 8595579 | 859557911 | - | - | - | 5.790 | 0.22795 | | | | |
| 61558 | 6155811 | - | - | - | 5.800 | 0.22835 | | | | |
| 8595581 | - | - | - | - | 5.810 | 0.22874 | | | | |
| 8595582 | - | - | - | - | 5.820 | 0.22913 | | | | |
| 8595583 | - | - | - | - | 5.830 | 0.22953 | | | | |
| 8595584 | - | - | - | - | 5.840 | 0.22992 | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAlN.

continued on next page

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|--------------------------|------|--------------|------------|-------------------------------------|-------------------------------------|--------------------------|-----------|-------------------------------------|-------------------------------------|--------------|----------|-----------------|----------------|---------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 1100 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |

good best

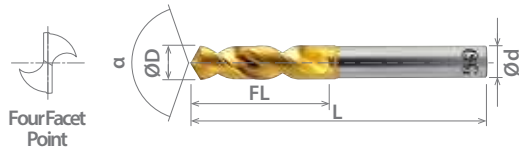




List 1100 (Continued)

EX-SUS-GDS, Ideal for Stainless Steel

| | | | | | |
|-------------------|-------------|------------|--------------|-------------|------------|
| SPEED FEED | HSSE | TiN | TiAlN | STUB | 40° |
| P391 | | | | | |



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 0.5≤D≤3 | +0 / -0.014 | +0 / -0.0006 |
| 3<D≤6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤18 | +0 / -0.027 | +0 / -0.0011 |
| 18<D≤30 | +0 / -0.033 | +0 / -0.0013 |
| 30<D≤32 | +0 / -0.039 | +0 / -0.0015 |

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|----------------|------------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8595585 | - | - | - | - | 5.850 | 0.23031 | 28 | 72 | 6 | 120° |
| 8595586 | - | - | - | - | 5.860 | 0.23071 | | | | |
| 8595587 | - | - | - | - | 5.870 | 0.23110 | | | | |
| 8595588 | - | - | - | - | 5.880 | 0.23150 | | | | |
| 8595589 | - | - | - | - | 5.890 | 0.23189 | | | | |
| 61559 | 6155911 | - | - | - | 5.900 | 0.23228 | | | | |
| 8595591 | - | - | - | - | 5.910 | 0.23268 | | | | |
| 8595592 | - | - | - | - | 5.920 | 0.23307 | | | | |
| 8595593 | - | - | - | - | 5.930 | 0.23346 | | | | |
| 8595594 | - | - | - | - | 5.940 | 0.23386 | | | | |
| 8595595 | 859559511 | - | - | - | 5.950 | 0.23425 | | | | |
| 8595596 | - | - | - | - | 5.960 | 0.23465 | | | | |
| 8595597 | 859559711 | - | - | - | 5.970 | 0.23504 | | | | |
| 8595598 | - | - | - | - | 5.980 | 0.23543 | | | | |
| 8595599 | - | - | - | - | 5.990 | 0.23583 | | | | |
| 61560 | 6156011 | - | - | - | 6.000 | 0.23622 | | | | |
| 8595605 | - | - | - | - | 6.050 | 0.23819 | | | | |
| 61561 | 6156111 | - | - | - | 6.100 | 0.24016 | | | | |
| 8595615 | - | - | - | - | 6.150 | 0.24213 | | | | |
| 61562 | - | - | - | - | 6.200 | 0.24409 | | | | |
| 8595625 | - | - | - | - | 6.250 | 0.24606 | | | | |
| 61563 | 6156311 | - | - | - | 6.300 | 0.24803 | | | | |
| 8595635 | 859563511 | 1/4 | - | E | 6.350 | 0.25000 | 31 | 75 | 8 | |
| 61564 | 6156411 | - | - | - | 6.400 | 0.25197 | | | | |
| 8595645 | - | - | - | - | 6.450 | 0.25394 | | | | |
| 61565 | 6156511 | - | - | - | 6.500 | 0.25591 | | | | |
| 8595655 | 859565511 | - | - | - | 6.550 | 0.25787 | | | | |
| 61566 | 6156611 | - | - | - | 6.600 | 0.25984 | | | | |
| 8595665 | - | - | - | - | 6.650 | 0.26181 | | | | |
| 61567 | 6156711 | - | - | - | 6.700 | 0.26378 | | | | |
| 8595675 | 859567511 | - | - | - | 6.750 | 0.26575 | | | | |
| 61568 | 6156811 | - | - | - | 6.800 | 0.26772 | | | | |
| 8595685 | 859568511 | - | - | - | 6.850 | 0.26969 | | | | |
| 61569 | 6156911 | - | - | - | 6.900 | 0.27165 | | | | |
| 8595695 | - | - | - | - | 6.950 | 0.27362 | | | | |
| 61570 | 6157011 | - | - | - | 7.000 | 0.27559 | | | | |
| 8595705 | - | - | - | - | 7.050 | 0.27756 | | | | |
| 61571 | 6157111 | - | - | - | 7.100 | 0.27953 | | | | |
| 8595715 | 859571511 | - | - | - | 7.150 | 0.28150 | | | | |
| 61572 | 6157211 | - | - | - | 7.200 | 0.28346 | | | | |
| 8595725 | - | - | - | - | 7.250 | 0.28543 | | | | |
| 61573 | 6157311 | - | - | - | 7.300 | 0.28740 | | | | |
| 8595735 | - | - | - | - | 7.350 | 0.28937 | | | | |
| 61574 | 6157411 | - | - | - | 7.400 | 0.29134 | | | | |
| 8595745 | - | - | - | - | 7.450 | 0.29331 | | | | |
| 61575 | 6157511 | - | - | - | 7.500 | 0.29528 | | | | |
| | | | | | | 34 | 78 | 8 | 120° | |
| | | | | | | | | | | |
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| | | | | | | | | | | |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order: 11 = TiAlN.



List 1100 (Continued)

EX-SUS-GDS, Ideal for Stainless Steel

| | | | | | |
|---------------|------|-----|-------|------|-----|
| SPEED FEED | HSSE | TiN | TiAlN | STUB | 40° |
| P391 | | | | | |

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length | Overall Length | Shank Diameter | Point Angle |
|----------------|------------------|-----------------|-----------|-------------|-------|---------|--------------|----------------|----------------|-------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8595755 | 859575511 | - | - | - | 7.550 | 0.29724 | 37 | 81 | 8 | 120° |
| 61576 | - | - | - | - | 7.600 | 0.29921 | | | | |
| 8595765 | 859576511 | - | - | - | 7.650 | 0.30118 | | | | |
| 61577 | 6157711 | - | - | - | 7.700 | 0.30315 | | | | |
| 8595775 | 859577511 | - | - | - | 7.750 | 0.30512 | | | | |
| 61578 | - | - | - | - | 7.800 | 0.30709 | | | | |
| 8595785 | - | - | - | - | 7.850 | 0.30906 | | | | |
| 61579 | 6157911 | - | - | - | 7.900 | 0.31102 | | | | |
| 8595795 | 859579511 | - | - | - | 7.950 | 0.31299 | | | | |
| 61580 | 6158011 | - | - | - | 8.000 | 0.31496 | | | | |
| 8595805 | - | - | - | - | 8.050 | 0.31693 | | | | |
| 61581 | 6158111 | - | - | - | 8.100 | 0.31890 | | | | |
| 8595815 | - | - | - | - | 8.150 | 0.32087 | | | | |
| 61582 | 6158211 | - | - | - | 8.200 | 0.32283 | | | | |
| 8595825 | - | - | - | - | 8.250 | 0.32480 | | | | |
| 61583 | 6158311 | - | - | - | 8.300 | 0.32677 | | | | |
| 8595835 | 859583511 | - | - | - | 8.350 | 0.32874 | | | | |
| 61584 | - | - | - | - | 8.400 | 0.33071 | | | | |
| 8595845 | - | - | - | - | 8.450 | 0.33268 | | | | |
| 61585 | 6158511 | - | - | - | 8.500 | 0.33465 | | | | |
| 8595855 | - | - | - | - | 8.550 | 0.33661 | | | | |
| 61586 | 6158611 | - | - | - | 8.600 | 0.33858 | | | | |
| 8595865 | - | - | - | - | 8.650 | 0.34055 | | | | |
| 61587 | - | - | - | - | 8.700 | 0.34252 | | | | |
| 8595875 | 859587511 | - | - | - | 8.750 | 0.34449 | | | | |
| 61588 | 6158811 | - | - | - | 8.800 | 0.34646 | | | | |
| 8595885 | - | - | - | - | 8.850 | 0.34843 | | | | |
| 61589 | - | - | - | - | 8.900 | 0.35039 | | | | |
| 8595895 | - | - | - | - | 8.950 | 0.35236 | | | | |
| 61590 | 6159011 | - | - | - | 9.000 | 0.35433 | | | | |
| 8595905 | - | - | - | - | 9.050 | 0.35630 | | | | |
| 61591 | - | - | - | - | 9.100 | 0.35827 | | | | |
| 8595915 | - | - | - | - | 9.150 | 0.36024 | | | | |
| 61592 | - | - | - | - | 9.200 | 0.36220 | | | | |
| 8595925 | - | - | - | - | 9.250 | 0.36417 | | | | |
| 61593 | - | - | - | - | 9.300 | 0.36614 | | | | |
| 8595935 | - | - | - | - | 9.350 | 0.36811 | | | | |
| 61594 | - | - | - | - | 9.400 | 0.37008 | | | | |
| 8595945 | - | - | - | - | 9.450 | 0.37205 | | | | |
| 61595 | 6159511 | - | - | - | 9.500 | 0.37402 | | | | |
| 8595955 | - | - | - | - | 9.550 | 0.37598 | | | | |
| 61596 | 6159611 | - | - | - | 9.600 | 0.37795 | | | | |
| 8595965 | 859596511 | - | - | - | 9.650 | 0.37992 | | | | |
| | | | | | | | 40 | 90 | | |
| | | | | | | | | 93 | | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order: 11 = TiAlN.

➔ continued on next page ➔ **EXD**

| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 1100 | ☉ | ○ | | | | ☉ | ☉ | ○ | | ☉ | ☉ | | | | | | | |

○ good ☉ best

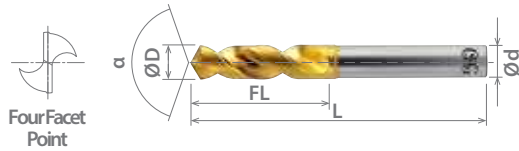




List 1100 (Continued)

EX-SUS-GDS, Ideal for Stainless Steel

| | | | | | |
|-----------------------|------|-----|-------|------|-----|
| SPEED FEED P391 | HSSE | TiN | TiAlN | STUB | 40° |
|-----------------------|------|-----|-------|------|-----|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 0.5 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 30 | +0 / -0.033 | +0 / -0.0013 |
| 30 < D ≤ 32 | +0 / -0.039 | +0 / -0.0015 |

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|----------------|------------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 61597 | - | - | - | - | 9.700 | 0.38189 | 43 | 93 | 10 | 120° |
| 8595975 | - | - | - | - | 9.750 | 0.38386 | | | | |
| 61598 | 6159811 | - | - | - | 9.800 | 0.38583 | | | | |
| 8595985 | - | - | - | - | 9.850 | 0.38780 | | | | |
| 61599 | 6159911 | - | - | - | 9.900 | 0.38976 | | | | |
| 8595995 | - | - | - | - | 9.950 | 0.39173 | | | | |
| 61600 | 6160011 | - | - | - | 10.000 | 0.39370 | | | | |
| 8596005 | - | - | - | - | 10.050 | 0.39567 | | | | |
| 61601 | - | - | - | - | 10.100 | 0.39764 | | | | |
| 8596015 | 859601511 | - | - | - | 10.150 | 0.39961 | | | | |
| 61602 | 6160211 | - | - | - | 10.200 | 0.40157 | | | | |
| 8596025 | - | - | - | - | 10.250 | 0.40354 | | | | |
| 61603 | 6160311 | - | - | - | 10.300 | 0.40551 | | | | |
| 8596035 | 859603511 | - | - | - | 10.350 | 0.40748 | | | | |
| 61604 | - | - | - | - | 10.400 | 0.40945 | | | | |
| 8596045 | - | - | - | - | 10.450 | 0.41142 | | | | |
| 61605 | 6160511 | - | - | - | 10.500 | 0.41339 | | | | |
| 8596055 | - | - | - | - | 10.550 | 0.41535 | | | | |
| 61606 | - | - | - | - | 10.600 | 0.41732 | | | | |
| 8596065 | - | - | - | - | 10.650 | 0.41929 | | | | |
| 61607 | 6160711 | - | - | - | 10.700 | 0.42126 | | | | |
| 8596075 | - | - | - | - | 10.750 | 0.42323 | | | | |
| 61608 | - | - | - | - | 10.800 | 0.42520 | | | | |
| 8596085 | - | - | - | - | 10.850 | 0.42717 | | | | |
| 61609 | - | - | - | - | 10.900 | 0.42913 | | | | |
| 8596095 | - | - | - | - | 10.950 | 0.43110 | | | | |
| 61610 | 6161011 | - | - | - | 11.000 | 0.43307 | | | | |
| 8596105 | - | - | - | - | 11.050 | 0.43504 | | | | |
| 61611 | 6161111 | - | - | - | 11.100 | 0.43701 | | | | |
| 8596115 | - | - | - | - | 11.150 | 0.43898 | | | | |
| 61612 | - | - | - | - | 11.200 | 0.44094 | | | | |
| 8596125 | - | - | - | - | 11.250 | 0.44291 | | | | |
| 61613 | - | - | - | - | 11.300 | 0.44488 | | | | |
| 8596135 | - | - | - | - | 11.350 | 0.44685 | | | | |
| 61614 | - | - | - | - | 11.400 | 0.44882 | | | | |
| 8596145 | - | - | - | - | 11.450 | 0.45079 | | | | |
| 61615 | 6161511 | - | - | - | 11.500 | 0.45276 | | | | |
| 8596155 | - | - | - | - | 11.550 | 0.45472 | | | | |
| 61616 | - | - | - | - | 11.600 | 0.45669 | | | | |
| 8596165 | - | - | - | - | 11.650 | 0.45866 | | | | |
| 61617 | - | - | - | - | 11.700 | 0.46063 | | | | |
| 8596175 | - | - | - | - | 11.750 | 0.46260 | | | | |
| 61618 | - | - | - | - | 11.800 | 0.46457 | | | | |
| 8596185 | - | - | - | - | 11.850 | 0.46654 | | | | |
| 61619 | - | - | - | - | 11.900 | 0.46850 | | | | |
| 8596195 | - | - | - | - | 11.950 | 0.47047 | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAlN.



List 1100 (Continued)

EX-SUS-GDS, Ideal for Stainless Steel

| | | | | | |
|-----------------------|------|-----|-------|------|-----|
| SPEED FEED P391 | HSSE | TiN | TiAlN | STUB | 40° |
|-----------------------|------|-----|-------|------|-----|

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|----------------|------------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 61620 | 6162011 | - | - | - | 12.000 | 0.47244 | 51 | 108 | 12 | 120° |
| 61621 | - | - | - | - | 12.100 | 0.47638 | | | | |
| 61622 | - | - | - | - | 12.200 | 0.48031 | | | | |
| 61623 | 6162311 | - | - | - | 12.300 | 0.48425 | | | | |
| 61624 | 6162411 | - | - | - | 12.400 | 0.48819 | | | | |
| 61625 | 6162511 | - | - | - | 12.500 | 0.49213 | | | | |
| 61626 | 6162611 | - | - | - | 12.600 | 0.49606 | | | | |
| 61627 | 6162711 | 1/2 | - | - | 12.700 | 0.50000 | | | | |
| 61628 | 6162811 | - | - | - | 12.800 | 0.50394 | | | | |
| 61629 | 6162911 | - | - | - | 12.900 | 0.50787 | | | | |
| 61630 | 6163011 | - | - | - | 13.000 | 0.51181 | 111 | | | |
| 61631 | 6163111 | - | - | - | 13.100 | 0.51575 | | | | |
| 61632 | - | - | - | - | 13.200 | 0.51969 | | | | |
| 61633 | - | - | - | - | 13.300 | 0.52362 | 54 | 114 | | |
| 61634 | - | - | - | - | 13.400 | 0.52756 | | | | |
| 61635 | 6163511 | - | - | - | 13.500 | 0.53150 | | | | |
| 61636 | - | - | - | - | 13.600 | 0.53543 | | | | |
| 61637 | - | - | - | - | 13.700 | 0.53937 | | | | |
| 61638 | - | - | - | - | 13.800 | 0.54331 | | | | |
| 61639 | - | - | - | - | 13.900 | 0.54724 | | | | |
| 61640 | 6164011 | - | - | - | 14.000 | 0.55118 | 56 | 116 | | |
| 61641 | 6164111 | - | - | - | 14.100 | 0.55512 | | | | |
| 61642 | - | - | - | - | 14.200 | 0.55906 | | | | |
| 61643 | 6164311 | - | - | - | 14.300 | 0.56299 | | | | |
| 61644 | - | - | - | - | 14.400 | 0.56693 | | | | |
| 61645 | 6164511 | - | - | - | 14.500 | 0.57087 | | | | |
| 61646 | - | - | - | - | 14.600 | 0.57480 | | | | |
| 61647 | - | - | - | - | 14.700 | 0.57874 | | | | |
| 61648 | - | - | - | - | 14.800 | 0.58268 | | | | |
| 61649 | - | - | - | - | 14.900 | 0.58661 | | | | |
| 61650 | 6165011 | - | - | - | 15.000 | 0.59055 | 58 | 118 | | |
| 61651 | - | - | - | - | 15.100 | 0.59449 | | | | |
| 61652 | - | - | - | - | 15.200 | 0.59843 | | | | |
| 61653 | 6165311 | - | - | - | 15.300 | 0.60236 | | | | |
| 61654 | - | - | - | - | 15.400 | 0.60630 | | | | |
| 61655 | - | - | - | - | 15.500 | 0.61024 | | | | |
| 61656 | - | - | - | - | 15.600 | 0.61417 | | | | |
| 61657 | - | - | - | - | 15.700 | 0.61811 | | | | |
| 61658 | - | - | - | - | 15.800 | 0.62205 | | | | |
| 61659 | 6165911 | - | - | - | 15.900 | 0.62598 | 60 | 126 | | |
| 61660 | 6166011 | - | - | - | 16.000 | 0.62992 | | | | |
| 61661 | 6166111 | - | - | - | 16.100 | 0.63386 | | | | |
| 61662 | - | - | - | - | 16.200 | 0.63780 | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAlN.

➔ continued on next page ➔

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|--------------------------|--------------|------------------------------|------------|-------------------------------------|-------------------------------------|--------------------------|----------------|-------------------------------------|-------------------------------------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | | Stainless Steels | | | | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 1100 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |

good best

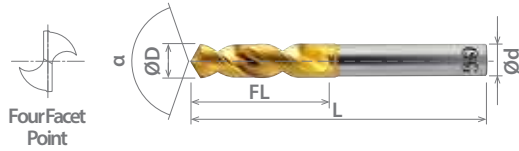




List 1100 (Continued)

EX-SUS-GDS, Ideal for Stainless Steel

| | | | | | |
|-------------------|-------------|------------|--------------|-------------|------------|
| SPEED FEED | HSSE | TiN | TiAlN | STUB | 40° |
| P391 | | | | | |



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 0.5 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 30 | +0 / -0.033 | +0 / -0.0013 |
| 30 < D ≤ 32 | +0 / -0.039 | +0 / -0.0015 |

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|----------------|------------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 61663 | - | - | - | - | 16.300 | 0.64173 | 60 | 126 | 20 | 120° |
| 61664 | - | - | - | - | 16.400 | 0.64567 | | | | |
| 61665 | 6166511 | - | - | - | 16.500 | 0.64961 | | | | |
| 61666 | - | - | - | - | 16.600 | 0.65354 | | | | |
| 61667 | 6166711 | - | - | - | 16.700 | 0.65748 | | | | |
| 61668 | - | - | - | - | 16.800 | 0.66142 | | | | |
| 61669 | - | - | - | - | 16.900 | 0.66535 | | | | |
| 61670 | - | - | - | - | 17.000 | 0.66929 | | | | |
| 61671 | 6167111 | - | - | - | 17.100 | 0.67323 | | | | |
| 61672 | 6167211 | - | - | - | 17.200 | 0.67717 | | | | |
| 61673 | - | - | - | - | 17.300 | 0.68110 | | | | |
| 61674 | - | - | - | - | 17.400 | 0.68504 | | | | |
| 61675 | - | - | - | - | 17.500 | 0.68898 | | | | |
| 61676 | - | - | - | - | 17.600 | 0.69291 | | | | |
| 61677 | 6167711 | - | - | - | 17.700 | 0.69685 | | | | |
| 61678 | - | - | - | - | 17.800 | 0.70079 | | | | |
| 61679 | - | - | - | - | 17.900 | 0.70472 | | | | |
| 61680 | 6168011 | - | - | - | 18.000 | 0.70866 | | | | |
| 61681 | - | - | - | - | 18.100 | 0.71260 | | | | |
| 61682 | - | - | - | - | 18.200 | 0.71654 | | | | |
| 61683 | - | - | - | - | 18.300 | 0.72047 | | | | |
| 61684 | - | - | - | - | 18.400 | 0.72441 | | | | |
| 61685 | - | - | - | - | 18.500 | 0.72835 | | | | |
| 61686 | - | - | - | - | 18.600 | 0.73228 | | | | |
| 61687 | - | - | - | - | 18.700 | 0.73622 | | | | |
| 61688 | - | - | - | - | 18.800 | 0.74016 | | | | |
| 61689 | - | - | - | - | 18.900 | 0.74409 | | | | |
| 61690 | - | - | - | - | 19.000 | 0.74803 | | | | |
| 61691 | 6169111 | - | - | - | 19.100 | 0.75197 | | | | |
| 61692 | - | - | - | - | 19.200 | 0.75591 | | | | |
| 61693 | - | - | - | - | 19.300 | 0.75984 | | | | |
| 61694 | - | - | - | - | 19.400 | 0.76378 | | | | |
| 61695 | - | - | - | - | 19.500 | 0.76772 | | | | |
| 61696 | - | - | - | - | 19.600 | 0.77165 | | | | |
| 61697 | - | - | - | - | 19.700 | 0.77559 | | | | |
| 61698 | - | - | - | - | 19.800 | 0.77953 | | | | |
| 61699 | - | - | - | - | 19.900 | 0.78346 | | | | |
| 61700 | - | - | - | - | 20.000 | 0.78740 | | | | |
| 61705 | - | - | - | - | 20.500 | 0.80709 | | | | |
| 61710 | 6171011 | - | - | - | 21.000 | 0.82677 | | | | |
| 61715 | 6171511 | - | - | - | 21.500 | 0.84646 | | | | |
| 61720 | - | - | - | - | 22.000 | 0.86614 | | | | |
| 61725 | - | - | - | - | 22.500 | 0.88583 | | | | |
| 61730 | 6173011 | - | - | - | 23.000 | 0.90551 | | | | |
| 61735 | - | - | - | - | 23.500 | 0.92520 | | | | |
| 61740 | - | - | - | - | 24.000 | 0.94488 | | | | |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order: 11 = TiAlN.



List 1100 (Continued)

EX-SUS-GDS, Ideal for Stainless Steel

| | | | | | |
|---------------|------|-----|-------|------|-----|
| SPEED FEED | HSSE | TiN | TiAIN | STUB | 40° |
| P391 | | | | | |

| TiN EDP Number | TiAIN EDP Number | Diameter | | | | | Flute Length | Overall Length | Shank Diameter | Point Angle |
|----------------|------------------|-----------------|-----------|-------------|--------|---------|--------------|----------------|----------------|-------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 61745 | - | - | - | - | 24.500 | 0.96457 | 75 | 151 | 25 | 120° |
| 61750 | - | - | - | - | 25.000 | 0.98425 | | | | |
| 61755 | - | - | - | - | 25.500 | 1.00394 | 78 | 158 | | |
| 61760 | - | - | - | - | 26.000 | 1.02362 | | | | |
| 61765 | - | - | - | - | 26.500 | 1.04331 | | | | |
| 61770 | - | - | - | - | 27.000 | 1.06299 | 81 | 161 | | |
| 61775 | - | - | - | - | 27.500 | 1.08268 | | | | |
| 61780 | - | - | - | - | 28.000 | 1.10236 | 84 | 164 | | |
| 61785 | - | - | - | - | 28.500 | 1.12205 | | | | |
| 61790 | - | - | - | - | 29.000 | 1.14173 | | | | |
| 61795 | - | - | - | - | 29.500 | 1.16142 | | | | |
| 61800 | - | - | - | - | 30.000 | 1.18110 | 87 | 167 | | |
| 61805 | - | - | - | - | 30.500 | 1.20079 | | | | |
| 61810 | - | - | - | - | 31.000 | 1.22047 | 90 | 170 | | |
| 61815 | - | - | - | - | 31.500 | 1.24016 | | | | |
| 61820 | - | - | - | - | 32.000 | 1.25984 | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAIN.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|--------------------------|--------------|------------------------------|------------|-------------------------------------|-------------------------------------|--------------------------|----------------|-------------------------------------|-------------------------------------|------------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S Nickel Alloy Inconel | H | | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | | Stainless Steels | | | | Aluminum | | | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 1100 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |

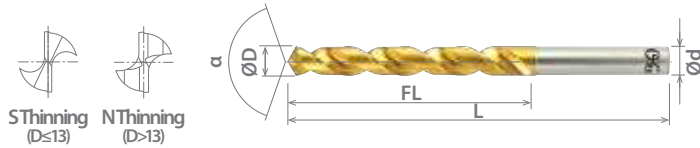
good best





List 1600

EX-SUS-GDR, Ideal for Stainless Steel



| | | | | | |
|-------------------|-------------|------------|--------------|----------------|------------|
| SPEED FEED | HSSE | TiN | TiAlN | JOBBERS | 40° |
| P391 | | | | | |

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 30 | +0 / -0.033 | +0 / -0.0013 |
| 30 < D ≤ 32 | +0 / -0.039 | +0 / -0.0015 |

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|----------------|------------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 62520 | 6252011 | - | - | - | 2.000 | 0.07874 | 24 | 56 | | |
| 8597201 | - | - | - | - | 2.010 | 0.07913 | | | | |
| 8597202 | - | - | - | - | 2.020 | 0.07953 | | | | |
| 8597203 | - | - | - | - | 2.030 | 0.07992 | | | | |
| 8597204 | 859720411 | - | - | - | 2.040 | 0.08031 | | | | |
| 8597205 | - | - | - | - | 2.050 | 0.08071 | | | | |
| 8597206 | - | - | - | - | 2.060 | 0.08110 | | | | |
| 8597207 | - | - | - | - | 2.070 | 0.08150 | | | | |
| 8597208 | 859720811 | - | - | - | 2.080 | 0.08189 | | | | |
| 8597209 | - | - | - | - | 2.090 | 0.08228 | | | | |
| 62521 | - | - | - | - | 2.100 | 0.08268 | | | | |
| 8597211 | - | - | - | - | 2.110 | 0.08307 | | | | |
| 8597212 | - | - | - | - | 2.120 | 0.08346 | | | | |
| 8597213 | - | - | - | - | 2.130 | 0.08386 | | | | |
| 8597214 | - | - | - | - | 2.140 | 0.08425 | | | | |
| 8597215 | - | - | - | - | 2.150 | 0.08465 | | | | |
| 8597216 | - | - | - | - | 2.160 | 0.08504 | | | | |
| 8597217 | - | - | - | - | 2.170 | 0.08543 | | | | |
| 8597218 | 859721811 | - | - | - | 2.180 | 0.08583 | | | | |
| 8597219 | - | - | - | - | 2.190 | 0.08622 | | | | |
| 62522 | 6252211 | - | - | - | 2.200 | 0.08661 | | | | |
| 8597221 | - | - | - | - | 2.210 | 0.08701 | | | | |
| 8597222 | - | - | - | - | 2.220 | 0.08740 | | | | |
| 8597223 | - | - | - | - | 2.230 | 0.08780 | | | | |
| 8597224 | - | - | - | - | 2.240 | 0.08819 | | | | |
| 8597225 | - | - | - | - | 2.250 | 0.08858 | | | | |
| 8597226 | 859722611 | - | - | - | 2.260 | 0.08898 | | | | |
| 8597227 | - | - | - | - | 2.270 | 0.08937 | | | | |
| 8597228 | 859722811 | - | - | - | 2.280 | 0.08976 | | | | |
| 8597229 | - | - | - | - | 2.290 | 0.09016 | | | | |
| 62523 | - | - | - | - | 2.300 | 0.09055 | | | | |
| 8597231 | - | - | - | - | 2.310 | 0.09094 | | | | |
| 8597232 | - | - | - | - | 2.320 | 0.09134 | | | | |
| 8597233 | - | - | - | - | 2.330 | 0.09173 | | | | |
| 8597234 | - | - | - | - | 2.340 | 0.09213 | | | | |
| 8597235 | - | - | - | - | 2.350 | 0.09252 | | | | |
| 8597236 | - | - | - | - | 2.360 | 0.09291 | | | | |
| 8597237 | - | - | - | - | 2.370 | 0.09331 | | | | |
| 8597238 | 859723811 | - | - | - | 2.380 | 0.09370 | | | | |
| 8597239 | - | - | - | - | 2.390 | 0.09409 | | | | |
| 62524 | 6252411 | - | - | - | 2.400 | 0.09449 | | | | |
| 8597241 | - | - | - | - | 2.410 | 0.09488 | | | | |
| 8597242 | - | - | - | - | 2.420 | 0.09528 | | | | |
| 8597243 | - | - | - | - | 2.430 | 0.09567 | | | | |
| 8597244 | - | - | - | - | 2.440 | 0.09606 | | | | |
| 8597245 | - | - | - | - | 2.450 | 0.09646 | | | | |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order: 11 = TiAlN.



List 1600 (Continued)

EX-SUS-GDR, Ideal for Stainless Steel

| | | | | | |
|---------------|------|-----|-------|---------|-----|
| SPEED FEED | HSSE | TiN | TiAlN | JOBBERS | 40° |
| P391 | | | | | |

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length | Overall Length | Shank Diameter | Point Angle |
|----------------|------------------|-----------------|-----------|-------------|-------|---------|--------------|----------------|----------------|-------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8597246 | - | - | - | - | 2.460 | 0.09685 | 30 | 62 | 3 | 130° |
| 8597247 | - | - | - | - | 2.470 | 0.09724 | | | | |
| 8597248 | - | - | - | - | 2.480 | 0.09764 | | | | |
| 8597249 | - | - | - | - | 2.490 | 0.09803 | | | | |
| 62525 | 6252511 | - | - | - | 2.500 | 0.09843 | | | | |
| 8597251 | - | - | - | - | 2.510 | 0.09882 | | | | |
| 8597252 | - | - | - | - | 2.520 | 0.09921 | | | | |
| 8597253 | - | - | - | - | 2.530 | 0.09961 | | | | |
| 8597254 | - | - | - | - | 2.540 | 0.10000 | | | | |
| 8597255 | 859725511 | - | - | - | 2.550 | 0.10039 | | | | |
| 8597256 | - | - | - | - | 2.560 | 0.10079 | | | | |
| 8597257 | - | - | - | - | 2.570 | 0.10118 | | | | |
| 8597258 | 859725811 | - | - | - | 2.580 | 0.10157 | | | | |
| 8597259 | - | - | - | - | 2.590 | 0.10197 | | | | |
| 62526 | - | - | - | - | 2.600 | 0.10236 | | | | |
| 8597261 | - | - | - | - | 2.610 | 0.10276 | | | | |
| 8597262 | - | - | - | - | 2.620 | 0.10315 | | | | |
| 8597263 | - | - | - | - | 2.630 | 0.10354 | | | | |
| 8597264 | - | - | - | - | 2.640 | 0.10394 | | | | |
| 8597265 | - | - | - | - | 2.650 | 0.10433 | | | | |
| 8597266 | - | - | - | - | 2.660 | 0.10472 | | | | |
| 8597267 | - | - | - | - | 2.670 | 0.10512 | | | | |
| 8597268 | - | - | - | - | 2.680 | 0.10551 | | | | |
| 8597269 | - | - | - | - | 2.690 | 0.10591 | | | | |
| 62527 | - | - | - | - | 2.700 | 0.10630 | | | | |
| 8597271 | - | - | - | - | 2.710 | 0.10669 | | | | |
| 8597272 | - | - | - | - | 2.720 | 0.10709 | | | | |
| 8597273 | - | - | - | - | 2.730 | 0.10748 | | | | |
| 8597274 | - | - | - | - | 2.740 | 0.10787 | | | | |
| 8597275 | - | - | - | - | 2.750 | 0.10827 | | | | |
| 8597276 | - | - | - | - | 2.760 | 0.10866 | | | | |
| 8597277 | - | - | - | - | 2.770 | 0.10906 | | | | |
| 8597278 | 859727811 | - | - | - | 2.780 | 0.10945 | | | | |
| 8597279 | 859727911 | - | - | - | 2.790 | 0.10984 | | | | |
| 62528 | - | - | - | - | 2.800 | 0.11024 | | | | |
| 8597281 | 859728111 | - | - | - | 2.810 | 0.11063 | | | | |
| 8597282 | - | - | - | - | 2.820 | 0.11102 | | | | |
| 8597283 | - | - | - | - | 2.830 | 0.11142 | | | | |
| 8597284 | - | - | - | - | 2.840 | 0.11181 | | | | |
| 8597285 | - | - | - | - | 2.850 | 0.11220 | | | | |
| 8597286 | 859728611 | - | - | - | 2.860 | 0.11260 | | | | |
| 8597287 | - | - | - | - | 2.870 | 0.11299 | | | | |
| 8597288 | - | - | - | - | 2.880 | 0.11339 | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAlN.

➔ continued on next page ➔ **EXD**

| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|--------------------------|------|--------------|------------|-------------------------------------|-------------------------------------|--------------------------|---|-------------------------------------|-------------------------------------|---|--------------|----------|-----------------|----------------|---------|-----------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | | Aluminum | | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 1600 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |

good best

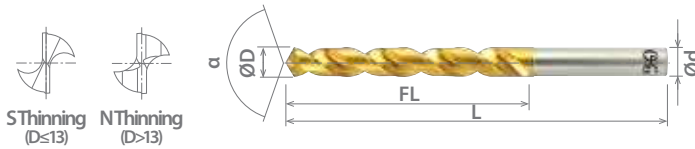




List 1600 (Continued)

EX-SUS-GDR, Ideal for Stainless Steel

| | | | | | |
|---------------------------|-------------|------------|--------------|----------------|------------|
| SPEED FEED P391 | HSSE | TiN | TiAlN | JOBBERS | 40° |
|---------------------------|-------------|------------|--------------|----------------|------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2≤D≤3 | +0 / -0.014 | +0 / -0.0006 |
| 3<D≤6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤18 | +0 / -0.027 | +0 / -0.0011 |
| 18<D≤30 | +0 / -0.033 | +0 / -0.0013 |
| 30<D≤32 | +0 / -0.039 | +0 / -0.0015 |

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|----------------|------------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8597289 | - | - | - | - | 2.890 | 0.11378 | 33 | 65 | 3 | 130° |
| 62529 | 6252911 | - | - | - | 2.900 | 0.11417 | | | | |
| 8597291 | - | - | - | - | 2.910 | 0.11457 | | | | |
| 8597292 | - | - | - | - | 2.920 | 0.11496 | | | | |
| 8597293 | - | - | - | - | 2.930 | 0.11535 | | | | |
| 8597294 | 859729411 | - | - | - | 2.940 | 0.11575 | | | | |
| 8597295 | - | - | - | - | 2.950 | 0.11614 | | | | |
| 8597296 | - | - | - | - | 2.960 | 0.11654 | | | | |
| 8597297 | - | - | - | - | 2.970 | 0.11693 | | | | |
| 8597298 | - | - | - | - | 2.980 | 0.11732 | | | | |
| 8597299 | - | - | - | - | 2.990 | 0.11772 | | | | |
| 62530 | 6253011 | - | - | - | 3.000 | 0.11811 | | | | |
| 8597301 | - | - | - | - | 3.010 | 0.11850 | | | | |
| 8597302 | - | - | - | - | 3.020 | 0.11890 | | | | |
| 8597303 | - | - | - | - | 3.030 | 0.11929 | | | | |
| 8597304 | 859730411 | - | - | - | 3.040 | 0.11969 | | | | |
| 8597305 | 859730511 | - | - | - | 3.050 | 0.12008 | | | | |
| 8597306 | - | - | - | - | 3.060 | 0.12047 | | | | |
| 8597307 | - | - | - | - | 3.070 | 0.12087 | | | | |
| 8597308 | - | - | - | - | 3.080 | 0.12126 | | | | |
| 8597309 | - | - | - | - | 3.090 | 0.12165 | | | | |
| 62531 | 6253111 | - | - | - | 3.100 | 0.12205 | | | | |
| 8597311 | - | - | - | - | 3.110 | 0.12244 | | | | |
| 8597312 | - | - | - | - | 3.120 | 0.12283 | | | | |
| 8597313 | - | - | - | - | 3.130 | 0.12323 | | | | |
| 8597314 | - | - | - | - | 3.140 | 0.12362 | | | | |
| 8597315 | - | - | - | - | 3.150 | 0.12402 | | | | |
| 8597316 | - | - | - | - | 3.160 | 0.12441 | | | | |
| 8597317 | - | - | - | - | 3.170 | 0.12480 | | | | |
| 8597318 | 859731811 | - | - | - | 3.180 | 0.12520 | | | | |
| 8597319 | - | - | - | - | 3.190 | 0.12559 | | | | |
| 62532 | 6253211 | - | - | - | 3.200 | 0.12598 | | | | |
| 8597321 | - | - | - | - | 3.210 | 0.12638 | | | | |
| 8597322 | - | - | - | - | 3.220 | 0.12677 | | | | |
| 8597323 | - | - | - | - | 3.230 | 0.12717 | | | | |
| 8597324 | - | - | - | - | 3.240 | 0.12756 | | | | |
| 8597325 | - | - | - | - | 3.250 | 0.12795 | | | | |
| 8597326 | - | - | - | - | 3.260 | 0.12835 | | | | |
| 8597327 | - | - | - | - | 3.270 | 0.12874 | | | | |
| 8597328 | - | - | - | - | 3.280 | 0.12913 | | | | |
| 8597329 | - | - | - | - | 3.290 | 0.12953 | | | | |
| 62533 | 6253311 | - | - | - | 3.300 | 0.12992 | | | | |
| 8597331 | - | - | - | - | 3.310 | 0.13031 | | | | |
| 8597332 | - | - | - | - | 3.320 | 0.13071 | | | | |
| 8597333 | - | - | - | - | 3.330 | 0.13110 | | | | |
| 8597334 | - | - | - | - | 3.340 | 0.13150 | | | | |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order: 11 = TiAlN.





List 1600 (Continued)

EX-SUS-GDR, Ideal for Stainless Steel

| | | | | | |
|---------------------------|-------------|------------|--------------|----------------|------------|
| SPEED FEED P391 | HSSE | TiN | TiAlN | JOBBERS | 40° |
|---------------------------|-------------|------------|--------------|----------------|------------|

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|----------------|------------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8597335 | - | - | - | - | 3.350 | 0.13189 | 36 | 68 | 4 | 130° |
| 8597336 | - | - | - | - | 3.360 | 0.13228 | | | | |
| 8597337 | - | - | - | - | 3.370 | 0.13268 | | | | |
| 8597338 | - | - | - | - | 3.380 | 0.13307 | | | | |
| 8597339 | - | - | - | - | 3.390 | 0.13346 | | | | |
| 62534 | - | - | - | - | 3.400 | 0.13386 | | | | |
| 8597341 | - | - | - | - | 3.410 | 0.13425 | | | | |
| 8597342 | - | - | - | - | 3.420 | 0.13465 | | | | |
| 8597343 | - | - | - | - | 3.430 | 0.13504 | | | | |
| 8597344 | - | - | - | - | 3.440 | 0.13543 | | | | |
| 8597345 | 859734511 | - | - | - | 3.450 | 0.13583 | | | | |
| 8597346 | - | - | - | - | 3.460 | 0.13622 | | | | |
| 8597347 | - | - | - | - | 3.470 | 0.13661 | | | | |
| 8597348 | - | - | - | - | 3.480 | 0.13701 | | | | |
| 8597349 | - | - | - | - | 3.490 | 0.13740 | | | | |
| 62535 | 6253511 | - | - | - | 3.500 | 0.13780 | | | | |
| 8597351 | - | - | - | - | 3.510 | 0.13819 | | | | |
| 8597352 | - | - | - | - | 3.520 | 0.13858 | | | | |
| 8597353 | - | - | - | - | 3.530 | 0.13898 | | | | |
| 8597354 | - | - | - | - | 3.540 | 0.13937 | | | | |
| 8597355 | - | - | - | - | 3.550 | 0.13976 | | | | |
| 8597356 | - | - | - | - | 3.560 | 0.14016 | | | | |
| 8597357 | 859735711 | - | - | - | 3.570 | 0.14055 | | | | |
| 8597358 | 859735811 | - | - | - | 3.580 | 0.14094 | | | | |
| 8597359 | - | - | - | - | 3.590 | 0.14134 | | | | |
| 62536 | - | - | - | - | 3.600 | 0.14173 | | | | |
| 8597361 | - | - | - | - | 3.610 | 0.14213 | | | | |
| 8597362 | - | - | - | - | 3.620 | 0.14252 | | | | |
| 8597363 | - | - | - | - | 3.630 | 0.14291 | | | | |
| 8597364 | - | - | - | - | 3.640 | 0.14331 | | | | |
| 8597365 | - | - | - | - | 3.650 | 0.14370 | | | | |
| 8597366 | - | - | - | - | 3.660 | 0.14409 | | | | |
| 8597367 | - | - | - | - | 3.670 | 0.14449 | | | | |
| 8597368 | - | - | - | - | 3.680 | 0.14488 | | | | |
| 8597369 | - | - | - | - | 3.690 | 0.14528 | | | | |
| 62537 | 6253711 | - | - | - | 3.700 | 0.14567 | | | | |
| 8597371 | - | - | - | - | 3.710 | 0.14606 | | | | |
| 8597372 | - | - | - | - | 3.720 | 0.14646 | | | | |
| 8597373 | - | - | - | - | 3.730 | 0.14685 | | | | |
| 8597374 | - | - | - | - | 3.740 | 0.14724 | | | | |
| 8597375 | - | - | - | - | 3.750 | 0.14764 | | | | |
| 8597376 | - | - | - | - | 3.760 | 0.14803 | | | | |
| 8597377 | - | - | - | - | 3.770 | 0.14843 | | | | |
| | | | | | | | 39 | 71 | | |
| | | | | | | | 43 | 75 | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAlN.

continued on next page **EXD**

| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|--------------------------|--------------|------------------------------|------------|-------------------------------------|-------------------------------------|--------------------------|----------------|-------------------------------------|-------------------------------------|--------------|-------------------|-----------------|--------------|--------------|--------------|--|
| List No. | P | | | | | M | | | K Cast Iron | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 1600 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |

good best

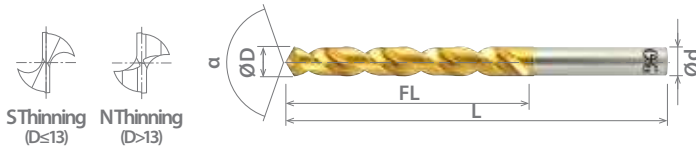




List 1600 (Continued)

EX-SUS-GDR, Ideal for Stainless Steel

| | | | | | |
|-------------------|-------------|------------|--------------|----------------|------------|
| SPEED FEED | HSSE | TiN | TiAlN | JOBBERS | 40° |
| P391 | | | | | |



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 30 | +0 / -0.033 | +0 / -0.0013 |
| 30 < D ≤ 32 | +0 / -0.039 | +0 / -0.0015 |

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|----------------|------------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8597378 | - | - | - | - | 3.780 | 0.14882 | 43 | 75 | 4 | 130° |
| 8597379 | - | - | - | - | 3.790 | 0.14921 | | | | |
| 62538 | 6253811 | - | - | - | 3.800 | 0.14961 | | | | |
| 8597381 | - | - | - | - | 3.810 | 0.15000 | | | | |
| 8597382 | 859738211 | - | - | - | 3.820 | 0.15039 | | | | |
| 8597383 | 859738311 | - | - | - | 3.830 | 0.15079 | | | | |
| 8597384 | 859738411 | - | - | - | 3.840 | 0.15118 | | | | |
| 8597385 | - | - | - | - | 3.850 | 0.15157 | | | | |
| 8597386 | - | - | - | - | 3.860 | 0.15197 | | | | |
| 8597387 | - | - | - | - | 3.870 | 0.15236 | | | | |
| 8597388 | - | - | - | - | 3.880 | 0.15276 | | | | |
| 8597389 | - | - | - | - | 3.890 | 0.15315 | | | | |
| 62539 | - | - | - | - | 3.900 | 0.15354 | | | | |
| 8597391 | - | - | - | - | 3.910 | 0.15394 | | | | |
| 8597392 | - | - | - | - | 3.920 | 0.15433 | | | | |
| 8597393 | - | - | - | - | 3.930 | 0.15472 | | | | |
| 8597394 | - | - | - | - | 3.940 | 0.15512 | | | | |
| 8597395 | - | - | - | - | 3.950 | 0.15551 | | | | |
| 8597396 | - | - | - | - | 3.960 | 0.15591 | | | | |
| 8597397 | 859739711 | - | - | - | 3.970 | 0.15630 | | | | |
| 8597398 | - | - | - | - | 3.980 | 0.15669 | | | | |
| 8597399 | 859739911 | - | - | - | 3.990 | 0.15709 | | | | |
| 62540 | 6254011 | - | - | - | 4.000 | 0.15748 | | | | |
| 8597401 | - | - | - | - | 4.010 | 0.15787 | | | | |
| 8597402 | - | - | - | - | 4.020 | 0.15827 | | | | |
| 8597403 | - | - | - | - | 4.030 | 0.15866 | | | | |
| 8597404 | 859740411 | - | - | - | 4.040 | 0.15906 | | | | |
| 8597405 | - | - | - | - | 4.050 | 0.15945 | | | | |
| 8597406 | - | - | - | - | 4.060 | 0.15984 | | | | |
| 8597407 | - | - | - | - | 4.070 | 0.16024 | | | | |
| 8597408 | - | - | - | - | 4.080 | 0.16063 | | | | |
| 8597409 | 859740911 | - | - | - | 4.090 | 0.16102 | | | | |
| 62541 | - | - | - | - | 4.100 | 0.16142 | | | | |
| 8597411 | - | - | - | - | 4.110 | 0.16181 | | | | |
| 8597412 | - | - | - | - | 4.120 | 0.16220 | | | | |
| 8597413 | - | - | - | - | 4.130 | 0.16260 | | | | |
| 8597414 | - | - | - | - | 4.140 | 0.16299 | | | | |
| 8597415 | - | - | - | - | 4.150 | 0.16339 | | | | |
| 8597416 | - | - | - | - | 4.160 | 0.16378 | | | | |
| 8597417 | - | - | - | - | 4.170 | 0.16417 | | | | |
| 8597418 | - | - | - | - | 4.180 | 0.16457 | | | | |
| 8597419 | - | - | - | - | 4.190 | 0.16496 | | | | |
| 62542 | - | - | - | - | 4.200 | 0.16535 | | | | |
| 8597421 | - | - | - | - | 4.210 | 0.16575 | | | | |
| 8597422 | 859742211 | - | - | - | 4.220 | 0.16614 | | | | |
| 8597423 | - | - | - | - | 4.230 | 0.16654 | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAlN.





List 1600 (Continued)

EX-SUS-GDR, Ideal for Stainless Steel

| | | | | | |
|---------------------------|-------------|------------|--------------|----------------|------------|
| SPEED FEED P391 | HSSE | TiN | TiAlN | JOBBERS | 40° |
|---------------------------|-------------|------------|--------------|----------------|------------|

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|----------------|------------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8597424 | - | - | - | - | 4.240 | 0.16693 | 43 | 87 | 6 | 120° |
| 8597425 | - | - | - | - | 4.250 | 0.16732 | | | | |
| 8597426 | - | - | - | - | 4.260 | 0.16772 | | | | |
| 8597427 | - | - | - | - | 4.270 | 0.16811 | | | | |
| 8597428 | - | - | - | - | 4.280 | 0.16850 | | | | |
| 8597429 | - | - | - | - | 4.290 | 0.16890 | | | | |
| 62543 | - | - | - | - | 4.300 | 0.16929 | | | | |
| 8597431 | - | - | - | - | 4.310 | 0.16969 | | | | |
| 8597432 | - | - | - | - | 4.320 | 0.17008 | | | | |
| 8597433 | - | - | - | - | 4.330 | 0.17047 | | | | |
| 8597434 | - | - | - | - | 4.340 | 0.17087 | | | | |
| 8597435 | - | - | - | - | 4.350 | 0.17126 | | | | |
| 8597436 | - | - | - | - | 4.360 | 0.17165 | | | | |
| 8597437 | 859743711 | - | - | - | 4.370 | 0.17205 | | | | |
| 8597438 | - | - | - | - | 4.380 | 0.17244 | | | | |
| 8597439 | - | - | - | - | 4.390 | 0.17283 | | | | |
| 62544 | - | - | - | - | 4.400 | 0.17323 | | | | |
| 8597441 | - | - | - | - | 4.410 | 0.17362 | | | | |
| 8597442 | - | - | - | - | 4.420 | 0.17402 | | | | |
| 8597443 | - | - | - | - | 4.430 | 0.17441 | | | | |
| 8597444 | - | - | - | - | 4.440 | 0.17480 | | | | |
| 8597445 | - | - | - | - | 4.450 | 0.17520 | | | | |
| 8597446 | - | - | - | - | 4.460 | 0.17559 | | | | |
| 8597447 | - | - | - | - | 4.470 | 0.17598 | | | | |
| 8597448 | - | - | - | - | 4.480 | 0.17638 | | | | |
| 8597449 | - | - | - | - | 4.490 | 0.17677 | | | | |
| 62545 | 6254511 | - | - | - | 4.500 | 0.17717 | | | | |
| 8597451 | - | - | - | - | 4.510 | 0.17756 | | | | |
| 8597452 | - | - | - | - | 4.520 | 0.17795 | | | | |
| 8597453 | - | - | - | - | 4.530 | 0.17835 | | | | |
| 8597454 | - | - | - | - | 4.540 | 0.17874 | | | | |
| 8597455 | - | - | - | - | 4.550 | 0.17913 | | | | |
| 8597456 | - | - | - | - | 4.560 | 0.17953 | | | | |
| 8597457 | 859745711 | - | - | - | 4.570 | 0.17992 | | | | |
| 8597458 | - | - | - | - | 4.580 | 0.18031 | | | | |
| 8597459 | - | - | - | - | 4.590 | 0.18071 | | | | |
| 62546 | - | - | - | - | 4.600 | 0.18110 | | | | |
| 8597461 | - | - | - | - | 4.610 | 0.18150 | | | | |
| 8597462 | - | - | - | - | 4.620 | 0.18189 | | | | |
| 8597463 | - | - | - | - | 4.630 | 0.18228 | | | | |
| 8597464 | - | - | - | - | 4.640 | 0.18268 | | | | |
| 8597465 | - | - | - | - | 4.650 | 0.18307 | | | | |
| 8597466 | - | - | - | - | 4.660 | 0.18346 | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAlN.

continued on next page

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|--------------------------|--------------|--------------|------------|-------------------------------------|-------------------------------------|--------------------------|----------------|-------------------------------------|-------------------------------------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 1600 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |

good best

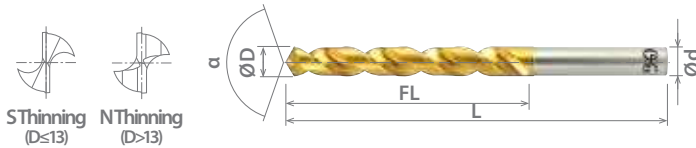




List 1600 (Continued)

EX-SUS-GDR, Ideal for Stainless Steel

| | | | | | |
|-------------------|-------------|------------|--------------|----------------|------------|
| SPEED FEED | HSSE | TiN | TiAlN | JOBBERS | 40° |
| P391 | | | | | |



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 30 | +0 / -0.033 | +0 / -0.0013 |
| 30 < D ≤ 32 | +0 / -0.039 | +0 / -0.0015 |

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|----------------|------------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8597467 | - | - | - | - | 4.670 | 0.18386 | 47 | 91 | | |
| 8597468 | - | - | - | - | 4.680 | 0.18425 | | | | |
| 8597469 | - | - | - | - | 4.690 | 0.18465 | | | | |
| 62547 | - | - | - | - | 4.700 | 0.18504 | | | | |
| 8597471 | - | - | - | - | 4.710 | 0.18543 | | | | |
| 8597472 | - | - | - | - | 4.720 | 0.18583 | | | | |
| 8597473 | - | - | - | - | 4.730 | 0.18622 | | | | |
| 8597474 | - | - | - | - | 4.740 | 0.18661 | | | | |
| 8597475 | 859747511 | - | - | - | 4.750 | 0.18701 | | | | |
| 8597476 | 859747611 | - | - | - | 4.760 | 0.18740 | | | | |
| 8597477 | - | - | - | - | 4.770 | 0.18780 | | | | |
| 8597478 | - | - | - | - | 4.780 | 0.18819 | | | | |
| 8597479 | - | - | - | - | 4.790 | 0.18858 | | | | |
| 62548 | 6254811 | - | - | - | 4.800 | 0.18898 | | | | |
| 8597481 | - | - | - | - | 4.810 | 0.18937 | | | | |
| 8597482 | - | - | - | - | 4.820 | 0.18976 | | | | |
| 8597483 | - | - | - | - | 4.830 | 0.19016 | | | | |
| 8597484 | - | - | - | - | 4.840 | 0.19055 | | | | |
| 8597485 | 859748511 | - | - | - | 4.850 | 0.19094 | | | | |
| 8597486 | - | - | - | - | 4.860 | 0.19134 | | | | |
| 8597487 | - | - | - | - | 4.870 | 0.19173 | | | | |
| 8597488 | - | - | - | - | 4.880 | 0.19213 | | | | |
| 8597489 | - | - | - | - | 4.890 | 0.19252 | | | | |
| 62549 | - | - | - | - | 4.900 | 0.19291 | | | | |
| 8597491 | - | - | - | - | 4.910 | 0.19331 | | | | |
| 8597492 | - | - | - | - | 4.920 | 0.19370 | | | | |
| 8597493 | - | - | - | - | 4.930 | 0.19409 | | | | |
| 8597494 | - | - | - | - | 4.940 | 0.19449 | | | | |
| 8597495 | - | - | - | - | 4.950 | 0.19488 | | | | |
| 8597496 | - | - | - | - | 4.960 | 0.19528 | | | | |
| 8597497 | - | - | - | - | 4.970 | 0.19567 | | | | |
| 8597498 | 859749811 | - | - | - | 4.980 | 0.19606 | | | | |
| 8597499 | - | - | - | - | 4.990 | 0.19646 | | | | |
| 62550 | - | - | - | - | 5.000 | 0.19685 | | | | |
| 8597501 | - | - | - | - | 5.010 | 0.19724 | | | | |
| 8597502 | 859750211 | - | - | - | 5.020 | 0.19764 | | | | |
| 8597503 | - | - | - | - | 5.030 | 0.19803 | | | | |
| 8597504 | - | - | - | - | 5.040 | 0.19843 | | | | |
| 8597505 | - | - | - | - | 5.050 | 0.19882 | | | | |
| 8597506 | - | - | - | - | 5.060 | 0.19921 | | | | |
| 8597507 | - | - | - | - | 5.070 | 0.19961 | | | | |
| 8597508 | - | - | - | - | 5.080 | 0.20000 | | | | |
| 8597509 | - | - | - | - | 5.090 | 0.20039 | | | | |
| 62551 | - | - | - | - | 5.100 | 0.20079 | | | | |
| 8597511 | 859751111 | - | - | - | 5.110 | 0.20118 | | | | |
| 8597512 | - | - | - | - | 5.120 | 0.20157 | | | | |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order: 11 = TiAlN.





List 1600 (Continued)

EX-SUS-GDR, Ideal for Stainless Steel

| | | | | | |
|--------------------|------|-----|-------|---------|-----|
| SPEED FEED P391 | HSSE | TiN | TiAlN | JOBBERS | 40° |
|--------------------|------|-----|-------|---------|-----|

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|----------------|------------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8597513 | - | - | - | - | 5.130 | 0.20197 | 52 | 96 | 6 | 120° |
| 8597514 | - | - | - | - | 5.140 | 0.20236 | | | | |
| 8597515 | - | - | - | - | 5.150 | 0.20276 | | | | |
| 8597516 | 859751611 | - | - | - | 5.160 | 0.20315 | | | | |
| 8597517 | - | - | - | - | 5.170 | 0.20354 | | | | |
| 8597518 | - | - | - | - | 5.180 | 0.20394 | | | | |
| 8597519 | - | - | - | - | 5.190 | 0.20433 | | | | |
| 62552 | 6255211 | - | - | - | 5.200 | 0.20472 | | | | |
| 8597521 | - | - | - | - | 5.210 | 0.20512 | | | | |
| 8597522 | - | - | - | - | 5.220 | 0.20551 | | | | |
| 8597523 | - | - | - | - | 5.230 | 0.20591 | | | | |
| 8597524 | - | - | - | - | 5.240 | 0.20630 | | | | |
| 8597525 | - | - | - | - | 5.250 | 0.20669 | | | | |
| 8597526 | - | - | - | - | 5.260 | 0.20709 | | | | |
| 8597527 | - | - | - | - | 5.270 | 0.20748 | | | | |
| 8597528 | - | - | - | - | 5.280 | 0.20787 | | | | |
| 8597529 | - | - | - | - | 5.290 | 0.20827 | | | | |
| 62553 | - | - | - | - | 5.300 | 0.20866 | | | | |
| 8597531 | 859753111 | - | - | - | 5.310 | 0.20906 | | | | |
| 8597532 | - | - | - | - | 5.320 | 0.20945 | | | | |
| 8597533 | - | - | - | - | 5.330 | 0.20984 | | | | |
| 8597534 | - | - | - | - | 5.340 | 0.21024 | | | | |
| 8597535 | - | - | - | - | 5.350 | 0.21063 | | | | |
| 8597536 | - | - | - | - | 5.360 | 0.21102 | | | | |
| 8597537 | - | - | - | - | 5.370 | 0.21142 | | | | |
| 8597538 | - | - | - | - | 5.380 | 0.21181 | | | | |
| 8597539 | - | - | - | - | 5.390 | 0.21220 | | | | |
| 62554 | - | - | - | - | 5.400 | 0.21260 | | | | |
| 8597541 | - | - | - | - | 5.410 | 0.21299 | | | | |
| 8597542 | - | - | - | - | 5.420 | 0.21339 | | | | |
| 8597543 | - | - | - | - | 5.430 | 0.21378 | | | | |
| 8597544 | - | - | - | - | 5.440 | 0.21417 | | | | |
| 8597545 | - | - | - | - | 5.450 | 0.21457 | | | | |
| 8597546 | - | - | - | - | 5.460 | 0.21496 | | | | |
| 8597547 | 859754711 | - | - | - | 5.470 | 0.21535 | | | | |
| 8597548 | - | - | - | - | 5.480 | 0.21575 | | | | |
| 8597549 | - | - | - | - | 5.490 | 0.21614 | | | | |
| 62555 | 6255511 | - | - | - | 5.500 | 0.21654 | | | | |
| 8597551 | - | - | - | - | 5.510 | 0.21693 | | | | |
| 8597552 | - | - | - | - | 5.520 | 0.21732 | | | | |
| 8597553 | - | - | - | - | 5.530 | 0.21772 | | | | |
| 8597554 | - | - | - | - | 5.540 | 0.21811 | | | | |
| 8597555 | - | - | - | - | 5.550 | 0.21850 | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAlN.

continued on next page

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|--------------------------|------|--------------|------------|-------------------------------------|-------------------------------------|--------------------------|-----------|-------------------------------------|-------------------------------------|--------------|----------------|-----------------|-----------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 1600 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |

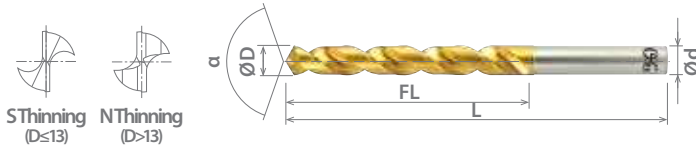
good best





List 1600 (Continued)

EX-SUS-GDR, Ideal for Stainless Steel



| | | | | | |
|--------------------|------|-----|-------|---------|-----|
| SPEED FEED P391 | HSSE | TiN | TiAlN | JOBBERS | 40° |
|--------------------|------|-----|-------|---------|-----|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 30 | +0 / -0.033 | +0 / -0.0013 |
| 30 < D ≤ 32 | +0 / -0.039 | +0 / -0.0015 |

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|----------------|------------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8597556 | - | - | - | - | 5.560 | 0.21890 | 57 | 101 | 6 | 120° |
| 8597557 | - | - | - | - | 5.570 | 0.21929 | | | | |
| 8597558 | - | - | - | - | 5.580 | 0.21969 | | | | |
| 8597559 | - | - | - | - | 5.590 | 0.22008 | | | | |
| 62556 | - | - | - | - | 5.600 | 0.22047 | | | | |
| 8597561 | 859756111 | - | - | - | 5.610 | 0.22087 | | | | |
| 8597562 | - | - | - | - | 5.620 | 0.22126 | | | | |
| 8597563 | - | - | - | - | 5.630 | 0.22165 | | | | |
| 8597564 | - | - | - | - | 5.640 | 0.22205 | | | | |
| 8597565 | - | - | - | - | 5.650 | 0.22244 | | | | |
| 8597566 | - | - | - | - | 5.660 | 0.22283 | | | | |
| 8597567 | - | - | - | - | 5.670 | 0.22323 | | | | |
| 8597568 | - | - | - | - | 5.680 | 0.22362 | | | | |
| 8597569 | - | - | - | - | 5.690 | 0.22402 | | | | |
| 62557 | - | - | - | - | 5.700 | 0.22441 | | | | |
| 8597571 | - | - | - | - | 5.710 | 0.22480 | | | | |
| 8597572 | - | - | - | - | 5.720 | 0.22520 | | | | |
| 8597573 | - | - | - | - | 5.730 | 0.22559 | | | | |
| 8597574 | - | - | - | - | 5.740 | 0.22598 | | | | |
| 8597575 | - | - | - | - | 5.750 | 0.22638 | | | | |
| 8597576 | - | - | - | - | 5.760 | 0.22677 | | | | |
| 8597577 | - | - | - | - | 5.770 | 0.22717 | | | | |
| 8597578 | - | - | - | - | 5.780 | 0.22756 | | | | |
| 8597579 | - | - | - | - | 5.790 | 0.22795 | | | | |
| 62558 | - | - | - | - | 5.800 | 0.22835 | | | | |
| 8597581 | - | - | - | - | 5.810 | 0.22874 | | | | |
| 8597582 | - | - | - | - | 5.820 | 0.22913 | | | | |
| 8597583 | - | - | - | - | 5.830 | 0.22953 | | | | |
| 8597584 | - | - | - | - | 5.840 | 0.22992 | | | | |
| 8597585 | - | - | - | - | 5.850 | 0.23031 | | | | |
| 8597586 | - | - | - | - | 5.860 | 0.23071 | | | | |
| 8597587 | - | - | - | - | 5.870 | 0.23110 | | | | |
| 8597588 | - | - | - | - | 5.880 | 0.23150 | | | | |
| 8597589 | - | - | - | - | 5.890 | 0.23189 | | | | |
| 62559 | - | - | - | - | 5.900 | 0.23228 | | | | |
| 8597591 | - | - | - | - | 5.910 | 0.23268 | | | | |
| 8597592 | - | - | - | - | 5.920 | 0.23307 | | | | |
| 8597593 | - | - | - | - | 5.930 | 0.23346 | | | | |
| 8597594 | - | - | - | - | 5.940 | 0.23386 | | | | |
| 8597595 | 859759511 | - | - | - | 5.950 | 0.23425 | | | | |
| 8597596 | - | - | - | - | 5.960 | 0.23465 | | | | |
| 8597597 | - | - | - | - | 5.970 | 0.23504 | | | | |
| 8597598 | - | - | - | - | 5.980 | 0.23543 | | | | |
| 8597599 | - | - | - | - | 5.990 | 0.23583 | | | | |
| 62560 | - | - | - | - | 6.000 | 0.23622 | | | | |
| 8597605 | - | - | - | - | 6.050 | 0.23819 | | | | |
| | | | | | | 63 | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAlN.





List 1600 (Continued)

EX-SUS-GDR, Ideal for Stainless Steel

| | | | | | |
|--------------------|------|-----|-------|---------|-----|
| SPEED FEED P391 | HSSE | TiN | TiAlN | JOBBERS | 40° |
|--------------------|------|-----|-------|---------|-----|

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|----------------|------------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 62561 | 6256111 | - | - | - | 6.100 | 0.24016 | 63 | 107 | 8 | 120° |
| 8597615 | - | - | - | - | 6.150 | 0.24213 | | | | |
| 62562 | - | - | - | - | 6.200 | 0.24409 | | | | |
| 8597625 | - | - | - | - | 6.250 | 0.24606 | | | | |
| 62563 | - | - | - | - | 6.300 | 0.24803 | | | | |
| 8597635 | 859763511 | 1/4 | - | E | 6.350 | 0.25000 | | | | |
| 62564 | - | - | - | - | 6.400 | 0.25197 | | | | |
| 8597645 | - | - | - | - | 6.450 | 0.25394 | | | | |
| 62565 | 6256511 | - | - | - | 6.500 | 0.25591 | | | | |
| 8597655 | - | - | - | - | 6.550 | 0.25787 | | | | |
| 62566 | 6256611 | - | - | - | 6.600 | 0.25984 | | | | |
| 8597665 | - | - | - | - | 6.650 | 0.26181 | | | | |
| 62567 | - | - | - | - | 6.700 | 0.26378 | | | | |
| 8597675 | 859767511 | - | - | - | 6.750 | 0.26575 | | | | |
| 62568 | 6256811 | - | - | - | 6.800 | 0.26772 | | | | |
| 8597685 | - | - | - | - | 6.850 | 0.26969 | | | | |
| 62569 | - | - | - | - | 6.900 | 0.27165 | | | | |
| 8597695 | - | - | - | - | 6.950 | 0.27362 | | | | |
| 62570 | 6257011 | - | - | - | 7.000 | 0.27559 | | | | |
| 8597705 | - | - | - | - | 7.050 | 0.27756 | | | | |
| 62571 | - | - | - | - | 7.100 | 0.27953 | | | | |
| 8597715 | - | - | - | - | 7.150 | 0.28150 | | | | |
| 62572 | - | - | - | - | 7.200 | 0.28346 | | | | |
| 8597725 | 859772511 | - | - | - | 7.250 | 0.28543 | | | | |
| 62573 | - | - | - | - | 7.300 | 0.28740 | | | | |
| 8597735 | - | - | - | - | 7.350 | 0.28937 | | | | |
| 62574 | 6257411 | - | - | - | 7.400 | 0.29134 | | | | |
| 8597745 | - | - | - | - | 7.450 | 0.29331 | | | | |
| 62575 | - | - | - | - | 7.500 | 0.29528 | | | | |
| 8597755 | - | - | - | - | 7.550 | 0.29724 | | | | |
| 62576 | - | - | - | - | 7.600 | 0.29921 | | | | |
| 8597765 | - | - | - | - | 7.650 | 0.30118 | | | | |
| 62577 | 6257711 | - | - | - | 7.700 | 0.30315 | | | | |
| 8597775 | - | - | - | - | 7.750 | 0.30512 | | | | |
| 62578 | - | - | - | - | 7.800 | 0.30709 | | | | |
| 8597785 | - | - | - | - | 7.850 | 0.30906 | | | | |
| 62579 | 6257911 | - | - | - | 7.900 | 0.31102 | | | | |
| 8597795 | - | - | - | - | 7.950 | 0.31299 | | | | |
| 62580 | - | - | - | - | 8.000 | 0.31496 | | | | |
| 8597805 | - | - | - | - | 8.050 | 0.31693 | | | | |
| 62581 | - | - | - | - | 8.100 | 0.31890 | | | | |
| 8597815 | - | - | - | - | 8.150 | 0.32087 | | | | |
| 62582 | - | - | - | - | 8.200 | 0.32283 | | | | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order: 11 = TiAlN.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|--------------------------|------|--------------|------------|-------------------------------------|-------------------------------------|--------------------------|-----------|-------------------------------------|-------------------------------------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 1600 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |

good best

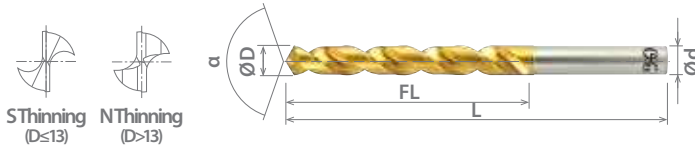




List 1600 (Continued)

EX-SUS-GDR, Ideal for Stainless Steel

| | | | | | |
|-------------------|-------------|------------|--------------|----------------|------------|
| SPEED FEED | HSSE | TiN | TiAlN | JOBBERS | 40° |
| P391 | | | | | |



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 30 | +0 / -0.033 | +0 / -0.0013 |
| 30 < D ≤ 32 | +0 / -0.039 | +0 / -0.0015 |

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|----------------|------------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8597825 | - | - | - | - | 8.250 | 0.32480 | 75 | 125 | 10 | 120° |
| 62583 | - | - | - | - | 8.300 | 0.32677 | | | | |
| 8597835 | - | - | - | - | 8.350 | 0.32874 | | | | |
| 62584 | - | - | - | - | 8.400 | 0.33071 | | | | |
| 8597845 | - | - | - | - | 8.450 | 0.33268 | | | | |
| 62585 | 6258511 | - | - | - | 8.500 | 0.33465 | | | | |
| 8597855 | - | - | - | - | 8.550 | 0.33661 | | | | |
| 62586 | 6258611 | - | - | - | 8.600 | 0.33858 | | | | |
| 8597865 | - | - | - | - | 8.650 | 0.34055 | | | | |
| 62587 | - | - | - | - | 8.700 | 0.34252 | | | | |
| 8597875 | - | - | - | - | 8.750 | 0.34449 | | | | |
| 62588 | - | - | - | - | 8.800 | 0.34646 | | | | |
| 8597885 | - | - | - | - | 8.850 | 0.34843 | | | | |
| 62589 | - | - | - | - | 8.900 | 0.35039 | | | | |
| 8597895 | - | - | - | - | 8.950 | 0.35236 | | | | |
| 62590 | - | - | - | - | 9.000 | 0.35433 | | | | |
| 8597905 | - | - | - | - | 9.050 | 0.35630 | | | | |
| 62591 | 6259111 | - | - | - | 9.100 | 0.35827 | | | | |
| 8597915 | - | - | - | - | 9.150 | 0.36024 | | | | |
| 62592 | 6259211 | - | - | - | 9.200 | 0.36220 | | | | |
| 8597925 | 859792511 | - | - | - | 9.250 | 0.36417 | | | | |
| 62593 | - | - | - | - | 9.300 | 0.36614 | | | | |
| 8597935 | 859793511 | - | - | - | 9.350 | 0.36811 | | | | |
| 62594 | - | - | - | - | 9.400 | 0.37008 | | | | |
| 8597945 | - | - | - | - | 9.450 | 0.37205 | | | | |
| 62595 | 6259511 | - | - | - | 9.500 | 0.37402 | | | | |
| 8597955 | - | - | - | - | 9.550 | 0.37598 | | | | |
| 62596 | - | - | - | - | 9.600 | 0.37795 | | | | |
| 8597965 | - | - | - | - | 9.650 | 0.37992 | | | | |
| 62597 | - | - | - | - | 9.700 | 0.38189 | | | | |
| 8597975 | - | - | - | - | 9.750 | 0.38386 | | | | |
| 62598 | 6259811 | - | - | - | 9.800 | 0.38583 | | | | |
| 8597985 | - | - | - | - | 9.850 | 0.38780 | | | | |
| 62599 | - | - | - | - | 9.900 | 0.38976 | | | | |
| 8597995 | - | - | - | - | 9.950 | 0.39173 | | | | |
| 62600 | - | - | - | - | 10.000 | 0.39370 | | | | |
| 8598005 | - | - | - | - | 10.050 | 0.39567 | | | | |
| 62601 | - | - | - | - | 10.100 | 0.39764 | | | | |
| 8598015 | - | - | - | - | 10.150 | 0.39961 | | | | |
| 62602 | 6260211 | - | - | - | 10.200 | 0.40157 | | | | |
| 8598025 | - | - | - | - | 10.250 | 0.40354 | | | | |
| 62603 | - | - | - | - | 10.300 | 0.40551 | | | | |
| 8598035 | - | - | - | - | 10.350 | 0.40748 | | | | |
| 62604 | - | - | - | - | 10.400 | 0.40945 | | | | |
| 8598045 | - | - | - | - | 10.450 | 0.41142 | | | | |
| 62605 | - | - | - | - | 10.500 | 0.41339 | | | | |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order: 11 = TiAlN.





List 1600 (Continued)

EX-SUS-GDR, Ideal for Stainless Steel

| | | | | | |
|---------------------------|-------------|------------|--------------|----------------|------------|
| SPEED FEED P391 | HSSE | TiN | TiAlN | JOBBERS | 40° |
|---------------------------|-------------|------------|--------------|----------------|------------|

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|----------------|------------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 8598055 | - | - | - | - | 10.550 | 0.41535 | 87 | 144 | 12 | 120° |
| 62606 | - | - | - | - | 10.600 | 0.41732 | | | | |
| 8598065 | - | - | - | - | 10.650 | 0.41929 | | | | |
| 62607 | 6260711 | - | - | - | 10.700 | 0.42126 | | | | |
| 8598075 | - | - | - | - | 10.750 | 0.42323 | | | | |
| 62608 | - | - | - | - | 10.800 | 0.42520 | | | | |
| 8598085 | - | - | - | - | 10.850 | 0.42717 | | | | |
| 62609 | 6260911 | - | - | - | 10.900 | 0.42913 | | | | |
| 8598095 | - | - | - | - | 10.950 | 0.43110 | | | | |
| 62610 | 6261011 | - | - | - | 11.000 | 0.43307 | | | | |
| 8598105 | - | - | - | - | 11.050 | 0.43504 | | | | |
| 62611 | 6261111 | - | - | - | 11.100 | 0.43701 | | | | |
| 8598115 | - | - | - | - | 11.150 | 0.43898 | | | | |
| 62612 | - | - | - | - | 11.200 | 0.44094 | | | | |
| 8598125 | - | - | - | - | 11.250 | 0.44291 | | | | |
| 62613 | - | - | - | - | 11.300 | 0.44488 | | | | |
| 8598135 | - | - | - | - | 11.350 | 0.44685 | | | | |
| 62614 | - | - | - | - | 11.400 | 0.44882 | | | | |
| 8598145 | - | - | - | - | 11.450 | 0.45079 | | | | |
| 62615 | - | - | - | - | 11.500 | 0.45276 | | | | |
| 8598155 | - | - | - | - | 11.550 | 0.45472 | | | | |
| 62616 | - | - | - | - | 11.600 | 0.45669 | | | | |
| 8598165 | - | - | - | - | 11.650 | 0.45866 | | | | |
| 62617 | - | - | - | - | 11.700 | 0.46063 | | | | |
| 8598175 | - | - | - | - | 11.750 | 0.46260 | | | | |
| 62618 | - | - | - | - | 11.800 | 0.46457 | | | | |
| 8598185 | - | - | - | - | 11.850 | 0.46654 | | | | |
| 62619 | - | - | - | - | 11.900 | 0.46850 | | | | |
| 8598195 | - | - | - | - | 11.950 | 0.47047 | | | | |
| 62620 | - | - | - | - | 12.000 | 0.47244 | | | | |
| 62621 | - | - | - | - | 12.100 | 0.47638 | | | | |
| 62622 | - | - | - | - | 12.200 | 0.48031 | | | | |
| 62623 | 6262311 | - | - | - | 12.300 | 0.48425 | | | | |
| 62624 | 6262411 | - | - | - | 12.400 | 0.48819 | | | | |
| 62625 | - | - | - | - | 12.500 | 0.49213 | | | | |
| 62626 | 6262611 | - | - | - | 12.600 | 0.49606 | | | | |
| 62627 | 6262711 | 1/2 | - | - | 12.700 | 0.50000 | | | | |
| 62628 | - | - | - | - | 12.800 | 0.50394 | | | | |
| 62629 | - | - | - | - | 12.900 | 0.50787 | | | | |
| 62630 | - | - | - | - | 13.000 | 0.51181 | | | | |
| 62635 | - | - | - | - | 13.500 | 0.53150 | | | | |
| 62640 | - | - | - | - | 14.000 | 0.55118 | | | | |
| 62641 | - | - | - | - | 14.100 | 0.55512 | | | | |
| | | | | | | | 106 | 166 | 16 | |
| | | | | | | | 109 | 169 | | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order: 11 = TiAlN.

continued on next page

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|--------------------------|--------------|------------------------------|------------|-------------------------------------|-------------------------------------|--------------------------|-----------|-------------------------------------|-------------------------------------|--------------|-------------------|-----------------|--------------|--------------|--------------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 1600 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |

good best

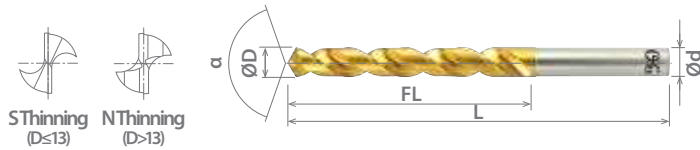




List 1600 (Continued)

| | | | | | |
|---------------------------|-------------|------------|--------------|----------------|------------|
| SPEED FEED P391 | HSSE | TiN | TiAlN | JOBBERS | 40° |
|---------------------------|-------------|------------|--------------|----------------|------------|

EX-SUS-GDR, Ideal for Stainless Steel



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2≤D≤3 | +0 / -0.014 | +0 / -0.0006 |
| 3<D≤6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤18 | +0 / -0.027 | +0 / -0.0011 |
| 18<D≤30 | +0 / -0.033 | +0 / -0.0013 |
| 30<D≤32 | +0 / -0.039 | +0 / -0.0015 |

| TiN EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | Point Angle α |
|----------------|------------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | |
| 62645 | - | - | - | - | 14.500 | 0.57087 | 109 | 169 | 16 | 120° |
| 62650 | 6265011 | - | - | - | 15.000 | 0.59055 | 112 | 172 | | |
| 62655 | - | - | - | - | 15.500 | 0.61024 | | | | |
| 62656 | - | - | - | - | 15.600 | 0.61417 | | | | |
| 62660 | - | - | - | - | 16.000 | 0.62992 | 115 | 181 | | |
| 62665 | - | - | - | - | 16.500 | 0.64961 | | | | |
| 62670 | - | - | - | - | 17.000 | 0.66929 | | | | |
| 62675 | - | - | - | - | 17.500 | 0.68898 | 118 | 184 | | |
| 62676 | - | - | - | - | 17.600 | 0.69291 | | | | |
| 62680 | - | - | - | - | 18.000 | 0.70866 | | | | |
| 62685 | - | - | - | - | 18.500 | 0.72835 | 122 | 188 | | |
| 62690 | - | - | - | - | 19.000 | 0.74803 | | | | |
| 62695 | - | - | - | - | 19.500 | 0.76772 | | | | |
| 62696 | - | - | - | - | 19.600 | 0.77165 | 125 | 191 | | |
| 62700 | - | - | - | - | 20.000 | 0.78740 | | | | |
| 62705 | - | - | - | - | 20.500 | 0.80709 | | | | |
| 62710 | - | - | - | - | 21.000 | 0.82677 | 128 | 204 | | |
| 62715 | - | - | - | - | 21.500 | 0.84646 | | | | |
| 62720 | - | - | - | - | 22.000 | 0.86614 | | | | |
| 62725 | - | - | - | - | 22.500 | 0.88583 | 132 | 208 | | |
| 62730 | 6273011 | - | - | - | 23.000 | 0.90551 | | | | |
| 62735 | - | - | - | - | 23.500 | 0.92520 | | | | |
| 62740 | - | - | - | - | 24.000 | 0.94488 | 140 | 216 | | |
| 62745 | - | - | - | - | 24.500 | 0.96457 | | | | |
| 62750 | - | - | - | - | 25.000 | 0.98425 | | | | |
| 62755 | - | - | - | - | 25.500 | 1.00394 | 145 | 225 | | |
| 62760 | - | - | - | - | 26.000 | 1.02362 | | | | |
| 62765 | - | - | - | - | 26.500 | 1.04331 | | | | |
| 62770 | - | - | - | - | 27.000 | 1.06299 | 150 | 230 | | |
| 62780 | - | - | - | - | 28.000 | 1.10236 | | | | |
| 62790 | - | - | - | - | 29.000 | 1.14173 | | | | |
| 62800 | - | - | - | - | 30.000 | 1.18110 | 155 | 235 | | |
| 62810 | - | - | - | - | 31.000 | 1.22047 | | | | |
| 62820 | - | - | - | - | 32.000 | 1.25984 | | | | |
| | | | | | | 165 | 245 | 32 | | |
| | | | | | | 160 | 240 | | | |
| | | | | | | 160 | 240 | | | |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order: 11 = TiAlN.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|--------------------------|--------------|------------------------------|------------|-------------------------------------|-------------------------------------|--------------------------|-----------|-------------------------------------|-------------------------------------|--------------|-------------------|-----------------|--------------|--------------|--------------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 1600 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |

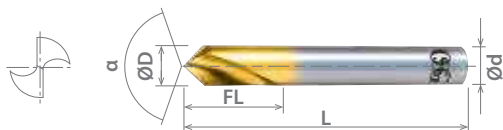
good best



List 1200

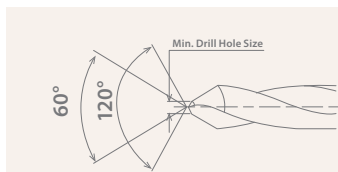
TiN-NC-LDS, 60°, 90° & 120° Spot Drills

| | | | | | |
|---------------------------|------------|-----------|------------|-------------|------------|
| SPEED FEED P392 | HSS | BR | TiN | STUB | 20° |
|---------------------------|------------|-----------|------------|-------------|------------|



| EDP Number | | Diameter | | | | | Min Drill Hole Size | Flute Length | Overall Length | Shank Diameter | Point Angle |
|------------|-------|-----------------|-----------|-------------|--------|---------|---------------------|--------------|----------------|----------------|-------------|
| Bright | TiN | Fractional Size | Wire Gage | Letter Size | mm | Inch | | FL (mm) | L (mm) | d (mm) | α |
| - | 63703 | - | - | - | - | - | 1.5 | - | - | - | 60° |
| 62903 | 63603 | - | - | - | 3.000 | 0.11811 | 1.1 | 11 | 48 | 3 | 90° |
| 62923 | 63653 | - | - | - | - | - | - | | | | 120° |
| - | 63704 | - | - | - | - | - | 1.7 | | | | 60° |
| 62904 | 63604 | - | - | - | 4.000 | 0.15748 | 1.3 | 15 | 54 | 4 | 90° |
| 62924 | 63654 | - | - | - | - | - | - | | | | 120° |
| - | 63706 | - | - | - | - | - | 1.9 | | | | 60° |
| 62906 | 63606 | - | - | - | 6.000 | 0.23622 | 1.5 | 20 | 72 | 6 | 90° |
| 62926 | 63656 | - | - | - | - | - | - | | | | 120° |
| - | 63708 | - | - | - | - | - | 1.9 | | | | 60° |
| 62908 | 63608 | - | - | - | 8.000 | 0.31496 | 1.6 | 26 | 81 | 8 | 90° |
| 62928 | 63658 | - | - | - | - | - | - | | | | 120° |
| - | 63710 | - | - | - | - | - | 2.1 | | | | 60° |
| 62910 | 63610 | - | - | - | 10.000 | 0.39370 | - | 30 | 93 | 10 | 90° |
| 62930 | 63660 | - | - | - | - | - | - | | | | 120° |
| - | 63712 | - | - | - | - | - | 2.1 | | | | 60° |
| 62912 | 63612 | - | - | - | 12.000 | 0.47244 | - | 36 | 108 | 12 | 90° |
| 62932 | 63662 | - | - | - | - | - | - | | | | 120° |
| 62916 | 63616 | - | - | - | 16.000 | 0.62992 | 3 | | | | 41 |
| 62936 | - | - | - | - | - | - | - | 120° | | | |
| 62918 | 63618 | - | - | - | 20.000 | 0.78740 | 3 | 53 | 132 | 20 | |
| 62938 | - | - | - | - | - | - | - | | | | 120° |
| 62920 | 63620 | - | - | - | 25.000 | 0.98425 | 3 | | | | 60 |
| 62940 | - | - | - | - | - | - | - | 120° | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAIN.



The EX-SPOT with point angle 60° has a 120° point angle within the minimum drill hole diameter in order to prevent the chisel edges from crashing.

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 1200 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

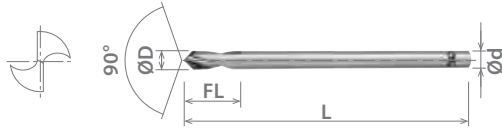




List 1250

| | | | | |
|--------------------|-----|----|------|-----|
| SPEED FEED P392 | HSS | BR | STUB | 20° |
|--------------------|-----|----|------|-----|

LS-NC-LDS, Long Shank, 90° Spot Drill



| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 63503 | - | - | - | 3.000 | 0.11811 | 11 | 75 | 3 |
| 63504 | - | - | - | 4.000 | 0.15748 | 15 | 100 | 4 |
| 63506 | - | - | - | 6.000 | 0.23622 | 20 | 150 | 6 |
| 63508 | - | - | - | 8.000 | 0.31496 | 26 | | 8 |
| 63510 | - | - | - | 10.000 | 0.39370 | 30 | 200 | 10 |
| 63512 | - | - | - | 12.000 | 0.47244 | 36 | | 12 |
| 63516 | - | - | - | 16.000 | 0.62992 | 41 | 250 | 16 |
| 63518 | - | - | - | 20.000 | 0.78740 | 53 | | 20 |
| 63520 | - | - | - | 25.000 | 0.98425 | 60 | | 25 |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order: 05 = TiN, 11 = TiAlN



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|------------------|-----|---------|--------------------------|--------------------------|--------------------------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 1250 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |

good best





List 163-SO

Parabolic Flute, Stub Drills

NEW SPEED FEED P393 HSS-Co5 TYPE FS BR TiAlN STUB 40°



Standard Point (D<1.5mm)
Split Point (D≥1.5mm)

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1≤D≤3 | +0 / -0.014 | +0 / -0.0006 |
| 3<D≤6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤14 | +0 / -0.027 | +0 / -0.0011 |

| Pcs per Pack | Bright EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|--------------|-------------------|------------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 10 | 1630100-SO | 1630100A-SO | - | - | - | 1.000 | 0.03937 | 6 | 26 | 1.00 |
| 10 | 1630102-SO | 1630102A-SO | - | 60 | - | 1.016 | 0.04000 | | | 1.02 |
| 10 | 1630104-SO | 1630104A-SO | - | 59 | - | 1.041 | 0.04100 | | | 1.04 |
| 10 | 1630107-SO | 1630107A-SO | - | 58 | - | 1.067 | 0.04200 | 7 | 28 | 1.07 |
| 10 | 1630109-SO | 1630109A-SO | - | 57 | - | 1.092 | 0.04300 | | | 1.09 |
| 10 | 1630110-SO | 1630110A-SO | - | - | - | 1.100 | 0.04331 | | | 1.10 |
| 10 | - | 1630115A-SO | - | - | - | 1.150 | 0.04528 | 8 | 30 | 1.15 |
| 10 | 1630118-SO | 1630118A-SO | - | 56 | - | 1.181 | 0.04650 | | | 1.18 |
| 10 | 1630119-SO | 1630119A-SO | 3/64 | - | - | 1.191 | 0.04688 | | | 1.19 |
| 10 | 1630120-SO | 1630120A-SO | - | - | - | 1.200 | 0.04724 | 9 | 32 | 1.20 |
| 10 | 1630125-SO | - | - | - | - | 1.250 | 0.04921 | | | 1.25 |
| 10 | 1630130-SO | 1630130A-SO | - | - | - | 1.300 | 0.05118 | | | 1.30 |
| 10 | 1630132-SO | 1630132A-SO | - | 55 | - | 1.321 | 0.05200 | 10 | 34 | 1.32 |
| 10 | 1630135-SO | 1630135A-SO | - | - | - | 1.350 | 0.05315 | | | 1.35 |
| 10 | 1630139-SO | 1630139A-SO | - | 54 | - | 1.397 | 0.05500 | | | 1.40 |
| 10 | 1630140-SO | 1630140A-SO | - | - | - | 1.400 | 0.05512 | 11 | 36 | 1.45 |
| 10 | 1630145-SO | 1630145A-SO | - | - | - | 1.450 | 0.05709 | | | 1.50 |
| 10 | 1630150-SO | 1630150A-SO | - | - | - | 1.500 | 0.05906 | | | 1.51 |
| 10 | 1630152-SO | 1630152A-SO | - | 53 | - | 1.511 | 0.05950 | 12 | 38 | 1.55 |
| 10 | 1630155-SO | 1630155A-SO | - | - | - | 1.550 | 0.06102 | | | 1.59 |
| 10 | 1630159-SO | 1630159A-SO | 1/16 | - | - | 1.588 | 0.06250 | | | 1.60 |
| 10 | 1630160-SO | 1630160A-SO | - | - | - | 1.600 | 0.06299 | 10 | 34 | 1.61 |
| 10 | 1630161-SO | 1630161A-SO | - | 52 | - | 1.613 | 0.06350 | | | 1.65 |
| 10 | 1630165-SO | 1630165A-SO | - | - | - | 1.650 | 0.06496 | | | 1.67 |
| 10 | 1630167-SO | 1630167A-SO | - | - | - | 1.670 | 0.06575 | 11 | 36 | 1.70 |
| 10 | 1630169-SO | 1630169A-SO | - | 51 | - | 1.702 | 0.06700 | | | 1.75 |
| 10 | 1630170-SO | 1630170A-SO | - | - | - | 1.700 | 0.06693 | | | 1.78 |
| 10 | 1630175-SO | 1630175A-SO | - | - | - | 1.750 | 0.06890 | 12 | 38 | 1.80 |
| 10 | 1630178-SO | 1630178A-SO | - | 50 | - | 1.778 | 0.07000 | | | 1.85 |
| 10 | 1630180-SO | 1630180A-SO | - | - | - | 1.800 | 0.07087 | | | 1.90 |
| 10 | 1630185-SO | 1630185A-SO | - | 49 | - | 1.854 | 0.07300 | 10 | 34 | 1.93 |
| 10 | 1630190-SO | 1630190A-SO | - | - | - | 1.900 | 0.07480 | | | 1.95 |
| 10 | 1630193-SO | 1630193A-SO | - | 48 | - | 1.930 | 0.07600 | | | 1.98 |
| 10 | 1630195-SO | 1630195A-SO | - | - | - | 1.950 | 0.07677 | 12 | 38 | 1.99 |
| 10 | 1630198-SO | 1630198A-SO | 5/64 | - | - | 1.984 | 0.07813 | | | 2.00 |
| 10 | 1630199-SO | 1630199A-SO | - | 47 | - | 1.994 | 0.07850 | | | 2.05 |
| 10 | 1630200-SO | 1630200A-SO | - | - | - | 2.000 | 0.07874 | 10 | 34 | 2.06 |
| 10 | 1630205-SO | 1630205A-SO | - | - | - | 2.050 | 0.08071 | | | 2.08 |
| 10 | 1630206-SO | 1630206A-SO | - | 46 | - | 2.057 | 0.08100 | | | 2.08 |
| 10 | 1630208-SO | 1630208A-SO | - | 45 | - | 2.083 | 0.08200 | | | |

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | | 300 | 400 | | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC |
| 163-SO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 163-SO (Continued)

| | | | | | | | |
|------------|---------------------------|----------------|----------------|-----------|--------------|-------------|------------|
| NEW | SPEED FEED P393 | HSS-Co5 | TYPE FS | BR | TiAlN | STUB | 40° |
|------------|---------------------------|----------------|----------------|-----------|--------------|-------------|------------|

Parabolic Flute, Stub Drills



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 14 | +0 / -0.027 | +0 / -0.0011 |

| Pcs per Pack | Bright EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|--------------|-------------------|------------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 10 | 1630210-SO | 1630210A-SO | - | - | - | 2.100 | 0.08268 | 12 | 38 | 2.10 |
| 10 | 1630215-SO | 1630215A-SO | - | - | - | 2.150 | 0.08465 | | | 2.15 |
| 10 | 1630218-SO | 1630218A-SO | - | 44 | - | 2.184 | 0.08600 | | | 2.18 |
| 10 | 1630220-SO | 1630220A-SO | - | - | - | 2.200 | 0.08661 | | | 2.20 |
| 10 | 1630225-SO | 1630225A-SO | - | - | - | 2.250 | 0.08858 | 13 | 40 | 2.25 |
| 10 | 1630226-SO | 1630226A-SO | - | 43 | - | 2.261 | 0.08900 | | | 2.26 |
| 10 | 1630230-SO | 1630230A-SO | - | - | - | 2.300 | 0.09055 | | | 2.30 |
| 10 | 1630235-SO | - | - | - | - | 2.350 | 0.09252 | | | 2.35 |
| 10 | 1630237-SO | 1630237A-SO | - | 42 | - | 2.375 | 0.09350 | | | 2.37 |
| 10 | 1630238-SO | 1630238A-SO | 3/32 | - | - | 2.381 | 0.09375 | | | 2.38 |
| 10 | 1630240-SO | 1630240A-SO | - | - | - | 2.400 | 0.09449 | | | 2.40 |
| 10 | 1630244-SO | 1630244A-SO | - | 41 | - | 2.438 | 0.09600 | | | 2.44 |
| 10 | 1630245-SO | 1630245A-SO | - | - | - | 2.450 | 0.09646 | | | 2.45 |
| 10 | - | 1630248A-SO | - | - | - | 2.480 | 0.09764 | | | 2.48 |
| 10 | 1630249-SO | 1630249A-SO | - | 40 | - | 2.489 | 0.09800 | 14 | 43 | 2.49 |
| 10 | 1630250-SO | 1630250A-SO | - | - | - | 2.500 | 0.09843 | | | 2.50 |
| 10 | 1630253-SO | 1630253A-SO | - | 39 | - | 2.527 | 0.09950 | | | 2.53 |
| 10 | 1630255-SO | - | - | - | - | 2.550 | 0.10039 | | | 2.55 |
| 10 | 1630258-SO | 1630258A-SO | - | 38 | - | 2.578 | 0.10150 | | | 2.58 |
| 10 | 1630260-SO | 1630260A-SO | - | - | - | 2.600 | 0.10236 | | | 2.60 |
| 10 | 1630264-SO | 1630264A-SO | - | 37 | - | 2.642 | 0.10400 | | | 2.64 |
| 10 | 1630270-SO | 1630270A-SO | - | - | - | 2.700 | 0.10630 | | | 2.70 |
| 10 | 1630271-SO | 1630271A-SO | - | 36 | - | 2.705 | 0.10650 | | | 2.71 |
| 10 | 1630275-SO | 1630275A-SO | - | - | - | 2.750 | 0.10827 | | | 2.75 |
| 10 | 1630278-SO | 1630278A-SO | 7/64 | - | - | 2.778 | 0.10938 | | | 2.78 |
| 10 | 1630279-SO | 1630279A-SO | - | 35 | - | 2.794 | 0.11000 | | | 2.79 |
| 10 | 1630280-SO | 1630280A-SO | - | - | - | 2.800 | 0.11024 | | | 2.80 |
| 10 | 1630282-SO | 1630282A-SO | - | 34 | - | 2.819 | 0.11100 | 16 | 46 | 2.82 |
| 10 | 1630285-SO | 1630285A-SO | - | - | - | 2.850 | 0.11220 | | | 2.85 |
| 10 | 1630287-SO | 1630287A-SO | - | 33 | - | 2.870 | 0.11300 | | | 2.87 |
| 10 | 1630290-SO | 1630290A-SO | - | - | - | 2.900 | 0.11417 | | | 2.90 |
| 10 | 1630295-SO | 1630295A-SO | - | 32 | - | 2.946 | 0.11600 | | | 2.95 |
| 10 | 1630300-SO | 1630300A-SO | - | - | - | 3.000 | 0.11811 | | | 3.00 |
| 10 | 1630305-SO | 1630305A-SO | - | 31 | - | 3.048 | 0.12000 | | | 3.05 |
| 10 | 1630310-SO | 1630310A-SO | - | - | - | 3.100 | 0.12205 | | | 3.10 |
| 10 | 1630315-SO | 1630315A-SO | - | - | - | 3.150 | 0.12402 | | | 3.15 |
| 10 | 1630318-SO | 1630318A-SO | 1/8 | - | - | 3.175 | 0.12500 | | | 3.18 |
| 10 | 1630320-SO | 1630320A-SO | - | - | - | 3.200 | 0.12598 | | | 3.20 |
| 10 | 1630322-SO | 1630322A-SO | - | - | - | 3.220 | 0.12598 | 18 | 49 | 3.22 |
| 10 | 1630323-SO | 1630323A-SO | - | - | - | 3.230 | 0.12598 | | | 3.23 |
| 10 | 1630325-SO | 1630325A-SO | - | - | - | 3.250 | 0.12598 | | | 3.25 |
| 10 | 1630326-SO | 1630326A-SO | - | 30 | - | 3.264 | 0.12850 | | | 3.26 |
| 10 | 1630330-SO | 1630330A-SO | - | - | - | 3.300 | 0.12992 | | | 3.30 |
| 10 | 1630335-SO | 1630335A-SO | - | - | - | 3.350 | 0.13189 | | | 3.35 |
| 10 | 1630340-SO | 1630340A-SO | - | - | - | 3.400 | 0.13386 | | | 3.40 |
| 10 | 1630345-SO | 1630345A-SO | - | 29 | - | 3.454 | 0.13600 | | | 3.45 |
| 10 | 1630350-SO | 1630350A-SO | - | - | - | 3.500 | 0.13780 | | | 3.50 |
| 10 | 1630357-SO | 1630357A-SO | 9/64 | - | - | 3.572 | 0.14063 | 20 | 52 | 3.57 |
| 10 | 1630360-SO | 1630360A-SO | - | - | - | 3.600 | 0.14173 | | | 3.60 |
| 10 | 1630366-SO | 1630366A-SO | - | 27 | - | 3.658 | 0.14400 | | | 3.66 |

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.





List 163-SO (Continued)

Parabolic Flute, Stub Drills

| | | | | | | | |
|------------|---------------------------|----------------|----------------|-----------|--------------|-------------|------------|
| NEW | SPEED FEED P393 | HSS-Co5 | TYPE FS | BR | TiAlN | STUB | 40° |
|------------|---------------------------|----------------|----------------|-----------|--------------|-------------|------------|

| Pcs per Pack | Bright EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|--------------|-------------------|------------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 10 | 1630370-SO | 1630370A-SO | - | - | - | 3.700 | 0.14567 | 20 | 52 | 3.70 |
| 10 | 1630373-SO | 1630373A-SO | - | 26 | - | 3.734 | 0.14700 | | | 3.73 |
| 10 | 1630379-SO | 1630379A-SO | - | 25 | - | 3.797 | 0.14950 | 22 | 55 | 3.80 |
| 10 | 1630380-SO | 1630380A-SO | - | - | - | 3.800 | 0.14961 | | | 3.86 |
| 10 | 1630386-SO | 1630386A-SO | - | 24 | - | 3.861 | 0.15200 | | | 3.90 |
| 10 | 1630390-SO | 1630390A-SO | - | - | - | 3.900 | 0.15354 | | | 3.91 |
| 10 | 1630391-SO | 1630391A-SO | - | 23 | - | 3.912 | 0.15400 | | | 3.97 |
| 10 | 1630397-SO | 1630397A-SO | 5/32 | - | - | 3.969 | 0.15625 | | | 3.99 |
| 10 | 1630399-SO | 1630399A-SO | - | 22 | - | 3.988 | 0.15700 | | | 4.00 |
| 10 | 1630400-SO | 1630400A-SO | - | - | - | 4.000 | 0.15748 | | | 4.04 |
| 10 | 1630404-SO | 1630404A-SO | - | 21 | - | 4.039 | 0.15900 | | | 4.09 |
| 10 | 1630409-SO | 1630409A-SO | - | 20 | - | 4.089 | 0.16100 | | | 4.10 |
| 10 | 1630410-SO | 1630410A-SO | - | - | - | 4.100 | 0.16142 | 4.20 | | |
| 10 | 1630420-SO | 1630420A-SO | - | - | - | 4.200 | 0.16535 | 4.22 | | |
| 10 | 1630422-SO | 1630422A-SO | - | 19 | - | 4.216 | 0.16600 | 4.25 | | |
| 10 | 1630425-SO | 1630425A-SO | - | - | - | 4.250 | 0.16732 | 4.30 | | |
| 10 | 1630430-SO | 1630430A-SO | - | - | - | 4.300 | 0.16929 | 4.31 | | |
| 10 | 1630431-SO | 1630431A-SO | - | 18 | - | 4.305 | 0.16950 | 4.37 | | |
| 10 | 1630437-SO | 1630437A-SO | 11/64 | - | - | 4.366 | 0.17188 | 4.39 | | |
| 10 | 1630439-SO | 1630439A-SO | - | 17 | - | 4.394 | 0.17300 | 4.40 | | |
| 10 | 1630440-SO | 1630440A-SO | - | - | - | 4.400 | 0.17323 | 4.45 | | |
| 10 | - | 1630445A-SO | - | - | - | 4.450 | 0.17520 | 4.50 | | |
| 10 | 1630449-SO | 1630449A-SO | - | 16 | - | 4.496 | 0.17700 | 4.57 | | |
| 10 | 1630450-SO | 1630450A-SO | - | - | - | 4.500 | 0.17717 | 4.60 | | |
| 10 | 1630457-SO | 1630457A-SO | - | 15 | - | 4.572 | 0.18000 | 4.62 | | |
| 10 | 1630460-SO | 1630460A-SO | - | - | - | 4.600 | 0.18110 | 4.69 | | |
| 10 | - | 1630462A-SO | - | 14 | - | 4.623 | 0.18200 | 4.75 | | |
| 10 | 1630469-SO | 1630469A-SO | - | 13 | - | 4.699 | 0.18500 | 4.76 | | |
| 10 | 1630475-SO | 1630475A-SO | - | - | - | 4.750 | 0.18701 | 4.80 | | |
| 10 | 1630476-SO | 1630476A-SO | 3/16 | - | - | 4.763 | 0.18750 | 4.86 | | |
| 10 | 1630480-SO | 1630480A-SO | - | - | - | 4.800 | 0.18898 | 4.90 | | |
| 10 | 1630479-SO | 1630479A-SO | - | 12 | - | 4.801 | 0.18900 | 4.92 | | |
| 10 | 1630485-SO | 1630485A-SO | - | 11 | - | 4.851 | 0.19100 | 4.98 | | |
| 10 | 1630490-SO | 1630490A-SO | - | - | - | 4.900 | 0.19291 | 5.00 | | |
| 10 | 1630492-SO | 1630492A-SO | - | 10 | - | 4.915 | 0.19350 | 5.05 | | |
| 10 | 1630498-SO | 1630498A-SO | - | 9 | - | 4.978 | 0.19600 | 5.10 | | |
| 10 | 1630500-SO | 1630500A-SO | - | - | - | 5.000 | 0.19685 | 5.11 | | |
| 10 | 1630506-SO | 1630506A-SO | - | 8 | - | 5.055 | 0.19900 | 5.16 | | |
| 10 | 1630510-SO | 1630510A-SO | - | - | - | 5.100 | 0.20079 | 5.18 | | |
| 10 | 1630511-SO | 1630511A-SO | - | 7 | - | 5.105 | 0.20100 | 5.20 | | |
| 10 | 1630516-SO | 1630516A-SO | 13/64 | - | - | 5.159 | 0.20313 | 5.22 | | |
| 10 | 1630518-SO | 1630518A-SO | - | 6 | - | 5.182 | 0.20400 | 5.30 | | |
| 10 | 1630520-SO | 1630520A-SO | - | - | - | 5.200 | 0.20472 | 5.31 | | |
| 10 | 1630522-SO | 1630522A-SO | - | 5 | - | 5.220 | 0.20550 | | | |
| 10 | 1630530-SO | 1630530A-SO | - | - | - | 5.300 | 0.20866 | | | |
| 10 | 1630532-SO | 1630532A-SO | - | 4 | - | 5.309 | 0.20900 | | | |

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-----------|
| | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | Alloy Steels | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 163-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best





List 163-SO (Continued)

Parabolic Flute, Stub Drills

| | | | | | | | |
|------------|---------------------------|----------------|----------------|-----------|--------------|-------------|------------|
| NEW | SPEED FEED P393 | HSS-Co5 | TYPE FS | BR | TiAIN | STUB | 40° |
|------------|---------------------------|----------------|----------------|-----------|--------------|-------------|------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 14 | +0 / -0.027 | +0 / -0.0011 |

| Pcs per Pack | Bright EDP Number | TiAIN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|--------------|-------------------|------------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 10 | 1630540-SO | 1630540A-SO | - | - | - | 5.400 | 0.21260 | 28 | 66 | 5.40 |
| 10 | 1630541-SO | 1630541A-SO | - | 3 | - | 5.410 | 0.21300 | | | 5.41 |
| 10 | 1630550-SO | 1630550A-SO | - | - | - | 5.500 | 0.21654 | | | 5.50 |
| 10 | 1630556-SO | 1630556A-SO | 7/32 | - | - | 5.556 | 0.21875 | | | 5.56 |
| 10 | 1630560-SO | 1630560A-SO | - | - | - | 5.600 | 0.22047 | | | 5.60 |
| 10 | 1630561-SO | 1630561A-SO | - | 2 | - | 5.613 | 0.22100 | | | 5.61 |
| 10 | 1630570-SO | 1630570A-SO | - | - | - | 5.700 | 0.22441 | | | 5.70 |
| 10 | 1630575-SO | 1630575A-SO | - | - | - | 5.750 | 0.22638 | | | 5.75 |
| 10 | 1630579-SO | 1630579A-SO | - | 1 | - | 5.791 | 0.22800 | | | 5.79 |
| 10 | 1630580-SO | 1630580A-SO | - | - | - | 5.800 | 0.22835 | | | 5.80 |
| 10 | 1630590-SO | 1630590A-SO | - | - | - | 5.900 | 0.23228 | | | 5.90 |
| 10 | 1630594-SO | 1630594A-SO | - | - | A | 5.944 | 0.23400 | | | 5.94 |
| 10 | 1630595-SO | 1630595A-SO | 15/64 | - | - | 5.953 | 0.23438 | | | 5.95 |
| 10 | 1630600-SO | 1630600A-SO | - | - | - | 6.000 | 0.23622 | | | 6.00 |
| 10 | 1630605-SO | 1630605A-SO | - | - | B | 6.045 | 0.23800 | 6.05 | | |
| 10 | 1630610-SO | 1630610A-SO | - | - | - | 6.100 | 0.24016 | 6.10 | | |
| 10 | 1630615-SO | 1630615A-SO | - | - | C | 6.147 | 0.24200 | 6.15 | | |
| 10 | 1630620-SO | 1630620A-SO | - | - | - | 6.200 | 0.24409 | 6.20 | | |
| 10 | 1630625-SO | 1630625A-SO | - | - | D | 6.248 | 0.24600 | 6.25 | | |
| 10 | 1630630-SO | 1630630A-SO | - | - | - | 6.300 | 0.24803 | 6.30 | | |
| 10 | 1630634-SO | 1630634A-SO | - | - | E | 6.350 | 0.25000 | 6.35 | | |
| 10 | 1630635-SO | 1630635A-SO | 1/4 | - | - | 6.350 | 0.25000 | 6.35 | | |
| 10 | 1630640-SO | 1630640A-SO | - | - | - | 6.400 | 0.25197 | 6.40 | | |
| 10 | 1630650-SO | 1630650A-SO | - | - | - | 6.500 | 0.25591 | 6.50 | | |
| 10 | 1630653-SO | 1630653A-SO | - | - | F | 6.528 | 0.25700 | 6.53 | | |
| 10 | 1630660-SO | 1630660A-SO | - | - | - | 6.600 | 0.25984 | 6.60 | | |
| 10 | 1630663-SO | 1630663A-SO | - | - | G | 6.629 | 0.26100 | 6.63 | | |
| 10 | 1630670-SO | 1630670A-SO | - | - | - | 6.700 | 0.26378 | 6.70 | | |
| 10 | 1630677-SO | 1630677A-SO | 17/64 | - | - | 6.747 | 0.26563 | 6.75 | | |
| 10 | 1630676-SO | 1630676A-SO | - | - | H | 6.756 | 0.26600 | 6.76 | | |
| 10 | 1630680-SO | 1630680A-SO | - | - | - | 6.800 | 0.26772 | 6.80 | | |
| 10 | 1630690-SO | 1630690A-SO | - | - | - | 6.900 | 0.27165 | 6.90 | | |
| 10 | 1630691-SO | 1630691A-SO | - | - | I | 6.909 | 0.27200 | 6.91 | | |
| 10 | 1630700-SO | 1630700A-SO | - | - | - | 7.000 | 0.27559 | 7.00 | | |
| 10 | 1630704-SO | 1630704A-SO | - | - | J | 7.036 | 0.27700 | 7.04 | | |
| 10 | 1630710-SO | 1630710A-SO | - | - | - | 7.100 | 0.27953 | 7.10 | | |
| 10 | 1630713-SO | 1630713A-SO | - | - | K | 7.137 | 0.28100 | 7.14 | | |
| 10 | 1630714-SO | 1630714A-SO | 9/32 | - | - | 7.144 | 0.28125 | 7.14 | | |
| 10 | 1630720-SO | 1630720A-SO | - | - | - | 7.200 | 0.28346 | 7.20 | | |
| 10 | - | 1630725A-SO | - | - | - | 7.250 | 0.28543 | 7.25 | | |
| 10 | 1630730-SO | 1630730A-SO | - | - | - | 7.300 | 0.28740 | 7.30 | | |
| 10 | 1630737-SO | 1630737A-SO | - | - | L | 7.366 | 0.29000 | 7.37 | | |
| 10 | 1630740-SO | 1630740A-SO | - | - | - | 7.400 | 0.29134 | 7.40 | | |
| 10 | 1630749-SO | 1630749A-SO | - | - | M | 7.493 | 0.29500 | 7.49 | | |
| 10 | 1630750-SO | 1630750A-SO | - | - | - | 7.500 | 0.29528 | 7.50 | | |
| 10 | 1630754-SO | 1630754A-SO | 19/64 | - | - | 7.541 | 0.29688 | 7.54 | | |
| 10 | 1630760-SO | 1630760A-SO | - | - | - | 7.600 | 0.29921 | 7.60 | | |
| 10 | 1630767-SO | 1630767A-SO | - | - | N | 7.671 | 0.30200 | 7.67 | | |
| 10 | 1630770-SO | 1630770A-SO | - | - | - | 7.700 | 0.30315 | 7.70 | | |
| 10 | 1630780-SO | 1630780A-SO | - | - | - | 7.800 | 0.30709 | 7.80 | | |

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.





List 163-SO (Continued)

Parabolic Flute, Stub Drills

| | | | | | | | |
|------------|---------------------------|----------------|----------------|-----------|--------------|-------------|------------|
| NEW | SPEED FEED P393 | HSS-Co5 | TYPE FS | BR | TiAIN | STUB | 40° |
|------------|---------------------------|----------------|----------------|-----------|--------------|-------------|------------|

| Pcs per Pack | Bright EDP Number | TiAIN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|--------------|-------------------|------------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 10 | 1630790-SO | 1630790A-SO | - | - | - | 7.900 | 0.31102 | 37 | 79 | 7.90 |
| 10 | 1630794-SO | 1630794A-SO | 5/16 | - | - | 7.938 | 0.31250 | | | 7.94 |
| 10 | 1630800-SO | 1630800A-SO | - | - | - | 8.000 | 0.31496 | | | 8.00 |
| 10 | 1630803-SO | 1630803A-SO | - | - | O | 8.026 | 0.31600 | | | 8.03 |
| 10 | 1630810-SO | 1630810A-SO | - | - | - | 8.100 | 0.31890 | | | 8.10 |
| 10 | 1630820-SO | 1630820A-SO | - | - | - | 8.200 | 0.32283 | | | 8.20 |
| 10 | 1630821-SO | 1630821A-SO | - | - | P | 8.204 | 0.32300 | | | 8.20 |
| 10 | 1630830-SO | 1630830A-SO | - | - | - | 8.300 | 0.32677 | | | 8.30 |
| 10 | 1630833-SO | 1630833A-SO | 21/64 | - | - | 8.334 | 0.32813 | | | 8.33 |
| 10 | 1630840-SO | 1630840A-SO | - | - | - | 8.400 | 0.33071 | | | 8.40 |
| 10 | 1630843-SO | 1630843A-SO | - | - | Q | 8.433 | 0.33200 | | | 8.43 |
| 10 | 1630850-SO | 1630850A-SO | - | - | - | 8.500 | 0.33465 | | | 8.50 |
| 10 | 1630860-SO | 1630860A-SO | - | - | - | 8.600 | 0.33858 | | | 8.60 |
| 10 | 1630861-SO | 1630861A-SO | - | - | R | 8.611 | 0.33900 | | | 8.61 |
| 10 | 1630870-SO | 1630870A-SO | - | - | - | 8.700 | 0.34252 | | | 8.70 |
| 10 | 1630873-SO | 1630873A-SO | 11/32 | - | - | 8.731 | 0.34375 | | | 8.73 |
| 10 | 1630880-SO | 1630880A-SO | - | - | - | 8.800 | 0.34646 | | | 8.80 |
| 10 | 1630884-SO | 1630884A-SO | - | - | S | 8.839 | 0.34800 | 8.84 | | |
| 10 | 1630890-SO | 1630890A-SO | - | - | - | 8.900 | 0.35039 | 8.90 | | |
| 10 | 1630900-SO | 1630900A-SO | - | - | - | 9.000 | 0.35433 | 9.00 | | |
| 10 | 1630909-SO | 1630909A-SO | - | - | T | 9.093 | 0.35800 | 9.09 | | |
| 10 | 1630910-SO | 1630910A-SO | - | - | - | 9.100 | 0.35827 | 9.10 | | |
| 10 | 1630913-SO | 1630913A-SO | 23/64 | - | - | 9.128 | 0.35938 | 9.13 | | |
| 10 | 1630920-SO | 1630920A-SO | - | - | - | 9.200 | 0.36220 | 9.20 | | |
| 10 | 1630930-SO | 1630930A-SO | - | - | - | 9.300 | 0.36614 | 9.30 | | |
| 10 | 1630935-SO | 1630935A-SO | - | - | U | 9.347 | 0.36800 | 9.35 | | |
| 10 | 1630940-SO | 1630940A-SO | - | - | - | 9.400 | 0.37008 | 9.40 | | |
| 10 | 1630950-SO | 1630950A-SO | - | - | - | 9.500 | 0.37402 | 9.50 | | |
| 10 | 1630953-SO | 1630953A-SO | 3/8 | - | - | 9.525 | 0.37500 | 9.53 | | |
| 10 | 1630958-SO | 1630958A-SO | - | - | V | 9.576 | 0.37700 | 9.58 | | |
| 10 | 1630960-SO | 1630960A-SO | - | - | - | 9.600 | 0.37795 | 9.60 | | |
| 10 | 1630970-SO | 1630970A-SO | - | - | - | 9.700 | 0.38189 | 9.70 | | |
| 10 | 1630980-SO | 1630980A-SO | - | - | - | 9.800 | 0.38583 | 9.80 | | |
| 10 | 1630981-SO | 1630981A-SO | - | - | W | 9.804 | 0.38600 | 9.80 | | |
| 10 | 1630990-SO | 1630990A-SO | - | - | - | 9.900 | 0.38976 | 9.90 | | |
| 5 | 1630992-SO | 1630992A-SO | 25/64 | - | - | 9.922 | 0.39063 | 9.92 | | |
| 5 | 1631000-SO | 1631000A-SO | - | - | - | 10.000 | 0.39370 | 10.00 | | |
| 5 | 1631008-SO | 1631008A-SO | - | - | X | 10.084 | 0.39700 | 10.08 | | |
| 5 | 1631020-SO | 1631020A-SO | - | - | - | 10.200 | 0.40157 | 10.20 | | |
| 5 | 1631026-SO | 1631026A-SO | - | - | Y | 10.262 | 0.40400 | 10.26 | | |
| 5 | 1631032-SO | 1631032A-SO | 13/32 | - | - | 10.319 | 0.40625 | 10.32 | | |
| 5 | 1631049-SO | 1631049A-SO | - | - | Z | 10.490 | 0.41300 | 10.49 | | |
| 5 | 1631050-SO | 1631050A-SO | - | - | - | 10.500 | 0.41339 | 10.50 | | |
| 5 | 1631072-SO | 1631072A-SO | 27/64 | - | - | 10.716 | 0.42188 | 10.72 | | |
| 5 | 1631080-SO | 1631080A-SO | - | - | - | 10.800 | 0.42520 | 10.80 | | |
| 5 | 1631100-SO | 1631100A-SO | - | - | - | 11.000 | 0.43307 | 11.00 | | |

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | 4140 4340 | | 300 | 400 | 17-4 PH | | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 163-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best





List 163-SO (Continued)

Parabolic Flute, Stub Drills



| | | | | | | | |
|------------|---------------------------|----------------|----------------|-----------|--------------|-------------|------------|
| NEW | SPEED FEED P393 | HSS-Co5 | TYPE FS | BR | TiAlN | STUB | 40° |
|------------|---------------------------|----------------|----------------|-----------|--------------|-------------|------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 14 | +0 / -0.027 | +0 / -0.0011 |

| Pcs per Pack | Bright EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|--------------|-------------------|------------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 5 | 1631111-SO | 1631111A-SO | 7/16 | - | - | 11.113 | 0.43750 | 47 | 95 | 11.11 |
| 5 | 1631120-SO | 1631120A-SO | - | - | - | 11.200 | 0.44094 | | | 11.20 |
| 5 | 1631150-SO | 1631150A-SO | - | - | - | 11.500 | 0.45276 | | | 11.50 |
| 5 | 1631151-SO | 1631151A-SO | 29/64 | - | - | 11.509 | 0.45313 | | | 11.51 |
| 5 | - | 1631191A-SO | 15/32 | - | - | 11.906 | 0.46875 | 51 | 102 | 11.91 |
| 5 | 1631200-SO | 1631200A-SO | - | - | - | 12.000 | 0.47244 | | | 12.00 |
| 5 | 1631229-SO | 1631229A-SO | 31/64 | - | - | 12.303 | 0.48438 | | | 12.30 |
| 5 | 1631250-SO | 1631250A-SO | - | - | - | 12.500 | 0.49213 | | | 12.50 |
| 5 | 1631269-SO | 1631269A-SO | 1/2 | - | - | 12.700 | 0.50000 | | | 12.70 |
| 5 | 1631300-SO | 1631300A-SO | - | - | - | 13.000 | 0.51181 | | | 13.00 |
| 1 | 1631310-SO | 1631310A-SO | 33/64 | - | - | 13.097 | 0.51563 | | | 13.10 |
| 1 | 1631349-SO | - | 17/32 | - | - | 13.494 | 0.53125 | | | 13.49 |
| 1 | 1631389-SO | 1631389A-SO | 35/64 | - | - | 13.891 | 0.54688 | | | 13.89 |
| 1 | 1631400-SO | - | - | - | - | 14.000 | 0.55118 | | | 14.00 |

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 163-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 164-SO

Parabolic Flute, Jobber Drills

NEW SPEED FEED P393 HSS-Co5 TYPE FS BR TiAIN JOBBERS 40°



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 16 | +0 / -0.027 | +0 / -0.0011 |

| Pcs per Pack | Bright EDP Number | TiAIN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|--------------|-------------------|------------------|-----------------|-----------|-------------|-------|---------|----------------------|-----------------------|-----------------------|
| | | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 10 | 1640100-SO | 1640100A-SO | - | - | - | 1.000 | 0.03937 | 12 | 34 | 1.00 |
| 10 | 1640102-SO | 1640102A-SO | - | 60 | - | 1.016 | 0.04000 | | | 1.02 |
| 10 | 1640104-SO | 1640104A-SO | - | 59 | - | 1.041 | 0.04100 | | | 1.04 |
| 10 | 1640107-SO | 1640107A-SO | - | 58 | - | 1.067 | 0.04200 | 14 | 36 | 1.07 |
| 10 | 1640109-SO | 1640109A-SO | - | 57 | - | 1.092 | 0.04300 | | | 1.09 |
| 10 | 1640110-SO | 1640110A-SO | - | - | - | 1.100 | 0.04331 | | | 1.10 |
| 10 | 1640115-SO | 1640115A-SO | - | - | - | 1.150 | 0.04528 | 16 | 38 | 1.15 |
| 10 | 1640118-SO | 1640118A-SO | - | 56 | - | 1.181 | 0.04650 | | | 1.18 |
| 10 | 1640119-SO | 1640119A-SO | 3/64 | - | - | 1.191 | 0.04688 | | | 1.19 |
| 10 | 1640120-SO | 1640120A-SO | - | - | - | 1.200 | 0.04724 | 18 | 40 | 1.20 |
| 10 | - | 1640125A-SO | - | - | - | 1.250 | 0.04921 | | | 1.25 |
| 10 | 1640130-SO | 1640130A-SO | - | - | - | 1.300 | 0.05118 | | | 1.30 |
| 10 | 1640132-SO | 1640132A-SO | - | 55 | - | 1.321 | 0.05200 | 20 | 43 | 1.32 |
| 10 | 1640139-SO | 1640139A-SO | - | 54 | - | 1.397 | 0.05500 | | | 1.40 |
| 10 | 1640140-SO | 1640140A-SO | - | - | - | 1.400 | 0.05512 | | | 1.45 |
| 10 | 1640145-SO | 1640145A-SO | - | - | - | 1.450 | 0.05709 | 22 | 46 | 1.45 |
| 10 | 1640150-SO | 1640150A-SO | - | - | - | 1.500 | 0.05906 | | | 1.50 |
| 10 | 1640152-SO | 1640152A-SO | - | 53 | - | 1.511 | 0.05950 | | | 1.51 |
| 10 | 1640155-SO | 1640155A-SO | - | - | - | 1.550 | 0.06102 | 24 | 49 | 1.55 |
| 10 | 1640159-SO | 1640159A-SO | 1/16 | - | - | 1.588 | 0.06250 | | | 1.59 |
| 10 | 1640160-SO | 1640160A-SO | - | - | - | 1.600 | 0.06299 | | | 1.60 |
| 10 | 1640161-SO | 1640161A-SO | - | 52 | - | 1.613 | 0.06350 | 20 | 43 | 1.61 |
| 10 | 1640162-SO | - | - | - | - | 1.620 | 0.06378 | | | 1.62 |
| 10 | 1640165-SO | 1640165A-SO | - | - | - | 1.650 | 0.06496 | | | 1.65 |
| 10 | 1640167-SO | - | - | - | - | 1.670 | 0.06575 | 22 | 46 | 1.67 |
| 10 | 1640170-SO | 1640170A-SO | - | - | - | 1.700 | 0.06693 | | | 1.70 |
| 10 | 1640169-SO | 1640169A-SO | - | 51 | - | 1.702 | 0.06700 | | | 24 |
| 10 | - | 1640175A-SO | - | - | - | 1.750 | 0.06890 | 1.78 | | |
| 10 | 1640178-SO | 1640178A-SO | - | 50 | - | 1.778 | 0.07000 | 1.80 | | |
| 10 | 1640180-SO | 1640180A-SO | - | - | - | 1.800 | 0.07087 | 20 | 43 | 1.80 |
| 10 | 1640185-SO | 1640185A-SO | - | 49 | - | 1.854 | 0.07300 | | | 1.85 |
| 10 | 1640190-SO | 1640190A-SO | - | - | - | 1.900 | 0.07480 | | | 1.90 |
| 10 | 1640193-SO | 1640193A-SO | - | 48 | - | 1.930 | 0.07600 | 22 | 46 | 1.93 |
| 10 | 1640198-SO | 1640198A-SO | 5/64 | - | - | 1.984 | 0.07813 | | | 1.98 |
| 10 | 1640199-SO | 1640199A-SO | - | 47 | - | 1.994 | 0.07850 | | | 1.99 |
| 10 | 1640200-SO | 1640200A-SO | - | - | - | 2.000 | 0.07874 | 24 | 49 | 2.00 |
| 10 | 1640205-SO | - | - | - | - | 2.050 | 0.08071 | | | 2.05 |
| 10 | 1640206-SO | 1640206A-SO | - | 46 | - | 2.057 | 0.08100 | | | 2.06 |
| 10 | 1640208-SO | 1640208A-SO | - | 45 | - | 2.083 | 0.08200 | 20 | 43 | 2.08 |
| 10 | 1640210-SO | 1640210A-SO | - | - | - | 2.100 | 0.08268 | | | 2.10 |

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | M | | | K | N | | S | | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 164-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 164-SO (Continued)

Parabolic Flute, Jobber Drills

| | | | | | | | |
|------------|---------------------------|----------------|----------------|-----------|--------------|----------------|------------|
| NEW | SPEED FEED P393 | HSS-Co5 | TYPE FS | BR | TiAIN | JOBBERS | 40° |
|------------|---------------------------|----------------|----------------|-----------|--------------|----------------|------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 16 | +0 / -0.027 | +0 / -0.0011 |

| Pcs per Pack | Bright EDP Number | TiAIN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Leng1 L (mm) | Shank Diameter d (mm) |
|--------------|-------------------|------------------|-----------------|-----------|-------------|-------|---------|-------------------------|-------------------------|--------------------------|
| | | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 10 | 1640215-SO | 1640215A-SO | - | - | - | 2.150 | 0.08465 | 27 | 53 | 2.15 |
| 10 | 1640218-SO | 1640218A-SO | - | 44 | - | 2.184 | 0.08600 | | | 2.18 |
| 10 | 1640220-SO | 1640220A-SO | - | - | - | 2.200 | 0.08661 | | | 2.20 |
| 10 | 1640226-SO | 1640226A-SO | - | 43 | - | 2.261 | 0.08900 | | | 2.26 |
| 10 | 1640230-SO | 1640230A-SO | - | - | - | 2.300 | 0.09055 | | | 2.30 |
| 10 | 1640235-SO | 1640235A-SO | - | - | - | 2.350 | 0.09252 | | | 2.35 |
| 10 | 1640237-SO | 1640237A-SO | - | 42 | - | 2.375 | 0.09350 | 2.37 | | |
| 10 | 1640238-SO | 1640238A-SO | 3/32 | - | - | 2.381 | 0.09375 | 2.38 | | |
| 10 | 1640240-SO | 1640240A-SO | - | - | - | 2.400 | 0.09449 | 2.40 | | |
| 10 | 1640244-SO | 1640244A-SO | - | 41 | - | 2.438 | 0.09600 | 2.44 | | |
| 10 | 1640245-SO | 1640245A-SO | - | - | - | 2.450 | 0.09646 | 2.45 | | |
| 10 | 1640249-SO | 1640249A-SO | - | 40 | - | 2.489 | 0.09800 | 2.49 | | |
| 10 | 1640250-SO | 1640250A-SO | - | - | - | 2.500 | 0.09843 | 2.50 | | |
| 10 | 1640253-SO | 1640253A-SO | - | 39 | - | 2.527 | 0.09950 | 2.53 | | |
| 10 | 1640258-SO | 1640258A-SO | - | 38 | - | 2.578 | 0.10150 | 2.58 | | |
| 10 | 1640260-SO | 1640260A-SO | - | - | - | 2.600 | 0.10236 | 2.60 | | |
| 10 | 1640264-SO | 1640264A-SO | - | 37 | - | 2.642 | 0.10400 | 2.64 | | |
| 10 | 1640270-SO | 1640270A-SO | - | - | - | 2.700 | 0.10630 | 2.70 | | |
| 10 | 1640271-SO | 1640271A-SO | - | 36 | - | 2.705 | 0.10650 | 2.71 | | |
| 10 | - | 1640275A-SO | - | - | - | 2.750 | 0.10827 | 2.75 | | |
| 10 | 1640278-SO | 1640278A-SO | 7/64 | - | - | 2.778 | 0.10938 | 2.78 | | |
| 10 | 1640279-SO | 1640279A-SO | - | 35 | - | 2.794 | 0.11000 | 2.79 | | |
| 10 | 1640280-SO | 1640280A-SO | - | - | - | 2.800 | 0.11024 | 2.80 | | |
| 10 | 1640282-SO | 1640282A-SO | - | 34 | - | 2.819 | 0.11100 | 2.82 | | |
| 10 | 1640287-SO | 1640287A-SO | - | 33 | - | 2.870 | 0.11300 | 2.87 | | |
| 10 | 1640290-SO | 1640290A-SO | - | - | - | 2.900 | 0.11417 | 2.90 | | |
| 10 | 1640295-SO | 1640295A-SO | - | 32 | - | 2.946 | 0.11600 | 2.95 | | |
| 10 | 1640300-SO | 1640300A-SO | - | - | - | 3.000 | 0.11811 | 3.00 | | |
| 10 | 1640305-SO | 1640305A-SO | - | 31 | - | 3.048 | 0.12000 | 3.05 | | |
| 10 | 1640310-SO | 1640310A-SO | - | - | - | 3.100 | 0.12205 | 3.10 | | |
| 10 | 1640315-SO | 1640315A-SO | - | - | - | 3.150 | 0.12402 | 3.15 | | |
| 10 | 1640318-SO | 1640318A-SO | 1/8 | - | - | 3.175 | 0.12500 | 3.18 | | |
| 10 | 1640320-SO | 1640320A-SO | - | - | - | 3.200 | 0.12598 | 3.20 | | |
| 10 | 1640326-SO | 1640326A-SO | - | 30 | - | 3.264 | 0.12850 | 3.26 | | |
| 10 | 1640330-SO | 1640330A-SO | - | - | - | 3.300 | 0.12992 | 3.30 | | |
| 10 | 1640335-SO | 1640335A-SO | - | - | - | 3.350 | 0.13189 | 3.35 | | |
| 10 | 1640340-SO | 1640340A-SO | - | - | - | 3.400 | 0.13386 | 3.40 | | |
| 10 | 1640345-SO | 1640345A-SO | - | 29 | - | 3.454 | 0.13600 | 3.45 | | |
| 10 | 1640350-SO | 1640350A-SO | - | - | - | 3.500 | 0.13780 | 3.50 | | |
| 10 | 1640357-SO | 1640357A-SO | 9/64 | - | - | 3.572 | 0.14063 | 3.57 | | |
| 10 | 1640360-SO | - | - | - | - | 3.600 | 0.14173 | 3.60 | | |
| 10 | 1640366-SO | 1640366A-SO | - | 27 | - | 3.658 | 0.14400 | 3.66 | | |
| 10 | 1640370-SO | 1640370A-SO | - | - | - | 3.700 | 0.14567 | 3.70 | | |
| 10 | 1640373-SO | 1640373A-SO | - | 26 | - | 3.734 | 0.14700 | 3.73 | | |
| 10 | 1640379-SO | 1640379A-SO | - | 25 | - | 3.797 | 0.14950 | 3.80 | | |
| 10 | 1640380-SO | 1640380A-SO | - | - | - | 3.800 | 0.14961 | 3.80 | | |
| 10 | 1640386-SO | 1640386A-SO | - | 24 | - | 3.861 | 0.15200 | 3.86 | | |
| 10 | 1640390-SO | 1640390A-SO | - | - | - | 3.900 | 0.15354 | 3.90 | | |
| 10 | 1640391-SO | 1640391A-SO | - | 23 | - | 3.912 | 0.15400 | 3.91 | | |
| 10 | 1640397-SO | 1640397A-SO | 5/32 | - | - | 3.969 | 0.15625 | 3.97 | | |

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List 164-SO (Continued)

Parabolic Flute, Jobber Drills

NEW SPEED FEED P393 HSS-Co5 TYPE FS BR TiAIN JOBBERS 40°

| Pcs per Pack | Bright EDP Number | TiAIN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Leng1 L (mm) | Shank Diameter d (mm) |
|--------------|-------------------|------------------|-----------------|-----------|-------------|-------|---------|-------------------------|-------------------------|--------------------------|
| | | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 10 | 1640399-SO | 1640399A-SO | - | 22 | - | 3.988 | 0.15700 | 43 | 75 | 3.99 |
| 10 | 1640400-SO | 1640400A-SO | - | - | - | 4.000 | 0.15748 | | | 4.00 |
| 10 | 1640404-SO | 1640404A-SO | - | 21 | - | 4.039 | 0.15900 | | | 4.04 |
| 10 | 1640409-SO | 1640409A-SO | - | 20 | - | 4.089 | 0.16100 | | | 4.09 |
| 10 | 1640410-SO | 1640410A-SO | - | - | - | 4.100 | 0.16142 | | | 4.10 |
| 10 | 1640420-SO | 1640420A-SO | - | - | - | 4.200 | 0.16535 | | | 4.20 |
| 10 | 1640422-SO | 1640422A-SO | - | 19 | - | 4.216 | 0.16600 | | | 4.22 |
| 10 | 1640430-SO | 1640430A-SO | - | - | - | 4.300 | 0.16929 | | | 4.30 |
| 10 | 1640431-SO | 1640431A-SO | - | 18 | - | 4.305 | 0.16950 | | | 4.31 |
| 10 | 1640437-SO | 1640437A-SO | 11/64 | - | - | 4.366 | 0.17188 | | | 4.37 |
| 10 | 1640439-SO | 1640439A-SO | - | 17 | - | 4.394 | 0.17300 | 4.39 | | |
| 10 | 1640440-SO | 1640440A-SO | - | - | - | 4.400 | 0.17323 | 4.40 | | |
| 10 | 1640445-SO | - | - | - | - | 4.450 | 0.17520 | 4.45 | | |
| 10 | 1640449-SO | 1640449A-SO | - | 16 | - | 4.496 | 0.17700 | 4.50 | | |
| 10 | 1640450-SO | 1640450A-SO | - | - | - | 4.500 | 0.17717 | - | | |
| 10 | 1640457-SO | 1640457A-SO | - | 15 | - | 4.572 | 0.18000 | 4.57 | | |
| 10 | - | 1640460A-SO | - | - | - | 4.600 | 0.18110 | 4.60 | | |
| 10 | 1640462-SO | 1640462A-SO | - | 14 | - | 4.623 | 0.18200 | 4.62 | | |
| 10 | 1640469-SO | 1640469A-SO | - | 13 | - | 4.699 | 0.18500 | 4.69 | | |
| 10 | 1640476-SO | 1640476A-SO | 3/16 | - | - | 4.763 | 0.18750 | 4.76 | | |
| 10 | 1640480-SO | 1640480A-SO | - | - | - | 4.800 | 0.18898 | - | | |
| 10 | 1640479-SO | 1640479A-SO | - | 12 | - | 4.801 | 0.18900 | 4.80 | | |
| 10 | 1640485-SO | 1640485A-SO | - | 11 | - | 4.851 | 0.19100 | 4.86 | | |
| 10 | 1640490-SO | 1640490A-SO | - | - | - | 4.900 | 0.19291 | 4.90 | | |
| 10 | 1640492-SO | 1640492A-SO | - | 10 | - | 4.915 | 0.19350 | 4.92 | | |
| 10 | 1640498-SO | 1640498A-SO | - | 9 | - | 4.978 | 0.19600 | 4.98 | | |
| 10 | 1640500-SO | 1640500A-SO | - | - | - | 5.000 | 0.19685 | 5.00 | | |
| 10 | 1640506-SO | 1640506A-SO | - | 8 | - | 5.055 | 0.19900 | 5.05 | | |
| 10 | 1640510-SO | 1640510A-SO | - | - | - | 5.100 | 0.20079 | 5.10 | | |
| 10 | 1640511-SO | 1640511A-SO | - | 7 | - | 5.105 | 0.20100 | 5.11 | | |
| 10 | 1640516-SO | 1640516A-SO | 13/64 | - | - | 5.159 | 0.20313 | 5.16 | | |
| 10 | 1640518-SO | 1640518A-SO | - | 6 | - | 5.182 | 0.20400 | 5.18 | | |
| 10 | 1640520-SO | 1640520A-SO | - | - | - | 5.200 | 0.20472 | 5.20 | | |
| 10 | 1640522-SO | 1640522A-SO | - | 5 | - | 5.220 | 0.20550 | 5.22 | | |
| 10 | 1640530-SO | 1640530A-SO | - | - | - | 5.300 | 0.20866 | 5.30 | | |
| 10 | 1640532-SO | 1640532A-SO | - | 4 | - | 5.309 | 0.20900 | 5.31 | | |
| 10 | 1640540-SO | 1640540A-SO | - | - | - | 5.400 | 0.21260 | 5.40 | | |
| 10 | 1640541-SO | 1640541A-SO | - | 3 | - | 5.410 | 0.21300 | 5.41 | | |
| 10 | 1640550-SO | 1640550A-SO | - | - | - | 5.500 | 0.21654 | 5.50 | | |
| 10 | 1640556-SO | 1640556A-SO | 7/32 | - | - | 5.556 | 0.21875 | 5.56 | | |
| 10 | 1640560-SO | 1640560A-SO | - | - | - | 5.600 | 0.22047 | 5.60 | | |
| 10 | 1640561-SO | 1640561A-SO | - | 2 | - | 5.613 | 0.22100 | 5.61 | | |
| 10 | 1640570-SO | 1640570A-SO | - | - | - | 5.700 | 0.22441 | 5.70 | | |
| 10 | 1640575-SO | 1640575A-SO | - | - | - | 5.750 | 0.22638 | 5.75 | | |
| 10 | 1640579-SO | 1640579A-SO | - | 1 | - | 5.791 | 0.22800 | 5.79 | | |
| 10 | 1640580-SO | 1640580A-SO | - | - | - | 5.800 | 0.22835 | 5.80 | | |

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

continued on next page

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------|
| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | | Stainless Steels | | | | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 164-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best





List 164-SO (Continued)

Parabolic Flute, Jobber Drills

| | | | | | | | |
|------------|---------------------------|----------------|----------------|-----------|--------------|----------------|------------|
| NEW | SPEED FEED P393 | HSS-Co5 | TYPE FS | BR | TiAlN | JOBBERS | 40° |
|------------|---------------------------|----------------|----------------|-----------|--------------|----------------|------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1≤D≤3 | +0 / -0.014 | +0 / -0.0006 |
| 3<D≤6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤16 | +0 / -0.027 | +0 / -0.0011 |

| Pcs per Pack | Bright EDP Number | TiAlN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Leng1 L (mm) | Shank Diameter d (mm) |
|--------------|-------------------|------------------|-----------------|-----------|-------------|-------|---------|-------------------------|-------------------------|--------------------------|
| | | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 10 | 1640590-SO | 1640590A-SO | - | - | - | 5.900 | 0.23228 | 57 | 93 | 5.90 |
| 10 | 1640594-SO | 1640594A-SO | - | - | A | 5.944 | 0.23400 | | | 5.94 |
| 10 | 1640595-SO | 1640595A-SO | 15/64 | - | - | 5.953 | 0.23438 | | | 5.95 |
| 10 | 1640600-SO | 1640600A-SO | - | - | - | 6.000 | 0.23622 | | | 6.00 |
| 10 | 1640605-SO | 1640605A-SO | - | - | B | 6.045 | 0.23800 | | | 6.05 |
| 10 | 1640610-SO | 1640610A-SO | - | - | - | 6.100 | 0.24016 | 6.10 | | |
| 10 | 1640615-SO | 1640615A-SO | - | - | C | 6.147 | 0.24200 | 6.15 | | |
| 10 | 1640620-SO | 1640620A-SO | - | - | - | 6.200 | 0.24409 | 6.20 | | |
| 10 | 1640625-SO | 1640625A-SO | - | - | D | 6.248 | 0.24600 | 6.25 | | |
| 10 | 1640630-SO | 1640630A-SO | - | - | - | 6.300 | 0.24803 | 6.30 | | |
| 10 | 1640634-SO | 1640634A-SO | - | - | E | 6.350 | 0.25000 | 6.35 | | |
| 10 | 1640635-SO | 1640635A-SO | 1/4 | - | - | - | - | 6.35 | | |
| 10 | 1640640-SO | 1640640A-SO | - | - | - | 6.400 | 0.25197 | 6.40 | | |
| 10 | 1640650-SO | 1640650A-SO | - | - | - | 6.500 | 0.25591 | 6.50 | | |
| 10 | 1640653-SO | 1640653A-SO | - | - | F | 6.528 | 0.25700 | 6.53 | | |
| 10 | 1640660-SO | 1640660A-SO | - | - | - | 6.600 | 0.25984 | 6.60 | | |
| 10 | 1640663-SO | 1640663A-SO | - | - | G | 6.629 | 0.26100 | 6.63 | | |
| 10 | 1640670-SO | 1640670A-SO | - | - | - | 6.700 | 0.26378 | 6.70 | | |
| 10 | 1640677-SO | 1640677A-SO | 17/64 | - | - | 6.747 | 0.26563 | 6.75 | | |
| 10 | 1640676-SO | 1640676A-SO | - | - | H | 6.756 | 0.26600 | 6.76 | | |
| 10 | 1640680-SO | 1640680A-SO | - | - | - | 6.800 | 0.26772 | 6.80 | | |
| 10 | 1640690-SO | 1640690A-SO | - | - | - | 6.900 | 0.27165 | 6.90 | | |
| 10 | 1640691-SO | 1640691A-SO | - | - | - | 6.910 | 0.27205 | - | | |
| 10 | 1640700-SO | 1640700A-SO | - | - | - | 7.000 | 0.27559 | 7.00 | | |
| 10 | 1640704-SO | 1640704A-SO | - | - | J | 7.036 | 0.27700 | 7.04 | | |
| 10 | 1640710-SO | 1640710A-SO | - | - | - | 7.100 | 0.27953 | 7.10 | | |
| 10 | 1640713-SO | 1640713A-SO | - | - | K | 7.137 | 0.28100 | 7.14 | | |
| 10 | 1640714-SO | 1640714A-SO | 9/32 | - | - | 7.144 | 0.28125 | 7.14 | | |
| 10 | 1640720-SO | 1640720A-SO | - | - | - | 7.200 | 0.28346 | 7.20 | | |
| 10 | 1640725-SO | 1640725A-SO | - | - | - | 7.250 | 0.28543 | 7.25 | | |
| 10 | 1640730-SO | 1640730A-SO | - | - | - | 7.300 | 0.28740 | 7.30 | | |
| 10 | 1640737-SO | 1640737A-SO | - | - | L | 7.366 | 0.29000 | 7.37 | | |
| 10 | 1640740-SO | 1640740A-SO | - | - | - | 7.400 | 0.29134 | 7.40 | | |
| 10 | 1640749-SO | 1640749A-SO | - | - | M | 7.493 | 0.29500 | 7.49 | | |
| 10 | 1640750-SO | 1640750A-SO | - | - | - | 7.500 | 0.29528 | 7.50 | | |
| 10 | 1640754-SO | 1640754A-SO | 19/64 | - | - | 7.541 | 0.29688 | 7.54 | | |
| 10 | 1640760-SO | 1640760A-SO | - | - | - | 7.600 | 0.29921 | 7.60 | | |
| 10 | 1640767-SO | 1640767A-SO | - | - | N | 7.671 | 0.30200 | 7.67 | | |
| 10 | 1640770-SO | 1640770A-SO | - | - | - | 7.700 | 0.30315 | 7.70 | | |
| 10 | 1640780-SO | 1640780A-SO | - | - | - | 7.800 | 0.30709 | 7.80 | | |
| 10 | 1640790-SO | 1640790A-SO | - | - | - | 7.900 | 0.31102 | 7.90 | | |
| 10 | 1640794-SO | 1640794A-SO | 5/16 | - | - | 7.938 | 0.31250 | 7.94 | | |
| 10 | 1640800-SO | 1640800A-SO | - | - | - | 8.000 | 0.31496 | 8.00 | | |
| 10 | 1640803-SO | 1640803A-SO | - | - | O | 8.026 | 0.31600 | 8.03 | | |
| 10 | 1640810-SO | 1640810A-SO | - | - | - | 8.100 | 0.31890 | 8.10 | | |
| 10 | 1640821-SO | 1640821A-SO | - | - | P | 8.204 | 0.32300 | 8.21 | | |
| 10 | 1640833-SO | - | 21/64 | - | - | 8.334 | 0.32813 | 8.33 | | |
| 10 | 1640843-SO | 1640843A-SO | - | - | Q | 8.433 | 0.33200 | 8.43 | | |
| 10 | 1640850-SO | 1640850A-SO | - | - | - | 8.500 | 0.33465 | 8.50 | | |

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.





List 164-SO (Continued)

Parabolic Flute, Jobber Drills

NEW SPEED FEED P393 HSS-Co5 TYPE FS BR TiAIN JOBBERS 40°

| Pcs per Pack | Bright EDP Number | TiAIN EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Leng1 L (mm) | Shank Diameter d (mm) |
|--------------|-------------------|------------------|-----------------|-----------|-------------|--------|---------|-------------------------|-------------------------|--------------------------|
| | | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 10 | - | 1640861A-SO | - | - | R | 8.611 | 0.33900 | 81 | 125 | 8.61 |
| 10 | 1640870-SO | - | - | - | - | 8.700 | 0.34252 | | | 8.70 |
| 10 | 1640873-SO | 1640873A-SO | 11/32 | - | - | 8.731 | 0.34375 | | | 8.73 |
| 10 | 1640880-SO | - | - | - | - | 8.800 | 0.34646 | | | 8.80 |
| 10 | 1640884-SO | 1640884A-SO | - | - | S | 8.839 | 0.34800 | | | 8.84 |
| 10 | 1640900-SO | 1640900A-SO | - | - | - | 9.000 | 0.35433 | | | 9.00 |
| 10 | 1640913-SO | 1640913A-SO | 23/64 | - | - | 9.128 | 0.35938 | | | 9.13 |
| 10 | 1640920-SO | 1640920A-SO | - | - | - | 9.200 | 0.36220 | | | 9.20 |
| 10 | - | 1640930A-SO | - | - | - | 9.300 | 0.36614 | | | 9.30 |
| 10 | 1640935-SO | 1640935A-SO | - | - | U | 9.347 | 0.36800 | | | 9.35 |
| 10 | 1640950-SO | 1640950A-SO | - | - | - | 9.500 | 0.37402 | | | 9.50 |
| 10 | 1640953-SO | 1640953A-SO | 3/8 | - | - | 9.525 | 0.37500 | | | 9.53 |
| 10 | 1640958-SO | 1640958A-SO | - | - | V | 9.576 | 0.37700 | | | 9.58 |
| 10 | 1640960-SO | 1640960A-SO | - | - | - | 9.600 | 0.37795 | | | 9.60 |
| 10 | 1640970-SO | 1640970A-SO | - | - | - | 9.700 | 0.38189 | 9.70 | | |
| 10 | 1640981-SO | 1640981A-SO | - | - | W | 9.804 | 0.38600 | 9.81 | | |
| 5 | 1640992-SO | 1640992A-SO | 25/64 | - | - | 9.922 | 0.39063 | 9.92 | | |
| 5 | 1641000-SO | 1641000A-SO | - | - | - | 10.000 | 0.39370 | 10.00 | | |
| 5 | - | 1641026A-SO | - | - | Y | 10.262 | 0.40400 | 10.26 | | |
| 5 | 1641032-SO | 1641032A-SO | 13/32 | - | - | 10.319 | 0.40625 | 10.32 | | |
| 5 | - | 1641049A-SO | - | - | Z | 10.490 | 0.41300 | 10.49 | | |
| 5 | 1641050-SO | 1641050A-SO | - | - | - | 10.500 | 0.41339 | 10.50 | | |
| 5 | 1641072-SO | 1641072A-SO | 27/64 | - | - | 10.716 | 0.42188 | 10.72 | | |
| 5 | 1641100-SO | 1641100A-SO | - | - | - | 11.000 | 0.43307 | 11.00 | | |
| 5 | 1641111-SO | 1641111A-SO | 7/16 | - | - | 11.113 | 0.43750 | 11.11 | | |
| 5 | 1641150-SO | 1641150A-SO | - | - | - | 11.500 | 0.45276 | 11.50 | | |
| 5 | 1641151-SO | - | 29/64 | - | - | 11.509 | 0.45313 | 11.51 | | |
| 5 | 1641191-SO | - | 15/32 | - | - | 11.906 | 0.46875 | 11.91 | | |
| 5 | 1641200-SO | 1641200A-SO | - | - | - | 12.000 | 0.47244 | 12.00 | | |
| 5 | 1641229-SO | 1641229A-SO | 31/64 | - | - | 12.303 | 0.48438 | 12.29 | | |
| 5 | 1641250-SO | 1641250A-SO | - | - | - | 12.500 | 0.49213 | 12.50 | | |
| 5 | 1641269-SO | 1641269A-SO | 1/2 | - | - | 12.700 | 0.50000 | 12.70 | | |
| 5 | 1641300-SO | 1641300A-SO | - | - | - | 13.000 | 0.51181 | 13.00 | | |
| 1 | 1641310-SO | - | 33/64 | - | - | 13.097 | 0.51563 | 13.10 | | |
| 1 | 1641349-SO | 1641349A-SO | 17/32 | - | - | 13.494 | 0.53125 | 13.49 | | |
| 1 | 1641389-SO | - | 35/64 | - | - | 13.891 | 0.54690 | 13.89 | | |
| 1 | - | 1641400A-SO | - | - | - | 14.000 | 0.55118 | 14.00 | | |
| 1 | 1641429-SO | 1641429A-SO | 9/16 | - | - | 14.288 | 0.56250 | 14.29 | | |
| 1 | 1641450-SO | - | - | - | - | 14.500 | 0.57087 | 14.50 | | |
| 1 | 1641468-SO | - | 37/64 | - | - | 14.684 | 0.57813 | 14.68 | | |
| 1 | - | 1641508A-SO | 19/32 | - | - | 15.081 | 0.59375 | 15.08 | | |
| 1 | 1641548-SO | - | 39/64 | - | - | 15.478 | 0.60938 | 15.48 | | |
| 1 | 1641588-SO | - | 5/8 | - | - | 15.875 | 0.62500 | 15.88 | | |

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | |
|---------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--|--|
| | P | | | | Die Steels | M | | | K Cast Iron | N | | S Titanium | H | | | |
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | Nickel Alloy | | Hardened Steels | | | |
| Low 1010 1018 | Med. 1035 1045 | High 1065 | 4140 4340 | 300 | 400 | 17-4 PH | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 164-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |

good best



List 164-SO (Continued)

SET, Parabolic Flute, Jobber Drills

| | | | | | | |
|------------|---------------------------|----------------|----------------|-----------|----------------|------------|
| NEW | SPEED FEED P393 | HSS-Co5 | TYPE FS | BR | JOBBERS | 40° |
|------------|---------------------------|----------------|----------------|-----------|----------------|------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 16 | +0 / -0.027 | +0 / -0.0011 |

| Drill Set EDP Bright Finish | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|--------------------------------|-----------------|-----------|-------------|---------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 1640025-SO | - | - | - | 1.00 | 0.03937 | 12 | 34 | 1.0 |
| | - | - | - | 1.50 | 0.05906 | 18 | 40 | 1.5 |
| | - | - | - | 2.00 | 0.07874 | 24 | 49 | 2.0 |
| | - | - | - | 2.50 | 0.09843 | 30 | 57 | 2.5 |
| | - | - | - | 3.00 | 0.11811 | 33 | 61 | 3.0 |
| | - | - | - | 3.50 | 0.13780 | 39 | 70 | 3.5 |
| | - | - | - | 4.00 | 0.15748 | 43 | 75 | 4.0 |
| | - | - | - | 4.50 | 0.17717 | 47 | 80 | 4.5 |
| | - | - | - | 5.00 | 0.19685 | 52 | 86 | 5.0 |
| | - | - | - | 5.50 | 0.21654 | 57 | 93 | 5.5 |
| | - | - | - | 6.00 | 0.23622 | | | 6.0 |
| | - | - | - | 6.50 | 0.25591 | 63 | 101 | 6.5 |
| | - | - | - | 7.00 | 0.27559 | 69 | 109 | 7.0 |
| | - | - | - | 7.50 | 0.29528 | 75 | 117 | 7.5 |
| | - | - | - | 8.00 | 0.31496 | | | 8.0 |
| | - | - | - | 8.50 | 0.33465 | 81 | 125 | 8.5 |
| | - | - | - | 9.00 | 0.35433 | | | 9.0 |
| | - | - | - | 9.50 | 0.37402 | 87 | 133 | 9.5 |
| | - | - | - | 10.00 | 0.39370 | | | 10.0 |
| | - | - | - | 10.50 | 0.41339 | 94 | 142 | 10.5 |
| - | - | - | 11.00 | 0.43307 | 11.0 | | | |
| - | - | - | 11.50 | 0.45276 | 101 | 151 | 11.5 | |
| - | - | - | 12.00 | 0.47244 | | | 12.0 | |
| - | - | - | 12.50 | 0.49213 | 101 | 151 | 12.5 | |
| - | - | - | 13.00 | 0.51181 | | | 13.0 | |

EDP's listed above are stocked standard, TiAlN coating is available upon request. Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S Titanium | H | | | | |
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | | Nickel Alloy | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 164-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

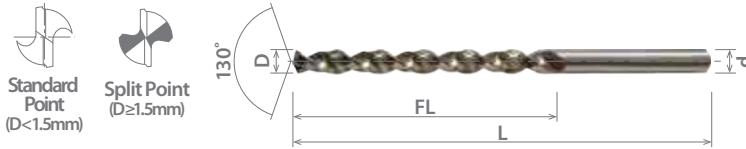




List 110-SO

Parabolic Flute, Long Series Drills

NEW SPEED FEED P393 HSS-Co5 TYPE FS BR LONG 40°



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 13 | +0 / -0.027 | +0 / -0.0011 |

| Pcs per Pack | EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|--------------|------------|-----------------|------------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | | Fractional Size | Wire Gauge | Letter Size | mm | Inch | | | |
| 10 | 1100100-SO | - | - | - | 1.000 | 0.03937 | 33 | 56 | 1.00 |
| 10 | 1100102-SO | - | 60 | - | 1.016 | 0.04000 | | | 1.02 |
| 10 | 1100104-SO | - | 59 | - | 1.041 | 0.04100 | | | 1.04 |
| 10 | 1100107-SO | - | 58 | - | 1.067 | 0.04200 | 37 | 60 | 1.07 |
| 10 | 1100109-SO | - | 57 | - | 1.092 | 0.04300 | | | 1.09 |
| 10 | 1100110-SO | - | - | - | 1.100 | 0.04331 | | | 1.10 |
| 10 | 1100118-SO | - | 56 | - | 1.181 | 0.04650 | 41 | 65 | 1.18 |
| 10 | 1100120-SO | - | - | - | 1.200 | 0.04724 | | | 1.20 |
| 10 | 1100130-SO | - | - | - | 1.300 | 0.05118 | | | 1.30 |
| 10 | 1100132-SO | - | 55 | - | 1.321 | 0.05200 | 45 | 70 | 1.32 |
| 10 | 1100139-SO | - | 54 | - | 1.397 | 0.05500 | | | 1.39 |
| 10 | 1100140-SO | - | - | - | 1.400 | 0.05512 | | | 1.40 |
| 10 | 1100150-SO | - | - | - | 1.500 | 0.05906 | 50 | 76 | 1.50 |
| 10 | 1100152-SO | - | 53 | - | 1.511 | 0.05950 | | | 1.52 |
| 10 | 1100159-SO | 1/16 | - | - | 1.588 | 0.06250 | | | 1.59 |
| 10 | 1100160-SO | - | - | - | 1.600 | 0.06299 | 53 | 80 | 1.60 |
| 10 | 1100161-SO | - | 52 | - | 1.613 | 0.06350 | | | 1.61 |
| 10 | 1100169-SO | - | - | - | 1.690 | 0.06654 | | | 1.70 |
| 10 | 1100170-SO | - | 51 | - | 1.702 | 0.06700 | 56 | 85 | 1.70 |
| 10 | 1100178-SO | - | 50 | - | 1.778 | 0.07000 | | | 1.78 |
| 10 | 1100180-SO | - | - | - | 1.800 | 0.07087 | | | 1.80 |
| 10 | 1100185-SO | - | 49 | - | 1.854 | 0.07300 | 59 | 90 | 1.85 |
| 10 | 1100190-SO | - | - | - | 1.900 | 0.07480 | | | 1.90 |
| 10 | 1100193-SO | - | 48 | - | 1.930 | 0.07600 | | | 1.93 |
| 10 | 1100198-SO | 5/64 | - | - | 1.984 | 0.07813 | 59 | 90 | 1.98 |
| 10 | 1100199-SO | - | 47 | - | 1.994 | 0.07850 | | | 1.99 |
| 10 | 1100200-SO | - | - | - | 2.000 | 0.07874 | | | 2.00 |
| 10 | 1100206-SO | - | 46 | - | 2.057 | 0.08100 | 59 | 90 | 2.06 |
| 10 | 1100208-SO | - | 45 | - | 2.083 | 0.08200 | | | 2.08 |
| 10 | 1100210-SO | - | - | - | 2.100 | 0.08268 | | | 2.10 |
| 10 | 1100218-SO | - | 44 | - | 2.184 | 0.08600 | 59 | 90 | 2.18 |
| 10 | 1100220-SO | - | - | - | 2.200 | 0.08661 | | | 2.20 |
| 10 | 1100226-SO | - | 43 | - | 2.261 | 0.08900 | | | 2.26 |
| 10 | 1100230-SO | - | - | - | 2.300 | 0.09055 | 2.30 | | |

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|----------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|
| | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | | Alloy Steels Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium | | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | 4140 4340 | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 110-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best

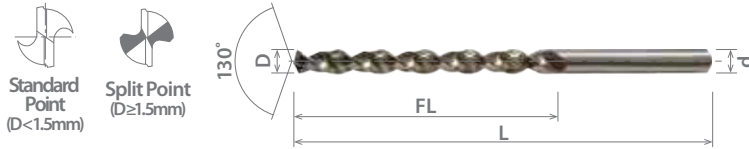




List 110-SO (Continued)

| | | | | | | |
|------------|---------------------------|----------------|----------------|-----------|-------------|------------|
| NEW | SPEED FEED P393 | HSS-Co5 | TYPE FS | BR | LONG | 40° |
|------------|---------------------------|----------------|----------------|-----------|-------------|------------|

Parabolic Flute, Long Series Drills



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 13 | +0 / -0.027 | +0 / -0.0011 |

| Pcs per Pack | EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|--------------|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 10 | 1100237-SO | - | 42 | - | 2.375 | 0.09350 | 62 | 95 | 2.37 |
| 10 | 1100238-SO | 3/32 | - | - | 2.381 | 0.09375 | | | 2.38 |
| 10 | 1100240-SO | - | - | - | 2.400 | 0.09449 | | | 2.40 |
| 10 | 1100244-SO | - | 41 | - | 2.438 | 0.09600 | | | 2.44 |
| 10 | 1100249-SO | - | 40 | - | 2.489 | 0.09800 | | | 2.49 |
| 10 | 1100250-SO | - | - | - | 2.500 | 0.09843 | | | 2.50 |
| 10 | 1100253-SO | - | 39 | - | 2.527 | 0.09950 | | | 2.53 |
| 10 | 1100258-SO | - | 38 | - | 2.578 | 0.10150 | | | 2.58 |
| 10 | 1100260-SO | - | - | - | 2.600 | 0.10236 | | | 2.60 |
| 10 | 1100264-SO | - | 37 | - | 2.642 | 0.10400 | | | 2.64 |
| 10 | 1100270-SO | - | - | - | 2.700 | 0.10630 | 2.70 | | |
| 10 | 1100271-SO | - | 36 | - | 2.705 | 0.10650 | 2.71 | | |
| 10 | 1100278-SO | 7/64 | - | - | 2.779 | 0.10940 | 2.78 | | |
| 10 | 1100279-SO | - | 35 | - | 2.794 | 0.11000 | 2.79 | | |
| 10 | 1100280-SO | - | - | - | 2.800 | 0.11024 | 2.80 | | |
| 10 | 1100282-SO | - | 34 | - | 2.819 | 0.11100 | 2.82 | | |
| 10 | 1100287-SO | - | 33 | - | 2.870 | 0.11300 | 2.87 | | |
| 10 | 1100290-SO | - | - | - | 2.900 | 0.11417 | 2.90 | | |
| 10 | 1100295-SO | - | 32 | - | 2.946 | 0.11600 | 2.95 | | |
| 10 | 1100300-SO | - | - | - | 3.000 | 0.11811 | 3.00 | | |
| 10 | 1100305-SO | - | 31 | - | 3.048 | 0.12000 | 3.05 | | |
| 10 | 1100310-SO | - | - | - | 3.100 | 0.12205 | 3.10 | | |
| 10 | 1100318-SO | 1/8 | - | - | 3.175 | 0.12500 | 3.18 | | |
| 10 | 1100320-SO | - | - | - | 3.200 | 0.12598 | 3.20 | | |
| 10 | 1100326-SO | - | 30 | - | 3.264 | 0.12850 | 3.26 | | |
| 10 | 1100330-SO | - | - | - | 3.300 | 0.12992 | 3.30 | | |
| 10 | 1100340-SO | - | - | - | 3.400 | 0.13386 | 3.40 | | |
| 10 | 1100345-SO | - | 29 | - | 3.454 | 0.13600 | 3.45 | | |
| 10 | 1100350-SO | - | - | - | 3.500 | 0.13780 | 3.50 | | |
| 10 | 1100356-SO | - | 28 | - | 3.569 | 0.14050 | 3.56 | | |
| 10 | 1100357-SO | 9/64 | - | - | 3.572 | 0.14063 | 3.57 | | |
| 10 | 1100360-SO | - | - | - | 3.600 | 0.14173 | 3.60 | | |
| 10 | 1100366-SO | - | 27 | - | 3.658 | 0.14400 | 3.66 | | |
| 10 | 1100370-SO | - | - | - | 3.700 | 0.14567 | 3.70 | | |
| 10 | 1100373-SO | - | 26 | - | 3.734 | 0.14700 | 3.73 | | |
| 10 | 1100379-SO | - | 25 | - | 3.797 | 0.14950 | 3.79 | | |
| 10 | 1100380-SO | - | - | - | 3.800 | 0.14961 | 3.80 | | |
| 10 | 1100386-SO | - | 24 | - | 3.861 | 0.15200 | 3.86 | | |
| 10 | 1100390-SO | - | - | - | 3.900 | 0.15354 | 3.90 | | |
| 10 | 1100391-SO | - | 23 | - | 3.912 | 0.15400 | 3.91 | | |
| 10 | 1100397-SO | 5/32 | - | - | 3.969 | 0.15625 | 3.97 | | |
| 10 | 1100399-SO | - | 22 | - | 3.988 | 0.15700 | 3.99 | | |
| 10 | 1100400-SO | - | - | - | 4.000 | 0.15748 | 4.00 | | |
| 10 | 1100404-SO | - | 21 | - | 4.039 | 0.15900 | 4.04 | | |
| 10 | 1100409-SO | - | 20 | - | 4.089 | 0.16100 | 4.09 | | |
| 10 | 1100410-SO | - | - | - | 4.100 | 0.16142 | 4.10 | | |
| 10 | 1100420-SO | - | - | - | 4.200 | 0.16535 | 4.20 | | |
| 10 | 1100422-SO | - | 19 | - | 4.216 | 0.16600 | 4.22 | | |

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.





List 110-SO (Continued)

Parabolic Flute, Long Series Drills

NEW SPEED FEED P393 HSS-Co5 TYPE FS BR LONG 40°

| Pcs per Pack | EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|--------------|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 10 | 1100430-SO | - | - | - | 4.300 | 0.16929 | 82 | 126 | 4.30 |
| 10 | 1100431-SO | - | 18 | - | 4.305 | 0.16950 | | | 4.31 |
| 10 | 1100437-SO | 11/64 | - | - | 4.366 | 0.17188 | | | 4.37 |
| 10 | 1100439-SO | - | 17 | - | 4.394 | 0.17300 | | | 4.39 |
| 10 | 1100440-SO | - | - | - | 4.400 | 0.17323 | | | 4.40 |
| 10 | 1100449-SO | - | 16 | - | 4.496 | 0.17700 | | | 4.49 |
| 10 | 1100450-SO | - | - | - | 4.500 | 0.17717 | | | 4.50 |
| 10 | 1100457-SO | - | 15 | - | 4.572 | 0.18000 | | | 4.57 |
| 10 | 1100460-SO | - | - | - | 4.600 | 0.18110 | | | 4.60 |
| 10 | 1100462-SO | - | 14 | - | 4.623 | 0.18200 | | | 4.62 |
| 10 | 1100469-SO | - | 13 | - | 4.699 | 0.18500 | | | 4.69 |
| 10 | 1100470-SO | - | - | - | 4.700 | 0.18504 | | | 4.70 |
| 10 | 1100476-SO | 3/16 | - | - | 4.763 | 0.18750 | | | 4.76 |
| 10 | 1100480-SO | - | - | - | 4.800 | 0.18898 | | | 4.80 |
| 10 | 1100479-SO | - | 12 | - | 4.801 | 0.18900 | | | 4.79 |
| 10 | 1100485-SO | - | 11 | - | 4.851 | 0.19100 | | | 4.85 |
| 10 | 1100490-SO | - | - | - | 4.900 | 0.19291 | 4.90 | | |
| 10 | 1100492-SO | - | 10 | - | 4.915 | 0.19350 | 4.92 | | |
| 10 | 1100498-SO | - | 9 | - | 4.978 | 0.19600 | 4.98 | | |
| 10 | 1100500-SO | - | - | - | 5.000 | 0.19685 | 5.00 | | |
| 10 | 1100506-SO | - | 8 | - | 5.055 | 0.19900 | 5.06 | | |
| 10 | 1100510-SO | - | - | - | 5.100 | 0.20079 | 5.10 | | |
| 10 | 1100511-SO | - | 7 | - | 5.105 | 0.20100 | 5.11 | | |
| 10 | 1100516-SO | 13/64 | - | - | 5.159 | 0.20313 | 5.16 | | |
| 10 | 1100518-SO | - | 6 | - | 5.182 | 0.20400 | 5.18 | | |
| 10 | 1100520-SO | - | - | - | 5.200 | 0.20472 | 5.20 | | |
| 10 | 1100522-SO | - | 5 | - | 5.220 | 0.20550 | 5.22 | | |
| 10 | 1100530-SO | - | - | - | 5.300 | 0.20866 | 5.30 | | |
| 10 | 1100532-SO | - | 4 | - | 5.309 | 0.20900 | 5.32 | | |
| 10 | 1100540-SO | - | - | - | 5.400 | 0.21260 | 5.40 | | |
| 10 | 1100541-SO | - | 3 | - | 5.410 | 0.21300 | 5.41 | | |
| 10 | 1100550-SO | - | - | - | 5.500 | 0.21654 | 5.50 | | |
| 10 | 1100556-SO | 7/32 | - | - | 5.556 | 0.21875 | 5.56 | | |
| 10 | 1100560-SO | - | - | - | 5.600 | 0.22047 | 5.60 | | |
| 10 | 1100561-SO | - | 2 | - | 5.613 | 0.22100 | 5.61 | | |
| 10 | 1100570-SO | - | - | - | 5.700 | 0.22441 | 5.70 | | |
| 10 | 1100579-SO | - | 1 | - | 5.791 | 0.22800 | 5.79 | | |
| 10 | 1100580-SO | - | - | - | 5.800 | 0.22835 | 5.80 | | |
| 10 | 1100590-SO | - | - | - | 5.900 | 0.23228 | 5.90 | | |
| 10 | 1100595-SO | 15/64 | - | - | 5.953 | 0.23438 | 5.95 | | |
| 10 | 1100600-SO | - | - | - | 6.000 | 0.23622 | 6.00 | | |

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------------------|------------|------------------|-----|---------|-------------------------------------|--------------|---------|--------------|-------------------------------------|-----------------|--------------|--------------|--------------|
| | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 110-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | <input checked="" type="checkbox"/> | | | | <input checked="" type="checkbox"/> | | | | |

good best

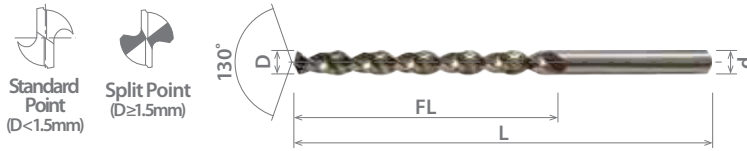




List 110-SO (Continued)

| | | | | | | |
|------------|---------------------------|----------------|----------------|-----------|-------------|------------|
| NEW | SPEED FEED P393 | HSS-Co5 | TYPE FS | BR | LONG | 40° |
|------------|---------------------------|----------------|----------------|-----------|-------------|------------|

Parabolic Flute, Long Series Drills



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 13 | +0 / -0.027 | +0 / -0.0011 |

| Pcs per Pack | EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|--------------|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 10 | 1100610-SO | - | - | - | 6.100 | 0.24016 | 97 | 148 | 6.10 |
| 10 | 1100620-SO | - | - | - | 6.200 | 0.24409 | | | 6.20 |
| 10 | 1100630-SO | - | - | - | 6.300 | 0.24803 | | | 6.30 |
| 10 | 1100635-SO | 1/4 | - | E | 6.350 | 0.25000 | | | 6.35 |
| 10 | 1100640-SO | - | - | - | 6.400 | 0.25197 | | | 6.40 |
| 10 | 1100650-SO | - | - | - | 6.500 | 0.25591 | | | 6.50 |
| 10 | 1100660-SO | - | - | - | 6.600 | 0.25984 | | | 6.60 |
| 10 | 1100670-SO | - | - | - | 6.700 | 0.26378 | | | 6.70 |
| 10 | 1100677-SO | 17/64 | - | - | 6.747 | 0.26563 | | | 6.75 |
| 10 | 1100680-SO | - | - | - | 6.800 | 0.26772 | | | 6.80 |
| 10 | 1100690-SO | - | - | - | 6.900 | 0.27165 | 6.90 | | |
| 10 | 1100700-SO | - | - | - | 7.000 | 0.27559 | 7.00 | | |
| 10 | 1100710-SO | - | - | - | 7.100 | 0.27953 | 7.10 | | |
| 10 | 1100714-SO | 9/32 | - | - | 7.144 | 0.28125 | 7.14 | | |
| 10 | 1100720-SO | - | - | - | 7.200 | 0.28346 | 7.20 | | |
| 10 | 1100730-SO | - | - | - | 7.300 | 0.28740 | 7.30 | | |
| 10 | 1100740-SO | - | - | - | 7.400 | 0.29134 | 7.40 | | |
| 10 | 1100750-SO | - | - | - | 7.500 | 0.29528 | 7.50 | | |
| 10 | 1100754-SO | 19/64 | - | - | 7.541 | 0.29688 | 7.54 | | |
| 10 | 1100760-SO | - | - | - | 7.600 | 0.29921 | 7.60 | | |
| 10 | 1100770-SO | - | - | - | 7.700 | 0.30315 | 7.70 | | |
| 10 | 1100780-SO | - | - | - | 7.800 | 0.30709 | 7.80 | | |
| 10 | 1100790-SO | - | - | - | 7.900 | 0.31102 | 7.90 | | |
| 10 | 1100794-SO | 5/16 | - | - | 7.938 | 0.31250 | 7.94 | | |
| 10 | 1100800-SO | - | - | - | 8.000 | 0.31496 | 8.00 | | |
| 10 | 1100810-SO | - | - | - | 8.100 | 0.31890 | 8.10 | | |
| 10 | 1100820-SO | - | - | - | 8.200 | 0.32283 | 8.20 | | |
| 10 | 1100830-SO | - | - | - | 8.300 | 0.32677 | 8.30 | | |
| 10 | 1100833-SO | 21/64 | - | - | 8.334 | 0.32813 | 8.33 | | |
| 10 | 1100840-SO | - | - | - | 8.400 | 0.33071 | 8.40 | | |
| 10 | 1100850-SO | - | - | - | 8.500 | 0.33465 | 8.50 | | |
| 10 | 1100860-SO | - | - | - | 8.600 | 0.33858 | 8.60 | | |
| 10 | 1100870-SO | - | - | - | 8.700 | 0.34252 | 8.70 | | |
| 10 | 1100873-SO | 11/32 | - | - | 8.731 | 0.34375 | 8.73 | | |
| 10 | 1100880-SO | - | - | - | 8.800 | 0.34646 | 8.80 | | |
| 10 | 1100890-SO | - | - | - | 8.900 | 0.35039 | 8.90 | | |
| 10 | 1100900-SO | - | - | - | 9.000 | 0.35433 | 9.00 | | |
| 10 | 1100910-SO | - | - | - | 9.100 | 0.35827 | 9.10 | | |
| 10 | 1100913-SO | - | - | - | 9.130 | 0.35945 | 9.13 | | |
| 10 | 1100920-SO | - | - | - | 9.200 | 0.36220 | 9.20 | | |
| 10 | 1100930-SO | - | - | - | 9.300 | 0.36614 | 9.30 | | |
| 10 | 1100940-SO | - | - | - | 9.400 | 0.37008 | 9.40 | | |
| 10 | 1100950-SO | - | - | - | 9.500 | 0.37402 | 9.50 | | |
| 10 | 1100953-SO | 3/8 | - | - | 9.525 | 0.37500 | 9.53 | | |
| 10 | 1100960-SO | - | - | - | 9.600 | 0.37795 | 9.60 | | |
| 10 | 1100970-SO | - | - | - | 9.700 | 0.38189 | 9.70 | | |
| 10 | 1100980-SO | - | - | - | 9.800 | 0.38583 | 9.80 | | |
| 10 | 1100990-SO | - | - | - | 9.900 | 0.38976 | 9.90 | | |

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List 110-SO (Continued)

Parabolic Flute, Long Series Drills

| | | | | | | |
|------------|---------------------------|---------|---------|----|------|-----|
| NEW | SPEED FEED P393 | HSS-Co5 | TYPE FS | BR | LONG | 40° |
|------------|---------------------------|---------|---------|----|------|-----|

| Pcs per Pack | EDP Number | Diameter | | | | | Flute Length | Overall Length | Shank Diameter |
|--------------|------------|-----------------|-----------|-------------|--------|---------|--------------|----------------|----------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | FL (mm) | L (mm) | d (mm) |
| 5 | 1100992-SO | 25/64 | - | - | 9.922 | 0.39063 | 121 | 184 | 9.92 |
| 5 | 1101000-SO | - | - | - | 10.000 | 0.39370 | | | 10.00 |
| 5 | 1101032-SO | 13/32 | - | - | 10.319 | 0.40625 | | | 10.32 |
| 5 | 1101072-SO | 27/64 | - | - | 10.716 | 0.42188 | 128 | 195 | 10.72 |
| 5 | 1101111-SO | 7/16 | - | - | 11.113 | 0.43750 | | | 11.11 |
| 5 | 1101151-SO | 29/64 | - | - | 11.509 | 0.45313 | | | 11.51 |
| 5 | 1101191-SO | 15/32 | - | - | 11.906 | 0.46875 | 134 | 205 | 11.91 |
| 5 | 1101230-SO | 31/64 | - | - | 12.303 | 0.48438 | | | 12.30 |
| 5 | 1101270-SO | 1/2 | - | - | 12.700 | 0.50000 | | | 12.70 |

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 110-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | |

good best





List 1R5-SO

RED BAND, Ideal for Alloy Steels



| | | | | | | | | |
|------------|--|-------------------------------|----------------|---------------|----------------|--------------|----------------|------------|
| NEW | RED BAND TAPS P561-563 P648-650 | SPEED FEED P394-395 | HSS-Co5 | TYPE H | TYPE FS | TiAlN | JOBBERS | 30° |
|------------|--|-------------------------------|----------------|---------------|----------------|--------------|----------------|------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 13 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | | |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|----|------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | |
| 1R50100-SO | - | - | - | 1.000 | 0.03937 | 12 | 34 | 1.00 | | |
| 1R50150-SO | - | - | - | 1.500 | 0.05906 | 18 | 40 | 1.50 | | |
| 1R50160-SO | - | - | - | 1.600 | 0.06299 | 20 | 43 | 1.60 | | |
| 1R50198-SO | 5/64 | - | - | 1.984 | 0.07813 | 24 | 49 | 1.98 | | |
| 1R50199-SO | - | 47 | - | 1.994 | 0.07850 | | | 1.99 | | |
| 1R50200-SO | - | - | - | 2.000 | 0.07874 | | | 2.00 | | |
| 1R50206-SO | - | 46 | - | 2.057 | 0.08100 | | | 2.06 | | |
| 1R50208-SO | - | 45 | - | 2.083 | 0.08200 | | | 2.08 | | |
| 1R50210-SO | - | - | - | 2.100 | 0.08268 | | | 2.10 | | |
| 1R50218-SO | - | 44 | - | 2.184 | 0.08600 | | | 2.18 | | |
| 1R50226-SO | - | 43 | - | 2.261 | 0.08900 | | | 2.26 | | |
| 1R50237-SO | - | 42 | - | 2.375 | 0.09350 | 30 | 57 | 2.37 | | |
| 1R50238-SO | 3/32 | - | - | 2.381 | 0.09375 | | | 2.38 | | |
| 1R50244-SO | - | 41 | - | 2.438 | 0.09600 | | | 2.44 | | |
| 1R50249-SO | - | 40 | - | 2.489 | 0.09800 | | | 2.49 | | |
| 1R50250-SO | - | - | - | 2.500 | 0.09843 | | | 2.50 | | |
| 1R50253-SO | - | 39 | - | 2.527 | 0.09950 | | | 2.53 | | |
| 1R50258-SO | - | 38 | - | 2.578 | 0.10150 | | | 2.58 | | |
| 1R50264-SO | - | 37 | - | 2.642 | 0.10400 | | | 2.64 | | |
| 1R50271-SO | - | 36 | - | 2.705 | 0.10650 | 33 | 61 | 2.71 | | |
| 1R50278-SO | 7/64 | - | - | 2.778 | 0.10938 | | | 2.78 | | |
| 1R50279-SO | - | 35 | - | 2.794 | 0.11000 | | | 2.79 | | |
| 1R50282-SO | - | 34 | - | 2.819 | 0.11100 | | | 2.82 | | |
| 1R50287-SO | - | 33 | - | 2.870 | 0.11300 | | | 2.87 | | |
| 1R50290-SO | - | - | - | 2.900 | 0.11417 | | | 2.90 | | |
| 1R50295-SO | - | 32 | - | 2.946 | 0.11600 | | | 2.95 | | |
| 1R50300-SO | - | - | - | 3.000 | 0.11811 | | | 3.00 | | |
| 1R50305-SO | - | 31 | - | 3.048 | 0.12000 | 36 | 65 | 3.05 | | |
| 1R50318-SO | 1/8 | - | - | 3.175 | 0.12500 | | | 3.18 | | |
| 1R50326-SO | - | 30 | - | 3.264 | 0.12850 | | | 3.26 | | |
| 1R50330-SO | - | - | - | 3.300 | 0.12992 | | | 3.30 | | |
| 1R50345-SO | - | 29 | - | 3.454 | 0.13600 | | | 3.45 | | |
| 1R50350-SO | - | - | - | 3.500 | 0.13780 | | | 3.50 | | |
| 1R50356-SO | - | 28 | - | 3.569 | 0.14050 | | | 39 | 70 | 3.57 |
| 1R50357-SO | 9/64 | - | - | 3.572 | 0.14063 | | | | | 3.57 |
| 1R50366-SO | - | 27 | - | 3.658 | 0.14400 | 3.66 | | | | |
| 1R50370-SO | - | - | - | 3.700 | 0.14567 | 3.70 | | | | |
| 1R50373-SO | - | 26 | - | 3.734 | 0.14700 | 3.73 | | | | |
| 1R50379-SO | - | 25 | - | 3.797 | 0.14950 | 3.80 | | | | |
| 1R50386-SO | - | 24 | - | 3.861 | 0.15200 | 3.86 | | | | |
| 1R50391-SO | - | 23 | - | 3.912 | 0.15400 | 3.91 | | | | |
| 1R50397-SO | 5/32 | - | - | 3.969 | 0.15625 | 43 | 75 | 3.97 | | |
| 1R50399-SO | - | 22 | - | 3.988 | 0.15700 | | | 3.99 | | |
| 1R50400-SO | - | - | - | 4.000 | 0.15748 | | | 4.00 | | |
| 1R50404-SO | - | 21 | - | 4.039 | 0.15900 | | | 4.04 | | |
| 1R50409-SO | - | 20 | - | 4.089 | 0.16100 | | | 4.09 | | |
| 1R50420-SO | - | - | - | 4.200 | 0.16535 | | | 4.20 | | |
| 1R50422-SO | - | 19 | - | 4.216 | 0.16600 | | | 4.22 | | |

Packed: 1 pc.
Available TiAlN coating only.





List 1R5-SO (Continued)

RED BAND, Ideal for Alloy Steels

| | | | | | | | | |
|------------|---|-------------------------------|----------------|---------------|----------------|--------------|---------------|------------|
| NEW | RED BAND TAPS P561-563 648-650 | SPEED FEED P394-395 | HSS-Co5 | TYPE H | TYPE FS | TiAIN | JOBBER | 30° |
|------------|---|-------------------------------|----------------|---------------|----------------|--------------|---------------|------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 1R50431-SO | - | 18 | - | 4.305 | 0.16950 | 47 | 80 | 4.31 |
| 1R50437-SO | 11/64 | - | - | 4.366 | 0.17188 | | | 4.37 |
| 1R50439-SO | - | 17 | - | 4.394 | 0.17300 | | | 4.39 |
| 1R50449-SO | - | 16 | - | 4.496 | 0.17700 | | | 4.50 |
| 1R50450-SO | - | - | - | 4.500 | 0.17717 | | | 4.57 |
| 1R50457-SO | - | 15 | - | 4.572 | 0.18000 | | | 4.62 |
| 1R50462-SO | - | 14 | - | 4.623 | 0.18200 | | | 4.70 |
| 1R50469-SO | - | 13 | - | 4.699 | 0.18500 | | | 4.76 |
| 1R50476-SO | 3/16 | - | - | 4.763 | 0.18750 | | | 4.80 |
| 1R50479-SO | - | 12 | - | 4.801 | 0.18900 | | | 4.86 |
| 1R50485-SO | - | 11 | - | 4.851 | 0.19100 | 4.92 | | |
| 1R50492-SO | - | 10 | - | 4.915 | 0.19350 | 4.98 | | |
| 1R50498-SO | - | 9 | - | 4.978 | 0.19600 | 5.00 | | |
| 1R50500-SO | - | - | - | 5.000 | 0.19685 | 5.05 | | |
| 1R50506-SO | - | 8 | - | 5.055 | 0.19900 | 5.11 | | |
| 1R50511-SO | - | 7 | - | 5.105 | 0.20100 | 5.16 | | |
| 1R50516-SO | 13/64 | - | - | 5.159 | 0.20313 | 5.18 | | |
| 1R50518-SO | - | 6 | - | 5.182 | 0.20400 | 5.22 | | |
| 1R50522-SO | - | 5 | - | 5.220 | 0.20550 | 5.31 | | |
| 1R50532-SO | - | 4 | - | 5.309 | 0.20900 | 5.41 | | |
| 1R50541-SO | - | 3 | - | 5.410 | 0.21300 | 5.50 | | |
| 1R50550-SO | - | - | - | 5.500 | 0.21654 | 5.56 | | |
| 1R50556-SO | 7/32 | - | - | 5.556 | 0.21875 | 5.61 | | |
| 1R50561-SO | - | 2 | - | 5.613 | 0.22100 | 5.79 | | |
| 1R50579-SO | - | 1 | - | 5.791 | 0.22800 | 5.95 | | |
| 1R50595-SO | 15/64 | - | - | 5.953 | 0.23438 | 6.00 | | |
| 1R50600-SO | - | - | - | 6.000 | 0.23622 | 6.35 | | |
| 1R50635-SO | 1/4 | - | E | 6.350 | 0.25000 | 6.50 | | |
| 1R50650-SO | - | - | - | 6.500 | 0.25591 | 6.53 | | |
| 1R50653-SO | - | - | F | 6.528 | 0.25700 | 6.75 | | |
| 1R50675-SO | 17/64 | - | - | 6.747 | 0.26563 | 6.80 | | |
| 1R50680-SO | - | - | - | 6.800 | 0.26772 | 6.90 | | |
| 1R50691-SO | - | - | I | 6.909 | 0.27200 | 7.00 | | |
| 1R50700-SO | - | - | - | 7.000 | 0.27559 | 7.14 | | |
| 1R50714-SO | 9/32 | - | - | 7.144 | 0.28125 | 7.50 | | |
| 1R50750-SO | - | - | - | 7.500 | 0.29528 | 7.54 | | |
| 1R50754-SO | 19/64 | - | - | 7.541 | 0.29688 | 7.94 | | |
| 1R50794-SO | 5/16 | - | - | 7.938 | 0.31250 | 8.00 | | |
| 1R50800-SO | - | - | - | 8.000 | 0.31496 | 8.33 | | |
| 1R50833-SO | 21/64 | - | - | 8.334 | 0.32810 | 8.43 | | |
| 1R50843-SO | - | - | Q | 8.433 | 0.33200 | 8.50 | | |
| 1R50850-SO | - | - | - | 8.500 | 0.33465 | 8.73 | | |
| 1R50873-SO | 11/32 | - | - | 8.731 | 0.34375 | 9.00 | | |
| 1R50900-SO | - | - | - | 9.000 | 0.35433 | 9.13 | | |
| 1R50913-SO | 23/64 | - | - | 9.128 | 0.35938 | 9.50 | | |
| 1R50950-SO | - | - | - | 9.500 | 0.37402 | | | |

Packed: 1 pc.
Available TiAIN coating only.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|------|-------------------------------------|------------|------------------|-----|---------|-----------|-----------|---------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 1R5-SO | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 1R5-SO (Continued)

RED BAND, Ideal for Alloy Steels



| | | | | | | | | |
|------------|--|-------------------------------|----------------|---------------|----------------|--------------|----------------|------------|
| NEW | RED BAND TAPS P561-563 P648-650 | SPEED FEED P394-395 | HSS-Co5 | TYPE H | TYPE FS | TiAIN | JOBBERS | 30° |
|------------|--|-------------------------------|----------------|---------------|----------------|--------------|----------------|------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 13 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 1R50953-SO | 3/8 | - | - | 9.525 | 0.37500 | 87 | 133 | 9.53 |
| 1R50992-SO | 25/64 | - | - | 9.922 | 0.39063 | | | 9.92 |
| 1R51000-SO | - | - | - | 10.000 | 0.39370 | | | 10.00 |
| 1R51020-SO | - | - | - | 10.200 | 0.40157 | | | 10.20 |
| 1R51032-SO | 13/32 | - | - | 10.319 | 0.40625 | | | 10.32 |
| 1R51050-SO | - | - | - | 10.500 | 0.41339 | | | 10.50 |
| 1R51072-SO | 27/64 | - | - | 10.716 | 0.42188 | 94 | 142 | 10.72 |
| 1R51100-SO | - | - | - | 11.000 | 0.43307 | | | 11.00 |
| 1R51111-SO | 7/16 | - | - | 11.113 | 0.43750 | | | 11.11 |
| 1R51150-SO | - | - | - | 11.500 | 0.45276 | 101 | 151 | 11.50 |
| 1R51200-SO | - | - | - | 12.000 | 0.47244 | | | 12.00 |
| 1R51250-SO | - | - | - | 12.500 | 0.49213 | | | 12.50 |
| 1R51269-SO | 1/2 | - | - | 12.700 | 0.50000 | | | 12.70 |
| 1R51300-SO | - | - | - | 13.000 | 0.51181 | | | 13.00 |

Packed: 1 pc.
Available TiAIN coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------|-------------------------------------|------------|------------------|-----|---------|-----------|--------------|---------|--------------------------|-------------------------------|--------------------------|--------------------------|--------------|--------------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 1R5-SO | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |

good best





List 1BB-SO

BLUE BAND, Ideal for Stainless Steels



| | | | | | | | |
|------------|--|-------------------------------|----------------|----------------|--------------|----------------|------------|
| NEW | BLUE BAND TAPS P564-566 651-653 | SPEED FEED P394-395 | HSS-Co5 | TYPE VA | TiAlN | JOBBERS | 35° |
|------------|--|-------------------------------|----------------|----------------|--------------|----------------|------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 13 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 1BB0100-SO | - | - | - | 1.000 | 0.03937 | 12 | 34 | 1.00 |
| 1BB0150-SO | - | - | - | 1.500 | 0.05906 | 18 | 40 | 1.50 |
| 1BB0160-SO | - | - | - | 1.600 | 0.06299 | 20 | 43 | 1.60 |
| 1BB0198-SO | 5/64 | - | - | 1.984 | 0.07813 | 24 | 49 | 1.98 |
| 1BB0199-SO | - | 47 | - | 1.994 | 0.07850 | | | 1.99 |
| 1BB0200-SO | - | - | - | 2.000 | 0.07874 | | | 2.00 |
| 1BB0206-SO | - | 46 | - | 2.057 | 0.08100 | | | 2.06 |
| 1BB0208-SO | - | 45 | - | 2.083 | 0.08200 | | | 2.08 |
| 1BB0210-SO | - | - | - | 2.100 | 0.08268 | | | 2.10 |
| 1BB0218-SO | - | 44 | - | 2.184 | 0.08600 | | | 2.18 |
| 1BB0226-SO | - | 43 | - | 2.261 | 0.08900 | | | 2.26 |
| 1BB0237-SO | - | 42 | - | 2.375 | 0.09350 | | | 2.37 |
| 1BB0238-SO | 3/32 | - | - | 2.381 | 0.09375 | | | 2.38 |
| 1BB0244-SO | - | 41 | - | 2.438 | 0.09600 | 2.44 | | |
| 1BB0249-SO | - | 40 | - | 2.489 | 0.09800 | 2.49 | | |
| 1BB0250-SO | - | - | - | 2.500 | 0.09843 | 2.50 | | |
| 1BB0253-SO | - | 39 | - | 2.527 | 0.09950 | 2.53 | | |
| 1BB0258-SO | - | 38 | - | 2.578 | 0.10150 | 2.58 | | |
| 1BB0264-SO | - | 37 | - | 2.642 | 0.10400 | 2.64 | | |
| 1BB0270-SO | - | - | - | 2.700 | 0.10630 | 2.70 | | |
| 1BB0271-SO | - | 36 | - | 2.705 | 0.10650 | 2.71 | | |
| 1BB0278-SO | 7/64 | - | - | 2.779 | 0.10940 | 2.78 | | |
| 1BB0279-SO | - | 35 | - | 2.794 | 0.11000 | 2.79 | | |
| 1BB0282-SO | - | 34 | - | 2.819 | 0.11100 | 2.82 | | |
| 1BB0287-SO | - | 33 | - | 2.870 | 0.11300 | 2.87 | | |
| 1BB0290-SO | - | - | - | 2.900 | 0.11417 | 2.90 | | |
| 1BB0295-SO | - | 32 | - | 2.946 | 0.11600 | 2.95 | | |
| 1BB0300-SO | - | - | - | 3.000 | 0.11811 | 3.00 | | |
| 1BB0305-SO | - | 31 | - | 3.048 | 0.12000 | 3.05 | | |
| 1BB0318-SO | 1/8 | - | - | 3.175 | 0.12500 | 3.18 | | |
| 1BB0326-SO | - | 30 | - | 3.264 | 0.12850 | 3.26 | | |
| 1BB0330-SO | - | - | - | 3.300 | 0.12992 | 3.30 | | |
| 1BB0345-SO | - | 29 | - | 3.454 | 0.13600 | 3.45 | | |
| 1BB0350-SO | - | - | - | 3.500 | 0.13780 | 3.50 | | |
| 1BB0356-SO | - | 28 | - | 3.569 | 0.14050 | 3.57 | | |
| 1BB0357-SO | 9/64 | - | - | 3.571 | 0.14060 | 3.57 | | |
| 1BB0366-SO | - | 27 | - | 3.658 | 0.14400 | 3.66 | | |
| 1BB0370-SO | - | - | - | 3.700 | 0.14567 | 3.70 | | |
| 1BB0373-SO | - | 26 | - | 3.734 | 0.14700 | 3.73 | | |

Packed: 1 pc.
Available TiAlN coating only.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|-----|-----------|----------|--|-------------------------|-------------------------------|-----------------|---------|--|--|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| 1BB-SO | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | | 300 | 400 | | 17-4 PH | | | | 6061 7075 | Casting | | |

good best





List 1BB-SO (Continued)

BLUE BAND, Ideal for Stainless Steels



| | | | | | | | |
|------------|--|-------------------------------|----------------|----------------|--------------|----------------|------------|
| NEW | BLUE BAND TAPS P564-566 651-653 | SPEED FEED P394-395 | HSS-Co5 | TYPE VA | TiAIN | JOBBERS | 35° |
|------------|--|-------------------------------|----------------|----------------|--------------|----------------|------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1≤D≤3 | +0 / -0.014 | +0 / -0.0006 |
| 3<D≤6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤13 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 1BB0379-SO | - | 25 | - | 3.797 | 0.14950 | 43 | 75 | 3.80 |
| 1BB0386-SO | - | 24 | - | 3.861 | 0.15200 | | | 3.86 |
| 1BB0391-SO | - | 23 | - | 3.912 | 0.15400 | | | 3.91 |
| 1BB0397-SO | 5/32 | - | - | 3.969 | 0.15625 | | | 3.97 |
| 1BB0399-SO | - | 22 | - | 3.988 | 0.15700 | | | 3.99 |
| 1BB0400-SO | - | - | - | 4.000 | 0.15748 | | | 4.00 |
| 1BB0404-SO | - | 21 | - | 4.039 | 0.15900 | | | 4.04 |
| 1BB0409-SO | - | 20 | - | 4.089 | 0.16100 | | | 4.09 |
| 1BB0420-SO | - | - | - | 4.200 | 0.16535 | | | 4.20 |
| 1BB0422-SO | - | 19 | - | 4.216 | 0.16600 | | | 4.22 |
| 1BB0431-SO | - | 18 | - | 4.305 | 0.16950 | 4.31 | | |
| 1BB0437-SO | 11/64 | - | - | 4.366 | 0.17188 | 47 | 80 | 4.37 |
| 1BB0439-SO | - | 17 | - | 4.394 | 0.17300 | | | 4.39 |
| 1BB0449-SO | - | 16 | - | 4.496 | 0.17700 | | | 4.50 |
| 1BB0450-SO | - | - | - | 4.500 | 0.17717 | | | 4.57 |
| 1BB0457-SO | - | 15 | - | 4.572 | 0.18000 | | | 4.62 |
| 1BB0462-SO | - | 14 | - | 4.623 | 0.18200 | | | 4.62 |
| 1BB0469-SO | - | 13 | - | 4.699 | 0.18500 | | | 4.70 |
| 1BB0476-SO | 3/16 | - | - | 4.763 | 0.18750 | | | 4.76 |
| 1BB0479-SO | - | 12 | - | 4.801 | 0.18900 | | | 4.80 |
| 1BB0485-SO | - | 11 | - | 4.851 | 0.19100 | | | 4.86 |
| 1BB0492-SO | - | 10 | - | 4.915 | 0.19350 | 4.92 | | |
| 1BB0498-SO | - | 9 | - | 4.978 | 0.19600 | 4.98 | | |
| 1BB0500-SO | - | - | - | 5.000 | 0.19685 | 52 | 86 | 5.00 |
| 1BB0506-SO | - | 8 | - | 5.055 | 0.19900 | | | 5.05 |
| 1BB0511-SO | - | 7 | - | 5.105 | 0.20100 | | | 5.11 |
| 1BB0516-SO | 13/64 | - | - | 5.159 | 0.20313 | | | 5.16 |
| 1BB0518-SO | - | 6 | - | 5.182 | 0.20400 | | | 5.18 |
| 1BB0522-SO | - | 5 | - | 5.220 | 0.20550 | | | 5.22 |
| 1BB0530-SO | - | - | - | 5.300 | 0.20866 | | | 5.30 |
| 1BB0532-SO | - | 4 | - | 5.309 | 0.20900 | | | 5.31 |
| 1BB0541-SO | - | 3 | - | 5.410 | 0.21300 | | | 5.41 |
| 1BB0550-SO | - | - | - | 5.500 | 0.21654 | | | 5.50 |
| 1BB0556-SO | 7/32 | - | - | 5.556 | 0.21875 | 5.56 | | |
| 1BB0561-SO | - | 2 | - | 5.613 | 0.22100 | 5.61 | | |
| 1BB0579-SO | - | 1 | - | 5.791 | 0.22800 | 5.79 | | |
| 1BB0595-SO | 15/64 | - | - | 5.953 | 0.23438 | 5.95 | | |
| 1BB0600-SO | - | - | - | 6.000 | 0.23622 | 6.00 | | |
| 1BB0634-SO | 1/4 | - | E | 6.350 | 0.25000 | 63 | 101 | 6.35 |
| 1BB0650-SO | - | - | - | 6.500 | 0.25591 | | | 6.50 |
| 1BB0653-SO | - | - | F | 6.528 | 0.25700 | | | 6.53 |
| 1BB0675-SO | 17/64 | - | - | 6.747 | 0.26563 | 69 | 109 | 6.75 |
| 1BB0680-SO | - | - | - | 6.800 | 0.26772 | | | 6.80 |
| 1BB0691-SO | - | - | I | 6.909 | 0.27200 | | | 6.90 |
| 1BB0700-SO | - | - | - | 7.000 | 0.27559 | | | 7.00 |
| 1BB0714-SO | 9/32 | - | - | 7.144 | 0.28125 | | | 7.14 |
| 1BB0730-SO | - | - | - | 7.300 | 0.28740 | | | 7.30 |
| 1BB0750-SO | - | - | - | 7.500 | 0.29528 | | | 7.50 |

Packed: 1 pc.
Available TiAIN coating only.



List 1BB-SO (Continued)

BLUE BAND, Ideal for Stainless Steels

| | | | | | | | |
|------------|--|-------------------------------|----------------|----------------|--------------|----------------|------------|
| NEW | BLUE BAND TAPS P564-566 651-653 | SPEED FEED P394-395 | HSS-Co5 | TYPE VA | TiAIN | JOBBERS | 35° |
|------------|--|-------------------------------|----------------|----------------|--------------|----------------|------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 1BB0754-SO | 19/64 | - | - | 7.541 | 0.29688 | 75 | 117 | 7.54 |
| 1BB0780-SO | - | - | - | 7.800 | 0.30709 | | | 7.80 |
| 1BB0794-SO | 5/16 | - | - | 7.938 | 0.31250 | | | 7.94 |
| 1BB0800-SO | - | - | - | 8.000 | 0.31496 | | | 8.00 |
| 1BB0833-SO | 21/64 | - | - | 8.334 | 0.32813 | 81 | 125 | 8.33 |
| 1BB0843-SO | - | - | Q | 8.433 | 0.33200 | | | 8.43 |
| 1BB0850-SO | - | - | - | 8.500 | 0.33465 | | | 8.50 |
| 1BB0873-SO | 11/32 | - | - | 8.731 | 0.34375 | | | 8.73 |
| 1BB0880-SO | - | - | - | 8.800 | 0.34646 | 87 | 133 | 8.80 |
| 1BB0900-SO | - | - | - | 9.000 | 0.35433 | | | 9.00 |
| 1BB0913-SO | 23/64 | - | - | 9.128 | 0.35938 | | | 9.13 |
| 1BB0950-SO | - | - | - | 9.500 | 0.37402 | | | 9.50 |
| 1BB0953-SO | 3/8 | - | - | 9.525 | 0.37500 | 94 | 142 | 9.53 |
| 1BB0992-SO | 25/64 | - | - | 9.922 | 0.39063 | | | 9.92 |
| 1BB1000-SO | - | - | - | 10.000 | 0.39370 | | | 10.00 |
| 1BB1020-SO | - | - | - | 10.200 | 0.40157 | | | 10.20 |
| 1BB1032-SO | 13/32 | - | - | 10.319 | 0.40625 | 101 | 151 | 10.32 |
| 1BB1050-SO | - | - | - | 10.500 | 0.41339 | | | 10.50 |
| 1BB1072-SO | 27/64 | - | - | 10.716 | 0.42188 | | | 10.72 |
| 1BB1080-SO | - | - | - | 10.800 | 0.42520 | | | 10.80 |
| 1BB1100-SO | - | - | - | 11.000 | 0.43307 | 75 | 117 | 11.00 |
| 1BB1111-SO | 7/16 | - | - | 11.113 | 0.43750 | | | 11.11 |
| 1BB1150-SO | - | - | - | 11.500 | 0.45276 | | | 11.50 |
| 1BB1151-SO | 29/64 | - | - | 11.509 | 0.45313 | | | 11.51 |
| 1BB1191-SO | 15/32 | - | - | 11.906 | 0.46875 | 81 | 125 | 11.91 |
| 1BB1200-SO | - | - | - | 12.000 | 0.47244 | | | 12.00 |
| 1BB1229-SO | 31/64 | - | - | 12.303 | 0.48438 | | | 12.30 |
| 1BB1250-SO | - | - | - | 12.500 | 0.49213 | | | 12.50 |
| 1BB1269-SO | 1/2 | - | - | 12.700 | 0.50000 | 87 | 133 | 12.70 |
| 1BB1300-SO | - | - | - | 13.000 | 0.51181 | | | 13.00 |

Packed: 1 pc.
Available TiAIN coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|-----------|---------|--------------------------|--------------------------|-----------------|-----------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 1BB-SO | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | |

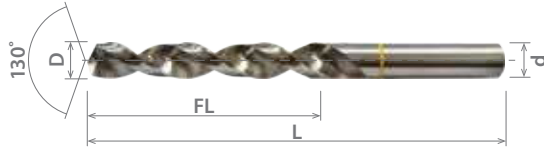
good best





List 1AQ-SO

YELLOW BAND, Ideal for Aluminum



| | | | | | | | |
|------------|--|-------------------------------|------------|---------------|-----------|----------------|------------|
| NEW | YELLOW BAND TAPS P567-569 654-656 | SPEED FEED P394-395 | HSS | TYPE W | BR | JOBBERS | 40° |
|------------|--|-------------------------------|------------|---------------|-----------|----------------|------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 0.9≤D≤3 | +0 / -0.014 | +0 / -0.0006 |
| 3<D≤6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤13 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 1AQ0090-SO | - | - | - | 0.900 | 0.03543 | 11 | 32 | 0.90 |
| 1AQ0100-SO | - | - | - | 1.000 | 0.03937 | 12 | 34 | 1.00 |
| 1AQ0110-SO | - | - | - | 1.100 | 0.04331 | 14 | 36 | 1.10 |
| 1AQ0120-SO | - | - | - | 1.200 | 0.04724 | 16 | 38 | 1.20 |
| 1AQ0130-SO | - | - | - | 1.300 | 0.05118 | 18 | 40 | 1.30 |
| 1AQ0140-SO | - | - | - | 1.400 | 0.05512 | 20 | 43 | 1.40 |
| 1AQ0150-SO | - | - | - | 1.500 | 0.05906 | 22 | 46 | 1.50 |
| 1AQ0160-SO | - | - | - | 1.600 | 0.06299 | 24 | 49 | 1.60 |
| 1AQ0170-SO | - | - | - | 1.700 | 0.06693 | 26 | 51 | 1.70 |
| 1AQ0175-SO | - | - | - | 1.750 | 0.06890 | 27 | 53 | 1.75 |
| 1AQ0180-SO | - | - | - | 1.800 | 0.07087 | 28 | 54 | 1.80 |
| 1AQ0190-SO | - | - | - | 1.900 | 0.07480 | 29 | 55 | 1.90 |
| 1AQ0198-SO | 5/64 | - | - | 1.984 | 0.07813 | 30 | 57 | 1.98 |
| 1AQ0199-SO | - | 47 | - | 1.994 | 0.07850 | 31 | 58 | 1.99 |
| 1AQ0200-SO | - | - | - | 2.000 | 0.07874 | 32 | 59 | 2.00 |
| 1AQ0206-SO | - | 46 | - | 2.057 | 0.08100 | 33 | 61 | 2.06 |
| 1AQ0208-SO | - | 45 | - | 2.083 | 0.08200 | 34 | 62 | 2.08 |
| 1AQ0210-SO | - | - | - | 2.100 | 0.08268 | 35 | 63 | 2.10 |
| 1AQ0218-SO | - | 44 | - | 2.184 | 0.08600 | 36 | 65 | 2.18 |
| 1AQ0220-SO | - | - | - | 2.200 | 0.08661 | 37 | 66 | 2.20 |
| 1AQ0225-SO | - | - | - | 2.250 | 0.08858 | 38 | 67 | 2.25 |
| 1AQ0226-SO | - | 43 | - | 2.261 | 0.08900 | 39 | 68 | 2.26 |
| 1AQ0230-SO | - | - | - | 2.300 | 0.09055 | 40 | 69 | 2.30 |
| 1AQ0237-SO | - | 42 | - | 2.375 | 0.09350 | 41 | 70 | 2.37 |
| 1AQ0238-SO | 3/32 | - | - | 2.381 | 0.09375 | 42 | 71 | 2.38 |
| 1AQ0240-SO | - | - | - | 2.400 | 0.09449 | 43 | 72 | 2.40 |
| 1AQ0244-SO | - | 41 | - | 2.438 | 0.09600 | 44 | 73 | 2.44 |
| 1AQ0249-SO | - | 40 | - | 2.489 | 0.09800 | 45 | 74 | 2.49 |
| 1AQ0250-SO | - | - | - | 2.500 | 0.09843 | 46 | 75 | 2.50 |
| 1AQ0253-SO | - | 39 | - | 2.527 | 0.09950 | 47 | 76 | 2.53 |
| 1AQ0258-SO | - | 38 | - | 2.578 | 0.10150 | 48 | 77 | 2.58 |
| 1AQ0260-SO | - | - | - | 2.600 | 0.10236 | 49 | 78 | 2.60 |
| 1AQ0264-SO | - | 37 | - | 2.642 | 0.10400 | 50 | 79 | 2.64 |
| 1AQ0270-SO | - | - | - | 2.700 | 0.10630 | 51 | 80 | 2.70 |
| 1AQ0271-SO | - | 36 | - | 2.705 | 0.10650 | 52 | 81 | 2.71 |
| 1AQ0275-SO | - | - | - | 2.750 | 0.10827 | 53 | 82 | 2.75 |
| 1AQ0278-SO | 7/64 | - | - | 2.778 | 0.10938 | 54 | 83 | 2.78 |
| 1AQ0279-SO | - | 35 | - | 2.794 | 0.11000 | 55 | 84 | 2.79 |
| 1AQ0280-SO | - | - | - | 2.800 | 0.11024 | 56 | 85 | 2.80 |
| 1AQ0282-SO | - | 34 | - | 2.819 | 0.11100 | 57 | 86 | 2.82 |
| 1AQ0287-SO | - | 33 | - | 2.870 | 0.11300 | 58 | 87 | 2.87 |
| 1AQ0290-SO | - | - | - | 2.900 | 0.11417 | 59 | 88 | 2.90 |
| 1AQ0295-SO | - | 32 | - | 2.946 | 0.11600 | 60 | 89 | 2.95 |
| 1AQ0300-SO | - | - | - | 3.000 | 0.11811 | 61 | 90 | 3.00 |
| 1AQ0305-SO | - | 31 | - | 3.048 | 0.12000 | 62 | 91 | 3.05 |
| 1AQ0310-SO | - | - | - | 3.100 | 0.12205 | 63 | 92 | 3.10 |
| 1AQ0318-SO | 1/8 | - | - | 3.175 | 0.12500 | 64 | 93 | 3.18 |
| 1AQ0320-SO | - | - | - | 3.200 | 0.12598 | 65 | 94 | 3.20 |
| 1AQ0326-SO | - | 30 | - | 3.264 | 0.12850 | 66 | 95 | 3.26 |
| 1AQ0330-SO | - | - | - | 3.300 | 0.12992 | 67 | 96 | 3.30 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.





List 1AQ-SO (Continued)

YELLOW BAND, Ideal for Aluminum

| | | | | | | | |
|------------|--|-------------------------------|------------|---------------|-----------|----------------|------------|
| NEW | YELLOW BAND TAPS P567-569 654-656 | SPEED FEED P394-395 | HSS | TYPE W | BR | JOBBERS | 40° |
|------------|--|-------------------------------|------------|---------------|-----------|----------------|------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 1AQ0340-SO | - | - | - | 3.400 | 0.13386 | 39 | 70 | 3.40 |
| 1AQ0345-SO | - | 29 | - | 3.454 | 0.13600 | | | 3.45 |
| 1AQ0350-SO | - | - | - | 3.500 | 0.13780 | | | 3.50 |
| 1AQ0356-SO | - | 28 | - | 3.569 | 0.14050 | | | 3.57 |
| 1AQ0357-SO | 9/64 | - | - | 3.572 | 0.14063 | | | 3.60 |
| 1AQ0360-SO | - | - | - | 3.600 | 0.14173 | | | 3.66 |
| 1AQ0366-SO | - | 27 | - | 3.658 | 0.14400 | | | 3.70 |
| 1AQ0370-SO | - | - | - | 3.700 | 0.14567 | | | 3.73 |
| 1AQ0373-SO | - | 26 | - | 3.734 | 0.14700 | | | 3.80 |
| 1AQ0379-SO | - | 25 | - | 3.797 | 0.14950 | | | 3.86 |
| 1AQ0380-SO | - | - | - | 3.800 | 0.14961 | | | 3.90 |
| 1AQ0386-SO | - | 24 | - | 3.861 | 0.15200 | | | 3.91 |
| 1AQ0390-SO | - | - | - | 3.900 | 0.15354 | | | 3.97 |
| 1AQ0391-SO | - | 23 | - | 3.912 | 0.15400 | | | 3.99 |
| 1AQ0397-SO | 5/32 | - | - | 3.969 | 0.15625 | 4.00 | | |
| 1AQ0399-SO | - | 22 | - | 3.988 | 0.15700 | 4.04 | | |
| 1AQ0400-SO | - | - | - | 4.000 | 0.15748 | 4.09 | | |
| 1AQ0404-SO | - | 21 | - | 4.039 | 0.15900 | 4.10 | | |
| 1AQ0409-SO | - | 20 | - | 4.089 | 0.16100 | 4.20 | | |
| 1AQ0410-SO | - | - | - | 4.100 | 0.16142 | 4.22 | | |
| 1AQ0420-SO | - | - | - | 4.200 | 0.16535 | 4.30 | | |
| 1AQ0422-SO | - | 19 | - | 4.216 | 0.16600 | 4.31 | | |
| 1AQ0430-SO | - | - | - | 4.300 | 0.16929 | 4.37 | | |
| 1AQ0431-SO | - | 18 | - | 4.305 | 0.16950 | 4.39 | | |
| 1AQ0437-SO | 11/64 | - | - | 4.366 | 0.17188 | 4.40 | | |
| 1AQ0439-SO | - | 17 | - | 4.394 | 0.17300 | 4.50 | | |
| 1AQ0440-SO | - | - | - | 4.400 | 0.17323 | 4.57 | | |
| 1AQ0449-SO | - | 16 | - | 4.496 | 0.17700 | 4.60 | | |
| 1AQ0450-SO | - | - | - | 4.500 | 0.17717 | 4.70 | | |
| 1AQ0457-SO | - | 15 | - | 4.572 | 0.18000 | 4.76 | | |
| 1AQ0460-SO | - | - | - | 4.600 | 0.18110 | 4.80 | | |
| 1AQ0462-SO | - | 14 | - | 4.623 | 0.18200 | 4.86 | | |
| 1AQ0469-SO | - | 13 | - | 4.699 | 0.18500 | 4.90 | | |
| 1AQ0470-SO | - | - | - | 4.700 | 0.18504 | 4.92 | | |
| 1AQ0476-SO | 3/16 | - | - | 4.763 | 0.18750 | 4.98 | | |
| 1AQ0479-SO | - | 12 | - | 4.801 | 0.18900 | 5.00 | | |
| 1AQ0480-SO | - | - | - | 4.800 | 0.18898 | 5.05 | | |
| 1AQ0485-SO | - | 11 | - | 4.851 | 0.19100 | 5.10 | | |
| 1AQ0490-SO | - | - | - | 4.900 | 0.19291 | 5.11 | | |
| 1AQ0492-SO | - | 10 | - | 4.915 | 0.19350 | 5.159 | | |
| 1AQ0498-SO | - | 9 | - | 4.978 | 0.19600 | 0.20313 | | |
| 1AQ0500-SO | - | - | - | 5.000 | 0.19685 | | | |
| 1AQ0506-SO | - | 8 | - | 5.055 | 0.19900 | | | |
| 1AQ0510-SO | - | - | - | 5.100 | 0.20079 | | | |
| 1AQ0511-SO | - | 7 | - | 5.105 | 0.20100 | | | |
| 1AQ0516-SO | 13/64 | - | - | 5.159 | 0.20313 | | | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | |
|----------|--------------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-------------------------------------|--------------------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|
| | P | | | | | M | | | K | N | | S | | H | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 1AQ-SO | <input type="checkbox"/> | | | | | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | |

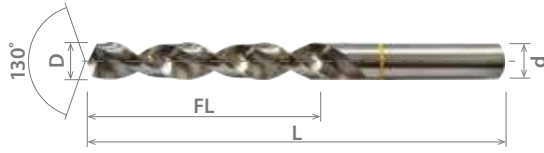
good best





List 1AQ-SO (Continued)

YELLOW BAND, Ideal for Aluminum



| | | | | | | | |
|------------|--|-------------------------------|------------|---------------|-----------|----------------|------------|
| NEW | YELLOW BAND TAPS P567-569 654-656 | SPEED FEED P394-395 | HSS | TYPE W | BR | JOBBERS | 40° |
|------------|--|-------------------------------|------------|---------------|-----------|----------------|------------|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 0.9≤D≤3 | +0 / -0.014 | +0 / -0.0006 |
| 3<D≤6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤13 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 1AQ0518-SO | - | 6 | - | 5.182 | 0.20400 | 52 | 86 | 5.18 |
| 1AQ0520-SO | - | - | - | 5.200 | 0.20472 | | | 5.20 |
| 1AQ0522-SO | - | 5 | - | 5.220 | 0.20550 | | | 5.22 |
| 1AQ0530-SO | - | - | - | 5.300 | 0.20866 | | | 5.30 |
| 1AQ0532-SO | - | 4 | - | 5.309 | 0.20900 | 57 | 93 | 5.31 |
| 1AQ0540-SO | - | - | - | 5.400 | 0.21260 | | | 5.40 |
| 1AQ0541-SO | - | 3 | - | 5.410 | 0.21300 | | | 5.41 |
| 1AQ0550-SO | - | - | - | 5.500 | 0.21654 | | | 5.50 |
| 1AQ0556-SO | 7/32 | - | - | 5.556 | 0.21875 | | | 5.56 |
| 1AQ0560-SO | - | - | - | 5.600 | 0.22047 | | | 5.60 |
| 1AQ0561-SO | - | 2 | - | 5.613 | 0.22100 | | | 5.61 |
| 1AQ0570-SO | - | - | - | 5.700 | 0.22441 | | | 5.70 |
| 1AQ0579-SO | - | 1 | - | 5.791 | 0.22800 | | | 5.79 |
| 1AQ0580-SO | - | - | - | 5.800 | 0.22835 | | | 5.80 |
| 1AQ0590-SO | - | - | - | 5.900 | 0.23228 | | | 5.90 |
| 1AQ0595-SO | 15/64 | - | - | 5.953 | 0.23438 | | | 5.95 |
| 1AQ0600-SO | - | - | - | 6.000 | 0.23622 | | | 6.00 |
| 1AQ0610-SO | - | - | - | 6.100 | 0.24016 | | | 6.10 |
| 1AQ0620-SO | - | - | - | 6.200 | 0.24409 | | | 6.20 |
| 1AQ0630-SO | - | - | - | 6.300 | 0.24803 | | | 6.30 |
| 1AQ0635-SO | 1/4 | - | E | 6.350 | 0.25000 | 6.35 | | |
| 1AQ0640-SO | - | - | - | 6.400 | 0.25197 | 6.40 | | |
| 1AQ0650-SO | - | - | - | 6.500 | 0.25591 | 6.50 | | |
| 1AQ0653-SO | - | - | F | 6.528 | 0.25700 | 6.53 | | |
| 1AQ0660-SO | - | - | - | 6.600 | 0.25984 | 6.60 | | |
| 1AQ0670-SO | - | - | - | 6.700 | 0.26378 | 6.70 | | |
| 1AQ0675-SO | 17/64 | - | - | 6.747 | 0.26563 | 6.75 | | |
| 1AQ0680-SO | - | - | - | 6.800 | 0.26772 | 6.80 | | |
| 1AQ0690-SO | - | - | - | 6.900 | 0.27165 | 6.90 | | |
| 1AQ0691-SO | - | - | I | 6.909 | 0.27200 | 6.90 | | |
| 1AQ0700-SO | - | - | - | 7.000 | 0.27559 | 7.00 | | |
| 1AQ0710-SO | - | - | - | 7.100 | 0.27953 | 7.10 | | |
| 1AQ0714-SO | 9/32 | - | - | 7.144 | 0.28125 | 7.14 | | |
| 1AQ0720-SO | - | - | - | 7.200 | 0.28346 | 7.20 | | |
| 1AQ0730-SO | - | - | - | 7.300 | 0.28740 | 7.30 | | |
| 1AQ0740-SO | - | - | - | 7.400 | 0.29134 | 7.40 | | |
| 1AQ0750-SO | - | - | - | 7.500 | 0.29528 | 7.50 | | |
| 1AQ0754-SO | 19/64 | - | - | 7.541 | 0.29688 | 7.54 | | |
| 1AQ0760-SO | - | - | - | 7.600 | 0.29921 | 7.60 | | |
| 1AQ0770-SO | - | - | - | 7.700 | 0.30315 | 7.70 | | |
| 1AQ0780-SO | - | - | - | 7.800 | 0.30709 | 7.80 | | |
| 1AQ0790-SO | - | - | - | 7.900 | 0.31102 | 7.90 | | |
| 1AQ0794-SO | 5/16 | - | - | 7.938 | 0.31250 | 7.94 | | |
| 1AQ0800-SO | - | - | - | 8.000 | 0.31496 | 8.00 | | |
| 1AQ0810-SO | - | - | - | 8.100 | 0.31890 | 8.10 | | |
| 1AQ0820-SO | - | - | - | 8.200 | 0.32283 | 8.20 | | |
| 1AQ0830-SO | - | - | - | 8.300 | 0.32677 | 8.30 | | |
| 1AQ0833-SO | 21/64 | - | - | 8.334 | 0.32813 | 8.33 | | |
| 1AQ0840-SO | - | - | - | 8.400 | 0.33071 | 8.40 | | |
| 1AQ0843-SO | - | - | Q | 8.433 | 0.33200 | 8.43 | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.





List 1AQ-SO (Continued)

YELLOW BAND, Ideal for Aluminum

| | | | | | | | |
|------------|--|-------------------------------|------------|---------------|-----------|----------------|------------|
| NEW | YELLOW BAND TAPS P567-569 654-656 | SPEED FEED P394-395 | HSS | TYPE W | BR | JOBBERS | 40° |
|------------|--|-------------------------------|------------|---------------|-----------|----------------|------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 1AQ0850-SO | - | - | - | 8.500 | 0.33465 | 75 | 117 | 8.50 |
| 1AQ0860-SO | - | - | - | 8.600 | 0.33858 | 81 | 125 | 8.60 |
| 1AQ0870-SO | - | - | - | 8.700 | 0.34252 | | | 8.70 |
| 1AQ0873-SO | 11/32 | - | - | 8.731 | 0.34375 | | | 8.73 |
| 1AQ0880-SO | - | - | - | 8.800 | 0.34646 | | | 8.80 |
| 1AQ0890-SO | - | - | - | 8.900 | 0.35039 | | | 8.90 |
| 1AQ0900-SO | - | - | - | 9.000 | 0.35433 | | | 9.00 |
| 1AQ0910-SO | - | - | - | 9.100 | 0.35827 | | | 9.10 |
| 1AQ0913-SO | 23/64 | - | - | 9.128 | 0.35938 | | | 9.13 |
| 1AQ0920-SO | - | - | - | 9.200 | 0.36220 | | | 9.20 |
| 1AQ0930-SO | - | - | - | 9.300 | 0.36614 | | | 9.30 |
| 1AQ0940-SO | - | - | - | 9.400 | 0.37008 | | | 9.40 |
| 1AQ0950-SO | - | - | - | 9.500 | 0.37402 | | | 9.50 |
| 1AQ0953-SO | 3/8 | - | - | 9.525 | 0.37500 | | | 9.53 |
| 1AQ0960-SO | - | - | - | 9.600 | 0.37795 | 9.60 | | |
| 1AQ0970-SO | - | - | - | 9.700 | 0.38189 | 9.70 | | |
| 1AQ0980-SO | - | - | - | 9.800 | 0.38583 | 9.80 | | |
| 1AQ0990-SO | - | - | - | 9.900 | 0.38976 | 9.90 | | |
| 1AQ0992-SO | 25/64 | - | - | 9.922 | 0.39063 | 9.92 | | |
| 1AQ1000-SO | - | - | - | 10.000 | 0.39370 | 10.00 | | |
| 1AQ1020-SO | - | - | - | 10.200 | 0.40157 | 10.20 | | |
| 1AQ1032-SO | 13/32 | - | - | 10.319 | 0.40625 | 10.32 | | |
| 1AQ1050-SO | - | - | - | 10.500 | 0.41339 | 10.50 | | |
| 1AQ1072-SO | 27/64 | - | - | 10.716 | 0.42188 | 10.72 | | |
| 1AQ1100-SO | - | - | - | 11.000 | 0.43307 | 11.00 | | |
| 1AQ1111-SO | 7/16 | - | - | 11.113 | 0.43750 | 11.11 | | |
| 1AQ1150-SO | - | - | - | 11.500 | 0.45276 | 11.50 | | |
| 1AQ1200-SO | - | - | - | 12.000 | 0.47244 | 12.00 | | |
| 1AQ1229-SO | 31/64 | - | - | 12.303 | 0.48438 | 12.30 | | |
| 1AQ1250-SO | - | - | - | 12.500 | 0.49213 | 12.50 | | |
| 1AQ1269-SO | 1/2 | - | - | 12.690 | 0.49961 | 12.70 | | |
| 1AQ1270-SO | - | - | - | 12.700 | 0.50000 | 12.70 | | |
| 1AQ1300-SO | - | - | - | 13.000 | 0.51181 | 13.00 | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|--------------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-------------------------------------|--------------------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 1AQ-SO | <input type="checkbox"/> | | | | | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | |

good best





List 1W6-SO

WHITE BAND, Ideal for Cast Iron

| | | | | | | | | |
|------------|------------------------------------|-------------------------------|----------------|----------------|----------------|--------------|---------------|------------|
| NEW | WHITE BAND TAPS P570-572 | SPEED FEED P394-395 | HSS-Co5 | TYPE FS | TYPE GG | TiAlN | JOBBER | 30° |
|------------|------------------------------------|-------------------------------|----------------|----------------|----------------|--------------|---------------|------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1.98 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 13 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | | |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|----|------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | |
| 1W60198-SO | 5/64 | - | - | 1.984 | 0.07813 | 24 | 49 | 1.98 | | |
| 1W60199-SO | - | 47 | - | 1.994 | 0.07850 | | | 1.99 | | |
| 1W60206-SO | - | 46 | - | 2.057 | 0.08100 | | | 2.06 | | |
| 1W60208-SO | - | 45 | - | 2.083 | 0.08200 | | | 2.08 | | |
| 1W60218-SO | - | 44 | - | 2.184 | 0.08600 | 27 | 53 | 2.18 | | |
| 1W60226-SO | - | 43 | - | 2.261 | 0.08900 | | | 2.26 | | |
| 1W60237-SO | - | 42 | - | 2.375 | 0.09350 | 30 | 57 | 2.37 | | |
| 1W60238-SO | 3/32 | - | - | 2.381 | 0.09375 | | | 2.38 | | |
| 1W60244-SO | - | 41 | - | 2.438 | 0.09600 | | | 2.44 | | |
| 1W60249-SO | - | 40 | - | 2.489 | 0.09800 | | | 2.49 | | |
| 1W60250-SO | - | - | - | 2.500 | 0.09843 | | | 2.50 | | |
| 1W60253-SO | - | 39 | - | 2.527 | 0.09950 | | | 2.53 | | |
| 1W60258-SO | - | 38 | - | 2.578 | 0.10150 | | | 2.58 | | |
| 1W60264-SO | - | 37 | - | 2.642 | 0.10400 | | | 2.64 | | |
| 1W60271-SO | - | 36 | - | 2.705 | 0.10650 | | | 33 | 61 | 2.71 |
| 1W60278-SO | 7/64 | - | - | 2.778 | 0.10938 | | | | | 2.78 |
| 1W60279-SO | - | 35 | - | 2.794 | 0.11000 | 2.79 | | | | |
| 1W60282-SO | - | 34 | - | 2.819 | 0.11100 | 2.82 | | | | |
| 1W60287-SO | - | 33 | - | 2.870 | 0.11300 | 2.87 | | | | |
| 1W60295-SO | - | 32 | - | 2.946 | 0.11600 | 2.95 | | | | |
| 1W60305-SO | - | 31 | - | 3.048 | 0.12000 | 36 | 65 | 3.05 | | |
| 1W60318-SO | 1/8 | - | - | 3.175 | 0.12500 | | | 3.18 | | |
| 1W60326-SO | - | 30 | - | 3.264 | 0.12850 | | | 3.26 | | |
| 1W60330-SO | - | - | - | 3.300 | 0.12992 | | | 3.30 | | |
| 1W60345-SO | - | 29 | - | 3.454 | 0.13600 | 39 | 70 | 3.45 | | |
| 1W60356-SO | - | 28 | - | 3.569 | 0.14050 | | | 3.57 | | |
| 1W60357-SO | 9/64 | - | - | 3.572 | 0.14063 | | | 3.57 | | |
| 1W60366-SO | - | 27 | - | 3.658 | 0.14400 | | | 3.66 | | |
| 1W60373-SO | - | 26 | - | 3.734 | 0.14700 | 3.73 | | | | |
| 1W60379-SO | - | 25 | - | 3.797 | 0.14950 | 43 | 75 | 3.80 | | |
| 1W60386-SO | - | 24 | - | 3.861 | 0.15200 | | | 3.86 | | |
| 1W60391-SO | - | 23 | - | 3.912 | 0.15400 | | | 3.91 | | |
| 1W60397-SO | 5/32 | - | - | 3.969 | 0.15625 | | | 3.97 | | |
| 1W60399-SO | - | 22 | - | 3.988 | 0.15700 | 3.99 | | | | |
| 1W60400-SO | - | - | - | 4.000 | 0.15748 | 4.00 | | | | |
| 1W60404-SO | - | 21 | - | 4.039 | 0.15900 | 4.04 | | | | |
| 1W60409-SO | - | 20 | - | 4.089 | 0.16100 | 4.09 | | | | |
| 1W60420-SO | - | - | - | 4.200 | 0.16535 | 4.20 | | | | |
| 1W60422-SO | - | 19 | - | 4.216 | 0.16600 | 4.22 | | | | |
| 1W60431-SO | - | 18 | - | 4.305 | 0.16950 | 47 | 80 | 4.31 | | |
| 1W60437-SO | 11/64 | - | - | 4.366 | 0.17188 | | | 4.37 | | |
| 1W60439-SO | - | 17 | - | 4.394 | 0.17300 | | | 4.39 | | |
| 1W60449-SO | - | 16 | - | 4.496 | 0.17700 | | | 4.50 | | |
| 1W60450-SO | - | - | - | 4.500 | 0.17717 | 52 | 86 | 4.50 | | |
| 1W60457-SO | - | 15 | - | 4.572 | 0.18000 | | | 4.57 | | |
| 1W60462-SO | - | 14 | - | 4.623 | 0.18200 | | | 4.62 | | |
| 1W60469-SO | - | 13 | - | 4.699 | 0.18500 | | | 4.70 | | |
| 1W60476-SO | 3/16 | - | - | 4.763 | 0.18750 | 4.76 | | | | |
| 1W60479-SO | - | 12 | - | 4.801 | 0.18900 | 4.80 | | | | |
| 1W60485-SO | - | 11 | - | 4.851 | 0.19100 | 4.86 | | | | |
| 1W60492-SO | - | 10 | - | 4.915 | 0.19350 | 4.92 | | | | |
| 1W60498-SO | - | 9 | - | 4.978 | 0.19600 | 4.98 | | | | |

Packed: 1 pc.
Available TiAlN coating only.





List 1W6-SO (Continued)

WHITE BAND, Ideal for Cast Iron

| | | | | | | | | |
|------------|-----------------------------|------------------------|---------|---------|---------|-------|---------|-----|
| NEW | WHITE BAND TAPS P570-572 | SPEED FEED P394-395 | HSS-Co5 | TYPE FS | TYPE GG | TiAlN | JOBBERS | 30° |
|------------|-----------------------------|------------------------|---------|---------|---------|-------|---------|-----|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 1W60500-SO | - | - | - | 5.000 | 0.19685 | 52 | 86 | 5.00 |
| 1W60506-SO | - | 8 | - | 5.055 | 0.19900 | | | 5.05 |
| 1W60511-SO | - | 7 | - | 5.105 | 0.20100 | | | 5.11 |
| 1W60516-SO | 13/64 | - | - | 5.159 | 0.20313 | | | 5.16 |
| 1W60518-SO | - | 6 | - | 5.182 | 0.20400 | | | 5.18 |
| 1W60522-SO | - | 5 | - | 5.220 | 0.20550 | | | 5.22 |
| 1W60532-SO | - | 4 | - | 5.309 | 0.20900 | | | 5.31 |
| 1W60541-SO | - | 3 | - | 5.410 | 0.21300 | | | 5.41 |
| 1W60550-SO | - | - | - | 5.500 | 0.21654 | | | 5.50 |
| 1W60556-SO | 7/32 | - | - | 5.556 | 0.21875 | | | 5.56 |
| 1W60561-SO | - | 2 | - | 5.613 | 0.22100 | 5.61 | | |
| 1W60579-SO | - | 1 | - | 5.791 | 0.22800 | 5.79 | | |
| 1W60595-SO | 15/64 | - | - | 5.953 | 0.23438 | 5.95 | | |
| 1W60600-SO | - | - | - | 6.000 | 0.23622 | 6.00 | | |
| 1W60634-SO | 1/4 | - | E | 6.350 | 0.25000 | 6.35 | | |
| 1W60650-SO | - | - | - | 6.500 | 0.25591 | 6.50 | | |
| 1W60653-SO | - | - | F | 6.528 | 0.25700 | 6.53 | | |
| 1W60675-SO | 17/64 | - | - | 6.747 | 0.26563 | 6.75 | | |
| 1W60680-SO | - | - | - | 6.800 | 0.26772 | 6.80 | | |
| 1W60691-SO | - | - | I | 6.909 | 0.27200 | 6.90 | | |
| 1W60700-SO | - | - | - | 7.000 | 0.27559 | 7.00 | | |
| 1W60714-SO | 9/32 | - | - | 7.144 | 0.28128 | 7.14 | | |
| 1W60750-SO | - | - | - | 7.500 | 0.29528 | 7.50 | | |
| 1W60754-SO | 19/64 | - | - | 7.541 | 0.29688 | 7.54 | | |
| 1W60794-SO | 5/16 | - | - | 7.938 | 0.31250 | 7.94 | | |
| 1W60800-SO | - | - | - | 8.000 | 0.31496 | 8.00 | | |
| 1W60833-SO | 21/64 | - | - | 8.334 | 0.32813 | 8.33 | | |
| 1W60843-SO | - | - | Q | 8.433 | 0.33200 | 8.43 | | |
| 1W60850-SO | - | - | - | 8.500 | 0.33465 | 8.50 | | |
| 1W60873-SO | 11/32 | - | - | 8.731 | 0.34375 | 8.73 | | |
| 1W60900-SO | - | - | - | 9.000 | 0.35433 | 9.00 | | |
| 1W60913-SO | 23/64 | - | - | 9.128 | 0.35938 | 9.13 | | |
| 1W60950-SO | - | - | - | 9.500 | 0.37402 | 9.50 | | |
| 1W60953-SO | 3/8 | - | - | 9.525 | 0.37500 | 9.53 | | |
| 1W60992-SO | 25/64 | - | - | 9.922 | 0.39063 | 9.92 | | |
| 1W61000-SO | - | - | - | 10.000 | 0.39370 | 10.00 | | |
| 1W61020-SO | - | - | - | 10.200 | 0.40157 | 10.20 | | |
| 1W61030-SO | 13/32 | - | - | 10.319 | 0.40625 | 10.32 | | |
| 1W61050-SO | - | - | - | 10.500 | 0.41339 | 10.50 | | |
| 1W61072-SO | 27/64 | - | - | 10.716 | 0.42188 | 10.72 | | |
| 1W61100-SO | - | - | - | 11.000 | 0.43307 | 11.00 | | |
| 1W61111-SO | 7/16 | - | - | 11.113 | 0.43750 | 11.11 | | |
| 1W61191-SO | 15/32 | - | - | 11.906 | 0.46875 | 11.91 | | |
| 1W61200-SO | - | - | - | 12.000 | 0.47244 | 12.00 | | |
| 1W61269-SO | 1/2 | - | - | 12.700 | 0.50000 | 12.70 | | |

Packed: 1 pc.
Available TiAlN coating only.



| List No. | Work Material | | | | | | | | | | | | | | | | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-------------------------------------|--------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|--|--|
| | P | | | | | M | | | K | N | | S | H | | | | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 1W6-SO | | | | | | | | | <input checked="" type="checkbox"/> | | | | | | | | | | |

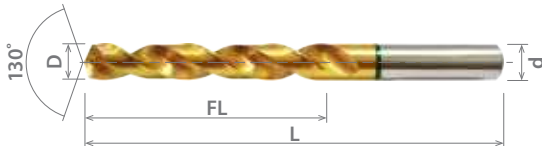
good best





List 1G7-SO

GREEN BAND, Ideal for Carbon Steels



| | | | | | | | |
|-----|----------------------------------|---------------------|---------|----------|-----|---------|-----|
| NEW | GREEN BAND TAPS P573-576 657-659 | SPEED FEED P394-395 | HSS-Co5 | TYPE UNI | TiN | JOBBERS | 33° |
|-----|----------------------------------|---------------------|---------|----------|-----|---------|-----|

| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 13 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 1G70100-SO | - | - | - | 1.000 | 0.03937 | 12 | 34 | 1.00 |
| 1G70150-SO | - | - | - | 1.500 | 0.05906 | 18 | 40 | 1.50 |
| 1G70160-SO | - | - | - | 1.600 | 0.06299 | 20 | 43 | 1.60 |
| 1G70170-SO | - | - | - | 1.700 | 0.06693 | | | 1.70 |
| 1G70190-SO | - | - | - | 1.900 | 0.07480 | | | 1.90 |
| 1G70198-SO | 5/64 | - | - | 1.984 | 0.07813 | 24 | 46 | 1.98 |
| 1G70199-SO | - | 47 | - | 1.994 | 0.07850 | | | 1.99 |
| 1G70200-SO | - | - | - | 2.000 | 0.07874 | | | 2.00 |
| 1G70206-SO | - | 46 | - | 2.057 | 0.08100 | | | 2.06 |
| 1G70208-SO | - | 45 | - | 2.083 | 0.08200 | | | 2.08 |
| 1G70210-SO | - | - | - | 2.100 | 0.08268 | 27 | 53 | 2.10 |
| 1G70218-SO | - | 44 | - | 2.184 | 0.08600 | | | 2.18 |
| 1G70226-SO | - | 43 | - | 2.261 | 0.08900 | | | 2.26 |
| 1G70237-SO | - | 42 | - | 2.375 | 0.09350 | 30 | 57 | 2.37 |
| 1G70238-SO | 3/32 | - | - | 2.381 | 0.09375 | | | 2.38 |
| 1G70244-SO | - | 41 | - | 2.438 | 0.09600 | | | 2.44 |
| 1G70249-SO | - | 40 | - | 2.489 | 0.09800 | | | 2.49 |
| 1G70250-SO | - | - | - | 2.500 | 0.09843 | | | 2.50 |
| 1G70253-SO | - | 39 | - | 2.527 | 0.09950 | 2.53 | | |
| 1G70258-SO | - | 38 | - | 2.578 | 0.10150 | 2.58 | | |
| 1G70260-SO | - | - | - | 2.600 | 0.10236 | 2.60 | | |
| 1G70264-SO | - | 37 | - | 2.642 | 0.10400 | 2.64 | | |
| 1G70270-SO | - | - | - | 2.700 | 0.10630 | 33 | 61 | 2.70 |
| 1G70271-SO | - | 36 | - | 2.705 | 0.10650 | | | 2.71 |
| 1G70278-SO | 7/64 | - | - | 2.778 | 0.10938 | | | 2.78 |
| 1G70279-SO | - | 35 | - | 2.794 | 0.11000 | | | 2.79 |
| 1G70280-SO | - | - | - | 2.800 | 0.11024 | | | 2.80 |
| 1G70282-SO | - | 34 | - | 2.819 | 0.11100 | 2.82 | | |
| 1G70287-SO | - | 33 | - | 2.870 | 0.11300 | 2.87 | | |
| 1G70290-SO | - | - | - | 2.900 | 0.11417 | 2.90 | | |
| 1G70295-SO | - | 32 | - | 2.946 | 0.11600 | 2.95 | | |
| 1G70300-SO | - | - | - | 3.000 | 0.11811 | 3.00 | | |
| 1G70305-SO | - | 31 | - | 3.048 | 0.12000 | 3.05 | | |
| 1G70310-SO | - | - | - | 3.100 | 0.12205 | 3.10 | | |
| 1G70318-SO | 1/8 | - | - | 3.175 | 0.12500 | 3.18 | | |
| 1G70320-SO | - | - | - | 3.200 | 0.12598 | 3.20 | | |
| 1G70326-SO | - | 30 | - | 3.264 | 0.12850 | 3.26 | | |
| 1G70330-SO | - | - | - | 3.300 | 0.12992 | 3.30 | | |
| 1G70340-SO | - | - | - | 3.400 | 0.13386 | 3.40 | | |
| 1G70345-SO | - | 29 | - | 3.454 | 0.13600 | 3.45 | | |
| 1G70350-SO | - | - | - | 3.500 | 0.13780 | 3.50 | | |
| 1G70356-SO | - | 28 | - | 3.569 | 0.14050 | 3.57 | | |
| 1G70357-SO | 9/64 | - | - | 3.572 | 0.14063 | 39 | 70 | 3.57 |
| 1G70360-SO | - | - | - | 3.600 | 0.14173 | | | 3.60 |
| 1G70366-SO | - | 27 | - | 3.658 | 0.14400 | | | 3.66 |
| 1G70370-SO | - | - | - | 3.700 | 0.14567 | | | 3.70 |
| 1G70373-SO | - | 26 | - | 3.734 | 0.14700 | | | 3.73 |
| 1G70379-SO | - | 25 | - | 3.797 | 0.14950 | 43 | 75 | 3.80 |
| 1G70380-SO | - | - | - | 3.800 | 0.14961 | | | 3.80 |
| 1G70386-SO | - | 24 | - | 3.861 | 0.15200 | | | 3.86 |

Packed: 1 pc.
Available TiN coating only.





List 1G7-SO (Continued)

GREEN BAND, Ideal for Carbon Steels

| | | | | | | | |
|------------|---|-------------------------------|----------------|-----------------|------------|----------------|------------|
| NEW | GREEN BAND TAPS P573-576 657-659 | SPEED FEED P394-395 | HSS-Co5 | TYPE UNI | TiN | JOBBERS | 33° |
|------------|---|-------------------------------|----------------|-----------------|------------|----------------|------------|

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | | |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|----|------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | |
| 1G70390-SO | - | - | - | 3.900 | 0.15354 | 43 | 75 | 3.90 | | |
| 1G70391-SO | - | 23 | - | 3.912 | 0.15400 | | | 3.91 | | |
| 1G70397-SO | 5/32 | - | - | 3.969 | 0.15625 | | | 3.97 | | |
| 1G70399-SO | - | 22 | - | 3.988 | 0.15700 | | | 3.99 | | |
| 1G70400-SO | - | - | - | 4.000 | 0.15748 | | | 4.00 | | |
| 1G70404-SO | - | 21 | - | 4.039 | 0.15900 | | | 4.04 | | |
| 1G70409-SO | - | 20 | - | 4.089 | 0.16100 | | | 4.09 | | |
| 1G70410-SO | - | - | - | 4.100 | 0.16142 | | | 4.10 | | |
| 1G70420-SO | - | - | - | 4.200 | 0.16535 | | | 4.20 | | |
| 1G70422-SO | - | 19 | - | 4.216 | 0.16600 | | | 4.22 | | |
| 1G70430-SO | - | - | - | 4.300 | 0.16929 | 47 | 80 | 4.30 | | |
| 1G70431-SO | - | 18 | - | 4.305 | 0.16950 | | | 4.31 | | |
| 1G70437-SO | 11/64 | - | - | 4.366 | 0.17188 | | | 4.37 | | |
| 1G70439-SO | - | 17 | - | 4.394 | 0.17300 | | | 4.39 | | |
| 1G70449-SO | - | 16 | - | 4.496 | 0.17700 | | | 52 | 86 | 4.50 |
| 1G70450-SO | - | - | - | 4.500 | 0.17717 | | | | | 4.57 |
| 1G70457-SO | - | 15 | - | 4.572 | 0.18000 | | | | | 4.62 |
| 1G70462-SO | - | 14 | - | 4.623 | 0.18200 | | | | | 4.70 |
| 1G70469-SO | - | 13 | - | 4.699 | 0.18500 | | | | | 4.76 |
| 1G70476-SO | 3/16 | - | - | 4.763 | 0.18750 | | | | | 57 |
| 1G70479-SO | - | 12 | - | 4.801 | 0.18900 | 4.86 | | | | |
| 1G70480-SO | - | - | - | 4.800 | 0.18898 | 4.92 | | | | |
| 1G70485-SO | - | 11 | - | 4.851 | 0.19100 | 4.98 | | | | |
| 1G70492-SO | - | 10 | - | 4.915 | 0.19350 | 5.00 | | | | |
| 1G70498-SO | - | 9 | - | 4.978 | 0.19600 | 5.05 | | | | |
| 1G70500-SO | - | - | - | 5.000 | 0.19685 | 5.10 | | | | |
| 1G70506-SO | - | 8 | - | 5.055 | 0.19900 | 5.11 | | | | |
| 1G70510-SO | - | - | - | 5.100 | 0.20079 | 5.16 | | | | |
| 1G70511-SO | - | 7 | - | 5.105 | 0.20100 | 5.18 | | | | |
| 1G70516-SO | 13/64 | - | - | 5.159 | 0.20313 | 5.20 | | | | |
| 1G70518-SO | - | 6 | - | 5.182 | 0.20400 | 5.22 | | | | |
| 1G70520-SO | - | - | - | 5.200 | 0.20472 | 5.30 | | | | |
| 1G70522-SO | - | 5 | - | 5.220 | 0.20550 | 5.31 | | | | |
| 1G70530-SO | - | - | - | 5.300 | 0.20866 | 5.41 | | | | |
| 1G70532-SO | - | 4 | - | 5.309 | 0.20900 | 5.50 | | | | |
| 1G70541-SO | - | 3 | - | 5.410 | 0.21300 | 5.56 | | | | |
| 1G70550-SO | - | - | - | 5.500 | 0.21654 | 5.61 | | | | |
| 1G70556-SO | 7/32 | - | - | 5.556 | 0.21875 | 5.79 | | | | |
| 1G70561-SO | - | 2 | - | 5.613 | 0.22100 | 5.80 | | | | |
| 1G70579-SO | - | 1 | - | 5.791 | 0.22800 | 5.90 | | | | |
| 1G70580-SO | - | - | - | 5.800 | 0.22835 | 5.95 | | | | |
| 1G70590-SO | - | - | - | 5.900 | 0.23228 | 6.00 | | | | |
| 1G70595-SO | 15/64 | - | - | 5.953 | 0.23438 | 6.10 | | | | |
| 1G70600-SO | - | - | - | 6.000 | 0.23622 | 6.20 | | | | |
| 1G70610-SO | - | - | - | 6.100 | 0.24016 | | | | | |
| 1G70620-SO | - | - | - | 6.200 | 0.24409 | | | | | |

Packed: 1 pc.
Available TiN coating only.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|------|--------------------------|------------|------------------|-----|---------|-----------|-----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|
| | P | | | | M | | | K | N | | S | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 1G7-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | | | | | | | | | | | | |

good best

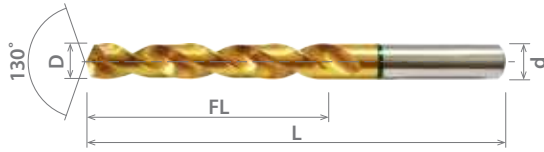




List 1G7-SO (Continued)

| | | | | | | | |
|------------|--|-------------------------------|----------------|-----------------|------------|----------------|------------|
| NEW | GREEN BAND TAPS P573-576 P577-659 | SPEED FEED P394-395 | HSS-Co5 | TYPE UNI | TiN | JOBBERS | 33° |
|------------|--|-------------------------------|----------------|-----------------|------------|----------------|------------|

GREEN BAND, Ideal for Carbon Steels



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1≤D≤3 | +0 / -0.014 | +0 / -0.0006 |
| 3<D≤6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤13 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 1G70630-SO | - | - | - | 6.300 | 0.24803 | 63 | 101 | 6.30 |
| 1G70635-SO | 1/4 | - | E | 6.350 | 0.25000 | | | 6.35 |
| 1G70640-SO | - | - | - | 6.400 | 0.25197 | | | 6.40 |
| 1G70650-SO | - | - | - | 6.500 | 0.25591 | | | 6.50 |
| 1G70653-SO | - | - | F | 6.528 | 0.25700 | 69 | 109 | 6.53 |
| 1G70675-SO | 17/64 | - | - | 6.747 | 0.26563 | | | 6.75 |
| 1G70680-SO | - | - | - | 6.800 | 0.26772 | | | 6.80 |
| 1G70690-SO | - | - | - | 6.900 | 0.27165 | | | 6.90 |
| 1G70691-SO | - | - | I | 6.909 | 0.27200 | 75 | 117 | 6.90 |
| 1G70700-SO | - | - | - | 7.000 | 0.27559 | | | 7.00 |
| 1G70714-SO | 9/32 | - | - | 7.144 | 0.28128 | | | 7.14 |
| 1G70730-SO | - | - | - | 7.300 | 0.28740 | | | 7.30 |
| 1G70750-SO | - | - | - | 7.500 | 0.29528 | 81 | 125 | 7.50 |
| 1G70754-SO | 19/64 | - | - | 7.541 | 0.29688 | | | 7.54 |
| 1G70770-SO | - | - | - | 7.700 | 0.30315 | | | 7.70 |
| 1G70780-SO | - | - | - | 7.800 | 0.30709 | | | 7.80 |
| 1G70790-SO | - | - | - | 7.900 | 0.31102 | 87 | 133 | 7.90 |
| 1G70794-SO | 5/16 | - | - | 7.938 | 0.31250 | | | 7.94 |
| 1G70800-SO | - | - | - | 8.000 | 0.31496 | | | 8.00 |
| 1G70810-SO | - | - | - | 8.100 | 0.31890 | | | 8.10 |
| 1G70820-SO | - | - | - | 8.200 | 0.32283 | 94 | 142 | 8.20 |
| 1G70833-SO | 21/64 | - | - | 8.334 | 0.32813 | | | 8.33 |
| 1G70840-SO | - | - | - | 8.400 | 0.33071 | | | 8.40 |
| 1G70843-SO | - | - | Q | 8.433 | 0.33200 | | | 8.43 |
| 1G70850-SO | - | - | - | 8.500 | 0.33465 | 94 | 142 | 8.50 |
| 1G70870-SO | - | - | - | 8.700 | 0.34252 | | | 8.70 |
| 1G70873-SO | 11/32 | - | - | 8.731 | 0.34375 | | | 8.73 |
| 1G70880-SO | - | - | - | 8.800 | 0.34646 | | | 8.80 |
| 1G70890-SO | - | - | - | 8.900 | 0.35039 | 94 | 142 | 8.90 |
| 1G70900-SO | - | - | - | 9.000 | 0.35433 | | | 9.00 |
| 1G70913-SO | 23/64 | - | - | 9.128 | 0.35938 | | | 9.13 |
| 1G70930-SO | - | - | - | 9.300 | 0.36614 | | | 9.30 |
| 1G70950-SO | - | - | - | 9.500 | 0.37402 | 94 | 142 | 9.50 |
| 1G70953-SO | 3/8 | - | - | 9.525 | 0.37500 | | | 9.53 |
| 1G70960-SO | - | - | - | 9.600 | 0.37795 | | | 9.60 |
| 1G70992-SO | 25/64 | - | - | 9.922 | 0.39063 | | | 9.92 |
| 1G71000-SO | - | - | - | 10.000 | 0.39370 | 94 | 142 | 10.00 |
| 1G71010-SO | - | - | - | 10.100 | 0.39764 | | | 10.10 |
| 1G71020-SO | - | - | - | 10.200 | 0.40157 | | | 10.20 |
| 1G71030-SO | - | - | - | 10.300 | 0.40551 | | | 10.30 |
| 1G71032-SO | 13/32 | - | - | 10.319 | 0.40625 | 94 | 142 | 10.32 |
| 1G71050-SO | - | - | - | 10.500 | 0.41339 | | | 10.50 |
| 1G71060-SO | - | - | - | 10.600 | 0.41732 | | | 10.60 |
| 1G71070-SO | - | - | - | 10.700 | 0.42126 | | | 10.70 |
| 1G71072-SO | 27/64 | - | - | 10.716 | 0.42188 | 94 | 142 | 10.72 |
| 1G71080-SO | - | - | - | 10.800 | 0.42520 | | | 10.80 |
| 1G71100-SO | - | - | - | 11.000 | 0.43307 | | | 11.00 |
| 1G71111-SO | 7/16 | - | - | 11.113 | 0.43750 | | | 11.11 |
| 1G71130-SO | - | - | - | 11.300 | 0.44488 | 94 | 142 | 11.30 |
| 1G71150-SO | - | - | - | 11.500 | 0.45276 | | | 11.50 |

Packed: 1 pc.
Available TiN coating only.



List 1G7-SO (Continued)

GREEN BAND, Ideal for Carbon Steels

| | | | | | | | |
|------------|---|-------------------------------|----------------|-----------------|------------|---------------|------------|
| NEW | GREEN BAND TAPS P573-576 657-659 | SPEED FEED P394-395 | HSS-Co5 | TYPE UNI | TIN | JOBBER | 33° |
|------------|---|-------------------------------|----------------|-----------------|------------|---------------|------------|

| EDP Number | Diameter | | | | | Flute Length | Overall Length | Shank Diameter |
|------------|-----------------|-----------|-------------|--------|---------|--------------|----------------|----------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | FL (mm) | L (mm) | d (mm) |
| 1G71170-SO | - | - | - | 11.700 | 0.46063 | 94 | 142 | 11.70 |
| 1G71180-SO | - | - | - | 11.800 | 0.46457 | | | 11.80 |
| 1G71200-SO | - | - | - | 12.000 | 0.47244 | 101 | 151 | 12.00 |
| 1G71250-SO | - | - | - | 12.500 | 0.49213 | | | 12.50 |
| 1G71269-SO | - | - | - | 12.690 | 0.49961 | | | 12.70 |
| 1G71270-SO | 1/2 | - | - | 12.700 | 0.50000 | | | 12.80 |
| 1G71280-SO | - | - | - | 12.800 | 0.50394 | | | 12.90 |
| 1G71290-SO | - | - | - | 12.900 | 0.50787 | | | 13.00 |
| 1G71300-SO | - | - | - | 13.000 | 0.51181 | | | |

Packed: 1 pc.
Available TIN coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|--------------|------------------------------|------------|------------------|-----|---------|----------------|--------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | | Stainless Steels | | | | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 1G7-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | | | | | | | | | | | | |

good best

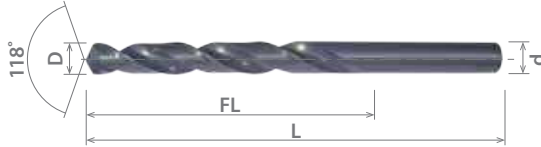




List 101-SO, 102-SO

| | | | | | | |
|------------|---------------------------|------------|---------------|------------|----------------|------------|
| NEW | SPEED FEED P396 | HSS | TYPE N | S/O | JOBBERS | 30° |
|------------|---------------------------|------------|---------------|------------|----------------|------------|

Jobber Drills



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 0.3≤D≤3 | +0 / -0.014 | +0 / -0.0006 |
| 3<D≤6 | +0 / -0.018 | +0 / -0.0007 |
| 6<D≤10 | +0 / -0.022 | +0 / -0.0009 |
| 10<D≤18 | +0 / -0.027 | +0 / -0.0011 |
| 18<D≤20 | +0 / -0.033 | +0 / -0.0013 |

| Pcs per Pack | EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|--------------|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 10 | 1010030-SO | - | - | - | 0.300 | 0.01181 | 3 | 19 | 0.30 |
| 10 | 1010035-SO | - | - | - | 0.350 | 0.01378 | 4 | | 0.35 |
| 10 | 1020040-SO | 1/64 | - | - | 0.397 | 0.01563 | 5 | 20 | 0.40 |
| 10 | 1010040-SO | - | - | - | 0.400 | 0.01575 | | | 0.45 |
| 10 | 1010045-SO | - | - | - | 0.450 | 0.01772 | 6 | 22 | 0.50 |
| 10 | 1010050-SO | - | - | - | 0.500 | 0.01969 | | | 0.55 |
| 10 | 1010055-SO | - | - | - | 0.550 | 0.02165 | 7 | 24 | 0.60 |
| 10 | 1010060-SO | - | - | - | 0.600 | 0.02362 | | | 0.70 |
| 10 | 1010070-SO | - | - | - | 0.700 | 0.02756 | 9 | 28 | 0.75 |
| 10 | 1010075-SO | - | - | - | 0.750 | 0.02953 | | | 0.79 |
| 10 | 1020079-SO | 1/32 | - | - | 0.794 | 0.03125 | 10 | 30 | 0.80 |
| 10 | 1010080-SO | - | - | - | 0.800 | 0.03150 | | | 0.90 |
| 10 | 1010090-SO | - | - | - | 0.900 | 0.03543 | 11 | 32 | 1.00 |
| 10 | 1010100-SO | - | - | - | 1.000 | 0.03937 | | | 1.05 |
| 10 | 1010105-SO | - | - | - | 1.050 | 0.04134 | 12 | 34 | 1.10 |
| 10 | 1010110-SO | - | - | - | 1.100 | 0.04331 | | | 1.15 |
| 10 | 1010115-SO | - | - | - | 1.150 | 0.04528 | 14 | 36 | 1.19 |
| 10 | 1020119-SO | 3/64 | - | - | 1.191 | 0.04688 | | | 1.20 |
| 10 | 1010120-SO | - | - | - | 1.200 | 0.04724 | 16 | 38 | 1.25 |
| 10 | 1010125-SO | - | - | - | 1.250 | 0.04921 | | | 1.30 |
| 10 | 1010130-SO | - | - | - | 1.300 | 0.05118 | 18 | 40 | 1.35 |
| 10 | 1010135-SO | - | - | - | 1.350 | 0.05315 | | | 1.40 |
| 10 | 1010140-SO | - | - | - | 1.400 | 0.05512 | 20 | 43 | 1.45 |
| 10 | 1010145-SO | - | - | - | 1.450 | 0.05709 | | | 1.50 |
| 10 | 1010150-SO | - | - | - | 1.500 | 0.05906 | 22 | 46 | 1.55 |
| 10 | 1010155-SO | - | - | - | 1.550 | 0.06102 | | | 1.59 |
| 10 | 1020159-SO | 1/16 | - | - | 1.588 | 0.06250 | 24 | 49 | 1.60 |
| 10 | 1010160-SO | - | - | - | 1.600 | 0.06299 | | | 1.65 |
| 10 | 1010165-SO | - | - | - | 1.650 | 0.06496 | 27 | 53 | 1.70 |
| 10 | 1010170-SO | - | - | - | 1.700 | 0.06693 | | | 1.75 |
| 10 | 1010175-SO | - | - | - | 1.750 | 0.06890 | 22 | 46 | 1.80 |
| 10 | 1010180-SO | - | - | - | 1.800 | 0.07087 | | | 1.85 |
| 10 | 1010185-SO | - | - | - | 1.850 | 0.07283 | 24 | 49 | 1.90 |
| 10 | 1010190-SO | - | - | - | 1.900 | 0.07480 | | | 1.95 |
| 10 | 1010195-SO | - | - | - | 1.950 | 0.07677 | 27 | 53 | 1.98 |
| 10 | 1020198-SO | 5/64 | - | - | 1.984 | 0.07813 | | | 2.00 |
| 10 | 1010200-SO | - | - | - | 2.000 | 0.07874 | 27 | 53 | 2.05 |
| 10 | 1010205-SO | - | - | - | 2.050 | 0.08071 | | | 2.10 |
| 10 | 1010210-SO | - | - | - | 2.100 | 0.08268 | 27 | 53 | 2.15 |
| 10 | 1010215-SO | - | - | - | 2.150 | 0.08465 | | | 2.20 |
| 10 | 1010220-SO | - | - | - | 2.200 | 0.08661 | 27 | 53 | 2.25 |
| 10 | 1010225-SO | - | - | - | 2.250 | 0.08858 | | | 2.30 |
| 10 | 1010230-SO | - | - | - | 2.300 | 0.09055 | 27 | 53 | 2.35 |
| 10 | 1010235-SO | - | - | - | 2.350 | 0.09252 | | | |

Available Steam Oxide only.





List 101-SO, 102-SO (Continued)

NEW SPEED FEED P396 HSS TYPE N S/O JOBBERS 30°

Jobber Drills

| Pcs per Pack | EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | | |
|--------------|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|----|------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | |
| 10 | 1020238-SO | 3/32 | - | - | 2.381 | 0.09375 | 30 | 57 | 2.38 | | |
| 10 | 1010240-SO | - | - | - | 2.400 | 0.09449 | | | 2.40 | | |
| 10 | 1010245-SO | - | - | - | 2.450 | 0.09646 | | | 2.45 | | |
| 10 | 1010250-SO | - | - | - | 2.500 | 0.09843 | | | 2.50 | | |
| 10 | 1010255-SO | - | - | - | 2.550 | 0.10039 | | | 2.55 | | |
| 10 | 1010260-SO | - | - | - | 2.600 | 0.10236 | | | 2.60 | | |
| 10 | 1010265-SO | - | - | - | 2.650 | 0.10433 | | | 2.65 | | |
| 10 | 1010270-SO | - | - | - | 2.700 | 0.10630 | 2.70 | | | | |
| 10 | 1010275-SO | - | - | - | 2.750 | 0.10827 | 2.75 | | | | |
| 10 | 1020278-SO | 7/64 | - | - | 2.778 | 0.10938 | 33 | 61 | 2.78 | | |
| 10 | 1010280-SO | - | - | - | 2.800 | 0.11024 | | | 2.80 | | |
| 10 | 1010285-SO | - | - | - | 2.850 | 0.11220 | | | 2.85 | | |
| 10 | 1010290-SO | - | - | - | 2.900 | 0.11417 | | | 2.90 | | |
| 10 | 1010295-SO | - | - | - | 2.950 | 0.11614 | | | 2.95 | | |
| 10 | 1010300-SO | - | - | - | 3.000 | 0.11811 | | | 3.00 | | |
| 10 | 1010310-SO | - | - | - | 3.100 | 0.12205 | | | 3.10 | | |
| 10 | 1020318-SO | 1/8 | - | - | 3.175 | 0.12500 | 36 | 65 | 3.18 | | |
| 10 | 1010320-SO | - | - | - | 3.200 | 0.12598 | | | 3.20 | | |
| 10 | 1010325-SO | - | - | - | 3.250 | 0.12795 | | | 3.25 | | |
| 10 | 1010330-SO | - | - | - | 3.300 | 0.12992 | | | 3.30 | | |
| 10 | 1010340-SO | - | - | - | 3.400 | 0.13386 | | | 3.40 | | |
| 10 | 1010350-SO | - | - | - | 3.500 | 0.13780 | | | 3.50 | | |
| 10 | 1020357-SO | 9/64 | - | - | 3.572 | 0.14063 | | | 39 | 70 | 3.57 |
| 10 | 1010360-SO | - | - | - | 3.600 | 0.14173 | 3.60 | | | | |
| 10 | 1010370-SO | - | - | - | 3.700 | 0.14567 | 3.70 | | | | |
| 10 | 1010380-SO | - | - | - | 3.800 | 0.14961 | 3.80 | | | | |
| 10 | 1010390-SO | - | - | - | 3.900 | 0.15354 | 3.90 | | | | |
| 10 | 1020397-SO | 5/32 | - | - | 3.969 | 0.15625 | 43 | 75 | | | 3.97 |
| 10 | 1010400-SO | - | - | - | 4.000 | 0.15748 | | | | | 4.00 |
| 10 | 1010410-SO | - | - | - | 4.100 | 0.16142 | | | 4.10 | | |
| 10 | 1010420-SO | - | - | - | 4.200 | 0.16535 | | | 4.20 | | |
| 10 | 1010425-SO | - | - | - | 4.250 | 0.16732 | | | 4.25 | | |
| 10 | 1010430-SO | - | - | - | 4.300 | 0.16929 | | | 4.30 | | |
| 10 | 1020437-SO | 11/64 | - | - | 4.366 | 0.17188 | | | 47 | 80 | 4.37 |
| 10 | 1010440-SO | - | - | - | 4.400 | 0.17323 | 4.40 | | | | |
| 10 | 1010450-SO | - | - | - | 4.500 | 0.17717 | 4.50 | | | | |
| 10 | 1010460-SO | - | - | - | 4.600 | 0.18110 | 4.60 | | | | |
| 10 | 1010470-SO | - | - | - | 4.700 | 0.18504 | 4.70 | | | | |

Available Steam Oxide only.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | | | |
|----------------|--------------------------|--------------------------|--------------------------|------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | H | | | | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 101-SO, 102-SO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 101-SO, 102-SO (Continued)

| | | | | | | |
|------------|---------------------------|------------|---------------|------------|----------------|------------|
| NEW | SPEED FEED P396 | HSS | TYPE N | S/O | JOBBERS | 30° |
|------------|---------------------------|------------|---------------|------------|----------------|------------|

Jobber Drills



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 0.3 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| Pcs per Pack | EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|--------------|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 10 | 1020476-SO | 3/16 | - | - | 4.763 | 0.18750 | 52 | 86 | 4.76 |
| 10 | 1010480-SO | - | - | - | 4.800 | 0.18898 | | | 4.80 |
| 10 | 1010490-SO | - | - | - | 4.900 | 0.19291 | | | 4.90 |
| 10 | 1010500-SO | - | - | - | 5.000 | 0.19685 | | | 5.00 |
| 10 | 1010510-SO | - | - | - | 5.100 | 0.20079 | | | 5.10 |
| 10 | 1020516-SO | 13/64 | - | - | 5.159 | 0.20313 | | | 5.16 |
| 10 | 1010520-SO | - | - | - | 5.200 | 0.20472 | | | 5.20 |
| 10 | 1010525-SO | - | - | - | 5.250 | 0.20669 | | | 5.25 |
| 10 | 1010530-SO | - | - | - | 5.300 | 0.20866 | | | 5.30 |
| 10 | 1010540-SO | - | - | - | 5.400 | 0.21260 | | | 5.40 |
| 10 | 1010550-SO | - | - | - | 5.500 | 0.21654 | 5.50 | | |
| 10 | 1020556-SO | 7/32 | - | - | 5.556 | 0.21875 | 5.56 | | |
| 10 | 1010560-SO | - | - | - | 5.600 | 0.22047 | 5.60 | | |
| 10 | 1010570-SO | - | - | - | 5.700 | 0.22441 | 5.70 | | |
| 10 | 1010575-SO | - | - | - | 5.750 | 0.22638 | 5.75 | | |
| 10 | 1010580-SO | - | - | - | 5.800 | 0.22835 | 5.80 | | |
| 10 | 1010590-SO | - | - | - | 5.900 | 0.23228 | 5.90 | | |
| 10 | 1020595-SO | 15/64 | - | - | 5.953 | 0.23438 | 5.95 | | |
| 10 | 1010600-SO | - | - | - | 6.000 | 0.23622 | 6.00 | | |
| 10 | 1010610-SO | - | - | - | 6.100 | 0.24016 | 6.10 | | |
| 10 | 1010620-SO | - | - | - | 6.200 | 0.24409 | 6.20 | | |
| 10 | 1010625-SO | - | - | - | 6.250 | 0.24606 | 6.25 | | |
| 10 | 1010630-SO | - | - | - | 6.300 | 0.24803 | 6.30 | | |
| 10 | 1020635-SO | 1/4 | - | E | 6.350 | 0.25000 | 6.35 | | |
| 10 | 1010640-SO | - | - | - | 6.400 | 0.25197 | 6.40 | | |
| 10 | 1010650-SO | - | - | - | 6.500 | 0.25591 | 6.50 | | |
| 10 | 1010660-SO | - | - | - | 6.600 | 0.25984 | 6.60 | | |
| 10 | 1010670-SO | - | - | - | 6.700 | 0.26378 | 6.70 | | |
| 10 | 1020675-SO | 17/64 | - | - | 6.747 | 0.26563 | 6.75 | | |
| 10 | 1010675-SO | - | - | - | 6.750 | 0.26575 | 6.75 | | |
| 10 | 1010680-SO | - | - | - | 6.800 | 0.26772 | 6.80 | | |
| 10 | 1010690-SO | - | - | - | 6.900 | 0.27165 | 6.90 | | |
| 10 | 1010700-SO | - | - | - | 7.000 | 0.27559 | 7.00 | | |
| 10 | 1010710-SO | - | - | - | 7.100 | 0.27953 | 7.10 | | |
| 10 | 1020714-SO | 9/32 | - | - | 7.144 | 0.28125 | 7.14 | | |
| 10 | 1010720-SO | - | - | - | 7.200 | 0.28346 | 7.20 | | |
| 10 | 1010730-SO | - | - | - | 7.300 | 0.28740 | 7.30 | | |
| 10 | 1010740-SO | - | - | - | 7.400 | 0.29134 | 7.40 | | |
| 10 | 1010750-SO | - | - | - | 7.500 | 0.29528 | 7.50 | | |
| 10 | 1020754-SO | 19/64 | - | - | 7.541 | 0.29688 | 7.54 | | |
| 10 | 1010760-SO | - | - | - | 7.600 | 0.29921 | 7.60 | | |
| 10 | 1010770-SO | - | - | - | 7.700 | 0.30315 | 7.70 | | |
| 10 | 1010780-SO | - | - | - | 7.800 | 0.30709 | 7.80 | | |
| 10 | 1010790-SO | - | - | - | 7.900 | 0.31102 | 7.90 | | |
| 10 | 1020794-SO | 5/16 | - | - | 7.938 | 0.31250 | 7.94 | | |
| 10 | 1010800-SO | - | - | - | 8.000 | 0.31496 | 8.00 | | |
| 10 | 1010810-SO | - | - | - | 8.100 | 0.31890 | 8.10 | | |
| 10 | 1010820-SO | - | - | - | 8.200 | 0.32283 | 8.20 | | |
| 10 | 1010825-SO | - | - | - | 8.250 | 0.32480 | 8.25 | | |
| 10 | 1010830-SO | - | - | - | 8.300 | 0.32677 | 8.30 | | |

Available Steam Oxide only.



List 101-SO, 102-SO (Continued)

Jobber Drills

NEW SPEED FEED P396 HSS TYPE N S/O JOBBERS 30°

| Pcs per Pack | EDP Number | Diameter | | | | | Flute Length | Overall Length | Shank Diameter |
|--------------|------------|-----------------|-----------|-------------|--------|---------|--------------|----------------|----------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | FL (mm) | L (mm) | d (mm) |
| 10 | 1020833-SO | 21/64 | - | - | 8.334 | 0.32813 | 75 | 117 | 8.33 |
| 10 | 1010840-SO | - | - | - | 8.400 | 0.33071 | | | 8.40 |
| 10 | 1010850-SO | - | - | - | 8.500 | 0.33465 | | | 8.50 |
| 10 | 1010860-SO | - | - | - | 8.600 | 0.33858 | | | 8.60 |
| 10 | 1010870-SO | - | - | - | 8.700 | 0.34252 | | | 8.70 |
| 10 | 1020873-SO | 11/32 | - | - | 8.731 | 0.34375 | | | 8.73 |
| 10 | 1010875-SO | - | - | - | 8.750 | 0.34449 | | | 8.75 |
| 10 | 1010880-SO | - | - | - | 8.800 | 0.34646 | 8.80 | | |
| 10 | 1010890-SO | - | - | - | 8.900 | 0.35039 | 8.90 | | |
| 10 | 1010900-SO | - | - | - | 9.000 | 0.35433 | 9.00 | | |
| 10 | 1010910-SO | - | - | - | 9.100 | 0.35827 | 9.10 | | |
| 10 | 1020913-SO | 23/64 | - | - | 9.128 | 0.35938 | 9.12 | | |
| 10 | 1010920-SO | - | - | - | 9.200 | 0.36220 | 9.20 | | |
| 10 | 1010925-SO | - | - | - | 9.250 | 0.36417 | 9.25 | | |
| 10 | 1010930-SO | - | - | - | 9.300 | 0.36614 | 9.30 | | |
| 10 | 1010940-SO | - | - | - | 9.400 | 0.37008 | 9.40 | | |
| 10 | 1010950-SO | - | - | - | 9.500 | 0.37402 | 9.50 | | |
| 10 | 1020953-SO | 3/8 | - | - | 9.525 | 0.37500 | 9.53 | | |
| 10 | 1010960-SO | - | - | - | 9.600 | 0.37795 | 9.60 | | |
| 10 | 1010970-SO | - | - | - | 9.700 | 0.38189 | 9.70 | | |
| 10 | 1010975-SO | - | - | - | 9.750 | 0.38386 | 9.75 | | |
| 10 | 1010980-SO | - | - | - | 9.800 | 0.38583 | 9.80 | | |
| 10 | 1010990-SO | - | - | - | 9.900 | 0.38976 | 9.90 | | |
| 5 | 1020992-SO | 25/64 | - | - | 9.922 | 0.39063 | 9.92 | | |
| 5 | 1011000-SO | - | - | - | 10.000 | 0.39370 | 10.00 | | |
| 5 | 1011010-SO | - | - | - | 10.100 | 0.39764 | 10.10 | | |
| 5 | 1011020-SO | - | - | - | 10.200 | 0.40157 | 10.20 | | |
| 5 | 1011025-SO | - | - | - | 10.250 | 0.40354 | 10.25 | | |
| 5 | 1011030-SO | - | - | - | 10.300 | 0.40551 | 10.30 | | |
| 5 | 1021032-SO | 13/32 | - | - | 10.319 | 0.40625 | 10.32 | | |
| 5 | 1011040-SO | - | - | - | 10.400 | 0.40945 | 10.40 | | |
| 5 | 1011050-SO | - | - | - | 10.500 | 0.41339 | 10.50 | | |
| 5 | 1011060-SO | - | - | - | 10.600 | 0.41732 | 10.60 | | |
| 5 | 1011070-SO | - | - | - | 10.700 | 0.42126 | 10.70 | | |
| 5 | 1021072-SO | 27/64 | - | - | 10.716 | 0.42188 | 10.72 | | |
| 5 | 1011075-SO | - | - | - | 10.750 | 0.42323 | 10.75 | | |
| 5 | 1011080-SO | - | - | - | 10.800 | 0.42520 | 10.80 | | |
| 5 | 1011090-SO | - | - | - | 10.900 | 0.42913 | 10.90 | | |
| 5 | 1011100-SO | - | - | - | 11.000 | 0.43307 | 11.00 | | |
| 5 | 1011110-SO | - | - | - | 11.100 | 0.43701 | 11.10 | | |
| 5 | 1021111-SO | 7/16 | - | - | 11.113 | 0.43750 | 11.11 | | |
| 5 | 1011120-SO | - | - | - | 11.200 | 0.44094 | 11.20 | | |
| 5 | 1011130-SO | - | - | - | 11.300 | 0.44488 | 11.30 | | |
| 5 | 1011140-SO | - | - | - | 11.400 | 0.44882 | 11.40 | | |
| 5 | 1011150-SO | - | - | - | 11.500 | 0.45276 | 11.50 | | |
| 5 | 1021151-SO | 29/64 | - | - | 11.509 | 0.45313 | 11.51 | | |

Available Steam Oxide only.

continued on next page 

| List No. | Work Material | | | | | | | | | | | | | | | | | | | |
|----------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | H | | | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | | |
| 101-SO, 102-SO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

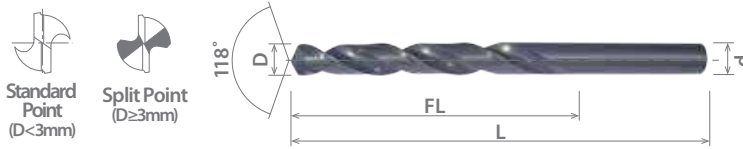




List 101-SO, 102-SO (Continued)

| | | | | | | |
|------------|---------------------------|------------|---------------|------------|----------------|------------|
| NEW | SPEED FEED P396 | HSS | TYPE N | S/O | JOBBERS | 30° |
|------------|---------------------------|------------|---------------|------------|----------------|------------|

Jobber Drills



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 0.3 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 18 | +0 / -0.027 | +0 / -0.0011 |
| 18 < D ≤ 20 | +0 / -0.033 | +0 / -0.0013 |

| Pcs per Pack | EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) | | |
|--------------|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|-----|-------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | | | |
| 5 | 1011160-SO | - | - | - | 11.600 | 0.45669 | 94 | 142 | 11.60 | | |
| 5 | 1011170-SO | - | - | - | 11.700 | 0.46063 | | | 11.70 | | |
| 5 | 1011180-SO | - | - | - | 11.800 | 0.46457 | | | 11.80 | | |
| 5 | 1011190-SO | - | - | - | 11.900 | 0.46850 | | | 11.90 | | |
| 5 | 1021191-SO | 15/32 | - | - | 11.906 | 0.46875 | | | 11.91 | | |
| 5 | 1011200-SO | - | - | - | 12.000 | 0.47244 | | | 12.00 | | |
| 5 | 1011210-SO | - | - | - | 12.100 | 0.47638 | | | 12.10 | | |
| 5 | 1011220-SO | - | - | - | 12.200 | 0.48031 | | | 12.20 | | |
| 5 | 1011225-SO | - | - | - | 12.250 | 0.48228 | | | 12.25 | | |
| 5 | 1011230-SO | - | - | - | 12.300 | 0.48425 | | | 101 | 151 | 12.30 |
| 5 | 1021230-SO | 31/64 | - | - | 12.303 | 0.48438 | | | | | 12.30 |
| 5 | 1011240-SO | - | - | - | 12.400 | 0.48819 | | | | | 12.40 |
| 5 | 1011250-SO | - | - | - | 12.500 | 0.49213 | | | | | 12.50 |
| 5 | 1011260-SO | - | - | - | 12.600 | 0.49606 | | | | | 12.60 |
| 5 | 1021270-SO | 1/2 | - | - | 12.700 | 0.50000 | 12.70 | | | | |
| 5 | 1011270-SO | 1/2 | - | - | 12.700 | 0.50000 | 12.70 | | | | |
| 5 | 1011275-SO | - | - | - | 12.750 | 0.50197 | 12.75 | | | | |
| 5 | 1011280-SO | - | - | - | 12.800 | 0.50394 | 12.80 | | | | |
| 5 | 1011290-SO | - | - | - | 12.900 | 0.50787 | 12.90 | | | | |
| 5 | 1011300-SO | - | - | - | 13.000 | 0.51181 | 13.00 | | | | |
| 1 | 1021310-SO | 33/64 | - | - | 13.097 | 0.51563 | 108 | 160 | | | 13.10 |
| 1 | 1011310-SO | - | - | - | 13.100 | 0.51575 | | | | | 13.10 |
| 1 | 1011320-SO | - | - | - | 13.200 | 0.51969 | | | | | 13.20 |
| 1 | 1011325-SO | - | - | - | 13.250 | 0.52165 | | | 13.25 | | |
| 1 | 1011330-SO | - | - | - | 13.300 | 0.52362 | | | 13.30 | | |
| 1 | 1011340-SO | - | - | - | 13.400 | 0.52756 | | | 13.40 | | |
| 1 | 1021349-SO | 17/32 | - | - | 13.494 | 0.53125 | | | 13.49 | | |
| 1 | 1011350-SO | - | - | - | 13.500 | 0.53150 | | | 13.50 | | |
| 1 | 1011360-SO | - | - | - | 13.600 | 0.53543 | | | 13.60 | | |
| 1 | 1011370-SO | - | - | - | 13.700 | 0.53937 | | | 13.70 | | |
| 1 | 1011380-SO | - | - | - | 13.800 | 0.54331 | | | 13.80 | | |
| 1 | 1021389-SO | 35/64 | - | - | 13.891 | 0.54688 | | | 13.89 | | |
| 1 | 1011400-SO | - | - | - | 14.000 | 0.55118 | | | 14.00 | | |
| 1 | 1011425-SO | - | - | - | 14.250 | 0.56102 | | | 14.25 | | |
| 1 | 1021429-SO | 9/16 | - | - | 14.288 | 0.56250 | 14.29 | | | | |
| 1 | 1011450-SO | - | - | - | 14.500 | 0.57087 | 14.50 | | | | |
| 1 | 1021468-SO | 37/64 | - | - | 14.684 | 0.57813 | 14.68 | | | | |
| 1 | 1011475-SO | - | - | - | 14.750 | 0.58071 | 14.75 | | | | |
| 1 | 1011500-SO | - | - | - | 15.000 | 0.59055 | 15.00 | | | | |
| 1 | 1011525-SO | - | - | - | 15.250 | 0.60039 | 15.25 | | | | |
| 1 | 1011550-SO | - | - | - | 15.500 | 0.61024 | 15.50 | | | | |
| 1 | 1011575-SO | - | - | - | 15.750 | 0.62008 | 15.75 | | | | |
| 1 | 1021588-SO | 5/8 | - | - | 15.875 | 0.62500 | 15.88 | | | | |
| 1 | 1011600-SO | - | - | - | 16.000 | 0.62992 | 16.00 | | | | |
| 1 | 1011650-SO | - | - | - | 16.500 | 0.64961 | 16.50 | | | | |
| 1 | 1011700-SO | - | - | - | 17.000 | 0.66929 | 17.00 | | | | |
| 1 | 1011750-SO | - | - | - | 17.500 | 0.68898 | 17.50 | | | | |
| 1 | 1011800-SO | - | - | - | 18.000 | 0.70866 | 18.00 | | | | |
| 1 | 1011850-SO | - | - | - | 18.500 | 0.72835 | 18.50 | | | | |
| 1 | 1011900-SO | - | - | - | 19.000 | 0.74803 | 19.00 | | | | |

Available Steam Oxide only.





List 101-SO, 102-SO (Continued)

| | | | | | | |
|------------|---------------------------|-----|--------|-----|---------|-----|
| NEW | SPEED FEED P396 | HSS | TYPE N | S/O | JOBBERS | 30° |
|------------|---------------------------|-----|--------|-----|---------|-----|

Jobber Drills

| Pcs per Pack | EDP Number | Diameter | | | | | Flute Length | Overall Length | Shank Diameter |
|--------------|------------|-----------------|-----------|-------------|--------|---------|--------------|----------------|----------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | FL (mm) | L (mm) | d (mm) |
| 1 | 1011950-SO | - | - | - | 19.500 | 0.76772 | 140 | 205 | 19.50 |
| 1 | 1012000-SO | - | - | - | 20.000 | 0.78740 | | | 20.00 |

Available Steam Oxide only.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|----------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 101-SO, 102-SO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

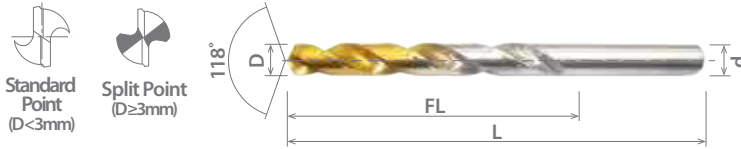




List 1X6-SO

| | | | | | | |
|------------|---------------------------|------------|---------------|------------|----------------|------------|
| NEW | SPEED FEED P396 | HSS | TYPE N | TiN | JOBBERS | 30° |
|------------|---------------------------|------------|---------------|------------|----------------|------------|

Jobber Drills



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 16 | +0 / -0.027 | +0 / -0.0011 |

| Pcs per Pack | EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|--------------|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 10 | 1X60318-SO | 1/8 | - | - | 3.175 | 0.12500 | 36 | 65 | 3.18 |
| 10 | 1X60357-SO | 9/64 | - | - | 3.572 | 0.14063 | 39 | 70 | 3.57 |
| 10 | 1X60397-SO | 5/32 | - | - | 3.969 | 0.15625 | 43 | 75 | 3.97 |
| 10 | 1X60437-SO | 11/64 | - | - | 4.366 | 0.17188 | 47 | 80 | 4.37 |
| 10 | 1X60476-SO | 3/16 | - | - | 4.763 | 0.18750 | 52 | 86 | 4.76 |
| 10 | 1X60516-SO | 13/64 | - | - | 5.159 | 0.20313 | | | 5.16 |
| 10 | 1X60556-SO | 7/32 | - | - | 5.556 | 0.21875 | 57 | 93 | 5.56 |
| 10 | 1X60595-SO | 15/64 | - | - | 5.953 | 0.23438 | | | 5.95 |
| 10 | 1X60635-SO | 1/4 | - | E | 6.350 | 0.25000 | 63 | 101 | 6.35 |
| 10 | 1X60675-SO | 17/64 | - | - | 6.747 | 0.26563 | | | 6.75 |
| 10 | 1X60714-SO | 9/32 | - | - | 7.144 | 0.28125 | 69 | 109 | 7.14 |
| 10 | 1X60754-SO | 19/64 | - | - | 7.541 | 0.29688 | | | 7.54 |
| 10 | 1X60794-SO | 5/16 | - | - | 7.938 | 0.31250 | 75 | 117 | 7.94 |
| 10 | 1X60833-SO | 21/64 | - | - | 8.334 | 0.32813 | | | 8.33 |
| 10 | 1X60873-SO | 11/32 | - | - | 8.731 | 0.34375 | 81 | 125 | 8.73 |
| 10 | 1X60913-SO | 23/64 | - | - | 9.128 | 0.35938 | | | 9.13 |
| 10 | 1X60953-SO | 3/8 | - | - | 9.525 | 0.37500 | 87 | 133 | 9.53 |
| 5 | 1X60992-SO | 25/64 | - | - | 9.922 | 0.39063 | | | 9.92 |
| 5 | 1X61032-SO | 13/32 | - | - | 10.319 | 0.40625 | 94 | 142 | 10.32 |
| 5 | 1X61072-SO | 27/64 | - | - | 10.716 | 0.42188 | | | 10.72 |
| 5 | 1X61111-SO | 7/16 | - | - | 11.113 | 0.43750 | 101 | 151 | 11.11 |
| 5 | 1X61151-SO | 29/64 | - | - | 11.509 | 0.45313 | | | 11.51 |
| 5 | 1X61191-SO | 15/32 | - | - | 11.906 | 0.46875 | 108 | 160 | 11.91 |
| 5 | 1X61229-SO | 31/64 | - | - | 12.303 | 0.48438 | | | 12.30 |
| 5 | 1X61269-SO | 1/2 | - | - | 12.700 | 0.50000 | 114 | 169 | 12.70 |
| 1 | 1X61309-SO | 33/64 | - | - | 13.097 | 0.51563 | | | 13.10 |
| 1 | 1X61349-SO | 17/32 | - | - | 13.494 | 0.53125 | 118 | 178 | 13.49 |
| 1 | 1X61389-SO | 35/64 | - | - | 13.891 | 0.54688 | | | 13.89 |
| 1 | 1X61429-SO | 9/16 | - | - | 14.288 | 0.56250 | 120 | 178 | 14.29 |
| 1 | 1X61468-SO | 37/64 | - | - | 14.684 | 0.57813 | | | 14.68 |
| 1 | 1X61588-SO | 5/8 | - | - | 15.875 | 0.62500 | | | 15.88 |

Available TiN coating only.



| List No. | Work Material | | | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | | | |
| | Carbon Steels | | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | 4140 | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 1X6-SO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

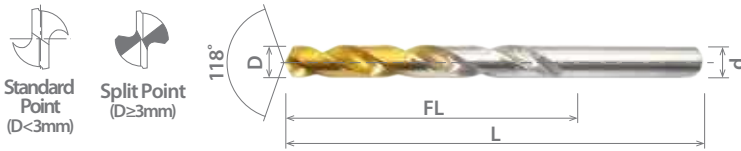




List 1X6-SO (Continued)

INCH SET, Jobber Drills

| | | | | | | |
|------------|---------------------------|------------|---------------|------------|----------------|------------|
| NEW | SPEED FEED P396 | HSS | TYPE N | TiN | JOBBERS | 30° |
|------------|---------------------------|------------|---------------|------------|----------------|------------|



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 16 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 1X60030-SO | 1/16 | - | - | 1.588 | 0.06250 | 20 | 43 | 1.59 |
| | 5/64 | - | - | 1.984 | 0.07813 | 24 | 49 | 1.98 |
| | 3/32 | - | - | 2.381 | 0.09375 | 30 | 57 | 2.38 |
| | 7/64 | - | - | 2.778 | 0.10938 | 33 | 61 | 2.78 |
| | 1/8 | - | - | 3.175 | 0.12500 | 36 | 65 | 3.18 |
| | 9/64 | - | - | 3.572 | 0.14063 | 39 | 70 | 3.57 |
| | 5/32 | - | - | 3.969 | 0.15625 | 43 | 75 | 3.97 |
| | 11/64 | - | - | 4.366 | 0.17188 | 47 | 80 | 4.37 |
| | 3/16 | - | - | 4.763 | 0.18750 | 52 | 86 | 4.76 |
| | 13/64 | - | - | 5.159 | 0.20313 | | | 5.16 |
| | 7/32 | - | - | 5.556 | 0.21875 | 57 | 93 | 5.56 |
| | 15/64 | - | - | 5.953 | 0.23438 | | | 5.95 |
| | 1/4 | - | E | 6.350 | 0.25000 | 63 | 101 | 6.35 |
| | 17/64 | - | - | 6.747 | 0.26563 | 69 | 109 | 6.75 |
| | 9/32 | - | - | 7.144 | 0.28125 | | | 7.14 |
| | 19/64 | - | - | 7.541 | 0.29688 | 75 | 117 | 7.54 |
| | 5/16 | - | - | 7.938 | 0.31250 | | | 7.94 |
| | 21/64 | - | - | 8.334 | 0.32813 | 81 | 125 | 8.33 |
| | 11/32 | - | - | 8.731 | 0.34375 | | | 8.73 |
| | 23/64 | - | - | 9.128 | 0.35938 | 87 | 133 | 9.13 |
| | 3/8 | - | - | 9.525 | 0.37500 | | | 9.53 |
| | 25/64 | - | - | 9.922 | 0.39063 | 94 | 142 | 9.92 |
| | 13/32 | - | - | 10.319 | 0.40625 | | | 10.32 |
| | 27/64 | - | - | 10.716 | 0.42188 | 101 | 151 | 10.72 |
| | 7/16 | - | - | 11.113 | 0.43750 | | | 11.11 |
| | 29/64 | - | - | 11.509 | 0.45313 | 101 | 151 | 11.51 |
| | 15/32 | - | - | 11.906 | 0.46875 | | | 11.91 |
| | 31/64 | - | - | 12.303 | 0.48438 | 101 | 151 | 12.30 |
| | 1/2 | - | - | 12.700 | 0.50000 | | | 12.70 |

Packed: 1 pc.
Available TiN coating only.

continued on next page



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | 4140 4340 | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 1X6-SO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

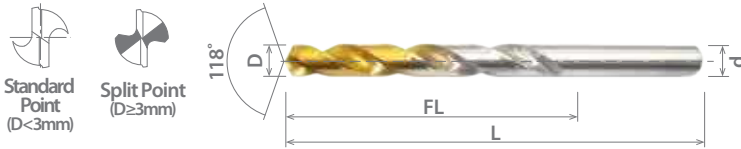




List 1X6-SO (Continued)

| | | | | | | |
|------------|---------------------------|------------|---------------|------------|----------------|------------|
| NEW | SPEED FEED P396 | HSS | TYPE N | TiN | JOBBERS | 30° |
|------------|---------------------------|------------|---------------|------------|----------------|------------|

METRIC SET, Jobber Drills



| Cutting Diameter Tolerance (h8) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 1 ≤ D ≤ 3 | +0 / -0.014 | +0 / -0.0006 |
| 3 < D ≤ 6 | +0 / -0.018 | +0 / -0.0007 |
| 6 < D ≤ 10 | +0 / -0.022 | +0 / -0.0009 |
| 10 < D ≤ 16 | +0 / -0.027 | +0 / -0.0011 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|---------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 1X60040-SO | - | - | - | 1.000 | 0.03937 | 12 | 34 | 1.00 |
| | - | - | - | 1.500 | 0.05906 | 18 | 40 | 1.50 |
| | - | - | - | 2.000 | 0.07874 | 24 | 49 | 2.00 |
| | - | - | - | 2.500 | 0.09843 | 30 | 57 | 2.50 |
| | - | - | - | 3.000 | 0.11811 | 33 | 61 | 3.00 |
| | - | - | - | 3.500 | 0.13780 | 39 | 70 | 3.50 |
| | - | - | - | 4.000 | 0.15748 | 43 | 75 | 4.00 |
| | - | - | - | 4.500 | 0.17717 | 47 | 80 | 4.50 |
| | - | - | - | 5.000 | 0.19685 | 52 | 86 | 5.00 |
| | - | - | - | 5.500 | 0.21654 | 57 | 93 | 5.50 |
| | - | - | - | 6.000 | 0.23622 | | | 6.00 |
| | - | - | - | 6.500 | 0.25591 | 63 | 101 | 6.50 |
| | - | - | - | 7.000 | 0.27559 | 69 | 109 | 7.00 |
| | - | - | - | 7.500 | 0.29528 | 75 | 117 | 7.50 |
| | - | - | - | 8.000 | 0.31496 | | | 8.00 |
| | - | - | - | 8.500 | 0.33465 | 81 | 125 | 8.50 |
| | - | - | - | 9.000 | 0.35433 | | | 9.00 |
| | - | - | - | 9.500 | 0.37402 | 87 | 133 | 9.50 |
| | - | - | - | 10.000 | 0.39370 | | | 10.00 |
| | - | - | - | 10.500 | 0.41339 | 94 | 142 | 10.50 |
| - | - | - | 11.000 | 0.43307 | 11.00 | | | |
| - | - | - | 11.500 | 0.45276 | 101 | 151 | 11.50 | |
| - | - | - | 12.000 | 0.47244 | | | 12.00 | |
| - | - | - | 12.500 | 0.49213 | 101 | 151 | 12.50 | |
| - | - | - | 13.000 | 0.51181 | | | 13.00 | |

Packed: 1 pc.
Available TiN coating only.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------------|-----------|-----------|-----------|
| | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | 4140 4340 | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 1X6-SO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | |

good best

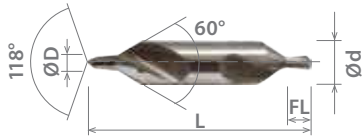




List 1NA-SO

| | | | |
|-----|------------|-----|----|
| NEW | SPEED FEED | HSS | BR |
| | P397 | | |

Center Drills



| EDP Number | Diameter | Tool Number | Flute Length | Overall Length | Shank Diameter |
|------------|----------|-------------|--------------|----------------|----------------|
| | | | FL (in) | L (in) | d (in) |
| 1NA0001-SO | 3/64 | 1 | 0.047 | 1.260 | 1/8 |
| 1NA0002-SO | 5/64 | 2 | 0.078 | 1.890 | 3/16 |
| 1NA0003-SO | 7/64 | 3 | 0.110 | 2.008 | 1/4 |
| 1NA0004-SO | 1/8 | 4 | 0.126 | 2.126 | 5/16 |
| 1NA0005-SO | 3/16 | 5 | 0.189 | 2.756 | 7/16 |
| 1NA0006-SO | 7/32 | 6 | 0.217 | 2.992 | 1/2 |
| 1NA0007-SO | 1/4 | 7 | 0.252 | 3.268 | 5/8 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|------------------------------|------------|--------------------------|--------------------------|---------|--------------------------|--------------------------|--------------------------|-------------------------------|-------------------|-----------------|------------|--------------|--------------|
| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S Nickel Alloy Titanium | H | | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | | Stainless Steels | | | | Aluminum | | | 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 1NA-SO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | |

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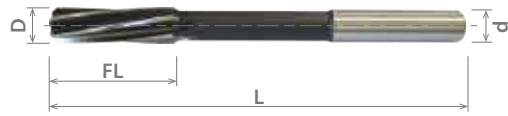




List 751-SO, 752-SO

Parallel Shank Machine Chucking Reamers

| | | | | | |
|------------|---------------------------|----------------|-----------|------------|------------|
| NEW | SPEED FEED P398 | HSS-Co5 | BR | LHS | 10° |
|------------|---------------------------|----------------|-----------|------------|------------|



| Cutting Diameter Tolerance (h7) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.010 | +0 / -0.0003 |
| 3 < D ≤ 6 | +0 / -0.012 | +0 / -0.0004 |
| 6 < D ≤ 10 | +0 / -0.015 | +0 / -0.0005 |
| 10 < D ≤ 18 | +0 / -0.018 | +0 / -0.0007 |
| 18 < D ≤ 20 | +0 / -0.021 | +0 / -0.0008 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|-------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 7510200-SO | - | - | - | 2.000 | 0.07874 | 11 | 49 | 2.00 |
| 7510240-SO | - | - | - | 2.400 | 0.09449 | 14 | 57 | 2.40 |
| 7510250-SO | - | - | - | 2.500 | 0.09843 | | | 2.50 |
| 7510260-SO | - | - | - | 2.600 | 0.10236 | 15 | 61 | 2.60 |
| 7510270-SO | - | - | - | 2.700 | 0.10630 | | | 2.70 |
| 7510280-SO | - | - | - | 2.800 | 0.11024 | 16 | 65 | 2.80 |
| 7510300-SO | - | - | - | 3.000 | 0.11811 | | | 3.00 |
| 7510310-SO | - | - | - | 3.100 | 0.12205 | 18 | 70 | 3.10 |
| 7520318-SO | 1/8 | - | - | 3.175 | 0.12500 | | | 3.20 |
| 7510320-SO | - | - | - | 3.200 | 0.12598 | 19 | 75 | 3.40 |
| 7510340-SO | - | - | - | 3.400 | 0.13386 | | | 3.50 |
| 7510350-SO | - | - | - | 3.500 | 0.13780 | 21 | 80 | 3.60 |
| 7510360-SO | - | - | - | 3.600 | 0.14173 | | | 3.80 |
| 7510380-SO | - | - | - | 3.800 | 0.14961 | 23 | 86 | 4.00 |
| 7510400-SO | - | - | - | 4.000 | 0.15748 | | | 4.50 |
| 7510410-SO | - | - | - | 4.100 | 0.16142 | 26 | 93 | 4.00 |
| 7510420-SO | - | - | - | 4.200 | 0.16535 | | | 4.50 |
| 7510430-SO | - | - | - | 4.300 | 0.16929 | 28 | 101 | 4.50 |
| 7510440-SO | - | - | - | 4.400 | 0.17323 | | | 5.00 |
| 7510450-SO | - | - | - | 4.500 | 0.17717 | 31 | 109 | 5.00 |
| 7520476-SO | 3/16 | - | - | 4.763 | 0.18750 | | | 5.60 |
| 7510480-SO | - | - | - | 4.800 | 0.18898 | 28 | 101 | 5.00 |
| 7510490-SO | - | - | - | 4.900 | 0.19291 | | | 5.60 |
| 7510500-SO | - | - | - | 5.000 | 0.19685 | 26 | 93 | 5.00 |
| 7510510-SO | - | - | - | 5.100 | 0.20079 | | | 5.60 |
| 7510520-SO | - | - | - | 5.200 | 0.20472 | 28 | 101 | 5.60 |
| 7510530-SO | - | - | - | 5.300 | 0.20866 | | | 6.30 |
| 7510540-SO | - | - | - | 5.400 | 0.21260 | 31 | 109 | 6.30 |
| 7510550-SO | - | - | - | 5.500 | 0.21654 | | | 7.10 |
| 7510560-SO | - | - | - | 5.600 | 0.22047 | 28 | 101 | 5.60 |
| 7510570-SO | - | - | - | 5.700 | 0.22441 | | | 6.30 |
| 7510580-SO | - | - | - | 5.800 | 0.22835 | 26 | 93 | 6.30 |
| 7510600-SO | - | - | - | 6.000 | 0.23622 | | | 7.10 |
| 7510610-SO | - | - | - | 6.100 | 0.24016 | 28 | 101 | 6.30 |
| 7510620-SO | - | - | - | 6.200 | 0.24409 | | | 7.10 |
| 7510630-SO | - | - | - | 6.300 | 0.24803 | 31 | 109 | 6.30 |
| 7520635-SO | 1/4 | - | E | 6.350 | 0.25000 | | | 7.10 |
| 7510640-SO | - | - | - | 6.400 | 0.25197 | 28 | 101 | 6.30 |
| 7510650-SO | - | - | - | 6.500 | 0.25591 | | | 7.10 |
| 7510660-SO | - | - | - | 6.600 | 0.25984 | 26 | 93 | 7.10 |
| 7510670-SO | - | - | - | 6.700 | 0.26378 | | | 7.10 |
| 7510680-SO | - | - | - | 6.800 | 0.26772 | 28 | 101 | 7.10 |
| 7510700-SO | - | - | - | 7.000 | 0.27559 | | | 7.10 |
| 7510710-SO | - | - | - | 7.100 | 0.27953 | 31 | 109 | 7.10 |
| 7510720-SO | - | - | - | 7.200 | 0.28346 | | | 7.10 |
| 7510730-SO | - | - | - | 7.300 | 0.28740 | 28 | 101 | 7.10 |
| 7510750-SO | - | - | - | 7.500 | 0.29528 | | | 7.10 |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order.





List 751-SO, 752-SO (Continued)

Parallel Shank Machine Chucking Reamers

NEW SPEED FEED P398 HSS-Co5 BR LHS 10°

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 7510780-SO | - | - | - | 7.800 | 0.30709 | 33 | 117 | 8.00 |
| 7510790-SO | - | - | - | 7.900 | 0.31102 | | | |
| 7520794-SO | 5/16 | - | - | 7.938 | 0.31250 | | | |
| 7510800-SO | - | - | - | 8.000 | 0.31496 | | | |
| 7510810-SO | - | - | - | 8.100 | 0.31890 | | | |
| 7510820-SO | - | - | - | 8.200 | 0.32283 | | | |
| 7510830-SO | - | - | - | 8.300 | 0.32677 | | | |
| 7510840-SO | - | - | - | 8.400 | 0.33071 | | | |
| 7510850-SO | - | - | - | 8.500 | 0.33465 | | | |
| 7510860-SO | - | - | - | 8.600 | 0.33858 | | | |
| 7510880-SO | - | - | - | 8.800 | 0.34646 | 36 | 125 | 9.00 |
| 7510890-SO | - | - | - | 8.900 | 0.35039 | | | |
| 7510900-SO | - | - | - | 9.000 | 0.35433 | | | |
| 7510910-SO | - | - | - | 9.100 | 0.35827 | | | |
| 7510950-SO | - | - | - | 9.500 | 0.37402 | | | |
| 7520953-SO | 3/8 | - | - | 9.525 | 0.37500 | 38 | 133 | 10.00 |
| 7510960-SO | - | - | - | 9.600 | 0.37795 | | | |
| 7510970-SO | - | - | - | 9.700 | 0.38189 | | | |
| 7510980-SO | - | - | - | 9.800 | 0.38583 | | | |
| 7510990-SO | - | - | - | 9.900 | 0.38976 | | | |
| 7511000-SO | - | - | - | 10.000 | 0.39370 | | | |
| 7511010-SO | - | - | - | 10.100 | 0.39764 | | | |
| 7511020-SO | - | - | - | 10.200 | 0.40157 | | | |
| 7511030-SO | - | - | - | 10.300 | 0.40551 | | | |
| 7511050-SO | - | - | - | 10.500 | 0.41339 | | | |
| 7511060-SO | - | - | - | 10.600 | 0.41732 | 41 | 142 | 10.00 |
| 7511070-SO | - | - | - | 10.700 | 0.42126 | | | |
| 7511080-SO | - | - | - | 10.800 | 0.42520 | | | |
| 7511090-SO | - | - | - | 10.900 | 0.42913 | | | |
| 7511100-SO | - | - | - | 11.000 | 0.43307 | | | |
| 7511110-SO | - | - | - | 11.100 | 0.43701 | | | |
| 7521111-SO | 7/16 | - | - | 11.113 | 0.43750 | | | |
| 7511150-SO | - | - | - | 11.500 | 0.45276 | | | |
| 7511170-SO | - | - | - | 11.700 | 0.46063 | | | |
| 7511180-SO | - | - | - | 11.800 | 0.46457 | | | |
| 7511190-SO | - | - | - | 11.900 | 0.46850 | 44 | 151 | 10.00 |
| 7511200-SO | - | - | - | 12.000 | 0.47244 | | | |
| 7511210-SO | - | - | - | 12.100 | 0.47638 | | | |
| 7511220-SO | - | - | - | 12.200 | 0.48031 | | | |
| 7511230-SO | - | - | - | 12.300 | 0.48425 | | | |
| 7511240-SO | - | - | - | 12.400 | 0.48819 | | | |
| 7511250-SO | - | - | - | 12.500 | 0.49213 | | | |
| 7511260-SO | - | - | - | 12.600 | 0.49606 | | | |
| 7511270-SO | - | - | - | 12.700 | 0.50000 | | | |
| 7521270-SO | 1/2 | - | - | 12.700 | 0.50000 | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------------|--------------------------|--------------------------|--------------------------|------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------|--------------------------|--------------------------|--------------------------|--------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 751-SO, 752-SO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

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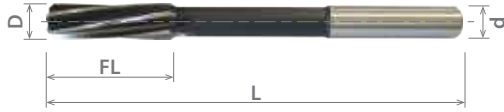




List 751-SO, 752-SO (Continued)

Parallel Shank Machine Chucking Reamers

| | | | | | |
|-----|------------|---------|----|-----|-----|
| NEW | SPEED FEED | HSS-Co5 | BR | LHS | 10° |
| | P398 | | | | |



| Cutting Diameter Tolerance (h7) | | |
|---------------------------------|-------------|--------------|
| Size | mm | inch |
| 2 ≤ D ≤ 3 | +0 / -0.010 | +0 / -0.0003 |
| 3 < D ≤ 6 | +0 / -0.012 | +0 / -0.0004 |
| 6 < D ≤ 10 | +0 / -0.015 | +0 / -0.0005 |
| 10 < D ≤ 18 | +0 / -0.018 | +0 / -0.0007 |
| 18 < D ≤ 20 | +0 / -0.021 | +0 / -0.0008 |

| EDP Number | Diameter | | | | | Flute Length FL (mm) | Overall Length L (mm) | Shank Diameter d (mm) |
|------------|-----------------|-----------|-------------|--------|---------|-------------------------|--------------------------|--------------------------|
| | Fractional Size | Wire Gage | Letter Size | mm | Inch | | | |
| 7511280-SO | - | - | - | 12.800 | 0.50394 | 44 | 151 | 10.00 |
| 7511290-SO | - | - | - | 12.900 | 0.50787 | | | |
| 7511300-SO | - | - | - | 13.000 | 0.51181 | | | |
| 7511350-SO | - | - | - | 13.500 | 0.53150 | 47 | 160 | 12.50 |
| 7511400-SO | - | - | - | 14.000 | 0.55118 | | | |
| 7521429-SO | 9/16 | - | - | 14.288 | 0.56250 | 50 | 162 | |
| 7511450-SO | - | - | - | 14.500 | 0.57087 | | | |
| 7511500-SO | - | - | - | 15.000 | 0.59055 | | | |
| 7511550-SO | - | - | - | 15.500 | 0.61024 | 52 | 170 | |
| 7521588-SO | 5/8 | - | - | 15.875 | 0.62500 | | | |
| 7511600-SO | - | - | - | 16.000 | 0.62992 | 54 | 175 | |
| 7511700-SO | - | - | - | 17.000 | 0.66929 | | | |
| 7511800-SO | - | - | - | 18.000 | 0.70866 | 56 | 182 | |
| 7521905-SO | 3/4 | - | - | 19.050 | 0.75000 | 60 | 195 | 16.00 |
| 7512000-SO | - | - | - | 20.000 | 0.78740 | | | |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | | | |
|----------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 751-SO, 752-SO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

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DRILLING

Technical





List 6600 - A Brand® ADO-TRS: 3D

List 6610 - A Brand® ADO-TRS: 5D

General Drilling Operations

| Work Material | | Carbon Steels, Mild Steels 1010, 1050, 12L14 | | Alloy Steels 4140, 4130 | | Stainless Steels 400SS, 17-4PH | | Cast Iron | | Ductile Cast Iron | |
|----------------|------|---|---------------|----------------------------|---------------|-----------------------------------|---------------|--------------|---------------|-------------------|---------------|
| Drilling Speed | | 260-395 SFM | | 260-395 SFM | | 130-200 SFM | | 260-395 SFM | | 195-330 SFM | |
| Drill Dia. | | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| mm | Inch | | | | | | | | | | |
| 3 | - | 10,700 | 0.004 - 0.006 | 10,700 | 0.004 - 0.006 | 5,200 | 0.004 - 0.006 | 10,700 | 0.004 - 0.007 | 8,400 | 0.004 - 0.006 |
| - | 1/8 | 10,100 | 0.004 - 0.006 | 10,100 | 0.004 - 0.006 | 4,900 | 0.004 - 0.006 | 10,100 | 0.004 - 0.007 | 7,900 | 0.004 - 0.006 |
| 4 | - | 7,900 | 0.005 - 0.009 | 7,900 | 0.005 - 0.009 | 4,000 | 0.005 - 0.007 | 7,900 | 0.005 - 0.009 | 6,350 | 0.005 - 0.009 |
| - | 3/16 | 6,700 | 0.007 - 0.010 | 6,700 | 0.007 - 0.010 | 3,300 | 0.007 - 0.009 | 6,700 | 0.007 - 0.011 | 5,300 | 0.007 - 0.010 |
| 6 | - | 5,300 | 0.007 - 0.013 | 5,300 | 0.007 - 0.013 | 2,650 | 0.007 - 0.009 | 5,300 | 0.008 - 0.014 | 4,250 | 0.007 - 0.013 |
| - | 1/4 | 5,000 | 0.007 - 0.014 | 5,000 | 0.007 - 0.014 | 2,500 | 0.007 - 0.010 | 5,000 | 0.009 - 0.015 | 4,000 | 0.007 - 0.014 |
| 8 | - | 3,950 | 0.009 - 0.017 | 3,950 | 0.009 - 0.017 | 2,000 | 0.009 - 0.013 | 3,950 | 0.011 - 0.019 | 3,200 | 0.009 - 0.017 |
| - | 3/8 | 3,300 | 0.012 - 0.021 | 3,300 | 0.012 - 0.021 | 1,700 | 0.011 - 0.015 | 3,300 | 0.013 - 0.023 | 2,650 | 0.012 - 0.021 |
| 10 | - | 3,150 | 0.012 - 0.022 | 3,150 | 0.012 - 0.022 | 1,600 | 0.012 - 0.016 | 3,150 | 0.014 - 0.024 | 2,550 | 0.012 - 0.022 |
| - | 7/16 | 2,850 | 0.013 - 0.023 | 2,850 | 0.013 - 0.023 | 1,450 | 0.013 - 0.017 | 2,850 | 0.015 - 0.026 | 2,300 | 0.013 - 0.023 |
| 12 | - | 2,650 | 0.014 - 0.024 | 2,650 | 0.014 - 0.024 | 1,350 | 0.014 - 0.019 | 2,650 | 0.017 - 0.028 | 2,100 | 0.014 - 0.024 |
| - | 1/2 | 2,500 | 0.015 - 0.025 | 2,500 | 0.015 - 0.025 | 1,250 | 0.015 - 0.020 | 2,500 | 0.018 - 0.028 | 2,000 | 0.015 - 0.025 |
| 14 | - | 2,250 | 0.017 - 0.028 | 2,250 | 0.017 - 0.028 | 1,150 | 0.017 - 0.022 | 2,250 | 0.019 - 0.030 | 1,800 | 0.017 - 0.028 |
| - | 5/8 | 2,000 | 0.019 - 0.031 | 2,000 | 0.019 - 0.031 | 1,000 | 0.019 - 0.025 | 2,000 | 0.022 - 0.034 | 1,600 | 0.019 - 0.031 |
| 16 | - | 2,000 | 0.019 - 0.031 | 2,000 | 0.019 - 0.031 | 1,000 | 0.019 - 0.025 | 2,000 | 0.022 - 0.034 | 1,600 | 0.019 - 0.031 |
| - | - | 1,750 | 0.021 - 0.032 | 1,750 | 0.021 - 0.032 | 900 | 0.021 - 0.028 | 1,750 | 0.025 - 0.035 | 1,400 | 0.021 - 0.032 |
| 18 | - | 1,650 | 0.023 - 0.034 | 1,650 | 0.023 - 0.034 | 850 | 0.023 - 0.030 | 1,650 | 0.026 - 0.037 | 1,300 | 0.023 - 0.034 |
| - | 3/4 | 1,600 | 0.024 - 0.035 | 1,600 | 0.024 - 0.035 | 800 | 0.024 - 0.031 | 1,600 | 0.028 - 0.039 | 1,250 | 0.024 - 0.035 |
| 20 | - | 1,600 | 0.024 - 0.035 | 1,600 | 0.024 - 0.035 | 800 | 0.024 - 0.031 | 1,600 | 0.028 - 0.039 | 1,250 | 0.024 - 0.035 |

General Drilling Operations

| Work Material | | Cast Aluminum | | Special Alloy Steels, Hardened Steels | | | | | |
|----------------|------|---------------|---------------|---------------------------------------|---------------|--------------|---------------|--------------|---------------|
| Hardness | | | | 26-30 HRC | | 30-34 HRC | | 34-43 HRC | |
| Drilling Speed | | 260-660 SFM | | 195-295 SFM | | 160-230 SFM | | 130-160 SFM | |
| Drill Dia. | | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| mm | Inch | | | | | | | | |
| 3 | - | 14,900 | 0.004 - 0.009 | 7,900 | 0.004 - 0.006 | 6,500 | 0.004 - 0.006 | 4,700 | 0.004 - 0.005 |
| - | 1/8 | 14,100 | 0.005 - 0.009 | 7,500 | 0.004 - 0.006 | 6,100 | 0.004 - 0.006 | 4,400 | 0.004 - 0.005 |
| 4 | - | 11,150 | 0.006 - 0.012 | 5,590 | 0.005 - 0.008 | 4,750 | 0.005 - 0.008 | 3,500 | 0.005 - 0.007 |
| - | 3/16 | 9,400 | 0.007 - 0.014 | 5,000 | 0.006 - 0.009 | 4,100 | 0.006 - 0.009 | 3,000 | 0.006 - 0.008 |
| 6 | - | 7,450 | 0.009 - 0.019 | 3,950 | 0.007 - 0.012 | 3,150 | 0.007 - 0.012 | 2,350 | 0.007 - 0.009 |
| - | 1/4 | 7,000 | 0.010 - 0.020 | 3,750 | 0.007 - 0.012 | 3,000 | 0.007 - 0.012 | 2,200 | 0.007 - 0.010 |
| 8 | - | 5,600 | 0.013 - 0.025 | 2,950 | 0.009 - 0.016 | 2,350 | 0.009 - 0.016 | 1,750 | 0.009 - 0.013 |
| - | 3/8 | 4,700 | 0.015 - 0.030 | 2,500 | 0.011 - 0.019 | 2,000 | 0.011 - 0.019 | 1,450 | 0.011 - 0.015 |
| 10 | - | 4,450 | 0.016 - 0.031 | 2,400 | 0.012 - 0.020 | 1,900 | 0.012 - 0.020 | 1,400 | 0.012 - 0.016 |
| - | 7/16 | 4,000 | 0.017 - 0.035 | 2,150 | 0.013 - 0.022 | 1,700 | 0.013 - 0.022 | 1,250 | 0.013 - 0.017 |
| 12 | - | 3,700 | 0.019 - 0.038 | 2,000 | 0.014 - 0.024 | 1,550 | 0.014 - 0.024 | 1,150 | 0.014 - 0.019 |
| - | 1/2 | 3,500 | 0.020 - 0.040 | 1,850 | 0.015 - 0.024 | 1,500 | 0.015 - 0.024 | 1,100 | 0.015 - 0.020 |
| 14 | - | 3,200 | 0.022 - 0.044 | 1,700 | 0.017 - 0.025 | 1,350 | 0.017 - 0.025 | 1,000 | 0.017 - 0.022 |
| - | 5/8 | 2,800 | 0.025 - 0.050 | 1,500 | 0.019 - 0.025 | 1,200 | 0.019 - 0.025 | 900 | 0.019 - 0.025 |
| 16 | - | 2,800 | 0.025 - 0.050 | 1,500 | 0.019 - 0.025 | 1,200 | 0.019 - 0.025 | 900 | 0.019 - 0.025 |
| 18 | - | 2,500 | 0.028 - 0.057 | 1,300 | 0.021 - 0.028 | 1,050 | 0.021 - 0.028 | 800 | 0.021 - 0.028 |
| - | 3/4 | 2,350 | 0.030 - 0.060 | 1,250 | 0.023 - 0.030 | 1,000 | 0.023 - 0.030 | 750 | 0.023 - 0.030 |
| 20 | - | 2,250 | 0.031 - 0.063 | 1,200 | 0.024 - 0.031 | 950 | 0.024 - 0.031 | 700 | 0.024 - 0.031 |





List 5720 - A Brand® ADFO: 3D

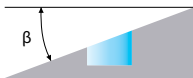
General Drilling Operations

| Work Material | | Carbon Steels, Mild Steels 1010, 1050, 12L14 | | Alloy Steels 4140, 4130 | | Stainless Steels 300SS, 400SS, 17-4PH | | Cast Iron | | Ductile Cast Iron | | Aluminum Alloy 5052,7075 | |
|----------------|------|---|---------------|----------------------------|---------------|---|---------------|-------------|---------------|-------------------|---------------|-----------------------------|---------------|
| Hardness | | | | 28-35 HRC | | | | | | | | | |
| Drilling Speed | | 200-330 SFM | | 100-300 SFM | | 130-200 SFM | | 200-400 SFM | | 165-260 SFM | | 265-650 SFM | |
| Drill Dia. | | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed |
| mm | Inch | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR |
| 3 | - | 10,650 | 0.002 - 0.004 | 7,530 | 0.002 - 0.004 | 5,300 | 0.002 - 0.004 | 10,650 | 0.002 - 0.004 | 8,570 | 0.002 - 0.004 | 17,000 | 0.002 - 0.004 |
| - | 1/8 | 10,080 | 0.002 - 0.004 | 7,120 | 0.002 - 0.004 | 5,040 | 0.002 - 0.004 | 10,080 | 0.002 - 0.004 | 8,100 | 0.002 - 0.004 | 16,040 | 0.002 - 0.004 |
| 4 | - | 8,000 | 0.002 - 0.005 | 5,650 | 0.002 - 0.005 | 4,000 | 0.002 - 0.005 | 8,000 | 0.002 - 0.005 | 6,430 | 0.002 - 0.005 | 12,730 | 0.002 - 0.005 |
| - | 3/16 | 6,720 | 0.002 - 0.006 | 4,750 | 0.002 - 0.006 | 3,360 | 0.002 - 0.006 | 6,720 | 0.002 - 0.006 | 5,400 | 0.002 - 0.006 | 10,690 | 0.002 - 0.006 |
| 6 | - | 5,300 | 0.002 - 0.007 | 3,770 | 0.002 - 0.007 | 2,660 | 0.002 - 0.007 | 5,300 | 0.002 - 0.007 | 4,280 | 0.002 - 0.007 | 8,490 | 0.002 - 0.007 |
| - | 1/4 | 5,040 | 0.003 - 0.008 | 3,560 | 0.003 - 0.008 | 2,520 | 0.003 - 0.008 | 5,040 | 0.003 - 0.008 | 4,050 | 0.003 - 0.008 | 8,020 | 0.003 - 0.008 |
| 8 | - | 4,000 | 0.003 - 0.009 | 2,830 | 0.003 - 0.009 | 2,000 | 0.003 - 0.009 | 4,000 | 0.003 - 0.009 | 3,210 | 0.003 - 0.009 | 6,370 | 0.003 - 0.009 |
| - | 3/8 | 3,360 | 0.004 - 0.011 | 2,370 | 0.004 - 0.011 | 1,680 | 0.004 - 0.011 | 3,360 | 0.004 - 0.011 | 2,700 | 0.004 - 0.011 | 5,350 | 0.004 - 0.011 |
| 10 | - | 3,200 | 0.004 - 0.012 | 2,260 | 0.004 - 0.012 | 1,600 | 0.004 - 0.012 | 3,200 | 0.004 - 0.012 | 2,570 | 0.004 - 0.012 | 5,100 | 0.004 - 0.012 |
| - | 7/16 | 2,880 | 0.004 - 0.013 | 2,030 | 0.004 - 0.013 | 1,440 | 0.004 - 0.013 | 2,880 | 0.004 - 0.013 | 2,310 | 0.004 - 0.013 | 4,580 | 0.004 - 0.013 |
| 12 | - | 2,650 | 0.005 - 0.014 | 1,880 | 0.005 - 0.014 | 1,330 | 0.005 - 0.014 | 2,650 | 0.005 - 0.014 | 2,140 | 0.005 - 0.014 | 4,240 | 0.005 - 0.014 |
| - | 1/2 | 2,520 | 0.005 - 0.015 | 1,780 | 0.005 - 0.015 | 1,260 | 0.005 - 0.015 | 2,520 | 0.005 - 0.015 | 2,020 | 0.005 - 0.015 | 4,010 | 0.005 - 0.015 |
| 14 | - | 2,290 | 0.006 - 0.017 | 1,620 | 0.006 - 0.017 | 1,140 | 0.006 - 0.017 | 2,290 | 0.006 - 0.017 | 1,840 | 0.006 - 0.017 | 3,640 | 0.006 - 0.017 |
| - | 5/8 | 2,010 | 0.006 - 0.019 | 1,420 | 0.006 - 0.019 | 1,010 | 0.006 - 0.019 | 2,010 | 0.006 - 0.019 | 1,620 | 0.006 - 0.019 | 3,210 | 0.006 - 0.019 |
| 16 | - | 2,000 | 0.006 - 0.019 | 1,410 | 0.006 - 0.019 | 1,000 | 0.006 - 0.019 | 2,000 | 0.006 - 0.019 | 1,610 | 0.006 - 0.019 | 3,180 | 0.006 - 0.019 |
| 18 | - | 1,775 | 0.007 - 0.021 | 1,260 | 0.007 - 0.021 | 890 | 0.007 - 0.021 | 1,775 | 0.007 - 0.021 | 1,430 | 0.007 - 0.021 | 2,830 | 0.007 - 0.021 |
| - | 3/4 | 1,680 | 0.008 - 0.023 | 1,190 | 0.008 - 0.023 | 840 | 0.008 - 0.023 | 1,680 | 0.008 - 0.023 | 1,350 | 0.008 - 0.023 | 2,670 | 0.008 - 0.023 |
| 20 | - | 1,600 | 0.008 - 0.024 | 1,130 | 0.008 - 0.024 | 800 | 0.008 - 0.024 | 1,600 | 0.008 - 0.024 | 1,280 | 0.008 - 0.024 | 2,550 | 0.008 - 0.024 |

General Drilling Operations

| Work Material | | Cast Aluminum | | Hardened Steel- Pre Hardened Steels | | Plastic Mold Steels | |
|----------------|------|---------------|---------------|--|---------------|---------------------|---------------|
| Hardness | | | | Up to 50 HRC | | Up to 40 HRC | |
| Drilling Speed | | 265-650 SFM | | 65-100 SFM | | 65-130 SFM | |
| Drill Dia. | | Speed | Feed | Speed | Feed | Speed | Feed |
| mm | Inch | RPM | IPR | RPM | IPR | RPM | IPR |
| 3 | - | 17,000 | 0.002 - 0.004 | 2,670 | 0.001 - 0.004 | 3,150 | 0.002 - 0.004 |
| - | 1/8 | 16,040 | 0.002 - 0.004 | 2,520 | 0.001 - 0.004 | 2,980 | 0.002 - 0.004 |
| 4 | - | 12,730 | 0.002 - 0.005 | 2,000 | 0.002 - 0.005 | 2,360 | 0.002 - 0.005 |
| - | 3/16 | 10,690 | 0.002 - 0.006 | 1,680 | 0.002 - 0.006 | 1,980 | 0.002 - 0.006 |
| 6 | - | 8,490 | 0.002 - 0.007 | 1,330 | 0.002 - 0.007 | 1,580 | 0.002 - 0.007 |
| - | 1/4 | 8,020 | 0.003 - 0.008 | 1,260 | 0.003 - 0.008 | 1,490 | 0.003 - 0.008 |
| 8 | - | 6,370 | 0.003 - 0.009 | 1,000 | 0.003 - 0.009 | 1,180 | 0.003 - 0.009 |
| - | 3/8 | 5,350 | 0.004 - 0.011 | 840 | 0.004 - 0.011 | 990 | 0.004 - 0.011 |
| 10 | - | 5,100 | 0.004 - 0.012 | 800 | 0.004 - 0.012 | 950 | 0.004 - 0.012 |
| - | 7/16 | 4,580 | 0.004 - 0.013 | 720 | 0.004 - 0.013 | 850 | 0.004 - 0.013 |
| 12 | - | 4,240 | 0.005 - 0.014 | 670 | 0.005 - 0.014 | 790 | 0.005 - 0.014 |
| - | 1/2 | 4,010 | 0.005 - 0.015 | 630 | 0.005 - 0.015 | 740 | 0.005 - 0.015 |
| 14 | - | 3,640 | 0.006 - 0.017 | 570 | 0.006 - 0.017 | 680 | 0.006 - 0.017 |
| - | 5/8 | 3,210 | 0.006 - 0.019 | 500 | 0.006 - 0.019 | 600 | 0.006 - 0.019 |
| 16 | - | 3,180 | 0.006 - 0.019 | 500 | 0.006 - 0.019 | 590 | 0.006 - 0.019 |
| 18 | - | 2,830 | 0.007 - 0.021 | 450 | 0.007 - 0.021 | 530 | 0.007 - 0.021 |
| - | 3/4 | 2,670 | 0.008 - 0.023 | 420 | 0.008 - 0.023 | 500 | 0.008 - 0.023 |
| 20 | - | 2,550 | 0.008 - 0.024 | 400 | 0.008 - 0.024 | 470 | 0.008 - 0.024 |

Note:



- The table above assumes a milled-flat surface and water soluble coolant.
- Use a rigid and precise machine and holder.
- Please minimize overhang length as much as possible during machining.
- Adjust the rotational speed and feed in accordance with conditions such as the machining shape, machine rigidity, or work holding.
- Please set up the drill so that the runout of the cutting edge is under 0.0008".
- Please select a cutting fluid that is most suitable for the work material with minimal smoke formation.
- In the case of dry machining, please use air blow to remove chips to prevent clogging.
 - Please do not machine stainless steel dry.
- When machining an inclined plane, adjust the rotational speed and feed in accordance with the angle of the incline (β).
 - When the machining incline angle (β) is less than 30°, please reduce the feed to 40-60%.
 - When the machining incline angle (β) is over 30°, please reduce the speed to 60-80%, the feed to 20-40%.
- Please use step drilling when drilling in pre-drilled holes to improve chip separation.
- If it is necessary to ensure the locating precision of the hole to be machined, adjust the rotational speed and feed as indicated above (in accordance with the machining precision requirement).
- Please always use the appropriate cutting fluid recommended by the cutting fluid manufacturer in the machining of magnesium alloys. Be cautious with the cutting chips as they are highly flammable and may pose a serious fire risk if not properly handled.





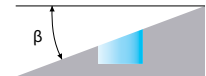
List 5700 - A Brand[®] ADF: 2D

General Drilling Operations

| Work Material | | Carbon Steels, Mild Steels 1010, 1050, 12L14 | | Alloy Steels 4140, 4130 28-35 HRC | | Stainless Steels 300SS, 400SS, 17-4PH | | Cast Iron | | Ductile Cast Iron | |
|----------------|-------|---|------------------|---|------------------|---|-------------------|-------------|-------------------|-------------------|-------------------|
| Hardness | | | | | | | | | | | |
| Drilling Speed | | 100-330 SFM | | 100-300 SFM | | 35-100 SFM | | 100-400 SFM | | 100-260 SFM | |
| Drill Dia. | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | |
| | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | |
| mm | Inch | | | | | | | | | | |
| 0.2 | - | 25,000 | 0.00004 - 0.0002 | 25,000 | 0.00004 - 0.0002 | 25,000 | 0.00004 - 0.00015 | 25,000 | 0.00004 - 0.00024 | 25,000 | 0.00004 - 0.00024 |
| - | 1/64 | 25,000 | 0.00004 - 0.0002 | 25,000 | 0.00004 - 0.0002 | 20,000 | 0.00004 - 0.00015 | 25,000 | 0.00004 - 0.00024 | 25,000 | 0.00004 - 0.00024 |
| 0.5 | - | 25,000 | 0.0001 - 0.0006 | 25,000 | 0.0001 - 0.0006 | 15,900 | 0.00012 - 0.0004 | 25,000 | 0.00012 - 0.0006 | 25,000 | 0.00012 - 0.0006 |
| - | 1/32 | 22,000 | 0.0001 - 0.0006 | 20,200 | 0.0001 - 0.0006 | 10,000 | 0.00012 - 0.0004 | 25,000 | 0.00012 - 0.0006 | 20,100 | 0.00012 - 0.0006 |
| 1 | - | 17,500 | 0.0002 - 0.0012 | 15,900 | 0.0002 - 0.0012 | 8,000 | 0.0002 - 0.0008 | 22,500 | 0.0002 - 0.0012 | 15,900 | 0.0002 - 0.0012 |
| - | 3/64 | 14,700 | 0.0002 - 0.0012 | 13,500 | 0.0002 - 0.0012 | 6,700 | 0.0002 - 0.0008 | 21,400 | 0.0002 - 0.0012 | 14,200 | 0.0002 - 0.0012 |
| 1.5 | - | 13,800 | 0.0003 - 0.0018 | 12,700 | 0.0003 - 0.0018 | 5,300 | 0.0003 - 0.0012 | 17,000 | 0.0003 - 0.0018 | 11,500 | 0.0003 - 0.0018 |
| - | 1/16 | 13,100 | 0.0003 - 0.0018 | 12,200 | 0.0003 - 0.0018 | 5,000 | 0.0003 - 0.0012 | 16,000 | 0.0003 - 0.0018 | 10,700 | 0.0003 - 0.0018 |
| 2 | - | 12,850 | 0.0012 - 0.002 | 9,700 | 0.0012 - 0.002 | 3,980 | 0.0012 - 0.002 | 14,550 | 0.0016 - 0.002 | 10,310 | 0.0016 - 0.002 |
| 3 | - | 8,570 | 0.002 - 0.003 | 6,470 | 0.002 - 0.003 | 2,650 | 0.002 - 0.003 | 9,700 | 0.002 - 0.004 | 6,870 | 0.002 - 0.004 |
| - | 1/8 | 8,100 | 0.002 - 0.003 | 6,110 | 0.002 - 0.003 | 2,500 | 0.002 - 0.003 | 9,170 | 0.002 - 0.004 | 6,500 | 0.002 - 0.004 |
| 4 | - | 6,430 | 0.002 - 0.004 | 4,850 | 0.002 - 0.004 | 1,990 | 0.002 - 0.004 | 7,280 | 0.003 - 0.005 | 5,150 | 0.003 - 0.005 |
| - | 3/16 | 5,400 | 0.002 - 0.004 | 4,070 | 0.002 - 0.004 | 1,670 | 0.002 - 0.004 | 6,110 | 0.003 - 0.005 | 4,330 | 0.003 - 0.005 |
| 6 | - | 4,280 | 0.004 - 0.006 | 3,230 | 0.004 - 0.006 | 1,325 | 0.004 - 0.006 | 4,850 | 0.005 - 0.007 | 3,440 | 0.005 - 0.007 |
| - | 1/4 | 4,050 | 0.004 - 0.006 | 3,060 | 0.004 - 0.006 | 1,250 | 0.004 - 0.006 | 4,580 | 0.005 - 0.007 | 3,250 | 0.005 - 0.007 |
| 8 | - | 3,210 | 0.005 - 0.008 | 2,430 | 0.005 - 0.008 | 995 | 0.005 - 0.008 | 3,640 | 0.006 - 0.009 | 2,580 | 0.006 - 0.009 |
| - | 3/8 | 2,700 | 0.005 - 0.008 | 2,040 | 0.005 - 0.008 | 835 | 0.005 - 0.008 | 3,060 | 0.006 - 0.009 | 2,160 | 0.006 - 0.009 |
| 10 | - | 2,570 | 0.006 - 0.010 | 1,940 | 0.006 - 0.010 | 795 | 0.006 - 0.010 | 2,910 | 0.008 - 0.012 | 2,060 | 0.008 - 0.012 |
| - | 7/16 | 2,300 | 0.006 - 0.010 | 1,750 | 0.006 - 0.010 | 715 | 0.006 - 0.010 | 2,620 | 0.008 - 0.012 | 1,860 | 0.008 - 0.012 |
| 12 | - | 2,140 | 0.007 - 0.012 | 1,620 | 0.007 - 0.012 | 660 | 0.007 - 0.012 | 2,430 | 0.009 - 0.014 | 1,720 | 0.009 - 0.014 |
| - | 1/2 | 2,020 | 0.007 - 0.012 | 1,530 | 0.007 - 0.012 | 625 | 0.007 - 0.012 | 2,290 | 0.009 - 0.014 | 1,620 | 0.009 - 0.014 |
| 14 | - | 1,840 | 0.008 - 0.014 | 1,390 | 0.008 - 0.014 | 570 | 0.008 - 0.014 | 2,080 | 0.011 - 0.017 | 1,470 | 0.011 - 0.017 |
| - | 5/8 | 1,620 | 0.009 - 0.016 | 1,220 | 0.009 - 0.016 | 500 | 0.009 - 0.016 | 1,830 | 0.013 - 0.019 | 1,300 | 0.013 - 0.019 |
| 16 | - | 1,610 | 0.009 - 0.016 | 1,210 | 0.009 - 0.016 | 440 | 0.009 - 0.016 | 1,820 | 0.013 - 0.019 | 1,290 | 0.013 - 0.019 |
| 18 | - | 1,430 | 0.011 - 0.018 | 1,080 | 0.011 - 0.018 | 420 | 0.011 - 0.018 | 1,620 | 0.014 - 0.021 | 1,150 | 0.014 - 0.021 |
| - | 3/4 | 1,350 | 0.012 - 0.020 | 1,020 | 0.012 - 0.020 | 400 | 0.012 - 0.020 | 1,530 | 0.016 - 0.024 | 1,090 | 0.016 - 0.024 |
| 20 | - | 1,280 | 0.012 - 0.020 | 970 | 0.012 - 0.020 | 500 | 0.012 - 0.020 | 1,450 | 0.016 - 0.024 | 1,030 | 0.016 - 0.024 |

Note:

- The speeds and feeds in the table above apply when drilling on a flat surface with water-soluble coolant.
- When using non-water soluble oil or water-emulsifiable (over 20 times dilution), reduce cutting speed by 30%.
- Use a rigid and precise machine and holder.
- Please minimize tool overhang as much as possible during machining.
- Adjust the rotational speed and the feed rate in accordance with conditions such as the machining shape, machine rigidity, or work holding.
- Please set up the drill so that the runout of the cutting edge is under 0.0004 in.
- When machining an inclined plane, adjust the rotational speed and the feed rate in accordance with the angle of the incline (β).
 - When the machining incline angle(β) is less than 30°, please reduce the feed to 40-60%.
 - When the machining incline angle(β) is over 30°, please reduce the speed to 60-80% , the feed to 40-60%.
- Please use step drilling in pilot holes to improve cutting chip separation.
- If it is necessary to ensure the locating precision of the hole to be machined, adjust the rotational speed and the feed rate as indicated above (in accordance with the machining precision requirement).





General Drilling Operations

| Work Material | | Aluminum Alloy 5052,7075 | | Cast Aluminum | | Hardened Steel-Pre Hardened Steel | | Plastic Mold Steels | |
|----------------|------|--------------------------|-------------------|---------------|-------------------|-----------------------------------|-------------------|---------------------|-------------------|
| Hardness | | | | | | Up to 50 HRC | | Up to 40 HRC | |
| Drilling Speed | | 100-650 SFM | | 100-650 SFM | | 65-100 SFM | | 65-130 SFM | |
| Drill Dia. | | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| mm | Inch | | | | | | | | |
| 0.2 | - | 25,000 | 0.00004 - 0.00024 | 25,000 | 0.00004 - 0.00024 | 25,000 | 0.00004 - 0.00016 | 25,000 | 0.00004 - 0.00016 |
| - | 1/64 | 25,000 | 0.00004 - 0.00024 | 25,000 | 0.00004 - 0.00024 | 20,000 | 0.00004 - 0.00016 | 24,400 | 0.00004 - 0.00016 |
| 0.5 | - | 25,000 | 0.00012 - 0.0006 | 25,000 | 0.00012 - 0.0006 | 15,900 | 0.00012 - 0.0004 | 19,000 | 0.00012 - 0.0004 |
| - | 1/32 | 25,000 | 0.00012 - 0.0006 | 25,000 | 0.00012 - 0.0006 | 10,000 | 0.00012 - 0.0004 | 12,200 | 0.00012 - 0.0004 |
| 1 | - | 25,000 | 0.0002 - 0.0012 | 25,000 | 0.0002 - 0.0012 | 7,950 | 0.0002 - 0.0008 | 9,550 | 0.0002 - 0.0008 |
| - | 3/64 | 25,000 | 0.0002 - 0.0012 | 25,000 | 0.0002 - 0.0012 | 6,700 | 0.0002 - 0.0008 | 8,150 | 0.0002 - 0.0008 |
| 1.5 | - | 25,000 | 0.0003 - 0.0018 | 25,000 | 0.0003 - 0.0018 | 5,300 | 0.0003 - 0.0012 | 6,350 | 0.0003 - 0.0012 |
| - | 1/16 | 25,000 | 0.0003 - 0.0018 | 25,000 | 0.0003 - 0.0018 | 5,000 | 0.0003 - 0.0012 | 6,100 | 0.0003 - 0.0012 |
| 2 | - | 22,200 | 0.0004 - 0.002 | 22,200 | 0.0004 - 0.002 | 4,000 | 0.0008 - 0.002 | 4,720 | 0.0012 - 0.002 |
| 3 | - | 14,800 | 0.001 - 0.004 | 14,800 | 0.001 - 0.004 | 2,660 | 0.001 - 0.002 | 3,150 | 0.0018 - 0.002 |
| - | 1/8 | 13,980 | 0.001 - 0.004 | 13,980 | 0.001 - 0.004 | 2,520 | 0.001 - 0.002 | 2,980 | 0.0018 - 0.002 |
| 4 | - | 11,100 | 0.001 - 0.005 | 11,100 | 0.001 - 0.005 | 2,000 | 0.002 - 0.003 | 2,360 | 0.002 - 0.003 |
| - | 3/16 | 9,320 | 0.001 - 0.005 | 9,320 | 0.001 - 0.005 | 1,680 | 0.002 - 0.003 | 1,980 | 0.002 - 0.003 |
| 6 | - | 7,400 | 0.001 - 0.007 | 7,400 | 0.001 - 0.007 | 1,330 | 0.002 - 0.005 | 1,570 | 0.004 - 0.005 |
| - | 1/4 | 6,990 | 0.001 - 0.007 | 6,990 | 0.001 - 0.007 | 1,260 | 0.002 - 0.005 | 1,490 | 0.004 - 0.005 |
| 8 | - | 5,550 | 0.002 - 0.009 | 5,550 | 0.002 - 0.009 | 1,000 | 0.003 - 0.006 | 1,180 | 0.005 - 0.006 |
| - | 3/8 | 4,660 | 0.002 - 0.009 | 4,660 | 0.002 - 0.009 | 840 | 0.003 - 0.006 | 990 | 0.005 - 0.006 |
| 10 | - | 4,440 | 0.002 - 0.012 | 4,440 | 0.002 - 0.012 | 800 | 0.004 - 0.008 | 950 | 0.006 - 0.008 |
| - | 7/16 | 3,990 | 0.002 - 0.012 | 3,990 | 0.002 - 0.012 | 720 | 0.004 - 0.008 | 850 | 0.006 - 0.008 |
| 12 | - | 3,700 | 0.002 - 0.014 | 3,700 | 0.002 - 0.014 | 670 | 0.005 - 0.009 | 790 | 0.007 - 0.009 |
| - | 1/2 | 3,500 | 0.002 - 0.014 | 3,500 | 0.002 - 0.014 | 630 | 0.005 - 0.009 | 744 | 0.007 - 0.009 |
| 14 | - | 3,170 | 0.003 - 0.017 | 3,170 | 0.003 - 0.017 | 570 | 0.006 - 0.011 | 670 | 0.008 - 0.011 |
| - | 5/8 | 2,800 | 0.003 - 0.019 | 2,800 | 0.003 - 0.019 | 500 | 0.006 - 0.013 | 590 | 0.009 - 0.013 |
| 16 | - | 2,790 | 0.003 - 0.019 | 2,790 | 0.003 - 0.019 | 500 | 0.006 - 0.013 | 590 | 0.009 - 0.013 |
| 18 | - | 2,470 | 0.004 - 0.021 | 2,470 | 0.004 - 0.021 | 450 | 0.007 - 0.014 | 520 | 0.011 - 0.014 |
| - | 3/4 | 2,330 | 0.004 - 0.024 | 2,330 | 0.004 - 0.024 | 420 | 0.008 - 0.016 | 500 | 0.012 - 0.016 |
| 20 | - | 2,250 | 0.004 - 0.024 | 2,250 | 0.004 - 0.024 | 400 | 0.008 - 0.016 | 470 | 0.012 - 0.016 |





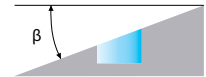
List 5705 - A Brand[®] ADFLS: 2D

General Drilling Operations

| Work Material | | Carbon Steels, Mild Steels 1010, 1050, 12L14 | | Alloy Steels 4140, 4130 28-35 HRC | | Stainless Steels 300SS, 400SS, 17-4PH | | Cast Iron | | Ductile Cast Iron | | Aluminum Alloy 5052,7075 | |
|----------------|-------|---|----------------|---|----------------|---|----------------|-------------|----------------|-------------------|----------------|-----------------------------|----------------|
| Hardness | | 200-330 SFM | | 100-300 SFM | | 65-140 SFM | | 200-400 SFM | | 165-260 SFM | | 265-650 SFM | |
| Drilling Speed | | 200-330 SFM | | 100-300 SFM | | 65-140 SFM | | 200-400 SFM | | 165-260 SFM | | 265-650 SFM | |
| Drill Dia. | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | |
| | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | |
| mm | Inch | | | | | | | | | | | | |
| 2 | - | 12,850 | 0.0012 - 0.002 | 9,700 | 0.0012 - 0.002 | 4,980 | 0.0012 - 0.002 | 14,550 | 0.0016 - 0.002 | 10,310 | 0.0016 - 0.002 | 22,200 | 0.0004 - 0.002 |
| 3 | - | 8,570 | 0.002 - 0.003 | 6,470 | 0.002 - 0.003 | 3,320 | 0.002 - 0.003 | 9,700 | 0.002 - 0.004 | 6,870 | 0.002 - 0.004 | 14,800 | 0.001 - 0.004 |
| - | 1/8 | 8,100 | 0.002 - 0.003 | 6,110 | 0.002 - 0.003 | 3,140 | 0.002 - 0.003 | 9,170 | 0.002 - 0.004 | 6,500 | 0.002 - 0.004 | 13,980 | 0.001 - 0.004 |
| 4 | - | 6,430 | 0.002 - 0.004 | 4,850 | 0.002 - 0.004 | 2,890 | 0.002 - 0.004 | 7,280 | 0.003 - 0.005 | 5,150 | 0.003 - 0.005 | 11,100 | 0.001 - 0.005 |
| - | 3/16 | 5,400 | 0.002 - 0.004 | 4,070 | 0.002 - 0.004 | 2,090 | 0.002 - 0.004 | 6,110 | 0.003 - 0.005 | 4,330 | 0.003 - 0.005 | 9,320 | 0.001 - 0.005 |
| 6 | - | 4,280 | 0.004 - 0.006 | 3,230 | 0.004 - 0.006 | 1,660 | 0.004 - 0.006 | 4,850 | 0.005 - 0.007 | 3,440 | 0.005 - 0.007 | 7,400 | 0.001 - 0.007 |
| - | 1/4 | 4,050 | 0.004 - 0.006 | 3,060 | 0.004 - 0.006 | 1,570 | 0.004 - 0.006 | 4,580 | 0.005 - 0.007 | 3,250 | 0.005 - 0.007 | 6,990 | 0.001 - 0.007 |
| 8 | - | 3,210 | 0.005 - 0.008 | 2,430 | 0.005 - 0.008 | 1,240 | 0.005 - 0.008 | 3,640 | 0.006 - 0.009 | 2,580 | 0.006 - 0.009 | 5,550 | 0.002 - 0.009 |
| - | 3/8 | 2,700 | 0.005 - 0.008 | 2,040 | 0.005 - 0.008 | 1,040 | 0.005 - 0.008 | 3,060 | 0.006 - 0.009 | 2,160 | 0.006 - 0.009 | 4,660 | 0.002 - 0.009 |
| 10 | - | 2,570 | 0.006 - 0.010 | 1,940 | 0.006 - 0.010 | 1,000 | 0.006 - 0.010 | 2,910 | 0.008 - 0.012 | 2,060 | 0.008 - 0.012 | 4,440 | 0.002 - 0.012 |
| - | 7/16 | 2,300 | 0.006 - 0.010 | 1,750 | 0.006 - 0.010 | 900 | 0.006 - 0.010 | 2,620 | 0.008 - 0.012 | 1,860 | 0.008 - 0.012 | 3,990 | 0.002 - 0.012 |
| 12 | - | 2,140 | 0.007 - 0.012 | 1,620 | 0.007 - 0.012 | 830 | 0.007 - 0.012 | 2,430 | 0.009 - 0.014 | 1,720 | 0.009 - 0.014 | 3,700 | 0.002 - 0.014 |
| - | 1/2 | 2,020 | 0.007 - 0.012 | 1,530 | 0.007 - 0.012 | 780 | 0.007 - 0.012 | 2,290 | 0.009 - 0.014 | 1,620 | 0.009 - 0.014 | 3,500 | 0.002 - 0.014 |
| 14 | - | 1,840 | 0.008 - 0.014 | 1,390 | 0.008 - 0.014 | 710 | 0.008 - 0.014 | 2,080 | 0.011 - 0.017 | 1,470 | 0.011 - 0.017 | 3,170 | 0.003 - 0.017 |
| - | 5/8 | 1,620 | 0.009 - 0.016 | 1,220 | 0.009 - 0.016 | 630 | 0.009 - 0.016 | 1,830 | 0.013 - 0.019 | 1,300 | 0.013 - 0.019 | 2,800 | 0.003 - 0.019 |
| 16 | - | 1,610 | 0.009 - 0.016 | 1,210 | 0.009 - 0.016 | 620 | 0.009 - 0.016 | 1,820 | 0.013 - 0.019 | 1,290 | 0.013 - 0.019 | 2,790 | 0.003 - 0.019 |
| 18 | - | 1,430 | 0.011 - 0.018 | 1,080 | 0.011 - 0.018 | 550 | 0.011 - 0.018 | 1,620 | 0.014 - 0.021 | 1,150 | 0.014 - 0.021 | 2,470 | 0.004 - 0.021 |
| - | 3/4 | 1,350 | 0.012 - 0.020 | 1,020 | 0.012 - 0.020 | 520 | 0.012 - 0.020 | 1,530 | 0.016 - 0.024 | 1,090 | 0.016 - 0.024 | 2,330 | 0.004 - 0.024 |
| 20 | - | 1,280 | 0.012 - 0.020 | 970 | 0.012 - 0.020 | 500 | 0.012 - 0.020 | 1,450 | 0.016 - 0.024 | 1,030 | 0.016 - 0.024 | 2,250 | 0.004 - 0.024 |

General Drilling Operations

| Work Material | | Cast Aluminum | | Hardened Steel-Pre Hardened Steel | | Plastic Mold Steels | |
|----------------|-------|---------------|----------------|--------------------------------------|----------------|---------------------|----------------|
| Hardness | | | | Up to 50 HRC | | Up to 40 HRC | |
| Drilling Speed | | 265-650 SFM | | 65-100 SFM | | 65-130 SFM | |
| Drill Dia. | Speed | Feed | Speed | Feed | Speed | Feed | |
| | RPM | IPR | RPM | IPR | RPM | IPR | |
| mm | Inch | | | | | | |
| 2 | - | 22,200 | 0.0004 - 0.002 | 4,000 | 0.0008 - 0.002 | 4,720 | 0.0012 - 0.002 |
| 3 | - | 14,800 | 0.001 - 0.004 | 2,660 | 0.001 - 0.002 | 3,150 | 0.0018 - 0.002 |
| - | 1/8 | 13,980 | 0.001 - 0.004 | 2,520 | 0.001 - 0.002 | 2,980 | 0.0018 - 0.002 |
| 4 | - | 11,100 | 0.001 - 0.005 | 2,000 | 0.002 - 0.003 | 2,360 | 0.002 - 0.003 |
| - | 3/16 | 9,320 | 0.001 - 0.005 | 1,680 | 0.002 - 0.003 | 1,980 | 0.002 - 0.003 |
| 6 | - | 7,400 | 0.001 - 0.007 | 1,330 | 0.002 - 0.005 | 1,570 | 0.004 - 0.005 |
| - | 1/4 | 6,990 | 0.001 - 0.007 | 1,260 | 0.002 - 0.005 | 1,490 | 0.004 - 0.005 |
| 8 | - | 5,550 | 0.002 - 0.009 | 1,000 | 0.003 - 0.006 | 1,180 | 0.005 - 0.006 |
| - | 3/8 | 4,660 | 0.002 - 0.009 | 840 | 0.003 - 0.006 | 990 | 0.005 - 0.006 |
| 10 | - | 4,440 | 0.002 - 0.012 | 800 | 0.004 - 0.008 | 950 | 0.006 - 0.008 |
| - | 7/16 | 3,990 | 0.002 - 0.012 | 720 | 0.004 - 0.008 | 850 | 0.006 - 0.008 |
| 12 | - | 3,700 | 0.002 - 0.014 | 670 | 0.005 - 0.009 | 790 | 0.007 - 0.009 |
| - | 1/2 | 3,500 | 0.002 - 0.014 | 630 | 0.005 - 0.009 | 744 | 0.007 - 0.009 |
| 14 | - | 3,170 | 0.003 - 0.017 | 570 | 0.006 - 0.011 | 670 | 0.008 - 0.011 |
| - | 5/8 | 2,800 | 0.003 - 0.019 | 500 | 0.006 - 0.013 | 590 | 0.009 - 0.013 |
| 16 | - | 2,790 | 0.003 - 0.019 | 500 | 0.006 - 0.013 | 590 | 0.009 - 0.013 |
| 18 | - | 2,470 | 0.004 - 0.021 | 450 | 0.007 - 0.014 | 520 | 0.011 - 0.014 |
| - | 3/4 | 2,330 | 0.004 - 0.024 | 420 | 0.008 - 0.016 | 500 | 0.012 - 0.016 |
| 20 | - | 2,250 | 0.004 - 0.024 | 400 | 0.008 - 0.016 | 470 | 0.012 - 0.016 |



Note:

- The speeds and feeds in the table above apply when drilling on a flat surface with water-soluble coolant.
- When using non-water soluble oil or water-emulsifiable (over 20 times dilution), reduce cutting speed by 30%.
- Use a rigid and precise machine and holder.
- Please minimize tool overhang as much as possible during machining.
- Adjust the rotational speed and the feed rate in accordance with conditions such as the machining shape, machine rigidity, or work holding.
- Please set up the drill so that the runout of the cutting edge is under 0.0004 in.
- When machining an inclined plane, adjust the rotational speed and the feed rate in accordance with the angle of the incline (β).
 - When the machining incline angle (β) is less than 30°, please reduce the feed to 40-60%.
 - When the machining incline angle (β) is over 30°, please reduce the speed to 60-80%, the feed to 40-60%.
- Please use step drilling in pilot holes to improve cutting chip separation.
- If it is necessary to ensure the locating precision of the hole to be machined, adjust the rotational speed and the feed rate as indicated above (in accordance with the machining precision requirement).





List 6500 - A Brand[®] ADO: 3D List 6510 - A Brand[®] ADO: 5D List 6520 - A Brand[®] ADO: 8D

General Drilling Operations

| Work Material | Carbon Steels, Mild Steels 1010, 1050, 12L14 | | Alloy Steels 4140, 4130 | | Stainless Steels 300SS, 400SS, 17-4PH | | High Heat Material | | | | | | |
|----------------|---|--------|----------------------------|--------|---|-------|---------------------|-------|---------------------------|-------|------------------------------|-------|-------------|
| | | | | | | | Ti-Alloy, Ti-6Al-4V | | Fe-Base Material, A286 | | Ni-Base Material, Inconel | | |
| Drilling Speed | 260-395 SFM | | 260-395 SFM | | 130-230 SFM | | 100 - 180 SFM | | 80 - 130 SFM | | 65 - 110 SFM | | |
| Drill Dia. | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | |
| | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | |
| mm | Inch | | | | | | | | | | | | |
| 2 | - | 15,870 | 0.002-0.004 | 15,870 | 0.002-0.004 | 8,740 | 0.002-0.004 | 6,790 | 0.002-0.003 | 5,080 | 0.001-0.002 | 4,250 | 0.001-0.002 |
| 3 | - | 10,580 | 0.002-0.005 | 10,580 | 0.002-0.005 | 5,820 | 0.002-0.005 | 4,530 | 0.002-0.003 | 3,390 | 0.002-0.002 | 2,840 | 0.001-0.002 |
| - | 1/8 | 10,000 | 0.003-0.005 | 10,000 | 0.003-0.005 | 5,500 | 0.003-0.005 | 4,280 | 0.002-0.004 | 3,200 | 0.002-0.003 | 2,680 | 0.002-0.002 |
| 4 | - | 7,940 | 0.003-0.006 | 7,940 | 0.003-0.006 | 4,370 | 0.003-0.006 | 3,400 | 0.002-0.004 | 2,540 | 0.002-0.003 | 2,130 | 0.002-0.002 |
| - | 3/16 | 6,670 | 0.004-0.007 | 6,670 | 0.004-0.007 | 3,670 | 0.004-0.007 | 2,850 | 0.003-0.005 | 2,130 | 0.003-0.004 | 1,790 | 0.002-0.003 |
| 6 | - | 5,290 | 0.005-0.009 | 5,290 | 0.005-0.009 | 2,910 | 0.005-0.009 | 2,269 | 0.004-0.005 | 1,690 | 0.004-0.005 | 1,420 | 0.002-0.004 |
| - | 1/4 | 5,000 | 0.006-0.009 | 5,000 | 0.006-0.009 | 2,750 | 0.006-0.009 | 2,140 | 0.004-0.006 | 1,600 | 0.004-0.006 | 1,340 | 0.002-0.004 |
| 8 | - | 3,970 | 0.006-0.011 | 3,970 | 0.006-0.011 | 2,180 | 0.006-0.011 | 1,700 | 0.005-0.007 | 1,270 | 0.005-0.006 | 1,060 | 0.003-0.005 |
| - | 3/8 | 3,330 | 0.008-0.012 | 3,330 | 0.008-0.012 | 1,830 | 0.008-0.012 | 1,430 | 0.005-0.008 | 1,070 | 0.005-0.007 | 890 | 0.004-0.005 |
| 10 | - | 3,170 | 0.008-0.012 | 3,170 | 0.008-0.012 | 1,750 | 0.008-0.012 | 1,360 | 0.006-0.009 | 1,020 | 0.006-0.008 | 850 | 0.004-0.006 |
| - | 7/16 | 2,860 | 0.008-0.012 | 2,860 | 0.008-0.012 | 1,570 | 0.008-0.012 | 1,220 | 0.007-0.010 | 910 | 0.007-0.009 | 770 | 0.004-0.007 |
| 12 | - | 2,650 | 0.008-0.012 | 2,650 | 0.008-0.012 | 1,460 | 0.008-0.012 | 1,130 | 0.007-0.011 | 850 | 0.007-0.009 | 710 | 0.005-0.007 |
| - | 1/2 | 2,500 | 0.008-0.012 | 2,500 | 0.008-0.012 | 1,380 | 0.008-0.012 | 1,070 | 0.008-0.012 | 800 | 0.008-0.010 | 670 | 0.005-0.008 |
| 14 | - | 2,270 | 0.009-0.014 | 2,270 | 0.009-0.014 | 1,250 | 0.009-0.014 | 970 | 0.008-0.013 | 730 | 0.008-0.011 | 610 | 0.005-0.008 |
| - | 5/8 | 2,000 | 0.010-0.014 | 2,000 | 0.010-0.014 | 1,100 | 0.010-0.014 | 860 | 0.009-0.013 | 640 | 0.006-0.009 | 540 | 0.005-0.008 |
| 16 | - | 2,000 | 0.010-0.014 | 2,000 | 0.010-0.014 | 1,100 | 0.010-0.014 | 860 | 0.009-0.013 | 640 | 0.006-0.009 | 540 | 0.005-0.008 |
| 18 | - | 1,760 | 0.011-0.015 | 1,760 | 0.011-0.015 | 1,090 | 0.011-0.015 | 750 | 0.010-0.014 | 560 | 0.008-0.011 | 470 | 0.005-0.008 |
| - | 3/4 | 1,670 | 0.012-0.015 | 1,670 | 0.012-0.015 | 920 | 0.012-0.015 | 710 | 0.011-0.015 | 530 | 0.008-0.011 | 450 | 0.005-0.008 |
| 20 | - | 1,590 | 0.012-0.016 | 1,590 | 0.012-0.016 | 870 | 0.012-0.016 | 680 | 0.012-0.016 | 510 | 0.008-0.012 | 420 | 0.005-0.008 |

General Drilling Operations

| Work Material | Cast Iron | | Ductile Cast Iron | | Special Alloy Steels, Hardened Steels | | | | | | | | |
|----------------|-------------|--------|-------------------|--------|---------------------------------------|--------|-------------|-------|-------------|-------|-------------|-------|-------------|
| | | | | | 26-30 HRC | | 30-34 HRC | | 34-43 HRC | | 43-48 HRC | | |
| Drilling Speed | 260-395 SFM | | 195-330 SFM | | 195-295 SFM | | 130-200 SFM | | 130-160 SFM | | 82-115 HRC | | |
| Drill Dia. | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | |
| | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | |
| mm | Inch | | | | | | | | | | | | |
| 2 | - | 15,870 | 0.002-0.004 | 12,700 | 0.002-0.004 | 11,890 | 0.002-0.004 | 8,000 | 0.002-0.003 | 7,040 | 0.002-0.003 | 4,770 | 0.001-0.002 |
| 3 | - | 10,580 | 0.002-0.005 | 8,470 | 0.002-0.005 | 7,920 | 0.002-0.005 | 5,330 | 0.002-0.003 | 4,690 | 0.002-0.003 | 3,180 | 0.002-0.002 |
| - | 1/8 | 10,000 | 0.003-0.005 | 8,000 | 0.003-0.005 | 7,490 | 0.003-0.005 | 5,040 | 0.002-0.004 | 4,430 | 0.002-0.004 | 3,010 | 0.002-0.003 |
| 4 | - | 7,940 | 0.003-0.006 | 6,350 | 0.003-0.006 | 5,940 | 0.003-0.006 | 4,000 | 0.003-0.004 | 3,520 | 0.003-0.004 | 2,390 | 0.002-0.003 |
| - | 3/16 | 6,670 | 0.004-0.007 | 5,330 | 0.004-0.007 | 4,990 | 0.004-0.007 | 3,360 | 0.003-0.005 | 2,950 | 0.003-0.005 | 2,000 | 0.003-0.004 |
| 6 | - | 5,290 | 0.005-0.009 | 4,230 | 0.005-0.009 | 3,960 | 0.005-0.009 | 2,700 | 0.005-0.006 | 2,340 | 0.005-0.006 | 1,590 | 0.004-0.005 |
| - | 1/4 | 5,000 | 0.006-0.009 | 4,000 | 0.006-0.009 | 3,740 | 0.006-0.010 | 2,520 | 0.005-0.007 | 2,220 | 0.005-0.007 | 1,500 | 0.004-0.006 |
| 8 | - | 3,970 | 0.006-0.011 | 3,170 | 0.006-0.011 | 2,970 | 0.006-0.011 | 2,000 | 0.006-0.008 | 1,760 | 0.006-0.008 | 1,190 | 0.005-0.007 |
| - | 3/8 | 3,330 | 0.008-0.012 | 2,670 | 0.008-0.012 | 2,500 | 0.007-0.012 | 1,680 | 0.008-0.009 | 1,480 | 0.008-0.009 | 1,000 | 0.006-0.008 |
| 10 | - | 3,170 | 0.008-0.012 | 2,540 | 0.008-0.012 | 2,380 | 0.008-0.012 | 1,600 | 0.008-0.010 | 1,410 | 0.008-0.010 | 950 | 0.007-0.009 |
| - | 7/16 | 2,860 | 0.008-0.012 | 2,290 | 0.008-0.012 | 2,140 | 0.008-0.012 | 1,440 | 0.009-0.011 | 1,270 | 0.009-0.011 | 860 | 0.007-0.009 |
| 12 | - | 2,650 | 0.008-0.012 | 2,120 | 0.008-0.012 | 1,980 | 0.008-0.012 | 1,330 | 0.009-0.012 | 1,170 | 0.009-0.012 | 800 | 0.007-0.009 |
| - | 1/2 | 2,500 | 0.008-0.012 | 2,000 | 0.008-0.012 | 1,870 | 0.008-0.012 | 1,260 | 0.010-0.013 | 1,110 | 0.010-0.013 | 750 | 0.008-0.010 |
| 14 | - | 2,270 | 0.009-0.014 | 1,810 | 0.009-0.014 | 1,700 | 0.009-0.014 | 1,140 | 0.011-0.014 | 1,000 | 0.011-0.014 | 680 | 0.008-0.011 |
| - | 5/8 | 2,000 | 0.010-0.014 | 1,600 | 0.010-0.014 | 1,500 | 0.010-0.014 | 1,010 | 0.012-0.015 | 890 | 0.012-0.015 | 600 | 0.009-0.013 |
| 16 | - | 2,000 | 0.010-0.014 | 1,600 | 0.010-0.014 | 1,500 | 0.010-0.014 | 1,010 | 0.012-0.015 | 890 | 0.012-0.015 | 600 | 0.009-0.013 |
| 18 | - | 1,760 | 0.011-0.015 | 1,410 | 0.011-0.015 | 1,320 | 0.011-0.015 | 890 | 0.014-0.018 | 780 | 0.014-0.018 | 530 | 0.010-0.014 |
| - | 3/4 | 1,670 | 0.012-0.015 | 1,330 | 0.012-0.015 | 1,250 | 0.012-0.015 | 840 | 0.015-0.019 | 740 | 0.015-0.019 | 500 | 0.011-0.015 |
| 20 | - | 1,590 | 0.012-0.016 | 1,270 | 0.012-0.016 | 1,190 | 0.012-0.016 | 800 | 0.016-0.020 | 700 | 0.016-0.020 | 480 | 0.012-0.016 |

Note:

- The indicated speeds and feeds are for drilling with **water-soluble oil** or **MQL**.
- Suitable cutting fluid is water-soluble high density oil (less than 20 times dilution).
- When using non-water-soluble oil or water-soluble oil (over 20 times dilution), reduce cutting speed by 30%.
- These conditions are for drilling depth under 8 times the drill diameter.
- 1D-2D step feeding may be required for drilling high hardened steels and mid-range (8D) work.





- List 6530 - A Brand[®] ADO: 10D**
- List 6535 - A Brand[®] ADO: 15D**
- List 6540 - A Brand[®] ADO: 20D**
- List 6550 - A Brand[®] ADO: 30D**

General Drilling Operations

| Work Material | Carbon Steels, Mild Steels 1010, 1050, 12L14 | | Alloy Steels 4140, 4130 | | Stainless Steels 300SS, 400SS, 17-4PH | | High Heat Material | | | | | | |
|----------------|---|-------------|----------------------------|-------------|---|-------------|---------------------|-------------|---------------------------|-------------|------------------------------|-------------|-------------|
| | | | | | | | Ti-Alloy, Ti-6Al-4V | | Fe-Base Material, A286 | | Ni-Base Material, Inconel | | |
| Drilling Speed | 260-395 SFM | | 260-395 SFM | | 130-230 SFM | | 100 - 180 SFM | | 80 - 130 SFM | | 65 - 110 SFM | | |
| Drill Dia. | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | |
| | | | | | | | | | | | | | mm |
| 2 | - | 15,870 | 0.002-0.004 | 15,870 | 0.002-0.004 | 8,740 | 0.002-0.004 | 6,790 | 0.001-0.003 | 5,080 | 0.001-0.002 | 4,250 | 0.001-0.002 |
| 3 | - | 10,580 | 0.002-0.005 | 10,580 | 0.002-0.005 | 5,820 | 0.002-0.005 | 4,530 | 0.002-0.003 | 3,390 | 0.002-0.002 | 2,840 | 0.001-0.002 |
| - | 1/8 | 10,000 | 0.003-0.005 | 10,000 | 0.003-0.005 | 5,500 | 0.003-0.005 | 4,280 | 0.002-0.003 | 3,200 | 0.002-0.003 | 2,680 | 0.002-0.002 |
| 4 | - | 7,940 | 0.003-0.006 | 7,940 | 0.003-0.006 | 4,370 | 0.003-0.006 | 3,400 | 0.002-0.004 | 2,540 | 0.002-0.003 | 2,130 | 0.002-0.002 |
| - | 3/16 | 6,670 | 0.004-0.007 | 6,670 | 0.004-0.007 | 3,670 | 0.004-0.007 | 2,850 | 0.003-0.004 | 2,130 | 0.002-0.004 | 1,790 | 0.002-0.003 |
| 6 | - | 5,290 | 0.005-0.009 | 5,290 | 0.005-0.009 | 2,910 | 0.005-0.009 | 2,269 | 0.004-0.005 | 1,690 | 0.004-0.005 | 1,420 | 0.002-0.004 |
| - | 1/4 | 5,000 | 0.005-0.010 | 5,000 | 0.005-0.010 | 2,750 | 0.005-0.010 | 2,140 | 0.004-0.006 | 1,600 | 0.004-0.006 | 1,340 | 0.002-0.005 |
| 8 | - | 3,970 | 0.006-0.011 | 3,970 | 0.006-0.011 | 2,180 | 0.006-0.011 | 1,700 | 0.005-0.007 | 1,270 | 0.005-0.006 | 1,060 | 0.003-0.005 |
| - | 3/8 | 3,330 | 0.007-0.012 | 3,330 | 0.007-0.012 | 1,830 | 0.007-0.012 | 1,430 | 0.005-0.008 | 1,070 | 0.005-0.007 | 890 | 0.003-0.005 |
| 10 | - | 3,170 | 0.008-0.012 | 3,170 | 0.008-0.012 | 1,750 | 0.008-0.012 | 1,360 | 0.006-0.009 | 1,020 | 0.006-0.008 | 850 | 0.004-0.006 |
| - | 7/16 | 2,860 | 0.008-0.012 | 2,860 | 0.008-0.012 | 1,570 | 0.008-0.012 | 1,220 | 0.007-0.010 | 910 | 0.007-0.009 | 770 | 0.004-0.007 |
| 12 | - | 2,650 | 0.008-0.012 | 2,650 | 0.008-0.012 | 1,460 | 0.008-0.012 | 1,130 | 0.007-0.011 | 850 | 0.007-0.009 | 710 | 0.005-0.007 |
| - | 1/2 | 2,500 | 0.008-0.012 | 2,500 | 0.008-0.012 | 1,380 | 0.008-0.012 | 1,070 | 0.008-0.012 | 800 | 0.008-0.010 | 670 | 0.005-0.008 |
| - | 9/16 | 2,220 | 0.009-0.014 | 2,220 | 0.009-0.014 | 1,220 | 0.009-0.014 | 950 | 0.008-0.013 | 710 | 0.008-0.011 | 600 | 0.005-0.008 |

Note:

- The indicated speeds and feeds are for drilling with **water-soluble oil** or **MQL**. (We do not recommend mist drilling with stainless steels.)
- Water-soluble oil (20-30 times dilution) is recommended.
- When using non-water-soluble oil, set the cutting speed between 70-100% of the lowest limit.
- Make a pilot hole before deep drilling; recommended operation is on pages 355-356.
- A clogged oil hole can lead to breakage. Make sure that a filter is attached to the oil feeder.
- Peck drilling of 1D-2D is strongly recommended in high hardness materials.





General Drilling Operations

| Work Material | | Cast Iron | | Ductile Cast Iron | | Special Alloy Steels, Hardened Steels | | | | | | | |
|----------------|------|-------------|-------------|-------------------|-------------|---------------------------------------|-------------|-------------|-------------|-------------|-------------|------------|-------------|
| Hardness | | | | | | 26-30 HRC | | 30-34 HRC | | 34-43 HRC | | 43-48 HRC | |
| Drilling Speed | | 260-395 SFM | | 195-330 SFM | | 195-295 SFM | | 130-200 SFM | | 130-160 SFM | | 82-115 HRC | |
| Drill Dia. | | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed |
| mm | Inch | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR |
| 2 | - | 15,870 | 0.002-0.004 | 12,700 | 0.002-0.004 | 11,890 | 0.002-0.004 | 8,000 | 0.002-0.003 | 7,040 | 0.002-0.003 | 4,770 | 0.001-0.002 |
| 3 | - | 10,580 | 0.002-0.005 | 8,470 | 0.002-0.005 | 7,920 | 0.002-0.005 | 5,330 | 0.002-0.003 | 4,690 | 0.002-0.003 | 3,180 | 0.002-0.002 |
| - | 1/8 | 10,000 | 0.003-0.005 | 8,000 | 0.003-0.005 | 7,490 | 0.003-0.005 | 5,040 | 0.003-0.004 | 4,430 | 0.003-0.004 | 3,010 | 0.002-0.003 |
| 4 | - | 7,940 | 0.003-0.006 | 6,350 | 0.003-0.006 | 5,940 | 0.003-0.006 | 4,000 | 0.003-0.004 | 3,520 | 0.003-0.004 | 2,390 | 0.002-0.003 |
| - | 3/16 | 6,670 | 0.004-0.007 | 5,330 | 0.004-0.007 | 4,990 | 0.004-0.007 | 3,360 | 0.003-0.005 | 2,950 | 0.003-0.005 | 2,000 | 0.003-0.004 |
| 6 | - | 5,290 | 0.005-0.009 | 4,230 | 0.005-0.009 | 3,960 | 0.005-0.009 | 2,700 | 0.005-0.006 | 2,340 | 0.005-0.006 | 1,590 | 0.004-0.005 |
| - | 1/4 | 5,000 | 0.005-0.010 | 4,000 | 0.005-0.010 | 3,740 | 0.005-0.010 | 2,520 | 0.005-0.007 | 2,220 | 0.005-0.007 | 1,500 | 0.004-0.006 |
| 8 | - | 3,970 | 0.006-0.011 | 3,170 | 0.006-0.011 | 2,970 | 0.006-0.011 | 2,000 | 0.006-0.008 | 1,760 | 0.006-0.008 | 1,190 | 0.005-0.007 |
| - | 3/8 | 3,330 | 0.007-0.012 | 2,670 | 0.007-0.012 | 2,500 | 0.007-0.012 | 1,680 | 0.007-0.009 | 1,480 | 0.007-0.009 | 1,000 | 0.006-0.008 |
| 10 | - | 3,170 | 0.008-0.012 | 2,540 | 0.008-0.012 | 2,380 | 0.008-0.012 | 1,600 | 0.008-0.010 | 1,410 | 0.008-0.010 | 950 | 0.007-0.009 |
| - | 7/16 | 2,860 | 0.008-0.012 | 2,290 | 0.008-0.012 | 2,140 | 0.008-0.012 | 1,440 | 0.009-0.011 | 1,270 | 0.009-0.011 | 860 | 0.007-0.009 |
| 12 | - | 2,650 | 0.008-0.012 | 2,120 | 0.008-0.012 | 1,980 | 0.008-0.012 | 1,330 | 0.009-0.012 | 1,170 | 0.009-0.012 | 800 | 0.007-0.009 |
| - | 1/2 | 2,500 | 0.008-0.012 | 2,000 | 0.008-0.012 | 1,870 | 0.008-0.012 | 1,260 | 0.010-0.013 | 1,110 | 0.010-0.013 | 750 | 0.008-0.010 |
| - | 9/16 | 2,220 | 0.009-0.014 | 1,780 | 0.009-0.014 | 1,660 | 0.009-0.014 | 1,120 | 0.011-0.014 | 980 | 0.011-0.014 | 670 | 0.008-0.011 |





List 6560 - A Brand[®] ADO: 40D List 6570 - A Brand[®] ADO: 50D

General Drilling Operations

| Work Material | | Carbon Steels, Mild Steels 1010, 1050, 12L14 | | Alloy Steels 4140, 4130 | | Stainless Steels 300SS, 400SS, 17-4PH | | Cast Iron | |
|----------------|------|---|-------------|----------------------------|-------------|--|-------------|--------------|-------------|
| Drilling Speed | | 195-295 SFM | | 195-295 SFM | | 130-195 SFM | | 195-295 SFM | |
| Drill Dia. | | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| mm | Inch | | | | | | | | |
| 3 | - | 7,500 | 0.002-0.005 | 7,500 | 0.002-0.005 | 5,300 | 0.002-0.005 | 7,500 | 0.002-0.005 |
| - | 1/8 | 7,100 | 0.003-0.005 | 7,100 | 0.003-0.005 | 5,000 | 0.003-0.005 | 7,100 | 0.003-0.005 |
| 4 | - | 5,600 | 0.003-0.006 | 5,600 | 0.003-0.006 | 4,000 | 0.003-0.006 | 5,600 | 0.003-0.006 |
| - | 3/16 | 4,700 | 0.004-0.008 | 4,700 | 0.004-0.008 | 3,300 | 0.004-0.008 | 4,700 | 0.004-0.008 |
| 6 | - | 3,700 | 0.005-0.009 | 3,700 | 0.005-0.009 | 2,700 | 0.005-0.009 | 3,700 | 0.005-0.009 |
| - | 1/4 | 3,500 | 0.005-0.010 | 3,500 | 0.005-0.010 | 2,500 | 0.005-0.010 | 3,500 | 0.005-0.010 |
| 8 | - | 2,800 | 0.006-0.011 | 2,800 | 0.006-0.011 | 2,000 | 0.006-0.011 | 2,800 | 0.006-0.011 |
| - | 3/8 | 2,400 | 0.008-0.013 | 2,400 | 0.008-0.013 | 1,700 | 0.008-0.013 | 2,400 | 0.008-0.013 |
| 10 | - | 2,300 | 0.008-0.014 | 2,300 | 0.008-0.014 | 1,600 | 0.008-0.014 | 2,300 | 0.008-0.014 |

General Drilling Operations

| Work Material | | Ductile Cast Iron | | Special Alloy Steels, Hardened Steels | | | |
|----------------|------|-------------------|-------------|---------------------------------------|-------------|--------------|-------------|
| Hardness | | | | 26-30 HRC | | 30-34 HRC | |
| Drilling Speed | | 165-260 SFM | | 165-260 SFM | | 130-230 SFM | |
| Drill Dia. | | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| mm | Inch | | | | | | |
| 3 | - | 6,400 | 0.002-0.005 | 6,400 | 0.002-0.005 | 5,300 | 0.002-0.004 |
| - | 1/8 | 6,000 | 0.003-0.005 | 6,000 | 0.003-0.005 | 5,000 | 0.003-0.005 |
| 4 | - | 4,800 | 0.003-0.006 | 4,800 | 0.003-0.006 | 4,000 | 0.003-0.006 |
| - | 3/16 | 4,000 | 0.004-0.008 | 4,000 | 0.004-0.008 | 3,300 | 0.004-0.007 |
| 6 | - | 3,200 | 0.005-0.009 | 3,200 | 0.005-0.009 | 2,700 | 0.005-0.008 |
| - | 1/4 | 3,000 | 0.005-0.010 | 3,000 | 0.005-0.010 | 2,500 | 0.005-0.009 |
| 8 | - | 2,400 | 0.006-0.011 | 2,400 | 0.006-0.011 | 2,000 | 0.006-0.009 |
| - | 3/8 | 2,000 | 0.008-0.013 | 2,000 | 0.008-0.013 | 1,700 | 0.008-0.011 |
| 10 | - | 1,900 | 0.008-0.014 | 1,900 | 0.008-0.014 | 1,600 | 0.008-0.012 |

Note:

- The indicated speeds and feeds are for drilling with **water-soluble oil** or **MQL**. (We do not recommend mist drilling with stainless steels.)
- Water-soluble oil (20-30 times dilution) is recommended.
- When using non-water-soluble oil, set the cutting speed between 70-100% of the lowest limit.
- Make a pilot hole before deep drilling; recommended operation is on pages 355-356.
- A clogged oil hole can lead to breakage. Make sure that a filter is attached to the oil feeder.
- Peck drilling of 1D-2D is strongly recommended in high hardness materials.
- If, after piloting with ADO-5D and drilling with ADO-40D/50D, hole condition or accuracy is poor or machining is difficult, ADO-20D/30D may be used as an intermediate drilling step. This three-step process may improve accuracy and condition as well as permit more aggressive parameters than stated above.

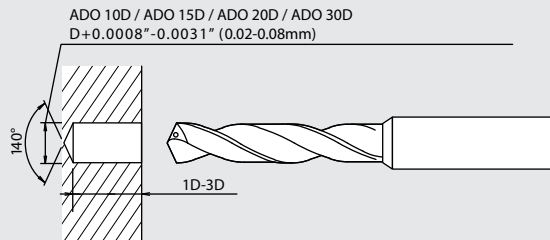




Deep Hole Operational Guidelines

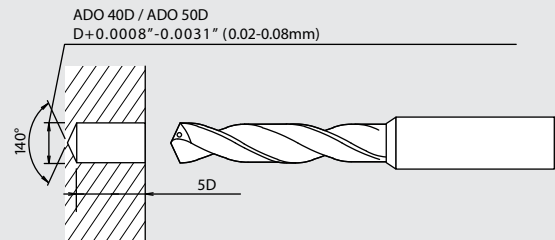
1. Make a pilot hole. (For 10-30D)

For a pilot hole, select 0.0008"-0.0031" (0.02-0.08mm) larger size drill than ADO 10D, ADO 15D, ADO 20D and ADO 30D. If the needed pilot drill size is not available, we recommend using the same diameter drill from ADO 3D.



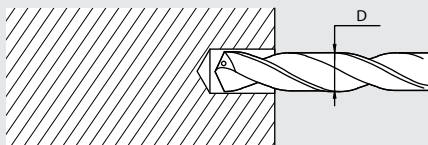
1. Make a pilot hole. (For 40 & 50D)

For a pilot hole, select 0.0008"-0.0031" (0.02-0.08mm) larger size drill than ADO 40D and ADO 50D. If the needed pilot drill size is not available, we recommend using the same diameter drill from ADO 5D or ADO-TRS.

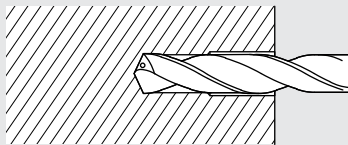


Remaining Steps are the Same for 10-50D

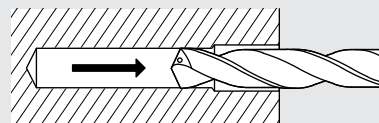
2. Insert the extra long drill into a pilot hole with zero or low revolution (below 500rpm).



3. Increase the revolution to the designated speed and start drilling.



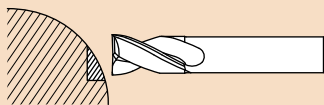
4. After drilling, move the drill away from the bottom of the hole, then reduce its speed while pulling it out of the hole.



Make sure to use an internal coolant supply when drilling.

Drilling a Curved Surface

When working on a curved surface, we recommend piloting with A Brand[®] ADF flat drill.



Improve Accuracy & Hole Condition

If, after piloting with ADO-5D and drilling with ADO-40D/50D, hole condition or accuracy is poor or machining is difficult, ADO-20D/30D may be used as an intermediate drilling step. This three-step process may improve accuracy and condition as well as permit more aggressive parameters.

continued on next page

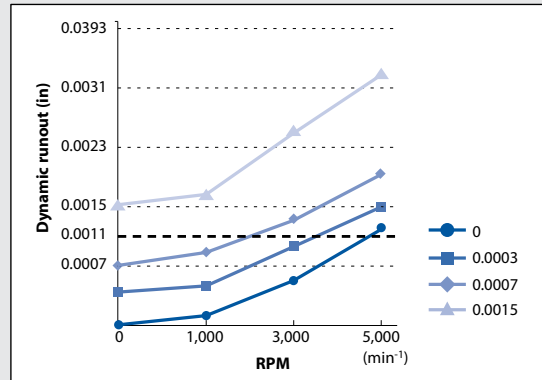




Stable Drilling with Long Drills

The runout of a gripped cutting tool increases with the speed, as shown in the graph on the right. To ensure a higher level of work stability, OSG recommends making +0.0008"-0.0031" (+0.02-0.08mm) pilot holes and inserting long drills stopped or at low speeds.

The reason for this is made evident in the graph on the right. Increasing the speed increases the dynamic runout, posing a higher risk of the drill not fitting properly in the pilot hole. Therefore, reducing the speed and minimizing static runout is the recommended drilling method for long drills.



| Static runout RPM (min ⁻¹) | 0" | 0.0003" | 0.0007" | 0.0015" |
|--|--------|---------|---------|---------|
| 1,000 | 0.0001 | 0.0005 | 0.0009 | 0.0018 |
| 3,000 | 0.0005 | 0.0010 | 0.0014 | 0.0025 |
| 5,000 | 0.0012 | 0.0015 | 0.0019 | 0.0034 |

Dynamic runout values for Ø6mm 30xD drill.



List 6300 - A Brand[®] AD: 2D

List 6310 - A Brand[®] AD: 4D

General Drilling Operations

| Work Material | Carbon Steels, Mild Steels 1010, 1050, 12L14 | | Alloy Steels 4140, 4130 | | Stainless Steels 300SS, 400SS, 17-4PH | | High Heat Material | | | | | | |
|----------------|---|-------------|----------------------------|-------------|---|-------------|---------------------|-------------|---------------------------|-------------|------------------------------|-------------|-------------|
| | 210-315 SFM | | 210-315 SFM | | 100-185 SFM | | Ti-Alloy, Ti-6Al-4V | | Fe-Base Material, A286 | | Ni-Base Material, Inconel | | |
| Drilling Speed | 210-315 SFM | | 210-315 SFM | | 100-185 SFM | | 80-145 SFM | | 65-100 SFM | | 50-90 SFM | | |
| Drill Dia. | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | |
| | | | | | | | | | | | | | mm |
| 2 | - | 12,700 | 0.002-0.004 | 12,700 | 0.002-0.004 | 6,900 | 0.002-0.004 | 5,460 | 0.002-0.003 | 4,000 | 0.001-0.002 | 3,390 | 0.001-0.002 |
| 3 | - | 8,470 | 0.002-0.005 | 8,470 | 0.002-0.005 | 4,610 | 0.002-0.005 | 3,640 | 0.002-0.003 | 2,670 | 0.002-0.002 | 2,260 | 0.001-0.002 |
| - | 1/8 | 8,000 | 0.002-0.005 | 8,000 | 0.002-0.005 | 4,350 | 0.003-0.005 | 3,440 | 0.002-0.003 | 2,520 | 0.002-0.003 | 2,140 | 0.001-0.002 |
| 4 | - | 6,350 | 0.003-0.006 | 6,350 | 0.003-0.006 | 3,450 | 0.003-0.006 | 2,730 | 0.002-0.004 | 2,000 | 0.002-0.003 | 1,700 | 0.002-0.002 |
| - | 3/16 | 5,330 | 0.003-0.006 | 5,330 | 0.003-0.006 | 2,900 | 0.004-0.007 | 2,290 | 0.003-0.005 | 1,680 | 0.002-0.004 | 1,420 | 0.002-0.003 |
| 6 | - | 4,230 | 0.005-0.009 | 4,230 | 0.005-0.009 | 2,300 | 0.005-0.009 | 1,820 | 0.004-0.005 | 1,330 | 0.004-0.005 | 1,130 | 0.002-0.004 |
| - | 1/4 | 4,000 | 0.005-0.009 | 4,000 | 0.005-0.009 | 2,180 | 0.005-0.010 | 1,720 | 0.004-0.006 | 1,260 | 0.004-0.005 | 1,070 | 0.002-0.004 |
| 8 | - | 3,170 | 0.006-0.011 | 3,170 | 0.006-0.011 | 1,730 | 0.006-0.011 | 1,360 | 0.005-0.007 | 1,000 | 0.005-0.006 | 850 | 0.003-0.005 |
| - | 3/8 | 2,670 | 0.007-0.012 | 2,670 | 0.007-0.012 | 1,450 | 0.008-0.012 | 1,150 | 0.005-0.008 | 840 | 0.006-0.008 | 710 | 0.004-0.006 |
| 10 | - | 2,540 | 0.008-0.012 | 2,540 | 0.008-0.012 | 1,380 | 0.008-0.012 | 1,090 | 0.006-0.009 | 800 | 0.006-0.008 | 680 | 0.004-0.006 |
| - | 7/16 | 2,290 | 0.008-0.012 | 2,290 | 0.008-0.012 | 1,240 | 0.008-0.012 | 980 | 0.007-0.010 | 720 | 0.007-0.009 | 610 | 0.004-0.007 |
| 12 | - | 2,120 | 0.008-0.012 | 2,120 | 0.008-0.012 | 1,150 | 0.008-0.012 | 910 | 0.007-0.011 | 670 | 0.007-0.009 | 560 | 0.005-0.007 |
| - | 1/2 | 2,000 | 0.008-0.012 | 2,000 | 0.008-0.012 | 1,090 | 0.008-0.012 | 860 | 0.008-0.011 | 630 | 0.008-0.009 | 530 | 0.005-0.008 |
| 14 | - | 1,810 | 0.009-0.014 | 1,810 | 0.009-0.014 | 990 | 0.009-0.014 | 780 | 0.008-0.013 | 570 | 0.008-0.011 | 480 | 0.005-0.008 |
| - | 5/8 | 1,600 | 0.010-0.014 | 1,600 | 0.010-0.014 | 870 | 0.009-0.014 | 690 | 0.009-0.013 | 500 | 0.008-0.011 | 430 | 0.005-0.008 |
| 16 | - | 1,600 | 0.010-0.014 | 1,600 | 0.010-0.014 | 870 | 0.009-0.014 | 690 | 0.009-0.013 | 500 | 0.008-0.011 | 430 | 0.005-0.008 |
| 18 | - | 1,410 | 0.011-0.015 | 1,410 | 0.011-0.015 | 770 | 0.011-0.015 | 610 | 0.010-0.014 | 440 | 0.008-0.011 | 380 | 0.005-0.008 |
| - | 3/4 | 1,330 | 0.012-0.016 | 1,330 | 0.012-0.016 | 720 | 0.011-0.015 | 570 | 0.011-0.015 | 420 | 0.008-0.012 | 360 | 0.005-0.008 |
| 20 | - | 1,270 | 0.012-0.016 | 1,270 | 0.012-0.016 | 690 | 0.012-0.016 | 550 | 0.012-0.016 | 400 | 0.008-0.012 | 340 | 0.005-0.008 |

General Drilling Operations

| Work Material | Cast Iron | | Ductile Cast Iron | | Special Alloy Steels, Hardened Steels | | | | | | | | |
|----------------|--------------|-------------|-------------------|-------------|---------------------------------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|-------------|
| | 210-315 SFM | | 156-265 SFM | | 155-235 SFM | | 100-160 SFM | | 100-130 SFM | | 65-95 SFM | | |
| Drilling Speed | 210-315 SFM | | 156-265 SFM | | 155-235 SFM | | 100-160 SFM | | 100-130 SFM | | 65-95 SFM | | |
| Drill Dia. | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | |
| | | | | | | | | | | | | | mm |
| 2 | - | 12,700 | 0.002-0.004 | 10,190 | 0.002-0.004 | 9,460 | 0.002-0.004 | 6,310 | 0.002-0.003 | 5,570 | 0.002-0.003 | 3,890 | 0.001-0.002 |
| 3 | - | 8,470 | 0.002-0.005 | 6,790 | 0.002-0.005 | 6,310 | 0.002-0.005 | 4,210 | 0.002-0.003 | 3,720 | 0.002-0.003 | 2,590 | 0.002-0.002 |
| - | 1/8 | 8,000 | 0.002-0.005 | 6,420 | 0.003-0.005 | 5,960 | 0.002-0.005 | 3,980 | 0.002-0.003 | 3,510 | 0.002-0.003 | 2,450 | 0.002-0.003 |
| 4 | - | 6,350 | 0.003-0.006 | 5,100 | 0.003-0.006 | 4,730 | 0.003-0.006 | 3,160 | 0.003-0.004 | 2,780 | 0.003-0.004 | 1,940 | 0.002-0.003 |
| - | 3/16 | 5,330 | 0.003-0.006 | 4,280 | 0.004-0.007 | 3,980 | 0.003-0.006 | 2,650 | 0.003-0.005 | 2,340 | 0.003-0.005 | 1,630 | 0.003-0.004 |
| 6 | - | 4,230 | 0.005-0.009 | 3,400 | 0.005-0.009 | 3,150 | 0.005-0.009 | 2,100 | 0.005-0.006 | 1,860 | 0.005-0.006 | 1,290 | 0.004-0.005 |
| - | 1/4 | 4,000 | 0.005-0.009 | 3,210 | 0.006-0.009 | 2,980 | 0.005-0.009 | 1,990 | 0.005-0.007 | 1,760 | 0.005-0.007 | 1,220 | 0.004-0.006 |
| 8 | - | 3,170 | 0.006-0.011 | 2,550 | 0.006-0.011 | 2,360 | 0.006-0.011 | 1,580 | 0.006-0.008 | 1,390 | 0.006-0.008 | 970 | 0.005-0.007 |
| - | 3/8 | 2,670 | 0.007-0.012 | 2,140 | 0.008-0.012 | 1,990 | 0.007-0.012 | 1,320 | 0.008-0.009 | 1,170 | 0.008-0.009 | 820 | 0.006-0.008 |
| 10 | - | 2,540 | 0.008-0.012 | 2,040 | 0.008-0.012 | 1,890 | 0.008-0.012 | 1,260 | 0.008-0.010 | 1,110 | 0.008-0.010 | 780 | 0.007-0.009 |
| - | 7/16 | 2,290 | 0.008-0.012 | 1,830 | 0.008-0.012 | 1,700 | 0.008-0.012 | 1,140 | 0.009-0.011 | 1,000 | 0.009-0.011 | 700 | 0.007-0.009 |
| 12 | - | 2,120 | 0.008-0.012 | 1,700 | 0.008-0.012 | 1,580 | 0.008-0.012 | 1,050 | 0.009-0.012 | 930 | 0.009-0.012 | 650 | 0.007-0.009 |
| - | 1/2 | 2,000 | 0.008-0.012 | 1,600 | 0.008-0.012 | 1,490 | 0.008-0.012 | 990 | 0.010-0.012 | 880 | 0.010-0.012 | 610 | 0.008-0.010 |
| 14 | - | 1,810 | 0.009-0.014 | 1,460 | 0.009-0.014 | 1,350 | 0.009-0.014 | 900 | 0.011-0.014 | 800 | 0.011-0.014 | 550 | 0.008-0.011 |
| - | 5/8 | 1,600 | 0.010-0.014 | 1,280 | 0.010-0.014 | 1,190 | 0.010-0.014 | 790 | 0.012-0.015 | 700 | 0.012-0.015 | 490 | 0.009-0.012 |
| 16 | - | 1,600 | 0.010-0.014 | 1,280 | 0.010-0.014 | 1,190 | 0.010-0.014 | 790 | 0.012-0.015 | 700 | 0.012-0.015 | 490 | 0.009-0.012 |
| 18 | - | 1,410 | 0.011-0.015 | 1,130 | 0.011-0.015 | 1,050 | 0.011-0.015 | 700 | 0.014-0.018 | 620 | 0.014-0.018 | 430 | 0.010-0.014 |
| - | 3/4 | 1,330 | 0.012-0.016 | 1,070 | 0.012-0.016 | 990 | 0.012-0.016 | 660 | 0.015-0.019 | 680 | 0.015-0.019 | 410 | 0.011-0.015 |
| 20 | - | 1,270 | 0.012-0.016 | 1,020 | 0.012-0.016 | 940 | 0.012-0.016 | 630 | 0.016-0.020 | 560 | 0.016-0.020 | 390 | 0.012-0.016 |

Note:

- The indicated speeds and feeds are for drilling with **water-soluble oil**.
- Suitable cutting fluid is water-soluble high density oil (less than 20 times dilution).
- When using non-water-soluble oil or water-soluble oil (over 20 times dilution), reduce cutting speed by 30%.
- These conditions are for drilling depth under 3 times the drill diameter.
- For machines that cannot achieve the speeds indicated in the table please set rotation as high as possible. Tool life may be reduced.





List 5200 - A Brand[®] ADO-SUS: 3D

List 5210 - A Brand[®] ADO-SUS: 5D

List 5220 - A Brand[®] ADO-SUS: 8D

General Drilling Operations

| Work Material | Carbon Steels, Mild Steels 1010, 1050, 12L14 | | Alloy Steels 4140, 4130 | | 300 Series Austenitic Stainless Steels | | | | 400 Series Ferritic Stainless Steels Martensitic Stainless Steels | | | | |
|----------------|---|--------|----------------------------|--------|--|--------|----------------|-------|--|--------|----------------|-------|----------------|
| | Hardness | | Hardness | | ≤15HRC | | > 15 HRC | | ≤15HRC | | > 15 HRC | | |
| Drilling Speed | 260-325 SFM | | 260-325 SFM | | 200-330 SFM | | 130-260 SFM | | 200-330 SFM | | 130-260 SFM | | |
| Drill Dia. | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | |
| | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | |
| mm | Inch | | | | | | | | | | | | |
| 2 | - | 14,190 | 0.0013 - 0.003 | 14,190 | 0.0013 - 0.003 | 12,850 | 0.0013 - 0.003 | 9,460 | 0.0013 - 0.003 | 12,850 | 0.0013 - 0.003 | 9,460 | 0.0013 - 0.003 |
| 3 | - | 9,450 | 0.002 - 0.005 | 9,450 | 0.002 - 0.005 | 8,570 | 0.002 - 0.005 | 6,310 | 0.002 - 0.005 | 8,570 | 0.002 - 0.005 | 6,310 | 0.002 - 0.005 |
| - | 1/8 | 8,940 | 0.002 - 0.005 | 8,940 | 0.002 - 0.005 | 8,100 | 0.002 - 0.005 | 5,960 | 0.002 - 0.005 | 8,100 | 0.002 - 0.005 | 5,960 | 0.002 - 0.005 |
| 4 | - | 7,090 | 0.003 - 0.006 | 7,090 | 0.003 - 0.006 | 6,430 | 0.003 - 0.006 | 4,730 | 0.003 - 0.006 | 6,430 | 0.003 - 0.006 | 4,730 | 0.003 - 0.006 |
| - | 3/16 | 5,960 | 0.004 - 0.007 | 5,960 | 0.004 - 0.007 | 5,400 | 0.004 - 0.007 | 3,970 | 0.004 - 0.007 | 5,400 | 0.004 - 0.007 | 3,970 | 0.004 - 0.007 |
| 6 | - | 4,730 | 0.005 - 0.009 | 4,730 | 0.005 - 0.009 | 4,280 | 0.005 - 0.008 | 3,150 | 0.005 - 0.008 | 4,280 | 0.005 - 0.008 | 3,150 | 0.005 - 0.008 |
| - | 1/4 | 4,470 | 0.005 - 0.009 | 4,470 | 0.005 - 0.009 | 4,050 | 0.005 - 0.008 | 2,980 | 0.005 - 0.008 | 4,050 | 0.005 - 0.008 | 2,980 | 0.005 - 0.008 |
| 8 | - | 3,550 | 0.006 - 0.011 | 3,550 | 0.006 - 0.011 | 3,210 | 0.006 - 0.009 | 2,360 | 0.006 - 0.009 | 3,210 | 0.006 - 0.009 | 2,360 | 0.006 - 0.009 |
| - | 3/8 | 2,980 | 0.007 - 0.012 | 2,980 | 0.007 - 0.012 | 2,700 | 0.007 - 0.011 | 1,990 | 0.007 - 0.011 | 2,700 | 0.007 - 0.011 | 1,990 | 0.007 - 0.011 |
| 10 | - | 2,840 | 0.008 - 0.012 | 2,840 | 0.008 - 0.012 | 2,570 | 0.008 - 0.012 | 1,890 | 0.007 - 0.011 | 2,570 | 0.007 - 0.011 | 1,890 | 0.007 - 0.011 |
| - | 7/16 | 2,550 | 0.008 - 0.012 | 2,550 | 0.008 - 0.012 | 2,310 | 0.008 - 0.012 | 1,700 | 0.007 - 0.011 | 2,310 | 0.007 - 0.011 | 1,700 | 0.007 - 0.011 |
| 12 | - | 2,360 | 0.008 - 0.012 | 2,360 | 0.008 - 0.012 | 2,140 | 0.008 - 0.012 | 1,580 | 0.007 - 0.012 | 2,140 | 0.007 - 0.012 | 1,580 | 0.007 - 0.012 |
| - | 1/2 | 2,230 | 0.008 - 0.013 | 2,230 | 0.008 - 0.013 | 2,020 | 0.008 - 0.012 | 1,490 | 0.008 - 0.012 | 2,020 | 0.008 - 0.012 | 1,490 | 0.008 - 0.012 |
| 14 | - | 2,030 | 0.009 - 0.014 | 2,030 | 0.009 - 0.014 | 1,840 | 0.008 - 0.013 | 1,350 | 0.008 - 0.013 | 1,840 | 0.008 - 0.013 | 1,350 | 0.008 - 0.013 |
| - | 5/8 | 1,790 | 0.010 - 0.015 | 1,790 | 0.010 - 0.015 | 1,620 | 0.009 - 0.015 | 1,190 | 0.009 - 0.015 | 1,620 | 0.009 - 0.015 | 1,190 | 0.009 - 0.015 |
| 16 | - | 1,770 | 0.010 - 0.015 | 1,770 | 0.010 - 0.015 | 1,610 | 0.009 - 0.015 | 1,180 | 0.009 - 0.015 | 1,610 | 0.009 - 0.015 | 1,180 | 0.009 - 0.015 |
| 18 | - | 1,580 | 0.011 - 0.015 | 1,580 | 0.011 - 0.015 | 1,430 | 0.010 - 0.016 | 1,050 | 0.010 - 0.016 | 1,430 | 0.010 - 0.016 | 1,050 | 0.010 - 0.016 |
| - | 3/4 | 1,490 | 0.012 - 0.016 | 1,490 | 0.012 - 0.016 | 1,350 | 0.011 - 0.016 | 990 | 0.011 - 0.016 | 1,350 | 0.011 - 0.016 | 990 | 0.011 - 0.016 |
| 20 | - | 1,420 | 0.012 - 0.016 | 1,420 | 0.012 - 0.016 | 1,280 | 0.011 - 0.016 | 950 | 0.011 - 0.016 | 1,280 | 0.011 - 0.016 | 950 | 0.011 - 0.016 |

General Drilling Operations

| Work Material | Duplex Stainless Steels | | | | Precipitation Hardened Stainless Steels 15-5, 17-4 | | Ductile Cast Iron/ Cast Iron | Cast Aluminum | Titanium Alloy | | | | |
|----------------|-------------------------|-------|----------------|-------|---|-------|---------------------------------|---------------|----------------|--------|---------------|-------|----------------|
| | Hardness | | Hardness | | Hardness | | | | Hardness | | | | |
| Drilling Speed | 130-260 SFM | | 100-165 SFM | | 130-200 SFM | | 195-330 SFM | | 325-700 SFM | | 100-165 SFM | | |
| Drill Dia. | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | |
| | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | |
| mm | Inch | | | | | | | | | | | | |
| 2 | - | 9,460 | 0.0013 - 0.003 | 6,430 | 0.0013 - 0.003 | 8,000 | 0.0013 - 0.003 | 12,700 | 0.0013 - 0.003 | 24,900 | 0.002 - 0.004 | 6,430 | 0.0013 - 0.003 |
| 3 | - | 6,310 | 0.002 - 0.005 | 4,280 | 0.002 - 0.005 | 5,330 | 0.002 - 0.005 | 8,470 | 0.002 - 0.005 | 16,600 | 0.004 - 0.006 | 4,280 | 0.002 - 0.005 |
| - | 1/8 | 5,960 | 0.002 - 0.005 | 4,050 | 0.002 - 0.005 | 5,040 | 0.002 - 0.005 | 8,000 | 0.002 - 0.005 | 15,680 | 0.004 - 0.006 | 4,050 | 0.002 - 0.005 |
| 4 | - | 4,730 | 0.003 - 0.006 | 3,210 | 0.003 - 0.006 | 4,000 | 0.003 - 0.006 | 6,350 | 0.003 - 0.006 | 12,450 | 0.005 - 0.007 | 3,210 | 0.003 - 0.006 |
| - | 3/16 | 3,970 | 0.004 - 0.007 | 2,700 | 0.004 - 0.007 | 3,360 | 0.004 - 0.007 | 5,330 | 0.004 - 0.007 | 10,450 | 0.006 - 0.008 | 2,700 | 0.004 - 0.007 |
| 6 | - | 3,150 | 0.005 - 0.008 | 2,140 | 0.005 - 0.008 | 2,670 | 0.005 - 0.008 | 4,230 | 0.005 - 0.009 | 8,300 | 0.008 - 0.010 | 2,140 | 0.005 - 0.008 |
| - | 1/4 | 2,980 | 0.005 - 0.008 | 2,020 | 0.005 - 0.008 | 2,520 | 0.005 - 0.008 | 4,000 | 0.005 - 0.009 | 7,840 | 0.009 - 0.011 | 2,020 | 0.005 - 0.008 |
| 8 | - | 2,360 | 0.006 - 0.009 | 1,600 | 0.006 - 0.009 | 2,000 | 0.006 - 0.009 | 3,170 | 0.006 - 0.011 | 6,220 | 0.012 - 0.014 | 1,600 | 0.006 - 0.009 |
| - | 3/8 | 1,990 | 0.007 - 0.011 | 1,350 | 0.007 - 0.011 | 1,680 | 0.007 - 0.011 | 2,670 | 0.007 - 0.012 | 5,230 | 0.014 - 0.016 | 1,350 | 0.007 - 0.011 |
| 10 | - | 1,890 | 0.008 - 0.012 | 1,280 | 0.007 - 0.011 | 1,600 | 0.008 - 0.012 | 2,540 | 0.008 - 0.012 | 4,980 | 0.015 - 0.017 | 1,280 | 0.007 - 0.011 |
| - | 7/16 | 1,700 | 0.008 - 0.012 | 1,160 | 0.007 - 0.011 | 1,440 | 0.008 - 0.012 | 2,290 | 0.008 - 0.012 | 4,480 | 0.017 - 0.019 | 1,160 | 0.007 - 0.011 |
| 12 | - | 1,580 | 0.008 - 0.012 | 1,070 | 0.007 - 0.012 | 1,330 | 0.008 - 0.012 | 2,120 | 0.008 - 0.012 | 4,150 | 0.018 - 0.020 | 1,070 | 0.007 - 0.012 |
| - | 1/2 | 1,490 | 0.008 - 0.012 | 1,010 | 0.008 - 0.012 | 1,260 | 0.008 - 0.012 | 2,000 | 0.008 - 0.013 | 3,920 | 0.019 - 0.021 | 1,010 | 0.008 - 0.012 |
| 14 | - | 1,350 | 0.008 - 0.013 | 920 | 0.008 - 0.013 | 1,140 | 0.008 - 0.013 | 1,810 | 0.009 - 0.014 | 3,560 | 0.021 - 0.023 | 920 | 0.008 - 0.013 |
| - | 5/8 | 1,190 | 0.009 - 0.015 | 810 | 0.009 - 0.015 | 1,010 | 0.009 - 0.015 | 1,600 | 0.010 - 0.015 | 3,140 | 0.023 - 0.026 | 810 | 0.009 - 0.015 |
| 16 | - | 1,180 | 0.009 - 0.015 | 800 | 0.009 - 0.015 | 1,000 | 0.009 - 0.015 | 1,590 | 0.010 - 0.015 | 3,110 | 0.023 - 0.026 | 800 | 0.009 - 0.015 |
| 18 | - | 1,050 | 0.010 - 0.016 | 710 | 0.010 - 0.016 | 890 | 0.010 - 0.016 | 1,410 | 0.011 - 0.015 | 2,770 | 0.026 - 0.030 | 710 | 0.010 - 0.016 |
| - | 3/4 | 990 | 0.011 - 0.016 | 670 | 0.011 - 0.016 | 840 | 0.011 - 0.016 | 1,330 | 0.012 - 0.016 | 2,610 | 0.027 - 0.031 | 670 | 0.011 - 0.016 |
| 20 | - | 950 | 0.011 - 0.016 | 640 | 0.011 - 0.016 | 800 | 0.011 - 0.016 | 1,270 | 0.012 - 0.016 | 2,490 | 0.028 - 0.032 | 640 | 0.011 - 0.016 |





List 5190 - A Brand[®] AD-LDS

General Drilling Operations

| Work Material | Carbon Steels, Mild Steels 1010, 1050, 12L14 | | Alloy Steels 4140, 4130 | | Cast Iron | | Cast Aluminum Alloy | | Special Alloy Steels, Hardened Steels | | | | |
|----------------|---|----------|----------------------------|----------|---------------|----------|---------------------|----------|---------------------------------------|----------|---------------|----------|---------------|
| | Hardness | | | | | | | | 26-30 HRC | | 30-34 HRC | | |
| Drilling Speed | 200-260 SFM | | 100-165 SFM | | 200-325 SFM | | 260-525 SFM | | 65-90 SFM | | 50-75 SFM | | |
| Drill Dia. | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | |
| | | | | | | | | | | | | | mm |
| 0.5 | - | 25,000 | 0.0002-0.0008 | 25,000 | 0.0002-0.0008 | 25,000 | 0.0002-0.0006 | 25,000 | 0.0008-0.0020 | 15,000 | 0.0002-0.0008 | 12,000 | 0.0002-0.0008 |
| 1.0 | - | 22,300 | 0.0004-0.0012 | 12,600 | 0.0004-0.0012 | 25,000 | 0.0004-0.0012 | 25,000 | 0.001-0.004 | 7,500 | 0.0004-0.0012 | 6,000 | 0.0004-0.0012 |
| 2.0 | - | 11,000 | 0.001-0.002 | 6,300 | 0.001-0.002 | 12,500 | 0.001-0.002 | 19,150 | 0.002-0.008 | 3,800 | 0.001-0.002 | 3,000 | 0.001-0.002 |
| 3.0 | - | 7,500 | 0.001-0.003 | 4,200 | 0.001-0.003 | 8,400 | 0.002-0.003 | 12,600 | 0.004-0.009 | 2,500 | 0.001-0.003 | 2,000 | 0.001-0.003 |
| 4.0 | - | 5,700 | 0.002-0.004 | 3,150 | 0.002-0.004 | 6,300 | 0.003-0.005 | 9,500 | 0.005-0.010 | 1,900 | 0.002-0.004 | 1,500 | 0.002-0.004 |
| 6.0 | - | 3,800 | 0.002-0.005 | 2,100 | 0.002-0.005 | 4,200 | 0.005-0.007 | 6,300 | 0.005-0.011 | 1,250 | 0.002-0.005 | 1,000 | 0.002-0.005 |
| - | 1/4 | 3,500 | 0.002-0.005 | 2,030 | 0.002-0.005 | 4,000 | 0.005-0.007 | 6,000 | 0.005-0.011 | 1,180 | 0.002-0.005 | 950 | 0.002-0.005 |
| 8.0 | - | 2,800 | 0.003-0.006 | 1,575 | 0.003-0.006 | 3,200 | 0.005-0.008 | 4,730 | 0.007-0.012 | 940 | 0.003-0.006 | 750 | 0.003-0.006 |
| - | 3/8 | 2,340 | 0.004-0.007 | 1,350 | 0.004-0.007 | 2,670 | 0.007-0.010 | 4,000 | 0.009-0.014 | 785 | 0.004-0.007 | 630 | 0.004-0.007 |
| 10.0 | - | 2,300 | 0.004-0.007 | 1,250 | 0.004-0.007 | 2,500 | 0.007-0.010 | 3,800 | 0.009-0.014 | 750 | 0.004-0.007 | 600 | 0.004-0.007 |
| 12.0 | - | 1,900 | 0.005-0.008 | 1,050 | 0.005-0.008 | 2,100 | 0.008-0.012 | 3,150 | 0.010-0.016 | 625 | 0.005-0.008 | 500 | 0.005-0.008 |
| - | 1/2 | 1,760 | 0.005-0.008 | 1,000 | 0.005-0.008 | 2,000 | 0.008-0.012 | 3,000 | 0.010-0.016 | 590 | 0.005-0.008 | 470 | 0.005-0.008 |
| - | 5/8 | 1,400 | 0.006-0.011 | 800 | 0.006-0.011 | 1,600 | 0.009-0.013 | 3,400 | 0.012-0.019 | 470 | 0.006-0.011 | 380 | 0.006-0.011 |
| 16.0 | - | 1,400 | 0.006-0.011 | 800 | 0.006-0.011 | 1,600 | 0.009-0.013 | 2,400 | 0.012-0.019 | 470 | 0.006-0.011 | 380 | 0.006-0.011 |
| - | 3/4 | 1,170 | 0.008-0.013 | 680 | 0.008-0.013 | 1,330 | 0.010-0.016 | 2,000 | 0.016-0.024 | 390 | 0.008-0.013 | 315 | 0.008-0.013 |
| 20.0 | - | 1,150 | 0.008-0.013 | 630 | 0.008-0.013 | 1,300 | 0.010-0.016 | 1,900 | 0.016-0.024 | 375 | 0.008-0.013 | 300 | 0.008-0.013 |
| 25.0 | - | 900 | 0.010-0.018 | 500 | 0.010-0.018 | 1,000 | 0.012-0.019 | 1,500 | 0.020-0.030 | 300 | 0.010-0.018 | 240 | 0.010-0.018 |

1. The indicated speeds and feeds are for drilling with water soluble oil.
2. When using non-water soluble oil, reduce the drilling speed by 20%.
3. When centering on a curved or inclined surface, reduce the feed rate accordingly.
4. For machines that cannot achieve the speeds indicated in the table, please set rotation as high as possible.





List 5600 - EXOPRO® Mega Muscle®: 3D List 5610 - EXOPRO® Mega Muscle®: 5D

General Drilling Operations

| Work Material | | Carbon Steels, Mild Steels 1010, 1050, 12L14 | | Alloy Steels 4140, 4130 | | Cast Iron | | Ductile Cast Iron | | Cast Aluminum | |
|----------------|------|---|---------------|----------------------------|---------------|--------------|---------------|-------------------|---------------|---------------|---------------|
| Drilling Speed | | 260-395 SFM | | 200-295 SFM | | 260-395 SFM | | 195-330 SFM | | 260-660 SFM | |
| Drill Dia. | | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| mm | Inch | | | | | | | | | | |
| 4 | - | 8,000 | 0.005 - 0.009 | 6,000 | 0.005 - 0.009 | 8,000 | 0.005 - 0.009 | 6,300 | 0.005 - 0.009 | 11,100 | 0.006 - 0.012 |
| 6 | - | 5,300 | 0.008 - 0.012 | 4,000 | 0.007 - 0.013 | 5,300 | 0.008 - 0.014 | 4,200 | 0.008 - 0.013 | 7,400 | 0.009 - 0.019 |
| - | 1/4 | 5,000 | 0.009 - 0.014 | 3,775 | 0.007 - 0.014 | 5,000 | 0.009 - 0.016 | 4,000 | 0.007 - 0.014 | 7,000 | 0.010 - 0.020 |
| 8 | - | 4,000 | 0.011 - 0.016 | 3,000 | 0.009 - 0.017 | 4,000 | 0.011 - 0.019 | 3,200 | 0.009 - 0.017 | 5,600 | 0.013 - 0.025 |
| - | 3/8 | 3,300 | 0.012 - 0.021 | 2,500 | 0.012 - 0.021 | 3,300 | 0.013 - 0.023 | 2,700 | 0.012 - 0.021 | 4,700 | 0.015 - 0.030 |
| 10 | - | 3,200 | 0.013 - 0.020 | 2,400 | 0.012 - 0.022 | 3,200 | 0.014 - 0.024 | 2,500 | 0.012 - 0.022 | 4,500 | 0.016 - 0.031 |
| - | 7/16 | 2,900 | 0.013 - 0.023 | 2,150 | 0.013 - 0.023 | 2,900 | 0.015 - 0.026 | 2,300 | 0.013 - 0.023 | 4,000 | 0.017 - 0.035 |
| 12 | - | 2,700 | 0.016 - 0.024 | 2,000 | 0.014 - 0.024 | 2,700 | 0.017 - 0.028 | 2,100 | 0.014 - 0.024 | 3,700 | 0.019 - 0.038 |
| - | 1/2 | 2,500 | 0.016 - 0.025 | 1,900 | 0.015 - 0.025 | 2,500 | 0.018 - 0.028 | 2,000 | 0.015 - 0.025 | 3,500 | 0.020 - 0.040 |
| 14 | - | 2,300 | 0.019 - 0.028 | 1,700 | 0.017 - 0.028 | 2,300 | 0.019 - 0.030 | 1,800 | 0.017 - 0.028 | 3,200 | 0.022 - 0.044 |
| - | 5/8 | 2,000 | 0.019 - 0.031 | 1,500 | 0.019 - 0.031 | 2,000 | 0.022 - 0.034 | 1,600 | 0.019 - 0.031 | 2,800 | 0.025 - 0.050 |
| 18 | - | 1,800 | 0.021 - 0.032 | 1,350 | 0.021 - 0.032 | 1,800 | 0.025 - 0.035 | 1,400 | 0.021 - 0.032 | 2,500 | 0.028 - 0.057 |
| - | 3/4 | 1,700 | 0.023 - 0.034 | 1,250 | 0.023 - 0.034 | 1,700 | 0.026 - 0.037 | 1,330 | 0.023 - 0.034 | 2,300 | 0.030 - 0.060 |
| 20 | - | 1,600 | 0.024 - 0.035 | 1,200 | 0.024 - 0.035 | 1,600 | 0.028 - 0.039 | 1,270 | 0.024 - 0.035 | 2,200 | 0.031 - 0.063 |

General Drilling Operations

| Work Material | | Special Alloy Steels, Hardened Steels | | | | | |
|----------------|------|---------------------------------------|---------------|--------------|---------------|--------------|---------------|
| Hardness | | 26-30 HRC | | 30-34 HRC | | 34-43 HRC | |
| Drilling Speed | | 195-295 SFM | | 160-230 SFM | | 130-160 SFM | |
| Drill Dia. | | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| mm | Inch | | | | | | |
| 4 | - | 6,000 | 0.005 - 0.008 | 4,730 | 0.005 - 0.008 | 3,500 | 0.005 - 0.007 |
| 6 | - | 4,000 | 0.007 - 0.012 | 3,200 | 0.007 - 0.012 | 2,350 | 0.007 - 0.009 |
| - | 1/4 | 3,700 | 0.007 - 0.012 | 3,000 | 0.007 - 0.012 | 2,200 | 0.007 - 0.010 |
| 8 | - | 3,000 | 0.009 - 0.016 | 2,400 | 0.009 - 0.016 | 1,750 | 0.009 - 0.013 |
| - | 3/8 | 2,500 | 0.011 - 0.019 | 2,000 | 0.011 - 0.019 | 1,500 | 0.011 - 0.015 |
| 10 | - | 2,400 | 0.012 - 0.020 | 1,900 | 0.012 - 0.020 | 1,400 | 0.012 - 0.016 |
| - | 7/16 | 2,100 | 0.013 - 0.022 | 1,700 | 0.013 - 0.022 | 1,300 | 0.013 - 0.017 |
| 12 | - | 2,000 | 0.014 - 0.024 | 1,600 | 0.014 - 0.024 | 1,200 | 0.014 - 0.019 |
| - | 1/2 | 1,900 | 0.015 - 0.024 | 1,500 | 0.015 - 0.024 | 1,100 | 0.015 - 0.020 |
| 14 | - | 1,700 | 0.017 - 0.025 | 1,350 | 0.017 - 0.025 | 1,000 | 0.017 - 0.022 |
| - | 5/8 | 1,500 | 0.019 - 0.025 | 1,200 | 0.019 - 0.025 | 900 | 0.019 - 0.025 |
| 18 | - | 1,300 | 0.021 - 0.028 | 1,050 | 0.021 - 0.028 | 800 | 0.021 - 0.028 |
| - | 3/4 | 1,250 | 0.023 - 0.030 | 1,000 | 0.023 - 0.030 | 700 | 0.023 - 0.030 |
| 20 | - | 1,200 | 0.024 - 0.031 | 950 | 0.024 - 0.031 | 700 | 0.024 - 0.031 |





List 5630 - EXOPRO® Mega Muscle®: 10D

General Drilling Operations

| Work Material | | Carbon Steels, Mild Steels 1010, 1050, 12L14 | | Alloy Steels 4140, 4130 | | Cast Iron | | Ductile Cast Iron | | Cast Aluminum | |
|----------------|------|---|---------------|----------------------------|---------------|--------------|---------------|-------------------|---------------|---------------|---------------|
| Drilling Speed | | 260-395 SFM | | 200-295 SFM | | 260-395 SFM | | 195-330 SFM | | 260-660 SFM | |
| Drill Dia. | | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| mm | Inch | | | | | | | | | | |
| 5 | - | 6,350 | 0.007 - 0.009 | 5,750 | 0.007 - 0.009 | 6,350 | 0.007 - 0.011 | 5,100 | 0.007 - 0.009 | 8,900 | 0.008 - 0.016 |
| 6 | - | 5,300 | 0.008 - 0.011 | 4,800 | 0.008 - 0.011 | 5,300 | 0.008 - 0.014 | 4,200 | 0.008 - 0.011 | 7,400 | 0.009 - 0.019 |
| - | 1/4 | 5,000 | 0.009 - 0.012 | 4,550 | 0.009 - 0.012 | 5,000 | 0.009 - 0.016 | 4,000 | 0.007 - 0.012 | 7,000 | 0.010 - 0.020 |
| 8 | - | 4,000 | 0.011 - 0.015 | 3,600 | 0.011 - 0.015 | 4,000 | 0.011 - 0.018 | 3,200 | 0.009 - 0.015 | 5,600 | 0.013 - 0.025 |
| - | 3/8 | 3,300 | 0.012 - 0.017 | 3,050 | 0.012 - 0.017 | 3,300 | 0.012 - 0.020 | 2,700 | 0.012 - 0.017 | 4,700 | 0.015 - 0.030 |
| 10 | - | 3,200 | 0.013 - 0.019 | 2,900 | 0.013 - 0.019 | 3,200 | 0.013 - 0.023 | 2,500 | 0.012 - 0.019 | 4,500 | 0.016 - 0.031 |
| - | 7/16 | 2,900 | 0.014 - 0.021 | 2,600 | 0.014 - 0.021 | 2,900 | 0.014 - 0.025 | 2,300 | 0.013 - 0.021 | 4,000 | 0.017 - 0.035 |
| 12 | - | 2,700 | 0.016 - 0.023 | 2,400 | 0.016 - 0.023 | 2,700 | 0.016 - 0.028 | 2,100 | 0.014 - 0.023 | 3,700 | 0.019 - 0.038 |
| - | 1/2 | 2,500 | 0.016 - 0.024 | 2,250 | 0.016 - 0.024 | 2,500 | 0.016 - 0.028 | 2,000 | 0.015 - 0.024 | 3,500 | 0.020 - 0.040 |
| 14 | - | 2,300 | 0.017 - 0.026 | 2,050 | 0.017 - 0.026 | 2,300 | 0.017 - 0.029 | 1,800 | 0.017 - 0.026 | 3,200 | 0.022 - 0.044 |
| - | 5/8 | 2,000 | 0.018 - 0.029 | 1,800 | 0.018 - 0.029 | 2,000 | 0.018 - 0.030 | 1,600 | 0.019 - 0.029 | 2,800 | 0.025 - 0.050 |

General Drilling Operations

| Work Material | | Special Alloy Steels, Hardened Steels | | | |
|----------------|------|---------------------------------------|---------------|--------------|---------------|
| Hardness | | 26-30 HRC | | 30-34 HRC | |
| Drilling Speed | | 195-295 SFM | | 160-230 SFM | |
| Drill Dia. | | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| mm | Inch | | | | |
| 5 | - | 4,750 | 0.006 - 0.007 | 3,750 | 0.005 - 0.007 |
| 6 | - | 4,000 | 0.007 - 0.010 | 3,200 | 0.007 - 0.010 |
| - | 1/4 | 3,700 | 0.007 - 0.010 | 3,000 | 0.007 - 0.010 |
| 8 | - | 3,000 | 0.009 - 0.014 | 2,400 | 0.009 - 0.014 |
| - | 3/8 | 2,500 | 0.011 - 0.017 | 2,000 | 0.011 - 0.017 |
| 10 | - | 2,400 | 0.012 - 0.018 | 1,900 | 0.012 - 0.018 |
| - | 7/16 | 2,100 | 0.013 - 0.020 | 1,700 | 0.013 - 0.020 |
| 12 | - | 2,000 | 0.014 - 0.022 | 1,600 | 0.014 - 0.022 |
| - | 1/2 | 1,900 | 0.015 - 0.022 | 1,500 | 0.015 - 0.022 |
| 14 | - | 1,700 | 0.017 - 0.023 | 1,350 | 0.017 - 0.023 |
| - | 5/8 | 1,500 | 0.019 - 0.024 | 1,200 | 0.018 - 0.023 |





List 5950Ni - EXOPRO® WHO-Ni: 3D

List 5955Ni - EXOPRO® WHO-Ni: 5D

General Drilling Operations

| Work Material | | Carbon Steels, Mild Steels 1010, 1050, 12L14 | | Alloy Steels 4140, 4130 | | Cast Iron | | Ductile Cast Iron | | Ni-Base Material, Inconel 38-43 HRC | |
|----------------|------|---|---------------|----------------------------|---------------|--------------|---------------|-------------------|---------------|--|---------------|
| Hardness | | | | | | | | | | | |
| Drilling Speed | | 260-395 SFM | | 260-395 SFM | | 260-395 SFM | | 195-330 SFM | | 35-100 SFM | |
| Drill Dia. | | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| mm | Inch | | | | | | | | | | |
| 3 | - | 10,600 | 0.002 - 0.005 | 10,600 | 0.002 - 0.005 | 10,600 | 0.002 - 0.005 | 8,500 | 0.002 - 0.005 | 2,150 | 0.001 - 0.002 |
| - | 1/8 | 10,000 | 0.002 - 0.005 | 10,000 | 0.002 - 0.005 | 10,000 | 0.002 - 0.005 | 8,000 | 0.002 - 0.005 | 2,050 | 0.001 - 0.002 |
| 4 | - | 7,900 | 0.003 - 0.006 | 7,900 | 0.003 - 0.006 | 7,900 | 0.003 - 0.006 | 6,350 | 0.003 - 0.006 | 1,625 | 0.001 - 0.003 |
| - | 3/16 | 6,650 | 0.004 - 0.008 | 6,650 | 0.004 - 0.008 | 6,650 | 0.004 - 0.008 | 5,300 | 0.004 - 0.008 | 1,350 | 0.002 - 0.004 |
| 6 | - | 5,300 | 0.005 - 0.009 | 5,300 | 0.005 - 0.009 | 5,300 | 0.005 - 0.009 | 4,200 | 0.005 - 0.009 | 1,100 | 0.002 - 0.005 |
| - | 1/4 | 5,000 | 0.005 - 0.009 | 5,000 | 0.005 - 0.009 | 5,000 | 0.005 - 0.009 | 4,000 | 0.005 - 0.009 | 1,025 | 0.002 - 0.005 |
| 8 | - | 4,000 | 0.006 - 0.011 | 4,000 | 0.006 - 0.011 | 4,000 | 0.006 - 0.011 | 3,200 | 0.006 - 0.011 | 800 | 0.003 - 0.006 |
| - | 3/8 | 3,350 | 0.007 - 0.012 | 3,350 | 0.007 - 0.012 | 3,350 | 0.007 - 0.012 | 2,700 | 0.007 - 0.012 | 680 | 0.003 - 0.007 |
| 10 | - | 3,200 | 0.008 - 0.012 | 3,200 | 0.008 - 0.012 | 3,200 | 0.008 - 0.012 | 2,550 | 0.008 - 0.012 | 650 | 0.004 - 0.008 |
| - | 7/16 | 2,850 | 0.008 - 0.012 | 2,850 | 0.008 - 0.012 | 2,850 | 0.008 - 0.012 | 2,300 | 0.008 - 0.012 | 585 | 0.004 - 0.009 |
| 12 | - | 2,650 | 0.008 - 0.012 | 2,650 | 0.008 - 0.012 | 2,650 | 0.008 - 0.012 | 2,100 | 0.008 - 0.012 | 550 | 0.005 - 0.009 |
| - | 1/2 | 2,500 | 0.008 - 0.012 | 2,500 | 0.008 - 0.012 | 2,500 | 0.008 - 0.012 | 2,000 | 0.008 - 0.012 | 500 | 0.005 - 0.010 |

General Drilling Operations

| Work Material | | Special Alloy Steels, Hardened Steels | | | | | |
|----------------|------|---------------------------------------|---------------|--------------|---------------|--------------|---------------|
| Hardness | | 35-40 HRC | | 40-45 HRC | | 45-56 HRC | |
| Drilling Speed | | 130-160 SFM | | 115-150 SFM | | 65-100 SFM | |
| Drill Dia. | | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| mm | Inch | | | | | | |
| 3 | - | 4,700 | 0.002 - 0.003 | 4,250 | 0.001 - 0.002 | 2,650 | 0.001 - 0.002 |
| - | 1/8 | 4,400 | 0.002 - 0.003 | 4,025 | 0.001 - 0.002 | 2,500 | 0.001 - 0.002 |
| 4 | - | 3,500 | 0.003 - 0.004 | 3,200 | 0.001 - 0.003 | 2,000 | 0.001 - 0.003 |
| - | 3/16 | 2,950 | 0.004 - 0.005 | 2,700 | 0.002 - 0.004 | 1,650 | 0.002 - 0.004 |
| 6 | - | 2,350 | 0.005 - 0.006 | 2,100 | 0.002 - 0.005 | 1,300 | 0.002 - 0.005 |
| - | 1/4 | 2,200 | 0.005 - 0.006 | 2,000 | 0.002 - 0.005 | 1,250 | 0.002 - 0.005 |
| 8 | - | 1,750 | 0.006 - 0.008 | 1,600 | 0.003 - 0.006 | 1,000 | 0.003 - 0.006 |
| - | 3/8 | 1,475 | 0.007 - 0.009 | 1,350 | 0.003 - 0.007 | 850 | 0.003 - 0.007 |
| 10 | - | 1,400 | 0.008 - 0.010 | 1,300 | 0.004 - 0.008 | 800 | 0.004 - 0.008 |
| - | 7/16 | 1,250 | 0.009 - 0.011 | 1,150 | 0.004 - 0.009 | 715 | 0.004 - 0.009 |
| 12 | - | 1,200 | 0.009 - 0.012 | 1,050 | 0.005 - 0.009 | 660 | 0.005 - 0.009 |
| - | 1/2 | 1,100 | 0.010 - 0.013 | 1,000 | 0.005 - 0.010 | 625 | 0.005 - 0.010 |



List 5171 - EXOCARB® WH70

| Work Material | Hardened Steels | | | |
|------------------|--------------------|---------------|-------------------------|---------------|
| | D2-S7 55-60 HRC | | D2, CPM-9V 60-70 HRC | |
| Drilling Speed | 33-52 SFM | | 26-42 SFM | |
| Drill Dia. mm | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| 2 | 2,080 | 0.001 - 0.002 | 1,670 | 0.001 - 0.002 |
| 3 | 1,375 | 0.001 - 0.002 | 1,100 | 0.001 - 0.002 |
| 4 | 1,030 | 0.001 - 0.002 | 825 | 0.001 - 0.002 |
| 5 | 825 | 0.001 - 0.002 | 660 | 0.001 - 0.002 |
| 6 | 680 | 0.001 - 0.002 | 550 | 0.001 - 0.002 |
| 7 | 590 | 0.001 - 0.002 | 470 | 0.001 - 0.002 |
| 8 | 515 | 0.001 - 0.002 | 410 | 0.001 - 0.002 |
| 9 | 450 | 0.001 - 0.002 | 360 | 0.001 - 0.002 |
| 10 | 410 | 0.001 - 0.002 | 260 | 0.001 - 0.002 |
| 11 | 375 | 0.001 - 0.002 | 300 | 0.001 - 0.002 |
| 12 | 340 | 0.001 - 0.002 | 275 | 0.001 - 0.002 |
| 14 | 290 | 0.001 - 0.002 | 235 | 0.001 - 0.002 |
| 15 | 270 | 0.001 - 0.002 | 220 | 0.001 - 0.002 |
| 16 | 260 | 0.001 - 0.002 | 205 | 0.001 - 0.002 |
| 17 | 240 | 0.001 - 0.002 | 195 | 0.001 - 0.002 |
| 18 | 230 | 0.001 - 0.002 | 180 | 0.001 - 0.002 |

1. Use a water soluble oil with high density (5 to 10 times dilution).
2. Tight clamping is critical.
3. For drilling depth > 3D, use a step feed.
4. For materials susceptible to chip packing in the flute, apply a step feed.

List 5172 - EXOCARB® XH

| Work Material | Broken Taps & Drills |
|------------------|----------------------|
| Drilling Speed | 65-80 SFM |
| Drill Dia. mm | Speed RPM |
| 2 | 3,190 - 3,930 |
| 3 | 2,100 - 2,590 |
| 4 | 1,580 - 1,940 |
| 5 | 1,260 - 1,550 |
| 6 | 1,050 - 1,290 |
| 7 | 900 - 1,110 |
| 8 | 790 - 970 |
| 9 | 700 - 860 |
| 10 | 630 - 780 |
| 11 | 570 - 705 |
| 12 | 530 - 650 |

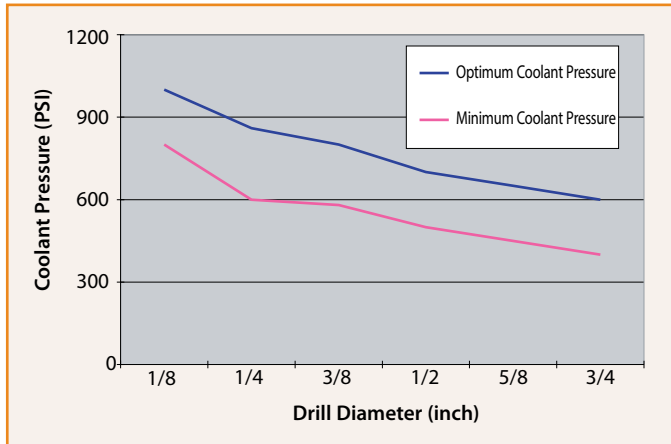
1. Use a drilling speed of 65-80 SFM.
2. Hand feed of 0.0005~0.001 in/rev is normal.
3. Use a rigid holder.
4. Select a high quality cutting oil and apply in sufficient amounts.
5. This tool should not be used to drill soft steels, aluminum alloys or other soft materials.
6. Resharpening should be done periodically.
7. For through hole processing of heat treated steels, use a spare piece of material underneath the material being drilled as this will prevent breakage caused by sudden torque.
8. Cannot be used to remove forming taps.



List 5275 - EXOCARB[®] MAX-OIL-AL: 15D-30D

| Work Material | Aluminum Alloy 2025, 5052 | | Aluminum Alloy Casting | | Copper Alloy C1020 | |
|------------------|------------------------------|-----------------|------------------------|-----------------|-----------------------|-----------------|
| Drilling Speed | 200-390 SFM | | 260-650 SFM | | 190-400 SFM | |
| Drill Dia. mm | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| 3 | 9,500 | 0.0035 – 0.0059 | 14,700 | 0.0035 - 0.0059 | 9,500 | 0.0020 - 0.0035 |
| 4 | 7,150 | 0.0047 – 0.0079 | 11,000 | 0.0047 - 0.0079 | 7,150 | 0.0024 - 0.0039 |
| 5 | 5,700 | 0.0059 – 0.0098 | 8,800 | 0.0059 - 0.0098 | 5,700 | 0.0024 - 0.0039 |
| 6 | 4,770 | 0.0071 – 0.0118 | 7,350 | 0.0071 - 0.0118 | 4,770 | 0.0024 - 0.0039 |
| 8 | 3,575 | 0.0079 – 0.0157 | 5,500 | 0.0079 - 0.0157 | 3,575 | 0.0031 - 0.0059 |
| 10 | 2,850 | 0.0098 – 0.0197 | 4,400 | 0.0098 - 0.0197 | 2,850 | 0.0031 - 0.0059 |

Recommended Coolant Pressure





List 5310 - EXOCARB® MAX-MINI FHL-GDTS

| Work Material | Hardened Steel, Pre-Hardened Steels | | | Tool Steels H13, D2 | | | Stainless Steels 440 | | |
|----------------|-------------------------------------|---------------|---------------|---------------------|---------------|---------------|----------------------|---------------|---------------|
| Drilling Speed | 130-160 SFM | | | 110-150 SFM | | | 100-130 SFM | | |
| Drill Dia. mm | Speed RPM | Feed IPR | Pecking (In) | Speed RPM | Feed IPR | Pecking (In) | Speed RPM | Feed IPR | Pecking (In) |
| 1.0 | 14,000 | 0.0008-0.0020 | 0.0008-0.0020 | 13,000 | 0.0008-0.0020 | 0.0008-0.0020 | 11,000 | 0.0008-0.0020 | 0.0008-0.0020 |
| 1.1 | 13,000 | 0.0008-0.0020 | 0.0008-0.0020 | 12,000 | 0.0008-0.0020 | 0.0008-0.0020 | 10,000 | 0.0008-0.0020 | 0.0008-0.0020 |
| 1.2 | 12,000 | 0.0008-0.0020 | 0.0008-0.0020 | 11,000 | 0.0008-0.0020 | 0.0008-0.0020 | 9,000 | 0.0008-0.0020 | 0.0008-0.0020 |
| 1.3 | 11,000 | 0.0008-0.0020 | 0.0008-0.0020 | 10,000 | 0.0008-0.0020 | 0.0008-0.0020 | 8,600 | 0.0008-0.0020 | 0.0008-0.0020 |
| 1.4 | 10,000 | 0.0008-0.0020 | 0.0008-0.0020 | 9,000 | 0.0008-0.0020 | 0.0008-0.0020 | 8,000 | 0.0008-0.0020 | 0.0008-0.0020 |
| 1.5 | 9,500 | 0.0008-0.0020 | 0.0008-0.0020 | 8,500 | 0.0008-0.0020 | 0.0008-0.0020 | 7,400 | 0.0008-0.0020 | 0.0008-0.0020 |
| 1.6 | 9,000 | 0.0008-0.0020 | 0.0008-0.0020 | 8,000 | 0.0008-0.0020 | 0.0008-0.0020 | 7,000 | 0.0008-0.0020 | 0.0008-0.0020 |
| 1.7 | 8,400 | 0.0008-0.0020 | 0.0008-0.0020 | 7,500 | 0.0008-0.0020 | 0.0008-0.0020 | 6,600 | 0.0008-0.0020 | 0.0008-0.0020 |
| 1.8 | 8,000 | 0.0008-0.0020 | 0.0008-0.0020 | 7,100 | 0.0008-0.0020 | 0.0008-0.0020 | 6,200 | 0.0008-0.0020 | 0.0008-0.0020 |
| 1.9 | 7,500 | 0.0008-0.0020 | 0.0008-0.0020 | 6,700 | 0.0008-0.0020 | 0.0008-0.0020 | 5,900 | 0.0008-0.0020 | 0.0008-0.0020 |
| 2.0 | 7,200 | 0.0008-0.0020 | 0.0008-0.0020 | 6,400 | 0.0008-0.0020 | 0.0008-0.0020 | 5,600 | 0.0008-0.0020 | 0.0008-0.0020 |
| 2.5 | 5,700 | 0.0008-0.0020 | 0.0008-0.0020 | 5,100 | 0.0008-0.0020 | 0.0008-0.0020 | 4,500 | 0.0008-0.0020 | 0.0008-0.0020 |
| 3.0 | 4,800 | 0.0008-0.0020 | 0.0008-0.0020 | 4,200 | 0.0008-0.0020 | 0.0008-0.0020 | 3,700 | 0.0008-0.0020 | 0.0008-0.0020 |

1. Please use in a machine with precise spindle rotation. Tight clamping is critical.
2. The indicated speeds and feeds are for drilling with water-soluble fluid.
3. Please use water-soluble high density fluid (less than 20 times dilution).
4. We recommend the pilot hole operation prior to EXOCARB® MAX-MINI (List 5310).
5. The run out with a drill in the spindle should be less than 0.0001".
6. OSG's Shrink Fit System is the recommended tool holder for these drills.

For machines that cannot achieve the speeds indicated in the above table, please set rotation as high as possible. Tool life may be decreased.



List 5315 - EXOCARB® MAX-MINI UVM-LDS

List 5320 - EXOCARB® MAX-MINI UVM-DRL: 5D

List 5325 - EXOCARB® MAX-MINI UVM-DRL: 10D

| Work Material | Stainless Steels 300SS, 400SS, 17-4PH | | | Special Alloy Steels, Hardened Steels | | | Aluminum Alloys, Cast Aluminum | | |
|------------------|--|-------------------|-----------------|--|-------------------|-----------------|-----------------------------------|-----------------|-----------------|
| Drilling Speed | 2-20 SFM | | | 2-20 SFM | | | 2-30 SFM | | |
| Drill Dia. mm | Speed RPM | Feed IPR | Pecking (In) | Speed RPM | Feed IPR | Pecking (In) | Speed RPM | Feed IPR | Pecking (In) |
| 0.02 | 25,000 | 0.00004 - 0.00006 | 0.00008 | 25,000 | 0.00004 - 0.00006 | 0.00008 | 25,000 | 0.0002 - 0.0004 | 0.00008 |
| 0.03 | 25,000 | 0.00004 - 0.00006 | 0.00012 | 25,000 | 0.00004 - 0.00006 | 0.00012 | 25,000 | 0.0002 - 0.0004 | 0.00012 |
| 0.04 | 25,000 | 0.00004 - 0.00006 | 0.00016 | 25,000 | 0.00004 - 0.00006 | 0.00016 | 25,000 | 0.0002 - 0.0004 | 0.00016 |
| 0.05 | 21,350 | 0.00004 - 0.00006 | 0.00020 | 21,350 | 0.00004 - 0.00006 | 0.00020 | 25,000 | 0.0002 - 0.0004 | 0.00020 |
| 0.06 | 17,790 | 0.00004 - 0.00006 | 0.00024 | 17,790 | 0.00004 - 0.00006 | 0.00024 | 25,000 | 0.0002 - 0.0004 | 0.00024 |
| 0.07 | 15,250 | 0.00004 - 0.00006 | 0.00027 | 15,250 | 0.00004 - 0.00006 | 0.00027 | 22,180 | 0.0002 - 0.0004 | 0.00027 |
| 0.08 | 13,340 | 0.00004 - 0.00006 | 0.00031 | 13,340 | 0.00004 - 0.00006 | 0.00031 | 19,400 | 0.0002 - 0.0004 | 0.00031 |
| 0.09 | 11,860 | 0.00004 - 0.00006 | 0.00035 | 11,860 | 0.00004 - 0.00006 | 0.00035 | 17,250 | 0.0002 - 0.0004 | 0.00035 |
| 0.10 | 10,670 | 0.00004 - 0.00006 | 0.00040 | 10,670 | 0.00004 - 0.00006 | 0.00040 | 15,520 | 0.0002 - 0.0004 | 0.00040 |

| Work Material | High Heat Material | | | | | |
|------------------|--------------------|---------------------|-----------------|-------------------|---------------------|-----------------|
| | Ti-Alloy | | | Inconel, Waspaloy | | |
| Drilling Speed | 2-7 SFM | | | 2-5 SFM | | |
| Drill Dia. mm | Speed RPM | Feed IPR | Pecking (In) | Speed RPM | Feed IPR | Pecking (In) |
| 0.02 | 21,830 | 0.000012 - 0.000028 | 0.00008 | 15,650 | 0.000012 - 0.000028 | 0.00008 |
| 0.03 | 14,550 | 0.000012 - 0.000028 | 0.00012 | 10,430 | 0.000012 - 0.000028 | 0.00012 |
| 0.04 | 10,910 | 0.000012 - 0.000028 | 0.00016 | 7,820 | 0.000012 - 0.000028 | 0.00016 |
| 0.05 | 8,730 | 0.000012 - 0.000028 | 0.00020 | 6,260 | 0.000012 - 0.000028 | 0.00020 |
| 0.06 | 7,280 | 0.000012 - 0.000028 | 0.00024 | 5,210 | 0.000012 - 0.000028 | 0.00024 |
| 0.07 | 6,240 | 0.000012 - 0.000028 | 0.00027 | 4,470 | 0.000012 - 0.000028 | 0.00027 |
| 0.08 | 5,460 | 0.000012 - 0.000028 | 0.00031 | 3,910 | 0.000012 - 0.000028 | 0.00031 |
| 0.09 | 4,850 | 0.000012 - 0.000028 | 0.00035 | 3,480 | 0.000012 - 0.000028 | 0.00035 |
| 0.10 | 4,370 | 0.000012 - 0.000028 | 0.00040 | 3,130 | 0.000012 - 0.000028 | 0.00040 |

1. Please use in a machine with precise spindle rotation. Tight clamping is critical.
2. The indicated feeds and speeds are for drilling with water-soluble fluid.
3. Please use water-soluble high density fluid (less than 20 times dilution).
4. Please utilize pecking cycle as specified in table.
5. The run out with a drill in the spindle should be less than 0.0001".
6. OSG's Shrink Fit System is the recommended tool holder for these drills.

For machines that cannot achieve the speeds indicated in the above table, please set rotation as high as possible. Tool life may be decreased.





List 5330 - EXOCARB® MAX-MINI WX-MS

General Drilling Operations

| Work Material | Carbon Steels 1010, 1050 | | Alloy Steels 4140, 4130 | | Martensitic, Ferritic Stainless Steels 420, 430, 430F, 440 | | Aluminum Alloy 6061, 7075 | |
|------------------|-----------------------------|-----------------|----------------------------|-----------------|--|-----------------|------------------------------|-----------------|
| Drilling Speed | 65-260 SFM | | 65-180 SFM | | 65-120 SFM | | 100-260 SFM | |
| Drill Dia. mm | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| 0.2 | 25,000 | 0.00008 | 25,000 | 0.00008 | 25,000 | 0.00008 | 25,000 | 0.0001 |
| 0.3 | 25,000 | 0.00012 | 25,000 | 0.00012 | 25,000 | 0.00012 | 25,000 | 0.0003 |
| 0.5 | 25,000 | 0.0003 | 20,000 | 0.0003 | 15,000 | 0.0003 | 25,000 | 0.0006 |
| 1.0 | 15,000 | 0.0008 | 11,000 | 0.0008 | 6,400 | 0.0004 | 15,000 | 0.0012 |
| 1.5 | 10,000 | 0.0008 - 0.0016 | 8,400 | 0.0008 - 0.0016 | 4,800 | 0.0005 - 0.0012 | 10,000 | 0.0012 - 0.0031 |
| 2.0 | 8,000 | 0.0012 - 0.0019 | 6,500 | 0.0012 - 0.0019 | 4,000 | 0.0006 - 0.0016 | 8,000 | 0.0016 - 0.0040 |
| 3.0 | 5,500 | 0.0016 - 0.0028 | 4,500 | 0.0016 - 0.0028 | 3,000 | 0.0009 - 0.0024 | 6,500 | 0.0024 - 0.0059 |
| 4.0 | 4,000 | 0.0024 - 0.0040 | 3,200 | 0.0024 - 0.0040 | 2,500 | 0.0012 - 0.0031 | 5,000 | 0.0031 - 0.0079 |
| 5.0 | 3,200 | 0.0027 - 0.0047 | 2,600 | 0.0027 - 0.0047 | 2,000 | 0.0016 - 0.004 | 4,000 | 0.0040 - 0.0098 |

General Drilling Operations

| Work Material | Cast Aluminum | | Copper, Copper Alloys C1020, S2600 | |
|------------------|---------------|-----------------|---------------------------------------|-----------------|
| Drilling Speed | 100-200 SFM | | 65-150 SFM | |
| Drill Dia. mm | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| 0.2 | 25,000 | 0.00008 | 25,000 | 0.00008 |
| 0.3 | 25,000 | 0.0001 | 25,000 | 0.00012 |
| 0.5 | 25,000 | 0.0003 | 20,000 | 0.0003 |
| 1.0 | 14,500 | 0.0004 | 10,000 | 0.0004 |
| 1.5 | 10,000 | 0.0005 - 0.0012 | 4,800 | 0.0005 - 0.0012 |
| 2.0 | 8,000 | 0.0006 - 0.0016 | 4,000 | 0.0006 - 0.0016 |
| 3.0 | 6,500 | 0.0009 - 0.0024 | 3,000 | 0.0009 - 0.0024 |
| 4.0 | 5,000 | 0.0012 - 0.0031 | 2,500 | 0.0012 - 0.0031 |
| 5.0 | 4,000 | 0.0016 - 0.0040 | 2,000 | 0.0016 - 0.0040 |

1. Please use in a machine with precise spindle rotation. Tight clamping is critical.
2. The indicated feeds and speeds are for drilling with water-soluble fluid.
3. Please use water-soluble high density fluid (less than 20 times dilution).
4. These tables are applicable for less than 3xD deep drilling operations.
When drilling deeper than 3xD, please peck every 0.25-0.5xD accordingly.
5. The run out with a drill in the spindle should be less than 0.0001".
6. OSG's Shrink Fit System is the recommended tool holder for these drills.

For machines that cannot achieve the speeds indicated in the above table, please set rotation as high as possible. Tool life may be decreased.



List 5340 - EXOCARB® MAX-MINI MRS

General Drilling Operations

| Work Material | Carbon Steels 1015, 1050 | | Alloy Steels 4140, 4130 | | Austenitic Stainless Steels 304, 316 | | Martensitic, Ferritic Stainless Steels 420, 430, 430F, 440 | | Precipitation Hardened Stainless Steels 17-4, 15-5 | |
|------------------|-----------------------------|-----------------|----------------------------|-----------------|---|-----------------|--|-----------------|--|-----------------|
| Drilling Speed | 65-260 SFM | | 65-180 SFM | | 50-130 SFM | | 65-165 SFM | | 50-130 SFM | |
| Drill Dia. mm | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| 0.5 | 25,000 | 0.0003 | 23,300 | 0.0003 | 17,465 | 0.0002 - 0.0006 | 22,300 | 0.0002 - 0.0006 | 17,465 | 0.0002 - 0.0006 |
| 1.0 | 15,700 | 0.0008 | 11,600 | 0.0008 | 8,730 | 0.0004 - 0.0012 | 11,150 | 0.0004 - 0.0012 | 8,730 | 0.0004 - 0.0012 |
| 1.5 | 10,000 | 0.0008 - 0.0016 | 7,750 | 0.0008 - 0.0016 | 5,820 | 0.0006 - 0.0018 | 7,440 | 0.0006 - 0.0018 | 5,820 | 0.0006 - 0.0018 |
| 2.0 | 8,000 | 0.0012 - 0.0019 | 5,800 | 0.0012 - 0.0019 | 4,365 | 0.0008 - 0.0024 | 5,580 | 0.0008 - 0.0024 | 4,365 | 0.0008 - 0.0024 |
| 2.5 | 6,400 | 0.0014 - 0.0025 | 4,660 | 0.0014 - 0.0025 | 3,500 | 0.0009 - 0.0030 | 4,460 | 0.0009 - 0.0030 | 3,500 | 0.0009 - 0.0030 |
| 3.0 | 5,500 | 0.0016 - 0.0028 | 3,900 | 0.0016 - 0.0028 | 2,900 | 0.0012 - 0.0035 | 3,720 | 0.0012 - 0.0035 | 2,900 | 0.0012 - 0.0035 |

General Drilling Operations

| Work Material | Aluminum Alloy 6061, 7075 | | Cast Aluminum | | Copper, Copper Alloys C1020, S2600 | | Special Alloy Steels, Hardened Steels | |
|------------------|------------------------------|-----------------|---------------|-----------------|---------------------------------------|-----------------|--|-----------------|
| Drilling Speed | 100-260 SFM | | 100-200 SFM | | 65-150 SFM | | 65-120 SFM | |
| Drill Dia. mm | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| 0.5 | 25,000 | 0.0006 | 25,000 | 0.0003 | 21,000 | 0.0003 | 17,500 | 0.0003 |
| 1.0 | 16,000 | 0.0012 | 14,500 | 0.0004 | 10,600 | 0.0004 | 8,800 | 0.0008 |
| 1.5 | 10,000 | 0.0012 - 0.0031 | 9,700 | 0.0005 - 0.0012 | 7,100 | 0.0005 - 0.0012 | 5,850 | 0.0012 - 0.0019 |
| 2.0 | 8,000 | 0.0016 - 0.0040 | 7,300 | 0.0006 - 0.0016 | 5,300 | 0.0006 - 0.0016 | 4,400 | 0.0016 - 0.0024 |
| 2.5 | 6,400 | 0.0020 - 0.0049 | 5,800 | 0.0007 - 0.0020 | 4,270 | 0.0007 - 0.0020 | 3,500 | 0.0020 - 0.0030 |
| 3.0 | 5,300 | 0.0024 - 0.0059 | 4,800 | 0.0009 - 0.0024 | 3,560 | 0.0009 - 0.0024 | 2,900 | 0.0024 - 0.0035 |

1. Please use in a machine with precise spindle rotation. Tight clamping is critical.
2. The indicated feeds and speeds are for drilling with water-soluble fluid.
3. Please use water-soluble high density fluid (less than 20 times dilution).
4. These tables are applicable for less than 3xD deep drilling operations.
When drilling deeper than 3xD, please peck every 0.25-0.5xD accordingly.
5. The run out with a drill in the spindle should be less than 0.0001".
6. OSG's Shrink Fit System is the recommended tool holder for these drills.

For machines that cannot achieve the speeds indicated in the above table, please set rotation as high as possible. Tool life may be decreased.





List 7501 - EXOPRO® AERO-STAD
List 7520 - EXOPRO® AERO-LHX
List 7500 - EXOPRO® AERO-D-REAM
List 257 - CARBIDE AERO-D-REAM

| Work Material | Carbon & Glass Fiber Reinforced Plastics | |
|---------------------|--|-----------------|
| Cutting Speed | 165 - 260 SFM | |
| Drill Diameter (in) | Speed RPM | Feed IPR |
| #40 | 8,000 | 0.0008 - 0.0020 |
| #30 | 6,100 | 0.0008 - 0.0030 |
| #20 | 4,900 | 0.0012 - 0.0030 |
| #11 | 4,100 | 0.0012 - 0.0030 |
| #2 | 3,550 | 0.0014 - 0.0040 |
| 1/4 | 3,100 | 0.0016 - 0.0040 |
| 5/16 | 3,170 | 0.0016 - 0.0040 |
| 3/8 | 2,100 | 0.0020 - 0.0040 |
| 7/16 | 1,790 | 0.0020 - 0.0040 |
| 1/2 | 1,570 | 0.0020 - 0.0040 |

1. Coolant is not needed, however, make sure dust is efficiently collected.
2. Peck drilling is not needed if drilling depth is less than 3D.
3. The machinability of CFRP depends on physical makeup and percentage of contents, both speed & feed may need adjustments depending on material.
4. Feed rate can be and should be adjusted depending on surface layer makeup.
5. Feed rates can be increased when an approved coolant is utilized.
6. Please contact OSG for specific application questions.

List 7530 - EXOPRO® AERO-S

| Work Material | Carbon & Glass Fiber Reinforced Plastics | | CFRP + Aluminum Stack | |
|---------------------|--|-----------------|-----------------------|-----------------|
| Cutting Speed | 165 - 260 SFM | | 200-400 SFM | |
| Drill Diameter (in) | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| #40 | 8,000 | 0.0008 - 0.0020 | 11,700 | 0.0010 - 0.0030 |
| #30 | 6,100 | 0.0008 - 0.0030 | 8,900 | 0.0030 - 0.0040 |
| #20 | 4,900 | 0.0012 - 0.0030 | 7,100 | 0.0040 - 0.0050 |
| #11 | 4,100 | 0.0012 - 0.0030 | 6,000 | 0.0040 - 0.0050 |
| #2 | 3,550 | 0.0014 - 0.0040 | 5,200 | 0.0050 - 0.0060 |
| 1/4 | 3,100 | 0.0016 - 0.0040 | 4,500 | 0.0060 - 0.0070 |
| 5/16 | 3,170 | 0.0016 - 0.0040 | 3,600 | 0.0070 - 0.0080 |
| 3/8 | 2,100 | 0.0020 - 0.0040 | 3,000 | 0.0090 - 0.0100 |
| 7/16 | 1,790 | 0.0020 - 0.0040 | 2,600 | 0.0100 - 0.0110 |
| 1/2 | 1,570 | 0.0020 - 0.0040 | 2,300 | 0.0120 - 0.0130 |

1. Feed rates can and should be adjusted depending on stack makeup, with higher feed rates in the composite portion and lower feeds in the metal portion.
2. Peck drilling may be necessary for enhanced quality and proper chip evacuation.
3. There are many factors that can effect successful stack drilling; please contact OSG about your specific application for best recommendation.





List 7532 - EXOPRO® AERO-H List 5732 - EXOCARB® AERO-H

| Work Material | Carbon & Glass Fiber Reinforced Plastics | | CFRP + Aluminum Stack | | CFRP + Titanium Stack | | CFRP + CRES Stack | |
|-----------------|--|-----------------|-----------------------|-----------------|-----------------------|-----------------|-------------------|-----------------|
| Cutting Speed | 165 - 260 SFM | | 200-400 SFM | | 40-60 SFM | | 30-50 SFM | |
| Drill Dia. (in) | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| #40 | 8,000 | 0.0008 - 0.0020 | 11,700 | 0.0010 - 0.0030 | 1,900 | 0.0002 - 0.0007 | 1,550 | 0.0002 - 0.0007 |
| #30 | 6,100 | 0.0008 - 0.0030 | 8,900 | 0.0030 - 0.0040 | 1,500 | 0.0004 - 0.0009 | 1,150 | 0.0004 - 0.0009 |
| #20 | 4,900 | 0.0012 - 0.0030 | 7,100 | 0.0040 - 0.0050 | 1,225 | 0.0006 - 0.0011 | 950 | 0.0006 - 0.0011 |
| #11 | 4,100 | 0.0012 - 0.0030 | 6,000 | 0.0040 - 0.0050 | 1,000 | 0.0007 - 0.0012 | 800 | 0.0007 - 0.0012 |
| #2 | 3,550 | 0.0014 - 0.0040 | 5,200 | 0.0050 - 0.0060 | 875 | 0.0009 - 0.0014 | 675 | 0.0009 - 0.0014 |
| 1/4 | 3,100 | 0.0016 - 0.0040 | 4,500 | 0.0060 - 0.0070 | 750 | 0.0010 - 0.0015 | 600 | 0.0010 - 0.0015 |
| 5/16 | 3,170 | 0.0016 - 0.0040 | 3,600 | 0.0070 - 0.0080 | 625 | 0.0013 - 0.0018 | 475 | 0.0013 - 0.0018 |
| 3/8 | 2,100 | 0.0020 - 0.0040 | 3,000 | 0.0090 - 0.0100 | 500 | 0.0016 - 0.0021 | 400 | 0.0016 - 0.0021 |
| 7/16 | 1,790 | 0.0020 - 0.0040 | 2,600 | 0.0100 - 0.0110 | 425 | 0.0019 - 0.0024 | 350 | 0.0019 - 0.0024 |
| 1/2 | 1,570 | 0.0020 - 0.0040 | 2,300 | 0.0120 - 0.0130 | 375 | 0.0023 - 0.0028 | 275 | 0.0023 - 0.0028 |

1. Feed rates can and should be adjusted depending on stack makeup, with higher feed rates in the composite portion and lower feeds in the metal portion.
2. Peck drilling may be necessary for enhanced quality and proper chip evacuation.
3. There are many factors that can effect successful stack drilling; please contact OSG about your specific application for best recommendation.



List HP700 - HY-PRO® CARB NEPTUNE®

| Work Material | Carbon & Glass Fiber Reinforced Plastics | | CFRP + Aluminum Stack | | CFRP + Titanium Stack | | CFRP + CRES Stack | |
|---------------------|--|-------------|-----------------------|-------------|-----------------------|---------------|-------------------|---------------|
| Cutting Speed | 150-300 SFM | | 200-400 SFM | | 40-60 SFM | | 30-50 SFM | |
| Drill Diameter (in) | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| #40 | 8,900 | 0.001-0.002 | 11,690 | 0.001-0.003 | 1,900 | 0.0002-0.0007 | 1,550 | 0.0002-0.0007 |
| #30 | 6,700 | 0.001-0.002 | 9,000 | 0.003-0.004 | 1,500 | 0.0004-0.0009 | 1,190 | 0.0004-0.0009 |
| #20 | 5,250 | 0.001-0.002 | 7,000 | 0.004-0.005 | 1,180 | 0.0006-0.0011 | 950 | 0.0006-0.0011 |
| #11 | 4,500 | 0.001-0.002 | 6,000 | 0.004-0.005 | 1,000 | 0.0007-0.0012 | 800 | 0.0007-0.0012 |
| 1/4 | 3,350 | 0.001-0.003 | 4,500 | 0.006-0.007 | 750 | 0.0010-0.0015 | 600 | 0.0009-0.0014 |



List HP243 - HY-PRO® CARB: 3D

List HP245 - HY-PRO® CARB: 5D

General Drilling Operations

| Work Material | | Carbon Steels, Mild Steels 1010, 1050, 12L14 | | Alloy Steels 4140, 4130 | | Stainless Steels 300SS, 400SS, 17-4PH | | Cast Iron | | Ductile Cast Iron | | Aluminum Alloy | |
|----------------|------|---|-------------|----------------------------|-------------|---|-------------|-------------|-------------|-------------------|-------------|----------------|-------------|
| Drilling Speed | | 240-350 SFM | | 230-325 SFM | | 130-200 SFM | | 240-385 SFM | | 175-300 SFM | | 200-380 SFM | |
| Drill Dia. | | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed |
| mm | Inch | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR |
| 1 | - | 25,000 | 0.001-0.002 | 25,000 | 0.001-0.002 | 16,010 | 0.001-0.002 | 25,000 | 0.001-0.002 | 23,090 | 0.001-0.002 | 25,000 | 0.001-0.002 |
| - | 1/16 | 18,030 | 0.001-0.002 | 16,930 | 0.001-0.002 | 10,080 | 0.001-0.002 | 19,620 | 0.001-0.002 | 14,550 | 0.001-0.002 | 17,720 | 0.001-0.002 |
| 2 | - | 14,310 | 0.002-0.003 | 13,430 | 0.001-0.003 | 8,010 | 0.001-0.003 | 15,130 | 0.001-0.003 | 11,540 | 0.001-0.003 | 14,070 | 0.002-0.003 |
| - | 3/32 | 12,020 | 0.002-0.004 | 11,280 | 0.002-0.004 | 6,720 | 0.002-0.003 | 13,080 | 0.002-0.004 | 9,700 | 0.002-0.004 | 11,820 | 0.002-0.004 |
| 3 | - | 9,540 | 0.002-0.005 | 8,960 | 0.002-0.005 | 5,340 | 0.002-0.004 | 10,090 | 0.002-0.005 | 7,700 | 0.002-0.005 | 9,380 | 0.003-0.005 |
| - | 1/8 | 9,010 | 0.003-0.005 | 8,460 | 0.003-0.005 | 5,040 | 0.003-0.004 | 9,810 | 0.002-0.005 | 7,270 | 0.003-0.005 | 8,860 | 0.004-0.005 |
| 4 | - | 7,160 | 0.003-0.006 | 6,720 | 0.003-0.006 | 4,000 | 0.003-0.005 | 7,560 | 0.003-0.006 | 5,770 | 0.003-0.006 | 7,040 | 0.004-0.006 |
| - | 3/16 | 6,010 | 0.004-0.008 | 5,640 | 0.004-0.008 | 3,360 | 0.004-0.006 | 6,540 | 0.004-0.007 | 4,850 | 0.004-0.007 | 5,910 | 0.005-0.007 |
| 6 | - | 4,770 | 0.005-0.009 | 4,480 | 0.005-0.009 | 2,670 | 0.005-0.007 | 5,040 | 0.005-0.009 | 3,850 | 0.005-0.009 | 4,690 | 0.006-0.008 |
| - | 1/4 | 4,510 | 0.005-0.010 | 4,230 | 0.005-0.010 | 2,520 | 0.006-0.008 | 4,910 | 0.005-0.010 | 3,640 | 0.005-0.010 | 4,430 | 0.007-0.009 |
| 8 | - | 3,580 | 0.006-0.011 | 3,360 | 0.006-0.011 | 2,000 | 0.006-0.009 | 3,780 | 0.006-0.011 | 2,890 | 0.006-0.011 | 3,520 | 0.008-0.010 |
| - | 3/8 | 3,010 | 0.007-0.011 | 2,820 | 0.007-0.011 | 1,680 | 0.007-0.009 | 3,270 | 0.007-0.011 | 2,420 | 0.007-0.011 | 2,950 | 0.009-0.011 |
| 10 | - | 2,860 | 0.008-0.012 | 2,680 | 0.008-0.012 | 1,600 | 0.008-0.010 | 3,030 | 0.008-0.012 | 2,310 | 0.008-0.012 | 2,810 | 0.011-0.013 |
| - | 7/16 | 2,580 | 0.008-0.012 | 2,420 | 0.008-0.012 | 1,440 | 0.008-0.010 | 2,800 | 0.008-0.012 | 2,080 | 0.008-0.012 | 2,530 | 0.012-0.014 |
| 12 | - | 2,380 | 0.008-0.012 | 2,240 | 0.008-0.012 | 1,330 | 0.008-0.010 | 2,520 | 0.008-0.012 | 1,920 | 0.008-0.012 | 2,340 | 0.013-0.015 |
| - | 1/2 | 2,250 | 0.009-0.013 | 2,120 | 0.009-0.013 | 1,260 | 0.008-0.011 | 2,450 | 0.008-0.013 | 1,820 | 0.008-0.013 | 2,210 | 0.014-0.016 |
| 14 | - | 2,040 | 0.009-0.014 | 1,920 | 0.009-0.014 | 1,140 | 0.009-0.011 | 2,160 | 0.009-0.014 | 1,650 | 0.009-0.014 | 2,010 | 0.016-0.018 |
| - | 5/8 | 1,810 | 0.010-0.014 | 1,690 | 0.010-0.014 | 1,010 | 0.010-0.012 | 1,960 | 0.010-0.014 | 1,450 | 0.010-0.014 | 1,770 | 0.018-0.020 |
| 16 | - | 1,810 | 0.010-0.014 | 1,690 | 0.010-0.014 | 1,010 | 0.010-0.012 | 1,960 | 0.010-0.014 | 1,450 | 0.010-0.014 | 1,770 | 0.018-0.020 |
| 18 | - | 1,590 | 0.011-0.015 | 1,490 | 0.011-0.015 | 890 | 0.011-0.013 | 1,682 | 0.011-0.015 | 1,280 | 0.011-0.015 | 1,560 | 0.020-0.022 |
| - | 3/4 | 1,500 | 0.012-0.015 | 1,410 | 0.012-0.015 | 840 | 0.011-0.013 | 1,580 | 0.011-0.015 | 1,210 | 0.012-0.015 | 1,480 | 0.021-0.023 |
| 20 | - | 1,430 | 0.012-0.016 | 1,340 | 0.012-0.016 | 800 | 0.012-0.014 | 1,514 | 0.012-0.016 | 1,150 | 0.012-0.016 | 1,410 | 0.022-0.024 |

continued on next page



General Drilling Operations

| Work Material Hardness | | Cast Aluminum | | Copper | | Special Alloy Steels, Hardened Steels | | | | | | | |
|---------------------------|------|---------------|-------------|--------------|-------------|---------------------------------------|-------------|--------------|-------------|--------------|-------------|--------------|--------------|
| | | | | | | 26-30 HRC | | 30-34 HRC | | 34-43 HRC | | 43-48 HRC | |
| Drilling Speed | | 260- 640 SFM | | 190-320 SFM | | 160-240 SFM | | 110-185 SFM | | 100-150 SFM | | 75-100 SFM | |
| Drill Dia. | | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| mm | Inch | | | | | | | | | | | | |
| 1 | - | 25,000 | 0.002-0.003 | 24,740 | 0.001-0.002 | 19,400 | 0.001-0.002 | 14,260 | 0.001-0.002 | 12,130 | 0.001-0.001 | 8,440 | 0.0005-0.001 |
| - | 1/16 | 25,000 | 0.002-0.003 | 15,580 | 0.001-0.002 | 12,220 | 0.001-0.002 | 8,980 | 0.001-0.002 | 7,640 | 0.001-0.002 | 5,320 | 0.0005-0.001 |
| 2 | - | 21,831 | 0.003-0.004 | 12,370 | 0.002-0.003 | 9,700 | 0.001-0.003 | 7,130 | 0.001-0.003 | 6,060 | 0.001-0.002 | 4,220 | 0.001-0.001 |
| - | 3/32 | 18,336 | 0.004-0.005 | 10,390 | 0.002-0.004 | 8,150 | 0.002-0.004 | 5,990 | 0.002-0.003 | 5,090 | 0.002-0.003 | 3,540 | 0.001-0.002 |
| 3 | - | 14,550 | 0.004-0.006 | 8,250 | 0.003-0.005 | 6,470 | 0.002-0.005 | 4,750 | 0.002-0.003 | 4,040 | 0.002-0.003 | 2,810 | 0.001-0.002 |
| - | 1/8 | 13,750 | 0.005-0.006 | 7,790 | 0.003-0.005 | 6,110 | 0.003-0.005 | 4,490 | 0.003-0.004 | 3,820 | 0.003-0.004 | 2,660 | 0.002-0.003 |
| 4 | - | 10,920 | 0.005-0.007 | 6,180 | 0.004-0.006 | 4,850 | 0.003-0.006 | 3,560 | 0.003-0.004 | 3,030 | 0.003-0.004 | 2,110 | 0.002-0.003 |
| - | 3/16 | 9,170 | 0.006-0.008 | 5,190 | 0.005-0.007 | 4,070 | 0.004-0.008 | 2,990 | 0.004-0.005 | 2,550 | 0.004-0.005 | 1,770 | 0.002-0.003 |
| 6 | - | 7,270 | 0.008-0.010 | 4,120 | 0.006-0.008 | 3,230 | 0.005-0.009 | 2,380 | 0.005-0.006 | 2,020 | 0.005-0.006 | 1,410 | 0.002-0.004 |
| - | 1/4 | 6,870 | 0.010-0.012 | 3,890 | 0.007-0.009 | 3,050 | 0.005-0.010 | 2,240 | 0.006-0.007 | 1,910 | 0.006-0.007 | 1,330 | 0.002-0.004 |
| 8 | - | 5,460 | 0.012-0.014 | 3,090 | 0.008-0.010 | 2,420 | 0.006-0.011 | 1,780 | 0.006-0.008 | 1,520 | 0.006-0.008 | 1,050 | 0.003-0.005 |
| - | 3/8 | 4,580 | 0.013-0.015 | 2,590 | 0.009-0.011 | 2,040 | 0.007-0.011 | 1,490 | 0.007-0.009 | 1,270 | 0.007-0.009 | 880 | 0.003-0.005 |
| 10 | - | 4,360 | 0.015-0.017 | 2,470 | 0.011-0.013 | 1,940 | 0.008-0.012 | 1,420 | 0.008-0.010 | 1,210 | 0.008-0.010 | 840 | 0.004-0.006 |
| - | 7/16 | 3,930 | 0.016-0.018 | 2,220 | 0.012-0.014 | 1,740 | 0.008-0.012 | 1,280 | 0.008-0.011 | 1,090 | 0.009-0.011 | 760 | 0.004-0.006 |
| 12 | - | 3,640 | 0.018-0.020 | 2,060 | 0.013-0.015 | 1,620 | 0.008-0.012 | 1,190 | 0.009-0.012 | 1,010 | 0.009-0.012 | 700 | 0.005-0.007 |
| - | 1/2 | 3,440 | 0.019-0.021 | 1,950 | 0.014-0.016 | 1,530 | 0.009-0.013 | 1,120 | 0.010-0.013 | 950 | 0.010-0.013 | 660 | 0.005-0.007 |
| 14 | - | 3,120 | 0.021-0.023 | 1,770 | 0.016-0.018 | 1,390 | 0.009-0.014 | 1,020 | 0.011-0.014 | 860 | 0.011-0.014 | 600 | 0.006-0.008 |
| - | 5/8 | 2,750 | 0.022-0.026 | 1,560 | 0.018-0.020 | 1,220 | 0.010-0.014 | 900 | 0.012-0.016 | 760 | 0.013-0.016 | 530 | 0.006-0.008 |
| 16 | - | 2,750 | 0.022-0.026 | 1,560 | 0.018-0.020 | 1,220 | 0.010-0.014 | 900 | 0.012-0.016 | 760 | 0.013-0.016 | 530 | 0.006-0.008 |
| 18 | - | 2,420 | 0.026-0.030 | 1,370 | 0.020-0.022 | 1,080 | 0.011-0.015 | 790 | 0.014-0.018 | 670 | 0.015-0.018 | 470 | 0.007-0.009 |
| - | 3/4 | 2,290 | 0.027-0.031 | 1,300 | 0.021-0.023 | 1,020 | 0.012-0.015 | 750 | 0.015-0.019 | 640 | 0.016-0.019 | 440 | 0.008-0.010 |
| 20 | - | 2,180 | 0.028-0.032 | 1,240 | 0.022-0.024 | 970 | 0.012-0.016 | 710 | 0.016-0.020 | 610 | 0.016-0.020 | 420 | 0.008-0.011 |



List HP253 - HY-PRO® CARB: 3D Coolant-Through
List HP255 - HY-PRO® CARB: 5D Coolant-Through
List HP258 - HY-PRO® CARB: 8D Coolant-Through

General Drilling Operations

| Work Material | | Carbon Steels, Mild Steels 1010, 1050, 12L14 | | Alloy Steels 4140, 4130 | | Stainless Steels 300SS, 400SS, 17-4PH | | Cast Iron | | Ductile Cast Iron | | Aluminum Alloy | |
|----------------|------|---|-------------|----------------------------|-------------|---|-------------|-------------|-------------|-------------------|-------------|----------------|-------------|
| Drilling Speed | | 310-455 SFM | | 265-380 SFM | | 145-220 SFM | | 285-420 SFM | | 215-350 SFM | | 260-450 SFM | |
| Drill Dia. | | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed |
| mm | Inch | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR |
| 3 | - | 12,370 | 0.002-0.005 | 10,430 | 0.002-0.005 | 5,900 | 0.002-0.004 | 11,400 | 0.002-0.005 | 9,140 | 0.002-0.005 | 11,480 | 0.003-0.005 |
| - | 1/8 | 11,690 | 0.002-0.005 | 9,860 | 0.002-0.005 | 5,580 | 0.002-0.004 | 10,770 | 0.002-0.005 | 8,630 | 0.002-0.005 | 10,850 | 0.003-0.005 |
| 4 | - | 9,280 | 0.003-0.006 | 7,820 | 0.003-0.006 | 4,430 | 0.003-0.005 | 8,550 | 0.003-0.006 | 6,850 | 0.003-0.006 | 8,610 | 0.004-0.006 |
| - | 3/16 | 7,790 | 0.004-0.007 | 6,570 | 0.004-0.007 | 3,720 | 0.004-0.006 | 7,180 | 0.004-0.007 | 5,760 | 0.004-0.007 | 7,230 | 0.005-0.007 |
| 6 | - | 6,190 | 0.005-0.009 | 5,220 | 0.005-0.009 | 2,950 | 0.005-0.007 | 5,700 | 0.005-0.009 | 4,570 | 0.005-0.009 | 5,740 | 0.006-0.008 |
| - | 1/4 | 5,840 | 0.005-0.010 | 4,930 | 0.005-0.010 | 2,790 | 0.006-0.008 | 5,390 | 0.005-0.010 | 4,320 | 0.005-0.010 | 5,420 | 0.007-0.009 |
| 8 | - | 4,640 | 0.006-0.011 | 3,910 | 0.006-0.011 | 2,210 | 0.006-0.009 | 4,280 | 0.006-0.011 | 3,430 | 0.006-0.011 | 4,310 | 0.008-0.010 |
| - | 3/8 | 3,900 | 0.007-0.011 | 3,290 | 0.007-0.011 | 1,860 | 0.007-0.009 | 3,590 | 0.007-0.011 | 2,880 | 0.007-0.011 | 3,620 | 0.009-0.011 |
| 10 | - | 3,710 | 0.008-0.012 | 3,130 | 0.008-0.012 | 1,770 | 0.008-0.010 | 3,420 | 0.008-0.012 | 2,740 | 0.008-0.012 | 3,440 | 0.011-0.013 |
| - | 7/16 | 3,340 | 0.008-0.012 | 2,820 | 0.008-0.012 | 1,590 | 0.008-0.010 | 3,080 | 0.008-0.012 | 2,470 | 0.008-0.012 | 3,100 | 0.012-0.014 |
| 12 | - | 3,090 | 0.008-0.012 | 2,610 | 0.008-0.012 | 1,480 | 0.008-0.010 | 2,850 | 0.008-0.012 | 2,280 | 0.008-0.012 | 2,870 | 0.013-0.015 |
| - | 1/2 | 2,920 | 0.008-0.013 | 2,460 | 0.008-0.013 | 1,390 | 0.008-0.010 | 2,690 | 0.008-0.013 | 2,160 | 0.008-0.013 | 2,710 | 0.014-0.016 |
| 14 | - | 2,650 | 0.009-0.014 | 2,240 | 0.009-0.014 | 1,260 | 0.009-0.011 | 2,440 | 0.009-0.014 | 1,960 | 0.009-0.014 | 2,460 | 0.016-0.018 |
| - | 5/8 | 2,340 | 0.010-0.014 | 1,970 | 0.010-0.014 | 1,120 | 0.010-0.012 | 2,150 | 0.010-0.014 | 1,730 | 0.010-0.014 | 2,170 | 0.018-0.020 |
| 16 | - | 2,340 | 0.010-0.014 | 1,970 | 0.010-0.014 | 1,120 | 0.010-0.012 | 2,150 | 0.010-0.014 | 1,730 | 0.010-0.014 | 2,170 | 0.018-0.020 |
| 18 | - | 2,060 | 0.011-0.015 | 1,740 | 0.011-0.015 | 980 | 0.011-0.013 | 1,900 | 0.011-0.015 | 1,520 | 0.011-0.015 | 1,910 | 0.020-0.022 |
| - | 3/4 | 1,950 | 0.011-0.015 | 1,640 | 0.011-0.015 | 930 | 0.011-0.013 | 1,800 | 0.011-0.015 | 1,440 | 0.011-0.015 | 1,810 | 0.021-0.023 |
| 20 | - | 1,860 | 0.012-0.016 | 1,560 | 0.012-0.016 | 890 | 0.012-0.014 | 1,710 | 0.012-0.016 | 1,370 | 0.012-0.016 | 1,720 | 0.022-0.024 |

continued on next page

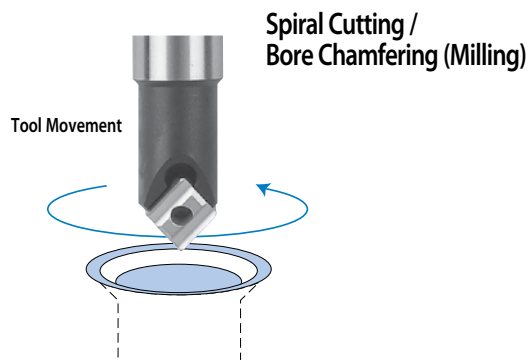
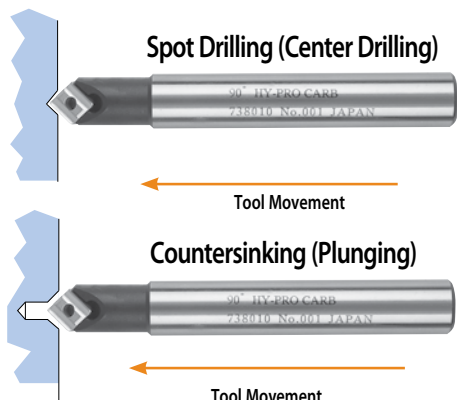


General Drilling Operations

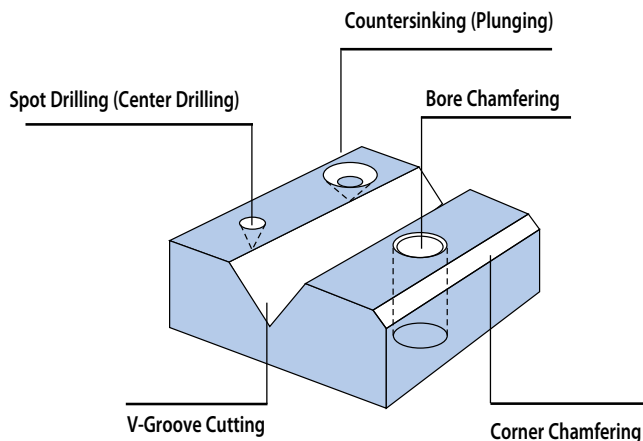
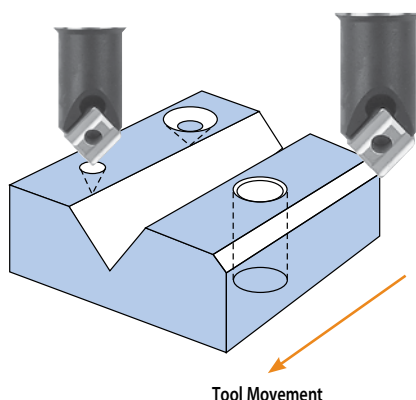
| Work Material | | Cast Aluminum | | Copper | | Special Alloy Steels, Hardened Steels | | | | | | | |
|----------------|--------------|---------------|--------------|-------------|--------------|---------------------------------------|--------------|-------------|--------------|-------------|--------------|-------------|-------------|
| | | | | | | 26-30 HRC | | 30-34 HRC | | 34-43 HRC | | 43-48 HRC | |
| Hardness | | 325- 700 SFM | | 230-380 SFM | | 185-295 SFM | | 130-210 SFM | | 120-180 SFM | | 80-110 SFM | |
| Drilling Speed | | 325- 700 SFM | | 230-380 SFM | | 185-295 SFM | | 130-210 SFM | | 120-180 SFM | | 80-110 SFM | |
| Drill Dia. | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | |
| | | | | | | | | | | | | | mm |
| 3 | - | 16,580 | 0.004-0.006 | 9,860 | 0.003-0.005 | 7,760 | 0.002-0.005 | 5,500 | 0.002-0.003 | 4,850 | 0.002-0.003 | 3,090 | 0.001-0.002 |
| - | 1/8 | 15,660 | 0.004-0.006 | 9,320 | 0.003-0.005 | 7,330 | 0.002-0.005 | 5,200 | 0.002-0.003 | 4,560 | 0.002-0.003 | 2,930 | 0.001-0.003 |
| 4 | - | 12,430 | 0.005-0.007 | 7,400 | 0.004-0.006 | 5,820 | 0.003-0.006 | 4,120 | 0.003-0.004 | 3,640 | 0.003-0.004 | 2,320 | 0.002-0.003 |
| - | 3/16 | 10,440 | 0.006-0.008 | 6,210 | 0.005-0.007 | 4,890 | 0.004-0.007 | 3,460 | 0.004-0.005 | 3,040 | 0.004-0.005 | 1,950 | 0.002-0.004 |
| 6 | - | 8,290 | 0.008-0.010 | 4,930 | 0.006-0.008 | 3,880 | 0.005-0.009 | 2,750 | 0.005-0.006 | 2,410 | 0.005-0.006 | 1,550 | 0.002-0.004 |
| - | 1/4 | 7,830 | 0.009-0.011 | 4,660 | 0.007-0.009 | 3,670 | 0.005-0.010 | 2,600 | 0.005-0.007 | 2,290 | 0.005-0.007 | 1,460 | 0.003-0.005 |
| 8 | - | 6,220 | 0.012-0.014 | 3,700 | 0.008-0.010 | 2,910 | 0.006-0.011 | 2,060 | 0.006-0.008 | 1,810 | 0.006-0.008 | 1,160 | 0.003-0.005 |
| - | 3/8 | 5,220 | 0.013-0.015 | 3,110 | 0.009-0.011 | 2,440 | 0.007-0.011 | 1,730 | 0.007-0.009 | 1,520 | 0.007-0.009 | 980 | 0.003-0.005 |
| 10 | - | 4,970 | 0.015-0.017 | 2,960 | 0.011-0.013 | 2,330 | 0.008-0.012 | 1,650 | 0.008-0.010 | 1,450 | 0.008-0.010 | 930 | 0.004-0.006 |
| - | 7/16 | 4,470 | 0.016-0.018 | 2,660 | 0.012-0.014 | 2,090 | 0.008-0.012 | 1,480 | 0.008-0.011 | 1,300 | 0.008-0.011 | 840 | 0.004-0.006 |
| 12 | - | 4,140 | 0.018-0.020 | 2,470 | 0.013-0.015 | 1,940 | 0.008-0.012 | 1,370 | 0.009-0.012 | 1,210 | 0.009-0.012 | 770 | 0.005-0.007 |
| - | 1/2 | 3,920 | 0.019-0.021 | 2,330 | 0.014-0.016 | 1,830 | 0.008-0.013 | 1,300 | 0.010-0.013 | 1,140 | 0.010-0.013 | 730 | 0.005-0.007 |
| 14 | - | 3,550 | 0.021-0.023 | 2,110 | 0.016-0.018 | 1,660 | 0.009-0.014 | 1,180 | 0.011-0.014 | 1,030 | 0.011-0.014 | 660 | 0.006-0.008 |
| - | 5/8 | 3,130 | 0.022-0.024 | 1,860 | 0.018-0.020 | 1,470 | 0.010-0.014 | 1,040 | 0.012-0.015 | 900 | 0.013-0.016 | 580 | 0.006-0.008 |
| 16 | - | 3,130 | 0.022-0.024 | 1,860 | 0.018-0.020 | 1,470 | 0.010-0.014 | 1,040 | 0.012-0.015 | 900 | 0.013-0.016 | 580 | 0.006-0.008 |
| 18 | - | 2,760 | 0.026-0.030 | 1,640 | 0.020-0.022 | 1,290 | 0.011-0.015 | 920 | 0.014-0.018 | 810 | 0.015-0.018 | 520 | 0.007-0.009 |
| - | 3/4 | 2,610 | 0.027-0.031 | 1,550 | 0.021-0.023 | 1,220 | 0.011-0.015 | 870 | 0.015-0.019 | 760 | 0.015-0.019 | 490 | 0.007-0.009 |
| 20 | - | 2,490 | 0.028-0.032 | 1,480 | 0.022-0.024 | 1,160 | 0.012-0.016 | 820 | 0.016-0.020 | 720 | 0.016-0.020 | 460 | 0.008-0.011 |



List 738



"V" Grooving / Corner Chamfering (Milling)



Eccentric Pin Lock (Pat. Pend.)



Insert Loading Position



Insert Locked Position



Loaded Insert

Place insert over Eccentric Pin in loading position. Rotate pin **counter-clockwise**, with supplied allen wrench, to lock insert solidly against machined faces of tool holder.

Center Drilling & V-Grooving

| Materials | RPM | IPM | Grade |
|-------------|-------|------|--------|
| Mild Steels | 3,000 | 3.20 | NK2020 |
| Stainless | 2,000 | 2.00 | NK2020 |
| Die Steels | 3,000 | 2.00 | NK2020 |
| Cast Iron | 3,200 | 8.00 | NK1010 |
| Aluminum | 4,000 | 6.00 | NK1010 |

Chamfer Milling (Down Cut)

| Materials | RPM | IPM | Grade |
|-------------|-------|-------|--------|
| Mild Steels | 3,000 | 8.00 | NK2020 |
| Stainless | 2,500 | 6.00 | NK2020 |
| Die Steels | 3,000 | 6.00 | NK2020 |
| Cast Iron | 3,000 | 8.00 | NK1010 |
| Aluminum | 4,000 | 12.00 | NK1010 |



List 215, 220D, 200 & 233*

General Drilling Operations

| Work Material | | Mild Steels, Carbon Steels | | Alloy Tool Steels, Tool Steels | | Cast Iron | | Aluminum | |
|----------------|------|----------------------------|-----------------|--------------------------------|-----------------|-------------|-----------------|-------------|-----------------|
| Hardness | | | | Up to 30 HRC | | | | | |
| Drilling Speed | | 280-320 SFM | | 250-270 SFM | | 250-350 SFM | | 550-650 SFM | |
| Drill Dia. | | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| mm | Inch | | | | | | | | |
| 1 | - | 25,000 | 0.0010 - 0.0012 | 25,000 | 0.0003 - 0.0005 | 25,000 | 0.0007 - 0.0009 | 25,000 | 0.0006 - 0.0008 |
| - | 1/16 | 18,300 | 0.0016 - 0.0018 | 15,900 | 0.0004 - 0.0006 | 18,300 | 0.0011 - 0.0013 | 25,000 | 0.0010 - 0.0012 |
| 2 | - | 14,600 | 0.0020 - 0.0022 | 12,600 | 0.0006 - 0.0008 | 14,600 | 0.0014 - 0.0016 | 25,000 | 0.0013 - 0.0015 |
| - | 3/32 | 12,200 | 0.0024 - 0.0026 | 10,600 | 0.0007 - 0.0009 | 12,200 | 0.0017 - 0.0019 | 24,400 | 0.0015 - 0.0017 |
| 3 | - | 9,700 | 0.0027 - 0.0029 | 8,400 | 0.0012 - 0.0014 | 9,700 | 0.0021 - 0.0023 | 19,400 | 0.0020 - 0.0022 |
| - | 1/8 | 9,200 | 0.0028 - 0.0030 | 7,950 | 0.0012 - 0.0015 | 9,200 | 0.0022 - 0.0024 | 18,300 | 0.0022 - 0.0024 |
| 4 | - | 7,300 | 0.0030 - 0.0032 | 6,300 | 0.0013 - 0.0015 | 7,300 | 0.0023 - 0.0025 | 14,500 | 0.0029 - 0.0031 |
| - | 3/16 | 6,100 | 0.0035 - 0.0037 | 5,300 | 0.0015 - 0.0017 | 6,100 | 0.0027 - 0.0029 | 12,200 | 0.0034 - 0.0036 |
| 6 | - | 4,850 | 0.0040 - 0.0042 | 4,200 | 0.0020 - 0.0022 | 4,850 | 0.0037 - 0.0039 | 9,700 | 0.0045 - 0.0047 |
| - | 1/4 | 4,600 | 0.0042 - 0.0044 | 3,950 | 0.0021 - 0.0023 | 4,600 | 0.0039 - 0.0041 | 9,150 | 0.0047 - 0.0049 |
| 8 | - | 3,650 | 0.0048 - 0.0050 | 3,150 | 0.0024 - 0.0026 | 3,650 | 0.0044 - 0.0046 | 7,250 | 0.0054 - 0.0056 |
| - | 3/8 | 3,050 | 0.0065 - 0.0067 | 2,650 | 0.0033 - 0.0035 | 3,050 | 0.0047 - 0.0049 | 6,100 | 0.0066 - 0.0068 |
| 10 | - | 2,900 | 0.0067 - 0.0069 | 2,500 | 0.0033 - 0.0036 | 2,900 | 0.0048 - 0.0050 | 5,800 | 0.0068 - 0.0070 |
| - | 7/16 | 2,600 | 0.0068 - 0.0070 | 2,250 | 0.0034 - 0.0036 | 2,600 | 0.0049 - 0.0051 | 5,200 | 0.0072 - 0.0074 |
| 12 | - | 2,400 | 0.0074 - 0.0076 | 2,100 | 0.0034 - 0.0036 | 2,400 | 0.0054 - 0.0056 | 4,800 | 0.0078 - 0.0080 |
| - | 1/2 | 2,250 | 0.0078 - 0.0080 | 1,950 | 0.0035 - 0.0036 | 2,250 | 0.0057 - 0.0059 | 4,550 | 0.0082 - 0.0084 |

General Drilling Operations

| Work Material | | Titanium Alloys (Annealed) | | Inconel, Titanium Alloys (Solution Treated and Aged) | | Hardened Steels, Prehardened Steels | | | |
|----------------|------|----------------------------|-----------------|--|-----------------|-------------------------------------|-----------------|-------------|-----------------|
| Hardness | | | | | | 30-38 HRC | | 38-45 HRC | |
| Drilling Speed | | 120-140 SFM | | 50-70 SFM | | 210-230 SFM | | 160-180 SFM | |
| Drill Dia. | | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| mm | Inch | | | | | | | | |
| 1 | - | 12,600 | 0.0003 - 0.0005 | 5,800 | 0.0002 - 0.0004 | 20,850 | 0.0002 - 0.0004 | 16,500 | 0.0002 - 0.0004 |
| - | 1/16 | 8,000 | 0.0004 - 0.0006 | 3,700 | 0.0003 - 0.0005 | 13,150 | 0.0004 - 0.0006 | 10,400 | 0.0004 - 0.0006 |
| 2 | - | 6,300 | 0.0006 - 0.0008 | 2,900 | 0.0004 - 0.0006 | 10,400 | 0.0005 - 0.0007 | 8,250 | 0.0005 - 0.0007 |
| - | 3/32 | 5,300 | 0.0007 - 0.0009 | 2,400 | 0.0005 - 0.0007 | 8,750 | 0.0007 - 0.0009 | 6,950 | 0.0007 - 0.0009 |
| 3 | - | 4,200 | 0.0010 - 0.0012 | 1,900 | 0.0008 - 0.0010 | 6,950 | 0.0011 - 0.0013 | 5,500 | 0.0011 - 0.0013 |
| - | 1/8 | 4,000 | 0.0011 - 0.0012 | 1,850 | 0.0008 - 0.0010 | 6,600 | 0.0012 - 0.0014 | 5,200 | 0.0012 - 0.0014 |
| 4 | - | 3,150 | 0.0011 - 0.0013 | 1,450 | 0.0009 - 0.0010 | 5,200 | 0.0013 - 0.0015 | 4,100 | 0.0013 - 0.0015 |
| - | 3/16 | 2,650 | 0.0013 - 0.0015 | 1,200 | 0.0010 - 0.0012 | 4,400 | 0.0015 - 0.0017 | 3,450 | 0.0015 - 0.0017 |
| 6 | - | 2,100 | 0.0015 - 0.0017 | 950 | 0.0013 - 0.0015 | 3,500 | 0.0023 - 0.0025 | 2,750 | 0.0023 - 0.0025 |
| - | 1/4 | 2,000 | 0.0016 - 0.0018 | 900 | 0.0014 - 0.0015 | 3,300 | 0.0024 - 0.0026 | 2,600 | 0.0024 - 0.0026 |
| 8 | - | 1,550 | 0.0018 - 0.0020 | 730 | 0.0015 - 0.0017 | 2,600 | 0.0028 - 0.0030 | 2,050 | 0.0028 - 0.0030 |
| - | 3/8 | 1,300 | 0.0023 - 0.0025 | 600 | 0.0018 - 0.0020 | 2,200 | 0.0039 - 0.0041 | 1,700 | 0.0039 - 0.0041 |
| 10 | - | 1,250 | 0.0024 - 0.0026 | 580 | 0.0019 - 0.0021 | 2,130 | 0.0040 - 0.0042 | 1,650 | 0.0040 - 0.0042 |
| - | 7/16 | 1,140 | 0.0025 - 0.0026 | 520 | 0.0019 - 0.0021 | 1,920 | 0.0041 - 0.0043 | 1,450 | 0.0041 - 0.0043 |
| 12 | - | 1,050 | 0.0025 - 0.0027 | 490 | 0.0020 - 0.0022 | 1,780 | 0.0041 - 0.0043 | 1,350 | 0.0041 - 0.0043 |
| - | 1/2 | 990 | 0.0026 - 0.0027 | 460 | 0.0020 - 0.0022 | 1,680 | 0.0042 - 0.0043 | 1,300 | 0.0042 - 0.0043 |

*When using our List 233 three flute drills, we recommend the same RPM but feed rates should be increased by 25-35%.

▶ continued on next page ▶



List 215, 220D, 200 & 233* (Continued)

Aerospace Operations

| Work Material | | Graphite Composite | | Epoxy Fiber | | Acrylic Plastics | | Graphite Composite Titanium Stack | |
|------------------|------|--------------------|---------------|--------------|---------------|------------------|---------------|-----------------------------------|---------------|
| Drilling Speed | | 200-220 SFM | | 200-220 SFM | | 150-170 SFM | | 12-20 SFM | |
| Drill Dia. mm | Inch | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| | | 3 | - | 6,800 | 0.0017-0.0022 | 6,800 | 0.0017-0.0022 | 5,200 | 0.0017-0.0022 |
| - | 1/8 | 6,400 | 0.0015-0.0025 | 6,400 | 0.0015-0.0025 | 4,900 | 0.0015-0.0025 | 490 | 0.0010-0.0015 |
| 4 | - | 5,100 | 0.0020-0.0030 | 5,100 | 0.0020-0.0030 | 3,900 | 0.0020-0.0030 | 390 | 0.0010-0.0020 |
| - | 3/16 | 4,250 | 0.0025-0.0035 | 4,250 | 0.0025-0.0035 | 3,250 | 0.0025-0.0035 | 325 | 0.0015-0.0025 |
| 6 | - | 3,400 | 0.0035-0.0045 | 3,400 | 0.0035-0.0045 | 2,580 | 0.0035-0.0045 | 260 | 0.0015-0.0025 |
| - | 1/4 | 3,200 | 0.0035-0.0045 | 3,200 | 0.0035-0.0045 | 2,450 | 0.0035-0.0045 | 245 | 0.0020-0.0030 |
| 8 | - | 2,550 | 0.0045-0.0055 | 2,550 | 0.0045-0.0055 | 1,950 | 0.0045-0.0055 | 195 | 0.0025-0.0035 |
| - | 3/8 | 2,140 | 0.0055-0.0065 | 2,140 | 0.0055-0.0065 | 1,630 | 0.0055-0.0065 | 165 | 0.0030-0.0040 |
| 10 | - | 2,030 | 0.0055-0.0065 | 2,030 | 0.0055-0.0065 | 1,550 | 0.0055-0.0065 | 155 | 0.0035-0.0045 |
| - | 7/16 | 1,830 | 0.0060-0.0070 | 1,830 | 0.0060-0.0070 | 1,400 | 0.0060-0.0070 | 140 | 0.0035-0.0045 |
| 12 | - | 1,700 | 0.0065-0.0075 | 1,700 | 0.0065-0.0075 | 1,280 | 0.0065-0.0075 | 130 | 0.0040-0.0050 |
| - | 1/2 | 1,600 | 0.0065-0.0075 | 1,600 | 0.0065-0.0075 | 1,200 | 0.0065-0.0075 | 120 | 0.0040-0.0050 |

The chart above is for materials typically used in aircraft structures. Speeds may be less than optimal because of limitations in the portable machine tools utilized.

*When using our List 233 three flute drills we recommend the same RPM but feed rates should be increased by 25-35%.

| Hole Depth Diameters | Reduce Spindle Speed | Reduce Feed Rate |
|-------------------------|-------------------------|---------------------|
| 3 x Dia. | 10% | 10% |
| 4 x Dia. | 20% | 10% |
| 5 x Dia. | 30% | 20% |
| 6 x Dia. | 35% | 20% |
| 8 x Dia. | 40% | 20% |

When drilling deep holes, the recommended speeds and feeds should be reduced proportionately based on the hole depth. To the left are guidelines for reducing the speeds and feeds.



List 300D

General Drilling Operations

| Work Material | | Mild Steels, Carbon Steels | | Alloy Tool Steels, Tool Steels | | Cast Iron | | Aluminum | |
|----------------|------|----------------------------|---------------|--------------------------------|---------------|-------------|---------------|-------------|---------------|
| Hardness | | | | Up to 30 HRC | | | | | |
| Drilling Speed | | 200-230 SFM | | 160-190 SFM | | 250-350 SFM | | 370-470 SFM | |
| Drill Dia. | | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| mm | Inch | | | | | | | | |
| 1 | - | 20,850 | 0.0010-0.0014 | 16,950 | 0.0010-0.0014 | 25,000 | 0.0007-0.0012 | 25,000 | 0.0008-0.0013 |
| - | 1/16 | 13,150 | 0.0015-0.0021 | 10,700 | 0.0015-0.0021 | 18,340 | 0.0012-0.0017 | 25,000 | 0.0012-0.0018 |
| 2 | - | 10,400 | 0.0022-0.0028 | 8,500 | 0.0022-0.0028 | 14,550 | 0.0017-0.0023 | 20,350 | 0.0017-0.0022 |
| - | 3/32 | 8,750 | 0.0026-0.0033 | 7,150 | 0.0026-0.0033 | 12,220 | 0.0022-0.0028 | 17,100 | 0.0023-0.0027 |
| 3 | - | 6,950 | 0.0033-0.0040 | 5,650 | 0.0032-0.0040 | 9,700 | 0.0032-0.0038 | 13,550 | 0.0027-0.0033 |
| - | 1/8 | 6,550 | 0.0034-0.0042 | 5,350 | 0.0033-0.0042 | 9,170 | 0.0035-0.0042 | 12,800 | 0.0028-0.0036 |
| 4 | - | 5,200 | 0.0040-0.0050 | 4,250 | 0.0040-0.0050 | 7,280 | 0.0044-0.0052 | 10,200 | 0.0034-0.0044 |
| - | 3/16 | 4,400 | 0.0048-0.0058 | 3,550 | 0.0045-0.0055 | 6,110 | 0.0056-0.0064 | 8,550 | 0.0040-0.0050 |
| 6 | - | 3,450 | 0.0060-0.0070 | 2,830 | 0.0057-0.0067 | 4,850 | 0.0070-0.0080 | 6,800 | 0.0051-0.0061 |
| - | 1/4 | 3,300 | 0.0062-0.0072 | 2,670 | 0.0060-0.0070 | 4,580 | 0.0070-0.0080 | 6,400 | 0.0055-0.0065 |
| 8 | - | 2,600 | 0.0076-0.0086 | 2,120 | 0.0070-0.0080 | 3,640 | 0.0080-0.0090 | 5,100 | 0.0065-0.0075 |
| - | 3/8 | 2,200 | 0.0090-0.0100 | 1,780 | 0.0082-0.0092 | 3,060 | 0.0100-0.0110 | 4,250 | 0.0075-0.0085 |
| 10 | - | 2,050 | 0.0095-0.0105 | 1,690 | 0.0087-0.0097 | 2,910 | 0.0110-0.0120 | 4,050 | 0.0080-0.0090 |
| - | 7/16 | 1,850 | 0.0105-0.0115 | 1,520 | 0.0090-0.0100 | 2,620 | 0.0120-0.0130 | 3,650 | 0.0090-0.0100 |
| 12 | - | 1,700 | 0.0115-0.0125 | 1,400 | 0.0105-0.0115 | 2,430 | 0.0130-0.0140 | 3,350 | 0.0095-0.0105 |
| - | 1/2 | 1,600 | 0.0120-0.0130 | 1,320 | 0.0108-0.0118 | 2,290 | 0.0133-0.0143 | 3,150 | 0.0100-0.0112 |

General Drilling Operations

| Work Material | | Titanium Alloys (Annealed) | | Inconel, Titanium Alloys | | Hardened Steels, Prehardened Steels | | | |
|----------------|------|----------------------------|---------------|--------------------------|---------------|-------------------------------------|---------------|-------------|---------------|
| Hardness | | | | | | 30-38 HRC | | 38-45 HRC | |
| Drilling Speed | | 75-90 SFM | | 45-50 SFM | | 135-155 SFM | | 100-120 SFM | |
| Drill Dia. | | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| mm | Inch | | | | | | | | |
| 1 | - | 7,950 | 0.0008-0.0013 | 4,650 | 0.0008-0.0013 | 14,050 | 0.0010-0.0014 | 10,650 | 0.0008-0.0013 |
| - | 1/16 | 5,000 | 0.0012-0.0018 | 2,950 | 0.0012-0.0018 | 8,850 | 0.0015-0.0021 | 6,700 | 0.0012-0.0018 |
| 2 | - | 3,950 | 0.0017-0.0022 | 2,300 | 0.0017-0.0022 | 7,000 | 0.0022-0.0028 | 5,300 | 0.0017-0.0022 |
| - | 3/32 | 3,350 | 0.0023-0.0027 | 1,950 | 0.0023-0.0027 | 5,900 | 0.0026-0.0033 | 4,500 | 0.0020-0.0028 |
| 3 | - | 2,650 | 0.0027-0.0033 | 1,550 | 0.0027-0.0033 | 4,700 | 0.0032-0.0040 | 3,550 | 0.0025-0.0033 |
| - | 1/8 | 2,500 | 0.0028-0.0036 | 1,450 | 0.0028-0.0036 | 4,450 | 0.0033-0.0042 | 3,350 | 0.0025-0.0035 |
| 4 | - | 1,950 | 0.0031-0.0041 | 1,160 | 0.0032-0.0040 | 3,500 | 0.0040-0.0050 | 2,650 | 0.0033-0.0043 |
| - | 3/16 | 1,650 | 0.0037-0.0047 | 970 | 0.0036-0.0046 | 2,950 | 0.0045-0.0055 | 2,250 | 0.0040-0.0050 |
| 6 | - | 1,300 | 0.0048-0.0058 | 770 | 0.0048-0.0058 | 2,350 | 0.0057-0.0067 | 1,750 | 0.0048-0.0058 |
| - | 1/4 | 1,250 | 0.0049-0.0059 | 730 | 0.0049-0.0059 | 2,200 | 0.0060-0.0070 | 1,650 | 0.0050-0.0060 |
| 8 | - | 1,000 | 0.0058-0.0068 | 580 | 0.0058-0.0068 | 1,750 | 0.0070-0.0080 | 1,300 | 0.0060-0.0070 |
| - | 3/8 | 830 | 0.0068-0.0078 | 480 | 0.0068-0.0078 | 1,450 | 0.0082-0.0092 | 1,100 | 0.0070-0.0080 |
| 10 | - | 790 | 0.0073-0.0083 | 460 | 0.0073-0.0083 | 1,400 | 0.0087-0.0097 | 1,050 | 0.0073-0.0083 |
| - | 7/16 | 710 | 0.0080-0.0090 | 410 | 0.0080-0.0090 | 1,250 | 0.0090-0.0100 | 950 | 0.0080-0.0090 |
| 12 | - | 660 | 0.0087-0.0097 | 380 | 0.0087-0.0097 | 1,150 | 0.0105-0.0115 | 880 | 0.0088-0.0098 |
| - | 1/2 | 620 | 0.0090-0.0100 | 360 | 0.0090-0.0100 | 1,100 | 0.0108-0.0118 | 830 | 0.0093-0.0103 |

List OCS-SO

List OCJ-SO

List O1S-SO

List O1J-SO

| Work Material | | Carbon Steels Mild Steels 1010, 1050, 12L14 | | Alloy Steels 4140, 4130 | | Stainless Steels 300, 400, 17-4PH | | Cast Iron | | Ductile Cast Iron | |
|------------------|------|---|---------------|----------------------------|---------------|--------------------------------------|---------------|--------------|---------------|-------------------|---------------|
| Drilling Speed | | 395-500 SFM | | 165-400 SFM | | 130-295 SFM | | 245-495 SFM | | 245-495 SFM | |
| Drill Dia. mm | Inch | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| | | 1 | - | 42,970 | 0.0010-0.0012 | 27,058 | 0.0007-0.0008 | 20,692 | 0.0007-0.0008 | 35,813 | 0.0008-0.0010 |
| 2 | - | 21,485 | 0.0020-0.0024 | 13,529 | 0.0014-0.0016 | 10,346 | 0.0014-0.0016 | 17,906 | 0.0016-0.0020 | 17,906 | 0.0016-0.0020 |
| - | 3/32 | 18,045 | 0.0023-0.0028 | 11,363 | 0.0017-0.0019 | 8,689 | 0.0017-0.0019 | 15,039 | 0.0019-0.0023 | 15,039 | 0.0019-0.0023 |
| 3 | - | 14,323 | 0.0030-0.0035 | 9,019 | 0.0021-0.0024 | 6,897 | 0.0021-0.0024 | 11,938 | 0.0024-0.0030 | 11,938 | 0.0024-0.0030 |
| - | 1/8 | 13,534 | 0.0031-0.0038 | 8,522 | 0.0023-0.0025 | 6,517 | 0.0023-0.0025 | 11,280 | 0.0025-0.0031 | 11,280 | 0.0025-0.0031 |
| 4 | - | 10,743 | 0.0039-0.0047 | 6,765 | 0.0029-0.0031 | 5,173 | 0.0029-0.0031 | 8,953 | 0.0031-0.0039 | 8,953 | 0.0031-0.0039 |
| - | 3/16 | 9,023 | 0.0047-0.0056 | 5,682 | 0.0034-0.0038 | 4,345 | 0.0034-0.0038 | 7,520 | 0.0038-0.0047 | 7,520 | 0.0038-0.0047 |
| 6 | - | 7,162 | 0.0059-0.0071 | 4,510 | 0.0043-0.0047 | 3,449 | 0.0043-0.0047 | 5,969 | 0.0047-0.0059 | 5,969 | 0.0047-0.0059 |
| - | 1/4 | 6,767 | 0.0063-0.0075 | 4,261 | 0.0045-0.0050 | 3,259 | 0.0045-0.0050 | 5,640 | 0.0050-0.0063 | 5,640 | 0.0050-0.0063 |
| 8 | - | 5,371 | 0.0079-0.0094 | 3,382 | 0.0057-0.0063 | 2,586 | 0.0057-0.0063 | 4,477 | 0.0063-0.0079 | 4,477 | 0.0063-0.0079 |
| - | 3/8 | 4,511 | 0.0094-0.0113 | 2,841 | 0.0068-0.0075 | 2,172 | 0.0068-0.0075 | 3,760 | 0.0075-0.0094 | 3,760 | 0.0075-0.0094 |
| 10 | - | 4,297 | 0.0098-0.0118 | 2,706 | 0.0071-0.0079 | 2,069 | 0.0071-0.0079 | 3,581 | 0.0079-0.0098 | 3,581 | 0.0079-0.0098 |
| - | 7/16 | 3,867 | 0.0109-0.0131 | 2,435 | 0.0079-0.0088 | 1,862 | 0.0079-0.0088 | 3,223 | 0.0088-0.0109 | 3,223 | 0.0088-0.0109 |
| 12 | - | 3,581 | 0.0118-0.0142 | 2,255 | 0.0086-0.0094 | 1,724 | 0.0086-0.0094 | 2,984 | 0.0094-0.0118 | 2,984 | 0.0094-0.0118 |
| - | 1/2 | 3,383 | 0.0125-0.0150 | 2,131 | 0.0091-0.0100 | 1,629 | 0.0091-0.0100 | 2,820 | 0.0100-0.0125 | 2,820 | 0.0100-0.0125 |
| 14 | - | 3,069 | 0.0138-0.0165 | 1,933 | 0.0100-0.0110 | 1,478 | 0.0100-0.0110 | 2,558 | 0.0110-0.0138 | 2,558 | 0.0110-0.0138 |

continued on next page 

| Work Material | Aluminum | | | | Copper | Synthetics | High Heat Material | | | | | | |
|----------------|-------------|--------|---------------|--------|---------------|------------|---------------------|--------|---------------------------|--------|---------------|--------|---------------|
| | Alloy | | Casting | | | | Ti-Alloy, Ti-6Al-4V | | Ni-Base Material, Inconel | | | | |
| Drilling Speed | 495-655 SFM | | 150-490 SFM | | 165-260 SFM | | 325-985 SFM | | 65-200 SFM | | 65-230 SFM | | |
| Drill Dia. | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | |
| mm | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | |
| 1 | - | 55,708 | 0.0010-0.0012 | 31,038 | 0.0010-0.0012 | 20,692 | 0.0010-0.0012 | 63,667 | 0.0012-0.0018 | 12,733 | 0.0007-0.0008 | 14,325 | 0.0007-0.0008 |
| 2 | - | 27,854 | 0.0020-0.0024 | 15,519 | 0.0020-0.0024 | 10,346 | 0.0020-0.0024 | 31,833 | 0.0025-0.0033 | 6,367 | 0.0014-0.0016 | 7,163 | 0.0014-0.0016 |
| - | 3/32 | 23,395 | 0.0023-0.0028 | 13,034 | 0.0023-0.0028 | 8,689 | 0.0023-0.0028 | 26,737 | 0.0034-0.0039 | 5,347 | 0.0017-0.0019 | 6,016 | 0.0017-0.0019 |
| 3 | - | 18,569 | 0.0030-0.0035 | 10,346 | 0.0030-0.0035 | 6,897 | 0.0030-0.0035 | 21,222 | 0.0044-0.0050 | 4,244 | 0.0021-0.0024 | 4,775 | 0.0021-0.0024 |
| - | 1/8 | 17,546 | 0.0031-0.0038 | 9,776 | 0.0031-0.0038 | 6,517 | 0.0031-0.0038 | 20,052 | 0.0044-0.0050 | 4,010 | 0.0023-0.0025 | 4,512 | 0.0023-0.0025 |
| 4 | - | 13,927 | 0.0039-0.0047 | 7,759 | 0.0039-0.0047 | 5,173 | 0.0039-0.0047 | 15,917 | 0.0060-0.0065 | 3,183 | 0.0029-0.0031 | 3,581 | 0.0029-0.0031 |
| - | 3/16 | 11,697 | 0.0047-0.0056 | 6,517 | 0.0047-0.0056 | 4,345 | 0.0047-0.0056 | 13,368 | 0.0070-0.0075 | 2,674 | 0.0034-0.0038 | 3,008 | 0.0034-0.0038 |
| 6 | - | 9,285 | 0.0059-0.0071 | 5,173 | 0.0059-0.0071 | 3,449 | 0.0059-0.0071 | 10,611 | 0.0090-0.0095 | 2,122 | 0.0043-0.0047 | 2,388 | 0.0043-0.0047 |
| - | 1/4 | 8,773 | 0.0063-0.0075 | 4,888 | 0.0063-0.0075 | 3,259 | 0.0063-0.0075 | 10,026 | 0.0093-0.0100 | 2,005 | 0.0045-0.0050 | 2,256 | 0.0045-0.0050 |
| 8 | - | 6,964 | 0.0079-0.0094 | 3,880 | 0.0079-0.0094 | 2,586 | 0.0079-0.0094 | 7,958 | 0.0120-0.0126 | 1,592 | 0.0057-0.0063 | 1,791 | 0.0057-0.0063 |
| - | 3/8 | 5,849 | 0.0094-0.0113 | 3,259 | 0.0094-0.0113 | 2,172 | 0.0094-0.0113 | 6,684 | 0.0145-0.0150 | 1,337 | 0.0068-0.0075 | 1,504 | 0.0068-0.0075 |
| 10 | - | 5,571 | 0.0098-0.0118 | 3,104 | 0.0098-0.0118 | 2,069 | 0.0098-0.0118 | 6,367 | 0.0154-0.0157 | 1,273 | 0.0071-0.0079 | 1,433 | 0.0071-0.0079 |
| - | 7/16 | 5,013 | 0.0109-0.0131 | 2,793 | 0.0109-0.0131 | 1,862 | 0.0109-0.0131 | 5,729 | 0.0169-0.0175 | 1,146 | 0.0079-0.0088 | 1,289 | 0.0079-0.0088 |
| 12 | - | 4,642 | 0.0118-0.0142 | 2,586 | 0.0118-0.0142 | 1,724 | 0.0118-0.0142 | 5,306 | 0.0184-0.0189 | 1,061 | 0.0086-0.0094 | 1,194 | 0.0086-0.0094 |
| - | 1/2 | 4,386 | 0.0125-0.0150 | 2,444 | 0.0125-0.0150 | 1,629 | 0.0125-0.0150 | 5,013 | 0.0195-0.0200 | 1,003 | 0.0091-0.0100 | 1,128 | 0.0091-0.0100 |
| 14 | - | 3,979 | 0.0138-0.0165 | 2,217 | 0.0138-0.0165 | 1,478 | 0.0138-0.0165 | 4,548 | 0.0210-0.0220 | 910 | 0.0100-0.0110 | 1,023 | 0.0100-0.0110 |



List 1900 - VPH GDS: **Stub** List 1950 - VPH GDR: **Jobbers**

General Drilling Operations

| Work Material | | Low Carbon Steels 1010, 1018 | | Carbon Steels 1045, 1050 | | Alloy Steels 4140, 4330 | | Tool Steels D2, H13 | | Cast Iron | |
|----------------|------|---------------------------------|-------------|-----------------------------|-------------|----------------------------|-------------|------------------------|-------------|--------------|-------------|
| Drilling Speed | | 125-160 SFM | | 80-120 SFM | | 80-100 SFM | | 30-50 SFM | | 130-200 SFM | |
| Drill Dia. | | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| mm | Inch | | | | | | | | | | |
| 0.5 | - | 25,000 | 0.001-0.002 | 19,410 | 0.001-0.002 | 17,470 | 0.001-0.002 | 7,760 | 0.001-0.002 | 25,000 | 0.001-0.002 |
| - | 3/64 | 11,610 | 0.001-0.003 | 8,150 | 0.002-0.003 | 7,330 | 0.002-0.003 | 3,260 | 0.002-0.003 | 13,450 | 0.002-0.003 |
| 2 | - | 6,910 | 0.002-0.004 | 4,850 | 0.002-0.004 | 4,370 | 0.002-0.004 | 1,940 | 0.002-0.004 | 8,000 | 0.003-0.004 |
| - | 3/32 | 5,810 | 0.003-0.005 | 4,070 | 0.003-0.005 | 3,670 | 0.003-0.005 | 1,630 | 0.003-0.005 | 6,720 | 0.003-0.005 |
| 3 | - | 4,610 | 0.003-0.005 | 3,230 | 0.003-0.005 | 2,910 | 0.003-0.005 | 1,290 | 0.003-0.005 | 5,340 | 0.004-0.006 |
| - | 1/8 | 4,350 | 0.003-0.005 | 3,060 | 0.003-0.005 | 2,750 | 0.003-0.005 | 1,220 | 0.003-0.005 | 5,040 | 0.004-0.006 |
| 4 | - | 3,460 | 0.004-0.006 | 2,430 | 0.004-0.006 | 2,180 | 0.004-0.006 | 970 | 0.004-0.006 | 4,000 | 0.005-0.007 |
| - | 3/16 | 2,900 | 0.005-0.007 | 2,040 | 0.005-0.007 | 1,830 | 0.005-0.007 | 810 | 0.005-0.007 | 3,360 | 0.006-0.008 |
| 6 | - | 2,300 | 0.005-0.007 | 1,620 | 0.005-0.007 | 1,460 | 0.005-0.007 | 650 | 0.005-0.007 | 2,670 | 0.007-0.010 |
| - | 1/4 | 2,180 | 0.005-0.008 | 1,530 | 0.005-0.008 | 1,380 | 0.005-0.008 | 610 | 0.005-0.008 | 2,520 | 0.007-0.010 |
| 8 | - | 1,730 | 0.006-0.009 | 1,210 | 0.006-0.009 | 1,090 | 0.006-0.009 | 490 | 0.006-0.009 | 2,000 | 0.008-0.012 |
| - | 3/8 | 1,450 | 0.008-0.011 | 1,020 | 0.008-0.011 | 920 | 0.008-0.011 | 410 | 0.008-0.011 | 1,680 | 0.010-0.013 |
| 10 | - | 1,380 | 0.008-0.011 | 970 | 0.008-0.011 | 870 | 0.008-0.011 | 390 | 0.008-0.011 | 1,600 | 0.010-0.014 |
| - | 7/16 | 1,240 | 0.009-0.012 | 870 | 0.009-0.012 | 790 | 0.009-0.012 | 350 | 0.009-0.012 | 1,440 | 0.011-0.016 |
| 12 | - | 1,150 | 0.009-0.013 | 810 | 0.009-0.013 | 730 | 0.009-0.013 | 320 | 0.009-0.013 | 1,330 | 0.012-0.017 |
| - | 1/2 | 1,090 | 0.010-0.014 | 760 | 0.010-0.014 | 690 | 0.010-0.014 | 310 | 0.010-0.014 | 1,260 | 0.012-0.017 |
| 14 | - | 990 | 0.011-0.014 | 690 | 0.011-0.014 | 620 | 0.011-0.014 | 280 | 0.011-0.014 | 1,140 | 0.014-0.019 |
| - | 5/8 | 870 | 0.012-0.016 | 610 | 0.012-0.016 | 550 | 0.012-0.016 | 240 | 0.012-0.016 | 1,010 | 0.016-0.021 |
| 16 | - | 870 | 0.012-0.016 | 610 | 0.012-0.016 | 550 | 0.012-0.016 | 240 | 0.012-0.016 | 1,010 | 0.016-0.021 |
| 18 | - | 770 | 0.014-0.018 | 540 | 0.014-0.018 | 490 | 0.014-0.018 | 220 | 0.014-0.018 | 890 | 0.018-0.025 |
| - | 3/4 | 730 | 0.015-0.019 | 510 | 0.015-0.019 | 460 | 0.015-0.019 | 200 | 0.015-0.019 | 840 | 0.019-0.026 |
| 20 | - | 690 | 0.016-0.020 | 490 | 0.016-0.020 | 440 | 0.016-0.020 | 190 | 0.016-0.020 | 800 | 0.020-0.027 |

1. The indicated speeds and feeds are when water soluble oil is used.
2. Suitable cutting fluid is water-emulsifiable, high density oil (less than 20 times dilution).
3. When using non-water soluble oil or water-emulsifiable oil (over 20 times dilution), reduce drilling speed by 20%.
4. Pecking is necessary when drilling depth of the hole exceeds 3 times drill diameter for lathe/horizontal machines.

D: Drill Diameter

| Drilling Depth | ≤4D | ≤5D | ≤6D |
|------------------------------|------|------|-------|
| Coefficient for reducing RPM | x0.9 | x0.8 | x0.75 |

continued on next page



| Work Material | High Heat Material | | | | | | Hardened Steels | | | | | | |
|----------------|--------------------|-----------|------------------------------------|-----------|--|-----------|-----------------|-----------|-------------|-----------|-------------|-----------|-------------|
| | Ti Alloy Ti-6Al-4V | | Fe Base Material Incoloy 901, A286 | | Ni & Co Base Material Inconel718, Waspaloy | | 33-43 HRC | | 43-48 HRC | | 48-53 HRC | | |
| | 20-26 SFM | | 20-26 SFM | | 20-26 SFM | | 40-60 SFM | | 20-32 SFM | | 15-25 SFM | | |
| Drilling Speed | | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| Drill Dia. | | | | | | | | | | | | | |
| mm | Inch | | | | | | | | | | | | |
| 0.5 | - | 4,460 | 0.0005-0.0008 | 4,460 | 0.0005-0.0008 | 3,880 | 0.0005-0.0008 | 9,700 | 0.001 | 5,040 | 0.001 | 3,880 | 0.001 |
| - | 3/64 | 1,870 | 0.0006-0.0010 | 1,870 | 0.0006-0.0010 | 1,630 | 0.0006-0.0010 | 4,070 | 0.001-0.002 | 2,120 | 0.001 | 1,630 | 0.001 |
| 2 | - | 1,120 | 0.0008-0.0012 | 1,120 | 0.0008-0.0012 | 970 | 0.0008-0.0012 | 2,430 | 0.001-0.002 | 1,250 | 0.001-0.002 | 970 | 0.001-0.002 |
| - | 3/32 | 940 | 0.0010-0.0014 | 940 | 0.0010-0.0014 | 810 | 0.0010-0.0014 | 2,040 | 0.001-0.003 | 1,060 | 0.001-0.002 | 810 | 0.001-0.002 |
| 3 | - | 740 | 0.0012-0.0018 | 740 | 0.0012-0.0018 | 650 | 0.0012-0.0018 | 1,620 | 0.001-0.003 | 850 | 0.001-0.002 | 650 | 0.001-0.002 |
| - | 1/8 | 700 | 0.0013-0.0019 | 700 | 0.0013-0.0019 | 610 | 0.0013-0.0019 | 1,530 | 0.001-0.003 | 800 | 0.001-0.002 | 610 | 0.001-0.002 |
| 4 | - | 560 | 0.0016-0.0024 | 560 | 0.0016-0.0024 | 490 | 0.0016-0.0024 | 1,210 | 0.002-0.004 | 640 | 0.002-0.003 | 490 | 0.002-0.003 |
| - | 3/16 | 470 | 0.0019-0.0028 | 470 | 0.0019-0.0028 | 410 | 0.0019-0.0028 | 1,020 | 0.002-0.005 | 540 | 0.002-0.004 | 410 | 0.002-0.004 |
| 6 | - | 370 | 0.0024-0.0035 | 370 | 0.0024-0.0035 | 320 | 0.0024-0.0035 | 810 | 0.002-0.006 | 430 | 0.002-0.005 | 320 | 0.002-0.005 |
| - | 1/4 | 350 | 0.0026-0.0037 | 350 | 0.0026-0.0037 | 310 | 0.0026-0.0037 | 760 | 0.002-0.006 | 400 | 0.002-0.005 | 310 | 0.002-0.005 |
| 8 | - | 280 | 0.0031-0.0047 | 280 | 0.0031-0.0047 | 240 | 0.0031-0.0047 | 610 | 0.003-0.008 | 320 | 0.003-0.006 | 240 | 0.003-0.006 |
| - | 3/8 | 230 | 0.0037-0.0056 | 230 | 0.0037-0.0056 | 200 | 0.0037-0.0056 | 510 | 0.004-0.009 | 260 | 0.004-0.008 | 200 | 0.004-0.008 |
| 10 | - | 220 | 0.0039-0.0059 | 220 | 0.0039-0.0059 | 190 | 0.0039-0.0059 | 490 | 0.004-0.010 | 250 | 0.004-0.008 | 190 | 0.004-0.008 |
| - | 7/16 | 200 | 0.0043-0.0066 | 200 | 0.0043-0.0066 | 170 | 0.0043-0.0066 | 440 | 0.004-0.011 | 230 | 0.004-0.009 | 170 | 0.004-0.009 |
| 12 | - | 190 | 0.0047-0.0071 | 190 | 0.0047-0.0071 | 160 | 0.0047-0.0071 | 400 | 0.005-0.012 | 210 | 0.005-0.009 | 160 | 0.005-0.009 |
| - | 1/2 | 180 | 0.0050-0.0075 | 180 | 0.0050-0.0075 | 150 | 0.0050-0.0075 | 380 | 0.005-0.013 | 200 | 0.005-0.010 | 150 | 0.005-0.010 |
| 14 | - | 160 | 0.0055-0.0083 | 160 | 0.0055-0.0083 | 140 | 0.0055-0.0083 | 350 | 0.005-0.014 | 180 | 0.005-0.011 | 140 | 0.005-0.011 |
| - | 5/8 | 140 | 0.0062-0.0093 | 140 | 0.0062-0.0093 | 120 | 0.0062-0.0093 | 310 | 0.006-0.016 | 160 | 0.006-0.012 | 120 | 0.006-0.012 |
| 16 | - | 140 | 0.0062-0.0093 | 140 | 0.0062-0.0093 | 120 | 0.0062-0.0093 | 310 | 0.006-0.016 | 160 | 0.006-0.012 | 120 | 0.006-0.012 |
| 18 | - | 120 | 0.0071-0.0106 | 120 | 0.0071-0.0106 | 110 | 0.0071-0.0106 | 270 | 0.007-0.018 | 140 | 0.007-0.014 | 110 | 0.007-0.014 |
| - | 3/4 | 115 | 0.0075-0.0112 | 115 | 0.0075-0.0112 | 105 | 0.0075-0.0112 | 250 | 0.007-0.019 | 130 | 0.007-0.015 | 105 | 0.007-0.015 |
| 20 | - | 110 | 0.0079-0.0118 | 110 | 0.0079-0.0118 | 100 | 0.0079-0.0118 | 240 | 0.008-0.020 | 125 | 0.008-0.016 | 100 | 0.008-0.016 |



List 2000 - VP® GDR

General Drilling Operations

| Work Material | | Low Carbon Steels 1010, 1018 | | Carbon Steels 1045, 1050 | | Alloy Steels 4140, 4330 | | Tool Steels D2, H13 | | Cast Iron | | Cast Aluminum | |
|------------------|------|------------------------------|-------------|--------------------------|-------------|-------------------------|-------------|---------------------|-------------|-------------|-------------|---------------|-------------|
| Drilling Speed | | 125-160 SFM | | 80-120 SFM | | 80-100 SFM | | 30-50 SFM | | 130-200 SFM | | 230-400 SFM | |
| Drill Dia. mm | Inch | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed |
| | | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR |
| 2 | - | 6,900 | 0.002-0.004 | 4,840 | 0.002-0.004 | 4,360 | 0.002-0.004 | 1,940 | 0.002-0.004 | 8,000 | 0.003-0.004 | 15,270 | 0.005-0.007 |
| 3 | - | 4,600 | 0.004-0.005 | 3,230 | 0.004-0.005 | 2,900 | 0.004-0.005 | 1,290 | 0.004-0.005 | 5,330 | 0.004-0.006 | 10,180 | 0.008-0.011 |
| - | 1/8 | 4,350 | 0.004-0.005 | 3,050 | 0.004-0.005 | 2,740 | 0.004-0.005 | 1,220 | 0.004-0.005 | 5,030 | 0.004-0.006 | 9,620 | 0.008-0.012 |
| 4 | - | 3,450 | 0.004-0.006 | 2,420 | 0.004-0.006 | 2,180 | 0.004-0.006 | 970 | 0.004-0.006 | 4,000 | 0.005-0.007 | 7,630 | 0.009-0.015 |
| - | 3/16 | 2,900 | 0.005-0.007 | 2,030 | 0.005-0.007 | 1,830 | 0.005-0.007 | 810 | 0.005-0.007 | 3,360 | 0.006-0.008 | 6,410 | 0.011-0.016 |
| 6 | - | 2,300 | 0.005-0.007 | 1,610 | 0.005-0.007 | 1,450 | 0.005-0.007 | 640 | 0.005-0.007 | 2,660 | 0.007-0.010 | 5,090 | 0.013-0.019 |
| - | 1/4 | 2,170 | 0.005-0.008 | 1,520 | 0.005-0.008 | 1,370 | 0.005-0.008 | 610 | 0.005-0.008 | 2,520 | 0.007-0.010 | 4,810 | 0.013-0.019 |
| 8 | - | 1,700 | 0.006-0.009 | 1,210 | 0.006-0.009 | 1,090 | 0.006-0.009 | 480 | 0.006-0.009 | 2,000 | 0.008-0.012 | 3,820 | 0.015-0.021 |
| - | 3/8 | 1,450 | 0.007-0.011 | 1,010 | 0.007-0.011 | 910 | 0.007-0.011 | 400 | 0.007-0.011 | 1,680 | 0.009-0.013 | 3,200 | 0.017-0.024 |
| 10 | - | 1,380 | 0.008-0.011 | 960 | 0.008-0.011 | 870 | 0.008-0.011 | 390 | 0.008-0.011 | 1,600 | 0.010-0.014 | 3,050 | 0.018-0.025 |
| - | 7/16 | 1,240 | 0.009-0.012 | 870 | 0.009-0.012 | 780 | 0.009-0.012 | 350 | 0.009-0.012 | 1,440 | 0.011-0.015 | 2,750 | 0.020-0.028 |
| 12 | - | 1,150 | 0.009-0.013 | 800 | 0.009-0.013 | 720 | 0.009-0.013 | 320 | 0.009-0.013 | 1,330 | 0.012-0.017 | 2,550 | 0.021-0.030 |
| - | 1/2 | 1,080 | 0.010-0.014 | 760 | 0.010-0.014 | 680 | 0.010-0.014 | 300 | 0.010-0.014 | 1,260 | 0.012-0.017 | 2,400 | 0.021-0.031 |
| 14 | - | 980 | 0.011-0.015 | 690 | 0.011-0.015 | 620 | 0.011-0.015 | 270 | 0.011-0.015 | 1,140 | 0.013-0.017 | 2,180 | 0.022-0.032 |
| - | 5/8 | 870 | 0.012-0.016 | 610 | 0.012-0.016 | 550 | 0.012-0.016 | 240 | 0.012-0.016 | 1,010 | 0.013-0.018 | 1,920 | 0.023-0.033 |
| 16 | - | 860 | 0.012-0.017 | 600 | 0.012-0.017 | 540 | 0.012-0.017 | 240 | 0.012-0.017 | 1,000 | 0.013-0.018 | 1,910 | 0.024-0.033 |
| 18 | - | 760 | 0.013-0.019 | 540 | 0.013-0.019 | 480 | 0.013-0.019 | 210 | 0.013-0.019 | 890 | 0.014-0.020 | 1,700 | 0.025-0.035 |
| - | 3/4 | 720 | 0.013-0.020 | 510 | 0.013-0.020 | 450 | 0.013-0.020 | 200 | 0.013-0.020 | 840 | 0.015-0.021 | 1,600 | 0.026-0.037 |
| 20 | - | 690 | 0.014-0.020 | 480 | 0.014-0.020 | 430 | 0.014-0.020 | 190 | 0.014-0.020 | 800 | 0.016-0.022 | 1,530 | 0.027-0.039 |
| 22 | - | 620 | 0.016-0.022 | 440 | 0.016-0.022 | 400 | 0.016-0.022 | 170 | 0.016-0.022 | 730 | 0.017-0.023 | 1,390 | 0.029-0.042 |
| 24 | - | 570 | 0.016-0.024 | 400 | 0.016-0.024 | 370 | 0.016-0.024 | 160 | 0.016-0.024 | 660 | 0.018-0.026 | 1,270 | 0.030-0.044 |
| 26 | - | 530 | 0.017-0.026 | 370 | 0.017-0.026 | 340 | 0.017-0.026 | 150 | 0.017-0.026 | 610 | 0.019-0.027 | 1,170 | 0.032-0.047 |
| 28 | - | 490 | 0.018-0.028 | 340 | 0.018-0.028 | 320 | 0.018-0.028 | 140 | 0.018-0.028 | 570 | 0.020-0.029 | 1,090 | 0.033-0.050 |
| 30 | - | 460 | 0.019-0.030 | 320 | 0.019-0.030 | 300 | 0.019-0.030 | 130 | 0.019-0.030 | 530 | 0.021-0.031 | 1,020 | 0.034-0.052 |
| 32 | - | 430 | 0.020-0.031 | 300 | 0.020-0.031 | 280 | 0.020-0.031 | 120 | 0.020-0.031 | 500 | 0.023-0.033 | 960 | 0.035-0.054 |

1. The indicated speeds and feeds are when water soluble oil is used.
2. Suitable cutting fluid is water-emulsifiable, high density oil (less than 10 times dilution).
3. With the exception of using milling chucks, pay careful attention to ensure that drill is rigidly clamped and keep deflection at a minimum.
4. In case of drilling depth: >4D, reduce drilling speed as below.
5. When using non-water soluble oil or water-emulsifiable oil (over 10 times dilution), reduce drilling speed by 20%.
6. Step process should be used when drilling depth of the hole exceeds 4 times drill diameter for vertical machines or 3 times drill diameter for horizontal lathe machines.

D: Drill Diameter

| Drilling Depth | ≤5D | ≤6D |
|------------------------------|------|------|
| Coefficient for reducing RPM | x0.9 | x0.7 |



List 1700 - V-HO GDR: Coolant-Through

General Drilling Operations

| Work Material | Low Carbon Steels 1010, 1018 | | Carbon Steels 1045, 1050 | | Tool Steels D2, H13 | | Tool Steels H13 (20 HRC) | | Cast Iron | | Cast Aluminum | |
|--------------------|------------------------------|-------------|--------------------------|-------------|---------------------|-------------|--------------------------|-------------|--------------|-------------|---------------|-------------|
| Drilling Speed | 120-160 SFM | | 100-140 SFM | | 83-120 SFM | | 50-90 SFM | | 150-200 SFM | | 250-400 SFM | |
| Drill Dia. Inch | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| 1/4 | 2,140 | 0.005-0.007 | 1,830 | 0.005-0.007 | 1,530 | 0.005-0.007 | 1,070 | 0.005-0.007 | 2,680 | 0.008-0.010 | 4,970 | 0.013-0.019 |
| 9/32 | 1,900 | 0.006-0.008 | 1,630 | 0.006-0.008 | 1,360 | 0.006-0.008 | 950 | 0.006-0.008 | 2,380 | 0.008-0.011 | 4,420 | 0.014-0.020 |
| 5/16 | 1,710 | 0.007-0.009 | 1,470 | 0.007-0.009 | 1,220 | 0.007-0.009 | 860 | 0.007-0.009 | 2,140 | 0.008-0.012 | 3,970 | 0.015-0.021 |
| 11/32 | 1,560 | 0.007-0.009 | 1,330 | 0.007-0.009 | 1,110 | 0.007-0.009 | 780 | 0.007-0.009 | 1,950 | 0.009-0.013 | 3,610 | 0.016-0.022 |
| 3/8 | 1,430 | 0.008-0.011 | 1,220 | 0.008-0.011 | 1,020 | 0.008-0.011 | 710 | 0.008-0.011 | 1,780 | 0.010-0.014 | 3,310 | 0.017-0.025 |
| 13/32 | 1,320 | 0.008-0.011 | 1,130 | 0.008-0.011 | 940 | 0.008-0.011 | 660 | 0.008-0.011 | 1,650 | 0.010-0.014 | 3,060 | 0.018-0.026 |
| 7/16 | 1,220 | 0.009-0.012 | 1,050 | 0.009-0.012 | 870 | 0.009-0.012 | 610 | 0.009-0.012 | 1,530 | 0.011-0.015 | 2,840 | 0.019-0.027 |
| 15/32 | 1,140 | 0.009-0.012 | 980 | 0.009-0.012 | 820 | 0.009-0.012 | 570 | 0.009-0.012 | 1,430 | 0.011-0.015 | 2,650 | 0.020-0.028 |
| 1/2 | 1,070 | 0.010-0.013 | 920 | 0.010-0.013 | 760 | 0.010-0.013 | 540 | 0.010-0.013 | 1,340 | 0.013-0.017 | 2,480 | 0.021-0.030 |
| 9/16 | 950 | 0.011-0.014 | 820 | 0.011-0.014 | 680 | 0.011-0.014 | 480 | 0.011-0.014 | 1,190 | 0.013-0.017 | 2,210 | 0.022-0.031 |
| 5/8 | 860 | 0.012-0.015 | 730 | 0.012-0.015 | 610 | 0.012-0.015 | 430 | 0.011-0.014 | 1,070 | 0.014-0.018 | 1,990 | 0.023-0.032 |
| 11/16 | 780 | 0.013-0.016 | 670 | 0.013-0.016 | 560 | 0.013-0.016 | 390 | 0.012-0.015 | 970 | 0.014-0.018 | 1,810 | 0.024-0.033 |
| 3/4 | 710 | 0.014-0.017 | 610 | 0.014-0.017 | 510 | 0.014-0.017 | 360 | 0.013-0.016 | 890 | 0.015-0.019 | 1,660 | 0.025-0.034 |
| 13/16 | 660 | 0.016-0.021 | 560 | 0.016-0.021 | 470 | 0.016-0.021 | 330 | 0.015-0.020 | 820 | 0.017-0.022 | 1,530 | 0.028-0.040 |
| 7/8 | 610 | 0.017-0.022 | 520 | 0.017-0.022 | 440 | 0.017-0.022 | 310 | 0.017-0.022 | 760 | 0.018-0.023 | 1,420 | 0.030-0.042 |
| 15/16 | 570 | 0.018-0.023 | 490 | 0.018-0.023 | 410 | 0.018-0.023 | 290 | 0.018-0.023 | 710 | 0.020-0.025 | 1,320 | 0.032-0.044 |
| 1 | 540 | 0.019-0.024 | 460 | 0.019-0.024 | 380 | 0.019-0.024 | 270 | 0.019-0.024 | 670 | 0.021-0.026 | 1,240 | 0.033-0.045 |
| 1-1/8 | 480 | 0.020-0.025 | 410 | 0.020-0.025 | 340 | 0.020-0.025 | 240 | 0.020-0.025 | 590 | 0.022-0.027 | 1,100 | 0.034-0.046 |
| 1-1/4 | 430 | 0.021-0.026 | 370 | 0.021-0.026 | 310 | 0.021-0.026 | 210 | 0.020-0.025 | 540 | 0.023-0.028 | 990 | 0.035-0.047 |

1. Speeds and feeds are based on using soluble oil where applicable 1:5 to 1:10 concentration.
2. When other than an end mill collet is used, make sure the drill shank is firmly attached.
3. For deep holes (4 times the drill diameter or deeper) use the lower recommended feed rate as a starting point and increase as needed for the best result.
4. Recommended feeds and speeds are starting points only. Actual performance will be determined by specific material, the condition of equipment being used, and coolant.



List 1750 - HELIOS®:10D

List 1760 - HELIOS®:15D

List 1770 - HELIOS®:20D

General Drilling Operations

| Work Material | | Carbon Steels Mild Steels 1010, 1050, 12L14 | | Alloy Steels 4140, 4130 | | Tool Steels Die Steels D2, H13, P20, S7 | | Stainless Steels 300, 400, 17-4 PH | |
|----------------|------|---|-------------|----------------------------|-------------|---|-------------|---------------------------------------|-------------|
| Drilling Speed | | 65-80 SFM | | 60-75 SFM | | 40-55 SFM | | 20-45 SFM | |
| Drill Dia. | | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| mm | Inch | | | | | | | | |
| 2 | - | 3,510 | 0.001-0.002 | 3,270 | 0.001-0.002 | 2,300 | 0.001-0.002 | 1,570 | 0.001-0.002 |
| - | 3/32 | 2,950 | 0.001-0.002 | 2,750 | 0.001-0.002 | 1,930 | 0.001-0.002 | 1,320 | 0.001-0.002 |
| 3 | - | 2,340 | 0.001-0.003 | 2,180 | 0.001-0.003 | 1,530 | 0.001-0.003 | 1,050 | 0.001-0.003 |
| - | 1/8 | 2,210 | 0.001-0.003 | 2,060 | 0.001-0.003 | 1,450 | 0.001-0.003 | 990 | 0.001-0.003 |
| 4 | - | 1,750 | 0.002-0.004 | 1,630 | 0.002-0.004 | 1,150 | 0.002-0.004 | 790 | 0.002-0.004 |
| - | 3/16 | 1,470 | 0.002-0.005 | 1,370 | 0.002-0.005 | 970 | 0.002-0.005 | 660 | 0.002-0.005 |
| 5 | - | 1,400 | 0.002-0.005 | 1,310 | 0.002-0.005 | 920 | 0.002-0.005 | 630 | 0.002-0.005 |
| - | 7/32 | 1,260 | 0.002-0.005 | 1,180 | 0.002-0.005 | 830 | 0.002-0.005 | 570 | 0.002-0.005 |
| 6 | - | 1,170 | 0.002-0.006 | 1,090 | 0.002-0.006 | 770 | 0.002-0.006 | 520 | 0.002-0.006 |
| - | 1/4 | 1,100 | 0.003-0.006 | 1,030 | 0.003-0.006 | 720 | 0.003-0.006 | 500 | 0.003-0.006 |
| 8 | - | 880 | 0.003-0.008 | 820 | 0.003-0.008 | 580 | 0.003-0.008 | 400 | 0.003-0.007 |
| - | 3/8 | 740 | 0.004-0.009 | 690 | 0.004-0.009 | 480 | 0.004-0.009 | 330 | 0.004-0.009 |
| 10 | - | 700 | 0.004-0.010 | 650 | 0.004-0.010 | 460 | 0.004-0.010 | 315 | 0.004-0.009 |
| - | 7/16 | 630 | 0.004-0.011 | 590 | 0.004-0.011 | 410 | 0.004-0.011 | 280 | 0.004-0.010 |
| 12 | - | 580 | 0.005-0.012 | 550 | 0.005-0.012 | 380 | 0.005-0.012 | 260 | 0.005-0.011 |
| - | 1/2 | 550 | 0.005-0.012 | 520 | 0.005-0.012 | 360 | 0.005-0.012 | 250 | 0.005-0.011 |
| 14 | - | 500 | 0.005-0.014 | 470 | 0.005-0.014 | 330 | 0.005-0.014 | 225 | 0.005-0.012 |
| - | 9/16 | 490 | 0.006-0.014 | 460 | 0.006-0.014 | 320 | 0.006-0.014 | 220 | 0.006-0.012 |

For Stainless Steel and Aluminum Alloys, peck cycles may be necessary.

General Drilling Operations

| Work Material | | Ductile Cast Iron | | Cast Iron | | Aluminum Alloy, Cast Aluminum | |
|----------------|------|-------------------|-------------|--------------|-------------|----------------------------------|-------------|
| Drilling Speed | | 55-65 SFM | | 60-80 SFM | | 105-205 SFM | |
| Drill Dia. | | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| mm | Inch | | | | | | |
| 2 | - | 2,910 | 0.001-0.002 | 3,390 | 0.001-0.002 | 7,510 | 0.002-0.003 |
| - | 3/32 | 2,440 | 0.001-0.002 | 2,850 | 0.002-0.003 | 6,310 | 0.003-0.004 |
| 3 | - | 1,940 | 0.001-0.003 | 2,260 | 0.002-0.004 | 5,010 | 0.004-0.005 |
| - | 1/8 | 1,830 | 0.001-0.003 | 2,140 | 0.002-0.004 | 4,730 | 0.004-0.005 |
| 4 | - | 1,450 | 0.001-0.004 | 1,700 | 0.003-0.005 | 3,760 | 0.005-0.006 |
| - | 3/16 | 1,220 | 0.001-0.005 | 1,420 | 0.004-0.006 | 3,150 | 0.006-0.007 |
| 5 | - | 1,160 | 0.001-0.005 | 1,350 | 0.004-0.006 | 3,000 | 0.006-0.008 |
| - | 7/32 | 1,050 | 0.001-0.005 | 1,225 | 0.004-0.007 | 2,700 | 0.007-0.009 |
| 6 | - | 970 | 0.001-0.006 | 1,130 | 0.005-0.008 | 2,500 | 0.007-0.009 |
| - | 1/4 | 920 | 0.002-0.006 | 1,070 | 0.005-0.008 | 2,360 | 0.008-0.010 |
| 8 | - | 730 | 0.002-0.008 | 850 | 0.006-0.010 | 1,880 | 0.009-0.013 |
| - | 3/8 | 610 | 0.002-0.009 | 710 | 0.008-0.012 | 1,580 | 0.011-0.015 |
| 10 | - | 580 | 0.002-0.010 | 680 | 0.008-0.013 | 1,500 | 0.012-0.016 |
| - | 7/16 | 525 | 0.003-0.011 | 610 | 0.009-0.014 | 1,350 | 0.013-0.018 |
| 12 | - | 485 | 0.003-0.012 | 570 | 0.009-0.015 | 1,250 | 0.014-0.019 |
| - | 1/2 | 460 | 0.003-0.012 | 535 | 0.010-0.016 | 1,180 | 0.015-0.020 |
| 14 | - | 415 | 0.003-0.014 | 485 | 0.011-0.018 | 1,070 | 0.016-0.022 |
| - | 9/16 | 405 | 0.003-0.014 | 475 | 0.011-0.018 | 1,050 | 0.017-0.022 |

For Stainless Steel and Aluminum Alloys, peck cycles may be necessary.
For deep hold drilling procedure please refer to page: 347.



List 1800 - V-Select

General Drilling Operations

| Work Material | Low Carbon Steels 1010, 1018 | | Carbon Steels | | Alloy Steels 4140, 4340 | | Tool Steels D2, H13 | | Cast Iron | | Cast Aluminum | |
|------------------|---------------------------------|-------------|---------------|-------------|----------------------------|-------------|------------------------|-------------|--------------|-------------|---------------|-------------|
| Drilling Speed | 72-132 SFM | | 52-99 SFM | | 40-82 SFM | | 26-52 SFM | | 72-131 SFM | | 164-328 SFM | |
| Drill Dia. mm | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| 2 | 4,950 | 0.002-0.004 | 3,660 | 0.002-0.004 | 2,960 | 0.002-0.004 | 1,900 | 0.002-0.004 | 4,920 | 0.003-0.004 | 12,000 | 0.005-0.007 |
| 3 | 3,300 | 0.004-0.005 | 2,800 | 0.004-0.005 | 2,400 | 0.004-0.005 | 1,320 | 0.004-0.005 | 3,850 | 0.004-0.006 | 10,000 | 0.008-0.011 |
| 4 | 2,470 | 0.004-0.006 | 2,100 | 0.004-0.006 | 1,800 | 0.004-0.006 | 950 | 0.004-0.006 | 2,900 | 0.005-0.007 | 7,500 | 0.009-0.015 |
| 5 | 1,980 | 0.005-0.007 | 1,600 | 0.005-0.007 | 1,400 | 0.005-0.007 | 750 | 0.005-0.007 | 2,260 | 0.006-0.009 | 6,300 | 0.011-0.016 |
| 6 | 1,650 | 0.005-0.007 | 1,320 | 0.005-0.007 | 1,180 | 0.005-0.007 | 630 | 0.005-0.007 | 1,900 | 0.007-0.010 | 5,000 | 0.013-0.019 |
| 8 | 1,240 | 0.006-0.009 | 1,000 | 0.006-0.009 | 900 | 0.006-0.009 | 480 | 0.006-0.009 | 1,400 | 0.008-0.012 | 4,000 | 0.015-0.021 |
| 10 | 990 | 0.008-0.011 | 800 | 0.008-0.011 | 710 | 0.008-0.011 | 380 | 0.008-0.011 | 1,120 | 0.010-0.014 | 3,150 | 0.018-0.025 |
| 12 | 820 | 0.009-0.013 | 670 | 0.009-0.013 | 600 | 0.009-0.013 | 320 | 0.009-0.013 | 950 | 0.012-0.017 | 2,650 | 0.021-0.030 |
| 13 | 760 | 0.010-0.014 | 620 | 0.010-0.014 | 550 | 0.010-0.014 | 300 | 0.010-0.014 | 880 | 0.012-0.017 | 2,450 | 0.022-0.031 |



List 1150 - NEXUS GDS: **Stub** List 1650 - NEXUS GDR: **Jobbers**

General Drilling Operations

| Work Material | Low Carbon Steels Mild Steels 1010, 1018 | | Medium Carbon Steels 1035, 1045 | | Alloy Steels 4140, 4130 | | Tool Steels D2, H13 | | Stainless Steels | | | | |
|--------------------------|--|-------------|------------------------------------|-------------|----------------------------|-------------|------------------------|-------------|------------------------------------|-------------|--|--------------|-------------|
| | | | | | | | | | Austenitic 304 (Sulfur < 0.02%) | | Austenitic 304 (Sulfur > 0.02%) 303, 317 | | |
| Drilling Speed | 130-195 SFM | | 80-150 SFM | | 60-125 SFM | | 40-80 SFM | | 40-50 SFM | | 41-50 SFM | | |
| Drill Dia. mm Inch | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | |
| | 1 | - | 15,750 | 0.001-0.002 | 11,160 | 0.001-0.002 | 8,970 | 0.001-0.002 | 5,820 | 0.001-0.002 | 4,360 | 0.0005-0.001 | 4,410 |
| - | 1/16 | 9,920 | 0.001-0.003 | 7,000 | 0.001-0.003 | 5,650 | 0.001-0.003 | 3,650 | 0.001-0.003 | 2,750 | 0.0005-0.001 | 2,780 | 0.001-0.002 |
| 2 | - | 7,880 | 0.002-0.004 | 5,580 | 0.002-0.004 | 4,480 | 0.002-0.004 | 2,910 | 0.002-0.004 | 2,180 | 0.001-0.002 | 2,200 | 0.002-0.003 |
| - | 3/32 | 6,620 | 0.003-0.004 | 4,680 | 0.003-0.004 | 3,760 | 0.003-0.004 | 2,440 | 0.003-0.004 | 1,830 | 0.001-0.002 | 1,850 | 0.002-0.003 |
| 3 | - | 5,250 | 0.004-0.005 | 3,720 | 0.004-0.005 | 2,990 | 0.004-0.005 | 1,940 | 0.004-0.005 | 1,450 | 0.001-0.003 | 1,470 | 0.003-0.004 |
| - | 1/8 | 4,960 | 0.004-0.005 | 3,500 | 0.004-0.005 | 2,820 | 0.004-0.005 | 1,830 | 0.004-0.005 | 1,370 | 0.001-0.003 | 1,390 | 0.003-0.004 |
| 4 | - | 3,940 | 0.004-0.006 | 2,790 | 0.004-0.006 | 2,240 | 0.004-0.006 | 1,455 | 0.004-0.006 | 1,090 | 0.002-0.003 | 1,100 | 0.003-0.005 |
| - | 3/16 | 3,310 | 0.005-0.007 | 2,340 | 0.005-0.007 | 1,880 | 0.005-0.007 | 1,220 | 0.005-0.007 | 915 | 0.002-0.004 | 925 | 0.004-0.006 |
| 6 | - | 2,630 | 0.005-0.008 | 1,860 | 0.005-0.008 | 1,490 | 0.005-0.008 | 970 | 0.005-0.008 | 725 | 0.003-0.005 | 735 | 0.005-0.007 |
| - | 1/4 | 2,480 | 0.005-0.008 | 1,750 | 0.005-0.008 | 1,410 | 0.005-0.008 | 910 | 0.005-0.008 | 685 | 0.003-0.005 | 695 | 0.005-0.007 |
| 8 | - | 1,970 | 0.007-0.009 | 1,395 | 0.007-0.009 | 1,120 | 0.007-0.009 | 725 | 0.007-0.009 | 545 | 0.003-0.006 | 550 | 0.006-0.009 |
| - | 3/8 | 1,650 | 0.008-0.011 | 1,170 | 0.008-0.011 | 940 | 0.008-0.011 | 610 | 0.008-0.011 | 460 | 0.004-0.007 | 460 | 0.007-0.011 |
| 10 | - | 1,575 | 0.008-0.011 | 1,115 | 0.008-0.011 | 900 | 0.008-0.011 | 580 | 0.008-0.011 | 435 | 0.004-0.008 | 440 | 0.008-0.011 |
| - | 7/16 | 1,420 | 0.009-0.012 | 1,000 | 0.009-0.012 | 810 | 0.009-0.012 | 520 | 0.009-0.012 | 390 | 0.005-0.009 | 400 | 0.009-0.012 |
| 12 | - | 1,310 | 0.009-0.013 | 930 | 0.009-0.013 | 750 | 0.009-0.013 | 485 | 0.009-0.013 | 365 | 0.005-0.009 | 370 | 0.009-0.013 |
| - | 1/2 | 1,240 | 0.010-0.014 | 870 | 0.010-0.014 | 705 | 0.010-0.014 | 450 | 0.010-0.014 | 345 | 0.005-0.010 | 350 | 0.010-0.014 |

1. The indicated speeds and feeds are for drilling with water soluble coolant.
2. The most suitable cutting fluid is water-emulsifiable high density oil (less than 10 times dilution)
3. When drilling cast surface (ie.not ground surface), reduce drilling speed by 20%.
4. For drilling depth>3D, reduce drilling speed (using the table below).
5. Step feeding is required for drilling depth>4D.
6. When using non-water soluble coolant or water-emulsifiable (over 10 times dilution), reduce the drilling speed by 20%.

D: Drill Diameter

| Drilling Depth | ≤4D | ≤5D | ≤6D |
|------------------------------|------|------|-------|
| Coefficient for reducing RPM | x0.9 | x0.8 | x0.75 |

continued on next page



| Work Material | Stainless Steels | | | | | | Cast Iron | Aluminum Alloy 5052, 7075 | Cast Aluminum | Copper Copper Alloy | | | | |
|-----------------------|----------------------|--------------|-------------------|--------------|---------------|--------------|--------------|---------------------------|---------------|---------------------|--------------|-------------|--------------|--------------|
| | Martensitic 420, 440 | | Ferritic 430, 405 | | 15-5PH 17-4PH | | | | | | | | | |
| Drilling Speed | 42-50 SFM | | 43-50 SFM | | 44-50 SFM | | 110-195 SFM | | 105-205 SFM | | 205-325 SFM | | 130-195 SFM | |
| Drill Dia. mm Inch | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| 1 - | 4,460 | 0.0005-0.001 | 4,510 | 0.0005-0.001 | 4,550 | 0.0005-0.001 | 14,780 | 0.001-0.002 | 15,000 | 0.001-0.002 | 25,000 | 0.001-0.002 | 15,750 | 0.0005-0.001 |
| - 1/16 | 2,810 | 0.0005-0.001 | 2,840 | 0.0005-0.001 | 2,870 | 0.0005-0.001 | 9,310 | 0.002-0.003 | 9,460 | 0.001-0.003 | 16,180 | 0.001-0.003 | 9,920 | 0.001-0.002 |
| 2 - | 2,230 | 0.001-0.002 | 2,250 | 0.001-0.002 | 2,280 | 0.001-0.002 | 7,390 | 0.003-0.004 | 7,510 | 0.002-0.005 | 12,840 | 0.002-0.005 | 7,870 | 0.001-0.002 |
| - 3/32 | 1,870 | 0.001-0.002 | 1,900 | 0.001-0.002 | 1,915 | 0.001-0.002 | 6,210 | 0.003-0.004 | 6,310 | 0.002-0.006 | 10,790 | 0.002-0.006 | 6,600 | 0.002-0.003 |
| 3 - | 1,490 | 0.002-0.003 | 1,500 | 0.002-0.003 | 1,520 | 0.002-0.003 | 4,930 | 0.004-0.006 | 5,010 | 0.003-0.007 | 8,560 | 0.003-0.007 | 5,250 | 0.002-0.004 |
| - 1/8 | 1,405 | 0.002-0.003 | 1,420 | 0.002-0.003 | 1,435 | 0.002-0.003 | 4,660 | 0.004-0.006 | 4,730 | 0.003-0.007 | 8,100 | 0.003-0.007 | 4,960 | 0.002-0.004 |
| 4 - | 1,115 | 0.002-0.003 | 1,130 | 0.002-0.003 | 1,140 | 0.002-0.003 | 3,700 | 0.006-0.008 | 3,760 | 0.003-0.009 | 6,420 | 0.003-0.009 | 3,940 | 0.003-0.004 |
| - 3/16 | 935 | 0.002-0.004 | 950 | 0.003-0.004 | 960 | 0.003-0.004 | 3,100 | 0.006-0.009 | 3,150 | 0.004-0.011 | 5,400 | 0.004-0.011 | 3,310 | 0.004-0.005 |
| 6 - | 740 | 0.002-0.005 | 750 | 0.004-0.005 | 760 | 0.004-0.005 | 2,460 | 0.008-0.010 | 2,500 | 0.005-0.014 | 4,280 | 0.005-0.014 | 2,620 | 0.005-0.006 |
| - 1/4 | 700 | 0.002-0.005 | 710 | 0.004-0.005 | 720 | 0.004-0.005 | 2,330 | 0.008-0.010 | 2,360 | 0.005-0.015 | 4,050 | 0.005-0.015 | 2,480 | 0.005-0.006 |
| 8 - | 560 | 0.003-0.006 | 565 | 0.005-0.006 | 570 | 0.005-0.006 | 1,850 | 0.008-0.012 | 1,880 | 0.006-0.018 | 3,210 | 0.006-0.018 | 1,970 | 0.006-0.008 |
| - 3/8 | 470 | 0.003-0.007 | 475 | 0.006-0.007 | 480 | 0.006-0.007 | 1,550 | 0.009-0.013 | 1,580 | 0.007-0.021 | 2,700 | 0.007-0.021 | 1,650 | 0.007-0.009 |
| 10 - | 445 | 0.004-0.008 | 450 | 0.006-0.008 | 455 | 0.006-0.008 | 1,480 | 0.010-0.014 | 1,500 | 0.008-0.022 | 2,570 | 0.008-0.022 | 1,570 | 0.008-0.010 |
| - 7/16 | 400 | 0.004-0.009 | 405 | 0.007-0.009 | 410 | 0.007-0.009 | 1,330 | 0.010-0.015 | 1,350 | 0.009-0.024 | 2,310 | 0.009-0.024 | 1,420 | 0.009-0.011 |
| 12 - | 370 | 0.005-0.009 | 375 | 0.007-0.009 | 380 | 0.007-0.009 | 1,230 | 0.011-0.015 | 1,250 | 0.009-0.026 | 2,140 | 0.009-0.026 | 1,310 | 0.009-0.012 |
| - 1/2 | 350 | 0.005-0.010 | 355 | 0.008-0.010 | 360 | 0.008-0.010 | 1,160 | 0.011-0.015 | 1,180 | 0.010-0.027 | 2,020 | 0.010-0.027 | 1,240 | 0.010-0.013 |





List 1000 - EX-GOLD®: Stub List 1500 - EX-GOLD®: Jobbers

General Drilling Operations

| Work Material | Low Carbon Steels 1010, 1018 | | Meduim Carbon Steels 1035, 1045 | | Alloy Steels 4140, 4340 | | Tool Steels D2, H13 | | Cast Iron | | Cast Aluminum | | |
|----------------|------------------------------|-------|---------------------------------|-------|-------------------------|-------|---------------------|-------|-------------|-------|---------------|--------|-------------|
| Drilling Speed | 105-130 SFM | | 70-100 SFM | | 65-80 SFM | | 25-40 SFM | | 105-130 SFM | | 205-330 SFM | | |
| Drill Dia. | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | |
| | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | |
| mm | Inch | | | | | | | | | | | | |
| 2 | - | 5,710 | 0.002-0.004 | 4,120 | 0.002-0.004 | 3,520 | 0.002-0.004 | 1,570 | 0.002-0.004 | 5,700 | 0.003-0.004 | 13,000 | 0.006-0.008 |
| - | 3/32 | 4,790 | 0.003-0.004 | 3,460 | 0.003-0.004 | 2,960 | 0.003-0.004 | 1,320 | 0.003-0.004 | 4,790 | 0.003-0.004 | 10,900 | 0.007-0.009 |
| 3 | - | 3,800 | 0.004-0.005 | 2,750 | 0.004-0.005 | 2,350 | 0.004-0.005 | 1,050 | 0.004-0.005 | 3,800 | 0.004-0.006 | 8,650 | 0.008-0.011 |
| - | 1/8 | 3,590 | 0.004-0.005 | 2,600 | 0.004-0.005 | 2,220 | 0.004-0.005 | 990 | 0.004-0.005 | 3,590 | 0.004-0.006 | 8,180 | 0.008-0.011 |
| 4 | - | 2,850 | 0.004-0.006 | 2,060 | 0.004-0.006 | 1,760 | 0.004-0.006 | 790 | 0.004-0.006 | 2,850 | 0.006-0.008 | 6,480 | 0.010-0.013 |
| - | 3/16 | 2,390 | 0.005-0.007 | 1,730 | 0.005-0.007 | 1,480 | 0.005-0.007 | 660 | 0.005-0.007 | 2,390 | 0.006-0.009 | 5,450 | 0.011-0.016 |
| 6 | - | 1,900 | 0.005-0.007 | 1,370 | 0.005-0.007 | 1,170 | 0.005-0.007 | 530 | 0.005-0.007 | 1,900 | 0.007-0.010 | 4,320 | 0.013-0.018 |
| - | 1/4 | 1,800 | 0.005-0.007 | 1,300 | 0.005-0.007 | 1,110 | 0.005-0.007 | 500 | 0.005-0.007 | 1,800 | 0.008-0.010 | 4,090 | 0.013-0.019 |
| 8 | - | 1,430 | 0.007-0.009 | 1,030 | 0.007-0.009 | 880 | 0.007-0.009 | 390 | 0.007-0.009 | 1,430 | 0.008-0.012 | 3,240 | 0.015-0.021 |
| - | 3/8 | 1,200 | 0.008-0.011 | 870 | 0.008-0.011 | 740 | 0.008-0.011 | 330 | 0.008-0.011 | 1,200 | 0.010-0.014 | 2,730 | 0.017-0.025 |
| 10 | - | 1,140 | 0.008-0.011 | 820 | 0.008-0.011 | 700 | 0.008-0.011 | 320 | 0.008-0.011 | 1,140 | 0.010-0.014 | 2,600 | 0.018-0.025 |
| - | 7/16 | 1,030 | 0.009-0.012 | 740 | 0.009-0.012 | 630 | 0.009-0.012 | 280 | 0.009-0.012 | 1,030 | 0.011-0.015 | 2,340 | 0.019-0.027 |
| 12 | - | 950 | 0.009-0.012 | 680 | 0.009-0.012 | 580 | 0.009-0.012 | 260 | 0.009-0.012 | 950 | 0.011-0.016 | 2,160 | 0.020-0.028 |
| - | 1/2 | 900 | 0.010-0.013 | 650 | 0.010-0.013 | 550 | 0.010-0.013 | 250 | 0.010-0.013 | 900 | 0.012-0.017 | 2,040 | 0.021-0.030 |
| 14 | - | 810 | 0.011-0.014 | 590 | 0.011-0.014 | 500 | 0.011-0.014 | 230 | 0.011-0.014 | 820 | 0.012-0.017 | 1,850 | 0.022-0.031 |
| - | 5/8 | 720 | 0.012-0.015 | 520 | 0.012-0.015 | 440 | 0.012-0.015 | 200 | 0.011-0.014 | 720 | 0.013-0.018 | 1,640 | 0.023-0.032 |
| 18 | - | 630 | 0.013-0.016 | 450 | 0.013-0.016 | 390 | 0.013-0.016 | 180 | 0.012-0.015 | 630 | 0.013-0.018 | 1,440 | 0.024-0.033 |
| - | 3/4 | 600 | 0.014-0.017 | 430 | 0.014-0.017 | 370 | 0.014-0.017 | 170 | 0.013-0.016 | 600 | 0.014-0.019 | 1,360 | 0.025-0.034 |

1. Speeds and feeds are based on using soluble oil where applicable 1:5 to 1:10 concentration.
2. When other than an end mill collet is used, make sure the drill shank is firmly attached.
3. For deep holes (4 times the drill diameter or deeper) use the lower recommended feed rate as a starting point and increase as needed for the best result.
4. Recommended feeds and speeds are starting points only. Actual performance will be determined by specific material, the condition of equipment being used, and coolant.



List 1100 - EX-SUS-GOLD: **Stub**

List 1600 - EX-SUS-GOLD: **Jobbers**

General Drilling Operations

| Work Material | Low Carbon Steels Mild Steels 1010, 1018 | | Stainless Steels | | | | | | | | Aluminum 5052, 7075 | | Cast Aluminum | | Copper Copper Alloy | | |
|----------------|--|--------|------------------------|-------|-------------------------|-------|----------------------|-------|------------------|-------|------------------------|--------|---------------|--------|------------------------|--------|--------------|
| | | | Austenitic 304, 316 | | Martensitic 420, 440 | | Ferritic 430, 405 | | 15-5PH 17-4PH | | | | | | | | |
| Drilling Speed | 100-130 SFM | | 40-60 SFM | | 50-65 SFM | | 50-65 SFM | | 25-40 SFM | | 105 - 205 SFM | | 205-325 SFM | | 80 - 160 SFM | | |
| Drill Dia. | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | |
| mm | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | |
| 1 | - | 11,150 | 0.001-0.002 | 4,800 | 0.001-0.002 | 5,550 | 0.001-0.002 | 5,550 | 0.0005-0.001 | 3,200 | 0.0005-0.001 | 15,000 | 0.001-0.002 | 25,000 | 0.001-0.002 | 11,630 | 0.0005-0.001 |
| - | 1/16 | 7,020 | 0.002-0.003 | 3,000 | 0.001-0.003 | 3,600 | 0.001-0.003 | 3,600 | 0.0005-0.001 | 2,000 | 0.0005-0.001 | 9,460 | 0.001-0.004 | 16,180 | 0.002-0.004 | 7,330 | 0.001-0.002 |
| 2 | - | 5,570 | 0.002-0.004 | 2,400 | 0.002-0.003 | 2,850 | 0.002-0.003 | 2,850 | 0.001-0.002 | 1,600 | 0.001-0.002 | 7,510 | 0.002-0.005 | 12,840 | 0.002-0.005 | 5,820 | 0.001-0.002 |
| - | 3/32 | 4,680 | 0.003-0.004 | 2,000 | 0.002-0.003 | 2,400 | 0.002-0.003 | 2,400 | 0.001-0.002 | 1,350 | 0.001-0.002 | 6,310 | 0.002-0.006 | 10,790 | 0.002-0.006 | 4,890 | 0.001-0.003 |
| 3 | - | 3,710 | 0.004-0.005 | 1,600 | 0.002-0.004 | 1,900 | 0.002-0.004 | 1,900 | 0.002-0.003 | 1,100 | 0.002-0.003 | 5,010 | 0.002-0.007 | 8,560 | 0.002-0.007 | 3,880 | 0.002-0.004 |
| - | 1/8 | 3,510 | 0.004-0.005 | 1,500 | 0.003-0.004 | 1,800 | 0.002-0.004 | 1,800 | 0.002-0.003 | 1,000 | 0.002-0.003 | 4,730 | 0.003-0.007 | 8,090 | 0.003-0.007 | 3,660 | 0.002-0.004 |
| 4 | - | 2,790 | 0.004-0.006 | 1,200 | 0.003-0.005 | 1,450 | 0.003-0.005 | 1,450 | 0.002-0.003 | 800 | 0.002-0.003 | 3,760 | 0.003-0.009 | 6,420 | 0.003-0.009 | 2,910 | 0.003-0.004 |
| - | 3/16 | 2,340 | 0.005-0.007 | 1,000 | 0.004-0.006 | 1,200 | 0.004-0.006 | 1,200 | 0.003-0.004 | 680 | 0.003-0.004 | 3,150 | 0.004-0.011 | 5,390 | 0.004-0.011 | 2,440 | 0.004-0.005 |
| 6 | - | 1,860 | 0.005-0.008 | 800 | 0.005-0.007 | 950 | 0.006-0.007 | 950 | 0.004-0.005 | 550 | 0.004-0.005 | 2,500 | 0.005-0.014 | 4,280 | 0.005-0.014 | 1,940 | 0.005-0.006 |
| - | 1/4 | 1,750 | 0.006-0.008 | 750 | 0.005-0.007 | 900 | 0.006-0.007 | 900 | 0.004-0.005 | 510 | 0.004-0.005 | 2,360 | 0.005-0.015 | 4,050 | 0.005-0.015 | 1,830 | 0.005-0.007 |
| 8 | - | 1,400 | 0.007-0.009 | 600 | 0.006-0.009 | 720 | 0.008-0.009 | 720 | 0.005-0.006 | 400 | 0.005-0.006 | 1,880 | 0.006-0.018 | 3,210 | 0.006-0.018 | 1,450 | 0.006-0.008 |
| - | 3/8 | 1,170 | 0.008-0.010 | 500 | 0.007-0.010 | 600 | 0.009-0.011 | 600 | 0.006-0.007 | 340 | 0.006-0.007 | 1,580 | 0.007-0.021 | 2,700 | 0.007-0.021 | 1,220 | 0.007-0.009 |
| 10 | - | 1,110 | 0.008-0.011 | 480 | 0.008-0.011 | 570 | 0.010-0.012 | 570 | 0.006-0.008 | 320 | 0.006-0.008 | 1,500 | 0.008-0.022 | 2,570 | 0.008-0.022 | 1,160 | 0.008-0.010 |
| - | 7/16 | 1,000 | 0.009-0.012 | 430 | 0.008-0.012 | 520 | 0.011-0.013 | 520 | 0.006-0.009 | 300 | 0.006-0.009 | 1,350 | 0.008-0.024 | 2,310 | 0.008-0.024 | 1,050 | 0.009-0.011 |
| 12 | - | 930 | 0.009-0.013 | 400 | 0.009-0.013 | 480 | 0.012-0.014 | 480 | 0.007-0.009 | 280 | 0.007-0.009 | 1,250 | 0.009-0.026 | 2,140 | 0.009-0.026 | 970 | 0.009-0.012 |
| - | 1/2 | 880 | 0.010-0.014 | 380 | 0.010-0.014 | 450 | 0.013-0.015 | 450 | 0.007-0.010 | 260 | 0.007-0.010 | 1,180 | 0.010-0.027 | 2,020 | 0.010-0.027 | 920 | 0.010-0.012 |
| 14 | - | 800 | 0.011-0.015 | 340 | 0.011-0.015 | 410 | 0.014-0.018 | 410 | 0.008-0.012 | 225 | 0.008-0.012 | 1,070 | 0.011-0.029 | 1,830 | 0.011-0.029 | 830 | 0.010-0.013 |
| - | 5/8 | 700 | 0.011-0.016 | 300 | 0.012-0.017 | 360 | 0.015-0.020 | 360 | 0.009-0.012 | 200 | 0.009-0.012 | 950 | 0.012-0.032 | 1,620 | 0.012-0.032 | 735 | 0.011-0.014 |
| 16 | - | 695 | 0.011-0.017 | 300 | 0.012-0.017 | 355 | 0.015-0.020 | 355 | 0.009-0.013 | 200 | 0.009-0.013 | 940 | 0.012-0.033 | 1,600 | 0.012-0.033 | 725 | 0.011-0.015 |
| 18 | - | 620 | 0.013-0.019 | 265 | 0.013-0.019 | 320 | 0.016-0.021 | 320 | 0.010-0.014 | 175 | 0.010-0.014 | 835 | 0.013-0.037 | 1,420 | 0.013-0.037 | 650 | 0.011-0.016 |
| - | 3/4 | 585 | 0.013-0.020 | 250 | 0.013-0.019 | 300 | 0.016-0.021 | 300 | 0.010-0.015 | 165 | 0.010-0.015 | 790 | 0.013-0.038 | 1,350 | 0.013-0.038 | 610 | 0.012-0.016 |
| 20 | - | 555 | 0.013-0.021 | 240 | 0.013-0.020 | 285 | 0.016-0.022 | 285 | 0.010-0.016 | 160 | 0.010-0.016 | 750 | 0.014-0.039 | 1,280 | 0.014-0.039 | 580 | 0.012-0.017 |
| 22 | - | 510 | 0.015-0.022 | 215 | 0.014-0.021 | 260 | 0.017-0.024 | 260 | 0.011-0.017 | 145 | 0.011-0.017 | 680 | 0.015-0.043 | 1,170 | 0.015-0.043 | 530 | 0.013-0.019 |
| 24 | - | 465 | 0.015-0.024 | 200 | 0.015-0.022 | 240 | 0.017-0.026 | 240 | 0.012-0.019 | 135 | 0.012-0.019 | 625 | 0.016-0.045 | 1,070 | 0.016-0.045 | 480 | 0.013-0.021 |
| 26 | - | 430 | 0.016-0.026 | 185 | 0.016-0.024 | 220 | 0.018-0.028 | 220 | 0.013-0.021 | 120 | 0.013-0.021 | 580 | 0.017-0.048 | 990 | 0.017-0.048 | 450 | 0.013-0.022 |
| 28 | - | 400 | 0.017-0.028 | 170 | 0.016-0.025 | 200 | 0.018-0.029 | 200 | 0.013-0.022 | 115 | 0.013-0.022 | 535 | 0.018-0.051 | 920 | 0.018-0.051 | 410 | 0.014-0.023 |
| 30 | - | 370 | 0.018-0.030 | 160 | 0.017-0.026 | 190 | 0.018-0.031 | 190 | 0.014-0.024 | 105 | 0.014-0.024 | 500 | 0.019-0.053 | 860 | 0.019-0.053 | 390 | 0.014-0.025 |
| 32 | - | 350 | 0.019-0.032 | 150 | 0.017-0.028 | 180 | 0.018-0.032 | 180 | 0.015-0.025 | 100 | 0.015-0.025 | 470 | 0.020-0.056 | 800 | 0.020-0.056 | 360 | 0.015-0.026 |



List 1200 - EX-SPOT TiN-NC-LDS List 1250 - EX-SPOT LS-NC-LDS

General Drilling Operations

| Work Material | Carbon Steels, Mild Steel 1010, 1050 | | Alloy Steels 4140, 4130 | | Stainless Steels 300SS, 400SS, 17-4PH | | Cast Iron | | Cast Aluminum | | Tool Steels, Hardened Steels | | | |
|----------------|--------------------------------------|-------------|-------------------------|-------------|---------------------------------------|-------------|------------|-------------|---------------|-------------|------------------------------|-------------|-----------|-------------|
| | Hardness | | | | | | | | | | 26-30 HRC | | 30-34 HRC | |
| Drilling Speed | 105-130 SFM | | 65-85 SFM | | 25-40 SFM | | 85-105 SFM | | 165-325 SFM | | 30-45 SFM | | 25-40 SFM | |
| Drill Dia. mm | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| 3 | 3,850 | 0.001-0.003 | 2,400 | 0.001-0.003 | 1,060 | 0.001-0.003 | 3,100 | 0.001-0.003 | 8,000 | 0.004-0.009 | 1,220 | 0.001-0.003 | 1,060 | 0.001-0.003 |
| 4 | 2,900 | 0.002-0.004 | 1,800 | 0.002-0.004 | 800 | 0.002-0.004 | 2,400 | 0.002-0.005 | 6,000 | 0.005-0.010 | 910 | 0.002-0.004 | 800 | 0.002-0.004 |
| 6 | 1,900 | 0.002-0.005 | 1,180 | 0.002-0.005 | 530 | 0.002-0.005 | 1,600 | 0.002-0.005 | 4,000 | 0.005-0.011 | 610 | 0.002-0.005 | 530 | 0.002-0.005 |
| 8 | 1,400 | 0.003-0.006 | 900 | 0.003-0.006 | 400 | 0.003-0.006 | 1,200 | 0.003-0.006 | 3,000 | 0.007-0.012 | 450 | 0.003-0.006 | 400 | 0.003-0.006 |
| 10 | 1,120 | 0.004-0.007 | 710 | 0.004-0.007 | 320 | 0.004-0.007 | 950 | 0.004-0.007 | 2,400 | 0.009-0.014 | 360 | 0.004-0.007 | 320 | 0.004-0.007 |
| 12 | 950 | 0.005-0.008 | 600 | 0.005-0.008 | 270 | 0.005-0.008 | 800 | 0.005-0.008 | 2,000 | 0.010-0.016 | 300 | 0.005-0.008 | 270 | 0.005-0.008 |
| 16 | 720 | 0.006-0.011 | 450 | 0.006-0.011 | 200 | 0.006-0.011 | 600 | 0.006-0.011 | 1,500 | 0.012-0.019 | 220 | 0.006-0.011 | 200 | 0.006-0.011 |
| 20 | 560 | 0.008-0.013 | 360 | 0.008-0.013 | 160 | 0.008-0.013 | 480 | 0.008-0.013 | 1,200 | 0.016-0.024 | 180 | 0.008-0.013 | 160 | 0.008-0.013 |
| 25 | 450 | 0.010-0.018 | 290 | 0.010-0.018 | 130 | 0.010-0.018 | 380 | 0.010-0.018 | 960 | 0.020-0.029 | 150 | 0.010-0.018 | 130 | 0.010-0.018 |

1. The indicated speeds and feeds are for drilling with water soluble oil.
2. When using non-water soluble oil, reduce the drilling speed by 20%.
3. When entering on a curved or inclined surface, reduce the feed rate accordingly.
4. When using a coated tool, the drilling speed can be increased by 1.2 times the value in the table.



List 163-SO

List 164-SO

List 110-SO

| Work Material | | Carbon Steels Mild Steels 1010, 1050, 12L14 | | Alloy Steels 4140, 4130 | | Stainless Steels 300, 400, 17-4PH | | Cast Iron | | Ductile Cast Iron | |
|----------------|-------|---|---------------|----------------------------|---------------|--------------------------------------|---------------|--------------|---------------|-------------------|---------------|
| Drilling Speed | | 80-230 SFM | | 66-130 SFM | | 25-105 SFM | | 80-180 SFM | | 40-115 SFM | |
| Drill Dia. | | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| mm | Inch | | | | | | | | | | |
| 1 | - | 15,119 | 0.0008-0.0010 | 9,550 | 0.0004-0.0007 | 6,367 | 0.0004-0.0012 | 12,733 | 0.0006-0.0007 | 7,481 | 0.0004-0.0006 |
| 2 | - | 7,559 | 0.0016-0.0020 | 4,775 | 0.0009-0.0014 | 3,183 | 0.0008-0.0024 | 6,367 | 0.0012-0.0014 | 3,740 | 0.0009-0.0012 |
| - | 3/32 | 6,349 | 0.0019-0.0023 | 4,010 | 0.0010-0.0017 | 2,674 | 0.0010-0.0029 | 5,347 | 0.0014-0.0017 | 3,142 | 0.0010-0.0014 |
| 3 | - | 5,040 | 0.0024-0.0030 | 3,183 | 0.0013-0.0021 | 2,122 | 0.0012-0.0036 | 4,244 | 0.0018-0.0021 | 2,494 | 0.0013-0.0018 |
| - | 1/8 | 4,762 | 0.0025-0.0031 | 3,008 | 0.0014-0.0023 | 2,005 | 0.0013-0.0038 | 4,010 | 0.0019-0.0023 | 2,356 | 0.0014-0.0019 |
| 4 | - | 3,780 | 0.0031-0.0039 | 2,388 | 0.0017-0.0028 | 1,592 | 0.0017-0.0048 | 3,183 | 0.0024-0.0028 | 1,870 | 0.0017-0.0024 |
| - | 3/16 | 3,175 | 0.0038-0.0047 | 2,005 | 0.0021-0.0034 | 1,337 | 0.0020-0.0058 | 2,674 | 0.0028-0.0034 | 1,571 | 0.0021-0.0028 |
| 6 | - | 2,520 | 0.0047-0.0059 | 1,592 | 0.0026-0.0043 | 1,061 | 0.0025-0.0073 | 2,122 | 0.0035-0.0043 | 1,247 | 0.0026-0.0035 |
| - | 1/4 | 2,381 | 0.0050-0.0063 | 1,504 | 0.0028-0.0045 | 1,003 | 0.0027-0.0077 | 2,005 | 0.0038-0.0045 | 1,178 | 0.0028-0.0038 |
| 8 | - | 1,890 | 0.0063-0.0079 | 1,194 | 0.0035-0.0057 | 796 | 0.0034-0.0097 | 1,592 | 0.0047-0.0057 | 935 | 0.0035-0.0047 |
| - | 3/8 | 1,587 | 0.0075-0.0094 | 1,003 | 0.0041-0.0068 | 668 | 0.0041-0.0116 | 1,337 | 0.0056-0.0068 | 785 | 0.0041-0.0056 |
| 10 | - | 1,512 | 0.0079-0.0098 | 955 | 0.0043-0.0071 | 637 | 0.0043-0.0122 | 1,273 | 0.0059-0.0071 | 748 | 0.0043-0.0059 |
| - | 7/16 | 1,361 | 0.0088-0.0109 | 859 | 0.0048-0.0079 | 573 | 0.0048-0.0135 | 1,146 | 0.0066-0.0079 | 673 | 0.0048-0.0066 |
| 12 | - | 1,260 | 0.0094-0.0118 | 796 | 0.0052-0.0085 | 531 | 0.0051-0.0146 | 1,061 | 0.0071-0.0085 | 623 | 0.0052-0.0071 |
| - | 1/2 | 1,190 | 0.0100-0.0125 | 752 | 0.0055-0.0090 | 501 | 0.0055-0.0155 | 1,003 | 0.0075-0.0090 | 589 | 0.0055-0.0075 |
| 14 | - | 1,080 | 0.0110-0.0138 | 682 | 0.0061-0.0099 | 455 | 0.0060-0.0170 | 910 | 0.0083-0.0099 | 534 | 0.0061-0.0083 |
| - | 19/32 | 1,002 | 0.1190-0.0148 | 633 | 0.0065-0.0107 | 422 | 0.0065-0.0184 | 844 | 0.0089-0.0106 | 496 | 0.0065-0.0089 |
| 16 | - | 945 | 0.0126-0.0157 | 597 | 0.0069-0.0113 | 398 | 0.0069-0.0195 | 796 | 0.0094-0.0113 | 468 | 0.0069-0.0094 |

| Work Material | | Aluminum | | | | Copper | | Synthetics | | High Heat Material | | | |
|----------------|-------|--------------|---------------|--------------|---------------|--------------|---------------|--------------|---------------|---------------------|---------------|---------------------------|---------------|
| | | Alloy | | Casting | | | | | | Ti-Alloy, Ti-6Al-4V | | Ni-Base Material, Inconel | |
| Drilling Speed | | 245-410 SFM | | 90-380 SFM | | 90-350 SFM | | 50-410 SFM | | 15-115 SFM | | 15-80 SFM | |
| Drill Dia. | | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| mm | Inch | | | | | | | | | | | | |
| 1 | - | 31,833 | 0.0009-0.0018 | 22,602 | 0.0009-0.0018 | 21,010 | 0.0009-0.0018 | 22,283 | 0.0007-0.0018 | 6,367 | 0.0003-0.0004 | 4,775 | 0.0003-0.0007 |
| 2 | - | 15,917 | 0.0018-0.0035 | 11,301 | 0.0017-0.0035 | 10,505 | 0.0017-0.0035 | 11,142 | 0.0015-0.0035 | 3,183 | 0.0005-0.0009 | 2,388 | 0.0005-0.0014 |
| - | 3/32 | 13,368 | 0.0022-0.0042 | 9,492 | 0.0021-0.0042 | 8,823 | 0.0021-0.0042 | 9,358 | 0.0018-0.0042 | 2,674 | 0.0006-0.0010 | 2,005 | 0.0006-0.0017 |
| 3 | - | 10,611 | 0.0027-0.0053 | 7,534 | 0.0026-0.0053 | 7,003 | 0.0026-0.0053 | 7,428 | 0.0022-0.0053 | 2,122 | 0.0008-0.0013 | 1,592 | 0.0008-0.0021 |
| - | 1/8 | 10,026 | 0.0029-0.0056 | 7,119 | 0.0028-0.0056 | 6,617 | 0.0028-0.0056 | 7,018 | 0.0024-0.0056 | 2,005 | 0.0008-0.0014 | 1,504 | 0.0008-0.0023 |
| 4 | - | 7,958 | 0.0036-0.0071 | 5,650 | 0.0035-0.0071 | 5,253 | 0.0035-0.0071 | 5,571 | 0.0030-0.0071 | 1,592 | 0.0010-0.0017 | 1,194 | 0.0010-0.0028 |
| - | 3/16 | 6,684 | 0.0043-0.0084 | 4,746 | 0.0041-0.0084 | 4,412 | 0.0041-0.0084 | 4,679 | 0.0036-0.0084 | 1,337 | 0.0012-0.0021 | 1,003 | 0.0012-0.0034 |
| 6 | - | 5,306 | 0.0054-0.0106 | 3,767 | 0.0052-0.0106 | 3,502 | 0.0052-0.0106 | 3,714 | 0.0045-0.0106 | 1,061 | 0.0015-0.0026 | 796 | 0.0015-0.0043 |
| - | 1/4 | 5,013 | 0.0058-0.0113 | 3,559 | 0.0055-0.0113 | 3,309 | 0.0055-0.0113 | 3,509 | 0.0048-0.0113 | 1,003 | 0.0016-0.0028 | 752 | 0.0016-0.0045 |
| 8 | - | 3,979 | 0.0072-0.0142 | 2,825 | 0.0069-0.0142 | 2,626 | 0.0069-0.0142 | 2,785 | 0.0060-0.0142 | 796 | 0.0020-0.0035 | 597 | 0.0020-0.0057 |
| - | 3/8 | 3,342 | 0.0086-0.0169 | 2,373 | 0.0083-0.0169 | 2,206 | 0.0083-0.0169 | 2,339 | 0.0071-0.0169 | 668 | 0.0024-0.0041 | 501 | 0.0024-0.0068 |
| 10 | - | 3,183 | 0.0091-0.0177 | 2,260 | 0.0087-0.0177 | 2,101 | 0.0087-0.0177 | 2,228 | 0.0075-0.0177 | 637 | 0.0026-0.0043 | 478 | 0.0026-0.0071 |
| - | 7/16 | 2,865 | 0.0101-0.0197 | 2,034 | 0.0096-0.0197 | 1,891 | 0.0096-0.0197 | 2,005 | 0.0083-0.0197 | 573 | 0.0028-0.0048 | 430 | 0.0028-0.0079 |
| 12 | - | 2,653 | 0.0109-0.0213 | 1,883 | 0.0104-0.0213 | 1,751 | 0.0104-0.0213 | 1,857 | 0.0090-0.0213 | 531 | 0.0031-0.0052 | 398 | 0.0031-0.0085 |
| - | 1/2 | 2,507 | 0.0115-0.0225 | 1,780 | 0.0110-0.0225 | 1,654 | 0.0110-0.0225 | 1,755 | 0.0095-0.0225 | 501 | 0.0033-0.0055 | 376 | 0.0033-0.0090 |
| 14 | - | 2,274 | 0.0127-0.0248 | 1,614 | 0.0121-0.0248 | 1,501 | 0.0121-0.0248 | 1,592 | 0.0105-0.0248 | 455 | 0.0036-0.0061 | 341 | 0.0036-0.0099 |
| - | 19/32 | 2,110 | 0.0136-0.0267 | 1,500 | 0.0136-0.0267 | 1,390 | 0.0130-0.0267 | 1,480 | 0.0112-0.0267 | 420 | 0.0038-0.0065 | 320 | 0.0038-0.0106 |
| 16 | - | 1,990 | 0.0144-0.0283 | 1,410 | 0.0144-0.0283 | 1,310 | 0.0138-0.0283 | 1,390 | 0.0119-0.0283 | 400 | 0.0040-0.0069 | 300 | 0.0040-0.0113 |



List 1R5-SO
List 1BB-SO
List 1AQ-SO
List 1W6-SO
List 1G7-SO

| Work Material | | Carbon Steels Mild Steels 1010, 1050, 12L14 | | Alloy Steels 4140, 4130 | | Stainless Steels 300, 400, 17-4PH | | Cast Iron | | Ductile Cast Iron | |
|----------------|------|---|---------------|----------------------------|---------------|--------------------------------------|---------------|-------------|---------------|-------------------|---------------|
| Drilling Speed | | 80-165 SFM | | 30-100 SFM | | 30-75 SFM | | 115-150 SFM | | 50-115 SFM | |
| Drill Dia. | | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed |
| mm | Inch | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR |
| 1 | - | 11,936 | 0.0004-0.0016 | 6,367 | 0.0004-0.0008 | 5,093 | 0.0004-0.0011 | 12,733 | 0.0007-0.0016 | 7,958 | 0.0004-0.0008 |
| 2 | - | 5,968 | 0.0008-0.0031 | 3,183 | 0.0008-0.0016 | 2,547 | 0.0008-0.0022 | 6,367 | 0.0014-0.0031 | 3,979 | 0.0008-0.0016 |
| - | 3/32 | 5,012 | 0.0010-0.0038 | 2,674 | 0.0010-0.0019 | 2,139 | 0.0010-0.0027 | 5,347 | 0.0017-0.0038 | 3,342 | 0.0010-0.0019 |
| 3 | - | 3,979 | 0.0012-0.0047 | 2,122 | 0.0012-0.0024 | 1,698 | 0.0012-0.0033 | 4,244 | 0.0021-0.0047 | 2,653 | 0.0012-0.0024 |
| - | 1/8 | 3,759 | 0.0013-0.0050 | 2,005 | 0.0013-0.0026 | 1,604 | 0.0013-0.0035 | 4,010 | 0.0023-0.0050 | 2,507 | 0.0013-0.0026 |
| 4 | - | 2,984 | 0.0017-0.0063 | 1,592 | 0.0017-0.0033 | 1,273 | 0.0017-0.0045 | 3,183 | 0.0028-0.0063 | 1,990 | 0.0017-0.0033 |
| - | 3/16 | 2,506 | 0.0020-0.0075 | 1,337 | 0.0020-0.0039 | 1,069 | 0.0020-0.0053 | 2,674 | 0.0034-0.0075 | 1,671 | 0.0020-0.0039 |
| 6 | - | 1,989 | 0.0025-0.0094 | 1,061 | 0.0025-0.0049 | 849 | 0.0025-0.0067 | 2,122 | 0.0043-0.0094 | 1,326 | 0.0025-0.0049 |
| - | 1/4 | 1,880 | 0.0026-0.0100 | 1,003 | 0.0026-0.0052 | 802 | 0.0026-0.0071 | 2,005 | 0.0045-0.0100 | 1,253 | 0.0026-0.0052 |
| 8 | - | 1,492 | 0.0033-0.0126 | 796 | 0.0033-0.0065 | 637 | 0.0033-0.0089 | 1,592 | 0.0057-0.0126 | 995 | 0.0033-0.0065 |
| - | 3/8 | 1,253 | 0.0039-0.0150 | 668 | 0.0039-0.0078 | 535 | 0.0039-0.0106 | 1,337 | 0.0068-0.0150 | 836 | 0.0039-0.0078 |
| 10 | - | 1,194 | 0.0041-0.0157 | 637 | 0.0041-0.0081 | 509 | 0.0041-0.0112 | 1,273 | 0.0071-0.0157 | 796 | 0.0041-0.0081 |
| - | 7/16 | 1,074 | 0.0046-0.0175 | 573 | 0.0046-0.0090 | 458 | 0.0046-0.0124 | 1,146 | 0.0079-0.0175 | 716 | 0.0046-0.0090 |
| 12 | - | 995 | 0.0050-0.0189 | 531 | 0.0050-0.0098 | 424 | 0.0050-0.0134 | 1,061 | 0.0085-0.0189 | 663 | 0.0050-0.0098 |
| - | 1/2 | 940 | 0.0053-0.0200 | 501 | 0.0053-0.0103 | 401 | 0.0053-0.0142 | 1,003 | 0.0090-0.0200 | 627 | 0.0053-0.0103 |
| 13 | - | 918 | 0.0054-0.0205 | 490 | 0.0054-0.0106 | 392 | 0.0054-0.0145 | 979 | 0.0092-0.0205 | 612 | 0.0054-0.0106 |

continued on next page 

| Work Material | Aluminum | | | | Copper | High Heat Material | | | | | |
|----------------|-------------|----------|---------------|----------|---------------|---------------------|----------------|---------------------------|---------------|----------|---------------|
| | 6061, 7075 | | Casting | | | Ti-Alloy, Ti-6Al-4V | | Ni-Base Material, Inconel | | | |
| Drilling Speed | 115-200 SFM | | 75-130 SFM | | 50-90 SFM | | 20-105 SFM | | 15-50 SFM | | |
| Drill Dia. | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | |
| mm | Inch | | | | | | | | | | |
| 1 | - | 15,121 | 0.0006-0.0016 | 10,028 | 0.0006-0.0011 | 6,844 | 0.0004-0.0008 | 6,048 | 0.0004-0.0008 | 3,024 | 0.0003-0.0011 |
| 2 | - | 7,560 | 0.0011-0.0031 | 5,014 | 0.0011-0.0022 | 3,422 | 0.0008-0.0016 | 3,024 | 0.0008-0.0016 | 1,512 | 0.0006-0.0022 |
| - | 3/32 | 6,350 | 0.0013-0.0038 | 4,211 | 0.0013-0.0027 | 2,874 | 0.0010-0.0019 | 2,540 | 0.0010-0.0019 | 1,270 | 0.0008-0.0027 |
| 3 | - | 5,040 | 0.0017-0.0047 | 3,343 | 0.0017-0.0033 | 2,281 | 0.0012-0.0024 | 2,016 | 0.0012-0.0024 | 1,008 | 0.0009-0.0033 |
| - | 1/8 | 4,762 | 0.0018-0.0050 | 3,158 | 0.0018-0.0035 | 2,156 | 0.00130-0.0026 | 1,905 | 0.0013-0.0026 | 952 | 0.0010-0.0035 |
| 4 | - | 3,780 | 0.0022-0.0063 | 2,507 | 0.0022-0.0045 | 1,711 | 0.0017-0.0033 | 1,512 | 0.0017-0.0033 | 756 | 0.0013-0.0045 |
| - | 3/16 | 3,175 | 0.0026-0.0075 | 2,106 | 0.0026-0.0053 | 1,437 | 0.0020-0.0039 | 1,270 | 0.0020-0.0039 | 635 | 0.0015-0.0053 |
| 6 | - | 2,520 | 0.0033-0.0094 | 1,671 | 0.0033-0.0067 | 1,141 | 0.0025-0.0049 | 1,008 | 0.0025-0.0049 | 504 | 0.0019-0.0067 |
| - | 1/4 | 2,381 | 0.0035-0.0100 | 1,579 | 0.0035-0.0071 | 1,078 | 0.0026-0.0052 | 952 | 0.0026-0.0052 | 476 | 0.0020-0.0071 |
| 8 | - | 1,890 | 0.0044-0.0126 | 1,253 | 0.0044-0.0089 | 856 | 0.0033-0.0065 | 756 | 0.0033-0.0065 | 378 | 0.0025-0.0089 |
| - | 3/8 | 1,587 | 0.0053-0.0150 | 1,053 | 0.0053-0.0106 | 719 | 0.0039-0.0078 | 635 | 0.0039-0.0078 | 317 | 0.0030-0.0106 |
| 10 | - | 1,512 | 0.0055-0.0157 | 1,003 | 0.0055-0.0112 | 684 | 0.0041-0.0081 | 605 | 0.0041-0.0081 | 302 | 0.0031-0.0112 |
| - | 7/16 | 1,361 | 0.0061-0.0175 | 902 | 0.0061-0.0124 | 616 | 0.0046-0.0090 | 544 | 0.0046-0.0090 | 272 | 0.0035-0.0124 |
| 12 | - | 1,260 | 0.0066-0.0189 | 836 | 0.0066-0.0134 | 570 | 0.0050-0.0098 | 504 | 0.0050-0.0098 | 252 | 0.0038-0.0134 |
| - | 1/2 | 1,191 | 0.0070-0.0200 | 790 | 0.0070-0.0142 | 539 | 0.0053-0.0103 | 476 | 0.0053-0.0103 | 238 | 0.0040-0.0142 |
| 13 | - | 1,163 | 0.0072-0.0205 | 771 | 0.0072-0.0145 | 526 | 0.0054-0.0106 | 465 | 0.0054-0.0106 | 233 | 0.0041-0.0145 |

List 101-SO, 102-SO List 1X6-SO

| Work Material | | Carbon Steels Mild Steels 1010, 1050, 12L14 | | Alloy Steels 4140, 4130 | | Stainless Steels 300, 400, 17-4PH | | Cast Iron | | Ductile Cast Iron | |
|----------------|------|---|---------------|----------------------------|---------------|--------------------------------------|---------------|------------|---------------|-------------------|---------------|
| Drilling Speed | | 30-100 SFM | | 30-100 SFM | | 30-50 SFM | | 80-115 SFM | | 50-100 SFM | |
| Drill Dia. | | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed |
| mm | Inch | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR |
| 1 | - | 6,366 | 0.0003-0.0010 | 4,457 | 0.0004-0.0008 | 3,502 | 0.0002-0.0007 | 9,550 | 0.0004-0.0008 | 7,163 | 0.0004-0.0008 |
| 2 | - | 3,183 | 0.0005-0.0020 | 2,228 | 0.0009-0.0016 | 1,751 | 0.0005-0.0014 | 4,775 | 0.0009-0.0016 | 3,581 | 0.0009-0.0016 |
| - | 3/32 | 2,673 | 0.0006-0.0023 | 1,872 | 0.0010-0.0019 | 1,471 | 0.0006-0.0017 | 4,010 | 0.0010-0.0019 | 3,008 | 0.0010-0.0019 |
| 3 | - | 2,122 | 0.0008-0.0030 | 1,486 | 0.0013-0.0024 | 1,167 | 0.0007-0.0021 | 3,183 | 0.0013-0.0024 | 2,388 | 0.0013-0.0024 |
| - | 1/8 | 2,005 | 0.0008-0.0031 | 1,404 | 0.0014-0.0026 | 1,103 | 0.0008-0.0023 | 3,008 | 0.0014-0.0026 | 2,256 | 0.0014-0.0026 |
| 4 | - | 1,591 | 0.0010-0.0039 | 1,114 | 0.0017-0.0033 | 875 | 0.0009-0.0028 | 2,388 | 0.0017-0.0033 | 1,791 | 0.0017-0.0033 |
| - | 3/16 | 1,337 | 0.0012-0.0047 | 936 | 0.0021-0.0039 | 735 | 0.0011-0.0034 | 2,005 | 0.0021-0.0039 | 1,504 | 0.0021-0.0039 |
| 6 | - | 1,061 | 0.0015-0.0059 | 743 | 0.0026-0.0049 | 584 | 0.0014-0.0043 | 1,592 | 0.0026-0.0049 | 1,194 | 0.0026-0.0049 |
| - | 1/4 | 1,002 | 0.0016-0.0063 | 702 | 0.0028-0.0052 | 551 | 0.0015-0.0045 | 1,504 | 0.0028-0.0052 | 1,128 | 0.0028-0.0052 |
| 8 | - | 796 | 0.0020-0.0079 | 557 | 0.0035-0.0065 | 438 | 0.0019-0.0057 | 1,194 | 0.0035-0.0065 | 895 | 0.0035-0.0065 |
| - | 3/8 | 668 | 0.0024-0.0094 | 468 | 0.0041-0.0078 | 368 | 0.0023-0.0068 | 1,003 | 0.0041-0.0078 | 752 | 0.0041-0.0078 |
| 10 | - | 637 | 0.0026-0.0098 | 446 | 0.0043-0.0081 | 350 | 0.0024-0.0071 | 955 | 0.0043-0.0081 | 716 | 0.0043-0.0081 |
| - | 7/16 | 573 | 0.0028-0.0109 | 401 | 0.0048-0.0090 | 315 | 0.0026-0.0079 | 859 | 0.0048-0.0090 | 645 | 0.0048-0.0090 |
| 12 | - | 530 | 0.0031-0.0118 | 371 | 0.0052-0.0098 | 292 | 0.0028-0.0085 | 796 | 0.0052-0.0098 | 597 | 0.0052-0.0098 |
| - | 1/2 | 501 | 0.0033-0.0125 | 351 | 0.0055-0.0103 | 276 | 0.0030-0.0090 | 752 | 0.0055-0.0103 | 564 | 0.0055-0.0103 |
| 14 | - | 455 | 0.0036-0.0138 | 318 | 0.0061-0.0114 | 250 | 0.0033-0.0099 | 682 | 0.0061-0.0114 | 512 | 0.0061-0.0114 |
| - | 9/16 | 446 | 0.0036-0.0140 | 312 | 0.0061-0.0116 | 245 | 0.0033-0.0101 | 668 | 0.0078-0.0116 | 501 | 0.0065-0.0118 |
| 16 | - | 398 | 0.0040-0.0157 | 279 | 0.0069-0.0130 | 219 | 0.0037-0.0113 | 597 | 0.0081-0.0132 | 448 | 0.0072-0.0132 |
| 18 | - | 354 | 0.0046-0.0177 | 248 | 0.0077-0.0146 | 195 | 0.0042-0.0127 | 531 | 0.0085-0.0148 | 398 | 0.0078-0.0148 |
| 20 | - | 318 | 0.0051-0.0197 | 223 | 0.0087-0.0163 | 175 | 0.0047-0.0142 | 478 | 0.0087-0.0163 | 358 | 0.0087-0.0163 |

| Work Material | | Aluminum | | | | Copper | | High Heat Material | | | |
|----------------|------|------------|---------------|-------------|---------------|------------|---------------|---------------------|---------------|---------------------------|---------------|
| | | 6061, 7075 | | Casting | | | | Ti-Alloy, Ti-6Al-4V | | Ni-Base Material, Inconel | |
| Drilling Speed | | 30-100 SFM | | 100-330 SFM | | 50-165 SFM | | 25-80 SFM | | 15-35 SFM | |
| Drill Dia. | | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed |
| mm | Inch | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR |
| 1 | - | 11,938 | 0.0010-0.0013 | 20,692 | 0.0010-0.0013 | 10,346 | 0.0010-0.0013 | 5,093 | 0.0003-0.0006 | 2,388 | 0.0001-0.0004 |
| 2 | - | 5,969 | 0.0020-0.0025 | 10,346 | 0.0020-0.0025 | 5,173 | 0.0020-0.0025 | 2,547 | 0.0005-0.0011 | 1,194 | 0.0005-0.0009 |
| - | 3/32 | 5,013 | 0.0023-0.0030 | 8,689 | 0.0023-0.0030 | 4,345 | 0.0023-0.0030 | 2,139 | 0.0006-0.0013 | 1,003 | 0.0005-0.0010 |
| 3 | - | 3,979 | 0.0030-0.0038 | 6,897 | 0.0030-0.0038 | 3,449 | 0.0030-0.0038 | 1,698 | 0.0008-0.0017 | 796 | 0.0010-0.0013 |
| - | 1/8 | 3,760 | 0.0031-0.0040 | 6,517 | 0.0031-0.0040 | 3,259 | 0.0031-0.0040 | 1,604 | 0.0008-0.0018 | 752 | 0.0010-0.0014 |
| 4 | - | 2,984 | 0.0039-0.0050 | 5,173 | 0.0039-0.0050 | 2,586 | 0.0039-0.0050 | 1,273 | 0.0010-0.0022 | 597 | 0.0014-0.0017 |
| - | 3/16 | 2,507 | 0.0047-0.0060 | 4,345 | 0.0047-0.0060 | 2,172 | 0.0047-0.0060 | 1,069 | 0.0012-0.0026 | 501 | 0.0018-0.0021 |
| 6 | - | 1,990 | 0.0059-0.0076 | 3,449 | 0.0059-0.0076 | 1,724 | 0.0059-0.0076 | 849 | 0.0015-0.0033 | 398 | 0.0020-0.0026 |
| - | 1/4 | 1,880 | 0.0063-0.0080 | 3,259 | 0.0063-0.0080 | 1,629 | 0.0063-0.0080 | 802 | 0.0016-0.0035 | 376 | 0.0024-0.0028 |
| 8 | - | 1,492 | 0.0079-0.0101 | 2,586 | 0.0079-0.0101 | 1,293 | 0.0079-0.0101 | 637 | 0.0020-0.0044 | 298 | 0.0030-0.0035 |
| - | 3/8 | 1,253 | 0.0094-0.0120 | 2,172 | 0.0094-0.0120 | 1,086 | 0.0094-0.0120 | 535 | 0.0024-0.0053 | 251 | 0.0037-0.0041 |
| 10 | - | 1,194 | 0.0098-0.0126 | 2,069 | 0.0098-0.0126 | 1,035 | 0.0098-0.0126 | 509 | 0.0026-0.0055 | 239 | 0.0039-0.0043 |
| - | 7/16 | 1,074 | 0.0109-0.0140 | 1,862 | 0.0109-0.0140 | 931 | 0.0109-0.0140 | 458 | 0.0028-0.0061 | 215 | 0.0044-0.0048 |
| 12 | - | 995 | 0.0118-0.0151 | 1,724 | 0.0118-0.0151 | 862 | 0.0118-0.0151 | 424 | 0.0031-0.0066 | 199 | 0.0047-0.0052 |
| - | 1/2 | 940 | 0.0125-0.0160 | 1,629 | 0.0125-0.0160 | 815 | 0.0125-0.0160 | 401 | 0.0033-0.0070 | 188 | 0.0050-0.0055 |
| 14 | - | 853 | 0.0138-0.0176 | 1,478 | 0.0138-0.0176 | 739 | 0.0138-0.0176 | 364 | 0.0036-0.0077 | 171 | 0.0055-0.0061 |
| - | 9/16 | 836 | 0.0140-0.0180 | 1,448 | 0.0140-0.0182 | 724 | 0.0140-0.0180 | 356 | 0.0036-0.0078 | 167 | 0.0061-0.0065 |
| 16 | - | 746 | 0.0157-0.0187 | 1,293 | 0.0157-0.0191 | 647 | 0.0157-0.0201 | 318 | 0.0040-0.0088 | 149 | 0.0065-0.0077 |
| 18 | - | 663 | 0.0177-0.0195 | 1,150 | 0.0177-0.0187 | 575 | 0.0177-0.0226 | 283 | 0.0046-0.0099 | 133 | 0.0077-0.0081 |
| 20 | - | 597 | 0.0197-0.0252 | 1,035 | 0.0197-0.0252 | 517 | 0.0197-0.0252 | 255 | 0.0051-0.0110 | 119 | 0.0081-0.0087 |

List 1NA-SO

| Work Material | | Carbon Steels Mild Steels 1010, 1050, 12L14 | | Alloy Steels 4140, 4130 | | Stainless Steels 300, 400, 17-4PH | | Cast Iron | | Ductile Cast Iron | |
|----------------|-------|---|---------------|----------------------------|---------------|--------------------------------------|---------------|------------|---------------|-------------------|---------------|
| Drilling Speed | | 30-100 SFM | | 15-80 SFM | | 20-50 SFM | | 50-115 SFM | | 50-100 SFM | |
| Drill Dia. | | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed |
| mm | Inch | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR |
| 1.19 | No. 1 | 5,349 | 0.0014-0.0035 | 3,745 | 0.0014-0.0035 | 2,943 | 0.0014-0.0035 | 8,025 | 0.0014-0.0035 | 6,019 | 0.0014-0.0035 |
| 1.98 | No. 2 | 3,215 | 0.0023-0.0058 | 2,251 | 0.0023-0.0058 | 1,769 | 0.0023-0.0058 | 4,823 | 0.0023-0.0058 | 3,617 | 0.0023-0.0058 |
| 2.78 | No. 3 | 2,290 | 0.0033-0.0082 | 1,603 | 0.0033-0.0082 | 1,260 | 0.0033-0.0082 | 3,435 | 0.0033-0.0082 | 2,576 | 0.0033-0.0082 |
| 3.18 | No. 4 | 2,002 | 0.0063-0.0225 | 1,401 | 0.0063-0.0225 | 1,101 | 0.0063-0.0225 | 3,003 | 0.0063-0.0225 | 2,252 | 0.0063-0.0225 |
| 4.76 | No. 5 | 1,337 | 0.0094-0.0337 | 936 | 0.0094-0.0337 | 736 | 0.0094-0.0337 | 2,006 | 0.0094-0.0337 | 1,505 | 0.0094-0.0337 |
| 5.56 | No. 6 | 1,145 | 0.0219-0.0613 | 802 | 0.0219-0.0613 | 630 | 0.0219-0.0613 | 1,718 | 0.0219-0.0613 | 1,288 | 0.0219-0.0613 |
| 6.35 | No. 7 | 1,002 | 0.0250-0.0700 | 702 | 0.0250-0.0700 | 551 | 0.0250-0.0700 | 1,504 | 0.0250-0.0700 | 1,128 | 0.0250-0.0700 |

| Work Material | | Aluminum | | | | Copper | | High Heat Material | | | |
|----------------|-------|------------|---------------|-------------|---------------|------------|---------------|---------------------|---------------|---------------------------|---------------|
| | | 6061, 7075 | | Casting | | | | Ti-Alloy, Ti-6Al-4V | | Ni-Base Material, Inconel | |
| Drilling Speed | | 30-100 SFM | | 100-330 SFM | | 50-165 SFM | | 25-80 SFM | | 15-20 SFM | |
| Drill Dia. | | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed |
| mm | Inch | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR | RPM | IPR |
| 1.19 | No. 1 | 10,032 | 0.0014-0.0035 | 17,388 | 0.0014-0.0035 | 8,694 | 0.0014-0.0035 | 4,280 | 0.0014-0.0035 | 1,338 | 0.0014-0.0035 |
| 1.98 | No. 2 | 6,029 | 0.0023-0.0058 | 10,450 | 0.0023-0.0058 | 5,225 | 0.0023-0.0058 | 2,572 | 0.0023-0.0058 | 804 | 0.0023-0.0058 |
| 2.78 | No. 3 | 4,294 | 0.0033-0.0082 | 7,443 | 0.0033-0.0082 | 3,722 | 0.0033-0.0082 | 1,832 | 0.0033-0.0082 | 573 | 0.0033-0.0082 |
| 3.18 | No. 4 | 3,754 | 0.0063-0.0225 | 6,507 | 0.0063-0.0225 | 3,253 | 0.0063-0.0225 | 1,602 | 0.0063-0.0225 | 501 | 0.0063-0.0225 |
| 4.76 | No. 5 | 2,508 | 0.0094-0.0337 | 4,347 | 0.0094-0.0337 | 2,173 | 0.0094-0.0337 | 1,070 | 0.0094-0.0337 | 334 | 0.0094-0.0337 |
| 5.56 | No. 6 | 2,147 | 0.0219-0.0613 | 3,722 | 0.0219-0.0613 | 1,861 | 0.0219-0.0613 | 916 | 0.0219-0.0613 | 286 | 0.0219-0.0613 |
| 6.35 | No. 7 | 1,880 | 0.0250-0.0700 | 3,259 | 0.0250-0.0700 | 1,629 | 0.0250-0.0700 | 802 | 0.0250-0.0700 | 251 | 0.0250-0.0700 |

List 751-SO

List 752-SO

| Work Material | | Carbon Steels Mild Steels 1010, 1050, 12L14 | | Alloy Steels 4140, 4130 | | Tool Steel | | Stainless Steels 300, 400, 17-4PH | |
|----------------|------|---|-------------|----------------------------|-------------|--------------|-------------|--------------------------------------|-------------|
| Drilling Speed | | 50-80 SFM | | 15-50 SFM | | 15-25 SFM | | 20-40 SFM | |
| Drill Dia. | | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| mm | Inch | | | | | | | | |
| 2 | - | 3,155 | 0.003-0.004 | 1,575 | 0.002-0.004 | 970 | 0.002-0.003 | 1,455 | 0.002-0.004 |
| - | 3/32 | 2,650 | 0.003-0.005 | 1,325 | 0.003-0.004 | 815 | 0.002-0.003 | 1,220 | 0.003-0.005 |
| 3 | - | 2,100 | 0.004-0.007 | 1,505 | 0.003-0.005 | 645 | 0.002-0.004 | 970 | 0.003-0.007 |
| - | 1/8 | 1,985 | 0.005-0.008 | 995 | 0.004-0.006 | 610 | 0.003-0.004 | 915 | 0.004-0.008 |
| 4 | - | 1,575 | 0.005-0.008 | 790 | 0.004-0.007 | 485 | 0.003-0.005 | 730 | 0.004-0.008 |
| - | 3/16 | 1,325 | 0.005-0.009 | 660 | 0.004-0.007 | 405 | 0.003-0.005 | 610 | 0.004-0.009 |
| 6 | - | 1,050 | 0.006-0.010 | 525 | 0.005-0.008 | 325 | 0.004-0.006 | 485 | 0.005-0.010 |
| - | 1/4 | 995 | 0.006-0.010 | 495 | 0.005-0.008 | 305 | 0.004-0.007 | 460 | 0.005-0.010 |
| 8 | - | 790 | 0.006-0.011 | 395 | 0.005-0.009 | 245 | 0.004-0.007 | 365 | 0.005-0.011 |
| - | 3/8 | 660 | 0.007-0.012 | 330 | 0.006-0.010 | 205 | 0.005-0.008 | 305 | 0.006-0.012 |
| 10 | - | 630 | 0.008-0.013 | 315 | 0.006-0.010 | 195 | 0.005-0.008 | 290 | 0.006-0.013 |
| - | 7/16 | 570 | 0.008-0.013 | 285 | 0.007-0.011 | 175 | 0.005-0.009 | 260 | 0.007-0.013 |
| 12 | - | 525 | 0.008-0.014 | 265 | 0.007-0.012 | 160 | 0.005-0.009 | 245 | 0.007-0.014 |
| - | 1/2 | 495 | 0.009-0.015 | 250 | 0.008-0.013 | 155 | 0.006-0.010 | 230 | 0.008-0.015 |
| 14 | - | 450 | 0.010-0.016 | 225 | 0.008-0.013 | 140 | 0.006-0.010 | 210 | 0.008-0.016 |
| - | 3/4 | 330 | 0.010-0.016 | 165 | 0.008-0.014 | 100 | 0.006-0.011 | 155 | 0.008-0.016 |
| 20 | - | 315 | 0.012-0.019 | 160 | 0.009-0.015 | 95 | 0.007-0.012 | 145 | 0.009-0.019 |

| Work Material | | Cast Iron | | Ductile Cast Iron | | High Heat Material | | | |
|----------------|------|--------------|-------------|-------------------|-------------|--------------------|-------------|--------------|-------------|
| Drilling Speed | | 40-60 SFM | | 30-50 SFM | | 10-40 SFM | | 5-15 SFM | |
| Drill Dia. | | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| mm | Inch | | | | | | | | |
| 2 | - | 2,425 | 0.003-0.007 | 1,940 | 0.003-0.004 | 1,215 | 0.002-0.004 | 485 | 0.003-0.005 |
| - | 3/32 | 2,035 | 0.004-0.008 | 1,630 | 0.003-0.005 | 1,020 | 0.003-0.005 | 405 | 0.003-0.007 |
| 3 | - | 1,615 | 0.005-0.009 | 1,295 | 0.004-0.007 | 810 | 0.003-0.007 | 325 | 0.004-0.008 |
| - | 1/8 | 1,530 | 0.005-0.011 | 1,220 | 0.005-0.008 | 765 | 0.004-0.008 | 305 | 0.005-0.009 |
| 4 | - | 1,215 | 0.006-0.011 | 970 | 0.005-0.008 | 605 | 0.004-0.008 | 245 | 0.005-0.009 |
| - | 3/16 | 1,020 | 0.006-0.012 | 815 | 0.005-0.009 | 510 | 0.004-0.009 | 205 | 0.005-0.010 |
| 6 | - | 810 | 0.007-0.015 | 645 | 0.006-0.010 | 405 | 0.005-0.010 | 160 | 0.006-0.012 |
| - | 1/4 | 765 | 0.007-0.016 | 610 | 0.006-0.010 | 380 | 0.005-0.010 | 155 | 0.006-0.012 |
| 8 | - | 605 | 0.008-0.017 | 485 | 0.006-0.011 | 305 | 0.005-0.011 | 120 | 0.006-0.013 |
| - | 3/8 | 510 | 0.009-0.018 | 405 | 0.007-0.012 | 255 | 0.006-0.012 | 100 | 0.007-0.015 |
| 10 | - | 485 | 0.009-0.019 | 390 | 0.008-0.013 | 245 | 0.006-0.013 | 95 | 0.008-0.016 |
| - | 7/16 | 435 | 0.010-0.020 | 350 | 0.008-0.013 | 220 | 0.007-0.013 | 85 | 0.008-0.017 |
| 12 | - | 405 | 0.011-0.021 | 325 | 0.008-0.014 | 200 | 0.007-0.014 | 80 | 0.008-0.018 |
| - | 1/2 | 380 | 0.011-0.023 | 305 | 0.009-0.015 | 190 | 0.008-0.015 | 75 | 0.009-0.019 |
| 14 | - | 345 | 0.012-0.024 | 275 | 0.010-0.016 | 175 | 0.008-0.016 | 70 | 0.010-0.020 |
| - | 3/4 | 255 | 0.012-0.025 | 205 | 0.010-0.016 | 125 | 0.008-0.016 | 50 | 0.010-0.020 |
| 20 | - | 245 | 0.014-0.026 | 195 | 0.012-0.019 | 120 | 0.009-0.019 | 50 | 0.012-0.023 |

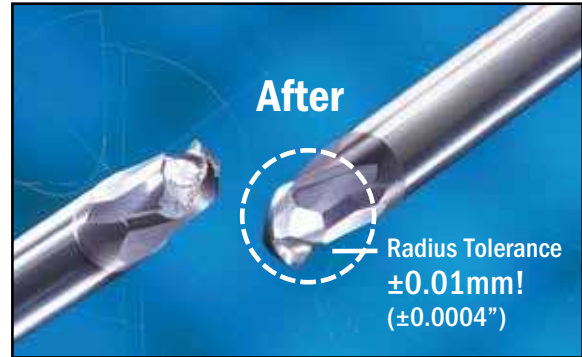
Drill Reconditioning





OSG Tool Reconditioning

OSG's Bensenville facility is the special cutting tool and regrinding authority based in the Chicago area. Through accurate and expedient regrinds of high-end cutting tools, OSG helps customers extend tool life and save money by restoring their used cutting tools to their original condition. In addition to regrinding, the Bensenville facility also manufactures custom drills, reamers, and other special cutting tools, performs product modifications and provides premium coating services.



Before:

After:



As part of the OSG Corporation (headquartered in Japan), the regrind facility is the only OSG authorized regrinding source in America. The regrinding program uses the same OSG manufacturing drawings, adheres to OSG's strict quality control standards and uses the same equipment for OSG manufacturing and inspection procedures. As one of the world's leading cutting tool manufacturers, OSG offers a global network of support to our customers.

Tool Reconditioning Lowers Costs

The primary benefit of tool reconditioning is clear: the reduction in overall tooling costs. As part of normal production, tool wear, chipping and breakage occurs often affecting tool performance and increasing manufacturing costs. By reconditioning high performance drills, end mills and taps, OSG helps manufacturers realize substantial cost savings through extended tool life without jeopardizing production quality or performance. Because OSG's reconditioned tools are manufactured to the same high level of quality and held to the same exacting standards that new tools are, customers of OSG's tool reconditioning services can expect the same high performance and quality they are accustomed with OSG's new tools even after regrinding multiple times.

Engineering & Sales Support

OSG reconditions OSG tools using the same prints as the original tools made in our plants around the world. By using original part drawings, tools are accurately reconditioned to the original specifications, so customers are assured that reconditioned tools realize the same high level of performance. Manufacturers can also work directly with OSG design engineers to customize tools for enhanced performance or to meet specific requirements.

OSG's national sales team provides tooling expertise in the field for onsite evaluations and recommendations for manufacturers to implement a customized reconditioning program. The goal is to help manufacturers reduce tool costs and inventory, optimize performance and enhance overall profits.



Contact your OSG representative or distributor to review your tool reconditioning program.





CNC Training

OSG CNC technicians are extensively trained on proper setup methodologies and reconditioning processes by an on-staff CNC trainer. Through their development, the CNC Technician training program moves operators through three levels where they are diligently monitored and certified/reevaluated annually to maintain consistency and quality in our tools. Technicians are also trained and certified/reevaluated annually by Quality Assurance to perform inspections to print on first piece and in process tools.

Inspector Training

In order to guarantee that our tools are reconditioned to the highest standards, inspectors also undergo annual training and certifications which involve standardized procedures. These are the same methods that are used in the OSG manufacturing facilities in Japan and around the world. Inspectors are trained to inspect and measure tools completely to the original tool prints.

Throughout the reconditioning process, the tools are also continuously inspected until 100% visual inspection ensures that no chipped or defective tools are received by the customer. The high tech inspection equipment used at the reconditioning facility is the same equipment used at all OSG locations. This includes in-house developed tool analyzers and state-of-the-art equipment with up to 300x magnification capabilities. The key to inspecting high performance, accurate reconditioned tools is assuring that they are held to the same inspection standards through the use of the same inspection methods as new OSG tools.

The Bensenville plant is subject to OSG's stringent JQA regrinding standards and is certified regularly by OSG Japan.

Equipment and Facility

In 2015, OSG opened a reconditioning facility which is equipped with state-of-the-art production and inspection equipment. The facility uses high precision 5-Axis CNC grinders throughout the reconditioning process for improved repeatability and precision.

OSG's weekly equipment Preventive Maintenance (PM) program ensures consistency and accuracy throughout the reconditioning process. Through this PM program, OSG's tool reconditioning performance will be consistent year after year.



THREADING

The A Brand®

OSG's premium tooling brand. Features products that are designed to exceed the evolving manufacturing needs of our customers.

EXOPRO®

OSG's ultra-premium tooling series. Features supreme performance threading products with OSG's proprietary coatings for maximum cost-efficiency and productivity.

EXOCARB® Thread Mill

Premium sub-micrograin carbide thread mills suited for cast iron, steels, exotics and difficult-to-machine materials.

EXOCARB®

Ultra-high performance taps made from premium micrograin carbide used in automotive production, tapping hardened steels and threading the most abrasive of composite materials.

EXOTAP®

Ultra-premium taps made from VC-10 powdered metal high speed steel. EXOTAP® is the industry solution for difficult materials and applications, when no other tap seems to do the job.

HY-PRO®

Premium taps made from vanadium high speed steel and designed for a wide range of applications and industries.

HY-PRO® SEVEN

Semi-premium taps made from premium high speed steel for general purpose tapping applications.

GENERAL PURPOSE

Premium general purpose taps for general machining applications. Available in a variety of styles and coatings.

SOMTA

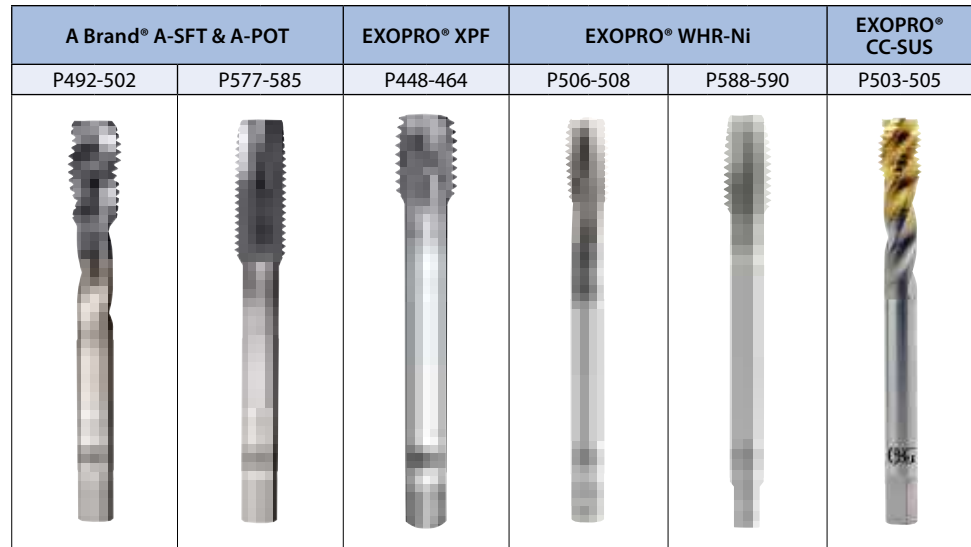
Value taps for a wide range of applications.







Featured Threading Products



| Inch/Metric | Inch | Metric | Inch | Metric | Inch | Metric | Inch | Metric | Inch | Metric | Inch | Metric |
|------------------------------|--------------------------|------------|--------------|------------|--------------------------------|----------|-----------------|------------|--------------|------------|-----------------|----------|
| Size Range | No. 4 - 2" | M1.4 - M56 | No. 2 - 1" | M1.4 - M24 | No. 0 - 1-3/4" | M1 - M45 | No. 2 - 1" | M2.5 - M24 | No. 2 - 1" | M2.5 - M24 | No. 2 - 1" | M2 - M24 |
| Type | Spiral Flute | | Spiral Point | | Form Tap | | Spiral Flute | | Spiral Point | | Spiral Flute | |
| Number of Flutes | 2, 3 & 4 | | | | Fluteless | | 2, 3 & 4 | 3 & 4 | 2, 3 & 4 | | 2, 3 & 4 | |
| Solid/Coolant-Through | Solid & Coolant-Through | | | | Solid & Coolant-Through | | Solid | | | | Solid | |
| Overall Length | DIN & Long Shank | | | | DIN & Long Shank | | DIN | | | | DIN | |
| Limit/Tolerance | H | D | H | D | H | D | H | D | H | D | H | D |
| Substrate | VC-10 | | | | HSS-CO | | VC-10 | | | | HSSE | |
| Coating | V | | | | V | | HR | | | | TiN | |
| Chamfer Length | Bottom & Modified Bottom | | Plug | | Bottom, Modified Bottom & Plug | | Modified Bottom | | Plug | | Modified Bottom | |

| | | | | |
|----------|--|--|--|--|
| P | Carbon Steels (1010, 1018) | | | |
| | Mild Steels, Alloy Steels (1050, 4140) | | | |
| | Die Steels (H13, D2) | | | |
| M | Stainless Steel (304SS, 420SS) | | | |
| K | Cast Iron | | | |
| | Ductile Cast Iron | | | |
| N | Aluminum Alloys (6061, 7075) | | | |
| S | Heat Resistant Alloys (Inconel 718) | | | |
| | Titanium Alloy (Ti-6Al-4V) | | | |
| H | Pre-Hardened Steel (P20) | | | |
| | Die Cast Steels (A2, S7) | | | |
| | Hardened Steels (D2) | | | |





Threading Application Guide

| | Work Material | Material Designation | Material Condition | Hardness | |
|------------------|---------------------|-------------------------|--------------------|----------|-------|
| | | | | BHN | HRC |
| P | Low Carbon Steel | 1010, 1018 | Normalized | ~190 | ~10 |
| | Medium Carbon Steel | 1035, 1045 | Normalized | ~208 | ~15 |
| | High Carbon Steel | 1065, 1095 | Normalized | ~253 | ~25 |
| | Alloy Steel | 4140, 4340, 8620 | Normalized | 253~301 | 25~32 |
| 4140, 4340, 8620 | | Hardened | 327~390 | 35~42 | |
| M | Stainless Steel | 300 Series / 400 Series | Annealed | ~253 | ~25 |
| | | 300 Series / 400 Series | Hardened | 327~390 | 35~42 |
| | | 17-4, 15-5, A286 | Annealed | ~253 | ~25 |
| | | 17-4, 15-5, A286 | Hardened | 327~390 | 35~42 |
| K | Cast Iron | Nodular, Grey | As Cast | ~208 | ~15 |
| N | Aluminum Alloy | 6061, 7075, 2011 | Normalized | ~150 | |
| | Die Cast Aluminum | 356AL, 390AL | As Cast | ~150 | |
| S | Nickel Based Alloy | Inconel 718, 625 | Annealed | 253~301 | 25~32 |
| | | Inconel 718 | Hardened | 327~390 | 35~42 |
| | | Hastelloy, Waspaloy | Normalized | | 25~40 |
| | | Kovar | Normalized | | 25~40 |
| | Titanium Alloy | 6Al4V | Annealed | 253~301 | 25~32 |
| | | 6Al4V, 6Al6V | Hardened | 327~390 | 35~42 |
| H | Tool Steel | D2, H13, P20, S7 | Annealed | 190~253 | 10~25 |
| | | H13 | Hardened | 327~450 | 35~48 |
| | | D2, A2 | Hardened | | 48~55 |
| | | D2, A2 | Hardened | | 55~70 |



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| Form Taps | | | | Cut Taps | | | | | | | | | Pipe Taps | |
|------------------------------|-------------|---|------------------|-----------|-----------------------------------|--------------------|--|--------------------|--|--------------------|-------------|-----------|----------------------|-----------|
| 468-488 | 453-464 | 488-452 | 465-467 | See Index | See Index | 492-497 500-502 | 498-499 | 577-580 583-585 | 581-582 | 623-624 | 662-663 | See Index | 735-739 | 740-751 |
| EXOTAP® NRT & HY-PRO® NRT | EXOPRO® XPF | EXOPRO® XPF-OIL <i>Coolant-Through</i> | EXOCARB® Carbide | General | General <i>Coolant-Through</i> | A Brand® A-SFT | A Brand® A-OIL-SFT <i>Coolant-Through</i> | A Brand® A-POT | A Brand® A-OIL-POT <i>Coolant-Through</i> | HY-PRO® Synchro AL | EXOCARB® VX | Carbide | A Brand® A-Pipe Taps | Pipe Taps |
| 35-130 | 50-115 | 75-130 | 40-145 | 25-80 | 50-120 | 80-120 | 100-200 | 80-120 | 100-200 | 85-105 | - | 35-100 | 5-35 | 15-40 |
| 20-50 | 50-115 | 75-130 | 25-60 | 20-50 | 45-110 | 80-120 | 100-200 | 80-120 | 100-200 | 85-105 | - | 30-70 | 5-35 | 10-25 |
| 15-30 | 50-85 | 65-100 | 20-35 | 20-45 | 40-100 | 80-120 | 100-200 | 80-120 | 100-200 | 70-85 | - | 30-60 | 5-35 | 10-20 |
| 15-30 | 50-85 | 65-100 | 20-35 | 20-50 | 45-110 | 35-50 | 50-100 | 40-65 | 50-120 | 70-85 | - | 30-70 | 5-20 | 10-25 |
| - | 10-40 | 20-50 | - | 15-20 | 20-60 | 20-40 | 40-80 | 35-55 | 45-110 | - | - | 20-35 | 5-20 | 10-15 |
| 15-40 | 15-40 | 20-50 | 20-60 | 20-45 | 30-70 | 15-35 | 25-70 | 25-75 | 40-120 | - | - | 25-55 | 5-20 | 10-25 |
| 15-35 | 15-35 | 20-45 | 20-50 | 12-20 | 20-50 | 15-35 | 25-70 | 25-75 | 40-120 | - | - | 15-30 | 5-20 | 8-12 |
| 15-25 | 15-30 | 20-40 | 20-40 | 15-20 | 20-50 | 15-25 | 25-50 | 25-60 | 40-100 | - | - | 20-35 | - | 8-12 |
| - | 10-25 | 15-30 | - | 8-20 | 15-40 | 15-25 | 25-50 | 25-60 | 40-100 | - | - | 10-25 | - | 8-12 |
| - | - | - | - | 25-75 | 40-100 | 50-80 | 60-150 | 60-100 | 80-160 | - | - | 40-90 | - | 15-50 |
| 50-150 | 65-115 | 80-130 | 60-160 | 40-80 | 50-125 | 70-120 | 90-220 | 70-120 | 90-220 | 300-800 | - | 50-100 | 5-20 | 15-40 |
| 45-130 | 65-90 | 75-110 | 55-120 | 40-65 | 50-110 | 70-120 | 90-220 | 70-120 | 90-220 | 200-700 | - | 50-80 | 5-35 | 20-35 |
| - | 8-12 | 8-10 | - | 8-15 | - | - | - | - | - | - | - | 10-20 | - | - |
| - | 8-10 | - | - | 8-15 | - | - | - | - | - | - | - | 10-20 | - | - |
| - | - | - | - | 8-15 | - | - | - | - | - | - | - | 10-20 | - | - |
| - | - | - | - | 8-15 | - | - | - | - | - | - | - | 10-20 | 5-10 | - |
| - | 8-15 | 8-10 | - | 15-20 | - | - | - | - | - | - | - | 20-30 | 5-10 | - |
| - | 8-12 | - | - | 3-10 | - | - | - | - | - | - | - | 5-12 | - | - |
| 20-45 | 15-50 | 20-65 | 25-60 | 15-35 | 20-60 | 30-55 | 50-110 | 40-65 | 60-120 | - | - | 20-50 | 5-35 | 10-20 |
| 10-15 | 12-25 | 20-35 | 15-30 | 8-15 | 15-50 | - | - | 20-50 | 30-80 | - | - | 10-20 | - | 8-12 |
| - | - | - | - | 3-10 | - | - | - | 15-40 | 25-75 | - | 5-12 | 5-12 | - | - |
| - | - | - | - | 3-8 | - | - | - | - | - | - | 3-10 | 3-10 | - | - |

For Thread Mills please refer to page 787-791.
For conversions to RPM please refer to page 762.





| List | Item | Brand | Inch/Metric | Material | Coating | Size Range | Features | Product Page/ Tech Page |
|------|------|-------|-------------|----------|---------|------------|----------|----------------------------|
|------|------|-------|-------------|----------|---------|------------|----------|----------------------------|

Thread Mills

| | | | | | | | | | |
|-------|--|---------------|--------|---------|------------|-------------------|-----------------------------------|-------------|-----|
| 16625 | | A Brand® AT-1 | Inch | Carbide | EgiAs | 1/4" - 1" | Helical Flute | 432 | 789 |
| 16620 | | A Brand® AT-1 | Metric | Carbide | EgiAs | M6 - M24 | Helical Flute | 433 | 789 |
| 16630 | | A Brand® AT-1 | Inch | Carbide | EgiAs | 1/16" - 2" | NPT, Helical Flute | 434 | 789 |
| 16631 | | A Brand® AT-1 | Inch | Carbide | EgiAs | 1/16" - 2" | NPTF, Helical Flute | 435 | 789 |
| 41200 | | EXOCARB® Mini | Inch | Carbide | WXS® SS | No. 0 - No. 8 | Miniature, Helical Flute | 436 | 791 |
| 41300 | | EXOCARB® Mini | Metric | Carbide | WXS® SS | M1 - M5 | Miniature, Helical Flute | 437 | 791 |
| 41000 | | EXOCARB® | Inch | Carbide | EXO® | No. 10 - 1" | Helical Flute | 438- 439 | 790 |
| 41100 | | EXOCARB® | Metric | Carbide | EXO® | M6 - M24 | Helical Flute | 440 | 790 |
| 41050 | | EXOCARB® Oil | Inch | Carbide | EXO® | 1/4" - 1" | Coolant-Through, Helical Flute | 441 | 790 |
| 41150 | | EXOCARB® Oil | Metric | Carbide | EXO® | M6 - M24 | Coolant-Through, Helical Flute | 442 | 790 |
| 42000 | | EXOCARB® Pipe | Inch | Carbide | EXO® | 1/16" - 2-1/2" | NPT, Helical Flute | 443 | 790 |
| 42001 | | EXOCARB® Pipe | Inch | Carbide | EXO® | 1/16" - 2-1/2" | NPTF, Helical Flute | 444 | 790 |

Diameter Correction Tool

| | | | | | | | | | |
|-------|--|------------|---------|--------|-----|-----|------------|---|-----|
| 15015 | | NEW | GENERAL | Inch | HSS | TiN | No. 5 - 1" | Diameter Correction Tool | 445 |
| 15010 | | NEW | GENERAL | Metric | HSS | TiN | M3 - M16 | Diameter Correction Tool | 446 |
| 15020 | | NEW | GENERAL | - | - | - | - | Diameter Correction Tool Accessories | 447 |

Forming Taps

| | | | | | | | | |
|-------|--|--------------------|--------|--------|---|-------------------|--------------------------|---------|
| 16050 | | EXOPRO® XPF-OIL | Inch | HSS-Co | V | 1/4" - 1-3/4" | Coolant-Through, DIN OAL | 448-449 |
| 16150 | | EXOPRO® XPF-OIL | Metric | HSS-Co | V | M6 - M45 | Coolant-Through, DIN OAL | 450-452 |
| 16250 | | EXOPRO® XPF | Inch | HSS-Co | V | No. 0 - 1-3/4" | DIN OAL | 453-456 |
| 16350 | | EXOPRO® XPF | Metric | HSS-Co | V | M1 - M45 | DIN OAL | 457-460 |
| 16255 | | EXOPRO® XPF-LS | Inch | HSS-Co | V | No. 5 - 1" | Long Shank | 461-462 |
| 16355 | | EXOPRO® XPF-LS | Metric | HSS-Co | V | M3 - M20 | Long Shank | 463-464 |





| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-----------|--------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |

Thread Mills

| | | | | | | | | | | | | | | | | | |
|-------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| 16625 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| 16620 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| 16630 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| 16631 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| 41200 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 41300 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 41000 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 41100 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 41050 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| 41150 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| 42000 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 42001 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | | |

Forming Taps

| | | | | | | | | | | | | | | | | | |
|-------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--|--|
| 16050 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 16150 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 16250 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 16350 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 16255 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 16355 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |

good best





| List | Item | Brand | Inch/Metric | Material | Coating | Size Range | Features | Product Page/Tech Page |
|------|------|-------|-------------|----------|---------|------------|----------|------------------------|
|------|------|-------|-------------|----------|---------|------------|----------|------------------------|

Forming Taps

| | | | | | | | | |
|-------|--|---------------|--------|---------|------------------------|--------------|-------------------------|---------|
| 14153 | | EXOCARB® | Metric | Carbide | Bright | M6 - M10 | Carbide Inlaid, DIN/DIN | 465 |
| 369 | | EXOCARB® | Metric | Carbide | Bright | M3 - M12 | JIS | 466 |
| 357 | | EXOCARB® | Metric | Carbide | Bright | M6 - M12 | JIS, Long Shank | 467 |
| 14050 | | EXOTAP® NRT® | Inch | VC-10 | V | No. 0 - 3/8" | | 468-470 |
| 14150 | | EXOTAP® NRT® | Metric | VC-10 | V | M1.6 - M12 | | 471-472 |
| 14001 | | HY-PRO® NRT® | Inch | HSS-CO | TiCN, TiN, Bright, S/O | No. 0 - 3/4" | | 473-485 |
| 14101 | | HY-PRO® NRT® | Metric | HSS-CO | TiCN, TiN, Bright, S/O | M1.6 - M12 | | 486-488 |
| 285 | | HY-PRO® SEVEN | Inch | HSS | TiCN, TiN, Bright | No. 0 - 1/2" | | 489 |
| 286 | | HY-PRO® SEVEN | Metric | HSS | TiCN, TiN, Bright | M3 - M12 | | 489 |

Spiral Fluted Taps

| | | | | | | | | |
|-------|--|--------------------|--------|---------|--------|-------------|--|---------|
| 16605 | | A Brand® A-CSF | Inch | Carbide | Bright | 1/4" - 1/2" | Coolant-Through, DIN OAL | 490 |
| 16600 | | A Brand® A-CSF | Metric | Carbide | Bright | M5 - M12 | Coolant-Through, DIN OAL | 491 |
| 16505 | | A Brand® A-SFT | Inch | VC-10 | V | No. 4 - 2" | Variable Helix, DIN OAL | 492-494 |
| 16500 | | A Brand® A-SFT | Metric | VC-10 | V | M1.4 - M56 | Variable Helix, DIN OAL | 495-497 |
| 16545 | | A Brand® A-OIL-SFT | Inch | VC-10 | V | 1/4" - 2" | Variable Helix, Coolant-Through, DIN OAL | 498 |
| 16540 | | A Brand® A-OIL-SFT | Metric | VC-10 | V | M6 - M56 | Variable Helix, Coolant-Through, DIN OAL | 499 |
| 16525 | | A Brand® A-LT-SFT | Inch | VC-10 | V | No. 4 - 1" | Variable Helix, Long Shank | 500 |
| 16520 | | A Brand® A-LT-SFT | Metric | VC-10 | V | M3 - M24 | Variable Helix, Long Shank | 501-502 |
| 16450 | | EXOPRO® CC-SUS | Inch | HSSE | TiN | No. 2 - 1" | Variable Helix, DIN OAL | 503-504 |
| 16455 | | EXOPRO® CC-SUS | Metric | HSSE | TiN | M2 - M24 | Variable Helix, DIN OAL | 505 |
| 335Ni | | EXOPRO® WHR-Ni | Inch | VC10 | HR | No. 2 - 1" | DIN OAL | 506-507 |
| 336Ni | | EXOPRO® WHR-Ni | Metric | VC10 | HR | M2.5 - M24 | DIN OAL | 508 |
| 389 | | EXOCARB® | Metric | Carbide | Bright | M3 - M12 | JIS | 509 |





| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-----------|--------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |

Forming Taps

| | | | | | | | | | | | | | | | | | |
|-------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--|-------------------------------------|-------------------------------------|--|--|--------------------------|--|--|--|
| 14153 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 369 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 357 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 14050 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | | | |
| 14150 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | | | |
| 14001 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | | | |
| 14101 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | | | |
| 285 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 286 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |

Spiral Fluted Taps

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|-------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--|-------------------------------------|--|--|--------------------------|
| 16605 | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 16600 | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 16505 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | | | |
| 16500 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | | | |
| 16545 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | | | |
| 16540 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | | | |
| 16525 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | | | |
| 16520 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | | | |
| 16450 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | |
| 16455 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | |
| 335Ni | | | | | | | | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | | | | | <input type="checkbox"/> |
| 336Ni | | | | | | | | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | | | | | <input type="checkbox"/> |
| 389 | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |

good best





| List | Item | Brand | Inch/ Metric | Material | Coating | Size Range | Features | Product Page/ Tech Page |
|------|------|-------|-----------------|----------|---------|---------------|----------|----------------------------|
|------|------|-------|-----------------|----------|---------|---------------|----------|----------------------------|

Spiral Fluted Taps

| | | | | | | | | |
|-------|--|-------------------------|--------|-------|----------------|------------------|-----------------------------|---------|
| 313Ti | | EXOTAP® VC-10 Ti | Inch | VC-10 | V | No. 2 - 1" | | 510-511 |
| 345Ti | | EXOTAP® VC-10 Ti | Metric | VC-10 | V | M2.5 - M12 | | 512 |
| 317Ti | | EXOTAP® VC-10 Ti Oil | Inch | VC-10 | V | 1/4" - 1" | Coolant-Through, DIN OAL | 513 |
| 348Ti | | EXOTAP® VC-10 Ti Oil | Metric | VC-10 | V | M8 - M24 | Coolant-Through, DIN OAL | 514 |
| 313Ni | | EXOTAP® VC-10 Ni | Inch | VC-10 | V, S/O | No. 2 - 1" | | 515-516 |
| 345Ni | | EXOTAP® VC-10 Ni | Metric | VC-10 | S/O | M2.5 - M12 | | 517 |
| 313 | | EXOTAP® VC-10 | Inch | VC-10 | V, S/O | No. 2 - 3/4" | | 518-519 |
| 345 | | EXOTAP® VC-10 | Metric | VC-10 | V, S/O | M3 - M12 | | 520 |
| 317 | | EXOTAP® VC-10 Oil | Inch | VC-10 | V | 5/16" - 1" | Coolant-Through, DIN OAL | 521 |
| 351 | | EXOTAP® VC-10 Oil | Metric | VC-10 | V | M8 - M24 | Coolant-Through, DIN OAL | 522 |
| 303 | | EXOTAP VA-3® | Inch | HSSE | V, TiN, S/O | No. 2 - 1" | | 523-525 |
| 343 | | EXOTAP VA-3® | Metric | HSSE | V, TiN, S/O | M3 - M18 | | 526 |
| 307 | | EXOTAP VA-3® Oil | Inch | HSSE | V | 1/4" - 1" | Coolant-Through, DIN OAL | 527 |
| 347 | | EXOTAP VA-3® Oil | Metric | HSSE | V | M6 - M24 | Coolant-Through, DIN OAL | 528 |
| 398 | | EXOTAP VA-3® | Inch | HSSE | S/O | No. 4 - 5/8" | Long Shank | 529 |
| 220 | | HY-PRO® DIN | Inch | HSSE | S/O | No. 4 - 2" | DIN OAL | 530 |
| 229 | | HY-PRO® DIN | Metric | HSSE | S/O | M3 - M20 | DIN OAL | 531 |
| 230 | | HY-PRO® DIN | Inch | HSSE | TiN | 1/4" - 1" | Coolant-Through, DIN OAL | 532 |
| 239 | | HY-PRO® DIN | Metric | HSSE | TiN | M6 - M20 | Coolant-Through, DIN OAL | 533 |
| 13013 | | HY-PRO® ALLOY | Inch | HSSE | V | 1/4" - 3/4" | Coolant-Through, DIN OAL | 534 |
| 13113 | | HY-PRO® ALLOY | Metric | HSSE | V | M6 - M20 | Coolant-Through, DIN OAL | 535 |
| 13014 | | HY-PRO® HXL | Inch | HSSE | S/O | 1/2" - 2-1/2" | DIN OAL | 536 |
| 13024 | | HY-PRO® HXL-OIL | Inch | HSSE | S/O | 1/2" - 2-1/2" | Coolant-Through, DIN OAL | 537 |





| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-----------|--------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |

Spiral Fluted Taps

| | | | | | | | | | | | | | | | | | |
|-------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| 313Ti | | | | ○ | | | | ○ | | | | ○ | ○ | ○ | ○ | | |
| 345Ti | | | | ○ | | | | ○ | | | | ○ | ○ | ○ | ○ | | |
| 317Ti | | | | ○ | | | | ○ | | | | ○ | ○ | ○ | ○ | ○ | |
| 348Ti | | | | ○ | | | | ○ | | | | ○ | ○ | ○ | ○ | ○ | |
| 313Ni | | | | | | | | ○ | | | | ○ | ○ | ○ | ○ | | |
| 345Ni | | | | | | | | ○ | | | | ○ | ○ | ○ | ○ | | |
| 313 | | | | ○ | ○ | | ○ | ○ | | | | ○ | ○ | ○ | ○ | ○ | |
| 345 | | | | ○ | ○ | | ○ | ○ | | | | ○ | ○ | ○ | ○ | ○ | |
| 317 | | | | ○ | ○ | | ○ | ○ | | | | ○ | ○ | ○ | ○ | ○ | |
| 351 | | | | ○ | ○ | | ○ | ○ | | | | ○ | ○ | ○ | ○ | ○ | |
| 303 | ○ | ○ | ○ | | | ○ | ○ | ○ | | | | | | | | | |
| 343 | ○ | ○ | ○ | | | ○ | ○ | ○ | | | | | | | | | |
| 307 | ○ | ○ | ○ | | | ○ | ○ | ○ | | | | | | | | | |
| 347 | ○ | ○ | ○ | | | ○ | ○ | ○ | | | | | | | | | |
| 398 | ○ | ○ | ○ | | | ○ | ○ | ○ | | | | | | | | | |
| 220 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | | ○ | | | |
| 229 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | | ○ | | | |
| 230 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | ○ | | | |
| 239 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | ○ | | | |
| 13013 | | | ○ | ○ | ○ | | | | ○ | | ○ | | | ○ | ○ | | |
| 13113 | | | ○ | ○ | ○ | | | | ○ | | ○ | | | ○ | ○ | | |
| 13014 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | | ○ | ○ | | |
| 13024 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | | ○ | ○ | | |

○ good ⊗ best





| List | Item | Brand | Inch/ Metric | Material | Coating | Size Range | Features | Product Page/ Tech Page |
|------|------|-------|-----------------|----------|---------|---------------|----------|----------------------------|
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Spiral Fluted Taps

| | | | | | | | | |
|-------------------|------------|-----------------------|--------|---------|---------------------------|-------------------|--|---------|
| 13015 | | HY-PRO® VXL | Inch | HSSE | S/O | 1/2" - 2-1/2" | DIN OAL | 538 |
| 13025 | | HY-PRO® VXL-OIL | Inch | HSSE | S/O | 1/2" - 2-1/2" | Coolant-Through, DIN OAL | 539 |
| 13116 | | HY-PRO® HXL-W | Metric | HSSE | S/O | M16 - M42 | DIN OAL | 540 |
| 13126 | | HY-PRO® HXL-W-OIL | Metric | HSSE | S/O | M16 - M42 | Coolant-Through, DIN OAL | 541 |
| 13117 | | HY-PRO® VXL-W | Metric | HSSE | S/O | M16 - M42 | DIN OAL | 542 |
| 13127 | | HY-PRO® VXL-W-OIL | Metric | HSSE | S/O | M16 - M42 | Coolant-Through, DIN OAL | 543 |
| 13058 | | HY-PRO® SYNCHRO AL | Inch | HSSE | V | No. 6 - 1/2" | Synchronized | 544 |
| 13158 | | HY-PRO® SYNCHRO AL | Metric | HSSE | V | M3 - M12 | Synchronized | 545 |
| 295 | | HY-PRO® AL | Inch | HSSE | Bright | No. 4 - 3/8" | | 546 |
| 296 | | HY-PRO® AL | Metric | HSSE | Bright | M3 - M10 | | 547 |
| 13019 | | HY-PRO® AL-DIN | Inch | HSSE | N | No. 2 - 1/2" | DIN OAL | 548 |
| 13119 | | HY-PRO® AL-DIN | Metric | HSSE | N | M3 - M12 | DIN OAL | 549 |
| 290 | | HY-PRO® | Inch | HSSE | TiCN, S/O, Bright | No. 2 - 1-1/2" | | 550-552 |
| 299 | | HY-PRO® | Metric | HSSE | TiCN, S/O, Bright | M3 - M30 | | 553 |
| 297 | | HY-PRO® SEVEN | Inch | HSS | TiN, S/O, Bright | No. 3 - 1/2" | | 554 |
| 298 | | HY-PRO® SEVEN | Metric | HSS | TiN, S/O, Bright | M3 - M12 | | 555 |
| 107 | | GENERAL PURPOSE | Inch | HSS | TiCN, TiN, S/O, Bright | No. 3 - 3/4" | | 556 |
| 143 | | GENERAL PURPOSE | Metric | HSS | TiCN, TiN, S/O, Bright | M3 - M12 | | 557 |
| 13020 | | GENERAL PURPOSE | Inch | HSSE | S/O | No. 6 - 5/8" | | 558 |
| 123 | | GENERAL PURPOSE | Metric | HSSE | Bright | M3 - M24 | JIS | 559 |
| 918 | | GENERAL PURPOSE | Inch | HSS | Bright | No. 4 - 5/8" | Long Shank | 560 |
| 5BA-SO, 5BL-SO | NEW | SOMTA | Inch | HSSE-V3 | TiAlN | No. 4 - 1-1/4" | Red Band , Ideal for Alloy Steel | 561-562 |
| 5EA-SO, 5EL-SO | NEW | SOMTA | Metric | HSSE-V3 | TiAlN | M3 - M24 | Red Band , Ideal for Alloy Steel | 563 |





| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-----------|--------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |

Spiral Fluted Taps

| | | | | | | | | | | | | | | | | | |
|-------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|--|--|
| 13015 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 13025 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 13116 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 13126 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 13117 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 13127 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 13058 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 13158 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 295 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 296 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 13019 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 13119 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 290 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input type="checkbox"/> | | | |
| 299 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input type="checkbox"/> | | | |
| 297 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 298 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 107 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 143 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 13020 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 123 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 918 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 5BA-SO, 5BL-SO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| 5EA-SO, 5EL-SO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |

good best





| List | Item | Brand | Inch/Metric | Material | Coating | Size Range | Features | Product Page/Tech Page |
|------|------|-------|-------------|----------|---------|------------|----------|------------------------|
|------|------|-------|-------------|----------|---------|------------|----------|------------------------|

Spiral Fluted Taps

| | | | | | | | | | |
|-------------------|--|-----|-------|--------|---------|--------|----------------|--------------------------------------|---------|
| 5BB-SO, 5BM-SO | | NEW | SOMTA | Inch | HSSE-V3 | TiALN | No. 4 - 1-1/4" | Blue Band, Ideal for Stainless Steel | 564-565 |
| 5EB-SO, 5EM-SO | | NEW | SOMTA | Metric | HSSE-V3 | TiALN | M3 - M24 | Blue Band, Ideal for Stainless Steel | 566 |
| 5BC-SO, 5BN-SO | | NEW | SOMTA | Inch | HSSE-V3 | Bright | No. 4 - 1-1/4" | Yellow Band, Ideal for Aluminum | 567-568 |
| 5EC-SO, 5EN-SO | | NEW | SOMTA | Metric | HSSE-V3 | Bright | M3 - M24 | Yellow Band, Ideal for Aluminum | 569 |
| 5BD-SO, 5BP-SO | | NEW | SOMTA | Inch | HSSE-V3 | TiALN | No. 4 - 1-1/4" | White Band, Ideal for Cast Iron | 570-571 |
| 5ED-SO, 5EP-SO | | NEW | SOMTA | Metric | HSSE-V3 | TiALN | M3 - M24 | White Band, Ideal for Cast Iron | 572 |
| 5BE-SO, 5BK-SO | | NEW | SOMTA | Inch | HSSE-V3 | TiN | No. 4 - 1-1/4" | Green Band, Ideal for Carbon Steel | 573-574 |
| 5EV-SO | | NEW | SOMTA | Metric | HSSE-V3 | TiN | M3 - M24 | Green Band, Ideal for Carbon Steel | 575 |
| 5EW-SO | | NEW | SOMTA | Metric | HSSE-V3 | TiN | M3 - M24 | Green Band, Ideal for Carbon Steel | 576 |

Spiral Pointed Taps

| | | | | | | | | |
|-------|--|----------------------|--------|-------|----|--------------|--------------------------|---------|
| 16515 | | A Brand® A-POT | Inch | VC-10 | V | No. 2 - 1" | DIN OAL | 577-578 |
| 16510 | | A Brand® A-POT | Metric | VC-10 | V | M1.4 - M24 | DIN OAL | 579-580 |
| 16555 | | A Brand® A-OIL-POT | Inch | VC-10 | V | 1/4" - 1" | Coolant-Through, DIN OAL | 581 |
| 16550 | | A Brand® A-OIL-POT | Metric | VC-10 | V | M6 - M24 | Coolant-Through, DIN OAL | 582 |
| 16535 | | A Brand® A-LT-POT | Inch | VC-10 | V | No. 4 - 1" | Long Shank | 583 |
| 16530 | | A Brand® A-LT-POT | Metric | VC-10 | V | M3 - M24 | Long Shank | 584-585 |
| 13063 | | EXOPRO® Ti | Inch | VC-10 | V | No. 2 - 1/2" | RHC/LHS | 586 |
| 13163 | | EXOPRO® Ti | Metric | VC-10 | V | M2.5 - M12 | RHC/LHS | 587 |
| 337Ni | | EXOPRO® WHR-Ni | Inch | VC-10 | HR | No. 2 - 1" | DIN OAL | 588-589 |
| 338Ni | | EXOPRO® WHR-Ni | Metric | VC-10 | HR | M2.5 - M24 | DIN OAL | 590 |
| 312Ti | | EXOTAP® VC-10 Ti | Inch | VC-10 | V | No. 2 - 1" | | 591-592 |
| 344Ti | | EXOTAP® VC-10 Ti | Metric | VC-10 | V | M3 - M12 | | 593 |
| 316Ti | | EXOTAP® VC-10 Ti Oil | Inch | VC-10 | V | 1/4" - 1" | Coolant-Through, DIN OAL | 594 |





| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-----------|--------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |

Spiral Fluted Taps

| | | | | | | | | | | | | | | | | | |
|-------------------|-------------------------------------|-------------------------------------|-------------------------------------|--|--|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|--|--|--|--|
| 5BB-SO, 5BM-SO | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | | | | |
| 5EB-SO, 5EM-SO | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | | | | |
| 5BC-SO, 5BN-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 5EC-SO, 5EN-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 5BD-SO, 5BP-SO | | | | | | | | | <input checked="" type="checkbox"/> | | | | | | | | |
| 5ED-SO, 5EP-SO | | | | | | | | | <input checked="" type="checkbox"/> | | | | | | | | |
| 5BE-SO, 5BK-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | |
| 5EV-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | |
| 5EW-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | |

Spiral Pointed Taps

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|-------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| 16515 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | | | |
| 16510 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | | | |
| 16555 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | | | |
| 16550 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | | | |
| 16535 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | | | |
| 16530 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | | | |
| 13063 | | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |
| 13163 | | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |
| 337Ni | | | | | | | | <input type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> |
| 338Ni | | | | | | | | <input type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> |
| 312Ti | | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 344Ti | | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 316Ti | | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best





| List | Item | Brand | Inch/ Metric | Material | Coating | Size Range | Features | Product Page/ Tech Page |
|------|------|-------|-----------------|----------|---------|---------------|----------|----------------------------|
|------|------|-------|-----------------|----------|---------|---------------|----------|----------------------------|

Spiral Pointed Taps

| | | | | | | | | |
|-------|--|-------------------------|--------|--------|----------------|-----------------|---|---------|
| 347Ti | | EXOTAP® VC-10 Ti Oil | Metric | VC-10 | V | M8 - M24 | Coolant-Through, DIN OAL | 595 |
| 312Ni | | EXOTAP® VC-10 Ni | Inch | VC-10 | V, S/O | No. 2 - 1" | | 596-597 |
| 344Ni | | EXOTAP® VC-10 Ni | Metric | VC-10 | V, S/O | M2.5 - M12 | | 598 |
| 312 | | EXOTAP® VC-10 | Inch | VC-10 | V, S/O | No. 2 - 3/4" | | 599-600 |
| 344 | | EXOTAP® VC-10 | Metric | VC-10 | V, S/O | M3 - M12 | | 601 |
| 316 | | EXOTAP® VC-10 Oil | Inch | VC-10 | V | 1/4" - 1" | Coolant-Through, DIN OAL | 602 |
| 350 | | EXOTAP® VC-10 Oil | Metric | VC-10 | V | M6 - M24 | Coolant-Through, DIN OAL | 603 |
| 300 | | EXOTAP VA-3° | Inch | HSSE | V, TiN, S/O | No. 2 - 1" | | 604-605 |
| 342 | | EXOTAP VA-3° | Metric | HSSE | V, TiN, S/O | M3 - M18 | | 606 |
| 306 | | EXOTAP VA-3° Oil | Inch | HSSE | V | 1/4" - 1" | Coolant-Through, DIN OAL | 607 |
| 346 | | EXOTAP VA-3° Oil | Metric | HSSE | V | M6 - M24 | Coolant-Through, DIN OAL | 608 |
| 397 | | EXOTAP VA-3° | Inch | HSSE | S/O | No. 4 - 5/8" | Long Shank | 609 |
| 320 | | EXOTIN | Inch | HSSE | TiN | No. 4 - 3/4" | | 610 |
| 250 | | HY-PRO® DIN | Inch | HSSE | S/O | No. 4 - 3/4" | DIN OAL | 611 |
| 259 | | HY-PRO® DIN | Metric | HSSE | S/O | M3 - M20 | DIN OAL | 612 |
| 260 | | HY-PRO® DIN | Inch | HSSE | TiN | 1/4" - 1" | Coolant-Through, DIN OAL | 613 |
| 269 | | HY-PRO® DIN | Metric | HSSE | TiN | M6 - M20 | Coolant-Through, DIN OAL | 614 |
| 11015 | | HY-PRO® AERO-F | Inch | HSS-Co | TiN | No. 4 - 1" | | 615-619 |
| 11115 | | HY-PRO® AERO-F | Metric | HSS-Co | TiN | M3 - M14 | | 620-621 |
| 13118 | | HY-PRO® RXL-W | Metric | HSSE | V | M16 - M42 | DIN OAL & Extended OAL, For Through Holes, LHS | 622 |
| 13059 | | HY-PRO® SYNCHRO AL | Inch | HSSE | V | No. 6 - 1/2" | Synchronized, RHC/LHS | 623 |
| 13159 | | HY-PRO® SYNCHRO AL | Metric | HSSE | V | M3 - M12 | Synchronized, RHC/LHS | 624 |





| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-----------|--------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |

Spiral Pointed Taps

| | | | | | | | | | | | | | | | | | |
|-------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|
| 347Ti | | | | ○ | | | | ○ | | | | ⊗ | ⊗ | ○ | ○ | | |
| 312Ni | | | | | | | | ○ | | | | ⊗ | ○ | ○ | ○ | | |
| 344Ni | | | | | | | | ○ | | | | ⊗ | ○ | ○ | ○ | | |
| 312 | | | | ⊗ | ○ | | ○ | ⊗ | | | | ○ | ○ | ⊗ | ○ | | |
| 344 | | | | ⊗ | ○ | | ○ | ⊗ | | | | ○ | ○ | ⊗ | ○ | | |
| 316 | | | | ⊗ | ○ | | ○ | ⊗ | | | | ○ | ○ | ⊗ | ○ | | |
| 350 | | | | ⊗ | ○ | | ○ | ⊗ | | | | ○ | ○ | ⊗ | ○ | | |
| 300 | ⊗ | ○ | ○ | | | | ⊗ | ⊗ | ○ | | | | | | | | |
| 342 | ⊗ | ○ | ○ | | | | ⊗ | ⊗ | ○ | | | | | | | | |
| 306 | ⊗ | ○ | ○ | | | | ⊗ | ⊗ | ○ | | | | | | | | |
| 346 | ⊗ | ○ | ○ | | | | ⊗ | ⊗ | ○ | | | | | | | | |
| 397 | ⊗ | ○ | ○ | | | | ⊗ | ⊗ | ○ | | | | | | | | |
| 320 | ○ | ○ | ⊗ | ⊗ | ⊗ | ○ | ○ | ○ | ○ | ○ | ○ | | | ○ | | | |
| 250 | ○ | ○ | ⊗ | ⊗ | ○ | ○ | ○ | ○ | ○ | | | | | ○ | | | |
| 259 | ○ | ○ | ⊗ | ⊗ | ○ | ○ | ○ | ○ | ○ | | | | | ○ | | | |
| 260 | ○ | ○ | ⊗ | ⊗ | ⊗ | ○ | ○ | ○ | ○ | ○ | ○ | | | ○ | | | |
| 269 | ○ | ○ | ⊗ | ⊗ | ⊗ | ○ | ○ | ○ | ○ | ○ | ○ | | | ○ | | | |
| 11015 | ⊗ | ⊗ | ⊗ | ○ | ○ | ⊗ | ⊗ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | |
| 11115 | ⊗ | ⊗ | ⊗ | ○ | ○ | ⊗ | ⊗ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | |
| 13118 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ○ | ○ | ○ | ⊗ | ○ | ○ | | | ⊗ | ○ | | |
| 13059 | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| 13159 | | | | | | | | | | ⊗ | ⊗ | | | | | | |

○ good ⊗ best





| List | Item | Brand | Inch/ Metric | Material | Coating | Size Range | Features | Product Page/ Tech Page |
|------|------|-------|-----------------|----------|---------|---------------|----------|----------------------------|
|------|------|-------|-----------------|----------|---------|---------------|----------|----------------------------|

Spiral Pointed Taps

| | | | | | | | | |
|-------------------|--|---------------------|--------|---------|---------------------------|-------------------|---|---------|
| 11016 | | HY-PRO® AL-DIN | Inch | HSSE | N | No. 2 - 1-1/2" | DIN OAL | 625 |
| 11116 | | HY-PRO® AL-DIN | Metric | HSSE | N | M3 - M12 | DIN OAL | 626 |
| 11017 | | HY-PRO® V DIN | Inch | HSSE | V | No. 4 - 1-1/2" | DIN OAL | 627 |
| 11117 | | HY-PRO® V DIN | Metric | HSSE | V | M3 - M12 | DIN OAL | 628 |
| 280 | | HY-PRO® | Inch | HSSE | TiCN, S/O, Bright | No. 2 - 1-1/2" | | 629-631 |
| 289 | | HY-PRO® | Metric | HSSE | TiCN, S/O, Bright | M3 - M30 | | 632 |
| 287 | | HY-PRO® SEVEN | Inch | HSS | TiN, S/O, Bright | No. 0 - 1/2" | | 633 |
| 288 | | HY-PRO® SEVEN | Metric | HSS | TiN, S/O, Bright | M3 - M12 | | 634 |
| 105 | | GENERAL PURPOSE | Inch | HSS | TiCN, TiN, S/O, Bright | No. 0 - 3/4" | | 635-637 |
| 105B | | GENERAL PURPOSE | Inch | HSS | S/O, Bright | No. 0 - 7/16" | | 638 |
| 105A | | GENERAL PURPOSE | Inch | HSS | S/O, Bright | No. 4 - 1/2" | Assembly Type Taps | 639 |
| 105+ | | GENERAL PURPOSE | Inch | HSS | TiN, Bright | No. 4 - No. 10 | H7 Taps | 640 |
| 105H | | GENERAL PURPOSE | Inch | HSS | TiCN, S/O, Bright | No. 6 - 3/4" | +0.005" Oversize | 641 |
| 142H | | GENERAL PURPOSE | Metric | HSS | Bright | M4 - M12 | +0.005" Oversize | 642 |
| 142 | | GENERAL PURPOSE | Metric | HSS | TiCN, TiN, S/O, Bright | M1.6 - M20 | | 643 |
| 122 | | GENERAL PURPOSE | Metric | HSSE | S/O, Bright | M3 - M24 | JIS | 644 |
| 917 | | GENERAL PURPOSE | Inch | HSS | S/O, Bright | No. 4 - 5/8" | Long Shank | 645 |
| 11118 | | GENERAL PURPOSE | Metric | HSS | S/O | M4 - M12 | Extended Length | 646 |
| S111 | | GENERAL PURPOSE | Inch | HSS | Bright | No. 00 | Miniature | 647 |
| 5BF-SO, 5BS-SO | | NEW SOMTA | Inch | HSSE-V3 | TiALN | No. 4 - 1-1/4" | Red Band , Ideal for Alloy Steel | 648-649 |
| 5EF-SO, 5ES-SO | | NEW SOMTA | Metric | HSSE-V3 | TiALN | M3 - M24 | Red Band , Ideal for Alloy Steel | 650 |
| 5BG-SO, 5BT-SO | | NEW SOMTA | Inch | HSSE-V3 | TiALN | No. 4 - 1-1/4" | Blue Band , Ideal for Stainless Steel | 651-652 |





| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-----------|--------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |

Spiral Pointed Taps

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|-------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|--|--|
| 11016 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 11116 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 11017 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input type="checkbox"/> | | | |
| 11117 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input type="checkbox"/> | | | |
| 280 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input type="checkbox"/> | | | |
| 289 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input type="checkbox"/> | | | |
| 287 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 288 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 105 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 105B | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 105A | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 105+ | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 105H | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 142H | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 142 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 122 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 917 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 11118 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| S111 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 5BF-SO, 5BS-SO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| 5EF-SO, 5ES-SO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| 5BG-SO, 5BT-SO | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | | | | | |

good best





| List | Item | Brand | Inch/Metric | Material | Coating | Size Range | Features | Product Page/Tech Page |
|------|------|-------|-------------|----------|---------|------------|----------|------------------------|
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Spiral Pointed Taps

| | | | | | | | | | |
|----------------|--|-----|-------|--------|---------|--------|----------------|--------------------------------------|---------|
| 5EG-SO, 5ET-SO | | NEW | SOMTA | Metric | HSSE-V3 | TiALN | M3 - M24 | Blue Band, Ideal for Stainless Steel | 653 |
| 5BH-SO, 5BU-SO | | NEW | SOMTA | Inch | HSSE-V3 | Bright | No. 4 - 1-1/4" | Yellow Band, Ideal for Aluminum | 654-655 |
| 5EH-SO, 5EU-SO | | NEW | SOMTA | Metric | HSSE-V3 | Bright | M3 - M24 | Yellow Band, Ideal for Aluminum | 656 |
| 5BJ-SO, 5BV-SO | | NEW | SOMTA | Inch | HSSE-V3 | TiN | No. 4 - 1-1/4" | Green Band, Ideal for Carbon Steel | 657-658 |
| 5EX-SO | | NEW | SOMTA | Metric | HSSE-V3 | TiN | M3 - M24 | Green Band, Ideal for Carbon Steel | 659 |

Straight Fluted Taps

| | | | | | | | | |
|-------|--|------------------|--------|---------|--------|---------------|--------------------------|-----|
| 16615 | | A Brand® A-CHT | Inch | Carbide | Bright | No. 12 - 1/2" | Coolant-Through, DIN OAL | 660 |
| 16610 | | A Brand® A-CHT | Metric | Carbide | Bright | M5 - M12 | Coolant-Through, DIN OAL | 661 |
| 311 | | EXOCARB® VX | Inch | Carbide | V | No. 4 - 1/2" | DIN OAL | 662 |
| 341 | | EXOCARB® VX | Metric | Carbide | V | M2.6 - M20 | JIS | 663 |
| 329 | | EXOCARB® Diamond | Inch | Carbide | DIA | No. 4 - 1/2" | UNJC, UNJF, DIN OAL | 664 |
| 359 | | EXOCARB® Diamond | Metric | Carbide | DIA | M3 - M12 | JIS | 665 |
| 319 | | EXOCARB® | Inch | Carbide | Bright | No. 4 - 1/2" | DIN OAL | 666 |
| 10059 | | EXOCARB® | Inch | Carbide | Bright | No. 10 - 3/8" | | 667 |
| 10061 | | EXOCARB® | Metric | Carbide | Bright | M3 - M10 | DIN OAL | 668 |
| 349 | | EXOCARB® | Metric | Carbide | Bright | M1.4 - M24 | JIS | 669 |
| 356 | | EXOCARB® | Metric | Carbide | Bright | M6 - M12 | JIS, Long Shank | 670 |
| 10051 | | EXOTAP® VCX | Inch | XPM | V | No. 6 - 1" | | 671 |
| 11051 | | EXOTAP® VCX | Metric | XPM | V | M3 - M24 | | 672 |
| 305 | | EXOTAP-MOLD® | Inch | HSS-CO | Bright | No. 4 - 3/4" | | 673 |
| 10052 | | EXOTAP® DC | Inch | VC-10 | V | 1/4" - 1" | DIN OAL | 674 |
| 11052 | | EXOTAP® DC | Metric | VC-10 | V | M6 - M24 | DIN OAL | 675 |
| 10053 | | EXOTAP® DC-OIL | Inch | VC-10 | V | 1/4" - 1" | Coolant-Through, DIN OAL | 676 |





| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-----------|--------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |

Spiral Pointed Taps

| | | | | | | | | | | | | | | | | | |
|-------------------|-------------------------------------|-------------------------------------|-------------------------------------|--|--|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--|-------------------------------------|--|--|--|--|
| 5EG-SO, 5ET-SO | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | | | | |
| 5BH-SO, 5BU-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 5EH-SO, 5EU-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 5BJ-SO, 5BV-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 5EX-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |

Straight Fluted Taps

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|-------|--|--|--|--------------------------|-------------------------------------|--|--|--|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--|-------------------------------------|-------------------------------------|
| 16615 | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | |
| 16610 | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | |
| 311 | | | | | | | | | | | | | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 341 | | | | | | | | | | | | | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 329 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | |
| 359 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | |
| 319 | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | |
| 10059 | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | |
| 10061 | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | |
| 349 | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | |
| 356 | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | |
| 10051 | | | | <input type="checkbox"/> | | | | | | | | | | | <input checked="" type="checkbox"/> | |
| 11051 | | | | <input type="checkbox"/> | | | | | | | | | | | <input checked="" type="checkbox"/> | |
| 305 | | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |
| 10052 | | | | | | | | | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | | |
| 11052 | | | | | | | | | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | | |
| 10053 | | | | | | | | | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | | |

good best





| List | Item | Brand | Inch/ Metric | Material | Coating | Size Range | Features | Product Page/ Tech Page |
|------|------|-------|-----------------|----------|---------|---------------|----------|----------------------------|
|------|------|-------|-----------------|----------|---------|---------------|----------|----------------------------|

Straight Fluted Taps

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|-------|--|--------------------|--------|--------|---------------------------|---------------------|--|---------|
| 11053 | | EXOTAP® DC-OIL | Metric | VC-10 | V | M6 - M24 | Coolant-Through, DIN OAL | 677 |
| 11054 | | EXOTAP® DC | Metric | VC-10 | V | M6 - M10 | DIN Shank, DIN OAL | 678 |
| 11055 | | EXOTAP® DC-OIL | Metric | VC-10 | V | M6 - M12 | Coolant-Through, DIN Shank, DIN OAL | 679 |
| 10056 | | EXOTAP® DC | Inch | VC-10 | V | 1/4" - 3/4" | | 680 |
| 11056 | | EXOTAP® DC | Metric | VC-10 | V | M6 - M14 | | 681 |
| 10057 | | EXOTAP® DC-OIL | Inch | VC-10 | V | 1/4" - 1/2" | Coolant-Through | 682 |
| 11057 | | EXOTAP® DC-OIL | Metric | VC-10 | V | M6 - M14 | Coolant-Through | 683 |
| 240 | | HYPRO® DC | Inch | HSSE | N, Bright | No. 2 - 1/2" | | 684 |
| 241 | | HYPRO® DC | Metric | HSSE | N | M3 - M12 | | 685 |
| 101C | | GENERAL PURPOSE | Inch | HSS | N, S/O | 1/4" - 3/4" | | 686 |
| 141C | | GENERAL PURPOSE | Metric | HSS | N, S/O | M6 - M12 | | 687 |
| 101 | | GENERAL PURPOSE | Inch | HSS | TiCN, TiN, S/O, Bright | 1/4" - 1-1/2" | | 688-689 |
| 101H | | GENERAL PURPOSE | Inch | HSS | TiCN, S/O, Bright | 1/4" - 3/4" | +0.005" Oversize | 690 |
| 102 | | GENERAL PURPOSE | Inch | HSS | TiCN, TiN, S/O, Bright | No. 0 - No. 12 | | 691-692 |
| 102H | | GENERAL PURPOSE | Inch | HSS | S/O, Bright | No. 6 - No. 10 | +0.005" Oversize | 693 |
| 103 | | GENERAL PURPOSE | Inch | HSS | TiN, S/O, Bright | No. 8 - 1/2" | Three Flutes | 694 |
| 104 | | GENERAL PURPOSE | Inch | HSS | S/O, Bright | No. 2 - 5/16" | Two Flutes | 695 |
| 101N | | GENERAL PURPOSE | Inch | HSS | Bright | No. 12 - 1" | UNEF | 696 |
| 141 | | GENERAL PURPOSE | Metric | HSS | S/O, Bright | M1.6 - M36 | | 697 |
| 121 | | GENERAL PURPOSE | Metric | HSS | S/O, Bright | M2 - M36 | JIS | 698-699 |
| 916 | | GENERAL PURPOSE | Inch | HSS | S/O | 1/4" - 3/4" | Pulley Taps, Long Shank | 700 |
| S110 | | GENERAL PURPOSE | Inch | HSS | Bright | No. 00 - No. 000 | Miniature | 701 |
| 114 | | GENERAL PURPOSE | Inch | HSS-CO | N | No. 2 - 1/4" | For Plastics | 702 |





| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------|--------------|------|--------------|------------|------------------|-----|---------|-----------|-----------|---------|--------------|----------|-----------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| | 1010 1018 | 1035 1045 | 1065 | 4140 4340 | | | | | | | | | | | | | |

Straight Fluted Taps

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|-------|--------------------------|--------------------------|--------------------------|--|--|--|--|--|-------------------------------------|--------------------------|-------------------------------------|--|--|--|--|--|--|
| 11053 | | | | | | | | | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | | | |
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| 10057 | | | | | | | | | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | | | |
| 11057 | | | | | | | | | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | | | |
| 240 | | | | | | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 241 | | | | | | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 101C | | | | | | | | | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | | | |
| 141C | | | | | | | | | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | | | |
| 101 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 101H | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 102 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 102H | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 103 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 104 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 101N | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 141 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 121 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 916 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | | | | | | | | |
| S110 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 114 | | | | | | | | | | | | | | | | | |

good best





| List | Item | Brand | Inch/ Metric | Material | Coating | Size Range | Features | Product Page/ Tech Page |
|------|------|-------|-----------------|----------|---------|---------------|----------|----------------------------|
|------|------|-------|-----------------|----------|---------|---------------|----------|----------------------------|

Straight Fluted Taps

| | | | | | | | | |
|------|--|-----------------|------|-----|--------|-----------------|-----------|-----|
| 180 | | GENERAL PURPOSE | Inch | HSS | Bright | 1-1/8" - 2-1/4" | 8 Pitch | 703 |
| 101L | | GENERAL PURPOSE | Inch | HSS | Bright | No. 6 - 1" | Left Hand | 704 |

Screw Thread Insert Taps

| | | | | | | | | |
|--------|--|------------------|--------|--------|-----------|--------------|---------------------------|---------|
| 16260 | | EXOPRO® XPF | Inch | HSS-CO | V | No. 2 - 1" | STI, Forming Tap, DIN OAL | 705-706 |
| 16360 | | EXOPRO® XPF | Metric | HSS-CO | V | M2 - M24 | STI, Forming Tap, DIN OAL | 707 |
| 315Ti | | EXOTAP® VC-10 Ti | Inch | VC-10 | V | No. 2 - 1/2" | STI, Spiral Fluted | 708 |
| 315Ni | | EXOTAP® VC-10 Ni | Inch | VC-10 | V | No. 2 - 1/2" | STI, Spiral Fluted | 709 |
| 315 | | EXOTAP® VC-10 | Inch | VC-10 | V, S/O | No. 2 - 1" | STI, Spiral Fluted | 710-711 |
| 345STI | | EXOTAP® VC-10 | Metric | VC-10 | V, S/O | M2 - M24 | STI, Spiral Fluted | 712 |
| 302 | | EXOTAP VA-3® | Inch | HSSE | V, S/O | No. 2 - 1" | STI, Spiral Fluted | 713-714 |
| 343STI | | EXOTAP VA-3® | Metric | HSSE | V, S/O | M2 - M24 | STI, Spiral Fluted | 715 |
| 13039 | | HYPRO® AL | Inch | HSSE | Bright, V | No. 2 - 1/2" | STI, Spiral Fluted | 716 |
| S108 | | GENERAL PURPOSE | Inch | HSS | Bright | No. 2 - 1" | STI, Spiral Fluted | 717-718 |
| S109 | | GENERAL PURPOSE | Metric | HSS | Bright | M2 - M24 | STI, Spiral Fluted | 719 |
| 314Ti | | EXOTAP® VC-10 Ti | Inch | VC-10 | V | No. 2 - 1/2" | STI, Spiral Pointed | 720 |
| 314Ni | | EXOTAP® VC-10 Ni | Inch | VC-10 | V | No. 2 - 1/2" | STI, Spiral Pointed | 721 |
| 314 | | EXOTAP® VC-10 | Inch | VC-10 | V, S/O | No. 2 - 1" | STI, Spiral Pointed | 722-723 |
| 344STI | | EXOTAP® VC-10 | Metric | VC-10 | V, S/O | M2 - M24 | STI, Spiral Pointed | 724 |
| 301 | | EXOTAP VA-3® | Inch | HSSE | V, S/O | No. 2 - 1" | STI, Spiral Pointed | 725-726 |
| 342STI | | EXOTAP VA-3® | Metric | HSSE | V, S/O | M2 - M24 | STI, Spiral Pointed | 727 |
| 11036 | | HYPRO® AL | Inch | HSSE | Bright, V | No. 2 - 1/2" | STI, Spiral Pointed | 728 |
| 125 | | GENERAL PURPOSE | Inch | HSS | Bright | No. 2 - 1" | STI, Spiral Pointed | 729-730 |





| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|----------|---------|--------------|----------|-----------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |

Straight Fluted Taps

| | | | | | | | | | | | | | | | | | |
|------|--------------------------|--------------------------|--------------------------|--|--|--|--|--|--------------------------|--------------------------|--------------------------|--|--|--|--|--|--|
| 180 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 101L | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |

Screw Thread Insert Taps




| | | | | | | | | | | | | | | | | | |
|--------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--|--|
| 16260 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 16360 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 315Ti | | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 315Ni | | | | | | | | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 315 | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 345STI | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 302 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | |
| 343STI | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | |
| 13039 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| S108 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| S109 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 314Ti | | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 314Ni | | | | | | | | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 314 | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 344STI | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 301 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | |
| 342STI | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | |
| 13036 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 125 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |

good best



| List | Item | Brand | Inch/ Metric | Material | Coating | Size Range | Features | Product Page/ Tech Page |
|------|------|-------|-----------------|----------|---------|---------------|----------|----------------------------|
|------|------|-------|-----------------|----------|---------|---------------|----------|----------------------------|

Screw Thread Insert Taps

| | | | | | | | | |
|-----|---|-----------------|--------|-----|--------|------------|----------------------|---------|
| 127 |  | GENERAL PURPOSE | Metric | HSS | Bright | M2 - M24 | STI, Spiral Pointed | 731 |
| 126 |  | GENERAL PURPOSE | Inch | HSS | Bright | No. 2 - 1" | STI, Straight Fluted | 732-733 |
| 128 |  | GENERAL PURPOSE | Metric | HSS | Bright | M2 - M24 | STI, Straight Fluted | 734 |

Pipe Taps

| | | | | | | | | | |
|-------|---|------------|----------------------|------|--------|---------------------------|-------------|--|-----|
| 16570 |  | NEW | A Brand® A-NPT | Inch | HSSE | V | 1/16" - 1" | NPT, Interrupted | 735 |
| 16575 |  | NEW | A Brand® A-LT-NPT | Inch | HSSE | V | 1/16" - 1" | NPT, Long shank, Interrupted | 736 |
| 16590 |  | NEW | A Brand® A-NPS | Inch | HSSE | V | 1/16" - 1" | NPS | 737 |
| 16585 |  | NEW | A Brand® A-BSPT | Inch | HSSE | V | 1/8" - 1" | BSPT | 738 |
| 16580 |  | NEW | A Brand® A-BSPP | Inch | HSSE | V | 1/8" - 1" | BSPP | 739 |
| 308 |  | | EXOPIPE® | Inch | HSSE | TiN, S/O | 1/16" - 1" | NPT | 740 |
| 318 |  | | EXOPIPE® | Inch | HSSE | TiN, S/O | 1/16" - 1" | NPTF | 741 |
| 12053 |  | | HY-PRO® PIPE | Inch | HSSE | TiCN | 1/8" - 1" | NPT, Interrupted | 742 |
| 12054 |  | | HY-PRO® PIPE | Inch | HSSE | TiCN | 1/8" - 1" | NPTF, Interrupted | 742 |
| 328 |  | | EXOTAP-MOLD® | Inch | HSS-CO | Bright | 1/8" - 3/4" | NPT, ANPT | 743 |
| 108 |  | | GENERAL PURPOSE | Inch | HSS | TiCN, TiN, S/O, Bright | 1/16" - 2" | NPT, ANPT | 744 |
| 108AL |  | | GENERAL PURPOSE | Inch | HSS | Bright | 1/8" - 1" | NPT | 745 |
| 118 |  | | GENERAL PURPOSE | Inch | HSS | TiCN, TiN, S/O, Bright | 1/16" - 2" | NPTF | 746 |
| 108G |  | | GENERAL PURPOSE | Inch | HSS | TiCN, S/O, Bright | 1/8" - 2" | NPT, NPTF, ANPT, Interrupted Thread | 747 |
| S125 |  | | GENERAL PURPOSE | Inch | HSS | TiCN, S/O, Bright | 1/8" - 1" | NPT, NPTF, Short Projection | 748 |
| 12006 |  | | GENERAL PURPOSE | Inch | HSS | Bright | 1/8" - 3/4" | NPTF, Special Short Projection | 749 |
| 12007 |  | | GENERAL PURPOSE | Inch | HSS | Bright | 1/8" - 3/4" | NPT | 750 |
| 109 |  | | GENERAL PURPOSE | Inch | HSS | S/O, Bright | 1/8" - 1" | NPS, NPSF | 751 |



| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-----------|--------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |

Screw Thread Insert Taps

| | | | | | | | | | | | | | | | | | |
|-----|--------------------------|--------------------------|--------------------------|--|--|--|--|--|--------------------------|--------------------------|--------------------------|--|--|--|--|--|--|
| 127 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 126 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 128 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |

Pipe Taps

| | | | | | | | | | | | | | | | | | |
|-------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|--|--------------------------|-------------------------------------|--------------------------|--|--|
| 16570 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| 16575 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| 16590 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| 16585 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| 16580 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| 308 | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | | | |
| 318 | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | | | |
| 12053 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 12054 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 328 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 108 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 108AL | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 118 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 108G | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| S125 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 12006 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 12007 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 109 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |




good best







| List | Item | Brand | Inch/ Metric | Material | Coating | Size Range | Features | Product Page/ Tech Page |
|------|------|-------|-----------------|----------|---------|---------------|----------|----------------------------|
|------|------|-------|-----------------|----------|---------|---------------|----------|----------------------------|

Round Dies

| | | | | | | | | |
|------|---|---------|--------|-----|--------|----------------|---|---------|
| 134 |  | GENERAL | Inch | HSS | Bright | No. 0 - 1-1/2" | Solid & Adjustable Round Split Dies | 752-754 |
| 134P |  | GENERAL | Inch | HSS | Bright | 1/8" - 1/2" | Adjustable Round Split Dies, Taper Pipe | 755 |
| 135 |  | GENERAL | Metric | HSS | Bright | M2 - M30 | Adjustable Round Split Dies | 756 |

Thread Gages

| | | | | | | | | |
|-------|---|---------|--------|-----|--------|----------------|-----------------------|-----|
| 15001 |  | GENERAL | Inch | HSS | Bright | No. 2 - 1-1/2" | GO/NOGO Set, Class 2B | 757 |
| 15002 |  | GENERAL | Metric | HSS | Bright | M3 - M24 | GO/NOGO Set, Class 6H | 758 |





| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-----------|--------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |

good best





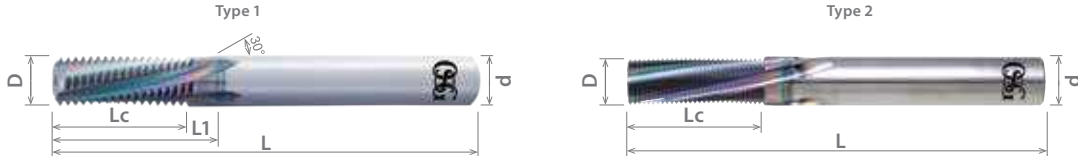
A Brand[®] AT-1

Advanced Performance One Pass Thread Mill

List 16625

| | | | | |
|---------------------------|----------------|--------------|------------|--------------------|
| SPEED FEED P789 | CARBIDE | EgiAs | 11° | SHANK h6 |
|---------------------------|----------------|--------------|------------|--------------------|

AT-1, Helical Flute



Units: Inch

| Size | Threads Per Inch | Cutter Diameter D | Overall Length L | Length of Cut Lc | Neck Length L1 | Shank Diameter d | No. of Flutes | Type | EDP Number |
|------|------------------|----------------------|---------------------|---------------------|-------------------|---------------------|---------------|------|------------|
| | | | | | | | | | EgiAs |
| 1/4 | 20 | 0.179 | 3.000 | 0.600 | 0.700 | 1/4 | 4 | 1 | 1662500017 |
| | 28 | | | 0.607 | 0.680 | | | | 1662500117 |
| | 32 | | | 0.563 | 0.625 | | | | 1662500217 |
| 5/16 | 18 | 0.224 | | 0.778 | 0.889 | | | | 1662500317 |
| | 24 | | | 0.750 | 0.833 | | | | 1662500417 |
| | 32 | | | 0.688 | 0.750 | | | | 1662500517 |
| 3/8 | 16 | 0.264 | 3.500 | 0.875 | 1.000 | 5/16 | 4 | 1 | 1662500617 |
| | 24 | | | 0.813 | 0.958 | | | | 1662500717 |
| | 32 | | | 0.875 | 0.875 | | | | 1662500817 |
| 7/16 | 14 | 0.303 | | 1.071 | - | | | | 1662500917 |
| | 20 | | | 1.000 | - | | | | 1662501017 |
| | 28 | | | 0.964 | - | | | | 1662501117 |
| 1/2 | 13 | 0.343 | 1.154 | 1.308 | 1662501217 | | | | |
| | 20 | | 1.100 | 1.200 | 1662501317 | | | | |
| | 28 | | 1.107 | 1.178 | 1662501417 | | | | |
| 9/16 | 12 | 0.382 | 5.000 | 1.333 | 1.500 | 1/2 | 5 | 1 | 1662501517 |
| | 18 | | | 1.278 | 1.389 | | | | 1662501617 |
| | 24 | | | 1.250 | 1.333 | | | | 1662501717 |
| 5/8 | 11 | 0.421 | | 1.454 | 1.636 | | | | 1662501817 |
| | 18 | | | 1.389 | 1.500 | | | | 1662501917 |
| | 24 | | | 1.374 | 1.458 | | | | 1662502017 |
| 3/4 | 10 | 0.461 | 1.700 | 1.900 | 1662502117 | | | | |
| | 16 | | 1.626 | 1.750 | 1662502217 | | | | |
| | 20 | | 1.600 | 1.700 | 1662502317 | | | | |
| 7/8 | 9 | 0.539 | 5.500 | 2.000 | 2.222 | 5/8 | 5 | 1 | 1662502417 |
| | 14 | | | 1.928 | 2.071 | | | | 1662502517 |
| | 20 | | | 1.850 | 1.950 | | | | 1662502617 |
| 1 | 8 | 0.736 | | 2.250 | 2.500 | | | | 1662502717 |
| | 12 | | | 2.167 | 2.334 | | | | 1662502817 |
| | 20 | | | 2.100 | 2.200 | | | | 1662502917 |

Packed: 1 pc.
Available in EgiAs coating only.
For internal threads only.



For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|---------------|--------------|------|--------------|------------|------------------|-----|---------|-----------|--------------|---------|--------------|-------------------|-----------------|-----------|-----------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| 16625 | Low | Med. | High | 4140 4340 | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| | 1010 1018 | 1035 1045 | 1065 | | | | | | | | | | | | | | |

good best

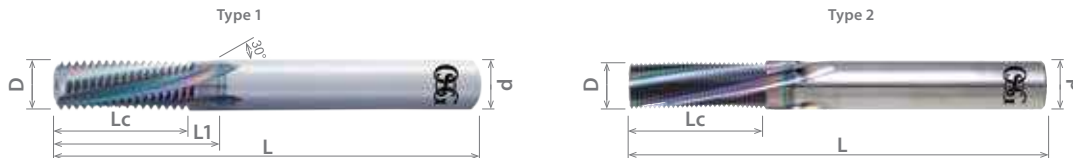




List 16620

AT-1, Helical Flute

| | | | | |
|---------------------------|----------------|--------------|------------|--------------------|
| SPEED FEED P789 | CARBIDE | EgiAs | 11° | SHANK h6 |
|---------------------------|----------------|--------------|------------|--------------------|



Units: mm

| Size | Pitch | Cutter Diameter | Overall Length | Length of Cut | Neck Length | Shank Diameter | No. of Flutes | Type | EDP Number |
|------|-------|-----------------|----------------|---------------|-------------|----------------|---------------|------|------------|
| | | D | L | Lc | L1 | d | | | EgiAs |
| M6 | 1.00 | 4.50 | 75.00 | 14.00 | 16.00 | 6.00 | 4 | 1 | 8331001 |
| | 0.75 | | | 13.50 | | | | | 8331000 |
| M8 | 1.25 | 5.70 | 75.00 | 18.75 | - | 8.00 | 4 | 1 | 8331004 |
| | 1.00 | | | 18.00 | - | | | | 8331003 |
| M10 | 1.50 | 7.70 | 85.00 | 24.00 | - | 10.00 | 5 | 2 | 8331007 |
| | 1.25 | | | 22.50 | - | | | | 8331006 |
| | 1.00 | | | 22.00 | - | | | | 8331005 |
| M12 | 1.75 | 9.70 | 100.00 | 28.00 | - | 12.00 | 5 | 2 | 8331011 |
| | 1.50 | | | 27.00 | - | | | | 8331010 |
| | 1.25 | | | 27.50 | - | | | | 8331009 |
| | 1.00 | | | 26.00 | - | | | | 8331008 |
| M14 | 2.00 | 9.70 | 100.00 | 32.00 | - | 16.00 | 5 | 1 | 8331016 |
| | 1.50 | 10.70 | 120.00 | 31.50 | 34.50 | | | | 8331015 |
| M16 | 2.00 | 11.70 | 120.00 | - | - | 16.00 | 5 | 2 | 8331019 |
| | 1.50 | 13.70 | 135.00 | 36.00 | 39.00 | | | | 8331018 |
| M18 | 2.50 | 11.70 | 120.00 | 42.50 | - | 16.00 | 5 | 2 | 8331020 |
| | 2.50 | 13.70 | 135.00 | 45.00 | 50.00 | | | | 8331022 |
| M20 | 1.50 | 15.70 | 135.00 | 43.50 | - | 20.00 | 6 | 2 | 8331021 |
| | 3.00 | 19.70 | 150.00 | 54.00 | - | | | | 8331025 |
| M24 | 2.00 | 19.70 | 150.00 | 52.00 | - | 20.00 | 6 | 2 | 8331024 |

Packed: 1 pc.
Available in EgiAs coating only.
For internal threads only.



For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S Titanium | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|---------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | | Nickel Alloy | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 16620 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best





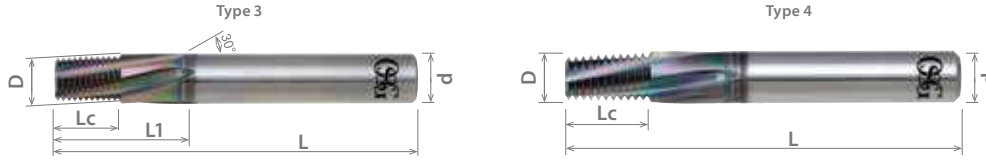
A Brand[®] AT-1

Advanced Performance One Pass Thread Mill

List 16630

| | | | | |
|---------------------------|----------------|--------------|------------|--------------------|
| SPEED FEED P789 | CARBIDE | EgiAs | 11° | SHANK h6 |
|---------------------------|----------------|--------------|------------|--------------------|

AT-1, NPT



Units: Inch

| Size | Threads Per Inch | Cutter Diameter | Overall Length | Length of Cut | | Shank Diameter | No. of Flutes | Type | EDP Number |
|------------------------|------------------|-----------------|----------------|---------------|-------|----------------|---------------|------|------------|
| | | D | L | Lc | L1 | d | | | EgiAs |
| 1/16 or 1/8 1/8 | 27 | 0.223 | 3.000 | 0.407 | 0.480 | 1/4 | 4 | 3 | 1663000017 |
| | | 0.302 | | | - | 5/16 | | | 4 |
| 1/4 or 3/8 3/8 | 18 | 0.381 | 3.500 | 0.611 | 0.720 | 1/2 | 5 | 3 | 1663000217 |
| | | 0.461 | | | | | | | 1663000317 |
| 1/2 or 3/4 1 thru 2 | 14 11-1/2 | 0.617 | 4.000 | 0.786 | - | 5/8 | 6 | 4 | 1663000417 |
| | | 0.737 | | | | | | | 1663000517 |

Packed: 1 pc.
Available in EgiAs coating only.
For internal and external threads.



For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 16630 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

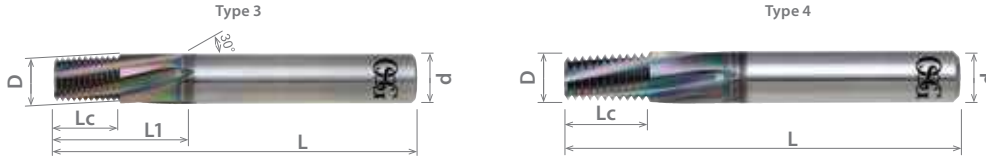




List 16631

| | | | | |
|--------------------|---------|-------|-----|-------------|
| SPEED FEED P789 | CARBIDE | EgiAs | 11° | SHANK h6 |
|--------------------|---------|-------|-----|-------------|

AT-1, NPTF



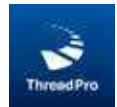
Units: Inch

| Size | Threads Per Inch | Cutter Diameter | Overall Length | Length of Cut | Neck Length | Shank Diameter | No. of Flutes | Type | EDP Number |
|------------------------|------------------|-----------------|----------------|---------------|-------------|----------------|---------------|------|------------|
| | | D | L | Lc | L1 | d | | | EgiAs |
| 1/16 or 1/8 1/8 | 27 | 0.223 | 3.000 | 0.407 | 0.480 | 1/4 | 4 | 3 | 1663100017 |
| | | 0.302 | | | - | 5/16 | | | 4 |
| 1/4 or 3/8 3/8 | 18 | 0.381 | 3.500 | 0.611 | 0.720 | 1/2 | 5 | 3 | 1663100217 |
| | | 0.459 | | | | | | | 1663100317 |
| 1/2 or 3/4 1 thru 2 | 14 11-1/2 | 0.617 | 4.000 | 0.786 | - | 5/8 | 6 | 4 | 1663100417 |
| | | 0.737 | | | | | | | 1663100517 |

Packed: 1 pc.
Available in EgiAs coating only.
For internal and external threads.



For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 16631 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best





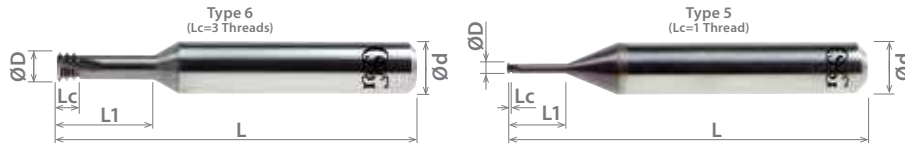
EXOCARB® Thread Mill

Ideal for Steels, Exotics and Difficult to Machine Materials

List 41200

| | | | | | |
|---------------------------|----------------|-----------|------------|------------|--------------------|
| SPEED FEED P791 | CARBIDE | SS | WXS | 11° | SHANK h6 |
|---------------------------|----------------|-----------|------------|------------|--------------------|

WH-VM-PNC, Miniature, Helical Flute



Units: Inch

| Size | Threads Per Inch | Cutter Diameter | Overall Length | Length of Cut | Neck Length | Shank Diameter | No. of Flutes | Type | EDP Number | |
|---------|------------------|-----------------|----------------|---------------|-------------|----------------|---------------|------|------------|------------|
| | | D | L | Lc | L1 | d | | | SS | WXS® |
| 0 | 80 | 0.045 | 1.625 | 0.013 | 0.162 | 1/8 | 3 | 5 | 4120000115 | - |
| 1 | 64 | 0.055 | | 0.016 | 0.198 | | | | 4120000315 | |
| 1 | 72 | | | 0.014 | 0.196 | | | | 4120000215 | - |
| 2 | 64 | 0.064 | 1.661 | 0.047 | 0.189 | 1/4 | | 6 | - | 4120000513 |
| 2, 3 | 56 | | | 0.054 | | | | | - | 4120000413 |
| 3, 4 | 48 | 0.074 | | 0.063 | 0.220 | | | | - | 4120000613 |
| 4, 5, 6 | 40 | 0.083 | | 0.075 | 0.248 | - | 4120000713 | | | |
| 5 | 44 | 0.096 | | 0.068 | 0.272 | - | 4120000813 | | | |
| 6, 8 | 32 | 0.103 | | 0.094 | 0.307 | - | 4120000913 | | | |
| 8 | 36 | 0.129 | 0.083 | 0.354 | - | 4120001013 | | | | |

Packed: 1 pc.

EDP's listed above are stocked standard.

Available in Super Smooth or WXS® coatings as shown above.

For internal threads only.



For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 41200 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |

good best

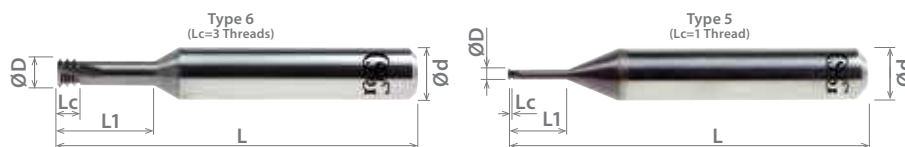




List 41300

WH-VM-PNC, Miniature, Helical Flute

| | | | | | |
|--------------------|---------|----|-----|-----|-------------|
| SPEED FEED P791 | CARBIDE | SS | WXS | 11° | SHANK h6 |
|--------------------|---------|----|-----|-----|-------------|



Units: mm

| Size | Threads Per Inch | Cutter Diameter | Overall Length | Length of Cut | Neck Length | Shank Diameter | No. of Flutes | Type | EDP Number | |
|------------|------------------|-----------------|----------------|---------------|-------------|----------------|---------------|------|------------|---------|
| | | D | L | Lc | L1 | d | | | SS | WXS® |
| M1 | 0.25 | 0.72 | 40.00 | 0.26 | 2.75 | 3.00 | 3 | 5 | 3900495 | - |
| M1.2 | | 0.91 | | | 3.25 | | | | 3900496 | - |
| M1.4 | 0.30 | 1.05 | | 0.31 | 3.80 | | | | 3900497 | - |
| M1.6 | 0.35 | 1.20 | | 0.36 | 4.35 | | | | 3900498 | - |
| M1.7, M1.8 | | 1.30 | | | 4.85 | | | | 3900499 | - |
| M2 | 0.40 | 1.50 | | 1.20 | 4.40 | | | | - | 3900500 |
| M2.5, M2.6 | 0.45 | 1.90 | 1.35 | 5.60 | - | 3900501 | | | | |
| M3 | 0.50 | 2.40 | 1.50 | 6.50 | - | 3900502 | | | | |
| M4 | 0.70 | 3.10 | 2.10 | 8.70 | - | 3900503 | | | | |
| M5 | 0.80 | 4.00 | 2.40 | 10.80 | - | 3900504 | | | | |

Packed: 1 pc.

EDP's listed above are stocked standard.

Available in Super Smooth or WXS® coatings as shown above.

For internal threads only.



For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-----------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 41300 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |

good best





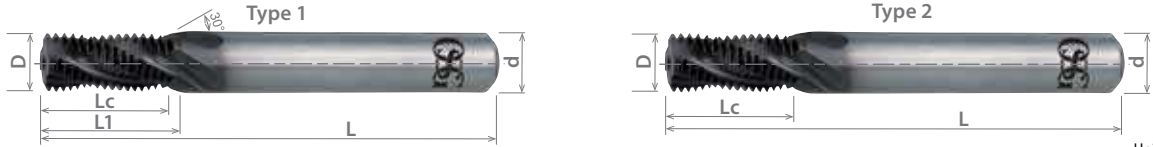
EXOCARB® Thread Mill

Ideal for Steels, Exotics and Difficult to Machine Materials

List 41000

| | | | | |
|--------------------|---------|------|--------|-------------|
| SPEED FEED P790 | CARBIDE | EXO® | 11-30° | SHANK h6 |
|--------------------|---------|------|--------|-------------|

OT-SFT-PNGT, UNC/UNF/UNEF/UNS, Regular & Long Length, Helical Flute



Units: Inch

| Size | Threads Per Inch | Cutter Diameter | Overall Length | Length of Cut | Neck Length | Shank Diameter | No. of Flutes | Type | EDP Number | |
|-------|------------------|-----------------|----------------|---------------|-------------|----------------|---------------|------|------------|------------|
| | | D | L | Lc | L1 | d | | | | |
| 10 | 24 UNC | 0.130 | 2.500 | 0.374 | 0.437 | 3/16 | 3 | 1 | 4100000411 | |
| | 32 UNF | | | | | | | | 4100000511 | |
| 12 | 24 UNC | 0.160 | 3.000 | 0.331 | 0.374 | 1/4 | 3 | 1 | 4100000611 | |
| | 28 UNF | | | 0.402 | 0.449 | | | | 4100000711 | |
| 1/4 | 20 UNC | 0.180 | 3.000 | 0.402 | 0.449 | 1/4 | 3 | 1 | 4100000811 | |
| | | | | 28 UNF | 0.551 | | | | 0.598 | 4100003211 |
| | 32 UNEF | 0.190 | | 0.394 | 0.429 | | | | 4100000911 | |
| | | | | 0.535 | 0.571 | | | | 4100003311 | |
| 5/16 | 18 UNC | 0.245 | 3.000 | 0.374 | 0.406 | 5/16 | 3 | 2 | 4100002811 | |
| | | | | 24 UNF | 0.500 | | | | - | 4100001011 |
| | 32 UNEF | 0.250 | | 0.720 | - | | | | 4100003411 | |
| | | | | 0.500 | - | | | | 4100001111 | |
| 3/8 | 16 UNC | 0.300 | 3.000 | 0.752 | - | 3/8 | 3 | 2 | 4100003511 | |
| | | | | 24 UNF | 0.469 | | | | - | 4100002911 |
| | 32 UNEF | 0.310 | | 0.594 | - | | | | 4100001211 | |
| | | | | 0.874 | - | | | | 4100003611 | |
| 7/16 | 14 UNC | 0.350 | 3.000 | 0.583 | - | 7/16 | 3 | 1 | 4100001311 | |
| | | | | 20 UNF | 0.874 | | | | - | 4100003711 |
| | 32 UNS | 0.375 | | 0.563 | - | | | | 4100003011 | |
| | | | | 0.713 | 0.783 | | | | 4100001411 | |
| 1/2 | 13 UNC | 0.370 | 3.000 | 1.071 | 1.142 | 1/2 | 3 | 2 | 4100003811 | |
| | | | | 20 UNF | 0.701 | | | | 0.752 | 4100001511 |
| | 32 UNS | 0.375 | | 1.051 | 1.098 | | | | 4100003911 | |
| | | | | 0.768 | - | | | | 4100001611 | |
| 9/16 | 12 UNC | 0.430 | 3.000 | 1.079 | - | 9/16 | 3 | 1 | 4100004011 | |
| | | | | 18 UNF | 0.750 | | | | - | 4100001711 |
| | 32 UNS | 0.430 | | 1.098 | - | | | | 4100004111 | |
| | | | | 0.917 | 1.000 | | | | 4100003111 | |
| 5/8 | 11 UNC | 0.430 | 3.000 | 0.752 | - | 5/8 | 3 | 2 | 4100001811 | |
| | | | | 18 UNF | 1.335 | | | | 1.417 | 4100004211 |
| | 32 UNS | 0.430 | | 0.890 | 0.945 | | | | 4100001911 | |
| | | | | 1.390 | 1.445 | | | | 4100004311 | |
| 3/4 | 10 UNC | 0.620 | 3.000 | 1.000 | 1.091 | 3/4 | 3 | 1 | 4100002011 | |
| | | | | 16 UNF | 1.453 | | | | 1.547 | 4100004411 |
| | 32 UNS | 0.620 | | 0.945 | - | | | | 4100002111 | |
| | | | | 1.500 | - | | | | 4100004511 | |
| 7/8 | 9 UNC | 0.745 | 3.000 | 1.201 | - | 7/8 | 3 | 2 | 4100002211 | |
| | | | | 14 UNF | 1.701 | | | | - | 4100004611 |
| | 32 UNS | 0.745 | | 1.126 | - | | | | 4100002311 | |
| | | | | 4.500 | 1.689 | | | | - | 4100004711 |
| 1 1/8 | 9 UNC | 0.745 | 3.000 | 4.000 | 1.335 | 1 1/8 | 3 | 1 | 4100002411 | |
| | | | | 14 UNF | 5.000 | | | | 2.000 | 4100004811 |
| | 32 UNS | 0.745 | | 4.000 | 1.358 | | | | - | 4100002511 |
| | | | | 5.000 | 2.000 | | | | - | 4100004911 |

Packed: 1 pc.
Available EXO® coating only.
For internal threads only.





List 41000 (Continued)

| | | | | |
|---------------------------|----------------|-------------|---------------|--------------------|
| SPEED FEED P790 | CARBIDE | EXO® | 11-30° | SHANK h6 |
|---------------------------|----------------|-------------|---------------|--------------------|

OT-SFT-PNGT, UNC/UNF/UNEF/UNS, Regular & Long Length, Helical Flute

Units: Inch

| Size | Threads Per Inch | Cutter Diameter | Overall Length | Length of Cut | Neck Length | Shank Diameter | No. of Flutes | Type | EDP Number |
|------|------------------|-----------------|----------------|---------------|-------------|----------------|---------------|------|------------|
| | | D | L | Lc | L1 | d | | | |
| 1 | 8 UNC | 0.745 | 4.000 | 1.626 | - | 3/4 | 4 | 2 | 4100002611 |
| | | | 5.000 | 2.000 | - | | | | 4100005011 |
| | 12 UNF | | 4.000 | 1.583 | - | | | | 4100002711 |
| | | | 5.000 | 2.000 | - | | | | 4100005111 |

Packed: 1 pc.
Available EXO® coating only.
For internal threads only.



For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---------|-----------|
| | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V | ~35 HRC | 35-45 HRC |
| 41000 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |

good best





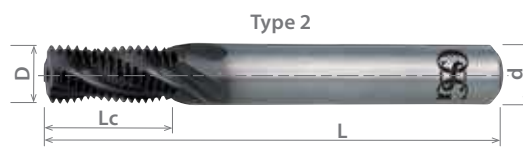
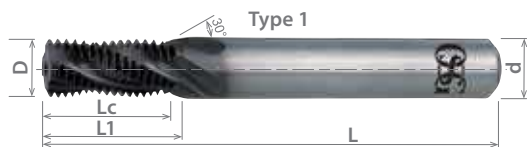
EXOCARB® Thread Mill

Ideal for Steels, Exotics and Difficult to Machine Materials

List 41100

OT-SFT-PNGT & WX-PNC, Regular & Long Length, Helical Flute

| | | | | |
|---------------------------|----------------|-------------|---------------|--------------------|
| SPEED FEED P790 | CARBIDE | EXO® | 11-30° | SHANK h6 |
|---------------------------|----------------|-------------|---------------|--------------------|



Units: mm

| Size | Threads Per Inch | Cutter Diameter | Overall Length | Length of Cut | Neck Length | Shank Diameter | No. of Flutes | Type | EDP Number | |
|------|------------------|-----------------|----------------|---------------|-------------|----------------|---------------|------|------------|------------|
| | | D | L | Lc | L1 | d | | | | |
| M6 | 1.00 | 4.50 | 60.00 | 10.00 | 15.00 | 6.00 | 3 | 1 | 4110000111 | |
| | | | | 13.00 | | | | | 3900001 | |
| M8 | 1.25 | 6.00 | 65.00 | 13.80 | - | 8.00 | 3 | 2 | 4110000311 | |
| | 1.00 | | | 17.50 | - | | | | 3900012 | |
| | | | | 13.00 | - | | | | 4110000211 | |
| | 17.00 | | | - | 3900011 | | | | | |
| M10 | 1.50 | 7.50 | 70.00 | 16.50 | 26.00 | 10.00 | 3 | 1 | 4110000611 | |
| | 1.25 | | | 22.50 | | | | | - | 3900023 |
| | | | | 16.25 | | | | | - | 4110000511 |
| | 1.00 | | | 16.00 | | | | | - | 4110000411 |
| M12 | 1.75 | 9.50 | 85.00 | 21.00 | 28.00 | 10.00 | 3 | 1 | 3900021 | |
| | 1.25 | | | 26.30 | | | | | - | 4110000811 |
| | | | | 20.00 | | | | | - | 3900034 |
| | 26.30 | | | - | | | | | 4110000711 | |
| M14 | 2.00 | 10.00 | 95.00 | 24.00 | - | 12.00 | 3 | 2 | 3900032 | |
| | 1.50 | | | 30.00 | - | | | | 4110001011 | |
| | | | | 22.50 | - | | | | 3900044 | |
| | 30.00 | | | - | 4110000911 | | | | | |
| M16 | 2.00 | 12.00 | 105.00 | 34.00 | - | 16.00 | 3 | 2 | 3900043 | |
| | 1.50 | | | 25.50 | - | | | | 3900054 | |
| | | | | 34.50 | - | | | | 4110001111 | |
| | 42.50 | | | - | 3900053 | | | | | |
| M20 | 2.50 | 16.00 | 120.00 | 42.00 | - | 20.00 | 3 | 2 | 3900075 | |
| | 1.50 | | | 31.50 | - | | | | 4110001211 | |
| | | | | 42.00 | - | | | | 3900073 | |
| M24 | 3.00 | 20.00 | 120.00 | 51.00 | - | 20.00 | 5 | 2 | 3900086 | |
| | 2.00 | | | 50.00 | - | | | | 3900084 | |

Packed: 1 pc.
Available EXO® coating only.
For internal threads only.



For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S Titanium | H | | | | |
|----------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | | Nickel Alloy | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 41100 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

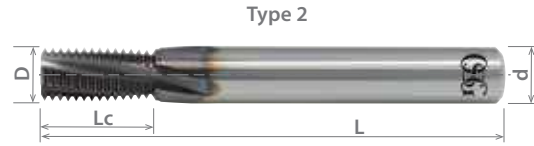
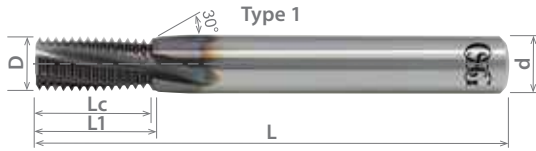




List 41050

WXO-ST-PNC, UNC/UNF, Coolant-Through, Helical Flute

| | | | | | |
|---------------------------|--|----------------|-------------|------------|--------------------|
| SPEED FEED P790 | | CARBIDE | EXO® | 11° | SHANK h6 |
|---------------------------|--|----------------|-------------|------------|--------------------|



Units: Inch

| Size | Threads Per Inch | Cutter Diameter | Overall Length | Length of Cut | Neck Length | Shank Diameter | No. of Flutes | Type | EDP Number |
|------|------------------|-----------------|----------------|---------------|-------------|----------------|---------------|------------|------------|
| | | D | L | Lc | L1 | d | | | |
| 1/4 | 20 UNC | 0.180 | 3.000 | 0.401 | 0.448 | 1/4 | 4 | 1 | 4105000111 |
| | 28 UNF | | | 0.393 | 0.429 | | | | 4105000211 |
| 5/16 | 18 UNC | 0.245 | | 0.500 | - | 5/16 | | 2 | 4105000311 |
| | 24 UNF | | | - | - | | | | 4105000411 |
| 3/8 | 16 UNC | 0.300 | | 0.562 | - | 3/8 | 1 | 4105000511 | |
| | 24 UNF | | | 0.582 | - | | | 4105000611 | |
| 7/16 | 14 UNC | 0.350 | | 0.712 | 0.783 | 7/16 | 1 | 4105000711 | |
| | 20 UNF | | | 0.700 | 0.751 | | | 4105000811 | |
| 1/2 | 13 UNC | 0.370 | | 0.767 | - | 1/2 | 2 | 4105000911 | |
| | 20 UNF | | | 0.750 | - | | | 4105001011 | |
| 9/16 | 12 UNC | 0.430 | 0.917 | 1.000 | 9/16 | 1 | 4105001111 | | |
| | 18 UNF | | 0.889 | 0.944 | | | 4105001211 | | |
| 5/8 | 11 UNC | 0.430 | 1.000 | 1.090 | 5/8 | 5 | 4105001311 | | |
| | 18 UNF | | 0.944 | - | | | 4105001411 | | |
| 3/4 | 10 UNC | 0.620 | 1.200 | - | 3/4 | 2 | 4105001511 | | |
| | 16 UNF | | 1.125 | - | | | 4105001611 | | |
| 7/8 | 9 UNC | 0.745 | 1.330 | - | 7/8 | 6 | 4105001711 | | |
| | 14 UNF | | 1.358 | - | | | 4105001811 | | |
| 1 | 8 UNC | 0.745 | 1.625 | - | 1 | 6 | 4105001911 | | |
| | 12 UNF | | 1.582 | - | | | 4105002011 | | |

Packed: 1 pc.
Available EXO® coating only.
For internal threads only.



For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|--------------|---------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------|--------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | 4140 4340 | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 41050 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |

good best





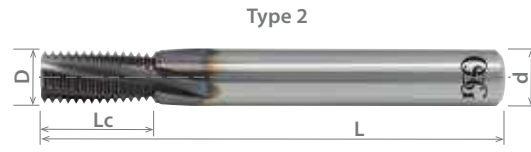
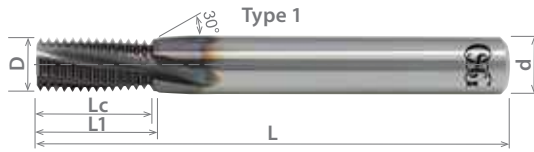
EXOCARB® Thread Mill

Ideal for Steels, Exotics and Difficult to Machine Materials

List 41150

WXO-ST-PNC, Coolant-through, Helical Flute

| | | | | | |
|---------------------------|--|----------------|------------|------------|--------------------|
| SPEED FEED P790 | | CARBIDE | EXO | 11° | SHANK h6 |
|---------------------------|--|----------------|------------|------------|--------------------|



Units: mm

| Size | Threads Per Inch | Cutter Diameter | Overall Length | Length of Cut | Neck Length | Shank Diameter | No. of Flutes | Type | EDP Number |
|------|------------------|-----------------|----------------|---------------|-------------|----------------|---------------|---------|------------|
| | | D | L | Lc | L1 | d | | | |
| M6 | 1.00 | 4.50 | 60.00 | 13.00 | 15.00 | 6.00 | 4 | 1 | 8304701 |
| M8 | | 6.00 | 65.00 | 17.00 | - | | | 2 | 8304711 |
| | 1.25 | | | 17.50 | - | | | | 8304712 |
| M10 | 1.50 | 7.50 | 70.00 | 22.50 | 26.00 | 8.00 | | 1 | 8304723 |
| | 1.00 | | | 21.00 | | | | 8304721 | |
| M12 | 1.75 | 9.50 | 85.00 | 26.30 | 28.00 | 10.00 | 5 | 1 | 8304734 |
| | 1.25 | | | | | | | | |
| M14 | 2.00 | 10.00 | 30.00 | - | - | 12.00 | | 2 | 8304744 |
| | 1.50 | | | - | - | | | | 8304743 |
| M16 | 2.00 | 12.00 | 95.00 | 34.00 | - | 16.00 | | | 8304754 |
| | 1.50 | | | 34.50 | - | | | 8304753 | |
| M20 | 2.50 | 16.00 | 105.00 | 42.50 | - | 20.00 | 6 | 2 | 8304775 |
| | 1.50 | | | | | | | | 42.00 |
| M24 | 3.00 | 20.00 | 120.00 | 51.00 | - | | | | 8304786 |
| | 2.00 | | | 50.00 | - | | | | 8304784 |

Packed: 1 pc.
Available EXO® coating only.
For internal threads only.



For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|----------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|---------|--------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 41150 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best

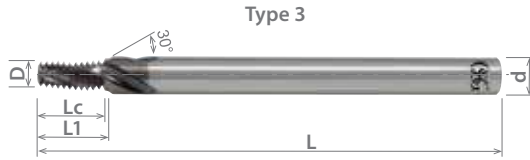




List 42000

OT-SFT-PNGT, NPT, Helical Flute

| | | | | |
|--------------------|---------|------------------|-----|-------------|
| SPEED FEED P790 | CARBIDE | EXO [®] | 30° | SHANK h6 |
|--------------------|---------|------------------|-----|-------------|



Type 3



Type 4

Units: Inch

| Size | Threads Per Inch | Cutter Diameter | Overall Length | Length of Cut | Neck Length | Shank Diameter | No. of Flutes | Type | EDP Number |
|------------|------------------|-----------------|----------------|---------------|-------------|----------------|---------------|------------|------------|
| | | D | L | Lc | L1 | d | | | |
| 1/16 | 27 | 0.186 | 3.000 | 0.409 | 0.440 | 1/4 | 3 | 3 | 4200000111 |
| 1/8 | | 0.286 | | | - | 5/16 | | | 4200000211 |
| 1/4 or 3/8 | 18 | 0.334 | 4.000 | 0.610 | - | 3/8 | 4 | 4 | 4200000311 |
| 1/2 or 3/4 | 14 | 0.575 | | 0.787 | - | 5/8 | | 4200000411 | |
| 1 thru 2 | 11-1/2 | 0.785 | | 0.957 | 1.040 | 1 | | 3 | 4200000511 |
| 2-1/2 | 8 | 0.917 | | 1.358 | - | 4 | | 4200000611 | |

Packed: 1 pc.
Available EXO[®] coating only.
For internal threads only.



For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S Nickel Alloy Inconel | H | | | | |
|----------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------------------|--------------------------|--------------------------|---------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 42000 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | | | |

good best





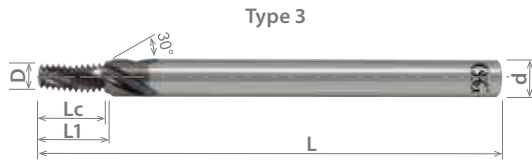
EXOCARB® Thread Mill

Ideal for Steels, Exotics and Difficult to Machine Materials

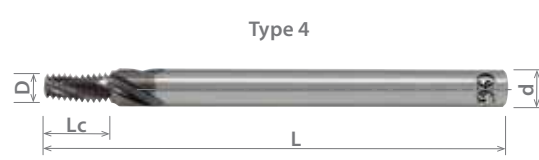
List 42001

OT-SFT-PNGT, NPTF, Helical Flute

| | | | | |
|---------------------------|----------------|-------------|------------|--------------------|
| SPEED FEED P790 | CARBIDE | EXO® | 30° | SHANK h6 |
|---------------------------|----------------|-------------|------------|--------------------|



Type 3



Type 4

Units: Inch

| Size | Threads Per Inch | Cutter Diameter | Overall Length | Length of Cut | Neck Length | Shank Diameter | No. of Flutes | Type | EDP Number |
|------------|------------------|-----------------|----------------|---------------|-------------|----------------|---------------|------|------------|
| | | D | L | Lc | L1 | d | | | |
| 1/16 | 27 | 0.186 | 3.000 | 0.409 | 0.440 | 1/4 | 3 | 3 | 4200100111 |
| 1/8 | | 0.286 | | | - | 5/16 | | | 4200100211 |
| 1/4 or 3/8 | 18 | 0.335 | 4.000 | 0.610 | - | 3/8 | 4 | 4 | 4200100311 |
| 1/2 | 14 | 0.575 | | | 0.787 | - | | | 5/8 |
| 3/4 | | | 11-1/2 | 0.785 | 0.957 | 1.040 | 1 | 3 | 3 |
| 1 or 1-1/4 | 8 | 0.917 | 1.358 | - | | | | | |
| 1-1/2 or 2 | | | | | | | | | 4200100511 |
| 2-1/2 | | | | | | | | | 4200100611 |

Packed: 1 pc.
Available EXO® coating only.
For internal threads only.



For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S Titanium | H | | | | |
|----------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|---------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | | Nickel Alloy | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 42001 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best



List 15015

DCT75

NEW

HSS

TiN



| Size (Inch) | Thread Length (mm) | Shank Diameter (mm) | EDP | |
|----------------|--------------------|---------------------|------------|------------|
| No.5 - 44 UNF | 5.0 | 6.0 | 1501500105 | |
| No.6 - 32 UNC | 5.0 | | 1501500205 | |
| No.10 - 24 UNC | 5.9 | | 1501500305 | |
| No.10 - 32 UNF | 5.0 | | 1501500405 | |
| 1/4 - 20 UNC | 7.0 | | 9342028 | |
| 1/4 - 28 UNF | 5.0 | 10.0 | 9342029 | |
| 1/4 - 32 UNEF | 5.0 | | 1501500505 | |
| 5/16 - 18 UNC | 7.8 | | 9342030 | |
| 5/16 - 24UNF | 7.0 | | 9342031 | |
| 3/8 - 16 UNC | 8.8 | | 9342033 | |
| 3/8 - 24 UNF | 7.0 | | 9342034 | |
| 7/16 - 14 UNC | 10.0 | | 12.0 | 9342035 |
| 7/16 - 20 UNF | 7.0 | | | 9342036 |
| 1/2 - 13 UNC | 10.8 | | 13.0 | 9342037 |
| 1/2 - 20 UNF | 7.0 | | | 9342038 |
| 1/2 - 32 UN | 5.0 | 1501500605 | | |
| 9/16 - 18 UNF | 7.8 | 15.0 | 1501500705 | |
| 5/8 - 11 UNC | 12.7 | 16.0 | 1501500805 | |
| 5/8 - 18 UNF | 7.8 | | 1501500905 | |
| 3/4 - 10 UNC | 14.0 | 20.0 | 1501501005 | |
| 3/4 - 16 UNF | 8.8 | | 1501501105 | |
| 7/8 - 9 UNC | 15.6 | | 23.0 | 1501501205 |
| 7/8 - 14 UNF | 10.0 | 1501501305 | | |
| 1 - 8 UNC | 17.5 | 25.5 | | 1501501405 |
| 1 - 12 UNF | 11.7 | | 1501501505 | |

Since it is made to measure class 2B, it can also be used as is for 3B. If the internal thread is a blind hole, please confirm that the internal thread length is longer than the screw length of DCT75. The selection of the Height Master is required if the nominal diameter of the internal thread has a chamfer or counterbore over 1.5mm. Please consult with your local sales representative.



Sleeve and Height Master Selection Chart

| Shank Diameter | Inch Sizes | Sleeve Hole Dia. | Height Master Dia. |
|----------------|---------------|--|--------------------|
| 6mm | No. 5 - No.10 | 6.5mm | 6mm |
| 10mm - 16mm | 1/4" - 5/8" | 17.5mm (included with the Digimatic Indicator) | 16mm |
| 20mm - 25.5mm | 3/4" - 1 | 26.5mm | |



List 15010

NEW**HSS****TIN**

DCT75



Units: mm

| Size | Thread Length | Shank Diameter | EDP |
|------------|---------------|----------------|------------|
| M3 x 0.5 | 5.0 | 6 | 1501000105 |
| M4 x 0.7 | 5.0 | 6 | 1501000205 |
| M6 x 1 | 6.2 | 10 | 9342019 |
| M8 x 1.25 | 7.3 | 10 | 9342020 |
| M8 x 1 | 6.2 | 10 | 9342021 |
| M10 x 1.5 | 8.3 | 10 | 9342022 |
| M12 x 1.75 | 9.7 | 12 | 9342025 |
| M16 x 1.5 | 8.7 | 16 | 9342027 |

Packed: 1 pcs.

Since it is made to measure class 6H, it can also be used as is for 4H, 5H, JIS I and JIS II. If the internal thread is a blind hole, please confirm that the internal thread length is longer than the screw length of DCT75. The selection of the Height Master is required if the nominal diameter of the internal thread has a chamfer or counterbore over 1.5mm. Please consult with your local sales representative.



Sleeve and Height Master Selection Chart

| Shank Diameter | Metric Sizes | Sleeve Hole Dia. | Height Master Dia. |
|----------------|--------------|--|--------------------|
| 6mm | M3 - M4 | 6.5mm | 6mm |
| 10mm - 16mm | M6 - M16 | 17.5mm (included with the Digimatic Indicator) | 16mm |





List 15020

NEW

DCT75 Accessories

Units: mm

| | Item Name | Size | EDP No. |
|---|--|--------------------|------------|
|  | Digimatic Indicator with 17.5mm Sleeve | - | 9342054 |
|  | Sleeve for Digimatic Indicator | 6.5mm Hole Dia. | 1502000100 |
| | | 26.5mm Hole Dia. | 1502000200 |
|  | Height Master | D 6mm x L 29mm | 1502000300 |
| | | D 6mm x L 29.25mm | 1502000400 |
| | | D 6mm x L 29.5mm | 1502000500 |
| | | D 6mm x L 29.75mm | 1502000600 |
| | | D 6mm x L 30mm | 1502000700 |
| | | D 16mm x L 29mm | 9342047 |
| | | D 16mm x L 29.25mm | 9342048 |
| | D 16mm x L 29.5mm | 9342049 | |
| | D 16mm x L 29.75mm | 9342050 | |
| | D 16mm x L 30mm | 9342051 | |

Please be sure to purchase the DCT75 and the Height Master as a set.

EXT

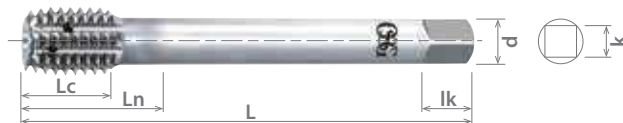
1. Hold the sleeve against the entrance of the internal thread. Please confirm the position of the sleeve and ensure that it is not in the way.
2. After confirming the shape of the internal thread, the sleeve's outer diameter and the hole diameter, please confirm the shape of the internal thread's entrance where the sleeve is fitted against.
3. The digital unit uses the Digimatic Indicator manufactured by Mitutoyo, paired with programs exclusively made for the DCT75.



List 16050



OIL-S-XPF, Coolant-Through, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)



Units: Inch

| Tap Size | Lead | Thread Limit | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | |
|---------------|------|--------------|------------|--------------------|---------------|-------------|------------|--------------|---------------|----------------|--------|--------------|----|
| | | | | V | Lc | Ln | d | k | lk | Min | Max | 2B | 3B |
| 1/4 -20 UNC | 1.5P | H6 | 1605014216 | 3.150 | 0.500 | 1.181 | 0.255 | 0.191 | 0.311 | 0.2245 | 0.2295 | H6 | H4 |
| | 2.5P | H4 | 1605014204 | | | | | | | | | | |
| | 4.5P | H6 | 1605014246 | | | | | | | | | | |
| 1/4 - 28 UNF | 1.5P | H6 | 1605014816 | 3.150 | 0.500 | 1.181 | 0.255 | 0.191 | 0.311 | 0.2318 | 0.2354 | H6 | H4 |
| | 2.5P | H4 | 1605014284 | | | | | | | | | | |
| | 4.5P | H6 | 1605014846 | | | | | | | | | | |
| 5/16 - 18 UNC | 1.5P | H7 | 1605051617 | 3.543 | 0.555 | 1.378 | 0.318 | 0.238 | 0.374 | 0.2842 | 0.2898 | H7 | H5 |
| | 2.5P | H5 | 1605056185 | | | | | | | | | | |
| | 4.5P | H7 | 1605056187 | | | | | | | | | | |
| 5/16 - 24 UNF | 1.5P | H7 | 1605051647 | 3.543 | 0.555 | 1.378 | 0.318 | 0.238 | 0.374 | 0.2912 | 0.0296 | H7 | H5 |
| | 2.5P | H5 | 1605056245 | | | | | | | | | | |
| | 4.5P | H7 | 1605056247 | | | | | | | | | | |
| 3/8-16 UNC | 1.5P | H7 | 1605056217 | 3.937 | 0.626 | 1.575 | 0.381 | 0.286 | 0.437 | 0.3431 | 0.3495 | H7 | H5 |
| | 2.5P | H5 | 1605038117 | | | | | | | | | | |
| | 4.5P | H7 | 1605038165 | | | | | | | | | | |
| 3/8 - 24 UNF | 1.5P | H7 | 1605038167 | 3.937 | 0.626 | 1.575 | 0.381 | 0.286 | 0.437 | 0.3537 | 0.3580 | H7 | H5 |
| | 2.5P | H5 | 1605038147 | | | | | | | | | | |
| | 4.5P | H7 | 1605038217 | | | | | | | | | | |
| 7/16 - 14 UNC | 1.5P | H8 | 1605038245 | 3.937 | 0.713 | 1.713 | 0.323 | 0.242 | 0.406 | 0.4011 | 0.4084 | H8 | H5 |
| | 2.5P | H5 | 1605038247 | | | | | | | | | | |
| | 4.5P | H8 | 1605038447 | | | | | | | | | | |
| 7/16 - 20 UNF | 1.5P | H8 | 1605076118 | 3.937 | 0.713 | 1.713 | 0.323 | 0.242 | 0.406 | 0.4120 | 0.4171 | H8 | H5 |
| | 2.5P | H5 | 1605076145 | | | | | | | | | | |
| | 4.5P | H8 | 1605076148 | | | | | | | | | | |
| 1/2 - 13 UNC | 1.5P | H8 | 1605076448 | 4.331 | 0.768 | 1.933 | 0.367 | 0.275 | 0.437 | 0.4608 | 0.4686 | H8 | H5 |
| | 2.5P | H5 | 1605076218 | | | | | | | | | | |
| | 4.5P | H8 | 1605076218 | | | | | | | | | | |
| 1/2-20 UNF | 1.5P | H8 | 1605012118 | 3.937 | 0.768 | 1.933 | 0.367 | 0.275 | 0.437 | 0.4745 | 0.4796 | H8 | H5 |
| | 2.5P | H5 | 1605012135 | | | | | | | | | | |
| | 4.5P | H8 | 1605012138 | | | | | | | | | | |
| 9/16 - 12 UNC | 1.5P | H10 | 1605012148 | 4.331 | 0.835 | 1.972 | 0.429 | 0.322 | 0.500 | 0.5200 | 0.5285 | H10 | H7 |
| | 2.5P | H7 | 1605012218 | | | | | | | | | | |
| | 4.5P | H10 | 1605012205 | | | | | | | | | | |
| 9/16 - 18 UNF | 1.5P | H10 | 1605012208 | 3.937 | 0.835 | 1.972 | 0.429 | 0.322 | 0.500 | 0.5342 | 0.5398 | H10 | H7 |
| | 2.5P | H7 | 1605091110 | | | | | | | | | | |
| | 4.5P | H10 | 1605096127 | | | | | | | | | | |
| 5/8 - 11 UNC | 1.5P | H10 | 1605096120 | 4.331 | 0.909 | 2.126 | 0.480 | 0.360 | 0.563 | 0.5787 | 0.5879 | H10 | H7 |
| | 2.5P | H7 | 1605091140 | | | | | | | | | | |
| | 4.5P | H10 | 1605091810 | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.





List 16050 (Continued)



OIL-S-XPF, Coolant-Through, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)

Units: Inch

| Tap Size | Lead | Thread Limit | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | | | | | | | | |
|-----------------|------|--------------|------------|--------------------|---------------|-------------|------------|--------------|---------------|----------------|--------|--------------|--------|--------|--------|--------|--------|--------|-----|---|
| | | | V | L | Lc | Ln | d | k | lk | Min | Max | 2B | 3B | | | | | | | |
| 5/8 - 18 UNF | 1.5P | H10 | 1605058810 | 3.937 | 0.909 | 2.126 | 0.480 | 0.360 | 0.563 | 0.5967 | 0.6023 | | | | | | | | | |
| | 2.5P | H7 | 1605058187 | | | | | | | | | | | | | | | | | |
| | 4.5P | H10 | 1605058180 | | | | | | | | | | | | | | | | | |
| 3/4 - 10 UNC | 1.5P | H10 | 1605058840 | 4.921 | 1.000 | 2.433 | 0.590 | 0.442 | 0.689 | 0.6990 | 0.7092 | H10 | H7 | | | | | | | |
| | 2.5P | H7 | 1605034110 | | | | | | | | | | | | | | | | | |
| | 4.5P | H10 | 1605034107 | | | | | | | | | | | | | | | | | |
| 3/4 - 16 UNF | 1.5P | H10 | 1605034100 | 4.331 | | | | | | 0.7181 | 0.7245 | | | | | | | | | |
| | 2.5P | H7 | 1605034140 | | | | | | | | | | | | | | | | | |
| | 4.5P | H10 | 1605034610 | | | | | | | | | | | | | | | | | |
| 7/8 - 9 UNC | 1.5P | H11 | 1605034167 | 5.512 | | | | | | 0.8183 | 0.8297 | | | | | | | | | |
| | 2.5P | H8 | 1605078911 | | | | | | | | | | | | | | | | | |
| | 4.5P | H11 | 1605078908 | | | | | | | | | | | | | | | | | |
| 7/8 - 14 UNF | 1.5P | H11 | 1605078901 | 4.920 | 1.110 | 2.654 | 0.697 | 0.523 | 0.752 | 0.8386 | 0.8459 | H11 | H8 | | | | | | | |
| | 2.5P | H8 | 1605078941 | | | | | | | | | | | | | | | | | |
| | 4.5P | H11 | 1605078111 | | | | | | | | | | | | | | | | | |
| 1 - 8 UNC | 1.5P | H8 | 1605078148 | 6.300 | 1.252 | 3.012 | 0.800 | 0.600 | 0.811 | 0.9363 | 0.9490 | | | | | | | | | |
| | 2.5P | H11 | 1605078141 | | | | | | | | | | | | | | | | | |
| | 4.5P | H8 | 1605001088 | | | | | | | | | | | | | | | | | |
| 1 - 12 UNF | 1.5P | H11 | 1605001081 | 5.510 | | | 1.194 | | | 0.9575 | 0.9660 | | | | | | | | | |
| | 2.5P | H8 | 1605018411 | | | | | | | | | | | | | | | | | |
| | 4.5P | H11 | 1605011211 | | | | | | | | | | | | | | | | | |
| 1, 1/8 - 7 UNC | 2.5P | H13 | 1605011211 | 7.087 | 0.858 | 2.835 | 0.896 | 0.672 | 0.874 | 1.0521 | 1.0667 | H13 | - | | | | | | | |
| 1, 1/8 - 8 UNS | | H11 | 1605011878 | | | | | | | 1.0613 | 1.0740 | H11 | - | | | | | | | |
| 1, 1/8 - 12 UNF | | H11 | 1605011888 | | | | | | | 5.906 | 0.835 | 2.362 | 1.0825 | 1.0910 | H11 | - | | | | |
| 1, 1/4 - 7 UNC | | H13 | 1605011826 | | | | | | | 7.087 | 0.858 | 2.835 | 1.021 | 0.766 | 1.000 | 1.1771 | 1.1917 | H13 | - | |
| 1, 1/4 - 8 UNS | | H11 | 1605012578 | | | | | | | 5.906 | 0.835 | 2.362 | 0.961 | 1.1863 | 1.1990 | H11 | - | | | |
| 1, 1/4 - 12 UNF | | H11 | 1605012588 | | | | | | | 7.087 | 0.858 | 2.835 | 1.021 | 0.766 | 1.000 | 1.2075 | 1.2160 | H11 | - | |
| 1, 3/8 - 6 UNC | | H14 | 1605012526 | | | | | | | 5.906 | 0.835 | 2.362 | 1.108 | 0.831 | 1.063 | 1.2900 | 1.3070 | H14 | - | |
| 1, 3/8 - 8 UNS | | H13 | 1605013768 | | | | | | | 7.874 | 1.000 | 3.150 | 1.108 | 0.831 | 1.063 | 1.3113 | 1.3240 | H13 | - | |
| 1, 3/8 - 12 UNF | | H11 | 1605013788 | | | | | | | 6.693 | 0.835 | 2.677 | 1.108 | 0.831 | 1.063 | 1.3325 | 1.3410 | H11 | - | |
| 1, 1/2 - 6 UNC | | H15 | 1605013126 | | | | | | | 6.693 | 0.835 | 2.677 | 1.108 | 0.831 | 1.063 | 1.4150 | 1.4320 | H15 | - | |
| 1, 1/2 - 8 UNS | | H13 | 1605011268 | | | | | | | 7.874 | 1.000 | 3.150 | 1.233 | 0.925 | 1.126 | 1.4363 | 1.4490 | H13 | - | |
| 1, 1/2 - 12 UNF | | H11 | 1605011288 | | | | | | | 6.693 | 0.835 | 2.677 | 1.233 | 0.925 | 1.126 | 1.4575 | 1.4660 | H11 | - | |
| 1, 5/8 - 8 UNS | | H13 | 1605012126 | | | | | | | 7.874 | 1.000 | 3.150 | 1.305 | 0.979 | 1.126 | 1.5613 | 1.5740 | H13 | - | |
| 1, 3/4 - 5 UNC | | H16 | 1605016288 | | | | | | | 7.874 | 1.000 | 3.150 | 1.305 | 0.979 | 1.126 | 1.6480 | 1.6684 | H16 | - | |
| 1, 3/4 - 8 UNS | | H13 | 1605017558 | | | | | | | 8.661 | 1.201 | 3.465 | 1.430 | 1.072 | 1.252 | 1.6863 | 1.6990 | H13 | - | |
| | | | H13 | | | | | | | 1605017588 | 7.874 | 1.201 | 3.150 | 1.430 | 1.072 | 1.252 | 1.6863 | 1.6990 | H13 | - |

Packed: 1 pc.
Available V coating only.



| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 16050 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| SFM | 75-130 | 75-130 | 65-100 | 65-100 | 20-65 | 20-50 | 20-45 | 15-40 | | 80-130 | 75-110 | 8-10 | 8-10 | 50-100 | 8-20 | | | |

*For Stainless Steel, please use non-water-soluble coolant.

good best





List 16150



OIL-S-XPF, Coolant-Through, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)



Units: mm

| Tap Size | Lead | Thread Limit | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | |
|------------|------|--------------|------------|--------------------|---------------|-------------|------------|--------------|---------------|----------------|-------|--------------|----|
| | | | | L | | | | | | Lc | Ln | d | k |
| M6 x 1.0 | 1.5P | D8 | 1615060118 | 80.00 | 10.00 | 30.00 | 6.47 | 4.85 | 7.30 | 5.49 | 5.59 | D8 | D5 |
| | 2.5P | D5 | 1615006015 | | | | | | | | | | |
| | 4.5P | D8 | 1615006018 | | | | | | | | | | |
| M6 x 0.75 | 1.5P | D7 | 1615067517 | 80.00 | 10.00 | 30.00 | 6.47 | 4.85 | 7.30 | 5.62 | 5.69 | D7 | D4 |
| | 2.5P | D4 | 1615006754 | | | | | | | | | | |
| | 4.5P | D7 | 1615006757 | | | | | | | | | | |
| M7 x 1.0 | 1.5P | D8 | 1615070118 | 90.00 | 12.00 | 35.00 | 8.07 | 6.05 | 9.50 | 6.49 | 6.59 | D8 | D5 |
| | 2.5P | D5 | 1615007015 | | | | | | | | | | |
| | 4.5P | D8 | 1615007018 | | | | | | | | | | |
| M8 x 1.25 | 1.5P | D9 | 1615081219 | 90.00 | 12.00 | 35.00 | 8.07 | 6.05 | 9.50 | 7.36 | 7.49 | D9 | D5 |
| | 2.5P | D5 | 1615008255 | | | | | | | | | | |
| | 4.5P | D9 | 1615008259 | | | | | | | | | | |
| M8 x 1.0 | 1.5P | D8 | 1615080118 | 80.00 | 12.00 | 35.00 | 8.07 | 6.05 | 9.50 | 7.49 | 7.59 | D8 | D4 |
| | 2.5P | D5 | 1615008015 | | | | | | | | | | |
| | 4.5P | D8 | 1615080148 | | | | | | | | | | |
| M8 x 0.75 | 1.5P | D7 | 1615087517 | 80.00 | 12.00 | 35.00 | 8.07 | 6.05 | 9.50 | 7.62 | 7.69 | D7 | D4 |
| | 2.5P | D4 | 1615008754 | | | | | | | | | | |
| | 4.5P | D7 | 1615008757 | | | | | | | | | | |
| M10 X 1.5 | 1.5P | D10 | 1615010110 | 100.00 | 15.00 | 39.00 | 9.67 | 7.26 | 11.10 | 9.24 | 9.39 | D10 | D6 |
| | 2.5P | D6 | 1615010156 | | | | | | | | | | |
| | 4.5P | D10 | 1615010150 | | | | | | | | | | |
| M10 x 1.25 | 1.5P | D9 | 1615010119 | 90.00 | 15.00 | 35.00 | 9.67 | 7.26 | 11.10 | 9.36 | 9.49 | D9 | D5 |
| | 2.5P | D5 | 1615010255 | | | | | | | | | | |
| | 4.5P | D9 | 1615010259 | | | | | | | | | | |
| M10 x 1.0 | 1.5P | D8 | 1615010118 | 90.00 | 15.00 | 35.00 | 9.67 | 7.26 | 11.10 | 9.49 | 9.59 | D8 | D5 |
| | 2.5P | D5 | 1615010015 | | | | | | | | | | |
| | 4.5P | D8 | 1615010148 | | | | | | | | | | |
| M12 x 1.75 | 1.5P | D11 | 1615012711 | 100.00 | 17.00 | 49.10 | 9.32 | 6.98 | 11.10 | 11.11 | 11.23 | D11 | D6 |
| | 2.5P | D6 | 1615012756 | | | | | | | | | | |
| | 4.5P | D11 | 1615010751 | | | | | | | | | | |
| M12 x 1.5 | 1.5P | D11 | 1615012541 | 100.00 | 17.00 | 49.10 | 9.32 | 6.98 | 11.10 | 11.24 | 11.39 | D11 | D6 |
| | 2.5P | D6 | 1615012156 | | | | | | | | | | |
| | 4.5P | D11 | 1615012151 | | | | | | | | | | |
| M12 x 1.25 | 1.5P | D10 | 1615012141 | 100.00 | 17.00 | 49.10 | 9.32 | 6.98 | 11.10 | 11.36 | 11.49 | D10 | D6 |
| | 2.5P | D6 | 1615012210 | | | | | | | | | | |
| | 4.5P | D10 | 1615012250 | | | | | | | | | | |
| M12 x 1.0 | 1.5P | D10 | 1615012240 | 100.00 | 17.00 | 49.10 | 9.32 | 6.98 | 11.10 | 11.49 | 11.59 | D10 | D6 |
| | 2.5P | D6 | 1615012110 | | | | | | | | | | |
| | 4.5P | D10 | 1615012100 | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.





List 16150 (Continued)



OIL-S-XPF, Coolant-Through, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)

Units: mm

| Tap Size | Lead | Thread Limit | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | | | | | | | | | | | | | | | | |
|-----------|------|--------------|------------|--------------------|---------------|-------------|------------|--------------|---------------|----------------|-------|--------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|----|
| | | | V | L | Lc | Ln | d | k | lk | Min | Max | 2B | 3B | | | | | | | | | | | | | | | |
| M14 x 2.0 | 1.5P | D12 | 1615014212 | 110.00 | 20.00 | 50.10 | 10.89 | 8.18 | 12.70 | 12.98 | 13.18 | D12 | D7 | | | | | | | | | | | | | | | |
| | 2.5P | D7 | 1615014027 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4.5P | D12 | 1615014022 | | | | | | | | | | | | | | | | | | | | | | | | | |
| M14 x 1.5 | 1.5P | D11 | 1615014242 | 100.00 | | | | | | 20.00 | 50.10 | 10.89 | 8.18 | 12.70 | 13.24 | 13.39 | D11 | D6 | | | | | | | | | | |
| | 2.5P | D6 | 1615014511 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4.5P | D11 | 1615014156 | | | | | | | | | | | | | | | | | | | | | | | | | |
| M16 x 2.0 | 1.5P | D11 | 1615014151 | 100.00 | | | | | | | | | | | 20.00 | 54.00 | 12.19 | 9.14 | 14.30 | 14.98 | 15.18 | D12 | D7 | | | | | |
| | 2.5P | D12 | 1615016212 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4.5P | D7 | 1615016207 | | | | | | | | | | | | | | | | | | | | | | | | | |
| M16 x 1.5 | 1.5P | D12 | 1615016202 | 100.00 | | | | | | | | | | | | | | | | 20.00 | 54.00 | 12.19 | 9.14 | 14.30 | 15.24 | 15.39 | D11 | D6 |
| | 2.5P | D6 | 1615016242 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4.5P | D11 | 1615016111 | | | | | | | | | | | | | | | | | | | | | | | | | |
| M18 x 2.5 | 1.5P | D11 | 1615016152 | 100.00 | 20.00 | 55.00 | 13.76 | 10.31 | 15.90 | | | | | | | | | | | | | | | | 16.73 | 16.98 | D12 | D7 |
| | 2.5P | D12 | 1615018212 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4.5P | D7 | 1615018257 | | | | | | | | | | | | | | | | | | | | | | | | | |
| M18 x 1.5 | 1.5P | D12 | 1615018252 | 125.00 | | | | | | 20.00 | 55.00 | 13.76 | 10.31 | 15.90 | | | | | | | | | | | 17.24 | 17.39 | D11 | D6 |
| | 2.5P | D6 | 1615018111 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4.5P | D11 | 1615018156 | | | | | | | | | | | | | | | | | | | | | | | | | |
| M20 x 2.5 | 1.5P | D11 | 1615018151 | 110.00 | | | | | | | | | | | 20.00 | 61.80 | 16.56 | 12.42 | 17.50 | | | | | | 18.73 | 18.98 | D12 | D7 |
| | 2.5P | D12 | 1615018141 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4.5P | D7 | 1615020212 | | | | | | | | | | | | | | | | | | | | | | | | | |
| M20 x 1.5 | 1.5P | D12 | 1615020257 | 140.00 | | | | | | | | | | | | | | | | 20.00 | 61.80 | 16.56 | 12.42 | 17.50 | 19.24 | 19.39 | D11 | D6 |
| | 2.5P | D7 | 1615020252 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4.5P | D12 | 1615020242 | | | | | | | | | | | | | | | | | | | | | | | | | |
| M22 x 2.5 | 1.5P | D11 | 1615020111 | 125.00 | 20.00 | 67.40 | 17.70 | 13.28 | 19.10 | | | | | | | | | | | | | | | | 20.73 | 20.98 | D12 | D7 |
| | 2.5P | D6 | 1615022112 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4.5P | D11 | 1615022156 | | | | | | | | | | | | | | | | | | | | | | | | | |
| M22 x 2.0 | 1.5P | D12 | 1615020156 | 140.00 | | | | | | 20.00 | 67.40 | 17.70 | 13.28 | 19.10 | | | | | | | | | | | 20.98 | 21.18 | D11 | D6 |
| | 2.5P | D7 | 1615020151 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4.5P | D12 | 1615020141 | | | | | | | | | | | | | | | | | | | | | | | | | |
| M22 x 1.5 | 1.5P | D12 | 1615022512 | 125.00 | | | | | | | | | | | 20.00 | 67.40 | 17.70 | 13.28 | 19.10 | | | | | | 21.24 | 21.39 | D11 | D6 |
| | 2.5P | D7 | 1615022257 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4.5P | D12 | 1615022252 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1.5P | D12 | 1615022542 | 140.00 | | | | | | | | | | | | | | | | 20.00 | 67.40 | 17.70 | 13.28 | 19.10 | 20.98 | 21.18 | D12 | D7 |
| | 2.5P | D7 | 1615022212 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4.5P | D12 | 1615022207 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1.5P | D12 | 1615022202 | 140.00 | 20.00 | 67.40 | 17.70 | 13.28 | 19.10 | | | | | | | | | | | | | | | | 21.24 | 21.39 | D11 | D6 |
| | 2.5P | D7 | 1615022202 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4.5P | D12 | 1615022242 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1.5P | D11 | 1615022111 | 125.00 | | | | | | 20.00 | 67.40 | 17.70 | 13.28 | 19.10 | | | | | | | | | | | 21.24 | 21.39 | D11 | D6 |
| | 2.5P | D6 | 1615022156 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4.5P | D11 | 1615022151 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1.5P | D11 | 1615022141 | 125.00 | | | | | | | | | | | 20.00 | 67.40 | 17.70 | 13.28 | 19.10 | | | | | | 21.24 | 21.39 | D11 | D6 |
| | 2.5P | D6 | 1615022156 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4.5P | D11 | 1615022141 | | | | | | | | | | | | | | | | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.

continued on next page



| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|-----------|-----------|--|
| | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 16150 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |
| SFM | 75-130 | 75-130 | 65-100 | 65-100 | 20-65 | 20-50 | 20-45 | 15-40 | | 80-130 | 75-110 | 8-10 | 8-10 | 50-100 | 8-20 | | | |

*For Stainless Steel, please use non-water-soluble coolant.

good best





List 16150 (Continued)



OIL-S-XPF, Coolant-Through, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)



Units: mm

| Tap Size | Lead | Thread Limit | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | | |
|-----------|------|--------------|------------|--------------------|---------------|-------------|------------|--------------|---------------|----------------|-------|--------------|-----|---|
| | | | V | L | Lc | Ln | d | k | lk | Min | Max | 2B | 3B | |
| M24 x 3.0 | 1.5P | D15 | 1615024315 | 160.00 | 30.00 | 68.40 | 19.30 | 14.48 | 19.10 | 22.47 | 22.78 | D15 | D9 | |
| | 2.5P | D9 | 1615024309 | | | | | | | | | | | |
| | | D15 | 1615024305 | | | | | | | | | | | |
| | 4.5P | D9 | 1615024349 | | | | | | | | | | | |
| | | D15 | 1615024345 | | | | | | | | | | | |
| M24 x 2.0 | 1.5P | D13 | 1615024223 | 140.00 | 25.00 | 80.00 | 31.31 | 23.50 | 28.60 | 22.98 | 23.18 | D13 | D7 | |
| | 2.5P | D7 | 1615024207 | | | | | | | | | | | |
| | | D13 | 1615024203 | | | | | | | | | | | |
| | 4.5P | D13 | 1615024243 | | | | | | | | | | | |
| M24 x 1.5 | 1.5P | D11 | 1615024111 | 200.00 | 27.00 | 88.00 | 36.32 | 27.23 | 31.80 | 23.24 | 23.39 | D11 | D6 | |
| | 2.5P | D6 | 1615024156 | | | | | | | | | | | |
| | | D11 | 1615024151 | | | | | | | | | | | |
| | 4.5P | D11 | 1615024141 | | | | | | | | | | | |
| M27 x 3.0 | 2.5P | D15 | 1615027309 | 160.00 | 18.00 | 64.00 | 22.75 | 17.07 | 22.20 | 25.47 | 25.78 | D15 | - | |
| M30 x 3.5 | | | | 1615030350 | 180.00 | 21.00 | 72.00 | 25.93 | 19.46 | 25.40 | 28.22 | 28.57 | D16 | - |
| M33 x 3.5 | | | D16 | 1615033350 | 200.00 | 24.00 | 80.00 | 31.31 | 23.50 | 28.60 | 33.96 | 34.37 | D17 | - |
| M36 x 4.0 | | | | 1615036411 | | | | | | | | | | |
| M42 x 4.5 | | | D17 | 1615042451 | 220.00 | 27.00 | 88.00 | 38.58 | 28.93 | 31.80 | 39.71 | 40.16 | D17 | - |
| M45 x 4.5 | | | | | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S Titanium | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|----------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | | Nickel Alloy | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 16150 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |
| SFM | 75-130 | 75-130 | 65-100 | 65-100 | 20-65 | 20-50 | 20-45 | 15-40 | | 80-130 | 75-110 | 8-10 | 8-10 | 50-100 | 8-20 | | |

*For Stainless Steel, please use non-water-soluble coolant.

good best

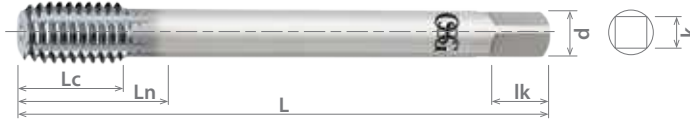




List 16250

HSS-Co **V**

S-XPF, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)



Units: Inch

| Tap Size | Lead | Thread Limit | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | |
|------------|------|--------------|-------------|--------------------|---------------|-------------|------------|--------------|---------------|----------------|--------|--------------|-----|
| | | | | L | Lc | Ln | | | | d | k | lk | Min |
| 0 - 80 UNF | 1.5P | H3 | 1625008013 | 1.575 | 0.324 | 0.363 | 0.141 | 0.110 | 0.188 | 0.0536 | 0.0549 | H3 | H2 |
| | 2.5P | H2 | 162500802 | | 0.321 | 0.360 | | | | | | | |
| | | | 162500803 | | | | | | | | | | |
| 1 - 64 UNC | 4.5P | H3 | 1625008043 | 1.772 | 0.315 | 0.354 | | | | | | | |
| | 1.5P | | 1625016413 | | 0.329 | 0.369 | | | | | | | |
| | 2.5P | H2 | 1625001642 | | 0.326 | 0.365 | | | | | | | |
| 1 - 72 UNF | 4.5P | H3 | 1625016443 | 1.969 | 0.315 | 0.354 | | | | | | | |
| | 1.5P | | 1625017213 | | 0.327 | 0.366 | | | | | | | |
| | 2.5P | H2 | 1625001722 | | 0.324 | 0.363 | | | | | | | |
| 2 - 56 UNC | 4.5P | H3 | 1625017243 | 2.205 | 0.323 | 0.363 | | | | | | | |
| | 1.5P | | 1625025613 | | 0.315 | 0.354 | | | | | | | |
| | 2.5P | H2 | 1625002562 | | 0.389 | 0.428 | | | | | | | |
| 2 - 64 UNF | 4.5P | H3 | 1625002563 | 2.205 | 0.385 | 0.424 | | | | | | | |
| | 1.5P | | 1625025643 | | 0.384 | 0.424 | | | | | | | |
| | 2.5P | H2 | 1625026413 | | 0.374 | 0.413 | | | | | | | |
| 3 - 48 UNC | 4.5P | H3 | 162502643 | 2.205 | 0.385 | 0.424 | | | | | | | |
| | 1.5P | | 1625026413 | | 0.381 | 0.421 | | | | | | | |
| | 2.5P | H2 | 1625002642 | | 0.374 | 0.413 | | | | | | | |
| 3 - 56 UNF | 4.5P | H3 | 1625026443 | 2.205 | 0.374 | 0.413 | | | | | | | |
| | 1.5P | | 1625034813 | | 0.390 | 0.429 | | | | | | | |
| | 2.5P | H2 | 1625003482 | | 0.385 | 0.424 | | | | | | | |
| 4 - 40 UNC | 4.5P | H3 | 1625003483 | 2.205 | 0.370 | 0.409 | | | | | | | |
| | 1.5P | | 1625003483 | | 0.385 | 0.425 | | | | | | | |
| | 2.5P | H2 | 1625003562 | | 0.381 | 0.421 | | | | | | | |
| 4 - 48 UNF | 4.5P | H3 | 1625003563 | 2.205 | 0.370 | 0.409 | | | | | | | |
| | 1.5P | | 1625003563 | | 0.370 | 0.409 | | | | | | | |
| | 2.5P | H2 | 16250044015 | | 0.317 | 0.727 | | | | | | | |
| 5 - 40 UNC | 4.5P | H3 | 1625004403 | 2.205 | 0.312 | 0.721 | | | | | | | |
| | 1.5P | | 1625004405 | | 0.311 | 0.721 | | | | | | | |
| | 2.5P | H2 | 1625004405 | | 0.295 | 0.705 | | | | | | | |
| 5 - 40 UNC | 4.5P | H3 | 1625044815 | 2.205 | 0.315 | 0.724 | | | | | | | |
| | 1.5P | | 1625004483 | | 0.311 | 0.720 | | | | | | | |
| | 2.5P | H2 | 1625004485 | | 0.310 | 0.720 | | | | | | | |
| 5 - 40 UNC | 4.5P | H3 | 1625044845 | 2.205 | 0.299 | 0.709 | | | | | | | |
| | 1.5P | | 1625054015 | | 0.318 | 0.728 | | | | | | | |
| | 2.5P | H2 | 1625005403 | | 0.313 | 0.722 | | | | | | | |
| 5 - 40 UNC | 4.5P | H3 | 1625005405 | 2.205 | 0.312 | 0.721 | | | | | | | |
| | 1.5P | | 1625005405 | | 0.312 | 0.721 | | | | | | | |
| | 2.5P | H2 | 1625005405 | | 0.312 | 0.721 | | | | | | | |

Packed: 1 pc.
Available V coating only.

[continued on next page](#) **EP**

| Work Material | | | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 16250 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| SFM | 50-115 | 50-115 | 50-85 | 50-85 | 20-65 | 15-40 | 15-35 | 10-30 | | 65-115 | 65-90 | 8-12 | 8-15 | 50-100 | 8-25 | | | | |

*For Stainless Steel, please use non-water-soluble coolant.

good best



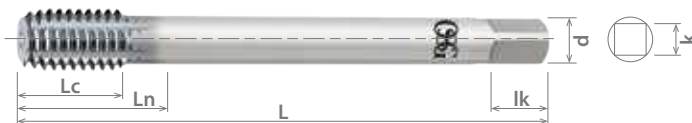


List 16250 (Continued)

HSS-Co

V

S-XPF, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)



Units: Inch

| Tap Size | Lead | Thread Limit | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | | | | | | | |
|---------------|------------|--------------|------------|--------------------|---------------|-------------|------------|--------------|---------------|----------------|--------|--------------|--------|--------|--------|--------|--------|----|----|
| | | | | L | | | | | | Lc | Ln | d | k | lk | Min | Max | 2B | 3B | |
| 5 - 40 UNC | 4.5P | H5 | 1625054045 | 2.205 | 0.299 | 0.709 | 0.141 | 0.110 | 0.188 | 0.1123 | 0.1148 | H5 | H3 | | | | | | |
| | 1.5P | | 1625054415 | | 0.315 | 0.724 | | | | | | | | | | | | | |
| 5 - 44 UNF | 2.5P | H3 | 1625005443 | | 0.310 | 0.719 | | | | | | | | | | | | | |
| | 4.5P | H5 | 1625005445 | | 0.309 | 0.709 | | | | | | | | | | | | | |
| 6 - 32 UNC | 1.5P | H3 | 1625063215 | | 0.399 | 0.812 | | | | | | | | | | | | | |
| | 2.5P | | 1625006323 | | 0.392 | 0.805 | | | | | | | | | | | | | |
| | 4.5P | H5 | 1625006325 | | 0.391 | 0.805 | | | | | | | | | | | | | |
| | 1.5P | 1625063245 | 0.370 | | 0.783 | | | | | | | | | | | | | | |
| 6 - 40 UNF | 1.5P | H3 | 1625064015 | | 0.394 | 0.807 | | | | | | | | | | | | | |
| | 2.5P | | 1625006403 | | 0.388 | 0.802 | | | | | | | | | | | | | |
| | 4.5P | H5 | 1625006405 | | 0.374 | 0.787 | | | | | | | | | | | | | |
| 8 - 32 UNC | 1.5P | H3 | 1625083215 | | 2.480 | 0.400 | | | | 0.853 | 0.168 | | | 0.131 | 0.250 | 0.1481 | 0.1512 | H5 | H3 |
| | 2.5P | | 1625008323 | 0.393 | | 0.846 | | | | | | | | | | | | | |
| | 4.5P | H5 | 1625083245 | 0.374 | | 0.827 | | | | | | | | | | | | | |
| | 1.5P | 1625083615 | 0.395 | 0.848 | | | | | | | | | | | | | | | |
| 8 - 36 UNF | 2.5P | H3 | 1625008363 | 0.389 | | 0.842 | | | | | | | | | | | | | |
| | 4.5P | H5 | 1625008365 | 0.374 | | 0.827 | | | | | | | | | | | | | |
| | 1.5P | 1625083645 | 0.374 | 0.827 | | | | | | | | | | | | | | | |
| 10 - 24 UNC | 1.5P | H6 | 1625010216 | 2.756 | | 0.530 | 0.975 | 0.194 | 0.152 | 0.250 | | 0.1688 | 0.1729 | | | H6 | H4 | | |
| | 2.5P | H4 | 1625010244 | | | 0.521 | 0.966 | | | | | | | | | | | | |
| | 4.5P | H6 | 1625010246 | | | 0.520 | 0.965 | | | | | | | | | | | | |
| | 1.5P | | 1625010249 | | | 0.492 | 0.937 | | | | | | | | | | | | |
| 10 - 32 UNF | 2.5P | H4 | 1625010316 | | | 0.523 | 0.968 | | | | | | | | | | | | |
| | 4.5P | H6 | 1625010324 | | 0.516 | 0.961 | | | | | | | | | | | | | |
| | 1.5P | | 1625010326 | | 0.500 | 0.945 | | | | | | | | | | | | | |
| 12 - 24 UNC | 1.5P | H7 | 1625012417 | | 3.150 | 0.532 | 1.134 | | | | 0.220 | 0.165 | 0.281 | 0.1948 | 0.1989 | | | H7 | H5 |
| | 2.5P | H5 | 1625012245 | | | 0.522 | 1.124 | | | | | | | | | | | | |
| | 4.5P | H7 | 1625012247 | | | 0.496 | 1.098 | | | | | | | | | | | | |
| | 1.5P | | 1625012817 | | | 0.523 | 1.130 | | | | | | | | | | | | |
| 12 - 28 UNF | 2.5P | H5 | 1625012285 | | | 0.519 | 1.121 | | | | | | | | | | | | |
| | 4.5P | H7 | 1625012287 | 0.500 | | 1.102 | | | | | | | | | | | | | |
| | 1.5P | | 1625012847 | 0.500 | | 1.102 | | | | | | | | | | | | | |
| 1/4 - 20 UNC | 1.5P | H6 | 1625014216 | 3.150 | | 0.538 | 1.219 | 0.255 | 0.191 | 0.313 | | | | 0.2245 | 0.2295 | H6 | H4 | | |
| | 2.5P | H4 | 1625014204 | | | 0.526 | 1.207 | | | | | | | | | | | | |
| | 4.5P | H6 | 1625014206 | | | 0.496 | 1.374 | | | | | | | | | | | | |
| | 1.5P | | 1625014246 | | | 0.517 | 1.198 | | | | | | | | | | | | |
| 1/4 - 28 UNF | 2.5P | H4 | 1625014816 | | | 0.509 | 1.190 | | | | | | | | | | | | |
| | 4.5P | H6 | 1625014284 | | 0.508 | 1.189 | | | | | | | | | | | | | |
| | 1.5P | | 1625014846 | | 0.496 | 1.177 | | | | | | | | | | | | | |
| 5/16 - 18 UNC | 1.5P | H7 | 1625051617 | | 3.543 | 0.555 | 1.378 | | | | 0.318 | 0.238 | 0.375 | 0.2842 | 0.2898 | | | H7 | H5 |
| | 2.5P | H5 | 1625056185 | | | | | | | | | | | | | | | | |
| | 4.5P | H7 | 1625056187 | | | | | | | | | | | | | | | | |
| 1.5P | 1625051647 | | | | | | | | | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.





List 16250 (Continued)

HSS-Co **V**

S-XPF, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)

Units: Inch

| Tap Size | Lead | Thread Limit | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | |
|---------------|------|--------------|------------|--------------------|---------------|-------------|------------|--------------|---------------|----------------|--------|--------------|----|
| | | | V | L | Lc | Ln | d | k | lk | Min | Max | 2B | 3B |
| 5/16 - 24 UNF | 1.5P | H7 | 1625056217 | 3.543 | 0.555 | 1.378 | 0.318 | 0.238 | 0.375 | 0.2912 | 0.2955 | | |
| | 2.5P | H5 | 1625056245 | | | | | | | | | | |
| | 4.5P | H7 | 1625056247 | | | | | | | | | | |
| 3/8 - 16 UNC | 1.5P | H7 | 1625056249 | 3.937 | 0.625 | 1.575 | 0.381 | 0.286 | 0.438 | 0.3431 | 0.3495 | H7 | |
| | 2.5P | H5 | 1625038117 | | | | | | | | | | |
| | 4.5P | H7 | 1625038165 | | | | | | | | | | |
| 3/8 - 24 UNF | 1.5P | H7 | 1625038167 | 3.937 | 0.712 | 1.693 | 0.323 | 0.242 | 0.406 | 0.3537 | 0.3580 | | |
| | 2.5P | H5 | 1625038147 | | | | | | | | | | |
| | 4.5P | H7 | 1625038217 | | | | | | | | | | |
| 7/16 - 14 UNC | 1.5P | H8 | 1625038245 | 4.331 | 0.767 | 1.929 | 0.367 | 0.275 | 0.438 | 0.4011 | 0.4084 | H5 | |
| | 2.5P | H5 | 1625038247 | | | | | | | | | | |
| | 4.5P | H7 | 1625038249 | | | | | | | | | | |
| 7/16 - 20 UNF | 1.5P | H8 | 1625076118 | 3.937 | 0.767 | 1.929 | 0.367 | 0.275 | 0.438 | 0.4120 | 0.4171 | H8 | |
| | 2.5P | H5 | 1625076145 | | | | | | | | | | |
| | 4.5P | H7 | 1625076148 | | | | | | | | | | |
| 1/2 - 13 UNC | 1.5P | H8 | 1625076149 | 4.331 | 0.767 | 1.929 | 0.367 | 0.275 | 0.438 | 0.4608 | 0.4686 | | |
| | 2.5P | H5 | 1625076218 | | | | | | | | | | |
| | 4.5P | H7 | 1625076205 | | | | | | | | | | |
| 1/2 - 20 UNF | 1.5P | H8 | 1625076208 | 3.937 | 0.767 | 1.929 | 0.367 | 0.275 | 0.438 | 0.4745 | 0.4796 | | |
| | 2.5P | H5 | 1625012118 | | | | | | | | | | |
| | 4.5P | H7 | 1625012135 | | | | | | | | | | |
| 9/16 - 12 UNC | 1.5P | H5 | 1625012138 | 4.331 | 0.834 | 1.969 | 0.429 | 0.322 | 0.500 | 0.5200 | 0.5280 | | |
| | 2.5P | H7 | 1625012148 | | | | | | | | | | |
| | 4.5P | H8 | 1625012205 | | | | | | | | | | |
| 9/16 - 18 UNF | 1.5P | H7 | 1625012208 | 3.937 | 0.834 | 1.969 | 0.429 | 0.322 | 0.500 | 0.5342 | 0.5398 | H10 | H7 |
| | 2.5P | H5 | 1625091117 | | | | | | | | | | |
| | 4.5P | H7 | 1625091127 | | | | | | | | | | |
| 5/8 - 11 UNC | 1.5P | H10 | 1625091147 | 4.331 | 0.909 | 2.126 | 0.480 | 0.360 | 0.563 | 0.5787 | 0.5879 | | |
| | 2.5P | H7 | 1625091810 | | | | | | | | | | |
| | 4.5P | H10 | 1625091817 | | | | | | | | | | |
| 5/8 - 18 UNF | 1.5P | H7 | 1625091840 | 3.937 | 0.909 | 2.126 | 0.480 | 0.360 | 0.563 | 0.5967 | 0.6023 | | |
| | 2.5P | H5 | 1625058410 | | | | | | | | | | |
| | 4.5P | H7 | 1625058117 | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.

continued on next page



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------|--|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | 4140 4340 | 300 | 400 | 17-4 PH | 6061 7075 | | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 16250 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| SFM | 50-115 | 50-115 | 50-85 | 50-85 | 20-65 | 15-40 | 15-35 | 10-30 | | 65-115 | 65-90 | 8-12 | 8-15 | 50-100 | 8-25 | | |

*For Stainless Steel, please use non-water-soluble coolant.

good best



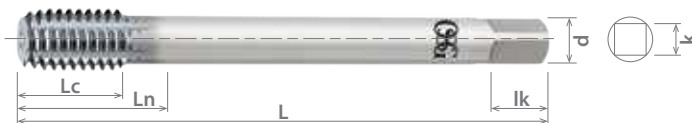


List 16250 (Continued)

HSS-Co

V

S-XPF, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)



Units: Inch

| Tap Size | Lead | Thread Limit | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | |
|-----------------|------|--------------|------------|--------------------|---------------|-------------|------------|--------------|---------------|----------------|--------|--------------|----|
| | | | | | | | | | | Min | Max | 2B | 3B |
| | | | V | L | Lc | Ln | d | k | lk | | | | |
| 3/4 - 10 UNC | 1.5P | H10 | 1625034110 | 4.921 | 1.00 | 2.441 | 0.590 | 0.442 | 0.688 | 0.6990 | 0.7092 | H10 | H7 |
| | 2.5P | H7 | 1625034107 | | | | | | | | | | |
| | 4.5P | H10 | 1625034100 | | | | | | | | | | |
| 3/4 - 16 UNF | 1.5P | H10 | 1625034140 | 4.331 | 1.00 | 2.441 | 0.590 | 0.442 | 0.688 | 0.7181 | 0.7245 | H10 | H7 |
| | 2.5P | H7 | 1625034610 | | | | | | | | | | |
| | 4.5P | H10 | 1625034160 | | | | | | | | | | |
| 7/8 - 9 UNC | 1.5P | H11 | 1625078911 | 5.512 | 1.110 | 2.638 | 0.697 | 0.523 | 0.750 | 0.8183 | 0.8297 | H11 | H8 |
| | 2.5P | H8 | 1625078908 | | | | | | | | | | |
| | 4.5P | H11 | 1625078901 | | | | | | | | | | |
| 7/8 - 14 UNF | 1.5P | H8 | 1625078111 | 4.921 | 1.110 | 2.638 | 0.697 | 0.523 | 0.750 | 0.8386 | 0.8459 | H11 | H8 |
| | 2.5P | H8 | 1625078148 | | | | | | | | | | |
| | 4.5P | H11 | 1625078141 | | | | | | | | | | |
| 1 - 8 UNC | 1.5P | H8 | 1625018111 | 6.299 | 1.251 | 2.992 | 0.800 | 0.600 | 0.813 | 0.9363 | 0.9490 | H11 | H8 |
| | 2.5P | H8 | 1625001088 | | | | | | | | | | |
| | 4.5P | H11 | 1625001081 | | | | | | | | | | |
| 1 - 12 UNF | 1.5P | H8 | 1625018411 | 5.512 | 1.251 | 2.992 | 0.800 | 0.600 | 0.813 | 0.9575 | 0.9660 | H11 | H8 |
| | 2.5P | H8 | 1625011211 | | | | | | | | | | |
| | 4.5P | H11 | 1625011212 | | | | | | | | | | |
| 1, 1/8 - 7 UNC | 2.5P | H13 | 1625011878 | 7.087 | 0.858 | 2.834 | 0.896 | 0.672 | 0.875 | 1.0521 | 1.0667 | H13 | - |
| 1, 1/8 - 8 UNS | | H11 | 1625011888 | | | | | | | 1.0613 | 1.0740 | H11 | - |
| 1, 1/8 - 12 UNF | | H11 | 1625011826 | 5.906 | 0.835 | 2.362 | 1.021 | 0.766 | 1.000 | 1.0825 | 1.0910 | H11 | - |
| 1, 1/4 - 7 UNC | | H13 | 1625012578 | 7.087 | 0.858 | 2.834 | 1.021 | 0.766 | 1.000 | 1.1771 | 1.1917 | H13 | - |
| 1, 1/4 - 8 UNS | | H11 | 1625012588 | 7.087 | 0.858 | 2.834 | 1.021 | 0.766 | 1.000 | 1.1863 | 1.1990 | H11 | - |
| 1, 1/4 - 12 UNF | | H11 | 1625012526 | 5.906 | 0.835 | 2.362 | 1.021 | 0.766 | 1.000 | 1.2075 | 1.2160 | H11 | - |
| 1, 3/8 - 6 UNC | | H14 | 1625013768 | 7.870 | 1.000 | 3.149 | 1.108 | 0.831 | 1.063 | 1.2900 | 1.3070 | H14 | - |
| 1, 3/8 - 8 UNS | | H13 | 1625013788 | 7.870 | 1.000 | 3.149 | 1.108 | 0.831 | 1.063 | 1.3113 | 1.3240 | H13 | - |
| 1, 3/8 - 12 UNF | | H11 | 1625013126 | 6.693 | 0.835 | 2.677 | 1.108 | 0.831 | 1.063 | 1.3325 | 1.3410 | H11 | - |
| 1, 1/2 - 6 UNC | | H15 | 1625011268 | 7.874 | 1.000 | 3.149 | 1.233 | 0.925 | 1.125 | 1.4150 | 1.4320 | H15 | - |
| 1, 1/2 - 8 UNS | | H13 | 1625011288 | 7.874 | 1.000 | 3.149 | 1.233 | 0.925 | 1.125 | 1.4363 | 1.4490 | H13 | - |
| 1, 1/2 - 12 UNF | | H11 | 1625012126 | 6.693 | 0.835 | 2.677 | 1.233 | 0.925 | 1.125 | 1.4575 | 1.4660 | H11 | - |
| 1, 5/8 - 8 UNS | | H13 | 1625016288 | 7.874 | 1.000 | 3.149 | 1.305 | 0.979 | 1.125 | 1.5613 | 1.5740 | H13 | - |
| 1, 3/4 - 5 UNC | | H16 | 1625017558 | 8.661 | 1.201 | 3.464 | 1.430 | 1.072 | 1.250 | 1.6480 | 1.6684 | H16 | - |
| 1, 3/4 - 8 UNS | | H13 | 1625017588 | 7.874 | 1.201 | 3.149 | 1.430 | 1.072 | 1.250 | 1.6863 | 1.6990 | H13 | - |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 16250 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| SFM | 50-115 | 50-115 | 50-85 | 50-85 | 20-65 | 15-40 | 15-35 | 10-30 | | 65-115 | 65-90 | 8-12 | 8-15 | 50-100 | 8-25 | | | |

*For Stainless Steel, please use non-water-soluble coolant.

good best

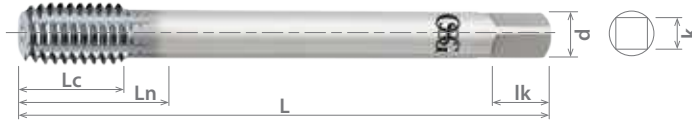




List 16350

HSS-Co **V**

S-XPF, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)



Units: mm

| Tap Size | Lead | Thread Limit | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | | | |
|-------------|------------|--------------|------------|--------------------|---------------|-------------|------------|--------------|---------------|----------------|------|--------------|----|------|------|
| | | | | | | | | | | V | L | Lc | Ln | d | k |
| M1 x 0.25 | 1.5P | D5 | 1635012515 | 40.00 | 5.50 | 6.50 | 3.581 | 2.79 | 4.80 | 0.88 | 0.90 | D5 | D3 | | |
| | 2.5P | | 1635012525 | | | | | | | | | | | | |
| | 4.5P | | 1635012545 | | | | | | | | | | | | |
| 1.5P | 1635012215 | | | | | | | | | | | | | | |
| 2.5P | 1635012225 | | | | | | | | | | | | | | |
| 4.5P | 1635012245 | | | | | | | | | | | | | | |
| M1.2 x 0.25 | 1.5P | | 1635014315 | | 7.00 | 8.00 | | | | | | | | 1.26 | 1.28 |
| | 2.5P | | 1635014325 | | | | | | | | | | | | |
| | 4.5P | | 1635014345 | | | | | | | | | | | | |
| M1.4 x 0.3 | 1.5P | 1635016315 | 40.00 | 8.00 | 9.00 | 1.42 | 1.46 | | | | | | | | |
| | 2.5P | 1635016353 | | | | | | | | | | | | | |
| | 4.5P | 1635016355 | | | | | | | | | | | | | |
| M1.6 x 0.35 | 1.5P | 1635017315 | 45.00 | 8.00 | 9.00 | 1.52 | 1.56 | | | | | | | | |
| | 2.5P | 1635017353 | | | | | | | | | | | | | |
| | 4.5P | 1635017355 | | | | | | | | | | | | | |
| M1.7 x 0.35 | 1.5P | 1635017345 | 50.00 | 9.80 | 10.80 | 1.62 | 1.66 | | | | | | | | |
| | 2.5P | 1635018315 | | | | | | | | | | | | | |
| | 4.5P | 1635018355 | | | | | | | | | | | | | |
| M1.8 X 0.35 | 1.5P | 1635018355 | 56.00 | 6.00 | 18.00 | 1.80 | 1.84 | | | | | | | | |
| | 2.5P | 1635018345 | | | | | | | | | | | | | |
| | 4.5P | 1635018345 | | | | | | | | | | | | | |
| M2 x 0.4 | 1.5P | 1635024155 | 50.00 | 9.80 | 10.80 | 2.27 | 2.32 | | | | | | | | |
| | 2.5P | 163502043 | | | | | | | | | | | | | |
| | 4.5P | 163502045 | | | | | | | | | | | | | |
| M2.5 x 0.45 | 1.5P | 1635024455 | 56.00 | 6.00 | 18.00 | 2.75 | 2.80 | | | | | | | | |
| | 2.5P | 1635025415 | | | | | | | | | | | | | |
| | 4.5P | 1635025453 | | | | | | | | | | | | | |
| M2.6 x 0.45 | 1.5P | 1635025455 | 56.00 | 6.00 | 18.00 | 2.83 | 2.89 | | | | | | | | |
| | 2.5P | 1635025445 | | | | | | | | | | | | | |
| | 4.5P | 1635026415 | | | | | | | | | | | | | |
| M3 x 0.5 | 1.5P | 1635026425 | 56.00 | 6.00 | 18.00 | 2.75 | 2.80 | | | | | | | | |
| | 2.5P | 1635026445 | | | | | | | | | | | | | |
| | 4.5P | 1635030515 | | | | | | | | | | | | | |
| M3 x 0.35 | 1.5P | 163503053 | 56.00 | 6.00 | 18.00 | 2.75 | 2.80 | | | | | | | | |
| | 2.5P | 1635003055 | | | | | | | | | | | | | |
| | 4.5P | 1635030545 | | | | | | | | | | | | | |
| M3 x 0.35 | 1.5P | 1635033515 | 56.00 | 6.00 | 18.00 | 2.83 | 2.89 | | | | | | | | |
| | 2.5P | 1635003353 | | | | | | | | | | | | | |
| | 4.5P | 1635003355 | | | | | | | | | | | | | |
| M3 x 0.35 | 1.5P | 1635033545 | 56.00 | 6.00 | 18.00 | 2.83 | 2.89 | | | | | | | | |
| | 2.5P | 163503355 | | | | | | | | | | | | | |
| | 4.5P | 1635033545 | | | | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.

continued on next page



| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| | P | | | | | M | | | K | N | | S | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 16350 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| SFM | 50-115 | 50-115 | 50-85 | 50-85 | 20-65 | 15-40 | 15-35 | 10-30 | | 65-115 | 65-90 | 8-12 | 8-15 | 50-100 | 8-25 | | | |

*For Stainless Steel, please use non-water-soluble coolant.

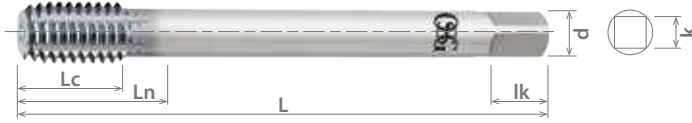
good best





List 16350 (Continued)

S-XPF, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)



Units: mm

| Tap Size | Lead | Thread Limit | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | |
|-------------|------|--------------|------------|--------------------|---------------|-------------|------------|--------------|---------------|----------------|------|--------------|----|
| | | | | V | Lc | Ln | d | k | lk | Min | Max | 6H | 4H |
| M3.5 x 0.6 | 1.5P | D6 | 1635035616 | 56.00 | 7.20 | 20.30 | 3.581 | 2.79 | 4.80 | 3.19 | 3.26 | | |
| | 2.5P | D4 | 1635035064 | | | | | | | | | | |
| | 4.5P | D6 | 1635035646 | | | | | | | | | | |
| M4 x 0.7 | 1.5P | D6 | 1635040716 | 63.00 | 8.50 | 21.10 | 4.267 | 3.33 | 6.40 | 3.64 | 3.71 | | |
| | 2.5P | D4 | 1635004074 | | | | | | | | | | |
| | 4.5P | D6 | 1635040746 | | | | | | | | | | |
| M4 x 0.5 | 1.5P | D6 | 1635040516 | 63.00 | 8.50 | 21.10 | 4.267 | 3.33 | 6.40 | 3.75 | 3.80 | D6 | D4 |
| | 2.5P | D4 | 1635004054 | | | | | | | | | | |
| | 4.5P | D6 | 1635040546 | | | | | | | | | | |
| M4.5 x 0.75 | 1.5P | D6 | 1635045716 | 70.00 | 9.10 | 25.10 | 4.928 | 3.86 | 7.90 | 4.13 | 4.19 | | |
| | 2.5P | D4 | 1635045754 | | | | | | | | | | |
| | 4.5P | D6 | 1635045746 | | | | | | | | | | |
| M5 x 0.8 | 1.5P | D7 | 1635050817 | 70.00 | 9.60 | 25.00 | 4.928 | 3.86 | 7.90 | 4.59 | 4.67 | | |
| | 2.5P | D4 | 1635005084 | | | | | | | | | | |
| | 4.5P | D7 | 1635050847 | | | | | | | | | | |
| M5 x 0.5 | 1.5P | D5 | 1635050515 | 80.00 | 10.00 | 30.00 | 6.477 | 4.85 | 9.50 | 4.75 | 4.80 | D5 | D3 |
| | 2.5P | D3 | 1635005053 | | | | | | | | | | |
| | 4.5P | D5 | 1635005055 | | | | | | | | | | |
| M6 x 1.0 | 1.5P | D8 | 1635060118 | 80.00 | 10.00 | 30.00 | 6.477 | 4.85 | 9.50 | 5.49 | 5.59 | D8 | D5 |
| | 2.5P | D5 | 1635006015 | | | | | | | | | | |
| | 4.5P | D8 | 1635006018 | | | | | | | | | | |
| M6 X 0.75 | 1.5P | D8 | 1635060148 | 80.00 | 10.00 | 30.00 | 6.477 | 4.85 | 9.50 | 5.62 | 5.69 | D6 | D4 |
| | 2.5P | D7 | 1635067517 | | | | | | | | | | |
| | 4.5P | D4 | 1635006754 | | | | | | | | | | |
| M7 x 1.0 | 1.5P | D7 | 1635067547 | 90.00 | 12.00 | 35.00 | 8.077 | 6.05 | 9.50 | 6.49 | 6.59 | D8 | |
| | 2.5P | D5 | 1635007015 | | | | | | | | | | |
| | 4.5P | D8 | 1635007018 | | | | | | | | | | |
| M8 x 1.25 | 1.5P | D8 | 1635070148 | 90.00 | 12.00 | 35.00 | 8.077 | 6.05 | 9.50 | 7.36 | 7.49 | D9 | D5 |
| | 2.5P | D5 | 1635081219 | | | | | | | | | | |
| | 4.5P | D9 | 1635008255 | | | | | | | | | | |
| M8 x 1.0 | 1.5P | D9 | 1635081249 | 90.00 | 12.00 | 35.00 | 8.077 | 6.05 | 9.50 | 7.49 | 7.59 | D8 | |
| | 2.5P | D5 | 1635008259 | | | | | | | | | | |
| | 4.5P | D8 | 1635008018 | | | | | | | | | | |
| M8 x 0.75 | 1.5P | D8 | 1635080118 | 80.00 | 12.00 | 30.00 | 8.077 | 6.05 | 9.50 | 7.62 | 7.69 | D6 | D4 |
| | 2.5P | D4 | 163508015 | | | | | | | | | | |
| | 4.5P | D7 | 1635080148 | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.





List 16350 (Continued)



S-XPF, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)

Units: mm

| Tap Size | Lead | Thread Limit | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | | | | | | | | | |
|------------|------|--------------|------------|--------------------|---------------|-------------|------------|--------------|---------------|----------------|--------|--------------|-----|----|--|--|--|-------|-------|-----|----|
| | | | V | L | Lc | Ln | d | k | lk | Min | Max | 6H | 4H | | | | | | | | |
| M10 x 1.5 | 1.5P | D10 | 1635010110 | 100.00 | 15.00 | 39.00 | 9.677 | 7.26 | 11.10 | 9.24 | 9.39 | D10 | D6 | | | | | | | | |
| | 2.5P | D6 | 1635010156 | | | | | | | | | | | | | | | | | | |
| | 4.5P | D10 | 1635010150 | | | | | | | | | | | | | | | | | | |
| M10 x 1.25 | 1.5P | D9 | 1635010119 | | | | | | | | | | | | | | | | | | |
| | 2.5P | D5 | 1635010255 | | | | | | | | | | | | | | | | | | |
| | 4.5P | D9 | 1635010259 | | | | | | | | | | | | | | | | | | |
| M10 x 1.0 | 1.5P | D8 | 1635010118 | 90.00 | 35.00 | | | | | | 9.49 | 9.59 | D8 | D5 | | | | | | | |
| | 2.5P | D5 | 1635010015 | | | | | | | | | | | | | | | | | | |
| | 4.5P | D8 | 1635010018 | | | | | | | | | | | | | | | | | | |
| M12 x 1.75 | 1.5P | D11 | 1635012171 | 110.00 | 17.00 | 49.10 | 9.322 | 6.98 | | | 11.11 | 11.23 | D11 | D6 | | | | | | | |
| | 2.5P | D6 | 1635012756 | | | | | | | | | | | | | | | | | | |
| | 4.5P | D11 | 1635012751 | | | | | | | | | | | | | | | | | | |
| M12 x 1.5 | 1.5P | D11 | 1635012541 | | | | | | | | | | | | | | | | | | |
| | 2.5P | D6 | 1635012111 | | | | | | | | | | | | | | | | | | |
| | 4.5P | D11 | 1635012156 | | | | | | | | | | | | | | | | | | |
| M12 x 1.25 | 1.5P | D10 | 1635012151 | 100.00 | | | | | | 11.24 | 11.39 | D10 | | | | | | | | | |
| | 2.5P | | 1635012151 | | | | | | | | | | | | | | | | | | |
| | 4.5P | | 1635012141 | | | | | | | | | | | | | | | | | | |
| M12 x 1.0 | 1.5P | | 1635012210 | | | | | | | 100.00 | | | | | | | | 11.36 | 11.49 | D10 | |
| | 2.5P | | 1635012220 | | | | | | | | | | | | | | | | | | |
| | 4.5P | | 1635012240 | | | | | | | | | | | | | | | | | | |
| M14 x 2.0 | 1.5P | D12 | 1635012110 | 110.00 | 20.00 | 50.10 | 10.897 | 8.18 | 12.70 | 11.49 | 11.59 | D10 | | | | | | | | | |
| | 2.5P | | 1635012120 | | | | | | | | | | | | | | | | | | |
| | 4.5P | | 1635012140 | | | | | | | | | | | | | | | | | | |
| M14 x 1.5 | 1.5P | | D12 | | | | | | | 1635014212 | 110.00 | | | | | | | 12.98 | 13.18 | D12 | D7 |
| | 2.5P | | D7 | | | | | | | 1635014027 | | | | | | | | | | | |
| | 4.5P | | D12 | | | | | | | 1635014022 | | | | | | | | | | | |
| M16 x 2.0 | 1.5P | D11 | 1635014242 | 110.00 | | | | | | 13.24 | 13.39 | D11 | D6 | | | | | | | | |
| | 2.5P | D6 | 1635014511 | | | | | | | | | | | | | | | | | | |
| | 4.5P | D11 | 1635014151 | | | | | | | | | | | | | | | | | | |
| M16 x 1.5 | 1.5P | D11 | 1635014541 | 100.00 | | | | | | 14.98 | 15.18 | D12 | D7 | | | | | | | | |
| | 2.5P | D7 | 1635016207 | | | | | | | | | | | | | | | | | | |
| | 4.5P | D12 | 1635016202 | | | | | | | | | | | | | | | | | | |
| M18 x 2.5 | 1.5P | D12 | 1635016242 | 110.00 | | | | | | 15.24 | 15.39 | D11 | D6 | | | | | | | | |
| | 2.5P | D6 | 1635016111 | | | | | | | | | | | | | | | | | | |
| | 4.5P | D11 | 1635016156 | | | | | | | | | | | | | | | | | | |
| M16 x 1.5 | 1.5P | D11 | 1635016151 | 100.00 | | | | | | 15.24 | 15.39 | D11 | D6 | | | | | | | | |
| | 2.5P | D6 | 1635016151 | | | | | | | | | | | | | | | | | | |
| | 4.5P | D11 | 1635016141 | | | | | | | | | | | | | | | | | | |
| M18 x 2.5 | 1.5P | D12 | 1635018212 | 125.00 | 25.00 | 55.00 | 13.767 | 10.31 | 15.90 | 16.73 | 16.98 | D12 | D7 | | | | | | | | |
| | 2.5P | D7 | 1635018257 | | | | | | | | | | | | | | | | | | |
| | 4.5P | D12 | 1635018252 | | | | | | | | | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.

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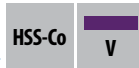


| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 16350 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| SFM | 50-115 | 50-115 | 50-85 | 50-85 | 20-65 | 15-40 | 15-35 | 10-30 | | 65-115 | 65-90 | 8-12 | 8-15 | 50-100 | 8-25 | | |

*For Stainless Steel, please use non-water-soluble coolant.

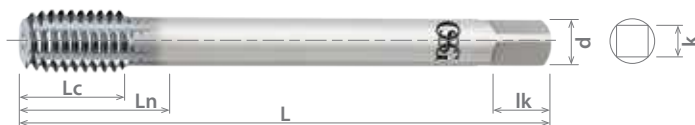
good best





List 16350 (Continued)

S-XPF, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)



Units: mm

| Tap Size | Lead | Thread Limit | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | |
|-----------|------|--------------|------------|--------------------|---------------|-------------|------------|--------------|---------------|----------------|-------|--------------|----|
| | | | | L | Lc | Ln | d | k | lk | Min | Max | 6H | 4H |
| M18 x 1.5 | 1.5P | D11 | 1635018111 | 110.00 | 25.00 | 55.00 | 13.767 | 10.31 | 15.90 | 17.24 | 17.39 | D11 | D6 |
| | 2.5P | D6 | 1635018156 | | | | | | | | | | |
| | 4.5P | D11 | 1635018151 | | | | | | | | | | |
| M20 x 2.5 | 1.5P | D12 | 1635020212 | 140.00 | 25.00 | 61.80 | 16.561 | 12.42 | 17.50 | 18.73 | 18.98 | D12 | D7 |
| | 2.5P | D7 | 1635020257 | | | | | | | | | | |
| | 4.5P | D12 | 1635020252 | | | | | | | | | | |
| M20 x 1.5 | 1.5P | D11 | 1635020111 | 125.00 | 25.00 | 61.80 | 16.561 | 12.42 | 17.50 | 19.24 | 19.39 | D11 | D6 |
| | 2.5P | D6 | 1635020156 | | | | | | | | | | |
| | 4.5P | D11 | 1635020151 | | | | | | | | | | |
| M22 x 2.5 | 1.5P | D12 | 1635022512 | 140.00 | 25.00 | 67.40 | 17.704 | 13.28 | 19.10 | 20.73 | 20.98 | D12 | - |
| | 2.5P | | 1635022522 | | | | | | | | | | - |
| | 4.5P | | 1635022542 | | | | | | | | | | - |
| M22 x 2.0 | 1.5P | D12 | 1635022212 | 140.00 | 25.00 | 67.40 | 17.704 | 13.28 | 19.10 | 20.98 | 21.18 | D12 | - |
| | 2.5P | | 1635022222 | | | | | | | | | | - |
| | 4.5P | | 1635022242 | | | | | | | | | | - |
| M22 x 1.5 | 1.5P | D11 | 1635022111 | 125.00 | 25.00 | 67.40 | 17.704 | 13.28 | 19.10 | 21.24 | 21.39 | D11 | - |
| | 2.5P | | 1635022121 | | | | | | | | | | - |
| | 4.5P | | 1635022141 | | | | | | | | | | - |
| M24 x 3.0 | 1.5P | D15 | 1635024315 | 160.00 | 30.00 | 68.40 | 19.304 | 14.48 | 19.10 | 22.47 | 22.78 | D15 | - |
| | 2.5P | | 1635024325 | | | | | | | | | | - |
| | 4.5P | | 1635024345 | | | | | | | | | | - |
| M24 x 2.0 | 1.5P | D13 | 1635024123 | 140.00 | 25.00 | 68.40 | 19.304 | 14.48 | 19.10 | 22.98 | 23.18 | D13 | - |
| | 2.5P | | 1635024223 | | | | | | | | | | - |
| | 4.5P | | 1635024243 | | | | | | | | | | - |
| M24 x 1.5 | 1.5P | D11 | 1635024111 | 140.00 | 25.00 | 68.40 | 19.304 | 14.48 | 19.10 | 23.24 | 23.39 | D11 | - |
| | 2.5P | | 1635024121 | | | | | | | | | | - |
| | 4.5P | | 1635024141 | | | | | | | | | | - |
| M27 x 3.0 | 2.5P | D15 | 1635027039 | 160.00 | 18.00 | 64.00 | 22.758 | 17.07 | 22.2 | 22.47 | 22.78 | D15 | - |
| M30 x 3.5 | | | 1635030350 | 180.00 | 21.00 | 72.00 | 22.933 | 19.46 | 25.4 | 28.22 | 28.57 | D15 | - |
| M33 x 3.5 | | D16 | 1635033350 | 200.00 | 24.00 | 80.00 | 28.143 | 21.11 | 27.0 | 31.22 | 31.57 | D16 | - |
| M36 x 4.0 | | | 1635036411 | 200.00 | 27.00 | 88.00 | 31.318 | 23.50 | 28.6 | 33.96 | 34.37 | D17 | - |
| M42 x 4.5 | | D17 | 1635042451 | 220.00 | 27.00 | 88.00 | 36.322 | 27.23 | 31.8 | 39.71 | 40.16 | D17 | - |
| M45 x 4.5 | | | 1635045451 | 220.00 | 27.00 | 88.00 | 38.583 | 28.93 | 31.8 | 42.71 | 43.16 | D17 | - |

Packed: 1 pc.
Available V coating only.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|---------------|--------|-------|--------------|------------|------------------|-------|---------|-----------|--------------|---------|--------------|-------------------|-----------------|--------------|--------------|--------------|
| | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | 4140 4340 | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 16350 | ☐ | ☐ | ☐ | ☐ | ☐ | ☐* | ☐* | ☐* | | ☐ | ☐ | ☐ | ☐ | ☐ | | | |
| SFM | 50-115 | 50-115 | 50-85 | 50-85 | 20-65 | 15-40 | 15-35 | 10-30 | | 65-115 | 65-90 | 8-12 | 8-15 | 50-100 | 8-25 | | |

*For Stainless Steel, please use non-water-soluble coolant.

☐ good ☐ best

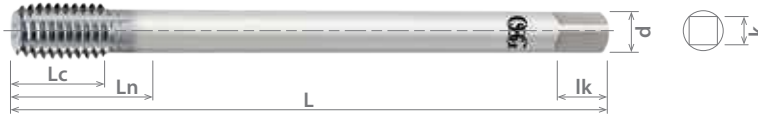




List 16255

HSS-Co **V**

LT-S-XPF, Long Shank, Modified Bottom (2.5P)



Units: Inch

| Tap Size | Lead | Thread Limit | EDP Number | | Long Overall Length | Thread Length | | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | | | | | | | | |
|---------------|--------------|---------------|-------------|------------|---------------------|---------------|-------|------------|--------------|---------------|----------------|--------|--------------|-------|--------|--------|--------|-------|--------|--------|----|
| | | | V | L | | Lc | Ln | | | | Min | Max | 2B | 3B | | | | | | | |
| 5 - 40 UNC | 2.5P | H5 | 1625554025 | 3.150 | 0.312 | 0.722 | 0.141 | 0.110 | 0.188 | 0.1123 | 0.1148 | H5 | H3 | | | | | | | | |
| 5 - 44 UNF | | | 1625554255 | 4.724 | | | | | | 0.1134 | 0.1157 | | | | | | | | | | |
| 6 - 32 UNC | | | 1625554425 | 3.150 | 0.391 | 0.805 | | | | 0.1221 | 0.1252 | | | | | | | | | | |
| | | | 1625554205 | 4.724 | | | | | | 0.1253 | 0.1278 | | | | | | | | | | |
| 6 - 40 UNF | | | 1625563225 | 3.150 | 0.388 | 0.801 | | | | 0.168 | 0.131 | | | 0.250 | 0.1481 | 0.1512 | | | | | |
| | | | 8 - 32 UNC | 1625564255 | | | | | | | | | | | 4.724 | 0.1498 | 0.1526 | | | | |
| 8 - 36 UNF | | | | 1625583225 | 3.150 | 0.393 | | | | | | | | | 0.846 | 0.194 | 0.152 | 0.281 | 0.1688 | 0.1729 | H6 |
| | | | 10 - 24 UNC | 1625583255 | 4.724 | | | | | | | | | | | | | | 0.1741 | 0.1772 | |
| 10 - 32 UNF | | | | 1625510226 | 3.937 | 0.520 | | | | | | | | | 0.965 | 0.220 | 0.165 | 0.281 | 0.1948 | 0.1989 | H7 |
| | | | 12 - 24 UNC | 1625510426 | 5.906 | | | | | | | | | | | | | | 0.1978 | 0.2014 | |
| 12 - 28 UNF | | 1625510326 | | 3.937 | 0.516 | 0.961 | 0.255 | 0.191 | 0.313 | | | 0.2245 | 0.2295 | | H6 | H4 | | | | | |
| | | 1/4 - 20 UNC | 1625512227 | 3.937 | | | | | | | | 0.2318 | 0.2354 | | | | | | | | |
| 1/4 - 28 UNF | | | 1625512827 | 3.937 | 0.526 | 1.207 | 0.381 | 0.286 | 0.438 | | | 0.2842 | 0.2898 | | H7 | H5 | | | | | |
| | | 5/16 - 18 UNC | 1625512257 | 5.906 | | | | | | | | 0.3431 | 0.3495 | | | | | | | | |
| 5/16 - 24 UNF | | | 1625514226 | 3.937 | 0.626 | 1.575 | 0.323 | 0.242 | 0.406 | 0.2912 | 0.2955 | H8 | H5 | | | | | | | | |
| | | 3/8 - 16 UNC | 1625514826 | 3.937 | | | | | | 0.4011 | 0.4084 | | | | | | | | | | |
| 3/8 - 24 UNF | | | 1625514256 | 5.906 | 0.713 | 1.713 | 0.381 | 0.286 | 0.438 | 0.4120 | 0.4171 | H8 | H5 | | | | | | | | |
| | | 7/16 - 14 UNC | 1625511128 | 4.724 | | | | | | 0.4608 | 0.4686 | | | | | | | | | | |
| 7/16 - 20 UNF | | | 1625576128 | 5.906 | 0.768 | 1.933 | 0.367 | 0.275 | 0.438 | 0.4120 | 0.4171 | H8 | H5 | | | | | | | | |
| | | 1/2 - 13 UNC | 1625571128 | 4.724 | | | | | | 0.4608 | 0.4686 | | | | | | | | | | |
| 1/2 - 13 UNC | 1625512128 | | 5.906 | 0.768 | 1.933 | 0.367 | 0.275 | 0.438 | 0.4608 | 0.4686 | H8 | H5 | | | | | | | | | |
| | 1/2 - 13 UNC | 1625512328 | 7.087 | | | | | | 0.4608 | 0.4686 | | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.

continued on next page



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 16255 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| SFM | 50-115 | 50-115 | 50-85 | 50-85 | 20-65 | 15-40 | 15-35 | 10-30 | | 65-115 | 65-90 | 8-12 | 8-15 | 50-100 | 8-25 | | |

*For Stainless Steel, please use non-water-soluble coolant.

good best

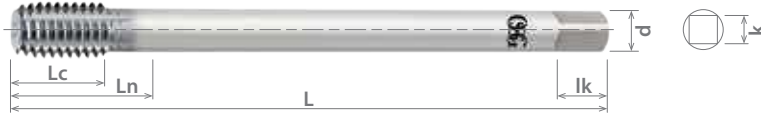




List 16255 (Continued)

HSS-Co **V**

LT-S-XPF, Long Shank, Modified Bottom (2.5P)



Units: Inch

| Tap Size | Lead | Thread Limit | EDP Number | | Long Overall Length | | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | |
|---------------|------|--------------|------------|--------|---------------------|-------|---------------|-------------|------------|--------------|---------------|----------------|----|--------------|--|
| | | | V | L | Lc | Ln | d | k | lk | Min | Max | 2B | 3B | | |
| 1/2 - 20 UNF | 2.5P | H8 | 1625512228 | 5.906 | 0.768 | 1.933 | 0.367 | 0.275 | 0.438 | 0.4745 | 0.4796 | H8 | H5 | | |
| | | | 1625512028 | 7.087 | | | | | | | | | | | |
| 9/16 - 12 UNC | | H7 | 1625591127 | 5.906 | 0.835 | 1.972 | 0.429 | 0.322 | 0.500 | 0.5200 | 0.5285 | H10 | H7 | | |
| | | | 1625591227 | 7.087 | | | | | | 0.5342 | 0.5398 | | | | |
| 9/16 - 18 UNF | | H7 | 1625591827 | 5.906 | 0.909 | 2.126 | 0.480 | 0.360 | 0.563 | 0.5787 | 0.5879 | H10 | H7 | | |
| | | | 1625596827 | 7.087 | | | | | | 0.5967 | 0.6023 | | | | |
| 5/8 - 11 UNC | | H7 | 1625558127 | 5.906 | 1.000 | 2.433 | 0.590 | 0.442 | 0.688 | 0.6990 | 0.7092 | H10 | H7 | | |
| 1625558257 | | | 7.087 | 0.7181 | | | | | | 0.7245 | | | | | |
| 5/8 - 18 UNF | | H7 | 1625558827 | 5.906 | 1.110 | 2.654 | 0.697 | 0.523 | 0.750 | 0.8183 | 0.8297 | H11 | H8 | | |
| 1625551827 | | | 7.087 | 0.8386 | | | | | | 0.8459 | | | | | |
| 3/4 - 10 UNC | | H7 | 1625534127 | 7.087 | 1.252 | 3.012 | 0.800 | 0.600 | 0.813 | 0.9363 | 0.9490 | H11 | H8 | | |
| 1625534027 | | | 8.661 | 0.9575 | | | | | | 0.9660 | | | | | |
| 3/4 - 16 UNF | | H7 | 1625534627 | 7.087 | 1.110 | 2.654 | 0.697 | 0.523 | 0.750 | 0.8183 | 0.8297 | H11 | H8 | | |
| 1625531627 | | | 8.661 | 0.8386 | | | | | | 0.8459 | | | | | |
| 7/8 - 9 UNC | | H8 | 1625579828 | 7.087 | 1.252 | 3.012 | 0.800 | 0.600 | 0.813 | 0.9363 | 0.9490 | H11 | H8 | | |
| 1625575258 | | | 8.661 | 0.9575 | | | | | | 0.9660 | | | | | |
| 7/8 - 14 UNF | | H8 | 1625578128 | 7.087 | 1.252 | 3.012 | 0.800 | 0.600 | 0.813 | 0.9363 | 0.9490 | H11 | H8 | | |
| 1625578428 | | | 8.661 | 0.9575 | | | | | | 0.9660 | | | | | |
| 1 - 8 UNC | | H8 | 1625518208 | 7.087 | 1.252 | 3.012 | 0.800 | 0.600 | 0.813 | 0.9363 | 0.9490 | H11 | H8 | | |
| 1625518258 | | | 8.661 | 0.9575 | | | | | | 0.9660 | | | | | |
| 1 - 12 UNF | H8 | 1625511428 | 7.087 | 1.252 | 3.012 | 0.800 | 0.600 | 0.813 | 0.9363 | 0.9490 | H11 | H8 | | | |
| 1625514208 | | 8.661 | 0.9575 | | | | | | 0.9660 | | | | | | |

Packed: 1 pc.
Available V coating only.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 16255 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| SFM | 50-115 | 50-115 | 50-85 | 50-85 | 20-65 | 15-40 | 15-35 | 10-30 | | 65-115 | 65-90 | 8-12 | 8-15 | 50-100 | 8-25 | | |

*For Stainless Steel, please use non-water-soluble coolant.

good best

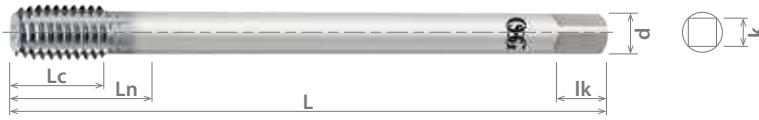




List 16355

HSS-Co **V**

LT-S-XPF, Long Shank, Modified Bottom (2.5P)



Units: mm

| Tap Size | Lead | Thread Limit | EDP Number | | Long Overall Length | Thread Length | | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | |
|-------------|------|--------------|------------|------------|---------------------|---------------|-------|-------------|------------|--------------|---------------|----------------|-----|--------------|----|
| | | | V | L | | Lc | Ln | | | | | Min | Max | 2B | 3B |
| M3 x 0.5 | 2.5P | D5 | 1635530525 | 80.00 | 6.00 | 18.00 | 3.581 | 2.79 | 4.80 | 2.75 | 2.80 | D5 | D3 | | |
| M3 x 0.35 | | | 1635535025 | 120.00 | | | | | | | | | | | |
| M3.5 x 0.6 | | | 1635530325 | 80.00 | | | | | | | | | | | |
| | | | 1635533525 | 120.00 | | | | | | | | | | | |
| M4 x 0.7 | | D6 | 1635535226 | 80.00 | 7.20 | 20.30 | 4.267 | 3.33 | 6.40 | 3.64 | 3.71 | D6 | D4 | | |
| | | | M4 x 0.5 | 1635535626 | | | | | | | | | | 120.00 | |
| M4.5 x 0.75 | | | 1635540726 | 80.00 | 8.50 | 21.10 | 9.10 | 4.928 | 3.86 | 4.13 | 4.19 | | | | |
| | | | M5 x 0.8 | 1635547256 | | | | | | | | | | 120.00 | |
| M5 x 0.5 | | | 1635540526 | 80.00 | 9.60 | 25.00 | 9.60 | 4.928 | 3.86 | 4.59 | 4.67 | | | | |
| | | | M6 x 1.0 | 1635545256 | | | | | | | | | | 120.00 | |
| M6 x 0.75 | | D7 | 1635545726 | 90.00 | 10.00 | 30.00 | 6.477 | 4.85 | 7.30 | 5.49 | 5.59 | | | | |
| | | | M7 x 1.0 | 1635545526 | | | | | | | | 120.00 | | | |
| M8 x 1.25 | | D9 | 1635550827 | 100.00 | 12.00 | 35.00 | 8.077 | 6.05 | 9.50 | 7.36 | 7.49 | | | | |
| | | | M8 x 1.0 | 1635550257 | | | | | | | | 150.00 | | | |
| M8 x 0.75 | | D8 | 1635550525 | 100.00 | 15.00 | 39.00 | 9.677 | 7.26 | 11.10 | 9.49 | 9.59 | | | | |
| | | | M10 x 1.5 | 1635550255 | | | | | | | | 150.00 | | | |
| M10 x 1.25 | | D10 | 1635561028 | 100.00 | 17.00 | 49.10 | 9.322 | 6.98 | 11.24 | 11.23 | 11.39 | | | | |
| | | | M10 x 1.0 | 1635560727 | | | | | | | | 100.00 | | | |
| M12 x 1.75 | | D11 | 1635567527 | 150.00 | 15.00 | 35.00 | 9.677 | 7.26 | 11.10 | 9.49 | 9.59 | | | | |
| | | | M12 x 1.5 | 1635571258 | | | | | | | | 100.00 | | | |
| M12 x 1.5 | D8 | 1635571028 | 150.00 | 15.00 | 35.00 | 9.677 | 7.26 | 11.10 | 9.49 | 9.59 | | | | | |
| | | M10 x 1.5 | 1635581229 | | | | | | | | 110.00 | | | | |
| M10 x 1.25 | D9 | 1635582529 | 150.00 | 15.00 | 35.00 | 9.677 | 7.26 | 11.10 | 9.49 | 9.59 | | | | | |
| | | M10 x 1.0 | 1635581258 | | | | | | | | 110.00 | | | | |
| M12 x 1.75 | D7 | 1635581028 | 150.00 | 15.00 | 35.00 | 9.677 | 7.26 | 11.10 | 9.49 | 9.59 | | | | | |
| | | M12 x 1.5 | 1635580727 | | | | | | | | 110.00 | | | | |
| M12 x 1.5 | D11 | 1635587527 | 150.00 | 15.00 | 35.00 | 9.677 | 7.26 | 11.10 | 9.49 | 9.59 | | | | | |
| | | M10 x 1.5 | 1635510120 | | | | | | | | 120.00 | | | | |
| M10 x 1.25 | D9 | 1635510520 | 150.00 | 15.00 | 35.00 | 9.677 | 7.26 | 11.10 | 9.49 | 9.59 | | | | | |
| | | M10 x 1.0 | 1635510129 | | | | | | | | 120.00 | | | | |
| M12 x 1.75 | D8 | 1635510229 | 150.00 | 15.00 | 35.00 | 9.677 | 7.26 | 11.10 | 9.49 | 9.59 | | | | | |
| | | M12 x 1.5 | 1635510128 | | | | | | | | 120.00 | | | | |
| M12 x 1.5 | D11 | 1635510258 | 150.00 | 15.00 | 35.00 | 9.677 | 7.26 | 11.10 | 9.49 | 9.59 | | | | | |
| | | M12 x 1.5 | 1635512721 | | | | | | | | 180.00 | | | | |
| M12 x 1.5 | D11 | 1635512751 | 180.00 | 15.00 | 35.00 | 9.677 | 7.26 | 11.10 | 9.49 | 9.59 | | | | | |
| | | M12 x 1.5 | 1635512121 | | | | | | | | 150.00 | | | | |
| M12 x 1.5 | D11 | 1635512251 | 180.00 | 15.00 | 35.00 | 9.677 | 7.26 | 11.10 | 9.49 | 9.59 | | | | | |

Packed: 1 pc.
Available V coating only.

continued on next page **EP**

| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 16355 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| SFM | 50-115 | 50-115 | 50-85 | 50-85 | 20-65 | 15-40 | 15-35 | 10-30 | | 65-115 | 65-90 | 8-12 | 8-15 | 50-100 | 8-25 | | | |

*For Stainless Steel, please use non-water-soluble coolant.

good best



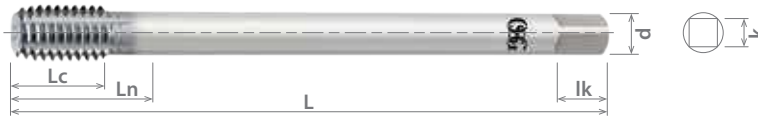


List 16355 (Continued)

HSS-Co

V

LT-S-XPF, Long Shank, Modified Bottom (2.5P)



Units: mm

| Tap Size | Lead | Thread Limit | EDP Number | | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | | | | | |
|------------|------|--------------|------------|------------|---------------|-------------|------------|--------------|---------------|----------------|--------|--------------|-------|-------|-------|-------|----|
| | | | V | L | | | | | | Min | Max | 2B | 3B | | | | |
| M12 x 1.25 | 2.5P | D10 | 1635512520 | 150.00 | 17.00 | 49.10 | 9.322 | 6.98 | 11.10 | 11.41 | 11.49 | D10 | D6 | | | | |
| M12 x 1.0 | | | 1635512250 | 180.00 | | | | | | | | | | 11.52 | 11.59 | | |
| M14 x 2.0 | | | D12 | 1635512120 | | | | | | 150.00 | 12.98 | | | | | 13.18 | |
| | | | | 1635512210 | | | | | | 180.00 | | | | | | | |
| M14 x 1.5 | | D11 | 1635514222 | 150.00 | 20.00 | 51.10 | 10.897 | 8.18 | 12.70 | 13.24 | 13.39 | D11 | D6 | | | | |
| | | | 1635514521 | 180.00 | | | | | | | | | | | | | |
| M16 x 2.0 | | D12 | 1635516222 | 150.00 | | | | | | 54.00 | 12.192 | 9.14 | 14.30 | 14.98 | 15.18 | D12 | D7 |
| | | | 1635516252 | 180.00 | | | | | | | | | | | | | |
| M16 x 1.5 | | D11 | 1635516121 | 150.00 | 25.00 | 55.00 | 13.767 | 10.31 | 15.90 | 15.24 | 15.39 | D11 | D6 | | | | |
| | | | 1635516521 | 180.00 | | | | | | | | | | | | | |
| M18 x 2.5 | | D12 | 1635518252 | 150.00 | | | | | | 61.80 | 16.561 | 12.42 | 17.50 | 16.73 | 16.98 | D12 | D7 |
| | | | 1635518552 | 180.00 | | | | | | | | | | | | | |
| M18 x 1.5 | | D11 | 1635518121 | 150.00 | 61.80 | 16.561 | 12.42 | 17.50 | 17.24 | 17.39 | D11 | D6 | | | | | |
| | | | 1635518521 | 180.00 | | | | | | | | | | | | | |
| M20 x 2.5 | | D12 | 1635520252 | 220.00 | 61.80 | 16.561 | 12.42 | 17.50 | 18.73 | 18.98 | D12 | D7 | | | | | |
| | | | 1635520222 | 220.00 | | | | | | | | | | | | | |
| M20 x 1.5 | D11 | 1635520121 | 180.00 | 61.80 | 16.561 | 12.42 | 17.50 | 19.24 | 19.39 | D11 | D6 | | | | | | |
| | | 1635520521 | 220.00 | | | | | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S Titanium | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|----------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | | Nickel Alloy | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 16355 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |
| SFM | 50-115 | 50-115 | 50-85 | 50-85 | 20-65 | 15-40 | 15-35 | 10-30 | | 65-115 | 65-90 | 8-12 | 8-15 | 50-100 | 8-25 | | |

*For Stainless Steel, please use non-water-soluble coolant.

good best

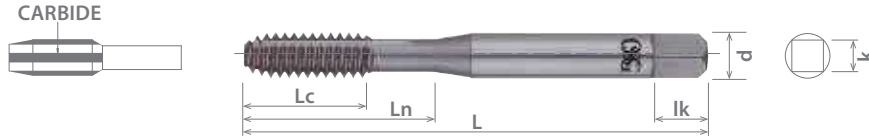




List 14153

CARBIDE BR

OTC-NRT, JIS, Carbide Inlaid, DIN/DIN, Bottom (1.5P - 2P)



Units: mm

| Tap Size | Thread Limit | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|------------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | Bottom (1.5P-2P) | | | | | | |
| | | Bright | | | | | | |
| | | L | Lc | Ln | d | k | lk | |
| M6 x 1.0 | RH7 | 1415310100 | 80.00 | 12.00 | 30.00 | 6.00 | 4.90 | 8.00 |
| M8 x 1.25 | | 1415310200 | 90.00 | 15.00 | 35.00 | 8.00 | 6.20 | 9.00 |
| M10 x 1.5 | | 1415310400 | 100.00 | 18.00 | 39.00 | 10.00 | 8.00 | 11.00 |
| M10 x 1.25 | | 1415310300 | | | | | | |

Packed: 1 pc.
Available Bright finish only.
See page 784 for tap drill recommendations.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|-------------------------------------|-------------------------------------|--------------|----------|-----------------|-------|-----|-------|-------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V | ~35 | 35-45 | 45-50 |
| | 1010 | 1035 | 1065 | 4140 | 4340 | | | 7075 | | | (30 HRC) | HRC | HRC | HRC | HRC | | | |
| 14153 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |
| SFM | | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |

good best

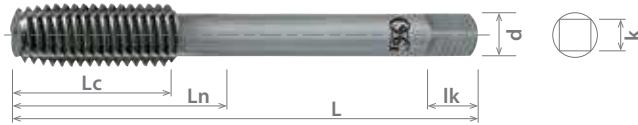




List 369

CARBIDE BR

OT-NRT, JIS, Plug (4P - 4.5P), Bottom (1.5P - 2P)



Units: mm

| Tap Size | Thread Limit | EDP Number | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|------------|---------|----------------|---------------|-------------|------------|--------------|---------------|
| | | Plug | Bottom | | | | | | |
| | | Bright | Bright | | | | | | |
| | | | | L | Lc | Ln | d | k | lk |
| M3 x 0.5 | RH5 | 8315054 | - | 46.00 | 10.00 | 19.00 | 4.00 | 3.20 | 6.00 |
| | | - | 8315055 | | | | | | |
| M4 x 0.7 | RH6 | 8315060 | - | 52.00 | 13.00 | 21.00 | 5.00 | 4.00 | 7.00 |
| M5 x 0.8 | | - | 8315061 | | | | | | |
| | | 8315066 | - | | | | | | |
| M6 x 1.0 | RH7 | 8315072 | 8315073 | 62.00 | 19.00 | 29.00 | 6.00 | 5.00 | 8.00 |
| M8 x 1.25 | | 8315084 | 8315085 | | | | | | |
| M10 x 1.5 | | 8315096 | 8315097 | | | | | | |
| M10x 1.25 | | 8315102 | 8315103 | | | | | | |
| M12 x 1.75 | RH8 | 8315114 | 8315115 | 82.00 | 29.00 | - | 8.50 | 6.50 | 9.00 |
| M12 x 1.5 | RH7 | 8315120 | 8315121 | | | - | | | |
| M12 x 1.25 | | 8315126 | 8315127 | | | - | | | |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order.
 See page 784 for tap drill recommendations.



| Work Material | | | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|--|--|
| List No. | P | | | | | M | | | K | N | | S | H | | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 369 | 1010 | 1035 | 1065 | 4140 | | | | | | | | | | | | | | | |
| SFM | 1018 | 1045 | 1065 | 4340 | | | | | | 65-150 | 50-120 | | | | | | | | |

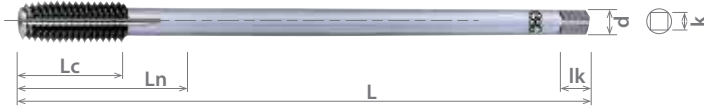
good best



List 357

CARBIDE BR

OT-LT-NRT, JIS, Long Shank, Bottom (1.5P - 2P)



Units: mm

| Tap Size | Thread Limit | EDP Number | Long Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|------------------|---------------------|---------------|-------------|------------|--------------|---------------|
| | | Bottom (1.5P-2P) | | | | | | |
| | | Bright | | | | | | |
| | | L | | | d | k | lk | |
| M6 x 1.0 | RH7 | 8315633 | 100.00 | 19.00 | 29.00 | 6.00 | 4.50 | 7.00 |
| M8 x 1.25 | | 8315639 | | 22.00 | - | 6.20 | 5.00 | |
| M10 x 1.5 | | 8315645 | | 24.00 | - | 7.00 | 5.50 | 8.00 |
| M10 x 1.25 | | 8315649 | | | - | | | |
| M12 x 1.75 | RH8 | 8315653 | 150.00 | - | - | 8.50 | 6.50 | 9.00 |
| M12 x 1.5 | RH7 | 8315657 | | 29.00 | - | | | |
| M12 x 1.25 | RH8 | 8315661 | | - | - | | | |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order.
 See page 784 for tap drill recommendations.



| Work Material | | | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|--|--|
| List No. | P | | | | | M | | | K | N | | S | H | | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 357 | 1010 | 1035 | 1065 | 4140 | | | | | | | | | | | | | | | |
| SFM | 1018 | 1045 | | 4340 | | | | | | 65-150 | 50-120 | | | | | | | | |

good best





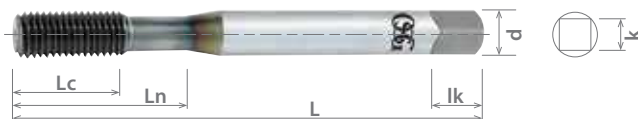
List 14050

VP-NRT, Bottom (2P-2.5P), Short Bottom (1P-1.5P)



VC10

V



Units: Inch

| Tap Size | Lead | Thread Limit | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | | | | | | | | | | | | |
|------------|------|--------------|------------|----------------|---------------|-------------|------------|--------------|---------------|----------------|--------|--------------|-------|-------|--------|--------|-------|-------|--------|--------|----|--------|----|----|
| | | | | | | | | | | V | L | Lc | Ln | d | k | lk | Min | Max | 2B | 3B | | | | |
| 0 - 80 UNF | 1.5P | H2 | 1405000008 | 1.625 | 0.311 | 0.350 | 0.141 | 0.110 | 0.188 | 0.0536 | 0.0549 | H3 | H2 | | | | | | | | | | | |
| | | H3 | 1405000108 | | | | | | | | | | | | | | | | | | | | | |
| | 2.5P | H2 | 1405000208 | | | | | | | | | | | | | | | | | | | | | |
| | | H3 | 1405000308 | | | | | | | | | | | | | | | | | | | | | |
| 1 - 64 UNC | 1.5P | H2 | 1405000408 | 1.688 | 0.374 | 0.413 | | | | 0.141 | 0.110 | | | 0.188 | 0.0650 | 0.0666 | H3 | H2 | | | | | | |
| | | H3 | 1405000508 | | | | | | | | | | | | | | | | | | | | | |
| | 2.5P | H2 | 1405000608 | | | | | | | | | | | | | | | | | | | | | |
| | | H3 | 1405000708 | | | | | | | | | | | | | | | | | | | | | |
| 2 - 56 UNC | 1.5P | H2 | 1405000808 | 1.750 | 0.437 | 0.476 | | | | | | 0.141 | 0.110 | | 0.188 | 0.0769 | | | 0.0787 | H3 | H2 | | | |
| | | H3 | 1405000908 | | | | | | | | | | | | | | | | | | | | | |
| | 2.5P | H2 | 1405001008 | | | | | | | | | | | | | | | | | | | | | |
| | | H3 | 1405001108 | | | | | | | | | | | | | | | | | | | | | |
| 3 - 48 UNC | 1.5P | H2 | 1405001208 | 1.813 | 0.496 | 0.535 | | | | | | | | | | 0.141 | 0.110 | 0.188 | 0.0884 | | | 0.0905 | H3 | H2 |
| | | H3 | 1405001308 | | | | | | | | | | | | | | | | | | | | | |
| | 2.5P | H2 | 1405001408 | | | | | | | | | | | | | | | | | | | | | |
| | | H3 | 1405001508 | | | | | | | | | | | | | | | | | | | | | |
| 4 - 40 UNC | 1.5P | H4 | 1405001608 | 1.875 | 0.295 | 0.559 | 0.141 | 0.110 | 0.188 | | | | | | | | | | 0.0993 | 0.1018 | H3 | H2 | | |
| | | H5 | 1405002108 | | | | | | | | | | | | | | | | | | | | | |
| | 2.5P | H3 | 1405002208 | | | | | | | | | | | | | | | | | | | | | |
| | | H4 | 1405002308 | | | | | | | | | | | | | | | | | | | | | |
| 5 - 40 UNC | 1.5P | H4 | 1405002408 | 1.938 | 0.299 | 0.626 | | | | 0.141 | 0.110 | | | 0.188 | | | | | 0.1123 | 0.1148 | | | H3 | H2 |
| | | H5 | 1405002508 | | | | | | | | | | | | | | | | | | | | | |
| | 2.5P | H3 | 1405002608 | | | | | | | | | | | | | | | | | | | | | |
| | | H4 | 1405002708 | | | | | | | | | | | | | | | | | | | | | |
| 6 - 32 UNC | 1.5P | H5 | 1405002808 | 2.000 | 0.370 | 0.685 | | | | | | 0.141 | 0.110 | | 0.188 | | | | 0.1221 | 0.1253 | H5 | H3 | | |
| | | H3 | 1405002908 | | | | | | | | | | | | | | | | | | | | | |
| | 2.5P | H3 | 1405003008 | | | | | | | | | | | | | | | | | | | | | |
| | | H4 | 1405003108 | | | | | | | | | | | | | | | | | | | | | |
| 8 - 32 UNC | 1.5P | H3 | 1405003208 | 2.125 | 0.374 | 0.752 | | | | | | | | | | 0.168 | 0.131 | 0.250 | 0.1481 | 0.1513 | | | H5 | H3 |
| | | H4 | 1405003308 | | | | | | | | | | | | | | | | | | | | | |
| | 2.5P | H5 | 1405003408 | | | | | | | | | | | | | | | | | | | | | |
| | | H6 | 1405003508 | | | | | | | | | | | | | | | | | | | | | |
| 8 - 32 UNC | 1.5P | H3 | 1405003608 | 2.125 | 0.374 | 0.752 | 0.168 | 0.131 | 0.250 | | | | | | | | | | 0.1481 | 0.1513 | H5 | H3 | | |
| | | H4 | 1405003708 | | | | | | | | | | | | | | | | | | | | | |
| | 2.5P | H3 | 1405003808 | | | | | | | | | | | | | | | | | | | | | |
| | | H5 | 1405003908 | | | | | | | | | | | | | | | | | | | | | |
| 8 - 32 UNC | 1.5P | H3 | 1405004008 | 2.125 | 0.374 | 0.752 | | | | 0.168 | 0.131 | | | 0.250 | | | | | 0.1481 | 0.1513 | | | H5 | H3 |
| | | H4 | 1405004108 | | | | | | | | | | | | | | | | | | | | | |
| | 2.5P | H5 | 1405004208 | | | | | | | | | | | | | | | | | | | | | |
| | | H6 | 1405004308 | | | | | | | | | | | | | | | | | | | | | |
| 8 - 32 UNC | 1.5P | H3 | 1405004408 | 2.125 | 0.374 | 0.752 | | | | | | 0.168 | 0.131 | | 0.250 | | | | 0.1481 | 0.1513 | H5 | H3 | | |
| | | H4 | 1405004508 | | | | | | | | | | | | | | | | | | | | | |
| | 2.5P | H5 | 1405004608 | | | | | | | | | | | | | | | | | | | | | |
| | | H6 | 1405004708 | | | | | | | | | | | | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.





List 14050 (Continued)



VC10 V

VP-NRT, Bottom (2P-2.5P), Short Bottom (1P-1.5P)

Units: Inch

| Tap Size | Lead | Thread Limit | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | |
|---------------|------|--------------|------------|----------------|---------------|-------------|------------|--------------|---------------|----------------|--------|--------------|----|
| | | | | | | | | | | V | L | Lc | Ln |
| 10 - 24 UNC | 1.5P | H3 | 1405004808 | 2.375 | 0.492 | 0.866 | 0.194 | 0.152 | 0.250 | 0.1688 | 0.1730 | H6 | H4 |
| | | H4 | 1405004908 | | | | | | | | | | |
| | | H5 | 1405005008 | | | | | | | | | | |
| | H6 | 1405005108 | | | | | | | | | | | |
| | 2.5P | H3 | 1405005208 | | | | | | | | | | |
| | | H4 | 1405005308 | | | | | | | | | | |
| H5 | | 1405005408 | | | | | | | | | | | |
| 10 - 32 UNF | 1.5P | H3 | 1405005608 | | | | | | | | | | |
| | | H4 | 1405005708 | | | | | | | | | | |
| | | H5 | 1405005808 | | | | | | | | | | |
| | 2.5P | H6 | 1405005908 | | | | | | | | | | |
| | | H3 | 1405006008 | | | | | | | | | | |
| | | H4 | 1405006108 | | | | | | | | | | |
| 12 - 24 UNC | 1.5P | H5 | 1405006408 | 0.496 | 0.933 | 0.220 | 0.165 | 0.281 | 0.1948 | 0.1990 | H7 | H5 | |
| | | H7 | 1405006508 | | | | | | | | | | |
| | 2.5P | H5 | 1405006608 | | | | | | | | | | |
| | | H7 | 1405006708 | | | | | | | | | | |
| 1/4 - 20 UNC | 1.5P | H5 | 1405006808 | 2.500 | 0.594 | 0.996 | 0.255 | 0.191 | 0.313 | 0.2245 | 0.2296 | H6 | H4 |
| | | H6 | 1405006908 | | | | | | | | | | |
| | | H7 | 1405007008 | | | | | | | | | | |
| | 2.5P | H8 | 1405007108 | | | | | | | | | | |
| | | H5 | 1405007208 | | | | | | | | | | |
| | | H6 | 1405007308 | | | | | | | | | | |
| 1/4 - 28 UNF | 1.5P | H7 | 1405007408 | | | | | | | | | | |
| | | H8 | 1405007508 | | | | | | | | | | |
| | | H4 | 1405007608 | | | | | | | | | | |
| | 2.5P | H5 | 1405007708 | | | | | | | | | | |
| | | H6 | 1405007808 | | | | | | | | | | |
| | | H7 | 1405007908 | | | | | | | | | | |
| 5/16 - 18 UNC | 1.5P | H4 | 1405008008 | 2.719 | 0.665 | 1.126 | 0.318 | 0.238 | 0.375 | 0.2842 | 0.2898 | H7 | H5 |
| | | H5 | 1405008408 | | | | | | | | | | |
| | | H6 | 1405008508 | | | | | | | | | | |
| | | H7 | 1405008608 | | | | | | | | | | |
| | | H8 | 1405008708 | | | | | | | | | | |
| | | H9 | 1405008808 | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.

continued on next page

| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-----------|-------------------------------------|-------------------------------------|--------------|----------|--------------------------|----------------|---------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 14050 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | | | | |
| SFM | 35-130 | 20-50 | 15-30 | 15-30 | 15-20 | 15-50 | 15-50 | 15-40 | | 65-150 | 65-130 | | | 10-15 | | | | |

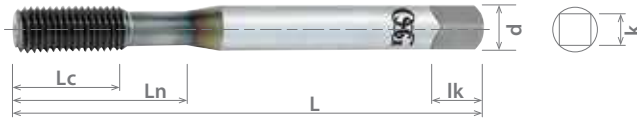
good best





List 14050 (Continued)

VP-NRT, Bottom (2P-2.5P), Short Bottom (1P-1.5P)



Units: Inch

| Tap Size | Lead | Thread Limit | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | |
|---------------|------|--------------|------------|----------------|---------------|-------------|------------|--------------|---------------|----------------|--------|--------------|----|
| | | | | | | | | | | V | L | Lc | Ln |
| 5/16 - 18 UNC | 2.5P | H5 | 1405008908 | 2.719 | 0.665 | 1.126 | 0.318 | 0.238 | 0.375 | 0.2842 | 0.2898 | H7 | H5 |
| | | H6 | 1405009008 | | | | | | | | | | |
| | | H7 | 1405009108 | | | | | | | | | | |
| | | H8 | 1405009208 | | | | | | | | | | |
| | | H9 | 1405009308 | | | | | | | | | | |
| 5/16 - 24 UNF | 1.5P | H4 | 1405009408 | | | | | | | | | | |
| | | H5 | 1405009508 | | | | | | | | | | |
| | | H6 | 1405009608 | | | | | | | | | | |
| | | H7 | 1405009708 | | | | | | | | | | |
| | 2.5P | H8 | 1405009808 | | | | | | | | | | |
| | | H4 | 1405009908 | | | | | | | | | | |
| | | H5 | 1405010008 | | | | | | | | | | |
| | | H6 | 1405010108 | | | | | | | | | | |
| 3/8 - 16 UNC | 1.5P | H7 | 1405010608 | | | | | | | | | | |
| | | H8 | 1405010708 | | | | | | | | | | |
| | | H9 | 1405010808 | | | | | | | | | | |
| | | H5 | 1405010908 | | | | | | | | | | |
| | | H6 | 1405011008 | | | | | | | | | | |
| | 2.5P | H7 | 1405011108 | | | | | | | | | | |
| | | H8 | 1405011208 | | | | | | | | | | |
| | | H9 | 1405011308 | | | | | | | | | | |
| | | H4 | 1405011408 | | | | | | | | | | |
| 3/8 - 24 UNF | 1.5P | H5 | 1405011508 | | | | | | | | | | |
| | | H6 | 1405011608 | | | | | | | | | | |
| | | H7 | 1405011708 | | | | | | | | | | |
| | | H8 | 1405011808 | | | | | | | | | | |
| | | H4 | 1405011908 | | | | | | | | | | |
| | | H5 | 1405012008 | | | | | | | | | | |
| | 2.5P | H6 | 1405012108 | | | | | | | | | | |
| | | H7 | 1405012208 | | | | | | | | | | |
| | | H8 | 1405012308 | | | | | | | | | | |
| | | H4 | 1405011908 | | | | | | | | | | |
| | | H5 | 1405012008 | | | | | | | | | | |
| | | H6 | 1405012108 | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-----------|-------------------------------------|-------------------------------------|--------------|--------------------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | 4140 4340 | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 14050 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | | | |
| SFM | 35-130 | 20-50 | 15-30 | 15-30 | 15-20 | 15-50 | 15-50 | 15-40 | | 65-150 | 65-130 | | 10-15 | | | | |

good best





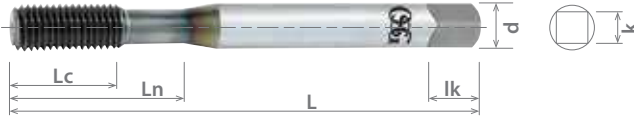
List 14150

VP-NRT, Bottom (2P-2.5P), Short Bottom (1P-1.5P)



VC10

V



Units: mm

| Tap Size | Lead | Thread Limit | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | |
|-------------|------|--------------|------------|----------------|---------------|-------------|------------|--------------|---------------|----------------|------|--------------|-----|
| | | | | | | | | | | Min | Max | 2B | 3B |
| M1.6 x 0.35 | | D3 | 141500008 | 41.30 | 7.90 | 8.90 | | | | 1.42 | 1.46 | | |
| | | D5 | 1415000108 | | | | | | | | | | |
| M1.7 x 0.35 | | D3 | 1415000208 | 42.90 | 9.50 | 10.50 | | | | 1.52 | 1.56 | | |
| | | D5 | 1415000308 | | | | | | | | | | |
| M2 x 0.4 | 2.5P | D3 | 1415000408 | 44.50 | 11.10 | 12.10 | | | | 1.80 | 1.84 | | |
| | | D5 | 1415000508 | | | | | | | | | | |
| M2.5 x 0.45 | | D3 | 1415000608 | 46.00 | 12.80 | 13.80 | | | | 2.27 | 2.32 | D5 | D3 |
| | | D5 | 1415000708 | | | | | | | | | | |
| M2.6 x 0.45 | | D3 | 1415000808 | 47.60 | 12.70 | 13.70 | 3.581 | 2.79 | 4.80 | 2.37 | 2.42 | | |
| | | D5 | 1415000908 | | | | | | | | | | |
| M3 x 0.5 | 1.5P | D3 | 1415001008 | 49.20 | 6.20 | 16.00 | | | | 2.75 | 2.80 | | |
| | | D5 | 1415001108 | | | | | | | | | | |
| | 2.5P | D3 | 1415001208 | | | | | | | | | | |
| | | D5 | 1415001308 | | | | | | | | | | |
| M3.5 x 0.6 | 1.5P | D4 | 1415001408 | 50.80 | 6.20 | 17.50 | | | | 3.19 | 3.26 | D6 | |
| | | D6 | 1415001508 | | | | | | | | | | |
| | 2.5P | D4 | 1415001608 | | | | | | | | | | |
| | | D6 | 1415001708 | | | | | | | | | | |
| M4 x 0.7 | 1.5P | D4 | 1415001808 | 54.00 | 8.40 | 19.60 | 4.267 | 3.33 | | 3.64 | 3.71 | | D4 |
| | | D6 | 1415001908 | | | | | | | | | | |
| | 2.5P | D4 | 1415002008 | | | | | | | | | | |
| | | D6 | 1415002108 | | | | | | | | | | |
| M5 x 0.8 | 1.5P | D4 | 1415002208 | 60.30 | 9.60 | 22.20 | 4.928 | 3.86 | | 4.59 | 4.67 | | D7 |
| | | D7 | 1415002308 | | | | | | | | | | |
| | 2.5P | D4 | 1415002408 | | | | | | | | | | |
| | | D7 | 1415002508 | | | | | | | | | | |
| M6 x 1.0 | 1.5P | D5 | 1415002608 | 63.50 | 12.00 | 25.40 | 6.477 | 4.85 | 7.80 | 5.49 | 5.59 | | D5 |
| | | D8 | 1415002708 | | | | | | | | | | |
| | 2.5P | D5 | 1415002808 | | | | | | | | | | |
| | | D8 | 1415002908 | | | | | | | | | | |
| M8 x 1.25 | 1.5P | D5 | 1415003008 | 69.10 | 15.00 | 28.60 | 8.077 | 6.05 | 9.50 | 7.36 | 7.49 | | D9 |
| | | D9 | 1415003108 | | | | | | | | | | |
| | 2.5P | D5 | 1415003208 | | | | | | | | | | |
| | | D9 | 1415003308 | | | | | | | | | | |
| M10 x 1.5 | 1.5P | D6 | 1415003808 | 74.60 | 18.00 | 31.80 | 9.677 | 7.26 | 11.10 | 9.24 | 9.39 | | D10 |
| | | D10 | 1415003908 | | | | | | | | | | |
| | 2.5P | D6 | 1415004008 | | | | | | | | | | |
| | | D10 | 1415004108 | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.

continued on next page



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-----------|-------------------------------------|-------------------------------------|--------------|----------|--------------------------|----------------|---------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 14150 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | | | | |
| SFM | 35-130 | 20-50 | 15-30 | 15-30 | 15-20 | 15-50 | 15-50 | 15-40 | | 65-150 | 65-130 | | | 10-15 | | | | |

good best





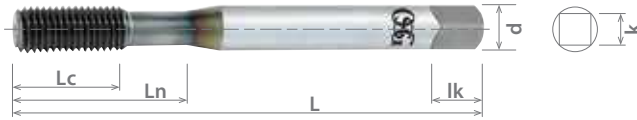
List 14150 (Continued)

VP-NRT, Bottom (2P-2.5P), Short Bottom (1P-1.5P)



VC10

V



Units: mm

| Tap Size | Lead | Thread Limit | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | |
|------------|------|--------------|------------|----------------|---------------|-------------|------------|--------------|---------------|----------------|------|--------------|----|
| | | | | | | | | | | V | L | Lc | Ln |
| M10 x 1.25 | 1.5P | D5 | 1415004608 | 74.60 | 18.00 | 31.80 | 9.677 | 7.26 | 11.10 | 9.36 | 9.49 | D9 | D5 |
| | | D9 | 1415004708 | | | | | | | | | | |
| | 2.5P | D5 | 1415004808 | | | | | | | | | | |
| | | D9 | 1415004908 | | | | | | | | | | |
| M10 x 1.0 | 1.5P | D5 | 1415003408 | 85.70 | 21.00 | 49.00 | 9.322 | 6.98 | | 9.49 | 9.59 | D11 | D6 |
| | | D9 | 1415003508 | | | | | | | | | | |
| | 2.5P | D5 | 1415003608 | | | | | | | | | | |
| | | D9 | 1415003708 | | | | | | | | | | |
| M12 x 1.75 | 1.5P | D6 | 1415004208 | 85.70 | 21.00 | 49.00 | 9.322 | 6.98 | 11.11 | 11.29 | D11 | D6 | |
| | | D11 | 1415004308 | | | | | | | | | | |
| | 2.5P | D6 | 1415004408 | | | | | | | | | | |
| | | D11 | 1415004508 | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-----------|-------------------------------------|-------------------------------------|--------------|--------------------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 14150 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | | | |
| SFM | 35-130 | 20-50 | 15-30 | 15-30 | 15-20 | 15-50 | 15-50 | 15-40 | | 65-150 | 65-130 | | 10-15 | | | | |

good best



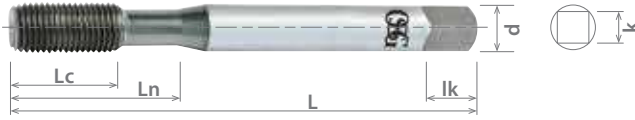


List 14001



| | | | |
|--------|---|--|--|
| HSS-Co | TIN | S/O | BR |
|--------|---|--|--|

NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)



Units: Inch

| Tap Size | Lead | Thread Limit | EDP Number | Coating Suffix | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | |
|------------|------|--------------|------------|----------------|-----|-----|----------------|---------------|-------------|------------|--------------|---------------|----------------|--------|--------------|----|
| | | | | Bright | S/O | TiN | L | Lc | Ln | d | k | lk | Min | Max | 2B | 3B |
| 0 - 80 UNF | 1.5P | H2 | 14001000 | 00 | 01 | 05 | 1.625 | 0.311 | 0.350 | | | | 0.0536 | 0.0549 | | |
| | | H3 | 14001001 | 00 | 01 | 05 | | | | | | | | | | |
| | | H2 | 14001002 | 00 | 01 | 05 | | | | | | | | | | |
| | 2.5P | H3 | 14001003 | 00 | 01 | 05 | | | | | | | | | | |
| | | H4 | 14001004 | 00 | 01 | 05 | | | | | | | | | | |
| | | H5 | 14001005 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001006 | 00 | 01 | - | | | | | | | | | | |
| 1 - 64 UNC | 2.5P | H7 | 14001007 | 00 | 01 | - | | | | | | | | | | |
| | | H2 | 14001008 | 00 | 01 | 05 | | | | | | | | | | |
| | | H3 | 14001009 | 00 | 01 | 05 | | | | | | | | | | |
| | | H4 | 14001010 | 00 | 01 | 05 | | | | | | | | | | |
| | | H5 | 14001011 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001012 | 00 | 01 | - | | | | | | | | | | |
| | | H7 | 14001013 | 00 | 01 | - | | | | | | | | | | |
| 1 - 72 UNF | 1.5P | H2 | 14001014 | 00 | 01 | 05 | 1.688 | 0.374 | 0.413 | | | | 0.0659 | 0.0673 | H3 | H2 |
| | | H3 | 14001015 | 00 | 01 | 05 | | | | | | | | | | |
| | | H2 | 14001016 | 00 | 01 | 05 | | | | | | | | | | |
| | 2.5P | H3 | 14001017 | 00 | 01 | 05 | | | | | | | | | | |
| | | H4 | 14001018 | 00 | 01 | 05 | | | | | | | | | | |
| | | H5 | 14001019 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001020 | 00 | 01 | 05 | | | | | | | | | | |
| 2 - 56 UNC | 1.5P | H6 | 14001020 | 00 | 01 | 05 | | | | | | | | | | |
| | | H7 | 14001021 | 00 | 01 | - | | | | | | | | | | |
| | | H2 | 14001022 | 00 | 01 | 05 | | | | | | | | | | |
| | 2.5P | H3 | 14001023 | 00 | 01 | 05 | 1.750 | 0.437 | 0.476 | | | | 0.0769 | 0.0787 | | |
| | | H4 | 14001024 | 00 | 01 | 05 | | | | | | | | | | |
| | | H2 | 14001025 | 00 | 01 | 05 | | | | | | | | | | |
| | | H3 | 14001026 | 00 | 01 | 05 | | | | | | | | | | |
| | | H4 | 14001027 | 00 | 01 | 05 | | | | | | | | | | |
| | | H5 | 14001028 | 00 | 01 | 05 | | | | | | | | | | |
| 2 - 64 UNF | 2.5P | H6 | 14001029 | 00 | 01 | 05 | | | | | | | | | | |
| | | H7 | 14001030 | 00 | 01 | 05 | | | | | | | | | | |
| | | H8 | 14001578 | 00 | - | - | | | | | | | | | | |
| | | H9 | 14001579 | 00 | - | - | | | | | | | | | | |
| | | H2 | 14001031 | 00 | 01 | 05 | | | | | | | | | | |
| | | H3 | 14001032 | 00 | 01 | 05 | | | | | | | | | | |
| | | H4 | 14001033 | 00 | 01 | 05 | | | | | | | | | | |
| | | H5 | 14001034 | 00 | 01 | - | | | | | | | | | | |
| | | H6 | 14001035 | 00 | 01 | - | | | | | | | | | | |
| | | H7 | 14001036 | 00 | 01 | - | | | | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

[continued on next page](#)

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|-------------------------------------|-------------------------------------|----------------|----------|--------------------------|-----------|-----------|--|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | 300 | | 400 | 17-4 PH | 6061 7075 | | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 14001 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | | | |
| SFM | 35-100 | 20-50 | 15-25 | 15-25 | 15-20 | 15-40 | 15-40 | 10-25 | | 50-90 | 45-100 | | | 10-15 | | | |

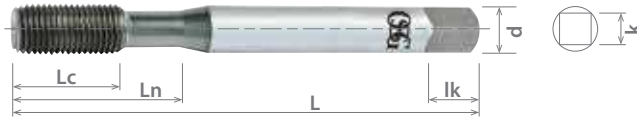
good best





List 14001 (Continued)

NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)



Units: Inch

| Tap Size | Lead | Thread Limit | EDP Number | Coating Suffix | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | | | | | | | | | | | |
|------------|------|--------------|------------|----------------|-----|-------|----------------|---------------|-------------|------------|--------------|---------------|----------------|--------|--------------|----|-------|-------|-------|-------|-------|-------|--------|--------|--|--|
| | | | | Bright | S/O | TiN | L | Lc | Ln | d | k | lk | Min | Max | 2B | 3B | | | | | | | | | | |
| 3 - 48 UNC | 2.5P | H2 | 14001037 | 00 | 01 | 05 | 1.813 | 0.496 | 0.535 | | | | 0.0884 | 0.0905 | | | | | | | | | | | | |
| | | H3 | 14001038 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H4 | 14001039 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H5 | 14001040 | 00 | 01 | - | | | | | | | | | | | | | | | | | | | | |
| | | H6 | 14001041 | 00 | 01 | - | | | | | | | | | | | | | | | | | | | | |
| | | H7 | 14001042 | 00 | 01 | - | | | | | | | | | | | | | | | | | | | | |
| | | H2 | 14001043 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| 3 - 56 UNF | 2.5P | H3 | 14001044 | 00 | 01 | 05 | 1.813 | 0.496 | 0.535 | | | | 0.0899 | 0.0917 | | H3 | H2 | | | | | | | | | |
| | | H4 | 14001045 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H5 | 14001046 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H6 | 14001047 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H7 | 14001048 | 00 | 01 | - | | | | | | | | | | | | | | | | | | | | |
| | | H3 | 14001049 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H4 | 14001050 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| 4 - 40 UNC | 1.5P | H5 | 14001051 | 00 | 01 | 05 | 1.875 | 0.295 | 0.559 | 0.141 | 0.110 | 0.188 | 0.0993 | 0.1018 | | | | | | | | | | | | |
| | | H6 | 14001573 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H7 | 14001574 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H2 | 14001052 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H3 | 14001053 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H4 | 14001054 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H5 | 14001055 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | 2.5P | H6 | 14001056 | 00 | 01 | 05 | | | | | | | | | | | 1.875 | 0.295 | 0.559 | 0.141 | 0.110 | 0.188 | 0.0993 | 0.1018 | | |
| | | H7 | 14001057 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H8 | 14001580 | 00 | - | - | | | | | | | | | | | | | | | | | | | | |
| | | H9 | 14001581 | 00 | - | - | | | | | | | | | | | | | | | | | | | | |
| | | H10 | 14001582 | 00 | - | - | | | | | | | | | | | | | | | | | | | | |
| | | H14 | 14001598 | 00 | - | - | | | | | | | | | | | | | | | | | | | | |
| | | H2 | 14001058 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| 4.5P | H3 | 14001059 | 00 | 01 | 05 | 1.875 | 0.295 | 0.559 | 0.141 | 0.110 | 0.188 | 0.0993 | 0.1018 | | | | | | | | | | | | | |
| | H4 | 14001060 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | |
| | H5 | 14001061 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | |
| | H6 | 14001062 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | |
| | H7 | 14001063 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | |
| | H2 | 14001064 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | |
| | H3 | 14001065 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | |
| 4 - 48 UNF | 2.5P | H4 | 14001066 | 00 | 01 | | | | | | | | | | | 05 | 1.938 | 0.299 | 0.626 | | | | 0.1014 | 0.1035 | | |
| | | H5 | 14001067 | 00 | 01 | | | | | | | | | | | 05 | | | | | | | | | | |
| | | H6 | 14001068 | 00 | 01 | | | | | | | | | | | - | | | | | | | | | | |
| | | H7 | 14001069 | 00 | 01 | | | | | | | | | | | - | | | | | | | | | | |
| | | H2 | 14001070 | 00 | 01 | | | | | | | | | | | 05 | | | | | | | | | | |
| | | H3 | 14001071 | 00 | 01 | | | | | | | | | | | 05 | | | | | | | | | | |
| | | H4 | 14001072 | 00 | 01 | | | | | | | | | | | - | | | | | | | | | | |
| 4.5P | H5 | 14001073 | 00 | 01 | - | 1.938 | 0.299 | 0.626 | | | | 0.1014 | 0.1035 | | | | | | | | | | | | | |
| | H6 | 14001074 | 00 | 01 | - | | | | | | | | | | | | | | | | | | | | | |
| | H7 | 14001075 | 00 | 01 | - | | | | | | | | | | | | | | | | | | | | | |
| | H2 | 14001076 | 00 | 01 | - | | | | | | | | | | | | | | | | | | | | | |
| | H3 | 14001077 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | |
| | H4 | 14001078 | 00 | 01 | - | | | | | | | | | | | | | | | | | | | | | |
| | H5 | 14001079 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | |
| 5 - 40 UNC | 2.5P | H6 | 14001080 | 00 | 01 | | | | | | | | | | | 05 | 1.938 | 0.299 | 0.626 | | | | 0.1123 | 0.1148 | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.





List 14001 (Continued)



| | | | |
|--------|-----|-----|----|
| HSS-Co | | | |
| | TiN | S/O | BR |

NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)

Units: Inch

| Tap Size | Lead | Thread Limit | EDP Number | Coating Suffix | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk | Tap Drill Size | | Class of Fit | | |
|------------|------|--------------|------------|----------------|-----|-----|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|----------------|--------|--------------|----|----|
| | | | | Bright | S/O | TiN | | | | | | | Min | Max | 2B | 3B | |
| 5 - 40 UNC | 2.5P | H7 | 14001081 | 00 | 01 | 05 | 1.938 | 0.299 | 0.626 | | | | 0.1123 | 0.1148 | | | |
| | | H2 | 14001082 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H3 | 14001083 | 00 | 01 | 05 | | | | | | | | | | | |
| | 4.5P | H4 | 14001084 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H5 | 14001085 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H6 | 14001086 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H7 | 14001087 | 00 | 01 | 05 | | | | | | | | | | | |
| 5 - 44 UNF | 2.5P | H2 | 14001088 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H3 | 14001089 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H4 | 14001090 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H5 | 14001091 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H6 | 14001092 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H7 | 14001093 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H2 | 14001094 | 00 | 01 | 05 | | | | | | | | | | | |
| | 4.5P | H3 | 14001095 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H4 | 14001096 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H5 | 14001097 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H6 | 14001098 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H7 | 14001099 | 00 | 01 | 05 | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| 6 - 32 UNC | 1.5P | H3 | 14001100 | 00 | 01 | 05 | 2.000 | 0.370 | 0.685 | 0.141 | 0.110 | 0.188 | 0.1221 | 0.1253 | H5 | H3 | |
| | | H4 | 14001101 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H5 | 14001102 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H6 | 14001575 | 00 | 01 | - | | | | | | | | | | | |
| | | H7 | 14001576 | 00 | 01 | - | | | | | | | | | | | |
| | | H8 | 14001577 | 00 | 01 | - | | | | | | | | | | | |
| | | H2 | 14001103 | 00 | 01 | 05 | | | | | | | | | | | |
| | 2.5P | H3 | 14001104 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H4 | 14001105 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H5 | 14001106 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H6 | 14001107 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H7 | 14001108 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H8 | 14001109 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H9 | 14001110 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H10 | 14001111 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H11 | 14001583 | 00 | - | - | | | | | | | | | | | |
| | | H12 | 14001584 | 00 | - | - | | | | | | | | | | | |
| | | H14 | 14001599 | 00 | - | - | | | | | | | | | | | |
| | | 4.5P | H2 | 14001112 | 00 | 01 | | | | | | | | | | | 05 |
| | | | H3 | 14001113 | 00 | 01 | | | | | | | | | | | 05 |
| | H4 | | 14001114 | 00 | 01 | 05 | | | | | | | | | | | |
| | H5 | | 14001115 | 00 | 01 | 05 | | | | | | | | | | | |
| | H6 | | 14001116 | 00 | 01 | 05 | | | | | | | | | | | |
| | H7 | | 14001117 | 00 | 01 | 05 | | | | | | | | | | | |
| | H8 | | 14001118 | 00 | 01 | 05 | | | | | | | | | | | |
| | H9 | | 14001119 | 00 | 01 | 05 | | | | | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

continued on next page

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|-------------------------------------|-------------------------------------|--------------|--------------------------|-----------------|--------------|--------------|--------------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 14001 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | | | |
| SFM | 35-100 | 20-50 | 15-25 | 15-25 | 15-20 | 15-40 | 15-40 | 10-25 | | 50-90 | 45-100 | | 10-15 | | | | |

good best



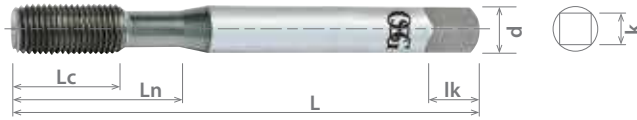


List 14001 (Continued)



| | | | |
|--------|-----|-----|----|
| HSS-Co | TiN | S/O | BR |
|--------|-----|-----|----|

NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)



Units: Inch

| Tap Size | Lead | Thread Limit | EDP Number | Coating Suffix | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk | Tap Drill Size | | Class of Fit | |
|------------|------------|--------------|------------|----------------|----------|-----|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|----------------|--------|--------------|----|
| | | | | Bright | S/O | TiN | | | | | | | Min | Max | 2B | 3B |
| 6 - 32 UNC | 4.5P | H10 | 14001120 | 00 | 01 | 05 | 2.000 | 0.370 | 0.685 | 0.141 | 0.110 | 0.188 | 0.1221 | 0.1253 | | |
| | | H2 | 14001121 | 00 | 01 | 05 | | | | | | | | | | |
| | | H3 | 14001122 | 00 | 01 | 05 | | | | | | | | | | |
| | | H4 | 14001123 | 00 | 01 | 05 | | | | | | | | | | |
| | | H5 | 14001124 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001125 | 00 | 01 | 05 | | | | | | | | | | |
| | | H7 | 14001126 | 00 | 01 | 05 | | | | | | | | | | |
| | | H8 | 14001127 | 00 | 01 | 05 | | | | | | | | | | |
| | | H9 | 14001128 | 00 | 01 | 05 | | | | | | | | | | |
| | | H10 | 14001129 | 00 | 01 | 05 | | | | | | | | | | |
| | 2.5P | H2 | 14001130 | 00 | 01 | 05 | | | | | | | | | | |
| | | H3 | 14001131 | 00 | 01 | 05 | | | | | | | | | | |
| | | H4 | 14001132 | 00 | 01 | 05 | | | | | | | | | | |
| | | H5 | 14001133 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001134 | 00 | 01 | 05 | | | | | | | | | | |
| | | H7 | 14001135 | 00 | 01 | 05 | | | | | | | | | | |
| | | H8 | 14001136 | 00 | 01 | 05 | | | | | | | | | | |
| | | H9 | 14001137 | 00 | 01 | 05 | | | | | | | | | | |
| | | H10 | 14001138 | 00 | 01 | 05 | | | | | | | | | | |
| | | 6 - 40 UNF | 4.5P | H3 | 14001139 | 00 | | | | | | | 01 | 05 | | |
| H4 | 14001140 | | | 00 | 01 | 05 | | | | | | | | | | |
| H5 | 14001141 | | | 00 | 01 | 05 | | | | | | | | | | |
| H2 | 14001142 | | | 00 | 01 | 05 | | | | | | | | | | |
| H3 | 14001143 | | | 00 | 01 | 05 | | | | | | | | | | |
| H4 | 14001144 | | | 00 | 01 | 05 | | | | | | | | | | |
| H5 | 14001145 | | | 00 | 01 | 05 | | | | | | | | | | |
| H6 | 14001146 | | | 00 | 01 | 05 | | | | | | | | | | |
| H7 | 14001147 | | | 00 | 01 | 05 | | | | | | | | | | |
| H8 | 14001148 | | | 00 | 01 | 05 | | | | | | | | | | |
| 1.5P | H9 | | 14001149 | 00 | 01 | 05 | | | | | | | | | | |
| | H10 | | 14001150 | 00 | 01 | 05 | | | | | | | | | | |
| | H11 | | 14001585 | 00 | - | - | | | | | | | | | | |
| | H12 | | 14001586 | 00 | - | - | | | | | | | | | | |
| | H14 | | 14001600 | 00 | - | - | | | | | | | | | | |
| | 2.5P | | H2 | 14001151 | 00 | 01 | 05 | | | | | | | | | |
| | | | H3 | 14001152 | 00 | 01 | 05 | | | | | | | | | |
| | | | H4 | 14001153 | 00 | 01 | 05 | | | | | | | | | |
| | | | H5 | 14001154 | 00 | 01 | 05 | | | | | | | | | |
| | | | H6 | 14001155 | 00 | 01 | 05 | | | | | | | | | |
| H7 | | 14001156 | 00 | 01 | 05 | | | | | | | | | | | |
| H8 | | 14001157 | 00 | 01 | 05 | | | | | | | | | | | |
| H9 | | 14001158 | 00 | 01 | 05 | | | | | | | | | | | |
| H10 | | 14001159 | 00 | 01 | 05 | | | | | | | | | | | |
| 8 - 32 UNC | | 4.5P | H2 | 14001160 | 00 | 01 | 05 | | | | | | | | | |
| | H3 | | 14001161 | 00 | 01 | 05 | | | | | | | | | | |
| | H4 | | 14001162 | 00 | 01 | 05 | | | | | | | | | | |
| | H5 | | 14001163 | 00 | 01 | 05 | | | | | | | | | | |
| | H6 | | 14001164 | 00 | 01 | 05 | | | | | | | | | | |
| | H7 | | 14001165 | 00 | 01 | 05 | | | | | | | | | | |
| | H8 | | 14001166 | 00 | 01 | 05 | | | | | | | | | | |
| | 8 - 36 UNF | | 2.5P | H2 | 14001160 | 00 | 01 | 05 | | | | | | | | |
| | | | | H3 | 14001161 | 00 | 01 | 05 | | | | | | | | |
| | | | | H4 | 14001162 | 00 | 01 | 05 | | | | | | | | |
| H5 | | 14001163 | | 00 | 01 | 05 | | | | | | | | | | |
| H6 | | 14001164 | | 00 | 01 | 05 | | | | | | | | | | |
| H7 | | 14001165 | | 00 | 01 | 05 | | | | | | | | | | |
| H8 | | 14001166 | | 00 | 01 | 05 | | | | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.





List 14001 (Continued)



| | | | |
|--------|--|---|---|
| HSS-Co | TiN | S/O | BR |
|--------|--|---|---|

NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)

Units: Inch

| Tap Size | Lead | Thread Limit | EDP Number | Coating Suffix | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk | Tap Drill Size | | Class of Fit | | |
|-------------|----------|--------------|------------|----------------|-----|-----|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|----------------|--------|--------------|----|----|
| | | | | Bright | S/O | TiN | | | | | | | Min | Max | 2B | 3B | |
| 8 - 36 UNF | 2.5P | H9 | 14001167 | 00 | 01 | 05 | 2.125 | 0.374 | 0.752 | 0.168 | 0.131 | 0.1498 | 0.1527 | H5 | H3 | | |
| | | H10 | 14001168 | 00 | 01 | 05 | | | | | | | | | | | |
| | 4.5P | H2 | 14001169 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H3 | 14001170 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H4 | 14001171 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H5 | 14001172 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H6 | 14001173 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H7 | 14001174 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H8 | 14001175 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H9 | 14001176 | 00 | 01 | 05 | | | | | | | | | | | |
| H10 | 14001177 | 00 | 01 | 05 | | | | | | | | | | | | | |
| 10 - 24 UNC | 1.5P | H3 | 14001178 | 00 | 01 | 05 | 2.375 | 0.492 | 0.866 | 0.194 | 0.152 | 0.250 | 0.1688 | 0.1730 | H6 | H4 | |
| | | H4 | 14001179 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H5 | 14001180 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H6 | 14001571 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H2 | 14001181 | 00 | 01 | 05 | | | | | | | | | | | |
| | 2.5P | H3 | 14001182 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H4 | 14001183 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H5 | 14001184 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H6 | 14001185 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H7 | 14001186 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H8 | 14001187 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H9 | 14001188 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H10 | 14001189 | 00 | 01 | 05 | | | | | | | | | | | |
| | | 4.5P | H2 | 14001190 | 00 | 01 | | | | | | | | | | | 05 |
| | | | H3 | 14001191 | 00 | 01 | | | | | | | | | | | 05 |
| | H4 | | 14001192 | 00 | 01 | 05 | | | | | | | | | | | |
| | H5 | | 14001193 | 00 | 01 | 05 | | | | | | | | | | | |
| | H6 | | 14001194 | 00 | 01 | 05 | | | | | | | | | | | |
| | H7 | | 14001195 | 00 | 01 | 05 | | | | | | | | | | | |
| | H8 | | 14001196 | 00 | 01 | 05 | | | | | | | | | | | |
| H9 | 14001197 | | 00 | 01 | 05 | | | | | | | | | | | | |
| H10 | 14001198 | | 00 | 01 | 05 | | | | | | | | | | | | |
| 10 - 32 UNF | 1.5P | | H3 | 14001199 | 00 | 01 | 05 | 0.1741 | 0.1776 | | | | | | | | |
| | | H4 | 14001200 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H5 | 14001201 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H6 | 14001572 | 00 | 01 | 05 | | | | | | | | | | | |
| | 2.5P | H2 | 14001202 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H3 | 14001203 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H4 | 14001204 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H5 | 14001205 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H6 | 14001206 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H7 | 14001207 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H8 | 14001208 | 00 | 01 | 05 | | | | | | | | | | | |
| | | H9 | 14001209 | 00 | 01 | 05 | | | | | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

continued on next page **HYT**

| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|-------------------------------------|-------------------------------------|--------------|-------------------|--------------------------|--------------|--------------|--------------|--|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 14001 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | | | | |
| SFM | 35-100 | 20-50 | 15-25 | 15-25 | 15-20 | 15-40 | 15-40 | 10-25 | | 50-90 | 45-100 | | | 10-15 | | | | |

good best



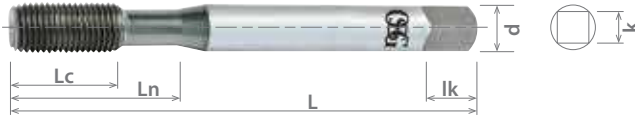


List 14001 (Continued)



| | | | |
|--------|-----|-----|----|
| HSS-Co | TiN | S/O | BR |
|--------|-----|-----|----|

NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)



Units: Inch

| Tap Size | Lead | Thread Limit | EDP Number | Coating Suffix | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | |
|--------------|-------------|--------------|------------|----------------|-----|-----|----------------|---------------|-------------|------------|--------------|---------------|----------------|--------|--------------|--------|
| | | | | Bright | S/O | TiN | L | Lc | Ln | d | k | lk | Min | Max | 2B | 3B |
| 10 - 32 UNF | 2.5P | H10 | 14001210 | 00 | 01 | 05 | 2.375 | 0.492 | 0.866 | 0.194 | 0.152 | 0.250 | 0.1741 | 0.1776 | H6 | H4 |
| | | H11 | 14001587 | 00 | - | - | | | | | | | | | | |
| | | H12 | 14001588 | 00 | - | - | | | | | | | | | | |
| | | H14 | 14001601 | 00 | - | - | | | | | | | | | | |
| | 4.5P | H2 | 14001211 | 00 | 01 | 05 | | | | | | | | | | |
| | | H3 | 14001212 | 00 | 01 | 05 | | | | | | | | | | |
| | | H4 | 14001213 | 00 | 01 | 05 | | | | | | | | | | |
| | | H5 | 14001214 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001215 | 00 | 01 | 05 | | | | | | | | | | |
| | | H7 | 14001216 | 00 | 01 | 05 | | | | | | | | | | |
| | | H8 | 14001217 | 00 | 01 | 05 | | | | | | | | | | |
| | | H9 | 14001218 | 00 | 01 | 05 | | | | | | | | | | |
| | | H10 | 14001219 | 00 | 01 | 05 | | | | | | | | | | |
| 12 - 24 UNC | 2.5P | H2 | 14001220 | 00 | 01 | 05 | 2.375 | 0.496 | 0.933 | 0.220 | 0.165 | 0.281 | 0.1948 | 0.1990 | H7 | H5 |
| | | H3 | 14001221 | 00 | 01 | 05 | | | | | | | | | | |
| | | H4 | 14001222 | 00 | 01 | 05 | | | | | | | | | | |
| | | H5 | 14001223 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001224 | 00 | 01 | 05 | | | | | | | | | | |
| | | H7 | 14001225 | 00 | 01 | 05 | | | | | | | | | | |
| | | H8 | 14001226 | 00 | 01 | 05 | | | | | | | | | | |
| | | H9 | 14001227 | 00 | 01 | 05 | | | | | | | | | | |
| | | H10 | 14001228 | 00 | 01 | 05 | | | | | | | | | | |
| | | 4.5P | H2 | 14001229 | 00 | 01 | | | | | | | | | | |
| | H3 | | 14001230 | 00 | 01 | 05 | | | | | | | | | | |
| | H4 | | 14001231 | 00 | 01 | 05 | | | | | | | | | | |
| | H5 | | 14001232 | 00 | 01 | 05 | | | | | | | | | | |
| | H6 | | 14001233 | 00 | 01 | 05 | | | | | | | | | | |
| | H7 | | 14001234 | 00 | 01 | 05 | | | | | | | | | | |
| | H8 | | 14001235 | 00 | 01 | 05 | | | | | | | | | | |
| | H9 | | 14001236 | 00 | 01 | 05 | | | | | | | | | | |
| | H10 | | 14001237 | 00 | 01 | 05 | | | | | | | | | | |
| | 12 - 28 UNF | 2.5P | H2 | 14001238 | 00 | 01 | | | | | | | 05 | 2.500 | | |
| H3 | | | 14001239 | 00 | 01 | 05 | | | | | | | | | | |
| H4 | | | 14001240 | 00 | 01 | 05 | | | | | | | | | | |
| H5 | | | 14001241 | 00 | 01 | 05 | | | | | | | | | | |
| H6 | | | 14001242 | 00 | 01 | 05 | | | | | | | | | | |
| H7 | | | 14001243 | 00 | 01 | 05 | | | | | | | | | | |
| H8 | | | 14001244 | 00 | 01 | 05 | | | | | | | | | | |
| H9 | | | 14001245 | 00 | 01 | 05 | | | | | | | | | | |
| H10 | | | 14001246 | 00 | 01 | 05 | | | | | | | | | | |
| 4.5P | | | H2 | 14001247 | 00 | 01 | 05 | | | | | | | | | |
| | | H3 | 14001248 | 00 | 01 | 05 | | | | | | | | | | |
| | | H4 | 14001249 | 00 | 01 | 05 | | | | | | | | | | |
| | | H5 | 14001250 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001251 | 00 | 01 | 05 | | | | | | | | | | |
| | | H7 | 14001252 | 00 | 01 | 05 | | | | | | | | | | |
| | | H8 | 14001253 | 00 | 01 | 05 | | | | | | | | | | |
| | | H9 | 14001254 | 00 | 01 | 05 | | | | | | | | | | |
| | | H10 | 14001255 | 00 | 01 | 05 | | | | | | | | | | |
| 1/4 - 20 UNC | | 1.5P | H5 | 14001256 | 00 | 01 | 05 | 2.500 | 0.594 | 0.996 | 0.255 | 0.191 | 0.313 | | 0.2245 | 0.2296 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.





List 14001 (Continued)



| | | | |
|--------|-----|-----|----|
| HSS-Co | TiN | S/O | BR |
|--------|-----|-----|----|

NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)

Units: Inch

| Tap Size | Lead | Thread Limit | EDP Number | Coating Suffix | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk | Tap Drill Size | | Class of Fit | |
|--------------|----------|--------------|------------|----------------|-----|-----|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|----------------|--------|--------------|----|
| | | | | Bright | S/O | TiN | | | | | | | Min | Max | 2B | 3B |
| 1/4 - 20 UNC | 1.5P | H6 | 14001257 | 00 | 01 | 05 | 2.375 | 0.496 | 0.933 | 0.255 | 0.191 | 0.281 | 0.2245 | 0.2296 | H6 | H4 |
| | | H7 | 14001258 | 00 | 01 | 05 | | | | | | | | | | |
| | | H8 | 14001259 | 00 | 01 | 05 | | | | | | | | | | |
| | 2.5P | H2 | 14001260 | 00 | 01 | 05 | | | | | | | | | | |
| | | H3 | 14001261 | 00 | 01 | 05 | | | | | | | | | | |
| | | H4 | 14001262 | 00 | 01 | 05 | | | | | | | | | | |
| | | H5 | 14001263 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001264 | 00 | 01 | 05 | | | | | | | | | | |
| | | H7 | 14001265 | 00 | 01 | 05 | | | | | | | | | | |
| | | H8 | 14001266 | 00 | 01 | 05 | | | | | | | | | | |
| | | H9 | 14001267 | 00 | 01 | 05 | | | | | | | | | | |
| | | H10 | 14001268 | 00 | 01 | 05 | | | | | | | | | | |
| | | H11 | 14001589 | 00 | - | - | | | | | | | | | | |
| | 4.5P | H12 | 14001590 | 00 | - | - | | | | | | | | | | |
| | | H13 | 14001591 | 00 | - | - | | | | | | | | | | |
| | | H2 | 14001269 | 00 | 01 | 05 | | | | | | | | | | |
| | | H3 | 14001270 | 00 | 01 | 05 | | | | | | | | | | |
| | | H4 | 14001271 | 00 | 01 | 05 | | | | | | | | | | |
| | | H5 | 14001272 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001273 | 00 | 01 | 05 | | | | | | | | | | |
| 1/4 - 28 UNF | 1.5P | H7 | 14001274 | 00 | 01 | 05 | | | | | | | | | | |
| | | H8 | 14001275 | 00 | 01 | 05 | | | | | | | | | | |
| | | H9 | 14001276 | 00 | 01 | 05 | | | | | | | | | | |
| | | H10 | 14001277 | 00 | 01 | 05 | | | | | | | | | | |
| | 2.5P | H4 | 14001278 | 00 | 01 | 05 | | | | | | | | | | |
| | | H5 | 14001279 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001280 | 00 | 01 | 05 | | | | | | | | | | |
| | | H7 | 14001281 | 00 | 01 | 05 | | | | | | | | | | |
| | | H2 | 14001282 | 00 | 01 | 05 | | | | | | | | | | |
| | | H3 | 14001283 | 00 | 01 | 05 | | | | | | | | | | |
| | | H4 | 14001284 | 00 | 01 | 05 | | | | | | | | | | |
| | | H5 | 14001285 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001286 | 00 | 01 | 05 | | | | | | | | | | |
| | | H7 | 14001287 | 00 | 01 | 05 | | | | | | | | | | |
| | | H8 | 14001288 | 00 | 01 | 05 | | | | | | | | | | |
| | 4.5P | H9 | 14001289 | 00 | 01 | 05 | | | | | | | | | | |
| | | H10 | 14001290 | 00 | 01 | 05 | | | | | | | | | | |
| | | H11 | 14001592 | 00 | - | - | | | | | | | | | | |
| | | H2 | 14001291 | 00 | 01 | 05 | | | | | | | | | | |
| | | H3 | 14001292 | 00 | 01 | 05 | | | | | | | | | | |
| 4.5P | H4 | 14001293 | 00 | 01 | 05 | | | | | | | | | | | |
| | H5 | 14001294 | 00 | 01 | 05 | | | | | | | | | | | |
| | H6 | 14001295 | 00 | 01 | 05 | | | | | | | | | | | |
| | H7 | 14001296 | 00 | 01 | 05 | | | | | | | | | | | |
| H8 | 14001297 | 00 | 01 | 05 | | | | | | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

continued on next page

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|-------------------------------------|-------------------------------------|--------------|--------------------------|-----------------|-----------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 14001 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | | | |
| SFM | 35-100 | 20-50 | 15-25 | 15-25 | 15-20 | 15-40 | 15-40 | 10-25 | | 50-90 | 45-100 | | 10-15 | | | | |

good best



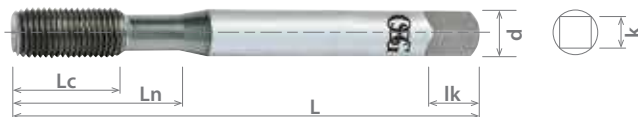


List 14001 (Continued)



| | | | |
|--------|-----|-----|----|
| HSS-Co | TiN | S/O | BR |
|--------|-----|-----|----|

NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)



Units: Inch

| Tap Size | Lead | Thread Limit | EDP Number | Coating Suffix | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | |
|---------------|----------|--------------|------------|----------------|-----|-----|----------------|---------------|-------------|------------|--------------|---------------|----------------|--------|--------------|----|
| | | | | Bright | S/O | TiN | L | Lc | Ln | d | k | lk | Min | Max | 2B | 3B |
| 1/4 - 28 UNF | 4.5P | H9 | 14001298 | 00 | 01 | 05 | 2.375 | 0.496 | 0.933 | 0.255 | 0.191 | 0.281 | 0.2318 | 0.2354 | H6 | H4 |
| | | H10 | 14001299 | 00 | 01 | 05 | | | | | | | | | | |
| 5/16 - 18 UNC | 1.5P | H6 | 14001300 | 00 | 01 | 05 | 2.719 | 0.665 | 1.126 | 0.318 | 0.238 | 0.375 | 0.2842 | 0.2898 | H7 | H5 |
| | | H7 | 14001301 | 00 | 01 | 05 | | | | | | | | | | |
| | | H8 | 14001302 | 00 | 01 | 05 | | | | | | | | | | |
| | | H9 | 14001303 | 00 | 01 | 05 | | | | | | | | | | |
| | | H2 | 14001304 | 00 | 01 | 05 | | | | | | | | | | |
| | 2.5P | H3 | 14001305 | 00 | 01 | 05 | | | | | | | | | | |
| | | H4 | 14001306 | 00 | 01 | 05 | | | | | | | | | | |
| | | H5 | 14001307 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001308 | 00 | 01 | 05 | | | | | | | | | | |
| | | H7 | 14001309 | 00 | 01 | 05 | | | | | | | | | | |
| | | H8 | 14001310 | 00 | 01 | 05 | | | | | | | | | | |
| | 4.5P | H9 | 14001311 | 00 | 01 | 05 | | | | | | | | | | |
| | | H10 | 14001312 | 00 | 01 | 05 | | | | | | | | | | |
| | | H11 | 14001593 | 00 | - | - | | | | | | | | | | |
| | | H2 | 14001313 | 00 | 01 | 05 | | | | | | | | | | |
| | | H3 | 14001314 | 00 | 01 | 05 | | | | | | | | | | |
| | | H4 | 14001315 | 00 | 01 | 05 | | | | | | | | | | |
| | | H5 | 14001316 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001317 | 00 | 01 | 05 | | | | | | | | | | |
| | | H7 | 14001318 | 00 | 01 | 05 | | | | | | | | | | |
| 5/16 - 24 UNF | 1.5P | H8 | 14001319 | 00 | 01 | 05 | | | | | | | | | | |
| | | H9 | 14001320 | 00 | 01 | 05 | | | | | | | | | | |
| | | H10 | 14001321 | 00 | 01 | 05 | | | | | | | | | | |
| | | H4 | 14001322 | 00 | 01 | 05 | | | | | | | | | | |
| | 2.5P | H5 | 14001323 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001324 | 00 | 01 | 05 | | | | | | | | | | |
| | | H7 | 14001325 | 00 | 01 | 05 | | | | | | | | | | |
| | | H8 | 14001326 | 00 | 01 | 05 | | | | | | | | | | |
| | | H2 | 14001327 | 00 | 01 | 05 | | | | | | | | | | |
| | | H3 | 14001328 | 00 | 01 | 05 | | | | | | | | | | |
| | 4.5P | H4 | 14001329 | 00 | 01 | 05 | | | | | | | | | | |
| | | H5 | 14001330 | 00 | 01 | 05 | | | | | | | | | | |
| H6 | | 14001331 | 00 | 01 | 05 | | | | | | | | | | | |
| H7 | | 14001332 | 00 | 01 | 05 | | | | | | | | | | | |
| H8 | | 14001333 | 00 | 01 | 05 | | | | | | | | | | | |
| H9 | | 14001334 | 00 | 01 | 05 | | | | | | | | | | | |
| H10 | | 14001335 | 00 | 01 | 05 | | | | | | | | | | | |
| H2 | | 14001336 | 00 | 01 | 05 | | | | | | | | | | | |
| H3 | 14001337 | 00 | 01 | 05 | | | | | | | | | | | | |
| | | H4 | 14001338 | 00 | 01 | 05 | | | | | | | | | | |
| | | H5 | 14001339 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001340 | 00 | 01 | 05 | | | | | | | | | | |
| | | H7 | 14001341 | 00 | 01 | 05 | | | | | | | | | | |
| | | H8 | 14001342 | 00 | 01 | 05 | | | | | | | | | | |
| | | H9 | 14001343 | 00 | 01 | 05 | | | | | | | | | | |
| | | H10 | 14001344 | 00 | 01 | 05 | | | | | | | | | | |
| | | H12 | 14001594 | 00 | - | - | | | | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.





List 14001 (Continued)



| | | | |
|--------|--|---|---|
| HSS-Co | TIN | S/O | BR |
|--------|--|---|---|

NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)

Units: Inch

| Tap Size | Lead | Thread Limit | EDP Number | Coating Suffix | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk | Tap Drill Size | | Class of Fit | |
|--------------|--------------|--------------|------------|----------------|-----|-----|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|----------------|--------|--------------|----|
| | | | | Bright | S/O | TiN | | | | | | | Min | Max | 2B | 3B |
| 3/8 - 16 UNC | 1.5P | H5 | 14001345 | 00 | 01 | 05 | 2.938 | 0.752 | 1.252 | 0.381 | 0.286 | 0.438 | 0.3431 | 0.3495 | H7 | H5 |
| | | H6 | 14001346 | 00 | 01 | 05 | | | | | | | | | | |
| | | H7 | 14001347 | 00 | 01 | 05 | | | | | | | | | | |
| | | H8 | 14001348 | 00 | 01 | 05 | | | | | | | | | | |
| | | H9 | 14001349 | 00 | 01 | 05 | | | | | | | | | | |
| | 2.5P | H4 | 14001350 | 00 | 01 | 05 | | | | | | | | | | |
| | | H5 | 14001351 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001352 | 00 | 01 | 05 | | | | | | | | | | |
| | | H7 | 14001353 | 00 | 01 | 05 | | | | | | | | | | |
| | | H8 | 14001354 | 00 | 01 | 05 | | | | | | | | | | |
| | | H9 | 14001355 | 00 | 01 | 05 | | | | | | | | | | |
| | | H10 | 14001356 | 00 | 01 | 05 | | | | | | | | | | |
| | 4.5P | H11 | 14001357 | 00 | 01 | 05 | | | | | | | | | | |
| | | H12 | 14001358 | 00 | 01 | 05 | | | | | | | | | | |
| | | H4 | 14001359 | 00 | 01 | 05 | | | | | | | | | | |
| | | H5 | 14001360 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001361 | 00 | 01 | 05 | | | | | | | | | | |
| | | H7 | 14001362 | 00 | 01 | 05 | | | | | | | | | | |
| | 3/8 - 24 UNF | 1.5P | H8 | 14001363 | 00 | 01 | | | | | | | 05 | | | |
| | | | H9 | 14001364 | 00 | 01 | | | | | | | 05 | | | |
| | | | H10 | 14001365 | 00 | 01 | | | | | | | 05 | | | |
| | | | H11 | 14001366 | 00 | 01 | | | | | | | 05 | | | |
| | | | H12 | 14001367 | 00 | 01 | | | | | | | 05 | | | |
| | | 2.5P | H4 | 14001368 | 00 | 01 | | | | | | | 05 | | | |
| H5 | | | 14001369 | 00 | 01 | 05 | | | | | | | | | | |
| H6 | | | 14001370 | 00 | 01 | 05 | | | | | | | | | | |
| H7 | | | 14001371 | 00 | 01 | 05 | | | | | | | | | | |
| H8 | | | 14001372 | 00 | 01 | 05 | | | | | | | | | | |
| H4 | | | 14001373 | 00 | 01 | 05 | | | | | | | | | | |
| H5 | 14001374 | | 00 | 01 | 05 | | | | | | | | | | | |
| 4.5P | H6 | 14001375 | 00 | 01 | 05 | | | | | | | | | | | |
| | H7 | 14001376 | 00 | 01 | 05 | | | | | | | | | | | |
| | H8 | 14001377 | 00 | 01 | 05 | | | | | | | | | | | |
| | H9 | 14001378 | 00 | 01 | 05 | | | | | | | | | | | |
| | H10 | 14001379 | 00 | 01 | 05 | | | | | | | | | | | |
| | H11 | 14001380 | 00 | 01 | 05 | | | | | | | | | | | |
| | H12 | 14001381 | 00 | 01 | 05 | | | | | | | | | | | |
| | H4 | 14001382 | 00 | 01 | 05 | | | | | | | | | | | |
| | H5 | 14001383 | 00 | 01 | 05 | | | | | | | | | | | |
| H6 | 14001384 | 00 | 01 | 05 | | | | | | | | | | | | |
| H7 | 14001385 | 00 | 01 | 05 | | | | | | | | | | | | |
| H8 | 14001386 | 00 | 01 | 05 | | | | | | | | | | | | |
| H9 | 14001387 | 00 | 01 | 05 | | | | | | | | | | | | |
| H10 | 14001388 | 00 | 01 | 05 | | | | | | | | | | | | |
| H11 | 14001389 | 00 | 01 | 05 | | | | | | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

[continued on next page](#)

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|-------------------------------------|-------------------------------------|--------------|--------------------------|-----------------|--------------|--------------|--------------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 14001 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | | | |
| SFM | 35-100 | 20-50 | 15-25 | 15-25 | 15-20 | 15-40 | 15-40 | 10-25 | | 50-90 | 45-100 | | 10-15 | | | | |

good best



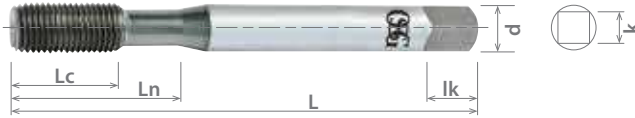


List 14001 (Continued)



| | | | |
|--------|-----|-----|----|
| HSS-Co | TiN | S/O | BR |
|--------|-----|-----|----|

NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)



Units: Inch

| Tap Size | Lead | Thread Limit | EDP Number | Coating Suffix | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk | Tap Drill Size | | Class of Fit | |
|---------------|------|--------------|------------|----------------|-----|-----|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|----------------|--------|--------------|----|
| | | | | Bright | S/O | TiN | | | | | | | Min | Max | 2B | 3B |
| 3/8 - 24 UNF | 4.5P | H12 | 14001390 | 00 | 01 | 05 | 2.938 | 0.752 | 1.252 | 0.381 | 0.286 | 0.438 | 0.3538 | 0.358 | H7 | |
| | | H13 | 14001595 | 00 | - | - | | | | | | | | | | |
| 7/16 - 14 UNC | 2.5P | H4 | 14001391 | 00 | 01 | 05 | 3.156 | 0.858 | 1.713 | 0.323 | 0.242 | 0.406 | 0.4011 | 0.4084 | H8 | H5 |
| | | H5 | 14001392 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001393 | 00 | 01 | 05 | | | | | | | | | | |
| | | H7 | 14001394 | 00 | 01 | 05 | | | | | | | | | | |
| | | H8 | 14001395 | 00 | 01 | 05 | | | | | | | | | | |
| | | H9 | 14001396 | 00 | 01 | 05 | | | | | | | | | | |
| | 4.5P | H10 | 14001397 | 00 | 01 | 05 | | | | | | | | | | |
| | | H11 | 14001398 | 00 | 01 | 05 | | | | | | | | | | |
| | | H12 | 14001399 | 00 | 01 | 05 | | | | | | | | | | |
| | | H4 | 14001400 | 00 | 01 | 05 | | | | | | | | | | |
| | | H5 | 14001401 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001402 | 00 | 01 | 05 | | | | | | | | | | |
| 7/16 - 20 UNF | 2.5P | H7 | 14001403 | 00 | 01 | 05 | 3.156 | 0.858 | 1.713 | 0.323 | 0.242 | 0.406 | 0.4120 | 0.4171 | H8 | H5 |
| | | H8 | 14001404 | 00 | 01 | 05 | | | | | | | | | | |
| | | H9 | 14001405 | 00 | 01 | 05 | | | | | | | | | | |
| | | H10 | 14001406 | 00 | 01 | 05 | | | | | | | | | | |
| | | H11 | 14001407 | 00 | 01 | 05 | | | | | | | | | | |
| | | H12 | 14001408 | 00 | 01 | 05 | | | | | | | | | | |
| | 4.5P | H4 | 14001409 | 00 | 01 | 05 | | | | | | | | | | |
| | | H5 | 14001410 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001411 | 00 | 01 | 05 | | | | | | | | | | |
| | | H7 | 14001412 | 00 | 01 | 05 | | | | | | | | | | |
| | | H8 | 14001413 | 00 | 01 | 05 | | | | | | | | | | |
| | | H9 | 14001414 | 00 | 01 | 05 | | | | | | | | | | |
| 1/2 - 13 UNC | 2.5P | H10 | 14001415 | 00 | 01 | 05 | 3.375 | 0.921 | 1.933 | 0.367 | 0.275 | 0.438 | 0.4608 | 0.4686 | | |
| | | H11 | 14001416 | 00 | 01 | 05 | | | | | | | | | | |
| | | H12 | 14001417 | 00 | 01 | 05 | | | | | | | | | | |
| | | H4 | 14001418 | 00 | 01 | 05 | | | | | | | | | | |
| | | H5 | 14001419 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001420 | 00 | 01 | 05 | | | | | | | | | | |
| | 4.5P | H7 | 14001421 | 00 | 01 | 05 | | | | | | | | | | |
| | | H8 | 14001422 | 00 | 01 | 05 | | | | | | | | | | |
| | | H9 | 14001423 | 00 | 01 | 05 | | | | | | | | | | |
| | | H10 | 14001424 | 00 | 01 | 05 | | | | | | | | | | |
| | | H11 | 14001425 | 00 | 01 | 05 | | | | | | | | | | |
| | | H12 | 14001426 | 00 | 01 | 05 | | | | | | | | | | |
| | 2.5P | H4 | 14001427 | 00 | 01 | 05 | 3.375 | 0.921 | 1.933 | 0.367 | 0.275 | 0.438 | 0.4608 | 0.4686 | | |
| | | H5 | 14001428 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001429 | 00 | 01 | 05 | | | | | | | | | | |
| | | H7 | 14001430 | 00 | 01 | 05 | | | | | | | | | | |
| | | H8 | 14001431 | 00 | 01 | 05 | | | | | | | | | | |
| | | H9 | 14001432 | 00 | 01 | 05 | | | | | | | | | | |
| 4.5P | H10 | 14001433 | 00 | 01 | 05 | | | | | | | | | | | |
| | H11 | 14001434 | 00 | 01 | 05 | | | | | | | | | | | |
| | H12 | 14001435 | 00 | 01 | 05 | | | | | | | | | | | |
| | H4 | 14001436 | 00 | 01 | 05 | | | | | | | | | | | |
| | H5 | 14001437 | 00 | 01 | 05 | | | | | | | | | | | |
| | H6 | 14001438 | 00 | 01 | 05 | | | | | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.





List 14001 (Continued)



| | | | |
|--------|-----|-----|----|
| HSS-Co | TIN | S/O | BR |
|--------|-----|-----|----|

NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)

Units: Inch

| Tap Size | Lead | Thread Limit | EDP Number | Coating Suffix | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk | Tap Drill Size | | Class of Fit | | | | | | | | | | | |
|---------------|----------|--------------|------------|----------------|-----|-----|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|----------------|--------|--------------|----|-------|-------|-------|-------|-------|-------|--------|--------|-----|----|
| | | | | Bright | S/O | TiN | | | | | | | Min | Max | 2B | 3B | | | | | | | | | | |
| 1/2 - 13 UNC | 4.5P | H7 | 14001439 | 00 | 01 | 05 | 3.375 | 0.921 | 1.933 | 0.367 | 0.275 | 0.438 | 0.4608 | 0.4686 | | | | | | | | | | | | |
| | | H8 | 14001440 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H9 | 14001441 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H10 | 14001442 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H11 | 14001443 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H12 | 14001444 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| 1/2 - 20 UNF | 2.5P | H4 | 14001445 | 00 | 01 | 05 | 3.375 | 0.921 | 1.933 | 0.367 | 0.275 | 0.438 | 0.4745 | 0.4796 | H8 | H5 | | | | | | | | | | |
| | | H5 | 14001446 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H6 | 14001447 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H7 | 14001448 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H8 | 14001449 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H9 | 14001450 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | H10 | 14001451 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | |
| | H11 | 14001452 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | |
| | H12 | 14001453 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | |
| | 4.5P | H4 | 14001454 | 00 | 01 | 05 | | | | | | | | | | | 3.375 | 0.921 | 1.933 | 0.367 | 0.275 | 0.438 | 0.4745 | 0.4796 | H8 | H5 |
| | | H5 | 14001455 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H6 | 14001456 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H7 | 14001457 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H8 | 14001458 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H9 | 14001459 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | H10 | 14001460 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | |
| | H11 | 14001461 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | |
| | H12 | 14001462 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | |
| H13 | 14001596 | 00 | - | - | | | | | | | | | | | | | | | | | | | | | | |
| H14 | 14001597 | 00 | - | - | | | | | | | | | | | | | | | | | | | | | | |
| 9/16 - 12 UNC | 2.5P | H4 | 14001463 | 00 | 01 | 05 | 3.594 | 1.000 | 1.972 | 0.429 | 0.322 | 0.500 | 0.5200 | 0.5285 | H10 | H7 | | | | | | | | | | |
| | | H5 | 14001464 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H6 | 14001465 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H7 | 14001466 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H8 | 14001467 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H9 | 14001468 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | H10 | 14001469 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | |
| | H11 | 14001470 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | |
| | H12 | 14001471 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | |
| | 4.5P | H4 | 14001472 | 00 | 01 | 05 | | | | | | | | | | | 3.594 | 1.000 | 1.972 | 0.429 | 0.322 | 0.500 | 0.5200 | 0.5285 | H10 | H7 |
| | | H5 | 14001473 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H6 | 14001474 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H7 | 14001475 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H8 | 14001476 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | | H9 | 14001477 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | |
| | H10 | 14001478 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | |
| | H11 | 14001479 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | |
| | H12 | 14001480 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | |
| 9/16 - 18 UNF | 2.5P | H4 | 14001481 | 00 | 01 | 05 | | | | | | | 0.5342 | 0.5398 | | | | | | | | | | | | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order.

continued on next page

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|-------------------------------------|-------------------------------------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 14001 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | | | |
| SFM | 35-100 | 20-50 | 15-25 | 15-25 | 15-20 | 15-40 | 15-40 | 10-25 | | 50-90 | 45-100 | | 10-15 | | | | |

good best



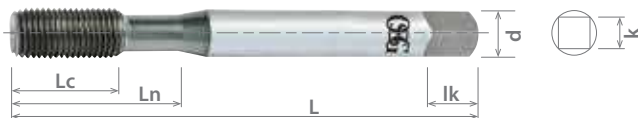


List 14001 (Continued)



| | | | |
|--------|-----|-----|----|
| HSS-Co | TiN | S/O | BR |
|--------|-----|-----|----|

NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)



Units: Inch

| Tap Size | Lead | Thread Limit | EDP Number | Coating Suffix | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | |
|---------------|----------|--------------|------------|----------------|-----|-----|----------------|---------------|-------------|------------|--------------|---------------|----------------|--------|--------------|----|
| | | | | Bright | S/O | TiN | L | Lc | Ln | d | k | lk | Min | Max | 2B | 3B |
| 9/16 - 18 UNF | 2.5P | H5 | 14001482 | 00 | 01 | 05 | 3.594 | 1.000 | 1.972 | 0.429 | 0.322 | 0.500 | 0.5342 | 0.5398 | | |
| | | H6 | 14001483 | 00 | 01 | 05 | | | | | | | | | | |
| | | H7 | 14001484 | 00 | 01 | 05 | | | | | | | | | | |
| | | H8 | 14001485 | 00 | 01 | 05 | | | | | | | | | | |
| | | H9 | 14001486 | 00 | 01 | 05 | | | | | | | | | | |
| | | H10 | 14001487 | 00 | 01 | 05 | | | | | | | | | | |
| | H11 | 14001488 | 00 | 01 | 05 | | | | | | | | | | | |
| | H12 | 14001489 | 00 | 01 | 05 | | | | | | | | | | | |
| | 4.5P | H4 | 14001490 | 00 | 01 | 05 | | | | | | | | | | |
| | | H5 | 14001491 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001492 | 00 | 01 | 05 | | | | | | | | | | |
| | | H7 | 14001493 | 00 | 01 | 05 | | | | | | | | | | |
| H8 | | 14001494 | 00 | 01 | 05 | | | | | | | | | | | |
| H9 | | 14001495 | 00 | 01 | 05 | | | | | | | | | | | |
| H10 | 14001496 | 00 | 01 | 05 | | | | | | | | | | | | |
| H11 | 14001497 | 00 | 01 | 05 | | | | | | | | | | | | |
| H12 | 14001498 | 00 | 01 | 05 | | | | | | | | | | | | |
| 5/8 - 11 UNC | 2.5P | H4 | 14001499 | 00 | 01 | 05 | 3.813 | 1.091 | 2.126 | 0.480 | 0.360 | 0.563 | 0.5786 | 0.5879 | H10 | H7 |
| | | H5 | 14001500 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001501 | 00 | 01 | 05 | | | | | | | | | | |
| | | H7 | 14001502 | 00 | 01 | 05 | | | | | | | | | | |
| | | H8 | 14001503 | 00 | 01 | 05 | | | | | | | | | | |
| | | H9 | 14001504 | 00 | 01 | 05 | | | | | | | | | | |
| | H10 | 14001505 | 00 | 01 | 05 | | | | | | | | | | | |
| | H11 | 14001506 | 00 | 01 | 05 | | | | | | | | | | | |
| | H12 | 14001507 | 00 | 01 | 05 | | | | | | | | | | | |
| | 4.5P | H4 | 14001508 | 00 | 01 | 05 | | | | | | | | | | |
| | | H5 | 14001509 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001510 | 00 | 01 | 05 | | | | | | | | | | |
| H7 | | 14001511 | 00 | 01 | 05 | | | | | | | | | | | |
| H8 | | 14001512 | 00 | 01 | 05 | | | | | | | | | | | |
| H9 | | 14001513 | 00 | 01 | 05 | | | | | | | | | | | |
| H10 | 14001514 | 00 | 01 | 05 | | | | | | | | | | | | |
| H11 | 14001515 | 00 | 01 | 05 | | | | | | | | | | | | |
| H12 | 14001516 | 00 | 01 | 05 | | | | | | | | | | | | |
| 5/8 - 18 UNF | 2.5P | H4 | 14001517 | 00 | 01 | 05 | 0.5967 | 0.6023 | | | | | | | | |
| | | H5 | 14001518 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001519 | 00 | 01 | 05 | | | | | | | | | | |
| | | H7 | 14001520 | 00 | 01 | 05 | | | | | | | | | | |
| | | H8 | 14001521 | 00 | 01 | 05 | | | | | | | | | | |
| | | H9 | 14001522 | 00 | 01 | 05 | | | | | | | | | | |
| | H10 | 14001523 | 00 | 01 | 05 | | | | | | | | | | | |
| | H11 | 14001524 | 00 | 01 | 05 | | | | | | | | | | | |
| | H12 | 14001525 | 00 | 01 | 05 | | | | | | | | | | | |
| | 4.5P | H4 | 14001526 | 00 | 01 | 05 | | | | | | | | | | |
| | | H5 | 14001527 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001528 | 00 | 01 | 05 | | | | | | | | | | |
| H7 | | 14001529 | 00 | 01 | 05 | | | | | | | | | | | |
| H8 | | 14001530 | 00 | 01 | 05 | | | | | | | | | | | |
| H9 | | 14001531 | 00 | 01 | 05 | | | | | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.





List 14001 (Continued)



| | | | |
|--------|---|---|-----------------------------|
| HSS-Co | <input checked="" type="checkbox"/> TiN | <input checked="" type="checkbox"/> S/O | <input type="checkbox"/> BR |
|--------|---|---|-----------------------------|

NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)

Units: Inch

| Tap Size | Lead | Thread Limit | EDP Number | Coating Suffix | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk | Tap Drill Size | | Class of Fit | |
|--------------|----------|--------------|------------|----------------|-----|-----|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|----------------|--------|--------------|----|
| | | | | Bright | S/O | TiN | | | | | | | Min | Max | 2B | 3B |
| 5/8 - 18 UNF | 4.5P | H10 | 14001532 | 00 | 01 | 05 | 3.813 | 1.091 | 2.126 | 0.480 | 0.360 | 0.563 | 0.5967 | 0.6023 | | |
| | | H11 | 14001533 | 00 | 01 | 05 | | | | | | | | | | |
| | | H12 | 14001534 | 00 | 01 | 05 | | | | | | | | | | |
| 3/4 - 10 UNC | 2.5P | H6 | 14001535 | 00 | 01 | 05 | 4.250 | 1.201 | 2.433 | 0.590 | 0.442 | 0.688 | 0.6990 | 0.7092 | H10 | H7 |
| | | H7 | 14001536 | 00 | 01 | 05 | | | | | | | | | | |
| | | H8 | 14001537 | 00 | 01 | 05 | | | | | | | | | | |
| | | H9 | 14001538 | 00 | 01 | 05 | | | | | | | | | | |
| | | H10 | 14001539 | 00 | 01 | 05 | | | | | | | | | | |
| | | H11 | 14001540 | 00 | 01 | 05 | | | | | | | | | | |
| | | H12 | 14001541 | 00 | 01 | 05 | | | | | | | | | | |
| | H13 | 14001542 | 00 | 01 | 05 | | | | | | | | | | | |
| | 4.5P | H14 | 14001543 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001544 | 00 | 01 | 05 | | | | | | | | | | |
| | | H7 | 14001545 | 00 | 01 | 05 | | | | | | | | | | |
| | | H8 | 14001546 | 00 | 01 | 05 | | | | | | | | | | |
| | | H9 | 14001547 | 00 | 01 | 05 | | | | | | | | | | |
| | | H10 | 14001548 | 00 | 01 | 05 | | | | | | | | | | |
| H11 | | 14001549 | 00 | 01 | 05 | | | | | | | | | | | |
| 3/4 - 16 UNF | 2.5P | H12 | 14001550 | 00 | 01 | 05 | 4.250 | 1.201 | 2.433 | 0.590 | 0.442 | 0.688 | 0.7181 | 0.7245 | H10 | H7 |
| | | H13 | 14001551 | 00 | 01 | 05 | | | | | | | | | | |
| | | H14 | 14001552 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001553 | 00 | 01 | 05 | | | | | | | | | | |
| | | H7 | 14001554 | 00 | 01 | 05 | | | | | | | | | | |
| | | H8 | 14001555 | 00 | 01 | 05 | | | | | | | | | | |
| | | H9 | 14001556 | 00 | 01 | 05 | | | | | | | | | | |
| | 4.5P | H10 | 14001557 | 00 | 01 | 05 | | | | | | | | | | |
| | | H11 | 14001558 | 00 | 01 | 05 | | | | | | | | | | |
| | | H12 | 14001559 | 00 | 01 | 05 | | | | | | | | | | |
| | | H13 | 14001560 | 00 | 01 | 05 | | | | | | | | | | |
| | | H14 | 14001561 | 00 | 01 | 05 | | | | | | | | | | |
| | | H6 | 14001562 | 00 | 01 | 05 | | | | | | | | | | |
| | | H7 | 14001563 | 00 | 01 | 05 | | | | | | | | | | |
| H8 | 14001564 | 00 | 01 | 05 | | | | | | | | | | | | |
| H9 | 14001565 | 00 | 01 | 05 | | | | | | | | | | | | |
| H10 | 14001566 | 00 | 01 | 05 | | | | | | | | | | | | |
| H11 | 14001567 | 00 | 01 | 05 | | | | | | | | | | | | |
| H12 | 14001568 | 00 | 01 | 05 | | | | | | | | | | | | |
| H13 | 14001569 | 00 | 01 | 05 | | | | | | | | | | | | |
| H14 | 14001570 | 00 | 01 | 05 | | | | | | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------------|-------------------------------------|-------------------------------------|------------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| List No. | P | | | | | M | | | K Cast Iron | N | | S Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | H | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | | Aluminum | | | | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 14001 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | | | |
| SFM | 35-100 | 20-50 | 15-25 | 15-25 | 15-20 | 15-40 | 15-40 | 10-25 | | 50-90 | 45-100 | | 10-15 | | | | |

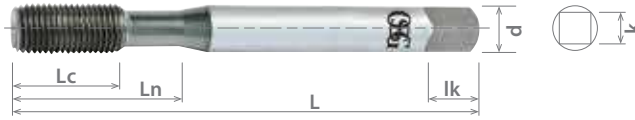
good best





List 14101

NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)



Units: mm

| Tap Size | Lead | Thread Limit | EDP Number | Coating Suffix | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | | | | | | | | | | | | | | | | | | | |
|-------------|------|--------------|------------|----------------|-----|-----|----------------|---------------|-------------|------------|--------------|---------------|----------------|------|--------------|-------|------|-------|------|------|------|------|-------|------|----|----|------|------|------|----|----|------|----|----|
| | | | | Bright | S/O | TiN | L | Lc | Ln | d | k | lk | Min | Max | 6H | 4H | | | | | | | | | | | | | | | | | | |
| M1.6 x 0.35 | 2.5P | D3 | 14101000 | 00 | 01 | 05 | 41.30 | 7.90 | 8.90 | 3.581 | 2.79 | 4.80 | 1.42 | 1.46 | D5 | D3 | | | | | | | | | | | | | | | | | | |
| | | D5 | 14101001 | 00 | 01 | 05 | | | | | | | 1.52 | 1.56 | | | | | | | | | | | | | | | | | | | | |
| M1.7 x 0.35 | 2.5P | D3 | 14101002 | 00 | 01 | 05 | 42.90 | 9.50 | 10.50 | | | | 3.581 | 2.79 | | | 4.80 | 1.52 | 1.56 | D5 | D3 | | | | | | | | | | | | | |
| | | D5 | 14101003 | 00 | 01 | 05 | | | | | | | | | | | | 1.52 | 1.56 | | | | | | | | | | | | | | | |
| M2 x 0.4 | 1.5P | D3 | 14101004 | 00 | 01 | 05 | 44.30 | 11.10 | 12.10 | | | | | | | | | 3.581 | 2.79 | | | 4.80 | 1.8 | 1.84 | D5 | D3 | | | | | | | | |
| | | D5 | 14101005 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | D3 | 14101006 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | D4 | 14101061 | 00 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2.5P | D5 | 14101007 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | D6 | 14101062 | 00 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | D7 | 14101063 | 00 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | D8 | 14101064 | 00 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M2.5 x 0.45 | 1.5P | D3 | 14101008 | 00 | 01 | 05 | 46.00 | 12.80 | 13.80 | | | | | | | | | | | | | | 3.581 | 2.79 | | | 4.80 | 2.27 | 2.32 | D5 | D3 | | | |
| | | D5 | 14101009 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | D3 | 14101010 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | D4 | 14101065 | 00 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2.5P | D5 | 14101011 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | D6 | 14101066 | 00 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | D7 | 14101067 | 00 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | D8 | 14101068 | 00 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M2.6 x 0.45 | 2.5P | D3 | 14101012 | 00 | 01 | 05 | 49.20 | 6.20 | 16.00 | 3.581 | 2.79 | 4.80 | | | 2.37 | 2.42 | | | | | | | | | | | | D5 | D3 | | | | | |
| | | D5 | 14101013 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M3 x 0.5 | 1.5P | D3 | 14101014 | 00 | 01 | 05 | | | | | | | 49.20 | 6.20 | 16.00 | 3.581 | 2.79 | | | 4.80 | 2.75 | | | | | | | | | | | 2.80 | D5 | D3 |
| | | D5 | 14101015 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | D6 | 14101060 | 00 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | D3 | 14101016 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | D4 | 14101069 | 00 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | D5 | 14101017 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2.5P | D6 | 14101070 | 00 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | D7 | 14101071 | 00 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | D8 | 14101072 | 00 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | D9 | 14101073 | 00 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | D10 | 14101074 | 00 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | D11 | 14101075 | 00 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 4.5P | D5 | 14101107 | 00 | - | | | | | | | | | | | | - | | | | | | | | | | | | | | | | |
| | | | D5 | 14101107 | 00 | - | | | | | | | | | | | | - | | | | | | | | | | | | | | | | |
| M3.5 x 0.6 | 1.5P | D4 | 14101018 | 00 | 01 | 05 | | | | | | | 50.80 | 6.20 | 17.50 | | | 3.581 | 2.79 | | 4.80 | 3.19 | 3.26 | D5 | D3 | | | | | | | | | |
| | | D6 | 14101019 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | D4 | 14101020 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | D5 | 14101076 | 00 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2.5P | D6 | 14101021 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | D7 | 14101077 | 00 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | D8 | 14101078 | 00 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | D4 | 14101022 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.5P | D6 | 14101023 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | D6 | 14101023 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M4 x 0.7 | 1.5P | D4 | 14101024 | 00 | 01 | 05 | 54.00 | 8.40 | 19.60 | 3.581 | 2.79 | 4.80 | 3.64 | 3.71 | D5 | D3 | | | | | | | | | | | | | | | | | | |
| | | D6 | 14101025 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | D4 | 14101026 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2.5P | D5 | 14101079 | 00 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | D6 | 14101027 | 00 | 01 | 05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | D7 | 14101080 | 00 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | D7 | 14101080 | 00 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.





List 14101 (Continued)



| | | | |
|--------|-----|-----|----|
| HSS-Co | TiN | S/O | BR |
|--------|-----|-----|----|

NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)

Units: mm

| Tap Size | Lead | Thread Limit | EDP Number | Coating Suffix | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk | Tap Drill Size | | Class of Fit | |
|-----------|----------|--------------|------------|----------------|-----|-----|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|----------------|------|--------------|----|
| | | | | Bright | S/O | TiN | | | | | | | Min | Max | 6H | 4H |
| M4 x 0.7 | 2.5P | D8 | 14101081 | 00 | - | - | 54.00 | 8.40 | 19.60 | 4.267 | 3.33 | 6.40 | 3.64 | 3.71 | D6 | |
| | | D9 | 14101082 | 00 | - | - | | | | | | | | | | |
| | | D10 | 14101083 | 00 | - | - | | | | | | | | | | |
| | 4.5P | D11 | 14101084 | 00 | - | - | | | | | | | | | | |
| | | D4 | 14101028 | 00 | 01 | 05 | | | | | | | | | | |
| M5 x 0.8 | 1.5P | D4 | 14101030 | 00 | 01 | 05 | 60.30 | 10.00 | 22.20 | 4.920 | 3.86 | 6.40 | 4.59 | 4.67 | D7 | D4 |
| | | D7 | 14101031 | 00 | 01 | 05 | | | | | | | | | | |
| | | D4 | 14101032 | 00 | 01 | 05 | | | | | | | | | | |
| | 2.5P | D5 | 14101085 | 00 | - | - | | | | | | | | | | |
| | | D6 | 14101086 | 00 | - | - | | | | | | | | | | |
| | | D7 | 14101033 | 00 | 01 | 05 | | | | | | | | | | |
| | | D8 | 14101087 | 00 | - | - | | | | | | | | | | |
| | | D9 | 14101088 | 00 | - | - | | | | | | | | | | |
| | | D10 | 14101089 | 00 | - | - | | | | | | | | | | |
| | | D11 | 14101090 | 00 | - | - | | | | | | | | | | |
| | | D14 | 14101105 | 00 | - | - | | | | | | | | | | |
| | 4.5P | D4 | 14101034 | 00 | 01 | 05 | | | | | | | | | | |
| | | D7 | 14101035 | 00 | 01 | 05 | | | | | | | | | | |
| | M6 x 1.0 | 1.5P | D5 | 14101036 | 00 | 01 | | | | | | | | | | |
| D8 | | | 14101037 | 00 | 01 | 05 | | | | | | | | | | |
| 2.5P | | D5 | 14101038 | 00 | 01 | 05 | | | | | | | | | | |
| | | D6 | 14101091 | 00 | - | - | | | | | | | | | | |
| | | D7 | 14101092 | 00 | - | - | | | | | | | | | | |
| | | D8 | 14101039 | 00 | 01 | 05 | | | | | | | | | | |
| | | D9 | 14101093 | 00 | - | - | | | | | | | | | | |
| | | D10 | 14101094 | 00 | - | - | | | | | | | | | | |
| | | D11 | 14101095 | 00 | - | - | | | | | | | | | | |
| | | D12 | 14101096 | 00 | - | - | | | | | | | | | | |
| | | D13 | 14101097 | 00 | - | - | | | | | | | | | | |
| | | D14 | 14101106 | 00 | - | - | | | | | | | | | | |
| 4.5P | | D5 | 14101040 | 00 | 01 | 05 | | | | | | | | | | |
| | | D8 | 14101041 | 00 | 01 | 05 | | | | | | | | | | |
| M8 x 1.25 | 1.5P | D5 | 14101042 | 00 | 01 | 05 | 69.10 | 15.00 | 28.60 | 8.077 | 6.05 | 9.5 | 7.36 | 7.49 | D9 | |
| | | D9 | 14101043 | 00 | 01 | 05 | | | | | | | | | | |
| | 2.5P | D5 | 14101044 | 00 | 01 | 05 | | | | | | | | | | |
| | | D9 | 14101045 | 00 | 01 | 05 | | | | | | | | | | |
| | 4.5P | D5 | 14101046 | 00 | 01 | 05 | | | | | | | | | | |
| | | D9 | 14101047 | 00 | 01 | 05 | | | | | | | | | | |
| M10 x 1.5 | 1.5P | D6 | 14101048 | 00 | 01 | 05 | 74.60 | 18.00 | 31.80 | 9.677 | 7.26 | 11.10 | 9.24 | 9.39 | D10 | D6 |
| | | D10 | 14101049 | 00 | 01 | 05 | | | | | | | | | | |
| | 2.5P | D6 | 14101050 | 00 | 01 | 05 | | | | | | | | | | |
| | | D7 | 14101098 | 00 | - | - | | | | | | | | | | |
| | | D8 | 14101099 | 00 | - | - | | | | | | | | | | |
| | | D9 | 14101100 | 00 | - | - | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

[continued on next page](#)

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|-------------------------------------|-------------------------------------|--------------|--------------------------|-----------------|-----------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 14101 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | | | |
| SFM | 35-100 | 20-50 | 15-25 | 15-25 | 15-20 | 15-40 | 15-40 | 10-25 | | 50-90 | 45-100 | | 10-15 | | | | |

good best



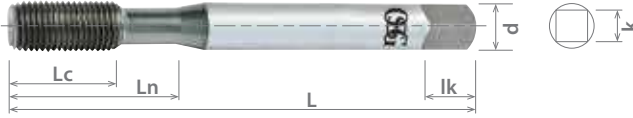


List 14101 (Continued)

NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)



| | | | |
|--------|-----|-----|----|
| HSS-Co | TiN | S/O | BR |
|--------|-----|-----|----|



Units: mm

| Tap Size | Lead | Thread Limit | EDP Number | Coating Suffix | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk | Tap Drill Size | | Class of Fit | |
|------------|------|--------------|------------|----------------|-----|-----|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|----------------|------|--------------|----|
| | | | | Bright | S/O | TiN | | | | | | | Min | Max | 6H | 4H |
| M10 x 1.5 | 2.5P | D10 | 14101051 | 00 | 01 | 05 | 74.60 | 18.00 | 31.80 | 9.677 | 7.26 | 11.10 | 9.24 | 9.39 | D10 | D6 |
| | | D11 | 14101101 | 00 | - | - | | | | | | | | | | |
| | | D12 | 14101102 | 00 | - | - | | | | | | | | | | |
| | D13 | 14101103 | 00 | - | - | | | | | | | | | | | |
| | 4.5P | D6 | 14101052 | 00 | 01 | 05 | | | | | | | | | | |
| D10 | | 14101053 | 00 | 01 | 05 | | | | | | | | | | | |
| M12 x 1.75 | 1.5P | D6 | 14101054 | 00 | 01 | 05 | 85.70 | 21.00 | 49.1 | 9.322 | 6.98 | 11.11 | 11.29 | D11 | D11 | |
| | | D11 | 14101055 | 00 | 01 | 05 | | | | | | | | | | |
| | 2.5P | D6 | 14101056 | 00 | 01 | 05 | | | | | | | | | | |
| | | D11 | 14101057 | 00 | 01 | 05 | | | | | | | | | | |
| | 4.5P | D6 | 14101058 | 00 | 01 | 05 | | | | | | | | | | |
| | | D11 | 14101059 | 00 | 01 | 05 | | | | | | | | | | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 14101 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| SFM | 35-100 | 20-50 | 15-25 | 15-25 | 15-20 | 15-40 | 15-40 | 10-25 | | 50-90 | 45-100 | | 10-15 | | | | |

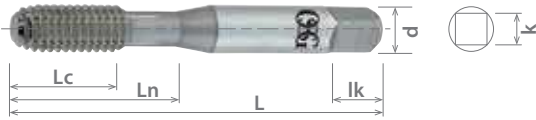
good best





List 285

NRT, Bottom (1.5P-2P)



Units: Inch

| Tap Size | Class of Fit | EDP Number | Coating Suffix | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|------------|------------------|-----|------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P-2P) | | | | | | | | |
| | | | Bright | TiN | TiCN | | | | | | |
| 0 - 80 UNF | 2B | 28642 | 00 | 05 | 08 | 1.625 | 0.311 | 0.350 | 0.141 | 0.11 | 0.188 |
| 2 - 56 UNC | | 28644 | 00 | 05 | 08 | 1.750 | 0.437 | 0.476 | | | |
| 3 - 48 UNC | | 28646 | 00 | 05 | 08 | 1.813 | 0.496 | 0.535 | | | |
| 4 - 40 UNC | | 28648 | 00 | 05 | 08 | 1.875 | 0.295 | 0.559 | | | |
| 6 - 32 UNC | | 28650 | 00 | 05 | 08 | 2.000 | 0.370 | 0.685 | | | |
| 8 - 32 UNC | | 28652 | 00 | 05 | 08 | 2.125 | 0.374 | 0.752 | | | |
| 10 - 24 UNC | | 28654 | 00 | 05 | 08 | 2.375 | 0.492 | 0.866 | 0.168 | 0.131 | 0.250 |
| 10 - 32 UNF | | 28656 | 00 | 05 | 08 | | | | | | |
| 1/4 - 20 UNC | | 28658 | 00 | 05 | 08 | | | | | | |
| 1/4 - 28 UNF | | 28660 | 00 | 05 | 08 | 2.500 | 0.594 | 0.996 | 0.255 | 0.191 | 0.313 |
| 5/16 - 18 UNC | | 28662 | 00 | 05 | 08 | 2.719 | 0.665 | 1.126 | 0.318 | 0.238 | 0.375 |
| 5/16 - 24 UNF | | 28664 | 00 | 05 | 08 | | | | | | |
| 3/8 - 16 UNC | | 28666 | 00 | 05 | 08 | 2.938 | 0.752 | 1.252 | 0.381 | 0.286 | 0.438 |
| 3/8 - 24 UNF | | 28668 | 00 | 05 | 08 | | | | | | |
| 7/16 - 14 UNC | | 28670 | 00 | 05 | 08 | | | | | | |
| 7/16 - 20 UNF | | 28672 | 00 | 05 | 08 | 3.156 | 0.858 | 1.713 | 0.323 | 0.242 | 0.406 |
| 1/2 - 13 UNC | | 28674 | 00 | 05 | 08 | 3.375 | 0.921 | 1.933 | 0.367 | 0.275 | 0.438 |
| 1/2 - 20 UNF | | 28676 | 00 | 05 | 08 | | | | | | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order.

See page 782 for tap drill recommendations.



List 286

NRT, Bottom (1.5P-2P)



Units: mm

| Tap Size | Class of Fit | EDP Number | Coating Suffix | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|------------|------------------|-----|------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P-2P) | | | | | | | | |
| | | | Bright | TiN | TiCN | | | | | | |
| M3 x 0.5 | 6H | 28681 | 00 | 05 | 08 | 50.00 | 6.00 | 16.00 | 3.581 | 2.79 | 4.80 |
| M4 x 0.7 | | 28683 | 00 | 05 | 08 | 55.00 | 8.40 | 19.10 | 4.267 | 3.33 | 6.40 |
| M5 x 0.8 | | 28685 | 00 | 05 | 08 | 62.00 | 9.60 | 22.20 | 4.928 | 3.86 | |
| M6 x 1.0 | | 28687 | 00 | 05 | 08 | 65.00 | 12.00 | 25.40 | 6.477 | 4.85 | 7.30 |
| M8 x 1.25 | | 28689 | 00 | 05 | 08 | 75.00 | 15.00 | 28.60 | 8.077 | 6.05 | 8.70 |
| M10 x 1.5 | | 28691 | 00 | 05 | 08 | 82.00 | 18.00 | 31.80 | 9.677 | 7.26 | 10.10 |
| M12 x 1.75 | | 28693 | 00 | 05 | 08 | 85.00 | 21.00 | 49.10 | 9.322 | 6.98 | 11.10 |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order.

See page 784 for tap drill recommendations.



Work Material

| List No. | P | | | | | | | | | | | | | | M | K | N | | S | | H | | | |
|----------|-------------------------------------|--------------------------|------|--------------|-----|------------|------------------|---------|-------------------------------------|-------------------------------------|----------|---------|----------------|----------|---|---|-----------------|-----------|-----------|--|---|--|--|--|
| | Carbon Steels | | | | | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | | | Hardened Steels | | | | | | | |
| | Low | Med. | High | Alloy Steels | 300 | | 400 | 17-4 PH | 6061 7075 | | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | | | 35-45 HRC | 45-50 HRC | 50-70 HRC | | | | | |
| | 1010 1018 | 1035 1045 | 1065 | 4140 4340 | | | | | | | | | | | | | | | | | | | | |
| 285 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | | | | | | | | |
| 286 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | | | | | | | | |
| SFM | 35-100 | 20-50 | | | | | | | 45-100 | 45-100 | | | | | | | | | | | | | | |

good best

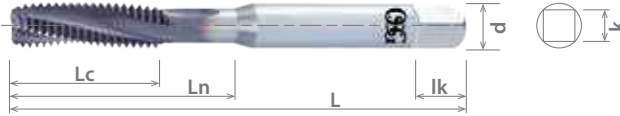




List 16605



A-CSF, Coolant - Through, DIN Overall Length, Modified Bottom (2.5P), Bottom (1.5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|---------------|-------------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P) | Mod Bottom (2.5P) | | | | | | |
| | | | Bright | Bright | | | | | | |
| 1/4 - 20 UNC | H5 | 3 | 1660500100 | 1660500000 | 3.140 | 0.598 | 1.181 | 0.255 | 0.191 | 0.313 |
| 1/4 - 28 UNF | H4 | | 1660500300 | 1660500200 | | | | | | |
| 5/16 - 18 UNC | H5 | | 1660500500 | 1660500400 | 3.540 | 0.665 | 1.377 | 0.318 | 0.238 | 0.375 |
| 3/8 - 16 UNC | | | 1660500700 | 1660500600 | 3.930 | 0.751 | | 0.381 | 0.286 | 0.438 |
| 7/16 - 14 UNC | | | 1660500900 | 1660500800 | 4.330 | 0.858 | - | 0.322 | 0.242 | 0.406 |
| 1/2 - 13 UNC | | | 1660501100 | 1660501000 | 4.330 | 0.921 | - | 0.367 | 0.275 | 0.438 |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order.
 Note: Reduce SFM 50% - 70% while using external coolant.



| Work Material | | | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|------------|------------------|-----|---------|-------------------------------------|-------------------------------------|-------------------------------------|--------------|----------------|-----------------|-----------|-----------|-----------|--|--|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 16605 | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | | |
| SFM | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | | |

good best

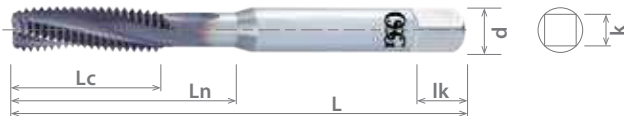




List 16600



A-CSF, Coolant - Through, DIN Overall Length, Modified Bottom (2.5P), Bottom (1.5P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|---------------|-------------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P) | Mod Bottom (2.5P) | | | | | | |
| | | | Bright | Bright | | | | | | |
| M5 x 0.8 | D4 | 3 | 1660000000 | 1660000100 | 70.00 | 10.00 | 25.00 | 4.928 | 3.86 | 6.4 |
| M6 x 1.0 | D5 | | 1660000200 | 1660000300 | 80.00 | 12.00 | 31.00 | 6.477 | 4.85 | 7.9 |
| M8 x 1.25 | | | 1660000400 | 1660000500 | 90.00 | 15.00 | 35.00 | 8.077 | 6.05 | 9.5 |
| M10 x 1.5 | D6 | | 1660000600 | 1660000700 | 100.00 | 18.00 | 39.00 | 9.677 | 7.26 | 11.1 |
| M10 x 1.25 | D5 | | 1660000800 | 1660000900 | | | | | | |
| M12 x 1.75 | D6 | | 1660001000 | 1660001100 | 110.00 | 21.00 | - | 9.322 | 6.98 | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order.

Note: Reduce SFM 50% - 70% while using external coolant.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|------------|------------------|-----|---------|-------------------------------------|-------------------------------------|-------------------------------------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 16600 | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |
| SFM | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |

good best

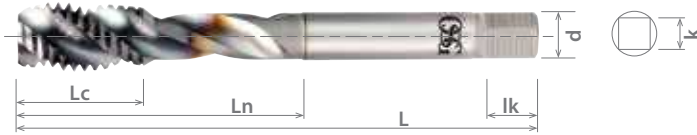




List 16505



A-SFT, DIN Overall Length, Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|----------------|--------------|---------------|---------------|-------------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P) | Mod Bottom (2.5P) | | | | | | |
| | | | V | V | | | | | | |
| 4 - 40 UNC | H2 | 2 | 1650508908 | 1650500108 | 2.205 | 0.196 | 0.704 | 0.141 | 0.110 | 0.188 |
| 4 - 48 UNF | | | 1650509008 | 1650500208 | | | | | | |
| 5 - 40 UNC | | | 1650509108 | 1650500308 | | | | | | |
| 5 - 44 UNF | | | 1650509208 | 1650500408 | | | | | | |
| 6 - 32 UNC | H3 | 3 | 1650509308 | 1650513108 | 2.480 | 0.200 | 0.708 | 0.141 | 0.110 | 0.188 |
| | H2 | 2 | 1650509408 | - | | | | | | |
| | H3 | | 1650513208 | 1650500508 | | | | | | |
| 6 - 40 UNF | H2 | 3 | 1650509508 | - | 2.756 | 0.248 | 0.783 | 0.141 | 0.110 | 0.188 |
| | | 2 | - | 1650500708 | | | | | | |
| 8 - 32 UNC | H2 | 3 | 1650509608 | - | 2.480 | 0.251 | 0.826 | 0.168 | 0.131 | 0.250 |
| | | | H3 | 1650509708 | | | | | | |
| | H2 | 2 | - | 1650500908 | | | | | | |
| | | | H3 | - | | | | | | |
| 8 - 36 UNF | H2 | 3 | 1650509808 | - | 2.756 | 0.326 | 1.059 | 0.194 | 0.152 | 0.250 |
| | | 2 | - | 1650501008 | | | | | | |
| 10 - 24 UNC | H3 | 3 | 1650509908 | - | 3.150 | 0.397 | 1.177 | 0.255 | 0.191 | 0.313 |
| | | 2 | - | 1650501108 | | | | | | |
| 10 - 32 UNF | H2 | 3 | 1650510008 | - | 3.543 | 0.444 | 1.377 | 0.318 | 0.238 | 0.375 |
| | | | 1650510108 | - | | | | | | |
| | | | - | 1650501308 | | | | | | |
| 12 - 24 UNC | H3 | 3 | - | 1650501208 | 3.150 | 0.330 | 1.177 | 0.220 | 0.165 | 0.281 |
| | | | - | 1650501408 | | | | | | |
| | | | 1650510308 | - | | | | | | |
| | | | - | 1650501508 | | | | | | |
| 12 - 28 UNF | H3 | 2 | - | 1650501508 | 3.543 | 0.444 | 1.377 | 0.318 | 0.238 | 0.375 |
| | | | 1650510408 | - | | | | | | |
| 12 - 32 UNEF | H3 | 2 | - | 1650505608 | 3.150 | 0.397 | 1.177 | 0.255 | 0.191 | 0.313 |
| | | | 1650510608 | - | | | | | | |
| 1/4 - 20 UNC | H5 | 2 | 1650510708 | - | 3.543 | 0.444 | 1.377 | 0.318 | 0.238 | 0.375 |
| | | | - | 1650501708 | | | | | | |
| | | | - | 1650501608 | | | | | | |
| 1/4 - 28 UNF | H3 | 3 | 1650510908 | - | 3.937 | 0.500 | 1.535 | 0.310 | 0.286 | 0.438 |
| | | | 1650510808 | - | | | | | | |
| | H3 | 2 | - | 1650501908 | | | | | | |
| | | | - | 1650501808 | | | | | | |
| 1/4 - 32 UNEF | H3 | 2 | 1650510508 | 1650505708 | 3.543 | 0.444 | 1.377 | 0.318 | 0.238 | 0.375 |
| | | | 1650511008 | - | | | | | | |
| 5/16 - 18 UNC | H5 | 3 | 1650511108 | 1650502108 | 3.150 | 0.397 | 1.177 | 0.255 | 0.191 | 0.313 |
| | | | 1650511208 | 1650502008 | | | | | | |
| 5/16 - 24 UNF | H3 | 2 | 1650511308 | 1650502308 | 3.543 | 0.444 | 1.377 | 0.318 | 0.238 | 0.375 |
| | | | 1650511408 | 1650502208 | | | | | | |
| 5/16 - 32 UNEF | H3 | 3 | 1650511508 | 1650505808 | 3.150 | 0.397 | 1.177 | 0.255 | 0.191 | 0.313 |
| | | | 1650511608 | 1650502508 | | | | | | |
| 3/8 - 16 UNC | H5 | 2 | 1650511708 | 1650502408 | 3.937 | 0.500 | 1.535 | 0.310 | 0.286 | 0.438 |
| | | | 1650511808 | 1650502708 | | | | | | |
| 3/8 - 24 UNF | H3 | 2 | 1650511908 | 1650502608 | 3.543 | 0.444 | 1.377 | 0.318 | 0.238 | 0.375 |
| | | | 1650512008 | - | | | | | | |
| 3/8 - 32 UNEF | H3 | 2 | - | 1650505908 | 3.150 | 0.397 | 1.177 | 0.255 | 0.191 | 0.313 |
| | | | 1650512108 | - | | | | | | |

Packed: 1 pc.
Available V coating only.





List 16505 (Continued)



A-SFT, DIN Overall Length, Modified Bottom (2.5P-3P), Bottom (1.5P-2P)

Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | |
|-----------------|--------------|---------------|---------------|-------------------|--------------------|---------------|-------------|------------|--------------|---------------|-------|
| | | | Bottom (1.5P) | Mod Bottom (2.5P) | | | | | | | |
| | | | V | V | | | | | | | |
| | | | | L | Lc | Ln | d | k | lk | | |
| 7/16 - 14 UNC | H3 | 3 | 1650512108 | 1650502908 | 3.937 | 0.570 | 1.712 | 0.323 | 0.242 | 0.406 | |
| | H5 | | 1650512208 | 1650502808 | | | | | | | |
| 7/16 - 20 UNF | H3 | | 1650512308 | 1650503108 | | | | | | | |
| | H5 | | 1650512408 | 1650503008 | | | | | | | |
| 7/16 - 28 UNEF | H4 | | 1650512508 | 1650506008 | 3.543 | | | | | | |
| 1/2 - 13 UNC | H3 | | 1650512608 | 1650503308 | 4.331 | 0.614 | 1.933 | 0.367 | 0.275 | 0.438 | |
| | H5 | | 1650512708 | 1650503208 | | | | | | | |
| 1/2 - 20 UNF | H3 | | 1650512808 | 1650503508 | 3.937 | 0.665 | 1.972 | 0.429 | 0.322 | 0.500 | |
| | H5 | | 1650512908 | 1650503408 | | | | | | | |
| 1/2 - 28 UNEF | H4 | | 1650513008 | 1650506108 | | | | | | | |
| 9/16 - 12 UNC | H3 | | - | 1650503708 | 4.331 | 0.728 | 2.125 | 0.480 | 0.360 | 0.563 | |
| | H5 | | - | 1650503608 | | | | | | | |
| 9/16 - 18 UNF | H3 | | - | 1650503908 | 3.937 | 0.909 | 2.165 | 0.542 | 0.406 | 0.625 | |
| | H5 | | - | 1650503808 | | | | | | | |
| 9/16 - 24 UNEF | H4 | | - | 1650506208 | | | | | | | |
| 5/8-11 UNC | H3 | | 4 | - | 1650504108 | 4.331 | 1.000 | 2.433 | 0.590 | 0.442 | 0.688 |
| | H5 | | | - | 1650504008 | | | | | | |
| 5/8 - 18 UNF | H3 | | | - | 1650504308 | 3.937 | 1.110 | 2.653 | 0.697 | 0.523 | 0.750 |
| | H5 | | | - | 1650504208 | | | | | | |
| 5/8 - 24 UNEF | H4 | | | - | 1650506308 | | | | | | |
| 11/16 - 24 UNEF | H4 | - | | 1650506408 | 4.331 | 0.909 | 2.165 | 0.542 | 0.406 | 0.625 | |
| 3/4 - 10 UNC | H3 | - | | 1650504508 | 4.921 | 1.251 | 3.011 | 0.800 | 0.600 | 0.813 | |
| | H5 | - | | 1650504408 | | | | | | | |
| 3/4 - 16 UNF | H3 | - | | 1650504708 | 4.331 | 0.944 | 3.818 | 0.896 | 0.672 | 0.875 | |
| | H5 | - | | 1650504608 | | | | | | | |
| 3/4 - 20 UNEF | H5 | - | | 1650506508 | | 0.826 | 3.070 | | | | |
| 13/16 - 20 UNEF | H4 | - | | 1650506608 | 4.921 | 0.944 | 3.818 | 0.896 | 0.672 | 0.875 | |
| 7/8 - 9 UNC | H4 | - | | 1650504908 | 5.512 | 3.937 | 1.021 | 0.766 | 0.766 | 1.000 | |
| | H6 | - | | 1650504808 | | | | | | | |
| 7/8 - 14 UNF | H4 | - | | 1650505108 | 4.921 | 7.087 | 70-120 | 70-120 | 30-55 | | |
| | H6 | - | | 1650505008 | | | | | | | |
| 7/8 - 20 UNEF | H5 | - | | 1650506708 | | 0.826 | 3.937 | 1.021 | 0.766 | 1.000 | |
| 15/16 - 20 UNEF | H5 | - | | 1650506808 | 5.512 | 0.826 | 3.937 | 1.021 | 0.766 | 1.000 | |
| 1 - 8 UNC | H4 | - | | 1650505308 | 6.299 | 7.087 | 70-120 | 70-120 | 30-55 | | |
| | H6 | - | | 1650505208 | | | | | | | |
| | H8 | - | 1650507008 | | | | | | | | |
| 1 - 12 UNF | H6 | - | 1650505408 | 5.512 | 7.087 | 70-120 | 70-120 | 30-55 | | | |
| | H4 | - | 1650505508 | | | | | | | | |
| 1 - 14 UNS | H6 | - | 1650513308 | 6.299 | 7.087 | 70-120 | 70-120 | 30-55 | | | |
| 1 - 20 UNEF | H5 | - | 1650506908 | 5.512 | 7.087 | 70-120 | 70-120 | 30-55 | | | |
| 1,1/8 - 7 UNC | H9 | - | 1650507108 | 7.087 | 0.944 | 3.818 | 0.896 | 0.672 | 0.875 | | |
| 1,1/8 - 8 UN | | - | 1650507208 | | | | | | | | |
| 1,1/8 - 12 UNF | H8 | - | 1650507308 | 5.906 | 0.944 | 3.937 | 1.021 | 0.766 | 1.000 | | |
| 1,1/4 - 7 UNC | H10 | - | 1650507408 | 7.087 | 0.826 | 3.937 | 1.021 | 0.766 | 1.000 | | |
| 1,1/4 - 8 UN | H9 | - | 1650507508 | 7.087 | 0.826 | 3.937 | 1.021 | 0.766 | 1.000 | | |

Packed: 1 pc.
Available V coating only.

continued on next page

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------|-------------------------------------|-----------------|----------------|---------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 16505 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | |
| SFM | 80-120 | 80-120 | 80-120 | 35-50 | 20-40 | 15-35 | 15-35 | 15-25 | 50-80 | 70-120 | 70-120 | | | 30-55 | | | |

good best

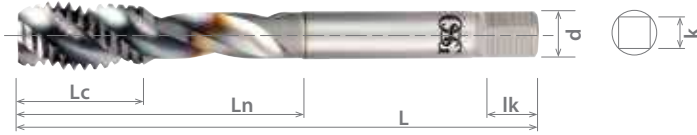




List 16505 (Continued)



A-SFT, DIN Overall Length, Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|----------------|--------------|---------------|---------------|-------------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P) | Mod Bottom (2.5P) | | | | | | |
| | | | V | V | | | | | | |
| 1,1/4 - 12 UNF | H8 | 4 | - | 1650507608 | 5.906 | 0.826 | 3.070 | 1.021 | 0.766 | 1.000 |
| 1,3/8 - 6 UNC | H10 | | - | 1650507708 | 7.874 | 1.102 | 4.527 | 1.108 | 0.831 | 1.063 |
| 1,3/8 - 8 UN | H9 | | - | 1650507808 | | 0.826 | | | | |
| 1,3/8 - 12 UNF | H8 | | - | 1650507908 | 6.693 | 1.102 | 3.582 | 1.233 | 0.925 | 1.125 |
| 1,1/2 - 6 UNC | H10 | | - | 1650508008 | 7.874 | | 4.527 | | | |
| 1,1/2 - 8 UN | H9 | | - | 1650508108 | 6.693 | 0.826 | 3.582 | 1.305 | 0.979 | 1.250 |
| 1,1/2 - 12 UNF | H8 | | - | 1650508208 | | | 7.874 | | | |
| 1,5/8 - 8 UN | H10 | | - | 1650508308 | 7.874 | 1.299 | 4.724 | 1.430 | 1.072 | 1.250 |
| 1,3/4 - 5 UNC | H11 | | - | 1650508408 | 8.661 | 0.826 | 3.976 | 1.519 | 1.139 | |
| 1,3/4 - 8 UN | H10 | | - | 1650508508 | 7.874 | | 4.921 | | | |
| 1,7/8 - 8 UN | | | - | 1650508608 | 8.858 | 1.456 | 5.511 | 1.644 | 1.233 | 1.375 |
| 2 - 4,1/2 UNC | H12 | | - | 1650508708 | 9.843 | 0.826 | 4.803 | | | |
| 2 - 8 UN | H10 | | - | 1650508808 | 8.858 | | | | | |

Packed: 1 pc.
Available V coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------|-------------------------------------|-----------------|----------------|---------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 16505 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | |
| SFM | 80-120 | 80-120 | 80-120 | 35-50 | 20-40 | 15-35 | 15-35 | 15-25 | 50-80 | 70-120 | 70-120 | | 30-55 | | | | |

good best





List 16500



A-SFT, DIN Overall Length, Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | |
|-------------|--------------|---------------|---------------|-------------------|--------------------|---------------|-------------|------------|--------------|---------------|-------|
| | | | Bottom (1.5P) | Mod Bottom (2.5P) | | | | | | | |
| | | | V | V | | | | | | | |
| M1.4 x 0.3 | D2 | 2 | - | 1650003008 | 40.00 | 6.00 | 11.50 | 3.581 | 2.79 | 4.80 | |
| M1.6 x 0.35 | D3 | | - | 1650003108 | | 7.00 | 13.60 | | | | |
| M1.7 x 0.35 | | | - | 1650003208 | | 8.00 | 13.40 | | | | |
| M2 x 0.4 | D2 | | - | 1650003408 | 45.00 | 3.30 | 10.00 | | | | |
| M2 x 0.25 | | | - | 1650003308 | | | 11.00 | | | | |
| M2.2 x 0.45 | | | D3 | - | | | 1650003608 | | | | |
| M2.2 x 0.25 | D2 | | - | 1650003508 | 50.00 | 3.70 | 13.00 | | | | |
| M2.3 x 0.4 | D3 | | - | 1650003708 | | | 3.20 | | | | 11.90 |
| M2.5 x 0.45 | | | - | 1650003908 | | | | | | | |
| M2.5 x 0.35 | | | - | 1650003808 | | | | | | | |
| M2.6 x 0.45 | | - | 1650004008 | | | | | | | | |
| M3 x 0.5 | D2 | 1650009808 | 1650000108 | 56.00 | 4.00 | 18.00 | | | | | |
| M3 x 0.35 | | 1650009708 | - | | | 1650004108 | | | | | |
| M3.5 x 0.6 | D3 | 1650010008 | 1650004308 | 63.00 | 5.60 | 20.90 | | | | | |
| M3.5 x 0.35 | | 1650009908 | 1650004208 | | | 4.80 | 20.00 | | | | |
| M4 x 0.7 | D4 | 1650010208 | 1650000308 | 70.00 | 6.10 | 24.90 | | | | | |
| M4 x 0.5 | D3 | 1650010108 | 1650000208 | | | 4.928 | 3.86 | | | | |
| M4.5 x 0.75 | D4 | 1650010408 | 1650004508 | | | 6.40 | 25.10 | | | | |
| M4.5 x 0.5 | D3 | 1650010308 | 1650004408 | 80.00 | 7.30 | 30.10 | | | | | |
| M5 x 0.8 | D4 | 1650010608 | 1650000508 | | | 5.588 | 4.19 | | | | |
| M5 x 0.5 | D3 | 1650010508 | 1650000408 | | | 6.477 | 4.85 | | | | |
| M5.5 x 0.5 | D5 | 1650010708 | 1650004608 | 90.00 | 8.00 | 29.90 | | | | | |
| M6 x 1.0 | | D5 | 1650011008 | | | 1650000808 | 30.00 | 7.10 | | | |
| M6 x 0.75 | D4 | 1650010908 | 1650000708 | 80.00 | 8.00 | 33.00 | | | | | |
| M6 x 0.5 | D3 | 1650010808 | 1650000608 | | | 8.077 | 6.05 | | | | |
| M7 x 1.0 | D5 | 1650011208 | 1650004808 | | | 9.50 | 7.90 | | | | |
| M7 x 0.75 | D4 | 1650011108 | 1650004708 | 90.00 | 10.00 | 35.00 | | | | | |
| M8 x 1.25 | D5 | 1650011508 | 1650001008 | | | 9.677 | 7.26 | | | | |
| M8 x 1.0 | | 1650011408 | 1650000908 | | | 11.10 | 11.10 | | | | |
| M8 x 0.75 | D4 | 1650011308 | 1650004908 | 100.00 | 12.00 | 39.00 | | | | | |
| M9 x 1.25 | D5 | 1650011808 | 1650005208 | | | 9.00 | 35.00 | | | | |
| M9 x 1.0 | | 1650011708 | 1650005108 | | | 8.00 | 35.00 | | | | |
| M9 x 0.75 | D4 | 1650011608 | 1650005008 | 90.00 | 10.00 | 35.00 | | | | | |
| M10 x 1.5 | D6 | 1650012208 | 1650001308 | | | 9.677 | 7.26 | | | | |
| M10 x 1.25 | | 1650012108 | 1650001208 | | | 11.10 | 11.10 | | | | |
| M10 x 1.0 | D5 | 1650012008 | 1650001108 | 100.00 | 12.00 | 39.00 | | | | | |
| M10 X 0.75 | | D4 | 1650011908 | | | 1650005308 | 9.00 | 35.00 | | | |

Packed: 1 pc.
Available V coating only.

continued on next page

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 16500 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| SFM | 80-120 | 80-120 | 80-120 | 35-50 | 20-40 | 15-35 | 15-35 | 15-25 | 50-80 | 70-120 | 70-120 | | | 30-55 | | | |

good best

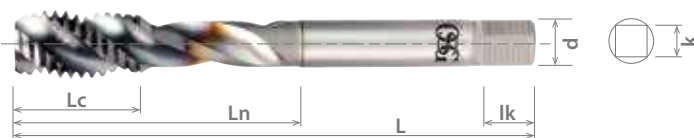




List 16500 (Continued)



A-SFT, DIN Overall Length, Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|---------------|-------------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P) | Mod Bottom (2.5P) | | | | | | |
| | | | V | V | | | | | | |
| M11 x 1.5 | D6 | 3 | 1650012608 | 1650005608 | 100.00 | 12.00 | 43.50 | 8.204 | 6.15 | 10.30 |
| M11 x 1.25 | D5 | | 1650012508 | - | | | | | | |
| M11 X 1.0 | D5 | | 1650012408 | 1650005508 | 90.00 | 8.00 | 49.10 | 9.322 | 6.98 | 11.10 |
| M11 x 0.75 | D4 | | 1650012308 | 1650005408 | | | | | | |
| M12 x 1.75 | D6 | | 1650013008 | 1650001708 | 110.00 | 14.00 | 54.00 | 12.192 | 9.14 | 14.30 |
| M12 x 1.5 | | | 1650012908 | 1650001608 | | | | | | |
| M12 x 1.25 | D6 | | 1650012808 | 1650001508 | 100.00 | 12.00 | 54.00 | 12.192 | 9.14 | 14.30 |
| M12 x 1.0 | D5 | | 1650012708 | 1650001408 | | | | | | |
| M14 x 2.0 | D7 | | - | 1650001908 | 110.00 | 16.00 | 54.00 | 12.192 | 9.14 | 14.30 |
| M14 x 1.5 | D7 | | - | 1650001808 | | | | | | |
| M14 x 1.25 | D6 | | - | 1650005808 | 100.00 | 12.00 | 54.00 | 12.192 | 9.14 | 14.30 |
| M14 x 1.0 | D5 | | - | 1650005708 | | | | | | |
| M15 x 1.25 | D6 | | - | 1650013208 | 110.00 | 16.00 | 54.00 | 12.192 | 9.14 | 14.30 |
| M15 X 1.5 | D6 | | - | 1650006008 | | | | | | |
| M15 x 2 | D7 | | - | 1650013108 | 110.00 | 16.00 | 54.00 | 12.192 | 9.14 | 14.30 |
| M15 x 1.0 | D5 | | - | 1650005908 | 100.00 | 12.00 | | | | |
| M16 x 2.0 | D7 | | - | 1650002108 | 110.00 | 16.00 | 54.00 | 12.192 | 9.14 | 14.30 |
| M16 x 1.25 | D6 | | - | 1650013308 | 100.00 | 12.00 | | | | |
| M16 x 1.5 | D6 | | - | 1650002008 | | | 100.00 | 16.00 | 54.00 | 12.192 |
| M16 x 1.0 | D5 | | - | 1650006108 | 100.00 | 12.00 | | | | |
| M17 x 1.5 | D6 | - | 1650006208 | 100.00 | | | 16.00 | 54.00 | 12.192 | 9.14 |
| M17 x 1.25 | D6 | - | 1650013408 | | 100.00 | 12.00 | | | | |
| M17 x 1.0 | D5 | - | 1650006308 | 100.00 | | | 16.00 | 54.00 | 12.192 | 9.14 |
| M18 x 2.5 | D7 | - | 1650002308 | | 125.00 | 25.00 | | | | |
| M18 x 2.0 | D7 | - | 1650006508 | 125.00 | | | 25.00 | 55.00 | 13.767 | 9.31 |
| M18 x 1.5 | D6 | - | 1650002208 | | 110.00 | 16.00 | | | | |
| M18 x 1.25 | D6 | - | 1650013508 | 110.00 | | | 16.00 | 55.00 | 13.767 | 10.31 |
| M18 x 1.0 | D5 | - | 1650006408 | | 100.00 | 16.00 | | | | |
| M20 x 2.5 | D7 | - | 1650002508 | 140.00 | 25.00 | 61.80 | 16.561 | 12.42 | 17.50 | |
| M20 x 2.0 | D7 | - | 1650006708 | | | | | | | 140.00 |
| M20 x 1.5 | D6 | - | 1650002408 | 125.00 | 16.00 | 61.80 | 16.561 | 12.42 | 17.50 | |
| M20 x 1.0 | D5 | - | 1650006608 | | | | | | | 125.00 |
| M22 x 2.5 | D7 | - | 1650002708 | 140.00 | 25.00 | 67.40 | 17.704 | 13.28 | 19.10 | |
| M22 x 2.0 | D7 | - | 1650006908 | | | | | | | 140.00 |
| M22 x 1.5 | D6 | - | 1650002608 | 125.00 | 16.00 | 67.40 | 17.704 | 13.28 | 19.10 | |
| M22 x 1.0 | D5 | - | 1650006808 | | | | | | | 125.00 |
| M24 x 3.0 | D8 | - | 1650002908 | 160.00 | 30.00 | 68.40 | 19.304 | 14.48 | 22.20 | |
| M24 x 2.0 | D7 | - | 1650007108 | | | | | | | 160.00 |
| M24 x 1.5 | D6 | - | 1650002808 | 140.00 | 16.00 | 68.40 | 19.304 | 14.48 | 22.20 | |
| M24 x 1.0 | D5 | - | 1650007008 | | | | | | | 140.00 |
| M27 x 3.0 | D10 | - | 1650007408 | 160.00 | 36.00 | 80.00 | 22.758 | 17.07 | 22.20 | |
| M27 x 2.0 | D8 | - | 1650007308 | | | | | | | 160.00 |
| M27 x 1.5 | D8 | - | 1650007208 | 140.00 | 24.00 | 60.00 | 25.933 | 19.46 | 25.40 | |
| M30 x 3.5 | D11 | - | 1650007708 | | | | | | | 180.00 |
| M30 x 2.0 | D9 | - | 1650007608 | 150.00 | 36.00 | 70.00 | 25.933 | 19.46 | 25.40 | |
| M30 x 1.5 | D8 | - | 1650007508 | | | | | | | 150.00 |
| M33 x 3.5 | D11 | - | 1650008008 | 180.00 | 42.00 | 95.00 | 28.143 | 21.11 | 27.00 | |
| M33 x 2.0 | D9 | - | 1650007908 | | | | | | | 160.00 |
| M33 x 1.5 | D8 | - | 1650007808 | 160.00 | 36.00 | 75.00 | 28.143 | 21.11 | 27.00 | |

Packed: 1 pc.
Available V coating only.





List 16500 (Continued)



A-SFT, DIN Overall Length, Modified Bottom (2.5P-3P), Bottom (1.5P-2P)

Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|-----------|--------------|---------------|---------------|-------------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P) | Mod Bottom (2.5P) | | | | | | |
| | | | V | V | | | | | | |
| M36 x 4.0 | D11 | 4 | - | 1650008408 | 200.00 | 48.00 | 115.00 | 31.318 | 23.50 | 28.60 |
| M36 X 3.0 | D10 | | - | 1650008308 | | | | | | |
| M36 x 2.0 | D9 | | - | 1650008208 | 170.00 | 36.00 | 85.00 | 31.318 | 23.50 | 28.60 |
| M36 x 1.5 | D8 | | - | 1650008108 | | | | | | |
| M39 x 4.0 | D11 | | - | 1650008508 | 200.00 | 48.00 | 110.00 | 33.147 | 24.87 | 31.80 |
| M42 x 3.0 | D10 | | - | 1650008808 | | | | | | |
| M42 x 2.0 | D9 | | - | 1650008708 | 170.00 | 54.00 | 100.00 | 36.322 | 27.23 | 31.80 |
| M42 x 4.5 | D12 | | - | 1650008908 | | | | | | |
| M42 x 1.5 | D8 | | - | 1650008608 | 170.00 | 48.00 | 70.00 | 36.322 | 27.23 | 31.80 |
| M45 x 4.5 | D12 | | - | 1650009108 | | | | | | |
| M45 x 3.0 | D10 | | - | 1650009008 | 200.00 | 48.00 | 100.00 | 38.583 | 28.93 | 34.90 |
| M48 x 5.0 | D13 | | - | 1650009508 | | | | | | |
| M48 x 3.0 | D11 | | - | 1650009408 | 225.00 | 60.00 | 140.00 | 41.758 | 31.32 | 34.90 |
| M48 x 2.0 | D9 | | - | 1650009308 | | | | | | |
| M48 x 1.5 | D8 | | - | 1650009208 | 190.00 | 48.00 | 80.00 | 41.758 | 31.32 | 34.90 |
| M56 x 5.5 | D14 | | - | 1650009608 | | | | | | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------|-------------------------------------|-----------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 16500 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | |
| SFM | 80-120 | 80-120 | 80-120 | 35-50 | 20-40 | 15-35 | 15-35 | 15-25 | 50-80 | 70-120 | 70-120 | | 30-55 | | | | |

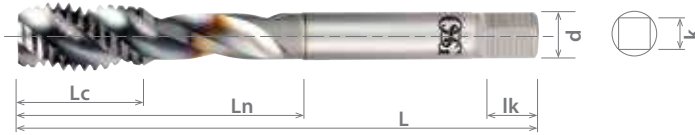
good best





List 16545

A-OIL-SFT, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | |
|----------------|--------------|---------------|----------------------|--------------------|---------------|-------------|------------|--------------|---------------|-------|-------|
| | | | Mod Bottom (2.5P-3P) | | | | | | | | |
| | | | V | | | | | | | | |
| 1/4 - 20 UNC | H5 | 3 | 1654500108 | 3.150 | 0.402 | 1.181 | 0.255 | 0.191 | 0.313 | | |
| 1/4 - 28 UNF | H4 | | 1654500208 | | 0.402 | 1.181 | | | | | |
| 5/16 - 18 UNC | H5 | | 1654500308 | 3.543 | 0.445 | 1.378 | 0.318 | 0.238 | 0.375 | | |
| 5/16 - 24 UNF | H4 | | 1654500408 | | 0.445 | 1.378 | | | | | |
| 3/8 - 16 UNC | H5 | | 1654500508 | 3.937 | 0.500 | 1.535 | 0.381 | 0.286 | 0.438 | | |
| 3/8 - 24 UNF | H4 | | 1654500608 | 3.543 | 0.500 | 1.378 | | | | | |
| 7/16 - 14 UNC | H5 | | 3 | 1654500708 | 3.937 | 0.571 | 1.713 | 0.323 | 0.242 | 0.406 | |
| 7/16 - 20 UNF | | | | 1654500808 | | 0.571 | 1.713 | | | | |
| 1/2 - 13 UNC | | | 1654500908 | 4.331 | 0.614 | 1.933 | 0.367 | 0.275 | 0.438 | | |
| 1/2 - 20 UNF | | | 1654501008 | 3.937 | 0.614 | 1.933 | | | | | |
| 9/16 - 12 UNC | | | 1654501108 | 4.331 | 0.665 | 1.972 | 0.429 | 0.322 | 0.500 | | |
| 9/16 - 18 UNF | | | 1654501208 | 3.937 | 0.665 | 1.972 | | | | | |
| 5/8 - 11 UNC | | | 1654501308 | 4.331 | 0.728 | 2.126 | 0.480 | 0.360 | 0.563 | | |
| 5/8 - 18 UNF | | | 1654501408 | 3.937 | 0.728 | 2.126 | | | | | |
| 3/4 - 10 UNC | | | H6 | 4 | 1654501508 | 4.921 | 1.000 | 2.433 | 0.590 | 0.442 | 0.688 |
| 3/4 - 16 UNF | | | | | 1654501608 | | 4.331 | 1.000 | | | |
| 7/8 - 9 UNC | 1654501708 | | | | 5.512 | 1.110 | 2.654 | 0.697 | 0.523 | 0.750 | |
| 7/8 - 14 UNF | 1654501808 | | | | 4.921 | 1.110 | 2.654 | | | | |
| 1 - 8 UNC | H8 | | | | 1654501908 | 6.299 | 1.252 | 3.012 | 0.800 | 0.600 | 0.813 |
| 1 - 12 UNF | | | | | 1654502008 | | 1.252 | 3.012 | | | |
| 1,1/8 - 7 UNC | H9 | 1654502108 | | | 7.087 | 1.252 | 3.012 | 0.896 | 0.672 | 0.875 | |
| 1,1/8 - 8 UN | | 1654502208 | | | | 1.732 | 3.819 | | | | |
| 1,1/8 - 12 UNF | H8 | 1654502308 | | | 5.906 | 1.496 | 3.819 | 1.021 | 0.766 | 1.000 | |
| 1,1/4 - 7 UNC | H10 | 1654502408 | | | | 1.496 | 3.071 | | | | |
| 1,1/4 - 8 UN | H9 | 1654502508 | 7.087 | 1.732 | 3.937 | 1.108 | 0.831 | 1.063 | | | |
| 1,1/4 - 12 UNF | | H8 | | 1654502608 | 1.496 | | | | 3.937 | | |
| 1,3/8 - 6 UNC | H10 | 1654502708 | 5.906 | 1.496 | 3.071 | 1.108 | 0.831 | 1.063 | | | |
| 1,3/8 - 8 UN | H9 | 1654502808 | | 2.008 | 4.528 | | | | | | |
| 1,3/8 - 12 UNF | H8 | 1654502908 | 7.874 | 1.496 | 4.528 | 1.233 | 0.925 | 1.125 | | | |
| 1,1/2 - 6 UNC | H10 | 1654503008 | 6.693 | 1.496 | 3.583 | | | | | | |
| 1,1/2 - 8 UN | H9 | 1654503108 | 7.874 | 2.008 | 4.528 | 1.305 | 0.979 | 1.250 | | | |
| 1,1/2 - 12 UNF | | H8 | | 1654503208 | 1.496 | | | | 4.528 | | |
| 1,5/8 - 8 UN | H10 | 1654503308 | 6.693 | 1.496 | 3.583 | 1.430 | 1.072 | 1.250 | | | |
| 1,3/4 - 5 UNC | H11 | 1654503408 | 7.874 | 1.496 | 4.331 | | | | | | |
| 1,3/4 - 8 UN | H10 | 1654503508 | 8.661 | 2.402 | 4.724 | 1.519 | 1.139 | 1.375 | | | |
| 1,7/8 - 8 UN | | 1654503608 | 7.874 | 2.008 | 3.976 | | | | | | |
| 2 - 4,1/2 UNC | | 1654503708 | 8.858 | 2.008 | 4.921 | | | | | | |
| 2 - 8 UN | H12 | 1654503808 | 9.843 | 2.677 | 5.512 | 1.644 | 1.233 | 1.375 | | | |
| 2 - 8 UN | H10 | 1654503908 | 8.858 | 2.008 | 4.803 | | | | | | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|---------|--------------|-------------------------------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 16545 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | | | | |
| SFM | 100-200 | 100-200 | 100-200 | 50-100 | 40-80 | 25-70 | 25-70 | 25-50 | 60-150 | 90-220 | 90-220 | | | 50-100 | | | |

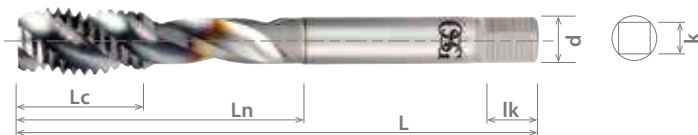
good best





List 16540

A-OIL-SFT, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|----------------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Mod Bottom (2.5P-3P) | L | Lc | Ln | d | k | lk |
| | | | V | L | Lc | Ln | d | k | lk |
| M6 x 1.0 | D5 | 3 | 1654000208 | 80.00 | 8.00 | 30.00 | 6.48 | 4.85 | 7.90 |
| M6 x 0.75 | D4 | | 1654000108 | | | | | | |
| M7 x 1.0 | D5 | | 1654000308 | 90.00 | 10.00 | 35.00 | 8.08 | 6.05 | 9.50 |
| M8 x 1.25 | | | 1654000608 | | | | | | |
| M8 x 1.0 | D4 | | 1654000508 | 80.00 | 8.00 | 33.00 | 9.68 | 7.26 | 11.10 |
| M8 X 0.75 | | | 1654000408 | | | | | | |
| M9 x 1.25 | D5 | | 1654000708 | 90.00 | 10.00 | 35.00 | 8.20 | 6.15 | 10.30 |
| M10 x 1.5 | D6 | | 1654001008 | 100.00 | 12.00 | 39.00 | | | |
| M10 x 1.25 | D5 | | 1654000908 | 90.00 | 10.00 | 35.00 | 9.68 | 7.26 | 11.10 |
| M10 x 1.0 | | | 1654000808 | | | | | | |
| M11 x 1.5 | D6 | | 1654001108 | 100.00 | 12.00 | 43.50 | 8.20 | 6.15 | 10.30 |
| M12 x 1.75 | | | 1654001508 | 110.00 | 14.00 | 49.10 | | | |
| M12 x 1.5 | D5 | | 1654001408 | 100.00 | | | 12.00 | 49.10 | 9.32 |
| M12 x 1.25 | | | 1654001308 | | | | | | |
| M12 x 1.0 | D5 | | 1654001208 | 110.00 | 16.00 | 50.10 | 10.90 | 8.18 | 12.70 |
| M14 x 2.0 | D7 | | 1654001708 | | | | | | |
| M14 x 1.5 | D6 | | 1654001608 | 100.00 | 16.00 | 50.10 | 10.90 | 8.18 | 12.70 |
| M15 x 1.5 | | | 1654001808 | | | | | | |
| M16 x 2.0 | D7 | | 1654002008 | 110.00 | 16.00 | 54.00 | 12.19 | 9.14 | 14.30 |
| M16 x 1.5 | D6 | | 1654001908 | 100.00 | 16.00 | 54.00 | 12.19 | 9.14 | 14.30 |
| M17 x 1.5 | | 1654002108 | | | | | | | |
| M18 x 2.5 | D7 | 1654002308 | 125.00 | 25.00 | 55.00 | 13.77 | 10.31 | 15.90 | |
| M18 x 1.5 | D6 | 1654002208 | 110.00 | 16.00 | 55.00 | 13.77 | 10.31 | 15.90 | |
| M20 x 2.5 | D7 | 1654002508 | 140.00 | 25.00 | 61.80 | 16.56 | 12.42 | 17.50 | |
| M20 x 1.5 | D6 | 1654002408 | 125.00 | 16.00 | 61.80 | 16.56 | 12.42 | 17.50 | |
| M22 x 2.5 | D7 | 1654002808 | 140.00 | 25.00 | 67.40 | 17.70 | 13.28 | 19.10 | |
| M22 x 2.0 | | 1654002708 | | | | | | | |
| M22 x 1.5 | D6 | 1654002608 | 125.00 | 16.00 | 67.40 | 17.70 | 13.28 | 19.10 | |
| M24 x 3.0 | D8 | 1654003108 | 160.00 | 30.00 | 68.40 | 19.30 | 14.48 | 22.20 | |
| M24 x 2.0 | D7 | 1654003008 | 140.00 | 16.00 | 68.40 | 19.30 | 14.48 | 22.20 | |
| M24 x 1.5 | D6 | 1654002908 | 160.00 | 36.00 | 80.00 | 22.76 | 17.07 | 22.20 | |
| M27 x 3.0 | D10 | 1654003208 | 160.00 | 36.00 | 80.00 | 22.76 | 17.07 | 22.20 | |
| M30 x 3.5 | D11 | 1654003308 | 180.00 | 42.00 | 100.00 | 25.93 | 19.46 | 25.40 | |
| M33 x 3.5 | | 1654003408 | | | | | | | 95.00 |
| M36 x 4.0 | D12 | 1654003508 | 200.00 | 48.00 | 115.00 | 31.32 | 23.50 | 28.60 | |
| M39 x 4.0 | | 1654003608 | | | | | | | 110.00 |
| M42 x 4.5 | D12 | 1654003708 | 220.00 | 54.00 | 100.00 | 36.32 | 27.23 | 31.80 | |
| M45 x 4.5 | | 1654003808 | | | | | | | 120.00 |
| M48 x 5.0 | D13 | 1654003908 | 250.00 | 60.00 | 140.00 | 41.76 | 31.32 | 34.90 | |
| M56 x 5.5 | D14 | 1654004008 | | | | | | | 66.00 |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|---------|--------------|-------------------------------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 16540 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | | | | |
| SFM | 100-200 | 100-200 | 100-200 | 50-100 | 40-80 | 25-70 | 25-70 | 25-50 | 60-150 | 90-220 | 90-220 | | | 50-100 | | | |

good best





List 16525



A-LT-SFT, Long Shank, Modified Bottom (2.5P-3P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Long Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | | | | |
|---------------|--------------|---------------|----------------------|---------------------|---------------|-------------|------------|--------------|---------------|-------|-------|-------|-------|-------|
| | | | Mod Bottom (2.5P-3P) | | | | | | | | | | | |
| | | | V | | | | | | | | | | | |
| 4 - 40 UNC | H2 | 2 | 1652505608 | 3.150 | 0.197 | 0.705 | 0.141 | 0.110 | 0.188 | | | | | |
| 4 - 48 UNF | | | 1652505708 | | | | | | | | | | | |
| 5 - 40 UNC | | | 1652500308 | | | | | | | | | | | |
| 5 - 44 UNF | | | 1652505908 | | | | | | | | | | | |
| 6 - 32 UNC | H3 | | 1652500608 | 4.724 | 0.248 | 0.783 | 0.168 | 0.131 | 0.250 | | | | | |
| 6 - 40 UNF | H2 | | 1652500708 | 3.937 | | | | | | | | | | |
| 8 - 32 UNC | H3 | | 1652500908 | 4.724 | 0.252 | 0.827 | 0.194 | 0.152 | 0.281 | | | | | |
| 8 - 36 UNF | H2 | | 1652501008 | 3.937 | | | | | | | | | | |
| 10 - 24 UNC | H3 | | 1652501108 | 4.921 | 0.327 | 0.976 | 0.194 | 0.152 | 0.281 | | | | | |
| 10 - 32 UNF | | | 1652501308 | 5.906 | | | | | | | | | | |
| 12 - 24 UNC | | | 1652501408 | 4.921 | | | | | | 0.331 | 1.177 | 0.220 | 0.165 | 0.281 |
| 12 - 28 UNF | | | 1652501508 | | | | | | | | | | | |
| 1/4 - 20 UNC | H5 | 1652501708 | 5.906 | 0.398 | 1.378 | 0.318 | 0.238 | 0.375 | | | | | | |
| 1/4 - 28 UNF | H4 | 1652501908 | | | | | | | | | | | | |
| 5/16 - 18 UNC | H5 | 1652502108 | | | | | | | | | | | | |
| 5/16 - 24 UNF | H4 | 1652502308 | | | | | | | | | | | | |
| 3/8 - 16 UNC | H5 | 1652502508 | 5.906 | 0.500 | 1.535 | 0.381 | 0.286 | 0.438 | | | | | | |
| 3/8 - 24 UNF | H4 | 1652502708 | | | 1.378 | | | | | | | | | |
| 7/16 - 14 UNC | H5 | 1652502908 | 7.087 | 0.571 | 2.362 | 0.323 | 0.242 | 0.406 | | | | | | |
| 7/16 - 20 UNF | | 1652503108 | | | | | | | | | | | | |
| 1/2 - 13 UNC | | 1652503308 | | | | | | | | | | | | |
| 1/2 - 20 UNF | | 1652503508 | | | | | | | | | | | | |
| 9/16 - 12 UNC | H5 | 1652503708 | 7.087 | 0.614 | 2.835 | 0.367 | 0.275 | 0.438 | | | | | | |
| 9/16 - 18 UNF | | 1652503908 | | | | | | | | | | | | |
| 5/8 - 11 UNC | | 1652504108 | | | | | | | | | | | | |
| 5/8 - 18 UNF | | 1652504308 | | | | | | | | | | | | |
| 3/4 - 10 UNC | H6 | 1652504508 | 7.874 | 1.000 | 3.150 | 0.590 | 0.442 | 0.688 | | | | | | |
| 3/4 - 16 UNF | | 1652504708 | | | | | | | | | | | | |
| 7/8 - 9 UNC | | 1652504908 | | | | | | | | | | | | |
| 7/8 - 14 UNF | | 1652505108 | | | | | | | | | | | | |
| 1 - 8 UNC | H6 | 1652505308 | 7.874 | 1.110 | 3.465 | 0.697 | 0.523 | 0.750 | | | | | | |
| 1 - 12 UNF | | 1652505508 | | | | | | | | | | | | |
| 1 - 12 UNF | H6 | 1652505508 | 7.874 | 1.252 | 3.465 | 0.800 | 0.600 | 0.813 | | | | | | |

Packed: 1 pc.
Available V coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|---------|--------------|-------------------------------------|-----------------|-----------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 16525 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | | | | |
| SFM | 80-120 | 80-120 | 80-120 | 35-50 | 20-40 | 15-35 | 15-35 | 15-25 | 50-80 | 70-120 | 70-120 | | | 30-55 | | | |

good best

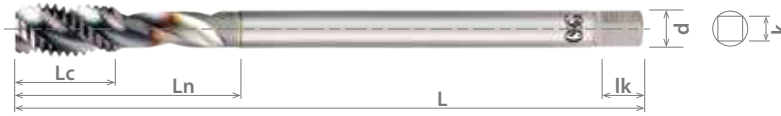




List 16520



A-LT-SFT, Long Shank, Modified Bottom (2.5P-3P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Long Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | |
|-------------|--------------|---------------|----------------------|------------|---------------------|---------------|-------------|------------|--------------|---------------|-------|-------|
| | | | Mod Bottom (2.5P-3P) | | | | | | | | | |
| | | | V | L | | | | | | | | |
| M3 x 0.5 | D3 | 3 | 1652001308 | L | 100.00 | 4.10 | 18.10 | 3.58 | 2.79 | 4.80 | | |
| M3 x 0.35 | | | 1652001208 | | | | | | | | | |
| M3.5 x 0.6 | | | 1652001508 | | | | | | | | | |
| M3.5 x 0.35 | 1652001408 | | 5.60 | 21.00 | | 4.27 | 3.33 | 6.40 | | | | |
| M4 x 0.7 | 1652001708 | | | | | | | | | | | |
| M4 x 0.5 | 1652001608 | | | | | | | | | | | |
| M4.5 x 0.75 | D4 | | 1652001908 | 6.10 | | 25.10 | 4.93 | 3.86 | | | | |
| M4.5 x 0.5 | D3 | | 1652001808 | | | | | | | | | |
| M5 x 0.8 | D4 | | 1652002108 | | | | | | | | | |
| M5 x 0.5 | D3 | | 1652002008 | 6.40 | | 25.00 | 5.59 | 4.19 | 7.10 | | | |
| M5.5 x 0.5 | 1652002208 | | | | | | | | | | | |
| M6 x 1.0 | D5 | | 1652002708 | | | | | | | | | |
| M6 x 0.75 | D4 | | 1652002508 | 8.00 | | 30.00 | 6.48 | 4.85 | 7.90 | | | |
| M6 x 0.5 | D3 | | 1652002308 | | | | | | | | | |
| M8 x 1.25 | D5 | | 1652003708 | | | | | | | | | |
| M8 x 1.0 | D5 | | 1652003508 | 10.00 | | 35.00 | 8.08 | 6.05 | 9.50 | | | |
| M8 x 0.75 | D4 | | 1652003308 | | | | | | | | | |
| M10 x 1.5 | D6 | | 1652005108 | | | | | | | | | |
| M10 x 1.25 | D5 | | 1652004908 | 12.00 | | 39.00 | 9.68 | 7.26 | 11.10 | | | |
| M10 x 1.0 | D5 | | 1652004708 | | | | | | | | | |
| M10 x 0.75 | D4 | | 1652004508 | | | | | | | | | |
| M12 x 1.75 | D6 | | 3 | 1652006708 | | 150.00 | 14.00 | 72.00 | 9.32 | 6.98 | 11.10 | |
| M12 x 1.5 | | | | 1652006508 | | | | | | | | |
| M12 x 1.25 | | | | 1652006308 | | | | | | | | |
| M12 x 1.0 | D5 | | | 1652006108 | | | 12.00 | 60.00 | 10.90 | 8.18 | 12.70 | |
| M14 x 2 | D7 | | | 1652007108 | | | | | | | | |
| M14 x 1.5 | D6 | | | 1652007008 | | | | | | | | |
| M14 x 1.25 | D6 | | | 1652006908 | | | 150.00 | 12.00 | 64.00 | 12.19 | 9.14 | 14.30 |
| M14 x 1.0 | D5 | | | 1652006808 | | | | | | | | |
| M15 x 1.5 | D6 | | | 1652007308 | | | | | | | | |
| M15 x 1.0 | D5 | 1652007208 | | 160.00 | 12.00 | | 64.00 | 12.19 | 9.14 | 14.30 | | |
| M16 x 2.0 | D7 | 1652007708 | | | | | | | | | | |
| M16 x 1.5 | D6 | 1652007508 | | | | | | | | | | |
| M16 x 1.0 | D5 | 1652007408 | | 160.00 | 12.00 | | 64.00 | 12.19 | 9.14 | 14.30 | | |
| M18 x 2.5 | D7 | 1652008308 | | | | | | | | | | |
| M18 x 2.0 | D7 | 1652008208 | | | | | | | | | | |
| M18 x 1.5 | D6 | 1652008108 | | 180.00 | 16.00 | | 72.00 | 13.77 | 10.31 | 15.90 | | |
| M18 x 1.0 | D5 | 1652008008 | | | | | | | | | | |
| M20 x 2.5 | D7 | 1652008708 | | | | | | | | | | |
| M20 x 2.0 | D7 | 1652008608 | | 200.00 | 25.00 | | 80.00 | 16.56 | 12.42 | 17.50 | | |

Packed: 1 pc.
Available V coating only.

continued on next page

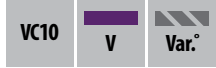
| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------|-------------------------------------|-----------------|-----------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 16520 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | |
| SFM | 80-120 | 80-120 | 80-120 | 35-50 | 20-40 | 15-35 | 15-35 | 15-25 | 50-80 | 70-120 | 70-120 | | | 30-55 | | | |

good best

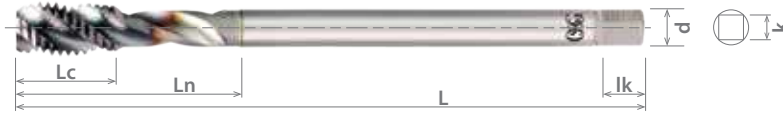




List 16520 (Continued)



A-LT-SFT, Long Shank, Modified Bottom (2.5P-3P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Long Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | | | |
|-----------|--------------|---------------|----------------------|---------------------|---------------|-------------|------------|--------------|---------------|-------|-------|---|----|
| | | | Mod Bottom (2.5P-3P) | | L | Lc | | | | Ln | d | k | lk |
| | | | V | | L | Lc | | | | Ln | d | k | lk |
| M20 x 1.5 | D6 | 4 | 1652008508 | 200.00 | 16.00 | 80.00 | 16.56 | 12.42 | 17.50 | | | | |
| M20 x 1.0 | D5 | | 1652008408 | | | | | | | | | | |
| M22 x 2.5 | D7 | | 1652009108 | | | | | | | | | | |
| M22 x 2.0 | | | 1652009008 | | | | | | | | | | |
| M22 x 1.5 | | | D6 | | 1652008908 | | | | | | | | |
| M22 x 1.0 | D5 | | 1652008808 | | 16.00 | | 83.00 | 19.30 | | 14.48 | 19.10 | | |
| M24 x 3.0 | D8 | | 1652009508 | | | | | | | | | | |
| M24 x 2.0 | D7 | | 1652009408 | | | | | | | | | | |
| M24 x 1.5 | D6 | | 1652009308 | | 16.00 | | | | | | | | |
| M24 x 1.0 | D5 | | 1652009208 | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------|-------------------|-------------------------------------|--------------|--------------|--------------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | 4140 4340 | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 16520 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | | | |
| SFM | 80-120 | 80-120 | 80-120 | 35-50 | 20-40 | 15-35 | 15-35 | 15-25 | 50-80 | 70-120 | 70-120 | | | 30-55 | | | |

good best





List 16450

| | | |
|------|-----|-------|
| HSSE | TiN | Var.° |
|------|-----|-------|

CC-SUS-SFT, DIN Overall Length, Modified Bottom (2.5P-3P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|---------------------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P-3P) | | | | | | |
| | | | TiN | L | Lc | Ln | d | k | lk |
| 2 - 56 UNC | H2 | 2 | 1645002562 | 1.772 | 0.142 | 0.472 | 0.141 | 0.110 | 0.188 |
| 3 - 48 UNC | | | 1645003482 | 1.969 | 0.161 | 0.531 | | | |
| 4 - 40 UNC | | | 1645004402 | 2.205 | 0.197 | 0.705 | | | |
| 4 - 48 UNF | | | 1645004482 | | 0.201 | 0.709 | | | |
| 5 - 40 UNC | | | 1645005402 | | 0.248 | 0.783 | | | |
| 6 - 32 UNC | H3 | | 1645006322 | 2.480 | 0.252 | 0.827 | 0.168 | 0.131 | 0.250 |
| 6 - 40 UNF | H2 | | 1645006323 | | | | | | |
| 6 - 40 UNF | H2 | | 1645006402 | | | | | | |
| 8 - 32 UNC | H3 | | 1645008322 | 2.756 | 0.327 | 0.976 | 0.194 | 0.152 | 0.281 |
| 8 - 36 UNF | H2 | | 1645008323 | | | | | | |
| 8 - 36 UNF | H2 | | 1645008362 | | | | | | |
| 10 - 24 UNC | H3 | | 1645010242 | 3.150 | 0.398 | 1.177 | 0.255 | 0.191 | 0.313 |
| 10 - 32 UNF | H3 | | 1645010243 | | | | | | |
| 10 - 32 UNF | H2 | | 1645010322 | | | | | | |
| 12 - 24 UNC | H3 | | 1645010323 | 3.543 | 0.445 | 1.378 | 0.318 | 0.238 | 0.375 |
| 12 - 28 UNF | | 1645012243 | | | | | | | |
| 12 - 28 UNF | | 1645012283 | | | | | | | |
| 1/4 - 20 UNC | H5 | 1645014203 | 3.937 | 0.500 | 1.535 | 0.381 | 0.286 | 0.438 | |
| 1/4 - 28 UNF | H3 | 1645014205 | | | | | | | |
| 1/4 - 28 UNF | H4 | 1645014283 | | | | | | | |
| 5/16 - 18 UNC | H3 | 1645014284 | 3.543 | 0.571 | 1.713 | 0.323 | 0.242 | 0.406 | |
| 5/16 - 18 UNC | H5 | 1645056183 | | | | | | | |
| 5/16 - 24 UNF | H3 | 1645056185 | | | | | | | |
| 5/16 - 24 UNF | H4 | 1645056243 | 3.937 | 0.614 | 1.933 | 0.367 | 0.275 | 0.438 | |
| 5/16 - 24 UNF | H4 | 1645056244 | | | | | | | |
| 5/16 - 24 UNF | H4 | 1645056244 | | | | | | | |
| 3/8 - 16 UNC | H3 | 1645038163 | 4.331 | 0.614 | 1.933 | 0.367 | 0.275 | 0.438 | |
| 3/8 - 16 UNC | H5 | 1645038165 | | | | | | | |
| 3/8 - 24 UNF | H3 | 1645038243 | | | | | | | |
| 3/8 - 24 UNF | H4 | 1645038244 | 3.937 | 0.571 | 1.713 | 0.323 | 0.242 | 0.406 | |
| 3/8 - 24 UNF | H3 | 1645038244 | | | | | | | |
| 3/8 - 24 UNF | H3 | 1645076143 | | | | | | | |
| 7/16 - 14 UNC | H5 | 1645076145 | 4.331 | 0.614 | 1.933 | 0.367 | 0.275 | 0.438 | |
| 7/16 - 20 UNF | H3 | 1645076203 | | | | | | | |
| 7/16 - 20 UNF | H5 | 1645076205 | | | | | | | |
| 1/2 - 13 UNC | H3 | 1645012133 | 3.937 | 0.614 | 1.933 | 0.367 | 0.275 | 0.438 | |
| 1/2 - 20 UNF | H5 | 1645012135 | | | | | | | |
| 1/2 - 20 UNF | H3 | 1645012203 | | | | | | | |
| 1/2 - 20 UNF | H5 | 1645012205 | | | | | | | |

Packed: 1 pc.
Available TiN coating only.
*Recommended drill is ADO-SUS drills for stainless steel.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|-------------------------------------|------------|-------------------------------------|-------------------------------------|--------------------------|-------------|-----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 16450 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | |
| SFM | 50-80 | 50-80 | 30-80 | 50-100 | | 20-35 | 20-35 | 15-25 | | | | | | | | | | |

good best





List 16450 (Continued)

| | | |
|------|-----|-------|
| HSSE | TiN | Var.° |
|------|-----|-------|

CC-SUS-SFT, DIN Overall Length, Modified Bottom (2.5P-3P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | | | | |
|---------------|--------------|---------------|---------------------------|--------------------|---------------|-------------|------------|--------------|---------------|-------|-------|-------|-------|-------|
| | | | Modified Bottom (2.5P-3P) | | | | | | | | | | | |
| | | | TiN | | | | | | | | | | | |
| | | | L | Lc | Ln | d | k | lk | | | | | | |
| 9/16 - 12 UNC | H3 | 3 | 1645096123 | 4.331 | 0.665 | 1.972 | 0.429 | 0.322 | 0.500 | | | | | |
| | H5 | | 1645096125 | | | | | | | | | | | |
| 9/16 - 18 UNF | H3 | | 1645096183 | 3.937 | | | | | | | | | | |
| | H5 | | 1645096185 | | | | | | | | | | | |
| 5/8 - 11 UNC | H3 | | 1645058113 | 4.331 | | | | | | 0.728 | 2.126 | 0.480 | 0.360 | 0.563 |
| | H5 | | 1645058115 | | | | | | | | | | | |
| 5/8 - 18 UNF | H3 | 1645058183 | 3.937 | | | | | | | | | | | |
| | H5 | 1645058185 | | | | | | | | | | | | |
| 3/4 - 10 UNC | H3 | 1645034103 | 4.921 | 1.000 | 2.433 | 0.590 | 0.442 | 0.688 | | | | | | |
| | H5 | 1645034105 | 4.331 | | | | | | | | | | | |
| 3/4 - 16 UNF | H3 | 1645034163 | 4.331 | | | | | | | | | | | |
| | H5 | 1645034165 | | | | | | | | | | | | |
| 7/8 - 9 UNC | H4 | 1645078094 | 5.512 | 1.110 | 2.654 | 0.697 | 0.523 | 0.750 | | | | | | |
| | H6 | 1645078096 | 4.921 | | | | | | | | | | | |
| 7/8 - 14 UNF | H4 | 1645078144 | | | | | | | 4.921 | | | | | |
| | H6 | 1645078146 | | | | | | | | | | | | |
| 1 - 8 UNC | H4 | 1645010084 | 6.299 | | | | | | 1.252 | 3.012 | 0.800 | 0.600 | 0.813 | |
| | H6 | 1645010086 | | | | | | | | | | | | |
| 1 - 12 UNF | H4 | 1645010124 | 5.512 | | | | | | | | | | | |
| | H6 | 1645010126 | | | | | | | | | | | | |

Packed: 1 pc.
Available TiN coating only.
*Recommended drill is ADO-SUS drills for stainless steel.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|----------|--------------------------|--------------------------|--------------------------|-------------------------------------|------------|-------------------------------------|-------------------------------------|--------------------------|----------------|-----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 16450 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | |
| SFM | 50-80 | 50-80 | 30-80 | 50-100 | | 20-35 | 20-35 | 15-25 | | | | | | | | | |

good best





List 16455

| | | |
|------|-----|-------|
| HSSE | TiN | Var.° |
|------|-----|-------|

CC-SUS-SFT, DIN Overall Length, Modified Bottom (2.5P-3P)



Units:mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|-------------|--------------|---------------|---------------------------|-------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P-3P) | | | | | | | |
| | | | TiN | L | | | | | | |
| M2 x 0.4 | D3 | 2 | 1645502043 | 45.00 | 3.20 | 12.00 | 3.58 | 2.79 | 4.80 | |
| M2.5 x 0.45 | | | 1645525453 | 50.00 | 3.70 | 14.10 | | | | |
| M2.6 x 0.45 | | | 1645526453 | | 3.60 | 16.00 | | | | |
| M3 x 0.5 | D4 | | 1645503054 | 56.00 | 4.10 | 18.10 | 4.27 | 3.33 | 6.40 | |
| M4 x 0.7 | | | 1645504074 | 63.00 | 5.60 | 21.00 | | | | |
| M5 x 0.8 | | | 1645505084 | 70.00 | 6.40 | 25.00 | | | | |
| M6 x 1 | D3 | 1645506103 | 80.00 | 8.00 | 30.00 | 6.48 | 4.85 | 7.90 | | |
| | D5 | 1645506105 | | | | | | | | |
| M8 X 1.25 | D4 | 1645508124 | 90.00 | 10.00 | 35.00 | 8.08 | 6.05 | 9.50 | | |
| | D6 | 1645508126 | | | | | | | | |
| M10 x 1.5 | D4 | 1645510154 | 100.00 | 12.00 | 39.00 | 9.68 | 7.26 | 11.10 | | |
| | D6 | 1645510156 | | | | | | | | |
| M12 x 1.75 | D4 | 1645512174 | 110.00 | 14.00 | 49.10 | 9.32 | 6.98 | 12.70 | | |
| | | 1645512176 | | | | | | | | |
| | D6 | 1645514205 | | | | | | | | |
| M14 x 2 | D5 | 1645514207 | 110.00 | 16.00 | 50.10 | 10.90 | 8.18 | 14.30 | | |
| | D7 | 1645516205 | | | | | | | | |
| M16 x 2 | D5 | 1645516207 | 125.00 | 25.00 | 55.00 | 13.77 | 10.31 | 15.90 | | |
| | | D7 | | | | | | | 1645518257 | |
| M18 x 2.5 | D8 | 1645520258 | 140.00 | 30.00 | 68.40 | 19.30 | 14.48 | 19.10 | | |
| M20 x 2.5 | | 1645524309 | 160.00 | | | | | | | |
| M24 x 3 | | D9 | 1645524309 | | | | | | 160.00 | |

Packed: 1 pc.
Available TiN coating only.
*Recommended drill is ADO-SUS drills for stainless steel.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|-------------------------------------|------------|-------------------------------------|-------------------------------------|--------------------------|-----------|-----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 16455 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | |
| SFM | 50-80 | 50-80 | 30-80 | 50-100 | | 20-35 | 20-35 | 15-25 | | | | | | | | | | |

good best





List 335Ni



WHR-Ni-SFT, DIN Overall Length, Modified Bottom (2.5P-3P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|---------------------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P-3P) | | | | | | |
| | | | HR | L | Lc | Ln | d | k | lk |
| 2 - 56 UNC | H2 | 2 | 3350002562 | 1.772 | 0.437 | - | 0.141 | 0.110 | 0.188 |
| 4 - 40 UNC | | | 3350004402 | 2.205 | 0.563 | - | | | |
| | H3 | | 3350004403 | | | 0.689 | - | | |
| 6 - 32 UNC | H2 | 3 | 3350006322 | 2.480 | 0.748 | - | 0.168 | 0.131 | 0.250 |
| | H3 | | 3350006323 | | | - | | | |
| 8 - 32 UNC | H2 | | 3350008322 | 2.756 | 0.874 | - | 0.194 | 0.152 | 0.313 |
| | H3 | 3350008323 | - | | | | | | |
| 10 - 24 UNC | H5 | | 3350010243 | 3.150 | 1.000 | - | 0.255 | 0.191 | 0.375 |
| | H2 | 3350010245 | - | | | | | | |
| 10 - 32 UNF | H3 | | 3350010322 | 3.543 | 0.665 | 1.378 | 0.318 | 0.238 | 0.438 |
| | H4 | 3350010323 | - | | | | | | |
| 1/4 - 20 UNC | H5 | | 3350014203 | 3.937 | 0.752 | 1.535 | 0.381 | 0.286 | 0.406 |
| | H3 | 3350014205 | - | | | | | | |
| 1/4 - 28 UNF | H3 | | 3350014283 | 3.937 | 0.858 | 1.713 | 0.323 | 0.242 | 0.438 |
| | H4 | 3350014284 | - | | | | | | |
| 5/16 - 18 UNC | H3 | 3 | 3350516183 | 4.331 | 0.921 | 1.933 | 0.367 | 0.275 | 0.500 |
| | H5 | | 3350516185 | | | | | | |
| 5/16 - 24 UNF | H3 | | 3350516243 | 4.331 | 1.091 | 2.126 | 0.480 | 0.360 | 0.563 |
| | H5 | 3350516245 | - | | | | | | |
| 3/8 - 16 UNC | H3 | 4 | 3350038163 | 4.921 | 1.201 | 2.433 | 0.590 | 0.442 | 0.688 |
| | H5 | | 3350038165 | | | | | | |
| 3/8 - 24 UNF | H3 | | 3350038243 | 4.331 | 1.335 | 2.654 | 0.697 | 0.523 | 0.750 |
| | H4 | 3350038244 | - | | | | | | |
| 7/16 - 14 UNC | H3 | | 3350716143 | 5.512 | 1.335 | 2.654 | 0.697 | 0.523 | 0.750 |
| | H5 | 3350716145 | - | | | | | | |
| 7/16 - 20 UNF | H3 | | 3350716203 | 4.921 | 1.201 | 2.433 | 0.590 | 0.442 | 0.688 |
| | H5 | 3350716205 | - | | | | | | |
| 1/2 - 13 UNC | H3 | 3 | 3350012133 | 4.331 | 0.921 | 1.933 | 0.367 | 0.275 | 0.438 |
| | H5 | | 3350012135 | | | | | | |
| 1/2 - 20 UNF | H3 | | 3350012203 | 3.937 | 1.000 | 1.972 | 0.429 | 0.322 | 0.500 |
| | H5 | 3350012205 | - | | | | | | |
| 9/16 - 18 UNF | H3 | | 3350096183 | 4.331 | 1.091 | 2.126 | 0.480 | 0.360 | 0.563 |
| | H5 | 3350096185 | - | | | | | | |
| 5/8 - 11 UNC | H3 | 4 | 3350058113 | 4.921 | 1.201 | 2.433 | 0.590 | 0.442 | 0.688 |
| | H5 | | 3350058115 | | | | | | |
| 5/8 - 18 UNF | H3 | | 3350058183 | 5.512 | 1.335 | 2.654 | 0.697 | 0.523 | 0.750 |
| | H5 | 3350058185 | - | | | | | | |
| 3/4 - 10 UNC | H3 | 3 | 3350034103 | 4.921 | 1.201 | 2.433 | 0.590 | 0.442 | 0.688 |
| | H5 | | 3350034105 | | | | | | |
| 3/4 - 16 UNF | H3 | | 3350034163 | 4.331 | 1.335 | 2.654 | 0.697 | 0.523 | 0.750 |
| | H5 | 3350034165 | - | | | | | | |
| 7/8 - 9 UNC | H3 | | 3350078093 | 5.512 | 1.335 | 2.654 | 0.697 | 0.523 | 0.750 |
| | H5 | 3350078095 | - | | | | | | |
| 7/8 - 14 UNF | H3 | | 3350078143 | 4.921 | 1.201 | 2.433 | 0.590 | 0.442 | 0.688 |
| | H5 | 3350078145 | - | | | | | | |

Packed: 1 pc.
Available HR coating only.





List 335Ni (Continued)

| | | |
|------|----|-----|
| VC10 | HR | 11° |
|------|----|-----|

WHR-Ni-SFT, DIN Overall Length, Modified Bottom (2.5P-3P)

Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|---------------------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P-3P) | | | | | | |
| | | | HR | L | Lc | Ln | d | k | lk |
| 1 - 8 UNC | H3 | 4 | 3350001083 | 6.299 | 1.500 | 3.012 | 0.800 | 0.600 | 0.813 |
| | H5 | | 3350001085 | | | | | | |
| 1 - 12 UNF | H3 | | 3350001123 | 5.512 | | | | | |
| | H5 | | 3350001125 | | | | | | |

Packed: 1 pc.
Available HR coating only.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|----------------|-----------|---------|--------------|----------|-----------------|----------------|---------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 335Ni | | | | | | | | | | | | | | | | | | | |
| SFM | | | | | | | | 8-20 | | | | 8-15 | | | | | | | 8-12 |

good best

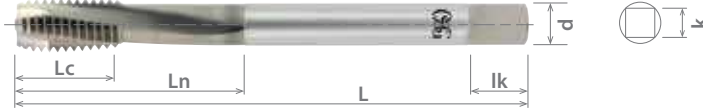




List 336Ni



WHR-Ni-SFT, DIN Overall Length, Modified Bottom (2.5P-3P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | | | | |
|-------------|--------------|---------------|---------------------------|--------------------|---------------|-------------|------------|--------------|---------------|-------|-------|-------|-------|-------|
| | | | Modified Bottom (2.5P-3P) | | | | | | | | | | | |
| | | | HR | | | | | | | | | | | |
| | | | L | Lc | Ln | d | k | lk | | | | | | |
| M2.5 x 0.45 | D3 | 3 | 3360250453 | 50.00 | 12.70 | - | 3.58 | 2.79 | 4.80 | | | | | |
| M3 x 0.5 | | | 3360003053 | 56.00 | 15.90 | - | | | | | | | | |
| M4 x 0.7 | | | 3360004074 | 63.00 | 19.00 | - | | | | | | | | |
| M5 x 0.8 | D4 | | 3360005084 | 70.00 | 22.20 | - | 4.93 | 3.86 | 6.40 | | | | | |
| M6 x 1.0 | | | 3360006105 | 80.00 | 25.40 | - | | | | | | | | |
| M6 x 0.75 | D5 | | 3360006755 | 90.00 | 15.00 | 35.00 | 8.08 | 6.05 | 9.50 | | | | | |
| M8 x 1.25 | | | 3360008255 | | | | | | | | | | | |
| M8 x 1.0 | | | 3360008105 | | | | | | | | | | | |
| M10 x 1.5 | D6 | | 3360010156 | 100.00 | 18.00 | 39.00 | 9.68 | 7.26 | 11.10 | | | | | |
| M10 x 1.25 | D5 | | 3360010255 | | | | | | | | | | | |
| M12 x 1.75 | D6 | | 3360012756 | 110.00 | 21.00 | 49.10 | 9.32 | 6.98 | | | | | | |
| M12 x 1.5 | | | 3360012156 | 100.00 | | | | | | | | | | |
| M14 x 2.0 | D7 | | 3360014207 | 110.00 | 24.00 | 50.10 | 10.90 | 8.18 | 12.70 | | | | | |
| M14 x 1.5 | D6 | | 3360014156 | 100.00 | | | | | | | | | | |
| M16 x 2.0 | D7 | | 3360016207 | 110.00 | | | 12.19 | 9.14 | 14.30 | | | | | |
| M16 x 1.5 | D6 | | 3360016156 | 100.00 | | | | | | | | | | |
| M18 x 2.5 | D7 | | 3360018257 | 125.00 | | | 54.00 | 13.77 | 10.31 | 15.90 | | | | |
| M18 x 1.5 | D6 | | 3360018156 | 110.00 | | | | | | | | | | |
| M20 x 2.5 | D8 | | 3360020258 | 140.00 | 30.00 | 61.80 | 16.56 | 12.42 | 17.50 | | | | | |
| M20 x 1.5 | D6 | | 3360020156 | 125.00 | | | | | | | | | | |
| M22 x 2.5 | D8 | | 3360022258 | 140.00 | | | | | | | | | | |
| M22 x 1.5 | D6 | | 3360022156 | 125.00 | | | | | | | | | | |
| M24 x 3.0 | D8 | | 3360024308 | 160.00 | | | | | | 36.00 | 68.40 | 19.30 | 14.48 | 19.10 |
| M24 x 1.5 | D6 | | 3360024156 | 140.00 | | | | | | | | | | |

Packed: 1 pc.
Available HR coating only.



| Work Material | | | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|------------|------------------|-----|---------|-------------|-----------|---------|--------------|----------|-----------------|----------------|---------|-----------|-----------|-----------|
| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | | | |
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 336Ni | | | | | | | | | | | | | | | | | | | |
| SFM | | | | | | | | 8-20 | | | | | 8-15 | | | | | | 8-12 |

good best





List 389



OT-SFT, JIS, Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|------------------|---------------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P-2P) | Modified Bottom (2.5P-3P) | | | | | | |
| | | | Bright | Bright | L | Lc | Ln | d | k | lk |
| M3 x 0.5 | OH3 | 3 | 8315255 | 8315254 | 46.00 | 11.00 | 19.00 | 4.00 | 3.20 | 6.00 |
| M4 x 0.7 | | | 8315261 | 8315260 | 52.00 | 13.00 | 21.00 | 5.00 | 4.00 | 7.00 |
| M5 x 0.8 | | | 8315267 | 8315266 | 60.00 | 15.90 | 23.90 | 5.50 | 4.50 | |
| M6 x 1.0 | | | 8315273 | 8315272 | 62.00 | 19.00 | 29.00 | 6.00 | 5.00 | |
| M8 x 1.25 | | | OH4 | 8315285 | 8315284 | 70.00 | 22.00 | - | 6.20 | 5.00 |
| M10 x 1.5 | 8315297 | | | 8315296 | 75.00 | 24.00 | - | 7.00 | 5.50 | |
| M10 x 1.25 | 8315303 | | | 8315302 | | | - | | | |
| M12 x 1.75 | 8315315 | | | 8315314 | 82.00 | 29.00 | - | 8.50 | 6.50 | 9.00 |

Packed: 1 pc.
Other coatings available upon request.
Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|----------|------------|------------------|-----|---------|-------------------------------------|-------------------------------------|-------------------------------------|------------------------------|-----------------|---------|----------------|---------|-----------|
| List No. | P | | | | | Die Steels | M | | | K Cast Iron | N | | S Nickel Alloy Inconel | H | | | | |
| | Carbon Steels | | | Alloy Steels | Titanium | | Stainless Steels | | | | Aluminum | Titanium | | Hardened Steels | | | | |
| | Low | Med. | High | | | | 300 | 400 | 17-4 PH | | | | | 6061 7075 | Casting | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 389 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| SFM | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |

good best





EXOTAP® VC-10 Ti

Taps Designed for Titanium Alloys



List 313Ti

V-Ti-SFT, Modified Bottom (2.5P-3P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|---------------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P-3P) | | | | | | |
| | | | V | | | | | | |
| | | | L | Lc | Ln | d | k | lk | |
| 2 - 56 UNC | H2 | 3 | 1305710108 | 1.750 | 0.437 | - | 0.141 | 0.110 | 0.188 |
| 4 - 40 UNC | | | 1305710208 | 1.875 | 0.559 | - | | | |
| 6 - 32 UNC | | | 1305710408 | 2.000 | 0.685 | - | | | |
| 6 - 40 UNF | 1305710508 | | | | | | | | |
| 8 - 32 UNC | 1305710608 | | | | | | | | |
| 8 - 36 UNF | H2 | | 1305710708 | 2.125 | 0.752 | - | 0.168 | 0.131 | 0.250 |
| 10 - 24 UNC | H3 | | 1305710808 | | | | | | |
| 10 - 32 UNF | H2 | | 1305710908 | | | | | | |
| 1/4 - 20 UNC | H3 | | 1305711008 | 2.375 | 0.866 | - | 0.194 | 0.152 | 0.313 |
| | H5 | | 1305711108 | | | | | | |
| | H3 | | 1305711208 | | | | | | |
| 1/4 - 28 UNF | H3 | | 1305711308 | 2.500 | 0.996 | - | 0.255 | 0.191 | 0.375 |
| | H4 | 1305711408 | | | | | | | |
| | H5 | 1305711508 | | | | | | | |
| 5/16 - 18 UNC | H3 | 1305711608 | 2.719 | 0.445 | 1.126 | 0.318 | 0.238 | 0.438 | |
| | H5 | 1305711708 | | | | | | | |
| | H3 | 1305711808 | | | | | | | |
| 5/16 - 24 UNF | H3 | 1305711908 | 2.938 | 0.500 | 1.252 | 0.381 | 0.286 | 0.406 | |
| | H4 | 1305712008 | | | | | | | |
| | H5 | 1305712108 | | | | | | | |
| 3/8 - 16 UNC | H3 | 1305712208 | 3.156 | 0.571 | 1.713 | 0.323 | 0.242 | 0.438 | |
| | H5 | 1305712308 | | | | | | | |
| | H3 | 1305712408 | | | | | | | |
| 3/8 - 24 UNF | H3 | 1305712508 | 3.375 | 0.614 | 1.933 | 0.367 | 0.275 | 0.500 | |
| | H5 | 1305712608 | | | | | | | |
| | H3 | 1305712708 | | | | | | | |
| 7/16 - 14 UNC | H3 | 1305712808 | 3.594 | 0.665 | 1.972 | 0.429 | 0.322 | 0.563 | |
| | H5 | 1305712908 | | | | | | | |
| | H3 | 1305713008 | | | | | | | |
| 7/16 - 20 UNF | H3 | 1305713108 | 3.813 | 0.728 | 2.126 | 0.480 | 0.360 | 0.688 | |
| | H5 | 1305713208 | | | | | | | |
| | H3 | 1305713308 | | | | | | | |
| 1/2 - 13 UNC | H3 | 1305713408 | 4.250 | 0.799 | 2.433 | 0.590 | 0.442 | 0.688 | |
| | H5 | 1305713508 | | | | | | | |
| | H3 | 1305713608 | | | | | | | |
| 1/2 - 20 UNF | H3 | 1305713708 | 3.594 | 0.665 | 1.972 | 0.429 | 0.322 | 0.500 | |
| | H5 | 1305713808 | | | | | | | |
| | H3 | 1305713908 | | | | | | | |
| 9/16 - 18 UNF | H3 | 1305714008 | 3.813 | 0.728 | 2.126 | 0.480 | 0.360 | 0.563 | |
| | H5 | 1305713308 | | | | | | | |
| | H3 | 1305713408 | | | | | | | |
| 5/8 - 11 UNC | H3 | 1305713508 | 4.250 | 0.799 | 2.433 | 0.590 | 0.442 | 0.688 | |
| 5/8 - 18 UNF | H5 | 1305713608 | | | | | | | |
| | H3 | 1305713708 | | | | | | | |
| 3/4 - 10 UNC | H3 | 1305713808 | 3.813 | 0.728 | 2.126 | 0.480 | 0.360 | 0.563 | |
| 3/4 - 16 UNF | H5 | 1305713908 | | | | | | | |
| | H3 | 1305714008 | | | | | | | |

Packed: 1 pc.
Available V coating only.





List 313Ti (Continued)

V-Ti-SFT, Modified Bottom (2.5P-3P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|--------------|--------------|---------------|---------------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P-3P) | | | | | | |
| | | | V | | | | | | |
| 7/8 - 9 UNC | H3 | 4 | 1305714208 | 4.688 | 0.890 | 2.654 | 0.697 | 0.523 | 0.750 |
| | H5 | | 1305714308 | | | | | | |
| 7/8 - 14 UNF | H3 | | 1305714408 | | | | | | |
| | H5 | | 1305714508 | | | | | | |
| 1 - 8 UNC | H5 | 1305714108 | 5.125 | 1.000 | 3.012 | 0.800 | 0.600 | 0.813 | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|---------------|------|------|--------------------------|------------|------------------|------|--------------------------|-----------|-----------|---------|-------------------------------------|-------------------------------------|--------------------------|----------------|---------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 313Ti | | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | |
| SFM | | | | 15-30 | | | 8-20 | | | | | 8-15 | 8-15 | 15-35 | 10-20 | | | |

good best





EXOTAP® VC-10 Ti

Taps Designed for Titanium Alloys

List 345Ti

V-Ti-SFT, Modified Bottom (2.5P-3P)



VC10

V

10°



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|-------------|--------------|---------------|---------------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P-3P) | | | | | | |
| | | | V | | | | | | |
| M2.5 x 0.45 | D3 | 3 | 1316210008 | 46.00 | 12.70 | - | 3.58 | 2.79 | 4.80 |
| M3 x 0.5 | | | 1316210108 | 49.20 | 16.00 | - | | | |
| M4 x 0.7 | D4 | | 1316210208 | 54.00 | 19.10 | - | 4.27 | 3.33 | 6.40 |
| M5 x 0.8 | | | 1316210308 | 60.30 | 22.20 | - | 4.93 | 3.86 | |
| M6 x 1.0 | D5 | | 1316210408 | 63.50 | 25.40 | - | 6.48 | 4.85 | 7.90 |
| M8 x 1.25 | | | 1316210508 | 69.10 | 10.00 | 28.60 | 8.08 | 6.05 | 9.50 |
| M10 x 1.5 | D6 | | 1316210708 | 74.60 | 12.00 | 31.80 | 9.68 | 7.26 | 11.10 |
| M10 x 1.25 | D5 | | 1316210608 | | | | | | |
| M12 x 1.75 | D6 | | 1316210808 | 85.70 | 14.00 | 49.10 | 9.32 | 6.98 | |
| M12 x 1.25 | D5 | | 1316210908 | | | | | | |

Packed: 1 pc.

Available V coating only.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|----------|---------------|------|------|--------------------------|------------|------------------|------|--------------------------|----------------|-----------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 345Ti | | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| SFM | | | | 15-30 | | | 8-20 | | | | 8-15 | 8-15 | 15-35 | 10-20 | | | |

good best





List 317Ti

VPO-Ti-SFT, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|---------------------------|-------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P-3P) | | | | | | | |
| | | | V | L | | | | | | |
| 1/4 - 28 UNF | H3 | 3 | 31721408 | 3.150 | 1.000 | - | 0.255 | 0.191 | 0.313 | |
| | H4 | | 31721508 | | | | | | | |
| 5/16 - 24 UNF | H3 | | 31721808 | 3.543 | 0.445 | 1.378 | 0.318 | 0.238 | 0.375 | |
| | H4 | | 31721908 | | | | | | | |
| 3/8 - 24 UNF | H3 | | 31722208 | 3.937 | 0.500 | 1.713 | 0.323 | 0.242 | 0.406 | |
| | H4 | | 31722308 | | | | | | | |
| 7/16 - 20 UNF | H3 | | 31722608 | 4.331 | 0.571 | 1.933 | 0.367 | 0.275 | 0.438 | |
| | H5 | | 31722708 | | | | | | | |
| 1/2 - 20 UNF | H3 | | 31723008 | 4.921 | 0.614 | 1.972 | 0.429 | 0.322 | 0.500 | |
| | H5 | | 31723108 | | | | | | | |
| 9/16 - 18 UNF | H3 | | 31723408 | 4.331 | 0.665 | 2.126 | 0.480 | 0.360 | 0.563 | |
| | H5 | | 31723508 | | | | | | | |
| 5/8 - 18 UNF | H3 | 31723808 | 4.921 | 0.728 | 2.433 | 0.590 | 0.442 | 0.688 | | |
| | H5 | 31723908 | | | | | | | | |
| 3/4 - 16 UNF | H3 | 31724208 | 5.512 | 0.799 | 2.654 | 0.697 | 0.523 | 0.750 | | |
| | H5 | 31724308 | | | | | | | | |
| 7/8 - 14 UNF | H4 | 31724608 | 5.512 | 0.890 | 3.012 | 0.800 | 0.600 | 0.813 | | |
| | H6 | 31724708 | | | | | | | | |
| 1 - 12 UNF | H4 | 31725008 | 5.512 | 1.000 | 3.012 | 0.800 | 0.600 | 0.813 | | |
| | H6 | 31725108 | | | | | | | | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|----------|---------------|------|------|--------------|------------|------------------|------|---------|----------------|-----------|---------|--------------|----------|-----------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 317Ti | | | | ○ | | | ○ | | | | ⊗ | ⊗ | ○ | ○ | | | |
| SFM | | | | 15-30 | | | 8-20 | | | | 8-15 | 8-15 | 15-35 | 10-20 | | | |

○ good ⊗ best





EXOTAP® VC-10 Ti Oil

Coolant-Through Taps Designed for Titanium Alloys

List 348Ti

VPO-Ti-SFT, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | |
|------------|--------------|---------------|---------------------------|--------------------|---------------|-------------|------------|--------------|---------------|-------|
| | | | Modified Bottom (2.5P-3P) | | | | | | | |
| | | | V | | | | | | | |
| M8 x 1.0 | D5 | 3 | 34820608 | 90.00 | 10.00 | 35.00 | 8.08 | 6.05 | 9.50 | |
| M10 x 1.25 | | | 34820808 | | | | | | | |
| M12 x 1.25 | | | 34821008 | | | | | | | |
| M12 x 1.5 | D6 | 3 | 34821108 | 100.00 | 14.00 | 49.10 | 9.32 | 6.98 | 11.10 | |
| M14 x 1.5 | | | 34821308 | | | | | | | |
| M16 x 1.5 | | | 34821508 | | | | | | | |
| M18 x 1.5 | | 4 | 4 | 34821708 | 110.00 | 20.00 | 55.00 | 13.77 | 10.31 | 15.90 |
| M20 x 1.5 | | | | 34821908 | | | | | | |
| M22 x 1.5 | | | | 34822108 | | | | | | |
| M24 x 1.5 | 34822308 | | | | | | | | | |
| | | | | 125.00 | | 61.80 | 16.56 | 12.42 | 17.50 | |
| | | | | 140.00 | 24.00 | 67.40 | 17.70 | 13.28 | 19.10 | |
| | | | | | | 68.40 | 19.30 | 14.48 | | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|---------------|------|------|--------------------------|------------|------------------|------|--------------------------|-----------|-----------|---------|-------------------------------------|-------------------------------------|--------------------------|-----------|-----------|-----------|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 348Ti | | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | |
| SFM | | | | 15-30 | | | 8-20 | | | | | 8-15 | 8-15 | 15-35 | 10-20 | | | |

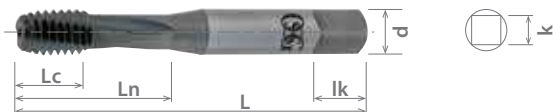
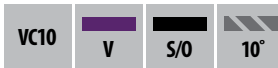
good best





List 313Ni

Ni-SFT, Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Bottom (1.5P - 2P) | | Modified Bottom (2.5P - 3P) | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk | | | |
|---------------|--------------|---------------|--------------------|-----------------------|-----------------------------|----------------|-------|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|-------|-------|-------|
| | | | EDP Number | Coating Suffix S/O | EDP Number | Coating Suffix | | | | | | | | | | |
| | | | | | | S/O | V | | | | | | | | | |
| 2 - 56 UNC | H2 | 2 | - | - | 17707 | 01 | - | 1.750 | 0.437 | - | 0.141 | 0.110 | 0.188 | | | |
| 4 - 40 UNC | | | H3 | 17705 | 01 | 17190 | 01 | 08 | 1.875 | 0.559 | | | | - | | |
| 6 - 32 UNC | H2 | | 01401 | 01 | 17207 | 01 | - | 2.000 | 0.685 | - | | | | 0.168 | 0.131 | 0.250 |
| | H3 | | 17700 | 01 | 17091 | 01 | 08 | | | - | | | | | | |
| | H5 | | - | - | 17092 | 01 | - | | | - | | | | | | |
| | H7 | | - | - | 17701 | 01 | - | | | - | | | | | | |
| 8 - 32 UNC | H2 | | 01402 | 01 | - | - | - | 2.125 | 0.752 | - | 0.194 | 0.152 | 0.250 | | | |
| | H3 | | - | - | 17093 | 01 | 08 | | | - | | | | | | |
| | H5 | | - | - | 17094 | 01 | - | | | - | | | | | | |
| 10 - 24 UNC | H3 | | - | - | 17195 | 01 | 08 | 2.375 | 0.866 | - | 0.255 | 0.191 | 0.313 | | | |
| | H5 | | - | - | 17196 | 01 | - | | | - | | | | | | |
| 10 - 32 UNF | H2 | | 01403 | 01 | 17702 | 01 | - | 2.500 | 0.996 | - | 0.318 | 0.238 | 0.375 | | | |
| | H3 | 17703 | 01 | 17095 | 01 | 08 | - | | | | | | | | | |
| | H4 | - | - | 17704 | 01 | - | - | | | | | | | | | |
| | H5 | - | - | 17096 | 01 | - | - | | | | | | | | | |
| 1/4 - 20 UNC | H3 | 01404 | 01 | 17197 | 01 | 08 | 2.719 | 0.445 | 1.126 | 0.381 | 0.286 | 0.438 | | | | |
| | H5 | - | - | 17198 | 01 | - | | | - | | | | | | | |
| | H7 | - | - | 17714 | 01 | - | | | - | | | | | | | |
| 1/4 - 28 UNF | H3 | 01405 | 01 | 17097 | 01 | 08 | 2.938 | 0.500 | 1.252 | 0.323 | 0.242 | 0.406 | | | | |
| | H4 | 01406 | 01 | - | - | - | | | - | | | | | | | |
| | H5 | - | - | 17098 | 01 | - | | | - | | | | | | | |
| 5/16 - 18 UNC | H3 | - | - | 17199 | 01 | 08 | 3.156 | 0.571 | 1.713 | 0.323 | 0.242 | 0.406 | | | | |
| | H5 | - | - | 17200 | 01 | - | | | - | | | | | | | |
| | H7 | - | - | 17712 | 01 | - | | | - | | | | | | | |
| 5/16 - 24 UNF | H3 | 01407 | 01 | 17099 | 01 | 08 | 2.938 | 0.500 | 1.252 | 0.381 | 0.286 | 0.438 | | | | |
| | H4 | - | - | 01408 | 01 | - | | | - | | | | | | | |
| | H5 | - | - | 17100 | 01 | - | | | - | | | | | | | |
| 3/8 - 16 UNC | H3 | 17710 | 01 | 17201 | 01 | 08 | 2.938 | 0.500 | 1.252 | 0.381 | 0.286 | 0.438 | | | | |
| | H5 | - | - | 17202 | 01 | - | | | - | | | | | | | |
| | H7 | - | - | 17711 | 01 | - | | | - | | | | | | | |
| 3/8 - 24 UNF | H3 | 01409 | 01 | 17101 | 01 | 08 | 2.938 | 0.500 | 1.252 | 0.381 | 0.286 | 0.438 | | | | |
| | H4 | 01410 | 01 | - | - | - | | | - | | | | | | | |
| | H5 | - | - | 17102 | 01 | - | | | - | | | | | | | |
| 7/16 - 14 UNC | H3 | - | - | 17203 | 01 | - | 3.156 | 0.571 | 1.713 | 0.323 | 0.242 | 0.406 | | | | |
| | H4 | - | - | 17204 | 01 | - | | | - | | | | | | | |
| | H5 | - | - | - | - | - | | | - | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

[continued on next page](#) **EXT**

| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|---------------------|----------------------|--------------|--------------|------------|------------------|------|--------------------------|-----------|--------------|---------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 313Ni | | | | | | | | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| SFM | | | | | | | 8-20 | | | | | 8-15 | 8-15 | 15-35 | 10-20 | | | |

good best





EXOTAP® VC-10 Ni

Taps Designed for Nickel Based Alloys



List 313Ni (Continued)

Ni-SFT, Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Bottom (1.5P - 2P) | | Modified Bottom (2.5P - 3P) | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------|--------------|---------------|--------------------|-----------------------|-----------------------------|----------------|-------|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|--------------|----|-------|----|-------|----|----|-------|-------|-------|-------|-------|-------|----|-------|----|-------|----|---|--------------|----|-------|----|-------|----|----|-------|-------|-------|-------|-------|-------|---------------|-------|-------|-------|----|---|----|-------|-------|-------|-------|-------|---------------|----|-------|----|---|---|---|--------------|-------|-------|-------|-------|-------|----|-------|-------|-------|-------|-------|--------------|--------------|----|---|-------|-------|----|-------|--------------|-------|-------|-------|-------|--------------|----|-------|-------|-------|-------|-------|--------------|----|---|---|-------|----|---|--------------|-------|-------|-------|-------|-------|----|-------|-------|-------|-------|-------|--------------|----|---|---|-------|----|---|-------------|-------|-------|-------|-------|-------|----|------|------|-------|-------|---|-------------|----|---|---|-------|----|---|--------------|------|-------|-------|-------|----|----|---|---|-------|----|---|--------------|----|---|---|-------|----|---|-----------|----|---|---|-------|----|----|---|---|-------|----|---|-----------|----|---|---|-------|-------|----|---|--|--|--|--|--|--|--|--|--|-------|----|
| | | | EDP Number | Coating Suffix S/O | EDP Number | Coating Suffix | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | S/O | V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7/16 - 20 UNF | H3 | 3 | 01411 | 01 | 17103 | 01 | - | 3.156 | 0.571 | 1.713 | 0.323 | 0.242 | 0.406 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H5 | | 01412 | 01 | 17104 | 01 | - | | | | | | | 1/2 - 13 UNC | H3 | 17709 | 01 | 17205 | 01 | 08 | 3.375 | 0.614 | 1.933 | 0.367 | 0.275 | 0.438 | H5 | - | - | 17206 | 01 | - | 1/2 - 20 UNF | H3 | 01413 | 01 | 17105 | 01 | 08 | 3.594 | 0.665 | 1.972 | 0.429 | 0.322 | 0.500 | H5 | 01414 | 01 | 17106 | 01 | - | H7 | - | - | 17713 | 01 | - | 9/16 - 18 UNF | H3 | 01415 | 01 | - | - | - | 3.813 | 0.728 | 2.126 | 0.480 | 0.360 | 0.563 | H5 | 01416 | 01 | - | - | - | 5/8 - 11 UNC | H3 | - | - | 17107 | 01 | - | 4.250 | 0.799 | 2.433 | 0.590 | 0.442 | 0.688 | 5/8 - 18 UNF | H5 | - | - | 17108 | 01 | - | 3/4 - 10 UNC | H3 | - | - | 17109 | 01 | - | 4.688 | 0.890 | 2.654 | 0.697 | 0.523 | 0.750 | H5 | - | - | 17708 | 01 | - | 3/4 - 16 UNF | H3 | - | - | 17110 | 01 | - | 5.125 | 1.000 | 3.012 | 0.800 | 0.600 | 0.813 | H5 | - | - | 17111 | 01 | - | 7/8 - 9 UNC | H3 | - | - | 17112 | 01 | - | 8-15 | 8-15 | 15-35 | 10-20 | | | H5 | - | - | 17114 | 01 | - | 7/8 - 14 UNF | H3 | - | - | 17115 | 01 | - | | | | | | | H5 | - | - | 17116 | 01 | - | 1 - 8 UNC | H5 | - | - | 17117 | 01 | - | | | | | | | | | | | 17113 | 01 |
| 1/2 - 13 UNC | H3 | | 17709 | 01 | 17205 | 01 | 08 | 3.375 | 0.614 | 1.933 | 0.367 | 0.275 | 0.438 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H5 | | - | - | 17206 | 01 | - | | | | | | | 1/2 - 20 UNF | H3 | 01413 | 01 | 17105 | 01 | 08 | 3.594 | 0.665 | 1.972 | 0.429 | 0.322 | 0.500 | H5 | 01414 | 01 | 17106 | 01 | - | | H7 | - | - | 17713 | 01 | - | | | | | | | 9/16 - 18 UNF | H3 | 01415 | 01 | - | - | - | 3.813 | 0.728 | 2.126 | 0.480 | 0.360 | 0.563 | H5 | 01416 | 01 | - | - | - | 5/8 - 11 UNC | H3 | - | - | 17107 | 01 | - | 4.250 | 0.799 | 2.433 | 0.590 | 0.442 | 0.688 | 5/8 - 18 UNF | H5 | - | - | 17108 | 01 | - | 3/4 - 10 UNC | H3 | - | - | 17109 | 01 | - | 4.688 | 0.890 | 2.654 | 0.697 | 0.523 | 0.750 | H5 | - | - | 17708 | 01 | - | 3/4 - 16 UNF | H3 | - | - | 17110 | 01 | - | 5.125 | 1.000 | 3.012 | 0.800 | 0.600 | 0.813 | H5 | - | - | 17111 | 01 | - | 7/8 - 9 UNC | H3 | - | - | 17112 | 01 | - | 8-15 | 8-15 | 15-35 | 10-20 | | | H5 | - | - | 17114 | 01 | - | 7/8 - 14 UNF | H3 | - | - | 17115 | 01 | - | | | | | | | H5 | - | - | 17116 | 01 | - | 1 - 8 UNC | H5 | - | - | 17117 | 01 | - | | | | | | | | | | | 17113 | 01 | - | | | | | | | | | | | |
| 1/2 - 20 UNF | H3 | | 01413 | 01 | 17105 | 01 | 08 | 3.594 | 0.665 | 1.972 | 0.429 | 0.322 | 0.500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H5 | | 01414 | 01 | 17106 | 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H7 | | - | - | 17713 | 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9/16 - 18 UNF | H3 | | 01415 | 01 | - | - | - | 3.813 | 0.728 | 2.126 | 0.480 | 0.360 | 0.563 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H5 | | 01416 | 01 | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5/8 - 11 UNC | H3 | | - | - | 17107 | 01 | - | 4.250 | 0.799 | 2.433 | 0.590 | 0.442 | 0.688 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5/8 - 18 UNF | | | H5 | - | - | 17108 | 01 | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3/4 - 10 UNC | H3 | | - | - | 17109 | 01 | - | 4.688 | 0.890 | 2.654 | 0.697 | 0.523 | 0.750 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H5 | - | - | 17708 | 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3/4 - 16 UNF | H3 | - | - | 17110 | 01 | - | 5.125 | 1.000 | 3.012 | 0.800 | 0.600 | 0.813 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H5 | - | - | 17111 | 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7/8 - 9 UNC | H3 | - | - | 17112 | 01 | - | 8-15 | 8-15 | 15-35 | 10-20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H5 | - | - | 17114 | 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7/8 - 14 UNF | H3 | - | - | 17115 | 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H5 | - | - | 17116 | 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 - 8 UNC | H5 | - | - | 17117 | 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | 17113 | 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | | | |
|----------|---------------------|----------------------|--------------|--------------|------------|------------------|------|-----|----------------|----------|-------------------------------------|--------------------------|--------------------------|--------------------------|-----------------|--------------|--------------|--------------|--|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy Inconel | Titanium | | Hardened Steels | | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 4140 4340 | 300 | 400 | | 17-4 PH | 6061 7075 | | Casting | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 313Ni | | | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | |
| SFM | | | | | | | 8-20 | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 8-15 | 8-15 | 15-35 | 10-20 | | | |

good best





List 345Ni

Ni-SFT, Modified Bottom (2.5P-3P)



VC10

S/O

10°



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | |
|-------------|--------------|---------------|----------------------------|----------------|---------------|-------------|------------|--------------|---------------|-------|
| | | | Modified Bottom (2.5P-3.P) | | | | | | | |
| | | | S/O | | | | | | | |
| M2.5 x 0.45 | D3 | 3 | 1316110001 | 46.00 | 12.70 | - | 3.58 | 2.79 | 4.80 | |
| M3 x 0.5 | | | 1316110101 | 49.20 | 16.00 | - | | | | |
| M4 x 0.7 | | | 1316110201 | 54.00 | 19.10 | - | | | | |
| M5 x 0.8 | D4 | | 1316110301 | 60.30 | 22.20 | - | 4.93 | 3.86 | 6.40 | |
| M6 x 1.0 | | | 1316110401 | 63.50 | 25.40 | - | 6.48 | 4.85 | 7.90 | |
| M8 x 1.25 | D5 | | 1316110501 | 69.10 | 10.00 | 28.60 | 8.08 | 6.05 | 9.50 | |
| M10 x 1.5 | | | D6 | 1316110701 | 74.60 | 12.00 | 31.80 | 9.68 | 7.26 | 11.10 |
| M10 x 1.25 | | | D5 | 1316110601 | | | | | | |
| M12 x 1.75 | D6 | | 1316110801 | 85.70 | 14.00 | 49.10 | 9.32 | 6.98 | | |

Packed: 1 pc.

Available Steam Oxide finish only.

EXT

Work Material

| List No. | P | | | Alloy Steels 4140 4340 | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|----------------|--------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------|--------------|--------------|
| | Carbon Steels | | | | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 345Ni | | | | | | | | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| SFM | | | | | | 8-20 | | | | | 8-15 | 8-15 | 15-35 | 10-20 | | | |

good best



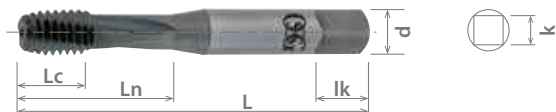


EXOTAP® VC-10

Ideal for Difficult to Machine Materials

List 313

Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Bottom (1.5P-2P) | | | Modified Bottom (2.5P-3.P) | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk |
|---------------|--------------|---------------|------------------|----------------|-------|----------------------------|----------------|-------|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|
| | | | EDP Number | Coating Suffix | | EDP Number | Coating Suffix | | | | | | | |
| | | | | S/O | V | | S/O | V | | | | | | |
| 2 - 56 UNC | H2 | 2 | 01417 | 01 | 08 | 17540 | 01 | 08 | 1.750 | 0.437 | - | 0.141 | 0.110 | 0.188 |
| 4 - 40 UNC | H3 | | 01418 | 01 | 08 | 17520 | 01 | 08 | 1.875 | 0.157 | 0.559 | | | |
| | H4 | | - | - | - | 17541 | 01 | 08 | | | | | | |
| | - | | - | - | - | 17542 | 01 | 08 | | | | | | |
| 5 - 40 UNC | H2 | | - | - | - | 17521 | 01 | 08 | 1.938 | 0.201 | 0.634 | | | |
| 6 - 32 UNC | H2 | | - | - | - | 17543 | 01 | 08 | 2.000 | 0.248 | 0.685 | | | |
| | H3 | | 01419 | 01 | 08 | 17522 | 01 | 08 | | | | | | |
| | H4 | | 01420 | 01 | 08 | 17544 | 01 | 08 | | | | | | |
| | H5 | | - | - | - | 17545 | 01 | 08 | | | | | | |
| 8 - 32 UNC | H2 | | 01421 | 01 | 08 | 17546 | 01 | 08 | 2.125 | 0.252 | 0.752 | 0.168 | 0.131 | |
| | H3 | | 01422 | 01 | 08 | 17523 | 01 | 08 | | | | | | |
| | H4 | | 01423 | 01 | 08 | 17547 | 01 | 08 | | | | | | |
| | H5 | | - | - | - | 17548 | 01 | 08 | | | | | | |
| 10 - 24 UNC | H6 | | - | - | - | 17549 | 01 | 08 | 2.375 | 0.327 | 0.866 | 0.194 | 0.152 | |
| | H3 | | - | - | - | 17524 | 01 | 08 | | | | | | |
| 10 - 32 UNF | H5 | | - | - | - | 17030 | 01 | 08 | 2.500 | 0.398 | 0.996 | 0.255 | 0.191 | 0.313 |
| | H2 | | 01424 | 01 | 08 | 17031 | 01 | 08 | | | | | | |
| | H3 | | 01425 | 01 | 08 | 17525 | 01 | 08 | | | | | | |
| | H4 | | 01426 | 01 | 08 | 17032 | 01 | 08 | | | | | | |
| | H5 | | - | - | - | 17033 | 01 | 08 | | | | | | |
| | H6 | | - | - | - | 17034 | 01 | 08 | | | | | | |
| 1/4 - 20 UNC | H3 | | - | - | - | 17526 | 01 | 08 | 2.500 | 0.398 | 0.996 | 0.255 | 0.191 | 0.313 |
| 1/4 - 28 UNF | H5 | | - | - | - | 17035 | 01 | 08 | | | | | | |
| | H3 | | 01427 | 01 | 08 | 17527 | 01 | 08 | | | | | | |
| | H4 | 01428 | 01 | 08 | 17036 | 01 | 08 | | | | | | | |
| | H5 | - | - | - | 17037 | 01 | 08 | | | | | | | |
| 5/16 - 18 UNC | H6 | - | - | - | 17038 | 01 | 08 | 2.719 | 0.445 | 1.126 | 0.318 | 0.238 | 0.375 | |
| | H3 | - | - | - | 17528 | 01 | 08 | | | | | | | |
| 5/16 - 24 UNF | H5 | - | - | - | 17039 | 01 | 08 | 2.938 | 0.500 | 1.252 | 0.381 | 0.286 | 0.438 | |
| | H3 | 01429 | 01 | 08 | 17529 | 01 | 08 | | | | | | | |
| | H4 | 01430 | 01 | 08 | 17040 | 01 | 08 | | | | | | | |
| | H5 | - | - | - | 17041 | 01 | 08 | | | | | | | |
| 3/8 - 16 UNC | H6 | - | - | - | 17042 | 01 | 08 | 3.156 | 0.571 | 1.713 | 0.323 | 0.242 | 0.406 | |
| | H3 | - | - | - | 17530 | 01 | 08 | | | | | | | |
| 3/8 - 24 UNF | H5 | - | - | - | 17043 | 01 | 08 | 3.375 | 0.614 | 1.933 | 0.367 | 0.275 | 0.438 | |
| | H3 | 01431 | 01 | 08 | 17531 | 01 | 08 | | | | | | | |
| | H4 | 01432 | 01 | 08 | 17044 | 01 | 08 | | | | | | | |
| 3/8 - 24 UNF | H5 | - | - | - | 17045 | 01 | 08 | 3.156 | 0.571 | 1.713 | 0.323 | 0.242 | 0.406 | |
| | H6 | - | - | - | 17046 | 01 | 08 | | | | | | | |
| 7/16 - 14 UNC | H3 | - | - | - | 17532 | 01 | 08 | 3.375 | 0.614 | 1.933 | 0.367 | 0.275 | 0.438 | |
| | H5 | - | - | - | 17047 | 01 | 08 | | | | | | | |
| 7/16 - 20 UNF | H3 | 01433 | 01 | 08 | 17533 | 01 | 08 | 3.375 | 0.614 | 1.933 | 0.367 | 0.275 | 0.438 | |
| | H5 | 01434 | 01 | 08 | 17048 | 01 | 08 | | | | | | | |
| 1/2 - 13 UNC | H3 | - | - | - | 17534 | 01 | 08 | 3.375 | 0.614 | 1.933 | 0.367 | 0.275 | 0.438 | |
| | H5 | - | - | - | 17049 | 01 | 08 | | | | | | | |
| 1/2 - 20 UNF | H3 | 01435 | 01 | 08 | 17535 | 01 | 08 | 3.375 | 0.614 | 1.933 | 0.367 | 0.275 | 0.438 | |
| | H5 | 01436 | 01 | 08 | 17050 | 01 | 08 | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.





List 313 (Continued)

Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



| | | | |
|------|---|-----|-----|
| VC10 | V | S/O | 15° |
|------|---|-----|-----|

Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Bottom (1.5P-2P) | | | Modified Bottom (2.5P-3.P) | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk |
|--------------|--------------|---------------|------------------|----------------|---|----------------------------|----------------|----|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|
| | | | EDP Number | Coating Suffix | | EDP Number | Coating Suffix | | | | | | | |
| | | | | S/O | V | | S/O | V | | | | | | |
| 5/8 - 11 UNC | H3 | 4 | - | - | - | 17536 | 01 | 08 | 3.813 | 0.728 | 2.126 | 0.480 | 0.360 | 0.563 |
| 5/8 - 18 UNF | H5 | | - | - | - | 17537 | 01 | 08 | | | | | | |
| 3/4 - 10 UNC | H3 | | - | - | - | 17538 | 01 | 08 | 4.250 | 0.799 | 2.433 | 0.590 | 0.442 | 0.688 |
| 3/4 - 16 UNF | | | - | - | - | 17539 | 01 | 08 | | | | | | |

Packed: 1 pc.

EDP's listed above are stocked standard.

Available in Steam Oxide or V coatings as shown above.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|---------------------|----------------------|--------------|-------------------------------------|--------------------------|------------------|-------|--------------------------|-------------------------------------|--------------|---------|--------------------------|-------------------------------------|--------------------------|--------------|--------------|--------------|--|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 313 | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | |
| SFM | | | | 15-30 | 10-25 | | 12-45 | 8-20 | | | | 8-15 | 8-15 | 15-35 | 10-20 | | | |

good best





EXOTAP® VC-10

Ideal for Difficult to Machine Materials



| | | | |
|------|---|-----|-----|
| VC10 | V | S/O | 15° |
|------|---|-----|-----|

List 345

Modified Bottom (2.5P-3P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | Modified Bottom (2.5P-3P) | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|---------------------------|----------------|----|----------------|---------------|-------------|------------|--------------|---------------|
| | | | EDP Number | Coating Suffix | | | | | | | |
| | | | | S/O | V | L | Lc | Ln | d | k | lk |
| M3 x 0.5 | D3 | 3 | 17055 | 01 | 08 | 49.20 | 4.10 | 16.00 | 3.58 | 2.79 | 4.80 |
| M4 x 0.7 | D4 | | 17056 | 01 | 08 | 54.00 | 5.60 | 19.10 | 4.27 | 3.33 | 6.40 |
| M5 x 0.8 | | | 17057 | 01 | 08 | 60.30 | 6.40 | 22.20 | 4.93 | 3.86 | |
| M6 x 1.0 | | | 17058 | 01 | 08 | 63.50 | 8.00 | 25.40 | 6.48 | 4.85 | |
| M8 x 1.25 | D5 | | 17059 | 01 | 08 | 69.10 | 10.00 | 28.60 | 8.08 | 6.05 | 9.50 |
| M10 x 1.5 | D6 | | 17061 | 01 | 08 | 74.60 | 12.00 | 31.80 | 9.68 | 7.26 | 11.10 |
| M10 x 1.25 | D5 | | 17060 | 01 | 08 | | | | | | |
| M12 x 1.75 | D6 | | 17062 | 01 | 08 | | | | | | |

Packed: 1 pc.
 EDP's listed above are stocked standard.
 Available in Steam Oxide or V coatings as shown above.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|---------------|------|------|-------------------------------------|--------------------------|------------------|--------------------------|-------------------------------------|-----------|-----------|---------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 345 | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| SFM | | | | 15-30 | 10-25 | | 12-45 | 8-20 | | | | 8-15 | 8-15 | 15-35 | 10-20 | | |

good best





List 317

VPO-SFT, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|---------------------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P-3P) | | | | | | |
| | | | V | | | | | | |
| | | | L | Lc | Ln | d | k | lk | |
| 5/16 - 18 UNC | H3 | 3 | 31701508 | 3.543 | 0.445 | 1.378 | 0.318 | 0.238 | 0.375 |
| | H5 | | 31701608 | | | | | | |
| 5/16 - 24 UNF | H3 | | 31701708 | 3.937 | 0.500 | 1.535 | 0.381 | 0.286 | 0.438 |
| | H4 | | 31701808 | | | | | | |
| 3/8 - 16 UNC | H3 | | 31701908 | 3.543 | 0.500 | 1.378 | 0.381 | 0.286 | 0.438 |
| | H5 | | 31702008 | | | | | | |
| 3/8 - 24 UNF | H3 | | 31702108 | 3.937 | 0.571 | 1.713 | 0.323 | 0.242 | 0.406 |
| | H4 | | 31702208 | | | | | | |
| 7/16 - 14 UNC | H3 | | 31702308 | 4.331 | 0.614 | 1.933 | 0.367 | 0.275 | 0.438 |
| | H5 | | 31702408 | | | | | | |
| 7/16 - 20 UNF | H3 | | 31702508 | 3.937 | 0.665 | 1.972 | 0.429 | 0.322 | 0.500 |
| | H5 | | 31702608 | | | | | | |
| 1/2 - 13 UNC | H3 | | 31702708 | 3.937 | 0.728 | 2.126 | 0.480 | 0.360 | 0.563 |
| | H5 | | 31702808 | | | | | | |
| 1/2 - 20 UNF | H3 | | 31702908 | 4.921 | 0.799 | 2.433 | 0.590 | 0.442 | 0.688 |
| | H5 | | 31703008 | | | | | | |
| 9/16 - 12 UNC | H3 | 31704908 | 4.331 | 0.890 | 2.654 | 0.697 | 0.523 | 0.750 | |
| | H5 | 31705008 | | | | | | | |
| 9/16 - 18 UNF | H3 | 31703108 | 4.331 | 0.890 | 2.654 | 0.697 | 0.523 | 0.750 | |
| | H5 | 31703208 | | | | | | | |
| 5/8 - 11 UNC | H3 | 31703308 | 4.331 | 1.000 | 3.012 | 0.800 | 0.600 | 0.813 | |
| | H5 | 31703408 | | | | | | | |
| 5/8 - 18 UNF | H3 | 31703508 | 5.512 | 1.000 | 3.012 | 0.800 | 0.600 | 0.813 | |
| | H5 | 31703608 | | | | | | | |
| 3/4 - 10 UNC | H3 | 31703708 | 4.331 | 1.000 | 3.012 | 0.800 | 0.600 | 0.813 | |
| | H5 | 31703808 | | | | | | | |
| 3/4 - 16 UNF | H3 | 31703908 | 5.512 | 1.000 | 3.012 | 0.800 | 0.600 | 0.813 | |
| | H5 | 31704008 | | | | | | | |
| 7/8 - 9 UNC | H4 | 31704108 | 4.921 | 1.000 | 3.012 | 0.800 | 0.600 | 0.813 | |
| | H6 | 31704208 | | | | | | | |
| 7/8 - 14 UNF | H4 | 31704308 | 5.512 | 1.000 | 3.012 | 0.800 | 0.600 | 0.813 | |
| | H6 | 31704408 | | | | | | | |
| 1 - 8 UNC | H4 | 31704508 | 6.299 | 1.000 | 3.012 | 0.800 | 0.600 | 0.813 | |
| | H6 | 31704608 | | | | | | | |
| 1 - 12 UNF | H4 | 31704708 | 5.512 | 1.000 | 3.012 | 0.800 | 0.600 | 0.813 | |
| | H6 | 31704808 | | | | | | | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|---------------|------|------|-------------------------------------|--------------------------|------------------|-----|--------------------------|-------------------------------------|-----------|-----------|---------|--------------------------|-------------------------------------|--------------------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 317 | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |
| SFM | | | | 15-30 | 10-25 | | | 12-45 | 8-20 | | | | 8-15 | 8-15 | 15-35 | 10-20 | | |

good best





EXOTAP® VC-10 Oil

Coolant-Through Taps Designed for Difficult to Machine Materials

List 351

VPO-SFT, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | |
|------------|--------------|---------------|---------------------------|--------------------|---------------|-------------|------------|--------------|---------------|-------|
| | | | Modified Bottom (2.5P-3P) | | | | | | | |
| | | | V | | | | | | | |
| M8 x 1.0 | D5 | 3 | 35100608 | 90.00 | 10.00 | 35.00 | 8.08 | 6.05 | 9.50 | |
| M8 x 1.25 | | | 35100708 | | | | | | | |
| M10 x 1.25 | | | 35100808 | | | | | | | |
| M10 x 1.5 | D6 | | 3 | 35100908 | 100.00 | 12.00 | 39.00 | 9.68 | 7.26 | 11.10 |
| M12 x 1.25 | D5 | | | 35101008 | | | | | | |
| M12 x 1.5 | D6 | | | 35101108 | | | | | | |
| M12 x 1.75 | | | 35101208 | | | | | | | |
| M14 x 1.5 | | | 35101308 | | | | | | | |
| M14 x 2.0 | D7 | | 3 | 35101408 | 110.00 | 16.00 | 50.10 | 10.90 | 8.18 | 12.70 |
| M16 x 1.5 | D6 | | | 35101508 | | | | | | |
| M16 x 2.0 | D7 | | | 35101608 | | | | | | |
| M18 x 1.5 | D6 | | 4 | 35101708 | 110.00 | 20.00 | 55.00 | 13.77 | 10.31 | 15.90 |
| M18 x 2.5 | D7 | 35101808 | | | | | | | | |
| M20 x 1.5 | D6 | 35101908 | | | | | | | | |
| M20 x 2.5 | D7 | 4 | 35102008 | 140.00 | 24.00 | 61.80 | 16.56 | 12.42 | 17.50 | |
| M22 x 1.5 | D6 | | 35102108 | | | | | | | |
| M22 x 2.5 | D7 | | 35102208 | | | | | | | |
| M24 x 1.5 | D6 | 4 | 35102308 | 140.00 | 24.00 | 67.40 | 17.70 | 13.28 | 19.10 | |
| M24 x 3.0 | D8 | | 35102408 | | | | | | | |
| | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.



| List No. | Work Material | | | | | | | | | | | | | | | | | | |
|----------|---------------|------|------|-----|--------------|------------|------------------|---------|------|-----------|----------|---------|----------------|----------|-----------------|-----------|-----------|--|--|
| | P | | | | | M | | | K | N | | S | | H | | | | | |
| | Carbon Steels | | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | 300 | | | 400 | 17-4 PH | 6061 | | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 351 | | | | | | | | | | | | | | | | | | | |
| SFM | | | | | 15-30 | 10-25 | | 12-45 | 8-20 | | | | 8-15 | 8-15 | 15-35 | 10-20 | | | |

good best



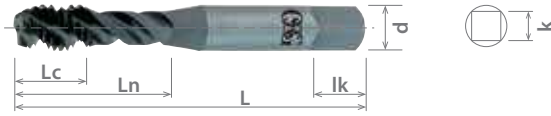


List 303

Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



| | | | | |
|------|---|-----|-----|-----|
| HSSE | V | TiN | S/O | 45° |
|------|---|-----|-----|-----|



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Bottom (1.5P - 2P) | | | Modified Bottom (2.5P - 3P) | | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk | | | |
|-------------|--------------|---------------|--------------------|----------------|----|-----------------------------|----------------|-----|----|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|-------|-------|-------|
| | | | EDP Number | Coating Suffix | | EDP Number | Coating Suffix | | | | | | | | | | | |
| | | | | S/O | V | | S/O | TiN | V | | | | | | | | | |
| 2 - 56 UNC | H2 | 2 | 01354 | 01 | 08 | 17489 | 01 | - | - | 1.750 | 0.437 | 0.476 | 0.141 | 0.110 | 0.188 | | | |
| 3 - 48 UNC | | | 01355 | 01 | 08 | 17487 | 01 | - | - | 1.813 | 0.496 | 0.535 | | | | | | |
| 4 - 40 UNC | H3 | 3 | - | - | - | 17639 | 01 | 05 | 08 | 1.875 | 0.197 | 0.559 | | | | 0.141 | 0.110 | 0.188 |
| | | | 01356 | 01 | 08 | 17320 | 01 | - | 08 | | | | | | | | | |
| | H4 | 2 | - | - | - | 17480 | 01 | - | - | | | | | | | | | |
| | | | 01357 | 01 | 08 | 17220 | 01 | - | 08 | | | | | | | | | |
| | | | - | - | - | 17481 | 01 | - | - | | | | | | | | | |
| | | | 17483 | 01 | - | 17482 | 01 | - | - | | | | | | | | | |
| 4 - 48 UNF | H2 | 2 | - | - | - | 17484 | 01 | - | - | 1.938 | 0.201 | 0.626 | | | | 0.141 | 0.110 | 0.188 |
| 5 - 40 UNC | | | 01358 | 01 | 08 | - | - | - | - | | | | | | | | | |
| 6 - 32 UNC | H2 | 2 | 01359 | 01 | 08 | 17321 | 01 | - | 08 | 2.000 | 0.248 | 0.685 | | | | 0.141 | 0.110 | 0.188 |
| | | | 01360 | 01 | 08 | 17242 | 01 | - | 08 | | | | | | | | | |
| | | | H3 | 01361 | 01 | 08 | 17322 | 01 | 05 | | | | 08 | | | | | |
| | | | H4 | - | - | - | 17467 | 01 | - | | | | - | | | | | |
| | | | H5 | 17468 | 01 | - | 17222 | 01 | - | | | | 08 | | | | | |
| 6 - 40 UNF | H2 | 2 | - | - | - | 17469 | 01 | - | - | 2.125 | 0.252 | 0.752 | 0.168 | 0.131 | 0.250 | | | |
| | | | 01362 | 01 | 08 | 17485 | 01 | - | - | | | | | | | | | |
| 8 - 32 UNC | H3 | 3 | - | - | - | 17486 | 01 | - | - | 2.375 | 0.327 | 0.866 | 0.194 | 0.152 | 0.281 | | | |
| | | | 01363 | 01 | 08 | 17243 | 01 | - | 08 | | | | | | | | | |
| | | | 01364 | 01 | 08 | 17323 | 01 | 05 | 08 | | | | | | | | | |
| | | | H4 | - | - | - | 17470 | 01 | - | | | | | | | - | | |
| | | | H5 | 17471 | 01 | - | 17223 | 01 | - | | | | | | | 08 | | |
| | | | H6 | - | - | - | 17472 | 01 | - | | | | | | | - | | |
| | | | H7 | - | - | - | 17473 | 01 | - | | | | | | | - | | |
| 8 - 36 UNF | H3 | 3 | 01365 | 01 | 08 | - | - | - | - | 2.375 | 0.327 | 0.866 | 0.194 | 0.152 | 0.281 | | | |
| 10 - 24 UNC | H2 | 2 | 01366 | 01 | 08 | 17245 | 01 | - | 08 | | | | | | | | | |
| | | | 01367 | 01 | 08 | 17324 | 01 | 05 | 08 | | | | | | | | | |
| | | | H3 | 17495 | 01 | - | 17494 | 01 | - | | | | | | | - | | |
| | | | H5 | - | - | - | 17496 | 01 | - | | | | | | | - | | |
| 10 - 32 UNF | H2 | 2 | - | - | - | 17496 | 01 | - | - | | | | | | | | | |
| | | | 01368 | 01 | 08 | 17246 | 01 | - | 08 | | | | | | | | | |
| | | | 01369 | 01 | 08 | 17325 | 01 | 05 | 08 | | | | | | | | | |
| | | | H3 | - | - | - | 17474 | 01 | - | - | | | | | | | | |
| | | | H4 | 17475 | 01 | - | 17225 | 01 | - | 08 | | | | | | | | |
| | | | H5 | - | - | - | 17476 | 01 | - | - | | | | | | | | |
| 12 - 24 UNC | H3 | 2 | - | - | - | 17477 | 01 | - | - | 0.331 | 0.933 | 0.220 | 0.165 | 0.281 | | | | |
| 12 - 28 UNF | | | 01370 | 01 | 08 | 17497 | 01 | - | - | | | | | | | | | |
| | | | - | - | - | 17498 | 01 | - | - | | | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide, V or TiN coatings as shown above.

continued on next page **EXT**

| Work Material | | | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|--------------------------|--------------------------|--------------|----------|------------|-------------------------------------|-------------------------------------|--------------------------|----------------|----------|--------------|----------|-----------------|---------|---------|----------------|---------|-----------|
| List No. | P | | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Titanium | | Stainless Steels | | | | Aluminum | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | | 300 | 400 | 17-4 PH | | | | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 303 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | 20-45 | 20-45 | 8-20 | | | | | | | | | | |

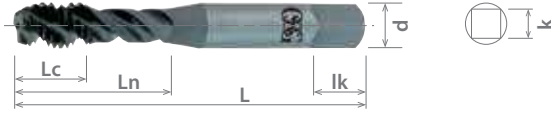
good best





List 303 (Continued)

Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Bottom (1.5P - 2P) | | | Modified Bottom (2.5P - 3P) | | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk |
|---------------|--------------|---------------|--------------------|----------------|-------|-----------------------------|----------------|-----|----|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|
| | | | EDP Number | Coating Suffix | | EDP Number | Coating Suffix | | | | | | | | |
| | | | | S/O | V | | S/O | TiN | V | | | | | | |
| 1/4 - 20 UNC | H2 | 3 | - | - | - | 17626 | 01 | - | - | 2.500 | 0.398 | 0.996 | 0.255 | 0.191 | 0.313 |
| | H3 | | 01371 | 01 | 08 | 17326 | 01 | 05 | 08 | | | | | | |
| | H5 | | 01372 | 01 | 08 | 17226 | 01 | - | 08 | | | | | | |
| | H7 | | - | - | - | 17627 | 01 | - | - | | | | | | |
| 1/4 - 28 UNF | H2 | | - | - | - | 17634 | 01 | - | - | | | | | | |
| | H3 | | 01373 | 01 | 08 | 17327 | 01 | 05 | 08 | | | | | | |
| | H4 | | 01374 | 01 | 08 | 17227 | 01 | - | 08 | | | | | | |
| | H5 | | 17636 | 01 | - | 17635 | 01 | - | - | | | | | | |
| | H6 | | - | - | - | 17637 | 01 | - | - | | | | | | |
| | H7 | | - | - | - | 17638 | 01 | - | - | | | | | | |
| 5/16 - 18 UNC | H3 | | 01375 | 01 | 08 | 17328 | 01 | 05 | 08 | | | | | | |
| | H5 | | 01376 | 01 | 08 | 17228 | 01 | - | 08 | | | | | | |
| | H7 | | - | - | - | 17622 | 01 | - | - | | | | | | |
| 5/16 - 24 UNF | H3 | | 01377 | 01 | 08 | 17329 | 01 | 05 | 08 | | | | | | |
| | H4 | | 01378 | 01 | 08 | 17229 | 01 | - | 08 | | | | | | |
| | H5 | | 17632 | 01 | - | 17631 | 01 | - | - | | | | | | |
| | H7 | | - | - | - | 17633 | 01 | - | - | | | | | | |
| 3/8 - 16 UNC | H3 | | 01379 | 01 | 08 | 17330 | 01 | 05 | 08 | | | | | | |
| | H5 | | 01380 | 01 | 08 | 17230 | 01 | - | 08 | | | | | | |
| | H7 | | - | - | - | 17618 | 01 | - | - | | | | | | |
| 3/8 - 24 UNF | H3 | | 01381 | 01 | 08 | 17331 | 01 | 05 | 08 | | | | | | |
| | H4 | | 01382 | 01 | 08 | 17231 | 01 | - | 08 | | | | | | |
| | H5 | | 17630 | 01 | - | 17629 | 01 | - | - | | | | | | |
| 7/16 - 14 UNC | H3 | | 01383 | 01 | 08 | 17332 | 01 | 05 | 08 | | | | | | |
| | H5 | | - | - | - | 17232 | 01 | - | 08 | | | | | | |
| | H7 | | - | - | - | 17617 | 01 | - | - | | | | | | |
| 7/16 - 20 UNF | H3 | | 01384 | 01 | 08 | 17333 | 01 | 05 | 08 | | | | | | |
| | H5 | | 01385 | 01 | 08 | 17233 | 01 | - | 08 | | | | | | |
| | H7 | - | - | - | 17628 | 01 | - | - | | | | | | | |
| 1/2 - 13 UNC | H3 | 01386 | 01 | 08 | 17334 | 01 | 05 | 08 | | | | | | | |
| | H5 | 01387 | 01 | 08 | 17234 | 01 | - | 08 | | | | | | | |
| | H7 | - | - | - | 17500 | 01 | - | - | | | | | | | |
| 1/2 - 20 UNF | H3 | 01388 | 01 | 08 | 17335 | 01 | 05 | 08 | | | | | | | |
| | H5 | 01389 | 01 | 08 | 17235 | 01 | - | 08 | | | | | | | |
| | H6 | - | - | - | 17624 | 01 | - | - | | | | | | | |
| | H7 | - | - | - | 17625 | 01 | - | - | | | | | | | |
| 9/16 - 12 UNC | H3 | 3 | - | - | - | 17499 | 01 | 05 | 08 | | | | | | |
| | | 4 | 01390 | 01 | 08 | 17260 | 01 | - | 08 | | | | | | |
| 9/16 - 18 UNF | H3 | 3 | - | - | - | 17623 | 01 | 05 | 08 | | | | | | |
| | | 4 | 01391 | 01 | 08 | 17261 | 01 | - | 08 | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide, V or TiN coatings as shown above.





List 303 (Continued)

Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Bottom (1.5P - 2P) | | | Modified Bottom (2.5P - 3P) | | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk |
|--------------|--------------|---------------|--------------------|----------------|----|-----------------------------|----------------|-----|----|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|
| | | | EDP Number | Coating Suffix | | EDP Number | Coating Suffix | | | | | | | | |
| | | | | S/O | V | | S/O | TiN | V | | | | | | |
| 5/8 - 11 UNC | H3 | 3 | - | - | - | 17491 | 01 | 05 | 08 | 3.813 | 0.728 | 2.126 | 0.480 | 0.360 | 0.563 |
| | | 4 | 01392 | 01 | 08 | 17336 | 01 | - | 08 | | | | | | |
| | H5 | 3 | - | - | - | 17492 | 01 | - | - | | | | | | |
| | | 4 | 01393 | 01 | 08 | - | - | - | - | | | | | | |
| 5/8 - 18 UNF | H3 | 3 | - | - | - | 17493 | 01 | - | - | | | | | | |
| | | 4 | - | - | - | 17619 | - | 05 | 08 | | | | | | |
| | H5 | 3 | - | - | - | 17337 | 01 | - | 08 | | | | | | |
| | | 4 | 01395 | 01 | 08 | - | - | - | - | | | | | | |
| 3/4 - 10 UNC | H3 | 4 | - | - | - | 17621 | 01 | - | - | | | | | | |
| | | | 01396 | 01 | 08 | 17338 | 01 | 05 | 08 | | | | | | |
| 3/4 - 16 UNF | H3 | 4 | 01397 | 01 | 08 | - | - | - | - | | | | | | |
| | | | 01398 | 01 | 08 | 17339 | 01 | 05 | 08 | | | | | | |
| 7/8 - 9 UNC | H4 | 4 | 01399 | 01 | 08 | - | - | - | - | | | | | | |
| 7/8 - 14 UNF | | | 01400 | 01 | 08 | 17263 | 01 | - | 08 | | | | | | |
| 1 - 8 UNC | | | - | - | - | 17264 | 01 | - | 08 | | | | | | |
| 1 - 12 UNF | | | - | - | - | 17490 | 01 | - | - | | | | | | |

Packed: 1 pc.

EDP's listed above are stocked standard.

Available in Steam Oxide, V or TiN coatings as shown above.



Work Material

| List No. | P | | | Alloy Steels 4140 4340 | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|----------|-------------------------------------|--------------------------|--------------------------|------------------------------|------------|-------------------------------------|-------------------------------------|--------------------------|----------------|--------------|---------|--------------|-------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 303 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | 20-45 | 20-45 | 8-20 | | | | | | | | | |

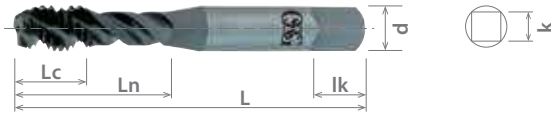
good best





List 343

Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | Bottom (1.5P - 2P) | | Modified Bottom (2.5P - 3P) | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk | |
|------------|--------------|---------------|--------------------|-----------------------|-----------------------------|----------------|-----|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|-------|
| | | | EDP Number | Coating Suffix S/O | EDP Number | Coating Suffix | | | | | | | | |
| | | | | | | S/O | TiN | | | | | | | V |
| M3 x 0.5 | D3 | 3 | 17550 | 01 | 17551 | 01 | - | - | 49.21 | 4.10 | 16.00 | 3.58 | 2.79 | 4.80 |
| M3.5 x 0.6 | D4 | | - | - | 17464 | 01 | - | - | | | | | | |
| M4 x 0.7 | | | 17553 | 01 | 17554 | 01 | 05 | 08 | 53.98 | 5.60 | 19.10 | 4.27 | 3.33 | 6.40 |
| M5 x 0.8 | | | 17556 | 01 | 17557 | 01 | 05 | 08 | 60.33 | 6.40 | 22.20 | 4.93 | 3.86 | |
| M6 x 1.0 | D5 | | 17559 | 01 | 17560 | 01 | 05 | 08 | 63.50 | 8.00 | 25.40 | 6.48 | 4.85 | |
| M8 x 1.25 | | | 17562 | 01 | 17563 | 01 | 05 | 08 | 69.06 | 10.00 | 28.60 | 8.08 | 6.05 | 9.50 |
| M8 x 1.0 | | | 17465 | 01 | 17466 | 01 | - | - | | | | | | |
| M10 x 1.5 | D6 | | 17565 | 01 | 17566 | 01 | 05 | 08 | | | | | | |
| M10 X 1.25 | D5 | | - | - | 17457 | 01 | - | - | | | | | | |
| M12 x 1.75 | D6 | | 17568 | 01 | 17569 | 01 | 05 | 08 | 85.73 | 14.00 | 49.10 | 9.32 | 6.98 | |
| M12 x 1.25 | D5 | | - | - | 17458 | 01 | - | - | | | | | | |
| M14 x 2.0 | D7 | | 17558 | 01 | 17460 | 01 | - | - | 91.28 | 16.00 | 50.10 | 10.90 | 8.18 | 12.70 |
| M14 x 1.5 | D6 | | 17561 | 01 | 17459 | 01 | - | - | | | | | | |
| M16 x 2.0 | D7 | | 17555 | 01 | 17462 | 01 | - | - | 96.84 | | 54.00 | 12.19 | 9.14 | 14.30 |
| M16 x 1.5 | D6 | | 17552 | 01 | 17461 | 01 | - | - | | | | | | |
| M18 x 1.5 | | | 4 | - | - | 17463 | 01 | - | - | 102.39 | 20.00 | 55.00 | 13.77 | 10.31 |

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide, V or TiN coatings as shown above.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S Titanium | H | | | | |
|----------|-------------------------------------|--------------------------|--------------------------|--------------|------------|-------------------------------------|-------------------------------------|--------------------------|----------------|--------------|---------|---------------|--------------|-------------------|------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | | Nickel Alloy | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 343 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | 20-45 | 20-45 | 8-20 | | | | | | | | | |

good best





List 307

OIL-V-SFT, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | |
|---------------|--------------|---------------|---------------------------|--------------------|---------------|-------------|------------|--------------|---------------|-------|
| | | | Modified Bottom (2.5P-3P) | | | | | | | |
| | | | V | | | | | | | |
| | | | L | Lc | Ln | d | k | lk | | |
| 1/4 - 20 UNC | H3 | 3 | 30701708 | 3.150 | 0.402 | 1.181 | 0.255 | 0.191 | 0.313 | |
| | H5 | | 30701808 | | | | | | | |
| 1/4 - 28 UNF | H3 | | 30701908 | | | | | | | |
| | H4 | | 30702008 | | | | | | | |
| 5/16 - 18 UNC | H3 | | 30702108 | 3.543 | 0.445 | 1.378 | 0.318 | 0.238 | 0.375 | |
| | H5 | | 30702208 | | | | | | | |
| 5/16 - 24 UNF | H4 | | 30702308 | | | | | | | |
| | H5 | | 30702408 | | | | | | | |
| 3/8 - 16 UNC | H3 | | 30702508 | 3.937 | 0.500 | 1.535 | 0.381 | 0.286 | 0.438 | |
| | H5 | | 30702608 | | | | | | | |
| 3/8 - 24 UNF | H3 | | 30702708 | 3.543 | | | | | | 1.378 |
| | H4 | | 30702808 | | | | | | | |
| 7/16 - 14 UNC | H3 | 30702908 | 3.937 | 0.571 | 1.291 | 0.323 | 0.242 | 0.406 | | |
| | H5 | 30703008 | | | | | | | | |
| 7/16 - 20 UNF | H3 | 30703108 | | | | | | | | |
| | H5 | 30703208 | | | | | | | | |
| 1/2 - 13 UNC | H3 | 30703308 | 4.331 | 0.614 | 1.354 | 0.367 | 0.275 | 0.438 | | |
| | H5 | 30703408 | | | | | | | | |
| 1/2 - 20 UNF | H3 | 30703508 | 3.397 | | | | | | 30703608 | |
| | H5 | 30703608 | | | | | | | | |
| 9/16 - 12 UNC | H3 | 30703708 | 4.331 | 0.665 | 1.472 | 0.429 | 0.322 | 0.500 | | |
| | H5 | 30703808 | | | | | | | | |
| 9/16 - 18 UNF | H3 | 30703908 | 3.937 | | | | | | 30704008 | |
| | H5 | 30704008 | | | | | | | | |
| 5/8 - 11 UNC | H3 | 30704108 | 4.331 | 0.728 | 1.563 | 0.480 | 0.360 | 0.563 | | |
| | H5 | 30704208 | | | | | | | | |
| 5/8 - 18 UNF | H3 | 30704308 | 3.937 | | | | | | 30704408 | |
| | H5 | 30704408 | | | | | | | | |
| 3/4 - 10 UNC | H3 | 30704508 | 4.921 | 0.799 | 1.713 | 0.590 | 0.442 | 0.688 | | |
| | H5 | 30704608 | | | | | | | | |
| 3/4 - 16 UNF | H3 | 30704708 | 4.331 | | | | | | 30704808 | |
| | H5 | 30704808 | | | | | | | | |
| 7/8 - 9 UNC | H4 | 30704908 | 5.512 | 0.890 | 1.886 | 0.697 | 0.523 | 0.750 | | |
| | H6 | 30705008 | | | | | | | | |
| 7/8 - 14 UNF | H4 | 30705108 | 4.921 | | | | | | 30705208 | |
| | H6 | 30705208 | | | | | | | | |
| 1 - 8 UNC | H4 | 30705308 | 6.299 | 1.000 | 2.091 | 0.800 | 0.600 | 0.813 | | |
| | H6 | 30705408 | | | | | | | | |
| 1 - 12 UNF | H4 | 30705508 | 5.512 | | | | | | 30705608 | |
| | H6 | 30705608 | | | | | | | | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|----------|-------------------------------------|--------------------------|--------------------------|--------------|------------|-------------------------------------|-------------------------------------|--------------------------|----------------|-----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 307 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | 20-45 | 20-45 | 8-20 | | | | | | | | | |

good best





EXOTAP VA-3® Oil

Coolant-Through Taps Designed for Stainless Steel

List 347

OIL-V-SFT, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|---------------------------|--------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P-3P) | | | | | | | |
| | | | V | L | | | | | | |
| M6 x 1.0 | D5 | 3 | 34700508 | 80.00 | 8.00 | 30.00 | 6.48 | 4.85 | 7.90 | |
| M8 x 1.0 | | | 34700608 | 90.00 | | | | | | |
| M8 x 1.25 | | | 34700708 | | | | | | | |
| M10 x 1.25 | D6 | | 34700808 | 100.00 | 12.00 | 39.00 | 9.68 | 7.26 | 11.10 | |
| M10 x 1.5 | | | 34700908 | | | | | | | |
| M12 x 1.25 | | | 34701008 | | | | | | | |
| M12 x 1.5 | D6 | | 34701108 | 110.00 | 14.00 | 49.10 | 9.32 | 6.98 | 11.10 | |
| M12 x 1.75 | | | 34701208 | | | | | | | |
| M14 x 1.5 | | | 34701308 | | | | | | | |
| M14 x 2.0 | D7 | 4 | 34701408 | 110.00 | 16.00 | 50.10 | 10.90 | 8.18 | 12.70 | |
| M16 x 1.5 | D6 | | 34701508 | 100.00 | | | | | | |
| M16 x 2.0 | D7 | | 34701608 | 110.00 | | | | | | |
| M18 x 1.5 | D6 | | 34701708 | 125.00 | 20.00 | 55.00 | 13.77 | 10.31 | 15.90 | |
| M18 x 2.5 | D7 | | 34701808 | | | | | | | |
| M20 x 1.5 | D6 | | 34701908 | | | | | | | |
| M20 x 2.5 | D7 | | 34702008 | 140.00 | 24.00 | 68.40 | 19.30 | 14.48 | 19.10 | |
| M22 x 1.5 | D6 | | 34702108 | 125.00 | | | | | | |
| M22 x 2.5 | D7 | | 34702208 | 140.00 | | | | | | |
| M24 x 1.5 | D6 | 34702308 | 160.00 | 24.00 | 68.40 | 19.30 | 14.48 | 19.10 | | |
| M24 x 3.0 | D8 | 34702408 | | | | | | | | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
|----------|-------------------------------------|--------------------------|--------------------------|--------------|------------|-------------------------------------|-------------------------------------|--------------------------|-----------|----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 347 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | 20-45 | 20-45 | 8-20 | | | | | | | | | | |

good best





List 398

Long Shank, Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



| | | |
|------|-----|-----|
| HSSE | S/O | 30° |
|------|-----|-----|



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Long Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|--------------------|-----------------------------|---------------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P - 2P) | Modified Bottom (2.5P - 3P) | | | | | | |
| | | | S/O | S/O | | | | | | |
| 4 - 40 UNC | H2 | 3 | - | 1766101 | 4.000 | 0.197 | 0.839 | 0.141 | 0.110 | 0.188 |
| 0143701 | | | - | 6.000 | | | | | | |
| 6 - 32 UNC | H3 | | - | 1766301 | 4.000 | 0.248 | 1.028 | 0.168 | 0.131 | 0.250 |
| 0143801 | | | 1766501 | 6.000 | | | | | | |
| 8 - 32 UNC | H3 | | - | 1766701 | 4.000 | 0.252 | 1.126 | 0.194 | 0.152 | 0.250 |
| 0143901 | | | 1766901 | 6.000 | | | | | | |
| 10 - 24 UNC | H3 | | - | 1767101 | 4.000 | 0.327 | 1.303 | 0.255 | 0.191 | 0.313 |
| - | | | 1767301 | 6.000 | | | | | | |
| 10 - 32 UNF | H3 | | - | 1767501 | 4.000 | 0.398 | 1.496 | 0.318 | 0.238 | 0.375 |
| 0144001 | | | 1767701 | 6.000 | | | | | | |
| 1/4 - 20 UNC | H3 | | - | 1767901 | 4.000 | 0.445 | 1.689 | 0.381 | 0.286 | 0.438 |
| 0144101 | | | 1768101 | 6.000 | | | | | | |
| 1/4 - 28 UNF | H3 | | - | 1768301 | 4.000 | 0.500 | 1.874 | 0.323 | 0.242 | 0.406 |
| 0144201 | | | 1768301 | 6.000 | | | | | | |
| 5/16 - 18 UNC | H3 | | - | 1768501 | 4.000 | 0.571 | 1.713 | 0.367 | 0.275 | 0.438 |
| 0144301 | | | 1768501 | 6.000 | | | | | | |
| 5/16 - 24 UNF | H3 | | - | 1768601 | 4.000 | 0.614 | 1.933 | 0.480 | 0.360 | 0.563 |
| 0144401 | | | 1768701 | 6.000 | | | | | | |
| 3/8 - 16 UNC | H3 | | - | 1768701 | 4.000 | 0.728 | 2.126 | 0.480 | 0.360 | 0.563 |
| 0144501 | | | 1768801 | 6.000 | | | | | | |
| 3/8 - 24 UNF | H3 | - | 1768801 | 4.000 | 0.728 | 2.126 | 0.480 | 0.360 | 0.563 | |
| 0144601 | | 1768901 | 6.000 | | | | | | | |
| 7/16 - 14 UNC | H3 | - | 1768901 | 4.000 | 0.728 | 2.126 | 0.480 | 0.360 | 0.563 | |
| - | | 1769001 | 6.000 | | | | | | | |
| 7/16 - 20 UNF | H3 | - | 1769101 | 4.000 | 0.728 | 2.126 | 0.480 | 0.360 | 0.563 | |
| 0144701 | | 1769101 | 6.000 | | | | | | | |
| 1/2 - 13 UNC | H3 | - | 1769201 | 4.000 | 0.728 | 2.126 | 0.480 | 0.360 | 0.563 | |
| 0144801 | | 1769201 | 6.000 | | | | | | | |
| 1/2 - 20 UNF | H3 | - | 1769201 | 4.000 | 0.728 | 2.126 | 0.480 | 0.360 | 0.563 | |
| 0144901 | | 1769201 | 6.000 | | | | | | | |
| 5/8 - 11 UNC | H3 | 4 | - | 1769301 | 4.000 | 0.728 | 2.126 | 0.480 | 0.360 | 0.563 |

Packed: 1 pc.
Available Steam Oxide finish only.
Neck length is designed for reaching 50% deeper holes than ANSI standard taps.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|--------------------------|--------------------------|--------------|------------|-------------------------------------|-------------------------------------|--------------------------|-----------|-----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 398 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | 20-45 | 20-45 | 8-20 | | | | | | | | | | |

good best





List 220

DIN Overall Length, Modified Bottom (2.5P-3P)



Units: Inch

| Tap Size | Class of Fit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|----------------|--------------|---------------|---------------------------|-------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P-3P) | | | | | | | |
| | | | S/O | L | | Lc | Ln | d | k | lk |
| 4 - 40UNC | 2B | 3 | 2211401 | 2.205 | 0.196 | 0.704 | 0.141 | 0.110 | 0.188 | 0.250 |
| 6 - 32 UNC | | | 2212401 | | | | | | | |
| 8 - 32 UNC | | | 2217801 | 2.480 | 0.251 | 0.826 | 0.168 | 0.131 | | |
| 10 - 24 UNC | | | 2213401 | 2.756 | 0.326 | 0.976 | 0.194 | 0.152 | | |
| 10 - 32 UNF | | | 2218801 | | | | | | | |
| 1/4 - 20 UNC | | | 2230001 | 3.150 | 0.397 | 1.177 | 0.255 | 0.191 | 0.313 | |
| 1/4 - 28 UNF | | | 2230401 | | | | | | | |
| 5/16 - 18 UNC | | | 2230801 | 3.543 | 0.444 | 1.377 | 0.318 | 0.238 | 0.375 | |
| 5/16 - 24 UNF | | | 2231201 | | | | | | | |
| 3/8 - 16 UNC | | | 2231601 | 3.937 | 0.500 | 1.712 | 0.381 | 0.286 | 0.438 | |
| 3/8 - 24 UNF | | | 2231801 | | | | | | | |
| 7/16 - 14 UNC | | | 2232001 | | | | | | | |
| 7/16 - 20 UNF | | | 2232201 | | | | | | | |
| 1/2 - 13 UNC | | | 2232401 | 4.331 | 0.614 | 1.933 | 0.367 | 0.275 | 0.438 | |
| 1/2 - 20 UNF | | | 2232601 | | | | | | | |
| 5/8 - 11 UNC | | | 2233201 | 4.331 | 0.728 | 2.125 | 0.480 | 0.360 | 0.563 | |
| 5/8 - 18 UNF | | 2233401 | | | | | | | | |
| 3/4 - 10 UNC | | 2233601 | 4.921 | 0.799 | 2.433 | 0.590 | 0.442 | 0.688 | | |
| 3/4 - 16 UNF | | 2233801 | | | | | | | | |
| 7/8 - 9 UNC | | 2244001 | 5.512 | 0.889 | 2.952 | 0.697 | 0.523 | 0.750 | | |
| 7/8 - 14 UNF | | 2239201 | | | | | | | | |
| 1 - 8 UNC | | 2244401 | 6.299 | 1.000 | 3.543 | 0.800 | 0.600 | 0.813 | | |
| 1 - 12 UNF | | 2239601 | | | | | | | | |
| 1,1/8 - 7 UNC | | 2247201 | 7.087 | 1.141 | 3.937 | 0.896 | 0.672 | 0.875 | | |
| 1,1/8 - 12 UNF | | 2245001 | | | | | | | | |
| 1,1/8 - 8 UN | | 2247601 | 7.087 | 1.141 | 3.937 | 1.021 | 0.766 | 1.000 | | |
| 1,1/4 - 7 UNC | | 2247701 | | | | | | | | |
| 1,1/4 - 12 UNF | | 2245601 | 5.906 | 1.334 | 3.074 | 1.108 | 0.831 | 1.063 | | |
| 1,1/4 - 8 UN | | 2247901 | | | | | | | | |
| 1,3/8 - 6 UNC | | 2248001 | 7.874 | 1.334 | 4.527 | 1.233 | 0.925 | 1.125 | | |
| 1,3/8 - 8 UN | | 2248201 | | | | | | | | |
| 1,3/8 - 12 UNF | | 2246201 | 6.693 | 1.334 | 3.590 | 1.233 | 0.925 | 1.125 | | |
| 1,1/2 - 6 UNC | 2248301 | | | | | | | | | |
| 1,1/2 - 8 UN | 2248501 | 7.874 | 1.334 | 4.527 | 1.305 | 0.979 | 1.250 | | | |
| 1,1/2 - 12 UNF | 2246801 | | | | | | | | | |
| 1,5/8 - 8 UN | 2248601 | 7.874 | 1.598 | 4.330 | 1.430 | 1.072 | 1.250 | | | |
| 1,3/4 - 5 UNC | 2248701 | | | | | | | | | |
| 1,3/4 - 8 UN | 2248801 | 8.661 | 1.598 | 4.724 | 1.519 | 1.139 | 1.375 | | | |
| 1,7/8 - 8 UN | 2248901 | | | | | | | | | |
| 2 - 4,1/2 UNC | 2249001 | 9.843 | 1.779 | 5.511 | 1.644 | 1.233 | 1.375 | | | |
| 2 - 8 UN | 2249101 | | | | | | | | | |

Packed: 1 pc.
Available Steam Oxide finish only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|---------|--------------|--------------------------|-----------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 220 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | |
| SFM | 25-80 | 20-50 | 20-45 | 20-50 | 15-30 | 20-45 | 20-40 | 15-20 | 25-75 | | | | | 15-35 | | | |

good best





List 229



DIN Overall Length, Modified Bottom (2.5P-3P)



Units: mm

| Tap Size | Class of Fit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|---------------------------|--------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P-3P) | S/O | | | | | | |
| | | | L | Lc | Ln | d | k | lk | | |
| M3 x 0.5 | 6H | 3 | 2290401 | 56.00 | 4.10 | 18.10 | 3.58 | 2.79 | 4.80 | |
| M4 x 0.7 | | | 2290601 | 63.00 | 5.60 | 21.00 | 4.27 | 3.33 | 6.40 | |
| M5 x 0.8 | | | 2290801 | 70.00 | 6.40 | 25.00 | 4.93 | 3.86 | | |
| M6 x 1.0 | | | 2291001 | 80.00 | 8.00 | 30.00 | 6.48 | 4.85 | 7.90 | |
| M8 x 1.25 | | | 2291401 | 90.00 | 10.00 | 35.00 | 8.08 | 6.05 | 9.50 | |
| M10 x 1.5 | | | 2291801 | 100.00 | | | | | | |
| M10 x 1.25 | | | 2291701 | | | | | | | |
| M12 x 1.75 | | | 2292301 | 110.00 | | | | | | |
| M12 x 1.5 | | | 2292201 | 100.00 | | 14.00 | 49.10 | 9.32 | 6.98 | 11.10 |
| M12 x 1.25 | | | 2292101 | | | | | | | |
| M14 x 2.0 | | | 2292601 | 110.00 | | | 50.10 | 10.90 | 8.18 | 12.70 |
| M14 x 1.5 | | | 2292501 | 100.00 | | 16.00 | | | | |
| M16 x 2.0 | | 2292901 | 110.00 | | | 54.00 | 12.19 | 9.14 | 14.30 | |
| M16 x 1.5 | | 2292801 | 100.00 | | | | | | | |
| M18 x 2.5 | | 2293201 | 125.00 | | | | | | | |
| M18 x 1.5 | | 2293001 | 110.00 | | 20.00 | 55.00 | 13.77 | 10.31 | 15.90 | |
| M20 x 2.5 | | 2293601 | 140.00 | | | | | | | |
| M20 x 1.5 | | 2293401 | 125.00 | | | 61.80 | 16.56 | 12.42 | 17.50 | |

Packed: 1 pc.
Available Steam Oxide finish only.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|----------|---------|--------------|--------------------------|-----------------|----------------|---------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 229 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input type="checkbox"/> | | | | |
| SFM | 25-80 | 20-50 | 20-45 | 20-50 | 15-30 | 20-45 | 20-40 | 15-20 | 25-75 | | | | | 15-35 | | | |

good best





List 230

OIL-TIN-SFT, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



HSSE



TiN



45°



Units: Inch

| Tap Size | Class of Fit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|-----------------------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P - 3P) | | | | | | |
| | | | TiN | | | | | | |
| 1/4 - 20 UNC | 2B | 3 | 2330005 | 3.150 | 0.402 | 1.181 | 0.255 | 0.191 | 0.313 |
| 1/4 - 28 UNF | | | 2330405 | | | | | | |
| 5/16 - 18 UNC | | | 2330805 | 3.543 | 0.445 | 1.378 | 0.318 | 0.238 | 0.375 |
| 5/16 - 24 UNF | | | 2331205 | | | | | | |
| 3/8 - 16 UNC | | | 2331605 | 3.937 | 0.500 | 1.713 | 0.381 | 0.286 | 0.438 |
| 3/8 - 24 UNF | | | 2331805 | | | | | | |
| 7/16 - 14 UNC | | | 2332005 | | | | | | |
| 7/16 - 20 UNF | | | 2332205 | | | | | | |
| 1/2 - 13 UNC | | | 2332405 | 4.331 | 0.614 | 1.933 | 0.367 | 0.275 | 0.438 |
| 1/2 - 20 UNF | | | 2332605 | | | | | | |
| 9/16 - 18 UNF | | 2333005 | 3.937 | 0.665 | 1.972 | 0.429 | 0.322 | 0.500 | |
| 5/8 - 11 UNC | | 2333205 | | | | | | | |
| 5/8 - 18 UNF | | 2333405 | 3.937 | 0.728 | 2.126 | 0.480 | 0.360 | 0.563 | |
| 3/4 - 10 UNC | | 2333605 | | | | | | | |
| 3/4 - 16 UNF | | 2333805 | 4.331 | 0.799 | 2.433 | 0.590 | 0.442 | 0.688 | |
| 7/8 - 9 UNC | | 2334005 | | | | | | | |
| 7/8 - 14 UNF | | 2334205 | 4.921 | 0.890 | 2.654 | 0.697 | 0.523 | 0.750 | |
| 1 - 8 UNC | | 2334405 | | | | | | | |
| | | | | 6.299 | 1.000 | 3.012 | 0.800 | 0.600 | 0.813 |

Packed: 1 pc.
Available TiN finish only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 230 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| SFM | 50-120 | 45-110 | 40-100 | 45-110 | 20-60 | 20-70 | 30-50 | 20-50 | 40-100 | 50-125 | 50-110 | | | 20-60 | | | | |

good best





List 239

OIL-TIN-SFT, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



Units: mm

| Tap Size | Class of Fit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|-----------------------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P - 3P) | | | | | | |
| | | | TiN | L | Lc | Ln | d | k | lk |
| M6 x 1.0 | 6H | 3 | 2391005 | 80.00 | 8.00 | 30.00 | 6.48 | 4.85 | 7.90 |
| M8 x 1.25 | | | 2391405 | 90.00 | 10.00 | 35.00 | 8.08 | 6.05 | 9.50 |
| M10 x 1.5 | | | 2391805 | 100.00 | 12.00 | 39.00 | 9.68 | 7.26 | 11.10 |
| M10 x 1.25 | | | 2391705 | | | | | | |
| M12 x 1.75 | | | 2392305 | 110.00 | 14.00 | 49.10 | 9.32 | 6.98 | |
| M12 x 1.5 | | | 2392205 | | | | | | |
| M12 x 1.25 | | | 2392105 | | | | | | |
| M14 x 2.0 | | | 2392605 | 110.00 | 16.00 | 50.10 | 10.90 | 8.18 | |
| M14 x 1.5 | | | 2392505 | 100.00 | | | | | |
| M16 x 2.0 | | | 2392905 | 110.00 | | | | | |
| M16 x 1.5 | | | 2392805 | 100.00 | 20.00 | 54.00 | 12.19 | 9.14 | 14.30 |
| M18 x 2.5 | | | 2393205 | 125.00 | | | | | |
| M18 x 1.5 | | 2393005 | 110.00 | | | | | | |
| M20 x 2.5 | | 2393605 | 140.00 | 20.00 | 61.80 | 16.56 | 12.42 | 17.50 | |
| M20 x 1.5 | | 2393405 | 125.00 | | | | | | |

Packed: 1 pc.
Available TiN finish only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------|--------------------------|-----------------|-----------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 239 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | | | |
| SFM | 50-120 | 45-110 | 40-100 | 45-110 | 20-60 | 20-70 | 30-50 | 20-50 | 40-100 | 50-125 | 50-110 | | | 20-60 | | | |

good best





List 13013



OIL-V-SFT, Coolant-Through, DIN Overall Length, Bottom (1.5P-2P)



Units: Inch

| Tap Size | Class of Fit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|--------------------|-------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P - 2P) | | | | | | | |
| | | | V | L | | | | | | |
| 1/4 - 20 UNC | 2B | 3 | 1301300508 | 3.150 | 3.150 | 0.402 | 1.181 | 0.255 | 0.191 | 0.313 |
| 1/4 - 28 UNF | | | 1301300608 | | | | | | | |
| 5/16 - 18 UNC | | | 1301300708 | 3.543 | | 0.445 | 1.378 | 0.318 | 0.238 | 0.375 |
| 5/16 - 24 UNF | | | 1301300808 | | | | | | | |
| 3/8 - 16 UNC | | | 1301300908 | 3.937 | | 0.500 | 0.381 | 0.286 | 0.438 | |
| 3/8 - 24 UNF | | | 1301301008 | | | | | | | |
| 7/16 - 14 UNC | | | 1301301108 | 0.571 | | 1.713 | 0.323 | 0.242 | 0.406 | |
| 7/16 - 20 UNF | | | 1301301208 | | | | | | | |
| 1/2 - 13 UNC | | 4 | 1301301308 | 4.331 | 0.614 | 1.933 | 0.367 | 0.275 | 0.438 | |
| 1/2 - 20 UNF | | | 1301301408 | 3.937 | | | | | | |
| 5/8 - 11 UNC | | 4 | 1301301508 | 4.331 | 0.728 | 2.126 | 0.480 | 0.360 | 0.563 | |
| 5/8 - 18 UNF | | | 1301301608 | 3.937 | | | | | | |
| 3/4 - 10 UNC | | | 1301301708 | 4.921 | | | | | | |
| 3/4 - 16 UNF | | | 1301301808 | 4.331 | | | | | | 0.799 |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
|----------|---------------|------|--------------------------|-------------------------------------|--------------------------|------------------|-----|---------|--------------------------|-----------|--------------------------|--------------|--------------------------|-----------------|-----------|-----------|-----------|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 13013 | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | | <input type="checkbox"/> | | <input type="checkbox"/> | | | | | |
| SFM | | | 40-100 | 45-110 | 20-60 | | | | 40-100 | | 50-110 | | | 20-60 | 15-50 | | | |

good best





List 13113

OIL-V-SFT, Coolant-Through, DIN Overall Length, Bottom (1.5P-2P)



HSSE

V

15°



Units: mm

| Tap Size | Class of Fit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|--------------------|--------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P - 2P) | V | | | | | | |
| | | | L | Lc | | | | | | |
| M6 x 1.0 | 6H | 3 | 1311300508 | 80.00 | 8.00 | 30.00 | 6.48 | 4.85 | 7.90 | |
| M8 x 1.25 | | | 1311300608 | 90.00 | 10.00 | 35.00 | 8.08 | 6.05 | 9.50 | |
| M10 x 1.5 | | | 1311300808 | 100.00 | 12.00 | 38.90 | 9.67 | 7.26 | 11.10 | |
| M10 x 1.25 | | | 1311300708 | | | | | | | |
| M12 x 1.75 | | | 1311301108 | 110.00 | 14.00 | 49.00 | 9.32 | 6.98 | | |
| M12 x 1.5 | | | 1311301008 | | | | | | | |
| M12 x 1.25 | | | 1311300908 | 100.00 | 16.00 | 50.00 | 10.89 | 8.18 | | |
| M14 x 2.0 | | | 1311301308 | 110.00 | | | | | | |
| M14 x 1.5 | | | 1311301208 | 100.00 | | | | | | |
| M16 x 2.0 | | | 1311301508 | 110.00 | 20.00 | 54.00 | 12.19 | 9.14 | 14.30 | |
| M16 x 1.5 | | | 1311301408 | 100.00 | | | | | | |
| M18 x 2.5 | | | 1311301708 | 125.00 | 20.00 | 54.90 | 13.76 | 10.31 | 15.90 | |
| M18 x 1.5 | | 1311301608 | 110.00 | | | | | | | |
| M20 x 2.5 | | 1311301908 | 140.00 | | | | | | | |
| M20 x 1.5 | | 1311301808 | 125.00 | | 61.80 | 16.56 | 12.42 | 17.50 | | |

Packed: 1 pc.
Available V coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|--------------------------|-------------------------------------|--------------------------|------------------|-----|---------|--------------------------|--------------------------|---------|--------------|--------------------------|--------------------------|---------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 13113 | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| SFM | | | 40-100 | 45-110 | 20-60 | | | | 40-100 | 50-110 | | | 20-60 | 15-50 | | | |

good best





List 13014

HXL-SFT, Horizontal Applications, DIN Overall Length, Modified Bottom (2.5P-3P)



HSSE

S/O

15°



Units: Inch

| Tap Size | Class of Fit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | |
|-------------------|--------------|---------------|---------------------------|--------------------|---------------|-------------|------------|--------------|---------------|-------|
| | | | Modified Bottom (2.5P-3P) | L | Lc | Ln | d | k | lk | |
| | | | S/O | L | Lc | Ln | d | k | lk | |
| 1/2 - 13 UNC | 2B | 4 | 1301402601 | 4.331 | 0.614 | - | 0.367 | 0.275 | 0.438 | |
| 1/2 - 20 UNF | | | 1301402701 | 3.937 | - | 1.000 | - | - | - | |
| 9/16 - 12 UNC | | | 1301400101 | 4.331 | - | - | - | 0.429 | 0.322 | 0.500 |
| 9/16 - 18 UNF | | | 1301400201 | 3.937 | - | - | 1.126 | - | - | - |
| 5/8 - 11 UNC | | | 1301400301 | 4.331 | - | - | - | 0.480 | 0.360 | 0.563 |
| 5/8 - 18 UNF | | | 1301400401 | 3.937 | - | - | 1.252 | - | - | - |
| 3/4 - 10 UNC | | | 1301400501 | 4.921 | - | - | - | 0.590 | 0.442 | 0.688 |
| 3/4 - 16 UNF | | | 1301402801 | 4.331 | - | - | 1.500 | - | - | - |
| 7/8 - 9 UNC | | | 1301400601 | 5.512 | - | - | - | 0.697 | 0.523 | 0.750 |
| 7/8 - 14 UNF | | | 1301402901 | 4.921 | - | - | 1.752 | - | - | - |
| 1 - 8 UNC | | | 1301400701 | 6.299 | - | - | - | 0.800 | 0.600 | 0.813 |
| 1 - 12 UNF | | | 1301403001 | 5.512 | - | - | 2.000 | - | - | - |
| 1,1/8 - 7 UNC | | 1301400901 | - | 7.087 | 1.142 | - | - | - | - | |
| 1,1/8 - 8 UN | | 1301401101 | - | - | 1.000 | - | 0.896 | 0.672 | 0.875 | |
| 1,1/8 - 12 UNF | | 1301403101 | - | 5.906 | 0.665 | - | 2.252 | - | - | |
| 1,1/4 - 7 UNC | | 1301401201 | - | - | 1.142 | - | - | - | - | |
| 1,1/4 - 8 UN | | 1301401401 | - | 7.087 | 1.000 | - | 2.500 | 1.021 | 0.766 | 1.000 |
| 1,1/4 - 12 UNF | | 1301403201 | - | 5.906 | 0.665 | - | - | - | - | - |
| 1,3/8 - 6 UNC | | 1301401501 | - | - | 1.335 | - | - | - | - | - |
| 1,3/8 - 8 UN | | 1301401701 | - | 7.874 | - | - | 1.108 | 0.831 | 1.063 | - |
| 1,3/8 - 12 UNF | | 1301403901 | - | 6.693 | 1.000 | - | 2.752 | - | - | - |
| 1,1/2 - 6 UNC | | 1301401801 | - | - | 1.335 | - | - | - | - | - |
| 1,1/2 - 8 UN | | 1301402001 | - | 7.874 | 1.000 | - | - | 1.233 | 0.925 | - |
| 1,1/2 - 12 UNF | | 1301403301 | - | 6.693 | 0.665 | - | 3.000 | - | - | 1.125 |
| 1,5/8 - 8 UN | | 1301402101 | - | 7.874 | 1.000 | - | 3.252 | 1.305 | 0.979 | - |
| 1,3/4 - 5 UNC | | 1301403501 | - | 8.661 | 1.598 | - | - | - | 1.072 | - |
| 1,3/4 - 8 UN | | 1301402201 | - | 7.874 | - | - | 3.500 | 1.430 | - | 1.250 |
| 1,7/8 - 8 UN | | 1301402301 | - | 8.858 | 1.000 | - | 3.752 | 1.519 | 1.138 | - |
| 2 - 4,1/2 UNC | | 1301403601 | - | 9.843 | 1.780 | - | - | - | - | - |
| 2 - 8 UN | | 1301402401 | - | 8.858 | 1.000 | - | 4.000 | 1.644 | 1.233 | 1.375 |
| 2,1/4 - 4,1/2 UNC | | 1301403701 | - | 11.024 | 1.780 | - | - | 1.894 | 1.420 | 1.438 |
| 2,1/4 - 8 UN | | 1301404001 | - | 9.843 | 1.000 | - | 4.500 | - | - | - |
| 2,1/2 - 4 UNC | 1301403801 | - | 12.402 | 2.000 | - | - | 2.100 | 1.575 | 1.500 | |
| 2,1/2 - 8 UN | 1301402501 | - | 10.827 | 1.000 | - | 5.000 | - | - | - | |

Packed: 1 pc.
Available Steam Oxide finish only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-----------|---------|--------------|----------------|-------------------------------------|--------------------------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 13014 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| SFM | 25-80 | 20-50 | 20-45 | 20-50 | 15-20 | 20-45 | 20-45 | 15-20 | 25-75 | | | | | 15-35 | 8-15 | | |

good best





List 13024

HXL-OIL-SFT, Horizontal Applications, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



Units: Inch

| Tap Size | Class of Fit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|-------------------|--------------|---------------|---------------------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P-3P) | L | Lc | Ln | d | k | lk |
| | | | S/O | L | Lc | Ln | d | k | lk |
| 1/2 - 13 UNC | 2B | 4 | 1302402601 | 4.331 | 0.614 | - | 0.367 | 0.275 | 0.438 |
| 1/2 - 20 UNF | | | 1302402701 | 3.937 | | 1.000 | | | |
| 9/16 - 12 UNC | | | 1302400101 | 4.331 | 0.665 | - | 0.429 | 0.322 | 0.500 |
| 9/16 - 18 UNF | | | 1302400201 | 3.937 | | 1.125 | | | |
| 5/8 - 11 UNC | | | 1302400301 | 4.331 | 0.728 | - | 0.480 | 0.360 | 0.563 |
| 5/8 - 18 UNF | | | 1302400401 | 3.937 | | 1.251 | | | |
| 3/4 - 10 UNC | | | 1302400501 | 4.921 | 0.799 | - | 0.590 | 0.442 | 0.688 |
| 3/4 - 16 UNF | | | 1302402801 | 4.331 | | 1.500 | | | |
| 7/8 - 9 UNC | | | 1302400601 | 5.512 | 0.889 | - | 0.697 | 0.523 | 0.750 |
| 7/8 - 14 UNF | | | 1302402901 | 4.921 | | 1.751 | | | |
| 1 - 8 UNC | | | 1302400701 | 6.299 | 1.000 | - | 0.800 | 0.600 | 0.813 |
| 1 - 12 UNF | | | 1302403001 | 5.512 | 0.665 | 2.000 | | | |
| 1,1/8 - 7 UNC | | 1302400901 | 7.087 | 1.141 | - | 0.896 | 0.672 | 0.875 | |
| 1,1/8 - 8 UN | | 1302401101 | | 1.000 | 2.251 | | | | |
| 1,1/8 - 12 UNF | | 1302403101 | 5.906 | 0.665 | 2.500 | 1.021 | 0.766 | 1.000 | |
| 1,1/4 - 7 UNC | | 1302401201 | 7.087 | 1.141 | | | | | |
| 1,1/4 - 8 UN | | 1302401401 | 5.906 | 1.000 | - | 1.108 | 0.831 | 1.063 | |
| 1,1/4 - 12 UNF | | 1302403201 | | 0.665 | | | | | 2.751 |
| 1,3/8 - 6 UNC | | 1302401501 | 7.874 | 1.334 | - | 1.233 | 0.925 | 1.125 | |
| 1,3/8 - 8 UN | | 1302401701 | | 1.000 | | | | | 3.000 |
| 1,3/8 - 12 UNF | | 1302403901 | 6.693 | 1.334 | - | 1.305 | 0.979 | 1.250 | |
| 1,1/2 - 6 UNC | | 1302401801 | 7.874 | 1.000 | 3.000 | | | | |
| 1,1/2 - 8 UN | | 1302402001 | 6.693 | 0.665 | - | 1.430 | 1.138 | 1.375 | |
| 1,1/2 - 12 UNF | | 1302403301 | | 7.874 | | | | | 1.000 |
| 1,5/8 - 8 UN | | 1302402101 | 7.874 | 1.000 | 3.251 | 1.644 | 1.233 | 1.375 | |
| 1,3/4 - 5 UNC | | 1302403501 | 8.661 | 1.598 | - | | | | 1.894 |
| 1,3/4 - 8 UN | | 1302402201 | 7.874 | 1.000 | 3.500 | | | | |
| 1,7/8 - 8 UN | | 1302402301 | 8.858 | 1.779 | - | 2.100 | 1.575 | 1.500 | |
| 2 - 4,1/2 UNC | | 1302403601 | 9.843 | 1.000 | 4.000 | | | | |
| 2 - 8 UN | | 1302402401 | 8.858 | 1.000 | 4.000 | - | - | - | |
| 2,1/4 - 4,1/2 UNC | 1302403701 | 11.024 | 1.779 | - | | | | | |
| 2,1/4 - 8 UN | 1302404001 | 9.843 | 1.000 | 4.500 | - | - | - | | |
| 2,1/2 - 4 UNC | 1302403801 | 12.402 | 2.000 | - | | | | | |
| 2,1/2 - 8 UN | 1302402501 | 10.827 | 1.000 | 5.000 | | | | | |

Packed: 1 pc.
Available Steam Oxide finish only.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-----------|-----------|---------|--------------|-------------------------------------|-----------------|-----------|-----------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 13024 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | | | | |
| SFM | 50-120 | 45-110 | 40-100 | 45-110 | 20-60 | 30-70 | 30-70 | 20-50 | 40-100 | | | | | 20-60 | 15-50 | | |

good best





List 13015



VXL-SFT, Vertical Applications, DIN Overall Length, Modified Bottom (2.5P-3P)



Units: Inch

| Tap Size | Class of Fit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|-------------------|--------------|---------------|---------------------------|-------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P-3P) | S/O | | | | | | |
| | | | L | Lc | | | | | | |
| 1/2 - 13 UNC | 2B | 3 | 1301502601 | 4.331 | 0.614 | - | 0.367 | 0.275 | 0.438 | |
| 1/2 - 20 UNF | | | 1301502701 | 3.937 | | 1.000 | | | | |
| 9/16 - 12 UNC | | | 1301500101 | 4.331 | | - | | | | |
| 9/16 - 18 UNF | | 1301500201 | 3.937 | 0.665 | 1.125 | 0.429 | 0.322 | 0.500 | | |
| 5/8 - 11 UNC | | 1301500301 | 4.331 | | - | | | | | |
| 5/8 - 18 UNF | | 1301500401 | 3.937 | | 1.251 | | | | | |
| 3/4 - 10 UNC | | 1301500501 | 4.921 | 0.728 | - | 0.480 | 0.360 | 0.563 | | |
| 3/4 - 16 UNF | | 1301502801 | 4.331 | | 1.500 | | | | | |
| 7/8 - 9 UNC | | 1301500601 | 5.512 | | - | | | | | |
| 7/8 - 14 UNF | | 1301502901 | 4.921 | 0.889 | 1.751 | 0.697 | 0.523 | 0.750 | | |
| 1 - 8 UNC | | 1301500701 | 6.299 | | 1.000 | | | | | |
| 1 - 12 UNF | | 1301503001 | 5.512 | | 0.665 | | | | 2.000 | |
| 1,1/8 - 7 UNC | | 1301500901 | - | 7.087 | 1.141 | 0.896 | 0.672 | 0.875 | | |
| 1,1/8 - 8 UN | | 1301501101 | 1.000 | | 2.251 | | | | | |
| 1,1/8 - 12 UNF | | 1301503101 | 5.906 | | 0.665 | | | | | |
| 1,1/4 - 7 UNC | | 1301501201 | - | 7.087 | 1.141 | 2.500 | 1.021 | 0.766 | 1.000 | |
| 1,1/4 - 8 UN | | 1301501401 | 1.000 | | 2.500 | | | | | |
| 1,1/4 - 12 UNF | | 1301503201 | 5.906 | | 0.665 | | | | | |
| 1,3/8 - 6 UNC | | 1301501501 | - | 7.874 | 1.334 | 1.108 | 0.831 | 1.063 | | |
| 1,3/8 - 8 UN | | 1301501701 | 7.874 | | 1.000 | | | | 2.751 | |
| 1,3/8 - 12 UNF | | 1301503401 | 6.693 | | 1.000 | | | | | |
| 1,1/2 - 6 UNC | | 1301501801 | - | 7.874 | 1.334 | 1.233 | 0.925 | 1.125 | | |
| 1,1/2 - 8 UN | | 1301502001 | 1.000 | | 3.000 | | | | | |
| 1,1/2 - 12 UNF | | 1301503301 | 6.693 | | 0.665 | | | | | |
| 1,5/8 - 8 UN | | 1301502101 | 7.874 | 8.661 | 1.000 | 1.305 | 0.979 | 1.250 | | |
| 1,3/4 - 5 UNC | | 1301503501 | 8.661 | | 1.598 | | | | | |
| 1,3/4 - 8 UN | | 1301502201 | 7.874 | | 3.500 | | | | | |
| 1,7/8 - 8 UN | | 1301502301 | 8.858 | 9.843 | 1.000 | 1.519 | 1.138 | 1.375 | | |
| 2 - 4,1/2 UNC | | 1301503601 | 9.843 | | 1.779 | | | | | |
| 2 - 8 UN | | 1301502401 | 8.858 | | 1.000 | | | | 4.000 | |
| 2,1/4 - 4,1/2 UNC | | 1301503701 | 11.024 | 9.843 | 1.779 | 1.894 | 1.420 | 1.438 | | |
| 2,1/4 - 8 UN | | 1301504001 | 9.843 | | 1.000 | | | | 4.500 | |
| 2,1/2 - 4 UNC | 1301503801 | 12.402 | 2.000 | | - | | | | | |
| 2,1/2 - 8 UN | 1301502501 | 10.827 | 1.000 | 5.000 | 2.100 | 1.575 | 1.500 | | | |

Packed: 1 pc.
Available Steam Oxide finish only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-----------|---------|--------------|----------|-------------------------------------|----------------|---------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 13015 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | | | |
| SFM | 25-80 | 20-50 | 20-45 | 20-50 | 15-20 | 20-45 | 20-45 | 15-20 | 25-75 | | | | | 15-35 | 8-15 | | |

good best





List 13025

VXL-OIL-SFT, Vertical Applications, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



Units: Inch

| Tap Size | Class of Fit | No. of Flutes | EDP Number | | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|-------------------|--------------|---------------|---------------------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P-3P) | DIN Overall Length | | | | | |
| | | | S/O | L | | | | | |
| 1/2 - 13 UNC | 2B | 3 | 1302502601 | 4.331 | 0.614 | - | 0.367 | 0.275 | 0.438 |
| 1/2 - 20 UNF | | | 1302502701 | 3.937 | | 1.000 | | | |
| 9/16 - 12 UNC | | | 1302500101 | 4.331 | | - | | | |
| 9/16 - 18 UNF | | 1302500201 | 3.937 | 0.665 | 1.125 | 0.429 | 0.322 | 0.500 | |
| 5/8 - 11 UNC | | 1302500301 | 4.331 | | - | | | | |
| 5/8 - 18 UNF | | 1302500401 | 3.937 | | 1.251 | | | | |
| 3/4 - 10 UNC | | 1302500501 | 4.921 | 0.799 | - | 0.590 | 0.442 | 0.688 | |
| 3/4 - 16 UNF | | 1302502801 | 4.331 | | 1.500 | | | | |
| 7/8 - 9 UNC | | 1302500601 | 5.512 | | - | | | | |
| 7/8 - 14 UNF | | 1302502901 | 4.921 | 0.889 | 1.751 | 0.697 | 0.523 | 0.750 | |
| 1 - 8 UNC | | 1302500701 | 6.299 | | - | | | | |
| 1 - 12 UNF | | 1302503001 | 5.512 | | 2.000 | | | | |
| 1,1/8 - 7 UNC | | 1302500901 | 7.087 | 1.000 | 1.141 | 0.896 | 0.672 | 0.875 | |
| 1,1/8 - 8 UN | | 1302501101 | 7.087 | | - | | | | |
| 1,1/8 - 12 UNF | | 1302503101 | 5.906 | | 2.251 | | | | |
| 1,1/4 - 7 UNC | | 1302501201 | 7.087 | 1.000 | 1.141 | 1.021 | 0.766 | 1.000 | |
| 1,1/4 - 8 UN | | 1302501401 | 7.087 | | - | | | | |
| 1,1/4 - 12 UNF | | 1302503201 | 5.906 | | 2.500 | | | | |
| 1,3/8 - 6 UNC | | 1302501501 | 7.874 | 1.000 | 1.334 | 1.108 | 0.831 | 1.063 | |
| 1,3/8 - 8 UN | | 1302501701 | 7.874 | | - | | | | |
| 1,3/8 - 12 UNF | | 1302503901 | 6.693 | | 2.751 | | | | |
| 1,1/2 - 6 UNC | | 1302501801 | 7.874 | 1.000 | 1.334 | 1.233 | 0.925 | 1.125 | |
| 1,1/2 - 8 UN | | 1302502001 | 7.874 | | - | | | | |
| 1,1/2 - 12 UNF | | 1302503301 | 6.693 | | 3.000 | | | | |
| 1,5/8 - 8 UN | | 1302502101 | 7.874 | 1.000 | 3.251 | 1.305 | 0.979 | 1.250 | |
| 1,3/4 - 5 UNC | | 1302503501 | 8.661 | | 1.598 | | | | |
| 1,3/4 - 8 UN | | 1302502201 | 7.874 | | 3.500 | | | | |
| 1,7/8 - 8 UN | | 1302502301 | 8.858 | 1.000 | 3.751 | 1.644 | 1.233 | 1.375 | |
| 2 - 4,1/2 UNC | | 1302503601 | 9.843 | | 1.779 | | | | |
| 2 - 8 UN | | 1302502401 | 8.858 | | 4.000 | | | | |
| 2,1/4 - 4,1/2 UNC | 1302503701 | 11.024 | 1.000 | 1.779 | 1.894 | 1.420 | 1.438 | | |
| 2,1/4 - 8 UN | 1302504001 | 9.843 | | 4.500 | | | | | |
| 2,1/2 - 4 UNC | 1302503801 | 12.402 | | 2.000 | | | | | |
| 2,1/2 - 8 UN | 1302502501 | 10.827 | 1.000 | 5.000 | 2.100 | 1.575 | 1.500 | | |

Packed: 1 pc.
Available Steam Oxide finish only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-----------|---------|--------------|----------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 13025 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| SFM | 50-120 | 45-110 | 40-100 | 45-110 | 20-60 | 30-70 | 30-70 | 20-50 | 40-100 | | | | | 20-60 | 15-50 | | |

good best





List 13116

HXL-SFT, Horizontal Applications, DIN Overall Length, Modified Bottom (2.5P-3P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|-----------|------------------|---------------|-----------------------------|--------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P - 3P) | | | | | | | |
| | | | S/O | L | | | | | | |
| M16 x 2.0 | D7 | 4 | 1311602401 | 110.00 | 16.00 | 58.00 | 12.19 | 9.14 | 14.30 | |
| | D17 (6H +0.005") | | 1311602501 | 180.00 | | | | | | 93.00 |
| | | | 1311602301 | 110.00 | | | | | | 58.00 |
| M20 x 2.5 | D8 | | 1311600101 | 140.00 | 20.00 | 73.00 | 16.56 | 12.42 | 17.50 | |
| | D18 (6H +0.005") | | 1311600201 | 200.00 | | | | | | 103.00 |
| | | | 1311601601 | 140.00 | | | | | | 73.00 |
| M24 x 3.0 | D9 | 1311600401 | 160.00 | 24.00 | 88.00 | 19.30 | 14.48 | 19.10 | | |
| | D19 (6H +0.005") | 1311600501 | 200.00 | | | | | | 108.00 | |
| | | 1311601701 | 160.00 | | | | | | 88.00 | |
| M27 x 3.0 | D9 | 1311600601 | 180.00 | 28.00 | 103.00 | 22.76 | 17.07 | 22.20 | | |
| | D19 (6H +0.005") | 1311600701 | 200.00 | | | | | | 108.00 | |
| | | 1311601801 | 160.00 | | | | | | 88.00 | |
| M30 x 3.5 | D10 | 1311600801 | 180.00 | 32.00 | 103.00 | 25.93 | 19.46 | 25.40 | | |
| | D20 (6H +0.005") | 1311600901 | 250.00 | | | | | | 138.00 | |
| | | 1311601901 | 180.00 | | | | | | 103.00 | |
| M33 x 3.5 | D10 | 1311601001 | 180.00 | 36.00 | 93.00 | 28.14 | 21.11 | 27.00 | | |
| | D20 (6H +0.005") | 1311601101 | 250.00 | | | | | | 128.00 | |
| | | 1311602001 | 180.00 | | | | | | 93.00 | |
| M36 x 4.0 | D11 | 1311601201 | 200.00 | 36.00 | 118.00 | 31.32 | 23.50 | 28.60 | | |
| | D21 (6H +0.005") | 1311601301 | 250.00 | | | | | | 143.00 | |
| | | 1311602101 | 200.00 | | | | | | 118.00 | |
| M42 x 4.5 | D11 | 1311601401 | 200.00 | 36.00 | 98.00 | 36.32 | 27.23 | 31.80 | | |
| | D21 (6H +0.005") | 1311601501 | 300.00 | | | | | | 148.00 | |
| | | 1311602201 | 200.00 | | | | | | 98.00 | |

Packed: 1 pc.
 Available Steam Oxide finish only.
 Note: +0.005" available for threads that will be heat treated after tapping.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-----------|-----------|---------|--------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 13116 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| SFM | 25-80 | 20-50 | 20-45 | 20-50 | 15-20 | 20-45 | 20-45 | 15-20 | 25-75 | | | | | 15-35 | 8-15 | | |

good best





List 13126

HXL-OIL-SFT, Horizontal Applications, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



HSSE

S/O

15°



Units: mm

| Tap Size | Class of Fit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|-----------|------------------|---------------|-----------------------------|--------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P - 3P) | | | | | | | |
| | | | S/O | L | | | | | | |
| M16 x 2.0 | D7 | 4 | 1312602401 | 110.00 | 16.00 | 58.00 | 12.19 | 9.14 | 14.30 | |
| | D17 (6H +0.005") | | 1312602501 | 180.00 | | | | | | 96.00 |
| M20 x 2.5 | D8 | | 1312602301 | 110.00 | 20.00 | 73.00 | 16.56 | 12.42 | 17.50 | |
| | D18 (6H +0.005") | | 1312600101 | 140.00 | | | | | | 103.00 |
| M24 x 3.0 | D9 | 5 | 1312600201 | 200.00 | 24.00 | 88.00 | 19.30 | 14.48 | 19.10 | |
| | D19 (6H +0.005") | | 1312601601 | 140.00 | | | | | | 73.00 |
| M27 x 3.0 | D9 | | 1312600401 | 160.00 | 28.00 | 108.00 | 22.76 | 17.07 | 22.20 | |
| | D19 (6H +0.005") | | 1312600501 | 200.00 | | | | | | 108.00 |
| M30 x 3.5 | D10 | | 1312601701 | 160.00 | 32.00 | 118.00 | 31.32 | 23.50 | 28.60 | |
| | D20 (6H +0.005") | | 1312600601 | 200.00 | | | | | | 108.00 |
| M33 x 3.5 | D10 | 6 | 1312600701 | 200.00 | 36.00 | 98.00 | 36.32 | 27.23 | 31.80 | |
| | D20 (6H +0.005") | | 1312601801 | 160.00 | | | | | | 88.00 |
| M36 x 4.0 | D11 | | 1312600801 | 180.00 | 32.00 | 128.00 | 31.32 | 23.50 | 28.60 | |
| | D21 (6H +0.005") | | 1312600901 | 250.00 | | | | | | 138.00 |
| M42 x 4.5 | D11 | | 1312601901 | 180.00 | 36.00 | 93.00 | 36.32 | 27.23 | 31.80 | |
| | D21 (6H +0.005") | | 1312601001 | 180.00 | | | | | | 93.00 |
| | | | 1312601101 | 250.00 | 36.00 | 118.00 | 36.32 | 27.23 | 31.80 | |
| | | | 1312601201 | 200.00 | | | | | | 118.00 |
| | | 1312601301 | 250.00 | 36.00 | 98.00 | 36.32 | 27.23 | 31.80 | | |
| | | 1312602001 | 180.00 | | | | | | 93.00 | |
| | | 1312602101 | 200.00 | 36.00 | 148.00 | 36.32 | 27.23 | 31.80 | | |
| | | 1312601401 | 300.00 | | | | | | 148.00 | |
| | | 1312601501 | 300.00 | 36.00 | 98.00 | 36.32 | 27.23 | 31.80 | | |
| | | 1312602201 | 200.00 | | | | | | 98.00 | |

Packed: 1 pc.

Available Steam Oxide finish only.

Note: +0.005" available for threads that will be heat treated after tapping.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-----------|---------|--------------|----------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 13126 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| SFM | 50-120 | 45-110 | 40-100 | 45-110 | 20-60 | 30-70 | 30-70 | 20-50 | 40-100 | | | | | 20-60 | 15-50 | | |

good best





List 13117



HSSE

S/O

45°

VXL-SFT, Vertical Applications, DIN Overall Length, Modified Bottom (2.5P-3P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|-----------|------------------|---------------|---------------------------|--------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P-3P) | | | | | | | |
| | | | S/O | L | | | | | | |
| M16 x 2.0 | D7 | 4 | 1311702401 | 110.00 | 16.00 | - | 12.19 | 9.14 | 14.30 | |
| | D17 (6H +0.005") | | 1311702501 | 180.00 | | | | | | |
| | | | 1311702301 | 110.00 | | | | | | |
| M20 x 2.5 | D8 | 4 | 1311700101 | 140.00 | 20.00 | - | 16.56 | 12.42 | 17.50 | |
| | D18 (6H +0.005") | | 1311700201 | 200.00 | | | | | | |
| | | | 1311701601 | 140.00 | | | | | | |
| M24 x 3.0 | D9 | 4 | 1311700401 | 160.00 | 24.00 | - | 19.30 | 14.48 | 19.10 | |
| | D19 (6H +0.005") | | 1311700501 | 200.00 | | | | | | |
| | | | 1311701701 | 160.00 | | | | | | |
| M27 x 3.0 | D9 | 4 | 1311700601 | 160.00 | 24.00 | - | 22.76 | 17.07 | 22.20 | |
| | D19 (6H +0.005") | | 1311700701 | 200.00 | | | | | | |
| | | | 1311701801 | 160.00 | | | | | | |
| M30 x 3.5 | D10 | 5 | 1311700801 | 180.00 | 28.00 | - | 25.93 | 19.46 | 25.40 | |
| | D20 (6H + 0.005) | | 1311700901 | 250.00 | | | | | | |
| | | | 1311701901 | 180.00 | | | | | | |
| M33 x 3.5 | D10 | 5 | 1311701001 | 180.00 | 28.00 | - | 28.14 | 21.11 | 27.00 | |
| | D20 (6H + 0.005) | | 1311701101 | 250.00 | | | | | | |
| | | | 1311702001 | 180.00 | | | | | | |
| M36 x 4.0 | D11 | 5 | 1311701201 | 200.00 | 32.00 | - | 31.32 | 23.50 | 28.60 | |
| | D21 (6H + 0.005) | | 1311701301 | 250.00 | | | | | | |
| | | | 1311702101 | 200.00 | | | | | | |
| M42 x 4.5 | D11 | 6 | 1311701401 | 200.00 | 36.00 | - | 36.32 | 27.23 | 31.80 | |
| | D21 (6H + 0.005) | | 1311701501 | 300.00 | | | | | | |
| | | | 1311702201 | 200.00 | | | | | | |

Packed: 1 pc.

Available Steam Oxide finish only.

Note: +0.005" available for threads that will be heat treated after tapping.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-----------|---------|--------------|-------------------------------------|--------------------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 13117 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |
| SFM | 25-80 | 20-50 | 20-45 | 20-50 | 15-20 | 20-45 | 20-45 | 15-20 | 25-75 | | | | | 15-35 | 8-15 | | |

good best





List 13127

VXL-OIL-SFT, Vertical Applications, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | | |
|-----------|------------------|---------------|---------------------------|--------|--------------------|---------------|-------------|------------|--------------|---------------|-------|-------|-------|
| | | | Modified Bottom (2.5P-3P) | | | | | | | | | | |
| | | | S/O | L | | | | | | | | | |
| M16 x 2.0 | D7 | 4 | 1312702401 | 110.00 | 16.00 | - | 12.19 | 9.14 | 14.30 | | | | |
| | D17 (6H +0.005") | | 1312702501 | 180.00 | | | | | | | | | |
| | | | 1312702301 | 110.00 | | | | | | | | | |
| M20 x 2.5 | D8 | | 1312700101 | 140.00 | 19.00 | - | 16.56 | 12.42 | 17.50 | | | | |
| | D18 (6H +0.005") | | 1312700201 | 200.00 | | | | | | | | | |
| | | | 1312701601 | 140.00 | | | | | | | | | |
| M24 x 3.0 | D9 | 1312700401 | 160.00 | 24.00 | - | 19.30 | 14.48 | 19.10 | | | | | |
| | D19 (6H +0.005") | 1312700501 | 200.00 | | | | | | | | | | |
| | | 1312701701 | 160.00 | | | | | | | | | | |
| M27 x 3.0 | D9 | 1312700601 | 160.00 | | | | | | 27.00 | - | 22.76 | 17.07 | 22.20 |
| | D19 (6H +0.005") | 1312700701 | 200.00 | | | | | | | | | | |
| | | 1312701801 | 160.00 | | | | | | | | | | |
| M30 x 3.5 | D10 | 1312700801 | 180.00 | 32.00 | - | 25.93 | 19.46 | 25.40 | | | | | |
| | D20 (6H +0.005") | 1312700901 | 250.00 | | | | | | | | | | |
| | | 1312701901 | 180.00 | | | | | | | | | | |
| M33 x 3.5 | D10 | 1312701001 | 180.00 | | | | | | 36.00 | - | 28.14 | 21.11 | 27.00 |
| | D20 (6H +0.005") | 1312701101 | 250.00 | | | | | | | | | | |
| | | 1312702001 | 180.00 | | | | | | | | | | |
| M36 x 4.0 | D11 | 1312701201 | 199.00 | 200.00 | - | 31.32 | 23.50 | 28.60 | | | | | |
| | D21 (6H +0.005") | 1312701301 | 250.00 | | | | | | | | | | |
| | | 1312702101 | 200.00 | | | | | | | | | | |
| M42 x 4.5 | D11 | 1312701401 | 200.00 | | | | | | 36.00 | - | 36.32 | 27.23 | 31.80 |
| | | 1312701501 | 300.00 | | | | | | | | | | |
| | | 1312702201 | 200.00 | | | | | | | | | | |

Packed: 1 pc.

Available Steam Oxide finish only.

Note: +0.005" available for threads that will be heat treated after tapping.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|----------|---------|--------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 13127 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| SFM | 50-120 | 45-110 | 40-100 | 45-110 | 20-60 | 30-70 | 30-70 | 20-50 | 40-100 | | | | | 20-60 | 15-50 | | |

good best





List 13058



US-AL-SFT, Modified Bottom (2.5P-3P)



Units: Inch

| Tap Size | Class of Fit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|-----------------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P - 3P) | | | | | | |
| | | | V | | | | | | |
| | | | L | Lc | Ln | d | k | lk | |
| 6 - 32 UNC | 2B | 2 | 1305800108 | 2.000 | 0.248 | 0.685 | 0.141 | 0.110 | 0.188 |
| 8 - 32 UNC | | | 1305800208 | 2.125 | 0.252 | 0.752 | 0.168 | 0.131 | |
| 10 - 24 UNC | | | 1305800308 | 2.375 | 0.327 | 0.866 | 0.194 | 0.152 | |
| 10 - 32 UNF | | | 1305800408 | | | | | | |
| 1/4 - 20 UNC | | | 1305800508 | 2.500 | 0.398 | 0.996 | 0.255 | 0.191 | 0.281 |
| 1/4 - 28 UNF | | | 1305800608 | | | | | | |
| 5/16 - 18 UNC | | | 1305800708 | | | | | | |
| 5/16 - 24 UNF | | | 1305800808 | 2.719 | 0.445 | 1.126 | 0.318 | 0.238 | 0.375 |
| 3/8 - 16 UNC | | | 1305800908 | | | | | | |
| 3/8 - 24 UNF | | | 1305801008 | 2.938 | 0.500 | 1.252 | 0.381 | 0.286 | 0.438 |
| 1/2 - 13 UNC | | | 1305801108 | | | | | | |
| 1/2 - 20 UNF | | | 1305801208 | | | | | | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|-----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 13058 | 1010 | 1035 | 1065 | 4140 | | | | | | | | | | | | | | |
| SFM | 1018 | 1045 | | 4340 | | | | | | | | | | | | | | |

good best





List 13158



US-AL-SFT, Modified Bottom (2.5P-3P)



Units: mm

| Tap Size | Class of Fit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|---------------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P-3P) | | | | | | |
| | | | V | | | | | | |
| | | | L | Lc | Ln | d | k | lk | |
| M3 x 0.5 | 6H | 2 | 1315800108 | 49.20 | 4.10 | 16.00 | 3.58 | 2.79 | 4.80 |
| M4 x 0.7 | | | 1315800208 | 54.00 | 5.60 | 19.10 | 4.26 | 3.33 | 6.40 |
| M5 x 0.8 | | | 1315800308 | 60.30 | 6.40 | 22.20 | 4.92 | 3.86 | 6.40 |
| M6 x 1.0 | | | 1315800408 | 63.50 | 8.00 | 25.40 | 6.47 | 4.85 | 7.90 |
| M8 x 1.25 | | | 1315800508 | 69.10 | 10.00 | 28.60 | 8.07 | 6.05 | 9.50 |
| M10 x 1.5 | | | 1315800708 | 74.60 | 12.00 | 31.80 | 9.67 | 7.26 | 11.10 |
| M10 x 1.25 | | | 1315800608 | | | | | | |
| M12 x 1.75 | | | 1315800908 | | | | | | |
| M12 x 1.5 | | | 1315800808 | | | | | | |
| | | | | | | 85.70 | 14.00 | 49.10 | 9.32 |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | | | | | | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------|-----------|------|-----|--------------|------------|------------------|---------|-----------|-------------------------------------|-------------------------------------|---------|----------------|----------|-----------------|-----------|-----------|-----------|---|--|---|--|---|--|--|--|
| | Carbon Steels | | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | | | | | | | |
| | Low | Med. | High | 300 | | | 400 | 17-4 PH | 6061 7075 | | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | | | | | | | | |
| | 1010 1018 | 1035 1045 | 1065 | | | | | | | | | | | | | | | 4140 4340 | | | | | | | | |
| 13158 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | | | | | | | | | |
| SFM | | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | |

good best





List 295



EX-AL-SFT, Modified Bottom (2.5P-3P)



Units: Inch

| Tap Size | Class of Fit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|---------------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P-3P) | | | | | | |
| | | | Bright | | | | | | |
| L | Lc | Ln | d | k | lk | | | | |
| 4 - 40 UNC | H2 | 2 | 2951300 | 1.875 | 0.196 | 0.559 | 0.141 | 0.110 | 0.188 |
| | H3 | | 2951400 | | | | | | |
| 6 - 32 UNC | H2 | | 2952500 | 2.000 | 0.248 | 0.685 | 0.168 | 0.131 | 0.250 |
| | H3 | | 2952600 | | | | | | |
| 8 - 32 UNC | H2 | | 2953100 | 2.125 | 0.251 | 0.751 | 0.194 | 0.152 | 0.313 |
| | H3 | | 2953200 | | | | | | |
| 10 - 24 UNC | H3 | | 2953800 | 2.375 | 0.326 | 0.866 | 0.255 | 0.191 | 0.375 |
| | H2 | | 2954300 | | | | | | |
| 10 - 32 UNF | H3 | | 2954400 | 2.500 | 0.397 | 0.996 | 0.318 | 0.238 | 0.438 |
| | H5 | | 2954600 | | | | | | |
| 1/4 - 20 UNC | H3 | | 2955000 | 2.719 | 0.444 | 1.125 | 0.381 | 0.286 | 0.438 |
| | H5 | | 2955200 | | | | | | |
| 1/4 - 28 UNF | H3 | | 2955600 | 2.938 | 0.500 | 1.251 | 0.381 | 0.286 | 0.438 |
| | H3 | | 2956200 | | | | | | |
| 5/16 - 18 UNC | H5 | | 2956400 | 2.719 | 0.444 | 1.125 | 0.318 | 0.238 | 0.375 |
| | H3 | | 2956800 | | | | | | |
| 5/16 - 24 UNF | H3 | | 2956900 | 2.938 | 0.500 | 1.251 | 0.381 | 0.286 | 0.438 |
| | H4 | | 2957400 | | | | | | |
| 3/8 - 16 UNC | H3 | | 2957400 | 2.938 | 0.500 | 1.251 | 0.381 | 0.286 | 0.438 |
| | H5 | | 2957600 | | | | | | |
| 3/8 - 24 UNF | H3 | 2958000 | 2.938 | 0.500 | 1.251 | 0.381 | 0.286 | 0.438 | |

Packed: 1 pc.
Other coatings available upon request.
Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|-----------|-------------------------------------|-------------------------------------|----------------|-----------------|-----------|-----------|-----------|--|--|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 295 | | | | | | | | | | | | | | | | | | | |
| SFM | | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |

good best





List 296

EX-AL-SFT, Modified Bottom (2.5P-3P)



Units: mm

| Tap Size | Class of Fit | No. of Flutes | EDP Number | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|---------------------------|--------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P-3P) | Bright | | | | | | |
| | | | L | Lc | Ln | d | k | lk | | |
| M3 x 0.5 | D3 | 2 | 2963300 | 49.20 | 4.10 | 16.00 | 3.58 | 2.79 | 4.80 | |
| M4 x 0.7 | D4 | | 2963400 | 54.00 | 5.60 | 19.10 | 4.26 | 3.33 | 6.40 | |
| M5 x 0.8 | D5 | | 2963500 | 60.30 | 6.40 | 22.19 | 4.92 | 3.86 | | |
| M6 x 1.0 | | | 2963600 | 63.50 | 8.00 | 25.40 | 6.47 | 4.85 | 7.90 | |
| M8 x 1.25 | | | 2963800 | 69.10 | 10.00 | 28.60 | 8.07 | 6.05 | 9.50 | |
| M10 x 1.5 | D6 | | 2964100 | 74.60 | 11.98 | 31.80 | 9.67 | 7.26 | 11.10 | |
| M10 x 1.25 | D5 | | 2964000 | | | | | | | |

Packed: 1 pc.
Other coatings available upon request.
Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|-------------------------------------|-------------------------------------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 296 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |
| SFM | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |

good best





List 13019

EX-AL-SFT, DIN Overall Length, Modified Bottom (2.5P-3P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|-----------------------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P - 3P) | L | Lc | Ln | d | k | lk |
| | | | N | L | Lc | Ln | d | k | lk |
| 2 - 56 UNC | H2 | 2 | 1301900103 | 1.772 | 0.437 | - | 0.141 | 0.110 | 0.188 |
| 4 - 40 UNC | | | 1301900203 | 2.205 | 0.196 | 0.704 | | | |
| 6 - 32 UNC | | | 1301900303 | | 0.248 | 0.783 | | | |
| 8 - 32 UNC | H3 | 2 | 1301900403 | 2.480 | 0.251 | 0.826 | 0.168 | 0.131 | 0.250 |
| 10 - 24 UNC | | | 1301900503 | 2.756 | 0.326 | 0.976 | 0.194 | 0.152 | |
| 10 - 32 UNF | | | 1301900603 | | | | | | |
| 1/4 - 20 UNC | H5 | 3 | 1301900703 | 3.150 | 0.397 | 1.177 | 0.255 | 0.191 | 0.313 |
| 1/4 - 28 UNF | H3 | | 1301900803 | | | | | | |
| | H5 | | 1301900903 | | | | | | |
| 5/16 - 18 UNC | H5 | | 1301901003 | 3.543 | 0.444 | 1.377 | 0.318 | 0.238 | 0.375 |
| 5/16 - 24 UNF | H3 | | 1301901103 | | | | | | |
| | H5 | | 1301901203 | | | | | | |
| 3/8 - 16 UNC | H5 | | 1301901303 | 3.937 | 0.500 | 1.535 | 0.381 | 0.286 | 0.438 |
| 3/8 - 24 UNF | H3 | | 1301901403 | 3.543 | | | | | |
| 7/16 - 14 UNC | H5 | | 1301901503 | 3.937 | 0.570 | 1.712 | 0.323 | 0.242 | 0.406 |
| 7/16 - 20 UNF | H3 | | 1301901603 | | | | | | |
| | H5 | | 1301901703 | | | | | | |
| 1/2 - 13 UNC | H5 | | 1301901803 | 4.331 | 0.614 | 1.933 | 0.367 | 0.275 | 0.438 |
| 1/2 - 20 UNF | H3 | 1301901903 | | | | | | | |
| | H5 | 1301902003 | | | | | | | |
| | | | 1301902103 | 3.937 | | | | | |

Packed: 1 pc.
Available Nitride finish only.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|-------------------------------------|-------------------------------------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 13019 | 1010 | 1035 | 1065 | 4140 | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |
| SFM | 1018 | 1045 | | 4340 | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |

good best





List 13119



| | | |
|------|---|-----|
| HSSE | N | 50° |
|------|---|-----|

EX-AL-SFT, DIN Overall Length, Modified Bottom (2.5P-3P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|-----------------------------|--------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P - 3P) | | | | | | | |
| | | | N | L | | | | | | |
| M3 x 0.5 | D3 | 3 | 1311900103 | 56.00 | 5.00 | 19.30 | 3.58 | 2.79 | 4.80 | |
| M4 x 0.7 | D4 | | 1311900303 | 63.00 | | | | | | |
| M5 x 0.8 | D5 | | 1311900403 | 70.00 | 10.00 | 27.20 | 4.93 | 3.86 | 6.40 | |
| M6 x 1.0 | | | 1311900503 | 80.00 | | | | | | |
| M8 x 1.25 | 1311900803 | | 90.00 | 12.00 | 39.00 | 9.68 | 7.26 | 11.10 | | |
| M10 x 1.5 | D6 | | 1311901003 | | | | | | 100.00 | |
| M10 x 1.25 | D5 | | 1311900903 | 110.00 | 14.00 | 49.10 | 9.32 | 6.98 | | |
| M12 x 1.75 | D6 | | 1311901303 | | | | | | | |
| M12 x 1.5 | D5 | | 1311901203 | 100.00 | | | | | | |
| M12 x 1.25 | | | 1311901103 | | | | | | | |

Packed: 1 pc.
Available Nitride finish only.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|-------------------------------------|-------------------------------------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 13119 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |
| SFM | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |

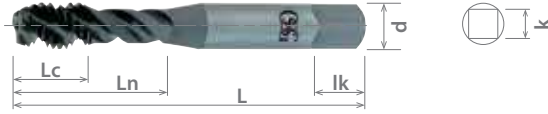
good best





List 290

Modified Bottom (2.5P-3P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Modified Bottom (2.5P - 3P) | | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|-----------------------------|----------------|-----|-------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | EDP Number | Coating Suffix | | | | | | | | |
| | | | | Bright | S/O | TiCN | | | | | | |
| 2 - 56 UNC | H2 | 2 | 29056 | 00 | 01 | 08 | 1.750 | 0.437 | 0.476 | 0.141 | 0.110 | 0.188 |
| 3 - 48 UNC | | | 29060 | 00 | 01 | 08 | 1.813 | 0.496 | 0.535 | | | |
| 4 - 40 UNC | H3 | 3 | 29064 | 00 | 01 | 08 | 1.875 | 0.196 | 0.559 | 0.194 | 0.152 | 0.250 |
| | H4 | | 29114 | 00 | 01 | 08 | | | | | | |
| | H5 | | 29165 | 00 | 01 | 08 | | | | | | |
| 4 - 48 UNF | H2 | | 29166 | 00 | 01 | 08 | 1.938 | 0.200 | 0.625 | | | |
| 5 - 40 UNC | | | 29168 | 00 | 01 | 08 | | | | | | |
| 6 - 32 UNC | H2 | | 29070 | 00 | 01 | 08 | 2.000 | 0.248 | 0.685 | | | |
| | | | 29074 | 00 | 01 | 08 | | | | | | |
| | | | 29124 | 00 | 01 | 08 | | | | | | |
| | | | 29174 | 00 | 01 | 08 | | | | | | |
| | | | 29175 | 00 | 01 | 08 | | | | | | |
| 6 - 40 UNF | H2 | | 29177 | 00 | 01 | 08 | 2.125 | 0.251 | 0.751 | | | |
| | | | 29072 | 00 | 01 | 08 | | | | | | |
| | | 29078 | 00 | 01 | 08 | | | | | | | |
| | | 29128 | 00 | 01 | 08 | | | | | | | |
| 8 - 32 UNC | H2 | 29178 | 00 | 01 | 08 | 2.375 | 0.326 | 0.866 | | | | |
| | | 29180 | 00 | 01 | 08 | | | | | | | |
| | | 29181 | 00 | 01 | 08 | | | | | | | |
| | | 29134 | 00 | 01 | 08 | | | | | | | |
| 10 - 24 UNC | H2 | 29184 | 00 | 01 | 08 | 2.500 | 0.397 | 0.996 | | | | |
| | | 29234 | 00 | 01 | 08 | | | | | | | |
| | | 29088 | 00 | 01 | 08 | | | | | | | |
| 10 - 32 UNF | H3 | 29138 | 00 | 01 | 08 | 2.719 | 0.444 | 1.125 | | | | |
| | | 29188 | 00 | 01 | 08 | | | | | | | |
| | | 29190 | 00 | 01 | 08 | | | | | | | |
| | | 29191 | 00 | 01 | 08 | | | | | | | |
| | | 29236 | 00 | 01 | 08 | | | | | | | |
| 12 - 24 UNC | H3 | 29238 | 00 | 01 | 08 | 2.940 | 0.476 | 0.535 | | | | |
| 12 - 28 UNF | | 29280 | 00 | 01 | 08 | | | | | | | |
| 1/4 - 20 UNC | H2 | 29300 | 00 | 01 | 08 | 2.940 | 0.476 | 0.535 | | | | |
| | | 29400 | 00 | 01 | 08 | | | | | | | |
| | | 29402 | 00 | 01 | 08 | | | | | | | |
| | | 29403 | 00 | 01 | 08 | | | | | | | |
| | | 29303 | 00 | 01 | 08 | | | | | | | |
| 1/4 - 28 UNF | H2 | 29304 | 00 | 01 | 08 | 2.940 | 0.476 | 0.535 | | | | |
| | | 29354 | 00 | 01 | 08 | | | | | | | |
| | | 29404 | 00 | 01 | 08 | | | | | | | |
| | | 29406 | 00 | 01 | 08 | | | | | | | |
| | | 29407 | 00 | 01 | 08 | | | | | | | |
| 5/16 - 18 UNC | H2 | 29306 | 00 | 01 | 08 | 2.940 | 0.476 | 0.535 | | | | |
| | | 29308 | 00 | 01 | 08 | | | | | | | |
| | | 29408 | 00 | 01 | 08 | | | | | | | |
| | | 29410 | 00 | 01 | 08 | | | | | | | |
| | | 29411 | 00 | 01 | 08 | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



List 290 (Continued)



Modified Bottom (2.5P-3P)

Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Modified Bottom (2.5P-3P) | | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|---------------------------|----------------|-----|-------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | EDP Number | Coating Suffix | | | | | | | | |
| | | | | Bright | S/O | TiCN | L | Lc | Ln | d | k | lk |
| 5/16 - 24 UNF | H2 | 3 | 29264 | 00 | 01 | 08 | 2.719 | 0.444 | 1.125 | 0.318 | 0.238 | 0.375 |
| | H3 | | 29312 | 00 | 01 | 08 | | | | | | |
| | H4 | | 29362 | 00 | 01 | 08 | | | | | | |
| | H5 | | 29412 | 00 | 01 | 08 | | | | | | |
| | H6 | | 29413 | 00 | 01 | 08 | | | | | | |
| | H7 | | 29414 | 00 | 01 | 08 | | | | | | |
| H11 | 29415 | | 00 | 01 | 08 | | | | | | | |
| 3/8 - 16 UNC | H2 | | 29315 | 00 | 01 | 08 | 2.938 | 0.500 | 1.251 | 0.381 | 0.286 | 0.438 |
| | H3 | | 29316 | 00 | 01 | 08 | | | | | | |
| | H5 | | 29416 | 00 | 01 | 08 | | | | | | |
| | H7 | | 29421 | 00 | 01 | 08 | | | | | | |
| | H11 | | 29419 | 00 | 01 | 08 | | | | | | |
| 3/8 - 24 UNF | H2 | | 29268 | 00 | 01 | 08 | 2.938 | 0.500 | 1.251 | 0.381 | 0.286 | 0.438 |
| | H3 | | 29318 | 00 | 01 | 08 | | | | | | |
| | H4 | | 29368 | 00 | 01 | 08 | | | | | | |
| | H5 | | 29418 | 00 | 01 | 08 | | | | | | |
| | H7 | | 29417 | 00 | 01 | 08 | | | | | | |
| | H11 | | 29423 | 00 | 01 | 08 | | | | | | |
| 7/16 - 14 UNC | H3 | | 29320 | 00 | 01 | 08 | 3.156 | 0.570 | 1.712 | 0.323 | 0.242 | 0.406 |
| | H5 | | 29420 | 00 | 01 | 08 | | | | | | |
| | H7 | | 29431 | 00 | 01 | 08 | | | | | | |
| | H11 | | 29433 | 00 | 01 | 08 | | | | | | |
| 7/16 - 20 UNF | H3 | | 29322 | 00 | 01 | 08 | 3.156 | 0.570 | 1.712 | 0.323 | 0.242 | 0.406 |
| | H5 | | 29422 | 00 | 01 | 08 | | | | | | |
| | H7 | 29490 | 00 | 01 | 08 | | | | | | | |
| | H11 | 29428 | 00 | 01 | 08 | | | | | | | |
| 1/2 - 13 UNC | H3 | 29324 | 00 | 01 | 08 | 3.375 | 0.614 | 1.933 | 0.367 | 0.275 | 0.438 | |
| | H5 | 29424 | 00 | 01 | 08 | | | | | | | |
| | H7 | 29425 | 00 | 01 | 08 | | | | | | | |
| | H11 | 29427 | 00 | 01 | 08 | | | | | | | |
| 1/2 - 20 UNF | H2 | 29276 | 00 | 01 | 08 | 3.375 | 0.614 | 1.933 | 0.367 | 0.275 | 0.438 | |
| | H3 | 29326 | 00 | 01 | 08 | | | | | | | |
| | H5 | 29426 | 00 | 01 | 08 | | | | | | | |
| | H7 | 29429 | 00 | 01 | 08 | | | | | | | |
| | H11 | 29430 | 00 | 01 | 08 | | | | | | | |
| 9/16 - 12 UNC | H3 | 4 | 29486 | 00 | 01 | 08 | 3.594 | 0.665 | 1.972 | 0.429 | 0.322 | 0.500 |
| 9/16 - 18 UNF | H3 | | 29488 | 00 | 01 | 08 | | | | | | |
| 5/8 - 11 UNC | H5 | | 29332 | 00 | 01 | 08 | 3.813 | 0.728 | 2.125 | 0.480 | 0.360 | 0.563 |
| | | | 29432 | 00 | 01 | 08 | | | | | | |
| 5/8 - 18 UNF | H3 | | 29334 | 00 | 01 | 08 | 4.250 | 0.799 | 2.433 | 0.590 | 0.442 | 0.688 |
| | | | 29336 | 00 | 01 | 08 | | | | | | |
| 3/4 - 10 UNC | H5 | | 29436 | 00 | 01 | 08 | 4.250 | 0.818 | 2.433 | 0.590 | 0.442 | 0.688 |
| | | | 29338 | 00 | 01 | 08 | | | | | | |
| 3/4 - 16 UNF | H3 | | 29438 | 00 | 01 | 08 | 4.688 | 0.889 | 2.653 | 0.697 | 0.523 | 0.750 |
| | | | 29440 | 00 | 01 | 08 | | | | | | |
| 7/8 - 9 UNC | H5 | | 29440 | 00 | 01 | 08 | 4.688 | 0.889 | 2.653 | 0.697 | 0.523 | 0.750 |
| 7/8 - 14 UNF | H4 | | 29392 | 00 | 01 | 08 | | | | | | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order.

▶ continued on next page ▶ **HYT**

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|---------|--------------|--------------------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 290 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | |
| SFM | 50-90 | 40-80 | 40-60 | 40-80 | 20-60 | 40-80 | 40-80 | 30-50 | 30-80 | | | | | 20-60 | | | |

good best

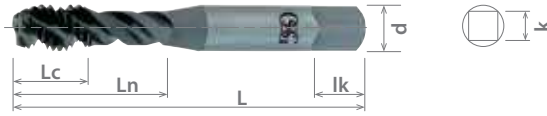




List 290 (Continued)



Modified Bottom (2.5P - 3P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Modified Bottom (2.5P - 3P) | | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|----------------|--------------|---------------|-----------------------------|----------------|-----|------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | EDP Number | Coating Suffix | | | | | | | | |
| | | | | Bright | S/O | TiCN | L | Lc | Ln | d | k | lk |
| 1 - 8 UNC | H5 | 4 | 29444 | 00 | 01 | 08 | 5.125 | 1.000 | 3.011 | 0.800 | 0.600 | 0.813 |
| 1 - 12 UNF | H4 | | 29396 | 00 | 01 | 08 | | | | | | |
| 1,1/8 - 7 UNC | H6 | | 29472 | - | 01 | - | 5.438 | 1.141 | 3.074 | 0.896 | 0.672 | 0.875 |
| 1,1/8 - 8 UNS | | | 29476 | - | 01 | - | | | | | | |
| 1,1/8 - 12 UNF | H5 | | 29450 | - | 01 | - | 5.750 | 1.141 | 3.074 | 1.021 | 0.766 | 1.000 |
| 1,1/4 - 7 UNC | H6 | | 29477 | - | 01 | - | | | | | | |
| 1,1/4 - 8 UNS | | | 29479 | - | 01 | - | | | | | | |
| 1,1/4 - 12 UNF | H5 | | 29456 | - | 01 | - | 6.063 | 1.334 | 3.590 | 1.108 | 0.831 | 1.063 |
| 1,3/8 - 6 UNC | H6 | | 29480 | - | 01 | - | | | | | | |
| 1,3/8 - 8 UNS | | | 29482 | - | 01 | - | 6.375 | 1.334 | 3.590 | 1.233 | 0.925 | 1.125 |
| 1,3/8 - 12 UNF | H5 | | 29462 | - | 01 | - | | | | | | |
| 1,1/2 - 6 UNC | H6 | | 29483 | - | 01 | - | | | | | | |
| 1,1/2 - 8 UNS | | | 29485 | - | 01 | - | | | | | | |
| 1,1/2 - 12 UNF | H5 | | 29468 | - | 01 | - | | | | | | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

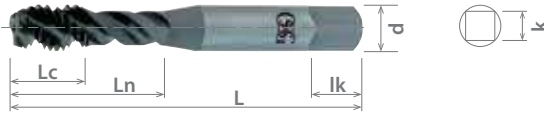
| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S Titanium | H | | | | |
|----------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|---------|---------------|--------------------------|-----------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | | Nickel Alloy | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 290 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | |
| SFM | 50-90 | 40-80 | 40-60 | 40-80 | 20-60 | 40-80 | 40-80 | 30-50 | 30-80 | | | | 20-60 | | | | |

good best



List 299

Modified Bottom (2.5P-3P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | Modified Bottom (2.5P-3P) | | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk |
|------------|--------------|---------------|---------------------------|----------------|-----|--------|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|
| | | | EDP Number | Coating Suffix | | | | | | | | |
| | | | | Bright | S/O | TiCN | | | | | | |
| M3 x 0.5 | D3 | 3 | 29904 | 00 | 01 | 08 | 49.20 | 4.08 | 16.00 | 3.58 | 2.79 | 4.80 |
| | D11 | | 29931 | - | 01 | - | | | | | | |
| M3.5 x 0.6 | D4 | | 29905 | 00 | 01 | 08 | 50.80 | 4.08 | 17.50 | 3.58 | 2.79 | 4.80 |
| | D11 | | 29933 | - | 01 | - | | | | | | |
| M4 x 0.7 | D4 | | 29906 | 00 | 01 | 08 | 54.00 | 4.80 | 19.10 | 4.27 | 3.33 | 6.40 |
| | D11 | | 29935 | - | 01 | - | | | | | | |
| M5 x 0.8 | D4 | | 29908 | 00 | 01 | 08 | 60.30 | 5.58 | 22.19 | 4.93 | 3.86 | 7.90 |
| | D11 | | 29937 | - | 01 | - | | | | | | |
| M6 x 1.0 | D5 | | 29910 | 00 | 01 | 08 | 63.50 | 8.00 | 25.40 | 6.48 | 4.85 | 9.50 |
| | D11 | | 29939 | - | 01 | - | | | | | | |
| M7 x 1.0 | D5 | | 29911 | 00 | 01 | 08 | 69.10 | 10.00 | 28.60 | 8.08 | 6.05 | 9.50 |
| | D11 | | 29941 | - | 01 | - | | | | | | |
| M8 x 1.25 | D5 | | 29914 | 00 | 01 | 08 | 74.60 | 11.98 | 31.80 | 9.68 | 7.26 | 11.10 |
| | D11 | | 29945 | - | 01 | - | | | | | | |
| M8 x 1.0 | D5 | | 29913 | 00 | 01 | 08 | 85.70 | 13.99 | 49.09 | 9.32 | 6.98 | 12.70 |
| | D11 | | 29943 | - | 01 | - | | | | | | |
| M10 x 1.5 | D6 | | 29918 | 00 | 01 | 08 | 91.30 | 16.00 | 50.08 | 10.90 | 8.18 | 14.30 |
| | D11 | | 29951 | - | 01 | - | | | | | | |
| M10 x 1.25 | D5 | | 29917 | 00 | 01 | 08 | 96.80 | 19.98 | 54.00 | 12.19 | 9.14 | 17.50 |
| | D11 | | 29949 | - | 01 | - | | | | | | |
| M10 x 1.0 | D5 | | 29916 | 00 | 01 | 08 | 102.40 | 24.00 | 68.40 | 19.30 | 14.48 | 22.20 |
| | D11 | | 29947 | - | 01 | - | | | | | | |
| M12 x 1.75 | D6 | | 29923 | 00 | 01 | 08 | 101.60 | 27.99 | 78.10 | 25.93 | 19.46 | 25.40 |
| | D11 | | 29957 | - | 01 | - | | | | | | |
| M12 x 1.5 | D6 | | 29922 | 00 | 01 | 08 | 113.50 | 19.98 | 61.79 | 16.56 | 12.42 | 17.50 |
| | D11 | | 29955 | - | 01 | - | | | | | | |
| M12 x 1.25 | D5 | | 29921 | 00 | 01 | 08 | 119.10 | 24.00 | 76.50 | 22.76 | 17.07 | 22.20 |
| | D11 | | 29952 | - | 01 | - | | | | | | |
| M14 x 2.0 | D7 | 29926 | - | 01 | - | 91.30 | 16.00 | 50.08 | 10.90 | 8.18 | 12.70 | |
| M14 x 1.5 | D6 | 29925 | - | 01 | - | 96.80 | 19.98 | 54.00 | 12.19 | 9.14 | 14.30 | |
| M16 x 2.0 | D7 | 29929 | - | 01 | - | 102.40 | 24.00 | 68.40 | 19.30 | 14.48 | 22.20 | |
| M16 x 1.5 | D6 | 29928 | - | 01 | - | 113.50 | 19.98 | 61.79 | 16.56 | 12.42 | 17.50 | |
| M18 x 2.5 | D7 | 29932 | - | 01 | - | 119.10 | 24.00 | 76.50 | 22.76 | 17.07 | 22.20 | |
| M18 x 1.5 | D6 | 29930 | - | 01 | - | 124.60 | 27.99 | 78.10 | 25.93 | 19.46 | 25.40 | |
| M20 x 2.5 | D8 | 29936 | - | 01 | - | 130.20 | 31.98 | 80.60 | 20.36 | 13.62 | 18.50 | |
| M20 x 1.5 | D6 | 29934 | - | 01 | - | 138.10 | 35.99 | 86.10 | 22.93 | 14.96 | 20.40 | |
| M22 x 2.5 | D8 | 29940 | - | 01 | - | 144.70 | 39.98 | 91.60 | 24.96 | 15.96 | 21.40 | |
| M22 x 1.5 | D6 | 29938 | - | 01 | - | 151.30 | 43.99 | 97.10 | 26.99 | 16.99 | 22.40 | |
| M24 x 3.0 | D8 | 29944 | - | 01 | - | 157.90 | 47.99 | 102.60 | 29.02 | 18.02 | 23.40 | |
| M24 x 1.5 | D6 | 29942 | - | 01 | - | 164.50 | 51.99 | 108.10 | 31.05 | 19.05 | 24.40 | |
| M27 x 3.0 | D8 | 29948 | - | 01 | - | 171.10 | 55.99 | 113.60 | 33.08 | 20.08 | 25.40 | |
| M27 x 1.5 | D6 | 29946 | - | 01 | - | 177.70 | 59.99 | 119.10 | 35.11 | 21.11 | 26.40 | |
| M30 x 3.5 | D9 | 29953 | - | 01 | - | 184.30 | 63.99 | 124.60 | 37.14 | 22.14 | 27.40 | |
| M30 x 1.5 | D6 | 29950 | - | 01 | - | 190.90 | 67.99 | 130.10 | 39.17 | 23.17 | 28.40 | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------|---------|--------------|--------------------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 299 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | |
| SFM | 50-90 | 40-80 | 40-60 | 40-80 | 20-60 | 40-80 | 40-80 | 30-50 | 30-80 | | | | | 20-60 | | | |

good best



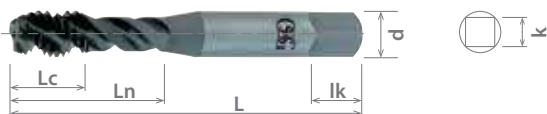


HY-PRO® SEVEN

General Purpose Class of Fit Taps

List 297

Bottom (1.5P-2P)



Units: Inch

| Tap Size | Class of Fit | No. of Flutes | Bottom (1.5P - 2P) | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | |
|---------------|--------------|---------------|--------------------|----------------|-------|----------------|---------------|-------------|------------|--------------|---------------|-------|
| | | | EDP Number | Coating Suffix | | | | | | | | |
| | | | | Bright | S/O | TiN | L | Lc | Ln | d | k | lk |
| 3 - 48 UNC | 2B | 2 | 29845 | 00 | 01 | 05 | 1.813 | 0.496 | 0.535 | 0.141 | 0.110 | 0.188 |
| 3 - 56 UNF | | | 29846 | 00 | 01 | 05 | | | | | | |
| 4 - 40 UNC | | | 29850 | 00 | 01 | 05 | | | | | | |
| 4 - 48 UNF | | | 29854 | 00 | 01 | 05 | | | | | | |
| 5 - 40 UNC | | | 29865 | 00 | 01 | 05 | | | | | | |
| 6 - 32 UNC | | | 29852 | 00 | 01 | 05 | | | | | | |
| 6 - 40 UNF | | 29866 | 00 | 01 | 05 | | | | | | | |
| 8 - 32 UNC | | 29853 | 3 | 00 | 01 | 05 | 2.125 | 0.374 | 0.751 | 0.168 | 0.131 | 0.250 |
| 8 - 36 UNF | | 29867 | | 00 | 01 | 05 | | | | | | |
| 10 - 24 UNC | | 29854 | | 00 | 01 | 05 | | | | | | |
| 10 - 32 UNF | | 29855 | | 00 | 01 | 05 | | | | | | |
| 12 - 24 UNC | | 29868 | | 00 | 01 | 05 | 2.375 | 0.492 | 0.866 | 0.194 | 0.152 | 0.281 |
| 1/4 - 20 UNC | | 29856 | | 00 | 01 | 05 | | | | | | |
| 1/4 - 28 UNF | | 29857 | | 00 | 01 | 05 | 2.500 | 0.594 | 0.996 | 0.255 | 0.191 | 0.313 |
| 5/16 - 18 UNC | | 29858 | | 00 | 01 | 05 | | | | | | |
| 5/16 - 24 UNF | | 29859 | | 00 | 01 | 05 | 2.719 | 0.665 | 1.125 | 0.318 | 0.238 | 0.375 |
| 3/8 - 16 UNC | | 29860 | | 00 | 01 | 05 | | | | | | |
| 3/8 - 24 UNF | | 29861 | | 00 | 01 | 05 | 2.938 | 0.751 | 1.251 | 0.381 | 0.286 | 0.438 |
| 7/16 - 14 UNC | | 29869 | | 00 | 01 | 05 | | | | | | |
| 7/16 - 20 UNF | | 29870 | | 00 | 01 | 05 | 3.156 | 0.858 | 1.712 | 0.323 | 0.242 | 0.406 |
| 1/2 - 13 UNC | 29862 | 00 | | 01 | 05 | | | | | | | |
| 1/2 - 20 UNF | 29863 | 00 | 01 | 05 | 3.375 | 0.921 | 1.933 | 0.367 | 0.275 | 0.438 | | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|------|--------------|------------|------------------|-----|---------|-----------|--------------------------|--------------------------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 297 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 50-90 | 40-80 | | | | | | | | 30-80 | 30-80 | | | | | | | |

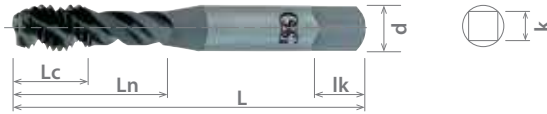
good best





List 298

Bottom (1.5P-2P)



Units: mm

| Tap Size | Class of Fit | No. of Flutes | Bottom (1.5P - 2P) | | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|--------------------|----------------|-----|-----|----------------|---------------|-------------|------------|--------------|---------------|
| | | | EDP Number | Coating Suffix | | | | | | | | |
| | | | | Bright | S/O | TiN | L | Lc | Ln | d | k | lk |
| M3 x 0.5 | 6H | 2 | 29880 | 00 | 01 | 05 | 49.20 | 8.00 | 16.00 | 3.58 | 2.79 | 4.80 |
| M4 x 0.7 | | | 29881 | 00 | 01 | 05 | 54.00 | 8.97 | 19.10 | 4.27 | 3.33 | 6.40 |
| M5 x 0.8 | | 3 | 29882 | 00 | 01 | 05 | 60.30 | 12.70 | 22.19 | 4.93 | 3.86 | 7.90 |
| M6 x 1.0 | | | 29883 | 00 | 01 | 05 | 63.50 | 15.18 | 25.40 | 6.48 | 4.85 | 7.90 |
| M8 x 1.25 | | | 29884 | 00 | 01 | 05 | 69.10 | 16.89 | 28.60 | 8.08 | 6.05 | 9.50 |
| M10 x 1.5 | | | 29885 | 00 | 01 | 05 | 74.60 | 19.10 | 31.80 | 9.68 | 7.26 | 11.10 |
| M12 x 1.75 | | | 29886 | 00 | 01 | 05 | 85.70 | 21.00 | 49.09 | 9.32 | 6.98 | 11.10 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|---------|--------------|----------|-----------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 298 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 50-90 | 40-80 | | | | | | | 30-80 | 30-80 | | | | | | | |

good best





GENERAL PURPOSE

List 107

Plug (4P-4.5P), Bottom (1.5P-2P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Bottom (1.5P - 2P) | | | | | Plug (4P - 4.5P) | | | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|--------------------|----------------|-----|-----|------|------------------|----------------|-----|-----|------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | EDP Number | Coating Suffix | | | | EDP Number | Coating Suffix | | | | | | | | | |
| | | | | Bright | S/O | TiN | TiCN | | Bright | S/O | TiN | TiCN | | | | | | |
| 3 - 48 UNC | H2 | 2 | 14061 | 00 | - | - | - | 14060 | 00 | - | - | - | 1.813 | 0.496 | 0.535 | 0.141 | 0.110 | 0.188 |
| 4 - 40 UNC | | | 14065 | 00 | 01 | 05 | 08 | 14064 | 00 | 01 | 05 | 08 | 1.875 | 0.326 | | | | |
| 5 - 40 UNC | | | 14071 | 00 | - | - | - | - | 14070 | 00 | - | - | - | 1.938 | | | | |
| 6 - 32 UNC | H3 | 2 | 50015 | 00 | - | 05 | 08 | 50014 | 00 | - | 05 | - | 2.000 | 0.397 | 0.685 | 0.141 | 0.110 | 0.188 |
| | | | 14125 | 00 | 01 | 05 | 08 | 14124 | 00 | 01 | 05 | 08 | | | | | | |
| 8 - 32 UNC | H2 | 2 | 50019 | 00 | - | - | - | 50018 | 00 | - | - | - | 2.125 | 0.401 | 0.759 | 0.168 | 0.131 | 0.250 |
| 10 - 24 UNC | H3 | | 14129 | 00 | 01 | 05 | 08 | 14128 | 00 | - | 05 | 08 | | | | | | |
| | | | 14133 | 00 | 01 | 05 | 08 | 14132 | 00 | - | 05 | 08 | | | | | | |
| 10 - 32 UNF | H2 | 2 | 50027 | 00 | - | 05 | 08 | 50026 | 00 | - | - | - | 2.375 | 0.511 | 0.874 | 0.194 | 0.152 | 0.281 |
| 12 - 24 UNC | H3 | | 14135 | 00 | 01 | 05 | 08 | 14134 | 00 | - | 05 | 08 | | | | | | |
| | | | 14137 | 00 | 01 | - | - | - | 14136 | 00 | - | - | | | | | | |
| 1/4 - 20 UNC | H5 | 3 | 14301 | 00 | 01 | 05 | 08 | 14300 | 00 | 01 | 05 | 08 | 2.500 | 0.645 | 1.007 | 0.255 | 0.191 | 0.313 |
| 1/4 - 28 UNF | | | H3 | 50035 | 00 | - | 05 | 08 | 50034 | 00 | - | 05 | | | | | | |
| 5/16 - 18 UNC | H5 | | 14303 | 00 | - | 05 | 08 | 14302 | 00 | - | 05 | 08 | | | | | | |
| 5/16 - 24 UNF | H3 | 3 | 14305 | 00 | 01 | 05 | 08 | 14304 | 00 | 01 | 05 | 08 | 2.719 | 0.708 | 1.129 | 0.318 | 0.238 | 0.375 |
| 3/8 - 16 UNC | H5 | | 50047 | 00 | - | 05 | 08 | 50046 | 00 | - | - | - | | | | | | |
| 3/8 - 24 UNF | H3 | | 14307 | 00 | - | 05 | 08 | 14306 | 00 | - | 05 | 08 | | | | | | |
| 7/16 - 14 UNC | H5 | 3 | 14309 | 00 | 01 | 05 | 08 | 14308 | 00 | 01 | 05 | 08 | 2.938 | 0.771 | 1.251 | 0.381 | 0.286 | 0.438 |
| 7/16 - 20 UNF | | | H3 | 50055 | 00 | - | 05 | 08 | 50054 | 00 | - | - | | | | | | |
| 1/2 - 13 UNC | H5 | | 14311 | 00 | - | 05 | 08 | 14310 | 00 | - | 05 | 08 | | | | | | |
| 1/2 - 20 UNF | H3 | 3 | 14313 | 00 | - | 05 | 08 | 14312 | 00 | - | 05 | 08 | 3.156 | 0.901 | 1.708 | 0.323 | 0.242 | 0.406 |
| 5/8 - 11 UNC | H5 | | 50062 | 00 | - | 05 | - | - | - | - | - | - | | | | | | |
| 5/8 - 18 UNF | H3 | | 14317 | 00 | - | 05 | 08 | 14316 | 00 | - | 05 | 08 | | | | | | |
| 3/4 - 10 UNC | H5 | 4 | 14321 | 00 | 01 | 05 | 08 | 14320 | 00 | 01 | 05 | 08 | 3.375 | 0.960 | 1.929 | 0.367 | 0.275 | 0.438 |
| 3/4 - 16 UNF | | | H3 | 50071 | 00 | - | - | - | 50070 | 00 | - | - | | | | | | |
| | | | | 14325 | 00 | - | 05 | 08 | 14324 | 00 | - | 05 | 08 | 3.813 | 1.110 | 2.129 | 0.480 | 0.360 |
| | | | 14329 | 00 | - | 05 | 08 | 14328 | 00 | - | - | - | | | | | | |
| | | | 14333 | 00 | - | 05 | 08 | 14332 | 00 | - | - | - | 4.250 | 1.240 | 2.429 | 0.590 | 0.442 | 0.688 |
| | | | 14337 | 00 | - | 05 | 08 | 14336 | 00 | - | 05 | 08 | | | | | | |
| | | | 14341 | 00 | - | 05 | 08 | 14340 | 00 | - | - | - | | | | | | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|--------------------------|--------------------------|--------------------------|---------|--------------|----------|-----------------|-------|---------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V | ~35 HRC | 35-45 HRC |
| 107 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | 25-75 | 40-80 | 40-65 | | | | | | | |

good best

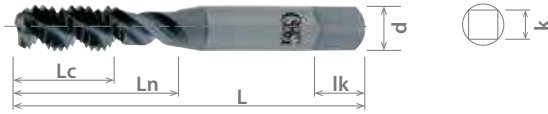




List 143

Plug (4P-4.5P), Bottom (1.5P-2P)

| | | | | | |
|-----|------|-----|-----|----|-----|
| HSS | TiCN | TiN | S/O | BR | 50° |
|-----|------|-----|-----|----|-----|



Units: mm

| Tap Size | Thread Limit | No. of Flutes | Bottom (1.5P - 2P) | | | | Plug (4P - 4.5P) | | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|--------------------|----------------|-----|------|------------------|----------------|-----|------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | EDP Number | Coating Suffix | | | EDP Number | Coating Suffix | | | | | | | | |
| | | | | Bright | S/O | TiCN | | Bright | TiN | TiCN | | | | | | |
| M3 x 0.5 | D3 | 2 | 19852 | 00 | 01 | 08 | 19851 | 00 | 05 | - | 49.20 | 8.30 | 15.79 | 3.58 | 2.79 | 4.80 |
| M4 x 0.7 | D4 | | 19855 | 00 | 01 | 08 | 19854 | 00 | 05 | 08 | 54.00 | 10.00 | 19.30 | 4.27 | 3.33 | 6.40 |
| M5 x 0.8 | | | 19858 | 00 | 01 | 08 | 19857 | 00 | 05 | 08 | 60.30 | 13.00 | 22.40 | 4.93 | 3.86 | |
| M6 x 1.0 | D5 | | 19861 | 00 | 01 | 08 | 19860 | 00 | 05 | 08 | 63.50 | 16.30 | 25.70 | 6.48 | 4.85 | 7.90 |
| M8 x 1.25 | | | 19864 | 00 | 01 | 08 | 19863 | 00 | 05 | 08 | 69.10 | 18.00 | 28.70 | 8.08 | 6.05 | 9.50 |
| M10 x 1.5 | D6 | | 19867 | 00 | 01 | 08 | 19866 | 00 | 05 | 08 | 74.60 | 19.50 | 31.69 | 9.68 | 7.26 | 11.10 |
| M12 x 1.75 | | | 19870 | 00 | 01 | 08 | 19869 | 00 | 05 | 08 | 85.70 | 24.40 | 48.99 | 9.32 | 6.98 | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|---------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 143 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | | |

good best





GENERAL PURPOSE

List 13020

Plug (3.5P-4.5P), Bottom (1.5P-2P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|--------------------|--------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P - 2P) | Plug (3.5P - 4.5P) | | | | | | |
| | | | S/O | S/O | | | | | | |
| 6 - 32 UNC | H3 | 3 | 1302001401 | 1302000101 | 2.000 | 0.248 | 0.685 | 0.141 | 0.110 | 0.188 |
| 8 - 32 UNC | | | 1302001501 | 1302000201 | 2.125 | 0.251 | 0.751 | 0.168 | 0.131 | 0.250 |
| 10 - 24 UNC | | | 1302001601 | 1302000301 | 2.375 | 0.326 | 0.866 | 0.194 | 0.152 | |
| 10 - 32 UNF | | | 1302001701 | 1302000401 | | | | | | |
| 1/4 - 20 UNC | | | 1302001801 | 1302000501 | 2.500 | 0.397 | 0.996 | 0.255 | 0.191 | 0.313 |
| 1/4 - 28 UNF | | | 1302001901 | 1302000601 | | | | | | |
| 5/16 - 18 UNC | | | 1302002001 | 1302000701 | 2.719 | 0.444 | 1.125 | 0.318 | 0.238 | 0.375 |
| 5/16 - 24 UNF | | | 1302002101 | 1302000801 | | | | | | |
| 3/8 - 16 UNC | | | 1302002201 | 1302000901 | 2.938 | 0.500 | 1.251 | 0.381 | 0.286 | 0.438 |
| 3/8 - 24 UNF | | | 1302002301 | 1302001001 | | | | | | |
| 1/2 - 13 UNC | | | 1302002401 | 1302001101 | 3.375 | 0.614 | 1.933 | 0.367 | 0.275 | 0.563 |
| 5/8 - 11 UNC | | | 1302002501 | 1302001201 | 3.813 | 0.728 | 2.125 | 0.480 | 0.360 | |
| 5/8 - 18 UNF | | 1302002601 | 1302001301 | | | | | | | |

Packed: 1 pc.
Available Steam Oxide only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 13020 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | | |

good best





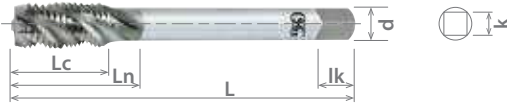
List 123

HSSE

BR

50°

EX-SFT, JIS, Modified Bottom (2.5P-3P)



Units: mm

| Tap Size | Class of Fit | No. of Flutes | EDP Number | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|-----------------------------|-------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P - 3P) | | | | | | | |
| | | | Bright | | L | Lc | Ln | d | k | lk |
| M3 x 0.5 | 2 | 3 | 11544 | 47.00 | 6.00 | 19.00 | 4.00 | 3.20 | 6.00 | |
| M4 x 0.7 | | | 11556 | 55.00 | 8.40 | 22.70 | 5.00 | 4.00 | | |
| M5 x 0.8 | | | 11571 | 64.00 | 10.00 | 26.10 | 5.50 | 4.50 | | |
| M6 x 1.0 | | | 11583 | 67.00 | 12.00 | 31.60 | 6.00 | | | |
| M8 x 1.25 | | | 11601 | 70.00 | 15.00 | 37.00 | 6.20 | 5.00 | 8.00 | |
| M10 x 1.5 | | | 11621 | 75.00 | 18.00 | 41.00 | 7.00 | 5.50 | | |
| M10 x 1.25 | | | 11624 | | | | | | | |
| M12 x 1.75 | | | 11650 | | | | | | | |
| M12 x 1.5 | | | 11653 | 82.00 | 21.00 | 48.00 | 8.50 | 6.50 | 9.00 | |
| M14 x 2.0 | | | 11680 | 88.00 | 30.00 | | 10.50 | 8.00 | 11.00 | |
| M14 x 1.5 | | | 11683 | 95.00 | 32.00 | 52.00 | 12.50 | 10.00 | 13.00 | |
| M16 x 2.0 | | | 11705 | | | | | | | |
| M16 x 1.5 | | 11708 | 100.00 | 37.00 | 55.00 | 14.00 | 11.00 | 14.00 | | |
| M18 x 2.5 | | 11730 | | | | | | | | |
| M18 x 1.5 | | 11735 | | | | | | | | |
| M20 x 2.5 | | 11757 | 105.00 | 37.00 | 58.00 | 15.00 | 12.00 | 15.00 | | |
| M20 x 1.5 | | 11762 | | | | | | | | |
| M22 x 2.5 | | 11772 | | | | | | | | |
| M24 x 3.0 | | 11799 | | | | | | | | |
| | | | | | 120.00 | 45.00 | 66.00 | 19.00 | 15.00 | 18.00 |

Packed: 1 pc.

Other coatings available upon request.

Specify treatment at time of order.

Note: List 123 Taps will normally produce JIS Class II and ISO 6H Limits.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|---------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 123 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | | |

good best

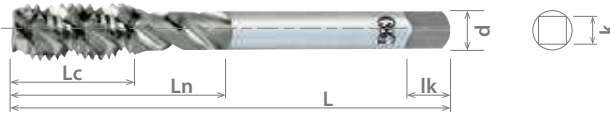




GENERAL PURPOSE LS

List 918

Long Shank, Plug (4P-4.5P), Bottom (1.5P-2P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Long Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|--------------------|------------------|---------------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P - 2P) | Plug (4P - 4.5P) | | | | | | |
| | | | Bright | Bright | | | | | | |
| 4 - 40 UNC | H2 | 2 | 1296100 | 1296000 | 4 | 0.326 | 0.555 | 0.141 | 0.110 | 0.188 |
| 6 - 32 UNC | 1296300 | | 1296200 | | | | | | | |
| 8 - 32 UNC | H3 | 3 | 1296500 | 1296400 | 6 | 0.397 | 0.685 | 0.168 | 0.131 | 0.250 |
| | | | 1296700 | 1296600 | | | | | | |
| 10 - 24 UNC | H3 | 3 | 1296900 | 1296800 | 6 | 0.472 | 0.830 | 0.194 | 0.152 | 0.250 |
| | | | 1297100 | 1297000 | | | | | | |
| 10 - 32 UNF | H3 | 3 | 1297300 | 1297200 | 6 | 0.511 | 0.874 | 0.255 | 0.191 | 0.313 |
| | | | 1297500 | 1297400 | | | | | | |
| 1/4 - 20 UNC | H3 | 3 | 1297700 | 1297600 | 6 | 0.645 | 1.007 | 0.318 | 0.238 | 0.375 |
| 1/4 - 28 UNF | | | 1297900 | 1297800 | | | | | | |
| 5/16 - 18 UNC | H3 | 3 | 1298100 | 1298000 | 6 | 0.771 | 1.251 | 0.381 | 0.286 | 0.438 |
| 3/8 - 16 UNC | | | 1298300 | 1298200 | | | | | | |
| 7/16 - 14 UNC | H3 | 3 | 1298500 | 1298400 | 6 | 0.901 | 1.708 | 0.323 | 0.242 | 0.406 |
| 1/2 - 13 UNC | | | 1298700 | 1298600 | | | | | | |
| 5/8 - 11 UNC | H3 | 3 | 1298900 | 1298800 | 6 | 0.960 | 1.929 | 0.367 | 0.275 | 0.438 |
| | | | 1299100 | 1299000 | | | | | | |
| | | 4 | 1299300 | 1299200 | | 1.110 | 2.129 | 0.480 | 0.360 | 0.563 |

Packed: 1 pc.
Other coatings available upon request.
Specify treatment at time of order.



Work Material

| List No. | P | | | Alloy Steels | Die Steels | M | | | K | N | | S | | H | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|--------------------------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | | | Stainless Steels | | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 918 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | | |

good best



List 5BA-SO, 5BL-SO

RED BAND, Ideal for Alloy Steel

NEW RED BAND DRILLS P316-318 HSSE V3 TYPE H TiAlN 15°



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|--------------------|----------------|---------------|------------|--------------|---------------|
| | | | Mod Bottom (2P-3P) | | | | | |
| | | | TiAlN | | | | | |
| | | | L | Lc | d | k | lk | |
| 4 - 40 UNC | H3 | 3 | 5BA0280-SO | 1.890 | 0.236 | 0.141 | 0.110 | 0.197 |
| | H5 | | 5BA0290-SO | | | | | |
| 4 - 48 UNF | H3 | | 5BL0280-SO | | | | | |
| | H5 | | 5BL0290-SO | | | | | |
| 5 - 40 UNC | H3 | | 5BA0320-SO | | | | | |
| | H5 | | 5BA0330-SO | | | | | |
| 5 - 44 UNF | H3 | | 5BL0320-SO | | | | | |
| | H5 | | 5BL0330-SO | | | | | |
| 6 - 32 UNC | H3 | | 5BA0350-SO | | | | | |
| | H5 | | 5BA0360-SO | | | | | |
| 6 - 40 UNF | H3 | | 5BL0350-SO | | | | | |
| | H5 | | 5BL0360-SO | | | | | |
| 8 - 32 UNC | H3 | | 5BA0420-SO | | | | | |
| | H5 | | 5BA0430-SO | | | | | |
| 8 - 36 UNF | H3 | | 5BL0420-SO | | | | | |
| | H5 | | 5BL0430-SO | | | | | |
| 10 - 24 UNC | H3 | | 5BA0480-SO | | | | | |
| | H5 | | 5BA0490-SO | | | | | |
| 10 - 32 UNF | H3 | | 5BL0480-SO | | | | | |
| | H5 | | 5BL0490-SO | | | | | |
| 12 - 24 UNC | H3 | | 5BA0550-SO | | | | | |
| | H5 | | 5BA0560-SO | | | | | |
| 12 - 28 UNF | H3 | | 5BL0550-SO | | | | | |
| | H5 | | 5BL0560-SO | | | | | |
| 1/4 - 20 UNC | H3 | | 5BA0640-SO | | | | | |
| | H5 | | 5BA0650-SO | | | | | |
| 1/4 - 28 UNF | H3 | | 5BL0640-SO | | | | | |
| | H5 | | 5BL0650-SO | | | | | |
| 5/16 - 18 UNC | H3 | 5BA0790-SO | | | | | | |
| | H5 | 5BA0800-SO | | | | | | |
| 5/16 - 24 UNF | H3 | 5BL0790-SO | | | | | | |
| | H5 | 5BL0800-SO | | | | | | |
| 3/8 - 16 UNC | H3 | 5BA0950-SO | | | | | | |
| | H5 | 5BA0960-SO | | | | | | |
| 3/8 - 24 UNF | H3 | 5BL0950-SO | | | | | | |
| | H5 | 5BL0960-SO | | | | | | |

Packed: 1 pc.
Available TiAlN only.

continued on next page

| Work Material | | | | | | | | | | | | | | | | | |
|----------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|------------------|-----|---------|--------------------------|--------------------------|---------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|---------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 5BA-SO, 5BL-SO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| SFM | 59-89 | 59-89 | 59-89 | 59-79 | 59-79 | | | | 59-88 | 78-118 | | 16-36 | 20-40 | 30-50 | 30-50 | | |

good best





List 5BA-SO, 5BL-SO (Continued)

| | | | | | |
|------------|------------------------------------|----------------|---------------|--------------|------------|
| NEW | RED BAND DRILLS P316-318 | HSSE V3 | TYPE H | TiAIN | 15° |
|------------|------------------------------------|----------------|---------------|--------------|------------|

RED BAND, Ideal for Alloy Steel



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Shank Dia. | Square Width | Square Length |
|----------------|--------------|---------------|--------------------|----------------|---------------|------------|--------------|---------------|
| | | | Mod Bottom (2P-3P) | | | | | |
| | | | TiAIN | | | | | |
| | | | L | Lc | d | k | lk | |
| 7/16 - 14 UNC | H3 | 4 | 5BA1110-SO | 3.228 | 0.709 | 0.323 | 0.242 | 0.413 |
| | H5 | | 5BA1120-SO | | | | | |
| | H3 | | 5BL1110-SO | | | | | |
| 7/16 - 20 UNF | H3 | | 5BL1120-SO | 3.425 | 0.827 | 0.367 | 0.275 | 0.433 |
| | H5 | | 5BA1270-SO | | | | | |
| | H3 | | 5BA1280-SO | | | | | |
| 1/2 - 13 UNC | H3 | | 5BL1270-SO | 3.661 | 0.866 | 0.429 | 0.322 | 0.492 |
| | H5 | | 5BL1280-SO | | | | | |
| | H3 | | 5BA1430-SO | | | | | |
| 1/2 - 20 UNF | H3 | | 5BA1440-SO | 3.878 | 0.906 | 0.480 | 0.360 | 0.571 |
| | H5 | | 5BL1430-SO | | | | | |
| | H3 | | 5BL1440-SO | | | | | |
| 9/16 - 12 UNC | H3 | 5BA1590-SO | 4.252 | 0.984 | 0.590 | 0.442 | 0.689 | |
| | H5 | 5BA1600-SO | | | | | | |
| | H3 | 5BL1590-SO | | | | | | |
| 9/16 - 18 UNF | H3 | 5BL1600-SO | 4.685 | 1.102 | 0.697 | 0.523 | 0.748 | |
| | H5 | 5BA1910-SO | | | | | | |
| | H3 | 5BA1920-SO | | | | | | |
| 5/8 - 11 UNC | H3 | 5BL1910-SO | 5.118 | 1.260 | 0.800 | 0.600 | 0.807 | |
| | H5 | 5BA2220-SO | | | | | | |
| | H3 | 5BA2230-SO | | | | | | |
| 5/8 - 18 UNF | H3 | 5BL2220-SO | 5.433 | 1.417 | 0.896 | 0.672 | 0.866 | |
| | H5 | 5BL2230-SO | | | | | | |
| | H3 | 5BA2540-SO | | | | | | |
| 3/4 - 10 UNC | H3 | 5BA2550-SO | 5.748 | 1.021 | 0.766 | 1.004 | | |
| | H5 | 5BL2540-SO | | | | | | |
| | H3 | 5BL2550-SO | | | | | | |
| 3/4 - 16 UNF | H3 | 5BA2860-SO | 5.433 | 1.417 | 0.896 | 0.672 | 0.866 | |
| | H5 | 5BA2870-SO | | | | | | |
| | H3 | 5BL2860-SO | | | | | | |
| 7/8 - 9 UNC | H3 | 5BL2870-SO | 5.748 | 1.021 | 0.766 | 1.004 | | |
| | H5 | 5BA3180-SO | | | | | | |
| | H3 | 5BA3190-SO | | | | | | |
| 7/8 - 14 UNF | H3 | 5BL3180-SO | 5.748 | 1.021 | 0.766 | 1.004 | | |
| | H5 | 5BA3190-SO | | | | | | |
| | H3 | 5BL3190-SO | | | | | | |
| 1 - 8 UNC | H3 | 5BL3190-SO | 5.748 | 1.021 | 0.766 | 1.004 | | |
| | H5 | | | | | | | |
| | H3 | | | | | | | |
| 1 - 12 UNF | H3 | | 5.748 | 1.021 | 0.766 | 1.004 | | |
| | H5 | | | | | | | |
| | H3 | | | | | | | |
| 1,1/8 - 7 UNC | H3 | | 5.748 | 1.021 | 0.766 | 1.004 | | |
| | H5 | | | | | | | |
| | H3 | | | | | | | |
| 1,1/8 - 12 UNF | H3 | | 5.748 | 1.021 | 0.766 | 1.004 | | |
| | H5 | | | | | | | |
| | H3 | | | | | | | |
| 1,1/4 - 7 UNC | H3 | | 5.748 | 1.021 | 0.766 | 1.004 | | |
| | H5 | | | | | | | |
| | H3 | | | | | | | |
| 1,1/4 - 12 UNF | H3 | | 5.748 | 1.021 | 0.766 | 1.004 | | |
| | H5 | | | | | | | |
| | H3 | | | | | | | |

Packed: 1 pc.
Available TiAIN only.



| Work Material | | | | | | | | | | | | | | | | | |
|----------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|------------------|-----|---------|--------------------------|--------------------------|---------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5BA-SO, 5BL-SO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| SFM | 59-89 | 59-89 | 59-89 | 59-79 | 59-79 | | | | 59-88 | 78-118 | | 16-36 | 20-40 | 30-50 | 30-50 | | |

good best



List 5EA-SO, 5EL-SO

RED BAND, Ideal for Alloy Steel

NEW RED BAND DRILLS P316-318 HSSE V3 TYPE H TiAlN 15°



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|--------------------|----------------|---------------|------------|--------------|---------------|
| | | | Mod Bottom (2P-3P) | | | | | |
| | | | TiAlN | | | | | |
| | | | L | Lc | d | k | lk | |
| M3 x 0.5 | D4 | 3 | 5EA0300-SO | 48.00 | 6.00 | 3.58 | 2.79 | 5.00 |
| M3.5 x 0.6 | | | 5EA0350-SO | 50.00 | 8.00 | | | |
| M4 x 0.7 | | | 5EA0400-SO | 53.00 | | | | |
| M5 x 0.8 | | | 5EA0500-SO | 58.50 | 10.00 | 4.93 | 4.93 | 6.50 |
| M6 x 1.0 | | | 5EA0600-SO | 65.00 | 12.00 | 6.48 | 4.85 | |
| M6 x 0.75 | | | 5EL0600-SO | | | | | |
| M7 x 1.0 | | | 5EA0700-SO | 69.00 | 14.00 | 8.08 | 6.05 | 9.50 |
| M8 x 1.25 | | | 5EA0800-SO | | | | | |
| M8 x 1.0 | | | 5EL0800-SO | 70.00 | | | | |
| M10 x 1.5 | | | 5EA1000-SO | 77.00 | 16.00 | 9.68 | 7.26 | 11.00 |
| M10 x 1.25 | 5EL1010-SO | | | | | | | |
| M12 x 1.75 | 5EA1200-SO | 87.00 | 18.00 | 9.32 | 9.32 | 13.00 | | |
| M12 x 1.5 | 5EA1214-SO | | | | | | | |
| M12 x 1.25 | 5EL1200-SO | | | | | | | |
| M14 x 2.0 | 5EL1190-SO | 93.00 | 22.00 | 10.90 | 10.90 | 14.00 | | |
| M14 x 1.5 | 5EA1400-SO | | | | | | | |
| M14 x 1.5 | 5EA1414-SO | | | | | | | |
| M16 x 2.0 | 5EL1400-SO | 98.50 | 23.00 | 12.19 | 12.19 | 15.88 | | |
| M16 x 1.5 | 5EA1600-SO | | | | | | | |
| M16 x 1.5 | 5EA1614-SO | | | | | | | |
| M16 x 1.5 | 5EL1600-SO | 108.00 | 25.00 | 13.76 | 13.76 | 17.50 | | |
| M16 x 1.5 | 5EL1614-SO | | | | | | | |
| M16 x 1.5 | 5EA1800-SO | | | | | | | |
| M18 x 2.5 | 5EA1814-SO | 114.00 | 28.00 | 16.56 | 16.56 | 19.05 | | |
| M18 x 1.5 | 5EL1800-SO | | | | | | | |
| M18 x 1.5 | 5EL1814-SO | | | | | | | |
| M20 x 2.5 | 5EA2000-SO | 119.00 | 30.00 | 17.70 | 13.28 | 19.05 | | |
| M20 x 1.5 | 5EL2000-SO | | | | | | | |
| M20 x 1.5 | 5EA2200-SO | | | | | | | |
| M22 x 2.5 | 5EL2200-SO | 125.00 | 30.00 | 19.30 | 14.48 | 19.05 | | |
| M22 x 1.5 | 5EA2400-SO | | | | | | | |
| M24 x 3.0 | | | | | | | | |

Packed: 1 pc.
Available TiAlN coating only.



| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|------------------|-----|---------|--------------------------|--------------------------|---------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|---------|-----------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 5EA-SO, 5EL-SO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| SFM | 59-89 | 59-89 | 59-89 | 59-79 | 59-79 | | | | 59-88 | 78-118 | | 16-36 | 20-40 | 30-50 | 30-50 | | | |

good best

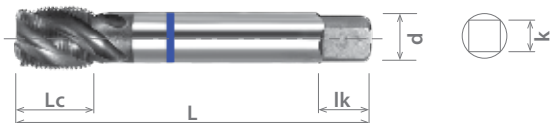




List 5BB-SO, 5BM-SO

BLUE BAND, Ideal for Stainless Steel

| | | | | | |
|-----|---------------------------------|---------|---------|-------|-----|
| NEW | BLUE BAND DRILLS P319-321 | HSSE V3 | TYPE VA | TiAIN | 40° |
|-----|---------------------------------|---------|---------|-------|-----|



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Shank Dia. | Square Width | Square Length | | | | | |
|---------------|--------------|---------------|--------------------|----------------|---------------|------------|--------------|---------------|-------|-------|-------|-------|-------|
| | | | Mod Bottom (2P-3P) | | | | | | | | | | |
| | | | TiAIN | | | | | | | | | | |
| | | | L | Lc | d | k | lk | | | | | | |
| 4 - 40 UNC | H3 | 3 | 5BB0284-SO | 1.890 | 0.236 | 0.141 | 0.110 | 0.197 | | | | | |
| | H5 | | 5BB0294-SO | | | | | | | | | | |
| 4 - 48 UNF | H3 | | 5BM0284-SO | | | | | | | | | | |
| | H5 | | 5BM0294-SO | | | | | | | | | | |
| 5 - 40 UNC | H3 | | 5BB0324-SO | | | | | | 1.969 | 0.315 | 0.168 | 0.131 | 0.256 |
| | H5 | | 5BB0334-SO | | | | | | | | | | |
| 5 - 44 UNF | H3 | | 5BM0324-SO | | | | | | | | | | |
| | H5 | | 5BM0334-SO | | | | | | | | | | |
| 6 - 32 UNC | H3 | | 5BB0354-SO | 2.087 | 0.394 | 0.194 | 0.152 | 0.276 | | | | | |
| | H5 | | 5BB0364-SO | | | | | | | | | | |
| 6 - 40 UNF | H3 | | 5BM0354-SO | | | | | | | | | | |
| | H5 | | 5BM0364-SO | | | | | | | | | | |
| 8 - 32 UNC | H3 | | 5BB0424-SO | | | | | | 2.303 | 0.472 | 0.255 | 0.191 | 0.315 |
| | H5 | | 5BB0434-SO | | | | | | | | | | |
| 8 - 36 UNF | H3 | | 5BM0424-SO | | | | | | | | | | |
| | H5 | | 5BM0434-SO | | | | | | | | | | |
| 10 - 24 UNC | H3 | | 5BB0484-SO | 2.402 | 0.551 | 0.318 | 0.238 | 0.374 | | | | | |
| | H5 | | 5BB0494-SO | | | | | | | | | | |
| 10 - 32 UNF | H3 | | 5BM0484-SO | | | | | | | | | | |
| | H5 | | 5BM0494-SO | | | | | | | | | | |
| 12 - 24 UNC | H3 | | 5BB0554-SO | | | | | | 2.559 | 0.630 | 0.381 | 0.286 | 0.433 |
| | H5 | | 5BB0564-SO | | | | | | | | | | |
| 12 - 28 UNF | H3 | | 5BM0554-SO | | | | | | | | | | |
| | H5 | | 5BM0564-SO | | | | | | | | | | |
| 1/4 - 20 UNC | H3 | | 5BB0644-SO | 2.756 | 0.709 | 0.323 | 0.242 | 0.413 | | | | | |
| | H5 | | 5BB0654-SO | | | | | | | | | | |
| 1/4 - 28 UNF | H3 | | 5BM0644-SO | | | | | | | | | | |
| | H5 | | 5BM0654-SO | | | | | | | | | | |
| 5/16 - 18 UNC | H3 | | 5BB0794-SO | | | | | | 3.031 | 0.827 | 0.367 | 0.275 | 0.433 |
| | H5 | | 5BB0804-SO | | | | | | | | | | |
| 5/16 - 24 UNF | H3 | 5BM0794-SO | | | | | | | | | | | |
| | H5 | 5BM0804-SO | | | | | | | | | | | |
| 3/8 - 16 UNC | H3 | 5BB0954-SO | 3.228 | 0.914 | 0.404 | 0.286 | 0.479 | | | | | | |
| | H5 | 5BB0964-SO | | | | | | | | | | | |
| 3/8 - 24 UNF | H3 | 5BM0954-SO | | | | | | | | | | | |
| | H5 | 5BM0964-SO | | | | | | | | | | | |
| 7/16 - 14 UNC | H3 | 5BB1114-SO | | | | | | 3.425 | 1.001 | 0.441 | 0.303 | 0.516 | |
| | H5 | 5BB1124-SO | | | | | | | | | | | |
| 7/16 - 20 UNF | H3 | 5BM1114-SO | | | | | | | | | | | |
| | H5 | 5BM1124-SO | | | | | | | | | | | |
| 1/2 - 13 UNC | H3 | 5BB1274-SO | 3.612 | 1.118 | 0.478 | 0.325 | 0.561 | | | | | | |
| | H5 | 5BB1284-SO | | | | | | | | | | | |
| 1/2 - 20 UNF | H3 | 5BM1274-SO | | | | | | | | | | | |
| | H5 | 5BM1284-SO | | | | | | | | | | | |

Packed: 1 pc.
Available TiAIN coating only.



List 5BB-SO, 5BM-SO (Continued)

BLUE BAND, Ideal for Stainless Steel

NEW BLUE BAND DRILLS P319-321 HSSE V3 TYPE VA TiAIN 40°

Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Shank Dia. | Square Width | Square Length | | | | | |
|----------------|--------------|---------------|--------------------|----------------|---------------|------------|--------------|---------------|-------|-------|-------|-------|-------|
| | | | Mod Bottom (2P-3P) | | | | | | | | | | |
| | | | TiAIN | | | | | | | | | | |
| | | | L | Lc | d | k | lk | | | | | | |
| 9/16 - 12 UNC | H3 | 3 | 5BB1434-SO | 3.661 | 0.866 | 0.429 | 0.322 | 0.492 | | | | | |
| | H5 | | 5BB1444-SO | | | | | | | | | | |
| 9/16 - 18 UNF | H3 | | 5BM1434-SO | | | | | | | | | | |
| | H5 | | 5BM1444-SO | | | | | | | | | | |
| 5/8 - 11 UNC | H3 | | 5BB1594-SO | | | | | | 3.878 | 0.906 | 0.480 | 0.360 | 0.571 |
| | H5 | | 5BB1604-SO | | | | | | | | | | |
| 5/8 - 18 UNF | H3 | | 5BM1594-SO | | | | | | | | | | |
| | H5 | | 5BM1604-SO | | | | | | | | | | |
| 3/4 - 10 UNC | H3 | | 5BB1914-SO | 4.252 | 0.984 | 0.590 | 0.442 | 0.689 | | | | | |
| | H5 | | 5BB1924-SO | | | | | | | | | | |
| 3/4 - 16 UNF | H3 | | 5BM1914-SO | | | | | | | | | | |
| | H5 | | 5BM1924-SO | | | | | | | | | | |
| 7/8 - 9 UNC | H3 | 5BB2224-SO | 4.685 | | | | | | 1.102 | 0.697 | 0.523 | 0.748 | |
| | H5 | 5BB2234-SO | | | | | | | | | | | |
| 7/8 - 14 UNF | H3 | 5BM2224-SO | | | | | | | | | | | |
| | H5 | 5BM2234-SO | | | | | | | | | | | |
| 1 - 8 UNC | H3 | 5BB2544-SO | | 5.118 | 1.260 | 0.800 | 0.600 | 0.807 | | | | | |
| | H5 | 5BB2554-SO | | | | | | | | | | | |
| 1 - 12 UNF | H3 | 5BM2544-SO | | | | | | | | | | | |
| | H5 | 5BM2554-SO | | | | | | | | | | | |
| 1,1/8 - 7 UNC | H3 | 5BB2864-SO | 5.433 | | | | | | 1.417 | 0.896 | 0.672 | 0.866 | |
| | H5 | 5BB2874-SO | | | | | | | | | | | |
| 1,1/8 - 12 UNF | H3 | 5BM2864-SO | | | | | | | | | | | |
| | H5 | 5BM2874-SO | | | | | | | | | | | |
| 1,1/4 - 7 UNC | H3 | 5BB3184-SO | | 5.748 | 1.021 | 0.766 | 1.004 | | | | | | |
| | H5 | 5BB3194-SO | | | | | | | | | | | |
| 1,1/4 - 12 UNF | H3 | 5BM3184-SO | | | | | | | | | | | |
| | H5 | 5BM3194-SO | | | | | | | | | | | |

Packed: 1 pc.
Available TiAIN coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|----------------|---------------|------|------|--------------|------------|-------------------------------------|-------------------------------------|--------------------------|-----------|-----------|---------|-------------------------------------|----------------|-----------------|-----------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5BB-SO, 5BM-SO | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | | | | | |
| SFM | | | | | | 29-49 | 26-49 | 25-45 | | | | 20-60 | | | | | |

good best

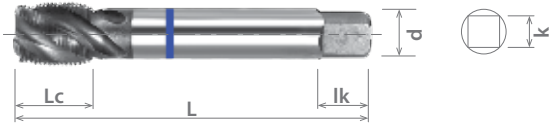




List 5EB-SO, 5EM-SO

BLUE BAND, Ideal for Stainless Steel

| | | | | | |
|------------|-------------------------------------|----------------|----------------|--------------|------------|
| NEW | BLUE BAND DRILLS P319-321 | HSSE V3 | TYPE VA | TiAlN | 40° |
|------------|-------------------------------------|----------------|----------------|--------------|------------|



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|--------------------|----------------|---------------|------------|--------------|---------------|
| | | | Mod Bottom (2P-3P) | | | | | |
| | | | TiAlN | | | | | |
| M3 x 0.5 | D4 | 3 | 5EB0304-SO | 48.00 | 6.00 | 3.58 | 2.79 | 5.00 |
| M3.5 x 0.6 | | | 5EB0354-SO | 50.00 | 8.00 | | | |
| M4 x 0.7 | | | 5EB0404-SO | 53.00 | | 4.27 | 3.33 | 6.50 |
| M5 x 0.8 | | | 5EB0504-SO | 58.50 | 10.00 | 4.93 | 3.86 | |
| M6 x 1.0 | D6 | 3 | 5EB0604-SO | 65.00 | 12.00 | 6.48 | 4.85 | 8.00 |
| M6 x 0.75 | 5EM0604-SO | | | | | | | |
| M7 x 1.0 | D4 | 3 | 5EB0704-SO | 69.00 | 14.00 | 8.08 | 6.05 | 9.50 |
| M8 x 1.25 | D6 | | 5EB0714-SO | | | | | |
| | D4 | | 5EB0804-SO | | | | | |
| D6 | 5EB0814-SO | | | | | | | |
| M8 x 1.0 | D4 | 5EM0804-SO | 70.00 | 14.00 | 9.68 | 7.26 | 11.00 | |
| | D6 | 5EM0814-SO | | | | | | |
| M10 x 1.5 | D4 | 3 | 5EB1004-SO | 77.00 | 16.00 | 9.68 | 7.26 | 11.00 |
| M10 x 1.25 | D6 | | 5EM1014-SO | | | | | |
| M10 x 1 | D4 | | 5EM1004-SO | | | | | |
| M12 x 1.75 | D6 | | 5EB1204-SO | | | | | |
| M12 x 1.5 | D4 | 3 | 5EB1214-SO | 87.00 | 18.00 | 9.32 | 6.99 | 13.00 |
| | | | 5EM1204-SO | | | | | |
| M12 x 1.25 | D4 | | 5EM1194-SO | | | | | |
| M14 x 2.0 | D6 | | 5EB1404-SO | 93.00 | | | | |
| | D4 | 5EB1414-SO | | | | | | |
| M14 x 1.5 | D6 | 5EM1404-SO | | | | | | |
| | D4 | 5EM1414-SO | | | | | | |
| M16 x 2.0 | D4 | 3 | 5EB1604-SO | 98.50 | 23.00 | 12.19 | 9.14 | 15.88 |
| | | | D6 | | | | | |
| M16 x 1.5 | D4 | | 5EM1604-SO | | | | | |
| | D6 | | 5EM1614-SO | | | | | |
| M18 x 2.5 | D4 | 3 | 5EB1804-SO | 108.00 | 25.00 | 13.76 | 10.30 | 17.50 |
| | | | D6 | | | | | |
| M18 x 1.5 | D4 | | 5EM1804-SO | | | | | |
| | D6 | | 5EM1814-SO | | | | | |
| M20 x 2.5 | D4 | 4 | 5EB2004-SO | 114.00 | 28.00 | 17.70 | 13.28 | 19.05 |
| M20 x 1.5 | | | 5EM2004-SO | | | | | |
| M22 x 2.5 | | | 5EB2204-SO | | | | | |
| M22 x 1.5 | | | 5EM2204-SO | | | | | |
| M24 x 3.0 | | | 5EB2404-SO | 125.00 | 30.00 | 19.30 | 14.48 | |

Packed: 1 pc.
Available TiAlN coating only.



| Work Material | | | | | | | | | | | | | | | | | | |
|----------------|---------------|------|------|--------------|------------|-------------------------------------|-------------------------------------|--------------------------|-----------|----------|---------|-------------------------------------|----------|-----------------|-----------|-----------|--|--|
| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | 4140 4340 | 300 | 400 | 17-4 PH | 6061 7075 | | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 5EB-SO, 5EM-SO | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | | | | | | |
| SFM | | | | | | 29-49 | 26-49 | 25-45 | | | | 20-60 | | | | | | |

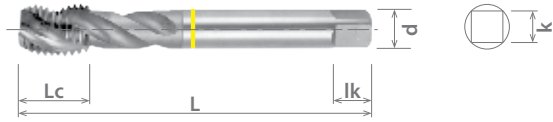
good best



List 5BC-SO, 5BN-SO

YELLOW BAND, Ideal for Aluminum

| | | | | | |
|------------|---------------------------------------|----------------|---------------|-----------|------------|
| NEW | YELLOW BAND DRILLS P322-325 | HSSE V3 | TYPE W | BR | 40° |
|------------|---------------------------------------|----------------|---------------|-----------|------------|



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Shank Dia. | Square Width | Square Length | | | | | |
|---------------|--------------|---------------|--------------------|----------------|---------------|------------|--------------|---------------|-------|-------|-------|-------|-------|
| | | | Mod Bottom (2P-3P) | | | | | | | | | | |
| | | | Bright | | | | | | | | | | |
| | | | L | Lc | d | k | lk | | | | | | |
| 4 - 40 UNC | H3 | 2 | 5BC0280-SO | 1.890 | 0.236 | 0.141 | 0.110 | 0.197 | | | | | |
| | H5 | | 5BC0290-SO | | | | | | | | | | |
| 4 - 48 UNF | H3 | | 5BN0280-SO | | | | | | | | | | |
| | H5 | | 5BN0290-SO | | | | | | | | | | |
| 5 - 40 UNC | H3 | | 5BC0320-SO | | | | | | 1.969 | 0.315 | 0.168 | 0.131 | 0.256 |
| | H5 | | 5BC0330-SO | | | | | | | | | | |
| 5 - 44 UNF | H3 | | 5BN0320-SO | | | | | | | | | | |
| | H5 | | 5BN0330-SO | | | | | | | | | | |
| 6 - 32 UNC | H3 | | 5BC0350-SO | 2.087 | 0.394 | 0.220 | 0.165 | 0.276 | | | | | |
| | H5 | | 5BC0360-SO | | | | | | | | | | |
| 6 - 40 UNF | H3 | | 5BN0350-SO | | | | | | | | | | |
| | H5 | | 5BN0360-SO | | | | | | | | | | |
| 8 - 32 UNC | H3 | | 5BC0420-SO | | | | | | 2.303 | 0.472 | 0.255 | 0.191 | 0.315 |
| | H5 | | 5BC0430-SO | | | | | | | | | | |
| 8 - 36 UNF | H3 | | 5BN0420-SO | | | | | | | | | | |
| | H5 | | 5BN0430-SO | | | | | | | | | | |
| 10 - 24 UNC | H3 | | 5BC0480-SO | 2.402 | 0.551 | 0.318 | 0.238 | 0.374 | | | | | |
| | H5 | | 5BC0490-SO | | | | | | | | | | |
| 10 - 32 UNF | H3 | | 5BN0480-SO | | | | | | | | | | |
| | H5 | | 5BN0490-SO | | | | | | | | | | |
| 12 - 24 UNC | H3 | | 5BC0550-SO | | | | | | 2.559 | 0.630 | 0.381 | 0.286 | 0.433 |
| | H5 | | 5BC0560-SO | | | | | | | | | | |
| 12 - 28 UNF | H3 | | 5BN0550-SO | | | | | | | | | | |
| | H5 | | 5BN0560-SO | | | | | | | | | | |
| 1/4 - 20 UNC | H3 | 5BC0640-SO | 2.756 | 0.78-170 | 40-65 | | | | | | | | |
| | H5 | 5BC0650-SO | | | | | | | | | | | |
| 1/4 - 28 UNF | H3 | 5BN0640-SO | | | | | | | | | | | |
| | H5 | 5BN0650-SO | | | | | | | | | | | |
| 5/16 - 18 UNC | H3 | 5BC0790-SO | | | | | | 3.031 | | | | | |
| | H5 | 5BC0800-SO | | | | | | | | | | | |
| 5/16 - 24 UNF | H3 | 5BN0790-SO | | | | | | | | | | | |
| | H5 | 5BN0800-SO | | | | | | | | | | | |
| 3/8 - 16 UNC | H3 | 5BC0950-SO | | | | | | | | | | | |
| | H5 | 5BC0960-SO | | | | | | | | | | | |
| 3/8 - 24 UNF | H3 | 5BN0950-SO | | | | | | | | | | | |
| | H5 | 5BN0960-SO | | | | | | | | | | | |

Packed: 1 pc.
EDPs listed above are stock standard, other coatings available upon request.
Specify treatment at the time of order.

continued on next page

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------|------------|------------------|-----|---------|-----------|-------------------------------------|-------------------------------------|--------------|----------------|-----------------|-----------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5BC-SO,5BN-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| SFM | 58-88 | 58-88 | 58-88 | | | | | | | 78-170 | 40-65 | | | | | | |

good best

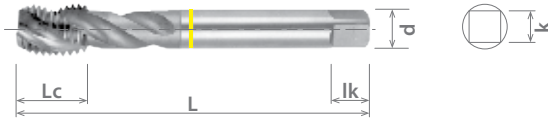




List 5BC-SO, 5BN-SO (Continued)

YELLOW BAND, Ideal for Aluminum

| | | | | | |
|-----|--------------------------------|---------|--------|----|-----|
| NEW | YELLOW BAND DRILLS P322-325 | HSSE V3 | TYPE W | BR | 40° |
|-----|--------------------------------|---------|--------|----|-----|



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|--------------------|----------------|---------------|------------|--------------|---------------|
| | | | Mod Bottom (2P-3P) | | | | | |
| | | | Bright | | | | | |
| | | | L | Lc | d | k | lk | |
| 7/16 - 14 UNC | H3 | 3 | 5BC1110-SO | 3.228 | 0.709 | 0.323 | 0.242 | 0.413 |
| | H5 | | 5BC1120-SO | | | | | |
| | H3 | | 5BN1110-SO | | | | | |
| 7/16 - 20 UNF | H3 | | 5BN1120-SO | 3.425 | 0.827 | 0.367 | 0.275 | 0.433 |
| | H5 | | 5BC1270-SO | | | | | |
| | H3 | | 5BC1280-SO | | | | | |
| 1/2 - 13 UNC | H3 | | 5BN1270-SO | 3.661 | 0.866 | 0.429 | 0.322 | 0.492 |
| | H5 | | 5BN1280-SO | | | | | |
| | H3 | | 5BC1430-SO | | | | | |
| 1/2 - 20 UNF | H3 | | 5BC1440-SO | 3.878 | 0.906 | 0.480 | 0.360 | 0.571 |
| | H5 | | 5BN1430-SO | | | | | |
| | H3 | | 5BN1440-SO | | | | | |
| 9/16 - 12 UNC | H3 | | 5BC1590-SO | 4.252 | 0.984 | 0.590 | 0.442 | 0.689 |
| | H5 | | 5BC1600-SO | | | | | |
| | H3 | | 5BN1590-SO | | | | | |
| 9/16 - 18 UNF | H3 | 5BN1600-SO | 4.685 | 1.102 | 0.697 | 0.523 | 0.748 | |
| | H5 | 5BC1910-SO | | | | | | |
| | H3 | 5BC1920-SO | | | | | | |
| 5/8 - 11 UNC | H3 | 5BN1910-SO | 5.118 | 1.260 | 0.800 | 0.600 | 0.807 | |
| | H5 | 5BC1920-SO | | | | | | |
| | H3 | 5BN1920-SO | | | | | | |
| 5/8 - 18 UNF | H3 | 5BC2220-SO | 5.433 | 1.417 | 0.896 | 0.672 | 0.866 | |
| | H5 | 5BC2230-SO | | | | | | |
| | H3 | 5BN2220-SO | | | | | | |
| 3/4 - 10 UNC | H3 | 5BN2230-SO | 5.748 | 1.021 | 0.766 | 1.004 | | |
| | H5 | 5BC2540-SO | | | | | | |
| | H3 | 5BC2550-SO | | | | | | |
| 3/4 - 16 UNF | H3 | 5BC2550-SO | 5.748 | 1.021 | 0.766 | 1.004 | | |
| | H5 | 5BN2540-SO | | | | | | |
| | H3 | 5BN2550-SO | | | | | | |
| 7/8 - 9 UNC | H3 | 5BC2860-SO | 5.748 | 1.021 | 0.766 | 1.004 | | |
| | H5 | 5BC2870-SO | | | | | | |
| | H3 | 5BN2860-SO | | | | | | |
| 7/8 - 14 UNF | H3 | 5BN2870-SO | 5.748 | 1.021 | 0.766 | 1.004 | | |
| | H5 | 5BC3180-SO | | | | | | |
| | H3 | 5BC3190-SO | | | | | | |
| 1 - 8 UNC | H3 | 5BN3180-SO | 5.748 | 1.021 | 0.766 | 1.004 | | |
| | H5 | 5BN3190-SO | | | | | | |
| | H3 | 5BN3190-SO | | | | | | |
| 1 - 12 UNF | H3 | 5BN3190-SO | 5.748 | 1.021 | 0.766 | 1.004 | | |
| | H5 | 5BN3190-SO | | | | | | |
| | H3 | 5BN3190-SO | | | | | | |

Packed: 1 pc.
EDPs listed above are stock standard, other coatings available upon request.
Specify treatment at the time of order.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------|------------|------------------|-----|---------|-----------|-------------------------------------|-------------------------------------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 5BC-SO,5BN-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |
| SFM | 58-88 | 58-88 | 58-88 | | | | | | | 78-170 | 40-65 | | | | | | | |

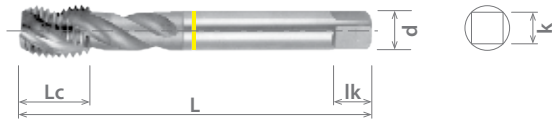
good best



List 5EC-SO, 5EN-SO

YELLOW BAND, Ideal for Aluminum

| | | | | | |
|-----|--------------------------------|---------|--------|----|-----|
| NEW | YELLOW BAND DRILLS P322-325 | HSSE V3 | TYPE W | BR | 40° |
|-----|--------------------------------|---------|--------|----|-----|



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Overall Length | Thread Length | Shank Dia. | Square Width | Square Length | | |
|------------|--------------|---------------|--------------------|------------|----------------|---------------|------------|--------------|---------------|-------|--------|
| | | | Mod Bottom (2P-3P) | | | | | | | | |
| | | | | | | Bright | L | Lc | d | k | lk |
| M3 x 0.5 | D4 | 2 | 5EC0300-SO | | 48.00 | 6.00 | 3.58 | 2.79 | 5.00 | | |
| M4 x 0.7 | | | 5EC0400-SO | | 53.00 | 8.00 | 4.27 | 3.33 | | | |
| M5 x 0.8 | | | 5EC0500-SO | | 58.50 | 10.00 | 4.93 | 3.86 | | | |
| M6 x 1.0 | 5EC0614-SO | | 65.00 | 12.00 | | | | | 6.48 | 4.85 | |
| M6 x 0.75 | 5EC0600-SO | | | | | | | | | | |
| M7 x 1.0 | 5EN0600-SO | | | | | | | | | | |
| M8 x 1.25 | D4 | | 3 | 5EC0700-SO | | 69.00 | 14.00 | 8.08 | 6.05 | 9.50 | |
| M8 x 1.0 | D6 | | | 5EC0800-SO | | | | | | | |
| M8 x 1.0 | D4 | | | 5EN0800-SO | | | | | | | |
| M10 x 1.5 | D6 | 5EN0814-SO | | 77.00 | 16.00 | 9.68 | 7.26 | 11.00 | | | |
| M10 x 1.25 | D4 | 5EC1000-SO | | | | | | | | | |
| M10 x 1.0 | D6 | 5EN1014-SO | | | | | | | | | |
| M12 x 1.75 | D4 | 3 | | 5EN1010-SO | | 87.00 | 18.00 | 9.32 | 6.99 | 13.00 | |
| M12 x 1.5 | D6 | | | 5EC1200-SO | | | | | | | |
| M14 x 2.0 | D4 | | | 5EN1200-SO | | | | | | | |
| M14 x 1.5 | D6 | | 5EN1214-SO | | 93.00 | 22.00 | 10.90 | 8.18 | 14.00 | | |
| M16 x 2.0 | D4 | | 5EC1400-SO | | | | | | | | |
| M16 x 1.5 | D6 | | 5EN1400-SO | | | | | | | | |
| M18 x 2.5 | D4 | | 3 | 5EC1600-SO | | 98.50 | 23.00 | 12.19 | 9.14 | 15.88 | |
| M18 x 1.5 | D6 | | | 5EN1600-SO | | | | | | | |
| M20 x 2.5 | D4 | | | 5EC1800-SO | | | | | | | |
| M20 x 1.5 | D6 | 5EN1800-SO | | 108.00 | 25.00 | 13.76 | 10.30 | 17.50 | | | |
| M22 x 2.5 | D4 | 5EC2000-SO | | | | | | | | | |
| M22 x 1.5 | D6 | 5EN2000-SO | | | | | | | | | |
| M24 x 3.0 | D4 | 3 | | 5EC2200-SO | | 114.00 | 28.00 | 17.70 | 13.28 | 19.05 | |
| M24 x 3.0 | D6 | | | 5EN2200-SO | | | | | | | |
| M24 x 3.0 | D4 | | | 5EC2400-SO | | | | | | | 119.00 |

Packed: 1 pc.
EDPs listed above are stock standard, other coatings available upon request.
Specify treatment at the time of order.



| Work Material | | | | | | | | | | | | | | | | | | |
|----------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------|------------|------------------|-----|---------|----------------|-------------------------------------|-------------------------------------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 5EC-SO, 5EN-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |
| SFM | 58-88 | 58-88 | 58-88 | | | | | | | 78-170 | 40-65 | | | | | | | |

good best





List 5BD-SO, 5BP-SO

WHITE BAND, Ideal for Cast Iron

| | | | | | |
|------------|-------------------------------|---------|---------|-------|-----|
| NEW | WHITE BAND DRILLS P326-327 | HSSE V3 | TYPE GG | TiAIN | 15° |
|------------|-------------------------------|---------|---------|-------|-----|



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Shank Dia. | Square Width | Square Length | | | | | |
|---------------|--------------|---------------|--------------------|----------------|---------------|------------|--------------|---------------|-------|-------|-------|-------|-------|
| | | | Mod Bottom (2P-3P) | | | | | | | | | | |
| | | | TiAIN | L | Lc | d | k | lk | | | | | |
| 4 - 40 UNC | H3 | 3 | 5BD0285-SO | 1.890 | 0.236 | 0.141 | 0.110 | 0.197 | | | | | |
| | H5 | | 5BD0295-SO | | | | | | | | | | |
| 4 - 48 UNF | H3 | | 5BP0285-SO | | | | | | | | | | |
| | H5 | | 5BP0295-SO | | | | | | | | | | |
| 5 - 40 UNC | H3 | | 5BD0325-SO | | | | | | 1.969 | 0.315 | 0.168 | 0.131 | 0.256 |
| | H5 | | 5BD0335-SO | | | | | | | | | | |
| 5 - 44 UNF | H3 | | 5BP0325-SO | | | | | | | | | | |
| | H5 | | 5BP0335-SO | | | | | | | | | | |
| 6 - 32 UNC | H3 | | 5BD0355-SO | 2.087 | 0.394 | 0.220 | 0.165 | 0.276 | | | | | |
| | H5 | | 5BD0365-SO | | | | | | | | | | |
| 6 - 40 UNF | H3 | | 5BP0355-SO | 2.303 | 0.472 | 0.255 | 0.191 | 0.315 | | | | | |
| | H5 | | 5BP0365-SO | | | | | | | | | | |
| 8 - 32 UNC | H3 | | 5BD0425-SO | 2.402 | 0.551 | 0.318 | 0.238 | 0.374 | | | | | |
| | H5 | | 5BD0435-SO | | | | | | | | | | |
| 8 - 36 UNF | H3 | | 5BP0425-SO | 2.559 | 0.630 | 0.381 | 0.286 | 0.433 | | | | | |
| | H5 | | 5BP0435-SO | | | | | | | | | | |
| 10 - 24 UNC | H3 | 5BD0485-SO | 3.031 | 0.709 | 0.323 | 0.242 | 0.413 | | | | | | |
| | H5 | 5BD0495-SO | | | | | | | | | | | |
| 10 - 32 UNF | H3 | 5BP0485-SO | 3.228 | 0.827 | 0.367 | 0.275 | 0.433 | | | | | | |
| | H5 | 5BP0495-SO | | | | | | | | | | | |
| 12 - 24 UNC | H3 | 5BD0555-SO | 3.425 | | | | | | | | | | |
| | H5 | 5BD0565-SO | | | | | | | | | | | |
| 12 - 28 UNF | H3 | 5BP0555-SO | | | | | | | | | | | |
| | H5 | 5BP0565-SO | | | | | | | | | | | |
| 1/4 - 20 UNC | H3 | 5BD0645-SO | | | | | | | | | | | |
| | H5 | 5BD0655-SO | | | | | | | | | | | |
| 1/4 - 28 UNF | H3 | 5BP0645-SO | | | | | | | | | | | |
| | H5 | 5BP0655-SO | | | | | | | | | | | |
| 5/16 - 18 UNC | H3 | 5BD0795-SO | | | | | | | | | | | |
| | H5 | 5BD0805-SO | | | | | | | | | | | |
| 5/16 - 24 UNF | H3 | 5BP0795-SO | | | | | | | | | | | |
| | H5 | 5BP0805-SO | | | | | | | | | | | |
| 3/8 - 16 UNC | H3 | 5BD0955-SO | | | | | | | | | | | |
| | H5 | 5BD0965-SO | | | | | | | | | | | |
| 3/8 - 24 UNF | H3 | 5BP0955-SO | | | | | | | | | | | |
| | H5 | 5BP0965-SO | | | | | | | | | | | |
| 7/16 - 14 UNC | H3 | 5BD1115-SO | | | | | | | | | | | |
| | H5 | 5BD1125-SO | | | | | | | | | | | |
| 7/16 - 20 UNF | H3 | 5BP1115-SO | | | | | | | | | | | |
| | H5 | 5BP1125-SO | | | | | | | | | | | |
| 1/2 - 13 UNC | H3 | 5BD1275-SO | | | | | | | | | | | |
| | H5 | 5BD1285-SO | | | | | | | | | | | |
| 1/2 - 20 UNF | H3 | 5BP1275-SO | | | | | | | | | | | |
| | H5 | 5BP1285-SO | | | | | | | | | | | |

Packed: 1 pc.
Available TiAIN coating only.



List 5BD-SO, 5BP-SO (Continued)

WHITE BAND, Ideal for Cast Iron

| | | | | | |
|------------|-------------------------------|---------|---------|-------|-----|
| NEW | WHITE BAND DRILLS P326-327 | HSSE V3 | TYPE GG | TiAIN | 15° |
|------------|-------------------------------|---------|---------|-------|-----|

Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Shank Dia. | Square Width | Square Length |
|----------------|--------------|---------------|--------------------|----------------|---------------|------------|--------------|---------------|
| | | | Mod Bottom (2P-3P) | | | | | |
| | | | TiAIN | | | | | |
| | | | L | Lc | d | k | lk | |
| 9/16 - 12 UNC | H3 | 4 | 5BD1435-SO | 3.661 | 0.866 | 0.429 | 0.322 | 0.492 |
| | H5 | | 5BD1445-SO | | | | | |
| 9/16 - 18 UNF | H3 | | 5BP1435-SO | 3.878 | 0.906 | 0.480 | 0.360 | 0.571 |
| | H5 | | 5BP1445-SO | | | | | |
| 5/8 - 11 UNC | H3 | | 5BD1595-SO | 4.252 | 0.984 | 0.590 | 0.442 | 0.689 |
| | H5 | | 5BD1605-SO | | | | | |
| 5/8 - 18 UNF | H3 | | 5BP1595-SO | 4.685 | 1.102 | 0.697 | 0.523 | 0.748 |
| | H5 | | 5BP1605-SO | | | | | |
| 3/4 - 10 UNC | H3 | | 5BD1915-SO | 5.118 | 1.260 | 0.800 | 0.600 | 0.807 |
| | H5 | | 5BD1925-SO | | | | | |
| 3/4 - 16 UNF | H3 | | 5BP1915-SO | 5.433 | 1.417 | 0.896 | 0.672 | 0.866 |
| | H5 | | 5BP1925-SO | | | | | |
| 7/8 - 9 UNC | H3 | | 5BD2225-SO | 5.748 | 1.021 | 0.766 | 1.004 | 1.004 |
| | H5 | | 5BD2235-SO | | | | | |
| 7/8 - 14 UNF | H3 | | 5BP2225-SO | 5.433 | 1.417 | 0.896 | 0.672 | 0.866 |
| | H5 | | 5BP2235-SO | | | | | |
| 1 - 8 UNC | H3 | | 5BD2545-SO | 5.433 | 1.417 | 0.896 | 0.672 | 0.866 |
| | H5 | | 5BD2555-SO | | | | | |
| 1 - 12 UNF | H3 | | 5BP2545-SO | 5.748 | 1.021 | 0.766 | 1.004 | 1.004 |
| | H5 | | 5BP2555-SO | | | | | |
| 1,1/8 - 7 UNC | H3 | 5BD2865-SO | 5.433 | 1.417 | 0.896 | 0.672 | 0.866 | |
| | H5 | 5BD2875-SO | | | | | | |
| 1,1/8 - 12 UNF | H3 | 5BP2865-SO | 5.748 | 1.021 | 0.766 | 1.004 | 1.004 | |
| | H5 | 5BP2875-SO | | | | | | |
| 1,1/4 - 7 UNC | H3 | 5BD3185-SO | 5.748 | 1.021 | 0.766 | 1.004 | 1.004 | |
| | H5 | 5BD3195-SO | | | | | | |
| 1,1/4 - 12 UNF | H3 | 5BP3185-SO | 5.748 | 1.021 | 0.766 | 1.004 | 1.004 | |
| | H5 | 5BP3195-SO | | | | | | |

Packed: 1 pc.
Available TiAIN coating only.



| Work Material | | | | | | | | | | | | | | | | | | | |
|----------------|---------------|------|------|--------------|------------|------------------|-----|---------|-------------------------------------|----------|---------|--------------|----------|-----------------|----------------|---------|-----------|-----------|-----------|
| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | | | |
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5BD-SO, 5BP-SO | 1010 | 1035 | 1065 | 4140 | | | | | | | | | | | | | | | |
| SFM | 1018 | 1045 | | 4340 | | | | | <input checked="" type="checkbox"/> | | | | | | | | | | |

good best





List 5ED-SO, 5EP-SO

WHITE BAND, Ideal for Cast Iron

| | | | | | |
|------------|-------------------------------|---------|---------|-------|-----|
| NEW | WHITE BAND DRILLS P326-327 | HSSE V3 | TYPE GG | TiAlN | 15° |
|------------|-------------------------------|---------|---------|-------|-----|



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|--------------------|----------------|---------------|------------|--------------|---------------|
| | | | Mod Bottom (2P-3P) | | | | | |
| | | | TiAlN | | | | | |
| M3 x 0.5 | D4 | 3 | 5ED0305-SO | 48.00 | 6.00 | 3.58 | 2.79 | 5.00 |
| M3.5 X 6 | | | 5ED0355-SO | 50.00 | 8.00 | | | |
| M4 x 0.7 | | | 5ED0405-SO | 53.00 | | 4.27 | 3.33 | 6.50 |
| M5 x 0.8 | | | 5ED0505-SO | 58.00 | 4.93 | | | |
| M6 x 1.0 | | | 5ED0605-SO | 65.00 | | 6.48 | 4.85 | 8.00 |
| M6 x 0.75 | | | 5EP0605-SO | | | | | |
| M7 x 1.0 | | | 5ED0705-SO | 69.00 | 8.08 | 6.05 | 9.50 | |
| M7 x 0.75 | | | 5EP0705-SO | | | | | |
| M8 x 1.25 | | | 5ED0805-SO | 70.00 | 14.00 | 9.68 | 7.26 | 11.00 |
| M8 x 1.0 | | | 5EP0805-SO | | | | | |
| M10 x 1.5 | D6 | 4 | 5ED1005-SO | 77.00 | 16.00 | 9.32 | 6.99 | 13.00 |
| M10 x 1.25 | | | 5EP0995-SO | | | | | |
| M10 x 1.0 | D4 | 4 | 5EP1005-SO | 87.00 | 18.00 | 10.90 | 8.18 | 13.00 |
| M12 x 1.75 | | | 5EP1015-SO | | | | | |
| M12 x 1.5 | D6 | 4 | 5ED1205-SO | 93.00 | 22.00 | 12.19 | 9.14 | 13.00 |
| M12 x 1.25 | | | 5EP1214-SO | | | | | |
| M14 x 2.0 | D4 | 4 | 5EP1235-SO | 98.50 | 23.00 | 13.76 | 10.30 | 14.00 |
| M14 x 1.5 | | | 5ED1205-SO | | | | | |
| M16 x 2.0 | | | 5ED1405-SO | 108.00 | 25.00 | 16.56 | 12.42 | 17.50 |
| M16 x 1.5 | | | 5EP1405-SO | | | | | |
| M18 x 2.5 | | | 5ED1605-SO | 114.00 | 28.00 | 17.70 | 13.28 | 19.05 |
| M18 x 1.5 | | | 5EP1605-SO | | | | | |
| M20 x 2.5 | | | 5ED1805-SO | 119.00 | 30.00 | 19.30 | 14.48 | 19.05 |
| M20 x 1.5 | | | 5EP1805-SO | | | | | |
| M22 x 2.5 | | | 5ED2005-SO | 125.00 | 30.00 | 19.30 | 14.48 | 19.05 |
| M22 x 1.5 | | | 5EP2005-SO | | | | | |
| M24 x 3.0 | | | 5ED2205-SO | | | | | |
| | | | 5ED2405-SO | | | | | |

Packed: 1 pc.
Available TiAlN coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|----------------|---------------|--------------|------|--------------|------------|------------------|-----|---------|-------------------------------------|-----------|---------|-------------------------------|---------|-----------------|-----------|-----------|-----------|
| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S Nickel Alloy Titanium | H | | | | |
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | | Inconel | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5ED-SO, 5EP-SO | 1010 1018 | 1035 1045 | 1065 | 4140 4340 | | | | | <input checked="" type="checkbox"/> | | | | | | | | |
| SFM | | | | | | | | | 30-85 | | | | | | | | |

good best



List 5BE-SO, 5BK-SO

GREEN BAND, Ideal for Carbon Steel

| | | | | | |
|------------|--------------------------------------|----------------|-----------------|------------|------------|
| NEW | GREEN BAND DRILLS P328-331 | HSSE V3 | TYPE UNI | TiN | 35° |
|------------|--------------------------------------|----------------|-----------------|------------|------------|



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Shank Dia. | Square Width | Square Length | | | | | |
|---------------|--------------|---------------|--------------------|----------------|---------------|------------|--------------|---------------|-------|-------|-------|-------|-------|
| | | | Mod Bottom (2P-3P) | | | | | | | | | | |
| | | | TiN | | | | | | | | | | |
| | | | L | Lc | d | k | lk | | | | | | |
| 4 - 40 UNC | H3 | 3 | 5BE0280-SO | 1.890 | 0.236 | 0.141 | 0.110 | 0.197 | | | | | |
| | H5 | | 5BE0290-SO | | | | | | | | | | |
| 4 - 48 UNF | H3 | | 5BK0280-SO | | | | | | | | | | |
| | H5 | | 5BK0290-SO | | | | | | | | | | |
| 5 - 40 UNC | H3 | | 5BE0320-SO | | | | | | 1.969 | 0.315 | 0.168 | 0.131 | 0.256 |
| | H5 | | 5BE0330-SO | | | | | | | | | | |
| 5 - 44 UNF | H3 | | 5BK0320-SO | | | | | | | | | | |
| | H5 | | 5BK0330-SO | | | | | | | | | | |
| 6 - 32 UNC | H3 | | 5BE0350-SO | 2.087 | 0.394 | 0.220 | 0.165 | 0.276 | | | | | |
| | H5 | | 5BE0360-SO | | | | | | | | | | |
| 6 - 40 UNF | H3 | | 5BK0350-SO | | | | | | | | | | |
| | H5 | | 5BK0360-SO | | | | | | | | | | |
| 8 - 32 UNC | H3 | | 5BE0420-SO | | | | | | 2.559 | 0.472 | 0.255 | 0.191 | 0.315 |
| | H5 | | 5BE0430-SO | | | | | | | | | | |
| 8 - 36 UNF | H3 | | 5BK0420-SO | | | | | | | | | | |
| | H5 | | 5BK0430-SO | | | | | | | | | | |
| 10 - 24 UNC | H3 | | 5BE0480-SO | 2.756 | 0.551 | 0.318 | 0.238 | 0.374 | | | | | |
| | H5 | | 5BE0490-SO | | | | | | | | | | |
| 10 - 32 UNF | H3 | | 5BK0480-SO | | | | | | | | | | |
| | H5 | | 5BK0490-SO | | | | | | | | | | |
| 12 - 24 UNC | H3 | | 5BE0550-SO | | | | | | 3.031 | 0.630 | 0.381 | 0.286 | 0.433 |
| | H5 | | 5BE0560-SO | | | | | | | | | | |
| 12 - 28 UNF | H3 | | 5BK0550-SO | | | | | | | | | | |
| | H5 | | 5BK0560-SO | | | | | | | | | | |
| 1/4 - 20 UNC | H3 | | 5BE0640-SO | 3.031 | 0.630 | 0.381 | 0.286 | 0.433 | | | | | |
| | H5 | | 5BE0650-SO | | | | | | | | | | |
| 1/4 - 28 UNF | H3 | | 5BK0640-SO | | | | | | | | | | |
| | H5 | | 5BK0650-SO | | | | | | | | | | |
| 5/16 - 18 UNC | H3 | | 5BE0790-SO | | | | | | 3.031 | 0.630 | 0.381 | 0.286 | 0.433 |
| | H5 | | 5BE0800-SO | | | | | | | | | | |
| 5/16 - 24 UNF | H3 | | 5BK0790-SO | | | | | | | | | | |
| | H5 | | 5BK0800-SO | | | | | | | | | | |
| 3/8 - 16 UNC | H3 | 5BE0950-SO | 3.031 | 0.630 | 0.381 | 0.286 | 0.433 | | | | | | |
| | H5 | 5BE0960-SO | | | | | | | | | | | |
| 3/8 - 24 UNF | H3 | 5BK0950-SO | | | | | | | | | | | |
| | H5 | 5BK0960-SO | | | | | | | | | | | |

Packed: 1 pc.
Available TiN coating only.

[continued on next page](#) 

| Work Material | | | | | | | | | | | | | | | | | |
|----------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------|------------|--------------------------|-----|---------|--------------------------|--------------------------|--------------------------|--------------------------|----------|-----------------|----------------|---------|-----------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 5BE-SO, 5BK-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | |
| SFM | 59-88 | 59-88 | 59-79 | | | 59-79 | | | 30-85 | 78-170 | 30-80 | 19-39 | | | | | |

good best





List 5BE-SO, 5BK-SO (Continued)

GREEN BAND, Ideal for Carbon Steel

| | | | | | |
|-----|-------------------------------|---------|----------|-----|-----|
| NEW | GREEN BAND DRILLS P328-331 | HSSE V3 | TYPE UNI | TiN | 35° |
|-----|-------------------------------|---------|----------|-----|-----|



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Overall Length | Thread Length | Shank Dia. | Square Width | Square Length |
|----------------|--------------|---------------|--------------------|-------|----------------|---------------|------------|--------------|---------------|
| | | | Mod Bottom (2P-3P) | | | | | | |
| | | | TiN | | L | Lc | d | k | lk |
| 7/16 - 14 UNC | H3 | 3 | 5BE1110-SO | | 3.228 | 0.709 | 0.323 | 0.242 | 0.413 |
| | H5 | | 5BE1120-SO | | | | | | |
| | H3 | | 5BK1110-SO | | | | | | |
| 7/16 - 20 UNF | H3 | | 5BK1120-SO | | 3.425 | 0.827 | 0.367 | 0.275 | 0.433 |
| | H5 | | 5BE1280-SO | | | | | | |
| 1/2 - 13 UNC | H3 | | 5BE1270-SO | | 3.661 | 0.866 | 0.429 | 0.322 | 0.492 |
| | H5 | | 5BK1280-SO | | | | | | |
| 1/2 - 20 UNF | H3 | | 5BE1430-SO | | 3.878 | 0.906 | 0.480 | 0.360 | 0.571 |
| | H5 | | 5BE1440-SO | | | | | | |
| 9/16 - 12 UNC | H3 | | 5BK1430-SO | | 4.252 | 0.984 | 0.590 | 0.442 | 0.689 |
| | H5 | | 5BK1440-SO | | | | | | |
| 9/16 - 18 UNF | H3 | | 5BE1590-SO | | 4.685 | 1.102 | 0.697 | 0.523 | 0.748 |
| | H5 | 5BE1600-SO | | | | | | | |
| 5/8 - 11 UNC | H3 | 5BK1590-SO | | 5.118 | 1.260 | 0.800 | 0.600 | 0.807 | |
| | H5 | 5BK1600-SO | | | | | | | |
| 5/8 - 18 UNF | H3 | 5BE1910-SO | | 5.433 | 1.417 | 0.896 | 0.672 | 0.807 | |
| | H5 | 5BE1920-SO | | | | | | | |
| 3/4 - 10 UNC | H3 | 5BK1910-SO | | 5.748 | 1.021 | 1.021 | 0.766 | 1.004 | |
| | H5 | 5BK1920-SO | | | | | | | |
| 3/4 - 16 UNF | H3 | 5BE2220-SO | | 5.748 | 1.021 | 1.021 | 0.766 | 1.004 | |
| | H5 | 5BE2230-SO | | | | | | | |
| 7/8 - 9 UNC | H3 | 5BK2220-SO | | 5.748 | 1.021 | 1.021 | 0.766 | 1.004 | |
| | H5 | 5BK2230-SO | | | | | | | |
| 7/8 - 14 UNF | H3 | 5BE2540-SO | | 5.748 | 1.021 | 1.021 | 0.766 | 1.004 | |
| | H5 | 5BE2550-SO | | | | | | | |
| 1 - 8 UNC | H3 | 5BK2540-SO | | 5.748 | 1.021 | 1.021 | 0.766 | 1.004 | |
| | H5 | 5BK2550-SO | | | | | | | |
| 1 - 12 UNF | H3 | 5BE2860-SO | | 5.748 | 1.021 | 1.021 | 0.766 | 1.004 | |
| | H5 | 5BE2870-SO | | | | | | | |
| 1,1/8 - 7 UNC | H3 | 5BK2860-SO | | 5.748 | 1.021 | 1.021 | 0.766 | 1.004 | |
| | H5 | 5BK2870-SO | | | | | | | |
| 1,1/8 - 12 UNF | H3 | 5BE3180-SO | | 5.748 | 1.021 | 1.021 | 0.766 | 1.004 | |
| | H5 | 5BE3190-SO | | | | | | | |
| 1,1/4 - 7 UNC | H3 | 5BK3180-SO | | 5.748 | 1.021 | 1.021 | 0.766 | 1.004 | |
| | H5 | 5BK3190-SO | | | | | | | |
| 1,1/4 - 12 UNF | H3 | 5BE3180-SO | | 5.748 | 1.021 | 1.021 | 0.766 | 1.004 | |
| | H5 | 5BE3190-SO | | | | | | | |

Packed: 1 pc.
Available TiN coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|----------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------|------------|--------------------------|-----|---------|--------------------------|--------------------------|--------------------------|--------------|----------------|-----------------|-----------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5BE-SO, 5BK-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| SFM | 59-88 | 59-88 | 59-79 | | | 59-79 | | | 30-85 | 78-170 | 30-80 | 19-39 | | | | | |

good best





List 5EV-SO

GREEN BAND, Ideal for Carbon Steel

NEW GREEN BAND DRILLS P328-331 HSSE V3 TYPE UNI TiN 15°



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|--------------------|----------------|---------------|------------|--------------|---------------|
| | | | Mod Bottom (2P-3P) | | | | | |
| | | | TiN | L | Lc | d | k | lk |
| M3 x 0.5 | D4 | 3 | 5EV0300-SO | 48.00 | 6.00 | 3.58 | 2.79 | 5.00 |
| M4 x 0.7 | | | 5EV0400-SO | 53.00 | 8.00 | 4.27 | 3.33 | 6.50 |
| M5 x 0.8 | | | 5EV0500-SO | 58.50 | 10.00 | 4.93 | 3.86 | |
| M6 x 1.0 | | | 5EV0600-SO | 65.00 | 12.00 | 6.48 | 4.85 | 8.00 |
| M8 x 1.25 | | | 5EV0800-SO | 70.00 | 14.00 | 8.08 | 6.05 | 9.50 |
| M10 x 1.5 | D6 | | 5EV1000-SO | 77.00 | 16.00 | 9.68 | 7.26 | 11.00 |
| M12 x 1.75 | | | 5EV1200-SO | 87.00 | 18.00 | 9.32 | 6.99 | |
| M14 x 2.0 | | | 5EV1400-SO | 93.00 | 22.00 | 10.90 | 8.18 | 13.00 |
| M16 x 2.0 | | | 5EV1600-SO | 98.50 | 23.00 | 12.19 | 9.14 | 14.00 |
| M18 x 2.5 | | | 5EV1800-SO | 108.00 | 25.00 | 13.76 | 10.30 | 15.88 |
| M20 x 2.5 | D4 | 5EV2000-SO | 114.00 | 16.56 | | 12.42 | 17.50 | |
| M22 x 2.5 | | 5EV2200-SO | 119.00 | 28.00 | 17.70 | 13.28 | 19.05 | |
| M24 x 3.0 | | 5EV2400-SO | 125.00 | 30.00 | 19.30 | 14.48 | | |

Packed: 1 pc.
Available TiN coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------------------|------------|--------------------------|-----|---------|--------------------------|--------------------------|--------------------------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | | Stainless Steels | | | | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5EV-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| SFM | 59-88 | 59-88 | 59-79 | | | 59-79 | | | 30-85 | 78-170 | 30-80 | 19-39 | | | | | |

good best





List 5EW-SO

GREEN BAND, Ideal for Carbon Steel

| | | | | | |
|-----|-------------------------------|---------|----------|-----|-----|
| NEW | GREEN BAND DRILLS P328-331 | HSSE V3 | TYPE UNI | TiN | 35° |
|-----|-------------------------------|---------|----------|-----|-----|



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|--------------------|----------------|---------------|------------|--------------|---------------|
| | | | Mod Bottom (2P-3P) | | | | | |
| | | | TiN | | | | | |
| | | | L | Lc | d | k | lk | |
| M3 x 0.5 | D4 | 3 | 5EW0300-SO | 48.00 | 6.00 | 3.58 | 2.79 | 5.00 |
| M4 x 0.7 | | | 5EW0400-SO | 53.00 | 8.00 | 4.27 | 3.33 | 6.50 |
| M5 x 0.8 | | | 5EW0500-SO | 58.50 | 10.00 | 4.93 | 3.86 | |
| M6 x 1.0 | | | 5EW0600-SO | 65.00 | 12.00 | 6.48 | 4.85 | 8.00 |
| M8 x 1.25 | | | 5EW0800-SO | 70.00 | 14.00 | 8.08 | 6.05 | 9.50 |
| M10 x 1.5 | D6 | 3 | 5EW1000-SO | 77.00 | 16.00 | 9.68 | 7.26 | 11.00 |
| M12 x 1.75 | | | 5EW1200-SO | 87.00 | 18.00 | 9.32 | 6.99 | |
| M14 x 2.0 | | | 5EW1400-SO | 93.00 | 22.00 | 10.90 | 8.18 | 13.00 |
| M16 x 2.0 | | | 5EW1600-SO | 98.50 | 23.00 | 12.19 | 9.14 | 14.00 |
| M18 x 2.5 | | | 5EW1800-SO | 108.00 | 25.00 | 13.76 | 10.30 | 15.88 |
| M20 x 2.5 | D4 | 4 | 5EW2000-SO | 114.00 | 28.00 | 16.56 | 12.42 | 17.50 |
| M22 x 2.5 | | | 5EW2200-SO | 119.00 | | 17.70 | 13.28 | 19.05 |
| M24 x 3.0 | | | 5EW2400-SO | 125.00 | 30.00 | 19.30 | 14.48 | |

Packed: 1 pc.
Available TiN coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------|------------|--------------------------|-----|---------|--------------------------|--------------------------|--------------------------|--------------|----------|-----------------|----------------|---------|-----------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 5EW-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| SFM | 59-88 | 59-88 | 59-79 | | | 59-79 | | | 30-85 | 78-170 | 30-80 | 19-39 | | | | | |

good best





List 16515

VC10

V

A-POT, DIN Overall Length, Plug (3.5P-4.5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | | | | | | | | | | |
|----------------|--------------|---------------|--------------------|--------------------|---------------|-------------|------------|--------------|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | | Plug (3.5P - 4.5P) | | | | | | | | | | | | | | | | | |
| | | | V | L | Lc | Ln | d | k | lk | | | | | | | | | | | |
| 2 - 56 UNC | H2 | 2 | 1651505608 | 1.772 | 0.437 | 0.476 | 0.141 | 0.110 | 0.188 | | | | | | | | | | | |
| 2 - 64 UNF | | | 1651505708 | | | | | | | | | | | | | | | | | |
| 3 - 48 UNC | | | 1651505808 | 1.969 | 0.500 | 0.539 | | | | | | | | | | | | | | |
| 3 - 56 UNF | | | 1651505908 | | | | | | | | | | | | | | | | | |
| 4 - 40 UNC | | | 1651500108 | 2.205 | 0.295 | 0.704 | | | | | | | | | | | | | | |
| 4 - 48 UNF | | | 1651500208 | | | | | | | | | | | | | | | | | |
| 5 - 40 UNC | | | 1651500308 | | | | | | | | | | | | | | | | | |
| 5 - 44 UNF | | | 1651500408 | | | | | | | | | | | | | | | | | |
| 6 - 32 UNC | | | 1651500608 | | | | | | | | | | | | | | | | | |
| 6 - 40 UNF | | | 1651500508 | | | | | | | | | | | | | | | | | |
| 6 - 40 UNF | H3 | 3 | 1651500708 | 2.480 | 0.374 | 0.826 | 0.168 | 0.131 | | | | | | | | | | | | |
| 8 - 32 UNC | H2 | | 1651500908 | | | | | | | | | | | | | | | | | |
| 8 - 36 UNF | H3 | | 1651500808 | | | | | | | | | | | | | | | | | |
| 10 - 24 UNC | H2 | | 1651501008 | 2.756 | 0.492 | 0.976 | | | 0.194 | 0.152 | | | | | | | | | | |
| 10 - 32 UNF | H3 | | 1651501108 | | | | | | | | | | | | | | | | | |
| 12 - 24 UNC | H2 | | 1651501308 | 3.150 | 0.496 | 1.177 | | | | | 0.220 | 0.165 | 0.281 | | | | | | | |
| 12 - 28 UNF | H3 | | 1651501208 | | | | | | | | | | | | | | | | | |
| 12 - 32 UNEF | H2 | | 1651501408 | | | | | | | | | | | | | | | | | |
| 12 - 32 UNEF | H3 | | 1651501508 | | | | | | | | | | | | | | | | | |
| 1/4 - 20 UNC | H5 | | 1651506008 | | | | | | | | | | | | | | | | | |
| 1/4 - 20 UNC | H3 | 1651501708 | | | | | | | | | | | | | | | | | | |
| 1/4 - 28 UNF | H4 | 1651501608 | 3.543 | 0.665 | 1.377 | 0.318 | 0.238 | 0.375 | | | | | | | | | | | | |
| 1/4 - 28 UNF | H3 | 1651501908 | | | | | | | | | | | | | | | | | | |
| 1/4 - 32 UNEF | H4 | 1651501808 | 3.150 | 0.653 | 1.366 | | | | 0.381 | 0.286 | | | | 0.438 | | | | | | |
| 5/16 - 18 UNC | H3 | 1651506108 | | | | | | | | | | | | | | | | | | |
| 5/16 - 24 UNF | H5 | 1651502108 | 3.937 | 0.751 | 1.535 | | | | | | 0.323 | 0.242 | 0.406 | | | | | | | |
| 5/16 - 32 UNEF | H3 | 1651502008 | | | | | | | | | | | | | | | | | | |
| 3/8 - 16 UNC | H4 | 1651502308 | 3.543 | 0.744 | 1.370 | | | | | | | | | | 0.381 | 0.286 | 0.438 | | | |
| 3/8 - 24 UNF | H3 | 1651502208 | | | | | | | | | | | | | | | | | | |
| 3/8 - 32 UNEF | H3 | 1651506208 | 3.937 | 0.858 | 1.291 | | | | | | | | | | | | | 0.323 | 0.242 | 0.406 |
| 7/16 - 14 UNC | H5 | 1651502508 | | | | | | | | | | | | | | | | | | |
| 7/16 - 20 UNF | H3 | 1651502708 | 3.937 | 0.858 | 1.291 | 0.323 | 0.242 | 0.406 | | | | | | | | | | | | |
| 7/16 - 20 UNF | H5 | 1651502808 | | | | | | | | | | | | | | | | | | |
| 7/16 - 20 UNF | H5 | 1651503108 | 3.937 | 0.858 | 1.291 | | | | 0.323 | 0.242 | | | | 0.406 | | | | | | |
| 7/16 - 20 UNF | H5 | 1651503008 | | | | | | | | | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.

continued on next page



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------|-------------------------------------|-----------------|-----------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 16515 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | |
| SFM | 80-120 | 80-120 | 80-120 | 40-65 | 35-55 | 25-75 | 25-60 | 25-60 | 60-100 | 70-120 | 70-120 | | | 40-65 | | | |

good best





VC10 **V**

List 16515 (Continued)

A-POT, DIN Overall Length, Plug (3.5P-4.5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | |
|-----------------|--------------|---------------|--------------------|--------------------|---------------|-------------|------------|--------------|---------------|-------|
| | | | Plug (3.5P - 4.5P) | L | Lc | Ln | d | k | lk | |
| | | | V | L | Lc | Ln | d | k | lk | |
| 7/16 - 28 UNEF | H4 | 3 | 1651506408 | 3.543 | 0.858 | 1.291 | 0.323 | 0.242 | 0.406 | |
| 1/2 - 13 UNC | H3 | | 1651503308 | 4.331 | | | | | | |
| | H5 | | 1651503208 | | | | | | | |
| 1/2 - 20 UNF | H3 | | 1651503508 | 3.937 | | 0.921 | 1.354 | 0.367 | 0.275 | 0.438 |
| | H5 | | 1651503408 | | | | | | | |
| 1/2 - 28 UNEF | H4 | | 1651506508 | 4.331 | | | | | | |
| 9/16 - 12 UNC | H3 | | 1651503708 | | | | | | | |
| | H5 | | 1651503608 | | | | | | | |
| 9/16 - 18 UNF | H3 | | 1651503908 | 3.937 | | 1.000 | 1.472 | 0.429 | 0.322 | 0.500 |
| | H5 | | 1651503808 | | | | | | | |
| 9/16 - 24 UNEF | H4 | | 1651506608 | 4.331 | | | | | | |
| 5/8 - 11 UNC | H3 | | 1651504108 | | | | | | | |
| | H5 | | 1651504008 | | | | | | | |
| 5/8 - 18 UNF | H3 | | 1651504308 | 3.937 | | 1.090 | 1.562 | 0.480 | 0.360 | 0.563 |
| | H5 | | 1651504208 | | | | | | | |
| 5/8 - 24 UNEF | H4 | | 1651506708 | 4.331 | | | | 0.542 | 0.406 | 0.625 |
| 11/16 - 24 UNEF | H3 | | 1651506808 | | | | | | | |
| 3/4 - 10 UNC | H3 | | 1651504508 | 4.921 | | | | | | |
| | H5 | | 1651504408 | | | | | | | |
| 3/4 - 16 UNF | H3 | | 1651504708 | 4.331 | | 1.200 | 1.712 | 0.590 | 0.442 | 0.688 |
| | H5 | | 1651504608 | | | | | | | |
| 3/4 - 20 UNEF | H5 | | 1651506908 | 4.921 | | | | 0.652 | 0.489 | |
| 13/16 - 20 UNEF | H4 | | 1651507008 | | | | | | | |
| 7/8 - 9 UNC | H4 | | 1651504908 | 5.512 | | | | | | |
| | H6 | | 1651504808 | | | | | | | |
| 7/8 - 14 UNF | H4 | | 1651505108 | 4.921 | | 1.334 | 1.885 | 0.697 | 0.523 | 0.750 |
| | H6 | | 1651505008 | | | | | | | |
| 7/8 - 20 UNEF | H5 | | 1651507108 | 5.512 | | | | 0.760 | 0.570 | 0.750 |
| 15/16 - 20 UNEF | H4 | 1651507208 | | | | | | | | |
| 1 - 8 UNC | H4 | 1651505308 | 6.299 | | | | | | | |
| | H6 | 1651505208 | | | | | | | | |
| 1 - 12 UNF | H4 | 1651505508 | 5.512 | | 1.500 | 2.090 | 0.800 | 0.600 | 0.813 | |
| | H6 | 1651505408 | | | | | | | | |
| 1 - 14 UNS | H6 | 1651507408 | 5.512 | | | | | | | |
| 1 - 20 UNEF | H5 | 1651507308 | | | | | | | | |

Packed: 1 pc.
Available V coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------|----------------|-------------------------------------|-----------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 16515 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | | | |
| SFM | 80-120 | 80-120 | 80-120 | 40-65 | 35-55 | 25-75 | 25-60 | 25-60 | 60-100 | 70-120 | 70-120 | | | 40-65 | | | |

good best





List 16510

VC10

V

A-POT, DIN Overall Length, Plug (3.5P-4.5P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | | | | | | | | |
|-------------|--------------|---------------|--------------------|--------------------|---------------|-------------|------------|--------------|---------------|------|-------|------|-------|-------|-------|------|------|------|
| | | | Plug (3.5P - 4.5P) | L | Lc | Ln | | | | | | | | | | | | |
| | | | V | L | Lc | Ln | d | k | lk | | | | | | | | | |
| M1.4 x 0.3 | D2 | 2 | 1651003008 | 40.00 | 7.90 | 8.90 | 3.58 | 2.79 | 4.80 | | | | | | | | | |
| M1.6 x 0.35 | D3 | | 1651003108 | | | | | | | 9.50 | 10.50 | | | | | | | |
| M1.7 x 0.35 | | | 1651003208 | | | | | | | | | | | | | | | |
| M2 x 0.4 | D2 | | 1651003408 | 45.00 | 11.10 | 12.10 | | | | 3.58 | 2.79 | 4.80 | | | | | | |
| M2 x 0.25 | | | 1651003308 | | | | | | | | | | | | | | | |
| M2.2 x 0.45 | D3 | | 1651003608 | | | | | | | | | | | | | | | |
| M2.2 x 0.25 | D2 | | 1651003508 | | | | | | | | | | | | | | | |
| M2.3 x 0.4 | D3 | | 1651003708 | | | | | | | | | | 50.00 | 12.80 | 13.80 | 3.58 | 2.79 | 4.80 |
| M2.5 x 0.45 | | | 1651003908 | | | | | | | | | | | | | | | |
| M2.5 x 0.35 | | | 1651003808 | | | | | | | | | | | | | | | |
| M2.6 x 0.45 | | 1651004008 | 56.00 | | | | 6.10 | 18.10 | | | | | | | | | | |
| M3 x 0.5 | | 1651000108 | | | | | | | | | | | | | | | | |
| M3 x 0.35 | | 1651004108 | | | | | | | | | | | | | | | | |
| M3.5 x 0.6 | | 1651004308 | | | | | | | | | | | | | | | | |
| M3.5 x 0.35 | | 1651004208 | | | | | | | | | | | | | | | | |
| M4 x 0.7 | | D4 | | 1651000308 | 63.00 | 8.40 | 21.00 | 4.27 | 3.33 | 6.40 | | | | | | | | |
| M4 x 0.5 | | D3 | | 1651000208 | | | | | | | | | | | | | | |
| M4.5 x 0.75 | D4 | 1651004508 | | | | | | | | | | | | | | | | |
| M4.5 x 0.5 | D3 | 1651004408 | | 70.00 | 9.10 | 24.80 | 4.93 | 3.86 | 6.40 | | | | | | | | | |
| M5 x 0.8 | D4 | 1651000508 | | | | | | | | | | | | | | | | |
| M5 x 0.5 | D3 | 1651000408 | | | | | | | | | | | | | | | | |
| M5.5 x 0.5 | | 1651004608 | | | | | | | | | | | | | | | | |
| M6 x 1.0 | D5 | 1651000808 | 80.00 | 10.80 | 29.70 | 5.59 | 4.19 | 7.10 | | | | | | | | | | |
| M6 x 0.75 | D4 | 1651000708 | | | | | | | | | | | | | | | | |
| M6 x 0.5 | D3 | 1651000608 | | 12.00 | | | | | | | | | | | | | | |
| M7 x 1.0 | D5 | 1651004808 | | | | | | | | | | | | | | | | |
| M7 x 0.75 | D4 | 1651004708 | 12.10 | 34.80 | 8.08 | 6.05 | 9.50 | | | | | | | | | | | |
| M8 x 1.25 | D5 | 1651001008 | | | | | | | | | | | | | | | | |
| M8 x 1.0 | D4 | 1651000908 | 90.00 | 15.40 | 30.00 | | | | | | | | | | | | | |
| M8 x 0.75 | | 1651004908 | 80.00 | | | | | | | | | | | | | | | |
| M9 x 1.25 | D5 | 1651005208 | 90.00 | 14.00 | 34.70 | 9.68 | 7.26 | 11.10 | | | | | | | | | | |
| M9 x 1.0 | | 1651005108 | | | | | | | | | | | | | | | | |
| M9 x 0.75 | D4 | 1651005008 | 100.00 | 18.00 | 38.90 | 9.68 | 7.26 | 11.10 | | | | | | | | | | |
| M10 x 1.5 | D6 | 1651001308 | | | | | | | | | | | | | | | | |
| M10 x 1.25 | D5 | 1651001208 | | | | | | | | | | | | | | | | |
| M10 x 1.0 | | 1651001108 | 18.00 | 34.80 | | | | | | | | | | | | | | |
| M10 x 0.75 | | D4 | | | 1651005308 | | | | | | | | | | | | | |
| M11 x 1.5 | D6 | 1651005608 | 100.00 | 18.00 | 29.00 | 8.20 | 6.15 | 10.30 | | | | | | | | | | |
| M11 x 1.0 | D5 | 1651005508 | 90.00 | | | | | | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.

continued on next page

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------|-------------------------------------|-----------------|----------------|---------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 16510 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | |
| SFM | 80-120 | 80-120 | 80-120 | 40-65 | 35-55 | 25-75 | 25-60 | 25-60 | 60-100 | 70-120 | 70-120 | | | 40-65 | | | |

good best





List 16510 (Continued)

VC10

V

A-POT, DIN Overall Length, Plug (3.5P-4.5P)



Units:mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | | | | | | | | | | |
|------------|--------------|---------------|--------------------|--------------------|---------------|-------------|------------|--------------|---------------|------------|--------|-------|-------|-------|------------|--------|-------|-------|-------|------------|
| | | | Plug (3.5P - 4.5P) | L | Lc | Ln | d | k | lk | | | | | | | | | | | |
| | | | V | L | Lc | Ln | d | k | lk | | | | | | | | | | | |
| M11 x 0.75 | D4 | 3 | 1651005408 | 90.00 | 18.00 | 29.00 | 8.20 | 6.15 | 10.30 | | | | | | | | | | | |
| M12 x 1.75 | D6 | | 1651001708 | 110.00 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | | | | | | | | | | | |
| M12 x 1.5 | | | 1651001608 | 100.00 | | | | | | | | | | | | | | | | |
| M12 x 1.25 | | | 1651001508 | | | | | | | | | | | | | | | | | |
| M12 x 1.0 | D5 | 1651001408 | 110.00 | 24.00 | | | | | | 36.00 | 12.19 | 9.14 | 14.30 | | | | | | | |
| M14 x 2.0 | D7 | 1651001908 | 110.00 | | | | | | | | | | | | | | | | | |
| M14 x 1.5 | D6 | 1651001808 | 100.00 | | | | | | | | | | | | | | | | | |
| M14 x 1.25 | | 1651005808 | | | | | | | | | | | | | | | | | | |
| M14 x 1.0 | | 1651005708 | | | | | | | | | | | | | | | | | | |
| M15 x 2.0 | D7 | 3 | 1651007208 | | 110.00 | 30.00 | 43.00 | 13.77 | 10.31 | | | | | 15.90 | | | | | | |
| M15 x 1.5 | D6 | 4 | 1651006008 | | 100.00 | | | | | | | | | | | | | | | |
| M15 x 1.25 | | 1651007308 | | | | | | | | | | | | | | | | | | |
| M15 x 1.0 | | D5 | 4 | | | | | | | | | | | | 1651005908 | | | | | |
| M16 x 2.0 | | D7 | 3 | | | | | | | | | | | | 1651002108 | 110.00 | | | | |
| M16 x 1.5 | D6 | 4 | 1651002008 | | 100.00 | | | | | | | | | | 30.00 | 44.00 | 16.56 | 12.42 | 17.50 | |
| M16 x 1.25 | | | 1651007408 | | | | | | | | | | | | | | | | | |
| M16 x 1.0 | | | D5 | 1651006108 | | | | | | | | | | | | | | | | |
| M17 x 1.5 | | | D6 | 1651006308 | | | | | | | | | | | | | | | | |
| M17 x 1.25 | D6 | 4 | 1651007508 | 110.00 | 36.00 | | | | | 51.00 | 19.30 | 14.48 | 19.10 | | | | | | | |
| M17 x 1.0 | | | D5 | | | | | | | | | | | | | | | | | 1651006208 |
| M18 x 2.5 | | | D7 | | | | | | | | | | | | | | | | | 3 |
| M18 x 2.0 | 1651006508 | 140.00 | | | | | | | | | | | | | | | | | | |
| M18 x 1.25 | D6 | | 4 | 1651007608 | | 110.00 | | | | | | | | | | | | | | |
| M18 x 1.5 | | 1651002208 | | | | | | | | | | | | | | | | | | |
| M18 x 1.0 | | D5 | | 1651006408 | | | | | | | | | | | | | | | | |
| M20 x 2.5 | D7 | 3 | 1651002508 | 140.00 | | 36.00 | 51.00 | 19.30 | 14.48 | | | | | 19.10 | | | | | | |
| M20 x 2.0 | | | 1651006708 | | | | | | | | | | | | | | | | | |
| M20 x 1.5 | D6 | 4 | 1651002408 | 125.00 | | | | | | | | | | | | | | | | |
| M20 x 1.0 | | | D5 | | | | | | | | | | | | 1651006608 | | | | | |
| M22 x 2.5 | D7 | 3 | 1651002708 | 140.00 | | | | | | | | | | | | | | | | |
| M22 x 2.0 | | | 1651006908 | | | | | | | | | | | | | | | | | |
| M22 x 1.5 | | | D6 | | 4 | | | | | 1651002608 | 125.00 | | | | | | | | | |
| M22 x 1.0 | D5 | 1651006808 | | | | | | | | | | | | | | | | | | |
| M24 x 3.0 | D8 | 3 | 1651002908 | 160.00 | 36.00 | | | | | 51.00 | 19.30 | 14.48 | 19.10 | | | | | | | |
| M24 x 2.0 | D7 | 4 | 1651007108 | | | | | | | | | | | | | | | | | |
| M24 x 1.5 | D6 | | 1651002808 | | | | | | | | | | | | | | | | | |
| M24 x 1.0 | D5 | | 1651007008 | | | | | | | | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------|-------------------------------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 16510 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | |
| SFM | 80-120 | 80-120 | 80-120 | 40-65 | 35-55 | 25-75 | 25-60 | 25-60 | 60-100 | 70-120 | 70-120 | | | 40-65 | | | |

good best





List 16555



A-OIL-POT, Coolant-Through, DIN Overall Length, Plug (3.5P-4.5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | |
|---------------|--------------|---------------|--------------------|--------------------|---------------|-------------|------------|--------------|---------------|-------|
| | | | Plug (3.5P - 4.5P) | L | Lc | Ln | d | k | lk | |
| | | | V | L | Lc | Ln | d | k | lk | |
| 1/4 - 20 UNC | H5 | 3 | 1655500108 | 3.150 | 0.598 | 1.181 | 0.255 | 0.191 | 0.313 | |
| 1/4 - 28 UNF | H4 | | 1655500208 | | | | | | | |
| 5/16 - 18 UNC | H5 | | 1655500308 | 3.543 | 0.665 | 1.377 | 0.318 | 0.238 | 0.375 | |
| 5/16 - 24 UNF | H4 | | 1655500408 | | | | | | | |
| 3/8 - 16 UNC | H5 | | 1655500508 | 3.937 | 0.751 | 1.535 | 0.381 | 0.286 | 0.438 | |
| 3/8 - 24 UNF | H4 | | 1655500608 | | | 1.377 | | | | |
| 7/16 - 14 UNC | H5 | | 1655500708 | 3.937 | 0.858 | 1.291 | 0.323 | 0.242 | 0.406 | |
| 7/16 - 20 UNF | | | 1655500808 | | | | | | | |
| 1/2 - 13 UNC | | | 1655500908 | 4.331 | 0.921 | 1.354 | 0.367 | 0.275 | 0.438 | |
| 1/2 - 20 UNF | | | 1655501008 | | | | | | | |
| 9/16 - 12 UNC | | | 1655501108 | 4.331 | 1.000 | 1.472 | 0.429 | 0.322 | 0.500 | |
| 9/16 - 18 UNF | | | 1655501208 | | | | | | | |
| 5/8 - 11 UNC | | | 1655501308 | 4.331 | 1.090 | 1.562 | 0.480 | 0.360 | 0.563 | |
| 5/8 - 18 UNF | | | 1655501408 | | | | | | | |
| 3/4 - 10 UNC | | | H6 | 1655501508 | 4.921 | 1.200 | 1.712 | 0.590 | 0.442 | 0.688 |
| 3/4 - 16 UNF | | | | 1655501608 | | | | | | |
| 7/8 - 9 UNC | | | | 1655501708 | 5.512 | 1.334 | 1.885 | 0.697 | 0.523 | 0.750 |
| 7/8 - 14 UNF | | | | 1655501808 | | | | | | |
| 1 - 8 UNC | 1655501908 | | | 6.299 | 1.500 | 2.090 | 0.800 | 0.600 | 0.813 | |
| 1 - 12 UNF | 1655502008 | | | | | | | | | |

Packed: 1 pc.
Available V coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------|-------------------------------------|-----------------|----------------|---------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 16555 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | |
| SFM | 100-200 | 100-200 | 100-200 | 50-120 | 45-110 | 40-120 | 40-120 | 40-100 | 80-160 | 90-220 | 90-220 | | | 60-120 | | | |

good best





A Brand® A-OIL-POT

Advanced Performance Taps for a Variety of Materials

List 16550



A-OIL-POT, Coolant-Through, DIN Overall Length, Plug (3.5P-4.5P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | |
|------------|--------------|---------------|--------------------|--------------------|---------------|-------------|------------|--------------|---------------|-------|
| | | | Plug (3.5P - 4.5P) | L | Lc | Ln | d | k | lk | |
| | | | V | L | Lc | Ln | d | k | lk | |
| M6 x 1.0 | D5 | 3 | 1655000208 | 80.00 | 12.00 | 30.00 | 6.48 | 4.85 | 7.90 | |
| M6 x 0.75 | D4 | | 1655000108 | | | | | | | |
| M7 x 1.0 | D5 | | 1655000308 | 90.00 | 15.00 | 35.00 | 8.08 | 6.05 | 9.50 | |
| M8 x 1.25 | | | 1655000608 | | | | | | | |
| M8 x 1.0 | D4 | | 1655000508 | 80.00 | 30.00 | 9.68 | 7.26 | 11.10 | | |
| M8 x 0.75 | | | 1655000408 | | | | | | | |
| M9 x 1.25 | D5 | | 1655000708 | 90.00 | 35.00 | 18.00 | 29.00 | 6.15 | 10.30 | |
| M10 x 1.5 | D6 | | 1655001008 | 100.00 | 39.00 | | | | | |
| M10 x 1.25 | D5 | | 1655000908 | 90.00 | 35.00 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 |
| M10 x 1.0 | | | 1655000808 | | | | | | | |
| M11 x 1.5 | D6 | | 1655001108 | 100.00 | 29.00 | 36.00 | 10.90 | 8.18 | 12.70 | |
| M12 x 1.75 | | | 1655001508 | 110.00 | | | | | | |
| M12 x 1.5 | D5 | 1655001408 | 100.00 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | | |
| M12 x 1.25 | | 1655001308 | | | | | | | | |
| M12 x 1.0 | D7 | 1655001208 | 110.00 | 24.00 | 36.00 | 12.19 | 9.14 | 14.30 | | |
| M14 x 2.0 | 1655001708 | 110.00 | | | | | | | | |
| M14 x 1.5 | D6 | 1655001608 | 100.00 | 30.00 | 43.00 | 13.77 | 10.31 | 15.90 | | |
| M15 x 1.5 | | 1655001808 | 100.00 | | | | | | | |
| M16 x 2.0 | D7 | 1655002008 | 110.00 | 36.00 | 44.00 | 16.56 | 12.42 | 17.50 | | |
| M16 x 1.5 | D6 | 1655001908 | 100.00 | | | | | | | |
| M17 x 1.5 | | 4 | 1655002108 | 100.00 | 30.00 | 44.00 | 17.70 | 13.28 | 19.10 | |
| M18 x 2.5 | D7 | 1655002308 | 125.00 | | | | | | | |
| M18 x 1.5 | D6 | 4 | 1655002208 | 110.00 | 36.00 | 51.00 | 19.30 | 14.48 | | |
| M20 x 2.5 | D7 | 3 | 1655002508 | 140.00 | | | | | | |
| M20 x 1.5 | D6 | 4 | 1655002408 | 125.00 | 36.00 | 51.00 | 19.30 | 14.48 | | |
| M22 x 2.5 | D7 | 3 | 1655002808 | 140.00 | | | | | | |
| M22 x 2.0 | | 4 | 1655002708 | 140.00 | 36.00 | 51.00 | 19.30 | 14.48 | | |
| M22 x 1.5 | D6 | 4 | 1655002608 | 125.00 | | | | | | |
| M24 x 3.0 | D8 | 3 | 1655003108 | 160.00 | 36.00 | 51.00 | 19.30 | 14.48 | | |
| M24 x 2.0 | D7 | 4 | 1655003008 | 140.00 | | | | | | |
| M24 x 1.5 | D6 | 4 | 1655002908 | 140.00 | 36.00 | 51.00 | 19.30 | 14.48 | | |
| | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------|-------------------------------------|-----------------|----------------|---------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 16550 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | |
| SFM | 100-200 | 100-200 | 100-200 | 50-120 | 45-110 | 40-120 | 40-120 | 40-100 | 80-160 | 90-220 | 90-220 | | | 60-120 | | | |

good best





List 16535

VC10

V

A-LT-POT, Long Shank, Plug (3.5P-4.5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Long Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | | |
|---------------|--------------|---------------|--------------------|---------------------|---------------|-------------|------------|--------------|---------------|-------|-------|-------|
| | | | Plug (3.5P - 4.5P) | | | | | | | | | |
| | | | V | L | Lc | Ln | d | k | lk | | | |
| 4 - 40 UNC | H2 | 2 | 1653506008 | 3.149 | 0.342 | 0.751 | 0.140 | 0.109 | 0.188 | | | |
| 4 - 48 UNF | | | 1653506108 | | | | | | | | | |
| 5 - 40 UNC | | | 1653500708 | | | | | | | | | |
| 5 - 44 UNF | | | 1653506308 | | | | | | | | | |
| 6 - 32 UNC | H3 | | 1653501008 | 4.724 | 0.429 | 0.842 | | | | | | |
| 6 - 40 UNF | H2 | | 1653501108 | 3.937 | 0.433 | 0.846 | | | | | | |
| 8 - 32 UNC | H3 | | 1653501308 | 4.724 | 0.444 | 0.897 | 0.167 | 0.131 | 0.251 | | | |
| 8 - 36 UNF | H2 | | 1653501408 | 3.937 | | | | | | | | |
| 10 - 24 UNC | H3 | | 1653501508 | 4.921 | 0.574 | 1.059 | 0.194 | 0.151 | 0.279 | | | |
| 10 - 32 UNF | | | 1653501708 | 5.906 | 0.582 | 1.066 | | | | | | |
| 12 - 24 UNC | | | 1653501808 | 4.921 | 0.590 | 1.271 | 0.220 | 0.164 | | | | |
| 12 - 28 UNF | | | 1653501908 | | | | | | | | | |
| 1/4 - 20 UNC | H5 | 3 | 1653502108 | 5.906 | 0.704 | 1.366 | 0.255 | 0.190 | 0.287 | | | |
| 1/4 - 28 UNF | H4 | | 1653502308 | | | | | | | | | |
| 5/16 - 18 UNC | H5 | | 1653502508 | | 0.803 | 1.633 | 0.317 | 0.238 | 0.342 | | | |
| 5/16 - 24 UNF | H4 | | 1653502708 | | | | | | | | | |
| 3/8 - 16 UNC | H5 | | 1653502908 | | 0.917 | 1.897 | 0.380 | 0.285 | 0.397 | | | |
| 3/8 - 24 UNF | H4 | | 1653503108 | | | | | | | | | |
| 7/16 - 14 UNC | H5 | | | | 1653503308 | 7.087 | 0.858 | 2.362 | 0.322 | 0.242 | 0.405 | |
| 7/16 - 20 UNF | | | 1653503508 | | | | | | | | | |
| 1/2 - 13 UNC | | | H5 | | | | 1653503708 | 0.921 | 2.834 | 0.367 | 0.274 | 0.437 |
| 1/2 - 20 UNF | | | | | 1653503908 | | | | | | | |
| 9/16 - 12 UNC | | | H5 | | | | 1653504108 | 1.000 | 2.834 | 0.429 | 0.322 | 0.500 |
| 9/16 - 18 UNF | | | | | 1653504308 | | | | | | | |
| 5/8 - 11 UNC | | H5 | | 1653504508 | 1.090 | | 2.834 | 0.480 | 0.359 | 0.562 | | |
| 5/8 - 18 UNF | | | 1653504708 | | | | | | | | | |
| 3/4 - 10 UNC | | H5 | | 1653504908 | 1.200 | | 3.149 | 0.590 | 0.442 | 0.688 | | |
| 3/4 - 16 UNF | | | 1653505108 | | | | | | | | | |
| 7/8 - 9 UNC | | H6 | | 1653505308 | 7.874 | | 1.334 | 3.149 | 0.697 | 0.522 | 0.751 | |
| 7/8 - 14 UNF | | | 1653505508 | | | | | | | | | |
| 1 - 8 UNC | 1653505708 | | 0.800 | 0.600 | | 0.811 | | | | | | |
| 1 - 12 UNF | 1653505908 | | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------|-------------------------------------|-----------------|----------------|---------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 16535 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | |
| SFM | 80-120 | 80-120 | 80-120 | 40-65 | 35-55 | 25-75 | 25-60 | 25-60 | 60-100 | 70-120 | 70-120 | | | 40-65 | | | |

good best





VC10 **V**

List 16530

A-LT-POT, Long Shank, Plug (3.5P-4.5P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Long Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|-------------|--------------|---------------|--------------------|---------------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (3.5P - 4.5P) | L | Lc | Ln | d | k | lk |
| | | | V | L | Lc | Ln | d | k | lk |
| M3 x 0.5 | D3 | 3 | 1653001308 | 100.00 | 6.00 | 20.00 | 3.58 | 2.79 | 4.80 |
| M3 x 0.35 | | | 1653001208 | | | | | | |
| M3.5 x 0.6 | | | 1653001508 | | | | | | |
| M3.5 x 0.35 | D4 | 3 | 1653001408 | 100.00 | 7.00 | 23.00 | 4.26 | 3.32 | 6.40 |
| M4 x 0.7 | | | 1653001708 | | | | | | |
| M4 x 0.5 | D4 | 3 | 1653001608 | 100.00 | 8.00 | 27.00 | 4.92 | 3.86 | 6.40 |
| M4.5 x 0.75 | | | 1653001908 | | | | | | |
| M4.5 x 0.5 | | | 1653001808 | | | | | | |
| M5 x 0.8 | D3 | 3 | 1653002108 | 125.00 | 9.00 | 30.00 | 5.58 | 4.19 | 7.10 |
| M5 x 0.5 | | | 1653002008 | | | | | | |
| M5.5 x 0.5 | D5 | 3 | 1653002208 | 150.00 | 10.00 | 35.90 | 6.47 | 4.85 | 7.80 |
| M6 x 1.0 | | | 1653002708 | | | | | | |
| M6 x 0.75 | | | 1653002508 | | | | | | |
| M6 x 0.5 | D3 | 3 | 1653002308 | 125.00 | 11.00 | 40.00 | 8.07 | 6.04 | 9.40 |
| M8 x 1.25 | | | 1653003708 | | | | | | |
| M8 x 1.0 | | | 1653003508 | | | | | | |
| M8 x 0.75 | D4 | 3 | 1653003308 | 150.00 | 15.00 | 51.90 | 9.67 | 7.26 | 11.00 |
| M10 x 1.5 | | | 1653003108 | | | | | | |
| M10 x 1.25 | | | 1653004908 | | | | | | |
| M10 x 1.0 | D5 | 3 | 1653004708 | 150.00 | 18.00 | 59.90 | 9.32 | 6.98 | 11.00 |
| M10 x 0.75 | | | 1653004508 | | | | | | |
| M12 x 1.75 | D6 | 3 | 1653006708 | 180.00 | 21.00 | 72.00 | 12.19 | 9.14 | 14.30 |
| M12 x 1.5 | | | 1653006508 | | | | | | |
| M12 x 1.25 | | | 1653006308 | | | | | | |
| M12 x 1.0 | D5 | 3 | 1653006108 | 160.00 | 24.00 | 72.00 | 12.19 | 9.14 | 14.30 |
| M14 x 2.0 | | | 1653007108 | | | | | | |
| M14 x 1.5 | | | 1653007008 | | | | | | |
| M14 x 1.25 | D6 | 4 | 1653006908 | 150.00 | 24.00 | 59.90 | 10.89 | 8.17 | 12.70 |
| M14 x 1.0 | | | 1653006808 | | | | | | |
| M15 x 1.5 | D6 | 4 | 1653007308 | 160.00 | 24.00 | 64.00 | 12.19 | 9.14 | 14.30 |
| M15 x 1.0 | | | 1653007208 | | | | | | |
| M16 x 2.0 | | | 1653007708 | | | | | | |
| M16 x 1.5 | D6 | 3 | 1653007508 | 160.00 | 24.00 | 64.00 | 12.19 | 9.14 | 14.30 |
| M16 x 1.0 | | | 1653007408 | | | | | | |
| M18 x 2.5 | D7 | 4 | 1653008308 | 180.00 | 29.00 | 72.00 | 13.76 | 10.31 | 15.90 |
| M18 x 2.0 | | | 1653008208 | | | | | | |
| M18 x 1.5 | | | 1653008108 | | | | | | |
| M18 x 1.0 | D5 | 4 | 1653008008 | 180.00 | 29.00 | 80.00 | 16.56 | 12.42 | 17.50 |
| M20 x 2.5 | | | 1653008708 | | | | | | |
| M20 x 2.0 | | | 1653008608 | | | | | | |
| M20 x 1.5 | D6 | 4 | 1653008508 | 200.00 | 29.00 | 80.00 | 17.70 | 13.28 | 19.10 |
| M20 x 1.0 | | | 1653008408 | | | | | | |
| M22 x 2.5 | D7 | 3 | 1653009108 | 200.00 | 29.00 | 80.00 | 17.70 | 13.28 | 19.10 |
| M22 x 2.0 | | | 1653009008 | | | | | | |
| M22 x 1.5 | | | 1653008908 | | | | | | |
| M22 x 1.0 | D6 | 4 | 1653008808 | 200.00 | 29.00 | 80.00 | 17.70 | 13.28 | 19.10 |
| M22 x 1.0 | | | 1653008808 | | | | | | |

Packed: 1 pc.
Available V coating only.





List 16530 (Continued)

VC10

V

A-LT-POT, Long Shank, Plug (3.5P-4.5P)

Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Long Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|-----------|--------------|---------------|--------------------|---------------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (3.5P - 4.5P) | | | | | | |
| | | | V | | | | | | |
| M24 x 3.0 | D8 | 3 | 1653009508 | 200.00 | 35.00 | 80.00 | 19.30 | 14.47 | 19.10 |
| M24 x 2.0 | D7 | 4 | 1653009408 | | | | | | |
| M24 x 1.5 | D6 | | 1653009308 | | | | | | |
| M24 x 1.0 | D5 | | 1653009208 | | | | | | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-----------------|-------|---------|-----------|-----------|-----------|------|--|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | | |
| | 1010 | 1018 | 1035 | | | 1045 | 1065 | 4140 | | 4340 | 7075 | | | 7075 | 7075 | 7075 | 7075 | 7075 | 7075 | 7075 | | |
| 16530 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | | | |
| SFM | 80-120 | 80-120 | 80-120 | 40-65 | 35-55 | 25-75 | 25-60 | 25-60 | 60-100 | 70-120 | 70-120 | | | 40-65 | | | | | | | | |

good best





List 13063



V-CPM-RFT, RHC/LHS for Through Hole, Plug (4P - 4.5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | |
|---------------|--------------|---------------|------------------|----------------|---------------|-------------|------------|--------------|---------------|------------|
| | | | Plug (4P - 4.5P) | | | | | | | |
| | | | V | | | | | | | |
| | | | L | Lc | Ln | d | k | lk | | |
| 2 - 56 UNC | H2 | 2 | 1306300108 | 1.752 | 0.437 | 0.476 | 0.141 | 0.110 | 0.189 | |
| 4 - 40 UNC | | | 1306300208 | 1.874 | 0.295 | 0.559 | | | | |
| 6 - 32 UNC | | | 1306300308 | 2.000 | 0.370 | 0.685 | | | | |
| 8 - 32 UNC | H3 | 3 | 1306300408 | 2.126 | 0.374 | 0.752 | 0.168 | 0.131 | 0.252 | |
| 10 - 24 UNC | | | 1306300508 | 2.374 | 0.492 | 0.866 | | | | |
| 10 - 32 UNF | | | 1306300608 | | | | | | | |
| 1/4 - 20 UNC | H5 | 3 | 1306300708 | 2.500 | 0.594 | 0.996 | 0.255 | 0.191 | 0.287 | |
| 1/4 - 28 UNF | H3 | | 1306300808 | | | | | | | |
| | H5 | | 1306300908 | | | | | | | |
| 5/16 - 18 UNC | H3 | 3 | 1306301008 | 2.720 | 0.665 | 1.126 | 0.318 | 0.238 | 0.374 | |
| 5/16 - 24 UNF | | | H5 | | | | | | | 1306301108 |
| | | | H3 | | | | | | | 1306301208 |
| 3/8 - 16 UNC | H5 | 3 | 1306301308 | 2.937 | 0.752 | 1.252 | 0.381 | 0.286 | 0.437 | |
| 3/8 - 24 UNF | | | H3 | | | | | | | 1306301408 |
| | | | H5 | | | | | | | 1306301508 |
| 7/16 - 14 UNC | H3 | 3 | 1306301608 | 3.157 | 0.858 | 1.291 | 0.323 | 0.242 | 0.406 | |
| 7/16 - 20 UNF | | | H5 | | | | | | | 1306301708 |
| | | | H3 | | | | | | | 1306301808 |
| 1/2 - 13 UNC | H5 | 3 | 1306301908 | 3.374 | 0.921 | 1.354 | 0.367 | 0.275 | 0.437 | |
| 1/2 - 20 UNF | | | H3 | | | | | | | 1306302008 |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|----------|---------------|------|------|--------------------------|----------|------------|------------------|--------------------------|---------|----------------|----------|--------------|-------------------------------------|--------------------------|---------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | Titanium | | Stainless Steels | | | | Aluminum | Nickel Alloy | Hardened Steels | | | | | |
| | Low | Med. | High | | | | 300 | 400 | 17-4 PH | | | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 13063 | | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | |
| SFM | | | | 15-50 | | | | 8-20 | | | | | 8-20 | 15-35 | | | | |

good best





List 13163

VC10  LHS 

V-CPM-RFT, RHC/LHS for Through Hole, Plug (4P - 4.5P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|-------------|--------------|---------------|------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (4P - 4.5P) | | | | | | |
| | | | V | | | | | | |
| M2.5 x 0.45 | D3 | 3 | 1316300108 | 47.60 | 12.00 | 13.80 | 3.58 | 2.79 | 4.80 |
| M3 x 0.5 | | | 1316300208 | 50.80 | 6.00 | 16.00 | | | |
| M4 x 0.7 | D4 | | 1316300308 | 55.80 | 8.00 | 19.10 | 4.26 | 3.33 | 6.40 |
| M5 x 0.8 | | | 1316300408 | 62.40 | 9.00 | 22.20 | 4.92 | 3.86 | |
| M6 x 1.0 | D5 | | 1316300508 | 65.50 | 12.00 | 25.40 | 6.47 | 4.85 | 7.30 |
| M8 x 1.25 | | | 1316300808 | 69.10 | 15.00 | 28.60 | 8.07 | 6.05 | 9.50 |
| M10 x 1.5 | D6 | | 1316301008 | 74.60 | 18.00 | 31.80 | 9.67 | 7.26 | 11.10 |
| M10 x 1.25 | D5 | | 1316300908 | | | | | | |
| M12 x 1.75 | D6 | | 1316301308 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | |
| M12 x 1.25 | D5 | | 1316301108 | | | | | | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | | | | | | | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------|-----------|------|--------------------------|--------------|------------|------------------|---------|-----------|-----------|----------|---------|-------------------------------------|--------------------------|-----------------|-----------|-----------|-----------|---|---|--|---|--|---|--|--|--|
| | Carbon Steels | | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | | | | | | | | |
| | Low | Med. | High | 300 | | | 400 | 17-4 PH | 6061 7075 | | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | | | | | | | | | |
| | 1010 1018 | 1035 1045 | 1065 | | | | | | | | | | | | | | | 4140 4340 | | | | | | | | | |
| 13163 | | | | <input type="checkbox"/> | | | | | | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | |
| SFM | | | | 15-50 | | | | 8-20 | | | | | 8-20 | 15-35 | | | | | | | | | | | | | |

good best





VC10
HR

List 337Ni

WHR-Ni-POT, DIN Overall Length, Plug (5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (5P) | | | | | | |
| | | | HR | L | Lc | Ln | d | k | lk |
| 2 - 56 UNC | H2 | 2 | 3370002562 | 1.772 | 0.437 | 0.476 | 0.140 | 0.109 | 0.188 |
| 4 - 40 UNC | H3 | | 3370004402 | | | | | | |
| 4 - 48 UNF | H2 | 2 | 3370004403 | 2.205 | 0.562 | 0.602 | 0.140 | 0.109 | 0.188 |
| 6 - 32 UNC | H3 | | 3370004482 | | | | | | |
| 8 - 32 UNC | H2 | 2 | 3370006322 | 2.480 | 0.688 | - | 0.167 | 0.131 | 0.251 |
| 10 - 24 UNC | H3 | | 3370006323 | | | | | | |
| 10 - 32 UNF | H2 | 2 | 3370008322 | 2.756 | 0.751 | - | 0.194 | 0.151 | 0.251 |
| 10 - 32 UNF | H3 | | 3370008323 | | | | | | |
| 10 - 32 UNF | H2 | 2 | 3370010242 | 2.756 | 0.874 | - | 0.194 | 0.151 | 0.251 |
| 10 - 32 UNF | H3 | | 3370010243 | | | | | | |
| 1/4 - 20 UNC | H2 | 2 | 3370010322 | 3.150 | 0.870 | - | 0.255 | 0.190 | 0.287 |
| 1/4 - 20 UNC | H3 | | 3370010323 | | | | | | |
| 1/4 - 28 UNF | H3 | 2 | 3370014203 | 3.150 | 1.000 | - | 0.255 | 0.190 | 0.287 |
| 1/4 - 28 UNF | H4 | | 3370014205 | | | | | | |
| 5/16 - 18 UNC | H3 | 3 | 3370014283 | 3.543 | 0.992 | - | 0.317 | 0.238 | 0.342 |
| 5/16 - 18 UNC | H5 | | 3370014284 | | | | | | |
| 5/16 - 24 UNF | H3 | 3 | 3370516183 | 3.543 | 0.665 | 1.377 | 0.317 | 0.238 | 0.342 |
| 5/16 - 24 UNF | H5 | | 3370516185 | | | | | | |
| 3/8 - 16 UNC | H3 | 3 | 3370516243 | 3.937 | 0.657 | 1.370 | 0.380 | 0.285 | 0.397 |
| 3/8 - 16 UNC | H5 | | 3370516245 | | | | | | |
| 3/8 - 24 UNF | H3 | 3 | 3370038163 | 3.937 | 0.751 | 1.535 | 0.380 | 0.285 | 0.397 |
| 3/8 - 24 UNF | H5 | | 3370038165 | | | | | | |
| 7/16 - 14 UNC | H3 | 3 | 3370038243 | 3.543 | 0.740 | 1.377 | 0.380 | 0.285 | 0.397 |
| 7/16 - 14 UNC | H5 | | 3370038245 | | | | | | |
| 7/16 - 20 UNF | H3 | 3 | 3370716143 | 3.937 | 0.858 | 1.291 | 0.322 | 0.242 | 0.405 |
| 7/16 - 20 UNF | H5 | | 3370716145 | | | | | | |
| 1/2 - 13 UNC | H3 | 3 | 3370716203 | 4.331 | 0.921 | 1.354 | 0.367 | 0.274 | 0.437 |
| 1/2 - 13 UNC | H5 | | 3370716205 | | | | | | |
| 1/2 - 20 UNF | H3 | 3 | 3370012133 | 3.937 | 1.000 | 1.472 | 0.429 | 0.322 | 0.500 |
| 1/2 - 20 UNF | H5 | | 3370012135 | | | | | | |
| 9/16 - 18 UNF | H3 | 3 | 3370012203 | 4.331 | 0.921 | 1.354 | 0.367 | 0.274 | 0.437 |
| 9/16 - 18 UNF | H5 | | 3370012205 | | | | | | |
| 5/8 - 11 UNC | H3 | 3 | 3370916183 | 4.331 | 1.090 | 1.562 | 0.480 | 0.359 | 0.562 |
| 5/8 - 11 UNC | H5 | | 3370916185 | | | | | | |
| 5/8 - 18 UNF | H3 | 3 | 3370058113 | 3.937 | 1.090 | 1.562 | 0.480 | 0.359 | 0.562 |
| 5/8 - 18 UNF | H5 | | 3370058115 | | | | | | |
| 3/4 - 10 UNC | H3 | 4 | 3370058183 | 4.921 | 1.200 | 1.712 | 0.590 | 0.442 | 0.688 |
| 3/4 - 10 UNC | H5 | | 3370058185 | | | | | | |
| 3/4 - 16 UNF | H3 | 4 | 3370034103 | 4.331 | 1.200 | 1.712 | 0.590 | 0.442 | 0.688 |
| 3/4 - 16 UNF | H5 | | 3370034105 | | | | | | |
| | | | 3370034163 | | | | | | |
| | | | 3370034165 | | | | | | |

Packed: 1 pc.
Available HR coating only.





List 337Ni (Continued)

VC10

HR

WHR-Ni-POT, DIN Overall Length, Plug (5P)

Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|--------------|--------------|---------------|------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (5P) | L | Lc | Ln | d | k | lk |
| | | | HR | L | Lc | Ln | d | k | lk |
| 7/8 - 9 UNC | H3 | 4 | 3370078093 | 5.512 | 1.334 | 1.885 | 0.697 | 0.522 | 0.751 |
| | H5 | | 3370078095 | | | | | | |
| 7/8 - 14 UNF | H3 | | 3370078143 | 4.921 | | | | | |
| | H5 | | 3370078145 | | | | | | |
| 1 - 8 UNC | H3 | | 3370001083 | 6.299 | 1.500 | 2.090 | 0.800 | 0.600 | 0.811 |
| | H5 | | 3370001085 | | | | | | |
| 1 - 12 UNF | H3 | | 3370001123 | 5.512 | | | | | |
| | H5 | | 3370001125 | | | | | | |

Packed: 1 pc.
Available HR coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|-----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 337Ni | | | | | | | | | | | | | | | | | | |
| SFM | | | | | | | | 8-20 | | | | 8-15 | | | | | | 8-12 |

good best





List 338Ni

VC10

HR

WHR-Ni-POT, DIN Overall Length, Plug (5P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|-------------|--------------|---------------|------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (5P) | | | | | | |
| | | | HR | | | | | | |
| | | | L | Lc | Ln | d | k | Lk | |
| M2.5 x 0.45 | D3 | 2 | 3380250453 | 50.00 | 12.00 | 13.80 | 3.58 | 2.79 | 4.80 |
| M3 x 0.5 | | | 3380003053 | 56.00 | 16.00 | 21.00 | | | |
| M4 x 0.7 | D4 | 2 | 3380004074 | 63.00 | 19.00 | 25.50 | 4.26 | 3.33 | 6.40 |
| M5 x 0.8 | | | 3380005084 | 70.00 | 22.00 | - | | | |
| M6 x 1.0 | D5 | 2 | 3380006105 | 80.00 | 25.00 | 33.90 | 6.47 | 4.85 | 7.30 |
| M6 x 0.75 | | | 3380006755 | | | | | | |
| M8 x 1.25 | | | 3380008255 | | | | | | |
| M8 x 1.0 | D6 | 2 | 3380008105 | 90.00 | 15.00 | 35.00 | 8.07 | 6.05 | 8.70 |
| M10 x 1.5 | | | 3380010156 | | | | | | |
| M10 x 1.25 | D5 | 2 | 3380010255 | 100.00 | 22.00 | 43.50 | 9.67 | 7.26 | 10.10 |
| M12 x 1.75 | 3380012756 | | 110.00 | | | | | | |
| M12 x 1.5 | D6 | 3 | 3380012156 | 100.00 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 |
| M14 x 2.0 | | | 3380014207 | 110.00 | | | | | |
| M14 x 1.5 | D6 | 3 | 3380014156 | 100.00 | 24.00 | 36.00 | 10.89 | 8.18 | 12.70 |
| M16 x 2.0 | D7 | | 3380016207 | 110.00 | | | | | |
| M16 x 1.5 | D6 | 3 | 3380016156 | 100.00 | 24.00 | 36.00 | 12.19 | 9.14 | 14.30 |
| M18 x 2.5 | D7 | | 3380018257 | 125.00 | | | | | |
| M18 x 1.5 | D6 | 3 | 3380018156 | 110.00 | 30.00 | 43.00 | 13.76 | 10.31 | 15.90 |
| M20 x 2.5 | D8 | | 3380020258 | 140.00 | | | | | |
| M20 x 1.5 | D6 | 3 | 3380020156 | 125.00 | 30.00 | 44.00 | 16.56 | 12.42 | 17.50 |
| M22 x 2.5 | D8 | | 3380022258 | 140.00 | | | | | |
| M22 x 1.5 | D6 | 3 | 3380022156 | 125.00 | 30.00 | 44.00 | 17.70 | 13.28 | 19.10 |
| M24 x 3.0 | D8 | | 3380024308 | 160.00 | | | | | |
| M24 x 1.5 | D6 | 4 | 3380024156 | 140.00 | 36.00 | 51.00 | 19.30 | 14.48 | |

Packed: 1 pc.
Available HR coating only.



| Work Material | | | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|------------|------------------|------|---------|----------------|-----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|--|------|
| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | | | |
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 338Ni | | | | | | | | | | | | | | | | | | | |
| SFM | | | | | | | 8-20 | | | | | 8-15 | | | | | | | 8-12 |

good best





List 312Ti

V-Ti-POT, Plug (4.5P-5.5P)



VC10

V



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (4.5P-5.5P) | | | | | | |
| | | | V | | | | | | |
| 2 - 56 UNC | H2 | 3 | 1105610108 | 1.752 | 0.437 | - | 0.140 | 0.109 | 0.188 |
| 4 - 40 UNC | | | 1105610208 | 1.874 | 0.562 | - | | | |
| 6 - 32 UNC | H3 | | 1105610408 | 2.000 | 0.688 | - | 0.167 | 0.131 | 0.251 |
| 6 - 40 UNF | H2 | | 1105610508 | | | - | | | |
| 8 - 32 UNC | H3 | | 1105610708 | 2.126 | 0.751 | - | 0.194 | 0.151 | 0.251 |
| 8 - 36 UNF | H2 | | 1105610808 | | | - | | | |
| 10 - 24 UNC | H3 | | 1105610908 | 2.374 | 0.874 | - | 0.255 | 0.190 | 0.311 |
| 10 - 32 UNF | H2 | | 1105611008 | | | - | | | |
| 1/4 - 20 UNC | H3 | | 1105611108 | 2.500 | 0.866 | - | 0.317 | 0.238 | 0.374 |
| | | | 1105611208 | | | - | | | |
| 1/4 - 28 UNF | H5 | | 1105611308 | 2.720 | 1.000 | - | 0.380 | 0.285 | 0.437 |
| | | | 1105611408 | | | - | | | |
| 5/16 - 18 UNC | H3 | | 1105611508 | 2.937 | 0.988 | - | 0.322 | 0.242 | 0.405 |
| | | | 1105611608 | | | - | | | |
| 5/16 - 24 UNF | H4 | | 1105611708 | 3.157 | 1.125 | 1.125 | 0.367 | 0.274 | 0.437 |
| | | | 1105611808 | | | 1.118 | | | |
| 3/8 - 16 UNC | H3 | | 1105611908 | 2.937 | 0.657 | 1.251 | 0.429 | 0.322 | 0.500 |
| | | | 1105612008 | | | 1.240 | | | |
| 3/8 - 24 UNF | H4 | | 1105612108 | 3.374 | 0.751 | 1.291 | 0.480 | 0.359 | 0.562 |
| | | | 1105612208 | | | 1.291 | | | |
| 7/16 - 14 UNC | H5 | | 1105612308 | 3.594 | 0.740 | 1.354 | 0.500 | 0.500 | 0.500 |
| | | | 1105612408 | | | 1.354 | | | |
| 7/16 - 20 UNF | H3 | | 1105612508 | 3.811 | 0.858 | 1.472 | 0.480 | 0.359 | 0.562 |
| | | | 1105612608 | | | 1.472 | | | |
| 1/2 - 13 UNC | H5 | | 1105612708 | 3.811 | 0.858 | 1.562 | 0.480 | 0.359 | 0.562 |
| | | | 1105612808 | | | 1.562 | | | |
| 1/2 - 20 UNF | H3 | | 1105612908 | 3.811 | 0.921 | 1.562 | 0.480 | 0.359 | 0.562 |
| | | | 1105613008 | | | 1.562 | | | |
| 9/16 - 18 UNF | H5 | 1105613108 | 3.811 | 1.000 | 1.562 | 0.480 | 0.359 | 0.562 | |
| | | 1105613208 | | | 1.562 | | | | |
| 5/8 - 11 UNC | H3 | 1105613308 | 3.811 | 1.090 | 1.562 | 0.480 | 0.359 | 0.562 | |
| | | 1105613408 | | | 1.562 | | | | |
| 5/8 - 18 UNF | H5 | 1105613508 | 3.811 | 1.090 | 1.562 | 0.480 | 0.359 | 0.562 | |
| | | 1105613608 | | | 1.562 | | | | |
| | | | | | | | | | |

Packed: 1 pc.
Available V coating only.

continued on next page **EXT**

| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------------------|------------|------------------|-----|--------------------------|-----------|-----------|---------|-------------------------------------|-------------------------------------|--------------------------|----------------|---------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 312Ti | | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | |
| SFM | | | | 15-30 | | | | 8-20 | | | | 8-15 | 8-15 | 15-35 | 10-20 | | | |

good best





VC10

V

List 312Ti (Continued)

V-Ti-POT, Plug (4.5P-5.5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|--------------|--------------|---------------|------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (4.5P-5.5P) | | | | | | |
| | | | V | | | | | | |
| | | | L | Lc | Ln | d | k | lk | |
| 3/4 - 10 UNC | H5 | 4 | 1105613808 | 4.252 | 1.200 | 1.712 | 0.590 | 0.442 | 0.688 |
| | H3 | | 1105613908 | | | | | | |
| | H5 | | 1105614008 | | | | | | |
| 7/8 - 9 UNC | H3 | | 1105614208 | 4.689 | 1.334 | 1.885 | 0.697 | 0.522 | 0.751 |
| | H5 | | 1105614308 | | | | | | |
| | H3 | | 1105614408 | | | | | | |
| 7/8 - 14 UNF | H3 | | 1105614508 | 5.126 | 1.500 | 2.090 | 0.800 | 0.600 | 0.811 |
| | H5 | | 1105614108 | | | | | | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------|------|------|--------------------------|------------|------------------|------|--------------------------|-----------|-----------|---------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 312Ti | | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| SFM | | | | 15-30 | | | 8-20 | | | | | 8-15 | 8-15 | 15-35 | 10-20 | | |

good best





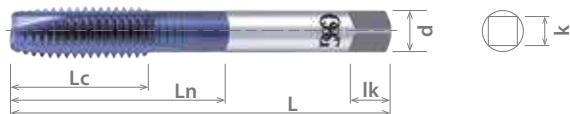
List 344Ti

V-Ti-POT, Plug (4.5P-5.5P)



VC10

V



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (4.5P-5.5P) | | | | | | |
| | | | V | L | Lc | Ln | d | k | lk |
| M3 x 0.5 | D3 | 3 | 1115810108 | 49.20 | 15.90 | 20.90 | 3.58 | 2.79 | 4.80 |
| M4 x 0.7 | D4 | | 1115810208 | 54.00 | 19.00 | 25.40 | 4.26 | 3.33 | 6.40 |
| M5 x 0.8 | | | 1115810308 | 60.30 | 22.20 | - | 4.92 | 3.86 | |
| M6 x 1.0 | D5 | | 1115810408 | 63.50 | 25.30 | 33.80 | 6.47 | 4.85 | 7.90 |
| M8 x 1.25 | | | 1115810508 | 69.10 | 15.00 | 28.60 | 8.07 | 6.05 | 9.50 |
| M10 x 1.5 | D6 | | 1115810708 | 74.00 | 18.00 | 31.80 | 9.67 | 7.26 | 11.10 |
| M10 x 1.25 | D5 | | 1115810608 | | | | | | |
| M12 x 1.75 | D6 | | 1115810808 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------|------|------|--------------|------------|------------------|------|---------|-----------|-----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 344Ti | | | | ○ | | | | ○ | | | | ○ | ○ | ○ | ○ | | |
| SFM | | | | 15-30 | | | 8-20 | | | | | 8-15 | 8-15 | 15-35 | 10-20 | | |

○ good □ best





EXOTAP® VC-10 Ti Oil

Coolant-Through Taps Designed for Titanium Alloys

List 316Ti

VPO-Ti-POT, Coolant-Through, DIN Overall Length, Plug (5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (5P) | | | | | | |
| | | | V | | | | | | |
| | | | L | Lc | Ln | d | k | lk | |
| 1/4 - 28 UNF | H3 | 3 | 31621408 | 3.140 | 1.000 | - | 0.255 | 0.191 | 0.313 |
| | H4 | | 31621508 | | | | | | |
| 5/16 - 24 UNF | H3 | | 31621808 | 3.540 | 0.665 | 1.378 | 0.318 | 0.238 | 0.375 |
| | H4 | | 31621908 | | | | | | |
| 3/8 - 24 UNF | H3 | | 31622208 | 3.930 | 0.752 | 1.291 | 0.381 | 0.286 | 0.438 |
| | H4 | | 31622308 | | | | | | |
| 7/16 - 20 UNF | H3 | | 31622608 | 4.330 | 0.858 | 1.354 | 0.323 | 0.242 | 0.406 |
| | H4 | | 31622708 | | | | | | |
| 1/2 - 20 UNF | H3 | | 31623008 | 4.920 | 0.921 | 1.472 | 0.367 | 0.275 | 0.438 |
| | H5 | | 31623108 | | | | | | |
| 9/16 - 18 UNF | H3 | | 31623408 | 5.510 | 1.000 | 1.563 | 0.429 | 0.322 | 0.500 |
| | H5 | | 31623508 | | | | | | |
| 5/8 - 18 UNF | H3 | | 31623808 | 4.330 | 1.091 | 1.713 | 0.480 | 0.360 | 0.563 |
| | H4 | | 31623908 | | | | | | |
| 3/4 - 16 UNF | H3 | | 31624208 | 4.920 | 1.201 | 1.886 | 0.590 | 0.442 | 0.688 |
| | H4 | | 31624308 | | | | | | |
| 7/8 - 14 UNF | H4 | 31624608 | 5.510 | 1.335 | 2.091 | 0.697 | 0.523 | 0.750 | |
| | H6 | 31624708 | | | | | | | |
| 1 - 12 UNF | H4 | 31625008 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | |
| | H6 | 31625108 | | | | | | | |

Packed: 1 pc.
Available V coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------------------|------------|------------------|---------|---------|-----------|----------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-----------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 1010 | 1035 | 1065 | 4140 | 4340 | 300 | 400 | 17-4 PH | 6061 | 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 316Ti | | | | <input type="checkbox"/> | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| SFM | | | | 15-30 | | | 8-20 | | | | 8-15 | 8-15 | 15-35 | 10-20 | | | |

good best





List 347Ti

VPO-Ti-POT, Coolant-Through, DIN Overall Length, Plug (5P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | |
|------------|--------------|---------------|------------|--------------------|---------------|-------------|------------|--------------|---------------|-------|-------|
| | | | Plug (5P) | | | | | | | | |
| | | | V | | | | | | | | |
| | | | | L | Lc | Ln | d | k | lk | | |
| M8 x 1.0 | D5 | 3 | 34720508 | 90.00 | 15.00 | 35.00 | 8.07 | 6.04 | 9.50 | | |
| M10 x 1.25 | | | 34720708 | | 18.00 | 39.00 | 9.67 | 11.10 | | | |
| M12 x 1.25 | | | 34720908 | | 21.00 | 32.00 | 9.32 | | | 6.98 | |
| M12 x 1.5 | 34721008 | | | | | | | | | | |
| M14 x 1.5 | 34721208 | | | | | | | | | | |
| M16 x 1.5 | 34721408 | | 24.00 | 36.00 | 10.89 | 8.17 | 12.70 | | | | |
| M18 x 1.5 | 34721608 | | | | 12.19 | 9.14 | 14.20 | | | | |
| M20 x 1.5 | 34721808 | | | | 30.00 | 43.00 | 13.76 | 10.31 | 15.80 | | |
| M22 x 1.5 | 34722008 | | 44.00 | 16.56 | | | | | | 12.42 | 17.40 |
| M24 x 1.5 | 34722208 | | 17.70 | 13.28 | | | | | | 19.00 | |
| | | 140.00 | 36.00 | 51.00 | 19.30 | 14.47 | | | | | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|---------------|------|------|--------------------------|------------|------------------|------|---------|-----------|-----------|---------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-----------|-----------|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 347Ti | | | | <input type="checkbox"/> | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| SFM | | | | 15-30 | | | 8-20 | | | | | 8-15 | 8-15 | 15-35 | 10-20 | | | |

good best





EXOTAP® VC-10 Ni

Taps Designed for Nickel Based Alloys



| | | |
|------|---|-----|
| VC10 | V | S/O |
|------|---|-----|

List 312Ni

Ni-POT, Plug (4.5P-5.5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Plug (4.5P-5.5P) | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|------------------|----------------|----|----------------|---------------|-------------|------------|--------------|---------------|
| | | | EDP Number | Coating Suffix | | | | | | | |
| | | | | S/O | V | L | Lc | Ln | d | k | lk |
| 2 - 56 UNC | H2 | 2 | 17722 | 01 | - | 1.752 | 0.472 | - | | | |
| | | | 17762 | 01 | 08 | | | | | | |
| 4 - 40 UNC | H3 | 3 | 17763 | 01 | - | 1.874 | 0.606 | - | | | |
| | | | 17720 | 01 | - | | | | | | |
| | | | 17721 | 01 | - | | | | | | |
| 4 - 48 UNF | H2 | 2 | 17721 | 01 | - | | | 0.140 | 0.109 | 0.188 | |
| 6 - 32 UNC | H3 | 2 | 17715 | 01 | - | 2.000 | 0.744 | - | | | |
| | | | 17063 | 01 | 08 | | | | | | |
| | | | 17064 | 01 | - | | | | | | |
| | | | 17716 | 01 | - | | | | | | |
| 8 - 32 UNC | H3 | 2 | 17065 | 01 | 08 | 2.126 | 0.822 | - | 0.167 | 0.131 | |
| | | | 17717 | 01 | - | | | | | | |
| | | | 17066 | 01 | - | | | | | | |
| 10 - 24 UNC | H3 | 2 | 17067 | 01 | 08 | 2.374 | 0.948 | - | 0.194 | 0.151 | 0.251 |
| | | | 17068 | 01 | - | | | | | | |
| 10 - 32 UNF | H3 | 2 | 17718 | 01 | - | 2.374 | 0.948 | - | 0.194 | 0.151 | 0.251 |
| | | | 17069 | 01 | 08 | | | | | | |
| | | | 17719 | 01 | - | | | | | | |
| | | | 17070 | 01 | - | | | | | | |
| 1/4 - 20 UNC | H3 | 2 | 17071 | 01 | 08 | 2.500 | 1.102 | - | 0.255 | 0.190 | 0.311 |
| | | | 17072 | 01 | - | | | | | | |
| | | | 17723 | 01 | - | | | | | | |
| 1/4 - 28 UNF | H3 | 2 | 17073 | 01 | 08 | 2.500 | 1.102 | - | 0.255 | 0.190 | 0.311 |
| | | | 17724 | 01 | - | | | | | | |
| | | | 17074 | 01 | - | | | | | | |
| 5/16 - 18 UNC | H3 | 3 | 17075 | 01 | 08 | 2.720 | 0.799 | 1.259 | 0.317 | 0.238 | 0.374 |
| | | | 17076 | 01 | - | | | | | | |
| | | | 17077 | 01 | 08 | | | | | | |
| 5/16 - 24 UNF | H3 | 3 | 17078 | 01 | - | 2.720 | 0.799 | 1.259 | 0.317 | 0.238 | 0.374 |
| | | | 17079 | 01 | 08 | | | | | | |
| 3/8 - 16 UNC | H3 | 3 | 17080 | 01 | - | 2.937 | 0.917 | 1.417 | 0.380 | 0.285 | 0.437 |
| | | | 17081 | 01 | 08 | | | | | | |
| 3/8 - 24 UNF | H3 | 3 | 17082 | 01 | - | 2.937 | 0.917 | 1.417 | 0.380 | 0.285 | 0.437 |
| | | | 17083 | 01 | - | | | | | | |
| 7/16 - 14 UNC | H3 | 3 | 17084 | 01 | - | 3.157 | 0.858 | 1.291 | 0.322 | 0.242 | 0.405 |
| | | | 17085 | 01 | 08 | | | | | | |
| 7/16 - 20 UNF | H3 | 3 | 17086 | 01 | - | 3.157 | 0.858 | 1.291 | 0.322 | 0.242 | 0.405 |
| | | | 17087 | 01 | 08 | | | | | | |
| 1/2 - 13 UNC | H3 | 3 | 17088 | 01 | - | 3.374 | 0.921 | 1.354 | 0.367 | 0.274 | 0.437 |
| | | | 17089 | 01 | 08 | | | | | | |
| 1/2 - 20 UNF | H3 | 3 | 17090 | 01 | - | 3.374 | 0.921 | 1.354 | 0.367 | 0.274 | 0.437 |
| | | | 17172 | 01 | - | | | | | | |
| 9/16 - 18 UNF | H3 | 3 | 17173 | 01 | - | 3.594 | 1.000 | 1.472 | 0.429 | 0.322 | 0.500 |
| | | | 17174 | 01 | - | | | | | | |
| 5/8 - 11 UNC | H3 | 3 | 17175 | 01 | - | 3.811 | 1.090 | 1.562 | 0.480 | 0.359 | 0.562 |
| 5/8 - 18 UNF | H3 | 3 | 17176 | 01 | - | | | | | | |
| 3/4 - 10 UNC | H3 | 4 | 17725 | 01 | - | 4.252 | 1.200 | 1.712 | 0.590 | 0.442 | 0.688 |
| | | | 17177 | 01 | - | | | | | | |

Packed: 1 pc.
 EDP's listed above are stocked standard.
 Available in Steam Oxide or V coatings as shown above.





List 312Ni (Continued)



| | | |
|------|---|-----|
| VC10 | V | S/O |
|------|---|-----|

Ni-POT, Plug (4.5P-5.5P)

Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Plug (4.5P-5.5P) | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|--------------|--------------|---------------|------------------|----------------|---|----------------|---------------|-------------|------------|--------------|---------------|
| | | | EDP Number | Coating Suffix | | | | | | | |
| | | | | S/O | V | L | Lc | Ln | d | k | lk |
| 3/4 - 16 UNF | H3 | 4 | 17178 | 01 | - | 4.252 | 1.200 | 1.712 | 0.590 | 0.442 | 0.688 |
| | H5 | | 17179 | 01 | - | | | | | | |
| 7/8 - 9 UNC | H3 | | 17181 | 01 | - | 4.689 | 1.334 | 1.885 | 0.697 | 0.522 | 0.751 |
| | H5 | | 17182 | 01 | - | | | | | | |
| 7/8 - 14 UNF | H3 | | 17183 | 01 | - | | | | | | |
| | H5 | | 17184 | 01 | - | | | | | | |
| 1 - 8 UNC | H5 | | 17180 | 01 | - | 5.126 | 1.500 | 2.090 | 0.800 | 0.600 | 0.811 |

Packed: 1 pc.

EDP's listed above are stocked standard.

Available in Steam Oxide or V coatings as shown above.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|--|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 312Ni | 1010 | 1035 | 1065 | 4140 | | | | | | | | | | | | | | | |
| SFM | 1018 | 1045 | | 4340 | | | | | | | | | | | | | | | |

good best





EXOTAP® VC-10 Ni

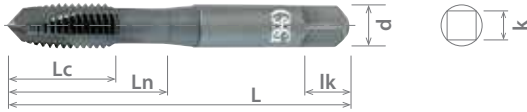
Taps Designed for Nickel Based Alloys

List 344Ni

Ni-POT, Plug (4.5P-5.5P)



| | | |
|------|---|-----|
| VC10 | V | S/O |
|------|---|-----|



Units: mm

| Tap Size | Thread Limit | No. of Flutes | Plug (4.5P-5.5P) | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | |
|-------------|--------------|---------------|------------------|----------------|----------------|---------------|-------------|------------|--------------|---------------|------|
| | | | EDP Number | Coating Suffix | | | | | | | |
| | | | | S/O | | | | | | | V |
| M2.5 x 0.45 | D3 | 2 | 11157100 | 01 | 08 | 46.00 | 12.00 | 13.70 | 3.58 | 2.79 | 4.80 |
| M3 x 0.5 | | | 11157101 | 01 | 08 | 49.20 | 16.00 | 23.10 | | | |
| M4 x 0.7 | D4 | 3 | 11157102 | 01 | 08 | 54.00 | 19.00 | 25.70 | 4.26 | 3.32 | 6.40 |
| M5 x 0.8 | | | 11157103 | 01 | 08 | 60.30 | 22.00 | - | | | |
| M6 x 1.0 | D5 | | 11157104 | 01 | 08 | 63.50 | 25.00 | 33.70 | 6.47 | 4.85 | 7.80 |
| M8 x 1.25 | | | 11157105 | 01 | 08 | 69.09 | 15.00 | 28.80 | 8.07 | 6.04 | 9.40 |
| M10 x 1.25 | D6 | 11157106 | 01 | 08 | 74.60 | 18.00 | 32.00 | 9.67 | 7.26 | 11.00 | |
| M10 x 1.5 | | 11157107 | 01 | 08 | | | | | | | |
| M12 x 1.75 | | 11157108 | 01 | 08 | 85.70 | 21.00 | | | | | 9.32 |

Packed: 1 pc.

EDP's listed above are stocked standard.

Available in Steam Oxide or V coatings as shown above.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|--------------------------|-----------|----------|------|-------------------------------------|--------------------------|--------------------------|--------------------------|---------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | 4140 | | 4340 | 300 | 400 | | 17-4 PH | 6061 | 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 344Ni | | | | | | | | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| SFM | | | | | | | | 8-20 | | | | 8-15 | 8-15 | 15-35 | 10-20 | | | |

good best



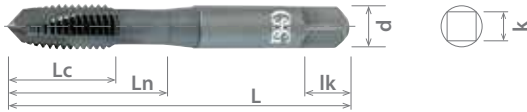


List 312

Plug (4.5P-5.5P)



| | | |
|------|---|-----|
| VC10 | V | S/O |
|------|---|-----|



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Plug (4.5P-5.5P) | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk |
|---------------|--------------|---------------|------------------|----------------|-------|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|
| | | | EDP Number | Coating Suffix | | | | | | | |
| | | | | S/O | V | | | | | | |
| 2 - 56 UNC | H2 | 2 | 17590 | 01 | 08 | 1.752 | 0.437 | 0.476 | 0.140 | 0.109 | 0.188 |
| 4 - 40 UNC | | | 17570 | 01 | 08 | 1.874 | 0.303 | 0.566 | | | |
| | 17591 | | 01 | 08 | | | | | | | |
| | 17592 | | 01 | 08 | | | | | | | |
| | 17593 | | 01 | 08 | | | | | | | |
| 5 - 40 UNC | H2 | | 17571 | 01 | 08 | 1.937 | 0.307 | 0.633 | | | |
| 6 - 32 UNC | H3 | 17594 | 01 | 08 | 2.000 | 0.377 | 0.692 | | | | |
| | H4 | 17572 | 01 | 08 | | | | | | | |
| | H5 | 17595 | 01 | 08 | | | | | | | |
| | H6 | 17596 | 01 | 08 | | | | | | | |
| | H6 | 17597 | 01 | 08 | | | | | | | |
| 8 - 32 UNC | H2 | 17598 | 01 | 08 | 2.126 | 0.381 | 0.759 | 0.167 | 0.131 | | |
| | H3 | 17573 | 01 | 08 | | | | | | | |
| | H4 | 17599 | 01 | 08 | | | | | | | |
| | H5 | 17600 | 01 | 08 | | | | | | | |
| | H6 | 17601 | 01 | 08 | | | | | | | |
| 10 - 24 UNC | H3 | 17574 | 01 | 08 | 2.374 | 0.500 | 0.874 | 0.194 | 0.151 | 0.251 | |
| | H5 | 17602 | 01 | 08 | | | | | | | |
| 10 - 32 UNF | H2 | 17603 | 01 | 08 | 2.500 | 0.602 | 1.003 | 0.255 | 0.190 | 0.311 | |
| | H3 | 17575 | 01 | 08 | | | | | | | |
| | H4 | 17604 | 01 | 08 | | | | | | | |
| | H5 | 17605 | 01 | 08 | | | | | | | |
| | H6 | 17606 | 01 | 08 | | | | | | | |
| 1/4 - 20 UNC | H3 | 17576 | 01 | 08 | 2.720 | 0.669 | 1.129 | 0.317 | 0.238 | 0.374 | |
| | H5 | 17002 | 01 | 08 | | | | | | | |
| 1/4 - 28 UNF | H3 | 17577 | 01 | 08 | 2.937 | 0.759 | 1.259 | 0.380 | 0.285 | 0.437 | |
| | H4 | 17003 | 01 | 08 | | | | | | | |
| | H5 | 17004 | 01 | 08 | | | | | | | |
| | H6 | 17005 | 01 | 08 | | | | | | | |
| 5/16 - 18 UNC | H3 | 17578 | 01 | 08 | 2.720 | 0.669 | 1.129 | 0.317 | 0.238 | 0.374 | |
| | H5 | 17006 | 01 | 08 | | | | | | | |
| 5/16 - 24 UNF | H3 | 17579 | 01 | 08 | 2.937 | 0.759 | 1.259 | 0.380 | 0.285 | 0.437 | |
| | H4 | 17007 | 01 | 08 | | | | | | | |
| | H5 | 17008 | 01 | 08 | | | | | | | |
| | H6 | 17009 | 01 | 08 | | | | | | | |
| 3/8 - 16 UNC | H3 | 17580 | 01 | 08 | 2.937 | 0.759 | 1.259 | 0.380 | 0.285 | 0.437 | |
| | H5 | 17010 | 01 | 08 | | | | | | | |

Packed: 1 pc.

EDP's listed above are stocked standard.

Available in Steam Oxide or V coatings as shown above.

continued on next page **EXT**

Work Material

| List No. | P | | | | | M | | | K Cast Iron | N | | S | | H | | | |
|----------|---------------------|----------------------|--------------|-------------------------------------|--------------------------|------------------|-------|--------------------------|----------------|----------------------------------|-------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | | Aluminum 6061 7075 Casting | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | | | | 6061 7075 | 8-15 | 8-15 | ~35 HRC | 35-45 HRC |
| 312 | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| SFM | | | | 15-30 | 10-25 | | 12-45 | 8-20 | | | | 8-15 | 8-15 | 15-35 | 10-20 | | |

good best

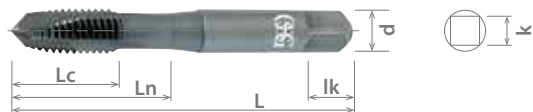




| | | |
|------|---|-----|
| VC10 | V | S/O |
|------|---|-----|

List 312 (Continued)

Plug (4.5P-5.5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Plug (4.5P-5.5P) | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk |
|---------------|--------------|---------------|------------------|----------------|-------|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|
| | | | EDP Number | Coating Suffix | | | | | | | |
| | | | | S/O | V | | | | | | |
| 3/8 - 24 UNF | H3 | 3 | 17581 | 01 | 08 | 2.937 | 0.759 | 1.259 | 0.380 | 0.285 | 0.437 |
| | H4 | | 17011 | 01 | 08 | | | | | | |
| | H5 | | 17012 | 01 | 08 | | | | | | |
| | H6 | | 17013 | 01 | 08 | | | | | | |
| 7/16 - 14 UNC | H3 | | 17582 | 01 | 08 | 3.157 | 0.893 | 1.291 | 0.322 | 0.242 | 0.405 |
| | H5 | | 17014 | 01 | 08 | | | | | | |
| 7/16 - 20 UNF | H3 | | 17583 | 01 | 08 | 3.374 | 0.960 | 1.354 | 0.367 | 0.274 | 0.437 |
| | H5 | | 17015 | 01 | 08 | | | | | | |
| 1/2 - 13 UNC | H3 | | 17584 | 01 | 08 | 3.811 | 1.137 | 1.562 | 0.480 | 0.359 | 0.562 |
| | H5 | | 17016 | 01 | 08 | | | | | | |
| 1/2 - 20 UNF | H3 | | 17585 | 01 | 08 | 4.252 | 1.251 | 1.712 | 0.590 | 0.442 | 0.688 |
| | H5 | | 17017 | 01 | 08 | | | | | | |
| 5/8 - 11 UNC | H3 | 17586 | 01 | 08 | 4.252 | 1.232 | 1.712 | 0.590 | 0.442 | 0.688 | |
| 5/8 - 18 UNF | H3 | 17587 | 01 | 08 | | | | | | | |
| | H5 | 17018 | 01 | 08 | | | | | | | |
| 3/4 - 10 UNC | H3 | 4 | 17588 | 01 | 08 | 4.252 | 1.251 | 1.712 | 0.590 | 0.442 | 0.688 |
| 3/4 - 16 UNF | | | 17589 | 01 | 08 | | | | | | |

Packed: 1 pc.

EDP's listed above are stocked standard.

Available in Steam Oxide or V coatings as shown above.



Work Material

| List No. | Work Material | | | | | | | | | | | | | | | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-------|---------|-----------|----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|--|--|
| | P | | | | | M | | | K | N | | S | | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 312 | 1010 | 1035 | 1045 | 1065 | 4140 | 4340 | | | | | | | | | | | | | |
| SFM | | | | | 15-30 | | 10-25 | | | | | | | | | | | | |

good best





List 344

Plug (4.5P-5.5P)



VC10

V

S/O



Units: mm

| Tap Size | Thread Limit | No. of Flutes | Plug (4.5P-5.5P) | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|------------------|----------------|----|----------------|---------------|-------------|------------|--------------|---------------|
| | | | EDP Number | Coating Suffix | | | | | | | |
| | | | | S/O | V | | | | | | |
| M3 x 0.5 | D3 | 3 | 17022 | 01 | 08 | 49.20 | 6.00 | 16.00 | 3.58 | 2.79 | 4.80 |
| M4 x 0.7 | D4 | | 17023 | 01 | 08 | 54.00 | 8.00 | 19.10 | 4.26 | 3.33 | 6.40 |
| M5 x 0.8 | | | 17024 | 01 | 08 | 60.30 | 9.00 | 22.20 | 4.92 | 3.86 | |
| M6 x 1.0 | D5 | | 17025 | 01 | 08 | 63.50 | 12.00 | 25.40 | 6.47 | 4.85 | 7.90 |
| M8 x 1.25 | | | 17026 | 01 | 08 | 69.10 | 15.00 | 28.60 | 8.07 | 6.05 | 9.50 |
| M10 x 1.5 | D6 | | 17028 | 01 | 08 | 74.60 | 17.00 | 31.70 | 9.67 | 7.26 | 11.10 |
| M10 x 1.25 | D5 | | 17027 | 01 | 08 | | | 31.60 | | | |
| M12 x 1.75 | D6 | | 17029 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | |

Packed: 1 pc.

EDP's listed above are stocked standard.

Available in Steam Oxide or V coatings as shown above.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|---------------|------|------|-------------------------------------|--------------------------|------------------|--------------------------|-------------------------------------|-----------|-----------|---------|--------------------------|--------------------------|-------------------------------------|--------------------------|-----------|-----------|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 344 | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |
| SFM | | | | 15-30 | 10-25 | | 12-45 | 8-20 | | | | 8-15 | 8-15 | 15-35 | 10-20 | | | |

good best





EXOTAP® VC-10 Oil

Coolant-Through Taps Designed for Difficult to Machine Materials



List 316

VPO-POT, Coolant-Through, DIN Overall Length, Plug (5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (5P) | L | Lc | Ln | d | k | lk |
| | | | V | L | Lc | Ln | d | k | lk |
| 1/4 - 20 UNC | H3 | 3 | 31601108 | 3.140 | 0.598 | 1.181 | 0.318 | 0.238 | 0.375 |
| | H5 | | 31601208 | | | | | | |
| 1/4 - 28 UNF | H3 | | 31601308 | | | | | | |
| | H4 | | 31601408 | | | | | | |
| 5/16 - 18 UNC | H3 | | 31601508 | 3.540 | 0.665 | 1.378 | 0.318 | 0.238 | 0.375 |
| | H5 | | 31601608 | | | | | | |
| H3 | 31601708 | | | | | | | | |
| 5/16 - 24 UNF | H3 | | 31601808 | | | | | | |
| | H4 | | 31601808 | | | | | | |
| 3/8 - 16 UNC | H3 | | 31601908 | 3.930 | 0.752 | 1.535 | 0.381 | 0.275 | 0.438 |
| | H5 | | 31602008 | | | | | | |
| 3/8 - 24 UNF | H3 | | 31602108 | 3.540 | 0.752 | 1.535 | 0.381 | 0.275 | 0.438 |
| | H4 | | 31602208 | | | | | | |
| 7/16 - 14 UNC | H3 | | 31602308 | 3.930 | 0.858 | 1.291 | 0.323 | 0.242 | 0.406 |
| | H5 | | 31602408 | | | | | | |
| H3 | 31602508 | | | | | | | | |
| 7/16 - 20 UNF | H3 | | 31602608 | | | | | | |
| | H5 | | 31602608 | | | | | | |
| 1/2 - 13 UNC | H3 | | 31602708 | 4.330 | 0.921 | 1.354 | 0.367 | 0.275 | 0.438 |
| | H5 | | 31602808 | | | | | | |
| 1/2 - 20 UNF | H3 | 31602908 | 3.930 | 1.000 | 1.472 | 0.429 | 0.322 | 0.500 | |
| | H5 | 31603008 | | | | | | | |
| 9/16 - 12 UNC | H3 | 31603108 | 4.330 | 1.000 | 1.472 | 0.429 | 0.322 | 0.500 | |
| | H5 | 31603208 | | | | | | | |
| 9/16 - 18 UNF | H3 | 31603308 | 3.930 | 1.091 | 1.563 | 0.480 | 0.360 | 0.563 | |
| | H5 | 31603408 | | | | | | | |
| 5/8 - 11 UNC | H3 | 31603508 | 4.330 | 1.091 | 1.563 | 0.480 | 0.360 | 0.563 | |
| | H5 | 31603608 | | | | | | | |
| 5/8 - 18 UNF | H3 | 31603708 | 3.930 | 1.201 | 1.713 | 0.590 | 0.442 | 0.688 | |
| | H5 | 31603808 | | | | | | | |
| 3/4 - 10 UNC | H3 | 31603908 | 4.920 | 1.201 | 1.713 | 0.590 | 0.442 | 0.688 | |
| | H5 | 31605008 | | | | | | | |
| 3/4 - 16 UNF | H3 | 31604008 | 4.330 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | |
| | H5 | 31604108 | | | | | | | |
| 7/8 - 9 UNC | H4 | 31604208 | 5.510 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | |
| | H6 | 31604308 | | | | | | | |
| 7/8 - 14 UNF | H4 | 31604408 | 4.920 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | |
| | H6 | 31604508 | | | | | | | |
| 1 - 8 UNC | H4 | 31604608 | 6.290 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | |
| | H6 | 31604708 | | | | | | | |
| 1 - 12 UNF | H4 | 31604808 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | |
| | H6 | 31604908 | | | | | | | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|---------------|------|------|-------------------------------------|--------------------------|------------------|-------|--------------------------|-----------|-----------|---------|--------------------------|-------------------------------------|--------------------------|-----------|-----------|-----------|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 316 | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | |
| SFM | | | | 15-30 | 10-25 | | 12-45 | 8-20 | | | | 8-15 | 8-15 | 15-35 | 10-20 | | | |

good best





List 350

VPO-POT, Coolant-Through, DIN Overall Length, Plug (5P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | |
|------------|--------------|---------------|------------|----------|--------------------|---------------|-------------|------------|--------------|---------------|----------|
| | | | Plug (5P) | V | | | | | | | |
| | | | L | Lc | Ln | d | k | lk | | | |
| M6 x 1.0 | D5 | 3 | 35000408 | 35000408 | 80.00 | 12.00 | 30.00 | 6.47 | 4.85 | 7.90 | |
| M8 x 1.0 | | | 35000508 | 35000508 | 90.00 | 15.00 | 35.00 | 8.07 | 6.04 | 9.50 | |
| M8 x 1.25 | | | 35000608 | 35000608 | | | | | | | |
| M10 x 1.25 | D6 | | 35000708 | 35000708 | 100.00 | 18.00 | 39.00 | 9.67 | 7.26 | 11.10 | |
| M10 x 1.5 | | | 35000808 | 35000808 | | | | | | | |
| M12 x 1.25 | | | D5 | 35000908 | | | | | | | 35000908 |
| M12 x 1.5 | D6 | | 35001008 | 35001008 | 110.00 | 21.00 | 32.00 | 9.32 | 6.98 | | |
| M12 x 1.75 | | | 35001108 | 35001108 | | | | | | | |
| M14 x 1.5 | | | 35001208 | 35001208 | | | | | | | |
| M14 x 2.0 | D7 | | 4 | 35001308 | 35001308 | 110.00 | 24.00 | 36.00 | 10.89 | 8.17 | 12.70 |
| M16 x 1.5 | D6 | | | 35001408 | 35001408 | | | | 100.00 | 12.19 | 9.14 |
| M16 x 2.0 | D7 | | | 35001508 | 35001508 | 110.00 | 30.00 | 43.00 | 13.76 | | |
| M18 x 1.5 | D6 | 35001608 | | 35001608 | 125.00 | | | | | 30.00 | 44.00 |
| M18 x 2.5 | D7 | 35001708 | | 35001708 | | 140.00 | 36.00 | 51.00 | 19.30 | | |
| M20 x 1.5 | D6 | 35001808 | | 35001808 | 125.00 | | | | | 30.00 | 44.00 |
| M20 x 2.5 | D7 | 35001908 | | 35001908 | | 140.00 | 36.00 | 51.00 | 19.30 | | |
| M22 x 1.5 | D6 | 35002008 | | 35002008 | 140.00 | | | | | 36.00 | 51.00 |
| M22 x 2.5 | D7 | 35002108 | | 35002108 | | 160.00 | 36.00 | 51.00 | 19.30 | | |
| M24 x 1.5 | D6 | 35002208 | | 35002208 | 160.00 | | | | | 36.00 | 51.00 |
| M24 x 3.0 | D8 | 35002308 | | 35002308 | | 160.00 | 36.00 | 51.00 | 19.30 | | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | | |
|----------|---------------|------|------|--------------|--------------------------|------------------|-------|---------|----------------|-----------|---------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 350 | | | | 4140 4340 | <input type="checkbox"/> | | | | | | | | | | | | | |
| SFM | | | | 15-30 | 10-25 | | 12-45 | 8-20 | | | | 8-15 | 8-15 | 15-35 | 10-20 | | | |

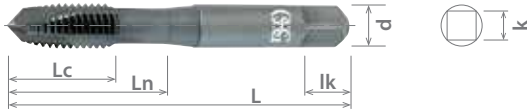
good best





List 300

Plug (3.5P-4.5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Plug (3.5P - 4.5P) | | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk |
|--------------|--------------|---------------|--------------------|----------------|-----|-------|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|
| | | | EDP Number | Coating Suffix | | | | | | | | |
| | | | | S/O | TiN | V | | | | | | |
| 2 - 56 UNC | H2 | 2 | 17346 | 01 | - | 08 | 1.752 | 0.437 | 0.476 | 0.140 | 0.109 | 0.188 |
| | H3 | | 17347 | 01 | - | 08 | | | | | | |
| | H4 | | 17255 | 01 | - | - | | | | | | |
| 3 - 48 UNC | H2 | | 17256 | 01 | - | - | 1.811 | 0.496 | 0.535 | | | |
| | | | 17300 | 01 | 05 | 08 | 1.874 | 0.303 | 0.566 | | | |
| 4 - 40 UNC | H3 | | 17348 | 01 | - | 08 | | | | | | |
| | H4 | | 17258 | 01 | - | - | | | | | | |
| | H5 | | 17349 | 01 | - | 08 | | | | | | |
| | H6 | | 17268 | 01 | - | - | | | | | | |
| 4 - 48 UNF | H2 | | 17269 | 01 | - | - | | | | | | |
| | | | 17270 | 01 | - | - | | | | | | |
| 5 - 40 UNC | H2 | | 17301 | 01 | - | 08 | 1.937 | 0.307 | 0.633 | | | |
| | | 17358 | 01 | - | 08 | 2.000 | 0.377 | 0.692 | | | | |
| 6 - 32 UNC | H3 | 17302 | 01 | - | 08 | | | | | | | |
| | | 17398 | 01 | 05 | 08 | | | | | | | |
| | | 17271 | 01 | - | - | | | | | | | |
| | | 17371 | 01 | - | 08 | | | | | | | |
| 6 - 40 UNF | H2 | 17273 | 01 | - | - | | | | 0.370 | 0.685 | | |
| | | 17274 | 01 | - | - | | | | | | | |
| 8 - 32 UNC | H2 | 17359 | 01 | - | 08 | 2.126 | 0.381 | 0.759 | 0.167 | 0.131 | | |
| | | 17303 | 01 | 05 | 08 | | | | | | | |
| | | 17275 | 01 | - | - | | | | | | | |
| | | 17372 | 01 | - | 08 | | | | | | | |
| | | 17276 | 01 | - | - | | | | | | | |
| 8 - 36 UNF | H2 | 17277 | 01 | - | - | 0.374 | 0.752 | | | | | |
| | | 17304 | 01 | 05 | 08 | 2.374 | 0.500 | 0.874 | 0.194 | 0.151 | | |
| 10 - 24 UNC | H3 | 17278 | 01 | - | - | | | | | | | |
| | | 17279 | 01 | - | - | | | | | | | |
| | | 17365 | 01 | - | 08 | | | | | | | |
| 10 - 32 UNF | H3 | 17305 | 01 | 05 | 08 | | | | | | | |
| | | 17764 | 01 | - | 08 | | | | | | | |
| | | 17373 | 01 | - | 08 | | | | | | | |
| | | 17280 | 01 | - | - | | | | | | | |
| | | 17281 | 01 | - | - | | | | | | | |
| | | 17282 | 01 | - | - | | | | | | | |
| 12 - 24 UNC | H3 | 17283 | 01 | - | - | 0.508 | 0.937 | 0.220 | 0.164 | 0.279 | | |
| 12 - 28 UNF | | 17283 | 01 | - | - | 0.503 | 0.940 | | | | | |
| 1/4 - 20 UNC | H2 | 17366 | 01 | - | 08 | 2.500 | 0.602 | 1.003 | 0.255 | 0.190 | 0.311 | |
| | | 17306 | 01 | 05 | 08 | | | | | | | |
| | | 17374 | 01 | - | 08 | | | | | | | |
| | | 17284 | 01 | - | - | | | | | | | |
| 1/4 - 28 UNF | H2 | 17367 | 01 | - | 08 | | | | | | | |
| | | 17307 | 01 | 05 | 08 | | | | | | | |
| | | 17368 | 01 | - | 08 | | | | | | | |
| | | 17285 | 01 | - | - | | | | | | | |
| | | 17286 | 01 | - | - | | | | | | | |
| | | 17287 | 01 | - | - | | | | | | | |

Packed: 1 pc.
 EDP's listed above are stocked standard.
 Available in Steam Oxide, TiN or V coatings as shown above.





List 300 (Continued)

Plug (3.5P-4.5P)



| | | | |
|------|---|-----|-----|
| HSSE | V | TiN | S/O |
|------|---|-----|-----|

Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Plug (3.5P - 4.5P) | | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk | | | | | | | | | | | | |
|---------------|--------------|---------------|--------------------|----------------|-----|-------|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | | EDP Number | Coating Suffix | | | | | | | | | | | | | | | | | | | | |
| | | | | S/O | TiN | V | | | | | | | | | | | | | | | | | | |
| 5/16 - 18 UNC | H3 | 3 | 17308 | 01 | 05 | 08 | 2.720 | 0.669 | 1.129 | 0.317 | 0.238 | 0.374 | | | | | | | | | | | | |
| | H5 | | 17383 | 01 | - | 08 | | | | | | | | | | | | | | | | | | |
| | H7 | | 17288 | 01 | - | - | | | | | | | | | | | | | | | | | | |
| 5/16 - 24 UNF | H3 | | 17309 | 01 | 05 | 08 | | | | | | | | | | | | | | | | | | |
| | H4 | | 17369 | 01 | - | 08 | | | | | | | | | | | | | | | | | | |
| | H5 | | 17289 | 01 | - | - | | | | | | | | | | | | | | | | | | |
| | H6 | | 17290 | 01 | - | - | | | | | | | | | | | | | | | | | | |
| 3/8 - 16 UNC | H3 | | 17310 | 01 | 05 | 08 | | | | | | | 2.937 | 0.759 | 1.259 | 0.380 | 0.285 | 0.437 | | | | | | |
| | H5 | | 17384 | 01 | - | 08 | | | | | | | | | | | | | | | | | | |
| | H7 | | 17292 | 01 | - | - | | | | | | | | | | | | | | | | | | |
| 3/8 - 24 UNF | H3 | | 17311 | 01 | 05 | 08 | | | | | | | | | | | | | | | | | | |
| | H4 | | 17370 | 01 | - | 08 | | | | | | | | | | | | | | | | | | |
| | H5 | | 17293 | 01 | - | - | | | | | | | | | | | | | | | | | | |
| | H7 | | 17294 | 01 | - | - | | | | | | | | | | | | | | | | | | |
| 7/16 - 14 UNC | H3 | | 17312 | 01 | 05 | 08 | | | | | | | | | | | | | 3.157 | 0.893 | 1.291 | 0.322 | 0.242 | 0.405 |
| | H5 | | 17385 | 01 | - | 08 | 0.881 | | | | | | | | | | | | | | | | | |
| 7/16 - 20 UNF | H3 | | 17313 | 01 | 05 | 08 | | | | | | | | | | | | | | | | | | |
| | H5 | | 17386 | 01 | - | 08 | | | | | | | | | | | | | | | | | | |
| 1/2 - 13 UNC | H3 | | 17314 | 01 | 05 | 08 | 3.374 | 0.960 | 1.354 | 0.367 | 0.274 | 0.437 | | | | | | | | | | | | |
| | H5 | | 17387 | 01 | - | 08 | | | | | | | | | | | | | | | | | | |
| | H7 | | 17295 | 01 | - | - | | | | | | | | | | | | | | | | | | |
| 1/2 - 20 UNF | H3 | | 17315 | 01 | 05 | 08 | | | | | | | | | | | | | | | | | | |
| | H5 | | 17388 | 01 | - | 08 | | | | | | | 0.944 | | | | | | | | | | | |
| 9/16 - 12 UNC | H3 | | 17250 | 01 | 05 | 08 | | | | | | | 3.594 | 1.043 | 1.472 | 0.429 | 0.322 | 0.500 | | | | | | |
| 9/16 - 18 UNF | | | 17251 | 01 | 05 | 08 | | | | | | | | | | | | | | 1.027 | | | | |
| 5/8 - 11 UNC | | | H5 | 17316 | 01 | 05 | | | | | | | | | | | | | | 08 | | | | |
| | H7 | | 17389 | 01 | - | 08 | | | | | | | 3.811 | 1.137 | 1.562 | 0.480 | 0.359 | 0.562 | | | | | | |
| | H3 | | 17317 | 01 | 05 | 08 | | | | | | | | | | | | | | | | | | |
| 5/8 - 18 UNF | H5 | | 17297 | 01 | - | - | | | | | | | | | | | | | | 1.118 | | | | |
| | H7 | | 17298 | 01 | - | - | | | | | | | | | | | | | | | | | | |
| | 3/4 - 10 UNC | H3 | 17318 | 01 | 05 | 08 | | | | | | | 4.252 | 1.251 | 1.712 | 0.590 | 0.442 | 0.688 | | | | | | |
| 17319 | | | 01 | 05 | 08 | 1.232 | | | | | | | | | | | | | | | | | | |
| 7/8 - 9 UNC | H4 | 17252 | 01 | 05 | 08 | 4.689 | | | | | | | 1.389 | 1.885 | 0.697 | 0.522 | 0.751 | | | | | | | |
| 7/8 - 14 UNF | | 17253 | 01 | 05 | 08 | | 1.370 | | | | | | | | | | | | | | | | | |
| 1 - 8 UNC | | 17254 | 01 | 05 | 08 | | 5.126 | 1.562 | | | | | | | | | | | | | | | | |
| 1 - 12 UNF | | 17299 | 01 | - | - | | | 1.543 | | | | | | | | | | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide, TiN or V coatings as shown above.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|--------------------------|--------------------------|--------------|------------|-------------------------------------|-------------------------------------|--------------------------|-----------|-----------|---------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 300 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | 20-45 | 20-45 | 8-20 | | | | | | | | | | |

good best





| | | | |
|------|---|-----|-----|
| HSSE | V | TiN | S/O |
|------|---|-----|-----|

List 342

Plug (3.5P-4.5P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | Plug (3.5P - 4.5P) | | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|--------------------|----------------|-----|----|----------------|---------------|-------------|------------|--------------|---------------|
| | | | EDP Number | Coating Suffix | | | | | | | | |
| | | | | S/O | TiN | V | | | | | | |
| M3 x 0.5 | D3 | 3 | 17501 | 01 | - | 08 | 49.20 | 6.00 | 16.00 | 3.58 | 2.79 | 4.80 |
| M3.5 x 0.6 | D4 | | 17729 | 01 | - | - | 50.80 | 7.00 | 17.50 | | | |
| M4 x 0.7 | | | 17504 | 01 | 05 | 08 | 54.00 | 8.00 | 19.10 | 4.26 | 3.33 | |
| M5 x 0.8 | | | 17507 | 01 | 05 | 08 | 60.30 | 9.00 | 22.20 | 4.92 | 3.86 | |
| M6 x 1.0 | D5 | | 17510 | 01 | 05 | 08 | 63.50 | 12.00 | 25.40 | 6.47 | 4.85 | 7.90 |
| M7 x 1.0 | | | 17734 | 01 | - | - | | | 28.70 | | | |
| M8 x 1.25 | | | 17513 | 01 | 05 | 08 | 69.10 | 15.00 | 28.60 | 8.07 | 6.05 | 9.50 |
| M8 x 1.0 | 17732 | | 01 | - | - | | | | | | | |
| M10 x 1.5 | D6 | | 17516 | 01 | 05 | 08 | 74.60 | 18.00 | 31.80 | 9.67 | 7.26 | 11.10 |
| M10 x 1.25 | D5 | | 17731 | 01 | - | - | | 17.00 | 31.70 | | | |
| M12 x 1.75 | D6 | | 17519 | 01 | 05 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | |
| M12 x 1.25 | D5 | | 17727 | 01 | - | - | | | | | | |
| M14 x 2.0 | D7 | | 17726 | 01 | - | - | 91.30 | 24.00 | 36.00 | 10.89 | 8.18 | 12.70 |
| M14 x 1.5 | D6 | | 17728 | 01 | - | - | | | | | | |
| M16 x 1.5 | | | 17730 | 01 | - | - | 96.80 | 12.19 | 9.14 | 14.30 | | |
| M16 x 2.0 | | | D7 | 17735 | 01 | - | | | | | - | |
| M18 x 1.5 | D6 | | 17733 | 01 | - | - | 102.40 | 30.00 | 43.00 | 13.76 | 10.31 | 15.90 |

Packed: 1 pc.

EDP's listed above are stocked standard.

Available in Steam Oxide, TiN or V coatings as shown above.



Work Material

| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|--------------------------|--------------------------|--------------|------------|-------------------------------------|-------------------------------------|--------------------------|-----------|-----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 342 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | 20-45 | 20-45 | 8-20 | | | | | | | | | | |

good best





List 306

OIL-V-POT, Coolant-Through, DIN Overall Length, Plug (4P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------|--------------|---------------|------------|--------------------|---------------|-------------|------------|--------------|---------------|---------------|----------|----------|-------|-------|-------|-------|-------|-------|----------|--------------|---------------|----------|----------|-------|-------|-------|-------|-------|-------|----------|--------------|---------------|----------|----------|-------|-------|-------|-------|-------|-------|----------|------------|---------------|----------|----------|-------|-------|-------|-------|-------|-------|----------|------------|---------------|----------|----------|-------|-------|-------|-------|-------|-------|----------|----------|---------------|----|----------|-------|-------|-------|-------|-------|-------|----|----------|---------------|----|----------|-------|-------|-------|-------|-------|-------|----|----------|---------------|----|----------|-------|-------|-------|-------|-------|-------|----|----------|---------------|----|----------|-------|-------|-------|-------|-------|-------|----|----------|---------------|----|----------|-------|-------|-------|-------|-------|-------|----|----------|---------------|----|----------|-------|-------|-------|-------|-------|-------|----|----------|--------------|----|----------|-------|-------|-------|-------|-------|-------|----|----------|--------------|----|----------|-------|-------|-------|-------|-------|-------|----|----------|--------------|----|----------|-------|-------|-------|-------|-------|-------|----|----------|--------------|----|----------|-------|-------|-------|-------|-------|-------|----|----------|--------------|----|----------|-------|-------|-------|-------|-------|-------|----|----------|--------------|----|----------|-------|-------|-------|-------|-------|-------|----|----------|------------|----|----------|-------|-------|-------|-------|-------|-------|----|----------|------------|----|----------|-------|
| | | | Plug (4P) | L | Lc | Ln | d | k | lk | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | V | L | Lc | Ln | d | k | lk | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1/4 - 20 UNC | H3 | 3 | 30601708 | 3.140 | 0.598 | 1.181 | 0.255 | 0.191 | 0.287 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H5 | | 30601808 | | | | | | | 1/4 - 28 UNF | H3 | 30601908 | 3.540 | 0.665 | 1.378 | 0.318 | 0.238 | 0.375 | H4 | 30602008 | 5/16 - 18 UNC | H3 | 30602108 | 3.930 | 0.752 | 1.535 | 0.381 | 0.286 | 0.438 | H5 | 30602208 | 5/16 - 24 UNF | H3 | 30602308 | 3.540 | 0.858 | 1.291 | 0.323 | 0.242 | 0.406 | H4 | 30602408 | 3/8 - 16 UNC | H3 | 30602508 | 4.330 | 0.921 | 1.354 | 0.367 | 0.275 | 0.438 | H5 | 30602608 | 3/8 - 24 UNF | H3 | 30602708 | 3.930 | 1.000 | 1.472 | 0.429 | 0.322 | 0.500 | H4 | 30602808 | 7/16 - 14 UNC | H3 | 30602908 | 4.330 | 1.091 | 1.563 | 0.480 | 0.360 | 0.563 | H5 | 30603008 | 7/16 - 20 UNF | H3 | 30603108 | 4.920 | 1.201 | 1.713 | 0.590 | 0.442 | 0.688 | H5 | 30603208 | 1/2 - 13 UNC | H3 | 30603308 | 4.330 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | H5 | 30603408 | 1/2 - 20 UNF | H3 | 30603508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30603608 | 9/16 - 12 UNC | H3 | 30603708 | 4.920 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | H5 | 30603808 | 9/16 - 18 UNF | H3 | 30603908 | 4.920 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | H5 | 30604008 | 5/8 - 11 UNC | H3 | 30604108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604208 | 5/8 - 18 UNF | H3 | 30604308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604408 | 3/4 - 10 UNC | H3 | 30604508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604608 | 3/4 - 16 UNF | H3 | 30604708 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604808 | 7/8 - 9 UNC | H4 | 30604908 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605008 | 7/8 - 14 UNF | H4 | 30605108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605208 | 1 - 8 UNC | H4 | 30605308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605408 | 1 - 12 UNF | H4 | 30605508 | 5.510 |
| 1/4 - 28 UNF | H3 | | 30601908 | 3.540 | 0.665 | 1.378 | 0.318 | 0.238 | 0.375 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H4 | | 30602008 | | | | | | | 5/16 - 18 UNC | H3 | 30602108 | 3.930 | 0.752 | 1.535 | 0.381 | 0.286 | 0.438 | H5 | 30602208 | 5/16 - 24 UNF | H3 | 30602308 | 3.540 | 0.858 | 1.291 | 0.323 | 0.242 | 0.406 | H4 | 30602408 | 3/8 - 16 UNC | H3 | 30602508 | 4.330 | 0.921 | 1.354 | 0.367 | 0.275 | 0.438 | H5 | 30602608 | 3/8 - 24 UNF | H3 | 30602708 | 3.930 | 1.000 | 1.472 | 0.429 | 0.322 | 0.500 | H4 | 30602808 | 7/16 - 14 UNC | H3 | 30602908 | 4.330 | 1.091 | 1.563 | 0.480 | 0.360 | 0.563 | H5 | 30603008 | 7/16 - 20 UNF | H3 | 30603108 | 4.920 | 1.201 | 1.713 | 0.590 | 0.442 | 0.688 | H5 | 30603208 | 1/2 - 13 UNC | H3 | 30603308 | 4.330 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | H5 | 30603408 | 1/2 - 20 UNF | H3 | 30603508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30603608 | 9/16 - 12 UNC | H3 | 30603708 | 4.920 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | H5 | 30603808 | 9/16 - 18 UNF | H3 | 30603908 | 4.920 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | H5 | 30604008 | 5/8 - 11 UNC | H3 | 30604108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604208 | 5/8 - 18 UNF | H3 | 30604308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604408 | 3/4 - 10 UNC | H3 | 30604508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604608 | 3/4 - 16 UNF | H3 | 30604708 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604808 | 7/8 - 9 UNC | H4 | 30604908 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605008 | 7/8 - 14 UNF | H4 | 30605108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605208 | 1 - 8 UNC | H4 | 30605308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605408 | 1 - 12 UNF | H4 | 30605508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605608 | | | | |
| 5/16 - 18 UNC | H3 | | 30602108 | 3.930 | 0.752 | 1.535 | 0.381 | 0.286 | 0.438 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H5 | | 30602208 | | | | | | | 5/16 - 24 UNF | H3 | 30602308 | 3.540 | 0.858 | 1.291 | 0.323 | 0.242 | 0.406 | H4 | 30602408 | 3/8 - 16 UNC | H3 | 30602508 | 4.330 | 0.921 | 1.354 | 0.367 | 0.275 | 0.438 | H5 | 30602608 | 3/8 - 24 UNF | H3 | 30602708 | 3.930 | 1.000 | 1.472 | 0.429 | 0.322 | 0.500 | H4 | 30602808 | 7/16 - 14 UNC | H3 | 30602908 | 4.330 | 1.091 | 1.563 | 0.480 | 0.360 | 0.563 | H5 | 30603008 | 7/16 - 20 UNF | H3 | 30603108 | 4.920 | 1.201 | 1.713 | 0.590 | 0.442 | 0.688 | H5 | 30603208 | 1/2 - 13 UNC | H3 | 30603308 | 4.330 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | H5 | 30603408 | 1/2 - 20 UNF | H3 | 30603508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30603608 | 9/16 - 12 UNC | H3 | 30603708 | 4.920 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | H5 | 30603808 | 9/16 - 18 UNF | H3 | 30603908 | 4.920 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | H5 | 30604008 | 5/8 - 11 UNC | H3 | 30604108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604208 | 5/8 - 18 UNF | H3 | 30604308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604408 | 3/4 - 10 UNC | H3 | 30604508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604608 | 3/4 - 16 UNF | H3 | 30604708 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604808 | 7/8 - 9 UNC | H4 | 30604908 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605008 | 7/8 - 14 UNF | H4 | 30605108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605208 | 1 - 8 UNC | H4 | 30605308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605408 | 1 - 12 UNF | H4 | 30605508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605608 | | | | | | | | | | | | | | | |
| 5/16 - 24 UNF | H3 | | 30602308 | 3.540 | 0.858 | 1.291 | 0.323 | 0.242 | 0.406 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H4 | | 30602408 | | | | | | | 3/8 - 16 UNC | H3 | 30602508 | 4.330 | 0.921 | 1.354 | 0.367 | 0.275 | 0.438 | H5 | 30602608 | 3/8 - 24 UNF | H3 | 30602708 | 3.930 | 1.000 | 1.472 | 0.429 | 0.322 | 0.500 | H4 | 30602808 | 7/16 - 14 UNC | H3 | 30602908 | 4.330 | 1.091 | 1.563 | 0.480 | 0.360 | 0.563 | H5 | 30603008 | 7/16 - 20 UNF | H3 | 30603108 | 4.920 | 1.201 | 1.713 | 0.590 | 0.442 | 0.688 | H5 | 30603208 | 1/2 - 13 UNC | H3 | 30603308 | 4.330 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | H5 | 30603408 | 1/2 - 20 UNF | H3 | 30603508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30603608 | 9/16 - 12 UNC | H3 | 30603708 | 4.920 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | H5 | 30603808 | 9/16 - 18 UNF | H3 | 30603908 | 4.920 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | H5 | 30604008 | 5/8 - 11 UNC | H3 | 30604108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604208 | 5/8 - 18 UNF | H3 | 30604308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604408 | 3/4 - 10 UNC | H3 | 30604508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604608 | 3/4 - 16 UNF | H3 | 30604708 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604808 | 7/8 - 9 UNC | H4 | 30604908 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605008 | 7/8 - 14 UNF | H4 | 30605108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605208 | 1 - 8 UNC | H4 | 30605308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605408 | 1 - 12 UNF | H4 | 30605508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605608 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3/8 - 16 UNC | H3 | | 30602508 | 4.330 | 0.921 | 1.354 | 0.367 | 0.275 | 0.438 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H5 | | 30602608 | | | | | | | 3/8 - 24 UNF | H3 | 30602708 | 3.930 | 1.000 | 1.472 | 0.429 | 0.322 | 0.500 | H4 | 30602808 | 7/16 - 14 UNC | H3 | 30602908 | 4.330 | 1.091 | 1.563 | 0.480 | 0.360 | 0.563 | H5 | 30603008 | 7/16 - 20 UNF | H3 | 30603108 | 4.920 | 1.201 | 1.713 | 0.590 | 0.442 | 0.688 | H5 | 30603208 | 1/2 - 13 UNC | H3 | 30603308 | 4.330 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | H5 | 30603408 | 1/2 - 20 UNF | H3 | 30603508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30603608 | 9/16 - 12 UNC | H3 | 30603708 | 4.920 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | H5 | 30603808 | 9/16 - 18 UNF | H3 | 30603908 | 4.920 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | H5 | 30604008 | 5/8 - 11 UNC | H3 | 30604108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604208 | 5/8 - 18 UNF | H3 | 30604308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604408 | 3/4 - 10 UNC | H3 | 30604508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604608 | 3/4 - 16 UNF | H3 | 30604708 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604808 | 7/8 - 9 UNC | H4 | 30604908 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605008 | 7/8 - 14 UNF | H4 | 30605108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605208 | 1 - 8 UNC | H4 | 30605308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605408 | 1 - 12 UNF | H4 | 30605508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605608 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3/8 - 24 UNF | H3 | | 30602708 | 3.930 | 1.000 | 1.472 | 0.429 | 0.322 | 0.500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H4 | | 30602808 | | | | | | | 7/16 - 14 UNC | H3 | 30602908 | 4.330 | 1.091 | 1.563 | 0.480 | 0.360 | 0.563 | H5 | 30603008 | 7/16 - 20 UNF | H3 | 30603108 | 4.920 | 1.201 | 1.713 | 0.590 | 0.442 | 0.688 | H5 | 30603208 | 1/2 - 13 UNC | H3 | 30603308 | 4.330 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | H5 | 30603408 | 1/2 - 20 UNF | H3 | 30603508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30603608 | 9/16 - 12 UNC | H3 | 30603708 | 4.920 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | H5 | 30603808 | 9/16 - 18 UNF | H3 | 30603908 | 4.920 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | H5 | 30604008 | 5/8 - 11 UNC | H3 | 30604108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604208 | 5/8 - 18 UNF | H3 | 30604308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604408 | 3/4 - 10 UNC | H3 | 30604508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604608 | 3/4 - 16 UNF | H3 | 30604708 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604808 | 7/8 - 9 UNC | H4 | 30604908 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605008 | 7/8 - 14 UNF | H4 | 30605108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605208 | 1 - 8 UNC | H4 | 30605308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605408 | 1 - 12 UNF | H4 | 30605508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605608 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7/16 - 14 UNC | H3 | | 30602908 | 4.330 | 1.091 | 1.563 | 0.480 | 0.360 | 0.563 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H5 | | 30603008 | | | | | | | 7/16 - 20 UNF | H3 | 30603108 | 4.920 | 1.201 | 1.713 | 0.590 | 0.442 | 0.688 | H5 | 30603208 | 1/2 - 13 UNC | H3 | 30603308 | 4.330 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | H5 | 30603408 | 1/2 - 20 UNF | H3 | 30603508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30603608 | 9/16 - 12 UNC | H3 | 30603708 | 4.920 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | H5 | 30603808 | 9/16 - 18 UNF | H3 | 30603908 | 4.920 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | H5 | 30604008 | 5/8 - 11 UNC | H3 | 30604108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604208 | 5/8 - 18 UNF | H3 | 30604308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604408 | 3/4 - 10 UNC | H3 | 30604508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604608 | 3/4 - 16 UNF | H3 | 30604708 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604808 | 7/8 - 9 UNC | H4 | 30604908 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605008 | 7/8 - 14 UNF | H4 | 30605108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605208 | 1 - 8 UNC | H4 | 30605308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605408 | 1 - 12 UNF | H4 | 30605508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605608 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7/16 - 20 UNF | H3 | | 30603108 | 4.920 | 1.201 | 1.713 | 0.590 | 0.442 | 0.688 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H5 | | 30603208 | | | | | | | 1/2 - 13 UNC | H3 | 30603308 | 4.330 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | H5 | 30603408 | 1/2 - 20 UNF | H3 | 30603508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30603608 | 9/16 - 12 UNC | H3 | 30603708 | 4.920 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | H5 | 30603808 | 9/16 - 18 UNF | H3 | 30603908 | 4.920 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | H5 | 30604008 | 5/8 - 11 UNC | H3 | 30604108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604208 | 5/8 - 18 UNF | H3 | 30604308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604408 | 3/4 - 10 UNC | H3 | 30604508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604608 | 3/4 - 16 UNF | H3 | 30604708 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604808 | 7/8 - 9 UNC | H4 | 30604908 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605008 | 7/8 - 14 UNF | H4 | 30605108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605208 | 1 - 8 UNC | H4 | 30605308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605408 | 1 - 12 UNF | H4 | 30605508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605608 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1/2 - 13 UNC | H3 | | 30603308 | 4.330 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H5 | | 30603408 | | | | | | | 1/2 - 20 UNF | H3 | 30603508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30603608 | 9/16 - 12 UNC | H3 | 30603708 | 4.920 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | H5 | 30603808 | 9/16 - 18 UNF | H3 | 30603908 | 4.920 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | H5 | 30604008 | 5/8 - 11 UNC | H3 | 30604108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604208 | 5/8 - 18 UNF | H3 | 30604308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604408 | 3/4 - 10 UNC | H3 | 30604508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604608 | 3/4 - 16 UNF | H3 | 30604708 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604808 | 7/8 - 9 UNC | H4 | 30604908 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605008 | 7/8 - 14 UNF | H4 | 30605108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605208 | 1 - 8 UNC | H4 | 30605308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605408 | 1 - 12 UNF | H4 | 30605508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605608 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1/2 - 20 UNF | H3 | | 30603508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H5 | | 30603608 | | | | | | | 9/16 - 12 UNC | H3 | 30603708 | 4.920 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | H5 | 30603808 | 9/16 - 18 UNF | H3 | 30603908 | 4.920 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | H5 | 30604008 | 5/8 - 11 UNC | H3 | 30604108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604208 | 5/8 - 18 UNF | H3 | 30604308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604408 | 3/4 - 10 UNC | H3 | 30604508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604608 | 3/4 - 16 UNF | H3 | 30604708 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604808 | 7/8 - 9 UNC | H4 | 30604908 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605008 | 7/8 - 14 UNF | H4 | 30605108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605208 | 1 - 8 UNC | H4 | 30605308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605408 | 1 - 12 UNF | H4 | 30605508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605608 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9/16 - 12 UNC | H3 | | 30603708 | 4.920 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H5 | | 30603808 | | | | | | | 9/16 - 18 UNF | H3 | 30603908 | 4.920 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | H5 | 30604008 | 5/8 - 11 UNC | H3 | 30604108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604208 | 5/8 - 18 UNF | H3 | 30604308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604408 | 3/4 - 10 UNC | H3 | 30604508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604608 | 3/4 - 16 UNF | H3 | 30604708 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604808 | 7/8 - 9 UNC | H4 | 30604908 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605008 | 7/8 - 14 UNF | H4 | 30605108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605208 | 1 - 8 UNC | H4 | 30605308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605408 | 1 - 12 UNF | H4 | 30605508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605608 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9/16 - 18 UNF | H3 | | 30603908 | 4.920 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H5 | | 30604008 | | | | | | | 5/8 - 11 UNC | H3 | 30604108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604208 | 5/8 - 18 UNF | H3 | 30604308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604408 | 3/4 - 10 UNC | H3 | 30604508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604608 | 3/4 - 16 UNF | H3 | 30604708 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604808 | 7/8 - 9 UNC | H4 | 30604908 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605008 | 7/8 - 14 UNF | H4 | 30605108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605208 | 1 - 8 UNC | H4 | 30605308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605408 | 1 - 12 UNF | H4 | 30605508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605608 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5/8 - 11 UNC | H3 | | 30604108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H5 | | 30604208 | | | | | | | 5/8 - 18 UNF | H3 | 30604308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604408 | 3/4 - 10 UNC | H3 | 30604508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604608 | 3/4 - 16 UNF | H3 | 30604708 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604808 | 7/8 - 9 UNC | H4 | 30604908 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605008 | 7/8 - 14 UNF | H4 | 30605108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605208 | 1 - 8 UNC | H4 | 30605308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605408 | 1 - 12 UNF | H4 | 30605508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605608 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5/8 - 18 UNF | H3 | | 30604308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H5 | | 30604408 | | | | | | | 3/4 - 10 UNC | H3 | 30604508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604608 | 3/4 - 16 UNF | H3 | 30604708 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604808 | 7/8 - 9 UNC | H4 | 30604908 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605008 | 7/8 - 14 UNF | H4 | 30605108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605208 | 1 - 8 UNC | H4 | 30605308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605408 | 1 - 12 UNF | H4 | 30605508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605608 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3/4 - 10 UNC | H3 | 30604508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H5 | 30604608 | | | | | | | 3/4 - 16 UNF | H3 | 30604708 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H5 | 30604808 | 7/8 - 9 UNC | H4 | 30604908 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605008 | 7/8 - 14 UNF | H4 | 30605108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605208 | 1 - 8 UNC | H4 | 30605308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605408 | 1 - 12 UNF | H4 | 30605508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605608 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3/4 - 16 UNF | H3 | 30604708 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H5 | 30604808 | | | | | | | 7/8 - 9 UNC | H4 | 30604908 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605008 | 7/8 - 14 UNF | H4 | 30605108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605208 | 1 - 8 UNC | H4 | 30605308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605408 | 1 - 12 UNF | H4 | 30605508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605608 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7/8 - 9 UNC | H4 | 30604908 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H6 | 30605008 | | | | | | | 7/8 - 14 UNF | H4 | 30605108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605208 | 1 - 8 UNC | H4 | 30605308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605408 | 1 - 12 UNF | H4 | 30605508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605608 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7/8 - 14 UNF | H4 | 30605108 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H6 | 30605208 | | | | | | | 1 - 8 UNC | H4 | 30605308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605408 | 1 - 12 UNF | H4 | 30605508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605608 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 - 8 UNC | H4 | 30605308 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H6 | 30605408 | | | | | | | 1 - 12 UNF | H4 | 30605508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | H6 | 30605608 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 - 12 UNF | H4 | 30605508 | 5.510 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H6 | 30605608 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|----------|-------------------------------------|--------------------------|--------------------------|--------------|------------|-------------------------------------|-------------------------------------|--------------------------|----------------|-----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 306 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | 20-45 | 20-45 | 8-20 | | | | | | | | | |

good best





EXOTAP VA-3® Oil

Coolant-Through Taps Designed for Stainless Steel

List 346

OIL-V-POT, Coolant-Through, DIN Overall Length, Plug (4P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (4P) | | | | | | |
| | | | V | | | | | | |
| M6 x 1.0 | D5 | 3 | 34600508 | 80.00 | 12.00 | 30.00 | 6.48 | 4.85 | 7.90 |
| M8 x 1.0 | | | 34600608 | 90.00 | 15.00 | 35.00 | 8.08 | 6.04 | 9.50 |
| M8 x 1.25 | | | 34600708 | | | | | | |
| M10 x 1.25 | D6 | | 34600808 | 100.00 | 18.00 | 39.00 | 9.68 | 7.26 | 11.10 |
| M10 x 1.5 | D5 | | 34600908 | | | | | | |
| M12 x 1.25 | 34601008 | | | | | | | | |
| M12 x 1.5 | D6 | | 34601108 | 110.00 | 21.00 | 32.00 | 9.32 | 6.98 | |
| M12 x 1.75 | | | 34601208 | | | | | | |
| M14 x 1.5 | D7 | | 34601308 | 100.00 | 24.00 | 36.00 | 10.90 | 8.18 | 12.70 |
| M14 x 2.0 | D6 | | 34601408 | 110.00 | | | 12.19 | 9.14 | 14.30 |
| M16 x 1.5 | D7 | | 34601508 | 100.00 | | | | | |
| M16 x 2.0 | D6 | | 34601608 | 110.00 | 30.00 | 43.00 | 13.77 | 10.31 | 15.90 |
| M18 x 1.5 | D7 | | 34601708 | | | | | | |
| M18 x 2.5 | D6 | | 34601808 | | | | | | |
| M20 x 1.5 | D7 | | 34601908 | 125.00 | 44.00 | 16.56 | 12.42 | 17.50 | |
| M20 x 2.5 | D6 | | 34602008 | | | | | | |
| M22 x 1.5 | D7 | | 34602108 | 125.00 | 36.00 | 51.00 | 19.30 | 14.48 | |
| M22 x 2.5 | D6 | | 34602208 | | | | | | |
| M24 x 1.5 | D7 | | 34602308 | 140.00 | | | | | |
| M24 x 3.0 | D8 | | 34602408 | 160.00 | | | | | |

Packed: 1 pc.
Available V coating only.



| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|--------------------------|--------------------------|--------------|------------|-------------------------------------|-------------------------------------|--------------------------|-----------|-----------|---------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 346 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | 20-45 | 20-45 | 8-20 | | | | | | | | | | |

good best



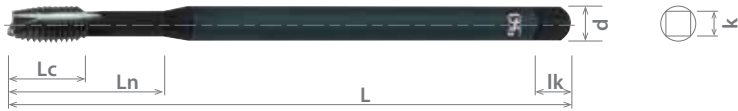


List 397

Long Shank, Plug (3.5P-4.5P)



HSSE S/O



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Long Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | |
|---------------|--------------|---------------|--------------------|-------|---------------------|---------------|-------------|------------|--------------|---------------|-------|
| | | | Plug (3.5P - 4.5P) | S/O | | | | | | | |
| | | | L | L | Lc | Ln | d | k | lk | | |
| 4 - 40 UNC | H2 | 2 | 1764001 | 4.000 | 0.295 | 0.839 | 0.141 | 0.110 | 0.188 | | |
| | | | 1766201 | 6.000 | | | | | | | |
| | | | 1764101 | 4.000 | | | | | | | |
| | | | 1764201 | 6.000 | | | | | | | |
| 6 - 32 UNC | | | 1764301 | 4.000 | 0.370 | 1.039 | 0.168 | 0.131 | | | |
| | | | 1764401 | 6.000 | | 1.028 | | | | | |
| 8 - 32 UNC | | | 1764501 | 4.000 | 0.492 | 1.303 | 0.194 | 0.152 | 0.250 | | |
| 10 - 24 UNC | | | 1764601 | 6.000 | | | | | | | |
| 10 - 32 UNF | | | 1764701 | 4.000 | 0.594 | 1.496 | 0.255 | 0.191 | 0.313 | | |
| 1/4 - 20 UNC | | | 1764801 | 6.000 | | | | | | | |
| 1/4 - 28 UNF | H3 | 3 | 1764901 | 4.000 | 0.665 | 1.689 | 0.318 | 0.238 | 0.375 | | |
| 5/16 - 18 UNC | | | | | | | | | | 1765001 | 6.000 |
| 5/16 - 24 UNF | | | | | | | | | | 1765101 | 6.000 |
| 3/8 - 16 UNC | | | | | | | | | | 1765201 | 6.000 |
| 3/8 - 24 UNF | | | | | | | | | | 1765701 | 6.000 |
| 7/16 - 14 UNC | | | | | | | | | | 1765301 | 6.000 |
| 7/16 - 20 UNF | | | | | | | | | | 1765801 | 6.000 |
| 1/2 - 13 UNC | | | | | | | | | | 1765401 | 6.000 |
| 1/2 - 20 UNF | | | | | | | | | | 1765901 | 6.000 |
| 5/8 - 11 UNC | | | | | | | | | | 1765501 | 6.000 |
| | | | 1766001 | 6.000 | 0.921 | 1.354 | 0.367 | 0.275 | 0.438 | | |
| | | | 1765601 | 6.000 | 1.091 | 1.563 | 0.480 | 0.360 | 0.563 | | |

Packed: 1 pc.
Available Steam Oxide finish only.
Note: Neck length is designed for reaching 50% deeper holes than ANSI standard taps.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|--------------------------|--------------------------|--------------|------------|-------------------------------------|-------------------------------------|--------------------------|---|-----------|----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 397 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | 20-45 | 20-45 | 8-20 | | | | | | | | | | |

good best





HSSE

TiN

List 320

Plug (3.5P-4.5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|--------------------|---------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (3.5P - 4.5P) | TiN | | | | | | |
| | | | L | Lc | L | Lc | Ln | d | k | lk |
| 4 - 40 UNC | H2 | 2 | 1740005 | 1.874 | 1.874 | 0.295 | 0.559 | 0.141 | 0.110 | 0.188 |
| 5 - 40 UNC | | | 1740105 | 1.937 | | | | | | |
| 6 - 32 UNC | H3 | | 1740205 | 2.000 | 0.370 | 0.685 | | | | |
| | H5 | | 1742005 | | | | | | | |
| 8 - 32 UNC | H3 | 3 | 1740305 | 2.126 | 2.126 | 0.374 | 0.752 | 0.168 | 0.131 | 0.250 |
| 10 - 24 UNC | | | 1740405 | | | | | | | |
| 10 - 32 UNF | H5 | | 1740505 | 2.374 | 0.492 | 0.866 | | | | |
| | H7 | | 1742205 | | | | | | | |
| | 1742305 | | | | | | | | | |
| 1/4 - 20 UNC | H3 | | 1740605 | 2.500 | 0.594 | 0.996 | | | | |
| 1/4 - 28 UNF | H5 | | 1740705 | | | | | | | |
| | H7 | | 1742405 | | | | | | | |
| | 1742505 | | | | | | | | | |
| 5/16 - 18 UNC | H3 | | 3 | 1740805 | 2.720 | 0.665 | 1.126 | 0.318 | 0.238 | 0.375 |
| 5/16 - 24 UNF | | | | 1740905 | | | | | | |
| 3/8 - 16 UNC | H5 | | | 1742605 | 2.937 | 0.740 | 1.240 | | | |
| | H7 | 1742705 | | | | | | | | |
| | 1741005 | | | | | | | | | |
| 3/8 - 24 UNF | H3 | 1741105 | | 3.157 | 0.858 | 1.291 | | | | |
| 7/16 - 14 UNC | H5 | 1741205 | | | | | | | | |
| | H7 | 1741305 | | | | | | | | |
| | 1741405 | | | | | | | | | |
| 7/16 - 20 UNF | H3 | 3 | | 1741505 | 3.374 | 0.921 | 1.354 | 0.367 | 0.275 | 0.438 |
| 1/2 - 13 UNC | | | 1741605 | | | | | | | |
| 1/2 - 20 UNF | | | 1741705 | 3.811 | 1.091 | 1.563 | | | | |
| 5/8 - 11 UNC | | | 1741805 | | | | | | | |
| 5/8 - 18 UNF | | | 1741905 | 4.252 | 1.201 | 1.713 | | | | |
| 3/4 - 10 UNC | | | 1741905 | | | | | | | |
| 3/4 - 16 UNF | | | | | | | | | | |

Packed: 1 pc.
Available TiN coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 320 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| SFM | 25-80 | 20-50 | 20-45 | 20-50 | 15-20 | 20-45 | 15-20 | 8-20 | 25-75 | 40-80 | 40-65 | | | 15-35 | | | |

good best





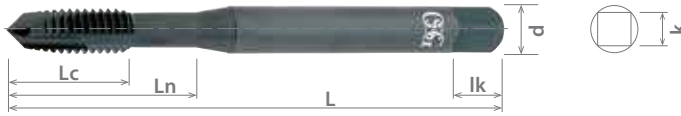
List 250

DIN Overall Length, Plug (3.5P-4.5P)



HSSE

S/O



Units: Inch

| Tap Size | Class of Fit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | |
|---------------|--------------|---------------|--------------------|--------------------|---------------|-------------|------------|--------------|---------------|-------|-------|
| | | | Plug (3.5P - 4.5P) | L | Lc | Ln | d | k | lk | | |
| 4 - 40 UNC | 2B | 2 | 2511401 | 2.205 | 0.295 | 0.705 | 0.141 | 0.110 | 0.188 | | |
| 6 - 32 UNC | | | 2512401 | | 0.370 | | | | | 0.783 | |
| 8 - 32 UNC | | 3 | 2517801 | 2.480 | 0.374 | 0.827 | 0.168 | 0.131 | 0.250 | | |
| 10 - 24 UNC | | | 2513401 | | 0.492 | | | | | 0.976 | |
| 10 - 32 UNF | | | 2518801 | | 0.984 | | | | | 0.194 | 0.152 |
| 1/4 - 20 UNC | | | 2530001 | | 3.150 | | | | | 0.594 | 1.177 |
| 1/4 - 28 UNF | | 2530401 | 1.189 | | | | | | | | |
| 5/16 - 18 UNC | | 3 | 2530801 | 3.543 | 0.665 | 1.378 | 0.318 | 0.238 | 0.375 | | |
| 5/16 - 24 UNF | | | 2531201 | | 0.657 | | | | | | |
| 3/8 - 16 UNC | | | 2531601 | 3.937 | 0.752 | 0.381 | 0.286 | 0.438 | | | |
| 3/8 - 24 UNF | | | 2531801 | | 0.740 | | | | | | |
| 7/16 - 14 UNC | | | 2532001 | 0.858 | 1.291 | 0.323 | 0.242 | 0.406 | | | |
| 7/16 - 20 UNF | | | 2532201 | | | | | | | | |
| 1/2 - 13 UNC | | | 2532401 | 4.331 | 0.921 | 1.354 | 0.367 | 0.275 | 0.438 | | |
| 1/2 - 20 UNF | | | 2532601 | 3.937 | | | | | | | |
| 5/8 - 11 UNC | | | 2533201 | 4.331 | 1.091 | 1.563 | 0.480 | 0.360 | 0.563 | | |
| 5/8 - 18 UNF | | | 2533401 | 3.937 | | | | | | | |
| 3/4 - 10 UNC | | 2533601 | 4.921 | 1.201 | 1.713 | 0.590 | 0.442 | 0.688 | | | |
| 3/4 - 16 UNF | | 2533801 | 4.331 | | | | | | | | |

Packed: 1 pc.
Available Steam Oxide finish only.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S Titanium | H | | | | |
|----------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|---------|---------------|--------------------------|-----------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | | Nickel Alloy | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 250 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | |
| SFM | 25-80 | 20-50 | 20-45 | 20-50 | 15-30 | 20-45 | 20-40 | 15-20 | 25-75 | | | | 15-35 | | | | |

good best





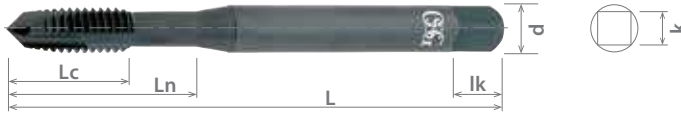
List 259



HSSE

S/O

DIN Overall Length, Plug (3.5P-4.5P)



Units: mm

| Tap Size | Class of Fit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|--------------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (3.5P - 4.5P) | L | Lc | Ln | d | k | lk |
| M3 x 0.5 | 6H | 3 | 2590401 | 56.00 | 6.00 | 18.00 | 3.58 | 2.79 | 4.80 |
| M4 x 0.7 | | | 2590601 | 63.00 | 8.40 | 21.00 | 4.27 | 3.33 | 6.40 |
| M5 x 0.8 | | | 2590801 | 70.00 | 9.60 | 25.00 | 4.93 | 3.86 | 7.90 |
| M6 x 1.0 | | | 2591001 | 80.00 | 12.00 | 30.00 | 6.48 | 4.85 | 9.50 |
| M8 x 1.25 | | | 2591401 | 90.00 | 15.00 | 35.00 | 8.08 | 6.05 | 11.10 |
| M10 x 1.5 | | | 2591801 | 100.00 | 18.00 | 39.00 | 9.68 | 7.26 | |
| M10 x 1.25 | | | 2591701 | | | | | | |
| M12 x 1.75 | | | 2592301 | 110.00 | 21.00 | 32.00 | 9.32 | 6.98 | |
| M12 x 1.5 | | | 2592201 | | | | | | |
| M12 x 1.25 | | | 2592101 | 100.00 | 24.00 | 36.00 | 10.90 | 8.18 | 12.70 |
| M14 x 2.0 | | | 2592601 | 110.00 | | | | | |
| M14 x 1.5 | | | 2592501 | 100.00 | 30.00 | 43.00 | 13.77 | 10.31 | 15.90 |
| M16 x 2.0 | | | 2592901 | 110.00 | | | | | |
| M16 x 1.5 | | | 2592801 | 100.00 | 44.00 | 16.56 | 12.42 | | |
| M18 x 2.5 | | | 2593201 | 125.00 | | | | | |
| M18 x 1.5 | | | 2593001 | 110.00 | | | | | |
| M20 x 2.5 | | | 2593601 | 140.00 | | | | | |
| M20 x 1.5 | | | 2593401 | 125.00 | | | | | |

Packed: 1 pc.

Available Steam Oxide finish only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|-----------|---------|--------------|--------------------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 259 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input type="checkbox"/> | | | | |
| SFM | 25-80 | 20-50 | 20-45 | 20-50 | 15-30 | 20-45 | 20-40 | 15-20 | 25-75 | | | | | 15-35 | | | |

good best





List 260

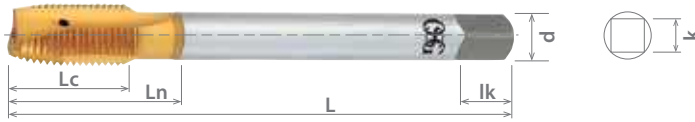


HSSE



TiN

OIL-TiN-POT, Coolant-Through, DIN Overall Length, Plug (3.5P-4.5P)



Units: Inch

| Tap Size | Class of Fit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | |
|---------------|--------------|---------------|--------------------|--------------------|---------------|-------------|------------|--------------|---------------|-------|
| | | | Plug (3.5P - 4.5P) | | | | | | | |
| | | | TiN | L | Lc | Ln | d | k | lk | |
| 1/4 - 20 UNC | 2B | 3 | 2630005 | 3.150 | 0.598 | 1.181 | 0.255 | 0.191 | 0.313 | |
| 1/4 - 28 UNF | | | 2630405 | | | | | | | |
| 5/16 - 18 UNC | | | 2630805 | 3.543 | 0.665 | 1.378 | 0.318 | 0.238 | 0.375 | |
| 5/16 - 24 UNF | | | 2631205 | | | | | | | |
| 3/8 - 16 UNC | | | 2631605 | 3.937 | 0.752 | 1.291 | 0.381 | 0.286 | 0.438 | |
| 3/8 - 24 UNF | | | 2631805 | | | | | | | |
| 7/16 - 14 UNC | | | 2632005 | | | | | | | |
| 7/16 - 20 UNF | | | 2632205 | 4.331 | 0.921 | 1.354 | 0.367 | 0.275 | 0.438 | |
| 1/2 - 13 UNC | | | 2632405 | | | | | | | |
| 1/2 - 20 UNF | | | 2632605 | 3.937 | 1.000 | 1.472 | 0.429 | 0.322 | 0.500 | |
| 9/16 - 18 UNF | | | 2633005 | | | | | | | |
| 5/8 - 11 UNC | | | 2633205 | 4.331 | 1.091 | 1.563 | 0.480 | 0.360 | 0.563 | |
| 5/8 - 18 UNF | | | 2633405 | | | | | | | |
| 3/4 - 10 UNC | | | 2633605 | 4.921 | 1.201 | 1.713 | 0.590 | 0.442 | 0.688 | |
| 3/4 - 16 UNF | | | 2633805 | | | | | | | |
| 7/8 - 9 UNC | | | 2634005 | 5.512 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | |
| 7/8 - 14 UNF | | | 2634205 | | | | | | | |
| 1 - 8 UNC | | | 4 | 2634405 | 6.299 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 |

Packed: 1 pc.
Available TiN coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------|--------------------------|-----------------|----------------|---------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 260 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | | | |
| SFM | 50-120 | 45-110 | 40-100 | 45-110 | 20-60 | 20-70 | 30-50 | 20-50 | 40-100 | 50-125 | 50-110 | | | 20-60 | | | |

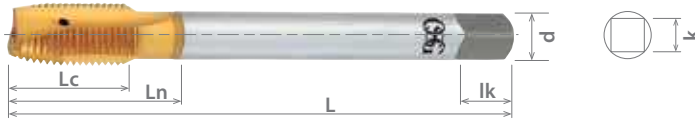
good best





List 269

OIL-TiN-POT, Coolant-Through, DIN Overall Length, Plug (3.5P-4.5P)



Units: mm

| Tap Size | Class of Fit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|--------------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (3.5P - 4.5P) | L | Lc | Ln | d | k | lk |
| M6 x 1.0 | 6H | 3 | 2691005 | 80.00 | 12.00 | 30.00 | 6.48 | 4.85 | 7.90 |
| M8 x 1.25 | | | 2691405 | 90.00 | 15.00 | 35.00 | 8.08 | 6.04 | 9.50 |
| M10 x 1.5 | | | 2691805 | 100.00 | 18.00 | 38.90 | 9.68 | 7.26 | 11.10 |
| M10 x 1.25 | | | 2691705 | | | | | | |
| M12 x 1.75 | | | 2692305 | 110.00 | 21.00 | 32.00 | 9.32 | 6.98 | |
| M12 x 1.5 | | | 2692205 | | | | | | |
| M12 x 1.25 | | | 2692105 | 100.00 | 24.00 | 35.90 | 10.90 | 8.17 | 12.70 |
| M14 x 2.0 | | | 2692605 | 110.00 | | | | | |
| M14 x 1.5 | | | 2692505 | 100.00 | 30.00 | 43.00 | 13.77 | 10.31 | 15.90 |
| M16 x 2.0 | | | 2692905 | 110.00 | | | | | |
| M16 x 1.5 | | | 2692805 | 100.00 | 43.90 | 16.56 | 12.42 | 17.50 | |
| M18 x 2.5 | | | 2693205 | 125.00 | | | | | |
| M18 x 1.5 | | | 2693005 | 110.00 | | | | | |
| M20 x 2.5 | | | 2693605 | 140.00 | | | | | |
| M20 x 1.5 | | | 2693405 | 125.00 | | | | | |

Packed: 1 pc.
Available TiN coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------|--------------------------|-----------------|----------------|---------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 269 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | | | |
| SFM | 50-120 | 45-110 | 40-100 | 45-110 | 20-60 | 20-70 | 30-50 | 20-50 | 40-100 | 50-125 | 50-110 | | 20-60 | | | | |

good best





List 11015



HSS-Co

TiN

Plug (4P-5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|--------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (4P-5P) | | | | | | |
| | | | TiN | L | Lc | Ln | d | k | lk |
| 4 - 40 UNC | H3 | 3 | 1101500105 | 1.875 | 0.382 | 0.693 | 0.141 | 0.110 | 0.188 |
| | H4 | | 1101505605 | | | | | | |
| | H5 | | 1101500205 | | | | | | |
| | H6 | | 1101500305 | | | | | | |
| | H7 | | 1101505705 | | | | | | |
| | H8 | | 1101515505 | | | | | | |
| 4 - 48 UNF | H3 | | 1101515605 | | | | | | |
| | H4 | | 1101515705 | | | | | | |
| | H5 | | 1101515805 | | | | | | |
| | H6 | | 1101515905 | | | | | | |
| | H7 | | 1101506505 | | | | | | |
| 6 - 32 UNC | H3 | 1101500405 | | | | | | | |
| | H4 | 1101505805 | | | | | | | |
| | H5 | 1101500505 | | | | | | | |
| | H6 | 1101500605 | | | | | | | |
| | H7 | 1101500705 | | | | | | | |
| | H8 | 1101500805 | | | | | | | |
| | H9 | 1101506705 | | | | | | | |
| | H10 | 1101506805 | | | | | | | |
| | H11 | 1101506905 | | | | | | | |
| | 6 - 40 UNF | H3 | 1101507005 | | | | | | |
| | | H4 | 1101507105 | | | | | | |
| H5 | | 1101507205 | | | | | | | |
| H6 | | 1101507305 | | | | | | | |
| H7 | | 1101507405 | | | | | | | |
| H8 | | 1101507505 | | | | | | | |
| H9 | | 1101507605 | | | | | | | |
| H10 | | 1101507705 | | | | | | | |
| H11 | | 1101507805 | | | | | | | |
| 8 - 32 UNC | | H3 | 1101500905 | | | | | | |
| | | H4 | 1101501005 | | | | | | |
| | H5 | 1101501105 | | | | | | | |
| | H6 | 1101501205 | | | | | | | |
| | H7 | 1101501305 | | | | | | | |
| | H8 | 1101501405 | | | | | | | |
| | H9 | 1101507905 | | | | | | | |
| | H10 | 1101508005 | | | | | | | |
| | H11 | 1101508105 | | | | | | | |

Packed: 1 pc.
Available TiN coating only.

continued on next page

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------|--------------|--------------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | 4140 4340 | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 11015 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| SFM | 25-80 | 20-50 | 20-45 | 20-50 | 15-30 | 20-45 | 20-45 | 15-20 | 25-75 | 40-80 | 40-65 | 8-15 | 8-15 | 15-35 | | | |

good best





HSS-Co

TiN

List 11015 (Continued)

Plug (4P-5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | | | | | | | |
|--------------|--------------|---------------|--------------|----------------|---------------|-------------|------------|--------------|---------------|---|------------|-------|-------|-------|-------|-------|-------|
| | | | Plug (4P-5P) | | | | | | | | | | | | | | |
| | | | TiN | L | Lc | Ln | d | k | lk | | | | | | | | |
| 8 - 36 UNF | H3 | 3 | 1101508205 | 2.125 | 0.437 | 0.878 | 0.168 | 0.131 | | | | | | | | | |
| | H4 | | 1101508305 | | | | | | | | | | | | | | |
| | H5 | | 1101508405 | | | | | | | | | | | | | | |
| | H6 | | 1101508505 | | | | | | | | | | | | | | |
| | H7 | | 1101508605 | | | | | | | | | | | | | | |
| | H8 | | 1101508705 | | | | | | | | | | | | | | |
| | H9 | | 1101508805 | | | | | | | | | | | | | | |
| | H10 | | 1101508905 | | | | | | | | | | | | | | |
| | H11 | | 1101509005 | | | | | | | | | | | | | | |
| | H3 | | 1101509105 | | | | | | | | | | | | | | |
| | H4 | | 1101509205 | | | | | | | | | | | | | | |
| 10 - 24 UNC | H5 | 3 | 1101509305 | 2.374 | 0.630 | 1.000 | 0.194 | 0.152 | 0.250 | | | | | | | | |
| | H6 | | 1101509405 | | | | | | | | | | | | | | |
| | H7 | | 1101509505 | | | | | | | | | | | | | | |
| | H8 | | 1101509605 | | | | | | | | | | | | | | |
| | H9 | | 1101509705 | | | | | | | | | | | | | | |
| | H10 | | 1101509805 | | | | | | | | | | | | | | |
| | H11 | | 1101509905 | | | | | | | | | | | | | | |
| | H3 | | 1101501505 | | | | | | | | | | | | | | |
| | H4 | | 1101501605 | | | | | | | | | | | | | | |
| | H5 | | 1101501705 | | | | | | | | | | | | | | |
| | H6 | | 1101501805 | | | | | | | | | | | | | | |
| 10 - 32 UNF | H7 | 3 | 1101501905 | 2.374 | 0.508 | 1.000 | 0.194 | 0.152 | 0.250 | | | | | | | | |
| | H8 | | 1101502005 | | | | | | | | | | | | | | |
| | H9 | | 1101502105 | | | | | | | | | | | | | | |
| | H10 | | 1101506005 | | | | | | | | | | | | | | |
| | H11 | | 1101506105 | | | | | | | | | | | | | | |
| | H12 | | 1101506205 | | | | | | | | | | | | | | |
| | H13 | | 1101516005 | | | | | | | | | | | | | | |
| | H3 | | 1101516105 | | | | | | | | | | | | | | |
| | H4 | | 1101516205 | | | | | | | | | | | | | | |
| | H5 | | 1101516305 | | | | | | | | | | | | | | |
| | H6 | | 1101516405 | | | | | | | | | | | | | | |
| | 12 - 28 UNC | | H7 | | | | | | | 3 | 1101516505 | 2.500 | 0.543 | 1.067 | 0.220 | 0.165 | 0.281 |
| | | | H8 | | | | | | | | 1101516605 | | | | | | |
| H9 | | 1101516705 | | | | | | | | | | | | | | | |
| H10 | | 1101516805 | | | | | | | | | | | | | | | |
| H11 | | 1101516905 | | | | | | | | | | | | | | | |
| H3 | | 1101510005 | | | | | | | | | | | | | | | |
| H4 | | 1101510105 | | | | | | | | | | | | | | | |
| 1/4 - 20 UNC | | H5 | 3 | 1101510205 | 2.500 | 0.752 | 1.122 | 0.255 | 0.191 | | 0.313 | | | | | | |
| | | H6 | | 1101510305 | | | | | | | | | | | | | |
| | | H7 | | 1101510405 | | | | | | | | | | | | | |
| | | H8 | | 1101510505 | | | | | | | | | | | | | |
| | H9 | 1101510605 | | | | | | | | | | | | | | | |
| | H10 | 1101510705 | | | | | | | | | | | | | | | |
| | H11 | 1101510805 | | | | | | | | | | | | | | | |

Packed: 1 pc.
Available TiN coating only.





List 11015 (Continued)



HSS-Co

TiN

Plug (4P-5P)

Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|----------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (4P - 5P) | | | | | | |
| | | | TiN | | | | | | |
| | | | L | Lc | Ln | d | k | lk | |
| 1/4 - 28 UNF | H3 | 3 | 1101502205 | 2.500 | 0.563 | 1.114 | 0.255 | 0.191 | 0.313 |
| | H4 | | 1101505505 | | | | | | |
| | H5 | | 1101502305 | | | | | | |
| | H6 | | 1101502405 | | | | | | |
| | H7 | | 1101502505 | | | | | | |
| | H8 | | 1101502605 | | | | | | |
| | H9 | | 1101502705 | | | | | | |
| | H10 | | 1101502805 | | | | | | |
| | H11 | | 1101506305 | | | | | | |
| | H12 | | 1101506405 | | | | | | |
| | H3 | | 1101510905 | | | | | | |
| | H4 | | 1101511005 | | | | | | |
| H5 | 1101511105 | | | | | | | | |
| H6 | 1101511205 | | | | | | | | |
| H7 | 1101511305 | | | | | | | | |
| H8 | 1101511405 | | | | | | | | |
| H9 | 1101511505 | | | | | | | | |
| H10 | 1101511605 | | | | | | | | |
| H11 | 1101511705 | | | | | | | | |
| 5/16 - 18 UNC | H3 | 3 | 1101502905 | 2.719 | 0.689 | 1.283 | 0.318 | 0.238 | 0.375 |
| | H4 | | 1101505905 | | | | | | |
| | H5 | | 1101503005 | | | | | | |
| | H6 | | 1101503105 | | | | | | |
| | H7 | | 1101503205 | | | | | | |
| | H8 | | 1101503305 | | | | | | |
| | H9 | | 1101503405 | | | | | | |
| | H10 | | 1101503505 | | | | | | |
| | H11 | | 1101511805 | | | | | | |
| | H3 | | 1101511905 | | | | | | |
| | H4 | | 1101512005 | | | | | | |
| | H5 | | 1101512105 | | | | | | |
| H6 | 1101512205 | | | | | | | | |
| H7 | 1101512305 | | | | | | | | |
| H8 | 1101512405 | | | | | | | | |
| H9 | 1101512505 | | | | | | | | |
| H10 | 1101512605 | | | | | | | | |
| H11 | 1101512705 | | | | | | | | |
| H12 | 1101512805 | | | | | | | | |
| 3/8 - 16 UNC | H3 | 3 | 1101503605 | 2.938 | 0.831 | 1.417 | 0.381 | 0.286 | 0.438 |
| | H4 | | 1101512905 | | | | | | |
| | H5 | | 1101503705 | | | | | | |
| | H6 | | 1101503805 | | | | | | |
| | H7 | | 1101503905 | | | | | | |
| | H8 | | 1101504005 | | | | | | |
| | H9 | | 1101504105 | | | | | | |
| | H10 | | 1101504205 | | | | | | |
| | H11 | | 1101513005 | | | | | | |
| | H3 | | 1101503605 | | | | | | |
| | H4 | | 1101512905 | | | | | | |
| | H5 | | 1101503705 | | | | | | |
| H6 | 1101503805 | | | | | | | | |
| H7 | 1101503905 | | | | | | | | |
| H8 | 1101504005 | | | | | | | | |
| H9 | 1101504105 | | | | | | | | |
| H10 | 1101504205 | | | | | | | | |
| H11 | 1101513005 | | | | | | | | |

Packed: 1 pc.
Available TiN coating only.

continued on next page

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 11015 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| SFM | 25-80 | 20-50 | 20-45 | 20-50 | 15-30 | 20-45 | 20-45 | 15-20 | 25-75 | 40-80 | 40-65 | 8-15 | 8-15 | 15-35 | | | |

good best





List 11015 (Continued)



HSS-Co

TiN

Plug (4P-5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | | | | | | | |
|---------------|---------------|---------------|--------------|----------------|---------------|-------------|------------|--------------|---------------|---|------------|-------|-------|-------|-------|-------|-------|
| | | | Plug (4P-5P) | | | | | | | | | | | | | | |
| | | | TiN | L | Lc | Ln | d | k | lk | | | | | | | | |
| 7/16 - 14 UNC | H3 | 3 | 1101513105 | 3.157 | 1.098 | 1.496 | 0.323 | 0.242 | 0.406 | | | | | | | | |
| | H4 | | 1101513205 | | | | | | | | | | | | | | |
| | H5 | | 1101513305 | | | | | | | | | | | | | | |
| | H6 | | 1101513405 | | | | | | | | | | | | | | |
| | H7 | | 1101513505 | | | | | | | | | | | | | | |
| | H8 | | 1101513605 | | | | | | | | | | | | | | |
| | H9 | | 1101513705 | | | | | | | | | | | | | | |
| | H10 | | 1101513805 | | | | | | | | | | | | | | |
| | H11 | | 1101513905 | | | | | | | | | | | | | | |
| | H3 | | 1101504305 | | | | | | | | | | | | | | |
| | H4 | | 1101514005 | | | | | | | | | | | | | | |
| 7/16 - 20 UNF | H5 | 3 | 1101504405 | 3.157 | 0.799 | 1.417 | 0.323 | 0.242 | 0.406 | | | | | | | | |
| | H6 | | 1101504505 | | | | | | | | | | | | | | |
| | H7 | | 1101504605 | | | | | | | | | | | | | | |
| | H8 | | 1101504705 | | | | | | | | | | | | | | |
| | H9 | | 1101504805 | | | | | | | | | | | | | | |
| | H10 | | 1101514105 | | | | | | | | | | | | | | |
| | H11 | | 1101514205 | | | | | | | | | | | | | | |
| | H3 | | 1101514305 | | | | | | | | | | | | | | |
| | H4 | | 1101514405 | | | | | | | | | | | | | | |
| | H5 | | 1101514505 | | | | | | | | | | | | | | |
| | H6 | | 1101514605 | | | | | | | | | | | | | | |
| 1/2 - 13 UNC | H7 | 3 | 1101514705 | 3.375 | 1.197 | 1.591 | 0.367 | 0.275 | 0.438 | | | | | | | | |
| | H8 | | 1101514805 | | | | | | | | | | | | | | |
| | H9 | | 1101514905 | | | | | | | | | | | | | | |
| | H10 | | 1101515005 | | | | | | | | | | | | | | |
| | H11 | | 1101515105 | | | | | | | | | | | | | | |
| | H3 | | 1101504905 | | | | | | | | | | | | | | |
| | H4 | | 1101515205 | | | | | | | | | | | | | | |
| | H5 | | 1101505005 | | | | | | | | | | | | | | |
| | H6 | | 1101505105 | | | | | | | | | | | | | | |
| | H7 | | 1101505205 | | | | | | | | | | | | | | |
| | H8 | | 1101505305 | | | | | | | | | | | | | | |
| 1/2 - 20 UNF | H9 | 3 | 1101505405 | 3.375 | 0.799 | 1.480 | 0.367 | 0.275 | 0.438 | | | | | | | | |
| | H10 | | 1101515305 | | | | | | | | | | | | | | |
| | H11 | | 1101515405 | | | | | | | | | | | | | | |
| | H3 | | 1101517005 | | | | | | | | | | | | | | |
| | 9/16 - 18 UNF | | H5 | | | | | | | 4 | 1101517105 | 3.594 | 0.862 | 1.307 | 0.429 | 0.322 | 0.500 |
| | | | H6 | | | | | | | | 1101517205 | | | | | | |
| | | | H7 | | | | | | | | 1101517305 | | | | | | |
| | | | H8 | | | | | | | | 1101517405 | | | | | | |
| | | | H9 | | | | | | | | 1101517505 | | | | | | |
| | | | H3 | | | | | | | | 1101517605 | | | | | | |
| | 5/8 - 11 UNC | | H5 | | | | | | | 4 | 1101517705 | 3.813 | 1.406 | 1.835 | 0.480 | 0.360 | 0.563 |
| H5 | | 1101517705 | | | | | | | | | | | | | | | |

Packed: 1 pc.
Available TiN coating only.





List 11015 (Continued)



HSS-Co

TiN

Plug (4P-5P)

Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|--------------|--------------|---------------|--------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (4P-5P) | | | | | | |
| | | | TiN | | | | | | |
| | | | L | Lc | Ln | d | k | lk | |
| 5/8 - 18 UNF | H3 | 4 | 1101517805 | 3.813 | 0.862 | 1.307 | 0.480 | 0.360 | 0.563 |
| | H5 | | 1101517905 | | | | | | |
| | H6 | | 1101518005 | | | | | | |
| | H7 | | 1101518105 | | | | | | |
| | H8 | | 1101518205 | | | | | | |
| | H9 | | 1101518305 | | | | | | |
| | H10 | | 1101518405 | | | | | | |
| | H11 | | 1101518505 | | | | | | |
| H3 | 1101518605 | | | | | | | | |
| H5 | 1101518705 | | | | | | | | |
| 3/4 - 10 UNC | H3 | | 5 | | | | | | |
| | H5 | 1101518905 | | | | | | | |
| H6 | 1101519005 | | | | | | | | |
| H7 | 1101519105 | | | | | | | | |
| H8 | 1101519205 | | | | | | | | |
| H9 | 1101519305 | | | | | | | | |
| H10 | 1101519405 | | | | | | | | |
| H11 | 1101519505 | | | | | | | | |
| H3 | 1101519605 | | | | | | | | |
| H5 | 1101519705 | | | | | | | | |
| H7 | 1101519805 | | | | | | | | |
| 7/8 - 9 UNC | H6 | 5 | 1101519905 | 4.688 | 1.106 | 1.622 | 0.697 | 0.523 | 0.750 |
| | H7 | | 1101520005 | | | | | | |
| H8 | 1101520105 | | | | | | | | |
| H9 | 1101520205 | | | | | | | | |
| H10 | 1101520305 | | | | | | | | |
| H11 | 1101520405 | | | | | | | | |
| H12 | 1101520505 | | | | | | | | |
| H6 | 1101520605 | | | | | | | | |
| H7 | 1101520705 | | | | | | | | |
| H8 | 1101520805 | | | | | | | | |
| H9 | 1101520905 | | | | | | | | |
| H10 | 1101521005 | | | | | | | | |
| 7/8 - 14 UNF | H6 | 5 | 1101521005 | 5.125 | 1.291 | 1.843 | 0.800 | 0.600 | 0.813 |
| | H7 | | 1101520405 | | | | | | |
| H8 | 1101520505 | | | | | | | | |
| H9 | 1101520605 | | | | | | | | |
| H10 | 1101520705 | | | | | | | | |
| H11 | 1101520805 | | | | | | | | |
| H12 | 1101520905 | | | | | | | | |
| H6 | 1101521005 | | | | | | | | |
| H7 | 1101520405 | | | | | | | | |
| H8 | 1101520505 | | | | | | | | |
| H9 | 1101520605 | | | | | | | | |
| H10 | 1101520705 | | | | | | | | |
| H11 | 1101520805 | | | | | | | | |
| H12 | 1101520905 | | | | | | | | |

Packed: 1 pc.
Available TiN coating only.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|-----------|-----------|--|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 11015 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| SFM | 25-80 | 20-50 | 20-45 | 20-50 | 15-30 | 20-45 | 20-45 | 15-20 | 25-75 | 40-80 | 40-65 | 8-15 | 8-15 | 15-35 | | | | |

good best





HSS-Co

TiN

List 11115

Plug (4P-5P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | | | | | | | |
|-----------|--------------|---------------|----------------|----------------|---------------|-------------|------------|--------------|---------------|---|------------|-------|-------|-------|------|------|------|
| | | | Plug (4P - 5P) | | | | | | | | | | | | | | |
| | | | TiN | | | | | | | | | | | | | | |
| | | | | L | Lc | Ln | d | k | lk | | | | | | | | |
| M3 x 0.5 | H3 | 3 | 1111500105 | 49.20 | 9.60 | 19.20 | 3.58 | 2.79 | 4.80 | | | | | | | | |
| | H5 | | 1111500205 | | | | | | | | | | | | | | |
| | H4 | | 1111500905 | | | | | | | | | | | | | | |
| | H6 | | 1111501005 | | | | | | | | | | | | | | |
| | H7 | | 1111501105 | | | | | | | | | | | | | | |
| | H8 | | 1111501205 | | | | | | | | | | | | | | |
| | H9 | | 1111501305 | | | | | | | | | | | | | | |
| | H10 | | 1111501405 | | | | | | | | | | | | | | |
| | H11 | | 1111501505 | | | | | | | | | | | | | | |
| | M4 x 0.7 | | H4 | | | | | | | 3 | 1111500305 | 54.00 | 11.10 | 20.60 | 4.27 | 3.33 | 6.40 |
| | | | H5 | | | | | | | | 1111500405 | | | | | | |
| H6 | | 1111501605 | | | | | | | | | | | | | | | |
| H7 | | 1111501705 | | | | | | | | | | | | | | | |
| H8 | | 1111501805 | | | | | | | | | | | | | | | |
| H9 | | 1111501905 | | | | | | | | | | | | | | | |
| H10 | | 1111502005 | | | | | | | | | | | | | | | |
| H11 | 1111502105 | | | | | | | | | | | | | | | | |
| M5 x 0.8 | H4 | 3 | 1111500505 | 60.30 | 12.70 | 25.40 | 4.93 | 3.86 | 6.40 | | | | | | | | |
| | H5 | | 1111500605 | | | | | | | | | | | | | | |
| | H6 | | 1111502205 | | | | | | | | | | | | | | |
| | H7 | | 1111502305 | | | | | | | | | | | | | | |
| | H8 | | 1111502405 | | | | | | | | | | | | | | |
| | H9 | | 1111502505 | | | | | | | | | | | | | | |
| | H10 | | 1111502605 | | | | | | | | | | | | | | |
| H11 | 1111502705 | | | | | | | | | | | | | | | | |
| M6 x 1.0 | H5 | 3 | 1111500705 | 63.50 | 14.30 | 28.60 | 6.48 | 4.85 | 7.90 | | | | | | | | |
| | H6 | | 1111502805 | | | | | | | | | | | | | | |
| | H7 | | 1111502905 | | | | | | | | | | | | | | |
| | H8 | | 1111503005 | | | | | | | | | | | | | | |
| | H9 | | 1111503105 | | | | | | | | | | | | | | |
| | H10 | | 1111503205 | | | | | | | | | | | | | | |
| | H11 | | 1111503305 | | | | | | | | | | | | | | |
| H12 | 1111503405 | | | | | | | | | | | | | | | | |
| M8 x 1.25 | H5 | 3 | 1111500805 | 69.00 | 17.60 | 31.90 | 8.08 | 6.05 | 9.50 | | | | | | | | |
| | H6 | | 1111503505 | | | | | | | | | | | | | | |
| | H7 | | 1111503605 | | | | | | | | | | | | | | |
| | H8 | | 1111503705 | | | | | | | | | | | | | | |
| | H9 | | 1111503805 | | | | | | | | | | | | | | |
| | H10 | | 1111503905 | | | | | | | | | | | | | | |
| | H11 | | 1111504005 | | | | | | | | | | | | | | |
| H12 | 1111504105 | | | | | | | | | | | | | | | | |
| M8 x 1.0 | H5 | 3 | 1111507005 | 69.00 | 15.00 | 29.50 | 8.08 | 6.05 | 9.50 | | | | | | | | |
| | H6 | | 1111507105 | | | | | | | | | | | | | | |
| | H7 | | 1111507205 | | | | | | | | | | | | | | |
| | H8 | | 1111507305 | | | | | | | | | | | | | | |
| | H9 | | 1111507405 | | | | | | | | | | | | | | |
| | H10 | | 1111507505 | | | | | | | | | | | | | | |
| H11 | 1111507605 | | | | | | | | | | | | | | | | |

Packed: 1 pc.

Available TiN coating only.

Note: List 11115 metric taps are manufactured to H-limits rather than D-limits.





List 11115 (Continued)



HSS-Co

TiN

Plug (4P-5P)

Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | | | | |
|------------|--------------|---------------|----------------|----------------|---------------|-------------|------------|--------------|---------------|-------|--|--|--|--|
| | | | Plug (4P - 5P) | | | | | | | | | | | |
| | | | TiN | | | | | | | | | | | |
| | | | | L | Lc | Ln | d | k | lk | | | | | |
| M10 x 1.5 | H5 | 3 | 1111504905 | 74.60 | 22.20 | 35.00 | 9.68 | 7.26 | 11.10 | | | | | |
| | H6 | | 1111505005 | | | | | | | | | | | |
| | H7 | | 1111505105 | | | | | | | | | | | |
| | H8 | | 1111505205 | | | | | | | | | | | |
| | H9 | | 1111505305 | | | | | | | | | | | |
| | H10 | | 1111505405 | | | | | | | | | | | |
| | H11 | | 1111505505 | | | | | | | | | | | |
| H12 | 1111505605 | | | | | | | | | | | | | |
| M10 x 1.25 | H5 | | | | 1111504205 | 19.10 | | | | 34.80 | | | | |
| | H6 | | 1111504305 | | | | | | | | | | | |
| | H7 | | 1111504405 | | | | | | | | | | | |
| | H8 | 1111504505 | | | | | | | | | | | | |
| | H9 | 1111504605 | | | | | | | | | | | | |
| | H10 | 1111504705 | | | | | | | | | | | | |
| | H11 | 1111504805 | | | | | | | | | | | | |
| M12 x 1.75 | H6 | | 1111507705 | 26.30 | 37.30 | | | | | | | | | |
| | H7 | 1111507805 | | | | | | | | | | | | |
| | H8 | 1111507905 | | | | | | | | | | | | |
| | H9 | 1111508005 | | | | | | | | | | | | |
| | H10 | 1111508105 | | | | | | | | | | | | |
| | H11 | 1111508205 | | | | | | | | | | | | |
| | H6 | 1111506405 | | | | | | | | | | | | |
| M12 x 1.5 | H7 | | 1111506505 | 85.70 | 22.20 | 35.00 | 9.32 | 6.98 | | | | | | |
| | H8 | 1111506605 | | | | | | | | | | | | |
| | H9 | 1111506705 | | | | | | | | | | | | |
| | H10 | 1111506805 | | | | | | | | | | | | |
| | H11 | 1111506905 | | | | | | | | | | | | |
| | H5 | 1111505705 | | | | | | | | | | | | |
| | H6 | 1111505805 | | | | | | | | | | | | |
| M12 x 1.25 | H7 | | 1111505905 | 19.10 | | | | | | | | | | |
| | H8 | 1111506005 | | | | | | | | | | | | |
| | H9 | 1111506105 | | | | | | | | | | | | |
| | H10 | 1111506205 | | | | | | | | | | | | |
| | H11 | 1111506305 | | | | | | | | | | | | |
| | H6 | 1111508305 | | | | | | | | | | | | |
| | H7 | 1111508405 | | | | | | | | | | | | |
| M14 x 1.5 | H8 | 4 | 1111508505 | 91.30 | 22.50 | 34.50 | 10.90 | 8.18 | 12.70 | | | | | |
| | H9 | | 1111508605 | | | | | | | | | | | |
| | H10 | | 1111508705 | | | | | | | | | | | |
| | H11 | | 1111508805 | | | | | | | | | | | |
| | H6 | | 1111508305 | | | | | | | | | | | |

Packed: 1 pc.
Available TiN coating only.

Note: List 11115 metric taps are manufactured to H-limits rather than D-limits.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------------|-----------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 11115 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| SFM | 25-80 | 20-50 | 20-45 | 20-50 | 15-30 | 20-45 | 20-45 | 15-20 | 25-75 | 40-80 | 40-65 | 8-15 | 8-15 | 15-35 | | | |

good best





List 13118



RXL-RFT, DIN Overall Length & Extended Length, Plug (4.5P-5.5P),
RHC/LHS for Through Holes



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|-----------|------------------------|---------------|--------------------|--------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (4.5P - 5.5P) | | | | | | | |
| | | | V | L | | | | | | |
| M16 x 2.0 | D7 D17 (6H+0.005") | 4 | 1311802408 | 110.00 | 24.00 | - | 12.19 | 9.14 | 14.30 | |
| | | | 1311802508 | 180.00 | | | | | | |
| | | | 1311802308 | 110.00 | | | | | | |
| M20 x 2.5 | D8 D18 (6H+0.005") | 5 | 1311800108 | 140.00 | 30.00 | - | 16.56 | 12.42 | 17.50 | |
| | | | 1311800208 | 200.00 | | | | | | |
| | | | 1311801608 | 140.00 | | | | | | |
| M24 x 3.0 | D9 D19 (6H+0.005") | 5 | 1311800408 | 160.00 | 36.00 | - | 19.30 | 14.48 | 19.10 | |
| | | | 1311800508 | 200.00 | | | | | | |
| | | | 1311801708 | 160.00 | | | | | | |
| M27 x 3.0 | D9 D19 (6H+0.005") | 5 | 1311800608 | 200.00 | 42.00 | - | 22.76 | 17.07 | 22.20 | |
| | | | 1311800708 | 200.00 | | | | | | |
| | | | 1311801808 | 160.00 | | | | | | |
| M30 x 3.5 | D10 D20 (6H+0.005") | 5 | 1311800808 | 180.00 | 42.00 | - | 25.93 | 19.46 | 25.40 | |
| | | | 1311800908 | 250.00 | | | | | | |
| | | | 1311801908 | 180.00 | | | | | | |
| M33 x 3.5 | D10 D20 (6H+0.005") | 5 | 1311801008 | 180.00 | 42.00 | - | 28.14 | 21.11 | 27.00 | |
| | | | 1311801108 | 250.00 | | | | | | |
| | | | 1311802008 | 180.00 | | | | | | |
| M36 x 4.0 | D11 D21 (6H+0.005") | 6 | 1311801208 | 200.00 | 48.00 | - | 31.32 | 23.50 | 28.60 | |
| | | | 1311801308 | 250.00 | | | | | | |
| | | | 1311802108 | 200.00 | | | | | | |
| M42 x 4.5 | D11 D21 (6H+0.005") | 6 | 1311801408 | 200.00 | 54.00 | - | 36.32 | 27.23 | 31.80 | |
| | | | 1311801508 | 300.00 | | | | | | |
| | | | 1311802208 | 200.00 | | | | | | |

Packed: 1 pc.
Available V coating only.
Note: +0.005" available for threads that will be heat treated after tapping.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-----------|
| | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 13118 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| SFM | 50-120 | 45-110 | 40-100 | 45-110 | 20-60 | 30-70 | 30-70 | 20-50 | 40-100 | 30-80 | 30-80 | | | 20-60 | 15-50 | | |

good best





List 13059



| | | | |
|------|---|-----|-----|
| HSSE | V | LHS | 20° |
|------|---|-----|-----|

US-AL-RFT, Synchronized, Plug (5.5P-6.5P), RHC/LHS for Through Holes



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|--------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (5.5P - 6.5P) | | | | | | |
| | | | V | | | | | | |
| | | | L | Lc | Ln | d | k | lk | |
| 6 - 32 UNC | 2B | 2 | 1305900108 | 1.992 | 0.370 | 0.685 | 0.141 | 0.110 | 0.188 |
| 8 - 32 UNC | | | 1305900208 | 2.118 | 0.374 | 0.752 | 0.168 | 0.131 | |
| 10 - 24 UNC | | | 1305900308 | 2.358 | 0.492 | 0.866 | 0.194 | 0.152 | |
| 10 - 32 UNF | | | 1305900408 | | | | | | |
| 1/4 - 20 UNC | | | 1305900508 | 2.457 | 0.594 | 0.996 | 0.255 | 0.191 | 0.313 |
| 1/4 - 28 UNF | | | 1305900608 | | | | | | |
| 5/16 - 18 UNC | | | 1305900708 | | | | | | |
| 5/16 - 24 UNF | | | 1305900808 | 2.457 | 0.665 | 1.126 | 0.318 | 0.238 | 0.375 |
| 3/8 - 16 UNC | | | 1305900908 | 2.937 | 0.752 | 1.252 | 0.381 | 0.286 | 0.438 |
| 3/8 - 24 UNF | | | 1305901008 | | | | | | |
| 1/2 - 13 UNC | | | 1305901108 | | | | | | |
| 1/2 - 20 UNF | | | 1305901208 | 3.374 | 0.921 | 1.933 | 0.367 | 0.275 | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | Work Material | | | | | | | | | | | | | | | | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|-----------|---------|--------------|----------|-----------------|----------------|---------|-----------|-----------|-----------|--|
| | P | | | | | M | | | K | N | | S | | H | | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 13059 | | | | | | | | | | | | | | | | | | | | |
| SFM | | | | | | | | | | | | | | | | | | | | |

good best





HY-PRO[®] SYNCHRO AL

High Speed Tapping of Aluminum and Aluminum Alloy

List 13159

US-AL-RFT, Synchronized, Plug (5.5P-6.5P), RHC/LHS for Through Holes



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|--------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (5.5P - 6.5P) | | | | | | |
| | | | V | | | | | | |
| | | | L | Lc | Ln | d | k | lk | |
| M3 x 0.5 | 6H | 2 | 1315900108 | 49.20 | 6.10 | 16.00 | 3.58 | 2.79 | 4.80 |
| M4 x 0.7 | | | 1315900208 | 53.80 | 8.40 | 19.10 | 4.27 | 3.33 | 6.40 |
| M5 x 0.8 | | | 1315900308 | 60.10 | 9.60 | 22.20 | 4.93 | 3.86 | |
| M6 x 1.0 | | | 1315900408 | 62.50 | 12.00 | 25.40 | 6.48 | 4.85 | 7.90 |
| M8 x 1.25 | | | 1315900508 | 69.10 | 15.00 | 28.60 | 8.08 | 6.05 | 9.50 |
| M10 x 1.5 | | | 1315900708 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 |
| M10 x 1.25 | | | 1315900608 | | | | | | |
| M12 x 1.75 | | | 1315900908 | 85.70 | 21.00 | 49.10 | 9.32 | 6.98 | |
| M12 x 1.5 | | | 1315900808 | | | | | | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|----------------|-------------------------------------|-------------------------------------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 13159 | 1010 | 1035 | 1065 | 4140 | | | | | | | | | | | | | | |
| SFM | 1018 | 1045 | | 4340 | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |
| | | | | | | | | | | 300-800 | 200-700 | | | | | | | |

good best





List 11016



HSSE

N

DIN Overall Length, Plug (3.5P-4.5P)



Units: Inch

| Tap Size | Class of Fit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|--------------------|-------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (3.5P - 4.5P) | | | | | | | |
| | | | N | L | | | | | | |
| 2 - 56 UNC | H2 | 2 | 1101600103 | 1.772 | 0.437 | 0.476 | 0.141 | 0.110 | 0.188 | |
| 4 - 40 UNC | | | 1101600203 | 2.201 | 0.295 | 0.705 | | | | |
| 6 - 32 UNC | H3 | 3 | 1101600303 | 2.480 | 0.370 | 0.783 | 0.168 | 0.131 | 0.250 | |
| 8 - 32 UNC | | | 1101600403 | | 0.374 | 0.827 | | | | |
| 10 - 24 UNC | | | 1101600503 | 2.748 | 0.492 | 1.059 | 0.194 | 0.152 | | |
| 10 - 32 UNF | | | 1101600603 | | 0.984 | | | | | |
| 1/4 - 20 UNC | H5 | 1101600703 | 3.146 | 0.594 | 1.177 | 0.255 | 0.191 | 0.313 | | |
| 1/4 - 28 UNF | H3 | 1101600803 | | | 1.189 | | | | | |
| | H5 | 1101600903 | 3.677 | 0.799 | 1.512 | 0.318 | 0.238 | 0.375 | | |
| 5/16 - 18 UNC | H3 | 1101601003 | | | 1.520 | | | | | |
| 5/16 - 24 UNF | H5 | 1101601103 | 4.102 | 0.917 | 1.543 | 0.381 | 0.286 | 0.438 | | |
| 3/8 - 16 UNC | H3 | 1101601203 | | | 1.555 | | | | | |
| 3/8 - 24 UNF | H5 | 1101601303 | 3.937 | 0.858 | 1.291 | 0.323 | 0.242 | 0.406 | | |
| 7/16 - 14 UNC | H3 | 1101601403 | | | 1.512 | | | | | |
| 7/16 - 20 UNF | H5 | 1101601503 | 4.331 | 0.921 | 1.354 | 0.367 | 0.275 | 0.438 | | |
| 1/2 - 13 UNC | H3 | 1101601603 | | | 1.512 | | | | | |
| 1/2 - 20 UNF | H5 | 1101601703 | 3.937 | 0.921 | 1.354 | 0.367 | 0.275 | 0.438 | | |
| | H3 | 1101601803 | | | 1.512 | | | | | |
| | H5 | 1101601903 | 4.331 | 0.921 | 1.354 | 0.367 | 0.275 | 0.438 | | |
| | H3 | 1101602003 | | | 1.512 | | | | | |
| | H5 | 1101602103 | 3.937 | 0.921 | 1.354 | 0.367 | 0.275 | 0.438 | | |

Packed: 1 pc.
Available Nitride treatment only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|-------------------------------------|-------------------------------------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 11016 | 1010 | 1035 | 1065 | 4140 | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |
| SFM | 1018 | 1045 | | 4340 | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |

good best





HSSE

N

List 11116

DIN Overall Length, Plug (3.5P-4.5P)



Units: mm

| Tap Size | Class of Fit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | | | | | | | | |
|------------|--------------|---------------|--------------------|--------|--------------------|---------------|-------------|------------|--------------|---------------|-------|-------|------|------|-------|-------|-------|------|------|
| | | | Plug (3.5P - 4.5P) | | | | | | | | | | | | | | | | |
| | | | N | L | | | | | | | | | | | | | | | |
| M3 x 0.5 | D3 | 3 | 1111600103 | 56.00 | 56.00 | 7.30 | 19.30 | 3.58 | 2.79 | 4.80 | | | | | | | | | |
| M4 x 0.7 | D4 | | 1111600303 | 63.00 | | | | | | | 10.10 | 22.70 | 4.27 | 3.33 | 6.40 | | | | |
| M5 x 0.8 | | | 1111600403 | 70.00 | | | | | | | 11.80 | 27.20 | 4.93 | 3.86 | | | | | |
| M6 x 1.0 | D5 | | 1111600503 | 80.00 | | | | | | | 14.60 | 32.60 | 6.48 | 4.85 | 7.90 | | | | |
| M8 x 1.25 | | | 1111600803 | 90.00 | | | | | | | 18.50 | 38.50 | 8.08 | 6.05 | 9.50 | | | | |
| M10 x 1.5 | D6 | | 1111601003 | 100.00 | | | | | | | 22.50 | 43.50 | 9.68 | 7.26 | 11.10 | | | | |
| M10 x 1.25 | D5 | | 1111600903 | | | | | | | | | | | | | | | | |
| M12 x 1.75 | D6 | | 1111601303 | | | | | | | | | | | | | | | | |
| M12 x 1.5 | D5 | | 1111601203 | | | | | | | | | | | | | 21.00 | 32.00 | 9.32 | 6.98 |
| M12 x 1.25 | | | 1111601103 | | | | | | | | | | | | | | | | |

Packed: 1 pc.

Available Nitride treatment only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|-------------------------------------|-------------------------------------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| | 1010 | 1035 | 1065 | 4140 | 4340 | | | | | | | | | | | | | |
| 11116 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |
| SFM | | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |

 good best




List 11017



HSSE

V

DIN Overall Length, Plug (3.5P-4.5P)



Units: Inch

| Tap Size | Class of Fit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|--------------------|-------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (3.5P - 4.5P) | | | | | | | |
| | | | V | L | | | | | | |
| 4 - 40 UNC | H2 | 2 | 1101700108 | 2.205 | 2.205 | 0.303 | 0.713 | 0.141 | 0.110 | 0.188 |
| 6 - 32 UNC | | | 1101700208 | | | 0.378 | 0.791 | | | |
| 8 - 32 UNC | | | 1101700308 | | | 0.382 | 0.835 | | | |
| 10 - 24 UNC | H3 | 3 | 1101700408 | 2.756 | 2.756 | 0.500 | 0.984 | 0.194 | 0.152 | 0.250 |
| 10 - 32 UNF | | | 1101700508 | | | | 0.992 | | | |
| 1/4 - 20 UNC | | | 1101700608 | 3.150 | 3.150 | 0.602 | 1.185 | 0.255 | 0.191 | 0.313 |
| 1/4 - 28 UNF | | | 1101700708 | | | | 1.197 | | | |
| 5/16 - 18 UNC | | | 1101700808 | 3.543 | 3.543 | 0.669 | 1.382 | 0.318 | 0.238 | 0.375 |
| 5/16 - 24 UNF | | | 1101700908 | | | | 1.390 | | | |
| 3/8 - 16 UNC | | | 1101701008 | 3.937 | 3.937 | 3.937 | 0.760 | 0.381 | 0.286 | 0.438 |
| 3/8 - 24 UNF | | | 1101701108 | | | | | | | |
| 7/16 - 14 UNC | | | 1101701208 | | | | 0.894 | 1.291 | 0.323 | 0.242 |
| 7/16 - 20 UNF | | | 1101701308 | 0.858 | | | | | | |
| 1/2 - 13 UNC | 1101701408 | 4.331 | 4.331 | 4.331 | 0.961 | 1.354 | 0.367 | 0.275 | 0.438 | |
| 1/2 - 20 UNF | 1101701508 | 3.937 | 3.937 | 3.937 | 0.921 | | | | | |

Packed: 1 pc.
Available V coating only.



| Work Material | | | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-----------|-----------|---|--------------|--------------------------|-----------------|---------|----------------|---------|-----------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | | 6061 7075 | | | | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 11017 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input type="checkbox"/> | | | | | |
| SFM | 50-90 | 40-80 | 40-60 | 40-80 | 20-60 | 40-80 | 40-80 | 30-50 | 30-80 | | | | | 20-60 | | | | | |

good best





List 11117



HSSE

V

DIN Overall Length, Plug (3.5P-4.5P)



Units: mm

| Tap Size | Class of Fit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|--------------------|--------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (3.5P - 4.5P) | | | | | | | |
| | | | V | L | Lc | Ln | d | k | lk | |
| M3 x 0.5 | D3 | 3 | 1111700108 | 56.00 | 6.30 | 18.30 | 3.58 | 2.79 | 4.80 | |
| M4 x 0.7 | D4 | | 1111700308 | 63.00 | 8.60 | 21.20 | 4.27 | 3.33 | 6.40 | |
| M5 x 0.8 | | | 1111700408 | 70.00 | 9.80 | 25.20 | 4.93 | 3.86 | | |
| M6 x 1.0 | D5 | | 1111700508 | 80.00 | 12.20 | 30.20 | 6.48 | 4.85 | 7.90 | |
| M8 x 1.25 | | | 1111700808 | 90.00 | 15.20 | 35.20 | 8.08 | 6.05 | 9.50 | |
| M10 x 1.5 | D6 | | 1111701008 | 100.00 | 18.20 | 39.20 | 9.68 | 7.26 | 11.10 | |
| M12 x 1.75 | | | 1111701308 | 110.00 | 21.90 | 32.00 | 9.32 | 6.98 | | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-----------|---------|--------------|--------------------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 11117 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | | | | |
| SFM | 50-90 | 40-80 | 40-60 | 40-80 | 20-60 | 40-80 | 40-80 | 30-50 | 30-80 | | | | 20-60 | | | | |

good best





List 280

Plug (3.5P-4.5P)



| | | | |
|------|------|-----|----|
| HSSE | TiCN | S/O | BR |
|------|------|-----|----|



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Plug (3.5P - 4.5P) | | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|-------------|--------------|---------------|--------------------|----------------|-----|-------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | EDP Number | Coating Suffix | | | | | | | | |
| | | | | Bright | S/O | TiCN | | | | | | |
| 2 - 56 UNC | H2 | 2 | 28056 | 00 | 01 | 08 | 1.752 | 0.437 | - | 0.141 | 0.110 | 0.188 |
| 3 - 48 UNC | | | 28060 | 00 | 01 | 08 | 1.811 | 0.500 | - | | | |
| 4 - 40 UNC | H3 | | 28064 | 00 | 01 | 08 | 1.874 | 0.295 | 0.559 | | | |
| | | | 28114 | 00 | 01 | 08 | | | | | | |
| | | | 28163 | 00 | 01 | 08 | | | | | | |
| | | | 28164 | 00 | 01 | 08 | | | | | | |
| 4 - 48 UNF | H2 | | 28165 | 00 | 01 | 08 | 1.937 | 0.299 | 0.626 | | | |
| 5 - 40 UNC | | | 28070 | 00 | 01 | 08 | | | | | | |
| 6 - 32 UNC | H2 | | 28074 | 00 | 01 | 08 | 2.000 | 0.370 | 0.685 | | | |
| | | | 28124 | 00 | 01 | 08 | | | | | | |
| | | | 28125 | 00 | 01 | 08 | | | | | | |
| | | | 28174 | 00 | 01 | 08 | | | | | | |
| | | 28175 | 00 | 01 | 08 | | | | | | | |
| | | 28176 | 00 | 01 | 08 | | | | | | | |
| 6 - 40 UNF | H2 | 28177 | 00 | 01 | 08 | 2.126 | 0.374 | 0.752 | | | | |
| | | 28076 | 00 | 01 | 08 | | | | | | | |
| | | 28078 | 00 | 01 | 08 | | | | | | | |
| | | 28128 | 00 | 01 | 08 | | | | | | | |
| | | 28129 | 00 | 01 | 08 | | | | | | | |
| | | 28178 | 00 | 01 | 08 | | | | | | | |
| 8 - 32 UNC | H2 | 28179 | 00 | 01 | 08 | 2.374 | 0.492 | 0.866 | | | | |
| | | 28180 | 00 | 01 | 08 | | | | | | | |
| | | 28181 | 00 | 01 | 08 | | | | | | | |
| | | 28080 | 00 | 01 | 08 | | | | | | | |
| | | 28134 | 00 | 01 | 08 | | | | | | | |
| | | 28184 | 00 | 01 | 08 | | | | | | | |
| 8 - 36 UNF | H2 | 28234 | 00 | 01 | 08 | 2.500 | 0.594 | 0.996 | | | | |
| | | 28088 | 00 | 01 | 08 | | | | | | | |
| | | 28138 | 00 | 01 | 08 | | | | | | | |
| | | 28139 | 00 | 01 | 08 | | | | | | | |
| 10 - 24 UNC | H3 | 28188 | 00 | 01 | 08 | 2.500 | 0.594 | 0.996 | | | | |
| | | 28189 | 00 | 01 | 08 | | | | | | | |
| | | 28190 | 00 | 01 | 08 | | | | | | | |
| | | 28191 | 00 | 01 | 08 | | | | | | | |
| | | 28090 | 00 | 01 | 08 | | | | | | | |
| | | 28092 | 00 | 01 | 08 | | | | | | | |
| 10 - 32 UNF | H3 | 28094 | 00 | 01 | 08 | 2.500 | 0.594 | 0.996 | | | | |
| | | 28139 | 00 | 01 | 08 | | | | | | | |
| | | 28188 | 00 | 01 | 08 | | | | | | | |
| | | 28189 | 00 | 01 | 08 | | | | | | | |
| | | 28190 | 00 | 01 | 08 | | | | | | | |
| | | 28191 | 00 | 01 | 08 | | | | | | | |
| 12 - 24 UNC | H3 | 28300 | 00 | 01 | 08 | 2.500 | 0.594 | 0.996 | | | | |
| 12 - 28 UNF | | 28400 | 00 | 01 | 08 | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

continued on next page

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|---------|--------------|--------------------------|-----------------|-----------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 280 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | |
| SFM | 50-90 | 40-80 | 40-60 | 40-80 | 20-60 | 40-80 | 40-80 | 30-50 | 30-80 | | | | | 20-60 | | | |

good best





List 280 (Continued)

Plug (3.5P-4.5P)



| | | | |
|------|------|-----|----|
| HSSE | TiCN | S/O | BR |
|------|------|-----|----|



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Plug (3.5P - 4.5P) | | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------|--------------|---------------|--------------------|----------------|-----|-------|----------------|---------------|-------------|------------|--------------|---------------|--------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----|----|----|----|-------|----|----|----|----|-------|----|----|----|----|-------|----|----|----|----|-------|----|----|----|-----|-------|----|----|----|---------------|----|-------|----|----|----|-------|-------|-------|-------|-------|-------|----|-------|----|----|----|----|-------|----|----|----|-----|-------|----|----|----|---------------|----|-------|----|----|----|-------|-------|-------|-------|-------|-------|----|-------|----|----|----|----|-------|----|----|----|----|-------|----|----|----|----|-------|----|----|----|----|-------|----|----|----|-----|-------|----|----|----|--------------|----|-------|----|----|----|-------|-------|-------|-------|-------|-------|----|-------|----|----|----|----|-------|----|----|----|-----|-------|----|----|----|----|-------|----|----|----|--------------|----|-------|----|----|----|-------|-------|-------|-------|-------|-------|----|-------|----|----|----|----|-------|----|----|----|----|-------|----|----|----|----|-------|----|----|----|-----|-------|----|----|----|----|-------|----|----|----|---------------|----|-------|----|----|----|-------|-------|-------|-------|-------|-------|----|-------|----|----|----|-----|-------|----|----|----|----|-------|----|----|----|---------------|----|-------|----|----|----|-------|-------|-------|-------|-------|-------|----|-------|----|----|----|-----|-------|----|----|----|----|-------|----|----|----|--------------|----|-------|----|----|----|-------|-------|-------|-------|-------|-------|----|-------|----|----|----|-----|-------|----|----|----|----|-------|----|----|----|--------------|----|-------|----|----|----|-------|-------|-------|-------|-------|-------|----|-------|----|----|----|----|-------|----|----|----|-----|-------|----|----|----|----|-------|----|----|----|---------------|----|-------|----|----|----|-------|-------|-------|-------|-------|-------|---------------|-------|----|----|
| | | | EDP Number | Coating Suffix | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | Bright | S/O | TiCN | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1/4 - 20 UNC | H7 | 3 | 28548 | 00 | 01 | 08 | 2.500 | 0.594 | 0.996 | 0.255 | 0.191 | 0.313 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H11 | | 28550 | 00 | 01 | 08 | | | | | | | 1/4 - 28 UNF | H2 | 28096 | 00 | 01 | 08 | 2.720 | 0.665 | 1.126 | 0.318 | 0.238 | 0.375 | H3 | 28304 | 00 | 01 | 08 | H4 | 28354 | 00 | 01 | 08 | H5 | 28404 | 00 | 01 | 08 | H6 | 28405 | 00 | 01 | 08 | H7 | 28406 | 00 | 01 | 08 | H11 | 28407 | 00 | 01 | 08 | 5/16 - 18 UNC | H3 | 28308 | 00 | 01 | 08 | 2.937 | 0.752 | 1.252 | 0.381 | 0.285 | 0.438 | H5 | 28408 | 00 | 01 | 08 | H7 | 28556 | 00 | 01 | 08 | H11 | 28558 | 00 | 01 | 08 | 5/16 - 24 UNF | H2 | 28264 | 00 | 01 | 08 | 3.157 | 0.858 | 1.291 | 0.323 | 0.242 | 0.406 | H3 | 28312 | 00 | 01 | 08 | H4 | 28362 | 00 | 01 | 08 | H5 | 28412 | 00 | 01 | 08 | H6 | 28413 | 00 | 01 | 08 | H7 | 28414 | 00 | 01 | 08 | H11 | 28415 | 00 | 01 | 08 | 3/8 - 16 UNC | H3 | 28316 | 00 | 01 | 08 | 3.374 | 0.921 | 1.354 | 0.367 | 0.275 | 0.438 | H5 | 28416 | 00 | 01 | 08 | H7 | 28564 | 00 | 01 | 08 | H11 | 28566 | 00 | 01 | 08 | H2 | 28268 | 00 | 01 | 08 | 3/8 - 24 UNF | H3 | 28318 | 00 | 01 | 08 | 3.594 | 1.000 | 1.472 | 0.429 | 0.322 | 0.500 | H4 | 28368 | 00 | 01 | 08 | H5 | 28418 | 00 | 01 | 08 | H6 | 28419 | 00 | 01 | 08 | H7 | 28417 | 00 | 01 | 08 | H11 | 28568 | 00 | 01 | 08 | H3 | 28320 | 00 | 01 | 08 | 7/16 - 14 UNC | H5 | 28420 | 00 | 01 | 08 | 3.594 | 1.000 | 1.472 | 0.429 | 0.322 | 0.500 | H7 | 28421 | 00 | 01 | 08 | H11 | 28423 | 00 | 01 | 08 | H3 | 28322 | 00 | 01 | 08 | 7/16 - 20 UNF | H5 | 28422 | 00 | 01 | 08 | 3.594 | 1.000 | 1.472 | 0.429 | 0.322 | 0.500 | H7 | 28425 | 00 | 01 | 08 | H11 | 28430 | 00 | 01 | 08 | H3 | 28324 | 00 | 01 | 08 | 1/2 - 13 UNC | H5 | 28424 | 00 | 01 | 08 | 3.594 | 1.000 | 1.472 | 0.429 | 0.322 | 0.500 | H7 | 28428 | 00 | 01 | 08 | H11 | 28574 | 00 | 01 | 08 | H2 | 28276 | 00 | 01 | 08 | 1/2 - 20 UNF | H3 | 28326 | 00 | 01 | 08 | 3.594 | 1.000 | 1.472 | 0.429 | 0.322 | 0.500 | H5 | 28426 | 00 | 01 | 08 | H7 | 28427 | 00 | 01 | 08 | H11 | 28429 | 00 | 01 | 08 | H3 | 28576 | 00 | 01 | 08 | 9/16 - 12 UNC | H3 | 28578 | 00 | 01 | 08 | 3.594 | 1.000 | 1.472 | 0.429 | 0.322 | 0.500 | 9/16 - 18 UNF | 28578 | 00 | 01 |
| 1/4 - 28 UNF | H2 | | 28096 | 00 | 01 | 08 | | | | | | | | 2.720 | 0.665 | 1.126 | 0.318 | 0.238 | | | | | | | 0.375 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H3 | | 28304 | 00 | 01 | 08 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 5/16 - 18 UNC | H3 | | 28308 | 00 | 01 | 08 | 2.937 | 0.752 | 1.252 | 0.381 | 0.285 | 0.438 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 3/8 - 16 UNC | H3 | 28316 | 00 | 01 | 08 | 3.374 | 0.921 | 1.354 | 0.367 | 0.275 | 0.438 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 1/2 - 13 UNC | H5 | 28424 | 00 | 01 | 08 | 3.594 | 1.000 | 1.472 | 0.429 | 0.322 | 0.500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 1/2 - 20 UNF | H3 | 28326 | 00 | 01 | 08 | 3.594 | 1.000 | 1.472 | 0.429 | 0.322 | 0.500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H5 | 28426 | 00 | 01 | 08 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H7 | 28427 | 00 | 01 | 08 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H11 | 28429 | 00 | 01 | 08 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H3 | 28576 | 00 | 01 | 08 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9/16 - 12 UNC | H3 | 28578 | 00 | 01 | 08 | 3.594 | 1.000 | 1.472 | 0.429 | 0.322 | 0.500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9/16 - 18 UNF | | 28578 | 00 | 01 | 08 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order.





List 280 (Continued)

Plug (3.5P-4.5P)



| | | | |
|------|------|-----|----|
| HSSE | TiCN | S/O | BR |
|------|------|-----|----|

Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Plug (3.5P - 4.5P) | | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | | | | | |
|----------------|--------------|---------------|--------------------|----------------|-----|------|----------------|---------------|-------------|------------|--------------|---------------|-------|-------|-------|-------|-------|-------|
| | | | EDP Number | Coating Suffix | | | | | | | | | | | | | | |
| | | | | Bright | S/O | TiCN | | | | | | | | | | | | |
| L | Lc | Ln | d | k | lk | | | | | | | | | | | | | |
| 5/8 - 11 UNC | H3 | 3 | 28332 | 00 | 01 | 08 | 3.811 | 1.091 | 1.563 | 0.480 | 0.360 | 0.563 | | | | | | |
| | H5 | | 28432 | 00 | 01 | 08 | | | | | | | | | | | | |
| 5/8 - 18 UNF | H3 | | 28334 | 00 | 01 | 08 | | | | | | | | | | | | |
| | H5 | | 28434 | 00 | 01 | 08 | | | | | | | | | | | | |
| | H7 | | 28580 | 00 | 01 | 08 | | | | | | | | | | | | |
| 3/4 - 10 UNC | H3 | | 28336 | 00 | 01 | 08 | | | | | | | 4.252 | 1.201 | 1.713 | 0.590 | 0.442 | 0.688 |
| | H5 | | 28436 | 00 | 01 | 08 | | | | | | | | | | | | |
| 3/4 - 16 UNF | H3 | | 28338 | 00 | 01 | 08 | | | | | | | | | | | | |
| | H5 | | 28438 | 00 | 01 | 08 | | | | | | | | | | | | |
| 7/8 - 9 UNC | H5 | | 28440 | 00 | 01 | 08 | 4.689 | 1.335 | 1.886 | 0.697 | 0.523 | 0.750 | | | | | | |
| 7/8 - 14 UNF | H4 | | 28392 | 00 | 01 | 08 | | | | | | | | | | | | |
| 1 - 8 UNC | H5 | | 28444 | 00 | 01 | 08 | 5.126 | 1.500 | 2.091 | 0.800 | 0.600 | 0.813 | | | | | | |
| 1 - 12 UNF | H4 | 28396 | 00 | 01 | 08 | | | | | | | | | | | | | |
| 1,1/8 - 7 UNC | H6 | 4 | 28498 | - | 01 | - | 5.437 | 1.713 | 2.303 | 0.896 | 0.672 | 0.875 | | | | | | |
| 1,1/8 - 8 UNS | | | 28502 | - | 01 | - | | | | | | | | | | | | |
| 1,1/8 - 12 UNF | H5 | | 28450 | - | 01 | - | | | | | | | | | | | | |
| 1,1/4 - 7 UNC | H6 | | 28504 | - | 01 | - | 5.752 | | 2.000 | 2.382 | 1.021 | 0.766 | 1.000 | | | | | |
| 1,1/4 - 8 UNS | | | H5 | 28508 | - | 01 | | | | | | | | - | | | | |
| 1,1/4 - 12 UNF | H5 | | 28456 | - | 01 | - | 6.063 | | | 2.748 | 1.108 | 0.831 | 1.063 | | | | | |
| 1,3/8 - 6 UNC | H6 | | 28510 | - | 01 | - | | | | | | | | | | | | |
| 1,3/8 - 8 UNS | | | H5 | 28514 | - | 01 | - | 6.374 | | | 2.787 | 1.233 | 0.925 | 1.125 | | | | |
| 1,3/8 - 12 UNF | H6 | | 28462 | - | 01 | - | | | | | | | | | | | | |
| 1,1/2 - 6 UNC | H6 | | 28516 | - | 01 | - | | | | | | | | | | | | |
| 1,1/2 - 8 UNS | | | H5 | 28520 | - | 01 | - | | | | | | | | | | | |
| 1,1/2 - 12 UNF | H5 | | 28468 | - | 01 | - | | | | | | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|---------|--------------|--------------------------|-----------------|-----------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 280 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | |
| SFM | 50-90 | 40-80 | 40-60 | 40-80 | 20-60 | 40-80 | 40-80 | 30-50 | 30-80 | | | | | 20-60 | | | |

good best





List 289

Plug (3.5P-4.5P)

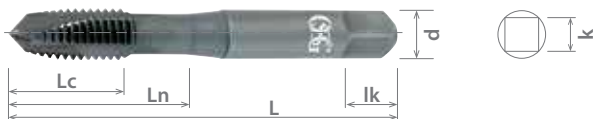


HSSE

TiCN

S/O

BR



Units: mm

| Tap Size | Thread Limit | No. of Flutes | Plug (3.5P - 4.5P) | | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------|--------------|---------------|--------------------|----------------|-----|--------|----------------|---------------|-------------|------------|--------------|---------------|------------|-------|-------|----|----|--------|-------|-------|-------|-------|-------|-----------|-----------|-------|-------|----|----|------------|-----------|-------|-------|----|----|--------|-------|-------|-------|-------|-------|-----------|-----------|-------|-------|----|------------|-----------|-----------|-------|-------|----|-------|--------|--------|-------|-------|-------|-----------|-----------|-----------|-------|-------|------------|-----------|-----------|-----------|-------|-------|-------|-------|--------|--------|-------|-------|-----------|-----------|-----------|-----------|-------|------------|-----------|-----------|-----------|-----------|-------|-------|-------|--------|--------|--------|-------|-----------|-----------|-----------|-----------|-----------|------------|-----------|-----------|-----------|-----------|-----------|-------|-------|--------|--------|--------|--------|-----------|-----------|-----------|-----------|-----------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-------|--------|--------|--------|--------|-----------|-----------|-----------|-----------|-----------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------|--------|--------|--------|-----------|-----------|-----------|-----------|-----------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------|--------|--------|--------|-----------|-----------|-----------|-----------|-----------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------|--------|--------|--------|-----------|-----------|-----------|-----------|-----------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------|--------|--------|--------|-----------|-----------|-----------|-----------|-----------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------|--------|--------|--------|-----------|-----------|-----------|-----------|-----------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------|--------|--------|--------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------|--------|--------|--------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------|--------|--------|--------|--------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------|--------|--------|--------|--------|--------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-------|--------|--------|--------|--------|--------|-------|-----------|-----------|-----------|-----------|-----------|-------|-----------|-----------|-----------|-----------|-------|-------|--------|--------|--------|--------|-------|-------|-----------|-----------|-----------|-----------|-------|-------|-----------|-----------|-----------|-------|-------|----|--------|--------|--------|-------|-------|-------|-----------|-----------|-----------|-------|-------|----|-----------|-----------|-------|-------|----|----|--------|--------|-------|-------|-------|-------|-----------|-----------|-------|-------|----|----|-----------|----|-------|---|----|---|--------|-------|-------|-------|-------|
| | | | EDP Number | Coating Suffix | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | Bright | S/O | TiCN | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M3 x 0.5 | D3 | 3 | 28904 | 00 | 01 | 08 | 49.20 | 6.00 | 15.90 | 3.58 | 2.79 | 4.80 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | D11 | | 28931 | - | 01 | 08 | | | | | | | M3.5 x 0.6 | D4 | 28905 | 00 | 01 | 08 | 50.80 | 7.20 | 17.50 | 3.58 | 2.79 | 4.80 | D11 | 28933 | - | 01 | 08 | M4 x 0.7 | D4 | 28906 | 00 | 01 | 08 | 54.00 | 8.30 | 19.00 | 4.27 | 3.33 | 6.40 | D11 | 28935 | - | 01 | 08 | M5 x 0.8 | D4 | 28908 | 00 | 01 | 08 | 60.30 | 9.70 | 22.30 | 4.93 | 3.86 | 6.40 | D11 | 28937 | - | 01 | 08 | M6 x 1.0 | D5 | 28910 | 00 | 01 | 08 | 63.50 | 11.90 | 25.30 | 6.48 | 4.85 | 7.90 | D11 | 28939 | - | 01 | 08 | M7 x 1.0 | D5 | 28911 | 00 | 01 | 08 | 63.50 | 11.90 | 25.30 | 6.48 | 4.85 | 7.90 | D11 | 28941 | - | 01 | 08 | M8 x 1.25 | D5 | 28914 | 00 | 01 | 08 | 69.10 | 15.00 | 28.60 | 8.08 | 6.05 | 9.50 | D11 | 28945 | - | 01 | 08 | M8 x 1.0 | D5 | 28913 | 00 | 01 | 08 | 69.10 | 15.00 | 28.60 | 8.08 | 6.05 | 9.50 | D11 | 28943 | - | 01 | 08 | M10 x 1.5 | D6 | 28918 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | D11 | 28951 | - | 01 | 08 | M10 x 1.25 | D5 | 28917 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | D11 | 28949 | - | 01 | 08 | M10 x 1.0 | D5 | 28916 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | D11 | 28947 | - | 01 | 08 | M12 x 1.75 | D6 | 28923 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28957 | - | 01 | 08 | M12 x 1.5 | D6 | 28922 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28955 | - | 01 | 08 | M12 x 1.25 | D5 | 28921 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28952 | - | 01 | 08 | M14 x 2.0 | D7 | 28926 | - | 01 | 08 | 91.30 | 24.00 | 36.00 | 10.90 | 8.18 | 12.70 | M14 x 1.5 | D6 | 28925 | - | 01 | 08 | M16 x 2.0 | D7 | 28929 | - | 01 | 08 | 96.80 | 24.00 | 36.00 | 12.19 | 9.14 | 14.30 | M16 x 1.5 | D6 | 28928 | - | 01 | 08 | M18 x 2.5 | D7 | 28932 | - | 01 | 08 | 102.40 | 30.00 | 43.00 | 13.77 | 10.31 | 15.90 | M18 x 1.5 | D6 | 28930 | - | 01 | 08 | M20 x 2.5 | D8 | 28936 | - | 01 | 08 | 113.50 | 30.00 | 44.00 | 16.56 | 12.42 | 17.50 | M20 x 1.5 | D6 | 28934 | - | 01 | 08 | M22 x 2.5 | D8 | 28940 | - | 01 | - | 119.10 | 36.00 | 51.00 | 17.70 | 13.28 | 19.10 | M22 x 1.5 | D6 | 28938 | - | 01 | - | M24 x 3.0 | D8 | 28944 | - | 01 | - | 124.60 | 36.00 | 51.00 | 19.30 | 14.48 | 22.20 | M24 x 1.5 | D6 | 28942 | - | 01 | - | M27 x 3.0 | D8 | 28948 | - | 01 | - | 130.20 | 42.00 | 58.00 | 25.93 | 19.46 | 25.40 | M27 x 1.5 | D6 | 28946 | - | 01 | - | M30 x 3.5 | D9 | 28953 | - | 01 | - | 138.10 | 38.10 | 54.10 | 25.93 | 19.46 |
| M3.5 x 0.6 | D4 | | 28905 | 00 | 01 | 08 | 50.80 | 7.20 | 17.50 | 3.58 | 2.79 | 4.80 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | D11 | | 28933 | - | 01 | 08 | | | | | | | M4 x 0.7 | D4 | 28906 | 00 | 01 | 08 | 54.00 | 8.30 | 19.00 | 4.27 | 3.33 | 6.40 | D11 | 28935 | - | 01 | 08 | M5 x 0.8 | D4 | 28908 | 00 | 01 | 08 | 60.30 | 9.70 | 22.30 | 4.93 | 3.86 | 6.40 | D11 | 28937 | - | 01 | 08 | M6 x 1.0 | D5 | 28910 | 00 | 01 | 08 | 63.50 | 11.90 | 25.30 | 6.48 | 4.85 | 7.90 | D11 | 28939 | - | 01 | 08 | M7 x 1.0 | D5 | 28911 | 00 | 01 | 08 | 63.50 | 11.90 | 25.30 | 6.48 | 4.85 | 7.90 | D11 | 28941 | - | 01 | 08 | M8 x 1.25 | D5 | 28914 | 00 | 01 | 08 | 69.10 | 15.00 | 28.60 | 8.08 | 6.05 | 9.50 | D11 | 28945 | - | 01 | 08 | M8 x 1.0 | D5 | 28913 | 00 | 01 | 08 | 69.10 | 15.00 | 28.60 | 8.08 | 6.05 | 9.50 | D11 | 28943 | - | 01 | 08 | M10 x 1.5 | D6 | 28918 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | D11 | 28951 | - | 01 | 08 | M10 x 1.25 | D5 | 28917 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | D11 | 28949 | - | 01 | 08 | M10 x 1.0 | D5 | 28916 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | D11 | 28947 | - | 01 | 08 | M12 x 1.75 | D6 | 28923 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28957 | - | 01 | 08 | M12 x 1.5 | D6 | 28922 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28955 | - | 01 | 08 | M12 x 1.25 | D5 | 28921 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28952 | - | 01 | 08 | M14 x 2.0 | D7 | 28926 | - | 01 | 08 | 91.30 | 24.00 | 36.00 | 10.90 | 8.18 | 12.70 | M14 x 1.5 | D6 | 28925 | - | 01 | 08 | M16 x 2.0 | D7 | 28929 | - | 01 | 08 | 96.80 | 24.00 | 36.00 | 12.19 | 9.14 | 14.30 | M16 x 1.5 | D6 | 28928 | - | 01 | 08 | M18 x 2.5 | D7 | 28932 | - | 01 | 08 | 102.40 | 30.00 | 43.00 | 13.77 | 10.31 | 15.90 | M18 x 1.5 | D6 | 28930 | - | 01 | 08 | M20 x 2.5 | D8 | 28936 | - | 01 | 08 | 113.50 | 30.00 | 44.00 | 16.56 | 12.42 | 17.50 | M20 x 1.5 | D6 | 28934 | - | 01 | 08 | M22 x 2.5 | D8 | 28940 | - | 01 | - | 119.10 | 36.00 | 51.00 | 17.70 | 13.28 | 19.10 | M22 x 1.5 | D6 | 28938 | - | 01 | - | M24 x 3.0 | D8 | 28944 | - | 01 | - | 124.60 | 36.00 | 51.00 | 19.30 | 14.48 | 22.20 | M24 x 1.5 | D6 | 28942 | - | 01 | - | M27 x 3.0 | D8 | 28948 | - | 01 | - | 130.20 | 42.00 | 58.00 | 25.93 | 19.46 | 25.40 | M27 x 1.5 | D6 | 28946 | - | 01 | - | M30 x 3.5 | D9 | 28953 | - | 01 | - | 138.10 | 38.10 | 54.10 | 25.93 | 19.46 | 25.40 | M30 x 1.5 | D6 | 28950 | - | 01 | - | | | | | | | | | | |
| M4 x 0.7 | D4 | | 28906 | 00 | 01 | 08 | 54.00 | 8.30 | 19.00 | 4.27 | 3.33 | 6.40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | D11 | | 28935 | - | 01 | 08 | | | | | | | M5 x 0.8 | D4 | 28908 | 00 | 01 | 08 | 60.30 | 9.70 | 22.30 | 4.93 | 3.86 | 6.40 | D11 | 28937 | - | 01 | 08 | M6 x 1.0 | D5 | 28910 | 00 | 01 | 08 | 63.50 | 11.90 | 25.30 | 6.48 | 4.85 | 7.90 | D11 | 28939 | - | 01 | 08 | M7 x 1.0 | D5 | 28911 | 00 | 01 | 08 | 63.50 | 11.90 | 25.30 | 6.48 | 4.85 | 7.90 | D11 | 28941 | - | 01 | 08 | M8 x 1.25 | D5 | 28914 | 00 | 01 | 08 | 69.10 | 15.00 | 28.60 | 8.08 | 6.05 | 9.50 | D11 | 28945 | - | 01 | 08 | M8 x 1.0 | D5 | 28913 | 00 | 01 | 08 | 69.10 | 15.00 | 28.60 | 8.08 | 6.05 | 9.50 | D11 | 28943 | - | 01 | 08 | M10 x 1.5 | D6 | 28918 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | D11 | 28951 | - | 01 | 08 | M10 x 1.25 | D5 | 28917 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | D11 | 28949 | - | 01 | 08 | M10 x 1.0 | D5 | 28916 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | D11 | 28947 | - | 01 | 08 | M12 x 1.75 | D6 | 28923 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28957 | - | 01 | 08 | M12 x 1.5 | D6 | 28922 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28955 | - | 01 | 08 | M12 x 1.25 | D5 | 28921 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28952 | - | 01 | 08 | M14 x 2.0 | D7 | 28926 | - | 01 | 08 | 91.30 | 24.00 | 36.00 | 10.90 | 8.18 | 12.70 | M14 x 1.5 | D6 | 28925 | - | 01 | 08 | M16 x 2.0 | D7 | 28929 | - | 01 | 08 | 96.80 | 24.00 | 36.00 | 12.19 | 9.14 | 14.30 | M16 x 1.5 | D6 | 28928 | - | 01 | 08 | M18 x 2.5 | D7 | 28932 | - | 01 | 08 | 102.40 | 30.00 | 43.00 | 13.77 | 10.31 | 15.90 | M18 x 1.5 | D6 | 28930 | - | 01 | 08 | M20 x 2.5 | D8 | 28936 | - | 01 | 08 | 113.50 | 30.00 | 44.00 | 16.56 | 12.42 | 17.50 | M20 x 1.5 | D6 | 28934 | - | 01 | 08 | M22 x 2.5 | D8 | 28940 | - | 01 | - | 119.10 | 36.00 | 51.00 | 17.70 | 13.28 | 19.10 | M22 x 1.5 | D6 | 28938 | - | 01 | - | M24 x 3.0 | D8 | 28944 | - | 01 | - | 124.60 | 36.00 | 51.00 | 19.30 | 14.48 | 22.20 | M24 x 1.5 | D6 | 28942 | - | 01 | - | M27 x 3.0 | D8 | 28948 | - | 01 | - | 130.20 | 42.00 | 58.00 | 25.93 | 19.46 | 25.40 | M27 x 1.5 | D6 | 28946 | - | 01 | - | M30 x 3.5 | D9 | 28953 | - | 01 | - | 138.10 | 38.10 | 54.10 | 25.93 | 19.46 | 25.40 | M30 x 1.5 | D6 | 28950 | - | 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M5 x 0.8 | D4 | | 28908 | 00 | 01 | 08 | 60.30 | 9.70 | 22.30 | 4.93 | 3.86 | 6.40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | D11 | | 28937 | - | 01 | 08 | | | | | | | M6 x 1.0 | D5 | 28910 | 00 | 01 | 08 | 63.50 | 11.90 | 25.30 | 6.48 | 4.85 | 7.90 | D11 | 28939 | - | 01 | 08 | M7 x 1.0 | D5 | 28911 | 00 | 01 | 08 | 63.50 | 11.90 | 25.30 | 6.48 | 4.85 | 7.90 | D11 | 28941 | - | 01 | 08 | M8 x 1.25 | D5 | 28914 | 00 | 01 | 08 | 69.10 | 15.00 | 28.60 | 8.08 | 6.05 | 9.50 | D11 | 28945 | - | 01 | 08 | M8 x 1.0 | D5 | 28913 | 00 | 01 | 08 | 69.10 | 15.00 | 28.60 | 8.08 | 6.05 | 9.50 | D11 | 28943 | - | 01 | 08 | M10 x 1.5 | D6 | 28918 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | D11 | 28951 | - | 01 | 08 | M10 x 1.25 | D5 | 28917 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | D11 | 28949 | - | 01 | 08 | M10 x 1.0 | D5 | 28916 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | D11 | 28947 | - | 01 | 08 | M12 x 1.75 | D6 | 28923 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28957 | - | 01 | 08 | M12 x 1.5 | D6 | 28922 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28955 | - | 01 | 08 | M12 x 1.25 | D5 | 28921 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28952 | - | 01 | 08 | M14 x 2.0 | D7 | 28926 | - | 01 | 08 | 91.30 | 24.00 | 36.00 | 10.90 | 8.18 | 12.70 | M14 x 1.5 | D6 | 28925 | - | 01 | 08 | M16 x 2.0 | D7 | 28929 | - | 01 | 08 | 96.80 | 24.00 | 36.00 | 12.19 | 9.14 | 14.30 | M16 x 1.5 | D6 | 28928 | - | 01 | 08 | M18 x 2.5 | D7 | 28932 | - | 01 | 08 | 102.40 | 30.00 | 43.00 | 13.77 | 10.31 | 15.90 | M18 x 1.5 | D6 | 28930 | - | 01 | 08 | M20 x 2.5 | D8 | 28936 | - | 01 | 08 | 113.50 | 30.00 | 44.00 | 16.56 | 12.42 | 17.50 | M20 x 1.5 | D6 | 28934 | - | 01 | 08 | M22 x 2.5 | D8 | 28940 | - | 01 | - | 119.10 | 36.00 | 51.00 | 17.70 | 13.28 | 19.10 | M22 x 1.5 | D6 | 28938 | - | 01 | - | M24 x 3.0 | D8 | 28944 | - | 01 | - | 124.60 | 36.00 | 51.00 | 19.30 | 14.48 | 22.20 | M24 x 1.5 | D6 | 28942 | - | 01 | - | M27 x 3.0 | D8 | 28948 | - | 01 | - | 130.20 | 42.00 | 58.00 | 25.93 | 19.46 | 25.40 | M27 x 1.5 | D6 | 28946 | - | 01 | - | M30 x 3.5 | D9 | 28953 | - | 01 | - | 138.10 | 38.10 | 54.10 | 25.93 | 19.46 | 25.40 | M30 x 1.5 | D6 | 28950 | - | 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M6 x 1.0 | D5 | | 28910 | 00 | 01 | 08 | 63.50 | 11.90 | 25.30 | 6.48 | 4.85 | 7.90 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | D11 | | 28939 | - | 01 | 08 | | | | | | | M7 x 1.0 | D5 | 28911 | 00 | 01 | 08 | 63.50 | 11.90 | 25.30 | 6.48 | 4.85 | 7.90 | D11 | 28941 | - | 01 | 08 | M8 x 1.25 | D5 | 28914 | 00 | 01 | 08 | 69.10 | 15.00 | 28.60 | 8.08 | 6.05 | 9.50 | D11 | 28945 | - | 01 | 08 | M8 x 1.0 | D5 | 28913 | 00 | 01 | 08 | 69.10 | 15.00 | 28.60 | 8.08 | 6.05 | 9.50 | D11 | 28943 | - | 01 | 08 | M10 x 1.5 | D6 | 28918 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | D11 | 28951 | - | 01 | 08 | M10 x 1.25 | D5 | 28917 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | D11 | 28949 | - | 01 | 08 | M10 x 1.0 | D5 | 28916 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | D11 | 28947 | - | 01 | 08 | M12 x 1.75 | D6 | 28923 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28957 | - | 01 | 08 | M12 x 1.5 | D6 | 28922 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28955 | - | 01 | 08 | M12 x 1.25 | D5 | 28921 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28952 | - | 01 | 08 | M14 x 2.0 | D7 | 28926 | - | 01 | 08 | 91.30 | 24.00 | 36.00 | 10.90 | 8.18 | 12.70 | M14 x 1.5 | D6 | 28925 | - | 01 | 08 | M16 x 2.0 | D7 | 28929 | - | 01 | 08 | 96.80 | 24.00 | 36.00 | 12.19 | 9.14 | 14.30 | M16 x 1.5 | D6 | 28928 | - | 01 | 08 | M18 x 2.5 | D7 | 28932 | - | 01 | 08 | 102.40 | 30.00 | 43.00 | 13.77 | 10.31 | 15.90 | M18 x 1.5 | D6 | 28930 | - | 01 | 08 | M20 x 2.5 | D8 | 28936 | - | 01 | 08 | 113.50 | 30.00 | 44.00 | 16.56 | 12.42 | 17.50 | M20 x 1.5 | D6 | 28934 | - | 01 | 08 | M22 x 2.5 | D8 | 28940 | - | 01 | - | 119.10 | 36.00 | 51.00 | 17.70 | 13.28 | 19.10 | M22 x 1.5 | D6 | 28938 | - | 01 | - | M24 x 3.0 | D8 | 28944 | - | 01 | - | 124.60 | 36.00 | 51.00 | 19.30 | 14.48 | 22.20 | M24 x 1.5 | D6 | 28942 | - | 01 | - | M27 x 3.0 | D8 | 28948 | - | 01 | - | 130.20 | 42.00 | 58.00 | 25.93 | 19.46 | 25.40 | M27 x 1.5 | D6 | 28946 | - | 01 | - | M30 x 3.5 | D9 | 28953 | - | 01 | - | 138.10 | 38.10 | 54.10 | 25.93 | 19.46 | 25.40 | M30 x 1.5 | D6 | 28950 | - | 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M7 x 1.0 | D5 | | 28911 | 00 | 01 | 08 | 63.50 | 11.90 | 25.30 | 6.48 | 4.85 | 7.90 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | D11 | | 28941 | - | 01 | 08 | | | | | | | M8 x 1.25 | D5 | 28914 | 00 | 01 | 08 | 69.10 | 15.00 | 28.60 | 8.08 | 6.05 | 9.50 | D11 | 28945 | - | 01 | 08 | M8 x 1.0 | D5 | 28913 | 00 | 01 | 08 | 69.10 | 15.00 | 28.60 | 8.08 | 6.05 | 9.50 | D11 | 28943 | - | 01 | 08 | M10 x 1.5 | D6 | 28918 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | D11 | 28951 | - | 01 | 08 | M10 x 1.25 | D5 | 28917 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | D11 | 28949 | - | 01 | 08 | M10 x 1.0 | D5 | 28916 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | D11 | 28947 | - | 01 | 08 | M12 x 1.75 | D6 | 28923 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28957 | - | 01 | 08 | M12 x 1.5 | D6 | 28922 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28955 | - | 01 | 08 | M12 x 1.25 | D5 | 28921 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28952 | - | 01 | 08 | M14 x 2.0 | D7 | 28926 | - | 01 | 08 | 91.30 | 24.00 | 36.00 | 10.90 | 8.18 | 12.70 | M14 x 1.5 | D6 | 28925 | - | 01 | 08 | M16 x 2.0 | D7 | 28929 | - | 01 | 08 | 96.80 | 24.00 | 36.00 | 12.19 | 9.14 | 14.30 | M16 x 1.5 | D6 | 28928 | - | 01 | 08 | M18 x 2.5 | D7 | 28932 | - | 01 | 08 | 102.40 | 30.00 | 43.00 | 13.77 | 10.31 | 15.90 | M18 x 1.5 | D6 | 28930 | - | 01 | 08 | M20 x 2.5 | D8 | 28936 | - | 01 | 08 | 113.50 | 30.00 | 44.00 | 16.56 | 12.42 | 17.50 | M20 x 1.5 | D6 | 28934 | - | 01 | 08 | M22 x 2.5 | D8 | 28940 | - | 01 | - | 119.10 | 36.00 | 51.00 | 17.70 | 13.28 | 19.10 | M22 x 1.5 | D6 | 28938 | - | 01 | - | M24 x 3.0 | D8 | 28944 | - | 01 | - | 124.60 | 36.00 | 51.00 | 19.30 | 14.48 | 22.20 | M24 x 1.5 | D6 | 28942 | - | 01 | - | M27 x 3.0 | D8 | 28948 | - | 01 | - | 130.20 | 42.00 | 58.00 | 25.93 | 19.46 | 25.40 | M27 x 1.5 | D6 | 28946 | - | 01 | - | M30 x 3.5 | D9 | 28953 | - | 01 | - | 138.10 | 38.10 | 54.10 | 25.93 | 19.46 | 25.40 | M30 x 1.5 | D6 | 28950 | - | 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M8 x 1.25 | D5 | | 28914 | 00 | 01 | 08 | 69.10 | 15.00 | 28.60 | 8.08 | 6.05 | 9.50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | D11 | | 28945 | - | 01 | 08 | | | | | | | M8 x 1.0 | D5 | 28913 | 00 | 01 | 08 | 69.10 | 15.00 | 28.60 | 8.08 | 6.05 | 9.50 | D11 | 28943 | - | 01 | 08 | M10 x 1.5 | D6 | 28918 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | D11 | 28951 | - | 01 | 08 | M10 x 1.25 | D5 | 28917 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | D11 | 28949 | - | 01 | 08 | M10 x 1.0 | D5 | 28916 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | D11 | 28947 | - | 01 | 08 | M12 x 1.75 | D6 | 28923 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28957 | - | 01 | 08 | M12 x 1.5 | D6 | 28922 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28955 | - | 01 | 08 | M12 x 1.25 | D5 | 28921 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28952 | - | 01 | 08 | M14 x 2.0 | D7 | 28926 | - | 01 | 08 | 91.30 | 24.00 | 36.00 | 10.90 | 8.18 | 12.70 | M14 x 1.5 | D6 | 28925 | - | 01 | 08 | M16 x 2.0 | D7 | 28929 | - | 01 | 08 | 96.80 | 24.00 | 36.00 | 12.19 | 9.14 | 14.30 | M16 x 1.5 | D6 | 28928 | - | 01 | 08 | M18 x 2.5 | D7 | 28932 | - | 01 | 08 | 102.40 | 30.00 | 43.00 | 13.77 | 10.31 | 15.90 | M18 x 1.5 | D6 | 28930 | - | 01 | 08 | M20 x 2.5 | D8 | 28936 | - | 01 | 08 | 113.50 | 30.00 | 44.00 | 16.56 | 12.42 | 17.50 | M20 x 1.5 | D6 | 28934 | - | 01 | 08 | M22 x 2.5 | D8 | 28940 | - | 01 | - | 119.10 | 36.00 | 51.00 | 17.70 | 13.28 | 19.10 | M22 x 1.5 | D6 | 28938 | - | 01 | - | M24 x 3.0 | D8 | 28944 | - | 01 | - | 124.60 | 36.00 | 51.00 | 19.30 | 14.48 | 22.20 | M24 x 1.5 | D6 | 28942 | - | 01 | - | M27 x 3.0 | D8 | 28948 | - | 01 | - | 130.20 | 42.00 | 58.00 | 25.93 | 19.46 | 25.40 | M27 x 1.5 | D6 | 28946 | - | 01 | - | M30 x 3.5 | D9 | 28953 | - | 01 | - | 138.10 | 38.10 | 54.10 | 25.93 | 19.46 | 25.40 | M30 x 1.5 | D6 | 28950 | - | 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M8 x 1.0 | D5 | | 28913 | 00 | 01 | 08 | 69.10 | 15.00 | 28.60 | 8.08 | 6.05 | 9.50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | D11 | | 28943 | - | 01 | 08 | | | | | | | M10 x 1.5 | D6 | 28918 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | D11 | 28951 | - | 01 | 08 | M10 x 1.25 | D5 | 28917 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | D11 | 28949 | - | 01 | 08 | M10 x 1.0 | D5 | 28916 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | D11 | 28947 | - | 01 | 08 | M12 x 1.75 | D6 | 28923 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28957 | - | 01 | 08 | M12 x 1.5 | D6 | 28922 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28955 | - | 01 | 08 | M12 x 1.25 | D5 | 28921 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28952 | - | 01 | 08 | M14 x 2.0 | D7 | 28926 | - | 01 | 08 | 91.30 | 24.00 | 36.00 | 10.90 | 8.18 | 12.70 | M14 x 1.5 | D6 | 28925 | - | 01 | 08 | M16 x 2.0 | D7 | 28929 | - | 01 | 08 | 96.80 | 24.00 | 36.00 | 12.19 | 9.14 | 14.30 | M16 x 1.5 | D6 | 28928 | - | 01 | 08 | M18 x 2.5 | D7 | 28932 | - | 01 | 08 | 102.40 | 30.00 | 43.00 | 13.77 | 10.31 | 15.90 | M18 x 1.5 | D6 | 28930 | - | 01 | 08 | M20 x 2.5 | D8 | 28936 | - | 01 | 08 | 113.50 | 30.00 | 44.00 | 16.56 | 12.42 | 17.50 | M20 x 1.5 | D6 | 28934 | - | 01 | 08 | M22 x 2.5 | D8 | 28940 | - | 01 | - | 119.10 | 36.00 | 51.00 | 17.70 | 13.28 | 19.10 | M22 x 1.5 | D6 | 28938 | - | 01 | - | M24 x 3.0 | D8 | 28944 | - | 01 | - | 124.60 | 36.00 | 51.00 | 19.30 | 14.48 | 22.20 | M24 x 1.5 | D6 | 28942 | - | 01 | - | M27 x 3.0 | D8 | 28948 | - | 01 | - | 130.20 | 42.00 | 58.00 | 25.93 | 19.46 | 25.40 | M27 x 1.5 | D6 | 28946 | - | 01 | - | M30 x 3.5 | D9 | 28953 | - | 01 | - | 138.10 | 38.10 | 54.10 | 25.93 | 19.46 | 25.40 | M30 x 1.5 | D6 | 28950 | - | 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M10 x 1.5 | D6 | | 28918 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | D11 | | 28951 | - | 01 | 08 | | | | | | | M10 x 1.25 | D5 | 28917 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | D11 | 28949 | - | 01 | 08 | M10 x 1.0 | D5 | 28916 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | D11 | 28947 | - | 01 | 08 | M12 x 1.75 | D6 | 28923 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28957 | - | 01 | 08 | M12 x 1.5 | D6 | 28922 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28955 | - | 01 | 08 | M12 x 1.25 | D5 | 28921 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28952 | - | 01 | 08 | M14 x 2.0 | D7 | 28926 | - | 01 | 08 | 91.30 | 24.00 | 36.00 | 10.90 | 8.18 | 12.70 | M14 x 1.5 | D6 | 28925 | - | 01 | 08 | M16 x 2.0 | D7 | 28929 | - | 01 | 08 | 96.80 | 24.00 | 36.00 | 12.19 | 9.14 | 14.30 | M16 x 1.5 | D6 | 28928 | - | 01 | 08 | M18 x 2.5 | D7 | 28932 | - | 01 | 08 | 102.40 | 30.00 | 43.00 | 13.77 | 10.31 | 15.90 | M18 x 1.5 | D6 | 28930 | - | 01 | 08 | M20 x 2.5 | D8 | 28936 | - | 01 | 08 | 113.50 | 30.00 | 44.00 | 16.56 | 12.42 | 17.50 | M20 x 1.5 | D6 | 28934 | - | 01 | 08 | M22 x 2.5 | D8 | 28940 | - | 01 | - | 119.10 | 36.00 | 51.00 | 17.70 | 13.28 | 19.10 | M22 x 1.5 | D6 | 28938 | - | 01 | - | M24 x 3.0 | D8 | 28944 | - | 01 | - | 124.60 | 36.00 | 51.00 | 19.30 | 14.48 | 22.20 | M24 x 1.5 | D6 | 28942 | - | 01 | - | M27 x 3.0 | D8 | 28948 | - | 01 | - | 130.20 | 42.00 | 58.00 | 25.93 | 19.46 | 25.40 | M27 x 1.5 | D6 | 28946 | - | 01 | - | M30 x 3.5 | D9 | 28953 | - | 01 | - | 138.10 | 38.10 | 54.10 | 25.93 | 19.46 | 25.40 | M30 x 1.5 | D6 | 28950 | - | 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M10 x 1.25 | D5 | | 28917 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | D11 | | 28949 | - | 01 | 08 | | | | | | | M10 x 1.0 | D5 | 28916 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | D11 | 28947 | - | 01 | 08 | M12 x 1.75 | D6 | 28923 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28957 | - | 01 | 08 | M12 x 1.5 | D6 | 28922 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28955 | - | 01 | 08 | M12 x 1.25 | D5 | 28921 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28952 | - | 01 | 08 | M14 x 2.0 | D7 | 28926 | - | 01 | 08 | 91.30 | 24.00 | 36.00 | 10.90 | 8.18 | 12.70 | M14 x 1.5 | D6 | 28925 | - | 01 | 08 | M16 x 2.0 | D7 | 28929 | - | 01 | 08 | 96.80 | 24.00 | 36.00 | 12.19 | 9.14 | 14.30 | M16 x 1.5 | D6 | 28928 | - | 01 | 08 | M18 x 2.5 | D7 | 28932 | - | 01 | 08 | 102.40 | 30.00 | 43.00 | 13.77 | 10.31 | 15.90 | M18 x 1.5 | D6 | 28930 | - | 01 | 08 | M20 x 2.5 | D8 | 28936 | - | 01 | 08 | 113.50 | 30.00 | 44.00 | 16.56 | 12.42 | 17.50 | M20 x 1.5 | D6 | 28934 | - | 01 | 08 | M22 x 2.5 | D8 | 28940 | - | 01 | - | 119.10 | 36.00 | 51.00 | 17.70 | 13.28 | 19.10 | M22 x 1.5 | D6 | 28938 | - | 01 | - | M24 x 3.0 | D8 | 28944 | - | 01 | - | 124.60 | 36.00 | 51.00 | 19.30 | 14.48 | 22.20 | M24 x 1.5 | D6 | 28942 | - | 01 | - | M27 x 3.0 | D8 | 28948 | - | 01 | - | 130.20 | 42.00 | 58.00 | 25.93 | 19.46 | 25.40 | M27 x 1.5 | D6 | 28946 | - | 01 | - | M30 x 3.5 | D9 | 28953 | - | 01 | - | 138.10 | 38.10 | 54.10 | 25.93 | 19.46 | 25.40 | M30 x 1.5 | D6 | 28950 | - | 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M10 x 1.0 | D5 | | 28916 | 00 | 01 | 08 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | D11 | | 28947 | - | 01 | 08 | | | | | | | M12 x 1.75 | D6 | 28923 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28957 | - | 01 | 08 | M12 x 1.5 | D6 | 28922 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28955 | - | 01 | 08 | M12 x 1.25 | D5 | 28921 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28952 | - | 01 | 08 | M14 x 2.0 | D7 | 28926 | - | 01 | 08 | 91.30 | 24.00 | 36.00 | 10.90 | 8.18 | 12.70 | M14 x 1.5 | D6 | 28925 | - | 01 | 08 | M16 x 2.0 | D7 | 28929 | - | 01 | 08 | 96.80 | 24.00 | 36.00 | 12.19 | 9.14 | 14.30 | M16 x 1.5 | D6 | 28928 | - | 01 | 08 | M18 x 2.5 | D7 | 28932 | - | 01 | 08 | 102.40 | 30.00 | 43.00 | 13.77 | 10.31 | 15.90 | M18 x 1.5 | D6 | 28930 | - | 01 | 08 | M20 x 2.5 | D8 | 28936 | - | 01 | 08 | 113.50 | 30.00 | 44.00 | 16.56 | 12.42 | 17.50 | M20 x 1.5 | D6 | 28934 | - | 01 | 08 | M22 x 2.5 | D8 | 28940 | - | 01 | - | 119.10 | 36.00 | 51.00 | 17.70 | 13.28 | 19.10 | M22 x 1.5 | D6 | 28938 | - | 01 | - | M24 x 3.0 | D8 | 28944 | - | 01 | - | 124.60 | 36.00 | 51.00 | 19.30 | 14.48 | 22.20 | M24 x 1.5 | D6 | 28942 | - | 01 | - | M27 x 3.0 | D8 | 28948 | - | 01 | - | 130.20 | 42.00 | 58.00 | 25.93 | 19.46 | 25.40 | M27 x 1.5 | D6 | 28946 | - | 01 | - | M30 x 3.5 | D9 | 28953 | - | 01 | - | 138.10 | 38.10 | 54.10 | 25.93 | 19.46 | 25.40 | M30 x 1.5 | D6 | 28950 | - | 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M12 x 1.75 | D6 | | 28923 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | D11 | | 28957 | - | 01 | 08 | | | | | | | M12 x 1.5 | D6 | 28922 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28955 | - | 01 | 08 | M12 x 1.25 | D5 | 28921 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28952 | - | 01 | 08 | M14 x 2.0 | D7 | 28926 | - | 01 | 08 | 91.30 | 24.00 | 36.00 | 10.90 | 8.18 | 12.70 | M14 x 1.5 | D6 | 28925 | - | 01 | 08 | M16 x 2.0 | D7 | 28929 | - | 01 | 08 | 96.80 | 24.00 | 36.00 | 12.19 | 9.14 | 14.30 | M16 x 1.5 | D6 | 28928 | - | 01 | 08 | M18 x 2.5 | D7 | 28932 | - | 01 | 08 | 102.40 | 30.00 | 43.00 | 13.77 | 10.31 | 15.90 | M18 x 1.5 | D6 | 28930 | - | 01 | 08 | M20 x 2.5 | D8 | 28936 | - | 01 | 08 | 113.50 | 30.00 | 44.00 | 16.56 | 12.42 | 17.50 | M20 x 1.5 | D6 | 28934 | - | 01 | 08 | M22 x 2.5 | D8 | 28940 | - | 01 | - | 119.10 | 36.00 | 51.00 | 17.70 | 13.28 | 19.10 | M22 x 1.5 | D6 | 28938 | - | 01 | - | M24 x 3.0 | D8 | 28944 | - | 01 | - | 124.60 | 36.00 | 51.00 | 19.30 | 14.48 | 22.20 | M24 x 1.5 | D6 | 28942 | - | 01 | - | M27 x 3.0 | D8 | 28948 | - | 01 | - | 130.20 | 42.00 | 58.00 | 25.93 | 19.46 | 25.40 | M27 x 1.5 | D6 | 28946 | - | 01 | - | M30 x 3.5 | D9 | 28953 | - | 01 | - | 138.10 | 38.10 | 54.10 | 25.93 | 19.46 | 25.40 | M30 x 1.5 | D6 | 28950 | - | 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M12 x 1.5 | D6 | | 28922 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | D11 | | 28955 | - | 01 | 08 | | | | | | | M12 x 1.25 | D5 | 28921 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | D11 | 28952 | - | 01 | 08 | M14 x 2.0 | D7 | 28926 | - | 01 | 08 | 91.30 | 24.00 | 36.00 | 10.90 | 8.18 | 12.70 | M14 x 1.5 | D6 | 28925 | - | 01 | 08 | M16 x 2.0 | D7 | 28929 | - | 01 | 08 | 96.80 | 24.00 | 36.00 | 12.19 | 9.14 | 14.30 | M16 x 1.5 | D6 | 28928 | - | 01 | 08 | M18 x 2.5 | D7 | 28932 | - | 01 | 08 | 102.40 | 30.00 | 43.00 | 13.77 | 10.31 | 15.90 | M18 x 1.5 | D6 | 28930 | - | 01 | 08 | M20 x 2.5 | D8 | 28936 | - | 01 | 08 | 113.50 | 30.00 | 44.00 | 16.56 | 12.42 | 17.50 | M20 x 1.5 | D6 | 28934 | - | 01 | 08 | M22 x 2.5 | D8 | 28940 | - | 01 | - | 119.10 | 36.00 | 51.00 | 17.70 | 13.28 | 19.10 | M22 x 1.5 | D6 | 28938 | - | 01 | - | M24 x 3.0 | D8 | 28944 | - | 01 | - | 124.60 | 36.00 | 51.00 | 19.30 | 14.48 | 22.20 | M24 x 1.5 | D6 | 28942 | - | 01 | - | M27 x 3.0 | D8 | 28948 | - | 01 | - | 130.20 | 42.00 | 58.00 | 25.93 | 19.46 | 25.40 | M27 x 1.5 | D6 | 28946 | - | 01 | - | M30 x 3.5 | D9 | 28953 | - | 01 | - | 138.10 | 38.10 | 54.10 | 25.93 | 19.46 | 25.40 | M30 x 1.5 | D6 | 28950 | - | 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M12 x 1.25 | D5 | | 28921 | 00 | 01 | 08 | 85.70 | 21.00 | 32.00 | 9.32 | 6.98 | 11.10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | D11 | | 28952 | - | 01 | 08 | | | | | | | M14 x 2.0 | D7 | 28926 | - | 01 | 08 | 91.30 | 24.00 | 36.00 | 10.90 | 8.18 | 12.70 | M14 x 1.5 | D6 | 28925 | - | 01 | 08 | M16 x 2.0 | D7 | 28929 | - | 01 | 08 | 96.80 | 24.00 | 36.00 | 12.19 | 9.14 | 14.30 | M16 x 1.5 | D6 | 28928 | - | 01 | 08 | M18 x 2.5 | D7 | 28932 | - | 01 | 08 | 102.40 | 30.00 | 43.00 | 13.77 | 10.31 | 15.90 | M18 x 1.5 | D6 | 28930 | - | 01 | 08 | M20 x 2.5 | D8 | 28936 | - | 01 | 08 | 113.50 | 30.00 | 44.00 | 16.56 | 12.42 | 17.50 | M20 x 1.5 | D6 | 28934 | - | 01 | 08 | M22 x 2.5 | D8 | 28940 | - | 01 | - | 119.10 | 36.00 | 51.00 | 17.70 | 13.28 | 19.10 | M22 x 1.5 | D6 | 28938 | - | 01 | - | M24 x 3.0 | D8 | 28944 | - | 01 | - | 124.60 | 36.00 | 51.00 | 19.30 | 14.48 | 22.20 | M24 x 1.5 | D6 | 28942 | - | 01 | - | M27 x 3.0 | D8 | 28948 | - | 01 | - | 130.20 | 42.00 | 58.00 | 25.93 | 19.46 | 25.40 | M27 x 1.5 | D6 | 28946 | - | 01 | - | M30 x 3.5 | D9 | 28953 | - | 01 | - | 138.10 | 38.10 | 54.10 | 25.93 | 19.46 | 25.40 | M30 x 1.5 | D6 | 28950 | - | 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M14 x 2.0 | D7 | 28926 | - | 01 | 08 | 91.30 | 24.00 | 36.00 | 10.90 | 8.18 | 12.70 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M14 x 1.5 | D6 | 28925 | - | 01 | 08 | | | | | | | M16 x 2.0 | D7 | 28929 | - | 01 | 08 | 96.80 | 24.00 | 36.00 | 12.19 | 9.14 | 14.30 | M16 x 1.5 | D6 | 28928 | - | 01 | 08 | M18 x 2.5 | D7 | 28932 | - | 01 | 08 | 102.40 | 30.00 | 43.00 | 13.77 | 10.31 | 15.90 | M18 x 1.5 | D6 | 28930 | - | 01 | 08 | M20 x 2.5 | D8 | 28936 | - | 01 | 08 | 113.50 | 30.00 | 44.00 | 16.56 | 12.42 | 17.50 | M20 x 1.5 | D6 | 28934 | - | 01 | 08 | M22 x 2.5 | D8 | 28940 | - | 01 | - | 119.10 | 36.00 | 51.00 | 17.70 | 13.28 | 19.10 | M22 x 1.5 | D6 | 28938 | - | 01 | - | M24 x 3.0 | D8 | 28944 | - | 01 | - | 124.60 | 36.00 | 51.00 | 19.30 | 14.48 | 22.20 | M24 x 1.5 | D6 | 28942 | - | 01 | - | M27 x 3.0 | D8 | 28948 | - | 01 | - | 130.20 | 42.00 | 58.00 | 25.93 | 19.46 | 25.40 | M27 x 1.5 | D6 | 28946 | - | 01 | - | M30 x 3.5 | D9 | 28953 | - | 01 | - | 138.10 | 38.10 | 54.10 | 25.93 | 19.46 | 25.40 | M30 x 1.5 | D6 | 28950 | - | 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M16 x 2.0 | D7 | 28929 | - | 01 | 08 | 96.80 | 24.00 | 36.00 | 12.19 | 9.14 | 14.30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M16 x 1.5 | D6 | 28928 | - | 01 | 08 | | | | | | | M18 x 2.5 | D7 | 28932 | - | 01 | 08 | 102.40 | 30.00 | 43.00 | 13.77 | 10.31 | 15.90 | M18 x 1.5 | D6 | 28930 | - | 01 | 08 | M20 x 2.5 | D8 | 28936 | - | 01 | 08 | 113.50 | 30.00 | 44.00 | 16.56 | 12.42 | 17.50 | M20 x 1.5 | D6 | 28934 | - | 01 | 08 | M22 x 2.5 | D8 | 28940 | - | 01 | - | 119.10 | 36.00 | 51.00 | 17.70 | 13.28 | 19.10 | M22 x 1.5 | D6 | 28938 | - | 01 | - | M24 x 3.0 | D8 | 28944 | - | 01 | - | 124.60 | 36.00 | 51.00 | 19.30 | 14.48 | 22.20 | M24 x 1.5 | D6 | 28942 | - | 01 | - | M27 x 3.0 | D8 | 28948 | - | 01 | - | 130.20 | 42.00 | 58.00 | 25.93 | 19.46 | 25.40 | M27 x 1.5 | D6 | 28946 | - | 01 | - | M30 x 3.5 | D9 | 28953 | - | 01 | - | 138.10 | 38.10 | 54.10 | 25.93 | 19.46 | 25.40 | M30 x 1.5 | D6 | 28950 | - | 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M18 x 2.5 | D7 | 28932 | - | 01 | 08 | 102.40 | 30.00 | 43.00 | 13.77 | 10.31 | 15.90 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M18 x 1.5 | D6 | 28930 | - | 01 | 08 | | | | | | | M20 x 2.5 | D8 | 28936 | - | 01 | 08 | 113.50 | 30.00 | 44.00 | 16.56 | 12.42 | 17.50 | M20 x 1.5 | D6 | 28934 | - | 01 | 08 | M22 x 2.5 | D8 | 28940 | - | 01 | - | 119.10 | 36.00 | 51.00 | 17.70 | 13.28 | 19.10 | M22 x 1.5 | D6 | 28938 | - | 01 | - | M24 x 3.0 | D8 | 28944 | - | 01 | - | 124.60 | 36.00 | 51.00 | 19.30 | 14.48 | 22.20 | M24 x 1.5 | D6 | 28942 | - | 01 | - | M27 x 3.0 | D8 | 28948 | - | 01 | - | 130.20 | 42.00 | 58.00 | 25.93 | 19.46 | 25.40 | M27 x 1.5 | D6 | 28946 | - | 01 | - | M30 x 3.5 | D9 | 28953 | - | 01 | - | 138.10 | 38.10 | 54.10 | 25.93 | 19.46 | 25.40 | M30 x 1.5 | D6 | 28950 | - | 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M20 x 2.5 | D8 | 28936 | - | 01 | 08 | 113.50 | 30.00 | 44.00 | 16.56 | 12.42 | 17.50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M20 x 1.5 | D6 | 28934 | - | 01 | 08 | | | | | | | M22 x 2.5 | D8 | 28940 | - | 01 | - | 119.10 | 36.00 | 51.00 | 17.70 | 13.28 | 19.10 | M22 x 1.5 | D6 | 28938 | - | 01 | - | M24 x 3.0 | D8 | 28944 | - | 01 | - | 124.60 | 36.00 | 51.00 | 19.30 | 14.48 | 22.20 | M24 x 1.5 | D6 | 28942 | - | 01 | - | M27 x 3.0 | D8 | 28948 | - | 01 | - | 130.20 | 42.00 | 58.00 | 25.93 | 19.46 | 25.40 | M27 x 1.5 | D6 | 28946 | - | 01 | - | M30 x 3.5 | D9 | 28953 | - | 01 | - | 138.10 | 38.10 | 54.10 | 25.93 | 19.46 | 25.40 | M30 x 1.5 | D6 | 28950 | - | 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M22 x 2.5 | D8 | 28940 | - | 01 | - | 119.10 | 36.00 | 51.00 | 17.70 | 13.28 | 19.10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M22 x 1.5 | D6 | 28938 | - | 01 | - | | | | | | | M24 x 3.0 | D8 | 28944 | - | 01 | - | 124.60 | 36.00 | 51.00 | 19.30 | 14.48 | 22.20 | M24 x 1.5 | D6 | 28942 | - | 01 | - | M27 x 3.0 | D8 | 28948 | - | 01 | - | 130.20 | 42.00 | 58.00 | 25.93 | 19.46 | 25.40 | M27 x 1.5 | D6 | 28946 | - | 01 | - | M30 x 3.5 | D9 | 28953 | - | 01 | - | 138.10 | 38.10 | 54.10 | 25.93 | 19.46 | 25.40 | M30 x 1.5 | D6 | 28950 | - | 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M24 x 3.0 | D8 | 28944 | - | 01 | - | 124.60 | 36.00 | 51.00 | 19.30 | 14.48 | 22.20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M24 x 1.5 | D6 | 28942 | - | 01 | - | | | | | | | M27 x 3.0 | D8 | 28948 | - | 01 | - | 130.20 | 42.00 | 58.00 | 25.93 | 19.46 | 25.40 | M27 x 1.5 | D6 | 28946 | - | 01 | - | M30 x 3.5 | D9 | 28953 | - | 01 | - | 138.10 | 38.10 | 54.10 | 25.93 | 19.46 | 25.40 | M30 x 1.5 | D6 | 28950 | - | 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M27 x 3.0 | D8 | 28948 | - | 01 | - | 130.20 | 42.00 | 58.00 | 25.93 | 19.46 | 25.40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M27 x 1.5 | D6 | 28946 | - | 01 | - | | | | | | | M30 x 3.5 | D9 | 28953 | - | 01 | - | 138.10 | 38.10 | 54.10 | 25.93 | 19.46 | 25.40 | M30 x 1.5 | D6 | 28950 | - | 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M30 x 3.5 | D9 | 28953 | - | 01 | - | 138.10 | 38.10 | 54.10 | 25.93 | 19.46 | 25.40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M30 x 1.5 | D6 | 28950 | - | 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|---------|--------------|--------------------------|-----------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 289 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | |
| SFM | 50-90 | 40-80 | 40-60 | 40-80 | 20-60 | 40-80 | 40-80 | 30-50 | 30-80 | | | | | 20-60 | | | |

good best



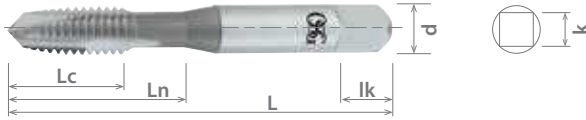


List 287

Plug (4.5P-5.5P)



| | | | |
|-----|-----|-----|----|
| HSS | TiN | S/O | BR |
|-----|-----|-----|----|



Units: Inch

| Tap Size | Class of Fit | No. of Flutes | Plug (4.5P - 5.5P) | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk | | |
|---------------|--------------|---------------|--------------------|----------------|-----|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|-------|-------|
| | | | EDP Number | Coating Suffix | | | | | | | | | |
| | | | Bright | S/O | TiN | | | | | | | | |
| 0 - 80 UNC | 2B | 2 | 28841 | 00 | 01 | 05 | 1.625 | 0.311 | - | 0.141 | 0.110 | 0.188 | |
| 1 - 64 UNC | | | 28842 | 00 | 01 | 05 | 1.688 | 0.374 | - | | | | |
| 1 - 72 UNF | | | 28843 | 00 | 01 | 05 | | | - | | | | |
| 2 - 56 UNC | | | 28844 | 00 | 01 | 05 | 1.750 | 0.437 | - | | | | |
| 3 - 48 UNC | | | 28845 | 00 | 01 | 05 | 1.813 | 0.496 | - | | | | |
| 3 - 56 UNF | | | 28846 | 00 | 01 | 05 | | | - | | | | |
| 4 - 40 UNC | | | 3B | 28850 | 00 | 01 | 05 | 1.875 | 0.319 | | | | 0.559 |
| 4 - 48 UNF | | | | 28800 | 00 | 01 | 05 | | | | | | |
| 5 - 40 UNC | | | | 28864 | 00 | 01 | 05 | | | | | | |
| 6 - 32 UNC | | | 3B | 28852 | 00 | 01 | 05 | 2.000 | 0.390 | | | | 0.685 |
| 6 - 40 UNF | 28802 | 00 | | 01 | 05 | | | | | | | | |
| 8 - 32 UNC | 3B | 28866 | 00 | 01 | 05 | 2.125 | 0.756 | 0.168 | 0.131 | | | | |
| 8 - 36 UNF | | 28853 | 00 | 01 | 05 | | | | | | | | |
| 10 - 24 UNC | 3B | 28803 | 00 | 01 | 05 | 2.375 | 0.504 | 0.874 | 0.194 | 0.250 | | | |
| 10 - 32 UNF | | 28867 | 00 | 01 | 05 | | | | | | | | |
| 12 - 24 UNC | 3B | 28854 | 00 | 01 | 05 | 2.500 | 0.638 | 1.008 | 0.255 | 0.191 | 0.313 | | |
| 1/4 - 20 UNC | | 28804 | 00 | 01 | 05 | | | | | | | | |
| 1/4 - 28 UNC | 3B | 28855 | 00 | 01 | 05 | 2.719 | 0.720 | 1.150 | 0.318 | 0.238 | 0.375 | | |
| 5/16 - 18 UNC | | 28806 | 00 | 01 | 05 | | | | | | | | |
| 5/16 - 24 UNF | 3B | 28857 | 00 | 01 | 05 | 2.938 | 0.787 | 1.276 | 0.381 | 0.286 | 0.438 | | |
| 3/8 - 16 UNC | | 28807 | 00 | 01 | 05 | | | | | | | | |
| 3/8 - 24 UNF | 3B | 28858 | 00 | 01 | 05 | 3.156 | 0.882 | 1.315 | 0.323 | 0.242 | 0.406 | | |
| 7/16 - 14 UNC | | 28808 | 00 | 01 | 05 | | | | | | | | |
| 7/16 - 20 UNF | 3B | 28859 | 00 | 01 | 05 | 3.375 | 0.941 | 1.374 | 0.367 | 0.275 | 0.438 | | |
| 1/2 - 13 UNC | | 28809 | 00 | 01 | 05 | | | | | | | | |
| 1/2 - 20 UNF | 3B | 28860 | 00 | 01 | 05 | | | | | | | | |
| | | 28810 | 00 | 01 | 05 | | | | | | | | |
| | 3B | 28861 | 00 | 01 | 05 | | | | | | | | |
| | | 28811 | 00 | 01 | 05 | | | | | | | | |
| | 3B | 28862 | 00 | 01 | 05 | | | | | | | | |
| | | 28812 | 00 | 01 | 05 | | | | | | | | |
| | 3B | 28863 | 00 | 01 | 05 | | | | | | | | |
| | | 28813 | 00 | 01 | 05 | | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|---------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 287 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | |
| SFM | 50-90 | 40-80 | | | | | | | 30-80 | 30-80 | | | | | | | | |

good best





HY-PRO® SEVEN

General Purpose Class of Fit Taps

List 288



HSS

TiN

S/O

BR

Plug (4.5P-5.5P)



Units: mm

| Tap Size | Class of Fit | No. of Flutes | Plug (4.5P - 5.5P) | | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|--------------------|----------------|-----|-----|----------------|---------------|-------------|------------|--------------|---------------|
| | | | EDP Number | Coating Suffix | | | | | | | | |
| | | | | Bright | S/O | TiN | L | Lc | Ln | d | k | lk |
| M3 x 0.5 | 6H | 2 | 28880 | 00 | 01 | 05 | 49.20 | 8.30 | 15.80 | 3.58 | 2.79 | 4.80 |
| M4 x 0.7 | | | 28881 | 00 | 01 | 05 | 54.00 | 10.00 | 19.30 | 4.27 | 3.33 | 6.40 |
| M5 x 0.8 | | | 28882 | 00 | 01 | 05 | 60.30 | 13.00 | 22.40 | 4.93 | 3.86 | |
| M6 x 1.0 | | | 28883 | 00 | 01 | 05 | 63.50 | 16.50 | 25.90 | 6.48 | 4.85 | 7.90 |
| M8 x 1.25 | | | 28884 | 00 | 01 | 05 | 69.10 | 18.00 | 28.80 | 8.08 | 6.05 | 9.50 |
| M10 x 1.5 | | | 28885 | 00 | 01 | 05 | 74.60 | 20.10 | 32.50 | 9.68 | 7.26 | 11.10 |
| M12 x 1.75 | | | 28886 | 00 | 01 | 05 | 85.70 | 23.90 | 34.90 | 9.32 | 6.98 | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order.



Work Material

| List No. | P | | | | | | | | | | | | M | | | K Cast Iron | N | | S | H | | | |
|----------|-------------------------------------|-------------------------------------|------|--------------|-----|----------------------------|------------------|---------|--------------------------|--------------------------|---------|-------------------|------------|-----------------|--------------|----------------|--------------|--|---|---|--|--|--|
| | Carbon Steels | | | | | Alloy Steels Die Steels | Stainless Steels | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | | | | | |
| | Low | Med. | High | 4140 4340 | 300 | | 400 | 17-4 PH | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | | 50-70 HRC | | | | | | |
| | 1010 1018 | 1035 1045 | 1065 | | 300 | | 400 | 17-4 PH | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | | 50-70 HRC | | | | | | |
| 288 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | |
| SFM | 50-90 | 40-80 | | | | | | | 30-80 | 30-80 | | | | | | | | | | | | | |

good best





List 105

No. 0 ~ No. 6 (4.5P-5.5P), >No. 8 (3.5P-4.5P)

| | | | | |
|-----|------|-----|-----|----|
| HSS | TiCN | TiN | S/O | BR |
|-----|------|-----|-----|----|



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Plug (4.5P - 5.5P) | | | | Plug (3.5P - 4.5P) | | | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk | | | | | | | | | | | | | | | | | | |
|------------|--------------|---------------|--------------------|----------------|-----|-----|--------------------|------------|----------------|-----|-------|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | | EDP Number | Coating Suffix | | | | EDP Number | Coating Suffix | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | Bright | S/O | TiN | TiCN | | Bright | S/O | TiN | | | | | | | TiCN | | | | | | | | | | | | | | | | | |
| 0 - 80 UNF | H1 | 2 | 12000 | 00 | 01 | - | 08 | - | - | - | - | 1.625 | 0.350 | - | 0.141 | 0.110 | 0.188 | | | | | | | | | | | | | | | | | | |
| | H2 | | 12050 | 00 | 01 | 05 | 08 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | |
| | H3 | | 12100 | 00 | 01 | - | 08 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 - 64 UNC | H1 | | 12002 | 00 | 01 | - | 08 | - | - | - | - | 1.688 | 0.370 | - | | | | 0.141 | 0.110 | 0.188 | | | | | | | | | | | | | | | |
| | H2 | | 12052 | 00 | 01 | - | 08 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 - 72 UNF | H1 | | 12004 | 00 | 01 | - | 08 | - | - | - | - | 1.750 | 0.441 | - | | | | | | | 0.141 | 0.110 | 0.188 | | | | | | | | | | | | |
| | H2 | | 12054 | 00 | 01 | 05 | 08 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 - 56 UNC | H1 | | 12006 | 00 | - | 05 | 08 | - | - | - | - | 1.750 | 0.429 | - | | | | | | | | | | 0.141 | 0.110 | 0.188 | | | | | | | | | |
| | H2 | | 12056 | 00 | 01 | 05 | 08 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | |
| | H3 | | 12106 | 00 | 01 | - | 08 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | |
| | H5 | | 12156 | 00 | 01 | - | 08 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 - 64 UNF | H1 | | 12008 | 00 | - | - | 08 | - | - | - | - | 1.813 | 0.496 | - | | | | | | | | | | | | | 0.141 | 0.110 | 0.188 | | | | | | |
| | H2 | | 12058 | 00 | 01 | 05 | 08 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 - 48 UNC | H1 | | 12010 | 00 | - | - | 08 | - | - | - | - | 1.875 | 0.319 | 0.559 | | | | | | | | | | | | | | | | 0.141 | 0.110 | 0.188 | | | |
| | H2 | | 12060 | 00 | 01 | 05 | 08 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | |
| | H3 | | 12110 | 00 | 01 | - | 08 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | |
| | H5 | | 20021 | 00 | - | - | 08 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 - 56 UNF | H1 | | 12012 | 00 | - | - | 08 | - | - | - | - | 1.938 | 0.323 | 0.618 | | | | | | | | | | | | | | | | | | | 0.141 | 0.110 | 0.188 |
| | H2 | | 12062 | 00 | 01 | 05 | 08 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 - 36 UNS | H1 | | 12014 | 00 | - | 05 | 08 | - | - | - | - | 1.938 | 0.323 | 0.618 | | | | | | | | | | | | | | | | | | | | | |
| | H2 | 12064 | 00 | 01 | 05 | 08 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H3 | 12114 | 00 | 01 | - | 08 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H5 | 12164 | 00 | 01 | - | 08 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 - 40 UNC | H1 | 12016 | 00 | - | - | 08 | - | - | - | - | 2.000 | 0.390 | 0.685 | 0.141 | 0.110 | 0.188 | | | | | | | | | | | | | | | | | | | |
| | H2 | 12066 | 00 | 01 | 05 | 08 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 - 48 UNF | H1 | 12020 | 00 | - | - | 08 | - | - | - | - | 2.000 | 0.390 | 0.685 | | | | 0.141 | 0.110 | 0.188 | | | | | | | | | | | | | | | | |
| | H2 | 12070 | 00 | 01 | 05 | 08 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H5 | 20033 | 00 | - | - | 08 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H2 | 12072 | 00 | 01 | 05 | 08 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 - 40 UNC | H1 | 12024 | 00 | - | 05 | 08 | - | - | - | - | 2.000 | 0.390 | 0.685 | | | | | | | 0.141 | 0.110 | 0.188 | | | | | | | | | | | | | |
| | H2 | 12074 | 00 | 01 | 05 | 08 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H3 | 12124 | 00 | 01 | 05 | 08 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H4 | 12126 | - | - | - | 08 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H5 | 20039 | 00 | - | 05 | 08 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 - 44 UNF | H1 | 12174 | 00 | 01 | - | 08 | - | - | - | - | 2.000 | 0.390 | 0.685 | | | | | | | | | | 0.141 | 0.110 | 0.188 | | | | | | | | | | |
| | H2 | 12026 | 00 | - | - | 08 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H2 | 12076 | 00 | 01 | 05 | 08 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H5 | 20042 | 00 | - | - | 08 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

[continued on next page](#)

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|------------------------------|------------|------------------|-----|---------|--------------------------|--------------------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 105 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | |

good best





GENERAL PURPOSE

List 105 (Continued)

| | | | | |
|-----|------|-----|-----|----|
| HSS | TiCN | TiN | S/O | BR |
|-----|------|-----|-----|----|

No. 0 ~ No. 6 (4.5P-5.5P), >No. 8 (3.5P-4.5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Plug (4.5P - 5.5P) | | | | | Plug (3.5P - 4.5P) | | | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk | | | | | |
|---------------|--------------|---------------|--------------------|----------------|-----|-----|-------|--------------------|----------------|-----|-----|-------|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|-------|-------|-------|-------|-------|
| | | | EDP Number | Coating Suffix | | | | EDP Number | Coating Suffix | | | | | | | | | | | | | | |
| | | | | Bright | S/O | TiN | TiCN | | Bright | S/O | TiN | TiCN | | | | | | | | | | | |
| 8 - 32 UNC | H1 | 2 | - | - | - | - | 12028 | 00 | - | 05 | 08 | 2.125 | 0.390 | 0.756 | 0.168 | 0.131 | | | | | | | |
| | H2 | | - | - | - | - | 12078 | 00 | 01 | 05 | 08 | | | | | | | | | | | | |
| | H3 | | - | - | - | - | 12128 | 00 | 01 | 05 | 08 | | | | | | | | | | | | |
| | H4 | 3 | - | - | - | - | 20050 | 00 | - | 05 | 08 | | | | | | | | | | | | |
| | H5 | | - | - | - | - | 12132 | - | 01 | - | - | | | | | | | | | | | | |
| 8 - 36 UNF | H1 | 2 | - | - | - | - | 12032 | 00 | - | - | 08 | | | | | | | | | | | | |
| | H2 | | - | - | - | - | 12082 | 00 | 01 | 05 | 08 | | | | | | | | | | | | |
| 10 - 24 UNC | H1 | 3 | - | - | - | - | 12034 | 00 | - | 05 | 08 | | | | | | | 2.375 | 0.504 | 0.874 | 0.194 | 0.152 | 0.250 |
| | H2 | | - | - | - | - | 12136 | - | 01 | - | - | | | | | | | | | | | | |
| | H3 | | - | - | - | - | 12084 | 00 | 01 | 05 | 08 | | | | | | | | | | | | |
| | H4 | 2 | - | - | - | - | 12134 | 00 | 01 | 05 | 08 | | | | | | | | | | | | |
| | H5 | | - | - | - | - | 20065 | 00 | - | - | 08 | | | | | | | | | | | | |
| 10 - 32 UNF | H1 | 3 | - | - | - | - | 20066 | 00 | - | 05 | 08 | | | | | | | | | | | | |
| | H2 | | - | - | - | - | 12038 | 00 | - | 05 | 08 | | | | | | | | | | | | |
| | H3 | | - | - | - | - | 12140 | - | 01 | - | - | | | | | | | | | | | | |
| | H4 | | - | - | - | - | 12088 | 00 | 01 | - | 08 | | | | | | | | | | | | |
| | H5 | | - | - | - | - | 12138 | 00 | 01 | 05 | 08 | | | | | | | | | | | | |
| 12 - 24 UNC | H1 | 2 | - | - | - | - | 20060 | 00 | - | - | 08 | | | | | | | | | | | | |
| | H3 | | - | - | - | - | 12188 | 00 | 01 | - | 08 | | | | | | | | | | | | |
| 12 - 28 UNF | H1 | 2 | - | - | - | - | 12042 | 00 | - | - | - | 2.375 | 0.520 | 0.949 | 0.220 | 0.165 | 0.281 | | | | | | |
| | H3 | | - | - | - | - | 12142 | 00 | 01 | 05 | 08 | | | | | | | | | | | | |
| 1/4 - 20 UNC | H1 | 3 | - | - | - | - | 12144 | 00 | 01 | 05 | 08 | 2.500 | 0.638 | 1.008 | 0.255 | 0.191 | 0.313 | | | | | | |
| | H2 | | - | - | - | - | 12200 | 00 | 01 | 05 | 08 | | | | | | | | | | | | |
| | H3 | | - | - | - | - | 12250 | 00 | 01 | 05 | 08 | | | | | | | | | | | | |
| | H5 | 3 | - | - | - | - | 12300 | 00 | 01 | 05 | 08 | | | | | | | | | | | | |
| | H5 | | - | - | - | - | 12302 | 00 | 01 | 05 | 08 | | | | | | | | | | | | |
| 1/4 - 28 UNF | H1 | 2 | - | - | - | - | 12400 | 00 | 01 | 05 | 08 | | | | | | | | | | | | |
| | H2 | | - | - | - | - | 12402 | 00 | - | - | 08 | | | | | | | | | | | | |
| | H3 | 3 | - | - | - | - | 12204 | 00 | - | - | 08 | | | | | | | | | | | | |
| | H4 | | - | - | - | - | 12254 | 00 | - | 05 | 08 | | | | | | | | | | | | |
| | H4 | | - | - | - | - | 12256 | 00 | - | 05 | 08 | | | | | | | | | | | | |
| 5/16 - 18 UNC | H1 | 2 | - | - | - | - | 12304 | 00 | 01 | 05 | 08 | | | | | | | | | | | | |
| | H2 | | - | - | - | - | 12354 | 00 | - | - | 08 | | | | | | | | | | | | |
| | H3 | 3 | - | - | - | - | 12356 | 00 | - | - | 08 | | | | | | | | | | | | |
| | H5 | | - | - | - | - | 12208 | 00 | - | 05 | 08 | | | | | | | | | | | | |
| | H5 | | - | - | - | - | 12258 | 00 | - | 05 | 08 | | | | | | | | | | | | |
| 5/16 - 24 UNF | H1 | 2 | - | - | - | - | 12308 | 00 | 01 | 05 | 08 | 2.719 | 0.724 | 1.154 | 0.318 | 0.238 | 0.375 | | | | | | |
| | H2 | | - | - | - | - | 12310 | 00 | 01 | 05 | 08 | | | | | | | | | | | | |
| | H3 | 3 | - | - | - | - | 12310 | 00 | 01 | 05 | 08 | | | | | | | | | | | | |
| | H4 | | - | - | - | - | 12408 | 00 | - | 05 | 08 | | | | | | | | | | | | |
| | H4 | | - | - | - | - | 12410 | 00 | 01 | 05 | 08 | | | | | | | | | | | | |
| 5/16 - 24 UNF | H1 | 2 | - | - | - | - | 12212 | 00 | - | - | 08 | | | | | | | | | | | | |
| | H2 | | - | - | - | - | 12262 | 00 | - | 05 | 08 | | | | | | | | | | | | |
| | H3 | 3 | - | - | - | - | 12264 | 00 | - | 05 | 08 | | | | | | | | | | | | |
| | H4 | | - | - | - | - | 12312 | 00 | 01 | 05 | 08 | | | | | | | | | | | | |
| | H4 | | - | - | - | - | 12362 | 00 | - | - | 08 | | | | | | | | | | | | |
| | | | - | - | - | - | 12364 | 00 | - | - | 08 | | | | | | | | | | | | |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order.





List 105 (Continued)

| | | | | |
|-----|------|-----|-----|----|
| HSS | TiCN | TiN | S/O | BR |
|-----|------|-----|-----|----|

No. 0 ~ No. 6 (4.5P-5.5P), >No. 8 (3.5P-4.5P)

Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Plug (4.5P - 5.5P) | | | | | Plug (3.5P - 4.5P) | | | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk | | | | | | | | | | | |
|---------------|--------------|---------------|--------------------|----------------|-----|-------|-------|--------------------|----------------|-----|-------|-------|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | | EDP Number | Coating Suffix | | | | EDP Number | Coating Suffix | | | | | | | | | | | | | | | | | | | | |
| | | | | Bright | S/O | TiN | TiCN | | Bright | S/O | TiN | TiCN | | | | | | | | | | | | | | | | | |
| 3/8 - 16 UNC | H1 | 3 | - | - | - | - | 12216 | 00 | - | - | 08 | 2.938 | 0.787 | 1.276 | 0.381 | 0.286 | 0.438 | | | | | | | | | | | | |
| | H2 | | - | - | - | - | 12266 | 00 | 01 | 05 | 08 | | | | | | | | | | | | | | | | | | |
| | H3 | | - | - | - | - | 12316 | 00 | 01 | 05 | 08 | | | | | | | | | | | | | | | | | | |
| | H5 | | - | - | - | - | 12416 | 00 | 01 | 05 | 08 | | | | | | | | | | | | | | | | | | |
| 3/8 - 24 UNF | H1 | | - | - | - | - | 12218 | 00 | - | - | 08 | | | | | | | | | | | | | | | | | | |
| | H2 | | - | - | - | - | 12268 | 00 | - | 05 | 08 | | | | | | | | | | | | | | | | | | |
| | H3 | | - | - | - | - | 12318 | 00 | 01 | 05 | 08 | | | | | | | | | | | | | | | | | | |
| | H4 | | - | - | - | - | 12368 | 00 | - | 05 | 08 | | | | | | | | | | | | | | | | | | |
| 7/16 - 14 UNC | H2 | | - | - | - | - | 12270 | 00 | - | - | 08 | | | | | | | 3.156 | 0.882 | 1.315 | 0.323 | 0.242 | 0.406 | | | | | | |
| | H3 | | - | - | - | - | 12320 | 00 | 01 | 05 | 08 | | | | | | | | | | | | | | | | | | |
| | H5 | | - | - | - | - | 12420 | 00 | - | 05 | 08 | | | | | | | | | | | | | | | | | | |
| 7/16 - 20 UNF | H2 | | - | - | - | - | 12272 | 00 | - | - | 08 | | | | | | | | | | | | | | | | | | |
| | H3 | | - | - | - | - | 12322 | 00 | 01 | 05 | 08 | | | | | | | | | | | | | | | | | | |
| | H5 | | - | - | - | - | 12422 | 00 | - | 05 | 08 | | | | | | | | | | | | | | | | | | |
| 1/2 - 13 UNC | H1 | | - | - | - | - | 12224 | 00 | - | - | 08 | | | | | | | | | | | | | 3.375 | 0.941 | 1.374 | 0.367 | 0.275 | 0.438 |
| | H2 | | - | - | - | - | 12274 | 00 | - | 05 | 08 | | | | | | | | | | | | | | | | | | |
| | H3 | | - | - | - | - | 12324 | 00 | 01 | 05 | 08 | | | | | | | | | | | | | | | | | | |
| | H5 | | - | - | - | - | 12424 | 00 | - | 05 | 08 | | | | | | | | | | | | | | | | | | |
| 1/2 - 20 UNF | H1 | | - | - | - | - | 12226 | 00 | - | - | 08 | | | | | | | | | | | | | | | | | | |
| | H2 | | - | - | - | - | 12276 | 00 | - | - | 08 | | | | | | | | | | | | | | | | | | |
| | H3 | - | - | - | - | 12326 | 00 | 01 | 05 | 08 | | | | | | | | | | | | | | | | | | | |
| | H5 | - | - | - | - | 12426 | 00 | - | - | 08 | | | | | | | | | | | | | | | | | | | |
| 5/8 - 11 UNC | H3 | - | - | - | - | 12332 | 00 | 01 | 05 | 08 | 3.813 | 1.091 | 1.563 | 0.480 | 0.360 | 0.563 | | | | | | | | | | | | | |
| | H5 | - | - | - | - | 12432 | 00 | - | 05 | 08 | | | | | | | | | | | | | | | | | | | |
| 5/8 - 18 UNF | H3 | - | - | - | - | 12334 | 00 | 01 | 05 | 08 | | | | | | | | | | | | | | | | | | | |
| | H5 | - | - | - | - | 20130 | 00 | - | 05 | 08 | | | | | | | | | | | | | | | | | | | |
| 3/4 - 10 UNC | H3 | - | - | - | - | 12336 | 00 | 01 | 05 | 08 | | | | | | | 4.250 | 1.220 | 1.713 | 0.590 | 0.442 | 0.688 | | | | | | | |
| | H5 | - | - | - | - | 12436 | 00 | - | 05 | 08 | | | | | | | | | | | | | | | | | | | |
| 3/4 - 16 UNF | H3 | - | - | - | - | 12338 | 00 | 01 | - | 08 | | | | | | | | | | | | | | | | | | | |
| | H5 | - | - | - | - | 20134 | 00 | - | 05 | 08 | | | | | | | | | | | | | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|--------------------------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 105 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | | |

good best



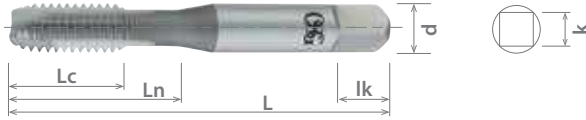


GENERAL PURPOSE

List 105B

| | | |
|-----|-----|----|
| HSS | S/O | BR |
|-----|-----|----|

Bottom (1.5P-2P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Bottom (1.5P-2P) | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk | | |
|---------------|--------------|---------------|------------------|----------------|-------|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|-------|-------|
| | | | EDP Number | Coating Suffix | | | | | | | | | |
| | | | | Bright | S/O | | | | | | | | |
| 0 - 80 UNF | H1 | 2 | 12001 | 00 | - | 1.625 | 0.311 | - | 0.141 | 0.110 | 0.188 | | |
| 1 - 64 UNC | H2 | | 30001 | 00 | - | | | | | | | | |
| | | | 12053 | 00 | - | 1.680 | 0.370 | - | | | | | |
| 1 - 72 UNC | H1 | | 12005 | 00 | - | | | | | | | | |
| | H2 | | 12055 | 00 | - | | | | | | | | |
| 2 - 56 UNC | H1 | | 12007 | 00 | - | 1.750 | 0.441 | - | | | | | |
| | | | 12057 | 00 | 01 | | | | | | | | |
| 3 - 48 UNC | H2 | | 12061 | 00 | 01 | 1.813 | 0.496 | - | | | | | |
| 3 - 56 UNF | | | 12063 | 00 | - | | | | | | | | |
| 4 - 40 UNC | | | 12065 | 00 | 01 | 1.875 | 0.319 | 0.559 | | | | | |
| 4 - 48 UNF | | | 12067 | 00 | - | | | | | | | | |
| 5 - 40 UNC | | | 12071 | 00 | 01 | 1.938 | 0.323 | 0.618 | | | | | |
| 5 - 44 UNF | | | 12073 | 00 | - | | | | | | | | |
| 6 - 32 UNC | | | H3 | 12075 | 00 | - | 2.000 | 0.390 | | | | 0.685 | |
| | | | H7 | 12125 | 00 | 01 | | | | | | | |
| 6 - 40 UNF | | | | 30031 | 00 | - | | | | | | | |
| | | | H2 | 12077 | 00 | 01 | 2.125 | 0.390 | | | | 0.756 | 0.168 |
| 8 - 32 UNC | H3 | | 12079 | 00 | - | | | | | | | | |
| | H7 | | 12129 | 00 | 01 | | | | | | | | |
| 8 - 36 UNF | | | 12147 | 00 | - | 2.375 | 0.504 | 0.874 | | | | 0.194 | 0.152 |
| 10 - 24 UNC | H2 | 12083 | 00 | - | | | | | | | | | |
| | H3 | 12085 | 00 | - | | | | | | | | | |
| | | 12135 | 00 | 01 | 2.500 | 0.638 | 1.008 | 0.255 | 0.191 | 0.313 | | | |
| 10 - 32 UNF | H1 | 12009 | 00 | - | | | | | | | | | |
| | H2 | 12089 | 00 | - | | | | | | | | | |
| | | 12139 | 00 | 01 | 2.719 | 0.724 | 1.154 | 0.318 | 0.238 | 0.375 | | | |
| 12 - 24 UNC | H3 | 12143 | 00 | 01 | | | | | | | | | |
| 12 - 28 UNF | | 12145 | 00 | 01 | | | | | | | | | |
| 1/4 - 20 UNC | | 12301 | 00 | 01 | | | | | | | | | |
| 1/4 - 28 UNF | H2 | 12255 | 00 | - | 2.938 | 0.787 | 1.276 | 0.381 | 0.286 | 0.438 | | | |
| 5/16 - 18 UNC | H3 | 12305 | 00 | 01 | | | | | | | | | |
| | | 12309 | 00 | 01 | 3.156 | 0.882 | 1.315 | 0.323 | 0.242 | 0.406 | | | |
| 5/16 - 24 UNF | H4 | 12313 | 00 | 01 | | | | | | | | | |
| | | 12365 | 00 | - | | | | | | | | | |
| 3/8 - 16 UNC | H3 | 12317 | 00 | 01 | | | | | | | | | |
| 7/16 - 14 UNC | | 12321 | 00 | - | | | | | | | | | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|---------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 105B | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | | |

good best

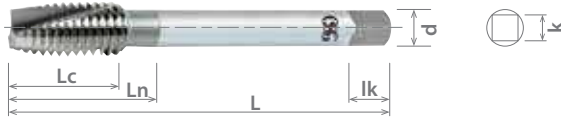




List 105A

| | | |
|-----|-----|----|
| HSS | S/O | BR |
|-----|-----|----|

Assembly Type Tap, Plug (4P-4.5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Plug (4P - 4.5P) | | | Overall Length L | Thread Length | | Shank Dia. d | Square Width k | Square Length lk | | | | |
|---------------|--------------|---------------|------------------|----------------|-----|---------------------|---------------|-------|-----------------|-------------------|---------------------|-------|-------|-------|-------|
| | | | EDP Number | Coating Suffix | | | Lc | Ln | | | | | | | |
| | | | | Bright | S/O | | | | | | | | | | |
| 4 - 40 UNC | H2 | 2 | 16054 | 00 | 01 | 1.875 | 0.319 | 0.559 | 0.141 | 0.110 | 0.188 | | | | |
| 5 - 40 UNC | | | 16060 | 00 | - | 1.938 | 0.323 | 0.618 | | | | | | | |
| 6 - 32 UNC | | | 16114 | 00 | 01 | 2.000 | 0.390 | 0.685 | | | | | | | |
| 8 - 32 UNC | H3 | | 2 | 16118 | 00 | 01 | 2.125 | 0.390 | 0.756 | 0.168 | 0.131 | 0.250 | | | |
| 10 - 24 UNC | | | | 16122 | 00 | 01 | 2.375 | | 0.500 | | | | 0.874 | | |
| 10 - 32 UNF | | | | 16124 | 00 | 01 | | | | | | | | | |
| 12 - 24 UNC | | | | 16126 | 00 | 01 | | 0.508 | | 0.937 | 0.220 | | | 0.165 | 0.281 |
| 1/4 - 20 UNC | | | | 3 | 3 | 16300 | 00 | 01 | 2.500 | 0.638 | 1.008 | | 0.255 | 0.191 | 0.313 |
| 5/16 - 18 UNC | | | | | | 16304 | 00 | - | 2.719 | 0.724 | 1.154 | | 0.318 | 0.238 | 0.375 |
| 3/8 - 16 UNC | 16308 | 00 | - | | | 2.938 | 0.787 | 1.276 | 0.381 | 0.286 | 0.438 | | | | |
| 1/2 - 13 UNC | 16316 | 00 | - | | | 3.375 | 0.941 | 1.374 | 0.367 | 0.275 | | | | | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|--------------------------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 105A | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | | |

good best





GENERAL PURPOSE

List 105+ (H7)

HSS

TiN

BR

No. 4 ~ No. 6 (4.5P-5.5P), >No. 8 (3.5P-4.5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Plug (4.5P - 5.5P) | | | Plug (3.5P - 4.5P) | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk |
|-------------|--------------|---------------|--------------------|----------------|----|--------------------|----------------|----|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|
| | | | EDP Number | Coating Suffix | | EDP Number | Coating Suffix | | | | | | | |
| 4 - 40 UNC | H7 | 2 | 20031 | 00 | - | - | - | - | 1.875 | 0.319 | 0.559 | 0.141 | 0.110 | 0.188 |
| 6 - 32 UNC | | | 17208 | 00 | 05 | - | - | - | 2.000 | 0.390 | 0.685 | | | |
| 8 - 32 UNC | | | - | - | - | 17212 | 00 | 05 | 2.125 | | 0.756 | 0.168 | 0.131 | |
| 10 - 24 UNC | | | - | - | - | 17216 | 00 | - | 2.375 | | 0.504 | 0.874 | 0.194 | |
| 10 - 32 UNF | | | - | - | - | 17218 | 00 | 05 | | | | | | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|--------------------------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 105+ | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | | |

good best





List 105H

+0.005" Oversize, Plug (4P-4.5P)

HSS

TiCN

S/O

BR



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Plug (4P - 4.5P) | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | |
|---------------|--------------|---------------|------------------|----------------|-----|----------------|---------------|-------------|------------|--------------|---------------|-------|
| | | | EDP Number | Coating Suffix | | | | | | | | |
| | | | | Bright | S/O | TiCN | L | Lc | Ln | d | k | lk |
| 6 - 32 UNC | +0.005 | 2 | 15920 | 00 | 01 | 08 | 2.000 | 0.390 | 0.685 | 0.141 | 0.110 | 0.188 |
| 8 - 32 UNC | | | 15928 | 00 | 01 | 08 | 2.125 | | 0.756 | 0.168 | 0.131 | 0.250 |
| 10 - 24 UNC | | | 15934 | 00 | 01 | 08 | 2.375 | 0.504 | 0.874 | 0.194 | 0.152 | |
| 10 - 32 UNF | | | 15936 | 00 | 01 | 08 | | | | | | |
| 1/4 - 20 UNC | | | 15900 | 00 | 01 | 08 | 2.500 | 0.638 | 1.008 | 0.255 | 0.191 | 0.313 |
| 1/4 - 28 UNF | | | 15902 | 00 | 01 | 08 | | | | | | |
| 5/16 - 18 UNC | | 15908 | 00 | 01 | 08 | 2.719 | 0.724 | 1.154 | 0.318 | 0.238 | 0.375 | |
| 5/16 - 24 UNF | | 15912 | 00 | - | 08 | | | | | | | |
| 3/8 - 16 UNC | | 15916 | 00 | 01 | 08 | 2.938 | 0.787 | 1.276 | 0.381 | 0.286 | 0.438 | |
| 3/8 - 24 UNF | | 15918 | 00 | 01 | 08 | | | | | | | |
| 7/16 - 14 UNC | | 15940 | 00 | 01 | 08 | 3.156 | 0.882 | 1.315 | 0.323 | 0.242 | 0.406 | |
| 7/16 - 20 UNF | | 15942 | 00 | 01 | 08 | | | | | | | |
| 1/2 - 13 UNC | | 15924 | 00 | 01 | 08 | 3.375 | 0.941 | 1.374 | 0.367 | 0.275 | 0.438 | |
| 1/2 - 20 UNF | | 15926 | 00 | 01 | 08 | | | | | | | |
| 5/8 - 11 UNC | | 15932 | 00 | 01 | 08 | 3.813 | 1.091 | 1.563 | 0.480 | 0.360 | 0.563 | |
| 3/4 - 10 UNF | | 15938 | 00 | 01 | 08 | 4.250 | 1.220 | 1.713 | 0.590 | 0.442 | 0.688 | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|--------------------------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 105H | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | | |

good best





GENERAL PURPOSE

List 142H

HSS

BR

+0.005" Oversize, Plug (3.5P-4.5P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|-------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (3.5 - 4.5P) | | | | | | |
| | | | Bright | | | | | | |
| | | | L | Lc | Ln | d | k | lk | |
| M4 x 0.7 | +0.005" | 2 | 1101200100 | 54.00 | 10.20 | 19.30 | 4.27 | 3.33 | 6.40 |
| M5 x 0.8 | | | 1101200300 | 60.30 | 13.20 | 22.40 | 4.93 | 3.86 | |
| M6 x 1.0 | | | 1101200500 | 63.50 | 16.50 | 25.70 | 6.48 | 4.85 | |
| M8 x 1.25 | | 3 | 1101200700 | 69.10 | 18.00 | 28.70 | 8.08 | 6.05 | 9.50 |
| M10 x 1.5 | | | 1101200900 | 74.60 | 20.40 | 32.60 | 9.68 | 7.26 | |
| M12 x 1.75 | | | 1101201100 | 85.70 | 24.40 | 34.80 | 9.32 | 6.98 | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|--------------------------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 142H | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | | |

good best





List 142

Plug (3.5P-4.5P)

| | | | | |
|-----|------|-----|-----|----|
| HSS | TiCN | TiN | S/O | BR |
|-----|------|-----|-----|----|



Units: mm

| Tap Size | Thread Limit | No. of Flutes | Plug (3.5P - 4.5P) | | | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | | | | |
|-------------|--------------|---------------|--------------------|----------------|-----|-----|------|----------------|---------------|-------------|------------|--------------|---------------|-------|------|-------|------|------|
| | | | EDP Number | Coating Suffix | | | | | | | | | | | | | | |
| | | | | Bright | S/O | TiN | TiCN | L | Lc | Ln | d | k | lk | | | | | |
| M1.6 x 0.35 | D3 | 2 | 19815 | 00 | - | - | - | 41.30 | 7.90 | - | 3.58 | 2.79 | 4.80 | | | | | |
| M2 x 0.4 | | | 19820 | 00 | 01 | - | - | 44.50 | 11.10 | | | | | | | | | |
| M2.5 x 0.45 | | | 19821 | 00 | 01 | - | - | 46.00 | 12.80 | | | | | | | | | |
| M3 x 0.5 | | | 19801 | 00 | 01 | 05 | 08 | 49.20 | 8.30 | | | | | 15.80 | | | | |
| M3.5 x 0.6 | D4 | | 19822 | 00 | 01 | - | - | 50.80 | 17.50 | 4.27 | 3.33 | 6.40 | | | | | | |
| M4 x 0.7 | | | 19804 | 00 | 01 | 05 | 08 | 54.00 | 10.00 | | | | 19.30 | | | | | |
| M4.5 x 0.75 | | | 19823 | 00 | 01 | - | - | 60.30 | 12.80 | | | | 22.20 | | | | | |
| M5 x 0.8 | | | 19807 | 00 | 01 | 05 | - | 63.50 | 13.00 | | | | 22.40 | | | | | |
| M6 x 1.0 | D5 | 3 | 19810 | 00 | 01 | 05 | 08 | 63.50 | 16.30 | 25.70 | 6.48 | 4.85 | 7.90 | | | | | |
| M7 x 1.0 | | | 19824 | 00 | 01 | - | - | 69.10 | 17.90 | 28.70 | 8.08 | 6.05 | 9.50 | | | | | |
| M8 x 1.25 | | | 19813 | 00 | 01 | 05 | 08 | 74.60 | 18.00 | 32.20 | | | | 9.68 | 7.26 | 11.10 | | |
| M8 x 1.0 | | | 19814 | 00 | 01 | - | - | 85.70 | 23.90 | 34.90 | | | | | | | 9.32 | 6.98 |
| M10 x 1.5 | D6 | | 19825 | 00 | 01 | - | - | 91.30 | 25.40 | 37.40 | | | | | | | | |
| M10 x 1.25 | D5 | | 19816 | 00 | 01 | 05 | 08 | 96.80 | 27.70 | 39.70 | 12.19 | 9.14 | 14.30 | | | | | |
| M10 x 1.0 | | | 19826 | 00 | 01 | - | - | 102.40 | 40.70 | 45.00 | 13.77 | 10.31 | 15.90 | | | | | |
| M12 x 1.75 | D6 | | 19819 | 00 | 01 | 05 | 08 | 113.50 | 31.00 | 45.00 | 16.56 | 12.42 | 17.50 | | | | | |
| M12 x 1.5 | | D5 | 19828 | 00 | 01 | - | - | | | | | | | | | | | |
| M14 x 2.0 | D7 | 19831 | 00 | 01 | - | - | | | | | | | | | | | | |
| M14 x 1.5 | D6 | 19838 | 00 | - | - | - | | | | | | | | | | | | |
| M14 x 1.25 | D5 | 19830 | 00 | 01 | - | - | | | | | | | | | | | | |
| M16 x 2.0 | D7 | 19833 | 00 | - | - | - | | | | | | | | | | | | |
| M16 x 1.5 | D6 | 19832 | 00 | 01 | - | - | | | | | | | | | | | | |
| M18 x 2.5 | D7 | 19835 | 00 | - | - | - | | | | | | | | | | | | |
| M18 x 1.5 | D6 | 19834 | 00 | 01 | - | - | | | | | | | | | | | | |
| M20 x 2.5 | D7 | 19837 | 00 | - | - | - | | | | | | | | | | | | |
| M20 x 1.5 | D6 | 19839 | 00 | - | - | - | | | | | | | | | | | | |
| | | 19836 | 00 | - | - | - | | | | | | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|--------------------------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 142 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | | |

good best





GENERAL PURPOSE

List 122

| | | |
|------|-----|----|
| HSSE | S/O | BR |
|------|-----|----|

EX-POT, JIS, Plug (4.5P-5.5P)



Units: mm

| Tap Size | Class of Fit | No. of Flutes | EDP Number | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|--------------------|-------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (4.5P - 5.5P) | | | | | | | |
| | | | Bright | S/O | L | Lc | Ln | d | k | lk |
| M3 x 0.5 | JIS 2 | 3 | 15368 | 16710 | 46.00 | 11.00 | 19.00 | 4.00 | 6.00 | 3.20 |
| M4 x 0.7 | | | 15386 | 16714 | 52.00 | 13.00 | 21.00 | 5.00 | 4.00 | |
| M5 x 0.8 | | | 15401 | - | 60.00 | 15.90 | 23.90 | 5.50 | 7.00 | 4.50 |
| M6 x 1.0 | | | 15413 | 16722 | 62.00 | 19.00 | 29.00 | 6.00 | 5.00 | |
| M8 x 1.25 | | | 15431 | 16728 | 70.00 | 22.00 | 37.00 | 6.20 | 8.00 | 5.00 |
| M10 x 1.5 | | | 15456 | 16734 | 75.00 | 24.00 | 41.00 | 7.00 | 8.00 | 5.50 |
| M10 x 1.25 | | | 15460 | - | | | | | | |
| M12 x 1.75 | | | 15480 | - | 82.00 | 29.00 | 48.00 | 8.50 | 9.00 | 6.50 |
| M12 x 1.5 | | | 15483 | - | | | | | | |
| M14 x 2.0 | | | 15509 | - | 88.00 | 30.00 | 10.50 | 11.00 | 8.00 | |
| M14 x 1.5 | | | 15512 | - | | | | | | |
| M16 x 2.0 | | | 15557 | - | 95.00 | 32.00 | 52.00 | 12.50 | 13.00 | 10.00 |
| M16 x 1.5 | | | 15560 | - | | | | | | |
| M18 x 2.5 | | | 15593 | - | 100.00 | 37.00 | 55.00 | 14.00 | 14.00 | 11.00 |
| M18 x 1.5 | | | 15601 | - | | | | | | |
| M20 x 2.5 | | | 15629 | - | 105.00 | 58.00 | 15.00 | 15.00 | 12.00 | |
| M20 x 1.5 | | | 15637 | - | | | | | | |
| M22 x 2.5 | | | 15645 | - | 115.00 | 38.00 | 63.00 | 17.00 | 16.00 | 13.00 |
| M24 x 3.0 | | | 15673 | - | 120.00 | 45.00 | 66.00 | 19.00 | 18.00 | 15.00 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|--------------------------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 122 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | | |

good best

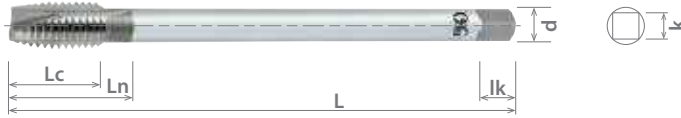




List 917

Long Shank*, Plug (3.5P-4.5P)

| | | |
|-----|---|-----------------------------|
| HSS | <input checked="" type="checkbox"/> S/O | <input type="checkbox"/> BR |
|-----|---|-----------------------------|



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Plug (3.5P - 4.5P) | | | Long Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk | | |
|---------------|--------------|---------------|--------------------|----------------|-------|--------------------------|---------------------|-------------------|-----------------|-------------------|---------------------|-------|-------|
| | | | EDP Number | Coating Suffix | | | | | | | | | |
| | | | | Bright | S/O | | | | | | | | |
| 4 - 40 UNC | H2 | 2 | 12940 | 00 | - | 4.000 | 0.319 | 0.559 | 0.141 | 0.110 | 0.188 | | |
| 6 - 32 UNC | | | 12941 | 00 | - | | | | | | | | |
| | | | 12942 | 00 | 01 | | | | | | | 6.000 | |
| 8 - 32 UNC | | | | | 12943 | 00 | 01 | 4.000 | 0.390 | 0.756 | 0.168 | 0.131 | 0.250 |
| | | | 12944 | 00 | 01 | 6.000 | | | | | | | |
| | | | 12945 | 00 | 01 | 4.000 | | | | | | | |
| 10 - 24 UNC | | | | | 12946 | 00 | 01 | 6.000 | 0.516 | 0.886 | 0.194 | 0.152 | 0.250 |
| | | | 12947 | 00 | 01 | 4.000 | | | | | | | |
| | | | 12948 | 00 | 01 | 6.000 | | | | | | | |
| 10 - 32 UNF | | | | | 12949 | 00 | 01 | 4.000 | 0.638 | 1.008 | 0.255 | 0.191 | 0.313 |
| 1/4 - 20 UNC | | | | | 12950 | 00 | 01 | 6.000 | | | | | |
| | | | 12939 | - | 01 | 4.000 | | | | | | | |
| 1/4 - 28 UNF | | | 12951 | 00 | 01 | 6.000 | 0.724 | 1.154 | 0.318 | 0.238 | 0.375 | | |
| | 21030 | 00 | - | 4.000 | | | | | | | | | |
| | 12952 | 00 | - | 6.000 | | | | | | | | | |
| 5/16 - 18 UNC | H3 | 3 | 12935 | - | 01 | 4.000 | 0.724 | 1.154 | 0.318 | 0.238 | 0.375 | | |
| | | | 12937 | - | 01 | 6.000 | | | | | | | |
| | | | 12957 | - | 01 | 4.000 | | | | | | | |
| 5/16 - 24 UNF | | | 2 | 21036 | 00 | - | 6.000 | 0.787 | 1.276 | 0.381 | 0.286 | 0.438 | |
| | | 12933 | - | 01 | 6.000 | | | | | | | | |
| | | 21038 | 00 | 01 | 4.000 | | | | | | | | |
| 3/8 - 16 UNC | | | 3 | 12953 | 00 | 01 | 6.000 | 0.882 | 1.315 | 0.323 | 0.242 | 0.406 | |
| | | 12958 | | - | 01 | 4.000 | | | | | | | |
| | | 21044 | | 00 | 01 | 6.000 | | | | | | | |
| 3/8 - 24 UNF | | | 3 | 12954 | 00 | 01 | 6.000 | 0.941 | 1.374 | 0.367 | 0.275 | 0.438 | |
| | | 7/16 - 14 UNC | | | 21052 | 00 | - | | | | | | 6.000 |
| | | 7/16 - 20 UNF | | | 12994 | - | 01 | | | | | | 4.000 |
| 1/2 - 13 UNC | | 3 | 12955 | 00 | 01 | 6.000 | 0.941 | 1.374 | 0.367 | 0.275 | 0.438 | | |
| | 1/2 - 20 UNF | | | 21060 | 00 | - | | | | | | 6.000 | |
| | 5/8 - 11 UNC | | | 12956 | 00 | - | | | | | | 6.000 | |
| | | | | | | | 1.091 | 1.563 | 0.480 | 0.360 | 0.563 | | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 917 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | | |

good best





GENERAL PURPOSE LS

List 11118

HSS

S/O

Extended Length, Plug (3.5P-4.5P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Long Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | | |
|------------|--------------|---------------|--------------------|--------|---------------------|---------------|-------------|------------|--------------|---------------|-------|------|------|
| | | | Plug (3.5P - 4.5P) | S/O | | | | | | | | | |
| | | | L | Lk | | | | | | | | | |
| M4 x 0.7 | D4 | 2 | 1111800201 | 101.60 | 10.00 | 19.30 | 4.27 | 3.33 | 6.40 | | | | |
| M5 x 0.8 | | | 1111800301 | 152.40 | | | | | | | | | |
| M6 x 1.0 | | | 1111800401 | 101.60 | | | | | | | | | |
| M8 x 1.25 | D5 | | 1111800501 | 152.40 | 13.00 | 22.40 | 4.93 | 3.86 | | | | | |
| | | | 1111800601 | 101.60 | | | | | | | | | |
| | | | 1111800701 | 152.40 | | | | | | | | | |
| M10 x 1.5 | D6 | 3 | 1111800801 | 101.60 | 16.30 | 26.00 | 6.48 | 4.85 | 7.90 | | | | |
| M12 x 1.75 | | | 1111800901 | 152.40 | | | | | | 18.00 | 29.80 | 8.08 | 6.05 |
| | | | 1111801001 | 101.60 | | | | | | | | | |
| 1111801101 | | | 152.40 | 23.90 | | | | | | 34.90 | 9.32 | 6.98 | |
| 1111801201 | 101.60 | | 11.10 | | | | | | | | | | |
| 1111801301 | 152.40 | | | 11.10 | | | | | | | | | |

Packed: 1 pc.
Available Steam Oxide coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|--------------------------|--------------------------|--------------------------|---------|--------------|----------|-----------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| | 1010 1018 | 1035 1045 | 1065 | 4140 4340 | | | | | | | | | | | | | |
| 11118 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | 25-75 | 40-80 | 40-65 | | | | | | | |

good best





List S111

HSS

BR

Plug (3.5P-4.5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|-------------|--------------|---------------|--------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (3.5P - 4.5P) | | | | | | |
| | | | Bright | | | | | | |
| | | | L | Lc | Ln | d | k | lk | |
| 00 - 90 UNS | H1 | 2 | 1050000 | 1.625 | 0.256 | - | 0.141 | 0.110 | 0.188 |
| | H2 | | 1320000 | | | | | | |
| 00 - 96 UNS | H1 | | 1080000 | | | | | | |
| | H2 | | 2056000 | | | | | | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order.



Suggested Hole Size Limits for Different Lengths of Engagement

| Tap Size | Basic O.D. | Basic P.D. | Depth of Thread Hole | | | | | |
|----------|------------|------------|----------------------|--------|-------------|--------|-----------|--------|
| | | | Up to 1/3D | | 1/3 to 1/2D | | 1/2 to 3D | |
| | | | Min. | Max. | Min. | Max. | Min. | Max. |
| 00-90 | 0.047 | 0.0398 | 0.0373 | 0.0385 | 0.0380 | 0.0392 | 0.0388 | 0.0400 |
| 00-96 | 0.047 | 0.0402 | 0.0379 | 0.0393 | 0.0388 | 0.0406 | 0.0397 | 0.0415 |

Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|--------------------------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| | 1010 1018 | 1035 1045 | 1065 | 4140 4340 | | | | | | | | | | | | | | |
| S111 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | | |

good best





List 5BF-SO, 5BS-SO

RED BAND, Ideal for Alloy Steel

| | | | | |
|-----|--------------------------------|---------|--------|-------|
| NEW | RED BAND DRILLS P316-318 | HSSE V3 | TYPE H | TiAIN |
|-----|--------------------------------|---------|--------|-------|



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|--------------|----------------|---------------|------------|--------------|---------------|
| | | | Plug (4P-5P) | | | | | |
| | | | TiAIN | | | | | |
| | | | L | Lc | d | k | lk | |
| 4 - 40 UNC | H3 | 3 | 5BF0280-SO | 1.890 | 0.433 | 0.141 | 0.110 | 0.197 |
| | H5 | | 5BF0290-SO | | | | | |
| 4 - 48 UNF | H3 | | 5BS0280-SO | | | | | |
| | H5 | | 5BS0290-SO | | | | | |
| 5 - 40 UNC | H3 | | 5BF0320-SO | | | | | |
| | H5 | | 5BF0330-SO | | | | | |
| 5 - 44 UNF | H3 | | 5BS0320-SO | | | | | |
| | H5 | | 5BS0330-SO | | | | | |
| 6 - 32 UNC | H3 | | 5BF0350-SO | 1.969 | 0.512 | 0.168 | 0.131 | 0.256 |
| | H5 | | 5BF0360-SO | | | | | |
| 6 - 40 UNF | H3 | | 5BS0350-SO | | | | | |
| | H5 | | 5BS0360-SO | | | | | |
| 8 - 32 UNC | H3 | | 5BF0420-SO | 2.087 | 0.630 | 0.194 | 0.152 | 0.276 |
| | H5 | | 5BF0430-SO | | | | | |
| 8 - 36 UNF | H3 | | 5BS0420-SO | | | | | |
| | H5 | | 5BS0430-SO | | | | | |
| 10 - 24 UNC | H3 | | 5BF0480-SO | 2.303 | 0.630 | 0.220 | 0.165 | 0.276 |
| | H5 | | 5BF0490-SO | | | | | |
| 10 - 32 UNF | H3 | | 5BS0480-SO | | | | | |
| | H5 | | 5BS0490-SO | | | | | |
| 12 - 24 UNC | H3 | | 5BF0550-SO | 2.402 | 0.748 | 0.255 | 0.191 | 0.315 |
| | H5 | | 5BF0560-SO | | | | | |
| 12 - 28 UNF | H3 | | 5BS0550-SO | | | | | |
| | H5 | | 5BS0560-SO | | | | | |
| 1/4 - 20 UNC | H3 | | 5BF0640-SO | 2.559 | 0.866 | 0.318 | 0.238 | 0.374 |
| | H5 | | 5BF0650-SO | | | | | |
| 1/4 - 28 UNF | H3 | | 5BS0640-SO | | | | | |
| | H5 | | 5BS0650-SO | | | | | |
| 5/16 - 18 UNC | H3 | 5BF0790-SO | 2.756 | 0.945 | 0.381 | 0.286 | 0.433 | |
| | H5 | 5BF0800-SO | | | | | | |
| 5/16 - 24 UNF | H3 | 5BS0790-SO | | | | | | |
| | H5 | 5BS0800-SO | | | | | | |
| 3/8 - 16 UNC | H3 | 5BF0950-SO | 3.031 | 0.984 | 0.323 | 0.242 | 0.413 | |
| | H5 | 5BF0960-SO | | | | | | |
| 3/8 - 24 UNF | H3 | 5BS0950-SO | | | | | | |
| | H5 | 5BS0960-SO | | | | | | |
| 7/16 - 14 UNC | H3 | 5BF1110-SO | 3.228 | 1.142 | 0.367 | 0.275 | 0.433 | |
| | H5 | 5BF1120-SO | | | | | | |
| 7/16 - 20 UNF | H3 | 5BS1110-SO | | | | | | |
| | H5 | 5BS1120-SO | | | | | | |
| 1/2 - 13 UNC | H3 | 5BF1270-SO | 3.425 | 1.181 | 0.429 | 0.322 | 0.492 | |
| | H5 | 5BF1280-SO | | | | | | |
| 1/2 - 20 UNF | H3 | 5BS1270-SO | | | | | | |
| | H5 | 5BS1280-SO | | | | | | |
| 9/16 - 12 UNC | H3 | 5BF1430-SO | 3.661 | 1.181 | 0.429 | 0.322 | 0.492 | |
| | H5 | 5BF1440-SO | | | | | | |
| 9/16 - 18 UNF | H3 | 5BS1430-SO | | | | | | |
| | H5 | 5BS1440-SO | | | | | | |

Packed: 1 pc.
Available TiAIN coating only.



List 5BF-SO, 5BS-SO (Continued)

RED BAND, Ideal for Alloy Steel

| | | | | |
|-----|--------------------------------|---------|--------|-------|
| NEW | RED BAND DRILLS P316-318 | HSSE V3 | TYPE H | TiAIN |
|-----|--------------------------------|---------|--------|-------|

Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Shank Dia. | Square Width | Square Length |
|----------------|--------------|---------------|--------------|----------------|---------------|------------|--------------|---------------|
| | | | Plug (4P-5P) | | | | | |
| | | | TiAIN | | | | | |
| | | | L | Lc | d | k | lk | |
| 5/8 - 11 UNC | H3 | 4 | 5BF1590-SO | 3.878 | 1.260 | 0.480 | 0.360 | 0.571 |
| | H5 | | 5BF1600-SO | | | | | |
| 5/8 - 18 UNF | H3 | | 5BS1590-SO | 4.252 | 1.457 | 0.590 | 0.442 | 0.689 |
| | H5 | | 5BS1600-SO | | | | | |
| 3/4 - 10 UNC | H3 | | 5BF1910-SO | 4.685 | 1.339 | 0.697 | 0.523 | 0.748 |
| | H5 | | 5BF1920-SO | | | | | |
| 3/4 - 16 UNF | H3 | | 5BS1910-SO | 5.118 | 1.772 | 0.800 | 0.600 | 0.807 |
| | H5 | | 5BS1920-SO | | | | | |
| 7/8 - 9 UNC | H3 | | 5BF2220-SO | 5.433 | 1.890 | 0.896 | 0.672 | 0.866 |
| | H5 | | 5BF2230-SO | | | | | |
| 7/8 - 14 UNF | H3 | | 5BS2220-SO | 5.748 | 2.008 | 1.021 | 0.766 | 1.004 |
| | H5 | | 5BS2230-SO | | | | | |
| 1 - 8 UNC | H3 | | 5BF2540-SO | 5.433 | 1.890 | 0.896 | 0.672 | 0.866 |
| | H5 | | 5BF2550-SO | | | | | |
| 1 - 12 UNF | H3 | | 5BS2540-SO | 5.748 | 2.008 | 1.021 | 0.766 | 1.004 |
| | H5 | | 5BS2550-SO | | | | | |
| 1,1/8 - 7 UNC | H3 | | 5BF2860-SO | 5.748 | 2.008 | 1.021 | 0.766 | 1.004 |
| | H5 | | 5BF2870-SO | | | | | |
| 1,1/8 - 12 UNF | H3 | | 5BS2860-SO | 5.748 | 2.008 | 1.021 | 0.766 | 1.004 |
| | H5 | | 5BS2870-SO | | | | | |
| 1,1/4 - 7 UNC | H3 | 5BF3180-SO | 5.748 | 2.008 | 1.021 | 0.766 | 1.004 | |
| | H5 | 5BF3190-SO | | | | | | |
| 1,1/4 - 12 UNF | H3 | 5BS3180-SO | 5.748 | 2.008 | 1.021 | 0.766 | 1.004 | |
| | H5 | 5BS3190-SO | | | | | | |

Packed: 1 pc.
Available TiAIN coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|----------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|------------------|-----|---------|--------------------------|--------------------------|---------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------|--------------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | 4140 4340 | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5BF-SO, 5BS-SO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| SFM | 59-89 | 59-89 | 59-89 | 59-79 | 59-79 | | | | 59-88 | 78-118 | | 16-36 | 20-40 | 30-50 | 30-50 | | |

good best





List 5EF-SO, 5ES-SO

RED BAND, Ideal for Alloy Steel

| | | | | |
|-----|--------------------------------|---------|--------|-------|
| NEW | RED BAND DRILLS P316-318 | HSSE V3 | TYPE H | TiAIN |
|-----|--------------------------------|---------|--------|-------|



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Shank Dia. | Square Width | Square Length |
|-------------|--------------|---------------|--------------|----------------|---------------|------------|--------------|---------------|
| | | | Plug (4P-5P) | | | | | |
| | | | TiAIN | | | | | |
| | | | L | Lc | d | k | lk | |
| M3 x 0.5 | D4 | 3 | 5EF0300-SO | 48.00 | 11.00 | 3.58 | 2.79 | 5.00 |
| M3.5 x 0.6 | | | 5EF0350-SO | 50.00 | 13.00 | | | |
| M4 x 0.7 | | | 5EF0400-SO | 53.00 | | | | |
| M4.5 X 0.75 | | | 5EF0450-SO | 58.50 | 16.00 | 4.93 | 3.86 | 6.50 |
| M5 x 0.8 | | | 5EF0500-SO | | | | | |
| M6 x 1.0 | | | 5EF0600-SO | 65.00 | 19.00 | 6.48 | 4.85 | 8.00 |
| M6 x 0.75 | | | 5ES0600-SO | | | | | |
| M7 x 1.0 | | | 5EF0700-SO | 69.00 | 22.00 | 8.08 | 6.05 | 9.50 |
| M8 x 1.25 | | | 5EF0800-SO | | | | | |
| M8 x 1.0 | | | 5ES0800-SO | | | | | |
| M10 x 1.5 | | | 5EF1000-SO | 77.00 | 24.00 | 9.68 | 7.26 | 11.00 |
| M10 x 1.25 | | | 5ES1010-SO | | | | | |
| M10 x 1 | 5ES1000-SO | 87.00 | 29.00 | 9.32 | 6.99 | 11.00 | | |
| M12 x 1.75 | 5EF1200-SO | | | | | | | |
| M12 x 1.5 | 5ES1200-SO | 93.00 | 30.00 | 10.90 | 8.18 | 13.00 | | |
| M12 x 1.25 | 5ES1210-SO | | | | | | | |
| M14 x 2.0 | 5EF1400-SO | 98.50 | 32.00 | 12.19 | 9.14 | 14.00 | | |
| M14 x 1.5 | 5EF1410-SO | | | | | | | |
| M14 x 1.5 | 5ES1400-SO | 108.00 | 37.00 | 13.76 | 10.31 | 15.88 | | |
| M16 x 2.0 | 5ES1410-SO | | | | | | | |
| M16 x 1.5 | 5EF1600-SO | 114.00 | 34.00 | 16.56 | 12.42 | 17.50 | | |
| M16 x 1.5 | 5EF1610-SO | | | | | | | |
| M16 x 1.5 | 5ES1600-SO | 119.00 | 45.00 | 19.30 | 14.48 | 19.05 | | |
| M18 x 2.5 | 5EF1610-SO | | | | | | | |
| M18 x 2.5 | 5EF1800-SO | 125.00 | 45.00 | 19.30 | 14.48 | 19.05 | | |
| M18 x 1.5 | 5EF1810-SO | | | | | | | |
| M18 x 1.5 | 5ES1800-SO | 125.00 | 45.00 | 19.30 | 14.48 | 19.05 | | |
| M20 x 2.5 | 5EF1810-SO | | | | | | | |
| M20 x 1.5 | 5ES1810-SO | 114.00 | 34.00 | 16.56 | 12.42 | 17.50 | | |
| M22 x 2.5 | 5EF2000-SO | | | | | | | |
| M22 x 1.5 | 5ES2000-SO | 119.00 | 45.00 | 19.30 | 14.48 | 19.05 | | |
| M24 x 3.0 | 5EF2200-SO | | | | | | | |
| M24 x 3.0 | 5ES2200-SO | 125.00 | 45.00 | 19.30 | 14.48 | 19.05 | | |
| M24 x 3.0 | 5EF2400-SO | | | | | | | |

Packed: 1 pc.
Available TiAIN coating only.



| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|------------|------------------|---------|--------------------------|--------------------------|----------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-----------|-----------|--|
| | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | 300 | | | 400 | 17-4 PH | 6061 | | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 1010 | 1018 | 1035 | 1045 | 1065 | 4140 | 4340 | | | | 7075 | | | | | | | | |
| 5EF-SO, 5ES-SO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| SFM | 59-89 | 59-89 | 59-89 | 59-79 | 59-79 | | | | 59-88 | 78-118 | | 16-36 | 20-40 | 30-50 | 30-50 | | | |

good best



List 5BG-SO, 5BT-SO

BLUE BAND, Ideal for Stainless Steel

| | | | | |
|-----|---------------------------------|---------|---------|-------|
| NEW | BLUE BAND DRILLS P319-321 | HSSE V3 | TYPE VA | TiAlN |
|-----|---------------------------------|---------|---------|-------|



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Shank Dia. | Square Width | Square Length | | | | | |
|---------------|--------------|---------------|--------------|----------------|---------------|------------|--------------|---------------|-------|-------|-------|-------|-------|
| | | | Plug (4P-5P) | | | | | | | | | | |
| | | | TiAlN | | | | | | | | | | |
| | | | L | Lc | d | k | lk | | | | | | |
| 4 - 40 UNC | H3 | 3 | 5BG0284-SO | 1.890 | 0.433 | 0.141 | 0.110 | 0.197 | | | | | |
| | H5 | | 5BG0294-SO | | | | | | | | | | |
| 4 - 48 UNF | H3 | | 5BT0284-SO | | | | | | | | | | |
| | H5 | | 5BT0294-SO | | | | | | | | | | |
| 5 - 40 UNC | H3 | | 5BG0324-SO | | | | | | 1.969 | 0.512 | 0.168 | 0.131 | 0.256 |
| | H5 | | 5BG0334-SO | | | | | | | | | | |
| 5 - 44 UNF | H3 | | 5BT0324-SO | | | | | | | | | | |
| | H5 | | 5BT0334-SO | | | | | | | | | | |
| 6 - 32 UNC | H3 | | 5BG0354-SO | 2.087 | 0.630 | 0.194 | 0.152 | 0.276 | | | | | |
| | H5 | | 5BG0364-SO | | | | | | | | | | |
| 6 - 40 UNF | H3 | | 5BT0354-SO | | | | | | | | | | |
| | H5 | | 5BT0364-SO | | | | | | | | | | |
| 8 - 32 UNC | H3 | | 5BG0424-SO | | | | | | 2.303 | 0.748 | 0.220 | 0.165 | 0.315 |
| | H5 | | 5BG0434-SO | | | | | | | | | | |
| 8 - 36 UNF | H3 | | 5BT0424-SO | | | | | | | | | | |
| | H5 | | 5BT0434-SO | | | | | | | | | | |
| 10 - 24 UNC | H3 | | 5BG0484-SO | 2.402 | 0.866 | 0.255 | 0.191 | 0.374 | | | | | |
| | H5 | | 5BG0494-SO | | | | | | | | | | |
| 10 - 32 UNF | H3 | | 5BT0484-SO | | | | | | | | | | |
| | H5 | | 5BT0494-SO | | | | | | | | | | |
| 12 - 24 UNC | H3 | | 5BG0554-SO | | | | | | 2.559 | 0.945 | 0.286 | 0.286 | 0.433 |
| | H5 | | 5BG0564-SO | | | | | | | | | | |
| 12 - 28 UNF | H3 | | 5BT0554-SO | | | | | | | | | | |
| | H5 | | 5BT0564-SO | | | | | | | | | | |
| 1/4 - 20 UNC | H3 | | 5BG0644-SO | 2.756 | 0.866 | 0.318 | 0.238 | 0.374 | | | | | |
| | H5 | | 5BG0654-SO | | | | | | | | | | |
| 1/4 - 28 UNF | H3 | | 5BT0644-SO | | | | | | | | | | |
| | H5 | | 5BT0654-SO | | | | | | | | | | |
| 5/16 - 18 UNC | H3 | | 5BG0794-SO | | | | | | 3.031 | 0.945 | 0.381 | 0.286 | 0.433 |
| | H5 | | 5BG0804-SO | | | | | | | | | | |
| 5/16 - 24 UNF | H3 | 5BT0794-SO | | | | | | | | | | | |
| | H5 | 5BT0804-SO | | | | | | | | | | | |
| 3/8 - 16 UNC | H3 | 5BG0954-SO | 3.031 | 0.945 | 0.381 | 0.286 | 0.433 | | | | | | |
| | H5 | 5BG0964-SO | | | | | | | | | | | |
| 3/8 - 24 UNF | H3 | 5BT0954-SO | | | | | | | | | | | |
| | H5 | 5BT0964-SO | | | | | | | | | | | |

Packed: 1 pc.
Available TiAlN coating only.

[continued on next page](#) 

| Work Material | | | | | | | | | | | | | | | | | |
|----------------|---------------------|----------------------|--------------|------------------------------|------------|-------------------------------------|-------------------------------------|--------------------------|----------------|--------------|---------|-------------------------------------|-------------------------------|-------------------|------------|--------------|--------------|
| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S Nickel Alloy Inconel | H | | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | | Stainless Steels | | | | Aluminum | | | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 5BG-SO, 5BT-SO | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | | | | | |
| SFM | | | | | | 29-49 | 26-49 | 25-45 | | | | 20-60 | | | | | |

good best

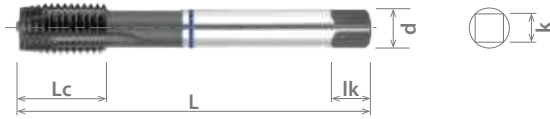




List 5BG-SO, 5BT-SO (Continued)

| | | | | |
|------------|-------------------------------------|----------------|----------------|--------------|
| NEW | BLUE BAND DRILLS P319-321 | HSSE V3 | TYPE VA | TiAIN |
|------------|-------------------------------------|----------------|----------------|--------------|

BLUE BAND, Ideal for Stainless Steel



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Shank Dia. | Square Width | Square Length |
|----------------|--------------|---------------|--------------|----------------|---------------|------------|--------------|---------------|
| | | | Plug (4P-5P) | | | | | |
| | | | TiAIN | | | | | |
| | | | L | Lc | d | k | lk | |
| 7/16 - 14 UNC | H3 | 3 | 5BG1114-SO | 3.228 | 0.984 | 0.323 | 0.242 | 0.413 |
| | H5 | | 5BG1124-SO | | | | | |
| | H3 | | 5BT1114-SO | | | | | |
| 7/16 - 20 UNF | H3 | | 5BT1124-SO | 3.425 | 1.142 | 0.367 | 0.275 | 0.433 |
| | H5 | | 5BG1274-SO | | | | | |
| 1/2 - 13 UNC | H3 | | 5BG1284-SO | 3.661 | 1.181 | 0.429 | 0.322 | 0.492 |
| | H5 | | 5BT1274-SO | | | | | |
| 1/2 - 20 UNF | H3 | | 5BT1284-SO | 3.878 | 1.260 | 0.480 | 0.360 | 0.571 |
| | H5 | | 5BG1434-SO | | | | | |
| 9/16 - 12 UNC | H3 | | 5BG1444-SO | 4.252 | 1.457 | 0.590 | 0.442 | 0.689 |
| | H5 | | 5BT1434-SO | | | | | |
| 9/16 - 18 UNF | H3 | | 5BT1444-SO | 4.685 | 1.339 | 0.697 | 0.523 | 0.748 |
| | H5 | 5BG1594-SO | | | | | | |
| 5/8 - 11 UNC | H3 | 5BG1604-SO | 5.118 | 1.772 | 0.800 | 0.600 | 0.807 | |
| | H5 | 5BT1594-SO | | | | | | |
| 5/8 - 18 UNF | H3 | 5BT1604-SO | 5.433 | 1.890 | 0.896 | 0.672 | 0.866 | |
| | H5 | 5BG1914-SO | | | | | | |
| 3/4 - 10 UNC | H3 | 5BG1924-SO | 5.748 | 2.008 | 1.021 | 0.766 | 1.004 | |
| | H5 | 5BT1914-SO | | | | | | |
| 3/4 - 16 UNF | H3 | 5BT1924-SO | 5.433 | 1.890 | 0.896 | 0.672 | 0.866 | |
| | H5 | 5BG2224-SO | | | | | | |
| 7/8 - 9 UNC | H3 | 5BG2234-SO | 5.748 | 2.008 | 1.021 | 0.766 | 1.004 | |
| | H5 | 5BT2224-SO | | | | | | |
| 7/8 - 14 UNF | H3 | 5BT2234-SO | 5.433 | 1.890 | 0.896 | 0.672 | 0.866 | |
| | H5 | 5BG2544-SO | | | | | | |
| 1 - 8 UNC | H3 | 5BG2554-SO | 5.748 | 2.008 | 1.021 | 0.766 | 1.004 | |
| | H5 | 5BT2544-SO | | | | | | |
| 1 - 12 UNF | H3 | 5BT2554-SO | 5.433 | 1.890 | 0.896 | 0.672 | 0.866 | |
| | H5 | 5BG2864-SO | | | | | | |
| 1,1/8 - 7 UNC | H3 | 5BG2874-SO | 5.748 | 2.008 | 1.021 | 0.766 | 1.004 | |
| | H5 | 5BT2864-SO | | | | | | |
| 1,1/8 - 12 UNF | H3 | 5BT2874-SO | 5.433 | 1.890 | 0.896 | 0.672 | 0.866 | |
| | H5 | 5BG3184-SO | | | | | | |
| 1,1/4 - 7 UNC | H3 | 5BG3194-SO | 5.748 | 2.008 | 1.021 | 0.766 | 1.004 | |
| | H5 | 5BT3184-SO | | | | | | |
| 1,1/4 - 12 UNF | H3 | 5BT3194-SO | 5.433 | 1.890 | 0.896 | 0.672 | 0.866 | |
| | H5 | 5BG3194-SO | | | | | | |

Packed: 1 pc.
Available TiAIN coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|----------------|---------------|------|------|--------------|------------|-------------------------------------|-------------------------------------|--------------------------|-----------|-----------|---------|-------------------------------------|----------|-----------------|----------------|---------|-----------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 5BG-SO, 5BT-SO | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | | | | | |
| SFM | | | | | | 29-49 | 26-49 | 25-45 | | | | 20-60 | | | | | |

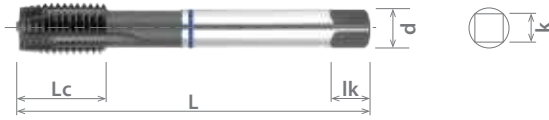
good best



List 5EG-SO, 5ET-SO

BLUE BAND, Ideal for Stainless Steel

| | | | | |
|------------|-------------------------------------|----------------|----------------|--------------|
| NEW | BLUE BAND DRILLS P319-321 | HSSE V3 | TYPE VA | TiAIN |
|------------|-------------------------------------|----------------|----------------|--------------|



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Shank Dia. | Square Width | Square Length |
|-------------|--------------|---------------|--------------|----------------|---------------|------------|--------------|---------------|
| | | | Plug (4P-5P) | | | | | |
| | | | TiAIN | | | | | |
| M3 x 0.5 | D4 | 3 | 5EG0304-SO | 48.00 | 11.00 | 3.58 | 2.79 | 5.00 |
| M3.5 x 0.6 | D6 | | 5EG0354-SO | 50.00 | 13.00 | | | |
| M4 x 0.7 | D4 | | 5EG0404-SO | 53.00 | | 16.00 | 4.27 | 3.33 |
| M4.5 x 0.75 | | | 5EG0454-SO | 58.50 | | | | |
| M5 x 0.8 | | | 5EG0504-SO | | | | | |
| M6 x 1.0 | | | 5EG0604-SO | 65.00 | 19.00 | | | |
| M6 x 0.75 | 5EG0614-SO | | | | | | | |
| M7 x 1.0 | D4 | | 5ET0604-SO | 69.00 | 22.00 | 8.08 | 6.05 | 9.50 |
| M7 x 1.0 | D6 | | 5EG0704-SO | | | | | |
| M8 x 1.25 | D4 | | 5EG0804-SO | 70.00 | 24.00 | 9.68 | 7.26 | 11.00 |
| M8 x 1.0 | D6 | | 5EG0814-SO | | | | | |
| M8 x 1.0 | D4 | | 5ET0804-SO | 77.00 | 29.00 | 9.32 | 6.99 | 13.00 |
| M10 x 1.5 | D6 | | 5ET0814-SO | | | | | |
| M10 x 1.25 | D4 | | 5EG1004-SO | 87.00 | 30.00 | 10.90 | 8.18 | 13.00 |
| M10 x 1 | | | 5EG1014-SO | | | | | |
| M12 x 1.75 | D6 | | 5ET1004-SO | 93.00 | 32.00 | 12.19 | 9.14 | 14.00 |
| M12 x 1.5 | D4 | | 5EG1204-SO | | | | | |
| M12 x 1.25 | D6 | | 5EG1214-SO | 98.50 | 34.00 | 16.56 | 12.42 | 17.50 |
| M14 x 2.0 | | | 5ET1204-SO | | | | | |
| M14 x 1.5 | D4 | | 5EG1404-SO | 108.00 | 37.00 | 13.76 | 10.31 | 15.88 |
| M14 x 1.5 | D6 | | 5EG1414-SO | | | | | |
| M16 x 2.0 | D4 | | 5ET1404-SO | 114.00 | 45.00 | 19.30 | 14.48 | 19.05 |
| M16 x 1.5 | D6 | | 5ET1414-SO | | | | | |
| M16 x 1.5 | D4 | | 5EG1604-SO | 119.00 | 45.00 | 17.70 | 13.28 | 19.05 |
| M18 x 2.5 | | | 5EG1614-SO | | | | | |
| M18 x 1.5 | D6 | | 5ET1604-SO | 125.00 | 45.00 | 19.30 | 14.48 | 19.05 |
| M18 x 1.5 | D4 | | 5ET1614-SO | | | | | |
| M20 x 2.5 | D4 | | 5EG1804-SO | 114.00 | 34.00 | 16.56 | 12.42 | 17.50 |
| M20 x 1.5 | | 5EG1814-SO | | | | | | |
| M22 x 2.5 | | 5ET1804-SO | | | | | | |
| M22 x 1.5 | | 5ET1814-SO | | | | | | |
| M24 x 3.0 | D6 | 5EG2004-SO | 119.00 | 45.00 | 17.70 | 13.28 | 19.05 | |
| M24 x 3.0 | 5EG2204-SO | | | | | | | |
| M24 x 3.0 | D4 | 5ET2004-SO | 125.00 | 45.00 | 19.30 | 14.48 | 19.05 | |
| M24 x 3.0 | 5EG2404-SO | | | | | | | |

Packed: 1 pc.
Available TiAIN coating only.



| List No. | Work Material | | | | | | | | | | | | | | | | | | |
|----------------|---------------|------|------|--------------|------------|-------------------------------------|-------------------------------------|--------------------------|-----------|-----------|---------|--------------|-------------------------------------|-----------------|-----------|-----------|-----------|--|--|
| | P | | | | | M | | | K | N | | S | H | | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 5EG-SO, 5ET-SO | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | | | | | | |
| SFM | | | | | | 29-49 | 26-49 | 25-45 | | | | | 20-60 | | | | | | |

good best

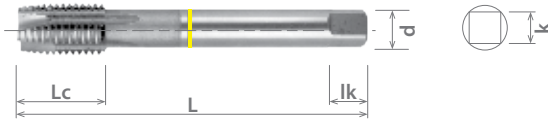




List 5BH-SO, 5BU-SO

YELLOW BAND, Ideal for Aluminum

| | | | | |
|-----|--------------------------------|---------|--------|----|
| NEW | YELLOW BAND DRILLS P322-325 | HSSE V3 | TYPE W | BR |
|-----|--------------------------------|---------|--------|----|



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Shank Dia. | Square Width | Square Length | | | | | |
|---------------|--------------|---------------|--------------|----------------|---------------|------------|--------------|---------------|-------|-------|-------|-------|-------|
| | | | Plug (4P-5P) | | | | | | | | | | |
| | | | Bright | | | | | | | | | | |
| | | | | L | Lc | d | k | lk | | | | | |
| 4 - 40 UNC | H3 | 2 | 5BH0280-SO | 1.890 | 0.433 | 0.141 | 0.110 | 0.197 | | | | | |
| | H5 | | 5BH0290-SO | | | | | | | | | | |
| 4 - 48 UNF | H3 | | 5BU0280-SO | | | | | | | | | | |
| | H5 | | 5BU0290-SO | | | | | | | | | | |
| 5 - 40 UNC | H3 | | 5BH0320-SO | | | | | | 1.969 | 0.512 | 0.168 | 0.131 | 0.256 |
| | H5 | | 5BH0330-SO | | | | | | | | | | |
| 5 - 44 UNF | H3 | | 5BU0320-SO | | | | | | | | | | |
| | H5 | | 5BU0330-SO | | | | | | | | | | |
| 6 - 32 UNC | H3 | | 5BH0350-SO | 2.087 | 0.630 | 0.194 | 0.152 | 0.276 | | | | | |
| | H5 | | 5BH0360-SO | | | | | | | | | | |
| 6 - 40 UNF | H3 | | 5BU0350-SO | | | | | | | | | | |
| | H5 | | 5BU0360-SO | | | | | | | | | | |
| 8 - 32 UNC | H3 | | 5BH0420-SO | | | | | | 2.303 | 0.748 | 0.255 | 0.191 | 0.315 |
| | H5 | | 5BH0430-SO | | | | | | | | | | |
| 8 - 36 UNF | H3 | | 5BU0420-SO | | | | | | | | | | |
| | H5 | | 5BU0430-SO | | | | | | | | | | |
| 10 - 24 UNC | H3 | | 5BH0480-SO | 2.402 | 0.866 | 0.318 | 0.238 | 0.374 | | | | | |
| | H5 | | 5BH0490-SO | | | | | | | | | | |
| 10 - 32 UNF | H3 | | 5BU0480-SO | | | | | | | | | | |
| | H5 | | 5BU0490-SO | | | | | | | | | | |
| 12 - 24 UNC | H3 | | 5BH0550-SO | | | | | | 2.559 | 0.945 | 0.381 | 0.286 | 0.433 |
| | H5 | | 5BH0560-SO | | | | | | | | | | |
| 12 - 28 UNF | H3 | | 5BU0550-SO | | | | | | | | | | |
| | H5 | | 5BU0560-SO | | | | | | | | | | |
| 1/4 - 20 UNC | H3 | 5BH0640-SO | 2.756 | 0.984 | 0.323 | 0.242 | 0.413 | | | | | | |
| | H5 | 5BH0650-SO | | | | | | | | | | | |
| 1/4 - 28 UNF | H3 | 5BU0640-SO | | | | | | | | | | | |
| | H5 | 5BU0650-SO | | | | | | | | | | | |
| 5/16 - 18 UNC | H3 | 5BH0790-SO | | | | | | 3.031 | 1.142 | 0.367 | 0.275 | 0.433 | |
| | H5 | 5BH0800-SO | | | | | | | | | | | |
| 5/16 - 24 UNF | H3 | 5BU0790-SO | | | | | | | | | | | |
| | H5 | 5BU0800-SO | | | | | | | | | | | |
| 3/8 - 16 UNC | H3 | 5BH0950-SO | 3.228 | 1.181 | 0.429 | 0.322 | 0.492 | | | | | | |
| | H5 | 5BH0960-SO | | | | | | | | | | | |
| 3/8 - 24 UNF | H3 | 5BU0950-SO | | | | | | | | | | | |
| | H5 | 5BU0960-SO | | | | | | | | | | | |
| 7/16 - 14 UNC | H3 | 5BH1110-SO | | | | | | 3.425 | 1.181 | 0.429 | 0.322 | 0.492 | |
| | H5 | 5BH1120-SO | | | | | | | | | | | |
| 7/16 - 20 UNF | H3 | 5BU1110-SO | | | | | | | | | | | |
| | H5 | 5BU1120-SO | | | | | | | | | | | |
| 1/2 - 13 UNC | H3 | 5BH1270-SO | 3.661 | 1.181 | 0.429 | 0.322 | 0.492 | | | | | | |
| | H5 | 5BH1280-SO | | | | | | | | | | | |
| 1/2 - 20 UNF | H3 | 5BU1270-SO | | | | | | | | | | | |
| | H5 | 5BU1280-SO | | | | | | | | | | | |
| 9/16 - 12 UNC | H3 | 5BH1430-SO | | | | | | 3.661 | 1.181 | 0.429 | 0.322 | 0.492 | |
| | H5 | 5BH1440-SO | | | | | | | | | | | |
| 9/16 - 18 UNF | H3 | 5BU1430-SO | | | | | | | | | | | |
| | H5 | 5BU1440-SO | | | | | | | | | | | |

Packed: 1 pc.
 EDPs listed above are stock standard, other coatings available upon request.
 Specify treatment at the time of order.



List 5BH-SO, 5BU-SO (Continued)

YELLOW BAND, Ideal for Aluminum

| | | | | |
|-----|--------------------------------|---------|--------|----|
| NEW | YELLOW BAND DRILLS P322-325 | HSSE V3 | TYPE W | BR |
|-----|--------------------------------|---------|--------|----|

Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Shank Dia. | Square Width | Square Length |
|----------------|--------------|---------------|--------------|----------------|---------------|------------|--------------|---------------|
| | | | Plug (4P-5P) | | | | | |
| | | | Bright | | | | | |
| | | | | L | Lc | d | k | lk |
| 5/8 - 11 UNC | H3 | 3 | 5BH1590-SO | 3.878 | 1.260 | 0.480 | 0.360 | 0.571 |
| | H5 | | 5BH1600-SO | | | | | |
| 5/8 - 18 UNF | H3 | | 5BU1590-SO | | | | | |
| | H5 | | 5BU1600-SO | | | | | |
| 3/4 - 10 UNC | H3 | | 5BH1910-SO | 4.252 | 1.457 | 0.590 | 0.442 | 0.689 |
| | H5 | | 5BH1920-SO | | | | | |
| 3/4 - 16 UNF | H3 | | 5BU1910-SO | | | | | |
| | H5 | | 5BU1920-SO | | | | | |
| 7/8 - 9 UNC | H3 | | 5BH2220-SO | 4.685 | 1.339 | 0.697 | 0.523 | 0.748 |
| | H5 | | 5BH2230-SO | | | | | |
| 7/8 - 14 UNF | H3 | | 5BU2220-SO | | | | | |
| | H5 | | 5BU2230-SO | | | | | |
| 1 - 8 UNC | H3 | | 5BH2540-SO | 5.118 | 1.772 | 0.800 | 0.600 | 0.807 |
| | H5 | | 5BH2541-SO | | | | | |
| 1 - 12 UNF | H3 | | 5BU2540-SO | | | | | |
| | H5 | | 5BU2550-SO | | | | | |
| 1,1/8 - 7 UNC | H3 | | 5BH2860-SO | 5.433 | 1.890 | 0.896 | 0.672 | 0.866 |
| | H5 | | 5BH2870-SO | | | | | |
| 1,1/8 - 12 UNF | H3 | | 5BU2860-SO | | | | | |
| | H5 | | 5BU2870-SO | | | | | |
| 1,1/4 - 7 UNC | H3 | 5BH3180-SO | 5.748 | 2.008 | 1.021 | 0.766 | 1.004 | |
| | H5 | 5BH3190-SO | | | | | | |
| 1,1/4 - 12 UNF | H3 | 5BU3180-SO | | | | | | |
| | H5 | 5BU3190-SO | | | | | | |

Packed: 1 pc.
EDPs listed above are stock standard, other coatings available upon request.
Specify treatment at the time of order.



| Work Material | | | | | | | | | | | | | | | | | |
|----------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------|------------|------------------|-----|---------|-----------|-------------------------------------|-------------------------------------|--------------|----------|-----------------|----------------|---------|-----------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 5BH-SO, 5BU-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| SFM | 58-88 | 58-88 | 58-88 | | | | | | | 78-170 | 40-65 | | | | | | |

good best

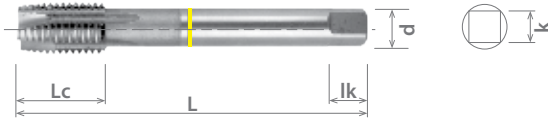




List 5EH-SO, 5EU-SO

YELLOW BAND, Ideal for Aluminum

| | | | | |
|-----|--------------------------------|---------|--------|----|
| NEW | YELLOW BAND DRILLS P322-325 | HSSE V3 | TYPE W | BR |
|-----|--------------------------------|---------|--------|----|



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Shank Dia. | Square Width | Square Length | | | |
|------------|--------------|---------------|--------------|----------------|---------------|------------|--------------|---------------|-------|-------|-------|
| | | | Plug (4P-5P) | | | | | | | | |
| | | | Bright | | | | | | L | Lc | d |
| M3 x 0.5 | D4 | 2 | 5EH0300-SO | 48.00 | 11.00 | 3.58 | 2.79 | 5.00 | | | |
| M4 x 0.7 | | | 5EH0400-SO | 53.00 | 13.00 | 4.27 | 3.33 | 6.50 | | | |
| M5 x 0.8 | | | 5EH0500-SO | 58.50 | 16.00 | 4.93 | 3.86 | | | | |
| M6 x 1.0 | D6 | | 2 | 5EH0600-SO | 65.00 | 19.00 | 6.48 | 4.85 | 8.00 | | |
| M6 x 0.75 | 5EH0610-SO | | | | | | | | | | |
| M7 x 1.0 | 5EU0600-SO | | | | | | | | | | |
| M8 x 1.25 | D4 | | 2 | 5EH0700-SO | 69.00 | 22.00 | 8.08 | 6.05 | 9.50 | | |
| M8 x 1.0 | 5EH0800-SO | | | | | | | | | | |
| M8 x 1.0 | 5EU0800-SO | | | | | | | | | | |
| M10 x 1.5 | D4 | | 3 | 5EU0810-SO | 77.00 | 24.00 | 9.68 | 7.26 | 11.00 | | |
| M10 x 1 | D6 | | | | | | | | | | |
| M10 x 1 | D4 | | | | | | | | | | |
| M12 x 1.75 | D4 | 3 | | 5EH1000-SO | 87.00 | 29.00 | 9.32 | 6.99 | 11.00 | | |
| M12 x 1.5 | D6 | | | | | | | | | | |
| M12 x 1.5 | D4 | | | | | | | | | | |
| M14 x 2.0 | D4 | 3 | | 5EU1200-SO | 93.00 | 30.00 | 10.90 | 8.18 | 13.00 | | |
| M14 x 1.5 | | | | 5EH1400-SO | | | | | | | |
| M16 x 2.0 | | | | 5EU1400-SO | | | | | | | |
| M16 x 1.5 | | | | D4 | 3 | 5EH1600-SO | 98.50 | 32.00 | 12.19 | 9.14 | 14.00 |
| M18 x 2.5 | | | | 5EU1600-SO | | | | | | | |
| M18 x 1.5 | | | | 5EH1800-SO | | | | | | | |
| M20 x 2.5 | | | D4 | 3 | 5EU1800-SO | 108.00 | 37.00 | 13.76 | 10.31 | 15.88 | |
| M20 x 1.5 | | | 5EH2000-SO | | | | | | | | |
| M22 x 2.5 | | | 5EU2000-SO | | | | | | | | |
| M22 x 1.5 | | | D4 | 3 | 5EH2200-SO | 114.00 | 34.00 | 16.56 | 12.42 | 17.50 | |
| M24 x 3.0 | | | 5EU2200-SO | | | | | | | | |
| M24 x 3.0 | | | 5EH2400-SO | | | | | | | | |
| M22 x 1.5 | D4 | 3 | 5EU2200-SO | 119.00 | 34.00 | 17.70 | 13.28 | 19.05 | | | |
| M24 x 3.0 | 5EH2400-SO | | | | | | | | | | |
| M24 x 3.0 | 5EU2400-SO | | | | | | | | | | |
| M24 x 3.0 | D4 | 3 | 5EH2400-SO | 125.00 | 45.00 | 19.30 | 14.48 | 19.05 | | | |
| M24 x 3.0 | 5EU2400-SO | | | | | | | | | | |
| M24 x 3.0 | 5EH2400-SO | | | | | | | | | | |

Packed: 1 pc.
EDPs listed above are stock standard, other coatings available upon request.
Specify treatment at the time of order.



| Work Material | | | | | | | | | | | | | | | | | |
|----------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------|------------|------------------|-----|---------|-----------|-------------------------------------|-------------------------------------|--------------|----------|-----------------|----------------|---------|-----------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 5EH-SO, 5EU-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| SFM | 58-88 | 58-88 | 58-88 | | | | | | | 78-170 | 40-65 | | | | | | |

good best



List 5BJ-SO, 5BV-SO

GREEN BAND, Ideal for Carbon Steel

| | | | | |
|-----|-------------------------------|---------|----------|-----|
| NEW | GREEN BAND DRILLS P328-331 | HSSE V3 | TYPE UNI | TiN |
|-----|-------------------------------|---------|----------|-----|



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Overall Length | Thread Length | Shank Dia. | Square Width | Square Length | | | | | |
|---------------|--------------|---------------|--------------|-------|----------------|---------------|------------|--------------|---------------|-------|-------|-------|-------|-------|
| | | | Plug (4P-5P) | | | | | | | | | | | |
| | | | TiN | | L | Lc | d | k | lk | | | | | |
| 4 - 40 UNC | H3 | 3 | 5BJ0280-SO | | 1.890 | 0.433 | 0.141 | 0.110 | 0.197 | | | | | |
| | H5 | | 5BJ0290-SO | | | | | | | | | | | |
| 4 - 48 UNF | H3 | | 5BV0280-SO | | | | | | | | | | | |
| | H5 | | 5BV0290-SO | | | | | | | | | | | |
| 5 - 40 UNC | H3 | | 5BJ0320-SO | | | | | | | 1.969 | 0.512 | 0.168 | 0.131 | 0.256 |
| | H5 | | 5BJ0330-SO | | | | | | | | | | | |
| 5 - 44 UNF | H3 | | 5BV0320-SO | | | | | | | | | | | |
| | H5 | | 5BV0330-SO | | | | | | | | | | | |
| 6 - 32 UNC | H3 | | 5BJ0350-SO | | 2.087 | 0.630 | 0.194 | 0.152 | 0.276 | | | | | |
| | H5 | | 5BJ0360-SO | | | | | | | | | | | |
| 6 - 40 UNF | H3 | | 5BV0350-SO | | | | | | | | | | | |
| | H5 | | 5BV0360-SO | | | | | | | | | | | |
| 8 - 32 UNC | H3 | | 5BJ0420-SO | | | | | | | 2.303 | 0.748 | 0.220 | 0.165 | 0.315 |
| | H5 | | 5BJ0430-SO | | | | | | | | | | | |
| 8 - 36 UNF | H3 | | 5BV0420-SO | | | | | | | | | | | |
| | H5 | | 5BV0430-SO | | | | | | | | | | | |
| 10 - 24 UNC | H3 | | 5BJ0480-SO | | 2.402 | 0.866 | 0.255 | 0.191 | 0.374 | | | | | |
| | H5 | | 5BJ0490-SO | | | | | | | | | | | |
| 10 - 32 UNF | H3 | | 5BV0480-SO | | | | | | | | | | | |
| | H5 | | 5BV0490-SO | | | | | | | | | | | |
| 12 - 24 UNC | H3 | | 5BJ0550-SO | | | | | | | 2.559 | 0.945 | 0.286 | 0.286 | 0.433 |
| | H5 | | 5BJ0560-SO | | | | | | | | | | | |
| 12 - 28 UNF | H3 | | 5BV0550-SO | | | | | | | | | | | |
| | H5 | | 5BV0560-SO | | | | | | | | | | | |
| 1/4 - 20 UNC | H3 | | 5BJ0640-SO | | 2.756 | 0.866 | 0.318 | 0.238 | 0.374 | | | | | |
| | H5 | | 5BJ0650-SO | | | | | | | | | | | |
| 1/4 - 28 UNF | H3 | | 5BV0640-SO | | | | | | | | | | | |
| | H5 | | 5BV0650-SO | | | | | | | | | | | |
| 5/16 - 18 UNC | H3 | | 5BJ0790-SO | | | | | | | 3.031 | 0.945 | 0.381 | 0.286 | 0.433 |
| | H5 | | 5BJ0800-SO | | | | | | | | | | | |
| 5/16 - 24 UNF | H3 | 5BV0790-SO | | | | | | | | | | | | |
| | H5 | 5BV0800-SO | | | | | | | | | | | | |
| 3/8 - 16 UNC | H3 | 5BJ0950-SO | | 3.031 | 0.945 | 0.381 | 0.286 | 0.433 | | | | | | |
| | H5 | 5BJ0960-SO | | | | | | | | | | | | |
| 3/8 - 24 UNF | H3 | 5BV0950-SO | | | | | | | | | | | | |
| | H5 | 5BV0960-SO | | | | | | | | | | | | |

Packed: 1 pc.
Available TiN coating only.

[continued on next page](#) 

| Work Material | | | | | | | | | | | | | | | | | |
|----------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------------------|------------|--------------------------|-----|---------|--------------------------|--------------------------|--------------------------|--------------|-------------------|-----------------|--------------|--------------|--------------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5BJ-SO, 5BV-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| SFM | 59-88 | 59-88 | 59-79 | | | 59-79 | | | 30-85 | 78-170 | 30-80 | 19-39 | | | | | |

good best





List 5BJ-SO, 5BV-SO

GREEN BAND, Ideal for Carbon Steel

| | | | | |
|-----|----------------------------|---------|----------|-----|
| NEW | GREEN BAND DRILLS P328-331 | HSSE V3 | TYPE UNI | TiN |
|-----|----------------------------|---------|----------|-----|



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Shank Dia. | Square Width | Square Length |
|----------------|--------------|---------------|--------------|----------------|---------------|------------|--------------|---------------|
| | | | Plug (4P-5P) | | | | | |
| | | | TiN | | | | | |
| | | | L | Lc | d | k | lk | |
| 7/16 - 14 UNC | H3 | 3 | 5BJ1110-SO | 3.228 | 0.984 | 0.323 | 0.242 | 0.413 |
| | H5 | | 5BJ1120-SO | | | | | |
| | H3 | | 5BV1110-SO | | | | | |
| 7/16 - 20 UNF | H3 | | 5BV1120-SO | 3.425 | 1.142 | 0.367 | 0.275 | 0.433 |
| | H5 | | 5BJ1280-SO | | | | | |
| 1/2 - 13 UNC | H3 | | 5BV1270-SO | 3.661 | 1.181 | 0.429 | 0.322 | 0.492 |
| | H5 | | 5BV1280-SO | | | | | |
| 1/2 - 20 UNF | H3 | | 5BJ1430-SO | 3.878 | 1.260 | 0.480 | 0.360 | 0.571 |
| | H5 | | 5BJ1440-SO | | | | | |
| 9/16 - 12 UNC | H3 | | 5BV1430-SO | 4.252 | 1.457 | 0.590 | 0.442 | 0.689 |
| | H5 | | 5BV1440-SO | | | | | |
| 9/16 - 18 UNF | H3 | | 5BJ1590-SO | 4.685 | 1.339 | 0.697 | 0.523 | 0.748 |
| | H5 | 5BJ1600-SO | | | | | | |
| 5/8 - 11 UNC | H3 | 5BV1590-SO | 5.118 | 1.772 | 0.800 | 0.600 | 0.807 | |
| | H5 | 5BV1600-SO | | | | | | |
| 5/8 - 18 UNF | H3 | 5BJ1910-SO | 5.433 | 1.890 | 0.896 | 0.672 | 0.866 | |
| | H5 | 5BJ1920-SO | | | | | | |
| 3/4 - 10 UNC | H3 | 5BV1910-SO | 5.748 | 2.008 | 1.021 | 0.766 | 1.004 | |
| | H5 | 5BV1920-SO | | | | | | |
| 3/4 - 16 UNF | H3 | 5BJ2220-SO | 5.433 | 1.890 | 0.896 | 0.672 | 0.866 | |
| | H5 | 5BJ2230-SO | | | | | | |
| 7/8 - 9 UNC | H3 | 5BV2220-SO | 5.748 | 2.008 | 1.021 | 0.766 | 1.004 | |
| | H5 | 5BV2230-SO | | | | | | |
| 7/8 - 14 UNF | H3 | 5BJ2540-SO | 5.433 | 1.890 | 0.896 | 0.672 | 0.866 | |
| | H5 | 5BJ2550-SO | | | | | | |
| 1 - 8 UNC | H3 | 5BV2540-SO | 5.748 | 2.008 | 1.021 | 0.766 | 1.004 | |
| | H5 | 5BV2550-SO | | | | | | |
| 1 - 12 UNF | H3 | 5BJ2860-SO | 5.433 | 1.890 | 0.896 | 0.672 | 0.866 | |
| | H5 | 5BJ2870-SO | | | | | | |
| 1,1/8 - 7 UNC | H3 | 5BV2860-SO | 5.748 | 2.008 | 1.021 | 0.766 | 1.004 | |
| | H5 | 5BV2870-SO | | | | | | |
| 1,1/8 - 12 UNF | H3 | 5BJ3180-SO | 5.748 | 2.008 | 1.021 | 0.766 | 1.004 | |
| | H5 | 5BJ3190-SO | | | | | | |
| 1,1/4 - 7 UNC | H3 | 5BV3180-SO | 5.748 | 2.008 | 1.021 | 0.766 | 1.004 | |
| | H5 | 5BV3190-SO | | | | | | |

Packed: 1 pc.
Available TiN coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------|------------|--------------------------|-----|---------|--------------------------|--------------------------|--------------------------|--------------|----------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 5BJ-SO, 5BV-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| SFM | 59-88 | 59-88 | 59-79 | | | 59-79 | | | 30-85 | 78-170 | 30-80 | 19-39 | | | | | |

good best





List 5EX-SO

GREEN BAND, Ideal for Carbon Steel

| | | | | |
|-----|-------------------------------|---------|----------|-----|
| NEW | GREEN BAND DRILLS P328-331 | HSSE V3 | TYPE UNI | TiN |
|-----|-------------------------------|---------|----------|-----|



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Shank Dia. | Square Width | Square Length | |
|------------|--------------|---------------|--------------|----------------|---------------|------------|--------------|---------------|-------|
| | | | Plug (4P-5P) | | | | | | |
| | | | TiN | L | Lc | d | k | lk | |
| M3 x 0.5 | D4 | 3 | 5EX0300-SO | 48.00 | 11.00 | 3.58 | 2.79 | 5.00 | |
| M4 x 0.7 | | | 5EX0400-SO | 53.00 | 13.00 | 4.27 | 3.33 | 6.50 | |
| M5 x 0.8 | | | 5EX0500-SO | 58.50 | 16.00 | 4.93 | 3.86 | | |
| M6 x 1.0 | | | 5EX0600-SO | 65.00 | 19.00 | 6.48 | 4.85 | 8.00 | |
| M8 x 1.25 | | | 5EX0800-SO | 70.00 | 22.00 | 8.08 | 6.05 | 9.50 | |
| M10 x 1.5 | D6 | 3 | 5EX1000-SO | 77.00 | 24.00 | 9.68 | 7.26 | 11.00 | |
| M12 x 1.75 | | | 5EX1200-SO | 87.00 | 29.00 | 9.32 | 6.99 | | |
| M14 x 2.0 | | | 5EX1400-SO | 93.00 | 30.00 | 10.90 | 8.18 | 13.00 | |
| M16 x 2.0 | | | 5EX1600-SO | 98.50 | 32.00 | 12.18 | 9.14 | 14.00 | |
| M18 x 2.5 | | | 5EX1800-SO | 108.00 | 37.00 | 13.76 | 10.31 | 15.88 | |
| M20 x 2.5 | | 4 | 4 | 5EX2000-SO | 114.00 | 34.00 | 16.56 | 12.42 | 17.50 |
| M22 x 2.5 | | | | 5EX2200-SO | 119.00 | | 17.70 | 13.28 | 19.05 |
| M24 x 3.0 | | | | 5EX2400-SO | 125.00 | 45.00 | 19.30 | 14.48 | |

Packed: 1 pc.
Available TiN coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------|------------|--------------------------|-----|---------|--------------------------|--------------------------|--------------------------|--------------|----------|-----------------|----------------|---------|-----------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 5EX-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| SFM | 59-88 | 59-88 | 59-79 | | | 59-79 | | | 30-85 | 78-170 | 30-80 | 19-39 | | | | | |

good best





List 16615



A-CHT, Coolant-Through, DIN Overall Length, Bottom (1.5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|---------------|--------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P) | Bright | | | | | | |
| | | | L | Lc | | | | | | |
| 12 - 24 UNC | H3 | 3 | 1661500200 | 3.150 | 0.500 | 0.945 | 0.220 | 0.165 | 0.281 | |
| 12 - 28 UNF | | | 1661500300 | | | | | | | |
| 1/4 - 20 UNC | | | 1661500400 | | | | | | | |
| 1/4 - 28 UNF | H4 | 4 | 1661500500 | 3.543 | 0.665 | 1.378 | 0.318 | 0.238 | 0.375 | |
| 5/16 - 18 UNC | H5 | | 1661500600 | | | | | | | |
| 5/16 - 24 UNF | H4 | | 1661500700 | 3.937 | 0.752 | 0.381 | 0.286 | 0.438 | | |
| 3/8 - 16 UNC | H5 | | 1661500800 | | | | | | | |
| 3/8 - 24 UNF | H4 | | 1661500900 | 3.937 | 0.858 | 0.323 | 0.242 | 0.406 | | |
| 7/16 - 14 UNC | H5 | | 1661501000 | | | | | | | |
| 7/16 - 20 UNF | | | 1661501100 | | | | | | | |
| 1/2 - 13 UNC | | | 1661501200 | 4.331 | 0.921 | 0.367 | 0.275 | 0.438 | | |
| 1/2 - 20 UNF | | | 1661501300 | | | | | | | |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order.
 Note: Reduce SFM 50% - 70% while using external coolant.



| Work Material | | | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|------------|------------------|-----|---------|-------------|----------|---------|--------------|----------|-----------------|----------------|---------|-----------|-----------|-----------|
| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | | | |
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 16615 | | | | | | | | | | | | | | | | | | | |
| SFM | | | | | | | | 15-50 | | 30-330 | | | | | | | | | |

good best





List 16610



A-CHT, Coolant-Through, DIN Overall Length, Bottom (1.5P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|---------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P) | | | | | | |
| | | | Bright | L | Lc | Ln | d | k | lk |
| M5 x 0.8 | D4 | 3 | 1661000000 | 70.00 | 10.00 | 25.00 | 4.93 | 3.86 | 6.35 |
| M6 x 1.0 | D5 | | 1661000100 | 80.00 | 12.00 | 31.00 | 6.48 | 4.85 | 7.92 |
| M8 x 1.25 | | | 1661000200 | 90.00 | 15.00 | 35.00 | 8.08 | 6.05 | 9.52 |
| M10 x 1.5 | D6 | 4 | 1661000300 | 100.00 | 18.00 | 39.00 | 9.68 | 7.26 | 11.11 |
| M10 x 1.25 | D5 | | 1661000400 | | | | | | |
| M12 x 1.75 | D6 | | 1661000500 | 110.00 | | | | | |
| M12 x 1.5 | | | 1661000600 | 100.00 | 21.00 | - | 9.32 | 6.98 | |
| M12 x 1.25 | | | 1661000700 | | | | | | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order.

Note: Reduce SFM 50% - 70% while using external coolant.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-------------------------------------|-----------|-------------------------------------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 16610 | | | | | | | | | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | | | | |
| SFM | | | | | | | | | 15-50 | | 30-330 | | | | | | | |

good best





List 311

CARBIDE

V

VX-OT, DIN Overall Length, Modified Bottom (2.5P-3P)



Units: Inch

| Tap Size | Class of Fit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Recommended WH-70 Drill Size | | | |
|---------------|--------------|---------------|---------------------------|--------------------|---------------|-------------|------------|--------------|---------------|------------------------------|-------|-------|--------|
| | | | Modified Bottom (2.5P-3P) | | | | | | | | | | |
| | | | V | | | | | | | | | | |
| 4 - 40 UNC | 2B | 4 | 3110108 | 2.205 | 0.295 | 0.705 | 0.141 | 0.110 | 0.188 | 2.3mm | | | |
| 6 - 32 UNC | | | 3110208 | | 0.370 | 0.783 | | | | 2.8mm | | | |
| 8 - 32 UNC | | | 3110308 | | 0.374 | 0.827 | | | | 3.5mm | | | |
| 10 - 24 UNC | | | 3110408 | 2.756 | 0.492 | 0.976 | 4.0mm | | | | | | |
| 10 - 32 UNF | | | 3110508 | | 0.500 | 0.984 | 4.2mm | | | | | | |
| 1/4 - 20 UNC | | | 3110608 | | 0.594 | 1.177 | 5.3mm | | | | | | |
| 1/4 - 28 UNF | | 3110708 | 3.150 | 0.606 | 1.189 | 5.6mm | | | | | | | |
| 5/16 - 18 UNC | | 3110808 | 5 | 3.543 | 0.665 | 1.378 | 0.318 | 0.238 | 0.375 | 6.8mm | | | |
| 5/16 - 24 UNF | | 3110908 | | | | | | | | 0.381 | 0.286 | 0.438 | 7.1mm |
| 3/8 - 16 UNC | | 3111008 | | | | | | | | 3.937 | 0.752 | 0.323 | 0.242 |
| 3/8 - 24 UNF | | 3111108 | | 0.858 | | | 8.7mm | | | | | | |
| 7/16 - 14 UNC | | 3111208 | | | | | 9.6mm | | | | | | |
| 7/16 - 20 UNF | | 3111308 | | | | | 4.331 | 0.921 | - | 0.367 | 0.275 | 0.438 | 10.1mm |
| 1/2 - 13 UNC | | 3111408 | 11.1mm | | | | | | | | | | |
| 1/2 - 20 UNF | | 3111508 | 11.7mm | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.



Tapping Guidelines

1. Set tapping speed between 3 ~ 10 SFM.
2. Choose largest hole-size possible, within the recommended tolerance range.
3. Use a non-water soluble cutting fluid.
4. Use highly rigid machine and tool holders.
5. Tapping by hand is NOT recommended.
6. For tapping length over 1.5D, step feed is recommended.

| Work Material | | | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|----------|---------|--------------|----------------|-----------------|-----------|-----------|--------------------------|--------------------------|--------------------------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 311 | 1010 | 1035 | 1065 | 4140 | | | | | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | |
| SFM | 1018 | 1045 | | 4340 | | | | | | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> |

good best

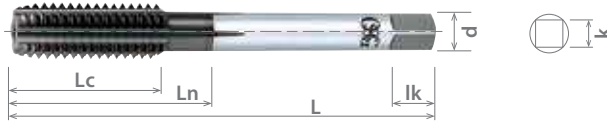




List 341

CARBIDE V

VX-OT, JIS, Modified Bottom (2.5P-3P)



Units: mm

| Tap Size | Class of Fit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Recommended WH-70 Drill Size | | | | | | |
|-------------|--------------|---------------|-----------------------------|--------------------|---------------|-------------|------------|--------------|---------------|------------------------------|---------|--------|-------|-------|-------|---------|
| | | | Modified Bottom (2.5P - 3P) | | | | | | | | | | | | | |
| | | | V | | | | | | | | | | | | | |
| M2.6 x 0.45 | OH3 | 4 | 8330049 | 44.00 | 14.00 | - | 3.00 | 2.50 | 5.00 | 2.2mm | | | | | | |
| M3 x 0.5 | | | 8330055 | 45.90 | 11.00 | 19.00 | 4.00 | 3.20 | 6.00 | 2.6mm | | | | | | |
| M4 x 0.7 | | | 8330061 | 51.90 | 13.00 | 21.00 | 5.00 | 4.00 | 7.00 | 3.4mm | | | | | | |
| M5 x 0.8 | | | 8330067 | 59.90 | 15.90 | 23.90 | 5.50 | 4.3mm | | | | | | | | |
| M6 x 1.0 | | 8330073 | 61.80 | 19.00 | 29.00 | 6.00 | 4.50 | 5.2mm | | | | | | | | |
| M8 x 1.25 | | 8330085 | 5 | 70.00 | 22.00 | - | 6.20 | 5.00 | 8.00 | 7.0mm | | | | | | |
| M8 x 1.0 | | 8330087 | | | | | | | | 7.2mm | | | | | | |
| M10 x 1.5 | | 8330097 | | | | | | | | 8.8mm | | | | | | |
| M10 x 1.25 | | 8330099 | | | | | | | | 9.0mm | | | | | | |
| M10 x 1.0 | | 8330101 | | 75.00 | 24.00 | - | 7.00 | 5.50 | 9.00 | 9.2mm | | | | | | |
| M12 x 1.75 | | 8330115 | | | | | | | | 10.6mm | | | | | | |
| M12 x 1.5 | | 8330117 | | | | | | | | 10.8mm | | | | | | |
| M12 x 1.25 | | 8330119 | | | | | | | | 11.0mm | | | | | | |
| M12 x 1.0 | | OH4 | 8330121 | 82.00 | 29.00 | - | 8.50 | 6.50 | 9.00 | 11.2mm | | | | | | |
| M14 x 2.0 | | OH4 | 6 | 8330123 | 88.00 | 30.00 | - | 10.50 | 8.00 | 11.00 | 12.4mm | | | | | |
| M14 x 1.5 | | OH3 | | | | | | | | | 8330125 | 12.8mm | | | | |
| M16 x 2.0 | OH4 | 95.00 | | 32.00 | - | 12.50 | 10.00 | 13.00 | 14.00 | 14.4mm | | | | | | |
| M16 x 1.5 | OH3 | | | | | | | | | 8330133 | 14.8mm | | | | | |
| M18 x 2.5 | OH4 | | | | | | | | | 100.00 | 37.00 | - | 14.00 | 11.00 | 14.00 | 16.0mm |
| M18 x 1.5 | | | | | | | | | | | | | | | | 8330139 |
| M20 x 2.5 | | 105.00 | | - | 15.00 | 12.00 | 15.00 | 18.0mm | | | | | | | | |
| M20 x 1.5 | | | | | | | | 8330147 | 18.8mm | | | | | | | |
| | | | | 8330149 | | | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.



Tapping Guidelines

1. Set tapping speed between 3 ~ 10 SFM.
2. Choose largest hole-size possible, within the recommended tolerance range.
3. Use a non-water soluble cutting fluid.
4. Use highly rigid machine and tool holders.
5. Tapping by hand is NOT recommended.
6. For tapping length over 1.5D, step feed is recommended.

| List No. | Work Material | | | | | | | | | | | | | | | | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|----------|---------|--------------|----------|-----------------|----------------|---------|-----------|-----------|-----------|--|
| | P | | | | | M | | | K | N | | S | | H | | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 341 | 1010 | 1035 | 1065 | 4140 | | | | | | | | | | | | | | | | |
| SFM | 1018 | 1045 | | 4340 | | | | | | | | | | | | | | | | |

good best





List 329

CARBIDE DIA

DIA-OTT, UNJF, DIN Overall Length, Bottom (1.5P), Modified Bottom (2.5P-3P)



Units: Inch

| Tap Size | Class of Fit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|---------------|-----------------------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P) | Modified Bottom (2.5P - 3P) | | | | | | |
| | | | Diamond | | | | | | | |
| 4 - 40 UNC | 2B | 3 | - | 3297016 | 2.205 | 0.295 | 0.705 | 0.141 | 0.110 | 0.188 |
| | 3B | | 3291216 | - | | | | | | |
| 6 - 32 UNC | 2B | | - | 3297116 | 2.480 | 0.370 | 0.783 | 0.168 | 0.131 | 0.250 |
| | 3B | | 3291316 | - | | | | | | |
| 8 - 32 UNC | 2B | | - | 3297216 | 2.756 | 0.500 | 0.984 | 0.194 | 0.152 | 0.250 |
| | 3B | | 3291416 | - | | | | | | |
| 10 - 24 UNC | 2B | - | 3297316 | 3.150 | 0.606 | 1.189 | 0.255 | 0.191 | 0.313 | |
| | 3B | 3291516 | - | | | | | | | |
| 10 - 32 UNF | 2B | 4 | - | 3297416 | 3.543 | 0.665 | 1.378 | 0.318 | 0.238 | 0.375 |
| | 3B | | 3291616 | - | | | | | | |
| 1/4 - 20 UNC | 2B | | - | 3297516 | 3.937 | 0.752 | 0.381 | 0.286 | 0.438 | |
| | 3B | | 3291716 | - | | | | | | |
| 1/4 - 28 UNF | 2B | | - | 3297616 | 4.331 | 0.921 | - | 0.367 | 0.275 | 0.438 |
| | 3B | | 3291816 | - | | | | | | |
| 5/16 - 18 UNC | 2B | | - | 3297716 | 4.331 | 0.921 | - | 0.367 | 0.275 | 0.438 |
| | 3B | | 3298516 | - | | | | | | |
| 5/16 - 24 UNF | 2B | | - | 3297816 | 4.331 | 0.921 | - | 0.367 | 0.275 | 0.438 |
| | 3B | | 3298616 | - | | | | | | |
| 3/8 - 16 UNC | 2B | | - | 3297916 | 4.331 | 0.921 | - | 0.367 | 0.275 | 0.438 |
| | 3B | | 3298716 | - | | | | | | |
| 3/8 - 24 UNF | 2B | - | 3298016 | 4.331 | 0.921 | - | 0.367 | 0.275 | 0.438 | |
| | 3B | 3298816 | - | | | | | | | |
| 7/16 - 14 UNC | 2B | 5 | - | 3298116 | 4.331 | 0.921 | - | 0.367 | 0.275 | 0.438 |
| | 3B | | 3298916 | - | | | | | | |
| 7/16 - 20 UNF | 2B | | - | 3298216 | 4.331 | 0.921 | - | 0.367 | 0.275 | 0.438 |
| | 3B | | 3299016 | - | | | | | | |
| 1/2 - 13 UNC | 2B | | - | 3298316 | 4.331 | 0.921 | - | 0.367 | 0.275 | 0.438 |
| | 3B | | 3299116 | - | | | | | | |
| 1/2 - 20 UNF | 2B | - | 3298416 | 4.331 | 0.921 | - | 0.367 | 0.275 | 0.438 | |
| | 3B | 3299216 | - | | | | | | | |

Packed: 1 pc.
Available Diamond coating only.
*3B fit taps conform to UNJ Aerospace internal threading applications.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|-------------------------------------|-------------------------------------|--------------|----------|-------------------------------------|--------------------------|-------------------------------------|---------------|
| List No. | P | | | | | M | | | K | N | | S | | Other | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | MMC | Copper Alloys | Fiberglass | Cobalt-Chrome |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | | | | |
| 329 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| SFM | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |

good best

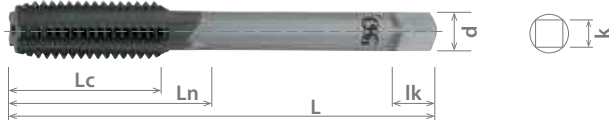




List 359

| | |
|---------|-------------------------------------|
| CARBIDE | <input type="checkbox"/> |
| DIA | <input checked="" type="checkbox"/> |

DIA-OTT, JIS, Modified Bottom (2.5P-3P)



Units: mm

| Tap Size | Class of Fit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|---------------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P-3P) | | | | | | |
| | | | Diamond | | | | | | |
| | | | L | Lc | Ln | d | k | lk | |
| M3 x 0.5 | 6H | 3 | 3590116 | 46.00 | 11.00 | 19.00 | 4.00 | 3.20 | 6.00 |
| M4 x 0.7 | | | 3590216 | 52.00 | 13.00 | 21.00 | 5.00 | 4.00 | 7.00 |
| M5 x 0.8 | | 4 | 3590316 | 60.00 | 16.00 | 24.00 | 5.50 | 4.50 | 7.00 |
| M6 x 1.0 | | | 3590416 | 62.00 | 19.00 | 29.00 | 6.00 | 4.50 | 7.00 |
| M8 x 1.25 | | | 3590516 | 70.00 | 22.00 | - | 6.20 | 5.00 | 8.00 |
| M10 x 1.5 | | | 5 | 3590616 | 75.00 | 24.00 | - | 7.00 | 5.50 |
| M12 x 1.75 | | 3590716 | | 82.00 | 29.00 | - | 8.50 | 6.50 | 9.00 |

Packed: 1 pc.
Available Diamond coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|-------------------------------------|-------------------------------------|--------------|----------------|-------------------------------------|--------------------------|-------------------------------------|---------------|
| List No. | P | | | | | M | | | K | N | | S | Other | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | MMC | Copper Alloys | Fiberglass | Cobalt-Chrome |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | | | | |
| 1010 | 1035 | 1065 | 4140 | 4340 | | | | | | | | | | | | | |
| 359 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| SFM | | | | | | | | | | 60-160 | 55-120 | | | 30-60 | 40-80 | 30-60 | |

good best

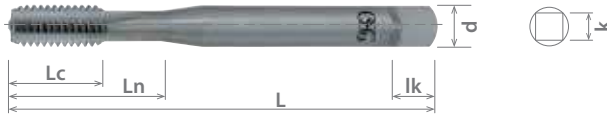




List 319

CARBIDE BR

DIN Overall Length, Bottom (1.5P-2P)



Units: Inch

| Tap Size | Class of Fit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|--------------------|--------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P - 2P) | Bright | | | | | | |
| | | | L | Lc | Ln | d | k | lk | | |
| 4 - 40 UNC | 2B | 3 | 3190000 | | 2.205 | 0.295 | 0.704 | 0.141 | 0.110 | 0.188 |
| 6 - 32 UNC | | | 3190100 | 0.370 | | 0.783 | | | | |
| 8 - 32 UNC | | | 3190200 | 2.480 | 0.374 | 0.826 | 0.194 | 0.152 | 0.250 | |
| 10 - 24 UNC | | | 3190300 | 2.756 | 0.492 | 0.976 | | | | |
| 10 - 32 UNF | | | 3190400 | 3.150 | 0.500 | 0.984 | | | | |
| 1/4 - 20 UNC | | | 3190500 | 3.150 | 0.594 | 1.177 | 0.255 | 0.191 | 0.313 | |
| 1/4 - 28 UNF | | 3190600 | 0.606 | | 1.188 | | | | | |
| 5/16 - 18 UNC | | 3190700 | 4 | 3.543 | 0.665 | 0.751 | 1.377 | 0.318 | 0.238 | 0.375 |
| 5/16 - 24 UNF | | 3191500 | | 3.937 | 0.751 | | | | | |
| 3/8 - 16 UNC | | 3190900 | | 3.543 | 0.858 | 0.323 | 0.242 | 0.406 | | |
| 3/8 - 24 UNF | | 3191000 | | 3.937 | - | | | | 0.367 | 0.275 |
| 7/16 - 14 UNC | | 3191100 | | 4.331 | - | | | | | |
| 7/16 - 20 UNF | | 3191200 | | 3.937 | - | | | | | |
| 1/2 - 13 UNC | | 3191300 | | | - | | | | | |
| 1/2 - 20 UNF | | 3191400 | | | - | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|------------|------------------|-----|---------|-------------------------------------|-------------------------------------|-------------------------------------|--------------|----------|-------|---------------|------------|---------------|---------|----------------|
| List No. | P | | | | | M | | | K | N | | S | | Other | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | MMC | Copper Alloys | Fiberglass | Cobalt-Chrome | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | | | | | Inconel | 6Al4V (30 HRC) |
| 319 | 1010 | 1035 | 1065 | 4140 | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | | |
| SFM | 1018 | 1045 | | 4340 | | | | | <input checked="" type="checkbox"/> | 40-90 | 60-160 | 55-120 | | | | | | | |

good best





List 10059

CARBIDE

BR

Bottom (1.5P-2P)



Units: Inch

| Tap Size | Class of Fit | No. of Flutes | EDP Number | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | |
|---------------|--------------|---------------|--------------------|--------|----------------|---------------|-------------|------------|--------------|---------------|-------|
| | | | Bottom (1.5P - 2P) | Bright | | | | | | | |
| | | | L | Lc | Ln | d | k | lk | | | |
| 10 - 24 UNC | 2B | 4 | 1005910100 | 2.375 | 0.492 | 0.866 | 0.194 | 0.152 | 0.250 | | |
| 10 - 32 UNF | | | 1005910200 | | | | | | | 0.500 | 0.874 |
| 12 - 24 UNC | | | 1005910300 | | | | | | | 0.496 | 0.933 |
| 1/4 - 20 UNC | | | 1005910400 | 2.500 | 0.594 | 0.996 | 0.255 | 0.191 | 0.313 | | |
| 1/4 - 28 UNF | | | 1005910500 | | | | | | | 0.606 | 1.007 |
| 5/16 - 18 UNC | | | 1005910600 | 2.719 | 0.665 | 1.125 | 0.318 | 0.238 | 0.375 | | |
| 5/16 - 24 UNF | | | 1005910700 | | | | | | | | |
| 3/8 - 16 UNC | | | 1005910800 | 2.938 | 0.751 | 1.251 | 0.381 | 0.286 | 0.438 | | |
| 3/8 - 24 UNF | | | 1005910900 | | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | Other | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|-------------------------------------|-------------------------------------|-------------------------------------|---------|--------------|----------|-------|---------------|------------|---------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | MMC | Copper Alloys | Fiberglass | Cobalt-Chrome |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | | | | |
| 10059 | 1010 | 1035 | 1065 | 4140 | | | | | | | | | | | | | |
| SFM | 1018 | 1045 | | 4340 | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |
| | | | | | | | | 40-90 | 60-160 | 55-120 | | | | 40-80 | 30-60 | 15-40 | |

good best





CARBIDE

BR

List 10061

DIN Overall Length, Plug (4P-4.5P), Bottom (1.5P-2P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|--------------------|------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P - 2P) | Plug (4P - 4.5P) | | | | | | |
| | | | Bright | Bright | | | | | | |
| M3 x 0.5 | D3 | 3 | 1006101100 | 1006100100 | 49.20 | 6.20 | 16.00 | 3.581 | 2.79 | 4.80 |
| M4 x 0.7 | D4 | 4 | 1006101300 | 1006100300 | 54.00 | 8.40 | 19.10 | 4.267 | 3.33 | 6.40 |
| M5 x 0.8 | | | 1006101400 | 1006100400 | 60.30 | 9.60 | 22.20 | 4.928 | 3.86 | |
| M6 x 1.0 | 1006101500 | | 1006100500 | 63.50 | 12.00 | 25.80 | 6.477 | 4.85 | 7.90 | |
| M8 x 1.25 | D5 | | 1006101800 | 1006100800 | 69.10 | 15.00 | 28.60 | 8.077 | 6.05 | 9.50 |
| M8 x 1.0 | | 1006101700 | 1006100700 | | | | | | | |
| M10 x 1.5 | D6 | | 1006102000 | 1006101000 | 74.60 | 18.00 | 31.80 | 9.677 | 7.26 | 11.10 |
| M10 x 1.25 | D5 | | 1006101900 | 1006100900 | | | | | | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | Other | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|----------|---------|--------------|----------|-------|---------------|------------|---------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | MMC | Copper Alloys | Fiberglass | Cobalt-Chrome |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | | | | |
| 10061 | 1010 | 1035 | 1065 | 4140 | | | | | | | | | | | | | |
| SFM | 1018 | 1045 | | 4340 | | | | | 40-90 | 60-160 | 55-120 | | | | 40-80 | 30-60 | 15-40 |

good best





List 349

CARBIDE BR

JIS, Modified Bottom (2.5P-3.5P), Bottom (1.5P-2P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | | |
|-------------|--------------|---------------|--------------------|-------------------------------|----------------|---------------|-------------|------------|--------------|---------------|------|------|------|
| | | | Bottom (1.5P - 2P) | Modified Bottom (2.5P - 3.5P) | | | | | | | | | |
| | | | Bright | Bright | | | | | | | | | |
| M1.4 x 0.3 | OH2 | 3 | 22800 | 24000 | 34.00 | 9.00 | 11.50 | 3.00 | 2.50 | 5.00 | | | |
| M1.6 x 0.35 | OH3 | | 22801 | 24001 | 36.00 | 10.00 | 13.50 | | | | | | |
| M1.7 x 0.35 | | | 22802 | 24002 | | 11.00 | | | | | | | |
| M1.8 x 0.35 | | | 22803 | 24003 | 40.00 | 12.00 | 16.00 | | | | | | |
| M2 x 0.4 | | | 22804 | 24004 | | 13.00 | | | | | | | |
| M2.3 x 0.4 | | | 22806 | 24006 | 42.00 | 14.00 | 17.00 | | | | | | |
| M2.5 x 0.45 | | | 22807 | 24007 | 46.00 | 11.00 | 13.00 | | | | 3.98 | 3.20 | 6.00 |
| M2.6 x 0.45 | | | 22808 | 24008 | | 12.00 | | | | | | | |
| M3 x 0.5 | | | 22810 | 24010 | 52.00 | 13.00 | 14.30 | | | | 5.00 | 4.00 | 7.00 |
| M4 x 0.7 | | | 22814 | 24014 | 60.00 | 16.00 | 17.80 | | | | 5.50 | 4.50 | |
| M5 x 0.8 | | | 22817 | 24017 | 62.00 | 19.00 | - | | | | 6.00 | 8.00 | |
| M6 x 1.0 | | | 22820 | 24020 | 70.00 | 22.00 | - | | | | 6.20 | | 5.00 |
| M8 x 1.25 | | | OH4 | 22830 | | 24030 | - | | | | - | | 7.00 |
| M8 x 1.0 | | | OH3 | 22831 | 24031 | - | - | | | | 8.50 | | |
| M10 x 1.5 | OH4 | 22833 | 24033 | 75.00 | 24.00 | - | 7.00 | 5.50 | 8.00 | | | | |
| M10 x 1.25 | | 22834 | 24034 | | 20.00 | - | | | | | | | |
| M10 x 1.0 | OH3 | 22835 | 24035 | 82.00 | 29.00 | - | 8.50 | 6.50 | 9.00 | | | | |
| M12 x 1.75 | OH5 | 22837 | 24037 | | - | - | | | | | | | |
| M12 x 1.5 | OH4 | 22839 | 24039 | 80.00 | 24.00 | - | 8.50 | 6.50 | 9.00 | | | | |
| M12 x 1.25 | | 22840 | 24040 | | - | - | | | | | | | |
| M12 x 1.0 | OH3 | 22841 | 24041 | 88.00 | 29.00 | - | 10.50 | 8.00 | 10.90 | | | | |
| *M14 x 2.0 | OH4 | 24046 | 24045 | | 21.00 | - | | | | | | | |
| *M14 x 1.5 | | 24048 | 24047 | 95.00 | 29.00 | - | 12.50 | 10.00 | 13.00 | | | | |
| *M16 x 2.0 | OH5 | 24052 | 24051 | | - | - | | | | | | | |
| *M16 x 1.5 | OH4 | 24054 | 24053 | 100.00 | 35.00 | - | 14.00 | 11.00 | 13.90 | | | | |
| *M18 x 2.5 | OH5 | 24056 | 24055 | | - | - | | | | | | | |
| *M18 x 1.5 | OH4 | 24060 | 24059 | 95.00 | 29.00 | - | 15.00 | 12.00 | 15.00 | | | | |
| *M20 x 2.5 | OH5 | 24062 | 24061 | 105.00 | 35.00 | - | | | | | | | |
| *M20 x 1.5 | OH4 | 24066 | 24065 | 95.00 | 29.00 | - | 17.00 | 13.00 | 16.00 | | | | |
| *M22 x 2.5 | OH5 | 24068 | 24067 | 115.00 | 35.00 | - | | | | | | | |
| *M22 x 1.5 | OH4 | 24072 | 24071 | 95.00 | 29.00 | - | 19.00 | 15.00 | 18.00 | | | | |
| *M24 x 3.0 | OH5 | 24074 | 24073 | 120.00 | 35.00 | - | | | | | | | |
| *M24 x 1.5 | OH4 | 24078 | 24077 | 95.00 | 29.00 | - | - | - | - | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.
*Brazed Carbide



| Work Material | | | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|------------------|------------|----------|--------------|----------|-------------|--------|---------------|------------|---------------|-------|-----|---------|-----------|---------|
| List No. | P | | | | | Die Steels | M | | | K Cast Iron | N | | S | | Other | | | | |
| | Carbon Steels | | | Alloy Steels | Stainless Steels | | Aluminum | Nickel Alloy | Titanium | | MMC | Copper Alloys | Fiberglass | Cobalt-Chrome | | | | | |
| | Low | Med. | High | | | | | | | | | | | | 300 | 400 | 17-4 PH | 6061 7075 | Casting |
| 349 | 1010 | 1035 | 1065 | 4140 | | | | | | | | | | | | | | | |
| SFM | 1018 | 1045 | | 4340 | | | | | 40-90 | 60-160 | 55-120 | | | | | | 40-80 | 30-60 | 15-40 |

good best





CARBIDE

BR

List 356

LT-OTT, JIS, Long Shank, Bottom (1.5P-2P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Long Overall Length | Thread Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|--------------------|--------|---------------------|---------------|------------|--------------|---------------|
| | | | Bottom (1.5P - 2P) | Bright | | | | | |
| | | | L | Lc | | | | | |
| M6 x 1.0 | OH3 | 3 | 22929 | | 100.00 | 24.00 | 6.00 | 4.50 | 7.00 |
| M8 x 1.25 | | | 22933 | 22.00 | | 6.20 | 5.00 | | |
| M10 x 1.5 | OH4 | 4 | 22941 | | 150.00 | 24.00 | 7.00 | 5.50 | 8.00 |
| M10 x 1.25 | | | 22945 | | | | | | |
| M10 x 1.0 | | | 22949 | | | | | | |
| M12 x 1.75 | | | 22953 | 29.00 | | 8.50 | 6.50 | 9.00 | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | Other | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-------------------------------------|-------------------------------------|-------------------------------------|--------------|----------|-------|-------------------------------------|--------------------------|-------------------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | MMC | Copper Alloys | Fiberglass | Cobalt-Chrome |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | | | | |
| 356 | 1010 | 1035 | 1065 | 4140 | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| SFM | 1018 | 1045 | | 4340 | | | | | 40-90 | 60-160 | 55-120 | | | | 40-80 | 30-60 | 15-40 |

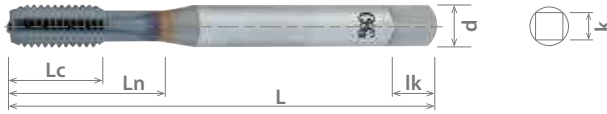
good best





List 10051

V-XPM-HT, Modified Bottom (2.5P-3P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|---------------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P-3P) | | | | | | |
| | | | V | L | Lc | Ln | d | k | lk |
| 6 - 32 UNC | H3 | 4 | 1005110508 | 2.000 | 0.374 | 0.688 | 0.141 | 0.110 | 0.188 |
| 8 - 32 UNC | | | 1005110808 | 2.125 | | 0.751 | 0.168 | | |
| 10 - 24 UNC | | | 1005111008 | 2.375 | 0.500 | 0.874 | 0.194 | 0.152 | |
| 10 - 32 UNF | | | 1005111208 | | | | | | |
| 1/4 - 20 UNC | H5 | 4 | 1005111408 | 2.500 | 0.598 | 1.000 | 0.255 | 0.191 | 0.313 |
| 1/4 - 28 UNF | H4 | | 1005111608 | | 0.586 | 0.988 | | | |
| 5/16 - 18 UNC | H5 | 5 | 1005111808 | 2.719 | 0.665 | 1.125 | 0.318 | 0.238 | 0.375 |
| 5/16 - 24 UNF | H4 | | 1005112008 | | | | | | |
| 3/8 - 16 UNC | H5 | | 1005112208 | 2.938 | 0.751 | 1.251 | 0.381 | 0.286 | |
| 3/8 - 24 UNF | H4 | | 1005112408 | | | | | | |
| 1/2 - 13 UNC | H5 | 5 | 1005113008 | 3.375 | 0.921 | 1.933 | 0.367 | 0.275 | |
| 1/2 - 20 UNF | | | 1005113208 | | | | | | |
| 9/16 - 12 UNC | | | 1005113408 | 3.594 | 1.000 | 1.972 | 0.429 | 0.322 | 0.500 |
| 9/16 - 18 UNF | | | 1005113608 | | | | | | |
| 5/8 - 11 UNC | H6 | 1005113808 | 3.813 | 1.091 | 2.126 | 0.480 | 0.360 | 0.563 | |
| 5/8 - 18 UNF | H5 | 1005114008 | | | | | | | |
| 3/4 - 10 UNC | H6 | 5 | 1005114208 | 4.250 | 1.201 | 2.433 | 0.590 | 0.442 | 0.688 |
| 3/4 - 16 UNF | H5 | | 1005114408 | | | | | | |
| 7/8 - 9 UNC | H7 | | 1005114608 | 4.688 | 1.335 | 2.654 | 0.697 | 0.523 | |
| 7/8 - 14 UNF | H6 | | 1005114808 | | | | | | |
| 1 - 8UNC | H7 | 1005115008 | 5.125 | 1.500 | 3.012 | 0.800 | 0.600 | 0.813 | |
| 1 - 12 UNF | H6 | 1005115208 | | | | | | | |

Packed: 1 pc.
Available V coating only.



| Work Material | | | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|------------|------------------|-----|---------|----------------|-----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|--|------|
| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | | | |
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 10051 | | | | 4140 4340 | | | | | | | | | | | | | | | |
| SFM | | | | 15-20 | | | | | | | | | | | | | | | 8-15 |

good best





XPM

V

List 11051

V-XPM-HT, Modified Bottom (2.5P-3P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | | |
|------------|--------------|---------------|-----------------------------|----------------|---------------|-------------|------------|--------------|---------------|-------|--------|-------|
| | | | Modified Bottom (2.5P - 3P) | | | | | | | | | |
| | | | V | | | | | | | | | |
| | | | | L | Lc | Ln | d | k | lk | | | |
| M3 x 0.5 | D3 | 4 | 1105100108 | 49.20 | 6.20 | 16.10 | 3.581 | 2.79 | 4.80 | | | |
| M4 x 0.7 | D4 | | 1105100208 | 54.00 | 8.40 | 19.10 | 4.267 | 3.33 | 6.40 | | | |
| M5 x 0.8 | D4 | | 1105100308 | 60.30 | 9.60 | 22.20 | 4.928 | 3.86 | 7.90 | | | |
| M6 x 1.0 | D5 | | 1105100408 | 63.00 | 12.00 | 25.40 | 6.477 | 4.85 | 9.50 | | | |
| M8 x 1.25 | D5 | 5 | 1105100508 | 69.10 | 15.00 | 28.60 | 8.077 | 6.05 | 11.10 | | | |
| M8 x 1.0 | D6 | | 1105100608 | | | | | | | | | |
| M10 x 1.5 | D6 | | 1105100708 | | | | | | | | | |
| M10 x 1.25 | D5 | | 1105100808 | 74.60 | 18.00 | 31.80 | 9.677 | 7.26 | | | | |
| M10 x 1.0 | D5 | | 1105100908 | | | | | | | | | |
| M12 x 1.75 | D6 | | 1105101008 | 85.70 | 21.00 | 49.10 | 9.322 | 6.98 | | | | |
| M12 x 1.5 | D6 | | 1105101108 | | | | | | | | | |
| M12 x 1.25 | D6 | | 1105101208 | | | | | | | | | |
| M14 x 2.0 | D7 | | 1105101308 | | | | | | | | | |
| M14 x 1.5 | D6 | | 1105101408 | 91.30 | 24.00 | 50.10 | 10.897 | 8.17 | | 12.70 | | |
| M16 x 2.0 | D7 | 1105101508 | 96.80 | 54.00 | | | | | 12.192 | | 9.14 | 14.30 |
| M16 x 1.5 | D6 | 1105101608 | | | 102.40 | 30.00 | 61.80 | 16.561 | | 12.42 | | |
| M18 x 2.5 | D7 | 1105101708 | 113.50 | 67.40 | | | | | 17.704 | | 13.28 | 19.10 |
| M18 x 1.5 | D6 | 1105101808 | | | | | | | | | | |
| M20 x 2.5 | D7 | 1105101908 | 124.60 | 36.00 | | | | | 68.40 | | 19.304 | 14.48 |
| M20 x 1.5 | D6 | 1105102008 | | | | | | | | | | |
| M22 x 2.5 | D7 | 1105102108 | | | | | | | | | | |
| M22 x 1.5 | D6 | 1105102208 | | | | | | | | | | |
| M24 x 3.0 | D8 | 1105102308 | | | | | | | | | | |
| M24 x 1.5 | D6 | 1105102408 | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|------------|------------------|-----|---------|----------------|-----------|---------|--------------|----------|-----------------|----------------|---------|-------------------------------------|
| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 11051 | | | | 4140 4340 | | | | | | | | | | | | | <input checked="" type="checkbox"/> |
| SFM | | | | 15-20 | | | | | | | | | | | | | <input type="checkbox"/> |

good best



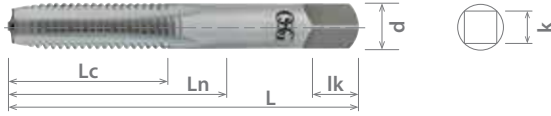


List 305

Plug (3.5P-4.5P)



HSS-Co BR



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|--------------|--------------|---------------|--------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (3.5P - 4.5P) | | | | | | |
| | | | Bright | | | | | | |
| | | | | L | Lc | Ln | d | k | lk |
| 4 - 40 UNC | H2 | 3 | 1745000 | 1.875 | 0.562 | 0.598 | 0.141 | 0.110 | 0.188 |
| 6 - 32 UNC | | | 1745100 | 2.000 | 0.688 | - | | | |
| 8 - 32 UNC | | | 1745200 | 2.125 | 0.751 | - | | | |
| 10 - 24 UNC | | | 1745300 | 2.375 | 0.874 | - | | | |
| 10 - 32 UNF | | | 1745400 | | | - | | | |
| 1/4 - 20 UNC | H3 | 4 | 1745500 | 2.500 | 1.000 | - | 0.255 | 0.191 | 0.313 |
| 1/4 - 28 UNF | | 3 | 1734000 | | | - | | | |
| | | | 1745600 | | | - | | | |
| | | | 1739000 | | | - | | | |
| | | | 1734100 | 2.719 | 1.125 | - | 0.318 | 0.238 | 0.375 |
| | | | 1739100 | | | - | | | |
| | | | 1734200 | 2.938 | 1.251 | - | 0.381 | 0.286 | 0.438 |
| | | | 1739200 | | | - | | | |
| | | | 1739600 | 3.156 | 1.437 | - | 0.323 | 0.242 | 0.406 |
| | | | 1739700 | | | - | | | |
| | | | 1734300 | 3.375 | 1.657 | - | 0.367 | 0.275 | 0.438 |
| | | | 1739300 | | | - | | | |
| | | | 1734400 | 3.813 | 1.811 | - | 0.480 | 0.360 | 0.563 |
| | | | 1739400 | | | - | | | |
| | | | 1734500 | 4.250 | 2.000 | - | 0.590 | 0.442 | 0.688 |
| | | | 1739500 | | | - | | | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 305 | | | | 4140 | | | | | | | | | | | | | | |
| SFM | | | | 4340 | | | | | | | | | | | | | | |
| | | | | 20-40 | | | | | | | | | | | | | | |
| | | | | | 15-20 | | | | | | | | | | | | | |

good best





List 10052

VP-DC-HT, DIN Overall Length, Bottom (1.5P-2P)



VC10

V



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|--------------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P - 2P) | L | Lc | Ln | d | k | lk |
| | | | V | L | Lc | Ln | d | k | lk |
| 1/4 - 20 UNC | H3 | 4 | 1005200108 | 3.150 | 0.598 | 1.181 | 0.255 | 0.191 | 0.313 |
| | H5 | | 1005200208 | | | | | | |
| 1/4 - 28 UNF | H3 | | 1005200308 | 3.543 | 0.665 | 1.377 | 0.318 | 0.238 | 0.375 |
| 5/16 - 18 UNC | H5 | | 1005200408 | | | | | | |
| 5/16 - 24 UNF | H3 | | 1005200508 | 3.937 | 0.751 | 1.712 | 0.381 | 0.286 | 0.438 |
| 3/8 - 16 UNC | H5 | | 1005200608 | | | | | | |
| 3/8 - 24 UNF | H3 | | 1005200708 | 4.331 | 0.921 | 1.933 | 0.367 | 0.275 | 0.438 |
| 7/16 - 14 UNC | H5 | | 1005200808 | | | | | | |
| 7/16 - 20 UNF | H3 | | 1005200908 | 3.937 | 0.858 | 1.712 | 0.323 | 0.242 | 0.406 |
| | H5 | | 1005201008 | | | | | | |
| 1/2 - 13 UNC | H3 | | 1005201108 | 4.331 | 0.921 | 1.933 | 0.367 | 0.275 | 0.438 |
| | H5 | | 1005201208 | | | | | | |
| 1/2 - 20 UNF | H3 | | 1005201308 | 3.937 | 1.000 | 1.972 | 0.429 | 0.322 | 0.500 |
| | H5 | | 1005201408 | | | | | | |
| 9/16 - 12 UNC | H3 | | 1005201508 | 4.331 | 1.090 | 2.125 | 0.480 | 0.360 | 0.563 |
| | H5 | | 1005201608 | | | | | | |
| 9/16 - 18 UNF | H3 | | 1005201708 | 3.937 | 1.200 | 2.433 | 0.590 | 0.442 | 0.688 |
| | H5 | | 1005201808 | | | | | | |
| 5/8 - 11 UNC | H3 | | 1005201908 | 4.331 | 1.334 | 2.653 | 0.697 | 0.523 | 0.750 |
| | H5 | | 1005202008 | | | | | | |
| 5/8 - 18 UNF | H3 | 1005202108 | 3.937 | 4.921 | 3.011 | 0.800 | 0.600 | 0.813 | |
| | H5 | 1005202208 | | | | | | | |
| 3/4 - 10 UNC | H3 | 1005202308 | 4.331 | 5.512 | 6.299 | 1.500 | 1.500 | 1.500 | |
| | H5 | 1005202408 | | | | | | | |
| 3/4 - 16 UNF | H3 | 1005202508 | 4.331 | 1.200 | 2.433 | 0.590 | 0.442 | 0.688 | |
| | H5 | 1005202608 | | | | | | | |
| 7/8 - 9 UNC | H3 | 1005202708 | 5.512 | 1.334 | 2.653 | 0.697 | 0.523 | 0.750 | |
| | H5 | 1005202808 | | | | | | | |
| 7/8 - 14 UNF | H3 | 1005202908 | 4.921 | 4.921 | 6.299 | 1.500 | 1.500 | 1.500 | |
| | H5 | 1005203008 | | | | | | | |
| 1 - 8 UNC | H3 | 1005203108 | 6.299 | 1.500 | 3.011 | 0.800 | 0.600 | 0.813 | |
| | H5 | 1005203208 | | | | | | | |
| | | | 1005203308 | | | | | | |
| | | | 1005203408 | | | | | | |
| | | | 1005203508 | | | | | | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-------------------------------------|-----------|-------------------------------------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| | 1010 | 1035 | 1045 | 1065 | 4140 | 4340 | | | | | | | | | | | | |
| 10052 | | | | | | | | | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | | | | |
| SFM | | | | | | | | 25-75 | | | 40-65 | | | | | | | |

good best



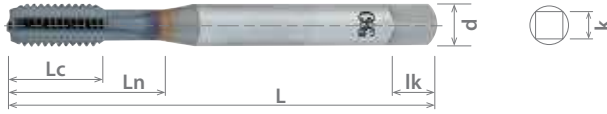
List 11052

VP-DC-HT, DIN Overall Length, Bottom (1.5P-2P)



VC10

V



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|--------------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P - 2P) | L | Lc | Ln | d | k | lk |
| | | | V | L | Lc | Ln | d | k | lk |
| M6 x 1.0 | D5 | 3 | 1105200108 | 80.00 | 12.00 | 30.00 | 6.477 | 4.85 | 7.90 |
| M8 x 1.25 | | | 1105200208 | 90.00 | 15.00 | 35.00 | 8.077 | 6.05 | 9.50 |
| M10 x 1.5 | | | 1105200508 | 100.00 | 18.00 | 39.00 | 9.677 | 7.26 | 11.10 |
| M10 x 1.25 | 1105200408 | | | | | | | | |
| M10 x 1.0 | D5 | 4 | 1105200308 | 90.00 | 21.00 | 49.10 | 9.322 | 6.98 | |
| M12 x 1.75 | 1105200808 | | 110.00 | | | | | | |
| M12 x 1.5 | D6 | | 1105200708 | 100.00 | | | | | |
| M12 x 1.25 | D7 | 5 | 1105200608 | 110.00 | 24.00 | 50.10 | 10.897 | 8.18 | 12.70 |
| M14 x 2.0 | | | 1105201008 | | | | | | |
| M14 x 1.5 | | | 1105200908 | | | | | | |
| M16 x 2.0 | D6 | 5 | 1105201208 | 110.00 | 30.00 | 54.00 | 12.192 | 9.14 | 14.30 |
| M16 x 1.5 | | | 1105201108 | 100.00 | | | | | |
| M18 x 2.5 | D7 | 5 | 1105201508 | 125.00 | 36.00 | 68.40 | 19.304 | 14.48 | 19.10 |
| M18 x 2.0 | | | 1105201408 | 110.00 | | | | | |
| M18 x 1.5 | D6 | 1105201308 | 110.00 | 61.80 | 16.561 | 12.42 | 17.50 | | |
| M20 x 2.5 | D7 | 1105201808 | 140.00 | | | | | | |
| M20 x 2.0 | D6 | 5 | 1105201708 | 140.00 | 30.00 | 67.40 | 17.704 | 13.28 | |
| M20 x 1.5 | | | 1105201608 | 125.00 | | | | | |
| M22 x 2.5 | D8 | 5 | 1105202108 | 140.00 | 36.00 | 68.40 | 19.304 | 14.48 | |
| M22 x 2.0 | | | 1105202008 | 140.00 | | | | | |
| M22 x 1.5 | D6 | 1105201908 | 125.00 | 61.80 | 16.561 | 12.42 | 17.50 | | |
| M24 x 3.0 | D8 | 1105202408 | 160.00 | | | | | | |
| M24 x 2.0 | | D6 | 1105202308 | 140.00 | 36.00 | 68.40 | 19.304 | 14.48 | |
| M24 x 1.5 | 1105202208 | | 140.00 | | | | | | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-------------------------------------|----------|-------------------------------------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 11052 | 1010 | 1035 | 1065 | 4140 | | | | | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | | | | |
| SFM | 1018 | 1045 | | 4340 | | | | | 25-75 | | 40-65 | | | | | | | |

good best





EXOTAP® DC-OIL

Premium Design for Cast Iron and Cast Aluminum

List 10053

VPO-DC-HT, Coolant-Through, DIN Overall Length, Bottom (1.5P-2P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | |
|---------------|--------------|---------------|--------------------|--------------------|---------------|-------------|------------|--------------|---------------|-------|
| | | | Bottom (1.5P - 2P) | L | Lc | Ln | d | k | lk | |
| | | | V | L | Lc | Ln | d | k | lk | |
| 1/4 - 20 UNC | H3 | 4 | 1005300108 | 3.150 | 0.598 | 1.181 | 0.255 | 0.190 | 0.313 | |
| | H5 | | 1005300208 | | | | | | | |
| 1/4 - 28 UNF | H3 | | 1005300308 | 3.543 | 0.665 | 1.377 | 0.318 | 0.238 | 0.375 | |
| 5/16 - 18 UNC | H5 | | 1005300408 | | | | | | | |
| 5/16 - 24 UNF | H3 | | 1005300508 | 3.937 | 0.751 | 1.712 | 0.380 | 0.286 | 0.438 | |
| 3/8 - 16 UNC | H5 | | 1005300608 | | | | | | | |
| 3/8 - 24 UNF | H3 | | 1005300708 | 4.331 | 0.921 | 1.933 | 0.367 | 0.275 | 0.438 | |
| 7/16 - 14 UNC | H5 | | 1005300808 | | | | | | | |
| 7/16 - 20 UNF | H3 | | 1005300908 | 3.937 | 0.858 | 1.000 | 1.972 | 0.429 | 0.322 | 0.500 |
| | H5 | | 1005301008 | | | | | | | |
| 1/2 - 13 UNC | H3 | | 1005301108 | 4.331 | 1.090 | 2.125 | 0.480 | 0.360 | 0.563 | |
| | H5 | | 1005301208 | | | | | | | |
| 1/2 - 20 UNF | H3 | | 1005301308 | 3.937 | 1.200 | 2.433 | 0.590 | 0.442 | 0.688 | |
| | H5 | | 1005301408 | | | | | | | |
| 9/16 - 12 UNC | H3 | | 1005301508 | 4.331 | 1.334 | 2.653 | 0.697 | 0.523 | 0.750 | |
| | H5 | | 1005301608 | | | | | | | |
| 9/16 - 18 UNF | H3 | | 1005301708 | 3.937 | 1.500 | 3.011 | 0.800 | 0.600 | 0.813 | |
| | H5 | | 1005301808 | | | | | | | |
| 5/8 - 11 UNC | H3 | | 1005301908 | 4.331 | 1.334 | 2.653 | 0.697 | 0.523 | 0.750 | |
| | H5 | | 1005302008 | | | | | | | |
| 5/8 - 18 UNF | H3 | 1005302108 | 3.937 | 1.334 | 2.653 | 0.697 | 0.523 | 0.750 | | |
| | H5 | 1005302208 | | | | | | | | |
| 3/4 - 10 UNC | H3 | 1005302308 | 4.331 | 1.334 | 2.653 | 0.697 | 0.523 | 0.750 | | |
| | H5 | 1005302408 | | | | | | | | |
| 3/4 - 16 UNF | H3 | 1005302508 | 4.331 | 1.334 | 2.653 | 0.697 | 0.523 | 0.750 | | |
| | H5 | 1005302608 | | | | | | | | |
| 7/8 - 9 UNC | H3 | 1005302708 | 5.512 | 1.334 | 2.653 | 0.697 | 0.523 | 0.750 | | |
| | H5 | 1005302808 | | | | | | | | |
| 7/8 - 14 UNF | H3 | 1005302908 | 4.921 | 1.334 | 2.653 | 0.697 | 0.523 | 0.750 | | |
| | H5 | 1005303008 | | | | | | | | |
| 1 - 8 UNC | H3 | 1005303108 | 6.299 | 1.334 | 2.653 | 0.697 | 0.523 | 0.750 | | |
| | H5 | 1005303208 | | | | | | | | |
| | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 10053 | | | | | | | | | | | | | | | | | |
| SFM | | | | | | | | ☐ | | | ☐ | | | | | | |

☐ good ☐ best





List 11053

VPO-DC-HT, Coolant-Through, DIN Overall Length, Bottom (1.5P-2P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|--------------------|--------------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P - 2P) | | | | | | |
| | | | V | L | Lc | Ln | d | k | lk |
| M6 x 1.0 | D5 | 3 | 1105300108 | 80.00 | 12.00 | 30.00 | 6.477 | 4.85 | 7.90 |
| M8 x 1.25 | | | 1105300208 | 90.00 | 15.00 | 35.00 | 8.077 | 6.05 | 9.50 |
| M10 x 1.5 | | | 1105300408 | 100.00 | 18.00 | 39.00 | 9.677 | 7.26 | 11.10 |
| M10 x 1.25 | 1105300308 | | | | | | | | |
| M12 x 1.75 | D6 | 4 | 1105300608 | 110.00 | 21.00 | 49.10 | 9.322 | 6.98 | |
| M12 x 1.5 | | | 1105300508 | | | | | | |
| M12 x 1.25 | | | 1105302508 | | | | | | |
| M14 x 2.0 | D7 | 5 | 1105300808 | 110.00 | 24.00 | 50.10 | 10.897 | 8.18 | 12.70 |
| M14 x 1.5 | | | 1105300708 | 100.00 | | | | | |
| M16 x 2.0 | | | 1105301208 | 110.00 | | | | | |
| M16 x 1.5 | D6 | 5 | 1105301108 | 100.00 | 30.00 | 61.80 | 16.561 | 12.42 | 17.50 |
| M18 x 2.5 | D7 | | 1105301508 | 125.00 | | | | | |
| M18 x 2.0 | D7 | | 1105301408 | 125.00 | | | | | |
| M18 x 1.5 | D6 | | 1105301308 | 110.00 | | | | | |
| M20 x 2.5 | D7 | | 1105301808 | 140.00 | | | | | |
| M20 x 2.0 | D7 | | 1105301708 | 140.00 | | | | | |
| M20 x 1.5 | D6 | | 1105301608 | 125.00 | | | | | |
| M22 x 2.5 | D8 | | 1105302108 | 140.00 | | | | | |
| M22 x 2.0 | D8 | | 1105302008 | 140.00 | | | | | |
| M22 x 1.5 | D6 | | 1105301908 | 125.00 | | | | | |
| M24 x 3.0 | D8 | 1105302408 | 160.00 | | | | | | |
| M24 x 2.0 | D8 | 1105302308 | 140.00 | 36.00 | 68.40 | 19.304 | 14.48 | 19.10 | |
| M24 x 1.5 | D6 | 1105302208 | 140.00 | | | | | | |

Packed: 1 pc.
Available V coating only.



| Work Material | | | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|-----|------------|-----|---------|----------|----------------|--------------|----------|-----------------|---------|----------------|---------|-----------|-----------|-----------|
| List No. | P | | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | 300 | | 400 | 17-4 PH | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | | |
| | Low | Med. | High | | | | | | 6061 | | | | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 11053 | 1010 | 1035 | 1065 | 4140 | | | | | | | | | | | | | | | |
| SFM | 1018 | 1045 | 1065 | 4340 | | | | | 40-100 | | 50-110 | | | | | | | | |

good best





VC10

V

List 11054

VP-DC-HT, DIN Shank, DIN Overall Length, Bottom (1.5P-2P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | DIN Overall Length | Thread Length | Neck Length | DIN Shank Dia. | Square Width | Square Length |
|-----------|--------------|---------------|--------------------|---|--------------------|---------------|-------------|----------------|--------------|---------------|
| | | | Bottom (1.5P - 2P) | | | | | | | |
| | | | V | L | | | | | | |
| M6 x 1.0 | D5 | 3 | 1105400108 | | 80.00 | 12.00 | 30.00 | d | k | lk |
| M8 x 1.25 | | | 1105400208 | | 90.00 | 15.00 | 35.00 | 8.00 | 6.20 | 8.90 |
| M10 x 1.5 | D6 | 4 | 1105400308 | | 100.00 | 18.00 | 39.00 | 10.00 | 8.00 | 10.90 |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|---------------|--------------|------|--------------|------------|------------------|-----|-------------------------------------|-----------|-------------------------------------|---------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| | 1010 1018 | 1035 1045 | 1065 | 4140 4340 | | | | | | | | | | | | | | |
| 11054 | | | | | | | | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | | | | | |
| SFM | | | | | | | | 25-75 | | 40-65 | | | | | | | | |

good best





List 11055

VPO-DC-HT, Coolant-Through, DIN Shank, DIN Overall Length, Bottom (1.5P-2P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | DIN Overall Length | Thread Length | Neck Length | DIN Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|--------------------|--------------------|---------------|-------------|----------------|--------------|---------------|
| | | | Bottom (1.5P - 2P) | | | | | | |
| | | | V | | | | | | |
| M6 x 1.0 | D5 | 3 | 1105500108 | 80.00 | 12.00 | 30.00 | 6.00 | 4.90 | 8.00 |
| M8 x 1.25 | | | 1105500208 | 90.00 | 14.00 | 34.90 | 8.00 | 6.20 | 9.00 |
| M10 x 1.5 | D6 | 4 | 1105500308 | 100.00 | 17.00 | 38.90 | 10.00 | 8.00 | 11.00 |
| M12 x 1.75 | | | 1105500408 | 110.00 | 20.00 | 43.90 | 9.00 | 7.00 | 10.00 |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-------------------------------------|----------|-------------------------------------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 11055 | 1010 | 1035 | 1065 | 4140 | 4340 | | | | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | | | | |
| SFM | 1018 | 1045 | | | | | | | 40-100 | | 50-110 | | | | | | | |

good best





VC10

V

List 10056

VP-DC-HT, Bottom (1.5P-2P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|--------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P - 2P) | | | | | | |
| | | | V | | | | | | |
| | | | L | Lc | Ln | d | k | lk | |
| 1/4 - 20 UNC | H3 | 4 | 1005600108 | 2.500 | 0.598 | 1.000 | 0.255 | 0.191 | 0.313 |
| | H5 | | 1005600208 | | | | | | |
| 1/4 - 28 UNF | H3 | | 1005600308 | | | | | | |
| 5/16 - 18 UNC | H3 | | 1005600408 | 2.720 | 0.665 | 1.125 | 0.318 | 0.238 | 0.375 |
| | H5 | | 1005600508 | | | | | | |
| 5/16 - 24 UNF | H3 | | 1005600608 | | | | | | |
| 3/8 - 16 UNC | H3 | | 1005600708 | 2.930 | 0.751 | 1.251 | 0.381 | 0.286 | 0.438 |
| | H5 | | 1005600808 | | | | | | |
| 3/8 - 24 UNF | H3 | | 1005600908 | | | | | | |
| 7/16 - 14 UNC | H3 | | 1005601008 | 3.150 | 0.858 | 1.712 | 0.323 | 0.242 | 0.406 |
| | H5 | | 1005601108 | | | | | | |
| 7/16 - 20 UNF | H3 | | 1005601208 | | | | | | |
| 1/2 - 13 UNC | H3 | 1005601308 | 3.370 | 0.921 | 1.933 | 0.367 | 0.275 | 0.438 | |
| | H5 | 1005601408 | | | | | | | |
| 1/2 - 20 UNF | H3 | 1005601508 | | | | | | | |
| 9/16 - 12 UNC | H3 | 1005601608 | 3.590 | 1.000 | 1.972 | 0.429 | 0.322 | 0.500 | |
| | H5 | 1005601708 | | | | | | | |
| 9/16 - 18 UNF | H3 | 1005601808 | | | | | | | |
| 5/8 - 11 UNC | H3 | 1005601908 | 3.810 | 1.090 | 2.125 | 0.480 | 0.360 | 0.563 | |
| | H5 | 1005602008 | | | | | | | |
| 5/8 - 18 UNF | H3 | 1005602108 | | | | | | | |
| 3/4 - 10 UNC | H3 | 1005602208 | 4.250 | 1.200 | 2.433 | 0.590 | 0.442 | 0.688 | |
| | H5 | 1005602308 | | | | | | | |
| 3/4 - 16 UNF | H3 | 1005602408 | | | | | | | |
| 3/4 - 16 UNF | H3 | 1005602508 | 4.250 | 1.200 | 2.433 | 0.590 | 0.442 | 0.688 | |
| | H5 | 1005602608 | | | | | | | |
| | | | | | | | | | 1005602708 |
| | | | 1005602808 | | | | | | |
| | | | 1005602908 | | | | | | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-------------------------------------|-----------|-------------------------------------|--------------|----------|-----------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 10056 | | | | | | | | | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | | | |
| SFM | | | | | | | | | 25-75 | | 40-65 | | | | | | |

good best





List 11056

VP-DC-HT, Bottom (1.5P-2P)



VC10

V



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|--------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P - 2P) | | | | | | |
| | | | V | | | | | | |
| | | | | L | Lc | Ln | d | k | lk |
| M6 x 1.0 | D5 | 3 | 1105600108 | 63.50 | 12.00 | 25.40 | 6.477 | 4.85 | 7.90 |
| M8 x 1.25 | | | 1105600208 | 69.10 | 15.00 | 28.60 | 8.077 | 6.05 | 9.50 |
| M10 x 1.5 | | | 1105600508 | 74.60 | 18.00 | 31.80 | 9.677 | 7.26 | 11.10 |
| M10 x 1.25 | 1105600408 | | | | | | | | |
| M10 x 1.0 | 1105600308 | | | | | | | | |
| M12 x 1.75 | D6 | 4 | 1105600808 | 85.70 | 21.00 | 49.10 | 9.322 | 6.98 | 12.70 |
| M12 x 1.5 | | | 1105600708 | | | | | | |
| M12 x 1.25 | | | 1105600608 | | | | | | |
| M14 x 2.0 | D7 | 5 | 1105601008 | 91.30 | 24.00 | 50.10 | 10.897 | 8.18 | 12.70 |
| M14 x 1.5 | | | 1105600908 | | | | | | |

Packed: 1 pc.

Available V coating only.



Work Material

| List No. | P | | | | | | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------|------|------|------|--------------|------------|------------------|---------|------|-----------|----------|---------|--------------|----------|-----------------|-----------|-----------|--|---|--|--|--|
| | Carbon Steels | | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | | | |
| | Low | Med. | High | 300 | | | 400 | 17-4 PH | 6061 | | Casting | Inconel | 6Al4V | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | | | | |
| | 1010 | 1035 | 1065 | 4140 | | | 4340 | 7075 | | | | | (30 HRC) | | | | | | | | | |
| 11056 | | | | | | | | | | | | | | | | | | | | | | |
| SFM | | | | | | | | | | | | | | | | | | | | | | |

good best





EXOTAP® DC-OIL

Premium Design for Cast Iron and Cast Aluminum

List 10057

VPO-DC-HT, Coolant-Through, Bottom (1.5P-2P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|---------------|---------------|--------------------|------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P - 2P) | V | | | | | | |
| | | | L | Lc | | | | | | |
| 1/4 - 20 UNC | H3 | 4 | 1005700108 | 2.500 | 0.598 | 1.000 | 0.255 | 0.191 | 0.313 | |
| | H5 | | 1005700208 | | | | | | | |
| 1/4 - 28 UNF | H3 | | 1005700308 | 2.719 | 0.665 | 1.125 | 0.318 | 0.238 | 0.375 | |
| 5/16 - 18 UNC | H5 | | 1005700408 | | | | | | | |
| | 5/16 - 24 UNF | | H3 | 1005700608 | 2.938 | 0.751 | 1.251 | 0.381 | 0.286 | 0.438 |
| H5 | | | 1005700708 | | | | | | | |
| 3/8 - 16 UNC | H3 | | 1005700808 | 3.156 | 0.858 | 1.712 | 0.323 | 0.242 | 0.406 | |
| | H5 | | 1005700908 | | | | | | | |
| 3/8 - 24 UNF | H3 | | 1005701008 | 3.375 | 0.921 | 1.933 | 0.367 | 0.275 | 0.438 | |
| | H5 | | 1005701108 | | | | | | | |
| 7/16 - 14 UNC | H3 | | 1005701208 | 3.375 | 0.921 | 1.933 | 0.367 | 0.275 | 0.438 | |
| | H5 | | 1005701308 | | | | | | | |
| 7/16 - 20 UNF | H3 | | 1005701408 | 3.375 | 0.921 | 1.933 | 0.367 | 0.275 | 0.438 | |
| | H5 | | 1005701508 | | | | | | | |
| 1/2 - 13 UNC | H3 | | 1005701608 | 3.375 | 0.921 | 1.933 | 0.367 | 0.275 | 0.438 | |
| | H5 | | 1005701708 | | | | | | | |
| 1/2 - 20 UNF | H3 | 1005701808 | 3.375 | 0.921 | 1.933 | 0.367 | 0.275 | 0.438 | | |
| | H5 | 1005701908 | | | | | | | | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-------------------------------------|-----------|-------------------------------------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 10057 | | | | | | | | | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | | | | |
| SFM | | | | | | | | | 40-100 | | 50-110 | | | | | | | |

good best





List 11057

VPO-DC-HT, Coolant-Through, Bottom (1.5P-2P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|--------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P - 2P) | | | | | | |
| | | | V | | | | | | |
| | | | L | Lc | Ln | d | k | lk | |
| M6 x 1.0 | D5 | 3 | 1105700108 | 63.50 | 12.00 | 25.40 | 6.48 | 4.85 | 7.90 |
| M8 x 1.25 | | | 1105700208 | 69.10 | 15.00 | 28.60 | 8.08 | 6.05 | 9.50 |
| M10 x 1.5 | | | 1105700408 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 |
| M10 x 1.25 | D6 | 4 | 1105700308 | 85.70 | 21.00 | 49.10 | 9.32 | 6.98 | |
| M12 x 1.75 | | | 1105700608 | | | | | | |
| M12 x 1.5 | | | 1105700508 | | | | | | |
| M14 x 2.0 | D7 | 5 | 1105700808 | 91.30 | 24.00 | 50.10 | 10.90 | 8.18 | 12.70 |
| M14 x 1.5 | | | 1105700708 | | | | | | |

Packed: 1 pc.
Available V coating only.



| Work Material | | | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|------------|------------------|-----|---------|-------------------------------------|-----------|---------|-------------------------------------|----------------|-----------------|-----------|-----------|-----------|--|--|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 11057 | | | | | | | | | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | | | | | | | |
| SFM | | | | | | | | | 40-100 | | | 50-110 | | | | | | | |

good best

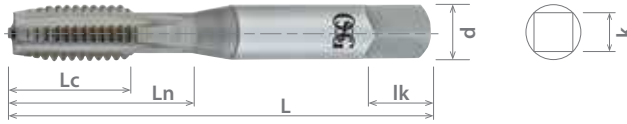




| | | |
|------|---|----|
| HSSE | N | BR |
|------|---|----|

List 240

EX-DC-HT, Plug (3.5P-4.5P), Bottom (1.5P-2P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Bottom (1.5P - 2P) | | | Plug (3.5P - 4.5P) | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|--------------------|----------------|---------|--------------------|----------------|---------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | EDP Number | Coating Suffix | | EDP Number | Coating Suffix | | | | | | | |
| | | | | Bright | Nitride | | Bright | Nitride | | | | | | |
| 2 - 56 UNC | H2 | 3 | 24929 | 00 | - | 24928 | 00 | - | 1.811 | 0.437 | 0.476 | 0.141 | 0.110 | 0.189 |
| 4 - 40 UNC | | | 24931 | 00 | - | 24930 | 00 | - | 1.874 | 0.295 | 0.559 | | | |
| 5 - 40 UNC | H3 | | 24012 | - | 03 | 24011 | - | 03 | 1.937 | 0.299 | 0.626 | 0.168 | 0.131 | 0.252 |
| 6 - 32 UNC | | | 24016 | - | 03 | 24015 | - | 03 | 2.000 | 0.370 | 0.685 | | | |
| 8 - 32 UNC | | | 24932 | - | 03 | 24019 | - | 03 | 2.126 | 0.374 | 0.752 | | | |
| 10 - 24 UNC | | | 24024 | - | 03 | 24023 | - | 03 | 2.374 | 0.492 | 0.866 | | | |
| 10 - 32 UNF | | | 24028 | - | 03 | 24027 | - | 03 | | | | | | |
| 1/4 - 20 UNC | | | H5 | 24032 | - | 03 | 24933 | - | 03 | 2.500 | 0.594 | | | |
| 1/4 - 28 UNF | H3 | | 24036 | - | 03 | 24934 | - | 03 | | | | | | |
| 5/16 - 18 UNC | H5 | | 24936 | - | 03 | 24935 | - | 03 | 2.720 | 0.665 | 1.126 | 0.318 | 0.238 | 0.374 |
| 5/16 - 24 UNF | H3 | 24044 | - | 03 | 24043 | - | 03 | | | | | | | |
| 3/8 - 16 UNC | H5 | 24938 | - | 03 | 24937 | - | 03 | 2.937 | 0.752 | 1.252 | 0.381 | 0.286 | 0.437 | |
| 3/8 - 24 UNF | H3 | 24940 | - | 03 | 24939 | - | 03 | | | | | | | |
| 7/16 - 14 UNC | H3 | 24942 | - | 03 | 24941 | - | 03 | 3.157 | 0.858 | 1.713 | 0.323 | 0.242 | 0.406 | |
| 7/16 - 20 UNF | | 24944 | - | 03 | 24943 | - | 03 | | | | | | | |
| 1/2 - 13 UNC | | 24064 | - | 03 | 24063 | - | 03 | | | | | | | |
| 1/2 - 20 UNF | | 24946 | - | 03 | 24945 | - | 03 | | | | | | | |
| | | 24948 | - | 03 | 24947 | - | 03 | 3.374 | 0.921 | 1.933 | 0.367 | 0.275 | 0.437 | |
| | | 24076 | - | 03 | 24075 | - | 03 | | | | | | | |
| | | 24080 | - | 03 | 24079 | - | 03 | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-------------------------------------|--------------------------|-------------------------------------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 240 | 1010 | 1035 | 1065 | 4140 | | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |
| SFM | 1018 | 1045 | | 4340 | | | | | 25-75 | 40-80 | 40-65 | | | | | | | |

good best





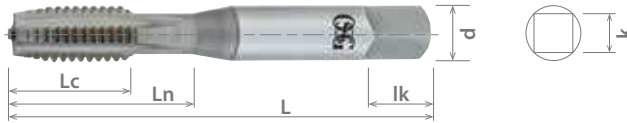
List 241



HSSE

N

EX-DC-HT, Plug (3.5P-4.5P), Bottom (1.5P-2P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|--------------------|--------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P - 2P) | Plug (3.5P - 4.5P) | | | | | | |
| | | | Nitride | Nitride | | | | | | |
| M3 x 0.5 | D3 | 3 | 2410203 | 2494903 | 49.20 | 7.30 | 17.20 | 3.58 | 2.79 | 4.80 |
| M4 x 0.7 | D4 | | 2495003 | 2410303 | 54.00 | 10.10 | 20.80 | 4.27 | 3.33 | 6.40 |
| M5 x 0.8 | D5 | | 2410603 | 2495103 | 60.30 | 11.80 | 24.40 | 4.93 | 3.86 | |
| M6 x 1.0 | | D5 | 4 | 2410803 | 2495203 | 63.50 | 14.60 | 28.00 | 6.48 | 4.85 |
| M8 x 1.25 | 2411203 | | | 2411103 | 69.10 | 15.00 | 28.60 | 8.08 | 6.05 | 9.50 |
| M10 x 1.5 | D6 | 4 | 2495403 | 2411703 | 74.60 | 18.00 | 31.80 | 9.68 | 7.26 | 11.10 |
| M10 x 1.25 | D5 | | 2411603 | 2495303 | | | | | | |
| M12 x 1.75 | D6 | | 2495503 | 2412103 | 85.70 | 21.00 | 49.10 | 9.32 | 6.98 | |

Packed: 1 pc.
Available Nitride treatment only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|------------|------------------|-----|---------|-------------------------------------|--------------------------|-------------------------------------|------------------------------|----------|-----------------|---------|-----------|-----------|
| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S Nickel Alloy Inconel | H | | | | |
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 241 | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| SFM | | | | | | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |

good best





GENERAL PURPOSE

Ideal for Cast Iron

List 101C

HSS

N S/O

Plug (3.5P-4.5P), Bottom (1.5P-2P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|--------------------|--------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P - 2P) | Plug (3.5P - 4.5P) | | | | | | |
| | | | Nitride-S/O | Nitride-S/O | | | | | | |
| | | | L | Lc | Ln | d | k | lk | | |
| 1/4 - 20 UNC | H3 | 4 | 1600207 | 1600107 | 2.500 | 0.756 | 1.189 | 0.255 | 0.191 | 0.311 |
| | H5 | | 1600407 | 1600307 | | | | | | |
| 1/4 - 28 UNF | H3 | | 1600607 | 1600507 | 2.720 | 0.835 | 1.323 | 0.318 | 0.238 | 0.374 |
| | H5 | | 1600807 | 1600707 | | | | | | |
| 5/16 - 18 UNC | H3 | | 1601007 | 1600907 | 2.937 | 0.937 | 1.413 | 0.381 | 0.286 | 0.437 |
| | H5 | | 1601207 | 1601107 | | | | | | |
| 5/16 - 24 UNF | H3 | | 1601407 | 1601307 | 3.157 | 1.071 | 1.689 | 0.323 | 0.242 | 0.406 |
| | H5 | | 1601607 | 1601507 | | | | | | |
| 3/8 - 16 UNC | H3 | | 1601807 | 1601707 | 3.374 | 1.177 | 1.811 | 0.367 | 0.275 | 0.437 |
| | H5 | | 1602007 | 1601907 | | | | | | |
| 3/8 - 24 UNF | H3 | | 1602207 | 1602107 | 3.594 | 1.280 | 1.941 | 0.429 | 0.322 | 0.500 |
| | H5 | | 1602407 | 1602307 | | | | | | |
| 7/16 - 14 UNC | H3 | | 1602607 | 1602507 | 3.811 | 1.390 | 2.000 | 0.480 | 0.360 | 0.563 |
| | H5 | | 1602807 | 1602707 | | | | | | |
| 7/16 - 20 UNF | H3 | | 1603007 | 1602907 | 4.252 | 1.531 | 2.220 | 0.590 | 0.442 | 0.689 |
| | H5 | | 1603207 | 1603107 | | | | | | |
| 1/2 - 13 UNC | H3 | | 1603407 | 1603307 | 4.252 | 1.531 | 2.220 | 0.590 | 0.442 | 0.689 |
| | H5 | | 1603607 | 1603507 | | | | | | |
| 1/2 - 20 UNF | H3 | | 1603807 | 1603707 | 4.252 | 1.531 | 2.220 | 0.590 | 0.442 | 0.689 |
| | H5 | | 1600007 | - | | | | | | |
| 9/16 - 12 UNC | H3 | 1604007 | 1603907 | 4.252 | 1.531 | 2.220 | 0.590 | 0.442 | 0.689 | |
| | H5 | 1604807 | 1604707 | | | | | | | |
| 9/16 - 18 UNF | H3 | 1604207 | 1604107 | 4.252 | 1.531 | 2.220 | 0.590 | 0.442 | 0.689 | |
| | H5 | 1605207 | - | | | | | | | |
| 5/8 - 11 UNC | H3 | 1604407 | 1604307 | 4.252 | 1.531 | 2.220 | 0.590 | 0.442 | 0.689 | |
| | H5 | 1604607 | 1604507 | | | | | | | |
| 5/8 - 18 UNF | H3 | 1605007 | 1604907 | 4.252 | 1.531 | 2.220 | 0.590 | 0.442 | 0.689 | |
| | H5 | | | | | | | | | |

Packed: 1 pc.
Available Nitride/Steam Oxide treatment only.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|------------|------------------|-----|---------|-------------------------------------|-----------|-------------------------------------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 101C | | | | | | | | | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | | | | |
| SFM | | | | | | | | | 25-75 | | 40-65 | | | | | | | |

good best





List 141C

HSS

N S/O

Plug (3.5P-4.5P), Bottom (1.5P-2P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|------------|--------------|---------------|--------------------|--------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P - 2P) | Plug (3.5P - 4.5P) | | | | | | |
| | | | Nitride-S/O | Nitride-S/O | | | | | | |
| M6 x 1.0 | D5 | 3 | 1608207 | 1608107 | 63.50 | 17.80 | 30.90 | 6.48 | 4.85 | 7.90 |
| M8 x 1.25 | | | 1608407 | 1608307 | 69.10 | 18.80 | 33.60 | 8.08 | 6.05 | 9.50 |
| M10 x 1.5 | D6 | 4 | 1608607 | 1608507 | 74.60 | 22.50 | 35.10 | 9.68 | 7.26 | 11.10 |
| M12 x 1.75 | | | 1608807 | 1608707 | 85.70 | 27.20 | 46.00 | 9.32 | 6.98 | |

Packed: 1 pc.

Available Nitride/Steam Oxide treatment only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-------------------------------------|-----------|-------------------------------------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 141C | | | | | | | | | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | | | | |
| SFM | | | | | | | | | 25-75 | | 40-65 | | | | | | | |

good best





GENERAL PURPOSE

List 101

Taper (5P and up), Plug (3.5P-4.5P), Bottom (1.5P-2P)

| | | | | |
|-----|------|-----|-----|----|
| HSS | TiCN | TiN | S/O | BR |
|-----|------|-----|-----|----|



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Bottom (1.5P - 2P) | | | | Plug (3.5P - 4.5P) | | | | Taper (5P and up) | | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | |
|----------------|--------------|---------------|--------------------|----------------|-----|------|--------------------|----------------|-----|-----|-------------------|----------------|--------|-----|----------------|---------------|-------------|------------|--------------|---------------|-------|
| | | | EDP Number | Coating Suffix | | | EDP Number | Coating Suffix | | | EDP Number | Coating Suffix | | | | | | | | | |
| | | | | Bright | S/O | TiCN | | Bright | S/O | TiN | | TiCN | Bright | S/O | | | | | | | TiCN |
| L | Lc | Ln | d | k | lk | | | | | | | | | | | | | | | | |
| 1/4 - 20 UNC | H1 | 4 | 11002 | 00 | - | 08 | 11001 | 00 | - | - | 08 | 11000 | 00 | - | 08 | 2.500 | 0.748 | 1.181 | 0.255 | 0.191 | 0.311 |
| | H2 | | 11102 | 00 | - | 08 | 11101 | 00 | - | - | 08 | 11100 | 00 | - | 08 | | | | | | |
| | H3 | | 11202 | 00 | 01 | 08 | 11201 | 00 | 01 | 05 | 08 | 11200 | 00 | 01 | 08 | | | | | | |
| | H5 | | 11402 | 00 | - | 08 | 11401 | 00 | - | - | 08 | - | - | - | - | | | | | | |
| 1/4 - 28 UNF | H1 | 4 | 11005 | 00 | - | - | 11004 | 00 | - | - | - | - | - | - | - | 2.500 | 0.748 | 1.181 | 0.255 | 0.191 | 0.311 |
| | H2 | | 11105 | 00 | - | 08 | 11104 | 00 | - | - | - | - | - | - | | | | | | | |
| | H3 | | 11205 | 00 | 01 | 08 | 11204 | 00 | 01 | 05 | 08 | 11203 | 00 | - | 08 | | | | | | |
| | H4 | | 11305 | 00 | - | - | 11304 | 00 | - | - | - | - | - | - | - | | | | | | |
| 5/16 - 18 UNC | H1 | 4 | 11008 | 00 | - | - | 11007 | 00 | - | - | - | - | - | - | - | 2.720 | 0.835 | 1.323 | 0.318 | 0.238 | 0.374 |
| | H2 | | 11108 | 00 | - | - | 11107 | 00 | - | - | 08 | 10088 | 00 | - | - | | | | | | |
| | H3 | | 11208 | 00 | 01 | 08 | 11207 | 00 | 01 | 05 | 08 | 11206 | 00 | 01 | 08 | | | | | | |
| | H5 | | 11408 | 00 | - | 08 | 11407 | 00 | - | - | 08 | - | - | - | - | | | | | | |
| 5/16 - 24 UNF | H1 | 4 | 11011 | 00 | - | - | 11010 | 00 | - | - | - | - | - | - | - | 2.720 | 0.835 | 1.323 | 0.318 | 0.238 | 0.374 |
| | H2 | | 11111 | 00 | - | 08 | 11110 | 00 | - | - | - | - | - | - | | | | | | | |
| | H3 | | 11211 | 00 | 01 | 08 | 11210 | 00 | 01 | 05 | 08 | 11209 | 00 | 01 | 08 | | | | | | |
| | H4 | | 11311 | 00 | - | 08 | 11310 | 00 | - | - | - | - | - | - | - | | | | | | |
| 3/8 - 16 UNC | H1 | 4 | 11014 | 00 | - | - | 11013 | 00 | - | - | - | - | - | - | - | 2.937 | 0.937 | 1.413 | 0.381 | 0.286 | 0.437 |
| | H2 | | 11114 | 00 | - | - | 11113 | 00 | - | - | - | - | - | - | | | | | | | |
| | H3 | | 11214 | 00 | 01 | 08 | 11213 | 00 | 01 | 05 | 08 | 11212 | 00 | 01 | 08 | | | | | | |
| | H5 | | 11414 | 00 | - | 08 | 11413 | 00 | - | - | 08 | - | - | - | - | | | | | | |
| 3/8 - 24 UNF | H1 | 4 | 11017 | 00 | - | 08 | 11016 | 00 | - | - | - | - | - | - | - | 2.937 | 0.937 | 1.413 | 0.381 | 0.286 | 0.437 |
| | H2 | | 11117 | 00 | - | - | 11116 | 00 | - | - | 08 | - | - | - | | | | | | | |
| | H3 | | 11217 | 00 | 01 | 08 | 11216 | 00 | 01 | 05 | 08 | 11215 | 00 | 01 | 08 | | | | | | |
| | H4 | | 11317 | 00 | - | 08 | 11316 | 00 | - | - | 08 | - | - | - | - | | | | | | |
| 7/16 - 14 UNC | H2 | 4 | - | - | - | - | 10516 | 00 | - | - | 08 | - | - | - | - | 3.157 | 1.071 | 1.689 | 0.323 | 0.242 | 0.406 |
| | H3 | | 11220 | 00 | - | 08 | 11219 | 00 | - | - | 08 | 11218 | 00 | - | 08 | | | | | | |
| | H5 | | 11420 | 00 | - | - | 11419 | 00 | - | - | - | - | - | - | - | | | | | | |
| | H2 | | - | - | - | - | 11122 | 00 | - | - | - | - | - | - | - | | | | | | |
| 7/16 - 20 UNF | H3 | 4 | 11223 | 00 | 01 | 08 | 11222 | 00 | 01 | 05 | 08 | 11221 | 00 | 01 | 08 | 3.157 | 1.071 | 1.689 | 0.323 | 0.242 | 0.406 |
| | H5 | | 11423 | 00 | - | 08 | 11422 | 00 | - | - | 08 | - | - | - | - | | | | | | |
| | H1 | | 11026 | 00 | - | - | 11025 | 00 | - | - | - | - | - | - | - | | | | | | |
| | H2 | | 11126 | 00 | - | - | 11125 | 00 | - | - | - | - | - | - | - | | | | | | |
| 1/2 - 13 UNC | H3 | 4 | 11226 | 00 | 01 | 08 | 11225 | 00 | 01 | 05 | 08 | 11224 | 00 | 01 | 08 | 3.374 | 1.154 | 1.811 | 0.367 | 0.275 | 0.437 |
| | H5 | | 11426 | 00 | - | - | 11425 | 00 | - | - | 08 | - | - | - | - | | | | | | |
| | H1 | | 11029 | 00 | - | - | 11028 | 00 | - | - | - | - | - | - | - | | | | | | |
| | H2 | | 11129 | 00 | - | - | 11128 | 00 | - | - | - | - | - | - | - | | | | | | |
| 1/2 - 20 UNF | H3 | 4 | 11229 | 00 | 01 | 08 | 11228 | 00 | 01 | 05 | 08 | 11227 | 00 | 01 | 08 | 3.374 | 1.154 | 1.811 | 0.367 | 0.275 | 0.437 |
| | H5 | | 11429 | 00 | - | 08 | 11428 | 00 | - | - | 08 | - | - | - | - | | | | | | |
| | H1 | | 11026 | 00 | - | - | 11025 | 00 | - | - | - | - | - | - | - | | | | | | |
| | H2 | | 11126 | 00 | - | - | 11125 | 00 | - | - | - | - | - | - | - | | | | | | |
| 9/16 - 12 UNC | H3 | 4 | 11232 | 00 | 01 | 08 | 11231 | 00 | 01 | - | 08 | 11230 | 00 | 01 | 08 | 3.594 | 1.252 | 1.941 | 0.429 | 0.322 | 0.500 |
| | H5 | | 10611 | 00 | - | 08 | 11431 | 00 | - | - | 08 | - | - | - | - | | | | | | |
| | H2 | | - | - | - | - | 11134 | 00 | - | - | - | - | - | - | - | | | | | | |
| | H3 | | 11235 | 00 | 01 | 08 | 11234 | 00 | 01 | - | 08 | 11233 | 00 | 01 | 08 | | | | | | |
| 9/16 - 18 UNF | H5 | 4 | 11435 | 00 | - | 08 | 11434 | 00 | - | - | 08 | - | - | - | - | 3.594 | 1.252 | 1.941 | 0.429 | 0.322 | 0.500 |
| | H1 | | - | - | - | - | 11037 | 00 | - | - | - | - | - | - | | | | | | | |
| | H2 | | 10632 | 00 | - | - | 11137 | 00 | - | - | - | - | - | - | | | | | | | |
| | H3 | | 11238 | 00 | 01 | 08 | 11237 | 00 | 01 | 05 | 08 | 11236 | 00 | 01 | 08 | | | | | | |
| 5/8 - 11 UNC | H5 | 4 | 11438 | 00 | - | 08 | 11437 | 00 | - | - | 08 | - | - | - | - | 3.811 | 1.362 | 2.000 | 0.480 | 0.360 | 0.563 |
| | H1 | | - | - | - | - | 11040 | 00 | - | - | - | - | - | - | | | | | | | |
| | H2 | | - | - | - | - | 11140 | 00 | - | - | - | - | - | - | | | | | | | |
| | H3 | | 11241 | 00 | 01 | 08 | 11240 | 00 | 01 | 05 | 08 | 11239 | 00 | 01 | 08 | | | | | | |
| 5/8 - 18 UNF | H5 | 4 | 11441 | 00 | - | 08 | 11440 | 00 | - | - | 08 | - | - | - | - | 3.811 | 1.362 | 2.000 | 0.480 | 0.360 | 0.563 |
| | H1 | | - | - | - | - | 11040 | 00 | - | - | - | - | - | - | | | | | | | |
| | H2 | | - | - | - | - | 11140 | 00 | - | - | - | - | - | - | | | | | | | |
| | H3 | | 11241 | 00 | 01 | 08 | 11240 | 00 | 01 | 05 | 08 | 11239 | 00 | 01 | 08 | | | | | | |
| 11/16 - 11 UNS | H5 | 4 | 11444 | 00 | - | 08 | 11440 | 00 | - | - | 08 | - | - | - | - | 4.031 | 1.362 | 2.000 | 0.480 | 0.360 | 0.563 |
| | H3 | | 11244 | 00 | - | 08 | 11243 | 00 | - | - | 08 | 11242 | 00 | - | - | | | | | | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.





List 101 (Continued)

| | | | | |
|-----|------|-----|-----|----|
| HSS | TiCN | TiN | S/O | BR |
|-----|------|-----|-----|----|

Taper (5P and up), Plug (3.5P-4.5P), Bottom (1.5P-2P)

Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Bottom (1.5P - 2P) | | | Plug (3.5P - 4.5P) | | | | Taper (5P and up) | | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | | |
|-----------------|--------------|---------------|--------------------|----------------|-----|--------------------|------------|----------------|-----|-------------------|------|------------|----------------|----------------|---------------|-------------|------------|--------------|---------------|-------|-------|-------|
| | | | EDP Number | Coating Suffix | | | EDP Number | Coating Suffix | | | | EDP Number | Coating Suffix | | | | | | | | | |
| | | | | Bright | S/O | TiCN | | Bright | S/O | TiN | TiCN | | Bright | | | | | | | S/O | TiCN | |
| 11/16 - 16 UNS | H3 | 4 | 11247 | 00 | - | 08 | 11246 | 00 | - | - | 08 | 11245 | 00 | - | 08 | 4.031 | 1.362 | 2.130 | 0.542 | 0.406 | 0.626 | |
| 3/4 - 10 UNC | H1 | | 10665 | 00 | - | - | 10089 | 00 | - | - | - | - | - | - | - | - | 4.252 | 1.500 | 2.220 | 0.590 | 0.442 | 0.689 |
| | H2 | | - | - | - | - | 11149 | 00 | - | - | - | - | - | - | - | | | | | | | |
| | H3 | | 11250 | 00 | 01 | 08 | 11249 | 00 | 01 | 05 | 08 | 11248 | 00 | - | 08 | | | | | | | |
| | H5 | | 11450 | 00 | - | 08 | 11449 | 00 | - | - | 08 | - | - | - | - | | | | | | | |
| 3/4 - 16 UNF | H1 | | - | - | - | - | 11052 | 00 | - | - | 08 | - | - | - | - | - | 4.689 | 1.665 | 2.500 | 0.697 | 0.523 | 0.752 |
| | H2 | | - | - | - | - | 11152 | 00 | - | - | - | - | - | - | - | | | | | | | |
| | H3 | | 11253 | 00 | 01 | 08 | 11252 | 00 | 01 | 05 | 08 | 11251 | 00 | - | 08 | | | | | | | |
| | H5 | | 11453 | 00 | - | 08 | 11452 | 00 | - | - | 08 | - | - | - | - | | | | | | | |
| 7/8 - 9 UNC | H1 | | 10692 | 00 | - | - | - | - | - | - | - | - | - | - | - | - | 5.126 | 1.874 | 2.720 | 0.800 | 0.600 | 0.811 |
| | H2 | | - | - | - | - | 10090 | 00 | - | - | - | - | - | - | - | | | | | | | |
| | H4 | | 11356 | 00 | 01 | 08 | 11355 | 00 | 01 | 05 | 08 | 11354 | 00 | - | 08 | | | | | | | |
| | H6 | | - | - | - | - | 11455 | 00 | - | 08 | - | - | - | - | - | | | | | | | |
| 7/8 - 14 UNF | H2 | | - | - | - | - | 11158 | 00 | - | - | - | - | - | - | - | 5.437 | 2.142 | 2.941 | 0.896 | 0.672 | 0.874 | |
| | H4 | | 11359 | 00 | 01 | 08 | 11358 | 00 | 01 | 05 | 08 | 11357 | 00 | - | 08 | | | | | | | |
| | H6 | | - | - | - | - | 11458 | 00 | - | - | 08 | - | - | - | - | | | | | | | |
| | H1 | | 10719 | 00 | - | - | 10718 | 00 | - | - | 08 | - | - | - | - | | | | | | | |
| 1 - 8 UNC | H2 | | - | - | - | - | 11161 | 00 | - | - | - | - | - | - | - | 5.752 | 2.142 | 3.000 | 1.021 | 0.766 | 1.000 | |
| | H4 | | 11362 | 00 | 01 | 08 | 11361 | 00 | 01 | 05 | 08 | 11360 | 00 | 01 | 08 | | | | | | | |
| | H6 | | - | - | - | - | 11461 | 00 | - | - | 08 | - | - | - | - | | | | | | | |
| | H1 | | 11365 | 00 | - | 08 | 11364 | 00 | - | - | 08 | 11363 | 00 | - | 08 | | | | | | | |
| 1 - 12 UNF | H4 | | - | - | - | - | 11167 | 00 | - | - | 08 | - | - | - | - | 6.063 | 2.500 | 3.161 | 1.108 | 0.831 | 1.063 | |
| 1 - 14 UNS | H2 | | 11368 | 00 | 01 | 08 | 11367 | 00 | 01 | - | 08 | 11366 | 00 | 01 | 08 | | | | | | | |
| 1, 1/8 - 7 UNC | - | | 11371 | 00 | 01 | 08 | 11370 | 00 | 01 | - | 08 | 11369 | 00 | - | 08 | | | | | | | |
| 1, 1/8 - 12 UNF | - | | 11374 | 00 | 01 | 08 | 11373 | 00 | 01 | - | 08 | 11372 | 00 | 01 | 08 | | | | | | | |
| 1, 1/4 - 7 UNC | - | | 11377 | 00 | 01 | 08 | 11376 | 00 | - | - | 08 | 11375 | 00 | - | 08 | 6.374 | 1.874 | 3.382 | 1.233 | 0.925 | 1.126 | |
| 1, 1/4 - 12 UNF | H4 | | 6 | 11380 | 00 | 01 | 08 | 11379 | 00 | 01 | - | 08 | 11378 | 00 | - | | | | | | | 08 |
| 1, 3/8 - 6 UNC | - | | 4 | 11383 | 00 | - | 08 | 11382 | 00 | - | - | 08 | 11381 | 00 | 01 | | | | | | | - |
| 1, 3/8 - 12 UNF | - | 6 | 11386 | 00 | 01 | 08 | 11385 | 00 | 01 | - | 08 | 11384 | 00 | 01 | 08 | | | | | | | |
| 1, 1/2 - 6 UNC | - | 4 | 11389 | 00 | 01 | 08 | 11388 | 00 | 01 | - | 08 | 11387 | 00 | 01 | 08 | 6.374 | 2.500 | 3.382 | 1.233 | 0.925 | 1.126 | |
| 1, 1/2 - 12 UNF | - | 6 | 11392 | 00 | 01 | 08 | 11391 | 00 | 01 | - | 08 | 11390 | 00 | 01 | 08 | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|--|--|
| List No. | P | | | | | M | | | K | N | | S | H | | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 101 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | | | |

good best





GENERAL PURPOSE

List 101H

| | | | |
|-----|------|-----|----|
| HSS | TiCN | S/O | BR |
|-----|------|-----|----|

+0.005" Oversize, Plug (3.5P-4.5P), Bottom (1.5P-2P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Bottom (1.5P - 2P) | | | Plug (3.5P - 4.5P) | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | |
|---------------|--------------|---------------|--------------------|----------------|------|--------------------|----------------|-----|----------------|---------------|-------------|------------|--------------|---------------|-------|-------|
| | | | EDP Number | Coating Suffix | | EDP Number | Coating Suffix | | | | | | | | | |
| | | | | Bright | TiCN | | Bright | S/O | | | | | | | TiCN | |
| 1/4 - 20 UNC | | + 0.005 | 4 | 10091 | 00 | 08 | 15901 | 00 | 01 | 08 | 2.500 | 0.748 | 1.181 | 0.255 | 0.191 | 0.311 |
| 1/4 - 28 UNF | - | | | - | - | 15903 | 00 | 01 | 08 | | | | | | | |
| 5/16 - 18 UNC | 10092 | | | 00 | 08 | 15907 | 00 | 01 | 08 | | | | | | | |
| 5/16 - 24 UNF | - | | | - | - | 15911 | 00 | - | 08 | 2.720 | 0.835 | 1.323 | 0.318 | 0.238 | 0.374 | |
| 3/8 - 16 UNC | 10093 | | | 00 | 08 | 15913 | 00 | - | 08 | | | | | | | |
| 3/8 - 24 UNF | - | | | - | - | 15915 | 00 | - | 08 | | | | | | | |
| 7/16 - 14 UNC | - | | | - | - | 15919 | 00 | - | - | 3.157 | 1.071 | 1.689 | 0.323 | 0.242 | 0.406 | |
| 7/16 - 20 UNF | - | | | - | - | 15921 | 00 | - | - | | | | | | | |
| 1/2 - 13 UNC | 10094 | | | 00 | 08 | 15925 | 00 | - | 08 | 3.374 | 1.154 | 1.811 | 0.367 | 0.275 | 0.437 | |
| 1/2 - 20 UNF | - | | | - | - | 15927 | 00 | - | 08 | | | | | | | |
| 5/8 - 11 UNC | 11257 | | | 00 | 08 | 15937 | 00 | - | 08 | 3.811 | 1.362 | 2.000 | 0.480 | 0.360 | 0.563 | |
| 5/8 - 18 UNF | - | | | - | - | 11259 | 00 | 01 | 08 | | | | | | | |
| 3/4 - 10 UNC | - | | | - | - | 15947 | 00 | 01 | - | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|--------------------------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 101H | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | | |

good best





List 102

Taper (5P and up), Plug (3.5P-4.5P), Bottom (1.5P-2P)

| | | | | |
|-----|------|-----|-----|----|
| HSS | TiCN | TiN | S/O | BR |
|-----|------|-----|-----|----|



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Bottom (1.5P-2P) | | | | Plug (3.5P-4.5P) | | | | Taper (5P and up) | | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk | | | |
|------------|--------------|---------------|------------------|----------------|-----|-----|------------------|------------|----------------|-----|-------------------|------|------------|----------------|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|-------|-------|-------|
| | | | EDP Number | Coating Suffix | | | | EDP Number | Coating Suffix | | | | EDP Number | Coating Suffix | | | | | | | | | |
| | | | | Bright | S/O | TiN | TiCN | | Bright | S/O | TiN | TiCN | | Bright | | | | | | | S/O | TiN | TiCN |
| 0 - 80 UNF | H1 | 2 | 10002 | 00 | 01 | 05 | 08 | 10001 | 00 | 01 | 05 | 08 | 10000 | 00 | 01 | - | 08 | 1.626 | 0.311 | | | | |
| | H2 | | 10102 | 00 | - | - | 08 | 10101 | 00 | - | 05 | 08 | - | - | - | - | - | | | | | | |
| 1 - 64 UNC | H1 | 2 | 10005 | 00 | 01 | - | - | 10004 | 00 | 01 | - | - | 10003 | 00 | - | - | - | 1.689 | 0.370 | | | | |
| | H2 | | 10080 | 00 | - | - | 08 | 10104 | 00 | - | - | 08 | - | - | - | - | - | | | | | | |
| 1 - 72 UNF | H1 | 2 | 10008 | 00 | 01 | - | - | 10007 | 00 | 01 | - | - | 10006 | 00 | 01 | - | 08 | 1.752 | 0.437 | | | | |
| | H2 | | 10108 | 00 | - | - | 08 | 10107 | 00 | - | - | 08 | - | - | - | - | - | | | | | | |
| 2 - 56 UNC | H1 | 2 | 10011 | 00 | - | - | 08 | 10010 | 00 | - | - | - | 10009 | 00 | - | - | - | 1.811 | 0.496 | | | | |
| | H2 | | 10111 | 00 | 01 | 05 | 08 | 10110 | 00 | 01 | 05 | 08 | 10109 | 00 | 01 | - | 08 | | | | | | |
| 2 - 64 UNF | H1 | 2 | 10014 | 00 | 01 | - | - | 10013 | 00 | - | - | - | - | - | - | - | - | 1.874 | 0.370 | 0.681 | 0.141 | 0.110 | 0.189 |
| | H2 | | 10114 | 00 | 01 | - | - | 10113 | 00 | 01 | - | - | 10112 | 00 | - | - | - | | | | | | |
| 3 - 48 UNC | H1 | 2 | - | - | - | - | - | 10016 | 00 | - | - | - | - | - | - | - | - | 1.937 | 0.374 | 0.744 | | | |
| | H2 | | 10117 | 00 | 01 | - | 08 | 10116 | 00 | 01 | - | 08 | 10115 | 00 | 01 | - | 08 | | | | | | |
| 3 - 56 UNF | H1 | 2 | - | - | - | - | - | 10019 | 00 | - | - | - | - | - | - | - | - | 1.937 | 0.374 | 0.744 | | | |
| | H2 | | 10120 | 00 | 01 | - | 08 | 10119 | 00 | 01 | - | 08 | 10118 | 00 | 01 | - | - | | | | | | |
| 4 - 36 UNS | H1 | 3 | 10129 | 00 | 01 | - | - | 10128 | 00 | - | - | - | 10127 | 00 | - | - | - | 2.000 | 0.465 | 0.799 | | | |
| | H2 | | 10023 | 00 | - | - | - | 10022 | 00 | - | - | - | 10021 | 00 | - | - | - | | | | | | |
| 4 - 40 UNC | H1 | 3 | 10123 | 00 | 01 | 05 | 08 | 10122 | 00 | 01 | 05 | 08 | 10121 | 00 | 01 | - | 08 | 2.126 | 0.469 | 0.933 | 0.168 | 0.131 | 0.252 |
| | H2 | | - | - | - | - | - | 10025 | 00 | - | - | - | - | - | - | - | - | | | | | | |
| 4 - 48 UNF | H1 | 3 | 10126 | 00 | 01 | - | 08 | 10125 | 00 | 01 | - | 08 | 10124 | 00 | - | - | - | 2.126 | 0.469 | 0.933 | 0.168 | 0.131 | 0.252 |
| | H2 | | 10032 | 00 | - | - | - | 10031 | 00 | - | - | - | - | - | - | - | - | | | | | | |
| 5 - 40 UNC | H1 | 3 | 10132 | 00 | 01 | 05 | 08 | 10131 | 00 | 01 | 05 | 08 | 10130 | 00 | 01 | - | 08 | 2.126 | 0.469 | 0.933 | 0.168 | 0.131 | 0.252 |
| | H2 | | - | - | - | - | - | 10034 | 00 | - | - | 08 | - | - | - | - | - | | | | | | |
| 5 - 44 UNF | H1 | 3 | 10135 | 00 | 01 | - | 08 | 10134 | 00 | 01 | - | 08 | 10133 | 00 | 01 | - | 08 | 2.126 | 0.469 | 0.933 | 0.168 | 0.131 | 0.252 |
| | H2 | | 10038 | 00 | - | - | - | 10037 | 00 | - | - | - | 10036 | 00 | - | - | - | | | | | | |
| 6 - 32 UNC | H1 | 3 | 10138 | 00 | - | 05 | 08 | 10137 | 00 | - | 05 | 08 | 10136 | 00 | - | - | 08 | 2.000 | 0.465 | 0.799 | | | |
| | H2 | | 10238 | 00 | 01 | 05 | 08 | 10237 | 00 | 01 | 05 | 08 | 10236 | 00 | 01 | - | 08 | | | | | | |
| 6 - 40 UNF | H1 | 3 | - | - | - | - | - | 10681 | - | - | 05 | - | - | - | - | - | - | 2.126 | 0.469 | 0.933 | 0.168 | 0.131 | 0.252 |
| | H2 | | 10141 | 00 | 01 | 05 | - | 10140 | 00 | 01 | 05 | - | 10139 | 00 | - | - | 08 | | | | | | |
| 8 - 32 UNC | H1 | 4 | 10044 | 00 | - | - | - | 10043 | 00 | - | - | 08 | 10042 | 00 | - | - | 08 | 2.126 | 0.469 | 0.933 | 0.168 | 0.131 | 0.252 |
| | H2 | | 10144 | 00 | - | 05 | - | 10143 | 00 | - | 05 | 08 | 10142 | 00 | - | - | - | | | | | | |
| | H3 | 3 | 10244 | 00 | 01 | 05 | 08 | 10243 | 00 | 01 | 05 | 08 | 10242 | 00 | 01 | - | 08 | 2.126 | 0.469 | 0.933 | 0.168 | 0.131 | 0.252 |
| | H7 | | 10199 | 00 | - | - | - | 10198 | 00 | - | - | - | - | - | - | - | - | | | | | | |
| 8 - 36 UNF | H1 | 4 | - | - | - | - | - | 10046 | 00 | - | - | - | - | - | - | - | - | 2.126 | 0.469 | 0.933 | 0.168 | 0.131 | 0.252 |
| | H2 | | 10147 | 00 | 01 | 05 | - | 10146 | 00 | 01 | 05 | - | 10145 | 00 | 01 | - | - | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

continued on next page

| Work Material | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|--------------|------------------|------------|-----|----------|--------------------------|--------------------------|--------------------------|-----------|---------------|---------|---------|----------------|---------|
| List No. | P | | | | | Die Steels | M | | | K Cast Iron | N | | S Titanium | H | | | |
| | Carbon Steels | | | Alloy Steels | Stainless Steels | | | Aluminum | Nickel Alloy | | Hardened Steels | | | | | | |
| | Low | Med. | High | | 300 | | 400 | | | | 17-4 PH | 6061 7075 | | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC |
| 102 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | |

good best





GENERAL PURPOSE

List 102 (Continued)

| | | | | |
|-----|------|-----|-----|----|
| HSS | TiCN | TiN | S/O | BR |
|-----|------|-----|-----|----|

Taper (5P and up), Plug (3.5P-4.5P), Bottom (1.5P-2P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Bottom (1.5P - 2P) | | | | Plug (3.5P - 4.5P) | | | | Taper (5P and up) | | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk | | | | | | | | | | | |
|----------------|--------------|---------------|--------------------|----------------|-----|-----|--------------------|------------|----------------|-----|-------------------|------|------------|----------------|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---|
| | | | EDP Number | Coating Suffix | | | | EDP Number | Coating Suffix | | | | EDP Number | Coating Suffix | | | | | | | | | | | | | | | | | |
| | | | | Bright | S/O | TiN | TiCN | | Bright | S/O | TiN | TiCN | | Bright | | | | | | | S/O | TiN | TiCN | | | | | | | | |
| 10 - 24 UNC | H1 | 4 | 10050 | 00 | 01 | - | - | 10049 | 00 | - | - | - | 10048 | 00 | - | - | - | 2.374 | 0.618 | 1.047 | 0.194 | 0.152 | 0.252 | | | | | | | | |
| | H2 | | 10150 | 00 | - | - | 08 | 10149 | 00 | - | - | - | 10148 | 00 | - | 05 | 08 | | | | | | | | | | | | | | |
| | H3 | | 10250 | 00 | 01 | 05 | 08 | 10249 | 00 | 01 | 05 | 08 | 10248 | 00 | 01 | - | - | | | | | | | | | | | | | | |
| | H7 | | 10087 | 00 | - | - | - | 10086 | 00 | - | - | - | - | - | - | - | - | | | | | | | | | | | | | | |
| 10 - 32 UNF | H1 | 4 | 10053 | 00 | - | - | - | 10052 | 00 | - | - | - | 10051 | 00 | - | - | - | | | | | | | 2.374 | 0.618 | 1.047 | 0.194 | 0.152 | 0.252 | | |
| | H2 | | 10153 | 00 | - | 05 | 08 | 10152 | 00 | - | - | 08 | 10151 | 00 | - | 05 | - | | | | | | | | | | | | | | |
| | H3 | | 10253 | 00 | 01 | 05 | 08 | 10252 | 00 | 01 | 05 | 08 | 10251 | 00 | 01 | 05 | 08 | | | | | | | | | | | | | | |
| | H7 | | 10286 | 00 | - | - | - | 10285 | 00 | - | - | - | - | - | - | - | - | | | | | | | | | | | | | | |
| 12 - 24 UNC | H1 | 4 | - | - | - | - | - | 10055 | 00 | - | - | - | - | - | - | - | - | | 2.374 | 0.622 | 1.110 | 0.220 | 0.165 | | | | | | | 0.280 | |
| | H3 | | 10256 | 00 | 01 | - | 08 | 10255 | 00 | 01 | 05 | 08 | 10254 | 00 | 01 | - | 08 | | | | | | | | | | | | | | |
| 12 - 28 UNF | H1 | | - | - | - | - | - | 10058 | 00 | - | - | - | - | - | - | - | - | | | | | | | | | | | | | | - |
| | H3 | | 10259 | 00 | 01 | 05 | 08 | 10258 | 00 | 01 | - | 08 | 10257 | 00 | 01 | - | 08 | | | | | | | | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|--------------------------|--------------|----------|-----------------|----------------|---------|-----------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 102 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | | | |

good best





List 102H

| | | |
|-----|---|-----------------------------|
| HSS | <input checked="" type="checkbox"/> S/O | <input type="checkbox"/> BR |
|-----|---|-----------------------------|

+0.005" Oversize, Plug (3.5P-4.5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|-------------|--------------|---------------|--------------------|---------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (3.5P - 4.5P) | | | | | | | |
| | | | Bright | S/O | | | | | | |
| 6 - 32 UNC | + 0.005 | 3 | 1593500 | - | 2.000 | 0.465 | 0.799 | 0.141 | 0.110 | 0.189 |
| 8 - 32 UNC | | 4 | 1594300 | - | 2.126 | 0.469 | 0.933 | 0.168 | 0.131 | 0.252 |
| 10 - 24 UNC | | | 1594900 | - | 2.374 | 0.618 | 1.047 | 0.194 | 0.152 | |
| 10 - 32 UNF | | | 1595100 | 1595101 | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|---------|--------------|----------|-----------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 102H | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | |

good best





GENERAL PURPOSE

List 103

HSS

TiN

S/O

BR

Three Flute, Plug (3.5P-4.5P), Bottom (1.5P-2P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Bottom (1.5P - 2P) | | | Plug (3.5P - 4.5P) | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | |
|---------------|--------------|---------------|--------------------|----------------|-----|--------------------|------------|----------------|----------------|---------------|-------------|------------|--------------|---------------|-------|-----|
| | | | EDP Number | Coating Suffix | | | EDP Number | Coating Suffix | | | | | | | | |
| | | | | Bright | S/O | TiN | | Bright | | | | | | | S/O | TiN |
| 8 - 32 UNC | H1 | 3 | 10402 | 00 | - | - | 10401 | 00 | - | - | 2.126 | 0.469 | 0.933 | 0.168 | 0.131 | |
| | H2 | | 10452 | 00 | - | - | 10451 | 00 | - | - | | | | | | |
| | H3 | | 10502 | 00 | - | - | 10501 | 00 | - | - | | | | | | |
| 10 - 24 UNC | H1 | 3 | - | - | - | - | 10407 | 00 | - | - | 2.374 | 0.618 | 1.047 | 0.194 | 0.152 | |
| | H2 | | - | - | - | - | 10457 | 00 | - | - | | | | | | |
| | H3 | | 10508 | 00 | - | - | 10507 | 00 | - | - | | | | | | |
| 10 - 32 UNF | H2 | 3 | 10461 | 00 | - | - | 10460 | 00 | - | - | 2.500 | 0.748 | 1.181 | 0.255 | 0.191 | |
| | H3 | | 10511 | 00 | 01 | 05 | 10510 | 00 | 01 | 05 | | | | | | |
| 1/4 - 20 UNC | H1 | 3 | 10593 | 00 | - | - | 11601 | 00 | - | - | 2.720 | 0.835 | 1.323 | 0.318 | 0.238 | |
| | H2 | | 10356 | 00 | - | - | 11651 | 00 | - | - | | | | | | |
| | H3 | | 11702 | 00 | 01 | 05 | 11701 | 00 | 01 | 05 | | | | | | |
| | H5 | | 11802 | 00 | - | - | 11801 | 00 | - | - | | | | | | |
| 1/4 - 28 UNF | H3 | 3 | 11705 | 00 | 01 | 05 | 11704 | 00 | 01 | 05 | 2.937 | 0.937 | 1.413 | 0.381 | 0.286 | |
| 5/16 - 18 UNC | H1 | - | - | - | - | 11607 | 00 | - | - | | | | | | | |
| | H3 | 11708 | 00 | - | - | 11707 | 00 | - | 05 | | | | | | | |
| | H5 | 11808 | 00 | - | - | 11807 | 00 | - | - | | | | | | | |
| 5/16 - 24 UNF | H3 | 3 | 11711 | 00 | 01 | 05 | 11710 | 00 | 01 | 05 | 3.157 | 1.071 | 1.689 | 0.323 | 0.242 | |
| 3/8 - 16 UNC | H1 | 10462 | 00 | - | - | 11613 | 00 | - | - | | | | | | | |
| | H3 | 11714 | 00 | 01 | 05 | 11713 | 00 | 01 | 05 | | | | | | | |
| | H5 | 11814 | 00 | - | - | 11813 | 00 | - | - | | | | | | | |
| 3/8 - 24 UNF | H3 | 3 | 11717 | 00 | 01 | 05 | 11716 | 00 | 01 | 05 | 3.374 | 1.154 | 1.811 | 0.367 | 0.275 | |
| 7/16 - 14 UNC | H3 | 11720 | 00 | - | - | 11719 | 00 | - | - | | | | | | | |
| 7/16 - 20 UNF | | 10547 | 00 | - | - | 11722 | 00 | - | - | | | | | | | |
| 1/2 - 13 UNC | | 11726 | 00 | 01 | 05 | 11725 | 00 | 01 | 05 | | | | | | | |
| 1/2 - 20 UNF | | 10593 | 00 | - | - | 11728 | 00 | - | - | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 103 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | |

good best





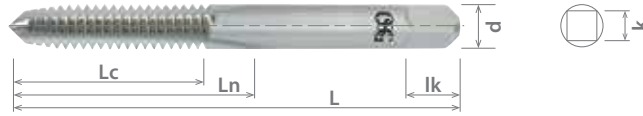
List 104

HSS

S/O

BR

Two Flute, Plug (3.5P-4.5P), Bottom (1.5P-2P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Bottom (1.5P - 2P) | | | Plug (3.5P - 4.5P) | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk | |
|---------------|--------------|---------------|--------------------|----------------|-------|--------------------|----------------|-----|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|-------|
| | | | EDP Number | Coating Suffix | | EDP Number | Coating Suffix | | | | | | | | |
| | | | | Bright | S/O | | Bright | S/O | | | | | | | |
| 2 - 56 UNC | H1 | 2 | 10602 | 00 | - | 10601 | 00 | - | 1.752 | 0.472 | 0.512 | 0.141 | 0.110 | 0.189 | |
| 3 - 48 UNC | H2 | | 10652 | 00 | - | 10651 | 00 | - | | | | | | | |
| 4 - 40 UNC | H1 | | 10658 | 00 | - | 10657 | 00 | - | 1.874 | 0.370 | 0.681 | | | | |
| 5 - 40 UNC | H2 | | 10079 | 00 | - | 10613 | 00 | - | | | | | | | |
| 5 - 44 UNF | | | 10664 | 00 | - | 10663 | 00 | - | 1.937 | 0.425 | 0.795 | | | | |
| 6 - 32 UNC | H1 | | 10673 | 00 | - | 10672 | 00 | - | | | | | | | |
| 6 - 40 UNF | H2 | | - | - | - | 10675 | 00 | - | 2.000 | 0.524 | 0.858 | | | | |
| 8 - 32 UNC | | | H1 | 10081 | 00 | - | 10628 | 00 | | | | | | | - |
| 10 - 24 UNC | | | H2 | 10679 | 00 | - | 10678 | 00 | | | | | | | - |
| 10 - 32 UNF | H3 | | 10729 | 00 | 01 | 10728 | 00 | 01 | 2.126 | 0.539 | 1.004 | | | | 0.168 |
| 1/4 - 20 UNC | | | H2 | 10164 | 00 | - | 10681 | 00 | | | | - | | | |
| 1/4 - 28 UNF | H3 | | 10685 | 00 | - | 10684 | 00 | - | 2.374 | 0.701 | 1.130 | 0.194 | 0.152 | | |
| 5/16 - 18 UNC | | | H1 | 10735 | 00 | 01 | 10734 | 00 | | | | | | 01 | |
| | | | H2 | 10691 | 00 | - | 10690 | 00 | | | | | | - | |
| | H3 | | 10741 | 00 | 01 | 10740 | 00 | 01 | 2.500 | 0.854 | 1.287 | 0.255 | 0.191 | 0.311 | |
| | | | H1 | 10262 | 00 | - | 10261 | 00 | | | | | | | - |
| | H3 | | 10694 | 00 | - | 10693 | 00 | - | 2.720 | 0.854 | 1.323 | 0.318 | 0.238 | 0.374 | |
| | | | H2 | 10744 | 00 | 01 | 10743 | 00 | | | | | | | 01 |
| | | | H3 | 11952 | 00 | 01 | 11951 | 00 | | | | | | | 01 |
| | | | 11955 | 00 | 01 | 11954 | 00 | 01 | | | | | | | |
| | | 11958 | 00 | - | 11957 | 00 | - | | | | | | | | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|------------------------------|------------|------------------|-----|---------|--------------------------|--------------------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 104 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | |

good best





GENERAL PURPOSE

List 101N

HSS

BR

UNEF, Plug (3.5P-4.5P), Bottom (1.5P-2P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk |
|-----------------|--------------|---------------|-----------------------|-----------------------|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|
| | | | Bottom (1.5P - 2P) | Plug (3.5P - 4.5P) | | | | | | |
| | | | Bright | Bright | | | | | | |
| 12 - 32 UNEF | H3 | 4 | 1670200 | 1670100 | 2.374 | 0.622 | 1.110 | 0.220 | 0.165 | 0.280 |
| 1/4 - 32 UNEF | | | 1680200 | 1680100 | 2.500 | 0.748 | 1.181 | 0.255 | 0.191 | 0.311 |
| 5/16 - 32 UNEF | | | 1680400 | 1680300 | 2.720 | 0.835 | 1.323 | 0.318 | 0.238 | 0.374 |
| 3/8 - 32 UNEF | | | 1680600 | 1680500 | 2.937 | 0.937 | 1.413 | 0.381 | 0.286 | 0.437 |
| 7/16 - 28 UNEF | | | 1680800 | 1680700 | 3.157 | 0.992 | 1.689 | 0.323 | 0.242 | 0.406 |
| 1/2 - 28 UNEF | | | 1681000 | 1680900 | 3.374 | 1.154 | 1.811 | 0.367 | 0.275 | 0.437 |
| 9/16 - 24 UNEF | | | 1681200 | 1681100 | 3.594 | 1.252 | 1.941 | 0.429 | 0.322 | 0.500 |
| 5/8 - 24 UNEF | | | 1681400 | 1681300 | 3.811 | 1.362 | 2.000 | 0.480 | 0.360 | 0.563 |
| 11/16 - 24 UNEF | | 1681600 | 1681500 | 4.031 | 2.130 | | 0.542 | 0.406 | 0.626 | |
| 3/4 - 20 UNEF | | 1681800 | 1681700 | 4.252 | 1.500 | 2.220 | 0.590 | 0.442 | 0.689 | |
| 13/16 - 20 UNEF | | 1682000 | 1681900 | 4.469 | | 2.382 | 0.652 | 0.489 | | |
| 7/8 - 20 UNEF | | 1682200 | 1682100 | 4.689 | 1.665 | 2.500 | 0.697 | 0.523 | 0.752 | |
| 15/16 - 20 UNEF | | 1682400 | 1682300 | 4.906 | 1.500 | | 0.760 | 0.570 | 0.752 | |
| 1 - 20 UNEF | | 1682600 | 1682500 | 5.126 | 1.874 | 2.720 | 0.800 | 0.600 | 0.811 | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|---------|--------------|----------|-----------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 101N | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | |

good best





List 141

HSS S/O BR

Taper (5P and up), Plug (3.5P-4.5P), Bottom (1.5P-2P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | Bottom (1.5P - 2P) | | | Plug (3.5P - 4.5P) | | | Taper (5P and up) | Overall Length | Thread Length | Neck Length | Shank Dia. d | Square Width k | Square Length lk |
|-------------|--------------|---------------|--------------------|----------------|-----|--------------------|----------------|-----|-------------------|----------------|---------------|-------------|--------------|----------------|------------------|
| | | | EDP Number | Coating Suffix | | EDP Number | Coating Suffix | | EDP Number | | | | | | |
| | | | | Bright | S/O | | Bright | S/O | | | | | | | |
| M1.6 x 0.35 | D3 | 3 | - | - | - | 19788 | 00 | - | - | 41.30 | 7.90 | 8.90 | 3.58 | 2.79 | 4.80 |
| M2 x 0.4 | | | 19774 | 00 | - | 19773 | 00 | - | - | 44.50 | 11.10 | 12.10 | | | |
| M2.5 x 0.45 | | | 19723 | 00 | 01 | 19722 | 00 | 01 | - | 46.00 | 12.80 | 13.80 | | | |
| M3 x 0.5 | | | 19702 | 00 | 01 | 19701 | 00 | 01 | 1970000 | 49.20 | 7.50 | 18.90 | | | |
| M3.5 x 0.6 | D4 | 4 | 19726 | 00 | 01 | 19725 | 00 | 01 | - | 50.80 | 9.00 | 20.40 | 4.27 | 3.33 | 6.40 |
| M4 x 0.7 | | | 19705 | 00 | 01 | 19704 | 00 | 01 | 1970300 | 54.00 | 10.50 | 23.70 | | | |
| M4.5 x 0.75 | | | 19729 | 00 | 01 | 19728 | 00 | 01 | - | 60.30 | 12.20 | 26.70 | | | |
| M5 x 0.8 | D5 | 5 | 19708 | 00 | 01 | 19707 | 00 | 01 | 1970600 | 63.50 | 15.90 | 30.00 | 4.93 | 3.86 | 9.50 |
| M6 x 1.0 | | | 19711 | 00 | 01 | 19710 | 00 | 01 | 1970900 | 69.10 | 18.80 | 33.60 | | | |
| M7 x 1.0 | D6 | 6 | 19732 | 00 | 01 | 19731 | 00 | 01 | - | 74.60 | 22.50 | 35.10 | 9.68 | 7.26 | 11.10 |
| M8 x 1.25 | | | 19714 | 00 | 01 | 19713 | 00 | 01 | 1971200 | 85.70 | 27.20 | 46.00 | | | |
| M8 x 1.0 | | | 19735 | 00 | 01 | 19734 | 00 | 01 | - | 91.30 | 30.80 | 49.30 | | | |
| M10 x 1.5 | D5 | 5 | 19717 | 00 | 01 | 19716 | 00 | 01 | 1971500 | 96.80 | 31.00 | 50.80 | 12.19 | 9.14 | 14.30 |
| M10 x 1.25 | | | 19741 | 00 | 01 | 19740 | 00 | 01 | - | 102.40 | 37.50 | 54.10 | | | |
| M10 x 1.0 | D6 | 4 | 19738 | 00 | 01 | 19737 | 00 | 01 | - | 113.50 | 38.80 | 60.50 | 16.56 | 12.42 | 17.50 |
| M12 x 1.75 | | | 19720 | 00 | 01 | 19719 | 00 | 01 | 1971800 | 124.60 | 45.00 | 63.50 | | | |
| M12 x 1.5 | | | 19747 | 00 | - | 19746 | 00 | - | - | 124.60 | 52.50 | 74.70 | | | |
| M12 x 1.25 | D7 | 7 | 19744 | 00 | 01 | 19743 | 00 | 01 | - | 138.10 | 52.50 | 74.70 | 25.93 | 19.46 | 25.40 |
| M14 x 2.0 | | | 19753 | 00 | - | 19752 | 00 | 01 | 1975100 | 154.00 | 60.00 | 80.00 | | | |
| M14 x 1.5 | D8 | 8 | 19777 | 00 | - | 19776 | 00 | - | - | 154.00 | 60.00 | 80.00 | 31.32 | 23.50 | 28.60 |
| M14 x 1.25 | | | 19750 | 00 | - | 19749 | 00 | - | - | 154.00 | 60.00 | 80.00 | | | |
| M16 x 2.0 | D9 | 9 | 19759 | 00 | 01 | 19758 | 00 | 01 | 1975700 | 154.00 | 60.00 | 80.00 | 31.32 | 23.50 | 28.60 |
| M16 x 1.5 | | | 19756 | 00 | 01 | 19755 | 00 | 01 | - | 154.00 | 60.00 | 80.00 | | | |
| M18 x 2.5 | D9 | 9 | 19765 | 00 | - | 19764 | 00 | 01 | - | 154.00 | 60.00 | 80.00 | 31.32 | 23.50 | 28.60 |
| M18 x 1.5 | | | 19762 | 00 | 01 | 19761 | 00 | - | - | 154.00 | 60.00 | 80.00 | | | |
| M20 x 2.5 | D9 | 9 | 19771 | 00 | 01 | 19770 | 00 | 01 | 1966900 | 154.00 | 60.00 | 80.00 | 31.32 | 23.50 | 28.60 |
| M20 x 1.5 | | | 19768 | 00 | 01 | 19767 | 00 | - | - | 154.00 | 60.00 | 80.00 | | | |
| M24 x 3.0 | D9 | 9 | 19772 | 00 | - | 19775 | 00 | - | 1978000 | 154.00 | 60.00 | 80.00 | 31.32 | 23.50 | 28.60 |
| M30 x 3.5 | | | 19782 | 00 | - | 19783 | 00 | - | 1978400 | 154.00 | 60.00 | 80.00 | | | |
| M36 x 4.0 | D9 | 9 | - | - | - | 19786 | 00 | - | 1978700 | 154.00 | 60.00 | 80.00 | 31.32 | 23.50 | 28.60 |
| M36 x 4.0 | | | - | - | - | 19786 | 00 | - | 1978700 | 154.00 | 60.00 | 80.00 | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|--|--|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 141 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | | | |

good best





List 121

HSS

S/O

BR

JIS, Taper (5P and up), Plug (4.5P-5.5P), Bottom (1.5P-2P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | | | | | | |
|-------------|--------------|---------------|--------------------|-------|--------------------|----------------|---------------|-------------|------------|--------------|---------------|-------------------|--------|-------|-------|-------|-------|-------|
| | | | Bottom (1.5P - 2P) | | Plug (4.5P - 5.5P) | | | | | | | Taper (5P and up) | | | | | | |
| | | | Bright | S/O | Bright | | | | | | | S/O | Bright | | | | | |
| M2 x 0.4 | | 3 | 233 | - | 232 | - | - | 40.00 | 8.00 | 12.00 | 3.00 | 2.50 | 5.00 | | | | | |
| M2.3 x 0.4 | | | 293 | - | 292 | - | - | 42.00 | 9.00 | - | | | | | | | | |
| M2.6 x 0.45 | | | 353 | - | 352 | - | - | 44.00 | | - | | | | | | | | |
| M3 x 0.5 | | | 393 | 22606 | 392 | 22605 | 391 | 46.00 | 11.00 | 19.00 | 4.00 | 3.20 | 6.00 | | | | | |
| M3.5 x 0.6 | | | 413 | - | 412 | - | 411 | 48.00 | 13.00 | 20.00 | | | | | | | | |
| M4 x 0.7 | | | 453 | 22612 | 452 | 22611 | 451 | 52.00 | | 21.00 | 5.00 | 4.00 | 7.00 | | | | | |
| M4.5 x 0.75 | | | - | - | 482 | - | - | 55.00 | | 16.00 | | | | 24.00 | | | | |
| M5 x 0.8 | | | 513 | 22618 | 512 | 22617 | 511 | 60.00 | | | 29.00 | 6.00 | | 4.50 | | | | |
| M6 x 1.0 | | | 583 | 22622 | 582 | 22621 | 581 | 62.00 | 19.00 | 29.00 | 6.00 | | | | | | | |
| M6 x 0.75 | | | 593 | - | 592 | - | 591 | | | | | 70.00 | 33.00 | 6.20 | 5.00 | 8.00 | | |
| M7 x 1.0 | | | - | - | 612 | - | - | 65.00 | 22.00 | 37.00 | | | | | | | | |
| M8 x 1.25 | | | 643 | 22628 | 642 | 22627 | 641 | 70.00 | | | 20.00 | | 35.00 | | | | | |
| M8 x 1.0 | | | 653 | - | 652 | - | 651 | | 72.00 | 22.00 | | | | 38.00 | | | | |
| M8 x 0.75 | | | - | - | 662 | - | - | 75.00 | | | 24.00 | | 41.00 | | | | | |
| M9 x 1.25 | | | - | - | 692 | - | - | | 75.00 | 24.00 | | | | 41.00 | 7.00 | 5.50 | | |
| M10 x 1.5 | | | 733 | 22634 | 732 | 22633 | 731 | | | | | | | | | | | |
| M10 x 1.25 | | 743 | 22638 | 742 | 22637 | 741 | | | | | | | | | | | | |
| M10 x 1.0 | | 753 | - | 752 | - | 751 | | | | | | | | | | | | |
| M11 x 1.5 | | - | - | 792 | - | - | 80.00 | 25.00 | 8.00 | 6.00 | 9.00 | | | | | | | |
| M12 x 1.75 | | 853 | 22644 | 852 | 22643 | 851 | | | | | | | | | | | | |
| M12 x 1.5 | | - | - | 862 | - | - | 82.00 | 29.00 | 48.00 | 8.50 | | | 6.50 | | | | | |
| M12 x 1.25 | | 873 | - | 872 | - | 871 | | | | | | | | | | | | |
| M12 x 1.0 | JIS 2 | 883 | - | 882 | - | 881 | 88.00 | 30.00 | 10.50 | 8.00 | 11.00 | | | | | | | |
| M14 x 2.0 | | | 983 | - | 982 | - | | | | | | | 981 | | | | | |
| M14 x 1.5 | | | 993 | - | 992 | - | | | | | | | 991 | | | | | |
| M14 x 1.25 | | | 1003 | - | 1002 | - | | | | | | 1001 | | | | | | |
| M16 x 2.0 | | | 1113 | - | 1112 | - | | | | | | 1111 | | | | | | |
| M16 x 1.5 | | | 1123 | - | 1122 | - | | | | | | 1121 | 95.00 | 32.00 | 52.00 | 12.50 | 10.00 | 13.00 |
| M16 x 1.0 | | | - | - | 1142 | - | | | | | | - | | | | | | |
| M18 x 2.5 | | | 1253 | - | 1252 | - | | | | | | 1251 | 100.00 | 37.00 | 55.00 | 14.00 | 11.00 | 14.00 |
| M18 x 2.0 | | - | - | 1262 | - | - | | | | | | | | | | | | |
| M18 x 1.5 | | 1273 | - | 1272 | - | 1271 | 105.00 | 38.00 | 63.00 | 17.00 | 13.00 | 16.00 | | | | | | |
| M20 x 2.5 | | 1393 | - | 1392 | - | 1391 | | | | | | | | | | | | |
| M20 x 1.5 | | 1413 | - | 1412 | - | 1411 | 115.00 | 38.00 | 63.00 | 17.00 | 13.00 | 16.00 | | | | | | |
| M22 x 2.5 | | 1503 | - | 1502 | - | 1501 | | | | | | | | | | | | |
| M22 x 1.5 | | 1523 | - | 1522 | - | - | 120.00 | 45.00 | 66.00 | 19.00 | 15.00 | 18.00 | | | | | | |
| M24 x 3.0 | | 1603 | - | 1602 | - | 1601 | | | | | | | | | | | | |
| M24 x 1.5 | | - | - | 1632 | - | - | 130.00 | 45.00 | 71.00 | 20.00 | 17.00 | 20.00 | | | | | | |
| M26 x 3.0 | | 1713 | - | 1712 | - | 1711 | | | | | | | | | | | | |
| M26 x 1.5 | | 1733 | - | 1732 | - | 1731 | | | | | | | | | | | | |
| M28 x 1.5 | | 1823 | - | 1822 | - | 1821 | | | | | | | | | | | | |
| M30 x 3.5 | | 1843 | - | 1842 | - | 1841 | 135.00 | 51.00 | 74.00 | 23.00 | 17.00 | 20.00 | | | | | | |
| M30 x 1.5 | | 1873 | - | 1872 | - | 1871 | 130.00 | 45.00 | 60.00 | | | | | | | | | |
| M32 x 1.5 | | 1933 | - | 1932 | - | 1931 | 105.00 | 37.00 | 47.00 | 24.00 | 19.00 | 22.00 | | | | | | |
| M33 x 1.5 | | 1983 | - | 1982 | - | 1981 | 110.00 | | | | | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.





List 121 (Continued)

| | | |
|-----|---|-----------------------------|
| HSS | <input checked="" type="checkbox"/> S/O | <input type="checkbox"/> BR |
|-----|---|-----------------------------|

JIS, Taper (5P and up), Plug (4.5P-5.5P), Bottom (1.5P-2P)

Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|-----------|--------------|---------------|--------------------|-----|--------------------|-----|-------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P - 2P) | | Plug (4.5P - 5.5P) | | Taper (5P and up) | | | | | | |
| | | | Bright | S/O | Bright | S/O | Bright | | | | | | |
| M34 x 1.5 | JIS 2 | 4 | 2033 | - | 2032 | - | 2031 | 110.00 | 37.00 | 47.00 | 26.00 | 21.00 | 24.00 |
| M36 x 1.5 | | | 2143 | - | 2142 | - | 2141 | | | | 28.00 | | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|---------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 121 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | | |

good best





GENERAL PURPOSE LS

HSS S/O

List 916

Long Shank, Plug (3.5P-4.5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Long Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|--------------------|--------|---------------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (3.5P - 4.5P) | | | | | | | |
| | | | S/O | L | | | | | | |
| 1/4 - 20 UNC | H3 | 4 | 1290001 | 6.000 | 1.000 | 1.689 | 0.255 | 0.191 | 0.311 | |
| | | | 1290201 | 8.000 | | | | | | |
| 5/16 - 18 UNC | | | 1290401 | 6.000 | 1.126 | 1.756 | 0.318 | 0.238 | 0.374 | |
| | | | 1290601 | 8.000 | | | | | | |
| 3/8 - 16 UNC | | | 1290801 | 6.000 | 1.252 | 1.882 | 0.381 | 0.286 | 0.437 | |
| | | | 1291001 | 8.000 | | | | | | |
| | | | 1291201 | 10.000 | | | | | | |
| 7/16 - 14 UNC | | | 1291401 | 6.000 | 1.437 | 2.224 | 0.444 | 0.333 | 0.500 | |
| | | | 1291601 | 8.000 | | | | | | |
| | | | 1292001 | 6.000 | | | | | | |
| 1/2 - 13 UNC | | | 1292201 | 8.000 | 1.657 | 2.445 | 0.507 | 0.380 | 0.563 | |
| | | | 1292401 | 10.000 | | | | | | |
| | | | 1292601 | 12.000 | | | | | | |
| | | | 1292801 | 6.000 | | | | | | |
| 5/8 - 11 UNC | | | 1293001 | 8.000 | 1.811 | 2.598 | 0.633 | 0.475 | 0.689 | |
| | | | 1293201 | 10.000 | | | | | | |
| | | | 1293401 | 12.000 | | | | | | |
| | | | 1293601 | 10.000 | | | | | | |
| 3/4 - 10 UNC | | | 1293801 | 12.000 | 2.000 | 2.787 | 0.759 | 0.569 | 0.748 | |

Packed: 1 pc.
Available Steam Oxide finish only.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|-----------|---------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 916 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | | | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | | | | | | | | | |

good best





List S110

HSS

BR

Plug (3.5P-4.5P), Bottom (1.5P-2P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk | Basic O.D. | Basic P.D. |
|---------------|--------------|---------------|-----------------------|-----------------------|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|------------|------------|
| | | | Bottom (1.5P - 2P) | Plug (3.5P - 4.5P) | | | | | | | | |
| | | | Bright | Bright | | | | | | | | |
| 000 - 120 UNC | H1 | 2 | 1020000 | 1010000 | 1.571 | 0.201 | 0.260 | 0.141 | 0.110 | 0.189 | 0.034 | 0.0286 |
| | H2 | | 2054000 | 1929000 | | | | | | | | |
| 00 - 90 UNC | H1 | | 1040000 | 1030000 | 1.728 | 0.280 | 0.339 | | | | 0.047 | 0.0402 |
| | H2 | | 2055000 | 3370000 | | | | | | | | |
| 00 - 96 UNC | H1 | | 1070000 | 1060000 | 1.322000 | 3380000 | 0.0398 | | | | | |
| | H2 | | 1322000 | 3380000 | | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Suggested Hole Size Limits for Different Lengths of Engagement

| Tap Size | Basic O.D. | Basic P.D. | Depth of Thread Hole | | | | | |
|----------|------------|------------|----------------------|--------|-------------|--------|-----------|--------|
| | | | Up to 1/3D | | 1/3 to 1/2D | | 1/2 to 3D | |
| | | | Min. | Max. | Min. | Max. | Min. | Max. |
| 000-120 | 0.0340 | 0.0286 | 0.0260 | 0.0270 | 0.0270 | 0.0280 | 0.0275 | 0.0285 |
| 00-90 | 0.0470 | 0.0398 | 0.0373 | 0.0385 | 0.0380 | 0.0392 | 0.0388 | 0.0400 |
| 00-96 | 0.0470 | 0.0402 | 0.0379 | 0.0393 | 0.0388 | 0.0406 | 0.0397 | 0.0415 |

Work Material

| List No. | P | | | Alloy Steels 4140 4340 | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|----------|--------------------------|--------------------------|--------------------------|------------------------------|------------|------------------|-----|---------|--------------------------|--------------------------|---------|--------------|-------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| | 1010 1018 | 1035 1045 | 1065 | | | | | | | | | | | | | | |
| S110 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | |

good best





GENERAL PURPOSE

Designed for Plastic

List 114

HSS-Co **N**

Plug (3.5P-4.5P), Bottom (1.5P-2P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk |
|--------------|--------------|---------------|-----------------------|-----------------------|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|
| | | | Bottom (1.5P - 2P) | Plug (3.5P - 4.5P) | | | | | | |
| | | | Nitride | Nitride | | | | | | |
| 2 - 56 UNC | 2B+ | 3 | 3141903 | 3141803 | 1.752 | 0.437 | - | 0.141 | 0.110 | 0.189 |
| | H7 | | 3141303 | 3141203 | | | - | | | |
| 4 - 40 UNC | 2B+ | 4 | 3142903 | 3142803 | 1.874 | 0.295 | 0.559 | 0.168 | 0.131 | 0.252 |
| | H7 | | 3142303 | 3142203 | | | | | | |
| 6 - 32 UNC | 2B+ | | 3144903 | 3144803 | 2.000 | 0.370 | 0.685 | 0.194 | 0.152 | 0.311 |
| | H7 | | 3144303 | 3144203 | | | | | | |
| 8 - 32 UNC | 2B+ | | 3145903 | 3145803 | 2.126 | 0.374 | 0.752 | 0.194 | 0.152 | 0.311 |
| | H7 | | 3145303 | 3145203 | | | | | | |
| 10 - 24 UNC | 2B+ | | 3146903 | 3146803 | 2.374 | 0.492 | 0.866 | 0.194 | 0.152 | 0.311 |
| | H7 | | 3146303 | 3146203 | | | | | | |
| 10 - 32 UNF | 2B+ | | 3146503 | 3146403 | 2.500 | 0.594 | 0.996 | 0.255 | 0.191 | 0.311 |
| | H7 | | 3146703 | 3146603 | | | | | | |
| 1/4 - 20 UNC | 2B+ | 3147903 | 3147803 | 2.500 | 0.594 | 0.996 | 0.255 | 0.191 | 0.311 | |
| | H7 | 3147303 | 3147203 | | | | | | | |

Packed: 1 pc.
Available Nitride treatment only.



The H7 series are designed for tapping thermoplastic materials such as nylon and vinyl.

The 2B+ are designed for tapping thermosetting, reinforced plastics and laminated plastics such as epoxy, bakelite, fiberglass, etc. The 2B+ limit is based on the actual products limit and machining properties, taking the guess work out of H limit selection.

Oversize 2B+ Series = +.0005"~.001" over 2B thread limit.

| List No. | Work Material | | | | | | | | | | | Thermo Plastics | Thermosetting Plastics | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|----------|---------|-----------------|------------------------|--------------|----------|--|
| | P | | | | | M | | | K | N | | | | S | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | | | Nickel Alloy | Titanium | |
| | Low | Med. | High | | | | | | | | | | | | | |
| | 1010 | 1035 | 1065 | 4140 | | | | | | | | | | | | |
| | 1018 | 1045 | | 4340 | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V | | | |
| | | | | | | | | | | 7075 | | | (30 HRC) | | | |
| 114 | | | | | | | | | | | | | | | | |
| SFM | | | | | | | | | | | | | | | | |

good best



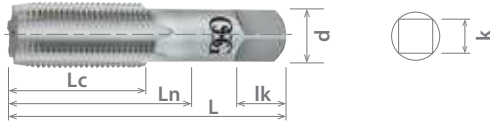


List 180

HSS

BR

Plug (3.5P-4.5P), Bottom (1.5P-2P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length Ik |
|-----------|--------------|---------------|-----------------------|-----------------------|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|
| | | | Bottom (1.5P - 2P) | Plug (3.5P - 4.5P) | | | | | | |
| | | | Bright | Bright | | | | | | |
| 1,1/8 - 8 | H5 | 4 | 1690200 | 1690100 | 5.437 | 1.874 | 2.941 | 0.896 | 0.672 | 0.874 |
| 1,1/4 - 8 | | | 1690500 | 1690400 | 5.752 | | 3.000 | 1.021 | 0.766 | 1.000 |
| 1,3/8 - 8 | | | 1690800 | 1690700 | 6.063 | | 3.161 | 1.108 | 0.831 | 1.063 |
| 1,1/2 - 8 | | | 1691100 | 1691000 | 6.374 | | 3.382 | 1.233 | 0.925 | 1.126 |
| 1,5/8 - 8 | 1691400 | 1691300 | 6.689 | 1.305 | 0.979 | | | | | |
| 1,3/4 - 8 | H6 | 6 | 1691700 | 1691600 | 7.000 | | 3.591 | 1.430 | 1.072 | 1.252 |
| 2 - 8 | | | 1692300 | 1692200 | 7.626 | | 3.811 | 1.644 | 1.233 | 1.374 |
| 2,1/4 - 8 | | | 8020000 | 8019000 | 8.252 | | 4.000 | 1.894 | 1.420 | 1.437 |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|---------|--------------|----------|-----------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 180 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | |

good best





GENERAL PURPOSE

Left Hand Taps

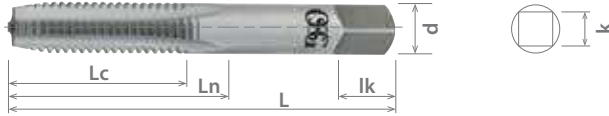
List 101L

HSS

BR

LH

Left Hand, Plug (3.5P-4.5P), Bottom (1.5P-2P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk | | |
|---------------|--------------|---------------|-----------------------|-----------------------|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|-------|-------|
| | | | Bottom (1.5P - 2P) | Plug (3.5P - 4.5P) | | | | | | | | |
| | | | Bright | Bright | | | | | | | | |
| 6 - 32 UNC | H3 | 3 | 1650200 | 1650100 | 2.000 | 0.523 | 0.858 | 0.140 | 0.109 | 0.188 | | |
| 6 - 40 UNF | H2 | | 1650400 | 1650300 | | | | | | | | |
| 8 - 32 UNC | H3 | | 1650600 | 1650500 | | | | | | | | |
| 8 - 36 UNF | H2 | 4 | 1650800 | 1650700 | 2.126 | 0.539 | 1.003 | 0.167 | 0.131 | 0.251 | | |
| 10 - 24 UNC | H3 | | 1651000 | 1650900 | | | | | | | | |
| 10 - 32 UNF | | | 1651200 | 1651100 | | | | | | | | |
| 1/4 - 20 UNC | | | 1660200 | 1660100 | 2.500 | 0.854 | 1.287 | 0.255 | 0.190 | 0.311 | | |
| 1/4 - 28 UNF | | | 1660400 | 1660300 | | | | | | | | |
| 5/16 - 18 UNC | | | 1660600 | 1660500 | 2.720 | 0.834 | 1.322 | 0.317 | 0.238 | 0.374 | | |
| 5/16 - 24 UNF | | | 1660800 | 1660700 | | | | | | | | |
| 3/8 - 16 UNC | | | H3 | 1661000 | 1660900 | 2.937 | 0.937 | 1.413 | 0.380 | 0.285 | 0.437 | |
| 3/8 - 24 UNF | | | | 1661200 | 1661100 | | | | | | | |
| 7/16 - 14 UNC | | | | 1661400 | 1661300 | 3.157 | 1.070 | 1.688 | 0.322 | 0.242 | 0.405 | |
| 7/16 - 20 UNF | | | | 1661600 | 1661500 | | | | | | | |
| 1/2 - 13 UNC | | | | 1661800 | 1661700 | 3.374 | 1.153 | 1.811 | 0.367 | 0.274 | 0.437 | |
| 1/2 - 20 UNF | | | | 1662000 | 1661900 | | | | | | | |
| 9/16 - 12 UNC | | | | H4 | 1662200 | 1662100 | 3.594 | 1.251 | 1.940 | 0.429 | 0.322 | 0.500 |
| 9/16 - 18 UNF | | | | | 1662400 | 1662300 | | | | | | |
| 5/8 - 11 UNC | | | 1662600 | | 1662500 | 3.811 | 1.362 | 2.000 | 0.480 | 0.359 | 0.562 | |
| 5/8 - 18 UNF | | 1662800 | 1662700 | | | | | | | | | |
| 3/4 - 10 UNC | 1663400 | 1663300 | 4.252 | | 1.500 | 2.220 | 0.590 | 0.442 | 0.688 | | | |
| 3/4 - 16 UNF | 1663600 | 1663500 | | | | | | | | | | |
| 7/8 - 9 UNC | H4 | 1663800 | 1663700 | | 4.689 | 1.665 | 2.500 | 0.697 | 0.522 | 0.751 | | |
| 7/8 - 14 UNF | | 1664000 | 1663900 | | | | | | | | | |
| 1 - 8 UNC | | 1664200 | 1664100 | 5.126 | 1.874 | 2.720 | 0.800 | 0.600 | 0.811 | | | |
| 1 - 12 UNF | | 1664400 | 1664300 | | | | | | | | | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|---------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 101L | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | | |

good best

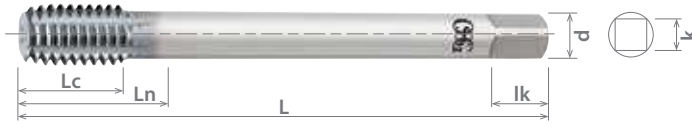




List 16260

| | | |
|--------|---|-----|
| HSS-Co | V | STI |
|--------|---|-----|

HL-S-XPF, DIN Overall Length, Modified Bottom (2.5P)



Units: Inch

| Tap Size | Lead | Thread Limit | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | | | | |
|---------------|------|--------------|------------------------|--------------------|---------------|-------------|------------|--------------|---------------|----------------|--------|--------------|--------|-----|----|-----|
| | | | Modified Bottom (2.5P) | | | | | | | L | Lc | Ln | Min | Max | 2B | 3B |
| | | | V | | | | | | | L | Lc | Ln | d | k | lk | Min |
| 2 - 56 UNC | 2.5P | H1 | 1626000108 | 2.274 | 0.261 | 0.718 | 0.140 | 0.109 | 0.188 | 0.0994 | 0.1013 | H2 | H1 | | | |
| | | H2 | 1626000208 | | | | | | | 0.1309 | 0.1333 | H3 | H2 | | | |
| 4 - 40 UNC | 2.5P | H3 | 1626000308 | 2.554 | 0.365 | 0.841 | 0.140 | 0.109 | 0.188 | 0.1309 | 0.1333 | | | H3 | H2 | |
| | | H2 | 1626000408 | | | | | | | 0.362 | 0.800 | 0.1281 | 0.1299 | | | |
| 4 - 48 UNF | 2.5P | H2 | 1626000508 | 2.274 | 0.362 | 0.800 | 0.140 | 0.109 | 0.188 | 0.1281 | 0.1299 | H3 | H2 | | | |
| | | H3 | 1626000608 | | | | | | | 0.1613 | 0.1637 | | | | | |
| 6 - 32 UNC | 2.5P | H2 | 1626000708 | 2.858 | 0.456 | 1.003 | 0.194 | 0.151 | 0.251 | 0.1613 | 0.1637 | H3 | H2 | | | |
| | | H3 | 1626000808 | | | | | | | 0.1569 | 0.1590 | | | | | |
| 6 - 40 UNF | 2.5P | H2 | 1626000908 | 2.839 | 0.449 | 0.996 | 0.167 | 0.131 | 0.251 | 0.1569 | 0.1590 | H3 | H2 | | | |
| | | H3 | 1626001008 | | | | | | | 0.1873 | 0.1895 | | | | | |
| 8 - 32 UNC | 2.5P | H2 | 1626001108 | 3.257 | 0.452 | 1.196 | 0.220 | 0.164 | 0.279 | 0.1873 | 0.1895 | H3 | H2 | | | |
| | | H3 | 1626001208 | | | | | | | 0.1849 | 0.1870 | | | | | |
| 8 - 36 UNF | 2.5P | H2 | 1626001308 | 3.257 | 0.452 | 1.196 | 0.220 | 0.164 | 0.279 | 0.1849 | 0.1870 | H3 | H2 | | | |
| | | H3 | 1626001408 | | | | | | | 0.2210 | 0.2238 | | | | | |
| 10 - 24 UNC | 2.5P | H4 | 1626001508 | 3.246 | 0.605 | 1.203 | 0.255 | 0.190 | 0.287 | 0.2210 | 0.2238 | H4 | H3 | | | |
| H3 | | 1626001608 | 0.2138 | | | | | | | 0.2160 | | | | | | |
| 10 - 32 UNF | 2.5P | H3 | 1626001708 | 3.246 | 0.600 | 1.199 | 0.255 | 0.190 | 0.287 | 0.2138 | 0.2160 | H4 | H3 | | | |
| H4 | | 1626001808 | 0.2868 | | | | | | | 0.2899 | | | | | | |
| 1/4 - 20 UNC | 2.5P | H3 | 1626001908 | 3.543 | 0.500 | 1.377 | 0.317 | 0.238 | 0.374 | 0.2868 | 0.2899 | H4 | H3 | | | |
| H4 | | 1626002008 | 0.2769 | | | | | | | 0.2789 | | | | | | |
| 1/4 - 28 UNF | 2.5P | H3 | 1626002108 | 3.543 | 0.500 | 1.377 | 0.317 | 0.238 | 0.374 | 0.2769 | 0.2789 | H4 | H3 | | | |
| H4 | | 1626002208 | 0.3537 | | | | | | | 0.3568 | | | | | | |
| 5/16 - 18 UNC | 2.5P | H5 | 1626002308 | 3.937 | 0.555 | 1.535 | 0.380 | 0.285 | 0.437 | 0.3537 | 0.3568 | H5 | H4 | | | |
| H4 | | 1626002408 | 0.3440 | | | | | | | 0.3462 | | | | | | |
| 5/16 - 24 UNF | 2.5P | H4 | 1626002508 | 3.543 | 0.555 | 1.377 | 0.380 | 0.285 | 0.437 | 0.3440 | 0.3462 | H5 | H4 | | | |
| H5 | | 1626002608 | 0.4215 | | | | | | | 0.4248 | | | | | | |
| 3/8 - 16 UNC | 2.5P | H6 | 1626002708 | 3.937 | 0.625 | 1.933 | 0.367 | 0.274 | 0.437 | 0.4215 | 0.4248 | H6 | H5 | | | |
| H5 | | 1626002808 | 0.4070 | | | | | | | 0.4091 | | | | | | |
| 3/8 - 24 UNF | 2.5P | H5 | 1626002908 | 3.543 | 0.625 | 1.712 | 0.322 | 0.242 | 0.405 | 0.4070 | 0.4091 | H6 | H5 | | | |
| H6 | | 1626003008 | 0.4907 | | | | | | | 0.4938 | | | | | | |
| 7/16 - 14 UNC | 2.5P | H5 | 1626003108 | 4.331 | 0.712 | 1.972 | 0.429 | 0.322 | 0.500 | 0.4907 | 0.4938 | H7 | H5 | | | |
| H7 | | 1626003208 | 0.4758 | | | | | | | 0.4777 | | | | | | |
| 7/16 - 20 UNF | 2.5P | H5 | 1626003308 | 3.937 | 0.712 | 1.933 | 0.367 | 0.274 | 0.437 | 0.4758 | 0.4777 | H7 | H5 | | | |
| H7 | | 1626003408 | 0.5570 | | | | | | | 0.5600 | | | | | | |
| 1/2 - 13 UNC | 2.5P | H5 | 1626003508 | 4.331 | 0.767 | 2.125 | 0.480 | 0.359 | 0.562 | 0.5570 | 0.5600 | H7 | H5 | | | |
| H7 | | 1626003608 | | | | | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|---------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 16260 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| SFM | 50-115 | 50-115 | 50-85 | 50-85 | 20-65 | 15-40 | 15-35 | 10-30 | | 65-115 | 65-90 | 8-12 | 8-15 | 50-100 | 12-25 | | |

*For Stainless Steel, please use non-water-soluble coolant.

good best





List 16260 (Continued)

HL-S-XPF, DIN Overall Length, Modified Bottom (2.5P)



Units: Inch

| Tap Size | Lead | Thread Limit | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | | Class of Fit | | | | | | | |
|---------------|------|--------------|------------------------|--------------------|---------------|-------------|------------|--------------|---------------|----------------|--------|--------------|----|---|----|-----|-----|----|----|
| | | | Modified Bottom (2.5P) | | | | | | | L | Lc | Ln | d | k | lk | Min | Max | 2B | 3B |
| | | | V | | | | | | | | | | | | | | | | |
| 1/2 - 20 UNF | 2.5P | H5 | 1626003708 | 3.937 | 0.767 | 1.972 | 0.429 | 0.322 | 0.500 | 0.5383 | 0.5402 | H7 | H5 | | | | | | |
| | | H7 | 1626003808 | | | | | | | | | | | | | | | | |
| 9/16 - 12 UNC | 2.5P | H9 | 1626003908 | 4.331 | 0.834 | 2.165 | 0.542 | 0.405 | 0.625 | 0.6251 | 0.6282 | H9 | H7 | | | | | | |
| | | H7 | 1626004008 | | | | | | | | | | | | | | | | |
| 9/16 - 18 UNF | 2.5P | H7 | 1626004108 | 3.937 | 0.909 | 2.125 | 0.480 | 0.359 | 0.562 | 0.6057 | 0.6077 | H9 | H7 | | | | | | |
| | | H9 | 1626004208 | | | | | | | | | | | | | | | | |
| 5/8 - 11 UNC | 2.5P | H7 | 1626004308 | 4.921 | 1.000 | 2.433 | 0.590 | 0.442 | 0.688 | 0.6928 | 0.6961 | H10 | H8 | | | | | | |
| | | H9 | 1626004408 | | | | | | | | | | | | | | | | |
| 5/8 - 18 UNF | 2.5P | H7 | 1626004508 | 4.331 | 1.110 | 2.165 | 0.542 | 0.405 | 0.625 | 0.6682 | 0.6702 | H11 | H8 | | | | | | |
| | | H9 | 1626004608 | | | | | | | | | | | | | | | | |
| 3/4 - 10 UNC | 2.5P | H7 | 1626004708 | 5.512 | 1.251 | 2.653 | 0.697 | 0.522 | 0.751 | 0.8241 | 0.8276 | H11 | H8 | | | | | | |
| | | H9 | 1626004808 | | | | | | | | | | | | | | | | |
| 3/4 - 16 UNF | 2.5P | H7 | 1626004908 | 4.921 | 1.110 | 2.433 | 0.652 | 0.488 | 0.688 | 0.7980 | 0.8002 | H11 | H8 | | | | | | |
| | | H9 | 1626005008 | | | | | | | | | | | | | | | | |
| 7/8 - 9 UNC | 2.5P | H7 | 1626005108 | 6.299 | 3.114 | 0.800 | 0.600 | 0.811 | 0.9573 | 0.9606 | 0.9297 | H11 | H8 | | | | | | |
| | | H10 | 1626005208 | | | | | | | | | | | | | | | | |
| 7/8 - 14 UNF | 2.5P | H7 | 1626005308 | 5.512 | 1.251 | 3.114 | 1.020 | 0.766 | 1.000 | 1.0925 | 1.0966 | H11 | H8 | | | | | | |
| | | H10 | 1626005408 | | | | | | | | | | | | | | | | |
| 1 - 8 UNC | 2.5P | H8 | 1626005508 | 7.087 | 1.251 | 3.114 | 0.895 | 0.672 | 0.874 | 1.0636 | 1.0658 | H11 | H8 | | | | | | |
| | | H11 | 1626005608 | | | | | | | | | | | | | | | | |
| 1 - 12 UNF | 2.5P | H8 | 1626005708 | 5.512 | 1.251 | 3.114 | 0.895 | 0.672 | 0.874 | 1.0636 | 1.0658 | H11 | H8 | | | | | | |
| | | H11 | 1626005808 | | | | | | | | | | | | | | | | |

Packed: 1 pc.
Available V coating only.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|---|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|----------------|---------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 16260 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |
| SFM | 50-115 | 50-115 | 50-85 | 50-85 | 20-65 | 15-40 | 15-35 | 10-30 | | 65-115 | 65-90 | 8-12 | 8-15 | 50-100 | 12-25 | | | |

*For Stainless Steel, please use non-water-soluble coolant.

good best

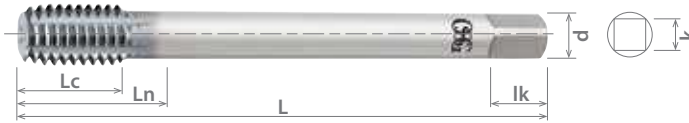




List 16360

| | | |
|--------|---|-----|
| HSS-Co | V | STI |
|--------|---|-----|

HL-S-XPF, DIN Overall Length, Modified Bottom (2.5P)



Units: mm

| Tap Size | Lead | Thread Limit | EDP Number | DIN Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Tap Drill Size | |
|-------------|------|--------------|------------------------|--------------------|---------------|-------------|------------|--------------|---------------|----------------|-------|
| | | | Modified Bottom (2.5P) | L | Lc | Ln | d | k | lk | Min | Max |
| | | | V | L | Lc | Ln | d | k | lk | Min | Max |
| M2 x 0.4 | 2.5P | D3 | 1636000108 | 50.00 | 8.00 | 9.21 | 3.58 | 2.79 | 4.80 | 2.32 | 2.35 |
| M2.5 x 0.45 | | | 1636000208 | 56.00 | 6.00 | 18.26 | | | | 2.85 | 2.89 |
| M3 x 0.5 | | | 1636000308 | 63.00 | 7.00 | 21.32 | | | | 3.39 | 3.43 |
| M4 x 0.7 | | D4 | 1636000408 | 70.00 | 10.00 | 25.37 | 4.92 | 3.86 | 6.40 | 4.54 | 4.59 |
| M5 x 0.8 | | | 1636000508 | 80.00 | 11.00 | 30.46 | 6.47 | 4.85 | 7.30 | 5.61 | 5.67 |
| M6 x 1.0 | | D5 | 1636000608 | 90.00 | 10.00 | 35.00 | 8.07 | 6.05 | 9.50 | 6.76 | 6.83 |
| M8 x 1.25 | | | 1636000708 | 100.00 | 12.00 | 39.00 | 9.67 | 7.26 | 11.10 | 8.95 | 9.03 |
| M10 x 1.5 | | | 1636000808 | | 15.00 | 49.10 | 9.32 | 6.98 | | 11.15 | 11.23 |
| M12 x 1.75 | | D9 | 1636000908 | 110.00 | 17.00 | 50.10 | 10.89 | 8.18 | 12.70 | 13.33 | 13.43 |
| M14 x 2.0 | | | 1636001008 | | | | | | | 20.00 | 55.00 |
| M16 x 2.0 | | D10 | 1636001108 | 125.00 | 25.00 | 61.80 | 14.98 | 11.23 | 17.50 | | 17.52 |
| M18 x 2.5 | | | 1636001208 | 140.00 | | 67.40 | 17.70 | 13.28 | 19.10 | 19.87 | 20.00 |
| M20 x 2.5 | | | 1636001308 | 160.00 | | 68.40 | 19.30 | 14.48 | | 21.87 | 22.00 |
| M22 x 2.5 | | | 1636001408 | | | 76.50 | 20.32 | 15.24 | 20.60 | 23.87 | 24.00 |
| M24 x 3.0 | | D11 | 1636001508 | | 30.00 | 79.10 | 22.75 | 17.07 | 22.20 | 26.23 | 26.38 |

Packed: 1 pc.
Available V coating only.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|---|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|----------------|---------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 16360 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |
| SFM | 50-115 | 50-115 | 50-85 | 50-85 | 20-65 | 15-40 | 15-35 | 10-30 | | 65-115 | 65-90 | 8-12 | 8-15 | 50-100 | 12-25 | | | |

*For Stainless Steel, please use non-water-soluble coolant.

good best





List 315Ti



V-HL-Ti-SFT, Spiral Fluted, Modified Bottom (2.5P-3P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|---------------------------|-------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P-3P) | | | | | | | |
| | | | V | L | Lc | Ln | d | k | lk | |
| 2 - 56 UNC | H2 | 3 | 31540108 | 1.944 | 0.574 | 0.614 | 0.140 | 0.109 | 0.188 | |
| 4 - 40 UNC | | | 31540208 | 2.058 | 0.688 | - | | | | |
| 6 - 32 UNC | H3 | | 31540308 | 2.451 | 0.870 | 1.066 | 0.194 | 0.151 | 0.251 | |
| 8 - 32 UNC | | | 31540408 | 2.464 | 0.937 | - | 0.220 | 0.164 | 0.279 | |
| 10 - 32 UNF | | | 31540508 | 2.500 | 1.000 | 1.196 | 0.255 | 0.190 | 0.287 | |
| 1/4 - 28 UNF | | | 31540608 | 2.720 | 0.500 | 1.125 | 0.317 | 0.238 | 0.374 | |
| 5/16 - 24 UNF | | | 31540708 | 2.937 | 0.555 | 1.251 | 0.380 | 0.285 | 0.437 | |
| 3/8 - 24 UNF | | | 31540808 | 3.157 | 0.625 | 1.712 | 0.322 | 0.242 | 0.405 | |
| 7/16 - 20 UNF | H4 | | 31540908 | 3.374 | 0.712 | 1.933 | 0.367 | 0.274 | 0.437 | |
| 1/2 - 20 UNF | | | 31541008 | 3.594 | 0.767 | 1.972 | 0.429 | 0.322 | 0.500 | |

Packed: 1 pc.
Available V coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------------------|------------|------------------|------|--------------------------|-----------|-----------|---------|-------------------------------------|--------------------------|--------------------------|-----------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 315Ti | | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| SFM | | | | 15-30 | | | 8-20 | | | | 8-15 | 8-15 | 15-35 | 10-20 | | | |

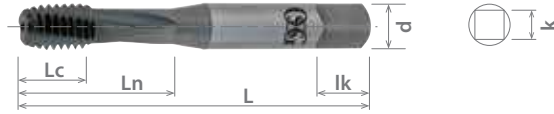
good best





List 315Ni

V-HL-Ni-SFT, Spiral Fluted, Modified Bottom (2.5P-3P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|---------------------------|-------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P-3P) | V | | | | | | |
| | | | L | Lc | Ln | Lk | d | k | lk | |
| 2 - 56 UNC | H2 | 3 | 31520108 | 1.880 | 0.559 | 0.598 | 0.140 | 0.109 | 0.188 | |
| 4 - 40 UNC | | | 31520208 | 2.058 | 0.688 | - | | | | |
| 6 - 32 UNC | H3 | | 31520308 | 2.380 | 0.870 | 1.067 | 0.194 | 0.151 | 0.251 | |
| 8 - 32 UNC | | | 31520408 | | 0.937 | - | 0.220 | 0.164 | 0.279 | |
| 10 - 32 UNF | | | 31520508 | 2.500 | 1.000 | 1.197 | 0.255 | 0.190 | 0.311 | |
| 1/4 - 28 UNF | | | 31520608 | 2.720 | 0.500 | 1.125 | 0.317 | 0.238 | 0.374 | |
| 5/16 - 24 UNF | | | 31520708 | 2.937 | 0.555 | 1.251 | 0.380 | 0.285 | 0.437 | |
| 3/8 - 24 UNF | | | 31520808 | 3.157 | 0.625 | 1.712 | 0.322 | 0.242 | 0.405 | |
| 7/16 - 20 UNF | H4 | | 31520908 | 3.374 | 0.712 | 1.933 | 0.367 | 0.274 | 0.437 | |
| 1/2 - 20 UNF | | | 31521008 | 3.594 | 0.767 | 1.972 | 0.429 | 0.322 | 0.500 | |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|-----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 315Ni | 1010 | 1035 | 1065 | 4140 | 4340 | | | | | | | | | | | | | |
| SFM | 1018 | 1045 | | | | | | 8-20 | | | | | | | | | | |

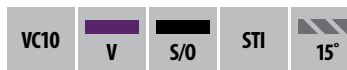
good best





List 315

V-HL-SFT, Spiral Fluted, Modified Bottom (2.5P-3P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Modified Bottom (2.5P - 3P) | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk |
|---------------|--------------|---------------|-----------------------------|----------------|----|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|
| | | | EDP Number | Coating Suffix | | | | | | | |
| | | | | S/O | V | | | | | | |
| 2 - 56 UNC | H2 | 2 | 17157 | 01 | 08 | 1.933 | 0.177 | 0.562 | 0.140 | 0.109 | 0.188 |
| 3 - 48 UNC | | | 315001 | 01 | 08 | 1.996 | 0.208 | 0.625 | | | |
| 4 - 40 UNC | | | 17158 | 01 | 08 | 2.059 | 0.251 | 0.688 | | | |
| 4 - 48 UNF | | | 315002 | 01 | 08 | 2.075 | 0.267 | 0.704 | | | |
| 6 - 32 UNC | H3 | 2 | 17159 | 01 | 08 | 2.457 | 0.311 | 0.874 | 0.194 | 0.151 | 0.251 |
| 6 - 40 UNF | | | 315003 | 01 | 08 | | | | | | |
| 8 - 32 UNC | H3 | 2 | 17161 | 01 | 08 | 2.465 | 0.311 | 0.937 | 0.220 | 0.164 | 0.279 |
| 8 - 36 UNF | | | 315004 | 01 | 08 | | | | | | |
| 10 - 24 UNC | H3 | 2 | 315005 | 01 | 08 | 2.524 | 0.440 | 1.023 | 0.255 | 0.190 | 0.287 |
| 10 - 32 UNF | | | 315006 | 01 | 08 | | | | | | |
| 1/4 - 20 UNC | H3 | 2 | 315007 | 01 | 08 | 2.720 | 0.500 | 1.125 | 0.317 | 0.238 | 0.374 |
| 1/4 - 28 UNF | | | 315008 | 01 | 08 | | | | | | |
| 5/16 - 18 UNC | H4 | 3 | 315009 | 01 | 08 | 2.937 | 0.555 | 1.251 | 0.380 | 0.285 | 0.437 |
| 5/16 - 24 UNF | | | 315010 | 01 | 08 | | | | | | |
| 3/8 - 16 UNC | H4 | 3 | 315012 | 01 | 08 | 3.374 | 0.625 | 1.933 | 0.367 | 0.274 | 0.405 |
| 3/8 - 24 UNF | | | 315013 | 01 | 08 | | | | | | |
| 7/16 - 14 UNC | H4 | 3 | 315016 | 01 | 08 | 3.594 | 0.712 | 1.972 | 0.429 | 0.322 | 0.500 |
| 7/16 - 20 UNF | | | 315017 | 01 | 08 | | | | | | |
| 1/2 - 13 UNC | H4 | 3 | 315020 | 01 | 08 | 3.811 | 0.767 | 2.125 | 0.480 | 0.359 | 0.562 |
| 1/2 - 20 UNF | | | 315021 | 01 | 08 | | | | | | |
| 9/16 - 12 UNC | H4 | 4 | 315024 | 01 | 08 | 4.031 | 0.834 | 2.165 | 0.542 | 0.405 | 0.625 |
| 9/16 - 18 UNF | | | 315025 | 01 | 08 | | | | | | |
| 5/8 - 11 UNC | H4 | 4 | 315028 | 01 | 08 | 4.252 | 0.909 | 2.433 | 0.590 | 0.442 | 0.688 |
| 5/8 - 18 UNF | | | 315029 | 01 | 08 | | | | | | |
| 3/4 - 10 UNC | H5 | 4 | 315032 | 01 | 08 | 4.689 | 1.000 | 2.653 | 0.697 | 0.522 | 0.751 |
| 3/4 - 16 UNF | | | 315033 | 01 | 08 | | | | | | |
| 7/8 - 9 UNC | H5 | 4 | 315036 | 01 | 08 | 5.126 | 1.110 | 3.011 | 0.800 | 0.600 | 0.811 |
| | | | 315037 | 01 | 08 | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.





List 315 (Continued)



| | | | | |
|------|---|-----|-----|-----|
| VC10 | V | S/O | STI | 15° |
|------|---|-----|-----|-----|

V-HL-SFT, Spiral Fluted, Modified Bottom (2.5P-3P)

Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Modified Bottom (2.5P - 3P) | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|--------------|--------------|---------------|-----------------------------|----------------|----|----------------|---------------|-------------|------------|--------------|---------------|
| | | | EDP Number | Coating Suffix | | | | | | | |
| | | | | S/O | V | L | Lc | Ln | d | k | lk |
| 7/8 - 14 UNF | H3 | 4 | 315038 | 01 | 08 | 5.126 | 1.110 | 3.011 | 0.800 | 0.600 | 0.811 |
| | H4 | | 315039 | 01 | 08 | | | | | | |
| 1 - 8 UNC | H4 | | 315040 | 01 | 08 | 5.572 | 1.251 | 3.114 | 1.020 | 0.766 | 1.000 |
| | H6 | | 315041 | 01 | 08 | | | | | | |
| 1 - 12 UNF | H4 | | 315042 | 01 | 08 | 5.437 | | | 0.895 | 0.672 | 0.874 |
| | H6 | | 315043 | 01 | 08 | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|---------------|------|------|-------------------------------------|--------------------------|------------------|-------|--------------------------|-----------|-----------|---------|--------------------------|-------------------------------------|--------------------------|-----------|-----------|-----------|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 315 | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | |
| SFM | | | | 15-30 | 10-25 | | 12-45 | 8-20 | | | | 8-15 | 8-15 | 15-35 | 10-20 | | | |

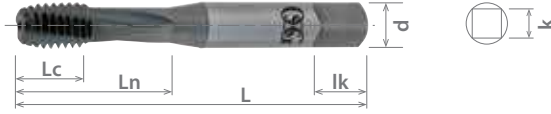
good best





List 345STI

Spiral Fluted, Modified Bottom (2.5P-3P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | Modified Bottom (2.5P - 3P) | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk | |
|-------------|--------------|---------------|-----------------------------|----------------|----|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|-------|
| | | | EDP Number | Coating Suffix | | | | | | | | |
| | | | | S/O | V | | | | | | | |
| M2 x 0.4 | D2 | 2 | 345001 | 01 | 08 | 47.80 | 12.00 | 13.90 | 3.58 | 2.79 | 4.80 | |
| M2.5 x 0.45 | | | 345002 | 01 | 08 | 49.30 | 4.00 | 15.90 | | | | |
| M3 x 0.5 | D3 | 3 | 345003 | 01 | 08 | 50.80 | 5.00 | 17.60 | 4.92 | 3.86 | 6.40 | |
| M4 x 0.7 | | | 345004 | 01 | 08 | 60.50 | 7.00 | 22.20 | | | | |
| M5 x 0.8 | | | 345005 | 01 | 08 | 63.50 | 8.00 | 25.50 | | | | |
| M6 x 1 | | | 345006 | 01 | 08 | 69.10 | 10.00 | 28.60 | | | | |
| M8 x 1.25 | D4 | 3 | 345007 | 01 | 08 | 74.70 | 12.00 | 31.80 | 9.67 | 7.26 | 11.10 | |
| M10 x 1.5 | | | 345008 | 01 | 08 | 85.90 | 15.00 | 49.10 | 9.32 | 6.98 | | |
| M12 x 1.75 | D5 | 4 | 345009 | 01 | 08 | 91.30 | 17.00 | 50.10 | 10.89 | 8.18 | 12.70 | |
| M14 x 2 | | | 345010 | 01 | 08 | 102.40 | 20.00 | 55.00 | 13.76 | 10.31 | 15.90 | |
| M16 x 2 | | | 345011 | 01 | 08 | 108.00 | | 61.80 | 14.98 | 11.23 | 17.50 | |
| M18 x 2.5 | | | 345012 | 01 | 08 | 119.10 | 25.00 | 67.40 | 17.70 | 13.28 | 19.10 | |
| M20 x 2.5 | | | 345013 | 01 | 08 | 124.60 | | 68.40 | 19.30 | 14.48 | | |
| M22 x 2.5 | | | 345014 | 01 | 08 | 130.20 | 76.50 | 20.32 | 15.24 | 20.60 | | |
| M24 x 3 | | | D6 | 345015 | 01 | 08 | 138.10 | 30.00 | 79.10 | 22.75 | 17.07 | 22.20 |

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|---------------|------|------|-------------------------------------|--------------------------|------------------|--------------------------|-------------------------------------|-----------|-----------|---------|--------------------------|-------------------------------------|--------------------------|-----------|-----------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 345STI | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |
| SFM | | | | 15-30 | 10-25 | | 12-45 | 8-20 | | | | 8-15 | 8-15 | 15-35 | 10-20 | | |

good best



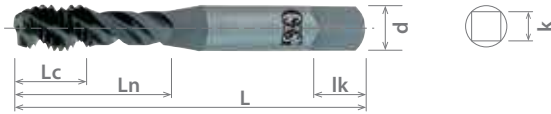


List 302

Spiral Fluted, Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



| | | | | |
|------|---|-----|-----|-----|
| HSSE | V | S/O | STI | 45° |
|------|---|-----|-----|-----|



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Bottom (1.5P - 2P) | | | Modified Bottom (2.5P - 3P) | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk |
|---------------|--------------|---------------|--------------------|----------------|----|-----------------------------|----------------|----|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|
| | | | EDP Number | Coating Suffix | | EDP Number | Coating Suffix | | | | | | | |
| | | | | S/O | V | | S/O | V | | | | | | |
| 2 - 56 UNC | H2 | 2 | 01447 | 01 | 08 | 17135 | 01 | - | 1.882 | 0.176 | 0.565 | 0.141 | 0.110 | 0.189 |
| 3 - 48 UNC | | | 302001 | 01 | 08 | - | - | - | 1.941 | 0.209 | 0.626 | | | |
| 4 - 40 UNC | | | 01448 | 01 | 08 | 17136 | 01 | - | 2.000 | 0.252 | 0.689 | | | |
| 4 - 48 UNF | | | 302002 | 01 | 08 | - | - | - | | | | | | |
| 6 - 32 UNC | H3 | 3 | 01449 | 01 | 08 | 17137 | 01 | - | 2.382 | 0.313 | 0.876 | 0.194 | 0.152 | 0.252 |
| 6 - 40 UNF | | | 01450 | 01 | 08 | 17138 | 01 | - | | | | | | |
| 8 - 32 UNC | H3 | 3 | 01451 | 01 | 08 | 302003 | 01 | 08 | 2.382 | 0.311 | 0.937 | 0.220 | 0.165 | 0.280 |
| 8 - 36 UNF | | | 01452 | 01 | 08 | 17139 | 01 | - | | | | | | |
| 10 - 24 UNC | H3 | 3 | 302005 | 01 | 08 | - | - | - | 2.500 | 0.418 | 1.000 | 0.255 | 0.191 | 0.311 |
| 10 - 32 UNF | | | 01455 | 01 | 08 | 302007 | 01 | 08 | | | | | | |
| 1/4 - 20 UNC | H2 | 3 | 01457 | 01 | 08 | 17141 | 01 | - | 2.720 | 0.500 | 1.126 | 0.318 | 0.238 | 0.374 |
| 1/4 - 28 UNF | | | 01458 | 01 | 08 | - | - | - | | | | | | |
| 5/16 - 18 UNC | H3 | 3 | 01461 | 01 | 08 | 302011 | 01 | 08 | 2.941 | 0.555 | 1.252 | 0.381 | 0.286 | 0.437 |
| 5/16 - 24 UNF | | | 01462 | 01 | 08 | 17143 | 01 | - | | | | | | |
| 3/8 - 16 UNC | H4 | 3 | 01464 | 01 | 08 | 302012 | 01 | 08 | 3.382 | 0.626 | 1.933 | 0.367 | 0.275 | 0.406 |
| 3/8 - 24 UNF | | | 01465 | 01 | 08 | 302013 | 01 | 08 | | | | | | |
| 7/16 - 14 UNC | H3 | 3 | 01467 | 01 | 08 | 302014 | 01 | 08 | 3.591 | 0.713 | 1.972 | 0.429 | 0.322 | 0.500 |
| 7/16 - 20 UNF | | | 01468 | 01 | 08 | 302015 | 01 | 08 | | | | | | |
| 1/2 - 13 UNC | H4 | 3 | 01470 | 01 | 08 | 302017 | 01 | 08 | 3.811 | 0.768 | 2.126 | 0.480 | 0.360 | 0.563 |
| 1/2 - 20 UNF | | | 01471 | 01 | 08 | 302018 | 01 | 08 | | | | | | |
| 9/16 - 12 UNC | H3 | 3 | 01473 | 01 | 08 | 302021 | 01 | 08 | 3.591 | 0.713 | 1.933 | 0.367 | 0.275 | 0.437 |
| | | | 01474 | 01 | 08 | 302022 | 01 | 08 | | | | | | |
| | H4 | 3 | 01476 | 01 | 08 | 302024 | 01 | 08 | 3.811 | 0.768 | 2.126 | 0.480 | 0.360 | 0.563 |
| | | | 01477 | 01 | 08 | 302025 | 01 | 08 | | | | | | |
| | H3 | 3 | 01479 | 01 | 08 | 302027 | 01 | 08 | 3.591 | 0.768 | 1.972 | 0.429 | 0.322 | 0.500 |
| | | | 302029 | 01 | 08 | 302028 | 01 | 08 | | | | | | |

Packed: 1 pc.

EDP's listed above are stocked standard.

Available in Steam Oxide or V coatings as shown above.

continued on next page



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|--------------------------|--------------------------|--------------|------------|-------------------------------------|-------------------------------------|--------------------------|----------------|----------|---------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 302 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | 20-45 | 20-45 | 8-20 | | | | | | | | | | |

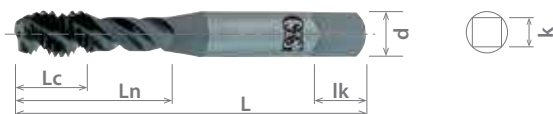
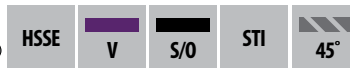
good best





List 302 (Continued)

Spiral Fluted, Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Bottom (1.5P - 2P) | | | Modified Bottom (2.5P - 3P) | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|--------------------|----------------|--------|-----------------------------|----------------|-------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | EDP Number | Coating Suffix | | EDP Number | Coating Suffix | | | | | | | |
| | | | | S/O | V | | S/O | V | | | | | | |
| 9/16 - 18 UNF | H3 | 4 | 01480 | 01 | 08 | 302033 | 01 | 08 | 3.810 | 0.835 | 2.126 | 0.480 | 0.360 | 0.563 |
| | H4 | | 302035 | 01 | 08 | 302034 | 01 | 08 | | | | | | |
| 5/8 - 11 UNC | H3 | | 302037 | 01 | 08 | 302036 | 01 | 08 | 4.252 | 0.909 | 2.433 | 0.590 | 0.442 | 0.689 |
| | H4 | | 302039 | 01 | 08 | 302038 | 01 | 08 | | | | | | |
| 5/8 - 18 UNF | H3 | | 01481 | 01 | 08 | 302041 | 01 | 08 | 4.031 | 1.000 | 2.165 | 0.542 | 0.406 | 0.626 |
| | H4 | | 302043 | 01 | 08 | 302042 | 01 | 08 | | | | | | |
| 3/4 - 10 UNC | H3 | | 302045 | 01 | 08 | 302044 | 01 | 08 | 4.689 | 1.110 | 2.654 | 0.697 | 0.523 | 0.752 |
| | H5 | | 302047 | 01 | 08 | 302046 | 01 | 08 | | | | | | |
| 3/4 - 16 UNF | H3 | | 302049 | 01 | 08 | 302048 | 01 | 08 | 4.467 | 3.012 | 0.800 | 0.600 | 0.811 | |
| | H4 | | 01482 | 01 | 08 | 302051 | 01 | 08 | | | | | | |
| 7/8 - 9 UNC | H3 | | 302053 | 01 | 08 | 302052 | 01 | 08 | 5.130 | 1.252 | 3.075 | 1.021 | 0.766 | 1.000 |
| | H5 | | 302055 | 01 | 08 | 302054 | 01 | 08 | | | | | | |
| 7/8 - 14 UNF | H3 | | 302057 | 01 | 08 | 302056 | 01 | 08 | 5.752 | 0.896 | 0.672 | 0.874 | | |
| | H4 | | 01483 | 01 | 08 | 302059 | 01 | 08 | | | | | | |
| 1 - 8 UNC | H3 | | 302063 | 01 | 08 | 302062 | 01 | 08 | 5.441 | 0.896 | 0.672 | 0.874 | | |
| | H6 | | 302065 | 01 | 08 | 302064 | 01 | 08 | | | | | | |
| 1 - 12 UNF | H4 | 302067 | 01 | 08 | 302066 | 01 | 08 | 5.441 | 0.896 | 0.672 | 0.874 | | | |
| | H6 | 302069 | 01 | 08 | 302068 | 01 | 08 | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|--------------------------|--------------------------|--------------|------------|-------------------------------------|-------------------------------------|--------------------------|-----------|----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 302 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | 20-45 | 20-45 | 8-20 | | | | | | | | | |

good best





List 343STI

Spiral Fluted, Modified Bottom (2.5P-3P)



| | | | | |
|------|---|-----|-----|-----|
| HSSE | V | S/O | STI | 45° |
|------|---|-----|-----|-----|



Units: mm

| Tap Size | Thread Limit | No. of Flutes | Modified Bottom (2.5P - 3P) | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|-------------|--------------|---------------|-----------------------------|----------------|----|----------------|---------------|-------------|------------|--------------|---------------|
| | | | EDP Number | Coating Suffix | | | | | | | |
| | | | | S/O | V | | | | | | |
| M2 x 0.4 | D2 | 2 | 343001 | 01 | 08 | 46.00 | 12.70 | 13.70 | 3.58 | 2.79 | 4.80 |
| M2.5 x 0.45 | | | 343002 | 01 | 08 | 49.30 | 4.60 | 16.00 | | | |
| M3 x 0.5 | D3 | 3 | 343003 | 01 | 08 | 50.80 | 5.20 | 17.70 | 4.92 | 3.86 | 6.40 |
| M4 x 0.7 | | | 343004 | 01 | 08 | 60.50 | 7.10 | 22.30 | | | |
| M5 x 0.8 | | | 343005 | 01 | 08 | 63.50 | 8.10 | 25.50 | | | |
| M6 x 1.0 | D4 | 3 | 343006 | 01 | 08 | 69.10 | 10.00 | 28.60 | 8.07 | 6.05 | 9.50 |
| M8 x 1.25 | | | 343007 | 01 | 08 | 74.70 | 12.50 | 31.80 | 9.67 | 7.26 | 11.10 |
| M10 x 1.5 | D5 | 4 | 343008 | 01 | 08 | 85.90 | 15.00 | 49.10 | 9.32 | 6.98 | 11.10 |
| M12 x 1.75 | | | 343009 | 01 | 08 | 91.20 | 17.50 | 50.10 | 10.89 | 8.18 | |
| M14 x 2.0 | D6 | 4 | 343010 | 01 | 08 | 102.40 | 20.00 | 55.00 | 13.76 | 10.31 | 15.90 |
| M16 x 2.0 | | | 343011 | 01 | 08 | 108.00 | | 61.80 | 14.98 | 11.23 | 17.50 |
| M18 x 2.5 | D5 | 4 | 343012 | 01 | 08 | 119.10 | 25.00 | 67.40 | 17.70 | 13.28 | 19.10 |
| M20 x 2.5 | | | 343013 | 01 | 08 | 124.60 | | 68.40 | 19.30 | 14.48 | |
| M22 x 2.5 | | | 343014 | 01 | 08 | 130.20 | | 76.50 | 20.32 | 15.24 | |
| M24 x 3.0 | D6 | 4 | 343015 | 01 | 08 | 138.10 | 30.00 | 79.10 | 22.75 | 17.07 | 22.20 |

Packed: 1 pc.

EDP's listed above are stocked standard.

Available in Steam Oxide or V coatings as shown above.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|--------------------------|--------------------------|--------------|------------|-------------------------------------|-------------------------------------|--------------------------|-----------|-----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 343STI | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | 20-45 | 20-45 | 8-20 | | | | | | | | | |

good best





List 13039



Spiral Fluted, Modified Bottom (2.5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Modified Bottom (2.5P - 3P) | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk |
|---------------|--------------|---------------|--------------------------------|----------------|-------|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|
| | | | EDP Number | Coating Suffix | | | | | | | |
| | | | | Bright | V | | | | | | |
| 2 - 56 UNC | H2 | 2 | 13039001 | 00 | 08 | 1.882 | 0.177 | 0.562 | 0.140 | 0.109 | 0.188 |
| 4 - 40 UNC | | | 13039002 | 00 | 08 | 2.000 | 0.251 | 0.688 | | | |
| 6 - 32 UNC | | | 13039003 | 00 | 08 | 2.382 | 0.311 | 0.874 | 0.194 | 0.151 | 0.251 |
| 8 - 32 UNC | | | 13039004 | 00 | 08 | | | 0.937 | 0.220 | 0.164 | 0.279 |
| 10 - 32 UNF | | | 13039005 | 00 | 08 | 2.500 | 0.417 | 1.000 | 0.255 | 0.190 | 0.311 |
| 1/4 - 20 UNC | H3 | | 13039006 | 00 | 08 | 2.720 | 0.500 | 1.125 | 0.317 | 0.238 | 0.374 |
| 1/4 - 28 UNF | | | 13039007 | 00 | 08 | | | | | | |
| 5/16 - 18 UNC | | | 13039008 | 00 | 08 | 2.941 | 0.555 | 1.251 | 0.380 | 0.285 | 0.437 |
| 5/16 - 24 UNF | | | 13039009 | 00 | 08 | | | | | | |
| 3/8 - 16 UNC | | | 13039010 | 00 | 08 | | | | | | |
| 3/8 - 24 UNF | 13039011 | 00 | 08 | 3.161 | 1.712 | 0.322 | 0.242 | 0.405 | | | |
| 7/16 - 20 UNF | H4 | 13039012 | 00 | 08 | 3.382 | 0.712 | 1.933 | 0.367 | 0.274 | 0.437 | |
| 1/2 - 20 UNF | | 13039013 | 00 | 08 | 3.591 | 0.767 | 1.972 | 0.429 | 0.322 | 0.500 | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|-----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|--|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 13039 | 1010 | 1035 | 1065 | 4140 | | | | | | | | | | | | | | | |
| SFM | 1018 | 1045 | 1065 | 4340 | | | | | | | | | | | | | | | |

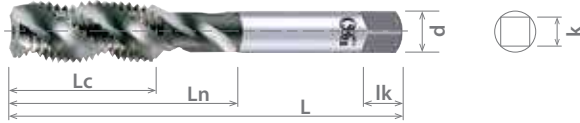
good best





List S108

Spiral Fluted, Bottom (1.5P-2P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | | | |
|---------------|--------------|---------------|--------------------|-------|-------|----------------|---------------|-------------|------------|--------------|---------------|-------|-------|-------|-------|
| | | | Bottom (1.5P - 2P) | | | | | | | | | | | | |
| | | | Bright | L | Lc | | | | | | | Ln | d | k | lk |
| 2 - 56 UNC | H2 | 2 | 8003000 | 1.882 | 0.188 | 0.574 | 0.140 | 0.109 | 0.188 | | | | | | |
| 3 - 48 UNC | | | 10800100 | 1.941 | 0.208 | 0.625 | | | | | | | | | |
| 4 - 40 UNC | | | 8003600 | 2.000 | 0.251 | 0.688 | | | | | | | | | |
| 4 - 48 UNF | | | 10800200 | | | | | | | | | | | | |
| 6 - 32 UNC | H3 | 2 | 8005400 | 2.382 | 0.314 | 0.885 | 0.194 | 0.151 | 0.251 | | | | | | |
| 6 - 40 UNF | H2 | | 8005700 | | | | | | | 10800300 | 2.130 | 0.755 | 0.167 | 0.131 | |
| 8 - 32 UNC | H3 | 2 | 8006900 | 2.382 | 0.311 | 0.940 | 0.220 | 0.164 | 0.279 | | | | | | |
| 8 - 36 UNF | H2 | | 8007200 | | | | | | | 10800400 | 0.937 | | | | |
| 10 - 24 UNC | H3 | | 8007800 | | | | | | | 2.500 | 0.417 | 1.000 | 0.255 | 0.190 | 0.311 |
| 10 - 32 UNF | H2 | 8008100 | | | | | | | | | | | | | |
| | H3 | 8008700 | | | | | | | | | | | | | |
| 1/4 - 20 UNC | H2 | 3 | 8009000 | 2.720 | 0.500 | 1.129 | 0.317 | 0.238 | 0.338 | | | | | | |
| 1/4 - 28 UNF | H3 | | 8010900 | | | | | | | | | | | | |
| | H2 | | 8011200 | | | | | | | | | | | | |
| 5/16 - 18 UNC | H3 | | 8011800 | | | | | | | 2.937 | 0.555 | 1.251 | 0.380 | 0.285 | 0.397 |
| | H4 | | 8012100 | | | | | | | | | | | | |
| 5/16 - 24 UNF | H2 | | 8013000 | | | | | | | 3.374 | 0.625 | 1.933 | 0.367 | 0.274 | 0.437 |
| 3/8 - 16 UNC | H3 | 8013300 | | | | | | | | | | | | | |
| | H4 | 8013600 | | | | | | | | | | | | | |
| 3/8 - 24 UNF | H2 | 8013700 | 3.157 | 0.712 | 1.712 | 0.322 | 0.242 | 0.405 | | | | | | | |
| | H3 | 8015400 | | | | | | | | | | | | | |
| 7/16 - 14 UNC | H4 | 4 | 8015700 | 3.594 | 0.834 | 2.125 | 0.542 | 0.405 | 0.625 | | | | | | |
| 7/16 - 20 UNF | H3 | | 8017000 | | | | | | | | | | | | |
| | H4 | | 10800500 | | | | | | | | | | | | |
| 1/2 - 13 UNC | H3 | 4 | 8017400 | 3.811 | 0.767 | 1.972 | 0.429 | 0.322 | 0.500 | | | | | | |
| | H4 | | 8017500 | | | | | | | | | | | | |
| 1/2 - 20 UNF | H3 | | 8018000 | 3.594 | 0.834 | 2.125 | 0.480 | 0.359 | 0.562 | | | | | | |
| | H4 | | 10800600 | | | | | | | | | | | | |
| 9/16 - 12 UNC | H3 | | 8018400 | 4.031 | 0.834 | 2.125 | 0.480 | 0.359 | 0.562 | | | | | | |
| | H4 | | 10800700 | | | | | | | | | | | | |
| 9/16 - 18 UNF | H3 | 10800800 | 3.811 | 0.834 | 2.125 | 0.480 | 0.359 | 0.562 | | | | | | | |
| | H4 | 10800900 | | | | | | | | | | | | | |
| | | | 10801000 | | | | | | | | | | | | |
| | | | 10801100 | | | | | | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

continued on next page

| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|--------------------------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| S108 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | | |

good best

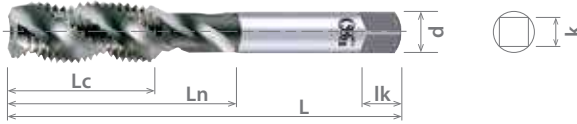




List S108 (Continued)

| | | | |
|-----|----|-----|-----|
| HSS | BR | STI | 50° |
|-----|----|-----|-----|

Spiral Fluted, Bottom (1.5P-2P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|--------------|--------------|---------------|--------------------|--------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P - 2P) | Bright | | | | | | |
| 5/8 - 11 UNC | H3 | 4 | 10801200 | 4.252 | L | Lc | Ln | d | k | lk |
| | H4 | | 10801300 | | | | | | | |
| 5/8 - 18 UNF | H3 | | 10801400 | 4.031 | L | Lc | Ln | d | k | lk |
| | H4 | | 10801500 | | | | | | | |
| 3/4 - 10 UNC | H3 | | 10801600 | 4.689 | L | Lc | Ln | d | k | lk |
| | H5 | | 10801700 | | | | | | | |
| 3/4 - 16 UNF | H3 | | 10801800 | 4.469 | L | Lc | Ln | d | k | lk |
| | H4 | | 10801900 | | | | | | | |
| 7/8 - 9 UNC | H3 | | 10802000 | 5.126 | L | Lc | Ln | d | k | lk |
| | H5 | | 10802100 | | | | | | | |
| 7/8 - 14 UNF | H3 | | 10802200 | 5.126 | L | Lc | Ln | d | k | lk |
| | H4 | | 10802300 | | | | | | | |
| 1 - 8 UNC | H4 | | 10802400 | 5.752 | L | Lc | Ln | d | k | lk |
| | H6 | | 10802500 | | | | | | | |
| 1 - 12 UNF | H4 | | 10802600 | 5.437 | L | Lc | Ln | d | k | lk |
| | H6 | | 10802700 | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|--------------------------|--------------|----------|-----------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| S108 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | |

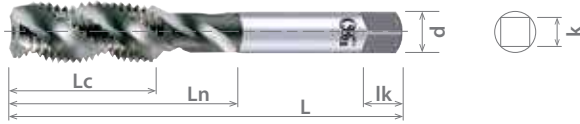
good best





List S109

Spiral Fluted, Modified Bottom (2.5P-3P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|-------------|--------------|---------------|-----------------------------|--|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P - 3P) | | | | | | | |
| | | | Bright | | L | Lc | Ln | d | k | lk |
| M2 x 0.4 | D2 | 2 | 10900100 | | 46.00 | 12.70 | - | 3.58 | 2.79 | 4.80 |
| M2.5 x 0.45 | | | 10900200 | | 49.30 | 4.50 | 15.90 | | | |
| M3 x 0.5 | | | 10900300 | | 50.80 | 5.00 | 17.50 | | | |
| M4 x 0.7 | D3 | 3 | 10900400 | | 60.50 | 7.00 | 22.20 | 4.92 | 3.86 | 6.40 |
| M5 x 0.8 | | | 10900500 | | 63.50 | 8.00 | 25.40 | 6.47 | 4.85 | 7.90 |
| M6 x 1.0 | | | 10900600 | | 69.10 | 10.00 | 28.60 | 8.07 | 6.05 | 9.50 |
| M8 x 1.25 | D4 | 3 | 10900700 | | 74.70 | 12.50 | 31.80 | 9.67 | 7.26 | 11.10 |
| M10 x 1.5 | | | 10900800 | | 85.90 | 15.00 | 49.10 | 9.32 | 6.98 | 11.10 |
| M12 x 1.75 | | | 10900900 | | 91.20 | 17.50 | 50.10 | 10.89 | 8.18 | 12.70 |
| M14 x 2.0 | D5 | 4 | 10901000 | | 102.40 | 20.00 | 55.00 | 13.76 | 10.31 | 15.90 |
| M16 x 2.0 | | | 10901100 | | 108.00 | | 61.80 | 14.98 | 11.23 | 17.50 |
| M18 x 2.5 | | | 10901200 | | 119.10 | 25.00 | 67.40 | 17.70 | 13.28 | 19.10 |
| M20 x 2.5 | | | 10901300 | | 124.60 | | 68.40 | 19.30 | 14.48 | |
| M22 x 2.5 | D6 | 4 | 10901400 | | 130.20 | | 76.50 | 20.32 | 15.24 | 20.60 |
| M24 x 3.0 | | | 10901500 | | 138.10 | 30.00 | 79.10 | 22.75 | 17.07 | 22.20 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|--------------------------|---------|--------------|----------|-----------------|---------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | 6061 7075 | | Casting | Inconel | | | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| S109 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | | |

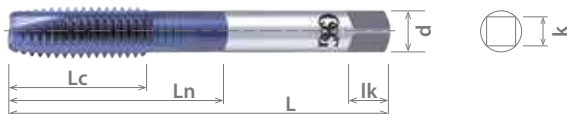
good best





List 314Ti

V-HL-Ti-POT, Spiral Pointed, Plug (3.5P-4.5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|--------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (3.5P - 4.5P) | | | | | | |
| | | | V | | | | | | |
| | | | L | Lc | Ln | d | k | lk | |
| 2 - 56 UNC | H2 | 2 | 31440108 | 1.882 | 0.562 | 0.601 | 0.140 | 0.109 | 0.188 |
| 4 - 40 UNC | | | 31440208 | 2.000 | 0.688 | - | | | |
| 6 - 32 UNC | H3 | 3 | 31440308 | 2.382 | 0.874 | 1.071 | 0.194 | 0.151 | 0.251 |
| 8 - 32 UNC | | | 31440408 | | 0.933 | - | 0.220 | 0.164 | 0.279 |
| 10 - 32 UNF | | | 31440508 | 2.500 | 1.000 | 1.197 | 0.255 | 0.190 | 0.311 |
| 1/4 - 28 UNF | | | 31440608 | 2.720 | 0.696 | 1.122 | 0.317 | 0.238 | 0.374 |
| 5/16 - 24 UNF | | | 31440708 | 2.941 | 0.779 | 1.251 | 0.380 | 0.285 | 0.437 |
| 3/4 - 24 UNF | | | 31440808 | 3.161 | 0.874 | 1.307 | 0.322 | 0.242 | 0.405 |
| 7/16 - 20 UNF | H4 | 3 | 31440908 | 3.382 | 1.000 | 1.433 | 0.367 | 0.274 | 0.437 |
| 1/2 - 20 UNF | | | 31441008 | 3.591 | 1.078 | 1.551 | 0.429 | 0.322 | 0.500 |

Packed: 1 pc.
Available V coating only.



Work Material

| List No. | P | | | | | | | | | | | | | | | | M | K | N | | S | | H | | | |
|----------|---------------|------|------|--------------------------|------------|------------------|------|---------|-----------|-----------|---------|-------------------------------------|--------------------------|-----------------|----------------|-----------|---|---|-----------|-----------|-----------|--|---|--|--|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | | | | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | | | 50-70 HRC | | | | | | | |
| | 1010 | 1035 | 1065 | | | 4140 | 4340 | 300 | | 400 | 17-4 PH | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | | | 35-45 HRC | 45-50 HRC | 50-70 HRC | | | | | |
| 314Ti | | | | <input type="checkbox"/> | | | | | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | |
| SFM | | | | 15-30 | | | | 8-20 | | | | 8-15 | 8-15 | 15-35 | 10-20 | | | | | | | | | | | |

good best



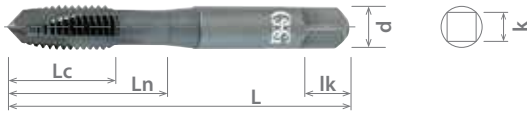


List 314Ni

V-HL-Ni-POT, Spiral Pointed, Plug (3.5P-4.5P)



| | | |
|------|---|-----|
| VC10 | V | STI |
|------|---|-----|



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|--------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (3.5P - 4.5P) | | | | | | |
| | | | V | | | | | | |
| 2 - 56 UNC | H2 | 3 | 31420108 | 1.933 | 0.562 | 0.602 | 0.140 | 0.109 | 0.188 |
| 4 - 40 UNC | | | 31420208 | 2.059 | 0.688 | - | | | |
| 6 - 32 UNC | | | 31420308 | 2.457 | 0.874 | 1.070 | 0.194 | 0.151 | 0.251 |
| 8 - 32 UNC | H3 | | 31420408 | 2.461 | 0.933 | - | 0.220 | 0.164 | 0.279 |
| 10 - 32 UNF | | | 31420508 | 2.579 | 1.000 | 1.196 | 0.255 | 0.190 | 0.287 |
| 1/4 - 28 UNF | | | 31420608 | 2.815 | 0.696 | 1.122 | 0.317 | 0.238 | 0.342 |
| 5/16 - 24 UNF | | | 31420708 | 3.055 | 0.779 | 1.251 | 0.380 | 0.285 | 0.397 |
| 3/8 - 24 UNF | H4 | | 31420808 | 3.157 | 0.874 | 1.307 | 0.322 | 0.242 | 0.405 |
| 7/16 - 20 UNF | | | 31420908 | 3.374 | 1.000 | 1.433 | 0.367 | 0.274 | 0.437 |
| 1/2 - 20 UNF | | | 31421008 | 3.594 | 1.078 | 1.551 | 0.429 | 0.322 | 0.500 |

Packed: 1 pc.
Available V coating only.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|-----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 314Ni | | | | | | | | | | | | | | | | | | |
| SFM | | | | | | | | 8-20 | | | | 8-15 | 8-15 | 15-35 | 10-20 | | | |

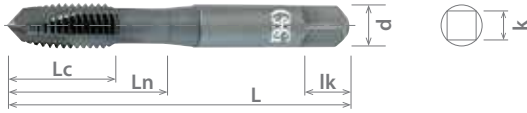
good best





List 314

Spiral Pointed, Plug (4.5P-5.5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Plug (4.5P - 5.5P) | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|--------------------|----------------|----|----------------|---------------|-------------|------------|--------------|---------------|
| | | | EDP Number | Coating Suffix | | | | | | | |
| | | | | S/O | V | | | | | | |
| 2 - 56 UNC | H2 | 2 | 17146 | 01 | 08 | 1.882 | 0.299 | 0.610 | 0.140 | 0.109 | 0.188 |
| 3 - 48 UNC | | | 314001 | 01 | 08 | 1.941 | 0.346 | 0.681 | | | |
| 4 - 40 UNC | | | 17147 | 01 | 08 | 2.000 | 0.413 | 0.751 | | | |
| 4 - 48 UNF | | | 314002 | 01 | 08 | | | | | | |
| 6 - 32 UNC | H3 | 3 | 17148 | 01 | 08 | 2.382 | 0.515 | 0.952 | 0.194 | 0.151 | 0.251 |
| 6 - 40 UNF | | | 17149 | 01 | 08 | | | 0.830 | | | |
| 8 - 32 UNC | H3 | 3 | 17150 | 01 | 08 | 2.382 | 0.527 | 1.027 | 0.220 | 0.164 | 0.279 |
| 8 - 36 UNF | | | 17151 | 01 | 08 | | | | | | |
| 10 - 24 UNC | H3 | 3 | 314003 | 01 | 08 | 2.500 | 0.688 | 1.106 | 0.255 | 0.190 | 0.287 |
| 10 - 32 UNF | | | 314004 | 01 | 08 | | | | | | |
| 1/4 - 20 UNC | H3 | 3 | 314005 | 01 | 08 | 2.720 | 0.842 | 1.267 | 0.317 | 0.238 | 0.342 |
| | | | 314006 | 01 | 08 | | | | | | |
| 1/4 - 28 UNC | H3 | 3 | 17152 | 01 | 08 | 2.941 | 0.956 | 1.429 | 0.380 | 0.285 | 0.397 |
| | | | 17153 | 01 | 08 | | | 0.952 | | | |
| 5/16 - 18 UNC | H3 | 3 | 314007 | 01 | 08 | 3.382 | 0.874 | 1.307 | 0.367 | 0.274 | 0.437 |
| | | | 314008 | 01 | 08 | | | | | | |
| 5/16 - 24 UNF | H3 | 3 | 17154 | 01 | 08 | 3.161 | 0.874 | 0.322 | 0.322 | 0.242 | 0.405 |
| | | | 17155 | 01 | 08 | | | | | | |
| 3/8 - 16 UNC | H4 | 3 | 314009 | 01 | 08 | 3.594 | 1.000 | 1.472 | 0.429 | 0.322 | 0.500 |
| | | | 314010 | 01 | 08 | | | | | | |
| 3/8 - 24 UNF | H4 | 3 | 314011 | 01 | 08 | 3.382 | 1.000 | 1.433 | 0.367 | 0.274 | 0.437 |
| | | | 17156 | 01 | 08 | | | | | | |
| 7/16 - 14 UNC | H4 | 3 | 314012 | 01 | 08 | 3.811 | 1.078 | 1.551 | 0.480 | 0.359 | 0.562 |
| | | | 314013 | 01 | 08 | | | | | | |
| 7/16 - 20 UNF | H4 | 3 | 314014 | 01 | 08 | 3.591 | 1.078 | 0.429 | 0.322 | 0.242 | 0.500 |
| | | | 314015 | 01 | 08 | | | | | | |
| 1/2 - 13 UNC | H4 | 3 | 314016 | 01 | 08 | 4.031 | 1.165 | 1.677 | 0.542 | 0.405 | 0.625 |
| | | | 314017 | 01 | 08 | | | | | | |
| 1/2 - 20 UNF | H4 | 3 | 314018 | 01 | 08 | 3.811 | 1.165 | 0.480 | 0.359 | 0.562 | |
| | | | 314019 | 01 | 08 | | | | | | |
| 9/16 - 12 UNC | H4 | 3 | 314020 | 01 | 08 | 4.252 | 1.271 | 1.822 | 0.590 | 0.442 | 0.688 |
| | | | 314021 | 01 | 08 | | | | | | |
| 9/16 - 18 UNF | H4 | 3 | 314022 | 01 | 08 | 4.031 | 1.271 | 1.783 | 0.542 | 0.405 | 0.625 |
| | | | 314023 | 01 | 08 | | | | | | |
| 5/8 - 11 UNC | H4 | 3 | 314024 | 01 | 08 | 4.689 | 1.401 | 1.992 | 0.697 | 0.522 | 0.751 |
| | | | 314025 | 01 | 08 | | | | | | |
| 5/8 - 18 UNF | H4 | 3 | 314026 | 01 | 08 | 4.469 | 1.401 | 1.952 | 0.652 | 0.488 | 0.688 |
| | | | 314027 | 01 | 08 | | | | | | |
| 3/4 - 10 UNC | H5 | 3 | 314028 | 01 | 08 | 5.126 | 1.555 | 2.145 | 0.800 | 0.600 | 0.811 |
| | | | 314029 | 01 | 08 | | | | | | |
| 3/4 - 16 UNF | H5 | 3 | 314030 | 01 | 08 | 5.126 | 1.555 | 2.145 | 0.800 | 0.600 | 0.811 |
| | | | 314031 | 01 | 08 | | | | | | |
| 7/8 - 9 UNC | H5 | 3 | 314032 | 01 | 08 | 5.126 | 1.555 | 2.145 | 0.800 | 0.600 | 0.811 |
| | | | 314033 | 01 | 08 | | | | | | |
| 7/8 - 9 UNC | H5 | 3 | 314034 | 01 | 08 | 5.126 | 1.555 | 2.145 | 0.800 | 0.600 | 0.811 |
| | | | 314035 | 01 | 08 | | | | | | |
| 7/8 - 9 UNC | H5 | 3 | 314036 | 01 | 08 | 5.126 | 1.555 | 2.145 | 0.800 | 0.600 | 0.811 |
| | | | 314037 | 01 | 08 | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.





List 314 (Continued)

Spiral Pointed, Plug (4.5P-5.5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Plug (4.5P - 5.5P) | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|--------------|--------------|---------------|-----------------------|----------------|----|----------------|---------------|-------------|------------|--------------|---------------|
| | | | EDP Number | Coating Suffix | | | | | | | |
| | | | | S/O | V | L | Lc | Ln | d | k | lk |
| 7/8 - 14 UNF | H3 | 4 | 314038 | 01 | 08 | 5.126 | 1.555 | 2.145 | 0.800 | 0.600 | 0.811 |
| | H4 | | 314039 | 01 | 08 | | | | | | |
| 1 - 8 UNC | H4 | | 314040 | 01 | 08 | 5.752 | 1.751 | 2.381 | 1.020 | 0.766 | 1.000 |
| | H6 | | 314041 | 01 | 08 | | | | | | |
| 1 - 12 UNF | H4 | | 314042 | 01 | 08 | 5.441 | | | 0.895 | 0.672 | 0.874 |
| | H6 | | 314043 | 01 | 08 | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|----------------|----------|---------|--------------|----------|-----------------|-------------------|---------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 314 | 1010 | 1035 | 1065 | 4140 4340 | | | | | | | | | | | | | | |
| SFM | 1018 | 1045 | | | 15-30 | 10-25 | | 12-45 | 8-20 | | | 8-15 | 8-15 | 15-35 | 10-20 | | | |

good best





List 344STI

Spiral Pointed, Plug (4.5P-5.5P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | Plug (4.5P - 5.5P) | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|-------------|--------------|---------------|--------------------|----------------|--------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | EDP Number | Coating Suffix | | | | | | | |
| | | | | S/O | V | | | | | | |
| M2 X 0.4 | D2 | 2 | 344001 | 01 | 08 | 48.59 | 12.65 | - | 3.58 | 2.79 | 4.80 |
| M2.5 X 0.45 | | | 344002 | 01 | 08 | 49.30 | 6.30 | 15.90 | | | |
| M3 X 0.5 | D3 | 3 | 344003 | 01 | 08 | 50.80 | 7.21 | 17.70 | 4.92 | 3.86 | 6.40 |
| M4 X 0.7 | | | 344004 | 01 | 08 | 60.50 | 9.93 | 22.35 | | | |
| M5 X 0.8 | | | 344005 | 01 | 08 | 63.50 | 11.38 | 25.58 | | | |
| M6 X 1.0 | | | 344006 | 01 | 08 | 69.09 | 14.22 | 28.83 | | | |
| M8 X 1.25 | D4 | 3 | 344007 | 01 | 08 | 74.70 | 17.91 | 32.00 | 9.67 | 7.26 | 11.10 |
| M10 X 1.5 | | | 344008 | 01 | 08 | 85.90 | 21.01 | 9.32 | 6.98 | | |
| M12 X 1.75 | D5 | 4 | 344009 | 01 | 08 | 91.21 | 24.51 | 36.50 | 10.89 | 8.17 | 12.70 |
| M14 X 2.0 | | | 344010 | 01 | 08 | 102.39 | 27.99 | 41.00 | 13.76 | 10.31 | 15.90 |
| M16 X 2.0 | | | 344011 | 01 | 08 | 108.00 | | 42.01 | 14.98 | 11.22 | 17.50 |
| M18 X 2.5 | | | 344012 | 01 | 08 | 119.10 | 35.00 | 49.00 | 17.70 | 13.28 | 19.10 |
| M20 X 2.5 | | | 344013 | 01 | 08 | 124.61 | | 19.30 | 14.47 | | |
| M22 X 2.5 | | | 344014 | 01 | 08 | 130.20 | | 20.32 | 15.24 | 20.60 | |
| M24 X 3.0 | D6 | 344015 | 01 | 08 | 138.10 | 42.01 | | 57.99 | 22.75 | 17.06 | 22.20 |

Packed: 1 pc.

EDP's listed above are stocked standard.

Available in Steam Oxide or V coatings as shown above.



Work Material

| List No. | P | | | | Die Steels | M | | | K | N | | S | | H | | | | |
|----------|---------------|------|------|-------------------------------------|--------------------------|------------------|--------------------------|-------------------------------------|---|-----------|--------------------------|--------------------------|-------------------------------------|--------------------------|-----------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 344STI | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | |
| SFM | | | | 15-30 | 10-25 | | 12-45 | 8-20 | | | 8-15 | 8-15 | 15-35 | 10-20 | | | | |

good best



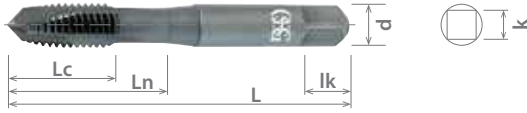


List 301

Spiral Pointed, Plug (3.5P-4.5P)



| | | | |
|------|---|-----|-----|
| HSSE | V | S/O | STI |
|------|---|-----|-----|



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Plug (3.5P-4.5P) | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | |
|---------------|--------------|---------------|------------------|----------------|--------|----------------|---------------|-------------|------------|--------------|---------------|----|----|
| | | | EDP Number | Coating Suffix | | | | | | | | | |
| | | | | S/O | V | | | | | | | | |
| 2 - 56 UNC | H2 | 2 | 17124 | 01 | 08 | 1.882 | 0.259 | 0.570 | 0.140 | 0.109 | 0.188 | | |
| 3 - 48 UNC | | | 301001 | 01 | 08 | 1.941 | 0.307 | 0.633 | | | | | |
| 4 - 40 UNC | | | 17125 | 01 | 08 | 2.000 | 0.362 | 0.700 | | | | | |
| 4 - 48 UNF | | | 301002 | 01 | 08 | | | | | | | | |
| 6 - 32 UNC | H3 | | 17126 | 01 | 08 | 2.382 | 0.440 | 0.877 | 0.194 | 0.151 | 0.251 | | |
| 6 - 40 UNF | | | 17127 | 01 | 08 | 2.130 | 0.381 | 0.759 | 0.167 | 0.131 | | | |
| | | | 301003 | 01 | 08 | | | | | | | | |
| 8 - 32 UNC | H2 | | 17128 | 01 | 08 | 2.382 | 0.440 | 0.940 | 0.220 | 0.164 | 0.279 | | |
| 8 - 36 UNF | H3 | | 17129 | 01 | 08 | | | | | | | | |
| 10 - 24 UNC | H2 | | 301004 | 01 | 08 | 2.500 | 0.590 | 1.007 | 0.255 | 0.190 | 0.311 | | |
| 10 - 32 UNF | | | H3 | | 301005 | | | | | | | 01 | 08 |
| | | | H3 | | 301006 | | | | | | | 01 | 08 |
| 1/4 - 20 UNC | H2 | | 17130 | 01 | 08 | 2.720 | 0.708 | 1.133 | 0.317 | 0.238 | 0.374 | | |
| 1/4 - 28 UNF | | | H3 | | 17131 | | | | | | | 01 | 08 |
| | | | H3 | | 301007 | | | | | | | 01 | 08 |
| 5/16 - 18 UNC | H4 | 3 | 301008 | 01 | 08 | 2.941 | 0.791 | 1.263 | 0.380 | 0.285 | 0.397 | | |
| 5/16 - 24 UNF | | | H2 | | 17132 | | | | | | | 01 | 08 |
| | | | H3 | | 17133 | | | | | | | 01 | 08 |
| 3/8 - 16 UNC | H4 | | 301009 | 01 | 08 | 3.374 | 0.921 | 1.354 | 0.367 | 0.274 | 0.437 | | |
| 3/8 - 24 UNF | | | H2 | | 301010 | | | | | | | 01 | 08 |
| | | | H3 | | 301011 | | | | | | | 01 | 08 |
| 7/16 - 14 UNC | H4 | | 301012 | 01 | 08 | 3.594 | 1.000 | 1.472 | 0.429 | 0.322 | 0.500 | | |
| 7/16 - 20 UNF | | | H3 | | 17134 | | | | | | | 01 | 08 |
| | | | H4 | | 301013 | | | | | | | 01 | 08 |
| 1/2 - 13 UNC | H4 | | 301014 | 01 | 08 | 3.811 | 1.090 | 1.562 | 0.480 | 0.359 | 0.562 | | |
| 1/2 - 20 UNF | | | H3 | | 301015 | | | | | | | 01 | 08 |
| | | | H4 | | 301016 | | | | | | | 01 | 08 |
| 9/16 - 12 UNC | H4 | | 301017 | 01 | 08 | 4.031 | 1.200 | 1.712 | 0.542 | 0.405 | 0.629 | | |
| | | | H3 | | 301018 | | | | | | | 01 | 08 |
| | | | H4 | | 301019 | | | | | | | 01 | 08 |
| 9/16 - 18 UNF | H4 | | 301020 | 01 | 08 | 3.811 | 1.090 | 1.562 | 0.480 | 0.359 | 0.562 | | |
| | | | H3 | | 301021 | | | | | | | 01 | 08 |
| | | | H4 | | 301022 | | | | | | | 01 | 08 |
| | H4 | | 301023 | 01 | 08 | 3.594 | 1.000 | 1.472 | 0.429 | 0.322 | 0.500 | | |
| | | | H3 | | 301024 | | | | | | | 01 | 08 |
| | | | H4 | | 301025 | | | | | | | 01 | 08 |
| | H4 | | 301026 | 01 | 08 | 4.031 | 1.200 | 1.712 | 0.542 | 0.405 | 0.629 | | |
| | | | H3 | | 301027 | | | | | | | 01 | 08 |
| | | | H4 | | 301028 | | | | | | | 01 | 08 |
| | H4 | | 301029 | 01 | 08 | 3.811 | 1.090 | 1.562 | 0.480 | 0.359 | 0.562 | | |
| | | | H3 | | | | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

continued on next page **EXT**

| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|--------------------------|--------------------------|--------------|------------|-------------------------------------|-------------------------------------|--------------------------|-----------|-----------|---------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 301 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | 20-45 | 20-45 | 8-20 | | | | | | | | | | |

good best



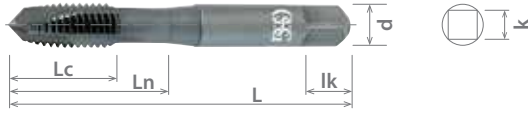


List 301 (Continued)

Spiral Pointed, Plug (3.5P-4.5P)



| | | | |
|------|---|-----|-----|
| HSSE | V | S/O | STI |
|------|---|-----|-----|



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Plug (3.5P - 4.5P) | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | |
|--------------|--------------|---------------|--------------------|----------------|----------------|---------------|-------------|------------|--------------|---------------|-------|
| | | | EDP Number | Coating Suffix | | | | | | | |
| | | | | S/O | | | | | | | V |
| 5/8 - 11 UNC | H3 | 3 | 301031 | 01 | 08 | 4.252 | 1.200 | 1.712 | 0.590 | 0.442 | 0.688 |
| | H4 | | | 301032 | 01 | | | | | | |
| 5/8 - 18 UNF | H3 | | 301033 | 01 | 08 | 4.031 | 1.334 | 1.885 | 0.542 | 0.405 | 0.629 |
| | H4 | | 301034 | 01 | 08 | | | | | | |
| 3/4 - 10 UNC | H3 | | 301035 | 01 | 08 | 4.689 | 1.500 | 2.090 | 0.697 | 0.522 | 0.751 |
| | H5 | | 301036 | 01 | 08 | | | | | | |
| 3/4 - 16 UNF | H3 | | 301037 | 01 | 08 | 4.469 | 1.712 | 2.381 | 1.020 | 0.766 | 1.000 |
| | H4 | | 301038 | 01 | 08 | | | | | | |
| 7/8 - 9 UNC | H3 | | 301039 | 01 | 08 | 5.126 | 1.500 | 2.090 | 0.800 | 0.600 | 0.811 |
| | H5 | | 301041 | 01 | 08 | | | | | | |
| 7/8 - 14 UNF | H3 | | 301042 | 01 | 08 | 5.752 | 1.712 | 2.303 | 0.895 | 0.672 | 0.874 |
| | H4 | | 301043 | 01 | 08 | | | | | | |
| 1 - 8 UNC | H4 | | 301044 | 01 | 08 | 5.437 | 1.712 | 2.303 | 0.895 | 0.672 | 0.874 |
| | H6 | | 301045 | 01 | 08 | | | | | | |
| 1 - 12 UNF | H4 | | 301046 | 01 | 08 | 5.437 | 1.712 | 2.303 | 0.895 | 0.672 | 0.874 |
| | H6 | | 301047 | 01 | 08 | | | | | | |

Packed: 1 pc.
 EDP's listed above are stocked standard.
 Available in Steam Oxide or V coatings as shown above.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S Titanium | H | | | | |
|----------|-------------------------------------|--------------------------|--------------------------|--------------|------------|-------------------------------------|-------------------------------------|--------------------------|----------------|--------------|---------|---------------|--------------|-----------------|-------------------|------------|--------------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | | Nickel Alloy | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 301 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | 20-45 | 20-45 | 8-20 | | | | | | | | | |

good best





List 342STI

Spiral Pointed, Plug (3.5P-4P)



| | | | |
|------|---|-----|-----|
| HSSE | V | S/O | STI |
|------|---|-----|-----|



Units: mm

| Tap Size | Thread Limit | No. of Flutes | Plug (3.5P - 4.5P) | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|-------------|--------------|---------------|--------------------|----------------|-------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | EDP Number | Coating Suffix | | | | | | | |
| | | | | S/O | V | | | | | | |
| M2 x 0.4 | D2 | 2 | 342001 | 01 | 08 | 46.00 | 6.40 | 13.10 | 3.58 | 2.79 | 4.80 |
| M2.5 x 0.45 | | | 342002 | 01 | 08 | 49.30 | 7.60 | 15.90 | | | |
| M3 x 0.5 | | | 342003 | 01 | 08 | 50.80 | 9.50 | 17.50 | | | |
| M4 x 0.7 | D3 | 3 | 342004 | 01 | 08 | 60.50 | 12.70 | 22.20 | 4.92 | 3.86 | 6.40 |
| M5 x 0.8 | | | 342005 | 01 | 08 | 63.50 | 15.20 | 25.40 | 6.47 | 4.85 | 7.90 |
| M6 x 1.0 | | | 342006 | 01 | 08 | 69.10 | 16.90 | 28.60 | 8.07 | 6.05 | 9.50 |
| M8 x 1.25 | D4 | 3 | 342007 | 01 | 08 | 74.70 | 19.20 | 31.90 | 9.67 | 7.26 | 11.10 |
| M10 x 1.5 | | | 342008 | 01 | 08 | 85.90 | 23.40 | 34.40 | 9.32 | 6.98 | |
| M12 x 1.75 | | | 342009 | 01 | 08 | 91.20 | 25.40 | 37.40 | 10.89 | 8.18 | |
| M14 x 2.0 | D5 | 3 | 342010 | 01 | 08 | 102.40 | 27.70 | 40.70 | 13.76 | 10.31 | 16.00 |
| M16 x 2.0 | | | 342011 | 01 | 08 | 108.00 | 30.50 | 43.50 | 14.98 | 11.23 | 17.50 |
| M18 x 2.5 | | | 342012 | 01 | 08 | 119.10 | 33.90 | 47.90 | 17.70 | 13.28 | 19.10 |
| M20 x 2.5 | 342013 | 01 | 08 | 124.60 | 19.30 | 14.48 | | | | | |
| M22 x 2.5 | D6 | 4 | 342014 | 01 | 08 | 130.20 | 38.10 | 53.10 | 20.32 | 15.24 | 20.60 |
| M24 x 3.0 | | | 342015 | 01 | 08 | 138.10 | 43.50 | 58.50 | 22.75 | 17.07 | 22.20 |

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|--------------------------|--------------------------|--------------|------------------|------------|-------------------------------------|-------------------------------------|--------------------------|----------------|---------|-------------------|-------------------|----------|----------------------|--------------|--------------|--------------|
| List No. | P | | | | | Die Steels | M | | | K Cast Iron | N | | S Nickel Alloy | Titanium | H Hardened Steels | | | |
| | Carbon Steels | | | Alloy Steels | Stainless Steels | | | Aluminum | | | Inconel | 6Al4V (30 HRC) | | | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | 4140 4340 | | 300 | 400 | 17-4 PH | | | | 6061 7075 | Casting | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 342STI | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | 20-45 | 20-45 | 8-20 | | | | | | | | | |

good best





List 11036

Spiral Pointed, Plug (3.5P - 4.5P)



HSSE

BR

V

STI



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | Plug (3.5P - 4.5P) | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | | |
|---------------|--------------|---------------|--------------------|----------------|----|----------------|---------------|-------------|------------|--------------|---------------|-------|-------|-------|
| | | | EDP Number | Coating Suffix | | | | | | | | | | |
| | | | | Bright | V | L | Lc | Ln | d | k | lk | | | |
| 2 - 56 UNC | H2 | 2 | 11036001 | 00 | 08 | 1.882 | 0.295 | 0.559 | 0.140 | 0.109 | 0.188 | | | |
| 4 - 40 UNC | | | 11036002 | 00 | 08 | 2.000 | 0.366 | 0.681 | | | | | | |
| 6 - 32 UNC | | | 11036003 | 00 | 08 | 2.382 | 0.492 | 0.874 | | | | 0.194 | 0.151 | 0.251 |
| 8 - 32 UNC | | | 11036004 | 00 | 08 | | 0.500 | 0.937 | | | | 0.220 | 0.164 | 0.279 |
| 10 - 32 UNF | | | 11036005 | 00 | 08 | | 2.500 | 0.598 | | | | 1.000 | 0.255 | 0.190 |
| 1/4 - 20 UNC | H3 | 3 | 11036006 | 00 | 08 | 2.720 | 0.669 | 1.129 | 0.317 | 0.238 | 0.374 | | | |
| 1/4 - 28 UNF | | | 11036007 | 00 | 08 | | | | | | | | | |
| 5/16 - 18 UNC | | | 11036008 | 00 | 08 | | | | | | | | | |
| 5/16 - 24 UNF | | | 11036009 | 00 | 08 | 2.941 | 0.417 | 1.244 | | | | 0.380 | 0.285 | 0.437 |
| 3/8 - 16 UNC | | | 11036010 | 00 | 08 | | | | | | | | | |
| 3/8 - 24 UNF | | | 11036011 | 00 | 08 | 3.382 | 0.921 | 1.354 | | | | 0.367 | 0.274 | 0.405 |
| 7/16 - 20 UNF | | | 11036012 | 00 | 08 | 3.161 | 0.858 | 1.291 | | | | 0.322 | 0.242 | |
| 1/2 - 20 UNF | | | 11036013 | 00 | 08 | 3.382 | 0.921 | 1.354 | | | | 0.367 | 0.274 | |
| 1/2 - 20 UNF | H4 | | 11036013 | 00 | 08 | 3.591 | 1.000 | 1.472 | 0.429 | 0.322 | 0.500 | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|--|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 11036 | 1010 | 1035 | 1065 | 4140 | | | | | | | | | | | | | | | |
| SFM | 1018 | 1045 | 1065 | 4340 | | | | | | | | | | | | | | | |

good best

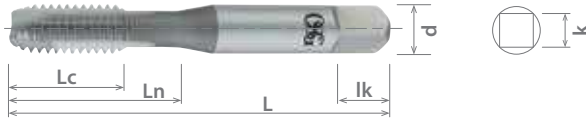




List 125

HSS BR STI

Spiral Pointed, Plug (3.5P-4.5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|--------------------|---------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (3.5P - 4.5P) | | | | | | | |
| | | | Bright | L | | | | | | |
| 2 - 56 UNC | H2 | 2 | 7002600 | 1.882 | 0.322 | 0.559 | 0.140 | 0.109 | 0.188 | |
| 3 - 48 UNC | | | 7003200 | 1.941 | | | | | | 0.618 |
| 4 - 40 UNC | H1 | | 1820400 | 2.000 | 0.389 | 0.688 | 0.167 | 0.131 | 0.251 | |
| 4 - 48 UNF | H2 | | 1824000 | | | | | | | 0.755 |
| 5 - 40 UNC | H2 | | 7004400 | 2.130 | 0.507 | 0.877 | 0.194 | 0.151 | 0.251 | |
| 6 - 32 UNC | | | H3 | 7005000 | 2.382 | 0.393 | 0.759 | 0.167 | | 0.131 |
| 6 - 40 UNF | H2 | | 1824800 | 2.382 | 0.511 | 0.940 | 0.220 | 0.164 | 0.279 | |
| 8 - 32 UNC | H3 | | 1830400 | | | | | | | |
| 8 - 36 UNF | H2 | | 7007100 | 2.500 | 0.641 | 1.007 | 0.255 | 0.190 | 0.311 | |
| 10 - 24 UNC | | | H3 | | | | | | | 1825600 |
| 10 - 32 UNF | H2 | | 7009800 | 2.720 | 0.700 | 1.129 | 0.317 | 0.238 | 0.374 | |
| 1/4 - 20 UNC | H3 | | 1825800 | | | | | | | |
| 1/4 - 28 UNF | H2 | | 7010700 | 2.941 | 0.763 | 1.251 | 0.380 | 0.285 | 0.437 | |
| 5/16 - 18 UNC | H3 | | 1826600 | | | | | | | |
| 5/16 - 24 UNF | H4 | | 1832200 | 3.382 | 0.940 | 1.374 | 0.367 | 0.274 | 0.405 | |
| 3/8 - 16 UNC | H2 | | 7014700 | | | | | | | |
| 3/8 - 24 UNF | H3 | | 7015300 | 3.591 | 1.000 | 1.472 | 0.429 | 0.322 | 0.500 | |
| 7/16 - 14 UNC | H4 | | 7015900 | | | | | | | |
| 7/16 - 20 UNF | H3 | | 7016200 | 3.811 | 1.090 | 1.562 | 0.480 | 0.359 | 0.562 | |
| 1/2 - 13 UNC | H4 | | 7017100 | | | | | | | |
| 1/2 - 20 UNF | H3 | | 7017400 | 3.591 | 1.000 | 1.472 | 0.429 | 0.322 | 0.500 | |
| 9/16 - 12 UNC | H4 | | 7018000 | | | | | | | |
| | H3 | | 7018300 | 4.031 | 1.090 | 1.562 | 0.542 | 0.405 | 0.625 | |
| | H4 | | 12500100 | | | | | | | |
| | | 12500200 | | | | | | | | |
| | | 12500300 | | | | | | | | |
| | | 12500400 | | | | | | | | |
| | | 12500500 | | | | | | | | |
| | | 12500600 | | | | | | | | |
| | | 12500700 | | | | | | | | |
| | | 12500800 | | | | | | | | |
| | | 12500900 | | | | | | | | |
| | | 12501000 | | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

continued on next page



| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|--------------------------|--------------------------|--------------------------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 125 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | 25-75 | 40-80 | 40-65 | | | | | | | | |

good best





List 125 (Continued)

| | | |
|-----|----|-----|
| HSS | BR | STI |
|-----|----|-----|

Spiral Pointed, Plug (3.5P-4.5P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|--------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (3.5P - 4.5P) | | | | | | |
| | | | Bright | L | Lc | Ln | d | k | Ik |
| 9/16 - 18 UNF | H3 | 3 | 12501100 | 3.811 | 1.090 | 1.562 | 0.480 | 0.359 | 0.562 |
| | H4 | | 12501200 | | | | | | |
| 5/8 - 11 UNC | H3 | | 12501300 | 4.252 | 1.220 | 1.712 | 0.590 | 0.442 | 0.688 |
| | H4 | | 12501400 | | | | | | |
| 5/8 - 18 UNF | H3 | | 12501500 | 4.031 | 1.090 | 1.562 | 0.542 | 0.405 | 0.625 |
| | H4 | | 12501600 | | | | | | |
| 3/4 - 10 UNC | H3 | | 12501700 | 4.689 | 1.334 | 1.885 | 0.697 | 0.522 | 0.751 |
| | H5 | | 12501800 | | | | | | |
| 3/4 - 16 UNF | H3 | | 12501900 | 4.469 | 1.417 | 1.771 | 0.652 | 0.488 | 0.688 |
| | H4 | | 12502000 | | | | | | |
| 7/8 - 9 UNC | H3 | | 12502100 | 5.130 | 1.500 | 2.090 | 0.800 | 0.600 | 0.811 |
| | H5 | | 12502200 | | | | | | |
| 7/8 - 14 UNF | H3 | 12502300 | 5.752 | 1.712 | 2.381 | 1.020 | 0.766 | 1.000 | |
| | H4 | 12502400 | | | | | | | |
| 1 - 8 UNC | H6 | 12502500 | 5.441 | 1.712 | 2.303 | 0.895 | 0.672 | 0.874 | |
| 1 - 12 UNF | H4 | 12502700 | | | | | | | |
| | | H6 | 12502800 | | | | | | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|--------------------------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 125 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | | |

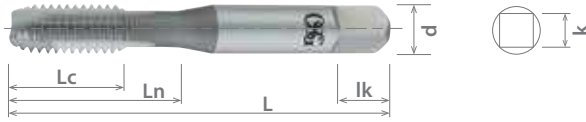
 good best



List 127

HSS BR STI

Spiral Pointed, Plug (3.5P-4P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|-------------|--------------|---------------|------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Plug (3.5P - 4P) | | | | | | |
| | | | Bright | | | | | | |
| | | | L | Lc | Ln | d | k | lk | |
| M2 x 0.4 | D2 | 2 | 12700100 | 46.00 | 6.40 | 13.10 | 3.58 | 2.79 | 4.80 |
| M2.5 x 0.45 | | | 12700200 | 49.30 | 8.20 | 15.70 | | | |
| M3 x 0.5 | | | 12700300 | 50.80 | 10.00 | 17.50 | | | |
| M4 x 0.7 | D3 | | 12700400 | 60.50 | 13.00 | 22.40 | 4.93 | 3.86 | 6.40 |
| M5 x 0.8 | | | 12700500 | 63.50 | 16.30 | 25.70 | 6.48 | 4.85 | 7.90 |
| M6 x 1.0 | | | 12700600 | 69.10 | 17.80 | 28.70 | 8.08 | 6.05 | 9.50 |
| M8 x 1.25 | D4 | 3 | 12700700 | 74.70 | 19.40 | 31.80 | 9.68 | 7.26 | 11.10 |
| M10 x 1.5 | | | 12700800 | 85.90 | 23.90 | 34.90 | 9.32 | 6.98 | |
| M12 x 1.75 | | | 12700900 | 91.20 | 25.40 | 37.40 | 10.90 | 8.18 | |
| M14 x 2.0 | D5 | | 12701000 | 102.40 | 27.70 | 40.70 | 13.77 | 10.31 | 15.90 |
| M16 x 2.0 | | | 12701100 | 108.00 | 31.00 | 43.50 | 14.99 | 11.23 | 17.50 |
| M18 x 2.5 | | | 12701200 | 119.10 | 33.90 | 47.90 | 17.70 | 13.28 | 19.10 |
| M20 x 2.5 | 12701300 | 124.60 | 33.90 | 19.30 | 14.48 | | | | |
| M22 x 2.5 | D5 | 12701400 | 130.20 | 38.10 | 53.10 | 20.32 | 15.24 | 20.60 | |
| M24 x 3.0 | | D6 | 12701500 | 138.10 | 43.50 | 58.50 | 22.76 | 17.07 | 22.20 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|--------------------------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 127 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | | |

good best

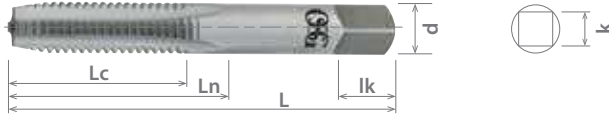




List 126



Straight Fluted, Plug (3.5P-4.5P), Bottom (1.5P-2P)



Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|---------------|--------------|---------------|--------------------|--------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Bottom (1.5P - 2P) | Plug (3.5P - 4.5P) | | | | | | |
| | | | Bright | Bright | | | | | | |
| 2 - 56 UNC | H2 | 3 | 6002700 | 6002600 | 1.886 | 0.279 | 0.696 | 0.140 | 0.109 | 0.188 |
| 3 - 48 UNC | | | 6003300 | 6003200 | 1.941 | 0.314 | 0.748 | | | |
| 4 - 40 UNC | H1 | | 6004600 | 6004500 | 2.000 | 0.374 | 0.803 | | | |
| 4 - 48 UNF | 12600200 | | 12600100 | 2.059 | | | | | | |
| 5 - 40 UNC | H2 | | 6006100 | 6006000 | 2.197 | 0.444 | 0.933 | 0.167 | 0.131 | 0.251 |
| 6 - 32 UNC | H3 | | 6006700 | - | 2.268 | | 1.003 | | | |
| 6 - 40 UNF | H2 | | - | 6006600 | 2.382 | 0.476 | 1.055 | 0.194 | 0.167 | 0.251 |
| 8 - 32 UNC | | | 1810500 | 1810400 | | | | | | |
| 8 - 36 UNF | H2 | | - | 6007500 | 2.276 | 0.547 | 1.011 | 0.220 | 0.164 | 0.279 |
| 10 - 24 UNC | | | H3 | 6008200 | - | 2.465 | 0.468 | | | |
| 10 - 32 UNF | H2 | | - | 6008100 | 2.555 | 0.559 | 1.204 | 0.255 | 0.190 | 0.287 |
| 10 - 32 UNF | | | H3 | 1810900 | - | 2.465 | 0.468 | | | |
| 1/4 - 20 UNC | H2 | | - | 1810800 | 2.555 | 0.559 | 1.204 | 0.317 | 0.238 | 0.374 |
| 1/4 - 28 UNF | | | H3 | 12600400 | - | 2.465 | 0.468 | | | |
| 5/16 - 18 UNC | H2 | | - | 12600300 | 2.555 | 0.559 | 1.204 | 0.380 | 0.285 | 0.437 |
| 5/16 - 24 UNF | | | H3 | 1805700 | - | 2.496 | 0.625 | | | |
| 3/8 - 16 UNC | H2 | - | 1805600 | 2.602 | 0.732 | 1.291 | 0.367 | 0.274 | 0.437 | |
| 3/8 - 24 UNF | | H3 | 6010300 | - | 2.575 | 0.625 | | | | 1.185 |
| 7/16 - 14 UNC | H2 | - | 6010200 | 2.602 | 0.732 | 1.291 | 0.429 | 0.322 | 0.500 | |
| 7/16 - 20 UNF | | H3 | 1805900 | - | 2.496 | 0.625 | | | | 1.185 |
| 1/2 - 13 UNC | H2 | - | 1805800 | 2.602 | 0.732 | 1.291 | 0.480 | 0.359 | 0.562 | |
| 1/2 - 20 UNF | | H3 | 1811500 | - | 2.496 | 0.625 | | | | 1.185 |
| 9/16 - 12 UNC | H4 | - | 1811400 | 2.602 | 0.732 | 1.291 | 0.542 | 0.405 | 0.625 | |
| | H4 | 6013300 | 6013200 | 2.720 | 0.751 | 1.322 | | | | |
| | H3 | 1812100 | 1812000 | | | | | | | |
| | H2 | 1806700 | 1806600 | 2.937 | 0.834 | 1.413 | 0.380 | 0.285 | 0.437 | |
| | H3 | 6014500 | 6014400 | | | | | | | |
| | H4 | 1812500 | 1812400 | 3.37 | 0.937 | 1.811 | 0.367 | 0.274 | 0.437 | |
| | H2 | 6015700 | 6015600 | | | | | | | |
| | H3 | 12600600 | 12600500 | 3.157 | 1.070 | 1.940 | 0.429 | 0.322 | 0.500 | |
| | H4 | 6016600 | 6016500 | | | | | | | |
| | H2 | 1812900 | 1812800 | 3.594 | 1.153 | 2.000 | 0.480 | 0.359 | 0.562 | |
| | H3 | 12600800 | 12600700 | | | | | | | |
| | H4 | 6018400 | 6018300 | 3.374 | 1.070 | 1.811 | 0.367 | 0.274 | 0.437 | |
| | H3 | 6018700 | 6018600 | | | | | | | |
| | H4 | 6019600 | 1813200 | 3.811 | 1.153 | 1.940 | 0.429 | 0.322 | 0.500 | |
| | H3 | 6019900 | 6019800 | | | | | | | |
| | H4 | 1813500 | 1813400 | 3.594 | 1.153 | 2.000 | 0.480 | 0.359 | 0.562 | |
| | H3 | 12601000 | 12600900 | | | | | | | |
| | H4 | 6022000 | 1813600 | 4.031 | 1.165 | 2.165 | 0.542 | 0.405 | 0.625 | |
| | H3 | 12601200 | 12601100 | | | | | | | |
| | H4 | 1813900 | 1813800 | 4.031 | 1.165 | 2.165 | 0.542 | 0.405 | 0.625 | |
| | H3 | 12601400 | 12601300 | | | | | | | |
| | H4 | 12601600 | 12601500 | 4.031 | 1.165 | 2.165 | 0.542 | 0.405 | 0.625 | |
| | H3 | 12601800 | 12601700 | | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.





List 126 (Continued)

HSS **BR** STI

Straight Fluted, Plug (3.5P-4.5P), Bottom (1.5P-2P)

Units: Inch

| Tap Size | Thread Limit | No. of Flutes | EDP Number | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | | | | | |
|---------------|--------------|---------------|--------------------|--------------------|----------------|---------------|-------------|------------|--------------|---------------|-------|-------|-------|-------|-------|-------|
| | | | Bottom (1.5P - 2P) | Plug (3.5P - 4.5P) | | | | | | | | | | | | |
| | | | Bright | Bright | | | | | | | | | | | | |
| 9/16 - 18 UNF | H3 | 4 | 12602000 | 12601900 | 3.811 | 1.165 | 2.125 | 0.480 | 0.359 | 0.562 | | | | | | |
| | H4 | | 12602200 | 12602100 | | | | | | | | | | | | |
| 5/8 - 11 UNC | H3 | | 12602400 | 12602300 | 4.252 | 1.271 | 2.433 | 0.590 | 0.442 | 0.688 | | | | | | |
| | H4 | | 12602600 | 12602500 | | | | | | | | | | | | |
| 5/8 - 18 UNF | H3 | | 12602800 | 12602700 | 4.031 | | 2.165 | 0.542 | 0.405 | 0.625 | | | | | | |
| | H4 | | 12603000 | 12602900 | | | | | | | | | | | | |
| 3/4 - 10 UNC | H3 | | 12603200 | 12603100 | 4.689 | 1.401 | 2.653 | 0.697 | 0.522 | 0.751 | | | | | | |
| | H5 | | 12603400 | 12603300 | | | | | | | | | | | | |
| 3/4 - 16 UNF | H3 | | 12603600 | 12603500 | 4.469 | | 2.433 | 0.652 | 0.488 | 0.688 | | | | | | |
| | H4 | | 12603800 | 12603700 | | | | | | | | | | | | |
| 7/8 - 9 UNC | H3 | | 12604000 | 12603900 | 5.126 | 1.555 | 3.011 | 0.800 | 0.600 | 0.811 | | | | | | |
| | H5 | | 12604200 | 12604100 | | | | | | | | | | | | |
| 7/8 - 14 UNF | H3 | | 12604400 | 12604300 | 5.126 | | 12604600 | 12604500 | 12604800 | 12604700 | 5.752 | 1.751 | 3.074 | 1.020 | 0.766 | 1.000 |
| | H4 | | 12605000 | 12604900 | | | | | | | | | | | | |
| 1 - 8 UNC | H6 | | 12605200 | 12605100 | 5.437 | 12605400 | 12605300 | 12605200 | 12605100 | 5.437 | 1.751 | | 3.074 | 0.895 | 0.672 | 0.881 |
| | H4 | | 12605200 | 12605100 | | | | | | | | | | | | |
| 1 - 12 UNF | H6 | | 12605400 | 12605300 | 5.437 | 1.751 | 3.074 | 0.895 | 0.672 | 0.881 | | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|--------------------------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| | P | | | | | M | | | K | N | | S | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 126 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | | |

good best

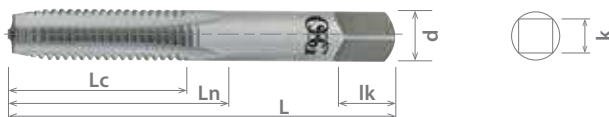




List 128

HSS **BR** STI

Straight Fluted, Modified Bottom (2.5P-3P)



Units: mm

| Tap Size | Thread Limit | No. of Flutes | EDP Number | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|-------------|--------------|---------------|-----------------------------|----------------|---------------|-------------|------------|--------------|---------------|
| | | | Modified Bottom (2.5P - 3P) | | | | | | |
| | | | Bright | | | | | | |
| | | | L | Lc | Ln | d | k | lk | |
| M2 x 0.4 | D2 | 2 | 12800100 | 47.80 | 13.00 | 14.00 | 3.58 | 2.79 | 4.80 |
| M2.5 x 0.45 | | | 12800200 | 49.30 | 6.70 | 16.30 | | | |
| M3 x 0.5 | | | 12800300 | 50.80 | 7.10 | 17.60 | | | |
| M4 x 0.7 | D3 | 3 | 12800400 | 60.50 | 10.30 | 22.70 | 4.92 | 3.86 | 6.40 |
| M5 x 0.8 | | | 12800500 | 63.50 | 11.30 | 25.50 | 6.47 | 4.85 | 7.90 |
| M6 x 1.0 | | | 12800600 | 69.10 | 14.00 | 28.60 | 8.07 | 6.05 | 9.50 |
| M8 x 1.25 | D4 | 4 | 12800700 | 74.70 | 17.50 | 31.80 | 9.67 | 7.26 | 11.10 |
| M10 x 1.5 | | | 12800800 | 85.90 | 21.00 | 49.10 | 9.32 | 6.98 | |
| M12 x 1.75 | | | 12800900 | 91.20 | 24.50 | 50.10 | 10.89 | 8.18 | |
| M14 x 2.0 | D5 | 4 | 12801000 | 102.40 | 28.00 | 55.00 | 13.76 | 10.31 | 15.90 |
| M16 x 2.0 | | | 12801100 | 108.00 | 28.00 | 61.80 | 14.98 | 11.23 | 17.50 |
| M18 x 2.5 | | | 12801200 | 119.10 | 35.00 | 67.40 | 17.70 | 13.28 | 19.10 |
| M20 x 2.5 | 12801300 | 124.60 | 35.00 | 68.40 | 19.30 | 14.48 | | | |
| M22 x 2.5 | 12801400 | 130.20 | 35.00 | 76.50 | 20.32 | 15.24 | 20.60 | | |
| M24 x 3.0 | D6 | | 12801500 | 138.10 | 42.00 | 79.10 | 22.75 | 17.07 | 22.40 |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|---------|--------------|----------|-----------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 128 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 25-80 | 20-50 | 20-45 | | | | | | 25-75 | 40-80 | 40-65 | | | | | | |

 good best

List 16570

NEW

HSSE

V

40°

A-NPT, Interrupted



Units: Inch

| Size | Number of Flutes | EDP Number | Overall Length | Length of Cut | Neck Length | Shank Diameter | Square Width | Square Length |
|--------------------|------------------|------------|----------------|---------------|-------------|----------------|--------------|---------------|
| | | NPT | L | Lc | Ln | d | k | lk |
| | | V | L | Lc | Ln | d | k | lk |
| 1/16 - 27 | 3 | 1657001008 | 3.543 | 0.689 | 1.417 | 0.313 | 0.234 | 0.374 |
| 1/8 - 27 (Sm. Shk) | | 1657002008 | | 0.752 | 1.457 | | | |
| 1/8 - 27 (Lg. Shk) | | 1657003008 | | | | | | |
| 1/4 - 18 | 4 | 1657004008 | 3.937 | 1.063 | 1.929 | 0.563 | 0.421 | 0.437 |
| 3/8 - 18 | | 1657005008 | | | 1.969 | 0.700 | 0.531 | 0.500 |
| 1/2 - 14 | | 1657006008 | 4.921 | 1.374 | 2.362 | 0.688 | 0.515 | 0.626 |
| 3/4 - 14 | | 1657007008 | 5.511 | | 2.913 | 0.906 | 0.679 | 0.689 |
| 1 - 11,1/2 | | 1657008008 | 6.299 | | 1.752 | 3.150 | 1.125 | 0.843 |

Packed: 1 pc.

Available in V coating only.

ATP

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | 4140 4340 | 300 | 400 | 17-4 PH | 6061 7075 | | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 16570 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| SFM | 5-35 | 5-35 | 5-35 | 5-20 | 5-20 | 5-20 | 5-20 | 5-20 | 5-20 | 5-35 | 5-10 | 5-20 | | | | | |

good best





List 16575

NEW HSSE V 40°

A-LT-NPT, Long Shank, NPT, Interrupted



Units: Inch

| Size | Number of Flutes | EDP Number | Overall Length | Length of Cut | Neck Length | Shank Diameter | Square Width | Square Length | |
|--------------------|------------------|------------|----------------|---------------|-------------|----------------|--------------|---------------|-------|
| | | NPT | L | Lc | Ln | d | k | lk | |
| | | V | L | Lc | Ln | d | k | lk | |
| 1/16 - 27 | 3 | 1657501008 | 4.000 | 0.689 | 1.614 | 0.313 | 0.234 | 0.374 | |
| | | 1657502008 | 6.000 | | 2.402 | | | | |
| 1657503008 | | 4.000 | 1.614 | | | | | | |
| 1657504008 | | 6.000 | 2.402 | | | | | | |
| 1657505008 | | 4.000 | 1.614 | | | | | | |
| 1657506008 | | 6.000 | 2.402 | | | | | | |
| 1/8 - 27 (Sm. Shk) | | 1657507008 | 4.000 | 1.063 | 1.929 | 0.563 | 0.421 | 0.437 | |
| 1657508008 | | 6.000 | 2.402 | | | | | | |
| 1/8 - 27 (Lg. Shk) | | 1657509008 | 4.000 | 1.063 | 1.969 | 0.700 | 0.531 | 0.500 | |
| 1/4 - 18 | | 1657510008 | 6.000 | | 2.402 | | | | |
| 3/8 - 18 | | 4 | 1657511008 | 4.000 | 1.374 | 2.362 | 0.688 | 0.515 | 0.626 |
| | | | 1657512008 | 6.000 | | 2.402 | | | |
| 1/2 - 14 | 1657513008 | | 4.000 | 2.504 | | | | | |
| 3/4 - 14 | 1657514008 | | 6.000 | 2.913 | | | | | |
| | 1657515008 | | 4.000 | 2.504 | | | | | |
| 1 - 11,1/2 | 1657516008 | | 6.000 | 3.150 | | | | | |
| | 1657516008 | | 6.000 | 3.150 | 1.125 | 0.843 | 0.811 | | |

Packed: 1 pc.
Available in V coating only.



| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 16575 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| SFM | 5-35 | 5-35 | 5-35 | 5-20 | 5-20 | 5-20 | | 5-20 | | 5-35 | | 5-10 | 5-20 | | | | | |

good best





List 16590

NEW

HSSE

V

40°

A-NPS



Units: Inch

| Size | Number of Flutes | EDP Number | Overall Length | Length of Cut | Neck Length | Shank Diameter | Square Width | Square Length |
|--------------------|------------------|------------|----------------|---------------|-------------|----------------|--------------|---------------|
| | | NPS | L | Lc | Ln | d | k | lk |
| | | V | L | Lc | Ln | d | k | lk |
| 1/16 - 27 | 3 | 1659001008 | 3.543 | 0.551 | 1.417 | 0.313 | 0.234 | 0.374 |
| 1/8 - 27 (Sm. Shk) | | 1659002008 | | | 1.457 | | | |
| 1/8 - 27 (Lg. Shk) | | 1659003008 | | | 0.438 | | | |
| 1/4 - 18 | 4 | 1659004008 | 3.937 | 0.748 | 1.929 | 0.563 | 0.421 | 0.437 |
| 3/8 - 18 | | 1659005008 | | | 0.827 | | | |
| 1/2 - 14 | | 1659006008 | 4.921 | 1.024 | 2.362 | 0.688 | 0.515 | 0.626 |
| 3/4 - 14 | | 1659007008 | 5.511 | 1.102 | 2.913 | 0.906 | 0.679 | 0.689 |
| 1 - 11,1/2 | | 1659008008 | 6.299 | 1.299 | 3.150 | 1.125 | 0.843 | 0.811 |

Packed: 1 pc.
Available in V coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|---------|--------------------------|-----------|-------------------------------------|--------------|--------------------------|-------------------------------------|-----------|-----------|-----------|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 16590 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | |
| SFM | 5-35 | 5-35 | 5-35 | 5-20 | 5-20 | 5-20 | 5-20 | | 5-20 | | 5-35 | | 5-10 | 5-20 | | | | |

good best





List 16585

| | | | |
|-----|------|---|-----|
| NEW | HSSE | V | 40° |
|-----|------|---|-----|

A-BSPT, Interrupted Thread



Units: Inch

| Size | Number of Flutes | EDP Number | Overall Length | Length of Cut | Neck Length | Shank Diameter | Square Width | Square Length |
|----------|------------------|------------|----------------|---------------|-------------|----------------|--------------|---------------|
| | | NPT | L | Lc | Ln | d | k | lk |
| | | V | L | Lc | Ln | d | k | lk |
| 1/8 - 28 | 3 | 1658501008 | 3.543 | 0.591 | 1.457 | 0.313 | 0.234 | 0.374 |
| 1/4 - 19 | | 1658502008 | 3.937 | 0.748 | 1.929 | 0.563 | 0.421 | 0.437 |
| 3/8 - 19 | 1658503008 | 0.827 | | 1.969 | 0.700 | 0.531 | 0.500 | |
| 1/2 - 14 | 4 | 1658504008 | 4.921 | 1.024 | 2.362 | 0.688 | 0.515 | 0.626 |
| 3/4 - 14 | | 1658505008 | 5.511 | 1.102 | 2.913 | 0.906 | 0.679 | 0.689 |
| 1 - 11 | | 1658506008 | 6.299 | 1.299 | 3.150 | 1.125 | 0.843 | 0.811 |

Packed: 1 pc.
Available in V coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|---------|--------------------------|--------------|-------------------------------------|--------------------------|-------------------------------------|-----------------|--------------|--------------|--------------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | 4140 4340 | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 16585 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | |
| SFM | 5-35 | 5-35 | 5-35 | 5-20 | 5-20 | 5-20 | 5-20 | | 5-20 | | 5-35 | | 5-10 | 5-20 | | | |

good best



List 16580

A-BSPP

NEW

HSSE

V

40°



Units: Inch

| Size | Number of Flutes | EDP Number | Overall Length | Length of Cut | Neck Length | Shank Diameter | Square Width | Square Length |
|----------|------------------|------------|----------------|---------------|-------------|----------------|--------------|---------------|
| | | NPT | L | Lc | Ln | d | k | lk |
| | | V | L | Lc | Ln | d | k | lk |
| 1/8 - 28 | 3 | 1658001008 | 3.543 | 0.591 | 1.457 | 0.313 | 0.234 | 0.374 |
| 1/4 - 19 | | 1658002008 | 3.937 | 0.748 | 1.929 | 0.563 | 0.421 | 0.437 |
| 3/8 - 19 | | 1658003008 | | 0.827 | 1.969 | 0.700 | 0.531 | 0.500 |
| 1/2 - 14 | 4 | 1658004008 | 4.921 | 1.024 | 2.362 | 0.688 | 0.515 | 0.626 |
| 3/4 - 14 | | 1658005008 | 5.511 | 1.102 | 2.913 | 0.906 | 0.679 | 0.689 |
| 1 - 11 | | 1658006008 | 6.299 | 1.299 | 3.150 | 1.125 | 0.843 | 0.811 |

Packed: 1 pc.
Available in V coating only.

ATP

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|---------|--------------------------|--------------|-------------------------------------|--------------------------|-------------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | 4140 4340 | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 16580 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | |
| SFM | 5-35 | 5-35 | 5-35 | 5-20 | 5-20 | 5-20 | 5-20 | | 5-20 | | 5-35 | | 5-10 | 5-20 | | | |

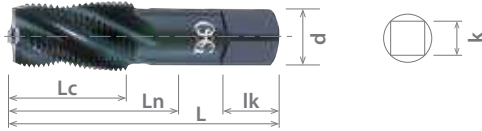
good best



| | | | |
|------|-----|-----|-----|
| HSSE | TiN | S/O | 15° |
|------|-----|-----|-----|

List 308

NPT



Units: Inch

| Tap Size | No. of Flutes | NPT | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk | |
|--------------------|---------------|------------|----------------|-----|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|-------|
| | | EDP Number | Coating Suffix | | | | | | | | |
| | | | S/O | TiN | | | | | | | |
| 1/16 - 27 | 4 | 17350 | 01 | 05 | 2.126 | 0.689 | 0.925 | 0.313 | 0.234 | 0.374 | |
| 1/8 - 27 (Sm. Shk) | | 17352 | 01 | 05 | | - | 0.752 | | | | |
| 1/8 - 27 (Lg. Shk) | | 17351 | 01 | 05 | | 0.988 | | 0.438 | 0.328 | | |
| 1/4 - 18 | | 17353 | 01 | 05 | 2.437 | 1.091 | 1.346 | 0.563 | 0.421 | 0.437 | |
| 3/8 - 18 | | 17354 | 01 | 05 | 2.563 | | | 0.700 | 0.531 | 0.500 | |
| 1/2 - 14 | | 17355 | 01 | 05 | 3.126 | 1.409 | - | 0.688 | 0.515 | 0.626 | |
| 3/4 - 14 | | 17448 | - | 05 | 3.252 | 1.374 | - | 0.906 | 0.679 | 0.689 | |
| | | 17356 | 01 | - | | | | | | | |
| 1 - 11,1/2 | | 4 | 17449 | - | 05 | 3.752 | 1.752 | - | 1.125 | 0.843 | 0.811 |
| | | 5 | 17357 | 01 | - | | | | | | |

Packed: 1 pc.

EDP's listed above are stocked standard.

Available in Steam Oxide or TiN coatings as shown above.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | H | | | | |
|----------|--------------------------|--------------------------|------|--------------|------------|-------------------------------------|-------------------------------------|-------------------------------------|----------------|----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 308 | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | | | |
| SFM | 15-40 | 10-25 | | | | 10-25 | 10-25 | 8-12 | | | | | | | | | |

good best



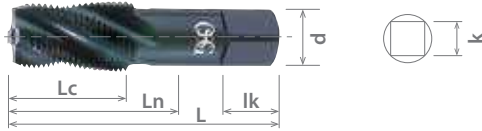


List 318

NPTF



| | | | |
|------|-----|-----|-----|
| HSSE | TiN | S/O | 15° |
|------|-----|-----|-----|



Units: Inch

| Tap Size | No. of Flutes | NPTF | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk |
|--------------------|---------------|------------|----------------|-----|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|
| | | EDP Number | Coating Suffix | | | | | | | |
| | | | S/O | TiN | | | | | | |
| 1/16 - 27 | 4 | 17375 | 01 | 05 | 2.126 | 0.688 | 0.312 | 0.233 | 0.374 | |
| 1/8 - 27 (Sm. Shk) | | 17377 | 01 | 05 | | - | | | | |
| 1/8 - 27 (Lg. Shk) | | 17376 | 01 | 05 | | 0.751 | 0.988 | 0.437 | | 0.327 |
| 1/4 - 18 | | 17378 | 01 | 05 | 2.437 | 1.090 | 1.346 | 0.562 | 0.420 | 0.437 |
| 3/8 - 18 | | 17379 | 01 | 05 | 2.563 | | 1.346 | 0.700 | 0.531 | 0.500 |
| 1/2 - 14 | | 17380 | 01 | 05 | 3.126 | 1.374 | - | 0.687 | 0.514 | 0.625 |
| 3/4 - 14 | | 17399 | - | 05 | 3.252 | | - | 0.906 | 0.679 | 0.688 |
| | | 17381 | 01 | - | | | - | | | |
| 1 - 11,1/2 | | 4 | 17446 | - | | 05 | 3.752 | 1.751 | 1.125 | |
| | | 5 | 17382 | 01 | - | | | | | |

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or TiN coatings as shown above.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|------|--------------|------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|-----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 318 | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | | | |
| SFM | 15-40 | 10-25 | | | | 10-25 | 10-25 | 8-12 | | | | | | | | | |

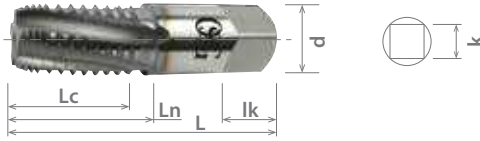
good best



List 12053



NPT, Interrupted



Units: Inch

| Tap Size | No. of Flutes | EDP Number | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|--------------------|---------------|------------------|-------|----------------|---------------|-------------|------------|--------------|---------------|
| | | NPT, Interrupted | | | | | | | |
| | | TiCN | | | | | | | |
| | | L | Lc | Ln | d | k | lk | | |
| 1/8 - 27 (Sm. Shk) | 3 | 1205300108 | 2.126 | 0.751 | - | 0.312 | 0.233 | 0.374 | |
| 1/8 - 27 (Lg. Shk) | | 1205300208 | | | 1.007 | 0.437 | 0.327 | | |
| 1/4 - 18 | | 1205300308 | | | 2.441 | 1.062 | 1.318 | | 0.562 |
| 3/8 - 18 | 5 | 1205300408 | 2.563 | 1.374 | - | 0.700 | 0.531 | 0.500 | |
| 1/2 - 14 | | 1205300508 | 3.126 | | - | 0.687 | 0.514 | 0.625 | |
| 3/4 - 14 | | 1205300608 | 3.252 | | - | 0.906 | 0.679 | 0.688 | |
| 1 - 11,1/2 | | 1205300708 | 3.752 | | - | 1.125 | 0.842 | 0.811 | |
| | | | | | | | | | |

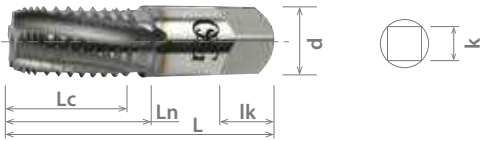
Packed: 1 pc.
Available TiCN coating only.



List 12054



NPTF, Interrupted



Units: Inch

| Tap Size | No. of Flutes | EDP Number | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|--------------------|---------------|-------------------|-------|----------------|---------------|-------------|------------|--------------|---------------|
| | | NPTF, Interrupted | | | | | | | |
| | | TiCN | | | | | | | |
| | | L | Lc | Ln | d | k | lk | | |
| 1/8 - 27 (Sm. Shk) | 3 | 1205400108 | 2.126 | 0.751 | - | 0.312 | 0.233 | 0.374 | |
| 1/8 - 27 (Lg. Shk) | | 1205400208 | | | 1.007 | 0.437 | 0.327 | | |
| 1/4 - 18 | | 1205400308 | | | 2.441 | 1.062 | 1.318 | | 0.562 |
| 3/8 - 18 | 5 | 1205400408 | 2.563 | 1.374 | - | 0.700 | 0.531 | 0.500 | |
| 1/2 - 14 | | 1205400508 | 3.126 | | - | 0.687 | 0.514 | 0.625 | |
| 3/4 - 14 | | 1205400608 | 3.252 | | - | 0.906 | 0.679 | 0.688 | |
| 1 - 11,1/2 | | 1205400708 | 3.752 | | - | 1.125 | 0.842 | 0.811 | |
| | | | | | | | | | |

Packed: 1 pc.
Available TiCN coating only.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|---------|--------------|--------------------------|--------------------------|----------------|---------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 12053 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| 12054 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| SFM | 15-40 | 10-25 | 10-20 | 10-25 | 10-15 | 10-25 | 10-25 | 8-12 | 15-50 | | | | 10-20 | 8-12 | | | |

good best





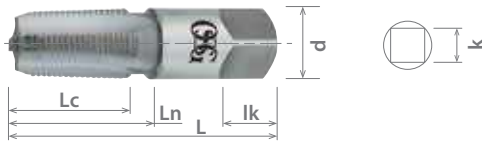
List 328

NPT, ANPT



HSS-Co

BR



Units: Inch

| Tap Size | No. of Flutes | EDP Number | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|--------------------|---------------|------------|-------|----------------|---------------|-------------|------------|--------------|---------------|
| | | NPT, ANPT | | | | | | | |
| | | Bright | L | | | | | | |
| 1/8 - 27 (Lg. Shk) | 4 | 1736000 | 2.126 | 0.751 | 0.992 | 0.437 | 0.327 | 0.374 | |
| 1/4 - 18 | | 1736100 | 2.437 | 1.062 | 1.318 | 0.562 | 0.420 | 0.437 | |
| 3/8 - 18 | | 1736200 | 2.563 | - | - | 0.700 | 0.531 | 0.500 | |
| 1/2 - 14 | | 1736300 | 3.126 | 1.374 | - | 0.687 | 0.514 | 0.625 | |
| 3/4 - 14 | 5 | 1736400 | 3.252 | - | - | 0.906 | 0.679 | 0.688 | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-----------|-----------|---------|--------------|-------------------------------------|--------------------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 328 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |
| SFM | 15-40 | 10-25 | 10-20 | 10-25 | 10-15 | 10-25 | 10-25 | 8-12 | | | | | 10-20 | 8-12 | | | |

good best



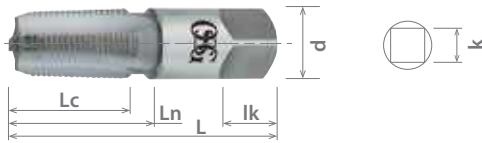


GENERAL PURPOSE

List 108

| | | | | |
|-----|------|-----|-----|----|
| HSS | TiCN | TiN | S/O | BR |
|-----|------|-----|-----|----|

NPT, ANPT



Units: Inch

| Tap Size | No. of Flutes | NPT, ANPT | | | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | |
|--------------------|---------------|------------|----------------|-----|-----|-------|----------------|---------------|-------------|------------|--------------|---------------|-------|
| | | EDP Number | Coating Suffix | | | | | | | | | | |
| | | | Bright | S/O | TiN | TiCN | | | | | | | |
| 1/16 - 27 | 4 | 13100 | 00 | 01 | 05 | 08 | 2.126 | 0.688 | 0.925 | 0.312 | 0.233 | 0.374 | |
| 1/8 - 27 (Sm. Shk) | | 13102 | 00 | 01 | 05 | 08 | | 0.751 | | | | | |
| 1/8 - 27 (Lg. Shk) | | 13101 | 00 | 01 | 05 | 08 | 1.062 | - | 0.437 | 0.327 | | | |
| 1/4 - 18 | | 13103 | 00 | 01 | 05 | 08 | | 2.437 | 1.318 | 0.562 | 0.420 | | 0.437 |
| 3/8 - 18 | | 13104 | 00 | 01 | 05 | 08 | | 2.563 | - | 0.700 | 0.531 | | 0.500 |
| 1/2 - 14 | | 13105 | 00 | 01 | 05 | 08 | | 3.126 | - | 0.687 | 0.514 | | 0.625 |
| 3/4 - 14 | 13106 | 00 | 01 | 05 | 08 | 3.252 | 1.374 | - | 0.906 | 0.679 | 0.688 | | |
| 1 - 11, 1/2 | 5 | 13107 | 00 | 01 | 05 | 08 | 3.752 | 1.751 | - | 1.125 | 0.842 | 0.811 | |
| 1, 1/4 - 11, 1/2 | | 13108 | 00 | 01 | - | 08 | 4.000 | | - | 1.312 | 0.983 | 0.937 | |
| 1, 1/2 - 11, 1/2 | 7 | 13109 | 00 | 01 | - | 08 | 4.252 | | - | 1.500 | 1.125 | 1.000 | |
| 2 - 11, 1/2 | | 13110 | 00 | 01 | - | 08 | 4.500 | | - | 1.875 | 1.405 | 1.125 | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|---------|--------------|----------|-----------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 108 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 15-40 | 10-25 | 10-20 | | | | | | 15-50 | 15-40 | 20-35 | | | | | | |

good best



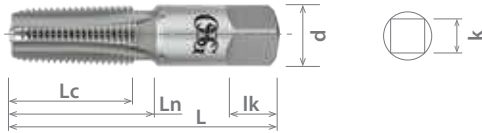


List 108AL

HSS

BR

NPT, For Aluminum



Units: Inch

| Tap Size | No. of Flutes | EDP Number | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|--------------------|---------------|------------|-------|----------------|---------------|-------------|------------|--------------|---------------|
| | | NPT | | | | | | | |
| | | Bright | | | | | | | |
| 1/8 - 27 (Lg. Shk) | 4 | 1311100 | | 2.126 | 0.752 | 0.988 | 0.438 | 0.328 | 0.374 |
| 1/4 - 18 | | 1311200 | | 2.437 | 1.063 | 1.319 | 0.563 | 0.421 | 0.437 |
| 3/8 - 18 | | 1311400 | | 2.563 | | | 0.700 | 0.531 | 0.500 |
| 1/2 - 14 | | 1311800 | | 3.126 | 1.374 | - | 0.688 | 0.515 | 0.626 |
| 3/4 - 14 | 1311500 | | 3.252 | - | | 0.906 | 0.679 | 0.689 | |
| 1 - 11,1/2 | 1311600 | | 3.752 | - | | 1.125 | 0.843 | 0.811 | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|----------|---------------|--------------|------|------------------------------|------------|------------------|-----|---------|-------------------------------------|-------------------------------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | | Stainless Steels | | | | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| | 1010 1018 | 1035 1045 | 1065 | | | | | | | | | | | | | | |
| 108AL | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |
| SFM | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |

good best



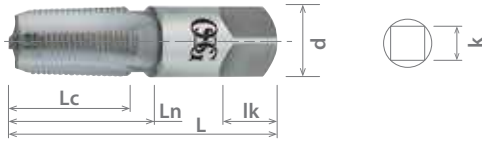


GENERAL PURPOSE

List 118

| | | | | |
|-----|------|-----|-----|----|
| HSS | TiCN | TiN | S/O | BR |
|-----|------|-----|-----|----|

NPTF



Units: Inch

| Tap Size | No. of Flutes | NPTF | | | | Overall Length L | Thread Length Lc | Neck Length Ln | Shank Dia. d | Square Width k | Square Length lk | |
|--------------------|---------------|------------|----------------|-----|-----|---------------------|---------------------|-------------------|-----------------|-------------------|---------------------|-------|
| | | EDP Number | Coating Suffix | | | | | | | | | |
| | | | Bright | S/O | TiN | | | | | | | TiCN |
| 1/16 - 27 | 4 | 13125 | 00 | 01 | 05 | 08 | 2.126 | 0.688 | 0.885 | 0.312 | 0.233 | |
| 1/8 - 27 (Sm. Shk) | | 13127 | 00 | 01 | 05 | 08 | | 0.751 | 0.948 | | | |
| 1/8 - 27 (Lg. Shk) | | 13126 | 00 | 01 | 05 | 08 | 1.062 | 1.279 | 0.437 | 0.327 | | |
| 1/4 - 18 | | 13128 | 00 | 01 | 05 | 08 | | | 2.437 | 0.562 | 0.420 | 0.437 |
| 3/8 - 18 | | 13129 | 00 | 01 | 05 | 08 | | | 2.563 | 0.700 | 0.531 | 0.500 |
| 1/2 - 14 | | 13130 | 00 | 01 | 05 | 08 | | | 3.126 | - | 0.687 | 0.514 |
| 3/4 - 14 | 13131 | 00 | 01 | 05 | 08 | 3.252 | 1.374 | - | 0.906 | 0.679 | 0.688 | |
| 1 - 11,1/2 | 5 | 13132 | 00 | 01 | - | 08 | 3.752 | 1.751 | - | 1.125 | 0.842 | 0.811 |
| 1,1/4 - 11,1/2 | | 13133 | 00 | 01 | - | 08 | 4.000 | | - | 1.312 | 0.983 | 0.937 |
| 1,1/2 - 11,1/2 | 7 | 13134 | 00 | 01 | - | 08 | 4.252 | | - | 1.500 | 1.125 | 1.000 |
| 2 - 11,1/2 | | 13135 | 00 | 01 | - | 08 | 4.500 | | - | 1.875 | 1.405 | 1.125 |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|----------|--------------------------|--------------------------|--------------------------|------------------------------|------------|------------------|-----|---------|--------------------------|--------------------------|--------------------------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | | Stainless Steels | | | | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 118 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| SFM | 15-40 | 10-25 | 10-20 | | | | | | 15-50 | 15-40 | 20-35 | | | | | | |

good best





List 108G

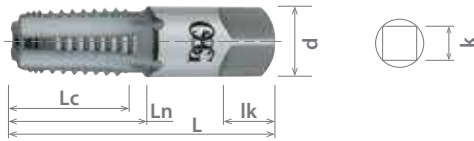
HSS

TiCN

S/O

BR

Interrupted Thread, NPT, NPTF, ANPT



Units: Inch

| Tap Size | No. of Flutes | NPT, ANPT, Interrupted Thread | | | NPTF, Interrupted Thread | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | | |
|--------------------|---------------|-------------------------------|----------------|-----|--------------------------|------------|----------------|----------------|---------------|-------------|------------|--------------|---------------|-------|-------|
| | | EDP Number | Coating Suffix | | | EDP Number | Coating Suffix | | | | | | | | |
| | | | Bright | S/O | TiCN | | Bright | S/O | TiCN | L | Lc | Ln | d | k | lk |
| 1/8 - 27 (Sm. Shk) | 5 | 13152 | 00 | 01 | 08 | 33105 | 00 | 01 | 08 | 2.126 | 0.752 | - | 0.313 | 0.234 | 0.374 |
| 1/8 - 27 (Lg. Shk) | | 13151 | 00 | 01 | 08 | 33101 | 00 | 01 | 08 | | | - | 0.988 | 0.438 | |
| 1/4 - 18 | | 13153 | 00 | 01 | 08 | 33109 | 00 | 01 | 08 | 2.437 | 1.063 | 1.319 | 0.563 | 0.421 | 0.437 |
| 3/8 - 18 | | 13154 | 00 | 01 | 08 | 13113 | 00 | 01 | 08 | | | | 2.563 | - | 0.700 |
| 1/2 - 14 | | 13155 | 00 | 01 | 08 | 13117 | 00 | 01 | 08 | 3.126 | 1.374 | - | 0.688 | 0.515 | 0.626 |
| 3/4 - 14 | | 13156 | 00 | 01 | 08 | 13121 | 00 | 01 | 08 | 3.252 | | - | 0.906 | 0.679 | 0.689 |
| 1 - 11,1/2 | | 13157 | 00 | 01 | 08 | 33125 | 00 | 01 | 08 | 3.752 | 1.752 | - | 1.125 | 0.843 | 0.811 |
| 1,1/4 - 11,1/2 | 13158 | 00 | 01 | 08 | 33129 | 00 | 01 | 08 | 4.000 | - | | 1.313 | 0.984 | 0.937 | |
| 1,1/2 - 11,1/2 | 13159 | 00 | 01 | 08 | - | - | - | - | 4.252 | - | | 1.500 | 1.125 | 1.000 | |
| 2 - 11,1/2 | 13160 | 00 | 01 | - | - | - | - | - | 4.500 | - | - | 1.875 | 1.406 | 1.126 | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|--------------------------|--------------|----------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 108G | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| SFM | 15-40 | 10-25 | 10-20 | | | | | | 15-50 | 15-40 | 20-35 | | | | | | |

good best



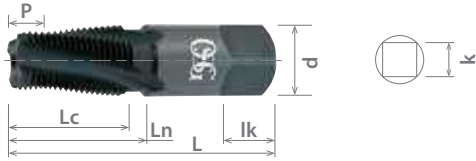


GENERAL PURPOSE

List S125

| | | | | |
|-----|------|-----|----|-----|
| HSS | TiCN | S/O | BR | 15° |
|-----|------|-----|----|-----|

Short Projection, NPT, NPTF



Units: Inch

| Tap Size | No. of Flutes | NPT, ANPT | | | NPTF | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Projection | | |
|--------------------|---------------|------------|----------------|-----|------|------------|----------------|----------------|---------------|-------------|------------|--------------|---------------|------------|-------|-------|
| | | EDP Number | Coating Suffix | | | EDP Number | Coating Suffix | | | | | | | | | |
| | | | Bright | S/O | TiCN | | Bright | | | | | | | | S/O | TiCN |
| 1/8 - 27 (Lg. Shk) | 4 | 12505 | 00 | 01 | 08 | 12506 | 00 | 01 | 08 | 2.126 | 0.751 | 0.988 | 0.437 | 0.327 | 0.374 | 0.234 |
| 1/4 - 18 | | 12513 | 00 | 01 | 08 | 12514 | 00 | 01 | 08 | 2.437 | 1.062 | 1.318 | 0.562 | 0.420 | 0.437 | 0.375 |
| 3/8 - 18 | | 12517 | 00 | 01 | 08 | 12518 | 00 | 01 | 08 | 2.563 | | | 0.700 | 0.531 | 0.500 | |
| 1/2 - 14 | | 12521 | 00 | 01 | 08 | 12522 | 00 | 01 | 08 | 3.126 | 1.374 | - | 0.687 | 0.514 | 0.625 | 0.468 |
| 3/4 - 14 | 5 | 12525 | 00 | 01 | 08 | 12526 | 00 | 01 | 08 | 3.252 | 1.751 | - | 0.906 | 0.679 | 0.688 | 0.453 |
| 1 - 11,1/2 | | 12529 | 00 | 01 | 08 | 12530 | 00 | 01 | 08 | 3.752 | | | 1.125 | 0.842 | 0.811 | 0.578 |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|---------|--------------|----------|-----------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| S125 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 15-40 | 10-25 | 10-20 | | | | | | 15-50 | 15-40 | 20-35 | | | | | | |

good best



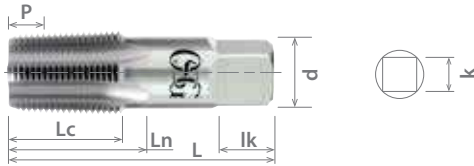


List 12006

HSS

BR

Short Projection, NPTF



Units: Inch

| Tap Size | No. of Flutes | EDP Number | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length | Projection |
|--------------------|---------------|------------------------|------------|----------------|---------------|-------------|------------|--------------|---------------|------------|
| | | NPTF, Short Projection | | | | | | | | |
| | | Bright | | | | | | | | |
| | | L | Lc | Ln | d | k | Ik | P | | |
| 1/8 - 27 (Lg. Shk) | 4 | 1200600100 | 1200600600 | 2.126 | 0.752 | 0.988 | 0.438 | 0.328 | 0.374 | 0.204 |
| | | | | | | | | | | 0.167 |
| 1/4 - 18 | | 1200600200 | 1200600700 | 2.437 | 1.063 | 1.319 | 0.563 | 0.421 | 0.437 | 0.306 |
| | | | | | | | | | | |
| 3/8 - 18 | | 1200600300 | 1200600800 | 2.563 | 1.374 | - | 0.700 | 0.531 | 0.500 | 0.306 |
| | | | | | | | | | | |
| 1/2 - 14 | | 1200600400 | 1200600900 | 3.126 | - | - | 0.688 | 0.515 | 0.626 | 0.393 |
| | | | | | | | | | | |
| 3/4 - 14 | 1200600500 | 1200601000 | 3.252 | - | - | 0.906 | 0.679 | 0.689 | 0.393 | |
| | | | | | | | | | | 0.322 |

Packed: 1 pc.
Available Bright finish only.



Work Material

| List No. | P | | | | | | | | | | | | | | | M | | | K | N | | S | | H | | | |
|----------|--------------------------|--------------------------|--------------------------|-----------|--------------|------------|------------------|---------|-----------|--------------------------|--------------------------|---------|----------------|----------|-----------------|-----------|-----------|--|---|---|--|---|--|---|--|--|--|
| | Carbon Steels | | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | | | | | | | | |
| | Low | Med. | High | 300 | | | 400 | 17-4 PH | 6061 7075 | | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | | | | | | | | | |
| | 1010 1018 | 1035 1045 | 1065 | 4140 4340 | | | | | | | | | | | | | | | | | | | | | | | |
| 12006 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | |
| SFM | 15-40 | 10-25 | 10-20 | | | | | | 15-50 | 15-40 | 20-35 | | | | | | | | | | | | | | | | |

good best



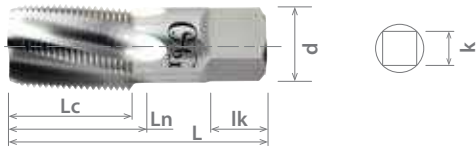


GENERAL PURPOSE

List 12007

| | | |
|-----|----|-----|
| HSS | BR | 15° |
|-----|----|-----|

NPT



Units: Inch

| Tap Size | No. of Flutes | EDP Number | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|--------------------|---------------|------------|-------|----------------|---------------|-------------|------------|--------------|---------------|
| | | NPT | | | | | | | |
| | | Bright | | | | | | | |
| | | L | Lc | Ln | d | k | lk | | |
| 1/8 - 27 (Lg. Shk) | 4 | 1200700200 | 2.126 | 0.751 | 0.948 | 0.437 | 0.327 | 0.374 | |
| 1/4 - 18 | | 1200700400 | 2.437 | 1.062 | 1.279 | 0.562 | 0.420 | 0.437 | |
| 3/8 - 18 | | 1200700500 | 2.563 | - | - | 0.700 | 0.531 | 0.500 | |
| 1/2 - 14 | | 1200700600 | 3.126 | - | - | 0.687 | 0.514 | 0.625 | |
| 3/4 - 14 | 5 | 1200700700 | 3.252 | 1.374 | - | 0.906 | 0.679 | 0.688 | |

Packed: 1 pc.
Available Bright finish only.



Work Material

| List No. | P | | | | | | | | | | | | | | | M | | | K | N | | S | | H | | | |
|----------|--------------------------|--------------------------|--------------------------|------|------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|------|--------------|----------|-----------------|---------|----------------|---------|-----------|-----------|-----------|------|------|--|--|--|
| | Carbon Steels | | | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | | | | | | | |
| | Low | Med. | High | 4140 | 4340 | | | 300 | 400 | 17-4 PH | | 6061 | 7075 | | | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | | | | |
| | 1010 | 1035 | 1065 | | | | | | | | | | | | | | | | | | | | 1018 | 1045 | | | |
| 12007 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | |
| SFM | 15-40 | 10-25 | 10-20 | | | | | | | 15-50 | 15-40 | 20-35 | | | | | | | | | | | | | | | |

good best

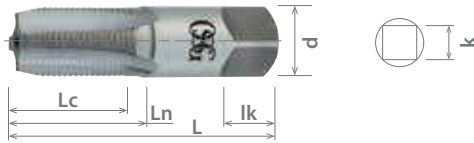




List 109

| | | |
|-----|---|-----------------------------|
| HSS | <input checked="" type="checkbox"/> S/O | <input type="checkbox"/> BR |
|-----|---|-----------------------------|

NPS, NPSF



Units: Inch

| Tap Size | No. of Flutes | NPS | | | NPSF | | | Overall Length | Thread Length | Neck Length | Shank Dia. | Square Width | Square Length |
|--------------------|---------------|------------|----------------|-------|------------|----------------|-------|----------------|---------------|-------------|------------|--------------|---------------|
| | | EDP Number | Coating Suffix | | EDP Number | Coating Suffix | | | | | | | |
| | | | Bright | S/O | | Bright | S/O | L | Lc | Ln | d | k | lk |
| 1/8 - 27 (Sm. Shk) | 4 | 13302 | 00 | 01 | 13327 | 00 | 01 | 2.126 | 0.752 | - | 0.313 | 0.234 | 0.374 |
| 1/8 - 27 (Lg. Shk) | | 13301 | 00 | 01 | 13326 | 00 | 01 | | | 0.949 | 0.438 | 0.328 | |
| 1/4 - 18 | | 13303 | 00 | 01 | 13328 | 00 | 01 | 2.437 | 1.063 | 1.260 | 0.563 | 0.421 | 0.437 |
| 3/8 - 18 | | 13304 | 00 | 01 | 13329 | 00 | 01 | 2.563 | | 0.700 | 0.531 | 0.500 | |
| 1/2 - 14 | | 13305 | 00 | 01 | 13330 | 00 | 01 | 3.126 | 1.374 | - | 0.688 | 0.515 | 0.626 |
| 3/4 - 14 | | 13306 | 00 | 01 | 13331 | 00 | 01 | 3.252 | | - | 0.906 | 0.679 | 0.689 |
| 1 - 11,1/2 | 13307 | 00 | 01 | 13332 | 00 | 01 | 3.752 | 1.752 | - | 1.125 | 0.843 | 0.811 | |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------|------------|------------------|-----|---------|--------------------------|--------------------------|---------|--------------|----------|-----------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 109 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| SFM | 15-40 | 10-25 | 10-20 | | | | | | 15-50 | 15-40 | 20-35 | | | | | | |

good best





List 134

HSS

BR

Solid Round Dies, Special Alloy Tool Steel



Units: Inch

| Size | Major Diameter | Outside Diameter | Thickness | EDP Number |
|------------|----------------|------------------|-----------|------------|
| 0 - 80 UNF | 0.060 | 5/8 | 1/4 | 2723000 |
| 1 - 72 UNF | 0.073 | | | 2723300 |
| 2 - 56 UNC | 0.086 | | | 2723400 |
| 2 - 64 UNF | | | | 2723500 |
| 3 - 56 UNF | 0.099 | | | 2723700 |
| 4 - 40 UNC | 0.112 | | | 2724000 |
| 4 - 48 UNF | | | | 2724100 |

| Size | Major Diameter | Outside Diameter | Thickness | EDP Number |
|------------|----------------|------------------|-----------|------------|
| 5 - 40 UNC | 0.125 | 5/8 | 1/4 | 2724200 |
| 6 - 32 UNC | 0.138 | | | 2724400 |
| 6 - 40 UNF | | | | 2724600 |
| 8 - 32 UNC | 0.164 | | | 2724700 |

Packed: 1 pc.
Available Bright finish only.



Packed: 1 pc.
Available Bright finish only.



List 134 (Continued)

HSS

BR

Adjustable Round Split Dies, Special Alloy Tool Steel



Units: Inch

| Size | Major Diameter | Outside Diameter | Thickness | EDP Number | | |
|---------------|----------------|------------------|-----------|------------|---------|---------|
| 0 - 80 UNF | 0.060 | 13/16 | 1/4 | 2726000 | | |
| 1/16 - 64 UNC | 0.062 | | | 2700100 | | |
| 1 - 64 UNC | 0.073 | | | 2726200 | | |
| 1 - 72 UNF | | | | 2726300 | | |
| 2 - 56 UNC | 0.086 | | | 2726400 | | |
| 2 - 64 UNF | | | | 2726500 | | |
| 3/32 - 48 UNC | 0.093 | | | 2700200 | | |
| 3 - 48 UNC | | | | 2726600 | | |
| 3 - 56 UNF | 0.099 | | | 2726700 | | |
| 4 - 36 UNS | | | | 2726900 | | |
| 4 - 40 UNC | 0.112 | | | 2727000 | | |
| 4 - 48 UNF | | | | 2727100 | | |
| 5 - 40 UNC | 0.125 | | | 2727200 | | |
| 5 - 44 UNF | | | | 2727300 | | |
| 1/8 - 40 UNC | 0.125 | | | 2700300 | | |
| 6 - 32 UNC | | | | 2727400 | | |
| 6 - 40 UNF | 0.138 | | | 1 | 3/8 | 2728800 |
| 5/32 - 32 UNC | | | | 0.156 | 13/16 | 1/4 |
| 5/32 - 36 UNF | 2700400 | | | | | |
| 8 - 32 UNC | 0.164 | | | 1 | 3/8 | 2700500 |
| 8 - 36 UNF | | 13/16 | 1/4 | 2727700 | | |
| 3/16 - 24 UNC | 0.187 | | | 1 | 3/8 | 2729100 |
| 3/16 - 32 UNF | | 13/16 | 1/4 | 2727800 | | |
| 10 - 24 UNC | 0.190 | 1 | 3/8 | 2700600 | | |
| 10 - 32 UNF | | 13/16 | 1/4 | 2702400 | | |
| 12 - 24 UNC | 0.216 | 1 | 3/8 | 2700700 | | |
| 12 - 28 UNF | | 13/16 | 1/4 | 2702500 | | |
| 7/32 - 24 UNC | 0.218 | 1 | 3/8 | 2728000 | | |
| 1/4 - 20 UNC | | 0.250 | 13/16 | 1/4 | 2728300 | |
| 1/4 - 24 UNS | 1 | | 3/8 | 2729700 | | |
| 1/4 - 28 UNF | 1 | | 3/8 | 2728400 | | |
| 1/4 - 32 UNEF | 13/16 | | 1/4 | 2700800 | | |
| | 1 | | 3/8 | 2701000 | | |
| | 1 - 5/16 | | 7/16 | 2702800 | | |
| | 1 - 1/2 | | 1/2 | 2704100 | | |
| | 2 | | 5/8 | 2706100 | | |
| | 1 | | 3/8 | 2710000 | | |
| | 13/16 | | 1/4 | 2702900 | | |
| | 1 | | 3/8 | 2701200 | | |
| | 1 - 5/16 | | 7/16 | 2703000 | | |
| | 1 - 1/2 | | 1/2 | 2704300 | | |
| | 2 | | 5/8 | 2706300 | | |
| | 1 | | 3/8 | 2710100 | | |
| | 1 | | 3/8 | 2703100 | | |

Packed: 1 pc.
Available Bright finish only.



| Size | Major Diameter | Outside Diameter | Thickness | EDP Number |
|----------------|----------------|------------------|-----------|------------|
| 5/16 - 18 UNC | 0.312 | 13/16 | 1/4 | 2701400 |
| | | 1 | 3/8 | 2703200 |
| | | 1 - 5/16 | 7/16 | 2704500 |
| | | 1 - 1/2 | 1/2 | 2706500 |
| 5/16 - 24 UNF | 0.312 | 2 | 5/8 | 2710400 |
| | | 13/16 | 1/4 | 2701500 |
| | | 1 | 3/8 | 2703300 |
| | | 1 - 5/16 | 7/16 | 2704600 |
| 5/16 - 32 UNEF | 0.312 | 1 - 1/2 | 1/2 | 2706600 |
| | | 2 | 5/8 | 2710500 |
| 3/8 - 16 UNC | 0.375 | 1 | 3/8 | 2703400 |
| | | 1 - 5/16 | 7/16 | 2703500 |
| | | 1 - 1/2 | 1/2 | 2704800 |
| 3/8 - 24 UNF | 0.375 | 2 | 5/8 | 2706800 |
| | | 1 | 3/8 | 2710700 |
| | | 1 - 5/16 | 7/16 | 2703600 |
| | | 1 - 1/2 | 1/2 | 2704900 |
| 7/16 - 14 UNC | 0.437 | 2 | 5/8 | 2706900 |
| | | 1 | 3/8 | 2710800 |
| | | 1 - 5/16 | 7/16 | 2703700 |
| | | 1 - 1/2 | 1/2 | 2705000 |
| 7/16 - 20 UNF | 0.437 | 1 - 1/2 | 1/2 | 2707000 |
| | | 2 | 5/8 | 2710900 |
| | | 1 | 3/8 | 2703800 |
| 1/2 - 13 UNC | 0.500 | 1 - 5/16 | 7/16 | 2705100 |
| | | 1 - 1/2 | 1/2 | 2707100 |
| | | 2 | 5/8 | 2711000 |
| | | 1 - 5/16 | 7/16 | 2705200 |
| 1/2 - 20 UNF | 0.500 | 1 - 1/2 | 1/2 | 2707200 |
| | | 2 | 5/8 | 2711100 |
| | | 1 - 5/16 | 7/16 | 2705300 |
| 9/16 - 12 UNC | 0.562 | 1 - 1/2 | 1/2 | 2707300 |
| | | 2 | 5/8 | 2711200 |
| | | 1 - 1/2 | 1/2 | 2707400 |
| 9/16 - 18 UNF | 0.562 | 2 | 5/8 | 2711300 |
| | | 1 - 1/2 | 1/2 | 2707500 |
| | | 2 | 5/8 | 2711400 |
| 5/8 - 11 UNC | 0.625 | 1 - 1/2 | 1/2 | 2707600 |
| | | 2 | 5/8 | 2711500 |
| | | 2 - 1/2 | 3/4 | 2713400 |
| 5/8 - 18 UNF | 0.625 | 1 - 1/2 | 1/2 | 2707700 |
| | | 2 | 5/8 | 2711600 |
| 11/16 - 11 UNS | 0.687 | 2 | 5/8 | 2711700 |
| 11/16 - 16 UNS | | | | 2711800 |
| 3/4 - 10 UNC | 0.750 | 2 - 1/2 | 3/4 | 2712000 |
| | | | | 2713800 |
| 3/4 - 16 UNF | 0.750 | 2 | 5/8 | 2712100 |
| | | | | 2713900 |
| 7/8 - 9 UNC | 0.875 | 2 - 1/2 | 3/4 | 2712200 |
| | | | | 2714000 |
| 7/8 - 14 UNF | 0.875 | 2 | 5/8 | 2712300 |
| | | | | 2714100 |

Packed: 1 pc.
Available Bright finish only.

continued on next page



List 134 (Continued)

HSS

BR

Adjustable Round Split Dies, Special Alloy Tool Steel



Units: Inch

| Size | Major Diameter | Outside Diameter | Thickness | EDP Number |
|----------------|----------------|------------------|-----------|------------|
| 1 - 8 UNC | 1.000 | 2 - 1/2 | 3/4 | 2714200 |
| | | 3 | 1 | 2715000 |
| 1 - 12 UNF | | 2 - 1/2 | 3/4 | 2714300 |
| | | 3 | 1 | 2715100 |
| 1 - 14 UNS | | 2 - 1/2 | 3/4 | 2714400 |
| | | | | 2715200 |
| 1,1/8 - 7 UNC | 1.125 | 3 | 1 | 2715300 |
| 1,1/8 - 12 UNF | | | | 2715400 |

Packed: 1 pc.
Available Bright finish only.



| Size | Major Diameter | Outside Diameter | Thickness | EDP Number |
|----------------|----------------|------------------|-----------|------------|
| 1,1/4 - 7 UNC | 1.250 | 3 | 1 | 2715500 |
| 1,1/4 - 12 UNF | | | | 2715600 |
| 1,3/8 - 6 UNC | 1.375 | | | 2715700 |
| 1,3/8 - 12 UNF | | | | 2715800 |
| 1,1/2 - 6 UNC | 1.500 | | | 2715900 |
| 1,1/2 - 12 UNF | | | | 2716000 |

Packed: 1 pc.
Available Bright finish only.



List 134P

HSS

BR

Adjustable Round Split Dies, Taper Pipe



Units: Inch

| Size | Outside Diameter | Thickness | EDP Number |
|----------|------------------|-----------|------------|
| 1/8 - 27 | 1 | 3/8 | 2734000 |
| | 1-1/2 | 1/2 | 2734100 |
| 1/4 - 18 | 1-1/2 | 1/2 | 2734200 |
| | 2 | 5/8 | 2734400 |

| Size | Outside Diameter | Thickness | EDP Number |
|----------|------------------|-----------|------------|
| 3/8 - 18 | 1-1/2 | 1/2 | 2734300 |
| | 2 | 5/8 | 2734500 |
| 1/2 - 14 | 2 | 5/8 | 2734600 |

Packed: 1 pc.
Available Bright finish only.



Packed: 1 pc.
Available Bright finish only.





List 135

HSS

BR

Adjustable Round Split Dies



Units: Inch

| Size | Outside Diameter | Thickness | EDP Number |
|-------------|------------------|-----------|------------|
| M2 X 0.4 | 20 | 7 | 46011 |
| M2.3 X 0.4 | | | 46015 |
| M2.5 X 0.45 | | | 46017 |
| M2.6 X 0.45 | | | 46020 |
| M3 X 0.5 | | | 46023 |
| M3.5 X 0.6 | 25 | 9 | 46064 |
| M4 X 0.7 | 20 | 7 | 46029 |
| M4 X 0.7 | 25 | 9 | 46068 |
| M4.5 X 0.75 | | | 46070 |
| M5 X 0.8 | 20 | 7 | 46034 |
| M5 X 0.8 | 25 | 9 | 46074 |
| M6 X 1.0 | 20 | 7 | 46038 |
| | | | 46079 |
| M6 X 0.75 | 25 | 9 | 46080 |
| M7 X 1.0 | | | 46082 |
| M8 X 1.25 | | | 46085 |
| M8 X 1.0 | | | 46086 |
| M8 X 0.75 | | | 46087 |
| M9 X 1.25 | | | 46089 |
| M10 X 1.5 | | | 46093 |
| M10 X 1.5 | 38 | 13 | 46142 |
| | | | 46143 |
| | | | 46144 |
| | | | 46147 |

Packed: 1 pc.
Available Bright finish only.



| Size | Outside Diameter | Thickness | EDP Number |
|------------|------------------|-----------|------------|
| M12 X 1.75 | 25 | 9 | 1351120 |
| M12 X 1.75 | | | 46152 |
| M12 X 1.5 | 38 | 13 | 46153 |
| M12 X 1.25 | | | 46154 |
| M12 X 1.0 | | | 46155 |
| M14 X 2.0 | | | 46163 |
| M14 X 1.5 | | | 46164 |
| M14 X 1.25 | 50 | 16 | 46165 |
| M16 X 2.0 | | | 46227 |
| M16 X 1.5 | | | 46228 |
| M16 X 1.0 | | | 46230 |
| M18 X 2.5 | | | 46239 |
| M18 X 1.5 | | | 46241 |
| M20 X 2.5 | | | 46251 |
| M20 X 1.5 | | | 46253 |
| M22 X 2.5 | | | 46263 |
| M22 X 1.5 | | | 46265 |
| M24 X 3.0 | 46276 | | |
| M24 X 1.5 | 46279 | | |
| M26 X 3.0 | 57 | 20 | 46329 |
| M26 X 1.5 | | | 46331 |
| M28 X 1.5 | | | 46341 |
| M30 X 3.5 | | | 46344 |
| M30 X 1.5 | | | 46347 |

Packed: 1 pc.
Available Bright finish only.





List 15001

HSS

BR

Go/NoGo, Class 2B



Units: Inch

| Gage Size | Class of Fit | Gage Length (Inch) | | Pitch Diameter (Inch) | | EDP Number |
|----------------|--------------|--------------------|--------|-----------------------|--------|-------------|
| | | Go | NoGo | Go | NoGo | Short Form* |
| 2 - 56 UNC | 2B | 1/4 | 3/16 | 0.0744 | 0.0772 | 1500100100 |
| 2 - 64 UNF | | | | 0.0759 | 0.0786 | 1500100200 |
| 3 - 48 UNC | | | | 0.0855 | 0.0885 | 1500100300 |
| 3 - 56 UNF | | 5/16 | 7/32 | 0.0874 | 0.0902 | 1500100400 |
| 4 - 40 UNC | | | | 0.0958 | 0.0991 | 1500100500 |
| 4 - 48 UNF | | | | 0.0985 | 0.1016 | 1500100600 |
| 5 - 40 UNC | | | | 0.1088 | 0.1121 | 1500100700 |
| 5 - 44 UNF | | | | 0.1102 | 0.1134 | 1500100800 |
| 6 - 32 UNC | | | | 0.1177 | 0.1214 | 1500100900 |
| 6 - 40 UNF | | 13/32 | 9/32 | 0.1218 | 0.1252 | 1500101000 |
| 8 - 32 UNC | | | | 0.1437 | 0.1475 | 1500101100 |
| 8 - 36 UNF | | | | 0.1460 | 0.1496 | 1500101200 |
| 10 - 24 UNC | | | | 0.1629 | 0.1672 | 1500101300 |
| 10 - 32 UNF | | | | 0.1697 | 0.1736 | 1500101400 |
| 12 - 24 UNC | | | | 0.1889 | 0.1933 | 1500101500 |
| 12 - 28 UNF | | 1/2 | 5/16 | 0.1928 | 0.1970 | 1500101600 |
| 1/4 - 20 UNC | | | | 0.2175 | 0.2224 | 1500101700 |
| 1/4 - 28 UNF | | | | 0.2268 | 0.2311 | 1500101800 |
| 5/16 - 18 UNC | | | | 0.2764 | 0.2817 | 1500101900 |
| 5/16 - 24 UNF | | | | 0.2854 | 0.2902 | 1500102000 |
| 3/8 - 16 UNC | | | | 3/4 | 3/8 | 0.3344 |
| 3/8 - 24 UNF | | 0.3479 | 0.3528 | | | 1500102200 |
| 7/16 - 14 UNC | | 0.3911 | 0.3972 | | | 1500102300 |
| 7/16 - 20 UNF | | 0.4050 | 0.4104 | | | 1500102400 |
| 1/2 - 13 UNC | | 0.4500 | 0.4565 | | | 1500102500 |
| 1/2 - 20 UNF | | 0.4675 | 0.4731 | | | 1500102600 |
| 9/16 - 12 UNC | | 7/8 | 1/2 | 0.5084 | 0.5152 | 1500102700 |
| 9/16 - 18 UNF | | | | 0.5264 | 0.5323 | 1500102800 |
| 5/8 - 11 UNC | | | | 0.5660 | 0.5732 | 1500102900 |
| 5/8 - 18 UNF | | | | 0.5889 | 0.5949 | 1500103000 |
| 3/4 - 10 UNC | | | | 0.6850 | 0.6927 | 1500103100 |
| 3/4 - 16 UNF | | | | 0.7094 | 0.7159 | 1500103200 |
| 7/8 - 9 UNC | | 1 | 5/8 | 0.8028 | 0.8110 | 1500103300 |
| 7/8 - 14 UNF | | | | 0.8286 | 0.8356 | 1500103400 |
| 1 - 8 UNC | | | | 0.9188 | 0.9276 | 1500103500 |
| 1 - 12 UNF | | | | 0.9459 | 0.9535 | 1500103600 |
| 1 - 14 UNS | | | | 0.9536 | 0.9609 | 1500103700 |
| 1,1/8 - 7 UNC | | | | 1.0322 | 1.0416 | 1500103800 |
| 1,1/8 - 12 UNF | | 1.0709 | 1.0787 | 1500103900 | | |
| 1,1/4 - 7 UNC | | 1 1/4 | 3/4 | 1.1572 | 1.1668 | 1500104000 |
| 1,1/4 - 12 UNF | | 1 | | 1.1959 | 1.2039 | 1500104100 |
| 1,3/8 - 6 UNC | | 1 1/4 | | 1.2667 | 1.2771 | 1500104200 |
| 1,3/8 - 12 UNF | | 1 | | 1.3209 | 1.3291 | 1500104300 |
| 1,1/2 - 6 UNC | | 1 1/4 | | 1.3917 | 1.4022 | 1500104400 |
| 1,1/2 - 12 UNF | | 1 | | 1.4459 | 1.4542 | 1500104500 |

Packed: 1 pc.
Available Bright finish only.



OSG Inch Thread Plug Gages are manufactured to Class X tolerances per ANSI B1.2 (Unified Inch Screw Threads).
OSG Thread Gages are made from High Speed Steel (HSS) to 64 HRC.
Short Form Certificates of Conformance are available with gages for no charge.

*Long Form Certificates available upon request.





Thread Gages

List 15002

| | |
|-----|----|
| HSS | BR |
|-----|----|

Go/NoGo, Class 6H



Units: mm

| Gage Size | Class of Fit | Gage Length (mm) | | Pitch Diameter (mm) | | EDP Number |
|------------|--------------|------------------|--------|---------------------|--------|-------------|
| | | Go | NoGo | Go | NoGo | Short Form* |
| M3 x 0.5 | 6H | 7.9 | 5.6 | 2.675 | 2.775 | 1500200100 |
| M3.5 x 0.6 | | | | 3.110 | 3.222 | 1500200200 |
| M4 x 0.7 | | 10.3 | 7.1 | 3.545 | 3.663 | 1500200300 |
| M5 x 0.8 | | | | 4.480 | 4.605 | 1500200400 |
| M6 x 0.75 | | 12.7 | 7.9 | 5.513 | 5.645 | 1500200500 |
| M6 x 1.0 | | | | 5.350 | 5.500 | 1500200600 |
| M7 x 1.0 | | | | 6.350 | 6.500 | 1500200700 |
| M8 x 1.0 | | | | 7.350 | 7.500 | 1500200800 |
| M8 x 1.25 | | | | 7.188 | 7.348 | 1500200900 |
| M10 x 1.0 | | | | 19 | 9.5 | 9.350 |
| M10 x 1.25 | | 9.188 | 9.348 | | | 1500201100 |
| M10 x 1.5 | | 9.026 | 9.206 | | | 1500201200 |
| M12 x 1.25 | | 11.188 | 11.368 | | | 1500201300 |
| M12 x 1.5 | | 11.026 | 11.216 | | | 1500201400 |
| M12 x 1.75 | | 10.863 | 11.063 | | | 1500201500 |
| M14 x 1.5 | | 22.2 | 12.7 | 13.026 | 13.216 | 1500201600 |
| M14 x 2.0 | | | | 12.701 | 12.913 | 1500201700 |
| M16 x 1.5 | | | | 15.026 | 15.216 | 1500201800 |
| M16 x 2.0 | | | | 14.701 | 14.913 | 1500201900 |
| M18 x 1.5 | | | | 17.026 | 17.216 | 1500202000 |
| M18 x 2.5 | | | | 16.376 | 16.600 | 1500202100 |
| M20 x 1.5 | | 25.4 | 15.9 | 19.026 | 19.216 | 1500202200 |
| M20 x 2.5 | | | | 18.376 | 18.600 | 1500202300 |
| M22 x 1.5 | | | | 21.026 | 21.216 | 1500202400 |
| M22 x 2.5 | | | | 20.376 | 20.600 | 1500202500 |
| M24 x 1.5 | | | | 23.026 | 23.226 | 1500202600 |
| M24 x 2.0 | | | | 22.701 | 22.925 | 1500202700 |
| M24 x 3.0 | | | | 22.051 | 22.316 | 1500202800 |

Packed: 1 pc.
Available Bright finish only.



OSG Metric Thread Plug Gages are manufactured to Class X tolerances per ANSI B1.16M (Metric M Series Screw Threads).
OSG Thread Gages are made from High Speed Steel (HSS) to 64 HRC.
Short Form Certificates of Conformance are available with gages for no charge.

***Long Form Certificates available upon request.**



THREADING

Technical





Tap and Screw Thread Terminology

Allowance: The minimum clearance or maximum interference which is intended between mating parts.

Angle of Thread: The angle included between the flanks of a thread measured in an axial plane.

Back Taper: A slight taper on the threaded portion of the tap, making the pitch diameter near the shank smaller than that at the chamfer.

Basic: The theoretical or nominal standard size from which all variations are made.

Chamfer: The tapered and relieved cutting teeth at the front end of the threaded section. Common types of chamfer are taper (8 to 10 threads long), plug (3 to 5 threads), semi (or modified) bottom (2.5 to 3 threads), and bottoming (1-1/2 threads).

Crest: The top surface joining the two sides or flanks of a thread.

Cutting Face: The leading side of the land.

Flute: The longitudinal channels formed on a tap to create cutting edges on the thread profile.

Heel: The following side of the land.

Height of Thread: In profile, distance between crest and bottom section of thread measured to the axis.

Hook Face: A concave cutting face of the land. This may be varied for different materials and conditions.

Interrupted Thread: Alternate teeth are removed in the thread helix on a tap having an odd number of flutes.

Land: Threaded sections between the flutes of a tap.

Lead of Thread: The distance a screw thread advances axially in one turn.

Major Diameter: The largest diameter of the screw or nut on a straight screw thread.

Minor Diameter: The smallest diameter of the screw or nut on a straight screw thread.

Neck: The reduced diameter, on some taps, between the threaded portion and the shank.

Pitch: The distance from a point on one thread to a corresponding point on the next thread, measured parallel to the axis of rotation.

Pitch Diameter: On a straight screw thread, the diameter of an imaginary cylinder where the width of the thread and the width of the space between threads is equal.

Point Diameter: The diameter at the leading end of the chamfered portion.

Rake Angle: The angle of the cutting face of the land in relation to an axial plane intersecting the cutting face at the major diameter.

Relief: The removal of metal behind the cutting edge to provide clearance between the part being threaded and a portion of the threaded land. Also, see back taper.

Chamfer Relief: The gradual decrease in land height from cutting edge to heel on the chamfered portion of the tap land to provide radial clearance for the cutting edge.

Con-eccentric Relief: Radial relief in the thread form starting back of a concentric margin.

Eccentric Thread Relief: Radial relief in the thread form starting at the cutting edge and continuing to the heel.

Root: The bottom surface joining the flanks of two adjacent threads.

Side or Flank Thread: The surface of the thread which connects the crest to the root.

Shank: The portion of the tap by which it is held.

Spiral Point: An oblique cutting edge ground into the lands to provide a shear cutting action on the first few threads.

Square: The squared end of the tap shank by which the tap is driven.

Thread: The helical formed portion of the tap which produces the pitch in a pre-existing hole.

Thread Lead Angle: The angle made by the helix of the thread at the pitch diameter, with a plane perpendicular to the axis.

Threads per Inch: The number of threads in one inch of length.

Thread:

Single: A thread in which lead is equal to pitch.

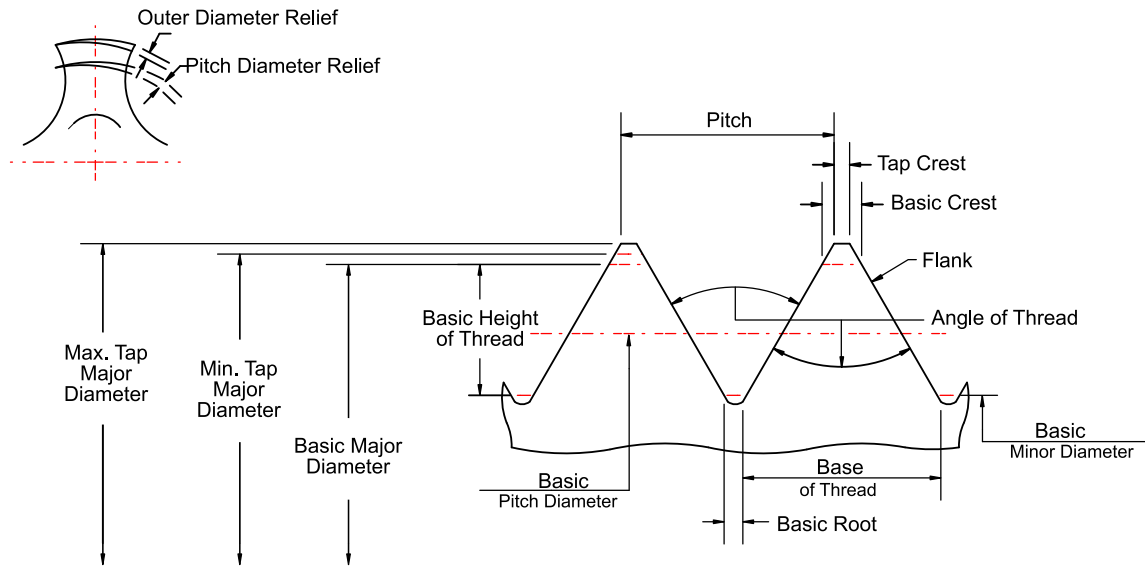
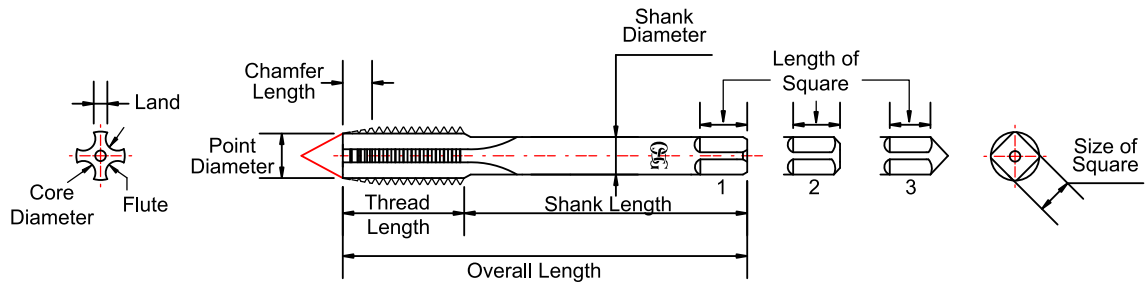
Double: A thread in which lead is equal to twice the pitch.

Triple: A thread in which lead is equal to triple the pitch.

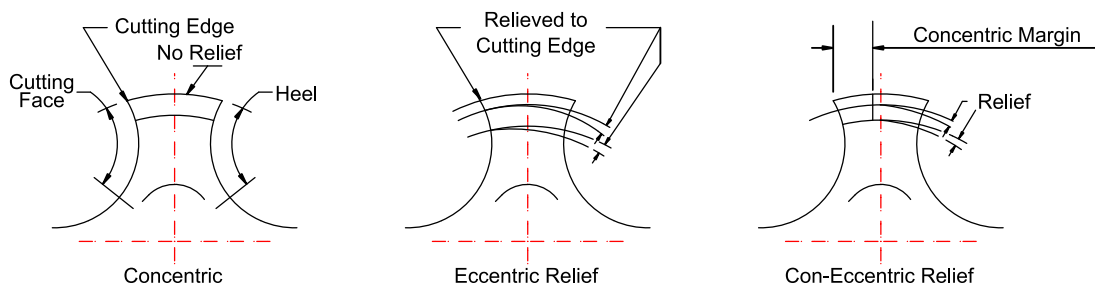




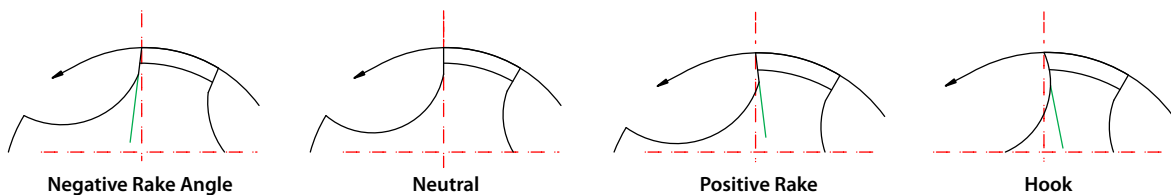
Illustration of Tap Terms



Relief Styles



Cutting Angles





Tapping Speed Guide

SFM to RPM Conversion charts

| Surface Footage | Conversion Table - Surface Feet Per Minute (SFM) to Revolutions Per Minute (RPM) - Inch | | | | | | | | | | | | | | |
|-----------------|---|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|
| | 5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 125 | 150 |
| Tap Size | Revolutions Per Minute | | | | | | | | | | | | | | |
| 0 | 318 | 637 | 955 | 1273 | 1592 | 1910 | 2547 | 3183 | 3820 | 4457 | 5093 | 5730 | 6367 | 7958 | 9550 |
| 1 | 262 | 523 | 785 | 1047 | 1308 | 1570 | 2093 | 2616 | 3140 | 3663 | 4186 | 4710 | 5233 | 6541 | 7849 |
| 2 | 222 | 444 | 666 | 888 | 1110 | 1333 | 1777 | 2221 | 2665 | 3109 | 3553 | 3998 | 4442 | 5552 | 6663 |
| 3 | 193 | 386 | 579 | 772 | 965 | 1158 | 1543 | 1929 | 2315 | 2701 | 3087 | 3473 | 3859 | 4823 | 5788 |
| 4 | 171 | 341 | 512 | 682 | 853 | 1023 | 1364 | 1705 | 2046 | 2388 | 2729 | 3070 | 3411 | 4263 | 5116 |
| 5 | 153 | 306 | 458 | 611 | 764 | 917 | 1222 | 1528 | 1834 | 2139 | 2445 | 2750 | 3056 | 3820 | 4584 |
| 6 | 138 | 277 | 415 | 554 | 692 | 830 | 1107 | 1384 | 1661 | 1938 | 2214 | 2491 | 2768 | 3460 | 4152 |
| 8 | 116 | 233 | 349 | 466 | 582 | 699 | 932 | 1165 | 1398 | 1630 | 1863 | 2086 | 2329 | 2912 | 3494 |
| 10 | 101 | 201 | 302 | 402 | 503 | 603 | 804 | 1005 | 1206 | 1407 | 1608 | 1809 | 2011 | 2513 | 3016 |
| 12 | 88 | 177 | 265 | 354 | 442 | 531 | 707 | 884 | 1061 | 1238 | 1415 | 1592 | 1769 | 2211 | 2653 |
| 1/4 | 76 | 153 | 229 | 306 | 382 | 458 | 611 | 764 | 917 | 1070 | 1222 | 1375 | 1528 | 1910 | 2292 |
| 5/16 | 61 | 122 | 183 | 244 | 306 | 367 | 489 | 611 | 733 | 856 | 978 | 1100 | 1222 | 1528 | 1834 |
| 3/8 | 51 | 102 | 153 | 204 | 255 | 306 | 407 | 509 | 611 | 713 | 815 | 917 | 1019 | 1273 | 1528 |
| 7/16 | 44 | 87 | 131 | 175 | 218 | 262 | 349 | 437 | 524 | 611 | 699 | 786 | 873 | 1091 | 1310 |
| 1/2 | 38 | 76 | 115 | 153 | 191 | 229 | 306 | 382 | 458 | 535 | 611 | 688 | 764 | 955 | 1146 |
| 9/16 | 34 | 68 | 102 | 136 | 170 | 204 | 272 | 340 | 407 | 475 | 543 | 611 | 679 | 849 | 1019 |
| 5/8 | 31 | 61 | 92 | 122 | 153 | 183 | 244 | 306 | 367 | 428 | 489 | 550 | 611 | 764 | 914 |
| 3/4 | 25 | 51 | 76 | 102 | 127 | 153 | 204 | 255 | 306 | 357 | 407 | 458 | 509 | 637 | 764 |
| 7/8 | 22 | 44 | 65 | 87 | 109 | 131 | 175 | 218 | 262 | 306 | 349 | 393 | 437 | 546 | 655 |
| 1 | 19 | 38 | 57 | 76 | 96 | 115 | 153 | 191 | 229 | 267 | 306 | 344 | 382 | 478 | 573 |
| 1 1/8 | 17 | 34 | 51 | 68 | 85 | 102 | 136 | 170 | 204 | 238 | 272 | 306 | 340 | 424 | 509 |
| 1 1/4 | 15 | 31 | 46 | 61 | 76 | 92 | 122 | 153 | 183 | 214 | 244 | 275 | 306 | 382 | 458 |
| 1 3/8 | 14 | 28 | 42 | 56 | 69 | 83 | 111 | 139 | 167 | 194 | 222 | 250 | 278 | 347 | 417 |
| 1 1/2 | 13 | 25 | 38 | 51 | 64 | 76 | 102 | 127 | 153 | 178 | 204 | 229 | 255 | 318 | 382 |
| 1 5/8 | 12 | 24 | 35 | 47 | 59 | 71 | 94 | 118 | 141 | 165 | 188 | 212 | 235 | 294 | 353 |
| 1 3/4 | 11 | 22 | 33 | 44 | 55 | 65 | 87 | 109 | 131 | 153 | 175 | 196 | 218 | 273 | 327 |
| 2 | 10 | 19 | 29 | 38 | 48 | 57 | 76 | 96 | 115 | 134 | 153 | 172 | 191 | 239 | 287 |
| 2 1/8 | 9 | 18 | 27 | 36 | 45 | 54 | 72 | 90 | 108 | 126 | 144 | 162 | 180 | 225 | 270 |

| Surface Footage | Conversion Table - Surface Feet Per Minute (SFM) to Revolutions Per Minute (RPM) - Metric | | | | | | | | | | | | | | |
|-----------------|---|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|
| | 5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 125 | 150 |
| Tap Size | Revolutions Per Minute | | | | | | | | | | | | | | |
| M2 | 243 | 485 | 728 | 970 | 1213 | 1455 | 1941 | 2426 | 2911 | 3396 | 3881 | 4366 | 4851 | 6064 | 7277 |
| M3 | 162 | 323 | 485 | 647 | 809 | 970 | 1294 | 1617 | 1941 | 2264 | 2587 | 2911 | 3234 | 4043 | 4851 |
| M4 | 121 | 243 | 364 | 485 | 606 | 728 | 970 | 1213 | 1455 | 1698 | 1941 | 2183 | 2426 | 3032 | 3639 |
| M5 | 97 | 194 | 291 | 388 | 485 | 582 | 776 | 970 | 1164 | 1358 | 1552 | 1747 | 1941 | 2426 | 2911 |
| M6 | 81 | 162 | 243 | 323 | 404 | 485 | 647 | 809 | 970 | 1132 | 1294 | 1455 | 1617 | 2021 | 2426 |
| M8 | 61 | 121 | 182 | 243 | 303 | 364 | 485 | 606 | 728 | 849 | 970 | 1092 | 1213 | 1516 | 1819 |
| M10 | 49 | 97 | 146 | 194 | 243 | 291 | 388 | 485 | 582 | 679 | 776 | 873 | 970 | 1213 | 1455 |
| M12 | 40 | 81 | 121 | 162 | 202 | 243 | 323 | 404 | 485 | 566 | 647 | 728 | 809 | 1011 | 1213 |
| M14 | 35 | 69 | 104 | 139 | 173 | 208 | 277 | 347 | 416 | 485 | 554 | 624 | 693 | 866 | 1040 |
| M16 | 30 | 61 | 91 | 121 | 152 | 182 | 243 | 303 | 364 | 424 | 485 | 546 | 606 | 758 | 910 |
| M18 | 27 | 54 | 81 | 108 | 135 | 162 | 216 | 270 | 323 | 377 | 431 | 485 | 539 | 674 | 809 |
| M20 | 24 | 49 | 73 | 97 | 121 | 146 | 194 | 243 | 291 | 340 | 388 | 437 | 485 | 606 | 728 |
| M24 | 20 | 40 | 61 | 81 | 101 | 121 | 162 | 202 | 243 | 283 | 323 | 364 | 404 | 505 | 606 |
| M27 | 18 | 36 | 54 | 72 | 90 | 108 | 144 | 180 | 216 | 252 | 287 | 323 | 359 | 449 | 539 |
| M30 | 16 | 32 | 49 | 65 | 81 | 97 | 129 | 162 | 194 | 226 | 259 | 291 | 323 | 404 | 485 |
| M33 | 15 | 29 | 44 | 59 | 74 | 88 | 118 | 147 | 176 | 206 | 235 | 265 | 294 | 368 | 441 |
| M36 | 13 | 27 | 40 | 54 | 67 | 81 | 108 | 135 | 162 | 189 | 216 | 243 | 270 | 337 | 404 |
| M39 | 12 | 25 | 37 | 50 | 62 | 75 | 100 | 124 | 149 | 174 | 199 | 224 | 249 | 311 | 373 |
| M42 | 12 | 23 | 35 | 46 | 58 | 69 | 92 | 116 | 139 | 162 | 185 | 208 | 231 | 289 | 347 |
| M45 | 11 | 22 | 32 | 43 | 54 | 65 | 86 | 108 | 129 | 151 | 172 | 194 | 216 | 270 | 323 |
| M48 | 10 | 20 | 30 | 40 | 51 | 61 | 81 | 101 | 121 | 142 | 162 | 182 | 202 | 253 | 303 |
| M56 | 9 | 17 | 26 | 35 | 43 | 52 | 69 | 87 | 104 | 121 | 139 | 156 | 173 | 217 | 260 |

Formulas

SFM (Surface Feet per Minute) = 0.262 x RPM x D

RPM (Revolutions Per Minute) = (3.82 x SFM) / D

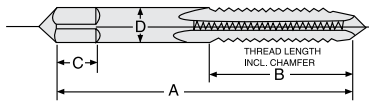
Note: D = Diameter (Must be in inches)



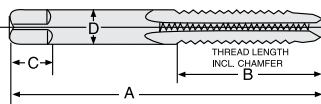


ANSI General Tap Dimensions (USCTI Table 302)

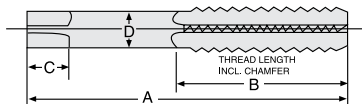
Blank Style 1



Blank Style 2



Blank Style 3



| Nominal Diameter Range - Inches | | Mach. Screw Size No. | Nominal Fractional Diameter Inches | Nominal Metric Diameter Millimeters | Style | Tap Dimensions - Inches | | | | |
|---------------------------------|------------|----------------------|------------------------------------|-------------------------------------|-------|-------------------------|-----------------|-----------------|------------------|----------------|
| Over | To (Incl.) | | | | | Overall Length A | Thread Length B | Square Length C | Shank Diameter D | Size of Square |
| 0.052 | 0.065 | 0 | 1/16 | - | 1 | 1 5/8 | 5/16 | 3/16 | 0.141 | 0.110 |
| 0.065 | 0.078 | 1 | - | M1.8 | 1 | 1 11/16 | 3/8 | 3/16 | 0.141 | 0.110 |
| 0.078 | 0.091 | 2 | - | M2, M2.2 | 1 | 1 3/4 | 7/16 | 3/16 | 0.141 | 0.110 |
| 0.091 | 0.104 | 3 | 3/32 | M2.5 | 1 | 1 13/16 | 1/2 | 3/16 | 0.141 | 0.110 |
| 0.104 | 0.117 | 4 | - | - | 1 | 1 7/8 | 9/16 | 3/16 | 0.141 | 0.110 |
| 0.117 | 0.130 | 5 | 1/8 | M3, M3.15 | 1 | 1 15/16 | 5/8 | 3/16 | 0.141 | 0.110 |
| 0.130 | 0.145 | 6 | - | M3.5 | 1 | 2 | 11/16 | 3/16 | 0.141 | 0.110 |
| 0.145 | 0.171 | 8 | 5/32 | M4 | 1 | 2 1/8 | 3/4 | 1/4 | 0.168 | 0.131 |
| 0.171 | 0.197 | 10 | 3/16 | M4.5, M5 | 1 | 2 3/8 | 7/8 | 1/4 | 0.194 | 0.152 |
| 0.197 | 0.223 | 12 | 7/32 | - | 1 | 2 3/8 | 15/16 | 9/32 | 0.220 | 0.165 |
| 0.223 | 0.260 | 14 | 1/4 | M6, M6.3 | 2 | 2 1/2 | 1 | 5/16 | 0.255 | 0.191 |
| 0.260 | 0.323 | - | 5/16 | M7, M8 | 2 | 2 23/32 | 1 1/8 | 3/8 | 0.318 | 0.238 |
| 0.323 | 0.385 | - | 3/8 | M10 | 2 | 2 15/16 | 1 1/4 | 7/16 | 0.381 | 0.286 |
| 0.385 | 0.448 | - | 7/16 | - | 3 | 3 5/32 | 1 7/16 | 13/32 | 0.323 | 0.242 |
| 0.448 | 0.510 | - | 1/2 | M12, M12.5 | 3 | 3 3/8 | 1 21/32 | 7/16 | 0.367 | 0.275 |
| 0.510 | 0.573 | - | 9/16 | M14 | 3 | 3 19/32 | 1 21/32 | 1/2 | 0.429 | 0.322 |
| 0.573 | 0.635 | - | 5/8 | M16 | 3 | 3 13/16 | 1 13/16 | 9/16 | 0.480 | 0.360 |
| 0.635 | 0.709 | - | 11/16 | M18 | 3 | 4 1/32 | 1 13/16 | 5/8 | 0.542 | 0.406 |
| 0.709 | 0.760 | - | 3/4 | - | 3 | 4 1/4 | 2 | 11/16 | 0.590 | 0.442 |
| 0.760 | 0.823 | - | 13/16 | M20 | 3 | 4 15/32 | 2 | 11/16 | 0.652 | 0.489 |
| 0.823 | 0.885 | - | 7/8 | M22 | 3 | 4 11/16 | 2 7/32 | 3/4 | 0.697 | 0.523 |
| 0.885 | 0.948 | - | 15/16 | M24 | 3 | 4 29/32 | 2 7/32 | 3/4 | 0.760 | 0.570 |
| 0.948 | 1.010 | - | 1 | M25 | 3 | 5 1/8 | 2 1/2 | 13/16 | 0.800 | 0.600 |
| 1.010 | 1.073 | - | 1 1/16 | M27 | 3 | 5 1/8 | 2 1/2 | 7/8 | 0.896 | 0.672 |
| 1.073 | 1.135 | - | 1 1/8 | - | 3 | 5 7/16 | 2 9/16 | 7/8 | 0.896 | 0.672 |
| 1.135 | 1.198 | - | 1 3/16 | M30 | 3 | 5 7/16 | 2 9/16 | 1 | 1.021 | 0.766 |
| 1.198 | 1.260 | - | 1 1/4 | - | 3 | 5 3/4 | 2 9/16 | 1 | 1.021 | 0.766 |
| 1.260 | 1.323 | - | 1 5/16 | M33 | 3 | 5 3/4 | 2 9/16 | 1 1/16 | 1.108 | 0.831 |
| 1.323 | 1.385 | - | 1 3/8 | - | 3 | 6 1/16 | 3 | 1 1/16 | 1.108 | 0.831 |
| 1.385 | 1.448 | - | 1 7/16 | M36 | 3 | 6 1/16 | 3 | 1 1/8 | 1.233 | 0.925 |
| 1.448 | 1.510 | - | 1 1/2 | - | 3 | 6 3/8 | 3 | 1 1/8 | 1.233 | 0.925 |
| 1.510 | 1.635 | - | 1 5/8 | M39 | 3 | 6 11/16 | 3 3/16 | 1 1/8 | 1.305 | 0.979 |
| 1.635 | 1.760 | - | 1 3/4 | M42 | 3 | 7 | 3 3/16 | 1 1/4 | 1.430 | 1.072 |
| 1.760 | 1.885 | - | 1 7/8 | - | 3 | 7 5/16 | 3 9/16 | 1 1/4 | 1.519 | 1.139 |
| 1.885 | 2.010 | - | 2 | M48 | 3 | 7 5/8 | 3 9/16 | 1 3/8 | 1.644 | 1.233 |
| 2.010 | 2.135 | - | 2 1/8 | - | 3 | 8 | 3 9/16 | 1 3/8 | 1.769 | 1.327 |
| 2.135 | 2.260 | - | 2 1/4 | M56 | 3 | 8 1/4 | 3 9/16 | 1 7/16 | 1.894 | 1.420 |
| 2.260 | 2.385 | - | 2 3/8 | - | 3 | 8 1/2 | 4 | 1 7/16 | 2.019 | 1.514 |
| 2.385 | 2.510 | - | 2 1/2 | - | 3 | 8 3/4 | 4 | 1 1/2 | 2.100 | 1.575 |
| 2.510 | 2.635 | - | 2 5/8 | M64 | 3 | 8 3/4 | 4 | 1 1/2 | 2.250 | 1.669 |
| 2.635 | 2.760 | - | 2 3/4 | - | 3 | 9 1/4 | 4 | 1 9/16 | 2.350 | 1.762 |
| 2.760 | 2.885 | - | 2 7/8 | M72 | 3 | 9 1/4 | 4 | 1 9/16 | 2.475 | 1.856 |
| 2.885 | 3.010 | - | 3 | - | 3 | 9 3/4 | 4 9/16 | 1 5/8 | 2.543 | 1.907 |
| 3.010 | 3.135 | - | 3 1/8 | - | 3 | 9 3/4 | 4 9/16 | 1 5/8 | 2.668 | 2.001 |
| 3.135 | 3.260 | - | 3 1/4 | M80 | 3 | 10 | 4 9/16 | 1 3/4 | 2.793 | 2.095 |
| 3.260 | 3.385 | - | 3 3/8 | - | 3 | 10 | 4 9/16 | 1 3/4 | 2.883 | 2.162 |
| 3.385 | 3.510 | - | 3 1/2 | - | 3 | 10 1/4 | 4 15/16 | 2 | 3.008 | 2.256 |
| 3.510 | 3.635 | - | 3 5/8 | M90 | 3 | 10 1/4 | 4 15/16 | 2 | 3.133 | 2.350 |
| 3.635 | 3.760 | - | 3 3/4 | - | 3 | 10 1/2 | 5 5/16 | 2 1/8 | 3.217 | 2.413 |
| 3.760 | 3.885 | - | 3 7/8 | - | 3 | 10 1/2 | 5 5/16 | 2 1/8 | 3.342 | 2.506 |
| 3.885 | 4.010 | - | 4 | M100 | 3 | 10 3/4 | 5 5/16 | 2 1/2 | 3.467 | 2.600 |

Note: Unless otherwise specified, all OSG taps conform to the dimensions listed above in USCTI Table 302.





Spiral Pointed and Spiral Fluted, JIS (Table 350)

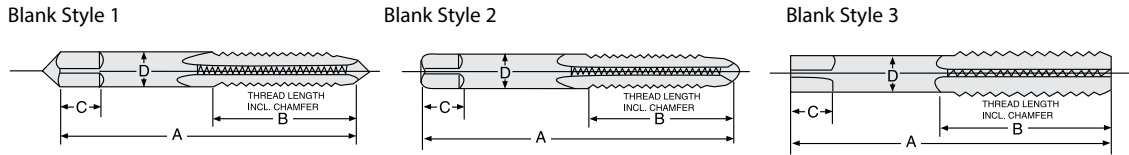
| Diameter | Pitch | General Dimensions - Metric | | | | | Ground Thread Limits Class | Pitch Diameter Limit | | |
|----------|-------|-----------------------------|--------------------|--------------------|---------------|------------------|----------------------------|----------------------|---------|---------|
| | | Overall Length A | Length of Thread B | Length of Square C | Shank Diam. D | Size of Square E | | Basic | Minimum | Maximum |
| M2 | 0.4 | 40 | 15 | 5 | 3 | 2.5 | 2 | 1.740 | 1.750 | 1.770 |
| M2.3 | 0.4 | 42 | 15 | 5 | 3 | 2.5 | 2 | 2.040 | 2.050 | 2.070 |
| M2.6 | 0.45 | 44 | 16 | 5 | 3 | 2.5 | 2 | 2.308 | 2.318 | 2.333 |
| M3 | 0.5 | 46 | 18 | 6 | 4 | 3.2 | 2 | 2.675 | 2.685 | 2.700 |
| M3.5 | 0.6 | 48 | 18 | 6 | 4 | 3.2 | 2 | 3.110 | 3.120 | 3.135 |
| M4 | 0.7 | 52 | 20 | 7 | 5 | 4 | 2 | 3.545 | 3.555 | 3.575 |
| M4.5 | 0.75 | 55 | 20 | 7 | 5 | 4 | 2 | 4.013 | 4.023 | 4.043 |
| M5 | 0.8 | 60 | 22 | 7 | 5.5 | 4.5 | 2 | 4.480 | 4.490 | 4.510 |
| M6 | 0.75 | 62 | 20 | 7 | 6 | 4.5 | 2 | 5.513 | 5.523 | 5.543 |
| | 1 | 62 | 24 | 7 | 6 | 4.5 | 2 | 5.350 | 5.360 | 5.380 |
| M7 | 1 | 65 | 6 | 8 | 6.2 | 5 | 2 | 6.350 | 6.360 | 6.380 |
| | 0.75 | 62 | 20 | 8 | 6.2 | 5 | 2 | 7.513 | 7.525 | 7.550 |
| M8 | 1 | 70 | 30 | 8 | 6.2 | 5 | 2 | 7.350 | 7.360 | 7.380 |
| | 1.25 | 70 | 30 | 8 | 6.2 | 5 | 2 | 7.188 | 7.198 | 7.223 |
| M9 | 1.25 | 72 | 30 | 8 | 7 | 5.5 | 2 | 8.188 | 8.198 | 8.223 |
| | 1 | 70 | 30 | 8 | 7 | 5.5 | 2 | 9.350 | 9.362 | 9.387 |
| M10 | 1.25 | 75 | 32 | 8 | 7 | 5.5 | 2 | 9.188 | 9.198 | 9.223 |
| | 1.5 | 75 | 32 | 8 | 7 | 5.5 | 2 | 9.026 | 9.041 | 9.066 |
| M11 | 1.5 | 80 | 38 | 9 | 8 | 6 | 2 | 10.026 | 10.041 | 10.066 |
| | 1 | 70 | 30 | 9 | 8.5 | 6.5 | 2 | 11.350 | 11.365 | 11.395 |
| M12 | 1.25 | 80 | 38 | 9 | 8.5 | 6.5 | 2 | 11.188 | 11.203 | 11.233 |
| | 1.5 | 82 | 38 | 9 | 8.5 | 6.5 | 2 | 11.026 | 11.041 | 11.071 |
| | 1.75 | 82 | 38 | 9 | 8.5 | 6.5 | 2 | 10.863 | 10.878 | 10.908 |
| M14 | 1.25 | 80 | 38 | 11 | 10.5 | 8 | 2 | 13.188 | 13.203 | 13.233 |
| | 1.5 | 88 | 42 | 11 | 10.5 | 8 | 2 | 13.026 | 13.041 | 13.071 |
| | 2 | 88 | 42 | 11 | 10.5 | 8 | 2 | 12.701 | 12.716 | 12.746 |
| M16 | 1 | 75 | 30 | 13 | 12.5 | 10 | 2 | 15.350 | 15.365 | 15.395 |
| | 1.5 | 95 | 45 | 13 | 12.5 | 10 | 2 | 15.026 | 15.041 | 15.071 |
| | 2 | 95 | 45 | 13 | 12.5 | 10 | 2 | 14.701 | 14.716 | 14.746 |
| M18 | 1.5 | 95 | 45 | 14 | 14 | 11 | 2 | 17.026 | 17.041 | 17.071 |
| | 2 | 95 | 45 | 14 | 14 | 11 | 2 | 16.701 | 16.716 | 16.751 |
| M20 | 2.5 | 100 | 48 | 14 | 14 | 11 | 2 | 16.376 | 16.396 | 16.431 |
| | 1.5 | 95 | 45 | 15 | 15 | 12 | 2 | 19.026 | 19.041 | 19.076 |
| M22 | 2.5 | 100 | 48 | 15 | 15 | 12 | 2 | 18.376 | 19.396 | 18.431 |
| | 1.5 | 95 | 45 | 16 | 17 | 13 | 2 | 21.026 | 21.041 | 21.076 |
| M24 | 2.5 | 115 | 55 | 16 | 17 | 13 | 2 | 20.376 | 20.396 | 20.431 |
| | 1.5 | 95 | 45 | 18 | 19 | 15 | 2 | 23.026 | 23.041 | 23.076 |
| M26 | 3 | 120 | 58 | 18 | 19 | 15 | 2 | 22.051 | 22.071 | 22.111 |
| | 1.5 | 95 | 45 | 18 | 20 | 15 | 2 | 25.026 | 25.041 | 25.076 |
| M28 | 3 | 130 | 62 | 18 | 20 | 15 | 2 | 24.051 | 24.071 | 24.076 |
| | 1.5 | 105 | 45 | 8 | 21 | 17 | 2 | 27.026 | 27.041 | 27.076 |
| M30 | 1.5 | 105 | 45 | 20 | 23 | 17 | 2 | 29.026 | 29.041 | 29.076 |
| | 3.5 | 135 | 65 | 20 | 23 | 17 | 2 | 27.727 | 27.747 | 27.787 |
| M32 | 1.5 | 105 | 45 | 22 | 24 | 19 | 2 | 31.026 | 31.041 | 31.076 |
| M33 | 1.5 | 110 | 45 | 22 | 25 | 19 | 2 | 32.026 | 32.041 | 32.076 |
| M34 | 1.5 | 110 | 45 | 24 | 26 | 21 | 2 | 33.026 | 33.041 | 33.076 |
| M36 | 1.5 | 110 | 45 | 24 | 28 | 21 | 2 | 35.026 | 35.041 | 35.076 |

Note: Dimensions are in millimeters





Screw Thread Inserts General Tap Dimensions - Inch (USCTI Table 322)



| Nominal Size | Threads Per Inch | | Blank Design No. | Tap Dimensions (Inch) | | | | | Table 302 Blank Equivalent |
|--------------|------------------|-----|------------------|-----------------------|-------|-------|-------|----------------|----------------------------|
| | UNC | UNF | | A | B | C | D | Size of Square | |
| 1 | 64 | – | 1 | 1.810 | 0.500 | 0.190 | 0.141 | 0.110 | No. 3 |
| 2 | 56 | – | 1 | 1.880 | 0.560 | 0.190 | 0.141 | 0.110 | No. 4 |
| | – | 64 | 1 | 1.880 | 0.560 | 0.190 | 0.141 | 0.110 | No. 4 |
| 3 | 48 | – | 1 | 1.940 | 0.630 | 0.190 | 0.141 | 0.110 | No. 5 |
| | – | 56 | 1 | 1.940 | 0.630 | 0.190 | 0.141 | 0.110 | No. 5 |
| 4 | 40 | – | 1 | 2.000 | 0.690 | 0.190 | 0.141 | 0.110 | No. 6 |
| | – | 48 | 1 | 2.000 | 0.690 | 0.190 | 0.141 | 0.110 | No. 6 |
| 5 | 40 | – | 1 | 2.130 | 0.750 | 0.250 | 0.168 | 0.131 | No. 8 |
| 6 | 32 | – | 1 | 2.380 | 0.880 | 0.250 | 0.194 | 0.152 | No. 10 |
| | – | 40 | 1 | 2.130 | 0.750 | 0.250 | 0.168 | 0.131 | No. 8 |
| 8 | 32 | – | 1 | 2.380 | 0.940 | 0.280 | 0.220 | 0.165 | No. 12 |
| | – | 36 | 1 | 2.380 | 0.940 | 0.280 | 0.220 | 0.165 | No. 12 |
| 10 | 24 | – | 2 | 2.500 | 1.000 | 0.310 | 0.255 | 0.191 | 1/4 |
| | – | 32 | 2 | 2.500 | 1.000 | 0.310 | 0.255 | 0.191 | 1/4 |
| 12 | 12 | – | 2 | 2.720 | 1.130 | 0.380 | 0.318 | 0.238 | 5/16 |
| | – | – | 2 | 2.720 | 1.130 | 0.380 | 0.318 | 0.238 | 5/16 |
| 1/4 | 20 | – | 2 | 2.720 | 1.130 | 0.380 | 0.318 | 0.238 | 5/16 |
| | – | 28 | 2 | 2.720 | 1.130 | 0.380 | 0.318 | 0.238 | 5/16 |
| 5/16 | 18 | – | 2 | 2.940 | 1.250 | 0.440 | 0.381 | 0.286 | 3/8 |
| | – | 24 | 2 | 2.940 | 1.250 | 0.440 | 0.381 | 0.286 | 3/8 |
| 3/8 | 16 | – | 3 | 3.380 | 1.660 | 0.440 | 0.367 | 0.275 | 1/2 |
| | – | 24 | 3 | 3.160 | 1.440 | 0.410 | 0.323 | 0.242 | 7/16 |
| 7/16 | 14 | – | 3 | 3.590 | 1.660 | 0.500 | 0.429 | 0.322 | 9/16 |
| | – | 20 | 3 | 3.380 | 1.660 | 0.440 | 0.367 | 0.275 | 1/2 |
| 1/2 | 13 | – | 3 | 3.810 | 1.810 | 0.560 | 0.480 | 0.360 | 5/8 |
| | – | 20 | 3 | 3.590 | 1.660 | 0.500 | 0.429 | 0.322 | 9/16 |
| 9/16 | 12 | – | 3 | 4.030 | 1.810 | 0.630 | 0.542 | 0.406 | 11/16 |
| | – | 18 | 3 | 3.810 | 1.810 | 0.560 | 0.480 | 0.360 | 5/8 |
| 5/8 | 11 | – | 3 | 4.250 | 2.000 | 0.690 | 0.590 | 0.442 | 3/4 |
| | – | 18 | 3 | 4.030 | 1.810 | 0.630 | 0.542 | 0.406 | 11/16 |
| 3/4 | 10 | – | 3 | 4.690 | 2.220 | 0.750 | 0.697 | 0.523 | 7/8 |
| | – | 16 | 3 | 4.470 | 2.000 | 0.690 | 0.652 | 0.489 | 13/16 |
| 7/8 | 9 | – | 3 | 5.130 | 2.500 | 0.810 | 0.800 | 0.600 | 1" |
| | – | 14 | 3 | 5.130 | 2.500 | 0.810 | 0.800 | 0.600 | 1" |
| 1 | 8 | – | 3 | 5.750 | 2.560 | 1.000 | 1.021 | 0.766 | 1 1/4 |
| | – | 12 | 3 | 5.440 | 2.560 | 0.880 | 0.896 | 0.672 | 1 1/8 |

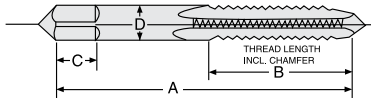
These taps are oversize to the extent that the internal thread they produce will accommodate a helical coil screw thread insert, which, at final assembly, will accept a screw thread of the normal size and pitch.



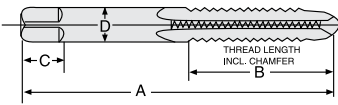


Screw Thread Inserts General Tap Dimensions - Metric (USCTI Table 322A)

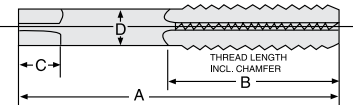
Blank Style 1



Blank Style 2



Blank Style 3



| Nominal Size | Pitch | | Blank Design No. | Tap Dimensions (Inch) | | | | | Table 302 Blank Equivalent |
|--------------|-------|------|------------------|-----------------------|-------|-------|-------|----------------|----------------------------|
| | M | MF | | A | B | C | D | Size of Square | |
| M2.2 | 0.45 | - | 1 | 1.880 | 0.560 | 0.190 | 0.141 | 0.110 | No. 4 |
| M2.5 | 0.45 | - | 1 | 1.940 | 0.630 | 0.190 | 0.141 | 0.110 | No. 5 |
| M3 | 0.5 | - | 1 | 2.000 | 0.690 | 0.190 | 0.141 | 0.110 | No. 6 |
| M3.5 | 0.6 | - | 1 | 2.130 | 0.750 | 0.250 | 0.117 | 0.131 | No. 8 |
| M4 | 0.7 | - | 1 | 2.380 | 0.880 | 0.250 | 0.194 | 0.152 | No. 10 |
| M5 | 0.8 | - | 2 | 2.500 | 1.000 | 0.310 | 0.255 | 0.191 | 1/4 |
| M6 | 1 | - | 2 | 2.720 | 1.130 | 0.380 | 0.318 | 0.238 | 5/16 |
| M7 | 1 | - | 2 | 2.940 | 1.250 | 0.440 | 0.381 | 0.286 | 3/8 |
| M8 | 1.25 | - | 2 | 2.940 | 1.250 | 0.440 | 0.381 | 0.286 | 3/8 |
| | - | 1 | 2 | 2.940 | 1.250 | 0.440 | 0.381 | 0.286 | 3/8 |
| M10 | 1.5 | - | 3 | 3.380 | 1.660 | 0.440 | 0.367 | 0.275 | 1/2 |
| | - | 1.25 | 3 | 3.380 | 1.660 | 0.440 | 0.367 | 0.275 | 1/2 |
| | - | 1 | 3 | 3.160 | 1.440 | 0.410 | 0.323 | 0.242 | 7/16 |
| M12 | 1.75 | - | 3 | 3.590 | 1.660 | 0.500 | 0.429 | 0.322 | 9/16 |
| | - | 1.5 | 3 | 3.590 | 1.660 | 0.500 | 0.429 | 0.322 | 9/16 |
| | - | 1.25 | 3 | 3.590 | 1.660 | 0.500 | 0.429 | 0.322 | 9/16 |
| M14 | 2 | - | 3 | 4.030 | 1.810 | 0.630 | 0.542 | 0.406 | 11/16 |
| | - | 1.5 | 3 | 3.810 | 1.810 | 0.560 | 0.480 | 0.360 | 5/8 |
| M16 | 2 | - | 3 | 4.250 | 2.000 | 0.690 | 0.590 | 0.442 | 3/4 |
| | - | 1.5 | 3 | 4.030 | 1.810 | 0.630 | 0.542 | 0.406 | 11/16 |
| M18 | 2.5 | - | 3 | 4.690 | 2.220 | 0.750 | 0.697 | 0.523 | 7/8 |
| | - | 2 | 3 | 4.470 | 2.000 | 0.690 | 0.652 | 0.489 | 13/16 |
| | - | 1.5 | 3 | 4.470 | 2.000 | 0.690 | 0.652 | 0.489 | 13/16 |
| M20 | 2.5 | - | 3 | 4.910 | 2.220 | 0.750 | 0.760 | 0.570 | 15/16 |
| | - | 2 | 3 | 4.910 | 2.220 | 0.750 | 0.760 | 0.570 | 15/16 |
| | - | 1.5 | 3 | 4.690 | 2.220 | 0.750 | 0.697 | 0.523 | 7/8 |
| M22 | 2.5 | - | 3 | 5.130 | 2.500 | 0.810 | 0.800 | 0.600 | 1" |
| | - | 2 | 3 | 5.130 | 2.500 | 0.810 | 0.800 | 0.600 | 1" |
| | - | 1.5 | 3 | 4.910 | 2.220 | 0.750 | 0.760 | 0.570 | 15/16 |
| M24 | 3 | - | 3 | 5.440 | 2.560 | 0.880 | 0.896 | 0.672 | 1 1/8 |
| | - | 2 | 3 | 5.130 | 2.500 | 0.880 | 0.896 | 0.672 | 1 1/16 |

These taps are oversize to the extent that the internal thread they produce will accommodate a helical coil screw thread insert, which, at final assembly, will accept a screw thread of the normal size and pitch.





Classes and Tap Recommendations

| Size | Threads Per Inch | | Basic Pitch Diameter | Unified Classes of Thread | | | | American National Classes of Thread | | | |
|-------|------------------|--------|----------------------|--------------------------------------|-----------|-----------------------------|-----------|-------------------------------------|-----------|----------------------------|-----------|
| | | | | CLASS 2B For General Applications | | CLASS 3B For Closer Fits | | CLASS 2 | | CLASS 3 | |
| | NC UNC | NF UNF | All Classes Minimum | Pitch Diam. Limits Maximum | Rec. Taps | Pitch Diam. Limits Maximum | Rec. Taps | Pitch Diam. Limits Maximum | Rec. Taps | Pitch Diam. Limits Maximum | Rec. Taps |
| 0 | — | 80 | 0.0519 | 0.0542 | H2 | 0.0536 | H1 | 0.0536 | H1 | 0.0532 | H1 |
| 1 | 64 | — | 0.0629 | 0.0655 | H2 | 0.0648 | H1 | 0.0648 | H1 | 0.0643 | H1 |
| 1 | — | 72 | 0.0640 | 0.0665 | H2 | 0.0659 | H1 | 0.0658 | H1 | 0.0653 | H1 |
| 2 | 56 | — | 0.0744 | 0.0772 | H2 | 0.0765 | H1 | 0.0764 | H1 | 0.0759 | H1 |
| 2 | — | 64 | 0.0759 | 0.0786 | H2 | 0.0779 | H1 | 0.0778 | H1 | 0.0773 | H1 |
| 3 | 48 | — | 0.0855 | 0.0885 | H2 | 0.0877 | H1 | 0.0877 | H1 | 0.0871 | H1 |
| 3 | — | 56 | 0.0874 | 0.0902 | H2 | 0.0895 | H1 | 0.0894 | H1 | 0.0889 | H1 |
| 4 | 40 | — | 0.0958 | 0.0991 | H2 | 0.0982 | H2 | 0.0982 | H2 | 0.0975 | H1 |
| 4 | — | 48 | 0.0985 | 0.1016 | H2 | 0.1008 | H1 | 0.1007 | H1 | 0.1001 | H1 |
| 5 | 40 | — | 0.1088 | 0.1121 | H2 | 0.1113 | H2 | 0.1112 | H2 | 0.1105 | H1 |
| 5 | — | 44 | 0.1102 | 0.1134 | H2 | 0.1126 | H1 | 0.1125 | H1 | 0.1118 | H1 |
| 6 | 32 | — | 0.1177 | 0.1214 | H3 | 0.1204 | H2 | 0.1204 | H2 | 0.1196 | H1 |
| 6 | — | 40 | 0.1218 | 0.1252 | H2 | 0.1243 | H2 | 0.1242 | H2 | 0.1235 | H1 |
| 8 | 32 | — | 0.1437 | 0.1475 | H3 | 0.1465 | H2 | 0.1464 | H2 | 0.1456 | H1 |
| 8 | — | 36 | 0.1460 | 0.1496 | H2 | 0.1487 | H2 | 0.1485 | H2 | 0.1478 | H1 |
| 10 | 24 | — | 0.1629 | 0.1672 | H3 | 0.1661 | H3 | 0.1662 | H3 | 0.1653 | H1 |
| 10 | — | 32 | 0.1697 | 0.1736 | H3 | 0.1726 | H2 | 0.1724 | H2 | 0.1716 | H1 |
| 12 | 24 | — | 0.1889 | 0.1933 | H3 | 0.1922 | H3 | 0.1922 | H3 | 0.1913 | H1 |
| 12 | — | 28 | 0.1928 | 0.1970 | H3 | 0.1959 | H3 | 0.1959 | H3 | 0.1950 | H1 |
| 1/4 | 20 | — | 0.2175 | 0.2224 | H5 | 0.2211 | H3 | 0.2211 | H3 | 0.2201 | H2 |
| 1/4 | — | 28 | 0.2268 | 0.2311 | H4 | 0.2300 | H3 | 0.2299 | H3 | 0.2290 | H1 |
| 5/16 | 18 | — | 0.2764 | 0.2817 | H5 | 0.2803 | H3 | 0.2805 | H3 | 0.2794 | H2 |
| 5/16 | — | 24 | 0.2854 | 0.2902 | H4 | 0.2890 | H3 | 0.2887 | H3 | 0.2878 | H1 |
| 3/8 | 16 | — | 0.3344 | 0.3401 | H5 | 0.3387 | H3 | 0.3389 | H3 | 0.3376 | H2 |
| 3/8 | — | 24 | 0.3479 | 0.3528 | H4 | 0.3516 | H3 | 0.3512 | H3 | 0.3503 | H1 |
| 7/16 | 14 | — | 0.3911 | 0.3972 | H5 | 0.3957 | H3 | 0.3960 | H5 | 0.3947 | H3 |
| 7/16 | — | 20 | 0.4050 | 0.4104 | H5 | 0.4091 | H3 | 0.4086 | H3 | 0.4076 | H1 |
| 1/2 | 13 | — | 0.4500 | 0.4565 | H5 | 0.4548 | H3 | 0.4552 | H5 | 0.4537 | H3 |
| 1/2 | — | 20 | 0.4675 | 0.4731 | H5 | 0.4717 | H3 | 0.4711 | H3 | 0.4701 | H1 |
| 9/16 | 12 | — | 0.5084 | 0.5152 | H5 | 0.5135 | H3 | 0.5140 | H5 | 0.5124 | H3 |
| 9/16 | — | 18 | 0.5264 | 0.5333 | H5 | 0.5308 | H3 | 0.5305 | H3 | 0.5294 | H2 |
| 5/8 | 11 | — | 0.5660 | 0.5732 | H5 | 0.5714 | H3 | 0.5719 | H5 | 0.5702 | H3 |
| 5/8 | — | 18 | 0.5889 | 0.5949 | H5 | 0.5934 | H3 | 0.5930 | H3 | 0.5919 | H2 |
| 3/4 | 10 | — | 0.6850 | 0.6927 | H5 | 0.6907 | H5 | 0.6914 | H5 | 0.6895 | H3 |
| 3/4 | — | 16 | 0.7094 | 0.7159 | H5 | 0.7143 | H3 | 0.7139 | H3 | 0.7126 | H2 |
| 7/8 | 9 | — | 0.8028 | 0.8110 | H6 | 0.8089 | H4 | 0.8098 | H6 | 0.8077 | H4 |
| 7/8 | — | 14 | 0.8286 | 0.8356 | H6 | 0.8339 | H4 | 0.8335 | H4 | 0.8322 | H2 |
| 1 | 8 | — | 0.9188 | 0.9276 | H6 | 0.9254 | H4 | 0.9264 | H4 | 0.9242 | H4 |
| 1 | — | 12 | 0.9459 | 0.9535 | H6 | 0.9516 | H4 | 0.9515 | H4 | 0.9499 | H4 |
| 1 | — | 14 | 0.9536 | 0.9609 | H6 | 0.9590 | H4 | 0.9585 | H4 | 0.9572 | H4 |
| 1-1/8 | 7 | — | 1.0322 | 1.0416 | H8 | 1.0393 | H4 | 1.0407 | H4 | 1.0381 | H4 |
| 1-1/8 | — | 12 | 1.0709 | 1.0787 | H6 | 1.0768 | H4 | 1.0765 | H4 | 1.0749 | H4 |
| 1-1/4 | 7 | — | 1.1572 | 1.1668 | H8 | 1.1644 | H4 | 1.1657 | H4 | 1.1631 | H4 |
| 1-1/4 | — | 12 | 1.1959 | 1.2039 | H6 | 1.2019 | H4 | 1.2015 | H4 | 1.1999 | H4 |
| 1-3/8 | 6 | — | 1.2667 | 1.2771 | H8 | 1.2745 | H4 | 1.2768 | H4 | 1.2738 | H4 |
| 1-3/8 | — | 12 | 1.3209 | 1.3291 | H6 | 1.3270 | H4 | 1.3265 | H4 | 1.3249 | H4 |
| 1-1/2 | 6 | — | 1.3917 | 1.4022 | H8 | 1.3996 | H4 | 1.4018 | H4 | 1.3988 | H4 |
| 1-1/2 | — | 12 | 1.4459 | 1.4542 | H6 | 1.4522 | H4 | 1.4515 | H4 | 1.4499 | H4 |
| 1-1/2 | — | 8 | 1.4188 | 1.4283 | H7 | 1.4259 | H5 | 1.4278 | H7 | 1.4251 | H5 |
| 1-5/8 | — | 8 | 1.5438 | 1.5535 | H8 | 1.5510 | H6 | 1.5531 | H7 | 1.5503 | H5 |
| 1-3/4 | 5 | — | 1.6201 | 1.6317 | H9 | 1.6288 | H7 | 1.6317 | H9 | 1.6283 | H7 |
| 1-3/4 | 8 | 8 | 1.6688 | 1.6786 | H8 | 1.6762 | H6 | 1.6785 | H8 | 1.6756 | H5 |
| 1-7/8 | 8 | 8 | 1.7938 | 1.8037 | H8 | 1.8013 | H6 | 1.8038 | H8 | 1.8008 | H6 |
| 2 | 4.5 | — | 1.8557 | 1.8681 | H10 | 1.8650 | H7 | 1.8684 | H10 | 1.8646 | H7 |
| 2 | — | 8 | 1.9188 | 1.9289 | H8 | 1.9264 | H6 | 1.9292 | H8 | 1.9261 | H6 |

| ISO Metric Class of Threads | | | | |
|------------------------------------|----------|--------------------------|--------|-----------|
| CLASS 6H For Commercial Threads | | | | |
| Size mm | Pitch mm | Pitch Dia. Limits (Inch) | | Rec. Taps |
| | | Min. | Max. | |
| M1.6 | 0.35 | 0.0541 | 0.0574 | D3 |
| M2 | 0.4 | 0.0686 | 0.0720 | D3 |
| M2.5 | 0.45 | 0.0870 | 0.0906 | D3 |
| M3 | 0.5 | 0.1054 | 0.1092 | D3 |
| M3.5 | 0.6 | 0.1225 | 0.1268 | D4 |
| M4 | 0.7 | 0.1396 | 0.1442 | D4 |
| M5 | 0.8 | 0.1764 | 0.1812 | D4 |
| M6 | 1.0 | 0.2107 | 0.2165 | D5 |
| M8 | 1.25 | 0.2830 | 0.2892 | D5 |
| M10 | 1.5 | 0.3554 | 0.3624 | D6 |
| M12 | 1.75 | 0.4277 | 0.4355 | D6 |
| M14 | 2.0 | 0.5001 | 0.5083 | D7 |
| M16 | 2.0 | 0.5788 | 0.5871 | D7 |
| M20 | 2.5 | 0.7235 | 0.7322 | D7 |
| M24 | 3.0 | 0.8682 | 0.8785 | D8 |
| M30 | 3.5 | 1.0917 | 1.1026 | D9 |
| M36 | 4.0 | 1.3151 | 1.3268 | D9 |
| M39 | 4.0 | 1.4331 | 1.4450 | D9 |
| M42 | 4.5 | 1.5385 | 1.5509 | D10 |
| M42 | 3.0 | 1.5768 | 1.5873 | D8 |
| M42 | 2.0 | 1.6024 | 1.6112 | D7 |
| M42 | 1.5 | 1.6152 | 1.6231 | D6 |
| M45 | 4.5 | 1.6566 | 1.6690 | D10 |
| M45 | 3.0 | 1.6949 | 1.7054 | D8 |
| M48 | 5.0 | 1.7619 | 1.7751 | D10 |
| M48 | 3.0 | 1.8130 | 1.8241 | D9 |
| M48 | 2.0 | 1.8386 | 1.8479 | D7 |
| M48 | 1.5 | 1.8514 | 1.8598 | D6 |
| M56 | 5.5 | 2.0641 | 2.0781 | D11 |

FORMULAS

- D3 = Basic PD + 0.0009" to Basic PD + 0.0015"
- D4 = Basic PD + 0.0012" to Basic PD + 0.0020"
- D5 = Basic PD + 0.0015" to Basic PD + 0.0025"
- D6 = Basic PD + 0.0018" to Basic PD + 0.0030"
- D7 = Basic PD + 0.0019" to Basic PD + 0.0035"
- D8 = Basic PD + 0.0024" to Basic PD + 0.0040"
- D9 = Basic PD + 0.0025" to Basic PD + 0.0045"

Sizes Through 1" Dia.

- H1 = Basic PD to Basic PD + 0.0005"
- H2 = Basic PD + 0.0005" to Basic PD + 0.0010"
- H3 = Basic PD + 0.0010" to Basic PD + 0.0015"
- H4 = Basic PD + 0.0015" to Basic PD + 0.0020"
- H5 = Basic PD + 0.0020" to Basic PD + 0.0025"
- H6 = Basic PD + 0.0025" to Basic PD + 0.0030"

Sizes Above 1" Through 1-1/2" Dia.

- H4 = Basic PD + 0.0010" to Basic PD + 0.0020"





Pitch Diameter Limits

For External and Internal Screw Threads

Classes 2A, 3A and 2B, 3B, Unified Thread Form Classes 2 and 3, American National Thread Form

| Size | Threads Per Inch | | External Thread (Bolt) | | | | | | | Internal Thread (Nut) | | | | |
|-------|------------------|--------|------------------------|--------------------|----------|----------|-----------------------------|-------------|---------|---------------------------|-------------|-------------|-------------------|------------|
| | | | Unified | | | | American National | | | Basic Pitch Dia. | Unified | | American National | |
| | | | Maximum | | Minimum | | Max. | Minimum | | | Maximum | | Minimum | |
| | NC UNC | NF UNF | Class 2A | Class 3A Basic No. | Class 2A | Class 3A | Classes 2, 3 Basic Size No. | Class 2 No. | Class 3 | All Classes Min. Size No. | 2B Size No. | 3B Size No. | 2 Size No. | 3 Size No. |
| 0 | - | 80 | 0.0514 | 0.0519 | 0.0496 | 0.0506 | 0.0519 | 0.0502 | 0.0506 | 0.0519 | 0.0542 | 0.0536 | 0.0536 | 0.0532 |
| 1 | 64 | - | 0.0623 | 0.0629 | 0.0603 | 0.0614 | 0.0629 | 0.0610 | 0.0615 | 0.0629 | 0.0655 | 0.0648 | 0.0648 | 0.0643 |
| | - | 72 | 0.0634 | 0.0640 | 0.0615 | 0.0626 | 0.0640 | 0.0622 | 0.0627 | 0.0640 | 0.0665 | 0.0659 | 0.0658 | 0.0653 |
| 2 | 56 | - | 0.0738 | 0.0744 | 0.0717 | 0.0728 | 0.0744 | 0.0724 | 0.0729 | 0.0744 | 0.0772 | 0.0765 | 0.0764 | 0.0759 |
| | - | 64 | 0.0753 | 0.0759 | 0.0733 | 0.0744 | 0.0759 | 0.0740 | 0.0745 | 0.0759 | 0.0786 | 0.0779 | 0.0778 | 0.0773 |
| 3 | 48 | - | 0.0848 | 0.0855 | 0.0825 | 0.0838 | 0.0855 | 0.0833 | 0.0839 | 0.0855 | 0.0885 | 0.0877 | 0.0877 | 0.0871 |
| | - | 56 | 0.0867 | 0.0874 | 0.0845 | 0.0858 | 0.0874 | 0.0854 | 0.0859 | 0.0874 | 0.0902 | 0.0895 | 0.0894 | 0.0889 |
| 4 | 40 | - | 0.0950 | 0.0958 | 0.0925 | 0.0939 | 0.0958 | 0.0934 | 0.0941 | 0.0958 | 0.0991 | 0.0982 | 0.0982 | 0.0975 |
| | - | 48 | 0.0978 | 0.0985 | 0.0954 | 0.0967 | 0.0985 | 0.0963 | 0.0969 | 0.0985 | 0.1016 | 0.1008 | 0.1007 | 0.1001 |
| 5 | 40 | - | 0.1080 | 0.1088 | 0.1054 | 0.1069 | 0.1088 | 0.1064 | 0.1071 | 0.1088 | 0.1121 | 0.1113 | 0.1112 | 0.1105 |
| | - | 44 | 0.1095 | 0.1102 | 0.1070 | 0.1083 | 0.1102 | 0.1079 | 0.1086 | 0.1102 | 0.1134 | 0.1126 | 0.1125 | 0.1118 |
| 6 | 32 | - | 0.1169 | 0.1177 | 0.1141 | 0.1156 | 0.1177 | 0.1150 | 0.1158 | 0.1177 | 0.1214 | 0.1204 | 0.1204 | 0.1196 |
| | - | 40 | 0.1210 | 0.1218 | 0.1184 | 0.1198 | 0.1218 | 0.1194 | 0.1201 | 0.1218 | 0.1252 | 0.1243 | 0.1242 | 0.1235 |
| 8 | 32 | - | 0.1428 | 0.1437 | 0.1399 | 0.1415 | 0.1437 | 0.1410 | 0.1418 | 0.1437 | 0.1475 | 0.1465 | 0.1464 | 0.1456 |
| | - | 36 | 0.1452 | 0.1460 | 0.1424 | 0.1439 | 0.1460 | 0.1435 | 0.1442 | 0.1460 | 0.1496 | 0.1487 | 0.1485 | 0.1478 |
| 10 | 24 | - | 0.1619 | 0.1629 | 0.1586 | 0.1604 | 0.1629 | 0.1596 | 0.1605 | 0.1629 | 0.1672 | 0.1661 | 0.1662 | 0.1653 |
| | - | 32 | 0.1688 | 0.1697 | 0.1658 | 0.1674 | 0.1697 | 0.1670 | 0.1678 | 0.1697 | 0.1736 | 0.1726 | 0.1724 | 0.1716 |
| 12 | 24 | - | 0.1879 | 0.1889 | 0.1845 | 0.1863 | 0.1889 | 0.1856 | 0.1865 | 0.1889 | 0.1933 | 0.1922 | 0.1922 | 0.1913 |
| | - | 28 | 0.1918 | 0.1928 | 0.1886 | 0.1904 | 0.1928 | 0.1897 | 0.1906 | 0.1928 | 0.1970 | 0.1959 | 0.1959 | 0.1950 |
| 1/4 | 20 | - | 0.2164 | 0.2175 | 0.2127 | 0.2147 | 0.2175 | 0.2139 | 0.2149 | 0.2175 | 0.2224 | 0.2211 | 0.2211 | 0.2201 |
| | - | 28 | 0.2258 | 0.2268 | 0.2225 | 0.2243 | 0.2268 | 0.2237 | 0.2246 | 0.2268 | 0.2311 | 0.2300 | 0.2299 | 0.2290 |
| 5/16 | 18 | - | 0.2752 | 0.2764 | 0.2712 | 0.2734 | 0.2764 | 0.2723 | 0.2734 | 0.2764 | 0.2817 | 0.2803 | 0.2805 | 0.2794 |
| | - | 24 | 0.2843 | 0.2854 | 0.2806 | 0.2827 | 0.2854 | 0.2821 | 0.2830 | 0.2854 | 0.2902 | 0.2890 | 0.2887 | 0.2878 |
| 3/8 | 16 | - | 0.3331 | 0.3344 | 0.3287 | 0.3311 | 0.3344 | 0.3299 | 0.3312 | 0.3344 | 0.3401 | 0.3387 | 0.3389 | 0.3376 |
| | - | 24 | 0.3468 | 0.3479 | 0.3430 | 0.3450 | 0.3479 | 0.3446 | 0.3455 | 0.3479 | 0.3528 | 0.3516 | 0.3512 | 0.3503 |
| 7/16 | 14 | - | 0.3897 | 0.3911 | 0.3850 | 0.3876 | 0.3911 | 0.3862 | 0.3875 | 0.3911 | 0.3972 | 0.3957 | 0.3960 | 0.3947 |
| | - | 20 | 0.4037 | 0.4050 | 0.3995 | 0.4019 | 0.4050 | 0.4014 | 0.4024 | 0.4050 | 0.4104 | 0.4091 | 0.4086 | 0.4076 |
| 1/2 | 13 | - | 0.4485 | 0.4500 | 0.4435 | 0.4463 | 0.4500 | 0.4448 | 0.4463 | 0.4500 | 0.4565 | 0.4548 | 0.4552 | 0.4537 |
| | - | 20 | 0.4662 | 0.4675 | 0.4619 | 0.4643 | 0.4675 | 0.4639 | 0.4649 | 0.4675 | 0.4731 | 0.4717 | 0.4711 | 0.4701 |
| 9/16 | 12 | - | 0.5068 | 0.5084 | 0.5016 | 0.5045 | 0.5084 | 0.5028 | 0.5044 | 0.5084 | 0.5152 | 0.5135 | 0.5140 | 0.5124 |
| | - | 18 | 0.5250 | 0.5264 | 0.5205 | 0.5230 | 0.5264 | 0.5223 | 0.5234 | 0.5264 | 0.5323 | 0.5308 | 0.5305 | 0.5294 |
| 5/8 | 11 | - | 0.5644 | 0.5660 | 0.5589 | 0.5619 | 0.5660 | 0.5601 | 0.5618 | 0.5660 | 0.5732 | 0.5714 | 0.5719 | 0.5702 |
| | - | 18 | 0.5875 | 0.5889 | 0.5828 | 0.5854 | 0.5889 | 0.5848 | 0.5859 | 0.5889 | 0.5949 | 0.5934 | 0.5930 | 0.5919 |
| 3/4 | 10 | - | 0.6832 | 0.6850 | 0.6773 | 0.6806 | 0.6850 | 0.6786 | 0.6805 | 0.6850 | 0.6927 | 0.6907 | 0.6914 | 0.6985 |
| | - | 16 | 0.7079 | 0.7094 | 0.7029 | 0.7056 | 0.7094 | 0.7049 | 0.7062 | 0.7094 | 0.7159 | 0.7143 | 0.7139 | 0.7126 |
| 7/8 | 9 | - | 0.8009 | 0.8028 | 0.7946 | 0.7981 | 0.8028 | 0.7958 | 0.7979 | 0.8028 | 0.8110 | 0.8089 | 0.8098 | 0.8077 |
| | - | 14 | 0.8270 | 0.8286 | 0.8216 | 0.8245 | 0.8286 | 0.8237 | 0.8250 | 0.8286 | 0.8356 | 0.8339 | 0.8335 | 0.8322 |
| 1 | 8 | - | 0.9168 | 0.9188 | 0.9100 | 0.9137 | 0.9188 | 0.9112 | 0.9134 | 0.9188 | 0.9276 | 0.9254 | 0.9264 | 0.9242 |
| | - | 12 | 0.9441 | 0.9459 | 0.9382 | 0.9415 | 0.9459 | 0.9403 | 0.9419 | 0.9459 | 0.9535 | 0.9516 | 0.9515 | 0.9499 |
| - | 14NS | 0.9519 | 0.9536 | 0.9463 | 0.9494 | 0.9536 | 0.9487 | 0.9500 | 0.9536 | 0.9609 | 0.9590 | 0.9585 | 0.9572 | |
| 1 1/8 | 7 | - | 1.0300 | 1.0322 | 1.0228 | 1.0268 | 1.0322 | 1.0237 | 1.0263 | 1.0322 | 1.0416 | 1.0393 | 1.0407 | 1.0381 |
| | - | 12 | 1.0691 | 1.0709 | 1.0631 | 1.0664 | 1.0709 | 1.0653 | 1.0669 | 1.0709 | 1.0787 | 1.0768 | 1.0765 | 1.0749 |
| 1 1/4 | 7 | - | 1.1550 | 1.1572 | 1.1476 | 1.1517 | 1.1572 | 1.1487 | 1.1513 | 1.1572 | 1.1668 | 1.1644 | 1.1657 | 1.1631 |
| | - | 12 | 1.1941 | 1.1959 | 1.1879 | 1.1913 | 1.1959 | 1.1903 | 1.1919 | 1.1959 | 1.2039 | 1.2019 | 1.2015 | 1.1999 |
| 1 3/8 | 6 | - | 1.2643 | 1.2667 | 1.2563 | 1.2607 | 1.2667 | 1.2566 | 1.2596 | 1.2667 | 1.2771 | 1.2745 | 1.2768 | 1.2738 |
| | - | 12 | 1.3190 | 1.3321 | 1.3127 | 1.3162 | 1.3209 | 1.3153 | 1.3169 | 1.3209 | 1.3291 | 1.3270 | 1.3265 | 1.3249 |
| 1 1/2 | 6 | - | 1.3893 | 1.3917 | 1.3812 | 1.3856 | 1.3917 | 1.3816 | 1.3846 | 1.3917 | 1.4022 | 1.3996 | 1.4018 | 1.3988 |
| | - | 12 | 1.4440 | 1.4459 | 1.4376 | 1.4411 | 1.4459 | 1.4403 | 1.4419 | 1.4459 | 1.4542 | 1.4522 | 1.4515 | 1.4499 |





Classes and Tap Recommendations (USCTI Table 323)

| Size | Threads Per Inch | | Tap Major Diameter | | Unified Classes of Thread | | | | | |
|------|------------------|-----------|--------------------|---------|--------------------------------------|---------|---------|-----------------------------|---------|---------|
| | | | | | Class 2B For General Applications | | | Class 3B For Closer Fits | | |
| | NC UNC | NF UNF | Minimum | Maximum | H Limit | Minimum | Maximum | H Limit | Minimum | Maximum |
| 2 | 56 | - | 0.1107 | 0.1117 | H2 | 0.0981 | 0.0986 | H1 | 0.0976 | 0.0981 |
| 3 | 48 | - | 0.1279 | 0.1289 | H2 | 0.1131 | 0.1136 | H1 | 0.1126 | 0.1131 |
| 4 | 40 | - | 0.1463 | 0.1473 | H2 | 0.1288 | 0.1293 | H1 | 0.1283 | 0.1288 |
| 4 | - | 48 | 0.1409 | 0.1419 | H2 | 0.1261 | 0.1266 | H1 | 0.1256 | 0.1261 |
| 6 | 32 | - | 0.1807 | 0.1817 | H3 | 0.1593 | 0.1598 | H2 | 0.1588 | 0.1593 |
| 6 | - | 40 | 0.1723 | 0.1733 | H2 | 0.1548 | 0.1553 | H1 | 0.1543 | 0.1548 |
| 8 | 32 | - | 0.2067 | 0.2077 | H3 | 0.1853 | 0.1858 | H2 | 0.1848 | 0.1853 |
| 8 | - | 36 | 0.2022 | 0.2032 | H2 | 0.1826 | 0.1831 | H1 | 0.1821 | 0.1826 |
| 10 | 24 | - | 0.2465 | 0.2475 | H3 | 0.2180 | 0.2185 | H2 | 0.2175 | 0.2180 |
| 10 | - | 32 | 0.2327 | 0.2337 | H3 | 0.2113 | 0.2118 | H2 | 0.2108 | 0.2113 |
| 1/4 | 20 | - | 0.3177 | 0.3187 | H3 | 0.2835 | 0.2840 | H2 | 0.2830 | 0.2835 |
| 1/4 | - | 28 | 0.2985 | 0.2995 | H3 | 0.2742 | 0.2747 | H2 | 0.2737 | 0.2742 |
| 5/16 | 18 | - | 0.3874 | 0.3884 | H4 | 0.3501 | 0.3506 | H3 | 0.3496 | 0.3501 |
| 5/16 | - | 24 | 0.3690 | 0.3700 | H3 | 0.3405 | 0.3410 | H2 | 0.3400 | 0.3405 |
| 3/8 | 16 | - | 0.4592 | 0.4602 | H4 | 0.4171 | 0.4176 | H3 | 0.4166 | 0.4171 |
| 3/8 | - | 24 | 0.4315 | 0.4325 | H3 | 0.4030 | 0.4035 | H2 | 0.4025 | 0.4030 |
| 7/16 | 14 | - | 0.5333 | 0.5343 | H4 | 0.4854 | 0.4859 | H3 | 0.4849 | 0.4854 |
| 7/16 | - | 20 | 0.5052 | 0.5062 | H4 | 0.4715 | 0.4720 | H3 | 0.4710 | 0.4715 |
| 1/2 | 13 | - | 0.6032 | 0.6042 | H4 | 0.5514 | 0.5519 | H3 | 0.5509 | 0.5514 |
| 1/2 | - | 20 | 0.5677 | 0.5687 | H4 | 0.5340 | 0.5345 | H3 | 0.5335 | 0.5340 |
| 9/16 | 12 | - | 0.6741 | 0.6751 | H4 | 0.6182 | 0.6187 | H3 | 0.6177 | 0.6182 |
| 9/16 | - | 18 | 0.6374 | 0.6384 | H4 | 0.6001 | 0.6006 | H3 | 0.5996 | 0.6001 |
| 5/8 | 11 | - | 0.7467 | 0.7477 | H4 | 0.6856 | 0.6861 | H3 | 0.6851 | 0.6856 |
| 5/8 | - | 18 | 0.6999 | 0.7009 | H4 | 0.6626 | 0.6631 | H3 | 0.6621 | 0.6626 |
| 3/4 | 10 | - | 0.8835 | 0.8850 | H5 | 0.8169 | 0.8174 | H3 | 0.8159 | 0.8164 |
| 3/4 | - | 16 | 0.8342 | 0.8352 | H4 | 0.7921 | 0.7926 | H3 | 0.7916 | 0.7921 |
| 7/8 | 9 | - | 1.0232 | 1.0247 | H5 | 0.9491 | 0.9496 | H3 | 0.9481 | 0.9486 |
| 7/8 | - | 14 | 0.9708 | 0.9718 | H4 | 0.9234 | 0.9239 | H3 | 0.9224 | 0.9229 |
| 1 | 8 | - | 1.1666 | 1.1681 | H6 | 1.0832 | 1.0842 | H4 | 1.0822 | 1.0832 |
| 1 | - | 12 | 1.1116 | 1.1126 | H6 | 1.0562 | 1.0572 | H4 | 1.0552 | 1.0562 |

| ISO Metric Class of Threads | | | | |
|------------------------------------|-------------|-----------------------|--------|---------------------|
| Class 6H For Commercial Threads | | | | |
| Size mm | Pitch mm | Pitch Diameter Limits | | Recommended Taps |
| | | Min. | Max | |
| M2 | 0.40 | 0.0889 | 0.0909 | D2 |
| M2.5 | 0.45 | 0.1099 | 0.1120 | D2 |
| M3 | 0.50 | 0.1309 | 0.1332 | D2 |
| M4 | 0.70 | 0.1753 | 0.1783 | D3 |
| M5 | 0.80 | 0.2173 | 0.2203 | D3 |
| M6 | 1.00 | 0.2618 | 0.2654 | D3 |
| M8 | 1.25 | 0.3469 | 0.3508 | D3 |
| M10 | 1.50 | 0.4320 | 0.4357 | D4 |
| M12 | 1.75 | 0.5172 | 0.5224 | D4 |
| M14 | 2.00 | 0.6023 | 0.6078 | D5 |
| M16 | 2.00 | 0.6810 | 0.6867 | D5 |
| M18 | 2.50 | 0.7725 | 0.7786 | D5 |
| M20 | 2.50 | 0.8371 | 0.8574 | D5 |
| M22 | 2.50 | 0.9300 | 0.9361 | D5 |
| M24 | 3.00 | 1.0216 | 1.0289 | D6 |



Machine Screw Taps – Ground Thread Unified and American National Form (USCTI Table 329)

| Tap Size In | Threads Per Inch | | | Major Diameter | | | Basic Pitch Diam. | Pitch Diameter Limits | | | | | | | |
|-------------|------------------|--------|----|----------------|--------|--------|-------------------|-----------------------|--------|----------|--------|----------|--------|-----------|--------|
| | NC UNC | UF UNF | NS | Basic | Min. | Max. | | H1 Limit | | H2 Limit | | H3 Limit | | H7 Limit* | |
| | | | | | | | | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. |
| 0 | - | 80 | - | 0.0600 | 0.0605 | 0.0616 | 0.0519 | 0.0519 | 0.0524 | 0.0524 | 0.0529 | - | - | - | - |
| 1 | 64 | - | - | 0.0730 | 0.0736 | 0.0750 | 0.0629 | 0.0629 | 0.0634 | 0.0634 | 0.0639 | - | - | - | - |
| 1 | - | 72 | - | 0.0730 | 0.0736 | 0.0748 | 0.0640 | 0.0640 | 0.0645 | 0.0645 | 0.0650 | - | - | - | - |
| 2 | 56 | - | - | 0.0860 | 0.0867 | 0.0883 | 0.0744 | 0.0744 | 0.0749 | 0.0749 | 0.0754 | - | - | - | - |
| 2 | - | 64 | - | 0.0860 | 0.0866 | 0.0880 | 0.0759 | 0.0759 | 0.0764 | 0.0764 | 0.0769 | - | - | - | - |
| 3 | 48 | - | - | 0.0990 | 0.0999 | 0.1017 | 0.0855 | 0.0855 | 0.0860 | 0.0860 | 0.0865 | - | - | - | - |
| 3 | - | 56 | - | 0.0990 | 0.0997 | 0.1013 | 0.0874 | 0.0874 | 0.0879 | 0.0879 | 0.0884 | - | - | - | - |
| 4 | - | - | 36 | 0.1120 | 0.1135 | 0.1156 | 0.0940 | - | - | 0.0945 | 0.0950 | - | - | - | - |
| 4 | 40 | - | - | 0.1120 | 0.1133 | 0.1152 | 0.0958 | 0.0958 | 0.0963 | 0.0963 | 0.0968 | - | - | - | - |
| 4 | - | 48 | - | 0.1120 | 0.1129 | 0.1147 | 0.0985 | 0.0985 | 0.0990 | 0.0990 | 0.0995 | - | - | - | - |
| 5 | 40 | - | - | 0.1250 | 0.1263 | 0.1282 | 0.1088 | 0.1088 | 0.1093 | 0.1093 | 0.1098 | - | - | - | - |
| 5 | - | 44 | - | 0.1250 | 0.1263 | 0.1280 | 0.1102 | - | - | 0.1107 | 0.1112 | - | - | - | - |
| 6 | 32 | - | - | 0.1380 | 0.1401 | 0.1421 | 0.1177 | 0.1177 | 0.1182 | 0.1182 | 0.1187 | 0.1187 | 0.1192 | 0.1207 | 0.1212 |
| 6 | - | 40 | - | 0.1380 | 0.1393 | 0.1412 | 0.1218 | 0.1218 | 0.1223 | 0.1223 | 0.1228 | - | - | - | - |
| 8 | 32 | - | - | 0.1640 | 0.1661 | 0.1681 | 0.1437 | 0.1437 | 0.1442 | 0.1442 | 0.1447 | 0.1447 | 0.1452 | 0.1467 | 0.1472 |
| 8 | - | 36 | - | 0.1640 | 0.1655 | 0.1676 | 0.1460 | 0.1460 | 0.1465 | 0.1465 | 0.1470 | - | - | - | - |
| 10 | 24 | - | - | 0.1900 | 0.1927 | 0.1954 | 0.1629 | 0.1629 | 0.1634 | 0.1634 | 0.1639 | 0.1639 | 0.1644 | 0.1659 | 0.1664 |
| 10 | - | 32 | - | 0.1900 | 0.1921 | 0.1941 | 0.1697 | 0.1697 | 0.1702 | 0.1702 | 0.1707 | 0.1707 | 0.1712 | 0.1727 | 0.1732 |
| 12 | 24 | - | - | 0.2160 | 0.2187 | 0.2214 | 0.1889 | 0.1889 | 0.1894 | - | - | 0.1899 | 0.1904 | - | - |
| 12 | - | 28 | - | 0.2160 | 0.2183 | 0.2206 | 0.1928 | 0.1928 | 0.1933 | - | - | 0.1938 | 0.1943 | - | - |

LEAD TOLERANCE
A maximum lead deviation of plus or minus 0.0005" within any two threads not farther apart than one inch is permitted.

ANGLE TOLERANCE
6 to 9 threads per inch incl. = ±25' in 1/2 angle.
10 to 80 threads per inch incl. = ±30' in 1/2 angle.

FORMULA

Maximum major diameter = Basic +A.
Minimum major diameter = Basic +B.
For values of A and B see table 331.

PITCH DIAMETER LIMITS FOR TAPS THROUGH 1" DIAMETER

H1 Limit = Basic PD to basic PD + 0.0005".
H2 Limit = Basic PD + 0.0005" to Basic PD + 0.0010".
H3 Limit = Basic PD + 0.0010" to Basic PD + 0.0015".
H4 Limit = Basic PD + 0.0015" to Basic PD + 0.0020".
H5 Limit = Basic PD + 0.0020" to Basic PD + 0.0025".
H6 Limit = Basic PD + 0.0025" to Basic PD + 0.0030".

PITCH DIAMETER LIMITS FOR TAPS OVER 1" DIAMETER THROUGH 1-1/2" DIAMETER

H4 Limit = Basic PD + 0.0010" to Basic PD + 0.0020".

*Major diameter for H7 Limit Taps is 0.002" larger than values shown in min. and max. columns.

Fractional Size Taps – Ground Thread Unified and American National Form (USCTI Table 327)

| Tap Size Inches | Threads Per Inch | | | Major Diameter | | | Basic Pitch Diam. | Pitch Diameter Limits | | | | | | | | | | | |
|-----------------|------------------|--------|----|----------------|--------|--------|-------------------|-----------------------|--------|----------|--------|----------|--------|----------|--------|----------|--------|----------|--------|
| | NC UNC | UF UNF | NS | Basic | Min. | Max. | | H1 Limit | | H2 Limit | | H3 Limit | | H4 Limit | | H5 Limit | | H6 Limit | |
| | | | | | | | | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. |
| 1/4 | 20 | - | - | 0.2500 | 0.2533 | 0.2565 | 0.2175 | 0.2175 | 0.2180 | 0.2180 | 0.2185 | 0.2185 | 0.2190 | - | - | 0.2195 | 0.2200 | - | - |
| 1/4 | - | 28 | - | 0.2500 | 0.2523 | 0.2546 | 0.2268 | 0.2268 | 0.2273 | 0.2273 | 0.2278 | 0.2278 | 0.2283 | 0.2283 | 0.2288 | - | - | - | - |
| 5/16 | 18 | - | - | 0.3125 | 0.3161 | 0.3197 | 0.2764 | 0.2764 | 0.2769 | 0.2769 | 0.2774 | 0.2774 | 0.2779 | - | - | 0.2784 | 0.2789 | - | - |
| 5/16 | - | 24 | - | 0.3125 | 0.3152 | 0.3179 | 0.2854 | 0.2854 | 0.2859 | 0.2859 | 0.2864 | 0.2864 | 0.2869 | 0.2869 | 0.2874 | - | - | - | - |
| 3/8 | 16 | - | - | 0.3750 | 0.3790 | 0.3831 | 0.3344 | 0.3344 | 0.3349 | 0.3349 | 0.3354 | 0.3354 | 0.3359 | - | - | 0.3364 | 0.3369 | - | - |
| 3/8 | - | 24 | - | 0.3750 | 0.3777 | 0.3804 | 0.3479 | 0.3479 | 0.3484 | 0.3484 | 0.3489 | 0.3489 | 0.3494 | 0.3494 | 0.3499 | - | - | - | - |
| 7/16 | 14 | - | - | 0.4375 | 0.4422 | 0.4468 | 0.3911 | 0.3911 | 0.3916 | 0.3916 | 0.3921 | 0.3921 | 0.3926 | - | - | 0.3931 | 0.3936 | - | - |
| 7/16 | - | 20 | - | 0.4375 | 0.4408 | 0.4440 | 0.4050 | 0.4050 | 0.4055 | 0.4055 | 0.4060 | 0.4060 | 0.4065 | - | - | 0.4070 | 0.4075 | - | - |
| 1/2 | 13 | - | - | 0.5000 | 0.5050 | 0.5100 | 0.4500 | 0.4500 | 0.4505 | 0.4505 | 0.4510 | 0.4510 | 0.4515 | - | - | 0.4520 | 0.4525 | - | - |
| 1/2 | - | 20 | - | 0.5000 | 0.5033 | 0.5065 | 0.4675 | 0.4675 | 0.4680 | 0.4680 | 0.4685 | 0.4685 | 0.4690 | - | - | 0.4695 | 0.4700 | - | - |
| 9/16 | 12 | - | - | 0.5625 | 0.5679 | 0.5733 | 0.5084 | 0.5084 | 0.5089 | 0.5089 | 0.5094 | 0.5094 | 0.5099 | - | - | 0.5104 | 0.5109 | - | - |
| 9/16 | - | 18 | - | 0.5625 | 0.5661 | 0.5697 | 0.5264 | 0.5264 | 0.5269 | 0.5269 | 0.5274 | 0.5274 | 0.5279 | - | - | 0.5284 | 0.5289 | - | - |
| 5/8 | 11 | - | - | 0.6250 | 0.6309 | 0.6368 | 0.5660 | 0.5660 | 0.5665 | 0.5665 | 0.5670 | 0.5670 | 0.5675 | - | - | 0.5680 | 0.5685 | - | - |
| 5/8 | - | 18 | - | 0.6250 | 0.6286 | 0.6322 | 0.5889 | 0.5889 | 0.5894 | 0.5894 | 0.5899 | 0.5899 | 0.5904 | - | - | 0.5909 | 0.5914 | - | - |
| 11/16 | - | - | 11 | 0.6875 | 0.6934 | 0.6993 | 0.6285 | - | - | - | - | 0.6295 | 0.6300 | - | - | - | - | - | - |
| 11/16 | - | - | 16 | 0.6875 | 0.6915 | 0.6956 | 0.6469 | - | - | - | - | 0.6479 | 0.6484 | - | - | - | - | - | - |
| 3/4 | 10 | - | - | 0.7500 | 0.7565 | 0.7630 | 0.6850 | 0.6850 | 0.6855 | 0.6855 | 0.6860 | 0.6860 | 0.6865 | - | - | 0.6870 | 0.6875 | - | - |
| 3/4 | - | 16 | - | 0.7500 | 0.7540 | 0.7581 | 0.7094 | 0.7094 | 0.7099 | 0.7099 | 0.7104 | 0.7104 | 0.7109 | - | - | 0.8306 | 0.8311 | - | - |
| 7/8 | 9 | - | - | 0.8750 | 0.8822 | 0.8894 | 0.8028 | 0.8028 | 0.8033 | 0.8033 | 0.8038 | - | - | 0.8043 | 0.8048 | - | - | 0.8053 | 0.8058 |
| 7/8 | - | 14 | - | 0.8750 | 0.8797 | 0.8843 | 0.8286 | 0.8286 | 0.8291 | 0.8291 | 0.8296 | - | - | 0.8301 | 0.8306 | - | - | 0.8311 | 0.8316 |
| 1 | 8 | - | - | 1.0000 | 1.0081 | 1.0162 | 0.9188 | 0.9188 | 0.9193 | 0.9193 | 0.9198 | - | - | 0.9203 | 0.9208 | - | - | 0.9213 | 0.9218 |
| 1 | - | 12 | - | 1.0000 | 1.0054 | 1.0108 | 0.9459 | - | - | - | - | - | - | 0.9474 | 0.9479 | - | - | - | - |
| 1 | - | - | 14 | 1.0000 | 1.0047 | 1.0093 | 0.9536 | - | - | 0.9541 | 0.9546 | - | - | 0.9551 | 0.9556 | - | - | 0.9561 | 0.9566 |
| 1 1/8 | 7 | - | - | 1.1250 | 1.1343 | 1.1436 | 1.0322 | - | - | - | - | - | - | 1.0332 | 1.0337 | - | - | - | - |
| 1 1/8 | - | 12 | - | 1.1250 | 1.1304 | 1.1358 | 1.0709 | - | - | - | - | - | - | 1.0719 | 1.0724 | - | - | - | - |
| 1 1/4 | 7 | - | - | 1.2500 | 1.2593 | 1.2686 | 1.1572 | - | - | - | - | - | - | 1.1582 | 1.1587 | - | - | - | - |
| 1 1/4 | - | 12 | - | 1.2500 | 1.2554 | 1.2608 | 1.1959 | - | - | - | - | - | - | 1.1969 | 1.1974 | - | - | - | - |
| 1 3/8 | 6 | - | - | 1.3750 | 1.3859 | 1.3967 | 1.2667 | - | - | - | - | - | - | 1.2677 | 1.2682 | - | - | - | - |
| 1 3/8 | - | 12 | - | 1.3750 | 1.3804 | 1.3858 | 1.3209 | - | - | - | - | - | - | 1.3219 | 1.3224 | - | - | - | - |
| 1 1/2 | 6 | - | - | 1.5000 | 1.5109 | 1.5217 | 1.3917 | - | - | - | - | - | - | 1.3927 | 1.3932 | - | - | - | - |
| 1 1/2 | - | 12 | - | 1.5000 | 1.5054 | 1.5108 | 1.4459 | - | - | - | - | - | - | 1.4469 | 1.4474 | - | - | - | - |





Ground Thread Taps (USCTI Table 331)

The following tables and formula are used in determining the limits and tolerances for ground thread taps having a thread lead angle not in excess of 5°, unless otherwise specified.

LEAD TOLERANCE

A maximum lead deviation of $\pm 0.0005''$, within any two threads not farther apart than 1" is permitted.

ANGLE TOLERANCE

| Threads Per Inch | Deviation in Half Angle |
|------------------|-------------------------|
| 4 to 5-1/2 incl. | $\pm 20'$ |
| 6 to 9 incl. | $\pm 25'$ |
| 10 to 80 incl. | $\pm 30'$ |

FORMULA

Max. Major Dia. = Basic + A

Max. Pitch Dia. = Min. + D

Min. Major Dia. = Basic + B

Min. Pitch Dia. = Basic + C

In the above formula:

A = Constant to add = 0.130P for all Pitches

B = Major Diameter Tolerance = 0.087P for 48 Through 80 TPI
 = 0.076P for 36 Through 47 TPI
 = 0.065P for 4 Through 35 TPI

C = Amount over basic for minimum pitch diameter

D = Pitch diameter tolerance

Note: When the tap major diameter must be determined from a specified tap pitch diameter, the maximum major diameter equals the minimum specified pitch diameter minus Constant C, plus 0.64952P, plus Constant A.

| Threads Per Inch | A | B | C | | | D | | | |
|------------------|--------|--------|---------------|--------------------------|-------------|-------------|-------------------------|-----------------------------|-------------|
| | | | To 5/8" Incl. | Over 5/8" to 2 1/2 Incl. | Over 2 1/2" | To 1" Incl. | Over 1" to 1 1/2" Incl. | Over 1 1/2" to 2 1/2" Incl. | Over 2 1/2" |
| 80 | 0.0016 | 0.0011 | 0.0005 | 0.0010 | 0.0015 | 0.0005 | 0.0010 | 0.0010 | 0.0015 |
| 72 | 0.0018 | 0.0012 | 0.0005 | 0.0010 | 0.0015 | 0.0005 | 0.0010 | 0.0010 | 0.0015 |
| 64 | 0.0020 | 0.0014 | 0.0005 | 0.0010 | 0.0015 | 0.0005 | 0.0010 | 0.0010 | 0.0015 |
| 56 | 0.0023 | 0.0016 | 0.0005 | 0.0010 | 0.0015 | 0.0005 | 0.0010 | 0.0010 | 0.0015 |
| 48 | 0.0027 | 0.0018 | 0.0005 | 0.0010 | 0.0015 | 0.0005 | 0.0010 | 0.0010 | 0.0015 |
| 44 | 0.0030 | 0.0017 | 0.0005 | 0.0010 | 0.0015 | 0.0005 | 0.0010 | 0.0010 | 0.0015 |
| 40 | 0.0032 | 0.0019 | 0.0005 | 0.0010 | 0.0015 | 0.0005 | 0.0010 | 0.0010 | 0.0015 |
| 36 | 0.0036 | 0.0021 | 0.0005 | 0.0010 | 0.0015 | 0.0005 | 0.0010 | 0.0010 | 0.0015 |
| 32 | 0.0041 | 0.0020 | 0.0010 | 0.0010 | 0.0015 | 0.0005 | 0.0010 | 0.0010 | 0.0015 |
| 28 | 0.0046 | 0.0023 | 0.0010 | 0.0010 | 0.0015 | 0.0005 | 0.0010 | 0.0010 | 0.0015 |
| 24 | 0.0054 | 0.0027 | 0.0010 | 0.0010 | 0.0015 | 0.0005 | 0.0010 | 0.0015 | 0.0015 |
| 20 | 0.0065 | 0.0032 | 0.0010 | 0.0010 | 0.0015 | 0.0005 | 0.0010 | 0.0015 | 0.0015 |
| 18 | 0.0072 | 0.0036 | 0.0010 | 0.0010 | 0.0015 | 0.0005 | 0.0010 | 0.0015 | 0.0015 |
| 16 | 0.0081 | 0.0041 | 0.0010 | 0.0010 | 0.0015 | 0.0005 | 0.0010 | 0.0015 | 0.0020 |
| 14 | 0.0093 | 0.0046 | 0.0010 | 0.0015 | 0.0015 | 0.0005 | 0.0010 | 0.0015 | 0.0020 |
| 13 | 0.0100 | 0.0050 | 0.0010 | 0.0015 | 0.0015 | 0.0005 | 0.0010 | 0.0015 | 0.0020 |
| 12 | 0.0108 | 0.0054 | 0.0010 | 0.0015 | 0.0015 | 0.0005 | 0.0010 | 0.0015 | 0.0020 |
| 11 | 0.0118 | 0.0059 | 0.0010 | 0.0015 | 0.0020 | 0.0005 | 0.0010 | 0.0015 | 0.0020 |
| 10 | 0.0130 | 0.0065 | - | 0.0015 | 0.0020 | 0.0005 | 0.0010 | 0.0015 | 0.0020 |
| 9 | 0.0144 | 0.0072 | - | 0.0015 | 0.0020 | 0.0005 | 0.0010 | 0.0015 | 0.0020 |
| 8 | 0.0162 | 0.0081 | - | 0.0015 | 0.0020 | 0.0005 | 0.0010 | 0.0015 | 0.0020 |
| 7 | 0.0186 | 0.0093 | - | 0.0015 | 0.0020 | 0.0010 | 0.0010 | 0.0020 | 0.0025 |
| 6 | 0.0217 | 0.0108 | - | 0.0015 | 0.0020 | 0.0010 | 0.0010 | 0.0020 | 0.0025 |
| 5 1/2 | 0.0236 | 0.0118 | - | 0.0015 | 0.0020 | 0.0010 | 0.0015 | 0.0020 | 0.0025 |
| 5 | 0.0260 | 0.0130 | - | 0.0015 | 0.0020 | 0.0010 | 0.0015 | 0.0020 | 0.0025 |
| 4 1/2 | 0.0289 | 0.0144 | - | 0.0015 | 0.0020 | 0.0010 | 0.0015 | 0.0020 | 0.0025 |
| 4 | 0.0325 | 0.0162 | - | 0.0015 | 0.0020 | 0.0010 | 0.0015 | 0.0020 | 0.0025 |

For intermediate pitches, use values for next coarser pitch for C and D, but use formulas for A and B.





Metric Size Taps – Ground Thread (USCTI Table 337)

| Nom-inal Size | Pitch | Major Diameter Inches | | | Standard Pitch Diameter Limits Inches | | | | | | | | | | | | | | |
|---------------|-------|-----------------------|--------|--------|---------------------------------------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|-----------|------|
| | | Basic | Min. | Max. | Basic Pitch Diam. | D3 Limits | | D4 Limits | | D5 Limits | | D6 Limits | | D7 Limits | | D8 Limits | | D9 Limits | |
| | | | | | | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. |
| 1.6 | 0.35 | 0.062992 | 0.0641 | 0.0651 | 0.054042 | 0.0550 | 0.0556 | - | - | - | - | - | - | - | - | - | - | - | |
| 2.0 | 0.4 | 0.078740 | 0.0801 | 0.0811 | 0.068511 | 0.0695 | 0.0701 | - | - | - | - | - | - | - | - | - | - | - | |
| 2.5 | 0.45 | 0.098425 | 0.0999 | 0.1009 | 0.086918 | 0.0879 | 0.0885 | - | - | - | - | - | - | - | - | - | - | - | |
| 3.0 | 0.5 | 0.118110 | 0.1198 | 0.1208 | 0.105324 | 0.1063 | 0.1069 | - | - | - | - | - | - | - | - | - | - | - | |
| 3.5 | 0.6 | 0.137795 | 0.1397 | 0.1407 | 0.122452 | - | - | 0.1237 | 0.1245 | - | - | - | - | - | - | - | - | - | |
| 4.0 | 0.7 | 0.157480 | 0.1597 | 0.1613 | 0.139580 | - | - | 0.1408 | 0.1416 | - | - | - | - | - | - | - | - | - | |
| 5.0 | 0.8 | 0.196850 | 0.1994 | 0.2010 | 0.176393 | - | - | 0.1776 | 0.1784 | - | - | - | - | - | - | - | - | - | |
| 6.0 | 1.0 | 0.236220 | 0.2395 | 0.2411 | 0.210648 | - | - | - | - | 0.2122 | 0.2132 | - | - | - | - | - | - | - | |
| 8.0 | 1.25 | 0.314960 | 0.3189 | 0.3214 | 0.282995 | - | - | - | - | 0.2843 | 0.2855 | - | - | - | - | - | - | - | |
| 10 | 1.5 | 0.393700 | 0.3985 | 0.4010 | 0.355343 | - | - | - | - | - | - | 0.3572 | 0.3584 | - | - | - | - | - | |
| 12 | 1.75 | 0.472440 | 0.4780 | 0.4805 | 0.427690 | - | - | - | - | - | - | 0.4295 | 0.4307 | - | - | - | - | - | |
| 14 | 2.0 | 0.551180 | 0.5575 | 0.5600 | 0.500037 | - | - | - | - | - | - | - | - | 0.5020 | 0.5036 | - | - | - | |
| 16 | 2.0 | 0.629920 | 0.6363 | 0.6388 | 0.578777 | - | - | - | - | - | - | - | - | 0.5807 | 0.5823 | - | - | - | |
| 20 | 2.5 | 0.787400 | 0.7954 | 0.7979 | 0.723471 | - | - | - | - | - | - | - | - | 0.7254 | 0.7270 | - | - | - | |
| 24 | 3.0 | 0.944880 | 0.9544 | 0.9583 | 0.868165 | - | - | - | - | - | - | - | - | - | - | 0.8706 | 0.8722 | - | |
| 30 | 3.5 | 1.181100 | 1.1922 | 1.1961 | 1.091599 | - | - | - | - | - | - | - | - | - | - | - | - | 1.0942 | |
| 36 | 4.0 | 1.417320 | 1.4300 | 1.4339 | 1.315034 | - | - | - | - | - | - | - | - | - | - | - | - | 1.3176 | |
| | | | | | | | | | | | | | | | | | | 1.0962 | |
| | | | | | | | | | | | | | | | | | | 1.3196 | |

LEAD TOLERANCE

A maximum lead deviation of ±0.013 mm within any two threads not farther apart than 25 mm is permitted.

ANGLE TOLERANCE

Pitch (mm)

Over 0.25 to 2.5 Incl.

Over 2.5 to 4 Incl.

Over 4 to 6 Incl.

Deviation in Half Angle

±30'

±25'

±20"

FORMULA

Min. Major Dia. = Basic + W

Max. Major Dia. = Min. + X

For Values of W, Y & Z, See Table 341

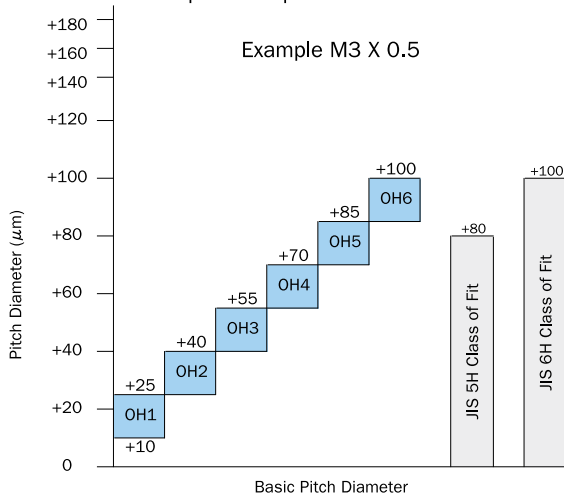
Max. Pitch Dia. = Basic + Y

Min. Pitch Dia. = Max. - Z

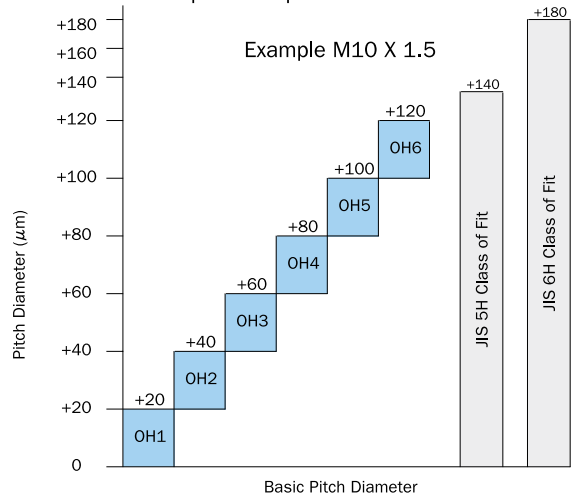
In all cases, the tap major and pitch diameter inch conversions have been rounded upwards to the next ten thousandth of an inch. Basic values agree with B1 Report—ISO Metric Screw Threads, Table 9B.

OH Tap Limits

OH Limits for Taps with a pitch ≤ 0.6



OH Limits for Taps with a pitch ≥ 0.7





Ground Thread Tap Limits (USCTI Table 341)

The following tables and formula are used in determining the limits and tolerances for ground thread metric taps unless otherwise specified. They apply only to metric threads having a 60° form with a P/8 flat at the major diameter of the basic thread form.

LEAD TOLERANCE

A maximum lead deviation of ±0.013 mm within any two threads not farther apart than 25 mm is permitted.

ANGLE TOLERANCE

| Pitch (mm) | Deviation in Half Angle |
|------------------------|-------------------------|
| Over 0.25 to 2.5 incl. | ±30' |
| Over 2.5 to 4. incl. | ±25' |
| Over 4 to 6 incl. | ±20' |

FORMULA

| | |
|----------------------------|-----------------------------|
| Min. Major Dia = Basic + W | Max. Pitch Dia. = Basic + Y |
| Max. Major Dia. = Min. + X | Min. Pitch Dia. = Max. - Z |

W = Constant to add to Basic Major Diameter*

X = Major Diameter Tolerance

Y = Amount over Basic for Maximum Pitch Diameter

Z = Pitch Diameter Tolerance

*W = .080P Converted to inches

Note: When the tap major diameter must be determined from a specified tap pitch diameter, the minimum major diameter equals the maximum specified tap pitch diameter minus constant Y, plus the basic single height of thread, plus constant W.

| Pitch | | Symmetrical Thread Height | Tap Limits for Metric Threads (inch) | | | | | | | | | |
|-------|-------------|---------------------------|--------------------------------------|--------|--------------------|------------------------|-----------------------|----------|--------------------|------------------------|-----------------------|----------|
| | | | W | X | Y | | | | Z | | | |
| | | | | | M1.6 To M6.3 Incl. | Over M6.3 to M25 Incl. | Over M25 To M90 Incl. | Over M90 | M1.6 To M6.3 Incl. | Over M6.3 to M25 Incl. | Over M25 To M90 Incl. | Over M90 |
| mm | Inch Equiv. | 0.64952P (Inch) | | | | | | | | | | |
| 0.3 | 0.011811 | 0.007671 | 0.0009 | 0.0010 | 0.0015 | 0.0015 | 0.0020 | 0.0020 | 0.0006 | 0.0006 | 0.0008 | 0.0008 |
| 0.35 | 0.013779 | 0.008950 | 0.0011 | 0.0010 | 0.0015 | 0.0015 | 0.0020 | 0.0020 | 0.0006 | 0.0006 | 0.0008 | 0.0008 |
| 0.4 | 0.015748 | 0.010229 | 0.0013 | 0.0010 | 0.0015 | 0.0020 | 0.0020 | 0.0020 | 0.0006 | 0.0006 | 0.0008 | 0.0010 |
| 0.45 | 0.017716 | 0.011507 | 0.0014 | 0.0010 | 0.0015 | 0.0020 | 0.0020 | 0.0020 | 0.0006 | 0.0008 | 0.0008 | 0.0010 |
| 0.5 | 0.019685 | 0.012786 | 0.0016 | 0.0010 | 0.0015 | 0.0020 | 0.0020 | 0.0025 | 0.0006 | 0.0008 | 0.0010 | 0.0010 |
| 0.6 | 0.236220 | 0.015343 | 0.0019 | 0.0010 | 0.0020 | 0.0020 | 0.0025 | 0.0025 | 0.0008 | 0.0008 | 0.0010 | 0.0010 |
| 0.7 | 0.027559 | 0.017900 | 0.0022 | 0.0016 | 0.0020 | 0.0020 | 0.0025 | 0.0025 | 0.0008 | 0.0008 | 0.0010 | 0.0010 |
| 0.75 | 0.029527 | 0.019178 | 0.0024 | 0.0016 | 0.0020 | 0.0025 | 0.0025 | 0.0030 | 0.0008 | 0.0010 | 0.0010 | 0.0012 |
| 0.8 | 0.031496 | 0.020457 | 0.0025 | 0.0016 | 0.0020 | 0.0025 | 0.0025 | 0.0030 | 0.0008 | 0.0010 | 0.0010 | 0.0012 |
| 0.9 | 0.035433 | 0.023014 | 0.0028 | 0.0016 | 0.0020 | 0.0025 | 0.0025 | 0.0030 | 0.0008 | 0.0010 | 0.0010 | 0.0012 |
| 1.0 | 0.039370 | 0.025572 | 0.0032 | 0.0016 | 0.0025 | 0.0025 | 0.0030 | 0.0030 | 0.0010 | 0.0010 | 0.0012 | 0.0012 |
| 1.25 | 0.049212 | 0.031964 | 0.0039 | 0.0025 | 0.0025 | 0.0025 | 0.0030 | 0.0035 | 0.0010 | 0.0012 | 0.0012 | 0.0016 |
| 1.5 | 0.059055 | 0.038357 | 0.0047 | 0.0025 | 0.0025 | 0.0030 | 0.0030 | 0.0035 | 0.0010 | 0.0012 | 0.0012 | 0.0016 |
| 1.75 | 0.068897 | 0.044750 | 0.0055 | 0.0025 | - | 0.0030 | 0.0035 | 0.0040 | - | 0.0012 | 0.0016 | 0.0016 |
| 2.0 | 0.078740 | 0.051143 | 0.0063 | 0.0025 | - | 0.0035 | 0.0035 | 0.0040 | - | 0.0016 | 0.0016 | 0.0016 |
| 2.5 | 0.098425 | 0.063929 | 0.0079 | 0.0025 | - | 0.0035 | 0.0040 | 0.0045 | - | 0.0016 | 0.0016 | 0.0020 |
| 3.0 | 0.118110 | 0.076715 | 0.0095 | 0.0039 | - | 0.0040 | 0.0040 | 0.0050 | - | 0.0016 | 0.0020 | 0.0020 |
| 3.5 | 0.137795 | 0.089501 | 0.0110 | 0.0039 | - | 0.0040 | 0.0045 | 0.0050 | - | 0.0016 | 0.0020 | 0.0020 |
| 4.0 | 0.157480 | 0.102286 | 0.0126 | 0.0039 | - | 0.0040 | 0.0045 | 0.0055 | - | 0.0020 | 0.0020 | 0.0025 |
| 4.5 | 0.177165 | 0.115072 | 0.0142 | 0.0039 | - | - | 0.0050 | 0.0055 | - | 0.0020 | 0.0020 | 0.0025 |
| 5.0 | 0.196850 | 0.127858 | 0.0158 | 0.0039 | - | - | 0.0050 | 0.0060 | - | - | 0.0025 | 0.0025 |
| 5.5 | 0.216535 | 0.140644 | 0.0173 | 0.0039 | - | - | 0.0055 | 0.0060 | - | - | 0.0025 | 0.0025 |
| 6.0 | 0.236220 | 0.153430 | 0.0189 | 0.0039 | - | - | 0.0055 | 0.0060 | - | - | 0.0025 | 0.0025 |

For intermediate pitches use value for next coarser pitch.

Symmetrical Thread Height; Equivalent to the basic height, h, of the original American National Form.





ISO TOLERANCE SYSTEM

The ISO Metric Screw Thread Tolerance System provides for tolerance grades and tolerance positions (allowances) for the pitch diameter and crest diameter.

TOLERANCE GRADES

A series of numbers, 3 through 9, were established as symbols, to reflect the size of the tolerance; the higher the number the larger the tolerance.

FOR EXTERNAL THREADS - (LOWER CASE LETTER SYMBOLS)

- Tolerance Position "e" has a large allowance. The upper limit is below basic by a large amount.
- Tolerance Position "g" has a small allowance. The upper limit is below basic by a small amount.
- Tolerance Position "h" has no allowance and the upper limit is basic.

FOR INTERNAL THREADS - (CAPITAL LETTER SYMBOLS)

- Tolerance Position "G" has a small allowance. The lower limit is above basic by a small amount.
- Tolerance Position "H" has no allowance and the lower limit is basic.

SELECTION OF TOLERANCE CLASSES

Two factors determine the selection of a suitable tolerance class:

1. Length of thread engagement (short, normal or long)
2. Quality requirement (fine, medium or coarse) See table below for preferred tolerance classes.

TOLERANCE POSITIONS

They define the maximum-material limits of the pitch and crest diameters and indicate their relationship to the basic profile. For plating requirements and ease of assembly, a series of tolerance positions were established.

PREFERRED TOLERANCE CLASSES

| Quality Requirement | External Thread (Bolts) | | | | | | | | | Internal Thread (Nuts) | | | | | |
|--|--|--------|-------|--|--------|-------|-------------------------------------|--------|-------|--|--------|------|-------------------------------------|--|--|
| | Tolerance Position e (Large Allowance) | | | Tolerance Position g (Small Allowance) | | | Tolerance Position h (No Allowance) | | | Tolerance Position G (Small Allowance) | | | Tolerance Position H (No Allowance) | | |
| | Length of Thread Engagement | | | Length of Thread Engagement | | | Length of Thread Engagement | | | Length of Thread Engagement | | | Length of Thread Engagement | | |
| | Short | Normal | Long | Short | Normal | Long | Short | Normal | Long | Short | Normal | Long | Short | | |
| FINE Close Fit Applications | | | | | | | 3h-4h | 4h | 5h-4h | | | | 4H | | |
| MEDIUM General Purpose Applications | | 6e | 7e-6e | 5g-6g | 6g | 7g-6g | 5h-6h | 6h | 7h-6h | 5G | 6G | 7G | 5H | | |
| COARSE Difficult Manufacturing Applications | | | | | 8g | 9g-8g | | | | | 7G | 8G | | | |

Tolerance Position "e" is not to be applied to pitches finer than 0.5 mm. Tolerance classes 6g and 6H are for commercial screw, bolt and nut threads.

THREAD DESIGNATIONS

Basic Designations: The letter "M" and the nominal size (basic major diameter in millimeters) followed by "X" and the pitch in millimeters, designates metric screw threads. For coarse series thread, the "X" and pitch may be omitted.

Example: Coarse series threads; M6
other threads; M8 x 1

A complete designation comprises, in addition to the basic designation, the tolerance class symbol separated by a dash. When the pitch and crest diameter tolerance classes are identical, the symbol need only be given once.
Example: M20 x 2—6H

When the pitch and crest diameters have different tolerance classes, the pitch diameter symbol is followed by the crest diameter symbol.

Example: M6 x 0.75—5g—6g

To indicate a specified thread fit between mating parts, the internal thread tolerance class symbol is followed by that of the external thread, separated by a slash.

Example: M20 x 2—6H/5g—6g

When rounded root external threads are to be specified, the minimum root radius value shall be added to the tolerance class designation.

Example: M6—5g —6g 0.100R





Limiting Dimensions of Standard Series Threads for Commercial Screws, Bolts and Nuts (Inches)

| Nominal Size Diam | Pitch P | Basic Thread Designation | External Thread (Bolt) | | | | | | | | Internal Thread (Nut) | | | | | | | |
|----------------------|------------|--------------------------|------------------------|-----------|----------------|--------|----------------|--------|--------|----------------|-----------------------|---------|----------------|--------|----------------|--------|------------|--------|
| | | | Tol Cl. | Allowance | Major Diameter | | Pitch Diameter | | | Minor Diameter | | Tol Cl. | Minor Diameter | | Pitch Diameter | | Major Dia. | |
| | | | | | Max. | Min. | Max. | Min. | Tol. | Max. | Min. | | Min. | Max. | Min. | Max. | | Tol. |
| 1.6 | 0.35 | M1.6 | 6g | 0.0008 | 0.0622 | 0.0589 | 0.0533 | 0.0509 | 0.0024 | 0.0453 | 0.0419 | 6H | 0.0481 | 0.0520 | 0.0541 | 0.0574 | 0.0033 | 0.0630 |
| 1.8 | 0.35 | M1.8 | 6g | 0.0008 | 0.0701 | 0.0668 | 0.0611 | 0.0588 | 0.0023 | 0.0531 | 0.0498 | 6H | 0.0560 | 0.0598 | 0.0620 | 0.0652 | 0.0032 | 0.0709 |
| 2 | 0.4 | M2.0 | 6g | 0.0009 | 0.0779 | 0.0743 | 0.0677 | 0.0652 | 0.0025 | 0.0586 | 0.0549 | 6H | 0.0617 | 0.0661 | 0.0686 | 0.0720 | 0.0034 | 0.0788 |
| 2.2 | 0.45 | M2.2 | 6g | 0.0009 | 0.0858 | 0.0819 | 0.0743 | 0.0716 | 0.0027 | 0.0640 | 0.0601 | 6H | 0.0675 | 0.0723 | 0.0752 | 0.0788 | 0.0036 | 0.0867 |
| 2.5 | 0.45 | M2.5 | 6g | 0.0009 | 0.0976 | 0.0938 | 0.0861 | 0.0834 | 0.0027 | 0.0759 | 0.0719 | 6H | 0.0793 | 0.0841 | 0.0870 | 0.0906 | 0.0036 | 0.0985 |
| 3 | 0.5 | M3.0 | 6g | 0.0009 | 0.1173 | 0.1132 | 0.1045 | 0.1016 | 0.0029 | 0.0931 | 0.0889 | 6H | 0.0969 | 0.1023 | 0.1054 | 0.1092 | 0.0038 | 0.1182 |
| 3.5 | 0.6 | M3.5 | 6g | 0.0009 | 0.1369 | 0.1321 | 0.1216 | 0.1183 | 0.0033 | 0.1079 | 0.1030 | 6H | 0.1123 | 0.1185 | 0.1225 | 0.1268 | 0.0043 | 0.1378 |
| 4 | 0.7 | M4.0 | 6g | 0.0009 | 0.1566 | 0.1512 | 0.1387 | 0.1352 | 0.0034 | 0.1227 | 0.1173 | 6H | 0.1277 | 0.1347 | 0.1396 | 0.1442 | 0.0046 | 0.1575 |
| 4.5 | 0.75 | M4.5 | 6g | 0.0010 | 0.1762 | 0.1708 | 0.1571 | 0.1536 | 0.0035 | 0.1400 | 0.1345 | 6H | 0.1452 | 0.1526 | 0.1580 | 0.1626 | 0.0046 | 0.1772 |
| 5 | 0.8 | M5.0 | 6g | 0.0010 | 0.1959 | 0.1900 | 0.1754 | 0.1717 | 0.0037 | 0.1572 | 0.1513 | 6H | 0.1628 | 0.1706 | 0.1764 | 0.1812 | 0.0048 | 0.1969 |
| 6 | 1.0 | M6.0 | 6g | 0.0012 | 0.2351 | 0.2282 | 0.2096 | 0.2052 | 0.0044 | 0.1868 | 0.1797 | 6H | 0.1936 | 0.2028 | 0.2107 | 0.2165 | 0.0058 | 0.2363 |
| 7 | 1.0 | M7.0 | 6g | 0.0011 | 0.2745 | 0.2675 | 0.2489 | 0.2446 | 0.0043 | 0.2262 | 0.2191 | 6H | 0.2330 | 0.2422 | 0.2501 | 0.2559 | 0.0058 | 0.2756 |
| 8 | 1.25 | M8.0 | 6g | 0.0012 | 0.3138 | 0.3056 | 0.2818 | 0.2773 | 0.0045 | 0.2535 | 0.2454 | 6H | 0.2617 | 0.2721 | 0.2830 | 0.2892 | 0.0062 | 0.3150 |
| 8 | 1.0 | M8 x 1.0 | 6g | 0.0011 | 0.3139 | 0.3069 | 0.2883 | 0.2840 | 0.0043 | 0.2656 | 0.2584 | 6H | 0.2724 | 0.2816 | 0.2894 | 0.2952 | 0.0058 | 0.3150 |
| 10 | 1.5 | M10 | 6g | 0.0013 | 0.3924 | 0.3832 | 0.3540 | 0.3489 | 0.0051 | 0.3199 | 0.3102 | 6H | 0.3298 | 0.3415 | 0.3554 | 0.3624 | 0.0070 | 0.3937 |
| 10 | 1.25 | M10 x 1.25 | 6g | 0.0012 | 0.3925 | 0.3843 | 0.3606 | 0.3560 | 0.0046 | 0.3322 | 0.3241 | 6H | 0.3404 | 0.3508 | 0.3618 | 0.3680 | 0.0062 | 0.3937 |
| 12 | 1.75 | M12 | 6g | 0.0014 | 0.4711 | 0.4607 | 0.4263 | 0.4205 | 0.0058 | 0.3865 | 0.3758 | 6H | 0.3979 | 0.4110 | 0.4277 | 0.4355 | 0.0078 | 0.4725 |
| 12 | 1.25 | M12 x 1.25 | 6g | 0.0012 | 0.4713 | 0.4630 | 0.4393 | 0.4342 | 0.0051 | 0.4109 | 0.4023 | 6H | 0.4192 | 0.4295 | 0.4405 | 0.4475 | 0.0070 | 0.4725 |
| 14 | 2.0 | M14 | 6g | 0.0016 | 0.5496 | 0.5387 | 0.4985 | 0.4923 | 0.0062 | 0.4530 | 0.4412 | 6H | 0.4660 | 0.4807 | 0.5001 | 0.5083 | 0.0082 | 0.5512 |
| 14 | 1.5 | M14 x 1.5 | 6g | 0.0013 | 0.5499 | 0.5407 | 0.5115 | 0.5061 | 0.0054 | 0.4774 | 0.4677 | 6H | 0.4873 | 0.4990 | 0.5129 | 0.5203 | 0.0074 | 0.5512 |
| 16 | 2.0 | M16 | 6g | 0.0016 | 0.6284 | 0.6175 | 0.5772 | 0.5710 | 0.0062 | 0.5318 | 0.5199 | 6H | 0.5447 | 0.5594 | 0.5788 | 0.5871 | 0.0083 | 0.6300 |
| 16 | 1.5 | M16 x 1.5 | 6g | 0.0014 | 0.6286 | 0.6194 | 0.5903 | 0.5849 | 0.0054 | 0.5561 | 0.5465 | 6H | 0.5660 | 0.5777 | 0.5916 | 0.5990 | 0.0074 | 0.6300 |
| 18 | 2.5 | M18 | 6g | 0.0017 | 0.7070 | 0.6939 | 0.6430 | 0.6364 | 0.0066 | 0.5862 | 0.5725 | 6H | 0.6022 | 0.6198 | 0.6448 | 0.6535 | 0.0087 | 0.7087 |
| 18 | 1.5 | M18 x 1.5 | 6g | 0.0013 | 0.7074 | 0.6982 | 0.6690 | 0.6636 | 0.0054 | 0.6349 | 0.6252 | 6H | 0.6448 | 0.6565 | 0.6704 | 0.6777 | 0.0073 | 0.7087 |
| 20 | 2.5 | M20 | 6g | 0.0018 | 0.7857 | 0.7726 | 0.7218 | 0.7152 | 0.0066 | 0.6649 | 0.6513 | 6H | 0.6809 | 0.6985 | 0.7235 | 0.7322 | 0.0087 | 0.7875 |
| 20 | 1.5 | M20 x 1.5 | 6g | 0.0014 | 0.7861 | 0.7769 | 0.7477 | 0.7423 | 0.0054 | 0.7136 | 0.7039 | 6H | 0.7235 | 0.7352 | 0.7491 | 0.7565 | 0.0074 | 0.7875 |
| 22 | 2.5 | M22 | 6g | 0.0018 | 0.8644 | 0.8513 | 0.8005 | 0.7939 | 0.0066 | 0.7437 | 0.7300 | 6H | 0.7597 | 0.7773 | 0.8023 | 0.8110 | 0.0087 | 0.8662 |
| 22 | 1.5 | M22 x 1.5 | 6g | 0.0014 | 0.8648 | 0.8556 | 0.8265 | 0.8211 | 0.0054 | 0.7924 | 0.7827 | 6H | 0.8023 | 0.8140 | 0.8278 | 0.8352 | 0.0074 | 0.8662 |
| 24 | 3.0 | M24 | 6g | 0.0020 | 0.9429 | 0.9283 | 0.8662 | 0.8584 | 0.0078 | 0.7980 | 0.7817 | 6H | 0.8171 | 0.8366 | 0.8682 | 0.8785 | 0.0103 | 0.9449 |
| 24 | 2.0 | M24 x 2.0 | 6g | 0.0016 | 0.9433 | 0.9324 | 0.8922 | 0.8856 | 0.0066 | 0.8467 | 0.8345 | 6H | 0.8597 | 0.8744 | 0.8938 | 0.9025 | 0.0087 | 0.9449 |
| 27 | 3.0 | M27 | 6g | 0.0019 | 1.0611 | 1.0464 | 0.9843 | 0.9765 | 0.0078 | 0.9161 | 0.8999 | 6H | 0.9352 | 0.9548 | 0.9863 | 0.9966 | 0.0103 | 1.0630 |
| 27 | 2.0 | M27 x 2.0 | 6g | 0.0016 | 1.0614 | 1.0505 | 1.0103 | 1.0037 | 0.0066 | 0.9648 | 0.9526 | 6H | 0.9778 | 0.9925 | 1.0119 | 1.0206 | 0.0087 | 1.0630 |
| 30 | 3.5 | M30 | 6g | 0.0022 | 1.1790 | 1.1623 | 1.0895 | 1.0812 | 0.0083 | 1.0099 | 0.9917 | 6H | 1.0320 | 1.0539 | 1.0917 | 1.1026 | 0.0109 | 1.1812 |
| 30 | 2.0 | M30 x 2.0 | 6g | 0.0016 | 1.1796 | 1.1686 | 1.1284 | 1.1218 | 0.0066 | 1.0829 | 1.0707 | 6H | 1.0959 | 1.1106 | 1.1300 | 1.1387 | 0.0087 | 1.1812 |
| 33 | 3.5 | M33 | 6g | 0.0022 | 1.2971 | 1.2804 | 1.2076 | 1.1993 | 0.0083 | 1.1280 | 1.1099 | 6H | 1.1501 | 1.1720 | 1.2098 | 1.2207 | 0.0109 | 1.2993 |
| 33 | 2.0 | M33 x 2.0 | 6g | 0.0016 | 1.2977 | 1.2867 | 1.2465 | 1.2399 | 0.0066 | 1.2011 | 1.1888 | 6H | 1.2140 | 1.2287 | 1.2481 | 1.2568 | 0.0087 | 1.2993 |
| 36 | 4.0 | M36 | 6g | 0.0025 | 1.4149 | 1.3963 | 1.3126 | 1.3039 | 0.0087 | 1.2217 | 1.2017 | 6H | 1.2469 | 1.2704 | 1.3151 | 1.3268 | 0.0117 | 1.4174 |
| 36 | 3.0 | M36 x 3.0 | 6g | 0.0020 | 1.4154 | 1.4007 | 1.3386 | 1.3309 | 0.0077 | 1.2705 | 1.2542 | 6H | 1.2895 | 1.3091 | 1.3406 | 1.3510 | 0.0104 | 1.4174 |
| 39 | 4.0 | M39 | 6g | 0.0025 | 1.5330 | 1.5144 | 1.4307 | 1.4220 | 0.0087 | 1.3398 | 1.3198 | 6H | 1.3650 | 1.3885 | 1.4332 | 1.4449 | 0.0117 | 1.5355 |
| 39 | 3.0 | M39 x 3.0 | 6g | 0.0020 | 1.5335 | 1.5188 | 1.4568 | 1.4490 | 0.0078 | 1.3886 | 1.3723 | 6H | 1.4076 | 1.4272 | 1.4587 | 1.4691 | 0.0104 | 1.5355 |

Excerpt from American National Standard B1. 16-1972, American Gaging Practices for Metric Screw Threads; "In all cases the inch conversion values have been rounded toward the interior of the tolerance zone, that is, maximum limits have been rounded downward and minimum limits have been rounded upward. Due to the fact that the majority of machinery and measuring equipment in the United States is based on the inch system, all gages should be made to the inch conversions."

TAP RECOMMENDATIONS: The pitch diameter high limits of the recommended tap for 6H tolerance class is 40% of the product tolerance rounded to the nearest .0005."

Example: M10 x 1.5; product tolerance = .00070" x .40 = .0028" rounded to .0030". This is the amount over basic pitch diameter. Based on .0005" increments over basic pitch diameter, the recommended tap has a D6 high limit (.0030 ÷ .0005").





Straight & Taper Pipe Taps

Standards & Dimensions

General Dimensions (USCTI Table 311)

| Nominal Size (inch) | Dimensions (inch) | | | | |
|---------------------|---------------------|--------------------|-----------------------|---------------------|---------------------|
| | Overall Length A | Thread Length B | Length of Square C | Shank Diameter D | Size of Square E |
| 1/16 | 2-1/8 | 11/16 | 3/8 | 0.3125 | 0.234 |
| 1/8 | 2-1/8 | 3/4 | 3/8 | 0.3125 | 0.234 |
| 1/8 | 2-1/8 | 3/4 | 3/8 | 0.4375 | 0.328 |
| 1/4 | 2-7/16 | 1-1/16 | 7/16 | 0.5625 | 0.421 |
| 3/8 | 2-9/16 | 1-1/16 | 1/2 | 0.7000 | 0.531 |
| 1/2 | 3-1/8 | 1-3/8 | 5/8 | 0.6875 | 0.515 |
| 3/4 | 3-1/4 | 1-3/8 | 11/16 | 0.9063 | 0.679 |
| 1 | 3-3/4 | 1-3/4 | 13/16 | 1.1250 | 0.843 |
| 1-1/4 | 4 | 1-3/4 | 15/16 | 1.3125 | 0.984 |
| 1-1/2 | 4-1/4 | 1-3/4 | 1 | 1.5000 | 1.125 |
| 2 | 4-1/2 | 1-3/4 | 1-1/8 | 1.8750 | 1.406 |

Tolerances

| Element | Range (inch) | Direction | Tolerance (inch) | |
|--------------------|-------------------|---------------|------------------|---------------|
| | | | Cut Thread | Ground Thread |
| Overall Length-A | 1/16 to 3/4 incl. | Plus or Minus | 1/32 | 1/32 |
| | 1 to 4 incl. | Plus or Minus | 1/16 | 1/16 |
| Thread Length-B | 1/16 to 3/4 incl. | Plus or Minus | 1/16 | 1/16 |
| | 1 to 1-1/4 incl. | Plus or Minus | 3/32 | 3/32 |
| Length of Square-C | 1-1/2 to 4 incl. | Plus or Minus | 1/8 | 1/8 |
| | 1/16 to 3/4 incl. | Plus or Minus | 1/32 | 1/32 |
| Shank Diameter-D | 1 to 4 incl. | Plus or Minus | 1/16 | 1/16 |
| | 1/16 to 1/8 incl. | Minus | 0.0070 | 0.0015 |
| | 1/4 to 1/2 incl. | Minus | 0.0070 | 0.0020 |
| Size of Square-E | 3/4 to 1 incl. | Minus | 0.0090 | 0.0020 |
| | 1-1/4 to 4 incl. | Minus | 0.0090 | 0.0030 |
| | 1/16 to 1/8 incl. | Minus | 0.0040 | 0.0040 |
| Size of Square-E | 1/4 to 3/4 incl. | Minus | 0.0060 | 0.0060 |
| | 1 to 4 incl. | Minus | 0.0080 | 0.0080 |

Thread Limits

| Nominal Size (inch) | Threads per Inch NPT | *Gage Measurement (inch) | | | Taper per Foot (inch) | | | |
|---------------------|----------------------|--------------------------|-----------------|---------------|-----------------------|-------|---------------|-------|
| | | Projection | Tolerance (+/-) | | Cut Thread | | Ground Thread | |
| | | | Cut Thread | Ground Thread | Min. | Max. | Min. | Max. |
| 1/16 | 27 | .312 | 1/16 | 1/16 | 23/32 | 27/32 | 23/32 | 25/32 |
| 1/8 | 27 | .312 | 1/16 | 1/16 | 23/32 | 27/32 | 23/32 | 25/32 |
| 1/4 | 18 | .459 | 1/16 | 1/16 | 23/32 | 27/32 | 23/32 | 25/32 |
| 3/8 | 18 | .454 | 1/16 | 1/16 | 23/32 | 27/32 | 23/32 | 25/32 |
| 1/2 | 14 | .579 | 1/16 | 1/16 | 23/32 | 13/16 | 23/32 | 25/32 |
| 3/4 | 14 | .565 | 1/16 | 1/16 | 23/32 | 13/16 | 23/32 | 25/32 |
| 1 | 11-1/2 | .678 | 3/32 | 3/32 | 23/32 | 13/16 | 23/32 | 25/32 |
| 1-1/4 | 11-1/2 | .686 | 3/32 | 3/32 | 23/32 | 13/16 | 23/32 | 25/32 |
| 1-1/2 | 11-1/2 | .699 | 3/32 | 3/32 | 23/32 | 13/16 | 23/32 | 25/32 |
| 2 | 11-1/2 | .667 | 3/32 | 3/32 | 23/32 | 13/16 | 23/32 | 25/32 |

*Distance small end of tap projects through American Standard Pipe Thread Ring Gage.



Taper Pipe Taps Ground Thread (USCTI Table 338)

American National Standard Taper Pipe Thread Form (NPT)
 Aeronautical National Taper Pipe Thread Form (ANPT)
 Dryseal American National Standard Taper Pipe Thread Form (NPTF)

Thread Limits

| Nominal Size (inch) | Threads per Inch NPT | *Gage Measurement (inch) | | Taper per Foot (inch) | |
|---------------------|----------------------|--------------------------|-----------------|-----------------------|-------|
| | | Projection | Tolerance (+/-) | Min. | Max. |
| 1/16 | 27 | 0.312 | 1/16 | 23/32 | 25/32 |
| 1/8 | 27 | 0.312 | 1/16 | 23/32 | 25/32 |
| 1/4 | 18 | 0.459 | 1/16 | 23/32 | 25/32 |
| 3/8 | 18 | 0.454 | 1/16 | 23/32 | 25/32 |
| 1/2 | 14 | 0.579 | 1/16 | 23/32 | 25/32 |
| 3/4 | 14 | 0.565 | 1/16 | 23/32 | 25/32 |
| 1 | 11-1/2 | 0.678 | 3/32 | 23/32 | 25/32 |
| 1 1/4 | 11-1/2 | 0.686 | 3/32 | 23/32 | 25/32 |
| 1 1/2 | 11-1/2 | 0.699 | 3/32 | 23/32 | 25/32 |
| 2 | 11-1/2 | 0.667 | 3/32 | 23/32 | 25/32 |
| 2 1/2 | 8 | 0.925 | 3/32 | 47/64 | 25/32 |
| 3 | 8 | 0.925 | 3/32 | 47/64 | 25/32 |
| 3 1/2 | 8 | 0.938 | 1/8 | 47/64 | 25/32 |
| 4 | 8 | 0.950 | 1/8 | 47/64 | 25/32 |

*Distance small end of tap projects through an L1 American Standard Taper Pipe Thread Ring Gage (See Table 357 page 668).

Angle Tolerance

| Threads Per Inch | Tolerance Half Angle |
|------------------------|----------------------|
| 8 | ±25' |
| 11-1/2 to 27 inclusive | ±30' |

Formula Values

| Threads Per Inch | A | B | C | D | E |
|------------------|--------|--------|--------|--------|--------|
| 27 | 0.0267 | 0.0296 | 0.0257 | 0.0234 | 0.0251 |
| 18 | 0.0408 | 0.0444 | 0.0401 | 0.0377 | 0.0395 |
| 14 | 0.0535 | 0.0571 | 0.0525 | 0.0515 | 0.0533 |
| 11 1/2 | 0.0658 | 0.0696 | 0.0647 | 0.0614 | 0.0649 |
| 8 | 0.0966 | 0.1000 | 0.0946 | | |

For essential dimensions of American National Standard Pipe Threads (See Table 357 page 440).

Ground Thread American Standard Pipe Form Taps made to this table are to be marked NPT. Ground Thread Dryseal American National Standard Pipe Taps made to this table are to be marked NPTF. Ground Thread Taps, Aeronautical National Thread Form, made to this table are marked ANPT.

Width of Flats - Taps

| Threads Per Inch | Element | Width of Flats at Tap Crest and Roots | | | |
|------------------|------------|---------------------------------------|-------|--------|-------|
| | | NPT | | NPTF | |
| | | Min. | Max. | Min. | Max. |
| 27 | Major Dia. | 0.0014 | .0041 | 0.0040 | .0055 |
| | Minor Dia. | | .0041 | | .0040 |
| 18 | Major Dia. | 0.0021 | .0057 | 0.0050 | .0065 |
| | Minor Dia. | | .0057 | | .0050 |
| 14 | Major Dia. | 0.0027 | .0064 | 0.0050 | .0065 |
| | Minor Dia. | | .0064 | | .0050 |
| 11 1/2 | Major Dia. | 0.0033 | .0073 | 0.0060 | .0083 |
| | Minor Dia. | | .0073 | | .0060 |
| 8 | Major Dia. | 0.0048 | .0090 | 0.0080 | .0103 |
| | Minor Dia. | | .0090 | | .0030 |

Minimum minor diameter flats are not specified. May be as sharp as practicable. Ground Thread Taps marked NPT may be used for NPT and ANPT applications.

LEAD TOLERANCE

A maximum lead deviation of ±.0005" within any two threads not farther apart than one inch is permitted.

FORMULA FOR AMERICAN NATIONAL STANDARD PIPE FORM

Minimum major diameter = Measured pitch diameter +A.
 Maximum major diameter = Measured pitch diameter +B.
 Minimum minor diameter = Measured pitch diameter -B.
 Maximum minor diameter = Measured pitch diameter -C.

FORMULA FOR DRYSEAL AMERICAN NATIONAL STANDARD PIPE FORM

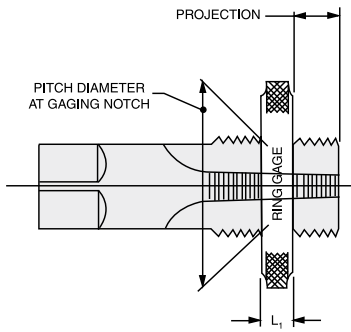
Minimum major diameter = Measured pitch diameter +D.
 Maximum major diameter = Measured pitch diameter +E.
 Minimum minor diameter = Maximum or smaller.
 Maximum minor diameter = Measured pitch diameter -E.



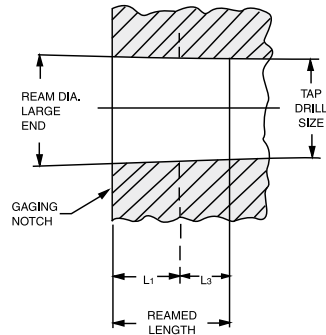
Measurement of Taper Pipe Taps, Reaming Data and Tap Drill Sizes (ref. USCTI Table 338)

| Size | Projection | | | | Ream Dia. Large End | Gage Width L1 | Reamed Length L1 + L3 | Tap Drill for Use w/ Reaming | Tap Drill for Use w/o Reaming |
|---------|------------|-------|-----------|-------|---------------------|---------------|-----------------------|------------------------------|-------------------------------|
| | NPT & NTF | | SAE-SHORT | | | | | | |
| | Min. | Max. | Min. | Max. | | | | | |
| 1/16-27 | 0.250 | 0.375 | 0.222 | 0.259 | 0.2515 | 0.1600 | 0.2711 | 15/64 | C |
| 1/8-27 | 0.250 | 0.375 | 0.222 | 0.259 | 0.3340 | 0.1615 | 0.2726 | 21/64 | Q |
| 1/4-18 | 0.397 | 0.521 | 0.333 | 0.389 | 0.4472 | 0.2278 | 0.3945 | 27/64 | 7/16 |
| 3/8-18 | 0.392 | 0.516 | 0.333 | 0.389 | 0.5826 | 0.240 | 0.4067 | 9/16 | 9/16 |
| 1/2-14 | 0.517 | 0.641 | 0.429 | 0.500 | 0.7213 | 0.320 | 0.5343 | 11/16 | 45/64 |
| 3/4-14 | 0.503 | 0.627 | 0.429 | 0.500 | 0.9317 | 0.339 | 0.5533 | 57/64 | 29/32 |
| 1-11½ | 0.584 | 0.772 | - | - | 1.1691 | 0.400 | 0.6609 | 1-1/8 | 1-9/64 |
| 1¼-11½ | 0.592 | 0.780 | - | - | 1.1538 | 0.420 | 0.6809 | 1-15/32 | 1-31/64 |
| 1½-11½ | 0.606 | 0.792 | - | - | 1.7528 | 0.420 | 0.6809 | 1-45/64 | 1-23/32 |
| 2-11½ | 0.574 | 0.760 | - | - | 2.2267 | 0.436 | 0.6969 | 2-3/16 | 2-3/16 |

Projection Thru Ring Gage



Reamed Hole Data





Straight Pipe Taps Ground Thread (USCTI Table 335)

Ground Threads

American National Standard Straight Pipe Thread Form (NPS) (NPSC) (NPSM)

Thread Limits

| Nominal Sizes (inch) | Threads Per Inch | Major Diameter | | | Pitch Diameter | | |
|----------------------|------------------|----------------------|--------|--------|------------------------|--------|--------|
| | | Plug at Gaging Notch | Min. G | Max. H | Plug at Gaging Notch E | Min. K | Max. L |
| 1/8 | 27 | 0.3983 | 0.4022 | 0.4032 | 0.3736 | 0.3746 | 0.3751 |
| 1/4 | 18 | 0.5286 | 0.5347 | 0.5357 | 0.4916 | 0.4933 | 0.4938 |
| 3/8 | 18 | 0.6640 | 0.6701 | 0.6711 | 0.6270 | 0.6287 | 0.6292 |
| 1/2 | 14 | 0.8260 | 0.8347 | 0.8357 | 0.7784 | 0.7806 | 0.7811 |
| 3/4 | 14 | 1.0364 | 1.0447 | 1.0457 | 0.9889 | 0.9906 | 0.9916 |
| 1 | 11-1/2 | 1.2966 | 1.3062 | 1.3077 | 1.2386 | 1.2402 | 1.2412 |
| 1-1/4 | 11-1/2 | 1.6413 | 1.6507 | 1.6522 | 1.5834 | 1.5847 | 1.5862 |
| 1-1/2 | 11-1/2 | 1.8803 | 0.1890 | 1.8912 | 1.8223 | 1.8237 | 1.8252 |
| 2 | 11-1/2 | 2.3542 | 2.3639 | 2.3654 | 2.2963 | 2.2979 | 2.2994 |
| 2-1/2 | 8 | 2.8454 | 2.8604 | 2.8619 | 2.7622 | 2.7640 | 2.7660 |
| 3 | 8 | 3.4718 | 3.4868 | 3.4883 | 3.3885 | 3.3904 | 3.3924 |
| 3-1/2 | 8 | 3.9721 | 3.9872 | 3.9887 | 3.8888 | 3.8908 | 3.8928 |
| 4 | 8 | 4.4704 | 4.4855 | 4.4870 | 4.3871 | 4.3891 | 4.3911 |

LEAD TOLERANCE

A maximum lead deviation of plus or minus .0005" within any two threads not farther apart than one inch is permitted.

Note

Taps made to these specifications are marked NPS and used for NPS, NPSC, and NPSM.

Angle Tolerance

| Threads Per Inch | Deviation in Half Angle |
|--------------------|-------------------------|
| 8 | ± 25' |
| 11 1/2 to 27 Incl. | ± 30' |

Formula for American National Standard Dryseal Pipe Form (NPS)

The maximum Pitch Diameter of tap is based upon an allowance deducted from the maximum product pitch diameter of NPSC or NPSM, whichever is smaller. The minimum Pitch Diameter of tap is derived by subtracting the ground thread pitch diameter tolerance for actual equivalent size as shown in Table 331, page 433, Col. D.

| Nominal Size (inch) | Major Diameter | | Minor Diameter |
|---------------------|----------------|----------------|----------------|
| | Min. G | Max. H | Max. |
| 1/8 | H - 0.0010 | K + A - 0.0010 | M - B |
| 1/4 to 3/4 Incl. | H - 0.0010 | K + A - 0.0020 | M - B |
| 1 to 4 Incl. | H - 0.0015 | K + A - 0.0021 | M - B |

Formula Values

| Threads Per Inch | A | B | M |
|------------------|--------|--------|----------|
| 27 | 0.0296 | 0.0257 | Actual |
| 18 | 0.0444 | 0.0401 | Measured |
| 14 | 0.0571 | 0.0525 | Pitch |
| 11-1/2 | 0.0696 | 0.0647 | Diameter |
| 8 | 0.1000 | 0.0946 | |

Straight Pipe Taps Ground Thread (USCTI Table 335-A)

Ground Thread

American National Standard Straight Dryseal Pipe Thread Form (NPSF)

Thread Limits

| Nominal Size (inch) | Threads Per Inch | Major Diameter | | | Pitch Diameter | | |
|---------------------|------------------|----------------|--------|------------------------|----------------|--------|---------------------------|
| | | Min. G | Max. H | Plug at Gaging Notch E | Min. K | Max. L | Minor* Diam. Flat Max. |
| 1/16 | 27 | 0.3008 | 0.3018 | 0.2812 | 0.2772 | 0.2777 | 0.004 |
| 1/8 | 27 | 0.3932 | 0.3942 | 0.3736 | 0.3696 | 0.3701 | 0.004 |
| 1/4 | 18 | 0.5239 | 0.5249 | 0.4916 | 0.4859 | 0.4864 | 0.005 |
| 3/8 | 18 | 0.6593 | 0.6603 | 0.6270 | 0.6213 | 0.6218 | 0.005 |
| 1/2 | 14 | 0.8230 | 0.8240 | 0.7784 | 0.7712 | 0.7717 | 0.005 |
| 3/4 | 14 | 1.0335 | 1.0345 | 0.9889 | 0.9817 | 0.9822 | 0.005 |
| 1 | 11-1/2 | 1.2933 | 1.2943 | 1.2386 | 1.2295 | 1.2305 | 0.006 |

*As specified or sharper.

The major diameter of standard taper pipe plug gages and the minor diameter of standard taper pipe ring gages used for gaging dryseal threads will be truncated .20p minimum to .25p maximum for all pitches.

Angle Tolerance

| Threads Per Inch | Deviation in Half Angles |
|--------------------|--------------------------|
| 11-1/2 to 27 Incl. | ± 30' |

Formula for American National Standard Dryseal Pipe Form (NPSF)

| Nominal Size (inch) | Major Diameter | | Pitch Diameter | | Max. Minor Diam. |
|---------------------|----------------|----------------|----------------|--------|------------------|
| | Min. G | Max. H | Min. K | Max. L | |
| 1/6 | H - 0.0010 | K + Q - 0.0005 | L - 0.0005 | E - F | M - Q |
| 1/8 | H - 0.0010 | K + Q - 0.0005 | L - 0.0005 | E - F | M - Q |
| 1/4 | H - 0.0010 | K + Q - 0.0005 | L - 0.0005 | E - F | M - Q |
| 3/8 | H - 0.0010 | K + Q - 0.0005 | L - 0.0005 | E - F | M - Q |
| 1/2 | H - 0.0010 | K + Q - 0.0005 | L - 0.0005 | E - F | M - Q |
| 3/4 | H - 0.0010 | K + Q - 0.0005 | L - 0.0005 | E - F | M - Q |
| 1 | H - 0.0010 | K + Q - 0.0001 | L - 0.0010 | E - F | M - Q |

Formula Values

| Threads Per Inch | E | F | M | Q |
|------------------|----------------|--------|----------|--------|
| 27 | Pitch Diameter | 0.0035 | Actual | 0.0251 |
| 18 | of plug | 0.0052 | Measured | 0.0395 |
| 14 | at gaging | 0.0067 | Pitch | 0.0533 |
| 11-1/2 | notch | 0.0081 | Diameter | 0.0649 |

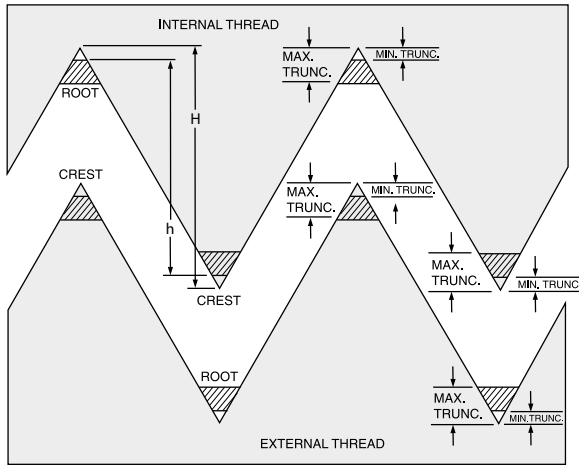
LEAD TOLERANCE

A maximum lead deviation of ±.0005" within any two threads not farther apart than one inch is permitted.





American National General Pipe Threads (USCTI Table 357)

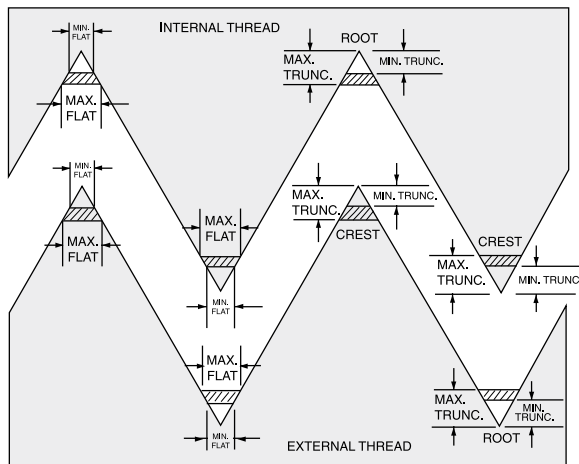


Crest and root limits for American National Standard External and Internal Taper Pipe Thread (NPT)

| Threads Per Inch | Height Sharp V Thread (inch) | Height Pipe Thread Max (inch) | Truncation (inch) | | Equivalent Width of Flat (inch) | |
|------------------|------------------------------|-------------------------------|-------------------|--------|---------------------------------|--------|
| | H | h | Min | Max. | Min. | Max. |
| 27 | 0.03208 | 0.02963 | 0.0012 | 0.0036 | 0.0014 | 0.0041 |
| 18 | 0.04811 | 0.04444 | 0.0018 | 0.0049 | 0.0021 | 0.0057 |
| 14 | 0.06186 | 0.05714 | 0.0024 | 0.0056 | 0.0027 | 0.0064 |
| 11 1/2 | 0.07531 | 0.06957 | 0.0029 | 0.0063 | 0.0033 | 0.0073 |
| 8 | 0.10825 | 0.10000 | 0.0041 | 0.0078 | 0.0048 | 0.0090 |

The limits specified above are intended to serve as a guide for establishing limits for the thread elements of taps, dies, and thread chasers. These limits may be required on the product. For complete specifications see latest edition of USE Standard B2.1. The Military Aeronautical Specification MIL-P-7105 agrees with all values given in this table.

Dryseal American National Standard Pipe Threads



Crest and root limits for Dryseal American National Standard External and Internal Pipe Threads (NPTF)

| Threads Per Inch | | Height Sharp V Thread (inch) | Truncation (inch) | | Equivalent Width of Flat (inch) | |
|------------------|-------|------------------------------|-------------------|--------|---------------------------------|--------|
| | | H | Min | Max. | Min. | Max. |
| 27 | Crest | 0.03208 | 0.0017 | 0.0035 | 0.0020 | 0.0040 |
| | Root | | 0.0035 | 0.0052 | 0.0040 | 0.0060 |
| 18 | Crest | 0.04811 | 0.0026 | 0.0043 | 0.0030 | 0.0050 |
| | Root | | 0.0043 | 0.0061 | 0.0050 | 0.0070 |
| 14 | Crest | 0.06186 | 0.0026 | 0.0043 | 0.0030 | 0.0050 |
| | Root | | 0.0043 | 0.0061 | 0.0050 | 0.0070 |
| 11 1/2 | Crest | 0.07531 | 0.0035 | 0.0052 | 0.0040 | 0.0060 |
| | Root | | 0.0052 | 0.0078 | 0.0060 | 0.0090 |
| 8 | Crest | 0.10825 | 0.0052 | 0.0069 | 0.0060 | 0.0080 |
| | Root | | 0.0069 | 0.0095 | 0.0080 | 0.0110 |

The major diameter of standard taper pipe plug gages and the minor diameter of standard taper pipe ring gages used for gaging dryseal threads will be truncated .20p minimum to .25p maximum for all pitches.



Tap Drill Sizes - Fractional Cut Taps

To minimize tapping problems and lengthen tool life, use the largest drill possible to produce a minor diameter that will result in the lowest percentage of full thread consistent with adequate strength. A minor diameter that provides a 55% to 65% thread is sufficient for most requirements, but in some cases a higher percentage of thread may be necessary to conform with the minor diameter limits of the thread class specified.

* Generally, deeper than 1-1/2 times the hole diameter.

Suggested Percentage of Full Thread in Tapped Holes

| Material | | *Deep Hole Tapping | Average Commercial Work | Thin Sheet Stock or Stamping |
|-----------------------|--|--------------------|-------------------------|------------------------------|
| Free Cutting | Aluminum, Brass, Bronze, Cast Iron, Copper, Mild Steel, Tool Steel | 60% - 70% | 65% - 70% | 75% - 85% |
| Hard or Tough Cutting | Cast Steel, Drop Forging, Monel Metal, Nickel Steel, Stainless Steel | 55% - 65% | 60% - 70% | |

| Tap Size | Threads Per Inch | | | Minor Diameter | | Tap Drill Diameter - Cut Taps | | | | |
|----------|------------------|-----|---------|----------------|---------|-------------------------------|------------|------------|------------|------------|
| | UNC | UNF | 8-Pitch | Min. 2B | Max. 2B | 80% Thread | 75% Thread | 70% Thread | 65% Thread | 60% Thread |
| | | | | | | (in) | (in) | (in) | (in) | (in) |
| 0 | - | 80 | - | 0.0465 | 0.0514 | 0.0470 | 0.0478 | 0.0486 | 0.0494 | 0.0503 |
| 1 | 64 | - | - | 0.0561 | 0.0623 | 0.0568 | 0.0578 | 0.0588 | 0.0598 | 0.0608 |
| | - | 72 | - | 0.0580 | 0.0635 | 0.0586 | 0.0595 | 0.0604 | 0.0613 | 0.0622 |
| 2 | 56 | - | - | 0.0667 | 0.0737 | 0.0674 | 0.0686 | 0.0698 | 0.0709 | 0.0721 |
| | - | 64 | - | 0.0691 | 0.0752 | 0.0698 | 0.0708 | 0.0718 | 0.0728 | 0.0738 |
| 3 | 48 | - | - | 0.0764 | 0.0845 | 0.0774 | 0.0787 | 0.0801 | 0.0814 | 0.0828 |
| | - | 56 | - | 0.0797 | 0.0865 | 0.0804 | 0.0816 | 0.0828 | 0.0839 | 0.0851 |
| 4 | 40 | - | - | 0.0849 | 0.0939 | 0.0860 | 0.0876 | 0.0893 | 0.0909 | 0.0925 |
| | - | 48 | - | 0.0894 | 0.0968 | 0.0904 | 0.0917 | 0.0931 | 0.0944 | 0.0958 |
| 5 | 40 | - | - | 0.0979 | 0.1062 | 0.0990 | 0.1006 | 0.1023 | 0.1039 | 0.1055 |
| | - | 44 | - | 0.1004 | 0.1079 | 0.1014 | 0.1029 | 0.1043 | 0.1058 | 0.1073 |
| 6 | 32 | - | - | 0.1040 | 0.1140 | 0.1055 | 0.1076 | 0.1096 | 0.1116 | 0.1136 |
| | - | 40 | - | 0.1110 | 0.1190 | 0.1120 | 0.1136 | 0.1153 | 0.1169 | 0.1185 |
| 8 | 32 | - | - | 0.1300 | 0.1390 | 0.1315 | 0.1336 | 0.1356 | 0.1376 | 0.1396 |
| | - | 36 | - | 0.1340 | 0.1420 | 0.1351 | 0.1369 | 0.1387 | 0.1405 | 0.1424 |
| 10 | 24 | - | - | 0.1450 | 0.1560 | 0.1467 | 0.1494 | 0.1521 | 0.1548 | 0.1575 |
| | - | 32 | - | 0.1560 | 0.1640 | 0.1575 | 0.1596 | 0.1616 | 0.1636 | 0.1656 |
| 12 | 24 | - | - | 0.1710 | 0.1810 | 0.1727 | 0.1754 | 0.1781 | 0.1808 | 0.1835 |
| | - | 28 | - | 0.1770 | 0.1860 | 0.1789 | 0.1812 | 0.1835 | 0.1858 | 0.1882 |
| 1/4 | 20 | - | - | 0.1960 | 0.2070 | 0.1980 | 0.2013 | 0.2045 | 0.2078 | 0.2110 |
| | - | 28 | - | 0.2110 | 0.2200 | 0.2129 | 0.2152 | 0.2175 | 0.2198 | 0.2222 |
| 5/16 | 18 | - | - | 0.2520 | 0.2650 | 0.2548 | 0.2584 | 0.2620 | 0.2656 | 0.2692 |
| | - | 24 | - | 0.2670 | 0.2770 | 0.2692 | 0.2719 | 0.2746 | 0.2773 | 0.2800 |
| 3/8 | 16 | - | - | 0.3070 | 0.3210 | 0.3101 | 0.3141 | 0.3182 | 0.3222 | 0.3263 |
| | - | 24 | - | 0.3300 | 0.3400 | 0.3317 | 0.3344 | 0.3371 | 0.3398 | 0.3425 |
| 7/16 | 14 | - | - | 0.3600 | 0.3760 | 0.3633 | 0.3679 | 0.3726 | 0.3772 | 0.3818 |
| | - | 20 | - | 0.3830 | 0.3950 | 0.3855 | 0.3888 | 0.3920 | 0.3953 | 0.3985 |
| 1/2 | 13 | - | - | 0.4170 | 0.4340 | 0.4201 | 0.4251 | 0.4301 | 0.4351 | 0.4400 |
| | - | 20 | - | 0.4460 | 0.4570 | 0.4480 | 0.4513 | 0.4545 | 0.4578 | 0.4610 |
| 9/16 | 12 | - | - | 0.4720 | 0.4900 | 0.4759 | 0.4813 | 0.4867 | 0.4921 | 0.4976 |
| | - | 18 | - | 0.5020 | 0.5150 | 0.5048 | 0.5084 | 0.5120 | 0.5156 | 0.5192 |
| 5/8 | 11 | - | - | 0.5270 | 0.5460 | 0.5305 | 0.5364 | 0.5423 | 0.5482 | 0.5541 |
| | - | 18 | - | 0.5650 | 0.5780 | 0.5673 | 0.5709 | 0.5745 | 0.5781 | 0.5817 |
| 3/4 | 10 | - | - | 0.6420 | 0.6630 | 0.6461 | 0.6526 | 0.6591 | 0.6656 | 0.6721 |
| | - | 16 | - | 0.6820 | 0.6960 | 0.6851 | 0.6891 | 0.6932 | 0.6972 | 0.7013 |
| 7/8 | 9 | - | - | 0.7550 | 0.7780 | 0.7595 | 0.7668 | 0.7740 | 0.7812 | 0.7884 |
| | - | 14 | - | 0.7980 | 0.8140 | 0.8008 | 0.8054 | 0.8101 | 0.8147 | 0.8193 |
| 1 | 8 | - | - | 0.8650 | 0.8900 | 0.8701 | 0.8782 | 0.8863 | 0.8945 | 0.9026 |
| | - | 12 | - | 0.9100 | 0.9280 | 0.9134 | 0.9188 | 0.9242 | 0.9296 | 0.9351 |
| 1-1/8 | 7 | - | - | 0.9700 | 0.9980 | 0.9765 | 0.9858 | 0.9951 | 1.0044 | 1.0137 |
| | - | 12 | - | 1.0350 | 1.0530 | 1.0384 | 1.0438 | 1.0492 | 1.0546 | 1.0601 |
| | - | - | 8 | 0.9900 | 1.0150 | 0.9951 | 1.0032 | 1.0113 | 1.0195 | 1.0276 |
| 1-1/4 | 7 | - | - | 1.0950 | 1.1230 | 1.1015 | 1.1108 | 1.1201 | 1.1294 | 1.1387 |
| | - | 12 | - | 1.1600 | 1.1780 | 1.1634 | 1.1688 | 1.1742 | 1.1796 | 1.1851 |
| | - | - | 8 | 1.1150 | 1.1400 | 1.1201 | 1.1282 | 1.1363 | 1.1445 | 1.1526 |
| 1-3/8 | 6 | - | - | 1.1950 | 1.2250 | 1.2018 | 1.2126 | 1.2235 | 1.2343 | 1.2451 |
| | - | 12 | - | 1.2850 | 1.3030 | 1.2884 | 1.2938 | 1.2992 | 1.3046 | 1.3101 |
| | - | - | 8 | 1.2400 | 1.2650 | 1.2451 | 1.2532 | 1.2613 | 1.2695 | 1.2776 |
| 1-1/2 | 6 | - | - | 1.3200 | 1.3500 | 1.3268 | 1.3376 | 1.3485 | 1.3593 | 1.3701 |
| | - | 12 | - | 1.4100 | 1.4280 | 1.4134 | 1.4188 | 1.4242 | 1.4296 | 1.4351 |
| | - | - | 8 | 1.3650 | 1.3900 | 1.3701 | 1.3782 | 1.3863 | 1.3945 | 1.4026 |
| 1-5/8 | 5 | - | - | 1.4900 | 1.5150 | 1.4951 | 1.5032 | 1.5113 | 1.5195 | 1.5276 |
| | - | - | 8 | 1.5330 | 1.5670 | 1.5422 | 1.5551 | 1.5681 | 1.5811 | 1.5941 |
| 1-3/4 | 5 | - | - | 1.6150 | 1.6400 | 1.6201 | 1.6282 | 1.6363 | 1.6445 | 1.6526 |
| | - | - | 8 | 1.7400 | 1.7650 | 1.7451 | 1.7532 | 1.7613 | 1.7695 | 1.7776 |
| 1-7/8 | 5 | - | - | 1.7590 | 1.7950 | 1.7691 | 1.7835 | 1.7979 | 1.8124 | 1.8268 |
| | - | - | 8 | 1.8650 | 1.8900 | 1.8701 | 1.8782 | 1.8863 | 1.8945 | 1.9026 |
| 2 | 4-1/2 | - | - | 2.0090 | 2.0450 | 2.0191 | 2.0335 | 2.0479 | 2.0624 | 2.0768 |
| | - | - | 8 | 2.1150 | 2.1400 | 2.1201 | 2.1282 | 2.1363 | 2.1445 | 2.1526 |
| 2-1/4 | 4 | - | - | 2.2290 | 2.2670 | 2.2402 | 2.2564 | 2.2727 | 2.2889 | 2.3051 |
| | - | - | 8 | 2.3650 | 2.3900 | 2.3701 | 2.3782 | 2.3863 | 2.3945 | 2.4026 |

| FORMULA: TAP DRILL SIZE | FORMULA: PERCENTAGE OF FULL THREAD |
|--|---|
| $\text{Drill Size} = \text{Tap Major Dia} - \frac{0.01299 \times \% \text{ of Full Thread}}{\# \text{ of Threads Per Inch}}$ | $\% \text{ of Full Thread} = \text{Threads Per Inch} \times \frac{\text{Tap Major Dia} - \text{Drill Dia}}{0.01299}$ |
| <p>Example: to determine drill size for 1/4"-20 UNC tap, 70% thread</p> <p>Tap Major $\phi = 0.2500"$ % of Full Thread = 70% # of Threads per Inch = 20</p> | <p>Example: to determine the % of thread for 1/4"-20 UNC using 0.2045" drill</p> <p># Threads per Inch = 20 Tap Major $\phi = 0.2500"$ Drill $\phi = 0.2045"$</p> |
| $\text{Drill Size} = 0.2500" - \frac{(0.01299 \times 70\%)}{20}$ | $\% \text{ of Thread} = 20 \times \frac{(0.2500 - 0.2045)}{0.01299}$ |
| $\text{Drill Size} = 0.2500" - 0.0455" = 0.2045"$ | $\% \text{ of Thread} = 20 \times 3.50 = 70\%$ |



Tap Drill Sizes - Fractional Form Taps

To minimize tapping problems and lengthen tool life, use the largest drill possible to produce a minor diameter that will result in the lowest percentage of full thread consistent with adequate strength. A minor diameter that provides a 55% to 65% thread is sufficient for most requirements, but in some cases a higher percentage of thread may be necessary to conform with the minor diameter limits of the thread class specified.

* Generally, deeper than 1 1/2 times the hole diameter.

Suggested Percentage of Full Thread in Tapped Holes

| Material | | *Deep Hole Tapping | Average Commercial Work | Thin Sheet Stock or Stamping |
|-----------------------|--|--------------------|-------------------------|------------------------------|
| Free Cutting | Aluminum, Brass, Bronze, Cast Iron, Copper, Mild Steel, Tool Steel | 60% - 70% | 65% - 70% | 75% - 85% |
| Hard or Tough Cutting | Cast Steel, Drop Forging, Monel Metal, Nickel Steel, Stainless Steel | 55% - 65% | 60% - 70% | |

| Tap Size | Threads Per Inch | | | Minor Diameter | | Tap Drill Diameter - Form Taps | | | | |
|----------|------------------|-----|---------|----------------|---------|--------------------------------|------------|------------|------------|------------|
| | UNC | UNF | 8-Pitch | Min. 2B | Max. 2B | 75% Thread | 70% Thread | 65% Thread | 60% Thread | 55% Thread |
| | | | | | | (in) | (in) | (in) | (in) | (in) |
| 0 | - | 80 | - | 0.0465 | 0.0514 | 0.0536 | 0.0540 | 0.0545 | 0.0549 | 0.0554 |
| 1 | 64 | - | - | 0.0561 | 0.0623 | 0.0650 | 0.0655 | 0.0661 | 0.0666 | 0.0672 |
| | - | 72 | - | 0.0580 | 0.0635 | 0.0659 | 0.0663 | 0.0669 | 0.0673 | 0.0679 |
| 2 | 56 | - | - | 0.0667 | 0.0737 | 0.0769 | 0.0774 | 0.0781 | 0.0787 | 0.0794 |
| | - | 64 | - | 0.0691 | 0.0752 | 0.0780 | 0.0785 | 0.0791 | 0.0796 | 0.0802 |
| 3 | 48 | - | - | 0.0764 | 0.0845 | 0.0884 | 0.0890 | 0.0898 | 0.0905 | 0.0913 |
| | - | 56 | - | 0.0797 | 0.0865 | 0.0899 | 0.0904 | 0.0911 | 0.0917 | 0.0924 |
| 4 | 40 | - | - | 0.0849 | 0.0939 | 0.0993 | 0.1000 | 0.1010 | 0.1018 | 0.1028 |
| | - | 48 | - | 0.0894 | 0.0968 | 0.1014 | 0.1020 | 0.1028 | 0.1035 | 0.1043 |
| 5 | 40 | - | - | 0.0979 | 0.1062 | 0.1123 | 0.1130 | 0.1140 | 0.1148 | 0.1158 |
| | - | 44 | - | 0.1004 | 0.1079 | 0.1134 | 0.1141 | 0.1150 | 0.1157 | 0.1166 |
| 6 | 32 | - | - | 0.1040 | 0.1140 | 0.1221 | 0.1230 | 0.1243 | 0.1252 | 0.1264 |
| | - | 40 | - | 0.1110 | 0.1190 | 0.1253 | 0.1260 | 0.1270 | 0.1278 | 0.1288 |
| 8 | 32 | - | - | 0.1300 | 0.1390 | 0.1481 | 0.1490 | 0.1503 | 0.1512 | 0.1524 |
| | - | 36 | - | 0.1340 | 0.1420 | 0.1498 | 0.1507 | 0.1518 | 0.1526 | 0.1537 |
| 10 | 24 | - | - | 0.1450 | 0.1560 | 0.1688 | 0.1700 | 0.1716 | 0.1729 | 0.1746 |
| | - | 32 | - | 0.1560 | 0.1640 | 0.1741 | 0.1750 | 0.1762 | 0.1772 | 0.1784 |
| 12 | 24 | - | - | 0.1710 | 0.1810 | 0.1948 | 0.1960 | 0.1976 | 0.1989 | 0.2006 |
| | - | 28 | - | 0.1770 | 0.1860 | 0.1978 | 0.1990 | 0.2002 | 0.2014 | 0.2028 |
| 1/4 | 20 | - | - | 0.1960 | 0.2070 | 0.2245 | 0.2260 | 0.2279 | 0.2295 | 0.2315 |
| | - | 28 | - | 0.2110 | 0.2200 | 0.2318 | 0.2329 | 0.2342 | 0.2354 | 0.2389 |
| 5/16 | 18 | - | - | 0.2520 | 0.2650 | 0.2842 | 0.2861 | 0.2879 | 0.2898 | 0.2917 |
| | - | 24 | - | 0.2670 | 0.2770 | 0.2912 | 0.2927 | 0.2941 | 0.2955 | 0.2969 |
| 3/8 | 16 | - | - | 0.3070 | 0.3210 | 0.3431 | 0.3452 | 0.3474 | 0.3495 | 0.3516 |
| | - | 24 | - | 0.3300 | 0.3400 | 0.3537 | 0.3552 | 0.3566 | 0.3580 | 0.3594 |
| 7/16 | 14 | - | - | 0.3600 | 0.3760 | 0.4011 | 0.4035 | 0.4059 | 0.4084 | 0.4108 |
| | - | 20 | - | 0.3830 | 0.3950 | 0.4120 | 0.4137 | 0.4154 | 0.4171 | 0.4188 |
| 1/2 | 13 | - | - | 0.4170 | 0.4340 | 0.4608 | 0.4634 | 0.4660 | 0.4686 | 0.4712 |
| | - | 20 | - | 0.4460 | 0.4570 | 0.4745 | 0.4762 | 0.4779 | 0.4796 | 0.4813 |
| 9/16 | 12 | - | - | 0.4720 | 0.4900 | 0.5200 | 0.5229 | 0.5257 | 0.5285 | 0.5313 |
| | - | 18 | - | 0.5020 | 0.5150 | 0.5342 | 0.5361 | 0.5379 | 0.5398 | 0.5417 |
| 5/8 | 11 | - | - | 0.5270 | 0.5460 | 0.5787 | 0.5817 | 0.5848 | 0.5879 | 0.5910 |
| | - | 18 | - | 0.5650 | 0.5780 | 0.5967 | 0.5986 | 0.6004 | 0.6023 | 0.6042 |
| 3/4 | 10 | - | - | 0.6420 | 0.6630 | 0.6990 | 0.7024 | 0.7058 | 0.7092 | 0.7126 |
| | - | 16 | - | 0.6820 | 0.6960 | 0.7181 | 0.7202 | 0.7224 | 0.7245 | 0.7266 |
| 7/8 | 9 | - | - | 0.7550 | 0.7780 | 0.8183 | 0.8221 | 0.8259 | 0.8297 | 0.8334 |
| | - | 14 | - | 0.7980 | 0.8140 | 0.8386 | 0.8410 | 0.8434 | 0.8459 | 0.8483 |
| 1 | 8 | - | - | 0.8650 | 0.8900 | 0.9363 | 0.9405 | 0.9448 | 0.9490 | 0.9533 |
| | - | 12 | - | 0.9100 | 0.9280 | 0.9575 | 0.9603 | 0.9632 | 0.9660 | 0.9866 |

| FORMULA: TAP DRILL SIZE | FORMULA: PERCENTAGE OF FULL THREAD |
|---|---|
| $\text{Drill Size} = \text{Tap Major Dia} - \frac{0.0068 \times \% \text{ of Full Thread}}{\# \text{ of Threads Per Inch}}$ | $\% \text{ of Full Thread} = \text{Threads Per Inch} \times \frac{\text{Tap Major Dia} - \text{Drill Dia}}{0.0068}$ |
| <p>Example: to determine drill size for 1/4"-20UNC tap, 70% thread</p> <p>Tap Major $\varnothing = 0.2500"$ % of Full Thread = 70% # of Threads per Inch = 20</p> $\text{Drill Size} = 0.2500" - \frac{(0.0068 \times 70\%)}{20}$ $\text{Drill Size} = 0.2500" - 0.0238" = \boxed{0.2262"} $ | <p>Example: to determine the % of thread for 1/4"-20UNC Tap using 1.9603" drill</p> <p># Threads per Inch = 20 Tap Major $\varnothing = 0.2500"$ Drill $\varnothing = 0.2045"$</p> $\% \text{ of Thread} = 20 \times \frac{(0.2500 - 0.2262)}{0.0068}$ $\% \text{ of Thread} = 20 \times 3.5 = \boxed{70\%} $ |

Suggested Pipe Tap Drill Sizes

| Tap Size | 1/16 | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1 | 1-1/4 | 1-1/2 | 2 | 2-1/2 | 3 | 3-1/2 | 4 | |
|-------------|--------------------|-----|-------|------|-------|-------|-------|--------|---------|---------|--------|---------|-------|-------|-------|
| Drill Sizes | Taper Pipe Tap* | C | Q | 7/16 | 9/16 | 45/64 | 29/32 | 1-9/64 | 1-31/64 | 1-23/32 | 2-3/16 | 2-5/8 | 3-1/4 | 3-3/4 | 4-1/4 |
| | Straight Pipe Tap† | 1/4 | 11/32 | 7/16 | 37/64 | 23/32 | 59/64 | 1-5/32 | 1-1/2 | 1-3/4 | 2-7/32 | 2-21/32 | | | |

*Sizes given permit direct tapping without reaming the hole, but only give a full thread for the first two or three threads.

†For Dryseal Straight Pipe Threads suggested drill sizes are as shown, except; 1/4" pipe, use .444 drill size.





Tap Drill Sizes - Metric Form Taps

To minimize tapping problems and lengthen tool life, use the largest drill possible to produce a minor diameter that will result in the lowest percentage of full thread consistent with adequate strength. A minor diameter that provides a 55% to 65% thread is sufficient for most requirements, but in some cases a higher percentage of thread may be necessary to conform with the minor diameter limits of the thread class specified.

* Generally, deeper than 1-1/2 times the hole diameter.

Suggested Percentage of Full Thread in Tapped Holes

| Material | | *Deep Hole Tapping | Average Commercial Work | Thin Sheet Stock or Stamping |
|-----------------------|--|--------------------|-------------------------|------------------------------|
| Free Cutting | Aluminum, Brass, Bronze, Cast Iron, Copper, Mild Steel, Tool Steel | 60% - 70% | 65% - 70% | 75% - 85% |
| Hard or Tough Cutting | Cast Steel, Drop Forging, Monel Metal, Nickel Steel, Stainless Steel | 55% - 65% | 60% - 70% | |

| Tap Size | Pitch | | Minor Diameter (mm) | | Tap Drill Diameter - Form Taps | | | | | | | | | |
|----------|-------|------|---------------------|---------|--------------------------------|--------|------------|--------|------------|--------|------------|--------|------------|--------|
| | M | MF | Min. 6H | Max. 6H | 75% Thread | | 70% Thread | | 65% Thread | | 60% Thread | | 55% Thread | |
| | | | | | (mm) | (in) | (mm) | (in) | (mm) | (in) | (mm) | (in) | (mm) | (in) |
| M1.6 | 0.35 | - | 1.221 | 1.321 | 1.42 | 0.0559 | 1.43 | 0.0563 | 1.45 | 0.0571 | 1.46 | 0.0575 | 1.47 | 0.0579 |
| M1.7 | 0.35 | - | 1.321 | 1.421 | 1.56 | 0.0617 | 1.57 | 0.0620 | 1.58 | 0.0623 | 1.59 | 0.0627 | 1.60 | 0.0630 |
| M1.8 | 0.35 | - | 1.422 | 1.519 | 1.62 | 0.0638 | 1.63 | 0.0642 | 1.65 | 0.0650 | 1.66 | 0.0654 | 1.67 | 0.0657 |
| M2 | 0.4 | - | 1.567 | 1.679 | 1.80 | 0.0709 | 1.81 | 0.0713 | 1.82 | 0.0717 | 1.84 | 0.0724 | 1.85 | 0.0728 |
| M2.2 | 0.45 | - | 1.715 | 1.836 | 1.97 | 0.0776 | 1.99 | 0.0783 | 2.00 | 0.0787 | 2.02 | 0.0795 | 2.03 | 0.0799 |
| M2.5 | 0.45 | - | 2.013 | 2.138 | 2.27 | 0.0894 | 2.29 | 0.0902 | 2.30 | 0.0906 | 2.32 | 0.0913 | 2.33 | 0.0917 |
| M2.6 | 0.45 | - | 2.113 | 2.238 | 2.41 | 0.0949 | 2.42 | 0.0953 | 2.43 | 0.0957 | 2.44 | 0.0962 | 2.45 | 0.0966 |
| M3 | 0.5 | - | 2.459 | 2.599 | 2.75 | 0.1083 | 2.76 | 0.1087 | 2.78 | 0.1094 | 2.80 | 0.1102 | 2.81 | 0.1106 |
| M3 | - | 0.35 | 2.621 | 2.721 | 2.86 | 0.1126 | 2.87 | 0.1130 | 2.88 | 0.1134 | 2.89 | 0.1138 | 2.90 | 0.1142 |
| M3.5 | 0.6 | - | 2.850 | 3.010 | 3.19 | 0.1256 | 3.21 | 0.1264 | 3.23 | 0.1272 | 3.26 | 0.1283 | 3.28 | 0.1291 |
| M4 | 0.7 | - | 3.242 | 3.422 | 3.64 | 0.1433 | 3.67 | 0.1445 | 3.69 | 0.1453 | 3.71 | 0.1461 | 3.74 | 0.1472 |
| M4 | - | 0.5 | 3.459 | 3.599 | 3.75 | 0.1476 | 3.76 | 0.1480 | 3.78 | 0.1488 | 3.80 | 0.1496 | 3.81 | 0.1500 |
| M4.5 | 0.75 | - | 3.688 | 3.876 | 4.12 | 0.1622 | 4.14 | 0.1630 | 4.17 | 0.1642 | 4.19 | 0.1650 | 4.22 | 0.1661 |
| M5 | 0.8 | - | 4.134 | 4.334 | 4.59 | 0.1807 | 4.62 | 0.1819 | 4.65 | 0.1831 | 4.67 | 0.1839 | 4.70 | 0.1850 |
| M5 | - | 0.5 | 4.458 | 4.600 | 4.75 | 0.1870 | 4.76 | 0.1874 | 4.78 | 0.1882 | 4.80 | 0.1890 | 4.81 | 0.1894 |
| M6 | 1 | - | 4.917 | 5.153 | 5.49 | 0.2161 | 5.52 | 0.2173 | 5.56 | 0.2189 | 5.59 | 0.2201 | 5.63 | 0.2217 |
| M6 | - | 0.75 | 5.187 | 5.377 | 5.62 | 0.2213 | 5.64 | 0.2220 | 5.67 | 0.2232 | 5.69 | 0.2240 | 5.72 | 0.2252 |
| M7 | 1 | - | 5.918 | 6.152 | 6.49 | 0.2555 | 6.52 | 0.2567 | 6.56 | 0.2583 | 6.59 | 0.2594 | 6.63 | 0.2610 |
| M8 | 1.25 | - | 6.647 | 6.912 | 7.36 | 0.2898 | 7.41 | 0.2917 | 7.45 | 0.2933 | 7.49 | 0.2949 | 7.53 | 0.2965 |
| M8 | - | 1 | 6.917 | 7.153 | 7.49 | 0.2949 | 7.52 | 0.2961 | 7.56 | 0.2976 | 7.59 | 0.2988 | 7.63 | 0.3004 |
| M8 | - | 0.75 | 7.187 | 7.377 | 7.62 | 0.3000 | 7.64 | 0.3008 | 7.67 | 0.3020 | 7.69 | 0.3028 | 7.72 | 0.3039 |
| M10 | 1.5 | - | 8.376 | 8.676 | 9.24 | 0.3638 | 9.29 | 0.3657 | 9.34 | 0.3677 | 9.39 | 0.3697 | 9.44 | 0.3717 |
| M10 | - | 1.25 | 8.647 | 8.912 | 9.36 | 0.3685 | 9.41 | 0.3705 | 9.45 | 0.3720 | 9.49 | 0.3736 | 9.53 | 0.3752 |
| M10 | - | 1 | 8.917 | 9.153 | 9.49 | 0.3736 | 9.52 | 0.3748 | 9.56 | 0.3764 | 9.59 | 0.3776 | 9.63 | 0.3791 |
| M10 | - | 0.75 | 9.188 | 9.378 | 9.62 | 0.3787 | 9.64 | 0.3795 | 9.67 | 0.3807 | 9.69 | 0.3815 | 9.72 | 0.3827 |
| M12 | 1.75 | - | 10.106 | 10.441 | 11.11 | 0.4374 | 11.17 | 0.4398 | 11.23 | 0.4421 | 11.29 | 0.4445 | 11.35 | 0.4469 |
| M12 | - | 1.5 | 10.376 | 10.676 | 11.24 | 0.4425 | 11.29 | 0.4448 | 11.34 | 0.4465 | 11.39 | 0.4484 | 11.44 | 0.4504 |
| M12 | - | 1.25 | 10.647 | 10.912 | 11.36 | 0.4472 | 11.41 | 0.4492 | 11.45 | 0.4508 | 11.49 | 0.4524 | 11.53 | 0.4539 |
| M12 | - | 1 | 10.917 | 11.153 | 11.49 | 0.4524 | 11.52 | 0.4535 | 11.56 | 0.4551 | 11.59 | 0.4563 | 11.63 | 0.4579 |
| M14 | 2 | - | 11.835 | 12.210 | 12.98 | 0.5110 | 13.05 | 0.5138 | 13.12 | 0.5165 | 13.18 | 0.5189 | 13.25 | 0.5217 |
| M14 | - | 1.5 | 12.376 | 12.676 | 13.24 | 0.5213 | 13.29 | 0.5232 | 13.34 | 0.5252 | 13.39 | 0.5272 | 13.44 | 0.5291 |
| M16 | 2 | - | 13.835 | 14.210 | 14.98 | 0.5898 | 15.05 | 0.5925 | 15.12 | 0.5953 | 15.18 | 0.5976 | 15.25 | 0.6004 |
| M16 | - | 1.5 | 14.376 | 14.676 | 15.24 | 0.6000 | 15.29 | 0.6020 | 15.34 | 0.6039 | 15.39 | 0.6059 | 15.44 | 0.6079 |
| M18 | 2.5 | - | 15.296 | 15.743 | 16.73 | 0.6587 | 16.81 | 0.6618 | 16.90 | 0.6654 | 16.98 | 0.6685 | 17.07 | 0.6720 |
| M18 | - | 1.5 | 16.376 | 16.676 | 17.24 | 0.6787 | 17.29 | 0.6807 | 17.34 | 0.6827 | 17.39 | 0.6846 | 17.44 | 0.6866 |
| M20 | 2.5 | - | 17.294 | 17.744 | 18.73 | 0.7374 | 18.81 | 0.7406 | 18.90 | 0.7441 | 18.98 | 0.7472 | 19.07 | 0.7508 |
| M20 | - | 1.5 | 18.376 | 18.676 | 19.24 | 0.7575 | 19.29 | 0.7594 | 19.34 | 0.7614 | 19.39 | 0.7634 | 19.44 | 0.7654 |
| M20 | - | 1 | 18.917 | 19.153 | 19.49 | 0.7673 | 19.52 | 0.7685 | 19.56 | 0.7701 | 19.59 | 0.7713 | 19.63 | 0.7728 |
| M22 | 2.5 | - | 19.294 | 19.744 | 20.73 | 0.8161 | 20.81 | 0.8193 | 20.90 | 0.8228 | 20.98 | 0.8260 | 21.07 | 0.8295 |
| M22 | - | 2 | 19.835 | 20.210 | 20.98 | 0.8260 | 21.05 | 0.8287 | 21.12 | 0.8315 | 21.18 | 0.8339 | 21.25 | 0.8366 |
| M22 | - | 1.5 | 20.376 | 20.676 | 21.24 | 0.8362 | 21.29 | 0.8382 | 21.34 | 0.8402 | 21.39 | 0.8421 | 21.44 | 0.8441 |
| M24 | 3 | - | 20.752 | 21.252 | 22.47 | 0.8846 | 22.57 | 0.8886 | 22.67 | 0.8925 | 22.78 | 0.8969 | 22.88 | 0.9008 |
| M24 | - | 2 | 21.835 | 22.210 | 22.98 | 0.9047 | 23.05 | 0.9075 | 23.12 | 0.9102 | 23.18 | 0.9126 | 23.25 | 0.9154 |
| M24 | - | 1.5 | 22.376 | 22.676 | 23.24 | 0.9150 | 23.29 | 0.9169 | 23.34 | 0.9189 | 23.39 | 0.9209 | 23.44 | 0.9228 |

| FORMULA: TAP DRILL SIZE | | FORMULA: PERCENTAGE OF FULL THREAD | |
|--|--|---|--|
| Drill Size = Tap Major Dia - $\frac{\text{Pitch} \times \% \text{ of Full Thread}}{147.059}$ | | % of Full Thread = (Tap Major Dia - Drill Dia) x $\frac{147.059}{\text{Pitch}}$ | |
| Example: to determine drill size for M12 x 1.75 tap, 70% thread | | Example: to determine the % of thread for M12 x 1.75 Tap using 11.17mm drill | |
| Tap Major Ø = 12mm | Drill Size = 12mm - $\frac{(1.75 \times 70\%)}{147.059}$ | # Threads per Inch = 20 | % of Thread = (12mm - 11.167mm) x $\frac{147.059}{1.75}$ |
| % of Full Thread = 70% | Drill Size = 12mm - 0.833mm = 11.167mm | Tap Major Ø = 0.2500" | % of Thread = (0.833mm) x 84.03 = 70% |
| Pitch = 1.75mm | | Drill Ø = 0.2045" | |



Tap Drill Sizes - STI Taps - Inch

| Tap Size | Threads Per Inch | | Minor Diameter (in) (After Tapping) | | Tap Drill Diameter (in) | |
|----------|------------------|-----|--|--------|-------------------------|---------------------------|
| | UNC | UNF | Min | Max | Aluminum | Steel, Magnesium, Plastic |
| 2 | 56 | – | 0.0899 | 0.0961 | 0.0938 | 0.0960 |
| 3 | 48 | – | 0.1036 | 0.1104 | 0.1065 | 0.1094 |
| | – | 56 | 0.1029 | 0.1086 | 0.1040 | 0.1065 |
| 4 | 40 | – | 0.1175 | 0.1252 | 0.1200 | 0.1200 |
| | – | 48 | 0.1166 | 0.1229 | 0.1181 | 0.1200 |
| 5 | 40 | – | 0.1305 | 0.1373 | 0.1339 | 0.1360 |
| | – | – | – | – | – | – |
| 6 | 32 | – | 0.1448 | 0.1527 | 0.1470 | 0.1495 |
| | – | 40 | 0.1435 | 0.1503 | 0.1470 | 0.1495 |
| 8 | 32 | – | 0.1708 | 0.1781 | 0.1730 | 0.1770 |
| | – | 36 | 0.1701 | 0.1771 | 0.1730 | 0.1770 |
| 10 | 24 | – | 0.1990 | 0.2000 | 0.2031 | 0.2055 |
| | – | 32 | 0.1968 | 0.2041 | 0.2010 | 0.2031 |
| 12 | 24 | – | 0.2250 | 0.2340 | 0.2280 | 0.2280 |
| 1/4 | 20 | – | 0.2608 | 0.2704 | 0.2660 | 0.2660 |
| | – | 28 | 0.2577 | 0.2646 | 0.2610 | 0.2638 |
| 5/16 | 18 | – | 0.3245 | 0.3342 | 0.3320 | 0.3320 |
| | – | 24 | 0.3215 | 0.3288 | 0.3281 | 0.3281 |
| 3/8 | 16 | – | 0.3885 | 0.3987 | 0.3970 | 0.3970 |
| | – | 24 | 0.3840 | 0.3910 | 0.3906 | 0.3906 |
| 7/16 | 14 | – | 0.4530 | 0.4639 | 0.4531 | 0.4531 |
| | – | 20 | 0.4483 | 0.4561 | 0.4531 | 0.4531 |
| 1/2 | 13 | – | 0.5166 | 0.5273 | 0.5156 | 0.5156 |
| | – | 20 | 0.5108 | 0.5186 | 0.5156 | 0.5156 |
| 9/16 | 12 | – | 0.5806 | 0.5918 | 0.5781 | 0.5938 |
| | – | 18 | 0.5745 | 0.5826 | 0.5781 | 0.5781 |
| 5/8 | 11 | – | 0.6447 | 0.6564 | 0.6562 | 0.6562 |
| | – | 18 | 0.6370 | 0.6451 | 0.6406 | 0.6406 |
| 3/4 | 10 | – | 0.7716 | 0.7838 | 0.7812 | 0.7812 |
| | – | 16 | 0.7635 | 0.7720 | 0.7656 | 0.7656 |
| 7/8 | 9 | – | 0.8990 | 0.9119 | 0.9062 | 0.9062 |
| | – | 14 | 0.8905 | 0.8994 | 0.8906 | 0.8906 |
| 1" | 8 | – | 1.0271 | 1.0421 | 1.0312 | 1.0312 |
| | – | 12 | 1.0181 | 1.0281 | 1.0156 | 1.0312 |

The suggested drill sizes for aluminum listed in the table are within the minor diameter limits for STI tapped holes specified in MS 33537. Alternate drill sizes are suggested in many instances for magnesium, steel and plastics to provide for maximum tap wear life. In the case of magnesium, the larger size is recommended to allow for material close-in. There are suggested drill sizes and any special requirements or specifications will supersede these recommendations.



Tap Drill Sizes - STI Taps - Metric

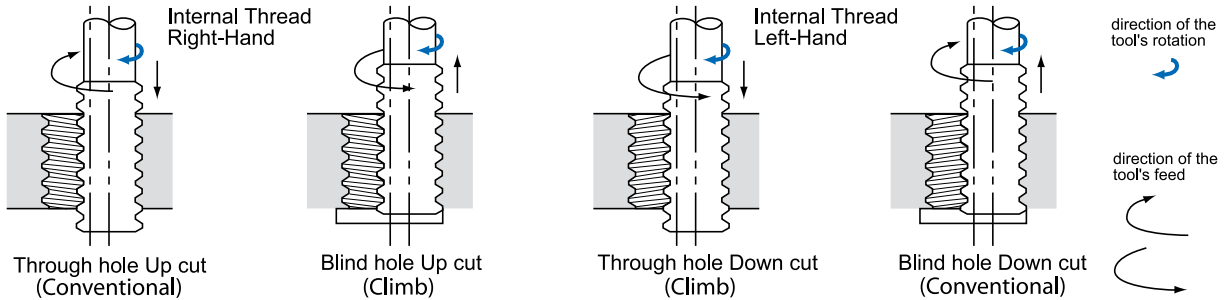
| Tap Size | Pitch | Minor Diameter (in) (After Tapping) | | Tap Drill Diameter (Metric) | |
|----------|-------|--|--------|-----------------------------|------------------------------|
| | | Min | Max | Aluminum | Steel, Magnesium, Plastic |
| M2 | 0.4 | 2.087 | 2.199 | 2.1 | 2.1 |
| M2.5 | 0.45 | 2.597 | 2.722 | 2.3 | 2.35 |
| M3 | 0.5 | 3.108 | 3.248 | 3.15 | 3.2 |
| M4 | 0.7 | 4.152 | 4.332 | 4.2 | 4.25 |
| M5 | 0.8 | 5.174 | 5.374 | 5.2 | 5.3 |
| M6 | 1.0 | 6.217 | 6.407 | 6.25 | 6.3 |
| M8 | 1.25 | 8.271 | 8.483 | 8.3 | 8.4 |
| M10 | 1.5 | 10.324 | 10.560 | 10.5 | 10.5 |
| M12 | 1.75 | 12.379 | 12.644 | 12.5 | 12.5 |
| M14 | 2 | 14.433 | 14.733 | 14.5 | 14.5 |
| M16 | 2 | 16.433 | 16.733 | 16.5 | 16.5 |
| M18 | 2.5 | 18.541 | 18.896 | 18.75 | 18.75 |
| M20 | 2.5 | 20.541 | 20.896 | 20.75 | 20.75 |
| M22 | 2.5 | 22.541 | 22.896 | 22.75 | 22.75 |
| M24 | 3 | 22.649 | 25.049 | 24.75 | 24.75 |

The suggested drill sizes for aluminum listed in the table are within the minor diameter limits for STI tapped holes specified in MS 33537. Alternate drill sizes are suggested in many instances for magnesium, steel and plastics to provide for maximum tap wear life. In the case of magnesium, the larger size is recommended to allow for material close-in. There are suggested drill sizes and any special requirements or specifications will supersede these recommendations.



Machining Technique

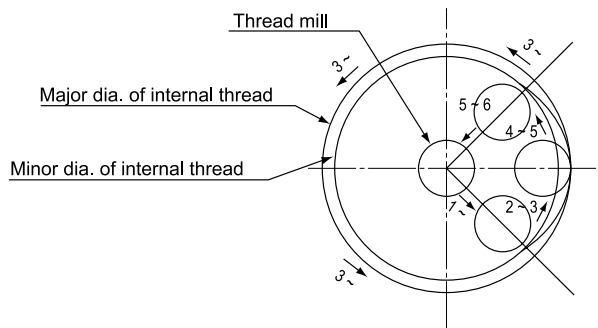
OSG's A Brand® & EXOCARB® Thread Mills have been developed for thread milling on a 3-Axis CNC controlled machine tool. Threads are produced by advancing one pitch feed per revolution in the axial direction, utilizing the planet-like rotation and revolution movements of the tool. Internal and right/left hand threads can all be produced with this one tool by simply changing the direction of feed.



Threading Process

- 1-2 Move to edge (maintain clearance)
- 2-3 Cut with helical milling
- 3-4 Mill the circumference of the circle
- 4-5 Pull away from the edge
- 5-6 Remove tool

The transition between the start and finish of the milling operation must be smooth, and the appropriate amount of feed is essential for minimizing milling resistance. There are many different methods for using this tool, but our research has shown that this technique provides the most precise and efficient operation.



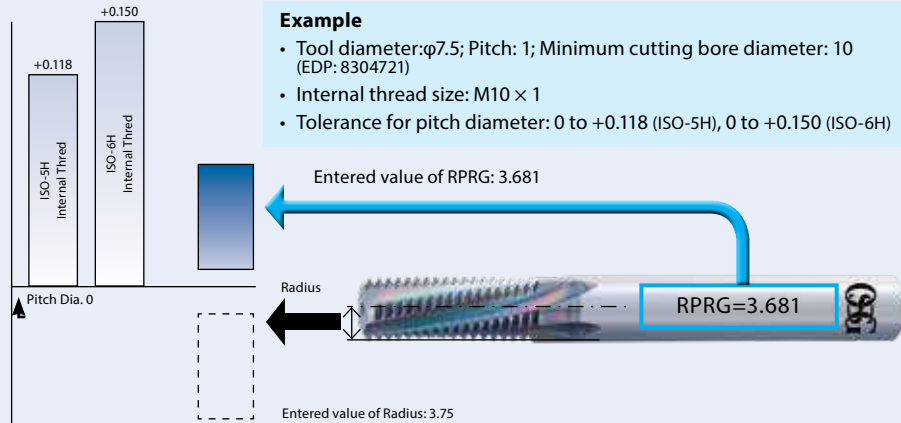
Thread Milling Process (view from above)



Radius Offset (RPRG)

RPRG is the reference value of tool radius offset.

Conventionally, the tool radius was entered during setup as a parameter of the NC system, which was corrected by checking the thread with a gauge. However, it has become possible to reduce the checking and correction simply by entering the RPRG value indicated on the tool shank.



NOTES:

1. RPRG are reference values. Determine optimal values after trial cutting as values depend on machining environment.
2. RPRG values are optimally established to achieve ISO:5H (formerly Grade 1) internal thread limits for metric threads and ANSI:3B internal thread limits for unified threads. RPRG values established for taper pipes (R/Rc) are effective when using the thread milling NC code generator software ThreadPro available on our website.
3. For diameters of thread mills, RPRG values are calculated based on the minimum cutting bore diameter (the minimum cutting internal thread size of the tool diameter). To cut other diameters, it is necessary to use a smaller value than RPRG.

ThreadPro (Thread Milling NC Code Generator Software)

www.osgtool.com/threadpro



- Available in 12 different languages
- Supports 8 NC programming languages
- Incorporates RPRG* value to further simplify process

* RPRG = reference value of tool radius offset



ThreadPro

Powered by
 AUTODESK





List 16620/16625 - A Brand® AT-1 List 16630/16631 - A Brand® AT-1 NPT/NPTF

| Work Material | | Cutting Speed SFM | Feed Rate (in/t) |
|-------------------------|------------------------|----------------------|---------------------|
| Low Carbon Steel | ~C0.25% | 260 - 790 | 0.0004 - 0.002 |
| Medium Carbon Steel | C0.25%~0.45% | 260 - 790 | 0.0004 - 0.002 |
| High Carbon Steel | C0.45%~ | 260 - 790 | 0.0004 - 0.002 |
| Alloy Steel | 4140, 4340, 8620 | 200 - 650 | 0.0004 - 0.002 |
| Hardened Steel | 25-45 HRC | 260 - 650 | 0.0004 - 0.002 |
| | 45-55 HRC | - | - |
| | 50-60 HRC | - | - |
| Stainless Steel | 300-series, 400-series | 200 - 790 | 0.0004 - 0.002 |
| Tool Steel | D2, H13, A6 | - | - |
| Cast Steel | - | 200 - 790 | 0.0004 - 0.002 |
| Cast Iron | - | 260 - 790 | 0.0004 - 0.002 |
| Ductile Cast Iron | - | 200 - 790 | 0.0004 - 0.002 |
| Copper | - | 260 - 790 | 0.001 - 0.004 |
| Brass | B21, B36 | 260 - 790 | 0.001 - 0.004 |
| Brass Casting | B62 | 260 - 790 | 0.001 - 0.004 |
| Bronze | B124, B103, B159 | 260 - 790 | 0.001 - 0.004 |
| Aluminum | 6061, 7075, 2014 | 260 - 790 | 0.001 - 0.004 |
| Aluminum Alloy Casting | - | 330 - 1000 | 0.002 - 0.008 |
| Magnesium Alloy Casting | - | 330 - 1000 | 0.002 - 0.008 |
| Zinc Alloy Casting | - | 330 - 1000 | 0.002 - 0.008 |
| Titanium Alloy | Ti-6Al-4V | - | - |
| Nickel Alloy | Inconel | - | - |
| Thermosetting Plastic | - | 260 - 650 | 0.001 - 0.004 |
| Thermo Plastic | - | 260 - 650 | 0.001 - 0.004 |

1. The indicated speeds and feeds are for water-soluble coolant.
2. Water-soluble coolant is not suitable for threading magnesium alloy.
3. Please adjust the cutting conditions depending on the rigidity of the machine, tool holders, and workpiece clamping.
4. If the threading length is long, or when machining a large-pitch thread, reduce the feed rate and take multiple passes.
5. If a machined parallel internal thread is tapered and prevents the go-gauge from going through, add a zero cut/spring pass.





EXOCARB® Thread Mill

Cutting Conditions

- List 41000/41100 - EXOCARB® Thread Mill
- List 41050/41150 - EXOCARB® Thread Mill Oil
- List 42000/42001 - EXOCARB® Thread Mill NPT/NPTF

| Work Material | SFM | Feed Rate (Inch/Tooth) | No. of Passes |
|---|-----------|------------------------|---------------|
| Low Carbon Steel | 300 - 420 | 0.0016 - 0.0050 | 1 |
| Medium Carbon Steel | 300 - 420 | 0.0016 - 0.0050 | 1 |
| High Carbon Steel | 250 - 420 | 0.0016 - 0.0050 | 1 |
| Alloy Steel | 180 - 350 | 0.0008 - 0.0040 | 1-2 |
| Heat Treated Steel (28-34HRC) | 160 - 300 | 0.0008 - 0.0040 | 1 |
| Heat Treated Steel (34-40HRC) | 130 - 260 | 0.0004 - 0.0040 | 1-2 |
| Heat Treated Steel (40-50HRC) | 65 - 250 | 0.0004 - 0.0040 | 2-4 |
| Stainless Steel (300 - Series) | 200 - 450 | 0.0016 - 0.0060 | 1-2 |
| Stainless Steel (400 - Series) | 165 - 400 | 0.0016 - 0.0060 | 1-2 |
| Stainless Steel (15-5, 17-4PH) | 130 - 350 | 0.0016 - 0.0060 | 2 |
| Cast Iron | 250 - 400 | 0.0008 - 0.0035 | 1 |
| Ductile Cast Iron | 210 - 280 | 0.0012 - 0.0040 | 1 |
| Aluminum Alloy | 300 - 500 | 0.0012 - 0.0040 | 1 |
| Aluminum Alloy Casting Si [12]% | 280 - 550 | 0.0012 - 0.0050 | 1 |
| Aluminum Alloy Casting Si [12-16]% | 250 - 460 | 0.0012 - 0.0040 | 1 |
| Aluminum Alloy Casting with Si [16-20]% | 210 - 400 | 0.0012 - 0.0040 | 1 |
| Aluminum Alloy Casting with Si [20-25]% | 200 - 350 | 0.0012 - 0.0040 | 1 |
| Copper, Copper Casting | 300 - 510 | 0.0012 - 0.0040 | 1 |
| Brass, Brass Casting | 300 - 510 | 0.0012 - 0.0040 | 1 |
| Bronze, Bronze Casting (C6***, PB, PBC) | 300 - 500 | 0.0012 - 0.0040 | 1 |
| Magnesium Alloy Casting | 210 - 410 | 0.0012 - 0.0050 | 1 |
| Zinc Alloy Casting | 180 - 380 | 0.0012 - 0.0050 | 1 |
| Titanium Alloy (Ti-6Al-4V) | 100 - 330 | 0.0012 - 0.0025 | 2 |
| High Heat Resistance Alloy (Inconel) | 65 - 260 | 0.0008 - 0.0020 | 2 |
| High Heat Resistance Alloy (Inconel >40HRC) | 65 - 200 | 0.0008 - 0.0020 | 4 |
| Thermoplastic | 220 - 510 | 0.0012 - 0.0050 | 1 |
| Cobalt/Chrome Alloy (Stellite) | 65 - 200 | 0.0016 - 0.0060 | 3 |

For chip loads, the smaller cutter diameters use a smaller chip load per tooth within a given range. Larger cutter diameters use the larger chip load per tooth within the given range. For programming help or other information, please contact our Engineering Department at 800-837-2223.












List 41200/41300 - EXOCARB® Thread Mill Mini

| Work Material | Thread Sizes Under #2/M2 | | | Thread Sizes #2/M2 & Larger | | |
|---|--------------------------|------------------------|---------------|-----------------------------|------------------------|---------------|
| | SFM | Feed Rate (Inch/Tooth) | No. of Passes | SFM | Feed Rate (Inch/Tooth) | No. of Passes |
| Low Carbon Steel | 200 - 300 | 0.0008 - 0.0020 | 2 | 200 - 300 | 0.0008 - 0.0030 | 1 |
| Medium Carbon Steel | 200 - 300 | 0.0008 - 0.0020 | 2 | 200 - 300 | 0.0008 - 0.0030 | 1 |
| High Carbon Steel | 200 - 300 | 0.0008 - 0.0020 | 2 | 200 - 300 | 0.0008 - 0.0030 | 1 |
| Alloy Steel | — | — | — | 100 - 200 | 0.0004 - 0.0012 | 1-2 |
| Heat Treated Steel (28-34HRC) | — | — | — | 100 - 200 | 0.0004 - 0.0012 | 1 |
| Heat Treated Steel (34-40HRC) | — | — | — | 100 - 200 | 0.0004 - 0.0012 | 1-2 |
| Heat Treated Steel (40-50HRC) | — | — | — | 100 - 200 | 0.0004 - 0.0012 | 2-4 |
| Stainless Steel (300 Series) | 200 - 300 | 0.0008 - 0.0020 | 2-3 | 200 - 300 | 0.0008 - 0.0030 | 1-2 |
| Stainless Steel (400 Series) | 200 - 300 | 0.0008 - 0.0020 | 2-3 | 200 - 300 | 0.0008 - 0.0030 | 1-2 |
| Stainless Steel (15-5, 17-4PH) | 200 - 300 | 0.0008 - 0.0020 | 3 | 200 - 300 | 0.0008 - 0.0030 | 2 |
| Cast Iron | 130 - 200 | 0.0008 - 0.0020 | 2 | 165 - 330 | 0.0012 - 0.0040 | 1 |
| Ductile Cast Iron | 130 - 300 | 0.0008 - 0.0020 | 2 | 165 - 230 | 0.0012 - 0.0040 | 1 |
| Aluminum Alloy | 230 - 330 | 0.0015 - 0.0030 | 2 | 165 - 330 | 0.0008 - 0.0025 | 1 |
| Aluminum Alloy Casting | 230 - 330 | 0.0015 - 0.0030 | 2 | 165 - 330 | 0.0008 - 0.0025 | 1 |
| Copper, Copper Casting | — | — | — | — | — | — |
| Brass, Brass Casting | 200 - 330 | 0.0015 - 0.0030 | 2 | 165 - 330 | 0.0008 - 0.0025 | 1 |
| Bronze, Bronze Casting | — | — | — | 165 - 330 | 0.0008 - 0.0025 | 1 |
| Magnesium Alloy Casting | 230 - 330 | 0.0015 - 0.0030 | 2 | 165 - 330 | 0.0008 - 0.0025 | 1 |
| Zinc Alloy Casting | 230 - 330 | 0.0015 - 0.0030 | 2 | 165 - 330 | 0.0008 - 0.0025 | 1 |
| Titanium Alloy (Ti-6Al-4V) | 65 - 130 | 0.0004 - 0.0012 | 3 | 65 - 200 | 0.0004 - 0.0012 | 2 |
| High Heat Resistance Alloy (Inconel) | — | — | — | 65 - 200 | 0.0004 - 0.0012 | 2 |
| High Heat Resistance Alloy (Inconel >40HRC) | — | — | — | 65 - 200 | 0.0004 - 0.0012 | 4 |
| Thermoplastic | 165 - 330 | 0.0015 - 0.0030 | 2 | 165 - 330 | 0.0008 - 0.0025 | 1 |
| Cobalt/Chrome Alloy (Stellite) | — | — | — | — | — | — |









For chip loads, the smaller cutter diameters use a smaller chip load per tooth within a given range. Larger cutter diameters use the larger chip load per tooth within the given range. For programming help or other information, please contact our Engineering Department at 800-837-2223.



| PROBLEM | CAUSE | SOLUTION |
|--|--|--|
| Chip Packing (Back Threaded Portion)  | Inappropriate spindle speed | Adjust RPM (lower or higher) for proper chip form |
| | Helix angle too large | Decrease helix angle or choose tap with low helix angle |
| | Chips not coiling / breaking properly | Use alternate coating |
| Chip Packing (Single Thread)  | *Occurs predominantly in horizontal applications* | |
| | Weak rake angle (positive) | Decrease rake angle |
| | Chips not evacuating properly | Use a POT style tap or a LHH / RHF |
| Chipping During Reversal  | Chips left behind in flute during tap reversal | Improve wear resistance of tap |
| | | Improve / add surface treatment / coating |
| | Material shrinkage | Increase coolant volume / concentration to control heat |
| Chipping Due to Wear  | Tap substrate not suitable for work material | Improve wear resistance of tap |
| | | Improve / add surface treatment / coating |
| | Cutting action work hardened material | Shorten chamfer length |
| Chipping of Land Edge  | Occurs when tap either hits bottom or entrance of hole | Avoid hitting the bottom of the hole, check stroke length, alignment and hole size |
| Chipping of Land Axially  | Occurs when tap either hits bottom or entrance of hole | Avoid hitting the bottom of the hole, check stroke length, alignment and hole size |
| Chipping of Chamfer  | Tap substrate not suitable for work material | Improve wear resistance of tap |
| | Inappropriate pre-drill size | Select suitable pre-drill size |





| PROBLEM | CAUSE | SOLUTION |
|---|---|---|
| Premature Tap Wear  | Inappropriate spindle speed | Reduce spindle speed |
| | Possible work hardening of pre-drilled hole | Prevent work hardening of pre-drilled hole |
| | Inappropriate thread relief | Use proper thread relief |
| | Inappropriate chamfer length | Adjust chamfer length |
| | Inappropriate lubrication | Change coolant method Increase volume / concentration Apply surface coating / treatment |
| Welding / Galling  | Inappropriate spindle speed | Reduce spindle speed |
| | Inappropriate lubrication | Change coolant method |
| | | Increase volume / concentration |
| | | Apply surface coating / treatment |
| Deformed Lobes  | Possible work hardening of pre-drilled hole | Prevent work hardening of pre-drilled hole |
| | Inappropriate spindle speed | Reduce spindle speed |
| | Inappropriate pre-drill size | Increase pre-drill hole size as much as possible |
| | Inappropriate lubrication | Change coolant method |
| | | Increase volume / concentration |
| | Tap substrate not suitable for material | Apply surface coating / treatment Improve wear resistance of tap |
| Tap Breakage  | Possible chip packing | Avoid chip packing |
| | Inappropriate pre-drill size | Increase pre-drill hole size as much as possible |
| | Inappropriate spindle speed | Reduce spindle speed |
| | Possible runout or tapered hole | Reduce runout and assure hole is straight |
| | Too high of torque generated | Use tap holder with torque adjustment / limiting feature |
| | Possible tap collision with bottom of hole | Avoid hitting the bottom of the hole, check stroke length, alignment and hole size |
| Overcutting / Oversized Threads  | Inconsistent feed of spiral fluted style tap | Use compensating tension / compression tap holder |
| | | Adjust feed rate appropriately |
| | | Check CNC program |
| | Inconsistent feed of spiral pointed style tap | Use compensating tension / compression tap holder |
| | | Adjust feed rate appropriately |
| | | Check CNC program |
| Tearing on Flanks  | Inappropriate thread relief / rake angle | Use sharper / freer cutting relief and angle |
| | Inappropriate lubrication | Change coolant method |
| | | Increase volume / concentration |
| | | Apply surface coating / treatment |
| Extremely Torn Threads  | Possible welding / galling | Select appropriate cutting conditions |
| | Possible chip packing | Select appropriate cutting conditions |
| | Inappropriate thread relief | Use sharper thread relief |
| | Inappropriate lubrication | Change coolant method |
| | | Increase volume / concentration |
| | | Apply surface coating / treatment |
| Chips Remain at Bottom  | Inappropriate geometry of tap | Reduce chamfer relief angle |
| | | Use thinner land width |
| | | Reduce chamfer length |
| | | Reduce cutting angle |





MILLING



MILLING

The A Brand®

OSG's premium tooling brand. Features products that are designed to exceed the evolving manufacturing needs of our customers.

EXOPRO®

OSG's ultra-premium tooling series, featuring our latest innovative technologies when the absolute best performance is needed.

EXOCARB® WXL®

The new standard in high performance end mills for high speed machining, featuring our WXL™ nanocoating technology.

EXOCARB® WXS®

The new standard in high performance end mills for hard milling, featuring our WXS™ nanocoating technology.

EXOCARB® MAX

Maximum performance end mills designed exclusively for hard milling. Features technologies including WXS™ and CBN.

EXOCARB® DIAMOND

OSG's patented CVD diamond coated end mills for die/mold and aerospace applications in non-ferrous materials like graphite, aluminum and CFRP.

EXOCARB® AERO

High performance carbide end mills for aircraft materials.

HY-PRO® CARB

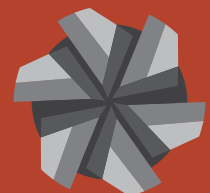
Performance sub-micrograin carbide end mills with OSG TiAlN coating. The perfect blend of performance and cost-efficiency.

CARBIDE

All-purpose micrograin carbide end mills for general machining applications.

SOMTA

























Value carbide and HSS-cobalt and mills for a wide range of applications.



Featured Milling Products









| Inch/Metric | Inch | Metric | Inch | Metric | Inch | Metric | Inch | Metric |
|--------------------------------------|-----------|----------|----------|--------|-----------|-----------|--------------|-----------|
| Size Range | 5/64 - 1" | 3 - 25mm | 1/4 - 1" | - | - | 0.06-20mm | 1/2 - 1-1/4" | 12 - 25mm |
| Number of Flutes | 4 | | 5 | | 3, 4 | | 5 | |
| Square | ✓ | ✓ | | | | | ✓ | ✓ |
| Corner Radius/Chamfer | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ |
| Ball Nose | | | | | | ✓ | | |
| Long Neck, Pencil Neck, Rib | ✓ | ✓ | | | | ✓ | ✓ | ✓ |
| Coolant-Through | | | | | | | | |
| Unequal Index, Variable Helix | ✓ | ✓ | ✓ | | | | ✓ | ✓ |
| Substrate | Carbide | | Carbide | | Carbide | | Carbide | |
| Coating | DUARISE | | EXO® | | WXS®/EXO® | | EXO® | |

| | | | | | |
|----------|--|---|---|---|---|
| P | Carbon Steels (1010, 1018) |  | |  | |
| | Mild Steels, Alloy Steels (1050, 4140) |  | |  | |
| | Die Steels (H13, D2) |  | |  | |
| M | Stainless Steel (304SS, 420SS) |  |  |  | |
| K | Cast Iron |  | |  | |
| | Ductile Cast Iron |  | |  | |
| N | Aluminum Alloys (6061, 7075) |  | | | |
| S | Heat Resistant Alloys (Inconel 718) |  |  | | |
| | Titanium Alloy (Ti-6Al-4V) |  | | |  |
| H | Pre-Hardened Steel (P20) |  |  |  | |
| | Die Cast Steels (A2, S7) |  | |  | |
| | Hardened Steels (D2) | | |  | |

Featured Milling Products



| EXOCARB® WXL® Series | | EXOCARB® WXS® Series | | EXOCARB® AERO DLC | | EXOCARB® AERO UVX Silent Rougher | | EXOCARB® AERO BLIZZARD® | | HY-PRO® CARB VGX Series | |
|---|------------|---|------------|---|-----------|---|----------|---|--------|---|--------|
| P853-883 | | P884-904 | | P932-941 | | P921-923 | | P942-950 | | P960-968 | |
|  | |  | |  | |  | |  | |  | |
| Inch | Metric | Inch | Metric | Inch | Metric | Inch | Metric | Inch | Metric | Inch | Metric |
| 1/64 - 3/4" | 0.1 - 26mm | 1/32 - 3/4" | 0.1 - 13mm | 1/2 - 1" | 12 - 25mm | 1/4 - 1" | 6 - 25mm | 1/8 - 1" | - | 1/8 - 1 1/4" | - |
| 2, 4 | | 2, 3, 4, 6 | | 2, 3 | | 4 | | 2, 3 | | 4, 5 | |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | | ✓ | |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | |
| ✓ | ✓ | ✓ | ✓ | | | | | ✓ | | ✓ | |
| ✓ | ✓ | | ✓ | | | ✓ | ✓ | ✓ | | ✓ | |
| | | | | ✓ | ✓ | | | | | | |
| | | | | | | ✓ | ✓ | | | ✓ | |
| Carbide | | Carbide | | Carbide | | Carbide | | Carbide | | Carbide | |
| WXL® | | WXS® | | DLC | | WXL® | | Bright/DLC | | TiAlN | |

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For OSG's complete end mill offering please refer to the Illustrated Index starting on page 784.

1st Choice 2nd Choice Recommended











| List | Item | Inch/ Metric | No. of Flutes | Length of Cut | Material | Coating | Size Range | Features | Product Page | Tech Page |
|------|------|-----------------|------------------|------------------|----------|---------|---------------|----------|-----------------|--------------|
|------|------|-----------------|------------------|------------------|----------|---------|---------------|----------|-----------------|--------------|

A Brand®

| | | | | | | | | | | | |
|------|---|-----------|--------|---|----------|---------|---------|-------------|--|-----|-----------|
| 8200 |  | NEW SIZES | Inch | 4 | Variable | Carbide | Duarise | 5/64" - 1" | AE-VMS | 830 | 1112-1113 |
| 8205 |  | NEW SIZES | Metric | 4 | Regular | Carbide | Duarise | 3mm - 25mm | AE-VMS | 831 | 1112-1113 |
| 8210 |  | | Inch | 4 | Variable | Carbide | Duarise | 3/16" - 1" | AE-CR-VMS, Corner Radius | 832 | 1114-1115 |
| 8215 |  | | Metric | 4 | Regular | Carbide | Duarise | 3mm - 12mm | AE-CR-VMS, Corner Radius | 833 | 1114-1115 |
| 8220 |  | | Inch | 4 | Variable | Carbide | Duarise | 1/4" - 1" | AE-LN-CR-VMS, Long Neck, Corner Radius | 834 | 1119 |
| 8206 |  | NEW | Metric | 4 | Stub | Carbide | Duarise | 3mm - 12mm | AE-VMSS | 835 | 1116-1117 |
| 8230 |  | NEW | Inch | 4 | Stub | Carbide | Duarise | 1/4" - 1" | AE-LN-VMSS, Long Neck | 836 | 1118 |
| 8235 |  | NEW | Metric | 4 | Stub | Carbide | Duarise | 6mm - 12mm | AE-LN-VMSS, Long Neck | 837 | 1118 |
| 8201 |  | NEW | Inch | 4 | Long | Carbide | Duarise | 1/4" - 1/2" | AE-VML | 838 | 1120-1123 |
| 8207 |  | NEW | Metric | 4 | Long | Carbide | Duarise | 6mm - 12mm | AE-VML | 839 | 1120-1123 |
| 8202 |  | NEW | Inch | 4 | Long | Carbide | Duarise | 1/4" - 1/2" | AE-NIK-VML, Nicks | 840 | 1120-1123 |
| 8208 |  | NEW | Metric | 4 | Long | Carbide | Duarise | 6mm - 12mm | AE-NIK-VML, Nicks | 840 | 1120-1123 |

EXOPRO®

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|------|---|--|--------|---|----------|---------|------|-------------|--|---------|-----------|
| 2055 |  | | Inch | 5 | Variable | Carbide | EXO® | 1/4" - 1" | UVX-Ni, Corner Radius | 841 | 1124 |
| 9510 |  | | Metric | 3 | Stub | Carbide | EXO® | 1mm - 20mm | Phoenix® Deep Feed, Ball End | 842 | 1125-1127 |
| 9590 |  | | Metric | 3 | Stub | Carbide | WXS® | 0.6mm - 6mm | Phoenix® Long Neck, Ball End | 843 | 1125-1127 |
| 9581 |  | | Metric | 3 | Stub | Carbide | WXS® | 1mm - 12mm | Phoenix® Pencil-Neck, Deep Feed, Ball End | 844-845 | 1125-1127 |
| 9592 |  | | Metric | 4 | Stub | Carbide | WXS® | 0.8mm - 3mm | Phoenix® Pencil Neck, Deep Feed, Corner Radius | 846 | 1131 |
| 9575 |  | | Metric | 3 | Stub | Carbide | WXS® | 6mm - 20mm | Phoenix® Deep Feed, Corner Radius | 847 | 1128-1130 |
| 9576 |  | | Metric | 3 | Stub | Carbide | WXS® | 4mm - 16mm | Phoenix® Long Neck, Deep Feed, Corner Radius | 848 | 1128-1130 |
| 9580 |  | | Metric | 3 | Stub | Carbide | WXS® | 2mm - 12mm | Phoenix® Pencil Neck, Deep Feed, Corner Radius | 849-851 | 1128-1130 |
| 9570 |  | | Metric | 3 | Stub | Carbide | EXO® | 1mm - 20mm | Phoenix® High-Feed, Corner Radius | 852 | 1128-1130 |



| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-----------|--------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |

A Brand®

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|------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--|
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EXOPRO®















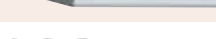

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|------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|--|-------------------------------------|--|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
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good best



| List | Item | Inch/ Metric | No. of Flutes | Length of Cut | Material | Coating | Size Range | Features | Product Page | Tech Page |
|------|------|-----------------|------------------|------------------|----------|---------|---------------|----------|-----------------|--------------|
|------|------|-----------------|------------------|------------------|----------|---------|---------------|----------|-----------------|--------------|

EXOCARB® WXL®

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|------|--|--------|---|---------|---------|------|--------------|--|---------|-----------|
| 3610 |  NEW SIZES | Inch | 2 | Regular | Carbide | WXL® | 1/32" - 1/2" | Ball End | 853 | 1135 |
| 3710 |  | Metric | 2 | Regular | Carbide | WXL® | 0.1mm - 20mm | Ball End | 854 | 1136 |
| 3670 |  NEW SIZES | Inch | 4 | Regular | Carbide | WXL® | 1/16" - 1" | Corner Radius | 855 | 1137 |
| 3604 |  NEW SIZES | Inch | 4 | Regular | Carbide | WXL® | 1/16" - 1" | | 856 | 1138 |
| 3690 |  | Inch | 2 | Regular | Carbide | WXL® | 1/64" - 1/4" | Ball End, Long Neck, ±5µm Radius Tolerance | 857 | 1139-1148 |
| 3790 |  | Metric | 2 | Regular | Carbide | WXL® | 0.1mm - 6mm | Ball End, Long Neck, ±5µm Radius Tolerance | 858-860 | 1139-1148 |
| 3619 |  NEW | Inch | 2 | Stub | Carbide | WXL® | 1/16" - 1/2" | | 861 | 1149 |
| 3620 |  | Inch | 2 | Stub | Carbide | WXL® | 1/16" - 3/4" | | 862 | 1150 |
| 3621 |  | Inch | 2 | Regular | Carbide | WXL® | 1/16" - 3/4" | | 863 | 1150 |
| 3704 |  | Metric | 4 | Regular | Carbide | WXL® | 1mm - 12mm | | 864 | 1151 |
| 3742 |  | Metric | 4 | Long | Carbide | WXL® | 3mm - 26mm | | 865 | 1152 |
| 3791 |  | Metric | 2 | Stub | Carbide | WXL® | 0.2mm - 5mm | Long Neck | 866-867 | 1154-1157 |
| 3711 |  | Metric | 2 | Stub | Carbide | WXL® | 1mm - 18mm | Ball End, Long Shank | 868 | 1153 |
| 3720 |  | Metric | 2 | Stub | Carbide | WXL® | 0.1mm - 6mm | | 869 | 1158-1159 |
| 3721 |  | Metric | 2 | Stub | Carbide | WXL® | 0.1mm - 20mm | | 870 | 1160-1161 |
| 3712 |  | Metric | 2 | Stub | Carbide | WXL® | 0.2mm - 6mm | Pencil Neck, Ball End | 871-876 | 1162-1169 |
| 3722 |  | Metric | 2 | Regular | Carbide | WXL® | 0.1mm - 20mm | | 877 | 1170-1171 |
| 3723 |  | Metric | 2 | Long | Carbide | WXL® | 0.2mm - 12mm | | 878 | 1172-1173 |
| 3770 |  | Metric | 2 | Regular | Carbide | WXL® | 0.6mm - 12mm | Corner Radius | 879 | 1174 |
| 3771 |  | Metric | 4 | Regular | Carbide | WXL® | 3mm - 12mm | Corner Radius | 880 | 1175 |
| 3794 |  | Metric | 4 | Stub | Carbide | WXL® | 1mm - 3mm | Long Neck | 881-882 | 1176-1177 |
| 4445 |  | Inch | 4 | Regular | Carbide | WXL® | 1/8" - 1/2" | High Helix, Corner Radius | 883 | 1178 |

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-----------|--------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |















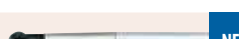

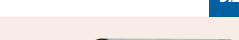

EXOCARB® WXL®

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| 3619 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3620 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3621 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
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| 3742 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
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| 3711 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
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| 3721 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3712 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3722 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
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| 4445 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |






good best

| List | Item | Inch/ Metric | No. of Flutes | Length of Cut | Material | Coating | Size Range | Features | Product Page | Tech Page |
|------|------|-----------------|------------------|------------------|----------|---------|---------------|----------|-----------------|--------------|
|------|------|-----------------|------------------|------------------|----------|---------|---------------|----------|-----------------|--------------|

EXOCARB® WXS®

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|------|--|--------|------|----------|---------|------|--------------|---|---------|-----------|
| 4410 |  | Inch | 2 | Stub | Carbide | WXS® | 1/32" - 1/2" | Ball End | 884 | 1179 |
| 4510 |  | Metric | 2 | Stub | Carbide | WXS® | 1mm - 12mm | Ball End | 885 | 1180 |
| 4440 |  | Inch | 4, 6 | Regular | Carbide | WXS® | 1/16" - 3/4" | | 886 | 1181 |
| 4540 |  NEW SIZES | Metric | 4, 6 | Regular | Carbide | WXS® | 1mm - 25mm | | 887 | 1182 |
| 4471 |  | Inch | 4 | Stub | Carbide | WXS® | 1/16" - 1/2" | Corner Radius | 888 | 1183 |
| 4571 |  | Metric | 4 | Stub | Carbide | WXS® | 3mm - 12mm | Corner Radius | 889 | 1184 |
| 4470 |  | Inch | 3, 4 | Stub | Carbide | WXS® | 1/8" - 1/2" | Corner Radius, High Feed | 890 | 1185 |
| 4570 |  | Metric | 3, 4 | Stub | Carbide | WXS® | 2mm - 13mm | Corner Radius, High Feed | 890 | 1186 |
| 4472 |  | Inch | 5 | Stub | Carbide | WXS® | 1/8" - 1/2" | Corner Radius, High Feed | 891 | 1187 |
| 4572 |  | Metric | 4, 5 | Stub | Carbide | WXS® | 2mm - 12mm | Corner Radius, High Feed | 892 | 1188 |
| 4592 |  | Metric | 2 | Stub | Carbide | WXS® | 0.4mm - 3mm | Corner Radius, Long Neck, ±5µm Radius Tolerance | 893-895 | 1189 |
| 4590 |  | Metric | 2 | Stub | Carbide | WXS® | 0.1mm - 6mm | Ball End, Long Neck, ±5µm Radius Tolerance | 896-898 | 1190-1192 |
| 4430 |  | Inch | 4 | Regular | Carbide | WXS® | 1/4" - 1/2" | Ball End, True 4 Flute | 899 | 1193 |
| 4530 |  | Metric | 4 | Regular | Carbide | WXS® | 6mm - 12mm | Ball End, True 4 Flute | 900 | 1194 |
| 4413 |  NEW | Inch | 2 | Regular | Carbide | WXS® | 1/16" - 1/2" | Ball End, Sphere Type | 901 | 1195 |
| 4513 |  NEW SIZES | Metric | 2 | Regular | Carbide | WXS® | 1mm - 12mm | Ball End, Sphere Type | 902 | 1196 |
| 4581 |  | Metric | 4 | Variable | Carbide | WXS® | 1mm - 2.5mm | Ball End, Tapered | 903 | 1197 |
| 4541 |  | Metric | 4, 6 | Regular | Carbide | WXS® | 3mm - 12mm | Corner Radius | 904 | 1198 |

EXOCARB® MAX

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|------|---|--------|---|---------|---------|------|--------------|----------------------|-----|-----------|
| 9010 |  | Inch | 2 | Stub | Carbide | WXS® | 1/32" - 1/2" | Ball End | 905 | 1199 |
| 9110 |  | Metric | 2 | Stub | Carbide | WXS® | 1mm - 10mm | Ball End | 905 | 1199 |
| 9011 |  | Inch | 2 | Stub | Carbide | WXS® | 1/32" - 3/8" | Ball End, Long Shank | 906 | 1199 |
| 9111 |  | Metric | 2 | Stub | Carbide | WXS® | 1mm - 10mm | Ball End, Long Shank | 906 | 1199 |
| 9140 |  | Metric | 6 | Regular | Carbide | WXS® | 3mm - 12mm | Square End | 907 | 1204-1205 |

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-----------|--------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |

EXOCARB® WXS®

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|------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--|--|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| 4410 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4510 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
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| 4540 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4471 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4571 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
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| 4472 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4572 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4592 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4590 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4430 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
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| 4513 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4581 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4541 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |






EXOCARB® MAX

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|------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--|--|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| 9010 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 9110 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 9011 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 9111 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 9140 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

good best





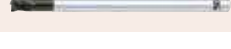
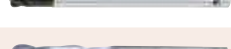

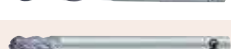

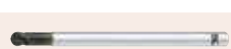
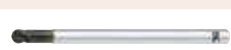





| List | Item | Inch/ Metric | No. of Flutes | Length of Cut | Material | Coating | Size Range | Features | Product Page | Tech Page |
|------|------|-----------------|------------------|------------------|----------|---------|---------------|----------|-----------------|--------------|
|------|------|-----------------|------------------|------------------|----------|---------|---------------|----------|-----------------|--------------|

EXOCARB® MAX

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|------|---|--------|---|---------|---------|--------|-------------|---------------------------------|-----|-----------|
| 9144 |  | Metric | 6 | Regular | Carbide | WXS® | 6mm - 12mm | Corner Radius | 907 | 1204-1205 |
| 9191 |  | Metric | 2 | Stub | CBN | Bright | 0.4mm - 3mm | CBN, Ball End | 908 | 1202 |
| 9192 |  | Metric | 2 | Stub | CBN | Bright | 0.4mm - 3mm | CBN, Super Long Neck, Ball Nose | 908 | 1203 |
| 9181 |  | Metric | 2 | Stub | CBN | Bright | 0.5mm - 3mm | CBN, Corner Radius | 909 | 1200 |
| 9182 |  | Metric | 2 | Stub | CBN | Bright | 0.5mm - 3mm | Long Neck, CBN, Corner Radius | 909 | 1201 |

| List | Item | Inch/ Metric | No. of Flutes | Length of Cut | Material | Coating | Size Range | Features | Product Page | Tech Page |
|------|------|-----------------|------------------|------------------|----------|---------|---------------|----------|-----------------|--------------|
|------|------|-----------------|------------------|------------------|----------|---------|---------------|----------|-----------------|--------------|

EXOCARB® Diamond

| | | | | | | | | | | |
|------|---|--------|------|---------|---------|---------|--------------|--------------------------------------|-----|-----------|
| 7020 |  | Inch | 2 | Stub | Carbide | Diamond | 1/64" - 1/2" | | 910 | 1206-1207 |
| 7120 |  | Metric | 2 | Regular | Carbide | Diamond | 1mm - 12mm | | 911 | 1206-1207 |
| 7040 |  | Inch | 4 | Stub | Carbide | Diamond | 1/16" - 1/2" | | 911 | 1206-1207 |
| 7041 |  | Inch | 4 | Long | Carbide | Diamond | 1/8" - 1/2" | | 912 | 1206-1207 |
| 7042 |  | Inch | 4 | Stub | Carbide | Diamond | 1/16" - 1/2" | Long Shank | 912 | 1206-1207 |
| 7072 |  | Inch | 4 | Stub | Carbide | Diamond | 1/8" - 1/2" | Long Shank, Corner Radius | 913 | 1206-1207 |
| 7010 |  | Inch | 2 | Regular | Carbide | Diamond | 1/32" - 1/2" | Ball End | 913 | 1206-1207 |
| 7110 |  | Metric | 2 | Regular | Carbide | Diamond | 1mm - 12mm | Ball End | 914 | 1206-1207 |
| 7030 |  | Inch | 4 | Regular | Carbide | Diamond | 1/32" - 1/2" | Ball End | 914 | 1206-1207 |
| 7031 |  | Inch | 4 | Long | Carbide | Diamond | 3/16" - 1/2" | Ball End | 915 | 1206-1207 |
| 7032 |  | Inch | 4 | Stub | Carbide | Diamond | 1/16" - 1/2" | Ball End, Long Shank | 915 | 1206-1207 |
| 7173 |  | Metric | 4 | Stub | Carbide | Diamond | 0.5mm - 12mm | Ball End, Long Shank | 916 | 1206-1207 |
| 7132 |  | Metric | 4 | Stub | Carbide | Diamond | 3mm - 12mm | Long Shank, Corner Radius | 917 | 1206-1207 |
| 7140 |  | Metric | 4 | Regular | Carbide | Diamond | 1mm - 12mm | | 917 | 1206-1207 |
| 7230 |  | Inch | 2, 4 | Regular | Carbide | Diamond | 1/64" - 1/4" | High Precision, Ball End | 918 | 1208 |
| 7231 |  | Inch | 2, 4 | Regular | Carbide | Diamond | 1/64" - 1/4" | High Precision, Ball End, Long Reach | 918 | 1208 |

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|-----------|---------|--------------|----------|-----------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |

EXOCARB® MAX

| | | | | | | | | | | | | | | | | | |
|------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--|--|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| 9144 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 9191 | | | | | | | | | | | | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 9192 | | | | | | | | | | | | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 9181 | | | | | | | | | | | | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 9182 | | | | | | | | | | | | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

good best

| List No. | P | | | | | M | | | K | N | | S | | Other | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|-----------------|---------------|--------------|----------|-------|---------------|----------|---------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum Alloys | Copper Alloys | Nickel Alloy | Titanium | Mg | Brass, Bronze | Graphite | Cobalt-Chrome |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | | | | | | | | |

EXOCARB® Diamond

| | | | | | | | | | | | | | | | | | |
|------|--|--|--|--|--|--|--|--|--|-------------------------------------|-------------------------------------|--|--|--|--|-------------------------------------|--|
| 7020 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | |
| 7120 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | |
| 7040 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | |
| 7041 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | |
| 7042 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | |
| 7072 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | |
| 7010 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | |
| 7110 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | |
| 7030 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | |
| 7031 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | |
| 7032 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | |
| 7173 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | |
| 7132 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | |
| 7140 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | |
| 7230 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | |
| 7231 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | |

good best

| List | Item | Inch/Metric | No. of Flutes | Length of Cut | Material | Coating | Size Range | Features | Product Page | Tech Page |
|------|------|-------------|---------------|---------------|----------|---------|------------|----------|--------------|-----------|
|------|------|-------------|---------------|---------------|----------|---------|------------|----------|--------------|-----------|

EXOCARB® AERO

| | | | | | | | | | | |
|------|---|--------|-----|----------|---------|--------|---------------|---|---------|-----------|
| 2050 |  | Inch | 4 | Variable | Carbide | EXO® | 1/8" - 1" | UVX, Square End, for Exotics | 919 | 1209 |
| 2052 |  | Inch | 4 | Variable | Carbide | EXO® | 1/8" - 1" | UVX, Corner Radius, for Exotics | 920 | 1209 |
| 3815 |  | Inch | 4 | Regular | Carbide | WXL® | 1/4" - 1" | UVX Silent Rougher, Low Helix, Corner Chamfer | 921 | 1210-1211 |
| 3820 |  | Inch | 4 | Regular | Carbide | WXL® | 1/4" - 1" | UVX Silent Rougher, High Helix, Corner Chamfer | 921 | 1210-1211 |
| 3915 |  | Metric | 4 | Regular | Carbide | WXL® | 6mm - 25mm | UVX Silent Rougher, Low Helix, Corner Chamfer | 922 | 1210-1211 |
| 3920 |  | Metric | 4 | Regular | Carbide | WXL® | 6mm - 25mm | UVX Silent Rougher, High Helix, Corner Chamfer | 922 | 1210-1211 |
| 3825 |  | Inch | 4 | Regular | Carbide | WXL® | 1/4" - 1" | UVX Silent Rougher, Low Helix, Long Neck, Corner Chamfer | 923 | 1210-1211 |
| 3830 |  | Inch | 4 | Regular | Carbide | WXL® | 1/4" - 1" | UVX Silent Rougher, High Helix, Long Neck, Corner Chamfer | 923 | 1210-1211 |
| 2015 |  | Inch | 4 | Regular | Carbide | TiAlN | 1/4" - 1" | Rougher, for Exotics | 924 | 1212 |
| 2100 |  | Inch | 5 | Multiple | Carbide | EXO® | 1/2" - 1-1/4" | UVX-Ti | 925 | 1213 |
| 2106 |  | Inch | 5 | Multiple | Carbide | EXO® | 1/2" - 1-1/4" | UVX-Ti, Corner Radius | 926-927 | 1213 |
| 2104 |  | Metric | 5 | Regular | Carbide | EXO® | 12mm - 25mm | UVX-Ti, Reduced Neck | 928 | 1214 |
| 2102 |  | Inch | 5 | Regular | Carbide | EXO® | 1/2" - 1-1/4" | UVX-Ti, Reduced Neck | 928 | 1213 |
| 2108 |  | Inch | 5 | Regular | Carbide | EXO® | 1/2" - 1-1/4" | UVX-Ti, Reduced Neck, Corner Radius | 929 | 1213 |
| 2110 |  | Metric | 5 | Regular | Carbide | EXO® | 12mm - 20mm | UVX-Ti, Reduced Neck, Corner Radius | 930 | 1214 |
| 2080 |  | Inch | 6,8 | Regular | Carbide | Bright | 5/8" - 1" | HFC-Ti, High Feed Radius Cutter for Titanium | 931 | 1215 |
| 2081 |  | Metric | 6,8 | Regular | Carbide | Bright | 16mm - 25mm | HFC-Ti, High Feed Radius Cutter for Titanium | 931 | 1215 |
| 2863 |  | Inch | 2 | Stub | Carbide | DLC | 1/2" - 1" | AERO-DLC, Corner Radius | 932 | 1216 |
| 2963 |  | Metric | 2 | Stub | Carbide | DLC | 12mm - 25mm | AERO-DLC, Corner Radius | 933 | 1216 |
| 2873 |  | Inch | 3 | Stub | Carbide | DLC | 1/2" - 1" | AERO-DLC, Corner Radius/Square | 934 | 1217 |
| 2973 |  | Metric | 3 | Stub | Carbide | DLC | 12mm - 25mm | AERO-DLC, Corner Radius/Square | 935 | 1217 |
| 2874 |  | Inch | 3 | Stub | Carbide | DLC | 5/8" - 1" | AERO-DLC, Coolant-Through, Corner Radius/Square | 936 | 1217 |
| 2974 |  | Metric | 3 | Stub | Carbide | DLC | 20mm - 25mm | AERO-DLC, Coolant-Through, Corner Radius/Square | 937 | 1218 |

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-----------|--------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |





EXOCARB® AERO

| | | | | | | | | | | | | | | | | | |
|------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--|--|
| 2050 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 2052 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 3815 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| 3820 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 3915 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| 3920 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 3825 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| 3830 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 2015 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 2100 | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | | | | |
| 2106 | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | | | | |
| 2104 | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | | | | |
| 2102 | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | | | | |
| 2108 | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | | | | |
| 2110 | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | | | | |
| 2080 | | | | | | | | | | | | | <input checked="" type="checkbox"/> | | | | |
| 2081 | | | | | | | | | | | | | <input checked="" type="checkbox"/> | | | | |
| 2863 | | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | |
| 2963 | | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | |
| 2873 | | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | |
| 2973 | | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | |
| 2874 | | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | |
| 2974 | | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | |

good best











| List | Item | Inch/Metric | No. of Flutes | Length of Cut | Material | Coating | Size Range | Features | Product Page | Tech Page |
|------|------|-------------|---------------|---------------|----------|---------|------------|----------|--------------|-----------|
|------|------|-------------|---------------|---------------|----------|---------|------------|----------|--------------|-----------|

EXOCARB® AERO

| | | | | | | | | | | |
|------|---|--------|---|------------|---------|-----|-------------|---|-----|------|
| 2843 |  | Inch | 3 | Long | Carbide | DLC | 1/2" - 1" | AERO-DLC, Long Length, Corner Radius/Square | 938 | 1218 |
| 2943 |  | Metric | 3 | Long | Carbide | DLC | 12mm - 20mm | AERO-DLC, Long Length, Corner Radius/Square | 939 | 1218 |
| 2853 |  | Inch | 3 | Extra Long | Carbide | DLC | 3/4" | AERO-DLC, Extra Long Length, Corner Radius/Square | 940 | 1219 |
| 2953 |  | Metric | 3 | Extra Long | Carbide | DLC | 20mm | AERO-DLC, Extra Long Length, Corner Radius/Square | 941 | 1219 |

| List | Item | Inch/Metric | No. of Flutes | Length of Cut | Material | Coating | Size Range | Features | Product Page | Tech Page |
|------|------|-------------|---------------|---------------|----------|---------|------------|----------|--------------|-----------|
|------|------|-------------|---------------|---------------|----------|---------|------------|----------|--------------|-----------|

EXOCARB® AERO

| | | | | | | | | | | |
|------|---|--------|---|---------|---------|--------|------------|---|-----|------|
| 2021 |  | Inch | 2 | Stub | Carbide | Bright | 1/8" - 1" | BLIZZARD® Square & Corner Radius | 942 | 1220 |
| 2022 |  | Inch | 2 | Regular | Carbide | Bright | 1/8" - 1" | BLIZZARD® Square & Corner Radius | 943 | 1220 |
| 2023 |  | Inch | 2 | Regular | Carbide | Bright | 1/4" - 1" | BLIZZARD®, Reduced Neck, Square & Corner Radius | 944 | 1220 |
| 2024 |  | Inch | 2 | Long | Carbide | Bright | 1/4" - 1" | BLIZZARD®, Reduced Neck, Square & Corner Radius | 945 | 1220 |
| 2041 |  | Inch | 3 | Stub | Carbide | Bright | 1/8" - 1" | BLIZZARD® Square & Corner Radius | 946 | 1221 |
| 2042 |  | Inch | 3 | Regular | Carbide | Bright | 1/8" - 1" | BLIZZARD® Square & Corner Radius | 947 | 1222 |
| 2043 |  | Inch | 3 | Regular | Carbide | Bright | 1/4" - 1" | BLIZZARD®, Reduced Neck, Square & Corner Radius | 948 | 1222 |
| 2048 |  | Inch | 3 | Long | Carbide | Bright | 1/4" - 1" | BLIZZARD®, Reduced Neck, Square & Corner Radius | 949 | 1222 |
| 2010 |  | Inch | 2 | Regular | Carbide | Bright | 1/8" - 1" | BLIZZARD®, Ball End | 950 | 1223 |
| 8120 |  | Metric | 2 | Regular | Carbide | Bright | 1mm - 16mm | | 951 | 1224 |

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-----------|--------------|---------|-------------------------|-------------------------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |

EXOCARB® AERO

| | | | | | | | | | | | | | | | | | |
|------|--|--|--|--|--|--|--|--|--|--------------------------|--------------------------|--|--|--|--|--|--|
| 2843 | | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 2943 | | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 2853 | | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 2953 | | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |

good best

| List No. | P | | | | | M | | | K | N | | S | | Other | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-----------|-----------------|---------------|-------------------------|-------------------------------|-------|---------------|----------|---------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum Alloys | Copper Alloys | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Mg | Brass, Bronze | Graphite | Cobalt-Chrome |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | | | | | | | | |









EXOCARB® AERO

| | | | | | | | | | | | | | | | | | |
|------|--|--|--|--|--|--|--|--|--|--------------------------|--------------------------|--|--|--|--|--|--|
| 2021 | | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 2022 | | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 2023 | | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 2024 | | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 2041 | | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 2042 | | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 2043 | | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 2048 | | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 2010 | | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 8120 | | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |

good best









| List | Item | Brand/Series | Inch/Metric | Material | Coating | Size Range | Features | Page | Tech Page |
|------|------|--------------|-------------|----------|---------|------------|----------|------|-----------|
|------|------|--------------|-------------|----------|---------|------------|----------|------|-----------|

Composite Routers

| | | | | | | | | | |
|------|---|------------------------|------|---------|---------|---------------|-------------------------------|-----|------|
| 2061 |  | EXOPRO® AERO-BNC | Inch | Carbide | Diamond | 1/8" - 1/2" | Nick Router | 952 | 1225 |
| 2066 |  | EXOPRO® AERO-HBC | Inch | Carbide | Diamond | 1/8" - 1/2" | Compression Router, 30° Helix | 953 | 1225 |
| 2064 |  | EXOPRO® AERO-HBC 45 | Inch | Carbide | Diamond | 1/4" - 1/2" | Compression Router, 45° Helix | 954 | 1225 |
| 2068 |  | EXOPRO® AERO-HBC 60 | Inch | Carbide | Diamond | 1/4" - 1/2" | Compression Router, 60° Helix | 955 | 1226 |
| 2680 |  | EXOPRO® AERO-REC | Inch | Carbide | Diamond | 15/64" - 1/2" | Rougher Router | 956 | 1227 |
| 2650 |  | EXOPRO® AERO-MFR | Inch | Carbide | Diamond | 1/4" - 1/2" | Finishing Router | 957 | 1228 |
| 668 |  | AERO-HBC 60 | Inch | Carbide | Bright | 1/4" - 1/2" | Compression Router, 60° Helix | 958 | 1226 |
| 641R |  | AERO-HFR | Inch | Carbide | Bright | 3/16" - 1/2" | Hand Router | 959 | 1229 |

| List | Item | Inch/Metric | No. of Flutes | Length of Cut | Material | Coating | Size Range | Features | Product Page | Tech Page |
|------|------|-------------|---------------|---------------|----------|---------|------------|----------|--------------|-----------|
|------|------|-------------|---------------|---------------|----------|---------|------------|----------|--------------|-----------|

HY-PRO® CARB V_G_K (Variable Geometry)

| | | | | | | | | | | |
|---------|---|------|---|----------|---------|-------|---------------|--|---------|------|
| VG441 |  | Inch | 4 | Multiple | Carbide | TiAlN | 1/8" - 1" | Square End | 960 | 1230 |
| VG434 |  | Inch | 4 | Multiple | Carbide | TiAlN | 1/8" - 1" | Corner Radius | 961 | 1230 |
| VG436 |  | Inch | 4 | Multiple | Carbide | TiAlN | 1/8" - 1" | Corner Chamfer | 962 | 1230 |
| VG446 |  | Inch | 4 | Multiple | Carbide | TiAlN | 1/4" - 1" | Red. Neck, Corner Radius/ Corner Chamfer | 963 | 1231 |
| VG464 |  | Inch | 4 | Multiple | Carbide | TiAlN | 1/4" - 1" | Extended Length, Square End/ Corner Chamfer | 964 | 1231 |
| VG441BN |  | Inch | 4 | Multiple | Carbide | TiAlN | 1/8" - 1-1/4" | Ball Nose | 965 | 1232 |
| VG541 |  | Inch | 5 | Multiple | Carbide | TiAlN | 1/8" - 1" | Square End | 966 | 1233 |
| VG534 |  | Inch | 5 | Multiple | Carbide | TiAlN | 3/16" - 1" | Corner Radius | 967-968 | 1233 |

| List No. | Carbon Fiber (CFRP) | Glass Fiber (GFRP) | Aramid Fiber (AFRP) | Honeycomb | | | | | Carbon/Carbon | Carbon Fiber/Aluminum Stack | Carbon Fiber/Titanium Stack | Carbon Fiber/CRES Stack |
|----------|---------------------|--------------------|---------------------|------------|------------|------|---------|-------|---------------|-----------------------------|-----------------------------|-------------------------|
| | | | | CFRP/Nomex | GFRP/Nomex | AFRP | CFRP/Al | Al/Al | | | | |

Composite Routers

| | | | | | | | | | | | | |
|------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--|--|--|
| 2061 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| 2066 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| 2064 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| 2068 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | |
| 2680 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| 2650 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| 668 | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | |
| 641R | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | |

Good Best

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|-----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |












HY-PRO® CARB V_G_x (Variable Geometry)

| | | | | | | | | | | | | | | | | | |
|---------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--|--|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--|
| VG441 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| VG434 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| VG436 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| VG446 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| VG464 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| VG441BN | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| VG541 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| VG534 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |








good best

| List | Item | Inch/Metric | No. of Flutes | Length of Cut | Material | Coating | Size Range | Features | Product Page | Tech Page |
|------|------|-------------|---------------|---------------|----------|---------|------------|----------|--------------|-----------|
|------|------|-------------|---------------|---------------|----------|---------|------------|----------|--------------|-----------|

HY-PRO® CARB Square End

| | | | | | | | | | | |
|-------|--|-------------|---------|--|---------|-------|-------------------------------|-------------------------------------|---------|-----------|
| HP421 |  | Inch/Metric | 2 | | Carbide | TiAlN | 3/64" - 1", 3mm-25mm | | 969-970 | 1234-1238 |
| HP441 |  | Inch/Metric | 4 | | Carbide | TiAlN | 3/64" - 1", 3mm-25mm | | 969-970 | 1234-1238 |
| HP460 |  | Inch/Metric | 3 | | Carbide | TiAlN | 1/8" - 1", 3mm-25mm | High Helix | 971 | 1239-1240 |
| HP450 |  | Inch/Metric | 4, 6, 8 | | Carbide | TiAlN | 1/8" - 1", 3mm-25mm | | 972 | 1241 |
| HP453 |  | Metric | 4 | | Carbide | TiAlN | 4mm - 20mm | Super Tough Mills | 973 | 1243 |
| HP456 |  | Metric | 4 | | Carbide | TiAlN | 6mm - 12mm | Super Tough Mills, Corner Radius | 973 | 1243 |
| HP451 |  | Inch/Metric | 4 | | Carbide | TiAlN | 1/8" - 1", 4mm-20mm | Super Tough Mills | 974 | 1242-1243 |
| HP400 |  | Inch/Metric | 4 | | Carbide | TiAlN | 1/4" - 1", 3mm-25mm | Rougher | 975 | 1244-1245 |
| HP410 |  | Inch/Metric | 2 | | Carbide | TiAlN | 1/32" - 3/16", 0.5mm-2.5mm | Short Length, Long Neck | 976-977 | 1246 |
| HP411 |  | Inch/Metric | 4 | | Carbide | TiAlN | 1/8" - 1/4", 3mm - 6mm | Short Length, Long Neck | 978 | 1247 |
| HP455 |  | Inch/Metric | 5 | | Carbide | TiAlN | 1/8" - 1", 3mm-25mm | Corner Protection | 979 | 1248 |

HY-PRO® CARB Ball End

| | | | | | | | | | | |
|---------|---|-------------|---|--|---------|-------|-----------------------------|-----------------------|---------|-----------|
| HP421BN |  | Inch/Metric | 2 | | Carbide | TiAlN | 3/64" - 1", 1mm-20mm | Ball End | 980-981 | 1249-1250 |
| HP441BN |  | Inch/Metric | 4 | | Carbide | TiAlN | 3/64" - 1", 1mm-20mm | Ball End | 980-981 | 1249-1250 |
| HP416 |  | Inch/Metric | 2 | | Carbide | TiAlN | 1/32" - 1/2", 1mm-25mm | Ball End | 982 | 1251-1252 |
| HP418 |  | Inch/Metric | 2 | | Carbide | TiAlN | 3/32" - 3/8", 1mm-12mm | Ball End, Pencil Neck | 983 | 1253-1254 |
| HP419 |  | Inch/Metric | 2 | | Carbide | TiAlN | 1/32" - 3/16", 0.5mm-6mm | Ball End, Long Neck | 984 | 1255-1256 |
| HP419L |  | Metric | 2 | | Carbide | TiAlN | 0.6mm - 3mm | Ball End, Long Neck | 985 | 1255-1256 |
| HP413 |  | Inch/Metric | 2 | | Carbide | TiAlN | 1/32" - 3/16", 1mm-6mm | Ball End | 986 | 1255-1256 |

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------|--------------|------|--------------|------------|------------------|-----|---------|-----------|-----------|---------|--------------|----------|-----------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| | 1010 1018 | 1035 1045 | 1065 | 4140 4340 | | | | | | | | | | | | | |

HY-PRO® CARB Square End

| | | | | | | | | | | | | | | | | | |
|-------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|--|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--|
| HP421 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| HP441 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| HP460 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| HP450 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| HP453 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| HP456 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| HP451 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| HP400 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| HP410 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| HP411 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | |
| HP455 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

HY-PRO® CARB Ball End





| | | | | | | | | | | | | | | | | | |
|---------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|
| HP421BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| HP441BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| HP416 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| HP418 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| HP419 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | |
| HP419L | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | |
| HP413 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | |

good best





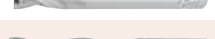


| List | Item | Inch/ Metric | No. of Flutes | Length of Cut | Material | Coating | Size Range | Features | Product Page | Tech Page |
|------|------|-----------------|------------------|------------------|----------|---------|---------------|----------|-----------------|--------------|
|------|------|-----------------|------------------|------------------|----------|---------|---------------|----------|-----------------|--------------|

HY-PRO® CARB Corner Radius

| | | | | | | | | | | |
|-------|---|-----------------|---|--|---------|-------|------------------------|---------------|-------------|---------------|
| HP432 |  | Inch/ Metric | 2 | | Carbide | TiAlN | 1/8" - 1", 3mm-12mm | Corner Radius | 987- 988 | 1257- 1260 |
| HP434 |  | Inch/ Metric | 4 | | Carbide | TiAlN | 1/8" - 1", 3mm-12mm | Corner Radius | 987- 988 | 1257- 1260 |
| HP433 |  | Metric | 2 | | Carbide | TiAlN | 3mm - 12mm | Corner Radius | 989 | 1257- 1260 |
| HP435 |  | Metric | 4 | | Carbide | TiAlN | 3mm - 12mm | Corner Radius | 990 | 1258- 1260 |

Square & Corner Radius

| | | | | | | | | | | |
|------|---|-----------------|----------|--|---------|-------------------------|---------------------------|----------------------------|---------------|---------------|
| 400 |  | Inch/ Metric | 4 | | Carbide | Bright* | 1/4" - 1", 6mm-25mm | Roughy Mills | 991 | 1272- 1273 |
| 415 |  | Inch | | | Carbide | Bright* | 1/8" - 1" | Toughy Mills, Standard Cut | 992 | - |
| 415C |  | Inch | | | Carbide | Bright* | 1/8" - 1" | Toughy Mills, Coarse Cut | 992 | - |
| 402 |  | Inch/ Metric | 2 | | Carbide | TiAlN, TiCN, Bright* | 1/32" - 1", 5mm-25mm | General Purpose | 993- 995 | 1261- 1267 |
| 403 |  | Inch/ Metric | 3 | | Carbide | TiAlN, Bright* | 1/32" - 1", 5mm-25mm | General Purpose | 993- 995 | 1261- 1267 |
| 404 |  | Inch/ Metric | 4 | | Carbide | TiAlN, Bright* | 1/32" - 1", 5mm-25mm | General Purpose | 993- 995 | 1261- 1267 |
| 408 |  | Inch | Multiple | | Carbide | Bright* | 1/8" - 1" | Slow Spiral | 996 | 1265- 1267 |
| 409 |  | Inch | 4 | | Carbide | Bright* | 1/16" - 1" | Slow Spiral | 996 | 1265- 1267 |
| 452 |  | Inch | 2 | | Carbide | TiAlN, Bright* | 1/16" - 1" | Plus Tolerance | 997 | 1261- 1267 |
| 454 |  | Inch | 4 | | Carbide | Bright* | 1/16" - 1" | Plus Tolerance | 997 | 1261- 1267 |
| 412 |  | Inch/ Metric | 2 | | Carbide | Bright* | 1/32" - 3/4", 1mm-12mm | Stub Length | 998- 999 | 1261- 1267 |
| 414 |  | Inch/ Metric | 4 | | Carbide | TiAlN, Bright* | 1/32" - 3/4", 1mm-12mm | Stub Length | 998- 999 | 1261- 1267 |
| 462 |  | Inch/ Metric | 2 | | Carbide | TiCN, TiAlN, Bright* | 1/8" - 1", 3mm-25mm | Long Length | 1000- 1001 | 1261- 1267 |
| 464 |  | Inch/ Metric | 4 | | Carbide | TiCN, TiAlN, Bright* | 1/8" - 1", 3mm-25mm | Long Length | 1000- 1001 | 1261- 1267 |
| 482 |  | Inch/ Metric | 2 | | Carbide | TiCN, TiAlN, Bright* | 1/8" - 1", 3mm-25mm | Extra-Long Length | 1002- 1003 | 1261- 1267 |
| 484 |  | Inch/ Metric | 4 | | Carbide | TiCN, TiAlN, Bright* | 1/8" - 1", 3mm-25mm | Extra-Long Length | 1002- 1003 | 1261- 1267 |

* Other coatings are available on request.



| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-----------|--------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |

HY-PRO® CARB Corner Radius

| | | | | | | | | | | | | | | | | | |
|-------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|
| HP432 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| HP434 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| HP433 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| HP435 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

Square & Corner Radius

| | | | | | | | | | | | | | | | | | |
|------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|--|--------------------------|--------------------------|--------------------------|--------------------------|
| 400 | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 415 | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 415C | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 402 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 403 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 404 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 408 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 409 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 452 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 454 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 412 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 414 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 462 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 464 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 482 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | | | |
| 484 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | | |

good best



| List | Item | Inch/Metric | No. of Flutes | Length of Cut | Material | Coating | Size Range | Features | Product Page | Tech Page |
|------|------|-------------|---------------|---------------|----------|---------|------------|----------|--------------|-----------|
|------|------|-------------|---------------|---------------|----------|---------|------------|----------|--------------|-----------|

Square & Corner Radius

| | | | | | | | | | | |
|-----|--|------|---|--|---------|----------------|-----------|---------------|------|-----------|
| 495 | | Inch | 2 | | Carbide | Bright* | 1/8" - 1" | Corner Radius | 1004 | 1261-1267 |
| 496 | | Inch | 4 | | Carbide | TiALN, Bright* | 1/8" - 1" | Corner Radius | 1004 | 1261-1267 |

Square End

| | | | | | | | | | | |
|------|--|-------------|---|--|---------|----------------------|-----------------------|-------------------|------|-----------|
| 455C | | Inch | 5 | | Carbide | TiCN, TiALN, Bright* | 1/8" - 1" | Corner Protection | 1005 | 1265-1267 |
| 460C | | Inch/Metric | 3 | | Carbide | Bright* | 1/8" - 1", 6mm - 25mm | High Helix | 1006 | 1261-1264 |
| 445 | | Inch/Metric | 3 | | Carbide | Bright* | 1/16" - 1", 1mm-20mm | | 1007 | 1261-1264 |
| 461 | | Inch/Metric | 6 | | Carbide | TiALN, Bright* | 1/8" - 1", 3mm-25mm | | 1008 | 1265-1267 |
| 447 | | Inch | 4 | | Carbide | TiALN, Bright* | 1/16" - 1" | RHC/LHS | 1009 | 1265-1267 |
| 492 | | Inch | 2 | | Carbide | Bright* | 0.015" - 0.060" | Miniature | 1010 | 1274 |
| 494 | | Inch | 4 | | Carbide | Bright* | 0.015" - 0.060" | Miniature | 1010 | 1274 |

Ball End

| | | | | | | | | | | |
|-------|--|-------------|---|--|---------|----------------------|--------------------------|-----------------------------|-----------|-----------|
| 402BN | | Inch/Metric | 2 | | Carbide | TiAIN, Bright* | 1/32" - 1", 0.5mm-25mm | Ball End | 1011-1013 | 1269-1271 |
| 403BN | | Inch/Metric | 3 | | Carbide | TiAIN, Bright* | 1/32" - 1", 0.5mm-25mm | Ball End | 1011-1013 | 1269-1271 |
| 404BN | | Inch/Metric | 4 | | Carbide | TiAIN, Bright* | 1/32" - 1", 0.5mm-25mm | Ball End | 1011-1013 | 1269-1271 |
| 452BN | | Inch | 2 | | Carbide | Bright* | 1/16" - 1" | Ball End, Plus Tolerance | 1014 | 1269 |
| 412BN | | Inch/Metric | 2 | | Carbide | TiALN, Bright* | 1/32" - 3/4", 1mm - 12mm | Ball End, Stub Length | 1015-1016 | 1269-1271 |
| 414BN | | Inch/Metric | 4 | | Carbide | TiCN, TiALN, Bright* | 1/32" - 3/4", 1mm - 12mm | Ball End, Stub Length | 1015-1016 | 1269-1271 |
| 462BN | | Inch/Metric | 2 | | Carbide | TiCN, Bright* | 1/8" - 1", 3mm-25mm | Ball End, Long Length | 1017 | 1269-1271 |
| 464BN | | Inch/Metric | 4 | | Carbide | TiCN, TiALN, Bright* | 1/8" - 1", 3mm-25mm | Ball End, Long Length | 1017 | 1269-1271 |
| 482BN | | Inch/Metric | 2 | | Carbide | TiALN, Bright* | 1/8" - 1", 3mm-25mm | Ball End, Extra Long Length | 1018-1019 | 1269-1271 |
| 484BN | | Inch/Metric | 4 | | Carbide | TiALN, Bright* | 1/8" - 1", 3mm-25mm | Ball End, Extra Long Length | 1018-1019 | 1269-1271 |
| 497 | | Inch/Metric | 2 | | Carbide | Bright* | 1/8" - 1", 3mm-20mm | Ball End, Long Shank | 1020 | 1268 |

* Other coatings are available on request.



| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-----------|--------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1018 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |

Square & Corner Radius

| | | | | | | | | | | | | | | | | | |
|-----|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 495 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 496 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Square End

| | | | | | | | | | | | | | | | | | |
|------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 455C | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 460C | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 445 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 461 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 447 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 492 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 494 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |







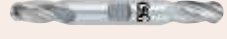



Ball End

| | | | | | | | | | | | | | | | | | |
|-------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 402BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 403BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 404BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 452BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 412BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 414BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 462BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 464BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 482BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 484BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 497 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

| List | Item | Inch/ Metric | No. of Flutes | Length of Cut | Material | Coating | Size Range | Features | Product Page | Tech Page |
|------|------|-----------------|------------------|------------------|----------|---------|---------------|----------|-----------------|--------------|
|------|------|-----------------|------------------|------------------|----------|---------|---------------|----------|-----------------|--------------|




Double End

| | | | | | | | | | | |
|-------|---|------|---|--|---------|-------------------|-----------------|-----------------------|------|---------------|
| 442 |  | Inch | 2 | | Carbide | TiALN, Bright* | 1/8" - 1/2" | | 1021 | 1261- 1267 |
| 444 |  | Inch | 4 | | Carbide | TiALN, Bright* | 1/8" - 1/2" | | 1021 | 1261- 1267 |
| 422 |  | Inch | 2 | | Carbide | TiALN, Bright* | 1/32" - 1/2" | Stub Length | 1022 | 1261- 1267 |
| 423 |  | Inch | 3 | | Carbide | TiALN, Bright* | 1/32" - 1/2" | Stub Length | 1022 | 1261- 1267 |
| 424 |  | Inch | 4 | | Carbide | TiALN, Bright* | 1/32" - 1/2" | Stub Length | 1022 | 1261- 1267 |
| 442BN |  | Inch | 2 | | Carbide | Bright* | 1/8" - 1/2" | Ball End | 1023 | 1269- 1271 |
| 444BN |  | Inch | 4 | | Carbide | TiALN, Bright* | 1/8" - 1/2" | Ball End | 1023 | 1269- 1271 |
| 422BN |  | Inch | 2 | | Carbide | TiALN, Bright* | 1/32" - 1/2" | Ball End, Stub Length | 1024 | 1269- 1271 |
| 423BN |  | Inch | 3 | | Carbide | Bright* | 1/32" - 1/2" | Ball End, Stub Length | 1024 | 1269- 1271 |
| 424BN |  | Inch | 4 | | Carbide | TiALN, Bright* | 1/32" - 1/2" | Ball End, Stub Length | 1024 | 1269- 1271 |

* Other coatings are available on request.

| List | Item | Inch/ Metric | Length of Cut | Material | Coating | Size Range | Features | Product Page |
|------|------|-----------------|------------------|----------|---------|---------------|----------|-----------------|
|------|------|-----------------|------------------|----------|---------|---------------|----------|-----------------|

Carbide Routers

| | | | | | | | | |
|-----|---|------|--|---------|--------|--------------|---------------------------------|------|
| 500 |  | Inch | | Carbide | Bright | 3/32" - 1/2" | 2 Flute, Straight | 1025 |
| 502 |  | Inch | | Carbide | Bright | 3/32" - 1/2" | 3 Flute, Straight | 1025 |
| 640 |  | Inch | | Carbide | Bright | 1/16" - 1/2" | Fiberglass Routers, Diamond Cut | 1026 |

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-----------|--------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |











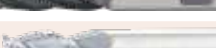
Double End

| | | | | | | | | | | | | | | | | | |
|-------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 442 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 444 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 422 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 423 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 424 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 442BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 444BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 422BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 423BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 424BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |




good best

| List | Item | Inch/Metric | No. of Flutes | Length of Cut | Material | Coating | Size Range | Features | Product Page | Tech Page |
|------|------|-------------|---------------|---------------|----------|---------|------------|----------|--------------|-----------|
|------|------|-------------|---------------|---------------|----------|---------|------------|----------|--------------|-----------|

SOMTA

| | | | | | | | | | | |
|--------|--|-----------------|---|---------|---------|--------|---------------------------|-----------------------------------|-----------|-----------|
| 04V-SO |  | NEW Inch/Metric | 4 | Stub | Carbide | TiALN | 3/16" - 3/4", 5mm-20mm | Variable Index | 1027 | 1275-1276 |
| 03V-SO |  | NEW Inch/Metric | 4 | Regular | Carbide | TiALN | 1/4" - 1", 5mm-20mm | Variable Index | 1028-1029 | 1275-1276 |
| 05V-SO |  | NEW Inch/Metric | 5 | Regular | Carbide | TiALN | 3/16" - 3/4", 5mm-20mm | Variable Index | 1030-1031 | 1277-1278 |
| 03A-SO |  | NEW Metric | 2 | Regular | Carbide | TiALN | 1mm - 20mm | Square | 1032 | 1279 |
| 03K-SO |  | NEW Metric | 4 | Regular | Carbide | TiALN | 1mm - 20mm | Square | 1033 | 1280 |
| 03M-SO |  | NEW Metric | 2 | Regular | Carbide | TiALN | 1mm - 20mm | Ball Nose | 1034 | 1279 |
| 03P-SO |  | NEW Metric | 4 | Regular | Carbide | TiALN | 1mm - 20mm | Ball Nose | 1035 | 1280 |
| 03E-SO |  | NEW Inch/Metric | 4 | Regular | Carbide | TiALN | 1/4" - 1", 6mm-20mm | Fine Pitch, Rougher | 1036 | 1281 |
| 03C-SO |  | NEW Inch | 3 | Regular | Carbide | Bright | 1/4" - 1" | Coarse Pitch, Rougher | 1037 | 1282 |
| 03F-SO |  | NEW Inch/Metric | 4 | Regular | Carbide | TiALN | 1/4" - 1", 6mm-20mm | Fine Pitch, Flat Crest, Rougher | 1038-1039 | 1283 |
| 03D-SO |  | NEW Inch | 3 | Regular | Carbide | TiALN | 1/4" - 1" | Coarse Pitch, Flat Crest, Rougher | 1040 | 1284 |

EXOMINI VC-10

| | | | | | | | | | | |
|-----|---|------|---|---------|-------|-----|---------------|--|------|-----------|
| 673 |  | Inch | 2 | Regular | VC-10 | TiN | 1/32" - 3/16" | | 1041 | 1297-1298 |
| 676 |  | Inch | 4 | Stub | VC-10 | TiN | 1/16" - 3/16" | | 1042 | 1299-1300 |
| 677 |  | Inch | 4 | Regular | VC-10 | TiN | 1/16" - 3/16" | | 1042 | 1299-1300 |

EXOMILL VC-10

| | | | | | | | | | | |
|-----|---|------|-----|---------|-------|---------|---------------|------------|------|-----------|
| 620 |  | Inch | 2 | Regular | VC-10 | Bright* | 1/8" - 1-1/2" | | 1043 | 1297-1298 |
| 621 |  | Inch | 2 | Regular | VC-10 | Bright* | 1/8" - 1-1/2" | Ball End | 1043 | 1301 |
| 641 |  | Inch | 4,6 | Regular | VC-10 | Bright* | 1/8" - 2" | | 1044 | 1299-1300 |
| 644 |  | Inch | 4,6 | Regular | VC-10 | Bright* | 3/8" - 1-1/2" | Ball End | 1045 | 1301 |
| 646 |  | Inch | 4,6 | Long | VC-10 | Bright* | 1/4" - 2" | | 1046 | 1299-1300 |
| 660 |  | Inch | 3,4 | Regular | VC-10 | Bright* | 1/4" - 1" | High Helix | 1046 | 1294 |

* Other coatings are available on request.

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-----------|--------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |

SOMTA

| | | | | | | | | | | | | | | | | | |
|--------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--|--|--|
| 04V-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |
| 03V-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |
| 05V-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |
| 03A-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| 03K-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| 03M-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| 03P-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| 03E-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |
| 03C-SO | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 03F-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | |
| 03D-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | |

EXOMINI VC-10

| | | | | | | | | | | | | | | | | | |
|-----|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--|--------------------------|-------------------------------------|--------------------------|--|--|
| 673 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 676 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 677 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |



EXOMILL VC-10

| | | | | | | | | | | | | | | | | | |
|-----|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--|--------------------------|-------------------------------------|--------------------------|--|--|
| 620 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 621 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 641 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 644 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 646 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 660 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | | | |











good best

| List | Item | Inch/ Metric | No. of Flutes | Length of Cut | Material | Coating | Size Range | Features | Product Page | Tech Page |
|------|------|-----------------|------------------|------------------|----------|---------|---------------|----------|-----------------|--------------|
|------|------|-----------------|------------------|------------------|----------|---------|---------------|----------|-----------------|--------------|









HY-PRO® V

| | | | | | | | | | | |
|-----|---|------|------|---------|------|------------------|-----------|--|------|---------------|
| 573 |  | Inch | 2 | Regular | HSSE | TiCN, Bright* | 1/8" - 1" | | 1047 | 1295 |
| 574 |  | Inch | 4, 6 | Regular | HSSE | TiCN, Bright* | 1/8" - 1" | | 1048 | 1295- 1296 |

Roughing End Mills

| | | | | | | | | | | |
|------|---|------|----------|---------------------------|--------|------------------|------------------|--|------|---------------|
| 690 |  | Inch | Multiple | Regular | HSSE | TiN | 1/4" - 2" | EXOTIN®, Non Center-Cutting | 1049 | 1293 |
| 450 |  | Inch | Multiple | Stub, Reg., Long | HSS-Co | TiCN, Bright* | 3/16" - 2" | Fine Pitch, Non Center- Cutting | 1050 | 1285 |
| 455 |  | Inch | Multiple | Stub, Reg., Long | HSS-Co | TiCN, TiAlN | 1/4" - 2" | Fine Pitch | 1051 | 1286 |
| 420 |  | Inch | 3, 4, 6 | Stub | HSS-Co | Bright* | 1/4" - 1-1/2" | Fine Pitch, Center Cutting | 1052 | 1285 |
| 460 |  | Inch | 4, 5, 6 | Regular, Long | HSS-Co | Bright* | 1/2" - 1-1/2" | Fine Pitch, Center Cutting | 1052 | 1291- 1292 |
| 410 |  | Inch | 3 | Stub | HSS-Co | Bright* | 1/2" - 1" | | 1053 | 1289 |
| 430E |  | Inch | 3 | Reg., Med., Long | HSS-Co | Bright* | 3/8" - 1-1/2" | | 1053 | 1288 |
| 490 |  | Inch | Multiple | Stub, Reg., Med., Long | HSS-Co | Bright* | 1/4" - 2" | General Purpose, Non Center-Cutting | 1054 | 1289 |
| 440 |  | Inch | 4, 6, 8 | Reg., Long | HSS-Co | Bright* | 1/2" - 2" | Ball End, General Purpose | 1055 | 1287 |
| 470 |  | Inch | Multiple | Stub, Reg., Long | HSS-Co | Bright* | 1/4" - 2" | Rough & Finish | 1056 | 1290 |

Single End Mills

| | | | | | | | | | | |
|-----|---|--------|---|---------|--------|-----------------|------------------|------------------------|------|---------------|
| 520 |  | Inch | 2 | Regular | HSS-Co | TiN, Bright* | 1/8" - 2" | | 1057 | 1297- 1298 |
| 580 |  | Metric | 2 | Regular | HSS-Co | Bright* | 3mm - 50mm | | 1058 | 1302 |
| 525 |  | Inch | 2 | Long | HSS-Co | Bright* | 3/8" - 2" | | 1059 | 1297- 1298 |
| 527 |  | Inch | 2 | Regular | HSS-Co | Bright* | 1/8" - 1-1/4" | Reduced Neck | 1059 | 1297- 1298 |
| 530 |  | Inch | 2 | Regular | HSS-Co | Bright* | 1/4" - 2" | High Helix | 1060 | 1297- 1298 |
| 535 |  | Inch | 2 | Long | HSS-Co | Bright* | 1/4" - 2" | High Helix | 1060 | 1297- 1298 |
| 521 |  | Inch | 2 | Regular | HSS-Co | Bright* | 1/8" - 1-1/2" | Ball End | 1061 | 1301 |
| 526 |  | Inch | 2 | Regular | HSS-Co | Bright* | 1/8" - 1" | Ball End, Reduced Neck | 1061 | 1301 |

* Other coatings are available on request.

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|-----------|---------|--------------|----------|-----------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |

HY-PRO® V

| | | | | | | | | | | | | | | | | | |
|-----|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--|-------------------------------------|-------------------------------------|-------------------------------------|--|--------------------------|--------------------------|--------------------------|--|--|
| 573 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 574 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |

Roughing End Mills

| | | | | | | | | | | | | | | | | | |
|------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--|--------------------------|-------------------------------------|--------------------------|--|--|
| 690 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 450 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 455 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 420 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 460 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 410 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| 430E | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 490 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| 440 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| 470 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | | | |













Single End Mills

| | | | | | | | | | | | | | | | | | |
|-----|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--|--------------------------|--------------------------|--------------------------|--|--|
| 520 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 580 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 525 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 527 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 530 | <input type="checkbox"/> | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 535 | <input type="checkbox"/> | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 521 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 526 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |







good best

| List | Item | Inch/ Metric | No. of Flutes | Length of Cut | Material | Coating | Size Range | Features | Product Page | Tech Page |
|------|------|-----------------|------------------|------------------|----------|---------|---------------|----------|-----------------|--------------|
|------|------|-----------------|------------------|------------------|----------|---------|---------------|----------|-----------------|--------------|

Single End Multiple Flute

| | | | | | | | | | | |
|-----|---|--------|---------|------------|--------|------------------------------|---------------|--------------------|------|---------------|
| 531 |  | Inch | 3 | Regular | HSS-Co | Bright* | 1/8" - 2" | | 1062 | 1304 |
| 581 |  | Metric | 4, 6 | Regular | HSS-Co | Bright* | 3mm - 45mm | Non Center-Cutting | 1063 | 1303 |
| 536 |  | Inch | 3 | Long | HSS-Co | Bright* | 1/4" - 2" | | 1064 | 1304 |
| 541 |  | Inch | 4, 6 | Regular | HSS-Co | TiCN, TiN, TiAlN, Bright* | 1/8" - 2" | | 1065 | 1299- 1300 |
| 548 |  | Inch | 4 | Medium | HSS-Co | TiCN, Bright* | 5/8" - 1-1/2" | | 1066 | 1299- 1300 |
| 546 |  | Inch | 4, 6 | Long | HSS-Co | TiCN, Bright* | 1/4" - 2" | | 1066 | 1299- 1300 |
| 558 |  | Inch | 4, 6 | Extra Long | HSS-Co | TiCN, Bright* | 1/4" - 2" | | 1067 | 1299- 1300 |
| 544 |  | Inch | 4 | Regular | HSS-Co | Bright* | 3/8" - 1-1/2" | Ball End | 1068 | 1301 |
| 540 |  | Inch | 4, 6, 8 | Regular | HSS-Co | TiN, Bright* | 1/8" - 2" | Non Center-Cutting | 1069 | 1299- 1300 |
| 547 |  | Inch | 4, 6, 8 | Medium | HSS-Co | Bright* | 1" - 2" | Non Center-Cutting | 1070 | 1299- 1300 |
| 545 |  | Inch | 4, 6, 8 | Long | HSS-Co | Bright* | 1/4" - 2" | Non Center-Cutting | 1070 | 1299- 1300 |
| 557 |  | Inch | 4, 6 | Extra Long | HSS-Co | Bright* | 1/4" - 2" | Non Center-Cutting | 1071 | 1299- 1300 |

Single End Tapered

| | | | | | | | | | | |
|-----|---|------|---|---------------------------|--------|---------|--------------|--------------------|------|------|
| 591 |  | Inch | 3 | Reg., Long, Extra Long | HSS-Co | Bright* | 1/16" - 5/8" | 1° Taper per Side | 1072 | 1305 |
| 593 |  | Inch | 3 | Reg., Long, Extra Long | HSS-Co | Bright* | 1/16" - 5/8" | 2° Taper per Side | 1072 | 1306 |
| 594 |  | Inch | 3 | Reg., Long, Extra Long | HSS-Co | Bright* | 3/32" - 1/2" | 3° Taper per Side | 1073 | 1306 |
| 595 |  | Inch | 3 | Reg., Long, Extra Long | HSS-Co | Bright* | 3/32" - 1/2" | 5° Taper per Side | 1074 | 1307 |
| 596 |  | Inch | 3 | Regular, Long | HSS-Co | Bright* | 5/64" - 1/2" | 7° Taper per Side | 1075 | 1307 |
| 597 |  | Inch | 3 | Regular, Long | HSS-Co | Bright* | 3/32" - 1/4" | 10° Taper per Side | 1075 | 1308 |

* Other coatings are available on request.

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-----------|--------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |

Single End Multiple Flute

| | | | | | | | | | | | | | | | | | |
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Single End Tapered

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| 597 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |




good best

| List | Item | Inch/ Metric | No. of Flutes | Length of Cut | Material | Coating | Size Range | Features | Product Page | Tech Page |
|------|------|-----------------|------------------|------------------|----------|---------|---------------|----------|-----------------|--------------|
|------|------|-----------------|------------------|------------------|----------|---------|---------------|----------|-----------------|--------------|

Double End Mills

| | | | | | | | | | | |
|-----|---|--------|---|---------|--------|-----------------|------------------|-------------------------------|------|---------------|
| 522 |  | Inch | 2 | Regular | HSS-Co | TiN, Bright* | 1/8" - 1" | | 1076 | 1297- 1298 |
| 582 |  | Metric | 2 | Regular | HSS-Co | Bright* | 1mm - 25mm | | 1077 | 1302 |
| 532 |  | Inch | 3 | Regular | HSS-Co | Bright* | 1/8" - 1" | | 1078 | 1304 |
| 542 |  | Inch | 4 | Regular | HSS-Co | TiN, Bright* | 1/8" - 1" | Non Center-Cutting | 1079 | 1299- 1300 |
| 543 |  | Inch | 4 | Regular | HSS-Co | Bright* | 1/8" - 1" | | 1080 | 1299- 1300 |
| 523 |  | Inch | 2 | Regular | HSS-Co | Bright* | 1/8" - 1" | Ball End | 1080 | 1301 |
| 562 |  | Inch | 2 | Stub | HSS-Co | Bright* | 1/32" - 3/16" | Miniature | 1081 | - |
| 563 |  | Inch | 2 | Regular | HSS-Co | Bright* | 1/32" - 3/16" | Miniature | 1081 | - |
| 564 |  | Inch | 2 | Long | HSS-Co | Bright* | 1/16" - 3/16" | Miniature | 1082 | - |
| 566 |  | Inch | 4 | Stub | HSS-Co | Bright* | 1/16" - 3/16" | Miniature | 1082 | - |
| 567 |  | Inch | 4 | Regular | HSS-Co | Bright* | 1/16" - 3/16" | Miniature, Non Center-Cutting | 1083 | - |
| 568 |  | Inch | 4 | Long | HSS-Co | Bright* | 1/16" - 3/16" | Miniature, Non Center-Cutting | 1083 | - |
| 570 |  | Inch | 2 | Stub | HSS-Co | Bright* | 1/16" - 3/16" | Ball End, Miniature | 1084 | - |
| 571 |  | Inch | 2 | Regular | HSS-Co | Bright* | 1/16" - 3/16" | Ball End, Miniature | 1084 | - |

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|--------|---|----------------------|------|---------|---------|-------|---------------|-----------|------|------|
| 310-SO |  | NEW Metric | 2 | Regular | HSS-Co8 | TiALN | 2mm - 25mm | Square | 1085 | 1309 |
| 314-SO |  | NEW Metric | 4, 6 | Regular | HSS-Co8 | TiALN | 3mm - 25mm | Square | 1086 | 1310 |
| 312-SO |  | NEW Metric | 2 | Regular | HSS-Co8 | TiALN | 2mm - 25mm | Ball Nose | 1087 | 1309 |

* Other coatings are available on request.

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-----------|--------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |

Double End Mills

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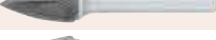











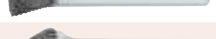

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| 312-S0 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best











| List No. | Item | Inch/ Metric | Material | Coating | Feature | Product Page |
|----------|------|-----------------|----------|---------|---------|-----------------|
|----------|------|-----------------|----------|---------|---------|-----------------|

Carbide Burs 1/4" Shank





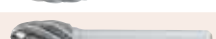


| | | | | | | |
|-----|---|-----------------|---------|--------|---|------|
| 801 |  | Inch, Metric | Carbide | Bright | Cylindrical, Medium Tough Cut | 1089 |
| 802 |  | Inch, Metric | Carbide | Bright | Cylindrical Ball End, Medium Tough Cut | 1089 |
| 803 |  | Inch, Metric | Carbide | Bright | Round Nose Tree, Medium Tough Cut | 1089 |
| 901 |  | Inch, Metric | Carbide | Bright | Cylindrical, Medium Right Hand Spiral | 1090 |
| 902 |  | Inch, Metric | Carbide | Bright | Cylindrical Ball End, Medium Right Hand Spiral | 1090 |
| 903 |  | Inch, Metric | Carbide | Bright | Round Nose Tree, Medium Right Hand Spiral | 1090 |
| 804 |  | Inch, Metric | Carbide | Bright | Pointed Tree, Medium Tough Cut | 1091 |
| 805 |  | Inch, Metric | Carbide | Bright | Pointed Cone, Medium Tough Cut | 1091 |
| 806 |  | Inch, Metric | Carbide | Bright | Egg Shape, Medium Tough Cut | 1091 |
| 904 |  | Inch, Metric | Carbide | Bright | Pointed Tree, Medium Right Hand Spiral | 1092 |
| 905 |  | Inch, Metric | Carbide | Bright | Pointed Cone, Medium Right Hand Spiral | 1092 |
| 906 |  | Inch, Metric | Carbide | Bright | Egg Shape, Medium Right Hand Spiral | 1092 |
| 807 |  | Inch, Metric | Carbide | Bright | 14° Included Angle, Medium Tough Cut | 1093 |
| 808 |  | Inch, Metric | Carbide | Bright | Ball Shape, Medium Tough Cut | 1093 |
| 849 |  | Inch, Metric | Carbide | Bright | 90° Cone, Medium Tough Cut | 1093 |
| 907 |  | Inch, Metric | Carbide | Bright | 14° Included Angle, Medium Right Hand Spiral | 1094 |
| 908 |  | Inch, Metric | Carbide | Bright | Ball Shape, Medium Right Hand Spiral | 1094 |
| 949 |  | Inch, Metric | Carbide | Bright | 90° Cone, Medium Right Hand Spiral | 1094 |
| 850 |  | Inch, Metric | Carbide | Bright | 60° Cone, Medium Tough Cut | 1095 |
| 851 |  | Inch, Metric | Carbide | Bright | Flame Shape, Medium Tough Cut | 1095 |
| 852 |  | Inch, Metric | Carbide | Bright | Inverted Taper, Medium Tough Cut | 1095 |
| 950 |  | Inch, Metric | Carbide | Bright | 60° Cone, Medium Right Hand Spiral | 1096 |
| 951 |  | Inch, Metric | Carbide | Bright | Flame Shape, Medium Right Hand Spiral | 1096 |
| 952 |  | Inch, Metric | Carbide | Bright | Inverted Taper, Medium Right Hand Spiral | 1096 |

| List No. | Item | Inch/ Metric | Material | Coating | Feature | Product Page |
|----------|------|-----------------|----------|---------|---------|-----------------|
|----------|------|-----------------|----------|---------|---------|-----------------|







Carbide Burs 6" Long Shank

| | | | | | | |
|-----|---|-----------------|---------|--------|---|------|
| 861 |  | Inch, Metric | Carbide | Bright | Cylindrical, Medium Tough Cut | 1097 |
| 862 |  | Inch, Metric | Carbide | Bright | Cylindrical Ball End, Medium Tough Cut | 1097 |
| 863 |  | Inch, Metric | Carbide | Bright | Round Nose Tree, Medium Tough Cut | 1097 |
| 961 |  | Inch, Metric | Carbide | Bright | Cylindrical, Medium Right Hand Spiral | 1098 |
| 962 |  | Inch, Metric | Carbide | Bright | Cylindrical Ball End, Medium Right Hand Spiral | 1098 |
| 963 |  | Inch, Metric | Carbide | Bright | Round Nose Tree, Medium Right Hand Spiral | 1098 |
| 867 |  | Inch, Metric | Carbide | Bright | 14° Included Angle, Medium Tough Cut | 1099 |
| 868 |  | Inch, Metric | Carbide | Bright | Ball Shape, Medium Tough Cut | 1099 |
| 967 |  | Inch, Metric | Carbide | Bright | 14° Included Angle, Medium Right Hand Spiral | 1100 |
| 968 |  | Inch, Metric | Carbide | Bright | Ball Shape, Medium Right Hand Spiral | 1100 |

Carbide Burs for Aluminum

| | | | | | | |
|-----|---|-----------------|---------|--------|------------------------------------|------|
| 881 |  | Inch, Metric | Carbide | Bright | Cylindrical, Aluminum Cut | 1101 |
| 882 |  | Inch, Metric | Carbide | Bright | Cylindrical Ball End, Aluminum Cut | 1101 |
| 883 |  | Inch, Metric | Carbide | Bright | Round Nose Tree, Aluminum Cut | 1101 |
| 885 |  | Inch, Metric | Carbide | Bright | Flame Shape, Aluminum Cut | 1102 |
| 886 |  | Inch, Metric | Carbide | Bright | Egg Shape, Aluminum Cut | 1102 |
| 887 |  | Inch, Metric | Carbide | Bright | 14° Included Angle, Aluminum Cut | 1102 |
| 888 |  | Inch, Metric | Carbide | Bright | Ball Shape, Aluminum Cut | 1102 |

Carbide Burs 1-1/2" OAL

| | | | | | | |
|-----|---|-----------------|---------|--------|--------------------------|-----------|
| 800 |  | Inch, Metric | Carbide | Bright | Tough Cut | 1103-1104 |
| 900 |  | Inch, Metric | Carbide | Bright | Medium Right Hand Spiral | 1105-1106 |
| 815 |  | Inch, Metric | Carbide | Bright | Tough Cut | 1107 |
| 915 |  | Inch, Metric | Carbide | Bright | Medium Right Hand Spiral | 1108 |
| 820 |  | Inch, Metric | Carbide | Bright | Tough Cut | 1109 |
| 920 |  | Inch, Metric | Carbide | Bright | Medium Right Hand Spiral | 1110 |



A Brand® AE-VMS

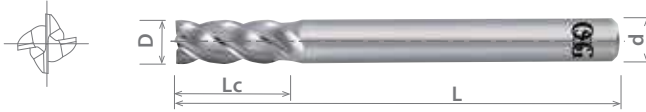
Advanced Performance Anti-Vibration Carbide End Mills

List 8200

AE-VMS, 4 Flute, Multiple Lengths

| | | | | | |
|------------------|---------------------------------|----------------|------------|--------------|-------------------|
| NEW SIZES | SPEED FEED P1112-1113 | CARBIDE | DUR | Var.° | SHRINK FIT |
|------------------|---------------------------------|----------------|------------|--------------|-------------------|

| Milling Diameter Tolerance | |
|----------------------------|------------|
| D < 1/2 | 0/-0.008" |
| D ≥ 1/2 | 0/-0.0012" |

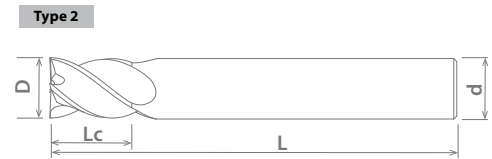
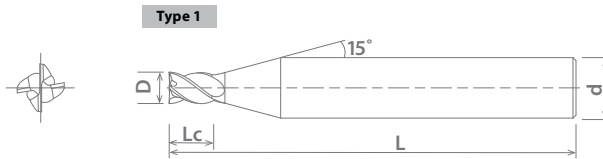


Units: Inch

| EDP Number | Mill Diameter | OAL | Length of Cut | Shank Diameter | Type |
|------------|---------------|-------|---------------|----------------|------|
| | D | | | | |
| 82004421 | 5/64 | 2 | 0.117 | 1/8 | 1 |
| 82004621 | 3/32 | 2 | 9/64 | 1/8 | 1 |
| 82004821 | 7/64 | 2 | 0.164 | 1/8 | 1 |
| 82005021 | 1/8 | 2 | 3/16 | 1/8 | 1 |
| 82005221 | 9/64 | 2 | 0.211 | 3/16 | 1 |
| 82005421 | 5/32 | 2 | 15/64 | 3/16 | 1 |
| 82000021 | 3/16 | 2 | 7/16 | 3/16 | 2 |
| 82000221 | 1/4 | 2-1/2 | 7/16 | 1/4 | 2 |
| 82000421 | 5/16 | 2-1/2 | 13/16 | 5/16 | 2 |
| 82000621 | 3/8 | 2-1/2 | 1/2 | 3/8 | 2 |
| 82000821 | 3/8 | 2-1/2 | 7/8 | 3/8 | 2 |
| 82001021 | 7/16 | 2-3/4 | 1 | 7/16 | 2 |

| EDP Number | Mill Diameter | OAL | Length of Cut | Shank Diameter | Type |
|------------|---------------|-------|---------------|----------------|------|
| | D | | | | |
| 82001221 | 1/2 | 2-1/2 | 5/8 | 1/2 | 2 |
| 82001421 | 1/2 | 3 | 1 | 1/2 | 2 |
| 82001621 | 1/2 | 3-1/2 | 1-1/4 | 1/2 | 2 |
| 82001821 | 5/8 | 3 | 3/4 | 5/8 | 2 |
| 82002021 | 5/8 | 3-1/2 | 1-1/4 | 5/8 | 2 |
| 82002221 | 5/8 | 5 | 1-5/8 | 5/8 | 2 |
| 82002421 | 3/4 | 3-1/2 | 7/8 | 3/4 | 2 |
| 82002621 | 3/4 | 4 | 1-1/2 | 3/4 | 2 |
| 82002821 | 3/4 | 4 | 1-5/8 | 3/4 | 2 |
| 82003021 | 1 | 4 | 1-1/2 | 1 | 2 |
| 82003221 | 1 | 5 | 2 | 1 | 2 |
| 82003421 | 1 | 5 | 2-1/2 | 1 | 2 |

Packed: 1 pc.
Available Duarise coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels ≤200HB | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 8200 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



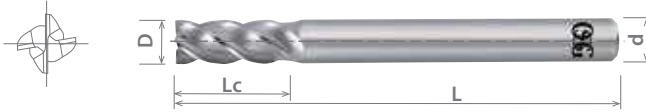


List 8205

AE-VMS, 4 Flute, Regular Length

| | | | | | | |
|------------------|---------------------------------|----------------|------------|--|-------------|-------------------|
| NEW SIZES | SPEED FEED P1112-1113 | CARBIDE | DUR | | Var. | SHRINK FIT |
|------------------|---------------------------------|----------------|------------|--|-------------|-------------------|

| Milling Diameter Tolerance | |
|----------------------------|------------|
| D ≤ 12mm | 0/-0.020mm |
| D > 12mm | 0/-0.030mm |

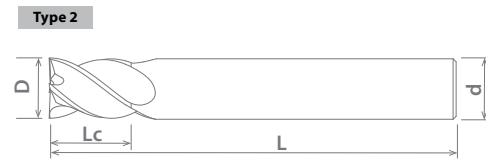
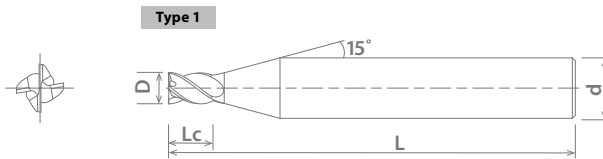


Units: mm

| EDP Number | Mill Diameter | OAL | Length of Cut | Shank Diameter | Type |
|------------|---------------|-----|---------------|----------------|------|
| | D | | | | |
| 8555830 | 3 | 60 | 8 | 6 | 1 |
| 8555840 | 4 | 60 | 11 | 6 | 1 |
| 8555850 | 5 | 60 | 13 | 6 | 1 |
| 8555860 | 6 | 60 | 13 | 6 | 2 |
| 8555880 | 8 | 70 | 19 | 8 | 2 |

| EDP Number | Mill Diameter | OAL | Length of Cut | Shank Diameter | Type |
|------------|---------------|-----|---------------|----------------|------|
| | D | | | | |
| 8555900 | 10 | 80 | 22 | 10 | 2 |
| 8555920 | 12 | 90 | 26 | 12 | 2 |
| 8555960 | 16 | 100 | 32 | 16 | 2 |
| 8556000 | 20 | 110 | 40 | 20 | 2 |
| 8556010 | 25 | 120 | 50 | 25 | 2 |

Packed: 1 pc.
Available Duarise coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels ≤200HB | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 8205 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





A Brand® AE-CR-VMS

Advanced Performance Anti-Vibration Carbide End Mills

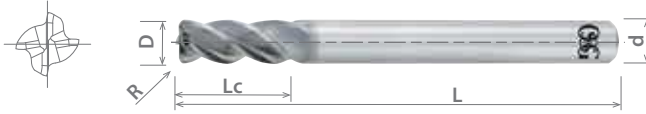
List 8210

AE-CR-VMS, 4 Flute, Multiple Lengths, Corner Radius

| | | | | |
|---------------------------------|----------------|------------|--------------|-------------------|
| SPEED FEED P1114-1115 | CARBIDE | DUR | Var.° | SHRINK FIT |
|---------------------------------|----------------|------------|--------------|-------------------|

| Milling Diameter Tolerance | |
|----------------------------|------------|
| D < 1/2 | 0/-0.008" |
| D ≥ 1/2 | 0/-0.0012" |

| Radius Tolerance | |
|-------------------|------------|
| 0.015 ≤ R ≤ 0.125 | 0/-0.0008" |



Units: Inch

| EDP Number | Mill Diameter D | Corner Radius R | OAL L | Length of Cut Lc | Shank Diameter d | EDP Number | Mill Diameter D | Corner Radius R | OAL L | Length of Cut Lc | Shank Diameter d |
|------------|--------------------|--------------------|----------|---------------------|---------------------|------------|--------------------|--------------------|----------|---------------------|---------------------|
| 82100021 | 3/16 | 0.015 | 2 | 7/16 | 3/16 | 82105221 | 1/2 | 0.015 | 3-1/2 | 1-1/4 | 1/2 |
| 82100221 | 3/16 | 0.030 | 2 | 7/16 | 3/16 | 82105421 | 1/2 | 0.030 | 3-1/2 | 1-1/4 | 1/2 |
| 82100421 | 1/4 | 0.015 | 2-1/2 | 7/16 | 1/4 | 82105621 | 1/2 | 0.045 | 3-1/2 | 1-1/4 | 1/2 |
| 82100621 | 1/4 | 0.030 | 2-1/2 | 7/16 | 1/4 | 82105821 | 1/2 | 0.060 | 3-1/2 | 1-1/4 | 1/2 |
| 82100821 | 5/16 | 0.015 | 2-1/2 | 13/16 | 5/16 | 82106021 | 1/2 | 0.090 | 3-1/2 | 1-1/4 | 1/2 |
| 82101021 | 5/16 | 0.030 | 2-1/2 | 13/16 | 5/16 | 82106221 | 5/8 | 0.030 | 3 | 3/4 | 5/8 |
| 82101221 | 3/8 | 0.015 | 2-1/2 | 1/2 | 3/8 | 82106421 | 5/8 | 0.060 | 3 | 3/4 | 5/8 |
| 82101421 | 3/8 | 0.030 | 2-1/2 | 1/2 | 3/8 | 82106621 | 5/8 | 0.090 | 3 | 3/4 | 5/8 |
| 82101621 | 3/8 | 0.045 | 2-1/2 | 1/2 | 3/8 | 82106821 | 5/8 | 0.125 | 3 | 3/4 | 5/8 |
| 82101821 | 3/8 | 0.060 | 2-1/2 | 1/2 | 3/8 | 82107021 | 5/8 | 0.030 | 3-1/2 | 1-1/4 | 5/8 |
| 82102021 | 3/8 | 0.015 | 2-1/2 | 7/8 | 3/8 | 82107221 | 5/8 | 0.060 | 3-1/2 | 1-1/4 | 5/8 |
| 82102221 | 3/8 | 0.030 | 2-1/2 | 7/8 | 3/8 | 82107421 | 5/8 | 0.090 | 3-1/2 | 1-1/4 | 5/8 |
| 82102421 | 3/8 | 0.045 | 2-1/2 | 7/8 | 3/8 | 82107621 | 5/8 | 0.125 | 3-1/2 | 1-1/4 | 5/8 |
| 82102621 | 3/8 | 0.060 | 2-1/2 | 7/8 | 3/8 | 82107821 | 3/4 | 0.030 | 3-1/2 | 7/8 | 3/4 |
| 82102821 | 7/16 | 0.015 | 2-3/4 | 1 | 7/16 | 82108021 | 3/4 | 0.060 | 3-1/2 | 7/8 | 3/4 |
| 82103021 | 7/16 | 0.030 | 2-3/4 | 1 | 7/16 | 82108221 | 3/4 | 0.090 | 3-1/2 | 7/8 | 3/4 |
| 82103221 | 1/2 | 0.015 | 2-1/2 | 5/8 | 1/2 | 82108421 | 3/4 | 0.125 | 3-1/2 | 7/8 | 3/4 |
| 82103421 | 1/2 | 0.030 | 2-1/2 | 5/8 | 1/2 | 82108621 | 3/4 | 0.030 | 4 | 1-1/2 | 3/4 |
| 82103621 | 1/2 | 0.045 | 2-1/2 | 5/8 | 1/2 | 82108821 | 3/4 | 0.060 | 4 | 1-1/2 | 3/4 |
| 82103821 | 1/2 | 0.060 | 2-1/2 | 5/8 | 1/2 | 82109021 | 3/4 | 0.090 | 4 | 1-1/2 | 3/4 |
| 82104021 | 1/2 | 0.090 | 2-1/2 | 5/8 | 1/2 | 82109221 | 3/4 | 0.125 | 4 | 1-1/2 | 3/4 |
| 82104221 | 1/2 | 0.015 | 3 | 1 | 1/2 | 82109421 | 1 | 0.030 | 4 | 1-1/2 | 1 |
| 82104421 | 1/2 | 0.030 | 3 | 1 | 1/2 | 82109621 | 1 | 0.060 | 4 | 1-1/2 | 1 |
| 82104621 | 1/2 | 0.045 | 3 | 1 | 1/2 | 82109821 | 1 | 0.090 | 4 | 1-1/2 | 1 |
| 82104821 | 1/2 | 0.060 | 3 | 1 | 1/2 | 82109921 | 1 | 0.125 | 4 | 1-1/2 | 1 |
| 82105021 | 1/2 | 0.090 | 3 | 1 | 1/2 | | | | | | |



Packed: 1 pc.
Available Duarise coating only.

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels ≤200HB | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 8210 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

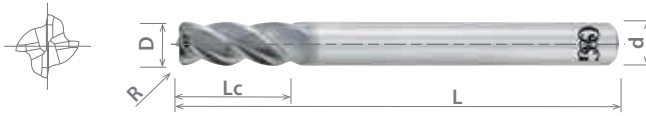




List 8215

AE-CR-VMS, 4 Flute, Regular Length, Corner Radius

| | | | | | |
|---------------------------------|----------------|------------|--|--------------|-------------------|
| SPEED FEED P1114-1115 | CARBIDE | DUR | | Var.° | SHRINK FIT |
|---------------------------------|----------------|------------|--|--------------|-------------------|



| Milling Diameter Tolerance | |
|----------------------------|------------|
| D ≤ 12mm | 0/-0.020mm |
| D > 12mm | 0/-0.030mm |

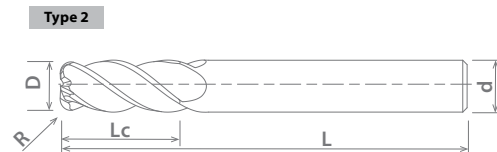
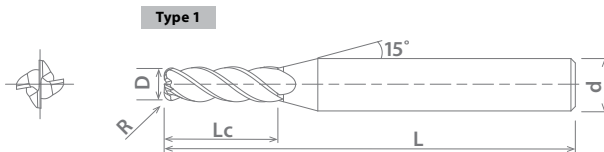
| Radius Tolerance | |
|------------------|-----------|
| 0.2 ≤ R ≤ 3 | 0/-0.02mm |

Units: mm

| EDP Number | Mill Diameter D | Corner Radius R | OAL L | Length of Cut Lc | Shank Diameter d | Type |
|------------|--------------------|--------------------|----------|---------------------|---------------------|------|
| 8556050 | 3 | 0.2 | 60 | 8 | 6 | 1 |
| 8556060 | 3 | 0.5 | 60 | 8 | 6 | 1 |
| 8556070 | 4 | 0.2 | 60 | 11 | 6 | 1 |
| 8556080 | 4 | 0.5 | 60 | 11 | 6 | 1 |
| 8556090 | 4 | 1.0 | 60 | 11 | 6 | 1 |
| 8556100 | 5 | 0.2 | 60 | 13 | 6 | 1 |
| 8556110 | 5 | 0.5 | 60 | 13 | 6 | 1 |
| 8556120 | 5 | 1.0 | 60 | 13 | 6 | 1 |
| 8556130 | 6 | 0.3 | 60 | 13 | 6 | 2 |
| 8556140 | 6 | 0.5 | 60 | 13 | 6 | 2 |
| 8556150 | 6 | 1.0 | 60 | 13 | 6 | 2 |
| 8556160 | 8 | 0.3 | 70 | 19 | 8 | 2 |
| 8556170 | 8 | 0.5 | 70 | 19 | 8 | 2 |
| 8556180 | 8 | 1.0 | 70 | 19 | 8 | 2 |

| EDP Number | Mill Diameter D | Corner Radius R | OAL L | Length of Cut Lc | Shank Diameter d | Type |
|------------|--------------------|--------------------|----------|---------------------|---------------------|------|
| 8556190 | 8 | 1.5 | 70 | 19 | 8 | 2 |
| 8556200 | 8 | 2.0 | 70 | 19 | 8 | 2 |
| 8556210 | 10 | 0.3 | 80 | 22 | 10 | 2 |
| 8556220 | 10 | 0.5 | 80 | 22 | 10 | 2 |
| 8556230 | 10 | 1.0 | 80 | 22 | 10 | 2 |
| 8556240 | 10 | 1.5 | 80 | 22 | 10 | 2 |
| 8556250 | 10 | 2.0 | 80 | 22 | 10 | 2 |
| 8556260 | 10 | 3.0 | 80 | 22 | 10 | 2 |
| 8556270 | 12 | 0.5 | 90 | 26 | 12 | 2 |
| 8556280 | 12 | 1.0 | 90 | 26 | 12 | 2 |
| 8556290 | 12 | 1.5 | 90 | 26 | 12 | 2 |
| 8556300 | 12 | 2.0 | 90 | 26 | 12 | 2 |
| 8556310 | 12 | 3.0 | 90 | 26 | 12 | 2 |

Packed: 1 pc.
Available Duarise coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels ≤200HB | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 8215 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



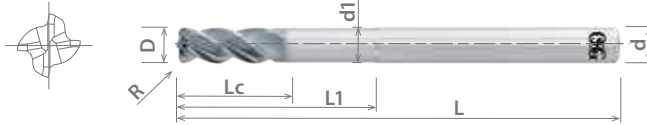


A Brand® AE-LN-CR-VMS

Advanced Performance Anti-Vibration Carbide End Mills

List 8220

AE-LN-CR-VMS, 4 Flute, Long Neck, Long Reach, Corner Radius



| | | | | | |
|----------------------------|----------------|------------|--|--------------|-------------------|
| SPEED FEED P1119 | CARBIDE | DUR | | Var.° | SHRINK FIT |
|----------------------------|----------------|------------|--|--------------|-------------------|

| Milling Diameter Tolerance | |
|----------------------------|------------|
| D < 1/2 | 0/-0.0008" |
| D ≥ 1/2 | 0/-0.0012" |

| Radius Tolerance | |
|-------------------|------------|
| 0.015 ≤ R ≤ 0.125 | 0/-0.0008" |

Units: Inch

| EDP Number | Mill Diameter | Corner Radius | OAL | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|---------------|-------|---------------|-------------|---------------|----------------|
| | D | R | L | Lc | L1 | d1 | d |
| 82200021 | 1/4 | 0.015 | 4 | 0.375 | 1.250 | 0.235 | 1/4 |
| 82200221 | 1/4 | 0.030 | 4 | 0.375 | 1.250 | 0.235 | 1/4 |
| 82200421 | 1/4 | 0.060 | 4 | 0.375 | 1.250 | 0.235 | 1/4 |
| 82200621 | 5/16 | 0.015 | 4 | 0.438 | 1.562 | 0.295 | 5/16 |
| 82200821 | 5/16 | 0.030 | 4 | 0.438 | 1.562 | 0.295 | 5/16 |
| 82201021 | 3/8 | 0.015 | 4 | 0.500 | 1.875 | 0.353 | 3/8 |
| 82201221 | 3/8 | 0.030 | 4 | 0.500 | 1.875 | 0.353 | 3/8 |
| 82201421 | 3/8 | 0.045 | 4 | 0.500 | 1.875 | 0.353 | 3/8 |
| 82201621 | 3/8 | 0.060 | 4 | 0.500 | 1.875 | 0.353 | 3/8 |
| 82201821 | 7/16 | 0.015 | 4 | 0.547 | 1.968 | 0.400 | 7/16 |
| 82202021 | 7/16 | 0.030 | 4 | 0.547 | 1.968 | 0.400 | 7/16 |
| 82202221 | 1/2 | 0.015 | 4 | 0.625 | 2.250 | 0.470 | 1/2 |
| 82202421 | 1/2 | 0.030 | 4 | 0.625 | 2.250 | 0.470 | 1/2 |
| 82202621 | 1/2 | 0.045 | 4 | 0.625 | 2.250 | 0.470 | 1/2 |
| 82202821 | 1/2 | 0.060 | 4 | 0.625 | 2.250 | 0.470 | 1/2 |
| 82203021 | 1/2 | 0.090 | 4 | 0.625 | 2.250 | 0.470 | 1/2 |
| 82203221 | 5/8 | 0.030 | 4-1/8 | 0.780 | 2.250 | 0.588 | 5/8 |
| 82203421 | 5/8 | 0.060 | 4-1/8 | 0.780 | 2.250 | 0.588 | 5/8 |
| 82203621 | 5/8 | 0.090 | 4-1/8 | 0.780 | 2.250 | 0.588 | 5/8 |
| 82203821 | 5/8 | 0.125 | 4-1/8 | 0.780 | 2.250 | 0.588 | 5/8 |
| 82204021 | 3/4 | 0.030 | 5-1/4 | 1.000 | 3.250 | 0.705 | 3/4 |
| 82204221 | 3/4 | 0.060 | 5-1/4 | 1.000 | 3.250 | 0.705 | 3/4 |
| 82204421 | 3/4 | 0.090 | 5-1/4 | 1.000 | 3.250 | 0.705 | 3/4 |
| 82204621 | 3/4 | 0.125 | 5-1/4 | 1.000 | 3.250 | 0.705 | 3/4 |
| 82204821 | 1 | 0.030 | 5-1/2 | 1.125 | 3.250 | 0.940 | 1 |
| 82205021 | 1 | 0.060 | 5-1/2 | 1.125 | 3.250 | 0.940 | 1 |
| 82205221 | 1 | 0.090 | 5-1/2 | 1.125 | 3.250 | 0.940 | 1 |
| 82205421 | 1 | 0.125 | 5-1/2 | 1.125 | 3.250 | 0.940 | 1 |

Packed: 1 pc.
Available Duarise coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels ≤200HB | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 8220 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 8206

AE-VMSS, 4 Flute, Stub Length

| | | | | | | |
|------------|---------------------------------|----------------|------------|--|--------------|-------------------|
| NEW | SPEED FEED P1116-1117 | CARBIDE | DUR | | Var.° | SHRINK FIT |
|------------|---------------------------------|----------------|------------|--|--------------|-------------------|

| Milling Diameter Tolerance | |
|----------------------------|------------|
| D ≤ 12mm | 0/-0.020mm |
| D > 12mm | 0/-0.030mm |



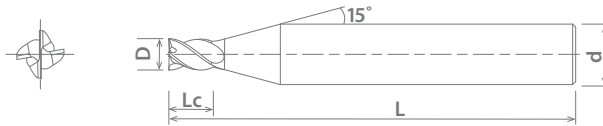
Units: mm

| EDP Number | Mill Diameter | OAL | Length of Cut | Shank Diameter | Type |
|------------|---------------|-----|---------------|----------------|------|
| | D | L | Lc | d | |
| 8556430 | 3 | 45 | 4.5 | 6 | 1 |
| 8556440 | 4 | 45 | 6.0 | 6 | 1 |
| 8556450 | 5 | 45 | 7.5 | 6 | 1 |
| 8556460 | 6 | 45 | 9.0 | 6 | 2 |
| 8556480 | 8 | 60 | 12.0 | 8 | 2 |
| 8556500 | 10 | 70 | 15.0 | 10 | 2 |
| 8556520 | 12 | 75 | 18.0 | 12 | 2 |

Packed: 1 pc.
Available Duarise coating only.



Type 1



Type 2



Work Material

| List No. | P | | | | Die Steels | M | | | K | N | | S | | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels ≤200HB | | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 8206 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best





A Brand® AE-LN-VMSS

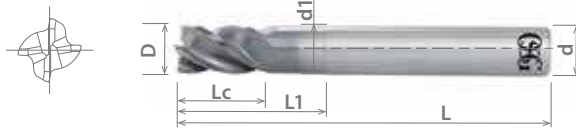
Advanced Performance Anti-Vibration Carbide End Mills

List 8230

AE-LN-VMSS, 4 Flute, Stub Length, Long Neck

| | | | | | | |
|------------|----------------------------|----------------|------------|--|--------------|-------------------|
| NEW | SPEED FEED P1118 | CARBIDE | DUR | | Var.° | SHRINK FIT |
|------------|----------------------------|----------------|------------|--|--------------|-------------------|

| Milling Diameter Tolerance | |
|----------------------------|------------|
| D < 1/2 | 0/-0.0008" |
| D ≥ 1/2 | 0/-0.0012" |



Units: Inch

| EDP Number | Mill Diameter | OAL | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|-------|---------------|-------------|---------------|----------------|
| | D | L | Lc | L1 | d1 | d |
| 82300021 | 1/4 | 3 | 3/8 | 0.235 | 3/4 | 1/4 |
| 82300121 | 1/4 | 4 | 3/8 | 0.243 | 1-1/4 | 1/4 |
| 82300221 | 5/16 | 4 | 7/16 | 0.303 | 1 | 5/16 |
| 82300321 | 5/16 | 4 | 7/16 | 0.303 | 1-9/16 | 5/16 |
| 82300421 | 3/8 | 4 | 1/2 | 0.364 | 1-3/16 | 3/8 |
| 82300521 | 3/8 | 4 | 1/2 | 0.364 | 1-7/8 | 3/8 |
| 82300621 | 7/16 | 4 | 35/64 | 0.400 | 1-5/16 | 7/16 |
| 82300721 | 7/16 | 4 | 35/64 | 0.400 | 1-7/8 | 7/16 |
| 82300821 | 1/2 | 4 | 5/8 | 0.485 | 1-1/2 | 1/2 |
| 82300921 | 1/2 | 4 | 5/8 | 0.485 | 2-1/4 | 1/2 |
| 82301021 | 5/8 | 4-1/8 | 0.78 | 0.588 | 2-1/4 | 5/8 |
| 82301121 | 5/8 | 5 | 0.78 | 0.588 | 3-1/8 | 5/8 |
| 82301221 | 3/4 | 5 | 1 | 0.705 | 2-1/4 | 3/4 |
| 82301321 | 3/4 | 5-1/4 | 1 | 0.705 | 3-1/4 | 3/4 |
| 82301421 | 1 | 5-1/2 | 1-1/8 | 0.940 | 3-1/4 | 1 |
| 82301521 | 1 | 7 | 1-1/8 | 0.940 | 5 | 1 |

Packed: 1 pc.
Available Duarise coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels ≤200HB | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 8230 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



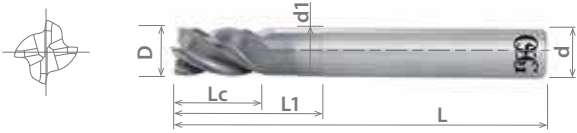


List 8235

AE-LN-VMSS, 4 Flute, Stub Length, Long Neck

| | | | | | | |
|------------|----------------------------|----------------|------------|--|--------------|-------------------|
| NEW | SPEED FEED P1118 | CARBIDE | DUR | | Var.° | SHRINK FIT |
|------------|----------------------------|----------------|------------|--|--------------|-------------------|

| Milling Diameter Tolerance | |
|----------------------------|------------|
| D ≤ 12mm | 0/-0.020mm |
| D > 12mm | 0/-0.030mm |



Units: mm

| EDP Number | Mill Diameter | OAL | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|-----|---------------|-------------|---------------|----------------|
| | D | L | Lc | L1 | d1 | d |
| 8556618 | 6 | 60 | 9 | 5.8 | 18 | 6 |
| 8556630 | 6 | 70 | 9 | 5.8 | 30 | 6 |
| 8556724 | 8 | 70 | 12 | 7.7 | 24 | 8 |
| 8556740 | 8 | 80 | 12 | 7.7 | 40 | 8 |
| 8556830 | 10 | 80 | 15 | 9.7 | 30 | 10 |
| 8556850 | 10 | 100 | 15 | 9.7 | 50 | 10 |
| 8556936 | 12 | 90 | 18 | 11.7 | 36 | 12 |
| 8556960 | 12 | 110 | 18 | 11.7 | 60 | 12 |

Packed: 1 pc.
Available Duarise coating only.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels ≤200HB | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 8235 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





A Brand® AE-VML

Advanced Performance Anti-Vibration Carbide End Mills

List 8201

AE-VML, 4 Flute, Long Length

| | | | | | | |
|------------|---------------------------------|----------------|------------|--|--------------|-------------------|
| NEW | SPEED FEED P1120-1123 | CARBIDE | DUR | | Var.° | SHRINK FIT |
|------------|---------------------------------|----------------|------------|--|--------------|-------------------|

| Milling Diameter Tolerance | |
|----------------------------|------------|
| D < 1/2 | 0/-0.0008" |
| D ≥ 1/2 | 0/-0.0012" |



Units: Inch

| EDP Number | Mill Diameter | OAL | Length of Cut | Shank Diameter |
|------------|---------------|-------|---------------|----------------|
| | D | L | Lc | d |
| 82010021 | 1/4 | 2-3/4 | 3/4 | 1/4 |
| 82010121 | 1/4 | 2-3/4 | 1 | 1/4 |
| 82010221 | 5/16 | 3-1/2 | 15/16 | 5/16 |
| 82010321 | 5/16 | 3-1/2 | 1-1/4 | 5/16 |
| 82010421 | 3/8 | 3-3/4 | 1-1/8 | 3/8 |
| 82010521 | 3/8 | 4 | 1-1/2 | 3/8 |
| 82010621 | 1/2 | 4 | 1-1/2 | 1/2 |
| 82010721 | 1/2 | 4-1/2 | 2 | 1/2 |

Packed: 1 pc.
Available Duarise coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels ≤200HB | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 8201 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 8207

AE-VML, 4 Flute, Long Length

| | | | | | | |
|------------|---------------------------------|----------------|------------|--|--------------|-------------------|
| NEW | SPEED FEED P1120-1123 | CARBIDE | DUR | | Var.° | SHRINK FIT |
|------------|---------------------------------|----------------|------------|--|--------------|-------------------|

| Milling Diameter Tolerance | |
|----------------------------|------------|
| D ≤ 12mm | 0/-0.020mm |
| D > 12mm | 0/-0.030mm |



Units: mm

| EDP Number | Mill Diameter | OAL | Length of Cut | Shank Diameter |
|------------|---------------|-----|---------------|----------------|
| | D | L | Lc | d |
| 8556320 | 6 | 70 | 19 | 6 |
| 8556328 | 6 | 70 | 24 | 6 |
| 8556322 | 8 | 80 | 25 | 8 |
| 8556330 | 8 | 90 | 32 | 8 |
| 8556324 | 10 | 90 | 31 | 10 |
| 8556332 | 10 | 100 | 40 | 10 |
| 8556326 | 12 | 100 | 38 | 12 |
| 8556334 | 12 | 110 | 48 | 12 |

Packed: 1 pc.
Available Duarise coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels ≤200HB | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 8207 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





A Brand® AE-NIK-VML

Advanced Performance Anti-Vibration Carbide End Mills

List 8202

AE-NIK-VML, 4 Flute, Long Length, Nicked



| | | | | | | |
|------------|---------------------------------|----------------|------------|--|--------------|-------------------|
| NEW | SPEED FEED P1120-1123 | CARBIDE | DUR | | Var.° | SHRINK FIT |
|------------|---------------------------------|----------------|------------|--|--------------|-------------------|

| Milling Diameter Tolerance | |
|----------------------------|------------|
| D < 1/2 | 0/-0.008" |
| D ≥ 1/2 | 0/-0.0012" |

Units: Inch

| EDP Number | Mill Diameter | OAL | Length of Cut | Shank Diameter |
|------------|---------------|-------|---------------|----------------|
| | D | L | Lc | d |
| 82020021 | 1/4 | 2-3/4 | 3/4 | 1/4 |
| 82020121 | 1/4 | 2-3/4 | 1 | 1/4 |
| 82020221 | 5/16 | 3-1/2 | 15/16 | 5/16 |
| 82020321 | 5/16 | 3-1/2 | 1-1/4 | 5/16 |
| 82020421 | 3/8 | 3-3/4 | 1-1/8 | 3/8 |
| 82020521 | 3/8 | 4 | 1-1/2 | 3/8 |
| 82020621 | 1/2 | 4 | 1-1/2 | 1/2 |
| 82020721 | 1/2 | 4-1/2 | 2 | 1/2 |

Packed: 1 pc.
Available Duarise coating only.



List 8208

AE-NIK-VML, 4 Flute, Long Length, Nicked



| | | | | | | |
|------------|---------------------------------|----------------|------------|--|--------------|-------------------|
| NEW | SPEED FEED P1120-1123 | CARBIDE | DUR | | Var.° | SHRINK FIT |
|------------|---------------------------------|----------------|------------|--|--------------|-------------------|

| Milling Diameter Tolerance | |
|----------------------------|------------|
| D ≤ 12mm | 0/-0.020mm |
| D > 12mm | 0/-0.030mm |

Units: mm

| EDP Number | Mill Diameter | OAL | Length of Cut | Shank Diameter |
|------------|---------------|-----|---------------|----------------|
| | D | L | Lc | d |
| 8556321 | 6 | 70 | 19 | 6 |
| 8556329 | 6 | 70 | 24 | 6 |
| 8556323 | 8 | 80 | 25 | 8 |
| 8556331 | 8 | 90 | 32 | 8 |
| 8556325 | 10 | 90 | 31 | 10 |
| 8556333 | 10 | 100 | 40 | 10 |
| 8556327 | 12 | 100 | 38 | 12 |
| 8556335 | 12 | 110 | 48 | 12 |

Packed: 1 pc.
Available Duarise coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels ≤200HB | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 8202 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8208 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 2055

UVX-Ni, 5 Flute, Multiple Lengths, Corner Radius

| | | | | |
|-----------------------------------|----------------|-------------|--|--------------|
| SPEED FEED P1124 | CARBIDE | EXO® | | Var.° |
| Milling Diameter Tolerance | | | | |
| 1/4 ≤ D ≤ 1 | | +0/-0.0015" | | |



Units: Inch

| EDP Number | EDP Number w/ Weldon Flat | Mill Diameter | Corner Radius | OAL | Length of Cut | Shank Diameter |
|------------|------------------------------|---------------|---------------|-------|---------------|----------------|
| | | D | R | L | Lc | d |
| 20552501 | - | 1/4 | 0.015 | 2-1/2 | 5/8 | 1/4 |
| 20552502 | - | 1/4 | 0.030 | 2-1/2 | 5/8 | 1/4 |
| 20552503 | - | 1/4 | 0.060 | 2-1/2 | 5/8 | 1/4 |
| 20553121 | - | 5/16 | 0.015 | 2-1/2 | 3/4 | 5/16 |
| 20553122 | - | 5/16 | 0.030 | 2-1/2 | 3/4 | 5/16 |
| 20553123 | - | 5/16 | 0.060 | 2-1/2 | 3/4 | 5/16 |
| - | 20553751 | 3/8 | 0.015 | 2-1/2 | 7/8 | 3/8 |
| - | 20553752 | 3/8 | 0.030 | 2-1/2 | 7/8 | 3/8 |
| - | 20553753 | 3/8 | 0.060 | 2-1/2 | 7/8 | 3/8 |
| - | 20555001 | 1/2 | 0.030 | 2-1/2 | 5/8 | 1/2 |
| - | 20555002 | 1/2 | 0.030 | 3 | 1 | 1/2 |
| - | 20555003 | 1/2 | 0.060 | 3 | 1 | 1/2 |
| - | 20555004 | 1/2 | 0.015 | 3-1/2 | 1-1/4 | 1/2 |
| - | 20555005 | 1/2 | 0.030 | 3-1/2 | 1-1/4 | 1/2 |
| - | 20555006 | 1/2 | 0.060 | 3-1/2 | 1-1/4 | 1/2 |
| - | 20555007 | 1/2 | 0.090 | 3-1/2 | 1-1/4 | 1/2 |
| - | 20555008 | 1/2 | 0.120 | 3-1/2 | 1-1/4 | 1/2 |
| - | 20556251 | 5/8 | 0.030 | 3-1/2 | 1-1/4 | 5/8 |
| - | 20556252 | 5/8 | 0.060 | 3-1/2 | 1-1/4 | 5/8 |
| - | 20556253 | 5/8 | 0.090 | 3-1/2 | 1-1/4 | 5/8 |
| - | 20556254 | 5/8 | 0.120 | 3-1/2 | 1-1/4 | 5/8 |
| - | 20557501 | 3/4 | 0.030 | 4 | 1-1/2 | 3/4 |
| - | 20557502 | 3/4 | 0.060 | 4 | 1-1/2 | 3/4 |
| - | 20557503 | 3/4 | 0.090 | 4 | 1-1/2 | 3/4 |
| - | 20557504 | 3/4 | 0.120 | 4 | 1-1/2 | 3/4 |
| - | 20551001 | 1 | 0.030 | 4 | 1-1/2 | 1 |
| - | 20551002 | 1 | 0.060 | 4 | 1-1/2 | 1 |
| - | 20551003 | 1 | 0.090 | 4 | 1-1/2 | 1 |
| - | 20551004 | 1 | 0.120 | 4 | 1-1/2 | 1 |

Packed: 1 pc.
Available EXO® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB VGX - List VG534 (p. 967-968)

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|---------------------|----------------------|--------------|--------------|------------|--------------------------|--------------------------|--------------------------|-----------|--------------|---------|-------------------------------------|-------------------|-----------------|--------------|--------------------------|--------------|
| | P | | | | Die Steels | M | | | Cast Iron | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | 4140 4340 | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 2055 | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | |

good best





List 9510

PHX-DBT, 3 Flute, Deep Feed, Ball End

| | | | | |
|---------------------------------|----------------|------------------------|--|--------------------|
| SPEED FEED P1125-1127 | CARBIDE | EXO[®] | | SHANK h6 |
|---------------------------------|----------------|------------------------|--|--------------------|



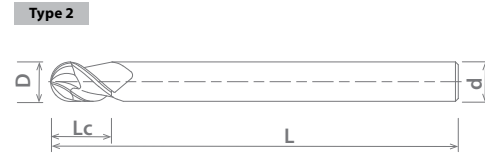
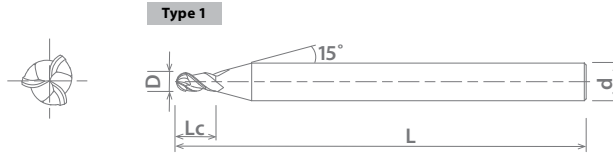
| Milling Diameter Tolerance | |
|----------------------------|--------------------|
| 1 ≤ D ≤ 5 | +0 / -0.015mm |
| 6 < D ≤ 20 | +0.01mm / -0.005mm |
| Radius Tolerance | |
| 0.5 ≤ R ≤ 10 | +0.01 / -0.01mm |

Units: mm

| EDP Number | Mill Diameter | OAL | Length of Cut | Shank Diameter | Type |
|------------|---------------|-----|---------------|----------------|------|
| | D | | | | |
| 3090202 | 1 | 60 | 1.5 | 6 | 1 |
| 3090204 | 2 | 60 | 3.0 | 6 | 1 |
| 3090206 | 3 | 70 | 4.5 | 6 | 1 |
| 3090208 | 4 | 70 | 6.0 | 6 | 1 |
| 3090210 | 5 | 70 | 7.5 | 6 | 1 |
| 3090212 | 6 | 80 | 9.0 | 6 | 2 |
| 3090312 | 6 | 110 | 9.0 | 6 | 2 |
| 3090216 | 8 | 90 | 12.0 | 8 | 2 |

| EDP Number | Mill Diameter | OAL | Length of Cut | Shank Diameter | Type |
|------------|---------------|-----|---------------|----------------|------|
| | D | | | | |
| 3090316 | 8 | 120 | 12.0 | 8 | 2 |
| 3090220 | 10 | 100 | 15.0 | 10 | 2 |
| 3090320 | 10 | 130 | 15.0 | 10 | 2 |
| 3090222 | 12 | 100 | 18.0 | 12 | 2 |
| 3090322 | 12 | 140 | 18.0 | 12 | 2 |
| 3090226 | 16 | 150 | 24.0 | 16 | 2 |
| 3090230 | 20 | 150 | 30.0 | 20 | 2 |
| 3090330 | 20 | 200 | 30.0 | 20 | 2 |

Packed: 1 pc.
Available EXO[®] coating only.



OSG's Performance & Savings

Not machining steel over 54 HRC? Try EXOCARB[®] WXL[®] - List 3710 (p. 854)

Don't require ultra-high performance? Try EXOCARB[®] WXS[®] - List 4510 (p. 885)

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 9510 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |

good best





List 9590

PHX-LN-DBT, 3 Flute, Long Neck, Ball End

| | | | | | |
|---------------------------------|----------------|------------|--|------------|--------------------|
| SPEED FEED P1125-1127 | CARBIDE | WXS | | 45° | SHANK h6 |
|---------------------------------|----------------|------------|--|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------------|
| 0.6 ≤ D ≤ 6 | +0.007mm / -0.007mm |

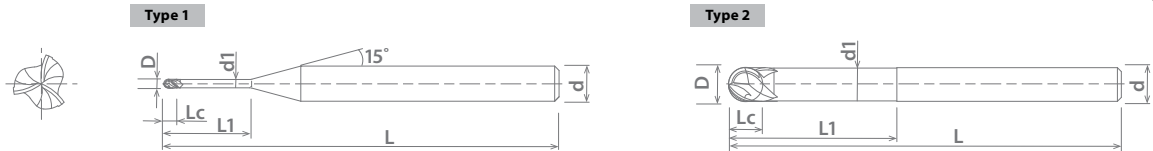
| Radius Tolerance | |
|------------------|---------------------|
| 0.3 ≤ R ≤ 3 | +0.007mm / -0.007mm |



Units: mm

| EDP Number | Mill Diameter | OAL | Length of Cut | Neck Length | Neck Diameter | Effective Neck Length (Based on Inclined Angle) | | | | | | Shank Diameter | Type |
|------------|---------------|-----|---------------|-------------|---------------|--|-------|-------|-------|-------|-------|----------------|------|
| | | | | | | α | | | | | | | |
| | | | | | | 0.5° | 1° | 1.5° | 2° | 2.5° | 3° | | |
| 3194901 | 0.6 | 50 | 0.45 | 1 | 0.55 | 1.02 | 1.05 | 1.08 | 1.11 | 1.14 | 1.17 | 4 | 1 |
| 3194902 | 0.6 | 50 | 0.45 | 2 | 0.55 | 2.06 | 2.12 | 2.18 | 2.26 | 2.33 | 2.42 | 4 | 1 |
| 3194903 | 0.6 | 50 | 0.45 | 3 | 0.55 | 3.09 | 3.19 | 3.29 | 3.41 | 3.53 | 3.66 | 4 | 1 |
| 3194904 | 0.6 | 50 | 0.45 | 4 | 0.55 | 4.12 | 4.26 | 4.4 | 4.56 | 4.72 | 4.9 | 4 | 1 |
| 3194906 | 0.6 | 50 | 0.45 | 6 | 0.55 | 6.19 | 6.4 | 6.62 | 6.86 | 7.11 | 7.39 | 4 | 1 |
| 3195004 | 1.0 | 50 | 0.75 | 4 | 0.95 | 4.26 | 4.50 | 4.74 | 4.96 | 5.18 | 5.39 | 4 | 1 |
| 3195006 | 1.0 | 50 | 0.75 | 6 | 0.95 | 6.39 | 6.72 | 7.03 | 7.32 | 7.95 | 7.88 | 4 | 1 |
| 3195008 | 1.0 | 50 | 0.75 | 8 | 0.95 | 8.50 | 8.92 | 9.28 | 9.62 | 9.98 | 10.36 | 4 | 1 |
| 3195010 | 1.0 | 50 | 0.75 | 10 | 0.95 | 10.61 | 11.09 | 11.51 | 11.92 | 12.37 | 12.85 | 4 | 1 |
| 3195012 | 1.0 | 50 | 0.75 | 12 | 0.95 | 12.71 | 13.25 | 13.71 | 14.12 | 14.49 | 14.83 | 4 | 1 |
| 3195014 | 1.0 | 50 | 0.75 | 14 | 0.95 | 14.81 | 15.40 | 15.90 | 16.34 | 16.73 | 17.82 | 4 | 1 |
| 3195016 | 1.0 | 50 | 0.75 | 16 | 0.95 | 16.90 | 17.54 | 18.07 | 18.54 | 19.53 | 20.31 | 4 | 1 |
| 3195106 | 1.5 | 50 | 1.12 | 6 | 1.45 | 6.37 | 6.70 | 7.00 | 7.28 | 7.54 | 7.82 | 4 | 1 |
| 3195108 | 1.5 | 50 | 1.12 | 8 | 1.45 | 8.49 | 8.89 | 9.25 | 9.58 | 9.93 | 10.30 | 4 | 1 |
| 3195110 | 1.5 | 50 | 1.12 | 10 | 1.45 | 10.60 | 11.07 | 11.48 | 11.88 | 12.32 | 12.79 | 4 | 1 |
| 3195112 | 1.5 | 50 | 1.12 | 12 | 1.45 | 12.70 | 13.23 | 13.69 | 14.09 | 14.46 | 14.80 | 4 | 1 |
| 3195116 | 1.5 | 50 | 1.12 | 16 | 1.45 | 16.89 | 17.52 | 18.05 | 18.51 | 18.93 | 19.31 | 4 | 1 |
| 3195206 | 2.0 | 50 | 1.50 | 6 | 1.95 | 6.35 | 6.65 | 6.94 | 7.21 | 7.46 | 7.73 | 4 | 1 |
| 3195208 | 2.0 | 50 | 1.50 | 8 | 1.95 | 8.46 | 8.85 | 9.20 | 9.52 | 9.85 | 10.21 | 4 | 1 |
| 3195210 | 2.0 | 50 | 1.50 | 10 | 1.95 | 10.57 | 11.03 | 11.43 | 11.82 | 12.24 | 12.70 | 4 | 1 |
| 3195212 | 2.0 | 50 | 1.50 | 12 | 1.95 | 12.67 | 13.19 | 13.64 | 14.12 | 14.63 | 15.19 | 4 | 1 |
| 3195214 | 2.0 | 50 | 1.50 | 14 | 1.95 | 14.77 | 15.34 | 15.86 | 16.42 | 17.02 | 17.67 | 4 | 1 |
| 3195216 | 2.0 | 50 | 1.50 | 16 | 1.95 | 16.86 | 17.48 | 18.08 | 18.72 | 19.41 | - | 4 | 1 |
| 3195218 | 2.0 | 60 | 1.50 | 18 | 1.95 | 18.94 | 19.62 | 20.29 | 21.02 | 21.80 | - | 4 | 1 |
| 3195220 | 2.0 | 60 | 1.50 | 20 | 1.95 | 21.03 | 21.76 | 22.51 | 23.18 | - | - | 4 | 1 |
| 3195222 | 2.0 | 60 | 1.50 | 22 | 1.95 | 23.13 | 23.89 | 24.50 | 25.03 | - | - | 4 | 1 |
| 3195312 | 3.0 | 60 | 2.25 | 12 | 2.85 | 12.61 | 13.10 | 13.57 | 14.08 | - | - | 4 | 1 |
| 3195316 | 3.0 | 60 | 2.25 | 16 | 2.85 | 16.77 | 17.38 | 17.01 | - | - | - | 4 | 1 |
| 3195320 | 3.0 | 60 | 2.25 | 20 | 2.85 | 20.92 | 21.65 | - | - | - | - | 4 | 1 |
| 3195325 | 3.0 | 60 | 2.25 | 25 | 2.85 | 26.10 | - | - | - | - | - | 4 | 1 |
| 3195416 | 4.0 | 60 | 3.00 | 16 | 3.85 | - | - | - | - | - | - | 4 | 2 |
| 3195420 | 4.0 | 60 | 3.00 | 20 | 3.85 | - | - | - | - | - | - | 4 | 2 |
| 3195425 | 4.0 | 60 | 3.00 | 25 | 3.85 | - | - | - | - | - | - | 4 | 2 |
| 3195520 | 6.0 | 70 | 4.50 | 20 | 5.85 | - | - | - | - | - | - | 6 | 2 |
| 3195530 | 6.0 | 70 | 4.50 | 30 | 5.85 | - | - | - | - | - | - | 6 | 2 |

Packed: 1 pc. Available WXS[®] coating only.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 9590 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |

good best





List 9581

PHX-PC-DBT, 3 Flute, Pencil-Neck, Deep Feed, Ball End

| | | | | |
|--------------------------|---------|-----|-----|-------------|
| SPEED FEED P1125-1127 | CARBIDE | WXS | 45° | SHANK h6 |
|--------------------------|---------|-----|-----|-------------|



| Milling Diameter Tolerance | |
|----------------------------|-------------------|
| 1 ≤ D ≤ 12 | + 0 / -0.015mm |
| Radius Tolerance | |
| 0.5 ≤ R ≤ 6 | +0.01mm / -0.01mm |

Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Min. Neck Diameter | Max. Neck Diameter | Neck Length | Effective Draft Angle | Neck Draft Angle | Shank Diameter | Type |
|------------|---------------|----------------|---------------|--------------------|--------------------|-------------|-----------------------|------------------|----------------|------|
| | D | L | Lc | d1 | d2 | L1 | α | β | d | |
| 3095125 | 1.0 | 60 | 1.50 | 0.95 | 1.20 | 16.0 | 0.38° | 0.5° | 6 | 1 |
| 3095141 | 1.0 | 60 | 1.50 | 0.95 | 1.10 | 6.0 | 0.56° | 1.0° | 6 | 1 |
| 3095142 | 1.0 | 60 | 1.50 | 0.95 | 1.17 | 8.0 | 0.68° | 1.0° | 6 | 1 |
| 3095143 | 1.0 | 60 | 1.50 | 0.95 | 1.24 | 10.0 | 0.75° | 1.0° | 6 | 1 |
| 3095144 | 1.0 | 60 | 1.50 | 0.95 | 1.31 | 12.0 | 0.79° | 1.0° | 6 | 1 |
| 3095145 | 1.0 | 60 | 1.50 | 0.95 | 1.45 | 16.0 | 0.85° | 1.0° | 6 | 1 |
| 3095146 | 1.0 | 60 | 1.50 | 0.95 | 1.59 | 20.0 | 0.88° | 1.0° | 6 | 1 |
| 3095147 | 1.0 | 70 | 1.50 | 0.95 | 1.77 | 25.0 | 0.91° | 1.0° | 6 | 1 |
| 3095155 | 1.0 | 60 | 1.50 | 0.95 | 1.65 | 15.0 | 1.30° | 1.5° | 6 | 1 |
| 3095157 | 1.0 | 70 | 1.50 | 0.95 | 2.18 | 25.0 | 1.39° | 1.5° | 6 | 1 |
| 3095191 | 1.0 | 70 | 1.50 | 0.95 | 5.43 | 30.0 | 4.30° | 4.5° | 6 | 1 |
| 3095211 | 1.5 | 60 | 2.25 | 1.45 | 1.58 | 6.0 | 0.45° | 1.0° | 6 | 1 |
| 3095212 | 1.5 | 60 | 2.25 | 1.45 | 1.68 | 9.0 | 0.65° | 1.0° | 6 | 1 |
| 3095213 | 1.5 | 60 | 2.25 | 1.45 | 1.79 | 12.0 | 0.74° | 1.0° | 6 | 1 |
| 3095214 | 1.5 | 60 | 2.25 | 1.45 | 1.89 | 15.0 | 0.80° | 1.0° | 6 | 1 |
| 3095215 | 1.5 | 60 | 2.25 | 1.45 | 2.10 | 21.0 | 0.86° | 1.0° | 6 | 1 |
| 3095216 | 1.5 | 70 | 2.25 | 1.45 | 2.41 | 30.0 | 0.90° | 1.0° | 6 | 1 |
| 3095223 | 2.0 | 60 | 3.00 | 1.95 | 2.24 | 20.0 | 0.38° | 0.5° | 6 | 1 |
| 3095241 | 2.0 | 60 | 3.00 | 1.95 | 2.19 | 10.0 | 0.62° | 1.0° | 6 | 1 |
| 3095242 | 2.0 | 60 | 3.00 | 1.95 | 2.36 | 15.0 | 0.76° | 1.0° | 6 | 1 |
| 3095243 | 2.0 | 60 | 3.00 | 1.95 | 2.54 | 20.0 | 0.82° | 1.0° | 6 | 1 |
| 3095244 | 2.0 | 70 | 3.00 | 1.95 | 2.71 | 25.0 | 0.86° | 1.0° | 6 | 1 |
| 3095245 | 2.0 | 80 | 3.00 | 1.95 | 2.89 | 30.0 | 0.89° | 1.0° | 6 | 1 |
| 3095246 | 2.0 | 80 | 3.00 | 1.95 | 3.24 | 40.0 | 0.92° | 1.0° | 6 | 1 |
| 3095247 | 2.0 | 100 | 3.00 | 1.95 | 3.59 | 50.0 | 0.93° | 1.0° | 6 | 1 |
| 3095251 | 2.0 | 80 | 3.00 | 1.95 | 3.88 | 40.0 | 1.39° | 1.5° | 6 | 1 |
| 3095262 | 2.0 | 100 | 3.00 | 1.95 | 5.81 | 60.3 | 1.94° | 2.0° | 6 | 2 |
| 3095273 | 2.0 | 80 | 3.00 | 1.95 | 5.75 | 41.2 | 2.85° | 3.0° | 6 | 2 |
| 3095281 | 2.0 | 80 | 3.00 | 1.95 | 5.67 | 30.0 | 3.95° | 3.8° | 6 | 2 |
| 3095321 | 3.0 | 80 | 4.50 | 2.90 | 3.17 | 20.0 | 0.27° | 0.5° | 6 | 1 |
| 3095341 | 3.0 | 80 | 4.50 | 2.90 | 3.44 | 20.0 | 0.69° | 1.0° | 6 | 1 |
| 3095342 | 3.0 | 80 | 4.50 | 2.90 | 3.61 | 25.0 | 0.76° | 1.0° | 6 | 1 |
| 3095343 | 3.0 | 80 | 4.50 | 2.90 | 3.79 | 30.0 | 0.80° | 1.0° | 6 | 1 |
| 3095344 | 3.0 | 80 | 4.50 | 2.90 | 4.13 | 40.0 | 0.85° | 1.0° | 6 | 1 |
| 3095345 | 3.0 | 100 | 4.50 | 2.90 | 4.48 | 50.0 | 0.88° | 1.0° | 6 | 1 |
| 3095346 | 3.0 | 100 | 4.50 | 2.90 | 4.83 | 60.0 | 0.90° | 1.0° | 6 | 1 |
| 3095356 | 3.0 | 100 | 4.50 | 2.90 | 5.74 | 60.8 | 1.45° | 1.5° | 6 | 2 |
| 3095365 | 3.0 | 100 | 4.50 | 2.90 | 5.70 | 46.5 | 1.92° | 2.0° | 6 | 2 |
| 3095374 | 3.0 | 80 | 4.50 | 2.90 | 5.60 | 32.1 | 2.81° | 3.0° | 6 | 2 |
| 3095421 | 4.0 | 80 | 6.00 | 3.90 | 4.23 | 25.0 | 0.29° | 0.5° | 6 | 1 |
| 3095441 | 4.0 | 80 | 6.00 | 3.90 | 4.73 | 30.0 | 0.76° | 1.0° | 6 | 1 |
| 3095442 | 4.0 | 80 | 6.00 | 3.90 | 5.08 | 40.0 | 0.82° | 1.0° | 6 | 1 |
| 3095443 | 4.0 | 100 | 6.00 | 3.90 | 5.43 | 50.0 | 0.86° | 1.0° | 6 | 1 |
| 3095444 | 4.0 | 100 | 6.00 | 3.90 | 5.76 | 61.3 | 0.97° | 1.0° | 6 | 2 |
| 3095445 | 4.0 | 120 | 6.00 | 3.90 | 6.48 | 80.0 | 0.92° | 1.0° | 8 | 1 |
| 3095453 | 4.0 | 80 | 6.00 | 3.90 | 5.70 | 42.2 | 1.43° | 1.5° | 6 | 2 |
| 3095454 | 4.0 | 120 | 6.00 | 3.90 | 7.69 | 80.4 | 1.47° | 1.5° | 8 | 2 |
| 3095462 | 4.0 | 120 | 6.00 | 3.90 | 7.63 | 61.3 | 1.94° | 2.0° | 8 | 2 |
| 3095472 | 4.0 | 100 | 6.00 | 3.90 | 7.50 | 42.2 | 2.85° | 3.0° | 8 | 2 |
| 3095541 | 5.0 | 100 | 7.50 | 4.90 | 5.86 | 35.0 | 0.76° | 1.0° | 8 | 1 |
| 3095542 | 5.0 | 100 | 7.50 | 4.90 | 6.38 | 50.0 | 0.84° | 1.0° | 8 | 1 |
| 3095543 | 5.0 | 130 | 7.50 | 4.90 | 7.08 | 70.0 | 0.89° | 1.0° | 8 | 1 |

Packed: 1 pc. Available WXS[®] coating only.





List 9581 (Continued)

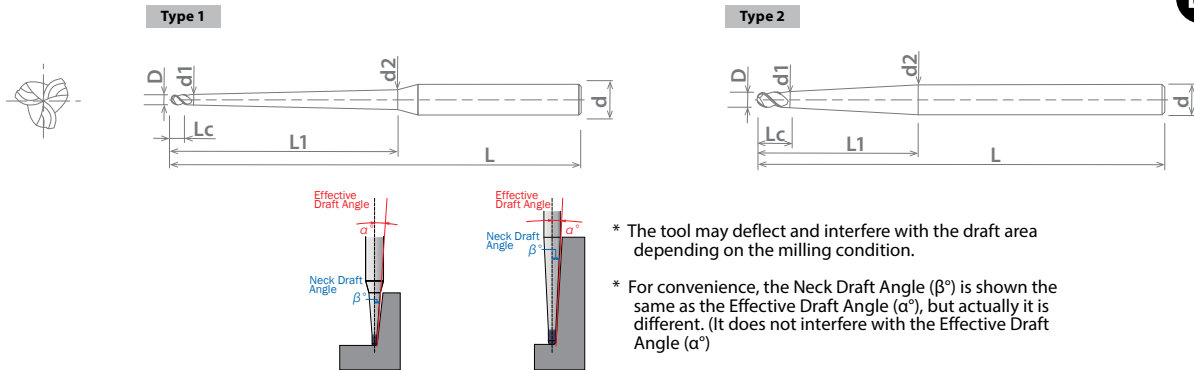
SPEED FEED P1125-1127 CARBIDE WXS 45° SHANK h6

PHX-PC-DBT, 3 Flute, Pencil-Neck, Deep Feed, Ball End

Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Min. Neck Diameter | Max. Neck Diameter | Neck Length | Effective Draft Angle | Neck Draft Angle | Shank Diameter | Type |
|------------|---------------|----------------|---------------|--------------------|--------------------|-------------|-----------------------|------------------|----------------|------|
| | D | L | Lc | d1 | d2 | L1 | α | β | d | |
| 3095544 | 5.0 | 130 | 7.50 | 4.90 | 7.72 | 90.4 | 0.98° | 1.0° | 8 | 2 |
| 3095553 | 5.0 | 130 | 7.50 | 4.90 | 7.64 | 61.8 | 1.45° | 1.5° | 8 | 2 |
| 3095562 | 5.0 | 130 | 7.50 | 4.90 | 7.56 | 47.5 | 1.91° | 2.0° | 8 | 2 |
| 3095641 | 6.0 | 100 | 9.00 | 5.90 | 6.98 | 40.0 | 0.77° | 1.0° | 8 | 1 |
| 3095642 | 6.0 | 100 | 9.00 | 5.90 | 7.33 | 50.0 | 0.82° | 1.0° | 8 | 1 |
| 3095643 | 6.0 | 130 | 9.00 | 5.90 | 7.69 | 62.3 | 0.97° | 1.0° | 8 | 2 |
| 3095644 | 6.0 | 130 | 9.00 | 5.90 | 8.72 | 90.0 | 0.90° | 1.0° | 10 | 1 |
| 3095651 | 6.0 | 100 | 9.00 | 5.90 | 7.60 | 43.2 | 1.43° | 1.5° | 8 | 2 |
| 3095653 | 6.0 | 130 | 9.00 | 5.90 | 9.59 | 81.4 | 1.47° | 1.5° | 10 | 2 |
| 3095661 | 6.0 | 100 | 9.00 | 5.90 | 7.50 | 33.6 | 1.87° | 2.0° | 8 | 2 |
| 3095662 | 6.0 | 130 | 9.00 | 5.90 | 9.49 | 62.3 | 1.94° | 2.0° | 10 | 2 |
| 3095841 | 8.0 | 120 | 12.00 | 7.90 | 9.22 | 50.0 | 0.77° | 1.0° | 10 | 1 |
| 3095842 | 8.0 | 120 | 12.00 | 7.90 | 9.62 | 63.3 | 0.97° | 1.0° | 10 | 2 |
| 3095843 | 8.0 | 150 | 12.00 | 7.90 | 10.62 | 90.0 | 0.88° | 1.0° | 12 | 1 |
| 3095844 | 8.0 | 180 | 12.00 | 7.90 | 11.62 | 120.6 | 0.99° | 1.0° | 12 | 2 |
| 3095851 | 8.0 | 120 | 12.00 | 7.90 | 9.50 | 44.2 | 1.43° | 1.5° | 10 | 2 |
| 3095853 | 8.0 | 150 | 12.00 | 7.90 | 11.49 | 82.4 | 1.47° | 1.5° | 12 | 2 |
| 3095862 | 8.0 | 120 | 12.00 | 7.90 | 11.35 | 63.3 | 1.94° | 2.0° | 12 | 2 |
| 3096041 | 10.0 | 120 | 15.00 | 9.90 | 11.56 | 64.3 | 0.97° | 1.0° | 12 | 2 |
| 3096042 | 10.0 | 160 | 15.00 | 9.90 | 12.16 | 80.0 | 0.83° | 1.0° | 16 | 1 |
| 3096043 | 10.0 | 160 | 15.00 | 9.90 | 12.86 | 100.0 | 0.87° | 1.0° | 16 | 1 |
| 3096044 | 10.0 | 180 | 15.00 | 9.90 | 13.56 | 120.0 | 0.89° | 1.0° | 16 | 1 |
| 3096045 | 10.0 | 200 | 15.00 | 9.90 | 14.26 | 140.0 | 0.91° | 1.0° | 16 | 1 |
| 3096046 | 10.0 | 220 | 15.00 | 9.90 | 14.96 | 160.0 | 0.92° | 1.0° | 16 | 1 |
| 3096051 | 10.0 | 120 | 15.00 | 9.90 | 11.40 | 45.2 | 1.43° | 1.5° | 12 | 2 |
| 3096053 | 10.0 | 180 | 15.00 | 9.90 | 15.38 | 121.6 | 1.48° | 1.5° | 16 | 2 |
| 3096061 | 10.0 | 120 | 15.00 | 9.90 | 11.24 | 35.6 | 1.87° | 2.0° | 12 | 2 |
| 3096064 | 10.0 | 160 | 15.00 | 9.90 | 15.21 | 92.9 | 1.96° | 2.0° | 16 | 2 |
| 3096241 | 12.0 | 120 | 18.00 | 11.90 | 13.36 | 60.0 | 0.73° | 1.0° | 16 | 1 |
| 3096242 | 12.0 | 180 | 18.00 | 11.90 | 14.76 | 100.0 | 0.85° | 1.0° | 16 | 1 |
| 3096243 | 12.0 | 180 | 18.00 | 11.90 | 15.48 | 122.6 | 0.99° | 1.0° | 16 | 2 |
| 3096244 | 12.0 | 220 | 18.00 | 11.90 | 16.85 | 160.0 | 0.91° | 1.0° | 20 | 1 |
| 3096254 | 12.0 | 220 | 18.00 | 11.90 | 19.27 | 160.8 | 1.48° | 1.5° | 20 | 2 |

Packed: 1 pc. Available WXS® coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 9581 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |

good best

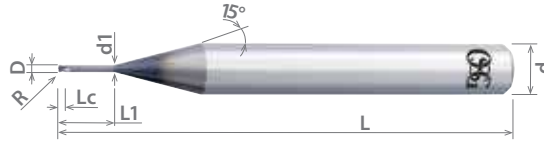
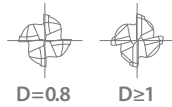




List 9592

PHX-LN-CRE, 4 Flute, Pencil-Neck, Deep Feed, Corner Radius, Rib Processor

| | | | | | | |
|----------------------------|----------------|------------|--|---------------------|-------------------|--------------------|
| SPEED FEED P1131 | CARBIDE | WXS | | 54° D=0.8 | 30° D≥1 | SHANK h6 |
|----------------------------|----------------|------------|--|---------------------|-------------------|--------------------|



| Milling Diameter Tolerance | |
|----------------------------|---------------------|
| 0.8≤D≤3 | +0 / -0.01mm |
| Radius Tolerance | |
| 0.1≤R≤0.3 | +0.007mm / -0.007mm |
| Neck Length Tolerance | |
| 0.8≤D≤3 | +0 / -0.1mm |

Units: mm

| EDP Number | Mill Diameter D | Corner Radius R | Overall Length L | Length of Cut Lc | Neck Length L1 | Neck Dia. d1 | Effective Neck Length (le) | | | Shank Diameter d |
|------------|--------------------|--------------------|---------------------|---------------------|-------------------|-----------------|----------------------------|-------|-------|---------------------|
| | | | | | | | α | | | |
| | | | | | | | 0° | 0.5° | 1° | |
| 3190800 | 0.8 | 0.1 | 50 | 0.32 | 2 | 0.75 | 2.00 | 2.16 | 2.32 | 4 |
| 3190801 | 0.8 | 0.1 | 50 | 0.32 | 4 | 0.75 | 4.00 | 4.29 | 4.57 | 4 |
| 3190802 | 0.8 | 0.1 | 50 | 0.32 | 6 | 0.75 | 6.00 | 6.42 | 6.78 | 4 |
| 3190803 | 0.8 | 0.1 | 50 | 0.32 | 8 | 0.75 | 8.00 | 8.54 | 8.97 | 4 |
| 3191006 | 1.0 | 0.1 | 50 | 0.40 | 4 | 0.95 | 4.00 | 4.29 | 4.56 | 4 |
| 3191007 | 1.0 | 0.1 | 50 | 0.40 | 6 | 0.95 | 6.00 | 6.41 | 6.77 | 4 |
| 3191008 | 1.0 | 0.1 | 50 | 0.40 | 8 | 0.95 | 8.00 | 8.53 | 8.96 | 4 |
| 3191009 | 1.0 | 0.1 | 50 | 0.40 | 10 | 0.95 | 10.00 | 10.63 | 11.13 | 4 |
| 3191010 | 1.0 | 0.1 | 50 | 0.40 | 12 | 0.95 | 12.00 | 12.73 | 13.29 | 4 |
| 3191011 | 1.0 | 0.2 | 50 | 0.40 | 4 | 0.95 | 4.00 | 4.29 | 4.56 | 4 |
| 3191012 | 1.0 | 0.2 | 50 | 0.40 | 6 | 0.95 | 6.00 | 6.41 | 6.77 | 4 |
| 3191013 | 1.0 | 0.2 | 50 | 0.40 | 8 | 0.95 | 8.00 | 8.53 | 8.96 | 4 |
| 3191014 | 1.0 | 0.2 | 50 | 0.40 | 10 | 0.95 | 10.00 | 10.63 | 11.13 | 4 |
| 3191015 | 1.0 | 0.2 | 50 | 0.40 | 12 | 0.95 | 12.00 | 12.73 | 13.29 | 4 |
| 3191018 | 1.0 | 0.3 | 50 | 0.40 | 4 | 0.95 | 4.00 | 4.29 | 4.56 | 4 |
| 3191019 | 1.0 | 0.3 | 50 | 0.40 | 6 | 0.95 | 6.00 | 6.41 | 6.77 | 4 |
| 3191501 | 1.5 | 0.1 | 50 | 0.60 | 4 | 1.45 | 4.00 | 4.29 | 4.56 | 4 |
| 3191503 | 1.5 | 0.1 | 50 | 0.60 | 8 | 1.45 | 8.00 | 8.53 | 8.96 | 4 |
| 3191505 | 1.5 | 0.1 | 50 | 0.60 | 12 | 1.45 | 12.00 | 12.73 | 13.29 | 4 |
| 3191506 | 1.5 | 0.2 | 50 | 0.60 | 4 | 1.45 | 4.00 | 4.29 | 4.56 | 4 |
| 3191507 | 1.5 | 0.2 | 50 | 0.60 | 6 | 1.45 | 6.00 | 6.41 | 6.77 | 4 |
| 3191508 | 1.5 | 0.2 | 50 | 0.60 | 8 | 1.45 | 8.00 | 8.53 | 8.96 | 4 |
| 3192001 | 2.0 | 0.1 | 50 | 0.80 | 8 | 1.95 | 8.00 | 8.53 | 8.96 | 4 |
| 3192002 | 2.0 | 0.1 | 50 | 0.80 | 10 | 1.95 | 10.00 | 10.63 | 11.13 | 4 |
| 3192003 | 2.0 | 0.1 | 50 | 0.80 | 12 | 1.95 | 12.00 | 12.73 | 13.29 | 4 |
| 3192004 | 2.0 | 0.1 | 50 | 0.80 | 16 | 1.95 | 16.00 | 16.92 | 17.57 | 4 |
| 3192013 | 2.0 | 0.3 | 50 | 0.80 | 8 | 1.95 | 8.00 | 8.53 | 8.96 | 4 |
| 3192015 | 2.0 | 0.3 | 50 | 0.80 | 12 | 1.95 | 12.00 | 12.73 | 13.29 | 4 |
| 3192019 | 2.0 | 0.5 | 50 | 0.80 | 6 | 1.95 | 6.00 | 6.41 | 6.77 | 4 |
| 3192020 | 2.0 | 0.5 | 50 | 0.80 | 8 | 1.95 | 8.00 | 8.53 | 8.96 | 4 |
| 3192021 | 2.0 | 0.5 | 50 | 0.80 | 10 | 1.95 | 10.00 | 10.63 | 11.13 | 4 |
| 3192022 | 2.0 | 0.5 | 50 | 0.80 | 12 | 1.95 | 12.00 | 12.73 | 13.29 | 4 |
| 3193008 | 3.0 | 0.3 | 50 | 1.20 | 12 | 2.85 | 12.00 | 12.73 | 13.29 | 4 |

Packed: 1 pc.
Available WXS[®] coating only.
Center Cutting applies only to diameter sizes over 0.8mm.



OSG's Performance & Savings

Don't require ultra-high performance? Try EXOCARB[®] WXS[®] - List 4592 (p. 893-895)

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 9592 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |

good best



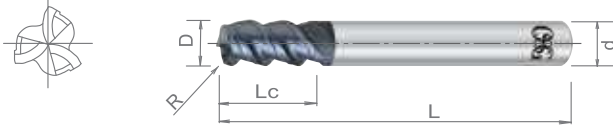


List 9575

PHX-DFR, 3 Flute, Deep Feed, Corner Radius

| | | | | |
|---------------------------------|----------------|------------|------------|--------------------|
| SPEED FEED P1128-1130 | CARBIDE | WXS | 55° | SHANK h6 |
|---------------------------------|----------------|------------|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|-------------------|
| 6 ≤ D ≤ 20 | +0.01mm / -0.01mm |
| Radius Tolerance | |
| 1.5 ≤ R ≤ 3 | +0.03mm / -0.03mm |



Units: mm

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|----------------|
| | D | R | L | Lc | d |
| 3090512 | 6 | 1.5 | 80 | 12 | 6 |
| 3090516 | 8 | 2.0 | 90 | 16 | 8 |
| 3090520 | 10 | 2.0 | 100 | 20 | 10 |
| 3090522 | 12 | 2.0 | 120 | 24 | 12 |
| 3090526 | 16 | 3.0 | 130 | 32 | 16 |
| 3090530 | 20 | 3.0 | 150 | 40 | 20 |

Packed: 1 pc.
Available WXS[®] coating only.



OSG's Performance & Savings

Not machining steel over 54 HRC? Try EXOCARB[®] WXL[®] - List 3771 (p. 880)
Don't require ultra-high performance? Try EXOCARB[®] WXS[®] - List 4571 (p. 889)

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------|---------|--------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 9575 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |

good best

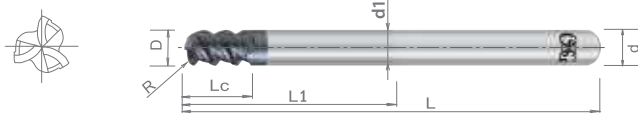




List 9576

PHX-LN-DFR, 3 Flute, Long Neck, Deep Feed, Corner Radius

| | | | | | |
|---------------------------------|----------------|------------|--|------------|--------------------|
| SPEED FEED P1128-1130 | CARBIDE | WXS | | 55° | SHANK h6 |
|---------------------------------|----------------|------------|--|------------|--------------------|



| Milling Diameter Tolerance | |
|----------------------------|-------------------|
| 4 ≤ D ≤ 16 | +0.01mm / -0.01mm |
| Radius Tolerance | |
| 1 ≤ R ≤ 3 | +0.03mm / -0.03mm |

Units: mm

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | R | L | Lc | L1 | d1 | d |
| 3092041 | 4 | 1.0 | 70 | 6 | 20 | 3.8 | 4 |
| 3092042 | 4 | 1.0 | 70 | 6 | 28 | 3.8 | 4 |
| 3092061 | 6 | 1.5 | 80 | 9 | 30 | 5.8 | 6 |
| 3092062 | 6 | 1.5 | 90 | 9 | 42 | 5.8 | 6 |
| 3092063 | 6 | 1.5 | 100 | 9 | 54 | 5.8 | 6 |
| 3092081 | 8 | 2.0 | 85 | 12 | 40 | 7.7 | 8 |
| 3092082 | 8 | 2.0 | 100 | 12 | 56 | 7.7 | 8 |
| 3092083 | 8 | 2.0 | 120 | 12 | 72 | 7.7 | 8 |
| 3092101 | 10 | 2.0 | 100 | 15 | 50 | 9.7 | 10 |
| 3092102 | 10 | 2.0 | 120 | 15 | 70 | 9.7 | 10 |
| 3092103 | 10 | 2.0 | 140 | 15 | 90 | 9.7 | 10 |
| 3092121 | 12 | 2.0 | 110 | 18 | 60 | 11.7 | 12 |
| 3092122 | 12 | 2.0 | 135 | 18 | 84 | 11.7 | 12 |
| 3092123 | 12 | 2.0 | 160 | 18 | 108 | 11.7 | 12 |
| 3092161 | 16 | 3.0 | 140 | 24 | 80 | 15.5 | 16 |
| 3092162 | 16 | 3.0 | 175 | 24 | 120 | 15.5 | 16 |

Packed: 1 pc.
Available WXS[®] coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|---------|--------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 9576 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |

good best





List 9580

PHX-PC-DFR, 3 Flute, Pencil Neck, Deep Feed, Corner Radius

| | | | | |
|---------------------------------|----------------|------------|------------|--------------------|
| SPEED FEED P1128-1130 | CARBIDE | WXS | 55° | SHANK h6 |
|---------------------------------|----------------|------------|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 2 ≤ D ≤ 12 | +0 / -0.015mm |

| Radius Tolerance | |
|------------------|-------------------|
| 0.5 ≤ R ≤ 2 | +0.03mm / -0.03mm |

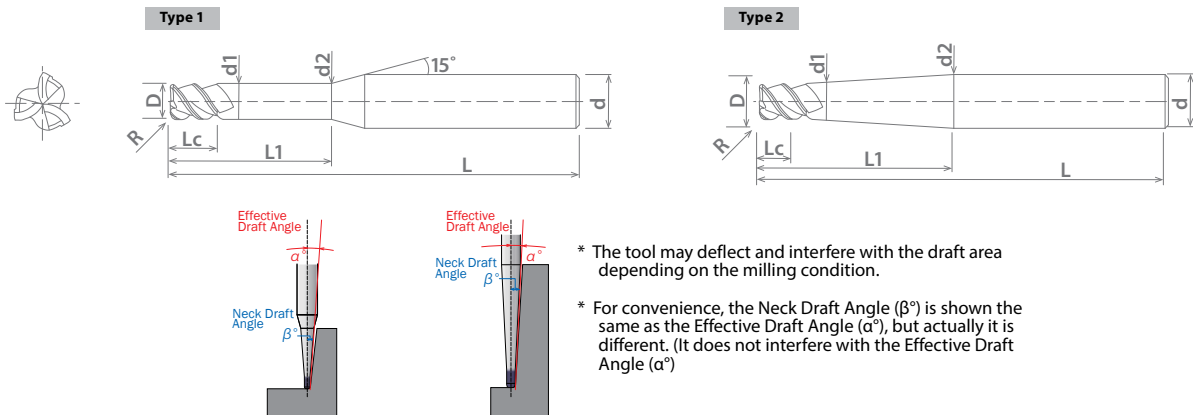


Units: mm

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Min. Neck Diameter | Maximum Neck Diameter | Neck Length | Effective Draft Angle | Neck Draft Angle | Shank Diameter | Type |
|------------|---------------|---------------|----------------|---------------|--------------------|-----------------------|-------------|-----------------------|------------------|----------------|------|
| | D | R | L | Lc | d1 | d2 | L1 | α | β | d | |
| 3097223 | 2 | 0.5 | 60 | 3.0 | 1.95 | 2.25 | 20.0 | 0.36° | 0.5° | 6 | 1 |
| 3097224 | 2 | 0.5 | 70 | 3.0 | 1.95 | 2.33 | 25.0 | 0.39° | 0.5° | 6 | 1 |
| 3097225 | 2 | 0.5 | 80 | 3.0 | 1.95 | 2.42 | 30.0 | 0.41° | 0.5° | 6 | 1 |
| 3097226 | 2 | 0.5 | 80 | 3.0 | 1.95 | 2.51 | 35.0 | 0.42° | 0.5° | 6 | 1 |
| 3097227 | 2 | 0.5 | 80 | 3.0 | 1.95 | 2.60 | 40.0 | 0.43° | 0.5° | 6 | 1 |
| 3097241 | 2 | 0.5 | 60 | 3.0 | 1.95 | 2.19 | 10.0 | 0.59° | 1° | 6 | 1 |
| 3097242 | 2 | 0.5 | 60 | 3.0 | 1.95 | 2.37 | 15.0 | 0.73° | 1° | 6 | 1 |
| 3097243 | 2 | 0.5 | 60 | 3.0 | 1.95 | 2.54 | 20.0 | 0.80° | 1° | 6 | 1 |
| 3097244 | 2 | 0.5 | 70 | 3.0 | 1.95 | 2.72 | 25.0 | 0.84° | 1° | 6 | 1 |
| 3097245 | 2 | 0.5 | 80 | 3.0 | 1.95 | 2.89 | 30.0 | 0.87° | 1° | 6 | 1 |
| 3097246 | 2 | 0.5 | 80 | 3.0 | 1.95 | 3.07 | 35.0 | 0.89° | 1° | 6 | 1 |
| 3097247 | 2 | 0.5 | 80 | 3.0 | 1.95 | 3.24 | 40.0 | 0.90° | 1° | 6 | 1 |
| 3097248 | 2 | 0.5 | 100 | 3.0 | 1.95 | 3.42 | 45.0 | 0.91° | 1° | 6 | 1 |
| 3097249 | 2 | 0.5 | 100 | 3.0 | 1.95 | 3.59 | 50.0 | 0.92° | 1° | 6 | 1 |
| 3097251 | 2 | 0.5 | 80 | 3.0 | 1.95 | 3.89 | 40.0 | 1.37° | 1.5° | 6 | 1 |
| 3097262 | 2 | 0.5 | 100 | 3.0 | 1.95 | 6.00 | 60.3 | 2.00° | 2° | 6 | 2 |
| 3097273 | 2 | 0.5 | 100 | 3.0 | 1.95 | 6.00 | 41.2 | 3.00° | 3° | 6 | 2 |
| 3097321 | 3 | 0.8 | 80 | 4.5 | 2.90 | 3.17 | 20.0 | 0.25° | 0.5° | 6 | 1 |
| 3097341 | 3 | 0.8 | 80 | 4.5 | 2.90 | 3.44 | 20.0 | 0.66° | 1° | 6 | 1 |
| 3097342 | 3 | 0.8 | 80 | 4.5 | 2.90 | 3.62 | 25.0 | 0.73° | 1° | 6 | 1 |
| 3097343 | 3 | 0.8 | 80 | 4.5 | 2.90 | 3.79 | 30.0 | 0.78° | 1° | 6 | 1 |

Packed: 1 pc.
Available WXS[®] coating only.

continued on next page **EP**



| List No. | Work Material | | | | | | | | | | | | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|----------|--------------|--------------|----------|-------------------|---------|-----------|
| | P | | | | | M | | | K | N | | S | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | |
| | Low | Med. | High | 4140 4340 | | 300 | 400 | 17-4 PH | | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 9580 | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | | | ☐ | ☐ | ☐ | ☐ |

☐ good ☐ best





List 9580 (Continued)

PHX-PC-DFR, 3 Flute, Pencil Neck, Deep Feed, Corner Radius

| | | | | | |
|---------------------------------|----------------|------------|--|------------|--------------------|
| SPEED FEED P1128-1130 | CARBIDE | WXS | | 55° | SHANK h6 |
|---------------------------------|----------------|------------|--|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 2 ≤ D ≤ 12 | +0 / -0.015mm |

| Radius Tolerance | |
|------------------|-------------------|
| 0.5 ≤ R ≤ 2 | +0.03mm / -0.03mm |



Units: mm

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Min. Neck Diameter | Maximum Neck Diameter | Neck Length | Effective Draft Angle | Neck Draft Angle | Shank Diameter | Type |
|------------|---------------|---------------|----------------|---------------|--------------------|-----------------------|-------------|-----------------------|------------------|----------------|------|
| | D | R | L | Lc | d1 | d2 | L1 | α | β | d | |
| 3097344 | 3 | 0.8 | 80 | 4.5 | 2.90 | 4.14 | 40.0 | 0.83° | 1° | 6 | 1 |
| 3097345 | 3 | 0.8 | 100 | 4.5 | 2.90 | 4.49 | 50.0 | 0.87° | 1° | 6 | 1 |
| 3097346 | 3 | 0.8 | 100 | 4.5 | 2.90 | 4.84 | 60.0 | 0.89° | 1° | 6 | 1 |
| 3097356 | 3 | 0.8 | 100 | 4.5 | 2.90 | 6.00 | 60.8 | 1.50° | 1.5° | 6 | 2 |
| 3097365 | 3 | 0.8 | 100 | 4.5 | 2.90 | 6.00 | 46.5 | 2.00° | 2° | 6 | 2 |
| 3097374 | 3 | 0.8 | 100 | 4.5 | 2.90 | 6.00 | 32.1 | 3.00° | 3° | 6 | 2 |
| 3097421 | 4 | 1.0 | 80 | 6.0 | 3.90 | 4.23 | 25.0 | 0.28° | 0.5° | 6 | 1 |
| 3097422 | 4 | 1.0 | 80 | 6.0 | 3.90 | 4.32 | 30.0 | 0.31° | 0.5° | 6 | 1 |
| 3097423 | 4 | 1.0 | 80 | 6.0 | 3.90 | 4.41 | 35.0 | 0.34° | 0.5° | 6 | 1 |
| 3097424 | 4 | 1.0 | 80 | 6.0 | 3.90 | 4.49 | 40.0 | 0.36° | 0.5° | 6 | 1 |
| 3097425 | 4 | 1.0 | 80 | 6.0 | 3.90 | 4.58 | 45.0 | 0.38° | 0.5° | 6 | 1 |
| 3097426 | 4 | 1.0 | 100 | 6.0 | 3.90 | 4.67 | 50.0 | 0.39° | 0.5° | 6 | 1 |
| 3097441 | 4 | 1.0 | 80 | 6.0 | 3.90 | 4.74 | 30.0 | 0.73° | 1° | 6 | 1 |
| 3097442 | 4 | 1.0 | 80 | 6.0 | 3.90 | 5.09 | 40.0 | 0.80° | 1° | 6 | 1 |
| 3097443 | 4 | 1.0 | 100 | 6.0 | 3.90 | 5.44 | 50.0 | 0.84° | 1° | 6 | 1 |
| 3097444 | 4 | 1.0 | 100 | 6.0 | 3.90 | 6.00 | 61.3 | 1.00° | 1° | 6 | 2 |
| 3097453 | 4 | 1.0 | 80 | 6.0 | 3.90 | 6.00 | 42.2 | 1.50° | 1.5° | 6 | 2 |
| 3097454 | 4 | 1.0 | 120 | 6.0 | 3.90 | 8.00 | 80.4 | 1.50° | 1.5° | 8 | 2 |
| 3097461 | 4 | 1.0 | 80 | 6.0 | 3.90 | 6.00 | 32.6 | 2.00° | 2° | 6 | 2 |
| 3097462 | 4 | 1.0 | 120 | 6.0 | 3.90 | 8.00 | 61.3 | 2.00° | 2° | 8 | 2 |
| 3097472 | 4 | 1.0 | 100 | 6.0 | 3.90 | 8.00 | 42.2 | 3.00° | 3° | 8 | 2 |
| 3097627 | 6 | 1.5 | 130 | 9.0 | 5.90 | 6.79 | 60.0 | 0.39° | 0.5° | 8 | 1 |
| 3097641 | 6 | 1.5 | 100 | 9.0 | 5.90 | 6.98 | 40.0 | 0.73° | 1° | 8 | 1 |
| 3097642 | 6 | 1.5 | 100 | 9.0 | 5.90 | 7.33 | 50.0 | 0.79° | 1° | 8 | 1 |
| 3097643 | 6 | 1.5 | 130 | 9.0 | 5.90 | 8.00 | 62.3 | 1.00° | 1° | 8 | 2 |
| 3097651 | 6 | 1.5 | 100 | 9.0 | 5.90 | 8.00 | 43.2 | 1.50° | 1.5° | 8 | 2 |
| 3097653 | 6 | 1.5 | 130 | 9.0 | 5.90 | 10.00 | 81.4 | 1.50° | 1.5° | 10 | 2 |
| 3097661 | 6 | 1.5 | 100 | 9.0 | 5.90 | 8.00 | 33.6 | 2.00° | 2° | 8 | 2 |
| 3097662 | 6 | 1.5 | 130 | 9.0 | 5.90 | 10.00 | 62.3 | 2.00° | 2° | 10 | 2 |
| 3097826 | 8 | 2.0 | 150 | 12.0 | 7.90 | 9.09 | 80.0 | 0.40° | 0.5° | 10 | 1 |
| 3097841 | 8 | 2.0 | 120 | 12.0 | 7.90 | 9.23 | 50.0 | 0.73° | 1° | 10 | 1 |
| 3097842 | 8 | 2.0 | 150 | 12.0 | 7.90 | 10.00 | 63.3 | 1.00° | 1° | 10 | 2 |
| 3097844 | 8 | 2.0 | 180 | 12.0 | 7.90 | 12.00 | 120.6 | 1.00° | 1° | 12 | 2 |
| 3097851 | 8 | 2.0 | 120 | 12.0 | 7.90 | 10.00 | 44.2 | 1.50° | 1.5° | 10 | 2 |
| 3097853 | 8 | 2.0 | 150 | 12.0 | 7.90 | 12.00 | 82.4 | 1.50° | 1.5° | 12 | 2 |
| 3097861 | 8 | 2.0 | 120 | 12.0 | 7.90 | 10.00 | 34.6 | 2.00° | 2° | 10 | 2 |
| 3097862 | 8 | 2.0 | 120 | 12.0 | 7.90 | 12.00 | 63.3 | 2.00° | 2° | 12 | 2 |
| 3098026 | 10 | 2.0 | 150 | 15.0 | 9.90 | 11.38 | 100.0 | 0.40° | 0.5° | 12 | 1 |
| 3098041 | 10 | 2.0 | 120 | 15.0 | 9.90 | 12.00 | 64.3 | 1.00° | 1° | 12 | 2 |
| 3098042 | 10 | 2.0 | 160 | 15.0 | 9.90 | 12.17 | 80.0 | 0.80° | 1° | 16 | 1 |
| 3098043 | 10 | 2.0 | 160 | 15.0 | 9.90 | 12.87 | 100.0 | 0.84° | 1° | 16 | 1 |
| 3098044 | 10 | 2.0 | 180 | 15.0 | 9.90 | 13.57 | 120.0 | 0.87° | 1° | 16 | 1 |
| 3098045 | 10 | 2.0 | 200 | 15.0 | 9.90 | 14.26 | 140.0 | 0.88° | 1° | 16 | 1 |
| 3098046 | 10 | 2.0 | 220 | 15.0 | 9.90 | 14.96 | 160.0 | 0.90° | 1° | 16 | 1 |
| 3098051 | 10 | 2.0 | 120 | 15.0 | 9.90 | 12.00 | 45.2 | 1.50° | 1.5° | 12 | 2 |
| 3098053 | 10 | 2.0 | 180 | 15.0 | 9.90 | 16.00 | 121.6 | 1.50° | 1.5° | 16 | 2 |
| 3098061 | 10 | 2.0 | 120 | 15.0 | 9.90 | 12.00 | 35.6 | 2.00° | 2° | 12 | 2 |

Packed: 1 pc.
Available WXS[®] coating only.



List 9580 (Continued)

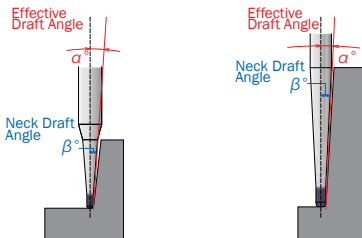
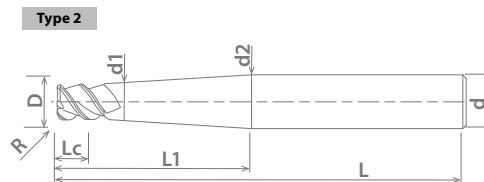
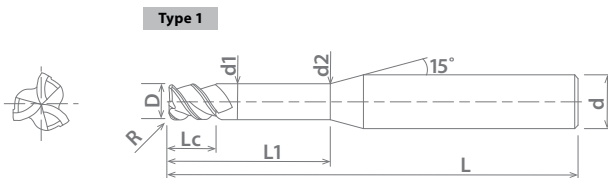
| | | | | |
|---------------------------------|----------------|------------|------------|--------------------|
| SPEED FEED P1128-1130 | CARBIDE | WXS | 55° | SHANK h6 |
|---------------------------------|----------------|------------|------------|--------------------|

PHX-PC-DFR, 3 Flute, Pencil Neck, Deep Feed, Corner Radius

Units: mm

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Min. Neck Diameter | Maximum Neck Diameter | Neck Length | Effective Draft Angle | Neck Draft Angle | Shank Diameter | Type |
|------------|---------------|---------------|----------------|---------------|--------------------|-----------------------|-------------|-----------------------|------------------|----------------|------|
| | D | R | L | Lc | d1 | d2 | L1 | α | β | d | |
| 3098064 | 10 | 2.0 | 220 | 15.0 | 9.90 | 16.00 | 92.9 | 2.00° | 2° | 16 | 2 |
| 3098224 | 12 | 2.0 | 180 | 18.0 | 11.90 | 13.68 | 120.0 | 0.41° | 0.5° | 16 | 1 |
| 3098241 | 12 | 2.0 | 120 | 18.0 | 11.90 | 13.37 | 60.0 | 0.67° | 1° | 16 | 1 |
| 3098242 | 12 | 2.0 | 180 | 18.0 | 11.90 | 14.76 | 100.0 | 0.81° | 1° | 16 | 1 |
| 3098243 | 12 | 2.0 | 180 | 18.0 | 11.90 | 16.00 | 122.6 | 1.00° | 1° | 16 | 2 |
| 3098244 | 12 | 2.0 | 220 | 18.0 | 11.90 | 16.86 | 160.0 | 0.88° | 1° | 20 | 1 |
| 3098254 | 12 | 2.0 | 220 | 18.0 | 11.90 | 20.00 | 160.8 | 1.50° | 1.5° | 20 | 2 |

Packed: 1 pc.
Available WXS[®] coating only.



- * The tool may deflect and interfere with the draft area depending on the milling condition.
- * For convenience, the Neck Draft Angle (β°) is shown the same as the Effective Draft Angle (α°), but actually it is different. (It does not interfere with the Effective Draft Angle (α°))

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 9580 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |

good best





List 9570

PHX-CRT, 3 Flute, High Feed, Corner Radius

| | | | | | |
|---------------------------------|----------------|------------------------|--|------------|--------------------|
| SPEED FEED P1128-1130 | CARBIDE | EXO[®] | | 55° | SHANK h6 |
|---------------------------------|----------------|------------------------|--|------------|--------------------|

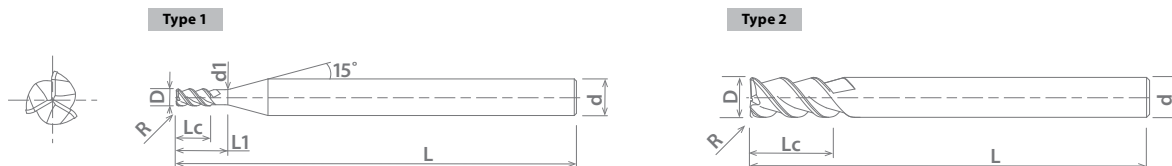


| Milling Diameter Tolerance | |
|----------------------------|--------------------|
| 1 ≤ D ≤ 5 | +0 / -0.015mm |
| 6 ≤ D ≤ 20 | +0.01mm / -0.005mm |
| Radius Tolerance | |
| 0.3 ≤ R ≤ 3 | +0.01mm / -0.01mm |

Units: mm

| EDP Number | Mill Diameter D | Corner Radius R | Overall Length L | Length of Cut Lc | Neck Length L1 | Neck Diameter d1 | Effective Neck Length (Le) (Based on Inclined Angle) | | | | Shank Diameter d | Type |
|------------|--------------------|--------------------|---------------------|---------------------|-------------------|---------------------|---|-------|-------|-------|---------------------|------|
| | | | | | | | α | | | | | |
| | | | | | | | 0.5° | 1° | 2° | 3° | | |
| 3090002 | 1.0 | 0.3 | 60 | 2 | 4.0 | 0.95 | 4.29 | 4.56 | 5.05 | 5.50 | 6 | 1 |
| 3090003 | 1.5 | 0.3 | 60 | 3 | 4.5 | 1.45 | 4.82 | 5.11 | 5.64 | 6.12 | 6 | 1 |
| 3090004 | 2.0 | 0.5 | 60 | 4 | 6.0 | 1.95 | 6.41 | 6.77 | 7.39 | 7.89 | 6 | 1 |
| 3090006 | 3.0 | 0.8 | 70 | 6 | 9.0 | 2.85 | 9.46 | 9.87 | 10.62 | 11.48 | 6 | 1 |
| 3090008 | 4.0 | 1.0 | 70 | 8 | 12.0 | 3.85 | 12.60 | 13.09 | 14.07 | 15.21 | 6 | 1 |
| 3090010 | 5.0 | 1.0 | 70 | 10 | 15.0 | 4.85 | 15.72 | 16.30 | - | - | 6 | 1 |
| 3090012 | 6.0 | 1.5 | 80 | 12 | - | - | - | - | - | - | 6 | 2 |
| 3090016 | 8.0 | 2.0 | 90 | 16 | - | - | - | - | - | - | 8 | 2 |
| 3090020 | 10.0 | 2.0 | 100 | 20 | - | - | - | - | - | - | 10 | 2 |
| 3090022 | 12.0 | 2.0 | 120 | 24 | - | - | - | - | - | - | 12 | 2 |
| 3090026 | 16.0 | 3.0 | 130 | 32 | - | - | - | - | - | - | 16 | 2 |
| 3090030 | 20.0 | 3.0 | 150 | 40 | - | - | - | - | - | - | 20 | 2 |

Packed: 1 pc.
Available EXO[®] coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try EXOCARB[®] WXS[®] - List 4570 (p. 890)

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 9570 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |

good best

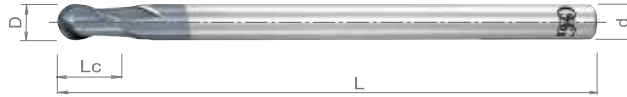




List 3610

WXL-EBD, 2 Flute, Regular Length, Ball End

| | | | | | | |
|------------------|----------------------------|----------------|------------|------------|------------|--------------------|
| NEW SIZES | SPEED FEED P1135 | CARBIDE | WXL | REG | 30° | SHANK h6 |
|------------------|----------------------------|----------------|------------|------------|------------|--------------------|



| Radius Tolerance | |
|------------------|---------------------|
| 1/32 ≤ D ≤ 3/16 | +0.0002" / -0.0002" |
| 1/4 ≤ D ≤ 1/2 | +0.0001" / -0.0003" |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 36100111 | 1/32 | 2-1/2 | 1/32 | 1/4 |
| 36100211 | 1/16 | 2-1/2 | 1/16 | 1/4 |
| 36100311 | 3/32 | 2-1/2 | 3/32 | 1/4 |
| 36100411 | 1/8 | 3 | 1/8 | 1/4 |
| 36101011 | 5/32 | 2-1/2 | 5/32 | 1/4 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 36100511 | 3/16 | 3 | 3/16 | 1/4 |
| 36100611 | 1/4 | 3 | 1/4 | 1/4 |
| 36100711 | 5/16 | 4 | 5/16 | 5/16 |
| 36100811 | 3/8 | 4 | 3/8 | 3/8 |
| 36100911 | 1/2 | 4 | 1/2 | 1/2 |

Units: Inch

Packed: 1 pc.
Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP421BN, HP416 or HP413 (p. 980-981, 982 or 986)

Machining steel over 54 HRC? Try EXOCARB® WXS® - List 4410 (p. 884)

Work Material

| List No. | P | | | | | | M | | | K | N | | S | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 3610 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

good best





EXOCARB® WXL®

Premium Performance Carbide End Mills with OSG's Proprietary WXL® Coating

List 3710

WXL-EBD, 2 Flute, Regular Length, Ball End

| | | | | | |
|---------------------|---------|-----|-----|-----|-------------|
| SPEED FEED P1136 | CARBIDE | WXL | REG | 30° | SHANK h6 |
|---------------------|---------|-----|-----|-----|-------------|



| Radius Tolerance | |
|------------------|---------------------|
| R < 3 | +0.005mm / -0.005mm |
| 3 ≤ R ≤ 6 | +0.003mm / -0.007mm |
| 6 > R | +0.01mm / -0.01mm |

Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 3105010 | 0.1 | 40 | 0.2 | 4 |
| 3105020 | 0.2 | 40 | 0.4 | 4 |
| 3105030 | 0.3 | 40 | 0.6 | 4 |
| 3105040 | 0.4 | 40 | 0.8 | 4 |
| 3105050 | 0.5 | 40 | 1.1 | 4 |
| 3105060 | 0.6 | 40 | 1.1 | 4 |
| 3105080 | 0.8 | 40 | 2.0 | 4 |
| 3105100 | 1.0 | 50 | 1.5 | 4 |
| 3106100 | 1.0 | 60 | 2.5 | 6 |
| 3105120 | 1.2 | 50 | 3.0 | 4 |
| 3105140 | 1.4 | 50 | 3.5 | 4 |
| 3105150 | 1.5 | 50 | 2.0 | 4 |
| 3106150 | 1.5 | 50 | 4.0 | 6 |
| 3105160 | 1.6 | 50 | 4.0 | 4 |
| 3105200 | 2.0 | 50 | 3.0 | 4 |
| 3106200 | 2.0 | 50 | 5.0 | 6 |
| 3105250 | 2.5 | 50 | 3.0 | 4 |
| 3106250 | 2.5 | 60 | 6.0 | 6 |
| 3105300 | 3.0 | 60 | 4.5 | 4 |
| 3106300 | 3.0 | 60 | 8.0 | 6 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 3106350 | 3.5 | 70 | 8.0 | 6 |
| 3105400 | 4.0 | 60 | 8.0 | 4 |
| 3106400 | 4.0 | 70 | 6.0 | 6 |
| 3106500 | 5.0 | 80 | 8.0 | 6 |
| 3106502 | 5.0 | 80 | 12.0 | 6 |
| 3106600 | 6.0 | 90 | 10.0 | 6 |
| 3106601 | 6.0 | 90 | 12.0 | 6 |
| 3106610 | 7.0 | 90 | 14.0 | 6 |
| 3106620 | 8.0 | 100 | 12.0 | 8 |
| 3106621 | 8.0 | 100 | 14.0 | 8 |
| 3106630 | 9.0 | 100 | 18.0 | 8 |
| 3106640 | 10.0 | 100 | 15.0 | 10 |
| 3106641 | 10.0 | 100 | 18.0 | 10 |
| 3106650 | 11.0 | 100 | 22.0 | 10 |
| 3106660 | 12.0 | 110 | 18.0 | 12 |
| 3106661 | 12.0 | 110 | 22.0 | 12 |
| 3106670 | 14.0 | 110 | 26.0 | 12 |
| 3106680 | 16.0 | 140 | 30.0 | 16 |
| 3106690 | 18.0 | 140 | 34.0 | 16 |
| 3106700 | 20.0 | 160 | 38.0 | 20 |

Packed: 1 pc.
Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP421BN, HP416 or HP413 (p. 980-981, 982 or 986)

Machining steel over 54 HRC? Try EXOCARB® WXS® - List 4510 (p. 885)

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 3710 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

good best





List 3670

WXL-CR-EMS, 4 Flute, Regular Length, Corner Radius

| | | | | | | |
|------------------|----------------------------|----------------|------------|------------|------------|--------------------|
| NEW SIZES | SPEED FEED P1137 | CARBIDE | WXL | REG | 30° | SHANK h6 |
|------------------|----------------------------|----------------|------------|------------|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/16 ≤ D ≤ 1 | +0 / -0.0008" |



Units: Inch

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|----------------|
| | D | R | L | Lc | d |
| 36700111 | 1/16 | 0.010 | 1-1/2 | 3/16 | 1/8 |
| 36700211 | 5/64 | 0.010 | 1-1/2 | 1/4 | 1/8 |
| 36700311 | 3/32 | 0.010 | 1-1/2 | 3/8 | 1/8 |
| 36700411 | 7/64 | 0.010 | 1-1/2 | 3/8 | 1/8 |
| 36700511 | 1/8 | 0.010 | 1-1/2 | 1/2 | 1/8 |
| 36700611 | 1/8 | 0.020 | 1-1/2 | 1/2 | 1/8 |
| 36700711 | 1/8 | 0.030 | 1-1/2 | 1/2 | 1/8 |
| 36700811 | 5/32 | 0.020 | 2 | 9/16 | 3/16 |
| 36700911 | 5/32 | 0.030 | 2 | 9/16 | 3/16 |
| 36701011 | 3/16 | 0.020 | 2 | 5/8 | 3/16 |
| 36701111 | 3/16 | 0.030 | 2 | 5/8 | 3/16 |
| 36701211 | 7/32 | 0.020 | 2-1/2 | 5/8 | 1/4 |
| 36701311 | 7/32 | 0.030 | 2-1/2 | 5/8 | 1/4 |
| 36701411 | 1/4 | 0.020 | 2-1/2 | 3/4 | 1/4 |
| 36701511 | 1/4 | 0.030 | 2-1/2 | 3/4 | 1/4 |
| 36701611 | 1/4 | 0.045 | 2-1/2 | 3/4 | 1/4 |
| 36701711 | 1/4 | 0.060 | 2-1/2 | 3/4 | 1/4 |
| 36701811 | 5/16 | 0.020 | 2-1/2 | 13/16 | 5/16 |
| 36701911 | 5/16 | 0.030 | 2-1/2 | 13/16 | 5/16 |
| 36703011 | 5/16 | 0.060 | 2-1/2 | 13/16 | 5/16 |
| 36702011 | 3/8 | 0.020 | 2-1/2 | 1 | 3/8 |
| 36702111 | 3/8 | 0.030 | 2-1/2 | 1 | 3/8 |
| 36702211 | 3/8 | 0.045 | 2-1/2 | 1 | 3/8 |

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|----------------|
| | D | R | L | Lc | d |
| 36702311 | 3/8 | 0.060 | 2-1/2 | 1 | 3/8 |
| 36703111 | 3/8 | 0.090 | 2-1/2 | 1 | 3/8 |
| 36702411 | 7/16 | 0.020 | 2-3/4 | 1 | 7/16 |
| 36702511 | 7/16 | 0.030 | 2-3/4 | 1 | 7/16 |
| 36703211 | 7/16 | 0.060 | 2-3/4 | 1 | 7/16 |
| 36702611 | 1/2 | 0.020 | 3 | 1 | 1/2 |
| 36702711 | 1/2 | 0.030 | 3 | 1 | 1/2 |
| 36702811 | 1/2 | 0.045 | 3 | 1 | 1/2 |
| 36702911 | 1/2 | 0.060 | 3 | 1 | 1/2 |
| 36703311 | 1/2 | 0.090 | 3 | 1 | 1/2 |
| 36703411 | 5/8 | 0.030 | 3-1/2 | 1-1/4 | 5/8 |
| 36703511 | 5/8 | 0.060 | 3-1/2 | 1-1/4 | 5/8 |
| 36703611 | 5/8 | 0.090 | 3-1/2 | 1-1/4 | 5/8 |
| 36703711 | 5/8 | 0.125 | 3-1/2 | 1-1/4 | 5/8 |
| 36703811 | 3/4 | 0.030 | 4 | 1-1/2 | 3/4 |
| 36703911 | 3/4 | 0.060 | 4 | 1-1/2 | 3/4 |
| 36704011 | 3/4 | 0.090 | 4 | 1-1/2 | 3/4 |
| 36704111 | 3/4 | 0.125 | 4 | 1-1/2 | 3/4 |
| 36704211 | 1 | 0.030 | 4 | 1-1/2 | 1 |
| 36704311 | 1 | 0.060 | 4 | 1-1/2 | 1 |
| 36704411 | 1 | 0.090 | 4 | 1-1/2 | 1 |
| 36704511 | 1 | 0.125 | 4 | 1-1/2 | 1 |

Packed: 1 pc.

Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP434 (p. 987-988)
Machining steel over 54 HRC? Try EXOCARB® WXS® - List 4471 (p. 888)

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 3670 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





EXOCARB® WXL®

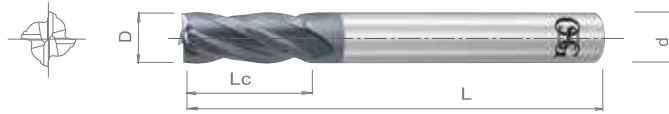
Premium Performance Carbide End Mills with OSG's Proprietary WXL® Coating

List 3604

WXL-EMS, 4 Flute, Regular Length

| | | | | | | |
|------------------|----------------------------|----------------|------------|------------|------------|--------------------|
| NEW SIZES | SPEED FEED P1138 | CARBIDE | WXL | REG | 30° | SHANK h6 |
|------------------|----------------------------|----------------|------------|------------|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/16 ≤ D ≤ 1 | +0 / -0.0008" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 36040111 | 1/16 | 1-1/2 | 3/16 | 1/8 |
| 36040211 | 5/64 | 1-1/2 | 1/4 | 1/8 |
| 36040311 | 3/32 | 1-1/2 | 3/8 | 1/8 |
| 36040411 | 7/64 | 1-1/2 | 3/8 | 1/8 |
| 36040511 | 1/8 | 1-1/2 | 1/2 | 1/8 |
| 36040611 | 5/32 | 2 | 9/16 | 3/16 |
| 36040711 | 3/16 | 2 | 5/8 | 3/16 |
| 36040811 | 7/32 | 2-1/2 | 5/8 | 1/4 |
| 36040911 | 1/4 | 2-1/2 | 3/4 | 1/4 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 36041011 | 9/32 | 2-1/2 | 3/4 | 5/16 |
| 36041111 | 5/16 | 2-1/2 | 13/16 | 5/16 |
| 36041211 | 3/8 | 2-1/2 | 1 | 3/8 |
| 36041311 | 7/16 | 2-3/4 | 1 | 7/16 |
| 36041411 | 1/2 | 3 | 1 | 1/2 |
| 36041511 | 5/8 | 3-1/2 | 1-1/4 | 5/8 |
| 36041611 | 3/4 | 4 | 1-1/2 | 3/4 |
| 36041711 | 1 | 4 | 1-1/2 | 1 |

Packed: 1 pc.
Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP441 (p. 969-970)
Machining steel over 54 HRC? Try EXOCARB® WXS® - List 4440 (p. 886)

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 3604 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 3690

WXL-LN-EBD, 2 Flute, Regular Length, Long Neck, Ball End, Rib Processing

| | | | | | |
|--------------------------|---------|-----|-----|-----|-------------|
| SPEED FEED P1139-1148 | CARBIDE | WXL | REG | 30° | SHANK h6 |
|--------------------------|---------|-----|-----|-----|-------------|

±5µm (±0.0002") Radius Tolerance



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | L | Lc | L1 | d1 | d |
| 36900111 | 1/64 | 2-1/2 | 1/64 | 3/64 | 0.013 | 1/8 |
| 36900211 | 1/64 | 2-1/2 | 1/64 | 3/32 | 0.013 | 1/8 |
| 36900311 | 1/32 | 2-1/2 | 1/32 | 5/32 | 0.029 | 1/4 |
| 36900411 | 1/32 | 2-1/2 | 1/32 | 5/16 | 0.029 | 1/4 |
| 36900511 | 1/32 | 2-1/2 | 1/32 | 13/32 | 0.029 | 1/4 |
| 36900611 | 1/16 | 2-1/2 | 1/16 | 5/16 | 0.061 | 1/4 |
| 36900711 | 1/16 | 2-1/2 | 1/16 | 5/8 | 0.061 | 1/4 |
| 36900811 | 1/16 | 3 | 1/16 | 13/16 | 0.061 | 1/4 |
| 36900911 | 3/32 | 2-1/2 | 3/32 | 15/32 | 0.092 | 1/4 |
| 36901011 | 3/32 | 2-7/8 | 3/32 | 15/16 | 0.092 | 1/4 |
| 36901111 | 3/32 | 3-1/8 | 3/32 | 1-13/32 | 0.092 | 1/4 |
| 36901211 | 1/8 | 3 | 1/8 | 5/8 | 0.123 | 1/4 |
| 36901311 | 1/8 | 3 | 1/8 | 1-1/4 | 0.123 | 1/4 |
| 36901411 | 1/8 | 3-3/4 | 1/8 | 1-7/8 | 0.123 | 1/4 |
| 36901511 | 3/16 | 3-1/2 | 3/16 | 15/16 | 0.185 | 1/4 |
| 36901611 | 3/16 | 4 | 3/16 | 1-7/8 | 0.185 | 1/4 |
| 36901711 | 1/4 | 4 | 1/4 | 1-1/4 | 0.248 | 1/4 |
| 36901811 | 1/4 | 4-1/2 | 1/4 | 2 | 0.248 | 1/4 |

Packed: 1 pc.
Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP419 (p. 984)

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 3690 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

good best



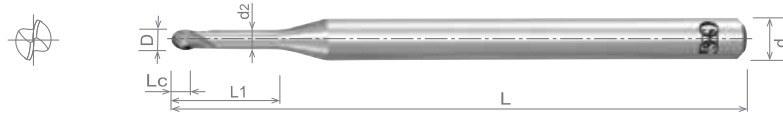


List 3790

WXL-LN-EBD, 2 Flute, Regular Length, Long Neck, Ball End, Rib Processing

| | | | | | |
|--------------------------|---------|-----|-----|-----|-------------|
| SPEED FEED P1139-1148 | CARBIDE | WXL | REG | 30° | SHANK h6 |
|--------------------------|---------|-----|-----|-----|-------------|

±5µm Radius Tolerance



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Neck Dia. | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|-----------|----------------|
| | D | L | Lc | L1 | d2 | d |
| 3110103 | 0.1 | 45 | 0.1 | 0.3 | 0.085 | 4 |
| 3110105 | 0.1 | 45 | 0.1 | 0.5 | 0.085 | 4 |
| 3110203 | 0.2 | 45 | 0.2 | 0.3 | 0.18 | 4 |
| 3110205 | 0.2 | 45 | 0.2 | 0.5 | 0.18 | 4 |
| 3110207 | 0.2 | 45 | 0.16 | 0.75 | 0.18 | 4 |
| 3110210 | 0.2 | 45 | 0.2 | 1.0 | 0.18 | 4 |
| 3110212 | 0.2 | 45 | 0.16 | 1.25 | 0.18 | 4 |
| 3110215 | 0.2 | 45 | 0.2 | 1.5 | 0.18 | 4 |
| 3110217 | 0.2 | 45 | 0.16 | 1.75 | 0.18 | 4 |
| 3110220 | 0.2 | 45 | 0.16 | 2.0 | 0.18 | 4 |
| 3110225 | 0.2 | 45 | 0.16 | 2.5 | 0.18 | 4 |
| 3110230 | 0.2 | 45 | 0.16 | 3.0 | 0.18 | 4 |
| 3110305 | 0.3 | 45 | 0.24 | 0.5 | 0.28 | 4 |
| 3110306 | 0.3 | 45 | 0.24 | 0.6 | 0.28 | 4 |
| 3110307 | 0.3 | 45 | 0.24 | 0.75 | 0.28 | 4 |
| 3110310 | 0.3 | 45 | 0.2 | 1.0 | 0.28 | 4 |
| 3110312 | 0.3 | 45 | 0.24 | 1.25 | 0.28 | 4 |
| 3110315 | 0.3 | 45 | 0.2 | 1.5 | 0.28 | 4 |
| 3110317 | 0.3 | 45 | 0.24 | 1.75 | 0.28 | 4 |
| 3110320 | 0.3 | 45 | 0.2 | 2.0 | 0.28 | 4 |
| 3110322 | 0.3 | 45 | 0.24 | 2.25 | 0.28 | 4 |
| 3110325 | 0.3 | 45 | 0.24 | 2.5 | 0.28 | 4 |
| 3110327 | 0.3 | 45 | 0.24 | 2.75 | 0.28 | 4 |
| 3110330 | 0.3 | 45 | 0.24 | 3.0 | 0.28 | 4 |
| 3110335 | 0.3 | 45 | 0.24 | 3.5 | 0.28 | 4 |
| 3110340 | 0.3 | 45 | 0.24 | 4.0 | 0.28 | 4 |
| 3110345 | 0.3 | 45 | 0.24 | 4.5 | 0.28 | 4 |
| 3110350 | 0.3 | 45 | 0.24 | 5.0 | 0.28 | 4 |
| 3110405 | 0.4 | 45 | 0.3 | 0.5 | 0.37 | 4 |
| 3110407 | 0.4 | 45 | 0.3 | 0.75 | 0.37 | 4 |
| 3110410 | 0.4 | 45 | 0.3 | 1.0 | 0.37 | 4 |
| 3110415 | 0.4 | 45 | 0.3 | 1.5 | 0.37 | 4 |
| 3110420 | 0.4 | 45 | 0.3 | 2.0 | 0.37 | 4 |
| 3110425 | 0.4 | 45 | 0.3 | 2.5 | 0.37 | 4 |
| 3110430 | 0.4 | 45 | 0.3 | 3.0 | 0.37 | 4 |
| 3110435 | 0.4 | 45 | 0.3 | 3.5 | 0.37 | 4 |
| 3110440 | 0.4 | 45 | 0.3 | 4.0 | 0.37 | 4 |
| 3110445 | 0.4 | 45 | 0.3 | 4.5 | 0.37 | 4 |
| 3110450 | 0.4 | 45 | 0.3 | 5.0 | 0.37 | 4 |
| 3110455 | 0.4 | 45 | 0.3 | 5.5 | 0.37 | 4 |
| 3110460 | 0.4 | 45 | 0.3 | 6.0 | 0.37 | 4 |
| 3110510 | 0.5 | 45 | 0.4 | 1.0 | 0.45 | 4 |
| 3110515 | 0.5 | 45 | 0.4 | 1.5 | 0.45 | 4 |
| 3110520 | 0.5 | 45 | 0.4 | 2.0 | 0.45 | 4 |
| 3110525 | 0.5 | 45 | 0.4 | 2.5 | 0.45 | 4 |
| 3110530 | 0.5 | 45 | 0.4 | 3.0 | 0.45 | 4 |
| 3110535 | 0.5 | 45 | 0.4 | 3.5 | 0.45 | 4 |
| 3110540 | 0.5 | 45 | 0.4 | 4.0 | 0.45 | 4 |
| 3110545 | 0.5 | 45 | 0.4 | 4.5 | 0.45 | 4 |
| 3110550 | 0.5 | 45 | 0.4 | 5.0 | 0.45 | 4 |
| 3110555 | 0.5 | 45 | 0.4 | 5.5 | 0.45 | 4 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Neck Dia. | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|-----------|----------------|
| | D | L | Lc | L1 | d2 | d |
| 3110560 | 0.5 | 45 | 0.4 | 6.0 | 0.45 | 4 |
| 3110570 | 0.5 | 45 | 0.4 | 7.0 | 0.45 | 4 |
| 3110580 | 0.5 | 45 | 0.4 | 8.0 | 0.45 | 4 |
| 3110590 | 0.5 | 45 | 0.4 | 9.0 | 0.45 | 4 |
| 3110600 | 0.5 | 45 | 0.4 | 10 | 0.45 | 4 |
| 3110610 | 0.6 | 45 | 0.5 | 1.0 | 0.55 | 4 |
| 3110615 | 0.6 | 45 | 0.5 | 1.5 | 0.55 | 4 |
| 3110620 | 0.6 | 45 | 0.5 | 2.0 | 0.55 | 4 |
| 3110625 | 0.6 | 45 | 0.5 | 2.5 | 0.55 | 4 |
| 3110630 | 0.6 | 45 | 0.5 | 3.0 | 0.55 | 4 |
| 3110635 | 0.6 | 45 | 0.5 | 3.5 | 0.55 | 4 |
| 3110640 | 0.6 | 45 | 0.5 | 4.0 | 0.55 | 4 |
| 3110645 | 0.6 | 45 | 0.5 | 4.5 | 0.55 | 4 |
| 3110650 | 0.6 | 45 | 0.5 | 5.0 | 0.55 | 4 |
| 3110655 | 0.6 | 45 | 0.5 | 5.5 | 0.55 | 4 |
| 3110660 | 0.6 | 45 | 0.5 | 6.0 | 0.55 | 4 |
| 3110665 | 0.6 | 45 | 0.5 | 6.5 | 0.55 | 4 |
| 3110670 | 0.6 | 45 | 0.5 | 7.0 | 0.55 | 4 |
| 3110675 | 0.6 | 45 | 0.5 | 7.5 | 0.55 | 4 |
| 3110680 | 0.6 | 45 | 0.5 | 8.0 | 0.55 | 4 |
| 3110685 | 0.6 | 45 | 0.5 | 8.5 | 0.55 | 4 |
| 3110690 | 0.6 | 45 | 0.5 | 9.0 | 0.55 | 4 |
| 3110695 | 0.6 | 45 | 0.5 | 9.5 | 0.55 | 4 |
| 3110700 | 0.6 | 45 | 0.5 | 10 | 0.55 | 4 |
| 3110711 | 0.6 | 45 | 0.5 | 11 | 0.55 | 4 |
| 3110712 | 0.6 | 45 | 0.5 | 12 | 0.55 | 4 |
| 3110820 | 0.8 | 45 | 0.6 | 2.0 | 0.75 | 4 |
| 3110830 | 0.8 | 45 | 0.5 | 3.0 | 0.75 | 4 |
| 3110840 | 0.8 | 45 | 0.6 | 4.0 | 0.75 | 4 |
| 3110850 | 0.8 | 45 | 0.6 | 5.0 | 0.75 | 4 |
| 3110860 | 0.8 | 45 | 0.6 | 6.0 | 0.75 | 4 |
| 3110870 | 0.8 | 45 | 0.6 | 7.0 | 0.75 | 4 |
| 3110880 | 0.8 | 45 | 0.6 | 8.0 | 0.75 | 4 |
| 3110890 | 0.8 | 45 | 0.6 | 9.0 | 0.75 | 4 |
| 3110900 | 0.8 | 45 | 0.6 | 10 | 0.75 | 4 |
| 3110912 | 0.8 | 45 | 0.5 | 12 | 0.75 | 4 |
| 3111025 | 1.0 | 45 | 0.8 | 2.5 | 0.95 | 4 |
| 3111030 | 1.0 | 45 | 0.8 | 3.0 | 0.95 | 4 |
| 3111040 | 1.0 | 45 | 0.8 | 4.0 | 0.95 | 4 |
| 3111050 | 1.0 | 45 | 0.8 | 5.0 | 0.95 | 4 |
| 3111060 | 1.0 | 45 | 0.8 | 6.0 | 0.95 | 4 |
| 3111070 | 1.0 | 45 | 0.8 | 7.0 | 0.95 | 4 |
| 3111080 | 1.0 | 45 | 0.8 | 8.0 | 0.95 | 4 |
| 3111090 | 1.0 | 45 | 0.8 | 9.0 | 0.95 | 4 |
| 3111100 | 1.0 | 45 | 0.8 | 10 | 0.95 | 4 |
| 3111112 | 1.0 | 45 | 0.8 | 12 | 0.95 | 4 |
| 3111114 | 1.0 | 50 | 0.8 | 14 | 0.95 | 4 |
| 3111116 | 1.0 | 50 | 0.8 | 16 | 0.95 | 4 |
| 3111118 | 1.0 | 55 | 0.8 | 18 | 0.95 | 4 |
| 3111120 | 1.0 | 55 | 0.8 | 20 | 0.95 | 4 |
| 3111240 | 1.2 | 45 | 1.0 | 4.0 | 1.15 | 4 |

Packed: 1 pc.
Available WXL® coating only.





List 3790 (Continued)

WXL-LN-EBD, 2 Flute, Regular Length, Long Neck, Ball End, Rib Processing

| | | | | | |
|--------------------------|---------|-----|-----|-----|-------------|
| SPEED FEED P1139-1148 | CARBIDE | WXL | REG | 30° | SHANK h6 |
|--------------------------|---------|-----|-----|-----|-------------|

±5µm Radius Tolerance

Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Neck Dia. | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|-----------|----------------|
| | D | L | Lc | L1 | d2 | d |
| 3111260 | 1.2 | 45 | 1.0 | 6.0 | 1.15 | 4 |
| 3111280 | 1.2 | 45 | 1.0 | 8.0 | 1.15 | 4 |
| 3111300 | 1.2 | 45 | 1.0 | 10 | 1.15 | 4 |
| 3111312 | 1.2 | 45 | 1.0 | 12 | 1.15 | 4 |
| 3111314 | 1.2 | 50 | 1.0 | 14 | 1.15 | 4 |
| 3111316 | 1.2 | 50 | 1.0 | 16 | 1.15 | 4 |
| 3111318 | 1.2 | 55 | 1.0 | 18 | 1.15 | 4 |
| 3111320 | 1.2 | 60 | 1.0 | 20 | 1.15 | 4 |
| 3111324 | 1.2 | 60 | 1.0 | 24 | 1.15 | 4 |
| 3111480 | 1.4 | 45 | 1.1 | 8.0 | 1.35 | 4 |
| 3111512 | 1.4 | 45 | 1.1 | 12 | 1.35 | 4 |
| 3111516 | 1.4 | 50 | 1.1 | 16 | 1.35 | 4 |
| 3111530 | 1.5 | 45 | 1.2 | 3.0 | 1.45 | 4 |
| 3111540 | 1.5 | 45 | 1.2 | 4.0 | 1.45 | 4 |
| 3111560 | 1.5 | 45 | 1.2 | 6.0 | 1.45 | 4 |
| 3111580 | 1.5 | 45 | 1.2 | 8.0 | 1.45 | 4 |
| 3111600 | 1.5 | 45 | 1.2 | 10 | 1.45 | 4 |
| 3111612 | 1.5 | 45 | 1.2 | 12 | 1.45 | 4 |
| 3111614 | 1.5 | 50 | 1.2 | 14 | 1.45 | 4 |
| 3111616 | 1.5 | 55 | 1.2 | 16 | 1.45 | 4 |
| 3111618 | 1.5 | 55 | 1.2 | 18 | 1.45 | 4 |
| 3111620 | 1.5 | 55 | 1.2 | 20 | 1.45 | 4 |
| 3111622 | 1.5 | 55 | 1.2 | 22 | 1.45 | 4 |
| 3111630 | 1.5 | 65 | 1.2 | 30 | 1.45 | 4 |
| 3111640 | 1.6 | 45 | 1.3 | 4.0 | 1.55 | 4 |
| 3111680 | 1.6 | 45 | 1.3 | 8.0 | 1.55 | 4 |
| 3111712 | 1.6 | 45 | 1.3 | 12 | 1.55 | 4 |
| 3111716 | 1.6 | 50 | 1.3 | 16 | 1.55 | 4 |
| 3111720 | 1.6 | 55 | 1.3 | 20 | 1.55 | 4 |
| 3111880 | 1.8 | 45 | 1.4 | 8.0 | 1.75 | 4 |
| 3111912 | 1.8 | 45 | 1.4 | 12 | 1.75 | 4 |
| 3111916 | 1.8 | 50 | 1.4 | 16 | 1.75 | 4 |
| 3111920 | 1.8 | 55 | 1.4 | 20 | 1.75 | 4 |
| 3112030 | 2.0 | 45 | 1.6 | 3.0 | 1.95 | 4 |
| 3112040 | 2.0 | 45 | 1.6 | 4.0 | 1.95 | 4 |
| 3112060 | 2.0 | 45 | 1.6 | 6.0 | 1.95 | 4 |
| 3112080 | 2.0 | 45 | 1.6 | 8.0 | 1.95 | 4 |
| 3112100 | 2.0 | 45 | 1.6 | 10 | 1.95 | 4 |
| 3112112 | 2.0 | 45 | 1.6 | 12 | 1.95 | 4 |
| 3112114 | 2.0 | 50 | 1.6 | 14 | 1.95 | 4 |
| 3112116 | 2.0 | 50 | 1.6 | 16 | 1.95 | 4 |
| 3112118 | 2.0 | 55 | 1.6 | 18 | 1.95 | 4 |
| 3112120 | 2.0 | 55 | 1.6 | 20 | 1.95 | 4 |
| 3112122 | 2.0 | 60 | 1.6 | 22 | 1.95 | 4 |
| 3112125 | 2.0 | 65 | 1.6 | 25 | 1.95 | 4 |
| 3112130 | 2.0 | 70 | 1.6 | 30 | 1.95 | 4 |
| 3112135 | 2.0 | 75 | 1.6 | 35 | 1.95 | 4 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Neck Dia. | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|-----------|----------------|
| | D | L | Lc | L1 | d2 | d |
| 3112140 | 2.0 | 80 | 1.6 | 40 | 1.95 | 4 |
| 3112560 | 2.5 | 45 | 2.0 | 6.0 | 2.45 | 4 |
| 3112600 | 2.5 | 50 | 2.0 | 10 | 2.45 | 4 |
| 3112615 | 2.5 | 55 | 2.0 | 15 | 2.45 | 4 |
| 3112620 | 2.5 | 60 | 2.0 | 20 | 2.45 | 4 |
| 3112625 | 2.5 | 65 | 2.0 | 25 | 2.45 | 4 |
| 3112630 | 2.5 | 70 | 2.0 | 30 | 2.45 | 4 |
| 3112635 | 2.5 | 70 | 2.0 | 35 | 2.45 | 4 |
| 3123060 | 3.0 | 50 | 2.4 | 6.0 | 2.85 | 6 |
| 3123080 | 3.0 | 50 | 2.4 | 8.0 | 2.85 | 6 |
| 3123100 | 3.0 | 50 | 2.4 | 10 | 2.85 | 6 |
| 3123112 | 3.0 | 55 | 2.4 | 12 | 2.85 | 6 |
| 3123114 | 3.0 | 55 | 2.4 | 14 | 2.85 | 6 |
| 3123115 | 3.0 | 55 | 2.4 | 15 | 2.85 | 6 |
| 3123116 | 3.0 | 55 | 2.4 | 16 | 2.85 | 6 |
| 3123120 | 3.0 | 60 | 2.4 | 20 | 2.85 | 6 |
| 3123125 | 3.0 | 65 | 2.4 | 25 | 2.85 | 6 |
| 3123130 | 3.0 | 70 | 2.4 | 30 | 2.85 | 6 |
| 3123135 | 3.0 | 80 | 2.4 | 35 | 2.85 | 6 |
| 3123140 | 3.0 | 85 | 2.4 | 40 | 2.85 | 6 |
| 3123600 | 3.5 | 60 | 2.8 | 10 | 3.35 | 6 |
| 3123615 | 3.5 | 60 | 2.8 | 15 | 3.35 | 6 |
| 3123620 | 3.5 | 65 | 2.8 | 20 | 3.35 | 6 |
| 3123625 | 3.5 | 65 | 2.8 | 25 | 3.35 | 6 |
| 3123630 | 3.5 | 70 | 2.8 | 30 | 3.35 | 6 |
| 3123635 | 3.5 | 80 | 2.8 | 35 | 3.35 | 6 |
| 3123640 | 3.5 | 90 | 2.8 | 40 | 3.35 | 6 |
| 3123645 | 3.5 | 90 | 2.8 | 45 | 3.35 | 6 |
| 3124080 | 4.0 | 60 | 3.2 | 8.0 | 3.85 | 6 |
| 3124100 | 4.0 | 60 | 3.2 | 10 | 3.85 | 6 |
| 3124112 | 4.0 | 60 | 3.2 | 12 | 3.85 | 6 |
| 3124114 | 4.0 | 60 | 3.2 | 14 | 3.85 | 6 |
| 3124115 | 4.0 | 60 | 3.2 | 15 | 3.85 | 6 |
| 3124116 | 4.0 | 60 | 3.2 | 16 | 3.85 | 6 |
| 3124120 | 4.0 | 65 | 3.2 | 20 | 3.85 | 6 |
| 3124125 | 4.0 | 70 | 3.2 | 25 | 3.85 | 6 |
| 3124130 | 4.0 | 80 | 3.2 | 30 | 3.85 | 6 |
| 3124135 | 4.0 | 80 | 3.2 | 35 | 3.85 | 6 |
| 3124140 | 4.0 | 90 | 3.2 | 40 | 3.85 | 6 |
| 3124145 | 4.0 | 90 | 3.2 | 45 | 3.85 | 6 |
| 3124150 | 4.0 | 100 | 3.2 | 50 | 3.85 | 6 |
| 3125100 | 5.0 | 65 | 5.0 | 10 | 4.85 | 6 |
| 3125115 | 5.0 | 70 | 5.0 | 15 | 4.85 | 6 |
| 3125120 | 5.0 | 70 | 4.0 | 20 | 4.85 | 6 |
| 3125125 | 5.0 | 70 | 4.0 | 25 | 4.85 | 6 |
| 3125130 | 5.0 | 80 | 4.0 | 30 | 4.85 | 6 |
| 3125135 | 5.0 | 80 | 4.0 | 35 | 4.85 | 6 |

Packed: 1 pc.

Available WXL® coating only.

continued on next page

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 3790 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

good best





List 3790 (Continued)

WXL-LN-EBD, 2 Flute, Regular Length, Long Neck, Ball End, Rib Processing

| | | | | | |
|--------------------------|---------|-----|-----|-----|-------------|
| SPEED FEED P1139-1148 | CARBIDE | WXL | REG | 30° | SHANK h6 |
|--------------------------|---------|-----|-----|-----|-------------|

±5µm Radius Tolerance



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Neck Dia. | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|-----------|----------------|
| | D | L | Lc | L1 | d2 | d |
| 3125140 | 5.0 | 90 | 5.0 | 40 | 4.85 | 6 |
| 3125145 | 5.0 | 100 | 5.0 | 45 | 4.85 | 6 |
| 3125150 | 5.0 | 100 | 5.0 | 50 | 4.85 | 6 |
| 3126100 | 6.0 | 60 | 6.0 | 10 | 5.85 | 6 |
| 3126120 | 6.0 | 70 | 6.0 | 20 | 5.85 | 6 |
| 3126125 | 6.0 | 70 | 6.0 | 25 | 5.85 | 6 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Neck Dia. | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|-----------|----------------|
| | D | L | Lc | L1 | d2 | d |
| 3126130 | 6.0 | 80 | 4.8 | 30 | 5.85 | 6 |
| 3126135 | 6.0 | 80 | 6.0 | 35 | 5.85 | 6 |
| 3126140 | 6.0 | 90 | 4.8 | 40 | 5.85 | 6 |
| 3126145 | 6.0 | 100 | 6.0 | 45 | 5.85 | 6 |
| 3126150 | 6.0 | 120 | 4.8 | 50 | 5.85 | 6 |

Packed: 1 pc.
Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP419 or HP419L (p. 984 or 985)
Machining steel over 54 HRC? Try EXOCARB® WXS® - List 4590 (p. 896-898)

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| | 1010 1018 | 1035 1045 | 1065 | 4140 4340 | | | | | | | | | | | | | |
| 3790 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

good best



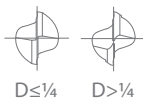


List 3619

WXL-1.5D-DE, 2 Flute, Stub Length

| | | | | | | | |
|------------|----------------------------|----------------|------------|--|-------------|------------|--------------------|
| NEW | SPEED FEED P1149 | CARBIDE | WXL | | STUB | 30° | SHANK h6 |
|------------|----------------------------|----------------|------------|--|-------------|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/16 ≤ D ≤ 7/16 | +0 / -0.0008" |
| D = 1/2 | +0 / -0.0012" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | | | |
| 36190001 | 1/16 | 2 | 3/32 | 1/8 |
| 36190002 | 5/64 | 2 | 1/8 | 1/8 |
| 36190003 | 3/32 | 2 | 9/64 | 1/8 |
| 36190004 | 7/64 | 2 | 11/64 | 1/8 |
| 36190005 | 1/8 | 2 | 3/16 | 1/8 |
| 36190006 | 5/32 | 2 | 15/64 | 3/16 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | | | |
| 36190007 | 3/16 | 2 | 9/32 | 3/16 |
| 36190008 | 1/4 | 2-1/2 | 3/8 | 1/4 |
| 36190009 | 5/16 | 2-1/2 | 15/32 | 5/16 |
| 36190010 | 3/8 | 2-3/4 | 9/16 | 3/8 |
| 36190011 | 7/16 | 3 | 21/32 | 7/16 |
| 36190012 | 1/2 | 3 | 3/4 | 1/2 |

Packed: 1 pc.
Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP421 (p. 969-970)

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 3619 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

good best





EXOCARB® WXL®

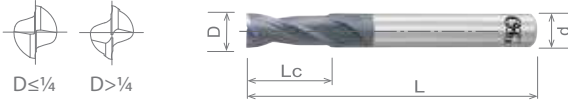
Premium Performance Carbide End Mills with OSG's Proprietary WXL® Coating

List 3620

WXL-2D-DE, 2 Flute, Stub Length

| | | | | | | |
|---------------------|---------|-----|--|------|-----|-------------|
| SPEED FEED P1150 | CARBIDE | WXL | | STUB | 30° | SHANK h6 |
|---------------------|---------|-----|--|------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/16 ≤ D ≤ 7/16 | +0 / -0.0008" |
| 1/2 ≤ D ≤ 3/4 | +0 / -0.0012" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | | | |
| 36200001 | 1/16 | 2 | 1/8 | 1/8 |
| 36200002 | 5/64 | 2 | 5/32 | 1/8 |
| 36200003 | 3/32 | 2 | 3/16 | 1/8 |
| 36200004 | 7/64 | 2 | 7/32 | 1/8 |
| 36200005 | 1/8 | 2 | 1/4 | 1/8 |
| 36200006 | 5/32 | 2 | 5/16 | 3/16 |
| 36200007 | 3/16 | 2 | 3/8 | 3/16 |
| 36200008 | 7/32 | 2 | 7/16 | 1/4 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | | | |
| 36200009 | 1/4 | 2-1/2 | 1/2 | 1/4 |
| 36200010 | 9/32 | 2-1/2 | 9/16 | 5/16 |
| 36200011 | 5/16 | 2-1/2 | 5/8 | 5/16 |
| 36200012 | 3/8 | 2-3/4 | 3/4 | 3/8 |
| 36200013 | 7/16 | 3 | 7/8 | 7/16 |
| 36200014 | 1/2 | 3 | 1 | 1/2 |
| 36200015 | 5/8 | 3-1/2 | 1-1/4 | 5/8 |
| 36200016 | 3/4 | 4 | 1-1/2 | 3/4 |

Packed: 1 pc.
Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP421 (p. 969-970)

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 3620 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

good best



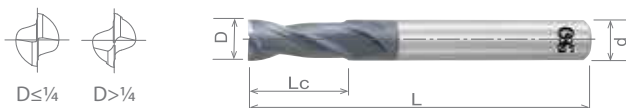


List 3621

WXL-3D-DE, 2 Flute, Regular Length

| | | | | | |
|---------------------|---------|-----|-----|-----|-------------|
| SPEED FEED P1150 | CARBIDE | WXL | REG | 35° | SHANK h6 |
|---------------------|---------|-----|-----|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/16 ≤ D ≤ 7/16 | +0 / -0.0008" |
| 1/2 ≤ D ≤ 3/4 | +0 / -0.0012" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | | | |
| 36210001 | 1/16 | 2 | 3/16 | 1/8 |
| 36210002 | 5/64 | 2 | 15/64 | 1/8 |
| 36210003 | 3/32 | 2 | 9/32 | 1/8 |
| 36210004 | 7/64 | 2 | 21/64 | 1/8 |
| 36210005 | 1/8 | 2 | 3/8 | 1/8 |
| 36210006 | 5/32 | 2 | 15/32 | 3/16 |
| 36210007 | 3/16 | 2-1/4 | 9/16 | 3/16 |
| 36210008 | 7/32 | 2-1/2 | 21/32 | 1/4 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | | | |
| 36210009 | 1/4 | 2-1/2 | 3/4 | 1/4 |
| 36210010 | 9/32 | 2-3/4 | 27/32 | 5/16 |
| 36210011 | 5/16 | 2-3/4 | 15/16 | 5/16 |
| 36210012 | 3/8 | 3 | 1-1/8 | 3/8 |
| 36210013 | 7/16 | 3-1/4 | 1-5/16 | 7/16 |
| 36210014 | 1/2 | 3-1/2 | 1-1/2 | 1/2 |
| 36210015 | 5/8 | 4-1/4 | 1-7/8 | 5/8 |
| 36210016 | 3/4 | 5 | 2-1/4 | 3/4 |

Packed: 1 pc.
Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP421 (p. 969-970)

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 3621 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

good best





EXOCARB® WXL®

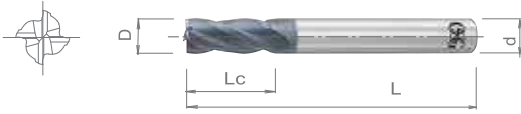
Premium Performance Carbide End Mills with OSG's Proprietary WXL® Coating

List 3704

WXL-EMS, 4 Flute, Regular Length

| | | | | | |
|---------------------|---------|-----|-----|-----|-------------|
| SPEED FEED P1151 | CARBIDE | WXL | REG | 30° | SHANK h6 |
|---------------------|---------|-----|-----|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1 ≤ D ≤ 12 | +0 / -0.02mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 3130510 | 1.0 | 40 | 2.5 | 4 |
| 3130515 | 1.5 | 40 | 4 | 4 |
| 3130520 | 2.0 | 40 | 6 | 4 |
| 3130525 | 2.5 | 40 | 8 | 4 |
| 3130530 | 3.0 | 45 | 8 | 6 |
| 3130535 | 3.5 | 45 | 10 | 6 |
| 3130540 | 4.0 | 45 | 11 | 6 |
| 3130545 | 4.5 | 45 | 11 | 6 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 3130550 | 5.0 | 50 | 13 | 6 |
| 3130560 | 6.0 | 50 | 13 | 6 |
| 3130570 | 7.0 | 60 | 16 | 8 |
| 3130580 | 8.0 | 60 | 19 | 8 |
| 3130590 | 9.0 | 70 | 19 | 10 |
| 3130600 | 10.0 | 70 | 22 | 10 |
| 3130620 | 12.0 | 75 | 26 | 12 |

Packed: 1 pc.
Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP441 (p. 969-970)
Machining steel over 54 HRC? Try EXOCARB® WXS® - List 4540 (p. 887)

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 3704 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 3742

WXL-EML, 4 Flute, Long Length

| | | | | | |
|---------------------|---------|-----|------|-----|-------------|
| SPEED FEED P1152 | CARBIDE | WXL | LONG | 30° | SHANK h6 |
|---------------------|---------|-----|------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 3 ≤ D ≤ 26 | +0 / -0.03mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 37420000 | 3.0 | 50 | 12 | 6 |
| 37420001 | 3.5 | 50 | 14 | 6 |
| 37420002 | 4.0 | 50 | 17 | 6 |
| 37420003 | 4.5 | 50 | 17 | 6 |
| 37420004 | 5.0 | 60 | 20 | 6 |
| 37420005 | 5.5 | 60 | 20 | 6 |
| 37420006 | 6.0 | 60 | 20 | 6 |
| 37420007 | 6.5 | 70 | 24 | 8 |
| 37420008 | 7.0 | 70 | 24 | 8 |
| 37420009 | 7.5 | 70 | 24 | 8 |
| 37420010 | 8.0 | 70 | 28 | 8 |
| 37420011 | 8.5 | 80 | 28 | 10 |
| 37420012 | 9.0 | 80 | 28 | 10 |
| 37420013 | 9.5 | 80 | 28 | 10 |
| 37420014 | 10.0 | 80 | 34 | 10 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 37420015 | 10.5 | 90 | 34 | 12 |
| 37420016 | 11.0 | 90 | 34 | 12 |
| 37420017 | 11.5 | 90 | 34 | 12 |
| 37420018 | 12.0 | 90 | 40 | 12 |
| 37420019 | 13.0 | 100 | 40 | 12 |
| 37420020 | 14.0 | 100 | 40 | 12 |
| 37420021 | 15.0 | 105 | 40 | 16 |
| 37420022 | 16.0 | 115 | 48 | 16 |
| 37420023 | 18.0 | 115 | 48 | 16 |
| 37420024 | 20.0 | 125 | 56 | 20 |
| 37420025 | 23.0 | 140 | 67 | 25 |
| 37420026 | 24.0 | 140 | 67 | 25 |
| 37420027 | 25.0 | 140 | 67 | 25 |
| 37420028 | 26.0 | 140 | 67 | 25 |

Packed: 1 pc.

Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP441 (p. 969-970)

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 3742 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



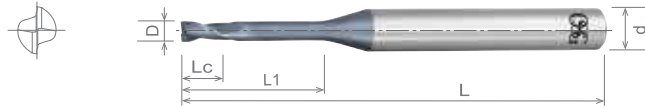


List 3791

WXL-LN-EDS, 2 Flute, Stub Length, Long Neck, Rib Processing

| | | | | | | |
|--------------------------|---------|-----|--|------|-----|-------------|
| SPEED FEED P1154-1157 | CARBIDE | WXL | | STUB | 30° | SHANK h6 |
|--------------------------|---------|-----|--|------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 0.2 ≤ D ≤ 5 | +0 / -0.015mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Shank Diameter | EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|----------------|------------|---------------|----------------|---------------|-------------|----------------|
| | D | L | Lc | L1 | d | | D | L | Lc | L1 | d |
| 3131201 | 0.2 | 45 | 0.30 | 0.5 | 4 | 3131706 | 0.7 | 45 | 1.00 | 6.0 | 4 |
| 3131202 | 0.2 | 45 | 0.30 | 1.0 | 4 | 3131708 | 0.7 | 45 | 1.00 | 8.0 | 4 |
| 3131203 | 0.2 | 45 | 0.30 | 1.5 | 4 | 3131710 | 0.7 | 45 | 1.00 | 10.0 | 4 |
| 3131204 | 0.2 | 45 | 0.30 | 2.0 | 4 | 3131804 | 0.8 | 45 | 1.20 | 4.0 | 4 |
| 3131205 | 0.2 | 45 | 0.30 | 2.5 | 4 | 3131806 | 0.8 | 45 | 1.20 | 6.0 | 4 |
| 3131206 | 0.2 | 45 | 0.30 | 3.0 | 4 | 3131808 | 0.8 | 45 | 1.20 | 8.0 | 4 |
| 3131207 | 0.2 | 45 | 0.30 | 3.5 | 4 | 3131810 | 0.8 | 45 | 1.20 | 10.0 | 4 |
| 3131208 | 0.2 | 45 | 0.30 | 4.0 | 4 | 3131812 | 0.8 | 45 | 1.20 | 12.0 | 4 |
| 3131302 | 0.3 | 45 | 0.45 | 1.0 | 4 | 3131814 | 0.8 | 50 | 1.20 | 14.0 | 4 |
| 3131303 | 0.3 | 45 | 0.45 | 1.5 | 4 | 3131816 | 0.8 | 50 | 1.20 | 16.0 | 4 |
| 3131304 | 0.3 | 45 | 0.45 | 2.0 | 4 | 3131820 | 0.8 | 55 | 1.20 | 20.0 | 4 |
| 3131305 | 0.3 | 45 | 0.45 | 2.5 | 4 | 3131824 | 0.8 | 60 | 1.20 | 24.0 | 4 |
| 3131306 | 0.3 | 45 | 0.45 | 3.0 | 4 | 3131904 | 0.9 | 45 | 1.35 | 4.0 | 4 |
| 3131308 | 0.3 | 45 | 0.45 | 4.0 | 4 | 3131906 | 0.9 | 45 | 1.35 | 6.0 | 4 |
| 3131310 | 0.3 | 45 | 0.45 | 5.0 | 4 | 3131908 | 0.9 | 45 | 1.35 | 8.0 | 4 |
| 3131312 | 0.3 | 45 | 0.45 | 6.0 | 4 | 3131910 | 0.9 | 45 | 1.35 | 10.0 | 4 |
| 3131318 | 0.3 | 45 | 0.45 | 9.0 | 4 | 3131915 | 0.9 | 50 | 1.35 | 15.0 | 4 |
| 3131403 | 0.4 | 45 | 0.60 | 1.5 | 4 | 3132003 | 1.0 | 45 | 1.50 | 3.0 | 4 |
| 3131404 | 0.4 | 45 | 0.60 | 2.0 | 4 | 3132004 | 1.0 | 45 | 1.50 | 4.0 | 4 |
| 3131406 | 0.4 | 45 | 0.60 | 3.0 | 4 | 3132005 | 1.0 | 45 | 1.50 | 5.0 | 4 |
| 3131408 | 0.4 | 45 | 0.60 | 4.0 | 4 | 3132006 | 1.0 | 45 | 1.50 | 6.0 | 4 |
| 3131410 | 0.4 | 45 | 0.60 | 5.0 | 4 | 3132007 | 1.0 | 45 | 1.50 | 7.0 | 4 |
| 3131412 | 0.4 | 45 | 0.60 | 6.0 | 4 | 3132008 | 1.0 | 45 | 1.50 | 8.0 | 4 |
| 3131414 | 0.4 | 45 | 0.60 | 7.0 | 4 | 3132009 | 1.0 | 45 | 1.50 | 9.0 | 4 |
| 3131416 | 0.4 | 45 | 0.60 | 8.0 | 4 | 3132010 | 1.0 | 45 | 1.50 | 10.0 | 4 |
| 3131418 | 0.4 | 45 | 0.60 | 9.0 | 4 | 3132012 | 1.0 | 45 | 1.50 | 12.0 | 4 |
| 3131420 | 0.4 | 45 | 0.60 | 10.0 | 4 | 3132014 | 1.0 | 50 | 1.50 | 14.0 | 4 |
| 3131424 | 0.4 | 45 | 0.60 | 12.0 | 4 | 3132016 | 1.0 | 50 | 1.50 | 16.0 | 4 |
| 3131501 | 0.5 | 45 | 0.70 | 1.5 | 4 | 3132018 | 1.0 | 55 | 1.50 | 18.0 | 4 |
| 3131502 | 0.5 | 45 | 0.70 | 2.0 | 4 | 3132020 | 1.0 | 55 | 1.50 | 20.0 | 4 |
| 3131503 | 0.5 | 45 | 0.70 | 3.0 | 4 | 3132022 | 1.0 | 60 | 1.50 | 22.0 | 4 |
| 3131504 | 0.5 | 45 | 0.70 | 4.0 | 4 | 3132025 | 1.0 | 60 | 1.50 | 25.0 | 4 |
| 3131505 | 0.5 | 45 | 0.70 | 5.0 | 4 | 3132030 | 1.0 | 70 | 1.50 | 30.0 | 4 |
| 3131506 | 0.5 | 45 | 0.70 | 6.0 | 4 | 3132204 | 1.2 | 45 | 1.80 | 4.0 | 4 |
| 3131507 | 0.5 | 45 | 0.70 | 7.0 | 4 | 3132206 | 1.2 | 45 | 1.80 | 6.0 | 4 |
| 3131508 | 0.5 | 45 | 0.70 | 8.0 | 4 | 3132208 | 1.2 | 45 | 1.80 | 8.0 | 4 |
| 3131509 | 0.5 | 45 | 0.70 | 9.0 | 4 | 3132210 | 1.2 | 45 | 1.80 | 10.0 | 4 |
| 3131510 | 0.5 | 45 | 0.70 | 10.0 | 4 | 3132212 | 1.2 | 45 | 1.80 | 12.0 | 4 |
| 3131512 | 0.5 | 45 | 0.70 | 12.0 | 4 | 3132214 | 1.2 | 50 | 1.80 | 14.0 | 4 |
| 3131515 | 0.5 | 50 | 0.70 | 15.0 | 4 | 3132216 | 1.2 | 50 | 1.80 | 16.0 | 4 |
| 3131602 | 0.6 | 45 | 0.90 | 2.0 | 4 | 3132220 | 1.2 | 55 | 1.80 | 20.0 | 4 |
| 3131603 | 0.6 | 45 | 0.90 | 3.0 | 4 | 3132406 | 1.4 | 45 | 2.10 | 6.0 | 4 |
| 3131604 | 0.6 | 45 | 0.90 | 4.0 | 4 | 3132408 | 1.4 | 45 | 2.10 | 8.0 | 4 |
| 3131605 | 0.6 | 45 | 0.90 | 5.0 | 4 | 3132410 | 1.4 | 45 | 2.10 | 10.0 | 4 |
| 3131606 | 0.6 | 45 | 0.90 | 6.0 | 4 | 3132412 | 1.4 | 45 | 2.10 | 12.0 | 4 |
| 3131607 | 0.6 | 45 | 0.90 | 7.0 | 4 | 3132414 | 1.4 | 50 | 2.10 | 14.0 | 4 |
| 3131608 | 0.6 | 45 | 0.90 | 8.0 | 4 | 3132416 | 1.4 | 50 | 2.10 | 16.0 | 4 |
| 3131610 | 0.6 | 45 | 0.90 | 10.0 | 4 | 3132422 | 1.4 | 60 | 2.10 | 22.0 | 4 |
| 3131612 | 0.6 | 45 | 0.90 | 12.0 | 4 | 3132504 | 1.5 | 45 | 2.30 | 4.0 | 4 |
| 3131615 | 0.6 | 50 | 0.90 | 15.0 | 4 | 3132506 | 1.5 | 45 | 2.30 | 6.0 | 4 |
| 3131618 | 0.6 | 50 | 0.90 | 18.0 | 4 | 3132508 | 1.5 | 45 | 2.30 | 8.0 | 4 |
| 3131702 | 0.7 | 45 | 1.00 | 2.0 | 4 | 3132510 | 1.5 | 45 | 2.30 | 10.0 | 4 |
| 3131704 | 0.7 | 45 | 1.00 | 4.0 | 4 | 3132512 | 1.5 | 45 | 2.30 | 12.0 | 4 |

Packed: 1 pc.
Available WXL® coating only.





List 3791 (Continued)

WXL-LN-EDS, 2 Flute, Stub Length, Long Neck, Rib Processing



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|----------------|
| | D | L | Lc | L1 | d |
| 3132514 | 1.5 | 50 | 2.30 | 14.0 | 4 |
| 3132516 | 1.5 | 50 | 2.30 | 16.0 | 4 |
| 3132518 | 1.5 | 55 | 2.30 | 18.0 | 4 |
| 3132520 | 1.5 | 55 | 2.30 | 20.0 | 4 |
| 3132525 | 1.5 | 60 | 2.30 | 25.0 | 4 |
| 3132530 | 1.5 | 70 | 2.30 | 30.0 | 4 |
| 3132538 | 1.5 | 80 | 2.30 | 38.0 | 4 |
| 3132540 | 1.5 | 80 | 2.30 | 40.0 | 4 |
| 3132545 | 1.5 | 80 | 2.30 | 45.0 | 4 |
| 3132606 | 1.6 | 45 | 2.40 | 6.0 | 4 |
| 3132608 | 1.6 | 45 | 2.40 | 8.0 | 4 |
| 3132610 | 1.6 | 45 | 2.40 | 10.0 | 4 |
| 3132612 | 1.6 | 45 | 2.40 | 12.0 | 4 |
| 3132614 | 1.6 | 50 | 2.40 | 14.0 | 4 |
| 3132616 | 1.6 | 50 | 2.40 | 16.0 | 4 |
| 3132618 | 1.6 | 55 | 2.40 | 18.0 | 4 |
| 3132620 | 1.6 | 55 | 2.40 | 20.0 | 4 |
| 3132806 | 1.8 | 45 | 2.70 | 6.0 | 4 |
| 3132808 | 1.8 | 45 | 2.70 | 8.0 | 4 |
| 3132810 | 1.8 | 45 | 2.70 | 10.0 | 4 |
| 3132812 | 1.8 | 45 | 2.70 | 12.0 | 4 |
| 3132814 | 1.8 | 50 | 2.70 | 14.0 | 4 |
| 3132816 | 1.8 | 50 | 2.70 | 16.0 | 4 |
| 3132818 | 1.8 | 55 | 2.70 | 18.0 | 4 |
| 3132820 | 1.8 | 55 | 2.70 | 20.0 | 4 |
| 3132825 | 1.8 | 60 | 2.70 | 25.0 | 4 |
| 3133006 | 2.0 | 45 | 3.00 | 6.0 | 4 |
| 3133008 | 2.0 | 45 | 3.00 | 8.0 | 4 |
| 3133010 | 2.0 | 45 | 3.00 | 10.0 | 4 |
| 3133012 | 2.0 | 45 | 3.00 | 12.0 | 4 |
| 3133014 | 2.0 | 50 | 3.00 | 14.0 | 4 |
| 3133016 | 2.0 | 50 | 3.00 | 16.0 | 4 |
| 3133018 | 2.0 | 55 | 3.00 | 18.0 | 4 |
| 3133020 | 2.0 | 55 | 3.00 | 20.0 | 4 |
| 3133025 | 2.0 | 60 | 3.00 | 25.0 | 4 |
| 3133030 | 2.0 | 70 | 3.00 | 30.0 | 4 |
| 3133035 | 2.0 | 80 | 3.00 | 35.0 | 4 |
| 3133040 | 2.0 | 90 | 3.00 | 40.0 | 4 |
| 3133050 | 2.0 | 100 | 3.00 | 50.0 | 4 |
| 3133060 | 2.0 | 110 | 3.00 | 60.0 | 4 |
| 3133508 | 2.5 | 45 | 3.70 | 8.0 | 4 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|----------------|
| | D | L | Lc | L1 | d |
| 3133510 | 2.5 | 45 | 3.70 | 10.0 | 4 |
| 3133512 | 2.5 | 45 | 3.70 | 12.0 | 4 |
| 3133514 | 2.5 | 50 | 3.70 | 14.0 | 4 |
| 3133516 | 2.5 | 55 | 3.70 | 16.0 | 4 |
| 3133518 | 2.5 | 55 | 3.70 | 18.0 | 4 |
| 3133520 | 2.5 | 60 | 3.70 | 20.0 | 4 |
| 3133525 | 2.5 | 70 | 3.70 | 25.0 | 4 |
| 3133530 | 2.5 | 80 | 3.70 | 30.0 | 4 |
| 3133540 | 2.5 | 90 | 3.70 | 40.0 | 4 |
| 3133550 | 2.5 | 100 | 3.70 | 50.0 | 4 |
| 3134008 | 3.0 | 45 | 4.50 | 8.0 | 6 |
| 3134010 | 3.0 | 45 | 4.50 | 10.0 | 6 |
| 3134012 | 3.0 | 45 | 4.50 | 12.0 | 6 |
| 3134014 | 3.0 | 50 | 4.50 | 14.0 | 6 |
| 3134016 | 3.0 | 55 | 4.50 | 16.0 | 6 |
| 3134018 | 3.0 | 55 | 4.50 | 18.0 | 6 |
| 3134020 | 3.0 | 60 | 4.50 | 20.0 | 6 |
| 3134025 | 3.0 | 65 | 4.50 | 25.0 | 6 |
| 3134030 | 3.0 | 80 | 4.50 | 30.0 | 6 |
| 3134035 | 3.0 | 90 | 4.50 | 35.0 | 6 |
| 3134040 | 3.0 | 90 | 4.50 | 40.0 | 6 |
| 3134050 | 3.0 | 100 | 4.50 | 50.0 | 6 |
| 3135012 | 4.0 | 50 | 6.00 | 12.0 | 6 |
| 3135016 | 4.0 | 60 | 6.00 | 16.0 | 6 |
| 3135020 | 4.0 | 60 | 6.00 | 20.0 | 6 |
| 3135025 | 4.0 | 70 | 6.00 | 25.0 | 6 |
| 3135030 | 4.0 | 80 | 6.00 | 30.0 | 6 |
| 3135035 | 4.0 | 90 | 6.00 | 35.0 | 6 |
| 3135040 | 4.0 | 90 | 6.00 | 40.0 | 6 |
| 3135045 | 4.0 | 100 | 6.00 | 45.0 | 6 |
| 3135050 | 4.0 | 100 | 6.00 | 50.0 | 6 |
| 3135060 | 4.0 | 110 | 6.00 | 60.0 | 6 |
| 3136016 | 5.0 | 60 | 7.50 | 16.0 | 6 |
| 3136020 | 5.0 | 70 | 7.50 | 20.0 | 6 |
| 3136025 | 5.0 | 70 | 7.50 | 25.0 | 6 |
| 3136030 | 5.0 | 90 | 7.50 | 30.0 | 6 |
| 3136035 | 5.0 | 90 | 7.50 | 35.0 | 6 |
| 3136040 | 5.0 | 100 | 7.50 | 40.0 | 6 |
| 3136050 | 5.0 | 110 | 7.50 | 50.0 | 6 |
| 3136060 | 5.0 | 120 | 7.50 | 60.0 | 6 |

Packed: 1 pc.
Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP410 (p. 976-977)

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 3791 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 3711

WXL-LS-EBD, 2 Flute, Stub Length, Long Shank, Ball End



| | | | | | |
|---------------------|---------|-----|------|-----|-------------|
| SPEED FEED P1153 | CARBIDE | WXL | STUB | 30° | SHANK h6 |
|---------------------|---------|-----|------|-----|-------------|

| Radius Tolerance | |
|------------------|------------|
| 1 ≤ D < 4 | +/-0.005mm |
| 5 ≤ D ≤ 18 | +/-0.01mm |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 37110000 | 1 | 70 | 2.5 | 3 |
| 37110001 | 2 | 70 | 5.0 | 3 |
| 37110002 | 3 | 80 | 8.0 | 3 |
| 37110003 | 4 | 100 | 8.0 | 4 |
| 37110004 | 5 | 100 | 10.0 | 4 |
| 37110005 | 6 | 140 | 12.0 | 6 |
| 37110006 | 7 | 140 | 14.0 | 6 |

Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 37110007 | 8 | 160 | 14.0 | 8 |
| 37110008 | 10 | 180 | 18.0 | 10 |
| 37110009 | 12 | 200 | 22.0 | 12 |
| 37110010 | 14 | 200 | 26.0 | 12 |
| 37110011 | 16 | 220 | 30.0 | 16 |
| 37110012 | 18 | 220 | 34.0 | 16 |

Packed: 1 pc.
Available WXL® coating only.



OSG's Performance & Savings

Machining steel over 54 HRC? Try EXOCARB® Max - List 9111 (p. 906)

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 3711 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

good best





List 3720

WXL-1.5D-DE, 2 Flute, Stub Length

| | | | | | |
|--------------------------|---------|-----|------|-----|-------------|
| SPEED FEED P1158-1159 | CARBIDE | WXL | STUB | 30° | SHANK h6 |
|--------------------------|---------|-----|------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 0.1 ≤ D ≤ 6 | +0 / -0.02mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 3181801 | 0.1 | 45 | 0.15 | 4 |
| 3181802 | 0.2 | 45 | 0.30 | 4 |
| 3181803 | 0.3 | 45 | 0.45 | 4 |
| 3181804 | 0.4 | 45 | 0.60 | 4 |
| 3181805 | 0.5 | 45 | 0.75 | 4 |
| 3181806 | 0.6 | 45 | 0.90 | 4 |
| 3181807 | 0.7 | 45 | 1.10 | 4 |
| 3181808 | 0.8 | 45 | 1.20 | 4 |
| 3181809 | 0.9 | 45 | 1.40 | 4 |
| 3181810 | 1.0 | 45 | 1.50 | 4 |
| 3181811 | 1.1 | 45 | 1.70 | 4 |
| 3181812 | 1.2 | 45 | 1.80 | 4 |
| 3181813 | 1.3 | 45 | 2.00 | 4 |
| 3181814 | 1.4 | 45 | 2.10 | 4 |
| 3181815 | 1.5 | 45 | 2.30 | 4 |
| 3181816 | 1.6 | 45 | 2.40 | 4 |
| 3181817 | 1.7 | 45 | 2.60 | 4 |
| 3181818 | 1.8 | 45 | 2.70 | 4 |
| 3181819 | 1.9 | 45 | 2.90 | 4 |
| 3181820 | 2.0 | 45 | 3.00 | 4 |
| 3181821 | 2.1 | 45 | 3.20 | 4 |
| 3181822 | 2.2 | 45 | 3.30 | 4 |
| 3181823 | 2.3 | 45 | 3.50 | 4 |
| 3181824 | 2.4 | 45 | 3.60 | 4 |
| 3181825 | 2.5 | 45 | 3.80 | 4 |
| 3181826 | 2.6 | 45 | 3.90 | 4 |
| 3181827 | 2.7 | 45 | 4.10 | 4 |
| 3181828 | 2.8 | 45 | 4.20 | 4 |
| 3181829 | 2.9 | 45 | 4.40 | 4 |
| 3181830 | 3.0 | 45 | 4.50 | 6 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 3181831 | 3.1 | 45 | 4.70 | 6 |
| 3181832 | 3.2 | 45 | 4.80 | 6 |
| 3181833 | 3.3 | 45 | 5.00 | 6 |
| 3181834 | 3.4 | 45 | 5.10 | 6 |
| 3181835 | 3.5 | 45 | 5.30 | 6 |
| 3181836 | 3.6 | 45 | 5.40 | 6 |
| 3181837 | 3.7 | 45 | 5.60 | 6 |
| 3181838 | 3.8 | 45 | 5.70 | 6 |
| 3181839 | 3.9 | 45 | 5.90 | 6 |
| 3181840 | 4.0 | 45 | 6.00 | 6 |
| 3181841 | 4.1 | 50 | 6.20 | 6 |
| 3181842 | 4.2 | 50 | 6.30 | 6 |
| 3181843 | 4.3 | 50 | 6.50 | 6 |
| 3181844 | 4.4 | 50 | 6.60 | 6 |
| 3181845 | 4.5 | 50 | 6.80 | 6 |
| 3181846 | 4.6 | 50 | 6.90 | 6 |
| 3181847 | 4.7 | 50 | 7.10 | 6 |
| 3181848 | 4.8 | 50 | 7.20 | 6 |
| 3181849 | 4.9 | 50 | 7.40 | 6 |
| 3181850 | 5.0 | 50 | 7.50 | 6 |
| 3181851 | 5.1 | 50 | 7.70 | 6 |
| 3181852 | 5.2 | 50 | 7.80 | 6 |
| 3181853 | 5.3 | 50 | 8.00 | 6 |
| 3181854 | 5.4 | 50 | 8.10 | 6 |
| 3181855 | 5.5 | 50 | 8.30 | 6 |
| 3181856 | 5.6 | 50 | 8.40 | 6 |
| 3181857 | 5.7 | 50 | 8.60 | 6 |
| 3181858 | 5.8 | 50 | 8.70 | 6 |
| 3181859 | 5.9 | 50 | 8.90 | 6 |
| 3181860 | 6.0 | 50 | 9.00 | 6 |

Packed: 1 pc.
Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP421 (p. 969-970)

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 3720 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

good best



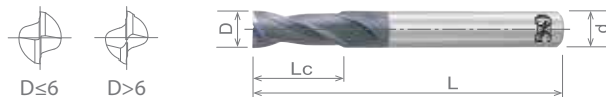


List 3721

WXL-2D-DE, 2 Flute, Stub Length

| | | | | | |
|--------------------------|---------|-----|------|-----|-------------|
| SPEED FEED P1160-1161 | CARBIDE | WXL | STUB | 30° | SHANK h6 |
|--------------------------|---------|-----|------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 0.1 ≤ D ≤ 12 | +0 / -0.02mm |
| 12 < D ≤ 20 | +0 / -0.03mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 3182001 | 0.1 | 45 | 0.2 | 4 |
| 3182002 | 0.2 | 45 | 0.4 | 4 |
| 3182003 | 0.3 | 45 | 0.6 | 4 |
| 3182004 | 0.4 | 45 | 0.8 | 4 |
| 3182005 | 0.5 | 45 | 1.0 | 4 |
| 3182006 | 0.6 | 45 | 1.2 | 4 |
| 3182007 | 0.7 | 45 | 1.4 | 4 |
| 3182008 | 0.8 | 45 | 1.6 | 4 |
| 3182009 | 0.9 | 45 | 1.8 | 4 |
| 3182010 | 1.0 | 45 | 2.0 | 4 |
| 3182011 | 1.1 | 45 | 2.2 | 4 |
| 3182012 | 1.2 | 45 | 2.4 | 4 |
| 3182013 | 1.3 | 45 | 2.6 | 4 |
| 3182014 | 1.4 | 45 | 2.8 | 4 |
| 3182015 | 1.5 | 45 | 3.0 | 4 |
| 3182016 | 1.6 | 45 | 3.2 | 4 |
| 3182017 | 1.7 | 45 | 3.4 | 4 |
| 3182018 | 1.8 | 45 | 3.6 | 4 |
| 3182019 | 1.9 | 45 | 3.8 | 4 |
| 3182020 | 2.0 | 45 | 4.0 | 4 |
| 3182021 | 2.1 | 45 | 4.2 | 4 |
| 3182022 | 2.2 | 45 | 4.4 | 4 |
| 3182023 | 2.3 | 45 | 4.6 | 4 |
| 3182024 | 2.4 | 45 | 4.8 | 4 |
| 3182025 | 2.5 | 45 | 5.0 | 4 |
| 3182026 | 2.6 | 45 | 5.2 | 4 |
| 3182027 | 2.7 | 45 | 5.4 | 4 |
| 3182028 | 2.8 | 45 | 5.6 | 4 |
| 3182029 | 2.9 | 45 | 5.8 | 4 |
| 3182030 | 3.0 | 45 | 6.0 | 6 |
| 3182031 | 3.1 | 45 | 6.2 | 6 |
| 3182032 | 3.2 | 45 | 6.4 | 6 |
| 3182033 | 3.3 | 45 | 6.6 | 6 |
| 3182034 | 3.4 | 45 | 6.8 | 6 |
| 3182035 | 3.5 | 45 | 7.0 | 6 |
| 3182036 | 3.6 | 45 | 7.2 | 6 |
| 3182037 | 3.7 | 45 | 7.4 | 6 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 3182038 | 3.8 | 45 | 7.6 | 6 |
| 3182039 | 3.9 | 45 | 7.8 | 6 |
| 3182040 | 4.0 | 45 | 8.0 | 6 |
| 3182041 | 4.1 | 50 | 8.2 | 6 |
| 3182042 | 4.2 | 50 | 8.4 | 6 |
| 3182043 | 4.3 | 50 | 8.6 | 6 |
| 3182044 | 4.4 | 50 | 8.8 | 6 |
| 3182045 | 4.5 | 50 | 9.0 | 6 |
| 3182046 | 4.6 | 50 | 9.2 | 6 |
| 3182047 | 4.7 | 50 | 9.4 | 6 |
| 3182048 | 4.8 | 50 | 9.6 | 6 |
| 3182049 | 4.9 | 50 | 9.8 | 6 |
| 3182050 | 5.0 | 50 | 10.0 | 6 |
| 3182051 | 5.1 | 50 | 10.2 | 6 |
| 3182052 | 5.2 | 50 | 10.4 | 6 |
| 3182053 | 5.3 | 50 | 10.6 | 6 |
| 3182054 | 5.4 | 50 | 10.8 | 6 |
| 3182055 | 5.5 | 50 | 11.0 | 6 |
| 3182056 | 5.6 | 50 | 11.2 | 6 |
| 3182057 | 5.7 | 50 | 11.4 | 6 |
| 3182058 | 5.8 | 50 | 11.6 | 6 |
| 3182059 | 5.9 | 50 | 11.8 | 6 |
| 3182060 | 6.0 | 50 | 12.0 | 6 |
| 3182065 | 6.5 | 60 | 13.0 | 8 |
| 3182070 | 7.0 | 60 | 14.0 | 8 |
| 3182075 | 7.5 | 60 | 15.0 | 8 |
| 3182080 | 8.0 | 60 | 16.0 | 8 |
| 3182085 | 8.5 | 70 | 17.0 | 10 |
| 3182090 | 9.0 | 70 | 18.0 | 10 |
| 3182095 | 9.5 | 70 | 19.0 | 10 |
| 3182100 | 10.0 | 70 | 20.0 | 10 |
| 3182110 | 11.0 | 75 | 22.0 | 12 |
| 3182120 | 12.0 | 75 | 24.0 | 12 |
| 3182160 | 16.0 | 90 | 32.0 | 16 |
| 3182180 | 18.0 | 90 | 36.0 | 16 |
| 3182200 | 20.0 | 100 | 40.0 | 20 |

Packed: 1 pc. Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP421 (p. 969-970)

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 3721 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

good best





List 3712

WXL-PC-EBD, 2 Flute, Stub Length, Pencil Neck, Ball End

| | | | | | |
|--------------------------|---------|-----|------------|-----|-------------|
| SPEED FEED P1162-1169 | CARBIDE | WXL | STUB | 30° | SHANK h6 |
| Radius Tolerance | | | | | |
| 0.2 ≤ D ≤ 6 | | | +/-0.005mm | | |

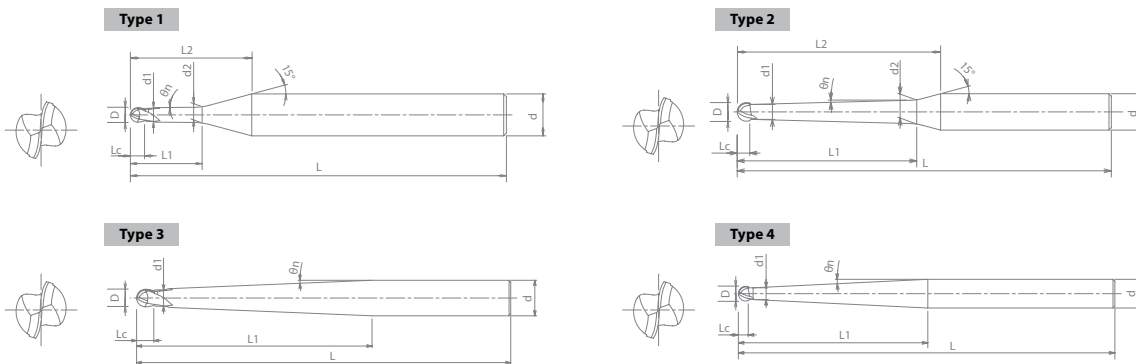


Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Minimum Neck Diameter | Effective Neck Length | Neck Taper | Shank Diameter | Type |
|------------|---------------|----------------|---------------|-----------------------|-----------------------|------------|----------------|------|
| | D | L | Lc | d1 | L1 | θn | d | |
| 3170011 | 0.2 | 45 | 0.16 | 0.19 | 1.0 | 0.5° | 4 | 1 |
| 3170012 | 0.2 | 45 | 0.16 | 0.19 | 1.5 | 0.5° | 4 | 1 |
| 3170013 | 0.2 | 45 | 0.16 | 0.19 | 2.0 | 0.5° | 4 | 1 |
| 3170014 | 0.2 | 45 | 0.16 | 0.19 | 2.5 | 0.5° | 4 | 1 |
| 3170015 | 0.2 | 45 | 0.16 | 0.19 | 3.0 | 0.5° | 4 | 1 |
| 3170021 | 0.2 | 45 | 0.16 | 0.19 | 2.0 | 1.0° | 4 | 1 |
| 3170022 | 0.2 | 45 | 0.16 | 0.19 | 2.5 | 1.0° | 4 | 1 |
| 3170023 | 0.2 | 45 | 0.16 | 0.19 | 3.0 | 1.0° | 4 | 1 |
| 3170031 | 0.3 | 45 | 0.24 | 0.29 | 2.0 | 0.5° | 4 | 1 |
| 3170032 | 0.3 | 45 | 0.24 | 0.29 | 3.0 | 0.5° | 4 | 1 |
| 3170041 | 0.3 | 45 | 0.24 | 0.29 | 3.0 | 1.0° | 4 | 1 |
| 3170042 | 0.3 | 45 | 0.24 | 0.29 | 4.0 | 1.0° | 4 | 1 |
| 3170051 | 0.4 | 45 | 0.30 | 0.38 | 2.0 | 0.5° | 4 | 1 |
| 3170052 | 0.4 | 45 | 0.30 | 0.38 | 3.0 | 0.5° | 4 | 1 |
| 3170053 | 0.4 | 45 | 0.30 | 0.38 | 4.0 | 0.5° | 4 | 1 |
| 3170054 | 0.4 | 45 | 0.30 | 0.38 | 5.0 | 0.5° | 4 | 1 |
| 3170055 | 0.4 | 45 | 0.30 | 0.38 | 6.0 | 0.5° | 4 | 1 |
| 3170061 | 0.4 | 45 | 0.30 | 0.38 | 4.0 | 1.0° | 4 | 1 |
| 3170062 | 0.4 | 45 | 0.30 | 0.38 | 5.0 | 1.0° | 4 | 1 |
| 3170063 | 0.4 | 45 | 0.30 | 0.38 | 6.0 | 1.0° | 4 | 1 |
| 3170071 | 0.5 | 45 | 0.40 | 0.48 | 4.0 | 0.5° | 4 | 1 |
| 3170072 | 0.5 | 45 | 0.40 | 0.48 | 6.0 | 0.5° | 4 | 1 |

Packed: 1 pc.
Available WXL® coating only.

continued on next page



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | 4140 4340 | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 3712 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

good best





List 3712 (Continued)

WXL-PC-EBD, 2 Flute, Stub Length, Pencil Neck, Ball End

| | | | | | | |
|--------------------------|---------|-----|--|------|-----|-------------|
| SPEED FEED P1162-1169 | CARBIDE | WXL | | STUB | 30° | SHANK h6 |
|--------------------------|---------|-----|--|------|-----|-------------|

| Radius Tolerance | |
|------------------|------------|
| 0.2 ≤ D ≤ 6 | +/-0.005mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Minimum Neck Diameter | Effective Neck Length | Neck Taper | Shank Diameter | Type |
|------------|---------------|----------------|---------------|-----------------------|-----------------------|------------|----------------|------|
| | D | L | Lc | d1 | L1 | θn | d | |
| 3170073 | 0.5 | 45 | 0.40 | 0.48 | 8.0 | 0.5° | 4 | 1 |
| 3170074 | 0.5 | 45 | 0.40 | 0.48 | 10.0 | 0.5° | 4 | 1 |
| 3170081 | 0.5 | 45 | 0.40 | 0.48 | 4.0 | 1.0° | 4 | 1 |
| 3170082 | 0.5 | 45 | 0.40 | 0.48 | 6.0 | 1.0° | 4 | 1 |
| 3170083 | 0.5 | 45 | 0.40 | 0.48 | 8.0 | 1.0° | 4 | 1 |
| 3170084 | 0.5 | 45 | 0.40 | 0.48 | 10.0 | 1.0° | 4 | 1 |
| 3170085 | 0.5 | 50 | 0.40 | 0.48 | 12.0 | 1.0° | 4 | 1 |
| 3170091 | 0.6 | 45 | 0.50 | 0.58 | 2.0 | 0.5° | 4 | 1 |
| 3170092 | 0.6 | 45 | 0.50 | 0.58 | 4.0 | 0.5° | 4 | 1 |
| 3170093 | 0.6 | 45 | 0.50 | 0.58 | 6.0 | 0.5° | 4 | 1 |
| 3170094 | 0.6 | 45 | 0.50 | 0.58 | 8.0 | 0.5° | 4 | 1 |
| 3170095 | 0.6 | 45 | 0.50 | 0.58 | 10.0 | 0.5° | 4 | 1 |
| 3170096 | 0.6 | 45 | 0.50 | 0.58 | 12.0 | 0.5° | 4 | 1 |
| 3170097 | 0.6 | 50 | 0.50 | 0.58 | 16.0 | 0.5° | 4 | 1 |
| 3170101 | 0.6 | 45 | 0.50 | 0.58 | 4.0 | 1.0° | 4 | 1 |
| 3170102 | 0.6 | 45 | 0.50 | 0.58 | 6.0 | 1.0° | 4 | 1 |
| 3170103 | 0.6 | 45 | 0.50 | 0.58 | 8.0 | 1.0° | 4 | 1 |
| 3170104 | 0.6 | 45 | 0.50 | 0.58 | 10.0 | 1.0° | 4 | 1 |
| 3170105 | 0.6 | 45 | 0.50 | 0.58 | 12.0 | 1.0° | 4 | 1 |
| 3170106 | 0.6 | 50 | 0.50 | 0.58 | 16.0 | 1.0° | 4 | 1 |
| 3170111 | 0.8 | 45 | 0.60 | 0.78 | 4.0 | 0.5° | 4 | 1 |
| 3170112 | 0.8 | 45 | 0.60 | 0.78 | 6.0 | 0.5° | 4 | 1 |
| 3170113 | 0.8 | 45 | 0.60 | 0.78 | 8.0 | 0.5° | 4 | 1 |
| 3170114 | 0.8 | 45 | 0.60 | 0.78 | 12.0 | 0.5° | 4 | 1 |
| 3170121 | 0.8 | 45 | 0.60 | 0.78 | 8.0 | 1.0° | 4 | 1 |
| 3170122 | 0.8 | 45 | 0.60 | 0.78 | 12.0 | 1.0° | 4 | 1 |
| 3170123 | 0.8 | 50 | 0.60 | 0.78 | 16.0 | 1.0° | 4 | 1 |
| 3170131 | 1.0 | 45 | 0.63 | 0.95 | 6.0 | 0.5° | 4 | 3 |
| 3170132 | 1.0 | 45 | 0.63 | 0.95 | 8.0 | 0.5° | 4 | 3 |
| 3170133 | 1.0 | 45 | 0.63 | 0.95 | 10.0 | 0.5° | 4 | 3 |
| 3170134 | 1.0 | 45 | 0.63 | 0.95 | 12.0 | 0.5° | 4 | 3 |
| 3170135 | 1.0 | 50 | 0.63 | 0.95 | 16.0 | 0.5° | 4 | 3 |
| 3170136 | 1.0 | 55 | 0.63 | 0.95 | 18.0 | 0.5° | 4 | 3 |
| 3170137 | 1.0 | 55 | 0.63 | 0.95 | 20.0 | 0.5° | 4 | 3 |
| 3170138 | 1.0 | 60 | 0.63 | 0.95 | 25.0 | 0.5° | 4 | 3 |
| 3170139 | 1.0 | 65 | 0.63 | 0.95 | 30.0 | 0.5° | 4 | 3 |
| 3170140 | 1.0 | 70 | 0.63 | 0.95 | 35.0 | 0.5° | 4 | 3 |
| 3170141 | 1.0 | 45 | 0.63 | 0.95 | 10.0 | 1.0° | 4 | 3 |
| 3170142 | 1.0 | 50 | 0.63 | 0.95 | 16.0 | 1.0° | 4 | 3 |
| 3170143 | 1.0 | 55 | 0.63 | 0.95 | 20.0 | 1.0° | 4 | 3 |
| 3170144 | 1.0 | 60 | 0.63 | 0.95 | 25.0 | 1.0° | 4 | 3 |
| 3170145 | 1.0 | 65 | 0.63 | 0.95 | 30.0 | 1.0° | 4 | 3 |
| 3170146 | 1.0 | 70 | 0.63 | 0.95 | 35.0 | 1.0° | 4 | 3 |
| 3170147 | 1.0 | 80 | 0.63 | 0.95 | 40.0 | 1.0° | 4 | 3 |
| 3170148 | 1.0 | 90 | 0.63 | 0.95 | 50.0 | 1.0° | 4 | 3 |
| 3170149 | 1.0 | 100 | 0.63 | 0.95 | 60.0 | 1.0° | 4 | 3 |
| 3170150 | 1.0 | 110 | 0.63 | 0.95 | 70.0 | 1.0° | 4 | 3 |
| 3170151 | 1.0 | 45 | 0.63 | 0.95 | 8.0 | 1.5° | 4 | 3 |
| 3170152 | 1.0 | 45 | 0.63 | 0.95 | 10.0 | 1.5° | 4 | 3 |
| 3170153 | 1.0 | 45 | 0.63 | 0.95 | 12.0 | 1.5° | 4 | 3 |

Packed: 1 pc.
Available WXL® coating only.





List 3712 (Continued)

WXL-PC-EBD, 2 Flute, Stub Length, Pencil Neck, Ball End

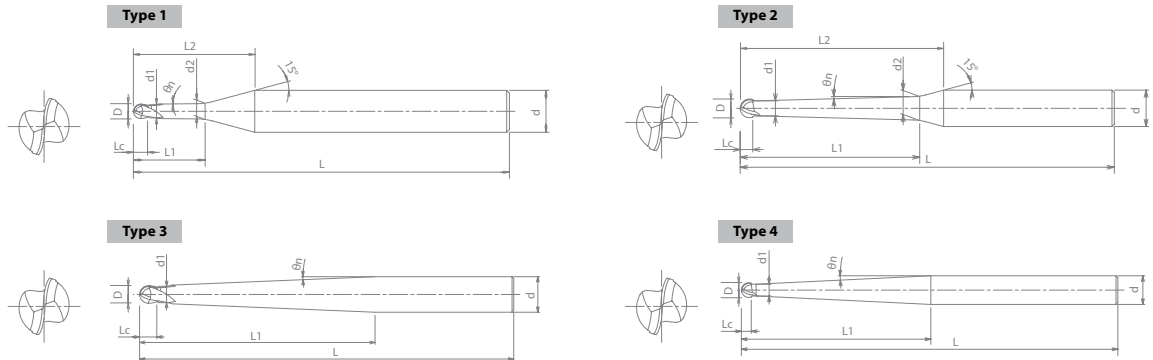
| | | | | | |
|--------------------------|---------|-----|------|-----|-------------|
| SPEED FEED P1162-1169 | CARBIDE | WXL | STUB | 30° | SHANK h6 |
|--------------------------|---------|-----|------|-----|-------------|

Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Minimum Neck Diameter | Effective Neck Length | Neck Taper | Shank Diameter | Type |
|------------|---------------|----------------|---------------|-----------------------|-----------------------|------------|----------------|------|
| | D | L | Lc | d1 | L1 | θn | d | |
| 3170154 | 1.0 | 50 | 0.63 | 0.95 | 16.0 | 1.5° | 4 | 3 |
| 3170155 | 1.0 | 55 | 0.63 | 0.95 | 20.0 | 1.5° | 4 | 3 |
| 3170156 | 1.0 | 60 | 0.63 | 0.95 | 25.0 | 1.5° | 4 | 3 |
| 3170157 | 1.0 | 65 | 0.63 | 0.95 | 30.0 | 1.5° | 4 | 3 |
| 3170158 | 1.0 | 70 | 0.63 | 0.95 | 35.0 | 1.5° | 4 | 3 |
| 3170161 | 1.0 | 80 | 0.63 | 0.95 | 45.0 | 2.0° | 4 | 4 |
| 3170171 | 1.2 | 45 | 0.76 | 1.15 | 12.0 | 0.5° | 4 | 3 |
| 3170172 | 1.2 | 60 | 0.76 | 1.15 | 25.0 | 0.5° | 4 | 3 |
| 3170181 | 1.2 | 45 | 0.76 | 1.15 | 12.0 | 1.0° | 4 | 3 |
| 3170182 | 1.2 | 60 | 0.76 | 1.15 | 25.0 | 1.0° | 4 | 3 |
| 3170191 | 1.2 | 45 | 0.76 | 1.15 | 12.0 | 1.5° | 4 | 3 |
| 3170192 | 1.2 | 60 | 0.76 | 1.15 | 25.0 | 1.5° | 4 | 3 |
| 3170211 | 1.5 | 45 | 0.95 | 1.42 | 8.0 | 0.5° | 4 | 3 |
| 3170212 | 1.5 | 45 | 0.95 | 1.42 | 10.0 | 0.5° | 4 | 3 |
| 3170213 | 1.5 | 45 | 0.95 | 1.42 | 12.0 | 0.5° | 4 | 3 |
| 3170214 | 1.5 | 55 | 0.95 | 1.42 | 16.0 | 0.5° | 4 | 3 |
| 3170215 | 1.5 | 55 | 0.95 | 1.42 | 20.0 | 0.5° | 4 | 3 |
| 3170216 | 1.5 | 60 | 0.95 | 1.42 | 25.0 | 0.5° | 4 | 3 |
| 3170217 | 1.5 | 65 | 0.95 | 1.42 | 30.0 | 0.5° | 4 | 3 |
| 3170218 | 1.5 | 70 | 0.95 | 1.42 | 35.0 | 0.5° | 4 | 3 |
| 3170221 | 1.5 | 45 | 0.95 | 1.42 | 10.0 | 1.0° | 4 | 3 |
| 3170222 | 1.5 | 45 | 0.95 | 1.42 | 12.0 | 1.0° | 4 | 3 |
| 3170223 | 1.5 | 55 | 0.95 | 1.42 | 16.0 | 1.0° | 4 | 3 |
| 3170224 | 1.5 | 55 | 0.95 | 1.42 | 20.0 | 1.0° | 4 | 3 |
| 3170225 | 1.5 | 60 | 0.95 | 1.42 | 25.0 | 1.0° | 4 | 3 |

Packed: 1 pc.
Available WXL® coating only.

continued on next page **HTE**



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 3712 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

good best





List 3712 (Continued)

WXL-PC-EBD, 2 Flute, Stub Length, Pencil Neck, Ball End

| | | | | | | |
|--------------------------|---------|-----|--|------|-----|-------------|
| SPEED FEED P1162-1169 | CARBIDE | WXL | | STUB | 30° | SHANK h6 |
|--------------------------|---------|-----|--|------|-----|-------------|

| Radius Tolerance | |
|------------------|------------|
| 0.2≤D≤6 | +/-0.005mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Minimum Neck Diameter | Effective Neck Length | Neck Taper | Shank Diameter | Type |
|------------|---------------|----------------|---------------|-----------------------|-----------------------|------------|----------------|------|
| | D | L | Lc | d1 | L1 | θn | d | |
| 3170226 | 1.5 | 65 | 0.95 | 1.42 | 30.0 | 1.0° | 4 | 3 |
| 3170227 | 1.5 | 70 | 0.95 | 1.42 | 35.0 | 1.0° | 4 | 3 |
| 3170230 | 1.5 | 45 | 0.95 | 1.42 | 10.0 | 1.5° | 4 | 3 |
| 3170231 | 1.5 | 45 | 0.95 | 1.42 | 12.0 | 1.5° | 4 | 3 |
| 3170232 | 1.5 | 55 | 0.95 | 1.42 | 16.0 | 1.5° | 4 | 3 |
| 3170233 | 1.5 | 55 | 0.95 | 1.42 | 20.0 | 1.5° | 4 | 3 |
| 3170234 | 1.5 | 60 | 0.95 | 1.42 | 25.0 | 1.5° | 4 | 3 |
| 3170235 | 1.5 | 65 | 0.95 | 1.42 | 30.0 | 1.5° | 4 | 3 |
| 3170236 | 1.5 | 70 | 0.95 | 1.42 | 35.0 | 1.5° | 4 | 3 |
| 3170241 | 1.5 | 70 | 0.95 | 1.42 | 38.6 | 2.0° | 4 | 4 |
| 3170271 | 2.0 | 45 | 1.26 | 1.93 | 8.0 | 0.5° | 4 | 3 |
| 3170272 | 2.0 | 45 | 1.26 | 1.93 | 10.0 | 0.5° | 4 | 3 |
| 3170273 | 2.0 | 45 | 1.26 | 1.93 | 12.0 | 0.5° | 4 | 3 |
| 3170274 | 2.0 | 50 | 1.26 | 1.93 | 16.0 | 0.5° | 4 | 3 |
| 3170275 | 2.0 | 55 | 1.26 | 1.93 | 20.0 | 0.5° | 4 | 3 |
| 3170276 | 2.0 | 65 | 1.26 | 1.93 | 26.0 | 0.5° | 4 | 3 |
| 3170277 | 2.0 | 70 | 1.26 | 1.93 | 30.0 | 0.5° | 4 | 3 |
| 3170278 | 2.0 | 75 | 1.26 | 1.93 | 35.0 | 0.5° | 4 | 3 |
| 3170279 | 2.0 | 80 | 1.26 | 1.93 | 40.0 | 0.5° | 4 | 3 |
| 3170281 | 2.0 | 50 | 1.26 | 1.93 | 16.0 | 1.0° | 4 | 3 |
| 3170282 | 2.0 | 55 | 1.26 | 1.93 | 20.0 | 1.0° | 4 | 3 |
| 3170283 | 2.0 | 65 | 1.26 | 1.93 | 25.0 | 1.0° | 4 | 3 |
| 3170284 | 2.0 | 70 | 1.26 | 1.93 | 30.0 | 1.0° | 4 | 3 |
| 3170285 | 2.0 | 75 | 1.26 | 1.93 | 35.0 | 1.0° | 4 | 3 |
| 3170286 | 2.0 | 80 | 1.26 | 1.93 | 40.0 | 1.0° | 4 | 3 |
| 3170287 | 2.0 | 90 | 1.26 | 1.93 | 50.0 | 1.0° | 6 | 3 |
| 3170288 | 2.0 | 100 | 1.26 | 1.93 | 60.0 | 1.0° | 6 | 3 |
| 3170289 | 2.0 | 110 | 1.26 | 1.93 | 70.0 | 1.0° | 6 | 3 |
| 3170291 | 2.0 | 50 | 1.26 | 1.93 | 16.0 | 1.5° | 4 | 3 |
| 3170292 | 2.0 | 55 | 1.26 | 1.93 | 20.0 | 1.5° | 4 | 3 |
| 3170293 | 2.0 | 65 | 1.26 | 1.93 | 25.0 | 1.5° | 4 | 3 |
| 3170294 | 2.0 | 70 | 1.26 | 1.93 | 30.0 | 1.5° | 4 | 3 |
| 3170295 | 2.0 | 75 | 1.26 | 1.93 | 35.0 | 1.5° | 4 | 3 |
| 3170296 | 2.0 | 80 | 1.26 | 1.93 | 41.4 | 1.5° | 4 | 4 |
| 3170301 | 2.0 | 70 | 1.26 | 1.93 | 31.5 | 2.0° | 4 | 4 |
| 3170321 | 3.0 | 50 | 2.40 | 2.95 | 8.0 | 0.5° | 6 | 1 |
| 3170322 | 3.0 | 50 | 2.40 | 2.95 | 10.0 | 0.5° | 6 | 1 |
| 3170323 | 3.0 | 55 | 2.40 | 2.95 | 12.0 | 0.5° | 6 | 1 |
| 3170324 | 3.0 | 55 | 2.40 | 2.95 | 16.0 | 0.5° | 6 | 1 |
| 3170325 | 3.0 | 60 | 2.40 | 2.95 | 20.0 | 0.5° | 6 | 1 |
| 3170326 | 3.0 | 65 | 2.40 | 2.95 | 25.0 | 0.5° | 6 | 1 |
| 3170327 | 3.0 | 70 | 2.40 | 2.95 | 30.0 | 0.5° | 6 | 1 |
| 3170328 | 3.0 | 80 | 2.40 | 2.95 | 35.0 | 0.5° | 6 | 1 |
| 3170329 | 3.0 | 85 | 2.40 | 2.95 | 40.0 | 0.5° | 6 | 1 |
| 3170330 | 3.0 | 90 | 2.40 | 2.95 | 50.0 | 0.5° | 6 | 1 |
| 3170331 | 3.0 | 60 | 2.40 | 2.95 | 20.0 | 1.0° | 6 | 1 |
| 3170332 | 3.0 | 65 | 2.40 | 2.95 | 25.0 | 1.0° | 6 | 1 |
| 3170333 | 3.0 | 70 | 2.40 | 2.95 | 30.0 | 1.0° | 6 | 1 |

Packed: 1 pc.
Available WXL® coating only.





List 3712 (Continued)

WXL-PC-EBD, 2 Flute, Stub Length, Pencil Neck, Ball End

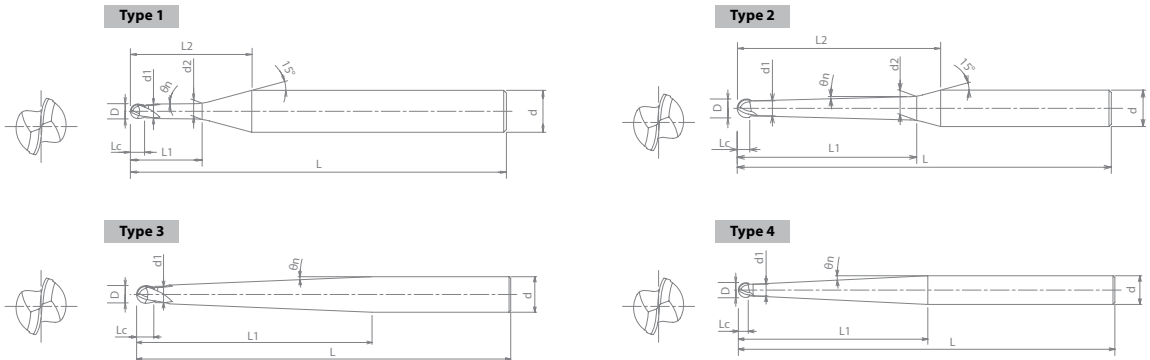
| | | | | | |
|--------------------------|---------|-----|------|-----|-------------|
| SPEED FEED P1162-1169 | CARBIDE | WXL | STUB | 30° | SHANK h6 |
|--------------------------|---------|-----|------|-----|-------------|

Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Minimum Neck Diameter | Effective Neck Length | Neck Taper | Shank Diameter | Type |
|------------|---------------|----------------|---------------|-----------------------|-----------------------|------------|----------------|------|
| | D | L | Lc | d1 | L1 | θn | d | |
| 3170334 | 3.0 | 80 | 2.40 | 2.95 | 35.0 | 1.0° | 6 | 1 |
| 3170335 | 3.0 | 85 | 2.40 | 2.95 | 40.0 | 1.0° | 6 | 1 |
| 3170336 | 3.0 | 90 | 2.40 | 2.95 | 50.0 | 1.0° | 6 | 1 |
| 3170337 | 3.0 | 100 | 2.40 | 2.95 | 60.0 | 1.0° | 6 | 1 |
| 3170338 | 3.0 | 110 | 2.40 | 2.95 | 70.0 | 1.0° | 6 | 1 |
| 3170341 | 3.0 | 60 | 2.40 | 2.95 | 20.0 | 1.5° | 6 | 1 |
| 3170342 | 3.0 | 65 | 2.40 | 2.95 | 25.0 | 1.5° | 6 | 1 |
| 3170343 | 3.0 | 70 | 2.40 | 2.95 | 30.0 | 1.5° | 6 | 1 |
| 3170344 | 3.0 | 80 | 2.40 | 2.95 | 35.0 | 1.5° | 6 | 1 |
| 3170345 | 3.0 | 85 | 2.40 | 2.95 | 40.0 | 1.5° | 6 | 1 |
| 3170346 | 3.0 | 90 | 2.40 | 2.95 | 50.0 | 1.5° | 6 | 1 |
| 3170347 | 3.0 | 100 | 2.40 | 2.95 | 62.5 | 1.5° | 6 | 2 |
| 3170351 | 3.0 | 100 | 2.40 | 2.95 | 47.5 | 2.0° | 6 | 2 |
| 3170371 | 4.0 | 65 | 3.20 | 3.93 | 20.0 | 1.0° | 6 | 1 |
| 3170372 | 4.0 | 80 | 3.20 | 3.93 | 30.0 | 1.0° | 6 | 1 |
| 3170373 | 4.0 | 90 | 3.20 | 3.93 | 40.0 | 1.0° | 6 | 1 |
| 3170374 | 4.0 | 100 | 3.20 | 3.93 | 50.0 | 1.0° | 8 | 1 |
| 3170375 | 4.0 | 110 | 3.20 | 3.93 | 60.0 | 1.0° | 8 | 1 |
| 3170381 | 4.0 | 80 | 3.20 | 3.93 | 44.2 | 1.5° | 6 | 2 |
| 3170391 | 4.0 | 80 | 3.20 | 3.93 | 34.0 | 2.0° | 6 | 2 |
| 3170401 | 5.0 | 100 | 5.00 | 4.95 | 30.0 | 1.0° | 8 | 1 |
| 3170402 | 5.0 | 100 | 5.00 | 4.95 | 40.0 | 1.0° | 8 | 1 |
| 3170403 | 5.0 | 130 | 5.00 | 4.95 | 60.0 | 1.0° | 8 | 1 |
| 3170411 | 5.0 | 100 | 5.00 | 4.95 | 26.9 | 1.5° | 6 | 2 |
| 3170412 | 5.0 | 130 | 5.00 | 4.95 | 65.1 | 1.5° | 8 | 2 |

Packed: 1 pc.
Available WXL® coating only.

continued on next page



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | | 300 | 400 | | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 3712 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |

good best





List 3712 (Continued)

WXL-PC-EBD, 2 Flute, Stub Length, Pencil Neck, Ball End

| | | | | | | |
|--------------------------|---------|-----|--|------|-----|-------------|
| SPEED FEED P1162-1169 | CARBIDE | WXL | | STUB | 30° | SHANK h6 |
|--------------------------|---------|-----|--|------|-----|-------------|

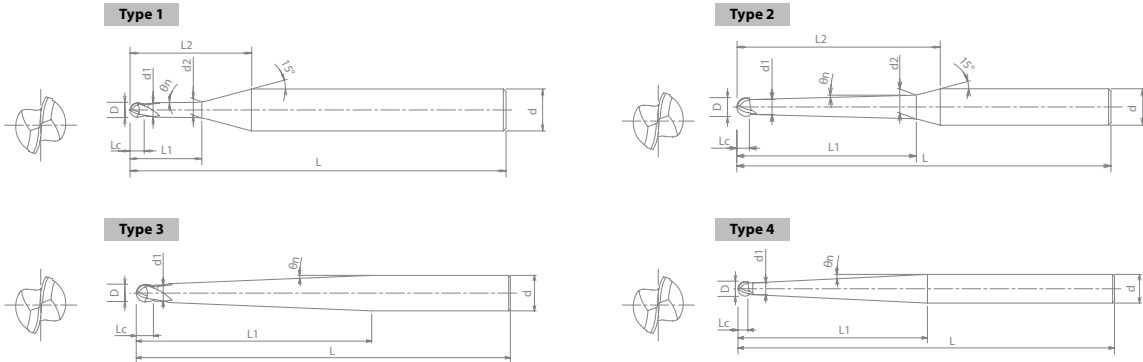
| Radius Tolerance | |
|------------------|------------|
| 0.2 ≤ D ≤ 6 | +/-0.005mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Minimum Neck Diameter | Effective Neck Length | Neck Taper | Shank Diameter | Type |
|------------|---------------|----------------|---------------|-----------------------|-----------------------|------------|----------------|------|
| | D | L | Lc | d1 | L1 | θn | d | |
| 3170421 | 5.0 | 130 | 5.00 | 4.95 | 50.1 | 2.0° | 8 | 2 |
| 3170431 | 6.0 | 100 | 6.00 | 5.95 | 30.0 | 1.0° | 8 | 1 |
| 3170432 | 6.0 | 100 | 6.00 | 5.95 | 40.0 | 1.0° | 8 | 1 |
| 3170433 | 6.0 | 100 | 6.00 | 5.95 | 50.0 | 1.0° | 8 | 1 |
| 3170434 | 6.0 | 110 | 6.00 | 5.95 | 60.0 | 1.0° | 10 | 1 |
| 3170435 | 6.0 | 120 | 6.00 | 5.95 | 70.0 | 1.0° | 10 | 1 |
| 3170436 | 6.0 | 130 | 6.00 | 5.95 | 80.0 | 1.0° | 12 | 1 |
| 3170441 | 6.0 | 100 | 6.00 | 5.95 | 49.0 | 1.5° | 8 | 2 |
| 3170451 | 6.0 | 100 | 6.00 | 5.95 | 36.0 | 2.0° | 8 | 2 |

Packed: 1 pc.
Available WXL® coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 3712 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

good best



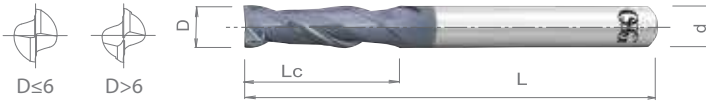


List 3722

WXL-3D-DE, 2 Flute, Regular Length

| | | | | | |
|--------------------------|---------|-----|-----|-----|-------------|
| SPEED FEED P1170-1171 | CARBIDE | WXL | REG | 35° | SHANK h6 |
|--------------------------|---------|-----|-----|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 0.1 ≤ D ≤ 12 | +0 / -0.02mm |
| 12 < D ≤ 20 | +0 / -0.03mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 3182401 | 0.1 | 45 | 0.3 | 4 |
| 3182402 | 0.2 | 45 | 0.6 | 4 |
| 3182403 | 0.3 | 45 | 0.9 | 4 |
| 3182404 | 0.4 | 45 | 1.2 | 4 |
| 3182405 | 0.5 | 45 | 1.5 | 4 |
| 3182406 | 0.6 | 45 | 1.8 | 4 |
| 3182407 | 0.7 | 45 | 2.1 | 4 |
| 3182408 | 0.8 | 45 | 2.4 | 4 |
| 3182409 | 0.9 | 45 | 2.7 | 4 |
| 3182410 | 1.0 | 45 | 3.0 | 4 |
| 3182411 | 1.1 | 45 | 3.3 | 4 |
| 3182412 | 1.2 | 45 | 3.6 | 4 |
| 3182413 | 1.3 | 45 | 3.9 | 4 |
| 3182414 | 1.4 | 45 | 4.2 | 4 |
| 3182415 | 1.5 | 45 | 4.5 | 4 |
| 3182416 | 1.6 | 45 | 4.8 | 4 |
| 3182417 | 1.7 | 45 | 5.1 | 4 |
| 3182418 | 1.8 | 45 | 5.4 | 4 |
| 3182419 | 1.9 | 45 | 5.7 | 4 |
| 3182420 | 2.0 | 45 | 6.0 | 4 |
| 3182421 | 2.1 | 45 | 6.3 | 4 |
| 3182422 | 2.2 | 45 | 6.6 | 4 |
| 3182423 | 2.3 | 45 | 6.9 | 4 |
| 3182424 | 2.4 | 45 | 7.2 | 4 |
| 3182425 | 2.5 | 45 | 7.5 | 4 |
| 3182426 | 2.6 | 45 | 7.8 | 4 |
| 3182427 | 2.7 | 45 | 8.1 | 4 |
| 3182428 | 2.8 | 45 | 8.4 | 4 |
| 3182429 | 2.9 | 45 | 8.7 | 4 |
| 3182430 | 3.0 | 45 | 9.0 | 6 |
| 3182431 | 3.1 | 45 | 9.3 | 6 |
| 3182432 | 3.2 | 45 | 9.6 | 6 |
| 3182433 | 3.3 | 45 | 9.9 | 6 |
| 3182434 | 3.4 | 45 | 10.2 | 6 |
| 3182435 | 3.5 | 45 | 10.5 | 6 |
| 3182436 | 3.6 | 45 | 10.8 | 6 |
| 3182437 | 3.7 | 45 | 11.1 | 6 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 3182438 | 3.8 | 45 | 11.4 | 6 |
| 3182439 | 3.9 | 45 | 11.7 | 6 |
| 3182440 | 4.0 | 50 | 12.0 | 6 |
| 3182441 | 4.1 | 50 | 12.3 | 6 |
| 3182442 | 4.2 | 50 | 12.6 | 6 |
| 3182443 | 4.3 | 50 | 12.9 | 6 |
| 3182444 | 4.4 | 50 | 13.2 | 6 |
| 3182445 | 4.5 | 50 | 13.5 | 6 |
| 3182446 | 4.6 | 55 | 13.8 | 6 |
| 3182447 | 4.7 | 55 | 14.1 | 6 |
| 3182448 | 4.8 | 55 | 14.4 | 6 |
| 3182449 | 4.9 | 55 | 14.7 | 6 |
| 3182450 | 5.0 | 55 | 15.0 | 6 |
| 3182451 | 5.1 | 55 | 15.3 | 6 |
| 3182452 | 5.2 | 55 | 15.6 | 6 |
| 3182453 | 5.3 | 55 | 15.9 | 6 |
| 3182454 | 5.4 | 55 | 16.2 | 6 |
| 3182455 | 5.5 | 60 | 16.5 | 6 |
| 3182456 | 5.6 | 60 | 16.8 | 6 |
| 3182457 | 5.7 | 60 | 17.1 | 6 |
| 3182458 | 5.8 | 60 | 17.4 | 6 |
| 3182459 | 5.9 | 60 | 17.7 | 6 |
| 3182460 | 6.0 | 60 | 18.0 | 6 |
| 3182465 | 6.5 | 65 | 19.5 | 8 |
| 3182470 | 7.0 | 65 | 21.0 | 8 |
| 3182475 | 7.5 | 70 | 22.5 | 8 |
| 3182480 | 8.0 | 70 | 24.0 | 8 |
| 3182485 | 8.5 | 70 | 22.5 | 10 |
| 3182490 | 9.0 | 75 | 27.0 | 10 |
| 3182495 | 9.5 | 75 | 28.5 | 10 |
| 3182500 | 10.0 | 80 | 30.0 | 10 |
| 3182510 | 11.0 | 80 | 33.0 | 12 |
| 3182520 | 12.0 | 90 | 36.0 | 12 |
| 3182560 | 16.0 | 110 | 48.0 | 16 |
| 3182580 | 18.0 | 130 | 54.0 | 16 |
| 3182600 | 20.0 | 130 | 60.0 | 20 |

Packed: 1 pc.
Available WXL® coating only.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 3722 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

good best





List 3723

WXL-4D-DE, 2 Flute, Long Length

| | | | | | |
|--------------------------|---------|-----|------|-----|-------------|
| SPEED FEED P1172-1173 | CARBIDE | WXL | LONG | 40° | SHANK h6 |
|--------------------------|---------|-----|------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 0.2 ≤ D ≤ 12 | +0 / -0.02mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 3182602 | 0.2 | 45 | 0.8 | 4 |
| 3182603 | 0.3 | 45 | 1.2 | 4 |
| 3182604 | 0.4 | 45 | 1.6 | 4 |
| 3182605 | 0.5 | 45 | 2.0 | 4 |
| 3182606 | 0.6 | 45 | 2.4 | 4 |
| 3182607 | 0.7 | 45 | 2.8 | 4 |
| 3182608 | 0.8 | 45 | 3.2 | 4 |
| 3182609 | 0.9 | 45 | 3.6 | 4 |
| 3182610 | 1.0 | 45 | 4.0 | 4 |
| 3182611 | 1.1 | 45 | 4.4 | 4 |
| 3182612 | 1.2 | 45 | 4.8 | 4 |
| 3182613 | 1.3 | 45 | 5.2 | 4 |
| 3182614 | 1.4 | 45 | 5.6 | 4 |
| 3182615 | 1.5 | 45 | 6.0 | 4 |
| 3182616 | 1.6 | 45 | 6.4 | 4 |
| 3182617 | 1.7 | 45 | 6.8 | 4 |
| 3182618 | 1.8 | 45 | 7.2 | 4 |
| 3182619 | 1.9 | 45 | 7.6 | 4 |
| 3182620 | 2.0 | 45 | 8.0 | 4 |
| 3182621 | 2.1 | 45 | 8.4 | 4 |
| 3182622 | 2.2 | 45 | 8.8 | 4 |
| 3182623 | 2.3 | 45 | 9.2 | 4 |
| 3182624 | 2.4 | 45 | 9.6 | 4 |
| 3182625 | 2.5 | 45 | 10.0 | 4 |
| 3182626 | 2.6 | 50 | 10.4 | 4 |
| 3182627 | 2.7 | 50 | 10.8 | 4 |
| 3182628 | 2.8 | 50 | 11.2 | 4 |
| 3182629 | 2.9 | 50 | 11.6 | 4 |
| 3182630 | 3.0 | 50 | 12.0 | 6 |
| 3182631 | 3.1 | 50 | 12.4 | 6 |
| 3182632 | 3.2 | 50 | 12.8 | 6 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 3182633 | 3.3 | 50 | 13.2 | 6 |
| 3182634 | 3.4 | 50 | 13.6 | 6 |
| 3182635 | 3.5 | 50 | 14.0 | 6 |
| 3182636 | 3.6 | 50 | 14.4 | 6 |
| 3182637 | 3.7 | 50 | 14.8 | 6 |
| 3182638 | 3.8 | 50 | 15.2 | 6 |
| 3182639 | 3.9 | 50 | 15.6 | 6 |
| 3182640 | 4.0 | 55 | 16.0 | 6 |
| 3182641 | 4.1 | 55 | 16.4 | 6 |
| 3182642 | 4.2 | 55 | 16.8 | 6 |
| 3182643 | 4.3 | 55 | 17.2 | 6 |
| 3182644 | 4.4 | 55 | 17.6 | 6 |
| 3182645 | 4.5 | 55 | 18.0 | 6 |
| 3182646 | 4.6 | 55 | 18.4 | 6 |
| 3182647 | 4.7 | 55 | 18.8 | 6 |
| 3182648 | 4.8 | 55 | 19.2 | 6 |
| 3182649 | 4.9 | 55 | 19.6 | 6 |
| 3182650 | 5.0 | 60 | 20.0 | 6 |
| 3182651 | 5.1 | 60 | 20.4 | 6 |
| 3182652 | 5.2 | 60 | 20.8 | 6 |
| 3182653 | 5.3 | 60 | 21.2 | 6 |
| 3182654 | 5.4 | 60 | 21.6 | 6 |
| 3182655 | 5.5 | 65 | 22.0 | 6 |
| 3182656 | 5.6 | 65 | 22.4 | 6 |
| 3182657 | 5.7 | 65 | 22.8 | 6 |
| 3182658 | 5.8 | 65 | 23.2 | 6 |
| 3182659 | 5.9 | 65 | 23.6 | 6 |
| 3182660 | 6.0 | 65 | 24.0 | 6 |
| 3182680 | 8.0 | 80 | 32.0 | 8 |
| 3182700 | 10.0 | 90 | 40.0 | 10 |
| 3182720 | 12.0 | 100 | 48.0 | 12 |

Packed: 1 pc.
Available WXL® coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 3723 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

good best





List 3770

WXL-CR-EDS, 2 Flute, Regular Length, Corner Radius

| | | | | | |
|---------------------|---------|-----|-----|-----|-------------|
| SPEED FEED P1174 | CARBIDE | WXL | REG | 30° | SHANK h6 |
|---------------------|---------|-----|-----|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 0.6 ≤ D ≤ 12 | +0 / -0.02mm |



Units: mm

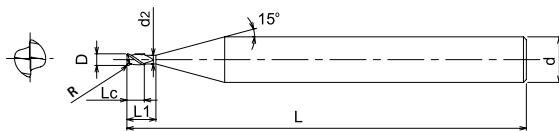
| EDP Number | Mill Dia. | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Dia. | Shank Dia. | Type |
|------------|-----------|---------------|----------------|---------------|-------------|-----------|------------|------|
| | D | R | L | Lc | L1 | d2 | d | |
| 37700000 | 0.6 | 0.1 | 50 | 0.9 | 2.0 | 0.55 | 6 | 1 |
| 37700001 | 0.8 | 0.1 | 50 | 1.2 | 2.6 | 0.75 | 6 | 1 |
| 37700002 | 1.0 | 0.1 | 50 | 1.5 | 2.7 | 0.95 | 6 | 1 |
| 37700003 | 1.2 | 0.1 | 50 | 1.8 | 3.2 | 1.15 | 6 | 1 |
| 37700004 | 1.4 | 0.1 | 50 | 2.1 | 3.7 | 1.35 | 6 | 1 |
| 37700005 | 1.5 | 0.1 | 50 | 2.3 | 4.0 | 1.45 | 6 | 1 |
| 37700006 | 1.6 | 0.1 | 50 | 2.4 | 4.2 | 1.55 | 6 | 1 |
| 37700007 | 1.8 | 0.1 | 50 | 2.7 | 4.7 | 1.75 | 6 | 1 |
| 37700008 | 2.0 | 0.1 | 50 | 3.0 | 5.2 | 1.95 | 6 | 1 |
| 37700009 | 2.5 | 0.1 | 50 | 3.7 | 5.2 | 2.40 | 6 | 1 |
| 37700010 | 3.0 | 0.2 | 60 | 8.0 | - | - | 6 | 2 |
| 37700011 | 3.0 | 0.5 | 60 | 8.0 | - | - | 6 | 2 |
| 37700012 | 4.0 | 0.2 | 70 | 11.0 | - | - | 6 | 2 |
| 37700013 | 4.0 | 0.5 | 70 | 11.0 | - | - | 6 | 2 |
| 37700014 | 4.0 | 1.0 | 70 | 11.0 | - | - | 6 | 2 |
| 37700015 | 5.0 | 0.2 | 80 | 13.0 | - | - | 6 | 2 |
| 37700016 | 5.0 | 0.5 | 80 | 13.0 | - | - | 6 | 2 |
| 37700017 | 5.0 | 1.0 | 80 | 13.0 | - | - | 6 | 2 |
| 37700018 | 6.0 | 0.2 | 90 | 13.0 | - | - | 6 | 2 |

| EDP Number | Mill Dia. | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Dia. | Shank Dia. | Type |
|------------|-----------|---------------|----------------|---------------|-------------|-----------|------------|------|
| | D | R | L | Lc | L1 | d2 | d | |
| 37700019 | 6.0 | 0.5 | 90 | 13.0 | - | - | 6 | 2 |
| 37700020 | 6.0 | 1.0 | 90 | 13.0 | - | - | 6 | 2 |
| 37700021 | 6.0 | 1.5 | 90 | 13.0 | - | - | 6 | 2 |
| 37700022 | 6.0 | 2.0 | 90 | 13.0 | - | - | 6 | 2 |
| 37700023 | 8.0 | 0.5 | 100 | 19.0 | - | - | 8 | 2 |
| 37700024 | 8.0 | 1.0 | 100 | 19.0 | - | - | 8 | 2 |
| 37700025 | 8.0 | 1.5 | 100 | 19.0 | - | - | 8 | 2 |
| 37700026 | 8.0 | 2.0 | 100 | 19.0 | - | - | 8 | 2 |
| 37700027 | 10.0 | 0.5 | 100 | 22.0 | - | - | 10 | 2 |
| 37700028 | 10.0 | 1.0 | 100 | 22.0 | - | - | 10 | 2 |
| 37700029 | 10.0 | 1.5 | 100 | 22.0 | - | - | 10 | 2 |
| 37700030 | 10.0 | 2.0 | 100 | 22.0 | - | - | 10 | 2 |
| 37700031 | 10.0 | 3.0 | 100 | 22.0 | - | - | 10 | 2 |
| 37700032 | 12.0 | 0.5 | 110 | 26.0 | - | - | 12 | 2 |
| 37700033 | 12.0 | 1.0 | 110 | 26.0 | - | - | 12 | 2 |
| 37700034 | 12.0 | 1.5 | 110 | 26.0 | - | - | 12 | 2 |
| 37700035 | 12.0 | 2.0 | 110 | 26.0 | - | - | 12 | 2 |
| 37700036 | 12.0 | 3.0 | 110 | 26.0 | - | - | 12 | 2 |

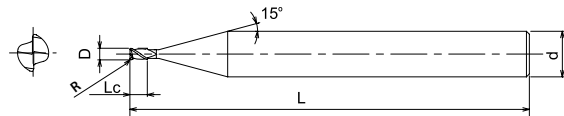


Packed: 1 pc.
Available WXL® coating only.

Type 1



Type 2



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP432 or HP433 (p. 987-988 or 989)

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 3770 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

good best





List 3771

WXL-CR-PHS, 4 Flute, Regular Length, Corner Radius

| | | | | | |
|---------------------|---------|-----|-----|-----|-------------|
| SPEED FEED P1175 | CARBIDE | WXL | REG | 30° | SHANK h6 |
|---------------------|---------|-----|-----|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 3 ≤ D ≤ 12 | +0 / -0.02mm |



Units: mm

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|----------------|
| | D | R | L | Lc | d |
| 37710000 | 3 | 0.2 | 60 | 8 | 6 |
| 37710001 | 3 | 0.5 | 60 | 8 | 6 |
| 37710002 | 4 | 0.2 | 70 | 11 | 6 |
| 37710003 | 4 | 0.5 | 70 | 11 | 6 |
| 37710004 | 4 | 1.0 | 70 | 11 | 6 |
| 37710005 | 5 | 0.2 | 80 | 13 | 6 |
| 37710006 | 5 | 0.5 | 80 | 13 | 6 |
| 37710007 | 5 | 1.0 | 80 | 13 | 6 |
| 37710008 | 6 | 0.2 | 90 | 13 | 6 |
| 37710009 | 6 | 0.5 | 90 | 13 | 6 |
| 37710010 | 6 | 1.0 | 90 | 13 | 6 |
| 37710011 | 6 | 1.5 | 90 | 13 | 6 |
| 37710012 | 6 | 2.0 | 90 | 13 | 6 |
| 37710013 | 8 | 0.5 | 100 | 19 | 8 |

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|----------------|
| | D | R | L | Lc | d |
| 37710014 | 8 | 1.0 | 100 | 19 | 8 |
| 37710015 | 8 | 1.5 | 100 | 19 | 8 |
| 37710016 | 8 | 2.0 | 100 | 19 | 8 |
| 37710017 | 10 | 0.5 | 100 | 22 | 10 |
| 37710018 | 10 | 1.0 | 100 | 22 | 10 |
| 37710019 | 10 | 1.5 | 100 | 22 | 10 |
| 37710020 | 10 | 2.0 | 100 | 22 | 10 |
| 37710021 | 10 | 3.0 | 100 | 22 | 10 |
| 37710022 | 12 | 0.5 | 110 | 26 | 12 |
| 37710023 | 12 | 1.0 | 110 | 26 | 12 |
| 37710024 | 12 | 1.5 | 110 | 26 | 12 |
| 37710025 | 12 | 2.0 | 110 | 26 | 12 |
| 37710026 | 12 | 3.0 | 110 | 26 | 12 |

Packed: 1 pc.
Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP434 or HP435 (p. 987-988 or 990)

Machining steel over 54 HRC? Try EXOCARB® WXS® - List 4571 (p. 889)

Work Material

| List No. | P | | | | | M | | | K Cast Iron | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 3771 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

good best





List 3794

WXL-LN-EMS, 4 Flute, Stub Length, Long Neck, Rib Processing

| | | | | | |
|--------------------------|---------|-----|------|-----|-------------|
| SPEED FEED P1176-1177 | CARBIDE | WXL | STUB | 35° | SHANK h6 |
|--------------------------|---------|-----|------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1 ≤ D ≤ 3 | +0 / -0.015mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | L | Lc | L1 | d2 | d |
| 3172004 | 1.0 | 45 | 1.5 | 4 | 0.95 | 4 |
| 3172006 | 1.0 | 45 | 1.5 | 6 | 0.95 | 4 |
| 3172008 | 1.0 | 45 | 1.5 | 8 | 0.95 | 4 |
| 3172010 | 1.0 | 45 | 1.5 | 10 | 0.95 | 4 |
| 3172012 | 1.0 | 45 | 1.5 | 12 | 0.95 | 4 |
| 3172016 | 1.0 | 50 | 1.5 | 16 | 0.95 | 4 |
| 3172206 | 1.2 | 45 | 1.8 | 6 | 1.15 | 4 |
| 3172208 | 1.2 | 45 | 1.8 | 8 | 1.15 | 4 |
| 3172210 | 1.2 | 45 | 1.8 | 10 | 1.15 | 4 |
| 3172212 | 1.2 | 45 | 1.8 | 12 | 1.15 | 4 |
| 3172216 | 1.2 | 50 | 1.8 | 16 | 1.15 | 4 |
| 3172406 | 1.4 | 45 | 2.1 | 6 | 1.35 | 4 |
| 3172408 | 1.4 | 45 | 2.1 | 8 | 1.35 | 4 |
| 3172410 | 1.4 | 45 | 2.1 | 10 | 1.35 | 4 |
| 3172412 | 1.4 | 45 | 2.1 | 12 | 1.35 | 4 |
| 3172414 | 1.4 | 50 | 2.1 | 14 | 1.35 | 4 |
| 3172416 | 1.4 | 50 | 2.1 | 16 | 1.35 | 4 |
| 3172422 | 1.4 | 60 | 2.1 | 22 | 1.35 | 4 |
| 3172506 | 1.5 | 45 | 2.3 | 6 | 1.45 | 4 |
| 3172508 | 1.5 | 45 | 2.3 | 8 | 1.45 | 4 |
| 3172510 | 1.5 | 45 | 2.3 | 10 | 1.45 | 4 |
| 3172512 | 1.5 | 45 | 2.3 | 12 | 1.45 | 4 |
| 3172514 | 1.5 | 50 | 2.3 | 14 | 1.45 | 4 |
| 3172516 | 1.5 | 50 | 2.3 | 16 | 1.45 | 4 |
| 3172518 | 1.5 | 55 | 2.3 | 18 | 1.45 | 4 |
| 3172520 | 1.5 | 55 | 2.3 | 20 | 1.45 | 4 |
| 3172606 | 1.6 | 45 | 2.4 | 6 | 1.55 | 4 |
| 3172608 | 1.6 | 45 | 2.4 | 8 | 1.55 | 4 |
| 3172610 | 1.6 | 45 | 2.4 | 10 | 1.55 | 4 |
| 3172612 | 1.6 | 45 | 2.4 | 12 | 1.55 | 4 |
| 3172614 | 1.6 | 50 | 2.4 | 14 | 1.55 | 4 |
| 3172616 | 1.6 | 50 | 2.4 | 16 | 1.55 | 4 |
| 3172618 | 1.6 | 55 | 2.4 | 18 | 1.55 | 4 |
| 3172620 | 1.6 | 55 | 2.4 | 20 | 1.55 | 4 |
| 3172625 | 1.6 | 60 | 2.4 | 25 | 1.55 | 4 |
| 3172806 | 1.8 | 45 | 2.7 | 6 | 1.75 | 4 |
| 3172808 | 1.8 | 45 | 2.7 | 8 | 1.75 | 4 |
| 3172810 | 1.8 | 45 | 2.7 | 10 | 1.75 | 4 |
| 3172812 | 1.8 | 45 | 2.7 | 12 | 1.75 | 4 |
| 3172814 | 1.8 | 50 | 2.7 | 14 | 1.75 | 4 |
| 3172816 | 1.8 | 50 | 2.7 | 16 | 1.75 | 4 |

Packed: 1 pc.
Available WXL® coating only.

continued on next page

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | 6061 7075 | | Casting | Inconel | | | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 3794 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



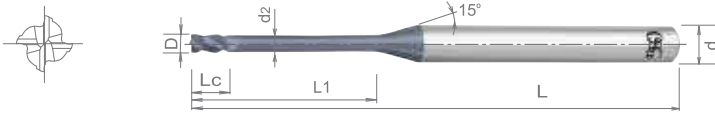


List 3794 (Continued)

WXL-LN-EMS, 4 Flute, Stub Length, Long Neck, Rib Processing

| | | | | | |
|--------------------------|---------|-----|------|-----|-------------|
| SPEED FEED P1176-1177 | CARBIDE | WXL | STUB | 35° | SHANK h6 |
|--------------------------|---------|-----|------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1 ≤ D ≤ 3 | +0 / -0.015mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | L | Lc | L1 | d2 | d |
| 3172818 | 1.8 | 55 | 2.7 | 18 | 1.75 | 4 |
| 3172820 | 1.8 | 55 | 2.7 | 20 | 1.75 | 4 |
| 3172825 | 1.8 | 60 | 2.7 | 25 | 1.75 | 4 |
| 3173006 | 2.0 | 45 | 3.0 | 6 | 1.95 | 4 |
| 3173008 | 2.0 | 45 | 3.0 | 8 | 1.95 | 4 |
| 3173010 | 2.0 | 45 | 3.0 | 10 | 1.95 | 4 |
| 3173012 | 2.0 | 45 | 3.0 | 12 | 1.95 | 4 |
| 3173014 | 2.0 | 50 | 3.0 | 14 | 1.95 | 4 |
| 3173016 | 2.0 | 50 | 3.0 | 16 | 1.95 | 4 |
| 3173018 | 2.0 | 55 | 3.0 | 18 | 1.95 | 4 |
| 3173020 | 2.0 | 55 | 3.0 | 20 | 1.95 | 4 |
| 3173025 | 2.0 | 60 | 3.0 | 25 | 1.95 | 4 |
| 3173030 | 2.0 | 70 | 3.0 | 30 | 1.95 | 4 |
| 3173508 | 2.5 | 45 | 3.7 | 8 | 2.40 | 4 |
| 3173512 | 2.5 | 45 | 3.7 | 12 | 2.40 | 4 |
| 3173516 | 2.5 | 55 | 3.7 | 16 | 2.40 | 4 |
| 3173520 | 2.5 | 60 | 3.7 | 20 | 2.40 | 4 |
| 3173525 | 2.5 | 70 | 3.7 | 25 | 2.40 | 4 |
| 3174008 | 3.0 | 45 | 4.5 | 8 | 2.85 | 6 |
| 3174012 | 3.0 | 45 | 4.5 | 12 | 2.85 | 6 |
| 3174016 | 3.0 | 55 | 4.5 | 16 | 2.85 | 6 |
| 3174020 | 3.0 | 60 | 4.5 | 20 | 2.85 | 6 |
| 3174025 | 3.0 | 65 | 4.5 | 25 | 2.85 | 6 |
| 3174030 | 3.0 | 80 | 4.5 | 30 | 2.85 | 6 |

Packed: 1 pc.
Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP411 (p. 978)

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 3794 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 4445

WXL-CR-EHS, 4 Flute, Regular Length, High Helix, Corner Radius

| | | | | | |
|---------------------|---------|-----|-----|-----|-------------|
| SPEED FEED P1178 | CARBIDE | WXL | REG | 50° | SHANK h6 |
|---------------------|---------|-----|-----|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/8 ≤ D ≤ 1/2 | +0 / -0.0008" |



Units: Inch

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|----------------|
| | D | R | L | Lc | d |
| 44450001 | 1/8 | 0.01 | 2-1/2 | 3/8 | 1/4 |
| 44450002 | 3/16 | 0.01 | 2-1/2 | 1/2 | 1/4 |
| 44450003 | 1/4 | 0.01 | 2-1/2 | 5/8 | 1/4 |

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|----------------|
| | D | R | L | Lc | d |
| 44450004 | 5/16 | 0.02 | 2-3/4 | 3/4 | 5/16 |
| 44450005 | 3/8 | 0.02 | 3 | 1 | 3/8 |
| 44450006 | 1/2 | 0.02 | 4 | 1-1/8 | 1/2 |

Packed: 1 pc.
Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP460 (p. 971)

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 4445 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

good best



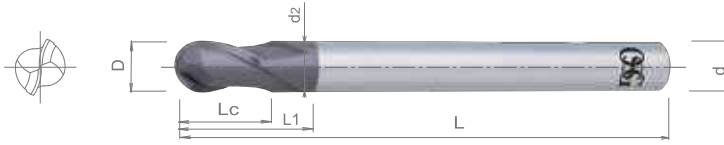


List 4410

WXS-EBD, 2 Flute, Stub Length, Ball End

| | | | | | |
|---------------------|---------|-----|------|-----|-------------|
| SPEED FEED P1179 | CARBIDE | WXS | STUB | 30° | SHANK h6 |
|---------------------|---------|-----|------|-----|-------------|

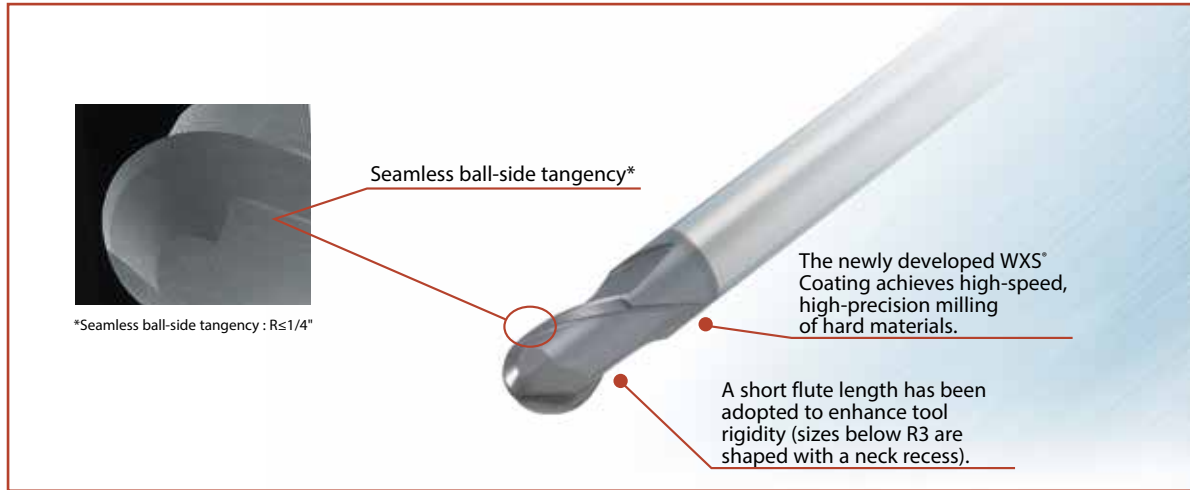
| Radius Tolerance | |
|------------------|-----------|
| 1/32 ≤ D ≤ 3/16 | ± 0.0002" |
| 1/4 ≤ D ≤ 1/2 | ± 0.0003" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | L | Lc | L1 | d2 | d |
| 44100111 | 1/32 | 1-1/2 | 1/32 | 0.094 | 0.029 | 1/4 |
| 44100211 | 1/16 | 1-1/2 | 1/16 | 0.157 | 0.060 | 1/4 |
| 44100511 | 3/32 | 1-1/2 | 3/32 | 0.189 | 0.092 | 1/4 |
| 44100711 | 1/8 | 2 | 1/8 | 0.252 | 0.123 | 1/4 |
| 44100911 | 3/16 | 2-1/2 | 3/16 | 0.283 | 0.185 | 1/4 |
| 44101111 | 1/4 | 3 | 1/4 | 0.504 | 0.246 | 1/4 |
| 44101311 | 5/16 | 3-1/2 | 5/16 | 0.630 | 0.308 | 5/16 |
| 44101411 | 3/8 | 3-1/2 | 3/8 | 0.756 | 0.371 | 3/8 |
| 44101611 | 1/2 | 4 | 1/2 | 1.000 | 0.496 | 1/2 |

Packed: 1 pc.
Available WXS® coating only.



OSG's Performance & Savings

Not machining steel over 54 HRC? Try EXOCARB® WXL® - List 3610 (p. 853)

Don't require ultra-high performance? Try HY-PRO® CARB - List HP421BN, HP416 or HP413 (p. 981-982, 982 or 986)

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|----------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 4410 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |

good best





List 4510

WXS-EBD, 2 Flute, Stub Length, Ball End

| | | | | | | |
|---------------------|---------|-----|--|------|-----|-------------|
| SPEED FEED P1180 | CARBIDE | WXS | | STUB | 30° | SHANK h6 |
|---------------------|---------|-----|--|------|-----|-------------|

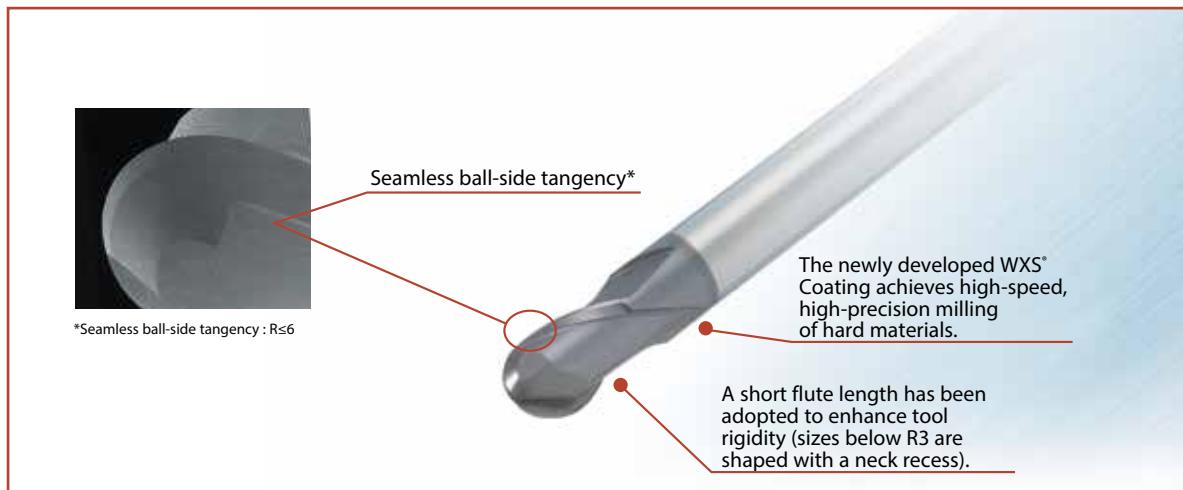
| Radius Tolerance | |
|------------------|-------------|
| 1 ≤ D ≤ 2 | +/- 0.005mm |
| 2 < D ≤ 12 | +/- 0.007mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | L | Lc | L1 | d2 | d |
| 3041410 | 1.0 | 50 | 1 | 2 | 0.95 | 4 |
| 3041415 | 1.5 | 50 | 2 | 3 | 1.45 | 4 |
| 3041420 | 2.0 | 50 | 2 | 4 | 1.95 | 6 |
| 3041430 | 3.0 | 60 | 3 | 6 | 2.85 | 6 |
| 3041440 | 4.0 | 70 | 4 | 8 | 3.85 | 6 |
| 3041441 | 4.0 | 60 | 4 | 8 | 3.85 | 4 |
| 3041450 | 5.0 | 80 | 5 | 10 | 4.85 | 6 |
| 3041460 | 6.0 | 90 | 9 | - | - | 6 |
| 3041480 | 8.0 | 100 | 12 | - | - | 8 |
| 3041500 | 10.0 | 100 | 15 | - | - | 10 |
| 3041520 | 12.0 | 110 | 18 | - | - | 12 |

Packed: 1 pc.
Available WXS® coating only.



OSG's Performance & Savings

Not machining steel over 54 HRC? Try EXOCARB® WXL® - List 3710 (p. 854)

Don't require ultra-high performance? Try HY-PRO® CARB - List HP421BN, HP416 or HP413 (p. 981-982, 982 or 986)

Want to turbo-charge performance? Try EXOPRO® PHX - List 9510 (p. 842)

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|----------|---------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 4510 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

good best





List 4440

WXS-EMS, Multiple Flute, Regular Length

| | | | | | |
|---------------------|---------|-----|-----|-----|-------------|
| SPEED FEED P1181 | CARBIDE | WXS | REG | 45° | SHANK h6 |
|---------------------|---------|-----|-----|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/16 ≤ D ≤ 1/2 | +0 / -0.0008" |
| 5/8 ≤ D ≤ 3/4 | +0 / -0.0012" |



4 Flutes 6 Flutes

Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | Number of Flutes |
|------------|---------------|----------------|---------------|----------------|------------------|
| | D | L | Lc | d | |
| 44400311 | 1/16 | 2-1/2 | 3/16 | 1/4 | 4 |
| 44400511 | 3/32 | 2-1/2 | 5/16 | 1/4 | 4 |
| 44400711 | 1/8 | 2-1/2 | 3/8 | 1/4 | 4 |
| 44400911 | 3/16 | 2-1/2 | 1/2 | 1/4 | 4 |
| 44401111 | 1/4 | 2-1/2 | 5/8 | 1/4 | 6 |
| 44401311 | 5/16 | 2-3/4 | 3/4 | 5/16 | 6 |
| 44401411 | 3/8 | 3 | 1 | 3/8 | 6 |
| 44401611 | 1/2 | 3-1/2 | 1-1/8 | 1/2 | 6 |
| 44401811 | 5/8 | 4 | 1-1/2 | 5/8 | 6 |
| 44402011 | 3/4 | 4-1/4 | 1-3/4 | 3/4 | 6 |

Packed: 1 pc.
Available WXS® coating only.



OSG's Performance & Savings

Not machining steel over 54HRC? Try EXOCARB® WXL® - List 3604 (p. 856)
Don't require ultra-high performance? Try HY-PRO® CARB - List HP450 (p. 972)

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 4440 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |

good best



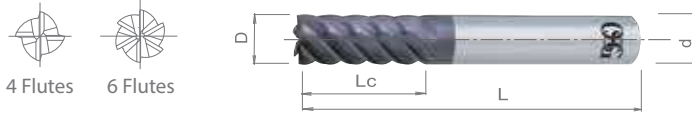


List 4540

WXS-EMS, Multiple Flute, Regular Length

| | | | | | | | |
|------------------|----------------------------|----------------|------------|--|------------|------------|--------------------|
| NEW SIZES | SPEED FEED P1182 | CARBIDE | WXS | | REG | 45° | SHANK h6 |
|------------------|----------------------------|----------------|------------|--|------------|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1 ≤ D ≤ 12 | +0 / -0.02mm |
| 16 ≤ D ≤ 25 | +0 / -0.03mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Dia. | Number of Flutes |
|------------|---------------|----------------|---------------|------------|------------------|
| | D | L | Lc | d | |
| 3041010 | 1.0 | 60 | 2.5 | 6 | 4 |
| 3041015 | 1.5 | 60 | 4.0 | 6 | 4 |
| 3041020 | 2.0 | 60 | 6.0 | 6 | 4 |
| 3041025 | 2.5 | 60 | 8.0 | 6 | 4 |
| 3041030 | 3.0 | 60 | 8.0 | 6 | 4 |
| 3041035 | 3.5 | 60 | 10.0 | 6 | 4 |
| 3041040 | 4.0 | 60 | 11.0 | 6 | 4 |
| 3041045 | 4.5 | 60 | 11.0 | 6 | 4 |
| 3041050 | 5.0 | 60 | 13.0 | 6 | 4 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Dia. | Number of Flutes |
|------------|---------------|----------------|---------------|------------|------------------|
| | D | L | Lc | d | |
| 3041055 | 5.5 | 60 | 13.0 | 6 | 4 |
| 3041060 | 6.0 | 60 | 13.0 | 6 | 6 |
| 3041080 | 8.0 | 70 | 19.0 | 8 | 6 |
| 3041100 | 10.0 | 80 | 22.0 | 10 | 6 |
| 3041120 | 12.0 | 90 | 26.0 | 12 | 6 |
| 3041160 | 16.0 | 105 | 32.0 | 16 | 6 |
| 3041200 | 20.0 | 110 | 38.0 | 20 | 6 |
| 3041250 | 25.0 | 125 | 45.0 | 25 | 8 |

Packed: 1 pc.
Available WXS® coating only.



OSG's Performance & Savings

Not machining steel over 54HRC? Try EXOCARB® WXL® - List 3704 (p. 864)
Don't require ultra-high performance? Try HY-PRO® CARB - List HP450 (p. 972)

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 4540 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |

good best



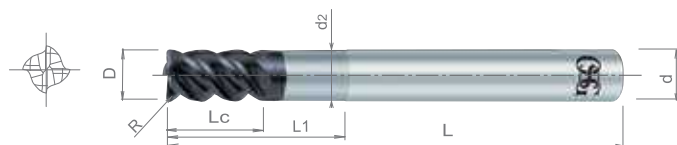


List 4471

WXS-PKE, 4 Flute, Stub Length, Reduced Neck, Corner Radius

| | | | | | | |
|---------------------|---------|-----|--|------|-----|-------------|
| SPEED FEED P1183 | CARBIDE | WXS | | STUB | 45° | SHANK h6 |
|---------------------|---------|-----|--|------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/16 ≤ D ≤ 1/2 | +0 / -0.0008" |



Units: Inch

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | R | L | Lc | L1 | d2 | d |
| 447100111 | 1/16 | 0.010 | 2.25 | 1/16 | 0.25 | 0.058 | 1/8 |
| 447100311 | 3/32 | 0.010 | 2.25 | 3/32 | 0.38 | 0.089 | 1/8 |
| 447100511 | 1/8 | 0.010 | 2.25 | 1/8 | 0.50 | 0.120 | 1/8 |
| 447100611 | 1/8 | 0.015 | 2.25 | 1/8 | 0.50 | 0.120 | 1/8 |
| 447100711 | 1/8 | 0.020 | 2.25 | 1/8 | 0.50 | 0.120 | 1/8 |
| 447101011 | 3/16 | 0.020 | 2.25 | 3/16 | 0.50 | 0.181 | 3/16 |
| 447101111 | 3/16 | 0.030 | 2.25 | 3/16 | 0.50 | 0.181 | 3/16 |
| 447101411 | 1/4 | 0.010 | 2.50 | 1/4 | 0.75 | 0.242 | 1/4 |
| 447101511 | 1/4 | 0.020 | 2.50 | 1/4 | 0.75 | 0.242 | 1/4 |
| 447101611 | 1/4 | 0.030 | 2.50 | 1/4 | 0.75 | 0.242 | 1/4 |
| 447102011 | 3/8 | 0.020 | 3.00 | 3/8 | 1.00 | 0.367 | 3/8 |
| 447102111 | 3/8 | 0.030 | 3.00 | 3/8 | 1.00 | 0.367 | 3/8 |
| 447102211 | 3/8 | 0.060 | 3.00 | 3/8 | 1.00 | 0.367 | 3/8 |
| 447102611 | 1/2 | 0.030 | 3.25 | 1/2 | 1.50 | 0.488 | 1/2 |
| 447102711 | 1/2 | 0.060 | 3.25 | 1/2 | 1.50 | 0.488 | 1/2 |

Packed: 1 pc.
Available WXS® coating only.



OSG's Performance & Savings

Not machining steel over 54HRC? Try EXOCARB® WXL® - List 3670 (p. 855)
Don't require ultra-high performance? Try HY-PRO® CARB - List HP434 (p. 987-988)

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 4471 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |

good best



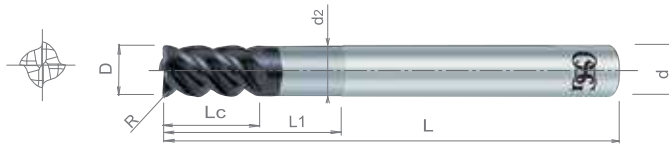


List 4571

WXS-PKE, 4 Flute, Stub Length, Reduced Neck, Corner Radius

| | | | | | |
|---------------------|---------|-----|------|-----|-------------|
| SPEED FEED P1184 | CARBIDE | WXS | STUB | 45° | SHANK h6 |
|---------------------|---------|-----|------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 3 ≤ D ≤ 12 | +0 / -0.02mm |



Units: mm

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | R | L | Lc | L1 | d2 | d |
| 457103011 | 3 | 0.2 | 60 | 5 | 9 | 2.85 | 6 |
| 457103111 | 3 | 0.2 | 70 | 5 | 15 | 2.85 | 6 |
| 457103211 | 3 | 0.5 | 60 | 5 | 9 | 2.85 | 6 |
| 457103311 | 3 | 0.5 | 70 | 5 | 15 | 2.85 | 6 |
| 457104011 | 4 | 0.2 | 70 | 6 | 12 | 3.80 | 6 |
| 457104111 | 4 | 0.2 | 80 | 6 | 20 | 3.80 | 6 |
| 457104211 | 4 | 0.5 | 70 | 6 | 12 | 3.80 | 6 |
| 457104311 | 4 | 0.5 | 80 | 6 | 20 | 3.80 | 6 |
| 457105011 | 5 | 0.2 | 80 | 8 | 15 | 4.80 | 6 |
| 457105111 | 5 | 0.2 | 90 | 8 | 25 | 4.80 | 6 |
| 457105211 | 5 | 0.5 | 80 | 8 | 15 | 4.80 | 6 |
| 457105311 | 5 | 0.5 | 90 | 8 | 25 | 4.80 | 6 |
| 457106011 | 6 | 0.5 | 90 | 9 | 18 | 5.80 | 6 |
| 457106111 | 6 | 1.0 | 90 | 9 | 18 | 5.80 | 6 |
| 457106211 | 6 | 1.0 | 100 | 9 | 30 | 5.80 | 6 |
| 457106311 | 6 | 0.5 | 100 | 9 | 30 | 5.80 | 6 |
| 457108011 | 8 | 0.5 | 100 | 12 | 24 | 7.70 | 8 |
| 457108111 | 8 | 0.5 | 110 | 12 | 40 | 7.70 | 8 |
| 457108211 | 8 | 1.0 | 100 | 12 | 24 | 7.70 | 8 |
| 457108311 | 8 | 1.0 | 110 | 12 | 40 | 7.70 | 8 |
| 457110011 | 10 | 0.5 | 100 | 15 | 30 | 9.70 | 10 |
| 457110111 | 10 | 0.5 | 120 | 15 | 50 | 9.70 | 10 |
| 457110211 | 10 | 1.0 | 100 | 15 | 30 | 9.70 | 10 |
| 457110311 | 10 | 1.0 | 120 | 15 | 50 | 9.70 | 10 |
| 457110411 | 10 | 2.0 | 100 | 15 | 30 | 9.70 | 10 |
| 457110511 | 10 | 2.0 | 120 | 15 | 50 | 9.70 | 10 |
| 457112011 | 12 | 1.0 | 110 | 18 | 36 | 11.70 | 12 |
| 457112111 | 12 | 1.0 | 130 | 18 | 60 | 11.70 | 12 |
| 457112211 | 12 | 2.0 | 110 | 18 | 36 | 11.70 | 12 |
| 457112311 | 12 | 2.0 | 130 | 18 | 60 | 11.70 | 12 |

Packed: 1 pc.
Available WXS® coating only.



OSG's Performance & Savings

Not machining steel over 54 HRC? Try EXOCARB® WXL® - List 3771 (p. 880)

Don't require ultra-high performance? Try HY-PRO® CARB - List HP434 or HP435 (p. 987-988 or 990)

Want to turbo-charge performance? Try EXOPRO® PHX - List 9575 (p. 847)

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|----------|---------|--------------|----------|-----------------|---------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | 6061 7075 | Casting | Inconel | | | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 4571 | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

☐ good ☐ best





EXOCARB® WXS®

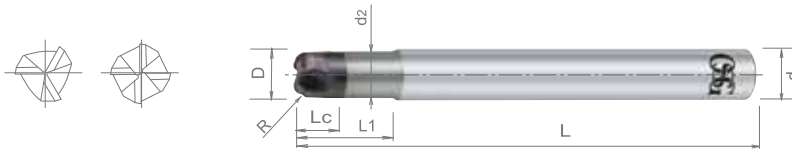
Ultra Premium Performance Carbide End Mills with OSG's Proprietary WXS® Coating

List 4470

WXS-CRE, Stub Length, High Feed, Corner Radius, Multiple Flute

| | | | | |
|---------------------|---------|-----|------|-------------|
| SPEED FEED P1185 | CARBIDE | WXS | STUB | SHANK h6 |
|---------------------|---------|-----|------|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/8 ≤ D ≤ 3/16 | +0 / -0.0008" |
| 1/4 ≤ D ≤ 1/2 | +0 / -0.0012" |



Units: Inch

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter | No. of Flutes |
|------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|---------------|
| | D | R | L | Lc | L1 | d2 | d | |
| 44700111 | 1/8 | 1/32 | 2-1/4 | 0.06 | 3/8 | 0.12 | 1/4 | 3 |
| 44700211 | 3/16 | 1/16 | 2-1/4 | 0.09 | 9/16 | 0.18 | 1/4 | 3 |
| 44700311 | 1/4 | 1/16 | 3 | 0.10 | 1 | 0.23 | 1/4 | 4 |
| 44700411 | 5/16 | 3/32 | 3 | 0.13 | 1-1/4 | 0.29 | 5/16 | 4 |
| 44700511 | 3/8 | 3/32 | 4 | 0.15 | 1-1/2 | 0.34 | 3/8 | 4 |
| 44700611 | 1/2 | 1/8 | 5 | 0.20 | 2 | 0.46 | 1/2 | 4 |

Packed: 1 pc.
Available WXS® coating only.

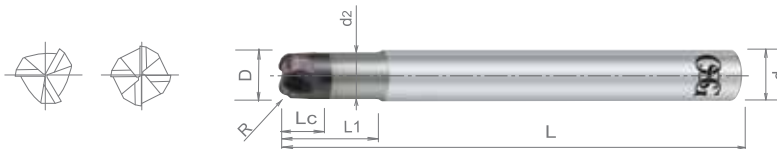


List 4570

WXS-CRE, Stub Length, High Feed, Corner Radius, Multiple Flute

| | | | | |
|---------------------|---------|-----|------|-------------|
| SPEED FEED P1186 | CARBIDE | WXS | STUB | SHANK h6 |
|---------------------|---------|-----|------|-------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 2 ≤ D ≤ 5 | +0 / -0.02mm |
| 6 ≤ D ≤ 13 | +0 / -0.03mm |



Units: mm

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter | No. of Flutes |
|------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|---------------|
| | D | R | L | Lc | L1 | d2 | d | |
| 457002011 | 2 | 0.50 | 60 | 0.8 | 5.0 | 1.8 | 6 | 3 |
| 457003011 | 3 | 0.75 | 60 | 1.3 | 9.0 | 2.7 | 6 | 4 |
| 457004011 | 4 | 1.00 | 70 | 1.6 | 10.0 | 3.6 | 6 | 4 |
| 457005011 | 5 | 1.20 | 80 | 2.0 | 12.5 | 4.5 | 6 | 4 |
| 457006011 | 6 | 1.50 | 90 | 2.5 | 12.0 | 5.4 | 6 | 4 |
| 457007011 | 7 | 1.50 | 90 | 3.0 | - | - | 6 | 4 |
| 457008011 | 8 | 2.00 | 100 | 3.5 | 16.0 | 7.2 | 8 | 4 |
| 457009011 | 9 | 2.00 | 100 | 4.0 | - | - | 8 | 4 |
| 457010011 | 10 | 2.00 | 100 | 4.5 | 20.0 | 9.0 | 10 | 4 |
| 457011011 | 11 | 2.00 | 100 | 5.0 | - | - | 10 | 4 |
| 457012011 | 12 | 3.00 | 110 | 5.0 | 24.0 | 11.0 | 12 | 4 |
| 457013011 | 13 | 3.00 | 110 | 6.0 | - | - | 12 | 4 |

Packed: 1 pc.
Available WXS® coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------|---------|--------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 4470 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 4570 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |

good best



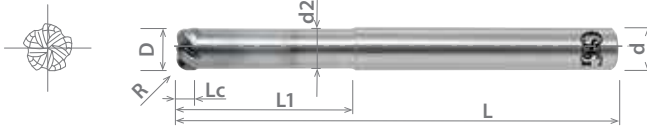


List 4472

WXS-CRE, 5 Flute, Stub Length, High Feed, Corner Radius

| | | | | | |
|----------------------------|----------------|------------|--|-------------|--------------------|
| SPEED FEED P1187 | CARBIDE | WXS | | STUB | SHANK h6 |
|----------------------------|----------------|------------|--|-------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/8 ≤ D ≤ 3/16 | +0 / -0.0008" |
| 1/4 ≤ D ≤ 1/2 | +0 / -0.0012" |



Units: Inch

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | R | L | Lc | L1 | d2 | d |
| 447200013 | 1/8 | 1/32 | 2-1/4 | 0.062 | 0.375 | 0.113 | 1/4 |
| 447200113 | 3/16 | 1/16 | 2-1/4 | 0.094 | 0.562 | 0.168 | 1/4 |
| 447200213 | 1/4 | 1/16 | 3 | 0.098 | 1.000 | 0.226 | 1/4 |
| 447200313 | 5/16 | 3/32 | 3 | 0.129 | 1.250 | 0.280 | 5/16 |
| 447200413 | 3/8 | 3/32 | 4 | 0.149 | 1.500 | 0.336 | 3/8 |
| 447200513 | 1/2 | 1/8 | 5 | 0.200 | 2.000 | 0.460 | 1/2 |

Packed: 1 pc.
Available WXS® coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|---------|-------------------------------------|----------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 4472 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |

good best





EXOCARB® WXS®

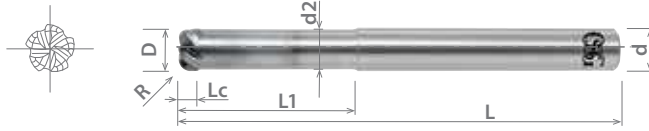
Ultra Premium Performance Carbide End Mills with OSG's Proprietary WXS® Coating

List 4572

WXS-CRE, Multiple Flute, Stub Length, High Feed, Corner Radius

| | | | | | |
|---------------------|---------|-----|--|------|-------------|
| SPEED FEED P1188 | CARBIDE | WXS | | STUB | SHANK h6 |
|---------------------|---------|-----|--|------|-------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 2 ≤ D ≤ 12 | +0 / -0.03mm |



Units: mm

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter | Number of Flutes |
|------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|------------------|
| | D | R | L | Lc | L1 | d2 | d | |
| 48106421 | 2 | 0.50 | 50 | 0.8 | 8.0 | 2.0 | 6 | 4 |
| 48106433 | 3 | 0.75 | 55 | 1.2 | 12.0 | 2.7 | 6 | 5 |
| 48106445 | 4 | 1.00 | 55 | 1.6 | 12.0 | 3.6 | 6 | 5 |
| 48106467 | 6 | 1.50 | 90 | 2.5 | 12.0 | 5.4 | 6 | 5 |
| 48106489 | 8 | 2.00 | 100 | 3.5 | 16.0 | 7.2 | 8 | 5 |
| 48106509 | 10 | 2.00 | 100 | 4.0 | 20.0 | 9.0 | 10 | 5 |
| 48106533 | 12 | 3.00 | 110 | 5.0 | 24.0 | 11.0 | 12 | 5 |

Packed: 1 pc.
Available WXS® coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|---------|-------------------------------------|----------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 4572 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |

good best





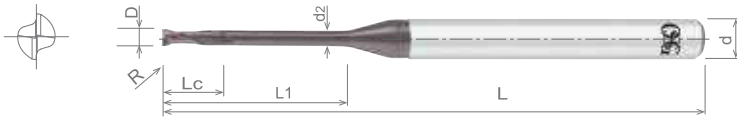
List 4592

WXS-CPR, 2 Flute, Stub Length, Long Neck, Corner Radius, Rib Processing

| | | | | | |
|---------------------|---------|-----|------|-----|-------------|
| SPEED FEED P1189 | CARBIDE | WXS | STUB | 30° | SHANK h6 |
|---------------------|---------|-----|------|-----|-------------|

±5µm Corner Radius Tolerance

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 0.4 ≤ D ≤ 0.5 | +0 / -0.010mm |
| 0.5 ≤ D ≤ 3 | +0 / -0.015mm |



Units: mm

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | R | L | Lc | L1 | d2 | d |
| 3100403 | 0.4 | 0.05 | 50 | 0.30 | 2 | 0.37 | 4 |
| 3100404 | 0.4 | 0.05 | 50 | 0.30 | 3 | 0.37 | 4 |
| 3100405 | 0.4 | 0.05 | 50 | 0.30 | 4 | 0.37 | 4 |
| 3100406 | 0.4 | 0.10 | 50 | 0.30 | 2 | 0.37 | 4 |
| 3100407 | 0.4 | 0.10 | 50 | 0.30 | 3 | 0.37 | 4 |
| 3100408 | 0.4 | 0.10 | 50 | 0.30 | 4 | 0.37 | 4 |
| 3100501 | 0.5 | 0.05 | 50 | 0.40 | 1 | 0.46 | 4 |
| 3100502 | 0.5 | 0.05 | 50 | 0.40 | 2 | 0.46 | 4 |
| 3100503 | 0.5 | 0.05 | 50 | 0.40 | 3 | 0.46 | 4 |
| 3100504 | 0.5 | 0.05 | 50 | 0.40 | 4 | 0.46 | 4 |
| 3100505 | 0.5 | 0.05 | 50 | 0.40 | 5 | 0.46 | 4 |
| 3100506 | 0.5 | 0.05 | 50 | 0.40 | 6 | 0.46 | 4 |
| 3100508 | 0.5 | 0.10 | 50 | 0.40 | 2 | 0.46 | 4 |
| 3100509 | 0.5 | 0.10 | 50 | 0.40 | 3 | 0.46 | 4 |
| 3100510 | 0.5 | 0.10 | 50 | 0.40 | 4 | 0.46 | 4 |
| 3100511 | 0.5 | 0.10 | 50 | 0.40 | 5 | 0.46 | 4 |
| 3100512 | 0.5 | 0.10 | 50 | 0.40 | 6 | 0.46 | 4 |
| 3100601 | 0.6 | 0.10 | 50 | 0.48 | 2 | 0.56 | 4 |
| 3100602 | 0.6 | 0.10 | 50 | 0.48 | 4 | 0.56 | 4 |
| 3100603 | 0.6 | 0.10 | 50 | 0.48 | 6 | 0.56 | 4 |
| 3100803 | 0.8 | 0.20 | 50 | 0.65 | 4 | 0.76 | 4 |
| 3100804 | 0.8 | 0.20 | 50 | 0.65 | 6 | 0.76 | 4 |
| 3100805 | 0.8 | 0.20 | 50 | 0.65 | 8 | 0.76 | 4 |
| 3101001 | 1.0 | 0.05 | 50 | 0.80 | 4 | 0.95 | 4 |
| 3101002 | 1.0 | 0.05 | 50 | 0.80 | 6 | 0.95 | 4 |
| 3101003 | 1.0 | 0.05 | 50 | 0.80 | 8 | 0.95 | 4 |
| 3101004 | 1.0 | 0.05 | 50 | 0.80 | 10 | 0.95 | 4 |
| 3101005 | 1.0 | 0.05 | 50 | 0.80 | 12 | 0.95 | 4 |
| 3101006 | 1.0 | 0.10 | 50 | 0.80 | 4 | 0.95 | 4 |
| 3101007 | 1.0 | 0.10 | 50 | 0.80 | 6 | 0.95 | 4 |
| 3101008 | 1.0 | 0.10 | 50 | 0.80 | 8 | 0.95 | 4 |
| 3101009 | 1.0 | 0.10 | 50 | 0.80 | 10 | 0.95 | 4 |
| 3101010 | 1.0 | 0.10 | 50 | 0.80 | 12 | 0.95 | 4 |
| 3101011 | 1.0 | 0.20 | 50 | 0.80 | 4 | 0.95 | 4 |
| 3101012 | 1.0 | 0.20 | 50 | 0.80 | 6 | 0.95 | 4 |
| 3101013 | 1.0 | 0.20 | 50 | 0.80 | 8 | 0.95 | 4 |
| 3101014 | 1.0 | 0.20 | 50 | 0.80 | 10 | 0.95 | 4 |
| 3101015 | 1.0 | 0.20 | 50 | 0.80 | 12 | 0.95 | 4 |
| 3101016 | 1.0 | 0.20 | 50 | 0.80 | 16 | 0.95 | 4 |
| 3101017 | 1.0 | 0.20 | 50 | 0.80 | 20 | 0.95 | 4 |
| 3101018 | 1.0 | 0.30 | 50 | 0.80 | 4 | 0.95 | 4 |

Packed: 1 pc.
Available WXS® coating only.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|-----------|---------|--------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 4592 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |

good best





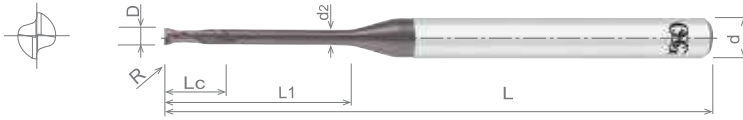
List 4592 (Continued)

WXS-CPR, 2 Flute, Stub Length, Long Neck, Corner Radius, Rib Processing

| | | | | | | |
|---------------------|---------|-----|--|------|-----|-------------|
| SPEED FEED P1189 | CARBIDE | WXS | | STUB | 30° | SHANK h6 |
|---------------------|---------|-----|--|------|-----|-------------|

±5µm Corner Radius Tolerance

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 0.4 ≤ D ≤ 0.5 | +0 / -0.010mm |
| 0.5 ≤ D ≤ 3 | +0 / -0.015mm |



Units: mm

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | R | L | Lc | L1 | d2 | d |
| 3101019 | 1.0 | 0.30 | 50 | 0.80 | 6 | 0.95 | 4 |
| 3101020 | 1.0 | 0.30 | 50 | 0.80 | 8 | 0.95 | 4 |
| 3101021 | 1.0 | 0.30 | 50 | 0.80 | 10 | 0.95 | 4 |
| 3101022 | 1.0 | 0.30 | 50 | 0.80 | 12 | 0.95 | 4 |
| 3101201 | 1.2 | 0.20 | 50 | 1.00 | 6 | 1.15 | 4 |
| 3101202 | 1.2 | 0.20 | 50 | 1.00 | 8 | 1.15 | 4 |
| 3101203 | 1.2 | 0.20 | 50 | 1.00 | 10 | 1.15 | 4 |
| 3101501 | 1.5 | 0.20 | 50 | 1.20 | 6 | 1.45 | 4 |
| 3101502 | 1.5 | 0.20 | 50 | 1.20 | 8 | 1.45 | 4 |
| 3101503 | 1.5 | 0.20 | 50 | 1.20 | 10 | 1.45 | 4 |
| 3101504 | 1.5 | 0.20 | 50 | 1.20 | 12 | 1.45 | 4 |
| 3101505 | 1.5 | 0.20 | 50 | 1.20 | 16 | 1.45 | 4 |
| 3101506 | 1.5 | 0.30 | 50 | 1.20 | 6 | 1.45 | 4 |
| 3101507 | 1.5 | 0.30 | 50 | 1.20 | 8 | 1.45 | 4 |
| 3101508 | 1.5 | 0.30 | 50 | 1.20 | 10 | 1.45 | 4 |
| 3101509 | 1.5 | 0.30 | 50 | 1.20 | 12 | 1.45 | 4 |
| 3101510 | 1.5 | 0.30 | 50 | 1.20 | 16 | 1.45 | 4 |
| 3102001 | 2.0 | 0.10 | 50 | 1.60 | 8 | 1.95 | 4 |
| 3102002 | 2.0 | 0.10 | 50 | 1.60 | 10 | 1.95 | 4 |
| 3102003 | 2.0 | 0.10 | 50 | 1.60 | 12 | 1.95 | 4 |
| 3102004 | 2.0 | 0.10 | 60 | 1.60 | 16 | 1.95 | 4 |
| 3102005 | 2.0 | 0.10 | 60 | 1.60 | 20 | 1.95 | 4 |
| 3102006 | 2.0 | 0.10 | 70 | 1.60 | 25 | 1.95 | 4 |
| 3102007 | 2.0 | 0.20 | 50 | 1.60 | 8 | 1.95 | 4 |
| 3102008 | 2.0 | 0.20 | 50 | 1.60 | 10 | 1.95 | 4 |
| 3102009 | 2.0 | 0.20 | 50 | 1.60 | 12 | 1.95 | 4 |
| 3102010 | 2.0 | 0.20 | 60 | 1.60 | 16 | 1.95 | 4 |
| 3102011 | 2.0 | 0.20 | 60 | 1.60 | 20 | 1.95 | 4 |
| 3102012 | 2.0 | 0.20 | 70 | 1.60 | 25 | 1.95 | 4 |
| 3102013 | 2.0 | 0.30 | 50 | 1.60 | 8 | 1.95 | 4 |
| 3102014 | 2.0 | 0.30 | 50 | 1.60 | 10 | 1.95 | 4 |
| 3102015 | 2.0 | 0.30 | 50 | 1.60 | 12 | 1.95 | 4 |
| 3102016 | 2.0 | 0.30 | 60 | 1.60 | 16 | 1.95 | 4 |
| 3102017 | 2.0 | 0.30 | 60 | 1.60 | 20 | 1.95 | 4 |
| 3102018 | 2.0 | 0.30 | 70 | 1.60 | 25 | 1.95 | 4 |
| 3102019 | 2.0 | 0.50 | 50 | 1.60 | 8 | 1.95 | 4 |
| 3102020 | 2.0 | 0.50 | 50 | 1.60 | 10 | 1.95 | 4 |
| 3102021 | 2.0 | 0.50 | 50 | 1.60 | 12 | 1.95 | 4 |
| 3102022 | 2.0 | 0.50 | 60 | 1.60 | 16 | 1.95 | 4 |
| 3102023 | 2.0 | 0.50 | 60 | 1.60 | 20 | 1.95 | 4 |
| 3102024 | 2.0 | 0.50 | 70 | 1.60 | 25 | 1.95 | 4 |
| 3102501 | 2.5 | 0.20 | 50 | 2.20 | 10 | 2.40 | 4 |
| 3102502 | 2.5 | 0.20 | 60 | 2.20 | 20 | 2.40 | 4 |
| 3102503 | 2.5 | 0.20 | 70 | 2.20 | 30 | 2.40 | 4 |
| 3102504 | 2.5 | 0.50 | 50 | 2.20 | 10 | 2.40 | 4 |
| 3102505 | 2.5 | 0.50 | 60 | 2.20 | 20 | 2.40 | 4 |
| 3102506 | 2.5 | 0.50 | 70 | 2.20 | 30 | 2.40 | 4 |
| 3103001 | 3.0 | 0.20 | 60 | 2.50 | 8 | 2.85 | 6 |
| 3103002 | 3.0 | 0.20 | 60 | 2.50 | 12 | 2.85 | 6 |
| 3103003 | 3.0 | 0.20 | 60 | 2.50 | 16 | 2.85 | 6 |
| 3103004 | 3.0 | 0.20 | 70 | 2.50 | 20 | 2.85 | 6 |
| 3103005 | 3.0 | 0.20 | 70 | 2.50 | 25 | 2.85 | 6 |

Packed: 1 pc.
Available WXS® coating only.





List 4592 (Continued)

| | | | | | | |
|------------------------|---------|-----|--|------|-----|-------------|
| SPEED FEED P1189 | CARBIDE | WXS | | STUB | 30° | SHANK h6 |
|------------------------|---------|-----|--|------|-----|-------------|

WXS-CPR, 2 Flute, Stub Length, Long Neck, Corner Radius, Rib Processing

±5µm Corner Radius Tolerance

Units: mm

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | R | L | Lc | L1 | d2 | d |
| 3103006 | 3.0 | 0.20 | 70 | 2.50 | 30 | 2.85 | 6 |
| 3103007 | 3.0 | 0.20 | 80 | 2.50 | 35 | 2.85 | 6 |
| 3103008 | 3.0 | 0.30 | 60 | 2.50 | 12 | 2.85 | 6 |
| 3103009 | 3.0 | 0.30 | 60 | 2.50 | 16 | 2.85 | 6 |
| 3103010 | 3.0 | 0.30 | 70 | 2.50 | 20 | 2.85 | 6 |
| 3103011 | 3.0 | 0.30 | 70 | 2.50 | 25 | 2.85 | 6 |
| 3103012 | 3.0 | 0.30 | 70 | 2.50 | 30 | 2.85 | 6 |
| 3103013 | 3.0 | 0.30 | 80 | 2.50 | 35 | 2.85 | 6 |
| 3103014 | 3.0 | 0.50 | 60 | 2.50 | 12 | 2.85 | 6 |
| 3103015 | 3.0 | 0.50 | 60 | 2.50 | 16 | 2.85 | 6 |
| 3103016 | 3.0 | 0.50 | 70 | 2.50 | 20 | 2.85 | 6 |
| 3103017 | 3.0 | 0.50 | 70 | 2.50 | 25 | 2.85 | 6 |
| 3103018 | 3.0 | 0.50 | 70 | 2.50 | 30 | 2.85 | 6 |
| 3103019 | 3.0 | 0.50 | 80 | 2.50 | 35 | 2.85 | 6 |

Packed: 1 pc.
Available WXS® coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOPRO® PHX - List 9592 (p. 846)

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|---------|-----------|----------|---------|--------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|
| | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 4592 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |

good best





List 4590

WXS-LN-EBD, 2 Flute, Stub Length, Long Neck, Ball End, Rib Processing

| | | | | | | |
|--------------------------|---------|-----|--|------|-----|-------------|
| SPEED FEED P1190-1192 | CARBIDE | WXS | | STUB | 30° | SHANK h6 |
|--------------------------|---------|-----|--|------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 0.1 ≤ D < 6 | +0 / -0.005mm |
| D = 6 | +0 / -0.007mm |



Units: mm

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Neck Length | Neck Dia. | Shank Dia. | Type |
|------------|-----------|----------------|---------------|-------------|-----------|------------|------|
| | D | L | Lc | L1 | d2 | d | |
| 3050100 | 0.1 | 45 | 0.08 | 0.30 | 0.09 | 4 | 1 |
| 3050101 | 0.1 | 45 | 0.08 | 0.50 | 0.09 | 4 | 1 |
| 3050201 | 0.2 | 45 | 0.16 | 0.50 | 0.18 | 4 | 1 |
| 3049921 | 0.2 | 45 | 0.16 | 0.75 | 0.18 | 4 | 1 |
| 3050202 | 0.2 | 45 | 0.16 | 1.00 | 0.18 | 4 | 1 |
| 3049922 | 0.2 | 45 | 0.16 | 1.25 | 0.18 | 4 | 1 |
| 3050203 | 0.2 | 45 | 0.16 | 1.50 | 0.18 | 4 | 1 |
| 3049923 | 0.2 | 45 | 0.16 | 1.75 | 0.18 | 4 | 1 |
| 3050204 | 0.2 | 45 | 0.16 | 2.00 | 0.18 | 4 | 1 |
| 3050205 | 0.2 | 45 | 0.16 | 2.50 | 0.18 | 4 | 1 |
| 3050206 | 0.2 | 45 | 0.16 | 3.00 | 0.18 | 4 | 1 |
| 3050301 | 0.3 | 45 | 0.24 | 0.60 | 0.28 | 4 | 1 |
| 3050302 | 0.3 | 45 | 0.24 | 1.00 | 0.28 | 4 | 1 |
| 3049932 | 0.3 | 45 | 0.24 | 1.25 | 0.28 | 4 | 1 |
| 3050303 | 0.3 | 45 | 0.24 | 1.50 | 0.28 | 4 | 1 |
| 3049933 | 0.3 | 45 | 0.24 | 1.75 | 0.28 | 4 | 1 |
| 3050304 | 0.3 | 45 | 0.24 | 2.00 | 0.28 | 4 | 1 |
| 3049934 | 0.3 | 45 | 0.24 | 2.25 | 0.28 | 4 | 1 |
| 3050305 | 0.3 | 45 | 0.24 | 2.50 | 0.28 | 4 | 1 |
| 3050306 | 0.3 | 45 | 0.24 | 3.00 | 0.28 | 4 | 1 |
| 3050307 | 0.3 | 45 | 0.24 | 3.50 | 0.28 | 4 | 1 |
| 3050308 | 0.3 | 45 | 0.24 | 4.00 | 0.28 | 4 | 1 |
| 3050309 | 0.3 | 45 | 0.24 | 4.50 | 0.28 | 4 | 1 |
| 3050310 | 0.3 | 45 | 0.24 | 5.00 | 0.28 | 4 | 1 |
| 3050401 | 0.4 | 45 | 0.30 | 0.80 | 0.37 | 4 | 1 |
| 3050402 | 0.4 | 45 | 0.30 | 1.00 | 0.37 | 4 | 1 |
| 3050403 | 0.4 | 45 | 0.30 | 1.50 | 0.37 | 4 | 1 |
| 3050404 | 0.4 | 45 | 0.30 | 2.00 | 0.37 | 4 | 1 |
| 3050405 | 0.4 | 45 | 0.30 | 2.50 | 0.37 | 4 | 1 |
| 3050406 | 0.4 | 45 | 0.30 | 3.00 | 0.37 | 4 | 1 |
| 3050407 | 0.4 | 45 | 0.30 | 3.50 | 0.37 | 4 | 1 |
| 3050408 | 0.4 | 45 | 0.30 | 4.00 | 0.37 | 4 | 1 |
| 3050409 | 0.4 | 45 | 0.30 | 4.50 | 0.37 | 4 | 1 |
| 3050410 | 0.4 | 45 | 0.30 | 5.00 | 0.37 | 4 | 1 |
| 3050411 | 0.4 | 45 | 0.30 | 5.50 | 0.37 | 4 | 1 |
| 3050412 | 0.4 | 45 | 0.30 | 6.00 | 0.37 | 4 | 1 |
| 3050500 | 0.5 | 45 | 0.40 | 1.00 | 0.45 | 4 | 1 |
| 3050501 | 0.5 | 45 | 0.40 | 1.50 | 0.45 | 4 | 1 |
| 3050502 | 0.5 | 45 | 0.40 | 2.00 | 0.45 | 4 | 1 |
| 3049952 | 0.5 | 45 | 0.40 | 2.50 | 0.45 | 4 | 1 |
| 3050503 | 0.5 | 45 | 0.40 | 3.00 | 0.45 | 4 | 1 |
| 3049953 | 0.5 | 45 | 0.40 | 3.50 | 0.45 | 4 | 1 |
| 3050504 | 0.5 | 45 | 0.40 | 4.00 | 0.45 | 4 | 1 |
| 3049954 | 0.5 | 45 | 0.40 | 4.50 | 0.45 | 4 | 1 |
| 3050505 | 0.5 | 45 | 0.40 | 5.00 | 0.45 | 4 | 1 |
| 3049955 | 0.5 | 45 | 0.40 | 5.50 | 0.45 | 4 | 1 |
| 3050506 | 0.5 | 45 | 0.40 | 6.00 | 0.45 | 4 | 1 |
| 3050507 | 0.5 | 45 | 0.40 | 7.00 | 0.45 | 4 | 1 |
| 3050508 | 0.5 | 45 | 0.40 | 8.00 | 0.45 | 4 | 1 |
| 3050509 | 0.5 | 45 | 0.40 | 9.00 | 0.45 | 4 | 1 |

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Neck Length | Neck Dia. | Shank Dia. | Type |
|------------|-----------|----------------|---------------|-------------|-----------|------------|------|
| | D | L | Lc | L1 | d2 | d | |
| 3050510 | 0.5 | 45 | 0.40 | 10.00 | 0.45 | 4 | 1 |
| 3050601 | 0.6 | 45 | 0.50 | 1.20 | 0.55 | 4 | 1 |
| 3050602 | 0.6 | 45 | 0.50 | 2.00 | 0.55 | 4 | 1 |
| 3049962 | 0.6 | 45 | 0.50 | 2.50 | 0.55 | 4 | 1 |
| 3050603 | 0.6 | 45 | 0.50 | 3.00 | 0.55 | 4 | 1 |
| 3049963 | 0.6 | 45 | 0.50 | 3.50 | 0.55 | 4 | 1 |
| 3050604 | 0.6 | 45 | 0.50 | 4.00 | 0.55 | 4 | 1 |
| 3049964 | 0.6 | 45 | 0.50 | 4.50 | 0.55 | 4 | 1 |
| 3050605 | 0.6 | 45 | 0.50 | 5.00 | 0.55 | 4 | 1 |
| 3049965 | 0.6 | 45 | 0.50 | 5.50 | 0.55 | 4 | 1 |
| 3050606 | 0.6 | 45 | 0.50 | 6.00 | 0.55 | 4 | 1 |
| 3049966 | 0.6 | 45 | 0.50 | 6.50 | 0.55 | 4 | 1 |
| 3050607 | 0.6 | 45 | 0.50 | 7.00 | 0.55 | 4 | 1 |
| 3049967 | 0.6 | 45 | 0.50 | 7.50 | 0.55 | 4 | 1 |
| 3050608 | 0.6 | 45 | 0.50 | 8.00 | 0.55 | 4 | 1 |
| 3049968 | 0.6 | 45 | 0.50 | 8.50 | 0.55 | 4 | 1 |
| 3050609 | 0.6 | 45 | 0.50 | 9.00 | 0.55 | 4 | 1 |
| 3049969 | 0.6 | 45 | 0.50 | 9.50 | 0.55 | 4 | 1 |
| 3050610 | 0.6 | 45 | 0.50 | 10.00 | 0.55 | 4 | 1 |
| 3050611 | 0.6 | 50 | 0.50 | 11.00 | 0.55 | 4 | 1 |
| 3050612 | 0.6 | 50 | 0.50 | 12.00 | 0.55 | 4 | 1 |
| 3050802 | 0.8 | 45 | 0.60 | 2.00 | 0.75 | 4 | 1 |
| 3050803 | 0.8 | 45 | 0.60 | 3.00 | 0.75 | 4 | 1 |
| 3050804 | 0.8 | 45 | 0.60 | 4.00 | 0.75 | 4 | 1 |
| 3050805 | 0.8 | 45 | 0.60 | 5.00 | 0.75 | 4 | 1 |
| 3050806 | 0.8 | 45 | 0.60 | 6.00 | 0.75 | 4 | 1 |
| 3050807 | 0.8 | 45 | 0.60 | 7.00 | 0.75 | 4 | 1 |
| 3050808 | 0.8 | 45 | 0.60 | 8.00 | 0.75 | 4 | 1 |
| 3050810 | 0.8 | 45 | 0.60 | 10.00 | 0.75 | 4 | 1 |
| 3050812 | 0.8 | 50 | 0.60 | 12.00 | 0.75 | 4 | 1 |
| 3051002 | 1.0 | 45 | 0.80 | 2.00 | 0.95 | 4 | 1 |
| 3051003 | 1.0 | 45 | 0.80 | 3.00 | 0.95 | 4 | 1 |
| 3051004 | 1.0 | 45 | 0.80 | 4.00 | 0.95 | 4 | 1 |
| 3051005 | 1.0 | 45 | 0.80 | 5.00 | 0.95 | 4 | 1 |
| 3051006 | 1.0 | 45 | 0.80 | 6.00 | 0.95 | 4 | 1 |
| 3051007 | 1.0 | 45 | 0.80 | 7.00 | 0.95 | 4 | 1 |
| 3051008 | 1.0 | 45 | 0.80 | 8.00 | 0.95 | 4 | 1 |
| 3051009 | 1.0 | 45 | 0.80 | 9.00 | 0.95 | 4 | 1 |
| 3051010 | 1.0 | 45 | 0.80 | 10.00 | 0.95 | 4 | 1 |
| 3051012 | 1.0 | 45 | 0.80 | 12.00 | 0.95 | 4 | 1 |
| 3051014 | 1.0 | 50 | 0.80 | 14.00 | 0.95 | 4 | 1 |
| 3051016 | 1.0 | 50 | 0.80 | 16.00 | 0.95 | 4 | 1 |
| 3051018 | 1.0 | 55 | 0.80 | 18.00 | 0.95 | 4 | 1 |
| 3051020 | 1.0 | 55 | 0.80 | 20.00 | 0.95 | 4 | 1 |
| 3051022 | 1.0 | 60 | 0.80 | 22.00 | 0.95 | 4 | 1 |
| 3051202 | 1.2 | 45 | 1.00 | 2.40 | 1.15 | 4 | 1 |
| 3051204 | 1.2 | 45 | 1.00 | 4.00 | 1.15 | 4 | 1 |
| 3051206 | 1.2 | 45 | 1.00 | 6.00 | 1.15 | 4 | 1 |
| 3051208 | 1.2 | 45 | 1.00 | 8.00 | 1.15 | 4 | 1 |
| 3051210 | 1.2 | 45 | 1.00 | 10.00 | 1.15 | 4 | 1 |

Packed: 1 pc.
Available WXS® coating only.





List 4590 (Continued)

WXS-LN-EBD, 2 Flute, Stub Length, Long Neck, Ball End, Rib Processing

| | | | | | | |
|--------------------------|---------|-----|--|------|-----|-------------|
| SPEED FEED P1190-1192 | CARBIDE | WXS | | STUB | 30° | SHANK h6 |
|--------------------------|---------|-----|--|------|-----|-------------|

Units: mm

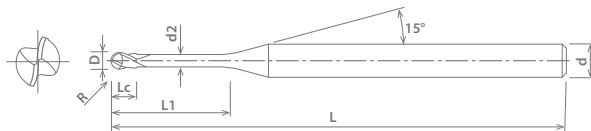
| EDP Number | Mill Dia. | Overall Length | Length of Cut | Neck Length | Neck Dia. | Shank Dia. | Type |
|------------|-----------|----------------|---------------|-------------|-----------|------------|------|
| | D | L | Lc | L1 | d2 | d | |
| 3051212 | 1.2 | 45 | 1.00 | 12.00 | 1.15 | 4 | 1 |
| 3051214 | 1.2 | 50 | 1.00 | 14.00 | 1.15 | 4 | 1 |
| 3051216 | 1.2 | 50 | 1.00 | 16.00 | 1.15 | 4 | 1 |
| 3051218 | 1.2 | 55 | 1.00 | 18.00 | 1.15 | 4 | 1 |
| 3051220 | 1.2 | 55 | 1.00 | 20.00 | 1.15 | 4 | 1 |
| 3051503 | 1.5 | 45 | 1.20 | 3.00 | 1.45 | 4 | 1 |
| 3051504 | 1.5 | 45 | 1.20 | 4.00 | 1.45 | 4 | 1 |
| 3051506 | 1.5 | 45 | 1.20 | 6.00 | 1.45 | 4 | 1 |
| 3051508 | 1.5 | 45 | 1.20 | 8.00 | 1.45 | 4 | 1 |
| 3051510 | 1.5 | 45 | 1.20 | 10.00 | 1.45 | 4 | 1 |
| 3051512 | 1.5 | 45 | 1.20 | 12.00 | 1.45 | 4 | 1 |
| 3051514 | 1.5 | 50 | 1.20 | 14.00 | 1.45 | 4 | 1 |
| 3051516 | 1.5 | 50 | 1.20 | 16.00 | 1.45 | 4 | 1 |
| 3051518 | 1.5 | 55 | 1.20 | 18.00 | 1.45 | 4 | 1 |
| 3051520 | 1.5 | 55 | 1.20 | 20.00 | 1.45 | 4 | 1 |
| 3051522 | 1.5 | 60 | 1.20 | 22.00 | 1.45 | 4 | 1 |
| 3051530 | 1.5 | 70 | 1.20 | 30.00 | 1.45 | 4 | 1 |
| 3051608 | 1.6 | 45 | 1.30 | 8.00 | 1.55 | 4 | 1 |
| 3051612 | 1.6 | 45 | 1.30 | 12.00 | 1.55 | 4 | 1 |
| 3051616 | 1.6 | 50 | 1.30 | 16.00 | 1.55 | 4 | 1 |
| 3051620 | 1.6 | 55 | 1.30 | 20.00 | 1.55 | 4 | 1 |
| 3052004 | 2.0 | 45 | 1.60 | 4.00 | 1.95 | 4 | 1 |
| 3052006 | 2.0 | 45 | 1.60 | 6.00 | 1.95 | 4 | 1 |
| 3052008 | 2.0 | 45 | 1.60 | 8.00 | 1.95 | 4 | 1 |
| 3052010 | 2.0 | 45 | 1.60 | 10.00 | 1.95 | 4 | 1 |
| 3052012 | 2.0 | 45 | 1.60 | 12.00 | 1.95 | 4 | 1 |
| 3052014 | 2.0 | 50 | 1.60 | 14.00 | 1.95 | 4 | 1 |
| 3052016 | 2.0 | 50 | 1.60 | 16.00 | 1.95 | 4 | 1 |
| 3052018 | 2.0 | 55 | 1.60 | 18.00 | 1.95 | 4 | 1 |
| 3052020 | 2.0 | 55 | 1.60 | 20.00 | 1.95 | 4 | 1 |
| 3052022 | 2.0 | 60 | 1.60 | 22.00 | 1.95 | 4 | 1 |
| 3052025 | 2.0 | 65 | 1.60 | 25.00 | 1.95 | 4 | 1 |
| 3052030 | 2.0 | 70 | 1.60 | 30.00 | 1.95 | 4 | 1 |
| 3052035 | 2.0 | 70 | 1.60 | 35.00 | 1.95 | 4 | 1 |
| 3052040 | 2.0 | 80 | 1.60 | 40.00 | 1.95 | 4 | 1 |

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Neck Length | Neck Dia. | Shank Dia. | Type |
|------------|-----------|----------------|---------------|-------------|-----------|------------|------|
| | D | L | Lc | L1 | d2 | d | |
| 3052510 | 2.5 | 45 | 2.00 | 10.00 | 2.35 | 4 | 1 |
| 3052515 | 2.5 | 50 | 2.00 | 15.00 | 2.35 | 4 | 1 |
| 3052520 | 2.5 | 55 | 2.00 | 20.00 | 2.35 | 4 | 1 |
| 3052525 | 2.5 | 65 | 2.00 | 25.00 | 2.35 | 4 | 1 |
| 3052530 | 2.5 | 70 | 2.00 | 30.00 | 2.35 | 4 | 1 |
| 3052535 | 2.5 | 70 | 2.00 | 35.00 | 2.35 | 4 | 1 |
| 3053006 | 3.0 | 50 | 2.40 | 6.00 | 2.85 | 6 | 1 |
| 3053008 | 3.0 | 50 | 2.40 | 8.00 | 2.85 | 6 | 1 |
| 3053010 | 3.0 | 50 | 2.40 | 10.00 | 2.85 | 6 | 1 |
| 3053012 | 3.0 | 55 | 2.40 | 12.00 | 2.85 | 6 | 1 |
| 3053014 | 3.0 | 55 | 2.40 | 14.00 | 2.85 | 6 | 1 |
| 3053015 | 3.0 | 55 | 2.40 | 15.00 | 2.85 | 6 | 1 |
| 3053016 | 3.0 | 55 | 2.40 | 16.00 | 2.85 | 6 | 1 |
| 3053020 | 3.0 | 60 | 2.40 | 20.00 | 2.85 | 6 | 1 |
| 3053025 | 3.0 | 65 | 2.40 | 25.00 | 2.85 | 6 | 1 |
| 3053030 | 3.0 | 70 | 2.40 | 30.00 | 2.85 | 6 | 1 |
| 3053035 | 3.0 | 80 | 2.40 | 35.00 | 2.85 | 6 | 1 |
| 3053040 | 3.0 | 90 | 2.40 | 40.00 | 2.85 | 6 | 1 |
| 3053515 | 3.5 | 55 | 2.80 | 15.00 | 3.35 | 6 | 1 |
| 3053520 | 3.5 | 60 | 2.80 | 20.00 | 3.35 | 6 | 1 |
| 3053525 | 3.5 | 65 | 2.80 | 25.00 | 3.35 | 6 | 1 |
| 3053530 | 3.5 | 70 | 2.80 | 30.00 | 3.35 | 6 | 1 |
| 3053535 | 3.5 | 80 | 2.80 | 35.00 | 3.35 | 6 | 1 |
| 3053540 | 3.5 | 90 | 2.80 | 40.00 | 3.35 | 6 | 1 |
| 3053545 | 3.5 | 90 | 2.80 | 45.00 | 3.35 | 6 | 1 |
| 3054008 | 4.0 | 60 | 3.20 | 8.00 | 3.85 | 6 | 1 |
| 3054010 | 4.0 | 60 | 3.20 | 10.00 | 3.85 | 6 | 1 |
| 3054012 | 4.0 | 60 | 3.20 | 12.00 | 3.85 | 6 | 1 |
| 3054015 | 4.0 | 60 | 3.20 | 15.00 | 3.85 | 6 | 1 |
| 3054016 | 4.0 | 60 | 3.20 | 16.00 | 3.85 | 6 | 1 |
| 3054020 | 4.0 | 65 | 3.20 | 20.00 | 3.85 | 6 | 1 |
| 3054025 | 4.0 | 70 | 3.20 | 25.00 | 3.85 | 6 | 1 |
| 3054030 | 4.0 | 80 | 3.20 | 30.00 | 3.85 | 6 | 1 |
| 3054035 | 4.0 | 80 | 3.20 | 35.00 | 3.85 | 6 | 1 |
| 3054040 | 4.0 | 90 | 3.20 | 40.00 | 3.85 | 6 | 1 |

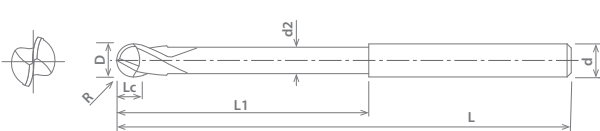
Packed: 1 pc.
Available WXS® coating only.

continued on next page

Type 1



Type 2



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 4590 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

good best





List 4590 (Continued)

WXS-LN-EBD, 2 Flute, Stub Length, Long Neck, Ball End, Rib Processing

| | | | | | | |
|--------------------------|---------|-----|--|------|-----|-------------|
| SPEED FEED P1190-1192 | CARBIDE | WXS | | STUB | 30° | SHANK h6 |
|--------------------------|---------|-----|--|------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 0.1 ≤ D < 6 | +0 / -0.005mm |
| D = 6 | +0 / -0.007mm |



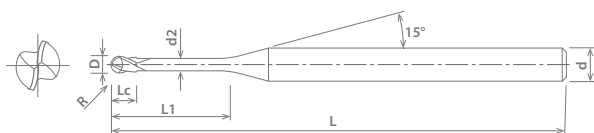
| EDP Number | Mill Dia. | Overall Length | Length of Cut | Neck Length | Neck Dia. | Shank Dia. | Type |
|------------|-----------|----------------|---------------|-------------|-----------|------------|------|
| | D | L | Lc | L1 | d2 | d | |
| 3054045 | 4.0 | 90 | 3.20 | 45.00 | 3.85 | 6 | 1 |
| 3054050 | 4.0 | 100 | 3.20 | 50.00 | 3.85 | 6 | 1 |
| 3055010 | 5.0 | 60 | 4.00 | 10.00 | 4.85 | 6 | 1 |
| 3055015 | 5.0 | 60 | 4.00 | 15.00 | 4.85 | 6 | 1 |
| 3055020 | 5.0 | 70 | 4.00 | 20.00 | 4.85 | 6 | 1 |
| 3055025 | 5.0 | 70 | 4.00 | 25.00 | 4.85 | 6 | 1 |
| 3055030 | 5.0 | 80 | 4.00 | 30.00 | 4.85 | 6 | 1 |
| 3055035 | 5.0 | 80 | 4.00 | 35.00 | 4.85 | 6 | 1 |
| 3055040 | 5.0 | 90 | 4.00 | 40.00 | 4.85 | 6 | 1 |
| 3055045 | 5.0 | 100 | 4.00 | 45.00 | 4.85 | 6 | 1 |

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Neck Length | Neck Dia. | Shank Dia. | Type |
|------------|-----------|----------------|---------------|-------------|-----------|------------|------|
| | D | L | Lc | L1 | d2 | d | |
| 3055050 | 5.0 | 100 | 4.00 | 50.00 | 4.85 | 6 | 1 |
| 3056012 | 6.0 | 60 | 4.80 | 12.00 | 5.85 | 6 | 2 |
| 3056020 | 6.0 | 70 | 4.80 | 20.00 | 5.85 | 6 | 2 |
| 3056025 | 6.0 | 70 | 4.80 | 25.00 | 5.85 | 6 | 2 |
| 3056030 | 6.0 | 80 | 4.80 | 30.00 | 5.85 | 6 | 2 |
| 3056035 | 6.0 | 80 | 4.80 | 35.00 | 5.85 | 6 | 2 |
| 3056040 | 6.0 | 90 | 4.80 | 40.00 | 5.85 | 6 | 2 |
| 3056045 | 6.0 | 100 | 4.80 | 45.00 | 5.85 | 6 | 2 |
| 3056050 | 6.0 | 120 | 4.80 | 50.00 | 5.85 | 6 | 2 |

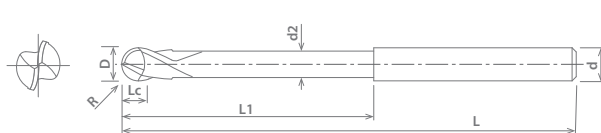
Packed: 1 pc.
Available WXS® coating only.



Type 1



Type 2



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 4590 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

good best





List 4430

WXS-EBM, True 4 Flute, Regular Length, Ball End

| | | | | | |
|---------------------|---------|-----|-----|-----|-------------|
| SPEED FEED P1193 | CARBIDE | WXS | REG | 30° | SHANK h6 |
|---------------------|---------|-----|-----|-----|-------------|

| Radius Tolerance | |
|------------------|-----------|
| 1/4 ≤ D ≤ 1/2 | ± 0.0006" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 44301111 | 1/4 | 3-1/2 | 1/2 | 1/4 |
| 44301311 | 5/16 | 4 | 5/8 | 5/16 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 44301411 | 3/8 | 4 | 3/4 | 3/8 |
| 44301611 | 1/2 | 4-3/8 | 7/8 | 1/2 |

Packed: 1 pc.
Available WXS® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP441BN (p. 980-981)

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|----------|---------|--------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 4430 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |

good best





EXOCARB® WXS®

Ultra Premium Performance Carbide End Mills with OSG's Proprietary WXS® Coating

List 4530

WXS-EBM, True 4 Flute, Regular Length, Ball End

| | | | | | |
|---------------------|---------|-----|-----|-----|-------------|
| SPEED FEED P1194 | CARBIDE | WXS | REG | 30° | SHANK h6 |
|---------------------|---------|-----|-----|-----|-------------|

| Radius Tolerance | |
|------------------|-----------|
| 6 ≤ D ≤ 12 | ± 0.015mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 45300001 | 6 | 90 | 12 | 6 |
| 45300002 | 8 | 100 | 14 | 8 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 45300003 | 10 | 100 | 18 | 10 |
| 45300004 | 12 | 110 | 22 | 12 |

Packed: 1 pc.
Available WXS® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP441BN (p. 980-981)

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|
| | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 4530 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |

good best





List 4413

WXS-EQD, Regular Length, 2 Flute, Ball End, Sphere Type

| | | | | | | |
|------------|----------------------------|----------------|------------|------------|------------|--------------------|
| NEW | SPEED FEED P1195 | CARBIDE | WXS | REG | 30° | SHANK h6 |
|------------|----------------------------|----------------|------------|------------|------------|--------------------|

| Radius Tolerance | |
|------------------|----------|
| 1/16 ≤ D ≤ 3/16 | ±0.0004" |
| 1/4 ≤ D ≤ 1/2 | ±0.0006" |



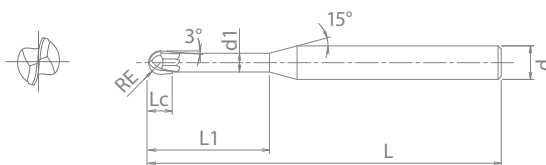
Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Min. Neck Diameter | Max Neck Diameter | Neck Incline | Shank Diameter | Type |
|------------|---------------|----------------|---------------|-------------|--------------------|-------------------|--------------|----------------|------|
| | D | L | Lc | L1 | d1 | d2 | θn | d | |
| 44130113 | 1/16 | 2-1/2 | 0.0442 | 0.313 | 0.0555 | 0.0555 | - | 1/4 | 1 |
| 44130213 | 3/32 | 2-1/2 | 0.0663 | 0.469 | 0.0833 | 0.0833 | - | 1/4 | 1 |
| 44130313 | 1/8 | 2-3/4 | 0.0884 | 0.625 | 0.1110 | 0.1110 | - | 1/4 | 1 |
| 44130513 | 3/16 | 3-1/4 | 0.1326 | 0.938 | 0.1434 | 0.1856 | - | 1/4 | 1 |
| 44130613 | 1/4 | 3-1/2 | 0.1768 | 1.250 | 0.1912 | 0.2475 | 1.5° | 1/4 | 2 |
| 44130713 | 5/16 | 4 | 0.2210 | 1.563 | 0.2391 | 0.3094 | 1.5° | 5/16 | 2 |
| 44130813 | 3/8 | 4-1/4 | 0.2652 | 1.875 | 0.2868 | 0.3712 | 1.5° | 3/8 | 2 |
| 44130913 | 1/2 | 4-1/2 | 0.3536 | 2.500 | 0.3825 | 0.4950 | 1.5° | 1/2 | 2 |

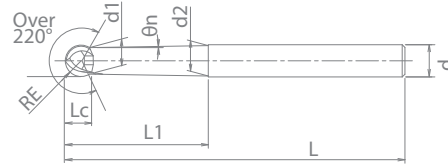
Packed: 1 pc.
Available WXS® coating only.



Type 1



Type 2



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|----------|---------|--------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 4413 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |

good best





List 4513

WXS-EQD, 2 Flute, Regular Length, Ball End, Sphere Type

| | | | | | | |
|------------------|----------------------------|----------------|------------|------------|------------|--------------------|
| NEW SIZES | SPEED FEED P1196 | CARBIDE | WXS | REG | 30° | SHANK h6 |
|------------------|----------------------------|----------------|------------|------------|------------|--------------------|

| Radius Tolerance | |
|------------------|----------|
| 1 ≤ D ≤ 5 | ±0.010mm |
| 6 ≤ D ≤ 12 | ±0.015mm |



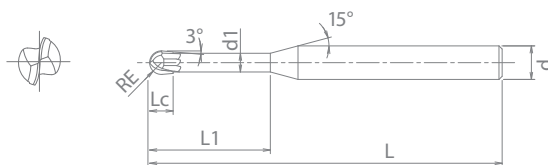
Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Min. Neck Diameter | Max Neck Diameter | Neck Incline | Shank Diameter | Type |
|------------|---------------|----------------|---------------|-------------|--------------------|-------------------|--------------|----------------|------|
| | D | L | Lc | L1 | d1 | d2 | θn | d | |
| 45130001 | 1 | 60 | 0.7 | 5 | 0.85 | 0.85 | - | 6 | 1 |
| 45130002 | 2 | 60 | 1.5 | 10 | 1.70 | 1.70 | - | 6 | 1 |
| 45130003 | 3 | 70 | 2.3 | 15 | 2.70 | 2.70 | - | 6 | 1 |
| 45130004 | 4 | 70 | 3.0 | 20 | 3.70 | 3.70 | - | 6 | 1 |
| 45130009 | 5 | 80 | 3.5 | 25 | 4.40 | 4.40 | - | 6 | 1 |
| 45130005 | 6 | 90 | 4.0 | 30 | 4.60 | 5.90 | 1.5° | 6 | 2 |
| 45130006 | 8 | 100 | 5.4 | 40 | 6.20 | 7.90 | 1.5° | 8 | 2 |
| 45130007 | 10 | 110 | 6.7 | 50 | 7.70 | 9.90 | 1.5° | 10 | 2 |
| 45130008 | 12 | 110 | 8.1 | 60 | 9.20 | 11.90 | 1.5° | 12 | 2 |

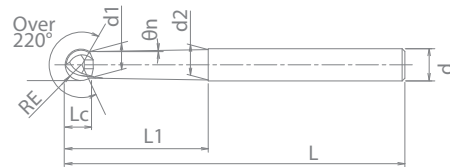
Packed: 1 pc.
Available WXS® coating only.



Type 1



Type 2



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|----------|---------|--------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 4513 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |

good best



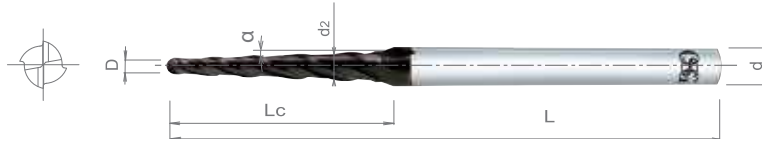


List 4581

WXS-RB-TPB, 4 Flute, Tapered, Ball End, Rib Processing

| | | | | | |
|----------------------------|----------------|------------|--|------------|--------------------|
| SPEED FEED P1197 | CARBIDE | WXS | | 25° | SHANK h6 |
|----------------------------|----------------|------------|--|------------|--------------------|

| |
|---|
| Side Cutting Edge Incline Tolerance ±0°5' |
|---|



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Max Diameter | Cut Incline | Shank Diameter |
|------------|---------------|----------------|---------------|--------------|-------------|----------------|
| | D | L | Lc | d2 | α | d |
| 45810026 | 1.0 | 45 | 8 | 1.13 | 0.50° | 4 |
| 45810035 | 1.0 | 45 | 8 | 1.39 | 1.50° | 4 |
| 45810040 | 1.0 | 45 | 12 | 1.80 | 2.00° | 4 |
| 45810072 | 1.5 | 45 | 10 | 1.82 | 1.00° | 4 |
| 45810073 | 1.5 | 45 | 12 | 1.90 | 1.00° | 4 |
| 45810078 | 1.5 | 45 | 12 | 2.09 | 1.50° | 4 |
| 45810083 | 1.5 | 45 | 12 | 2.29 | 2.00° | 4 |
| 45810140 | 2.0 | 55 | 25 | 2.42 | 0.50° | 4 |
| 45810144 | 2.0 | 55 | 20 | 2.50 | 0.75° | 4 |
| 45810145 | 2.0 | 55 | 25 | 2.63 | 0.75° | 4 |
| 45810150 | 2.0 | 55 | 25 | 2.84 | 1.00° | 4 |
| 45810152 | 2.0 | 45 | 12 | 2.58 | 1.50° | 4 |
| 45810154 | 2.0 | 55 | 20 | 3.00 | 1.50° | 4 |
| 45810156 | 2.0 | 45 | 10 | 2.63 | 2.00° | 4 |
| 45810175 | 2.5 | 55 | 25 | 3.33 | 1.00° | 4 |
| 45810178 | 2.5 | 50 | 16 | 3.27 | 1.50° | 4 |
| 45810180 | 2.5 | 55 | 25 | 3.74 | 1.50° | 4 |

Packed: 1 pc.
Available WXS® coating only.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|----------|---------|--------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-----------|
| | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 4581 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |

good best





List 4541

WXS-CR-EMS, Regular Length, Corner Radius

| | | | | | |
|---------------------|---------|-----|-----|-----|-------------|
| SPEED FEED P1198 | CARBIDE | WXS | REG | 45° | SHANK h6 |
|---------------------|---------|-----|-----|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 3 ≤ D ≤ 12 | +0 / -0.020mm |



Units: mm

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter | Number of Flutes |
|------------|---------------|---------------|----------------|---------------|----------------|------------------|
| | D | R | L | Lc | d | |
| 45410000 | 3 | 0.2 | 60 | 8 | 6 | 4 |
| 45410001 | 3 | 0.5 | 60 | 8 | 6 | 4 |
| 45410002 | 4 | 0.2 | 70 | 11 | 6 | 4 |
| 45410003 | 4 | 0.5 | 70 | 11 | 6 | 4 |
| 45410004 | 4 | 1.0 | 70 | 11 | 6 | 4 |
| 45410005 | 5 | 0.2 | 80 | 13 | 6 | 4 |
| 45410006 | 5 | 0.5 | 80 | 13 | 6 | 4 |
| 45410007 | 5 | 1.0 | 80 | 13 | 6 | 4 |
| 45410008 | 6 | 0.2 | 90 | 13 | 6 | 6 |
| 45410009 | 6 | 0.5 | 90 | 13 | 6 | 6 |
| 45410010 | 6 | 1.0 | 90 | 13 | 6 | 6 |
| 45410011 | 6 | 1.5 | 90 | 13 | 6 | 6 |
| 45410012 | 6 | 2.0 | 90 | 13 | 6 | 6 |
| 45410013 | 8 | 0.5 | 100 | 19 | 8 | 6 |
| 45410014 | 8 | 1.0 | 100 | 19 | 8 | 6 |
| 45410015 | 8 | 1.5 | 100 | 19 | 8 | 6 |
| 45410016 | 8 | 2.0 | 100 | 19 | 8 | 6 |
| 45410017 | 10 | 0.5 | 100 | 22 | 10 | 6 |
| 45410018 | 10 | 1.0 | 100 | 22 | 10 | 6 |
| 45410019 | 10 | 1.5 | 100 | 22 | 10 | 6 |
| 45410020 | 10 | 2.0 | 100 | 22 | 10 | 6 |
| 45410021 | 10 | 3.0 | 100 | 22 | 10 | 6 |
| 45410022 | 12 | 0.5 | 110 | 26 | 12 | 6 |
| 45410023 | 12 | 1.0 | 110 | 26 | 12 | 6 |
| 45410024 | 12 | 1.5 | 110 | 26 | 12 | 6 |
| 45410025 | 12 | 2.0 | 110 | 26 | 12 | 6 |
| 45410026 | 12 | 3.0 | 110 | 26 | 12 | 6 |

Packed: 1 pc.
Available WXS® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP434 or HP435 (p. 987-988 or 990)

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 4541 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |

good best





List 9010

MAX-BN-EBD, 2 Flute, Stub Length, Ball End



| | | | | | |
|---------------------|---------|-----|------|-----|-------------|
| SPEED FEED P1199 | CARBIDE | WXS | STUB | 30° | SHANK h6 |
|---------------------|---------|-----|------|-----|-------------|

| Radius Tolerance | |
|------------------|----------|
| 1/32 ≤ D < 1/4 | ±0.0002" |
| D ≥ 1/4 | ±0.0003" |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 90100111 | 1/32 | 2 | 3/64 | 1/4 |
| 90100311 | 1/16 | 2 | 3/32 | 1/4 |
| 90100711 | 1/8 | 2 | 3/16 | 1/4 |
| 90100911 | 3/16 | 2 | 9/32 | 1/4 |

Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 90101111 | 1/4 | 2 | 3/8 | 1/4 |
| 90101311 | 5/16 | 2-3/16 | 15/32 | 5/16 |
| 90101411 | 3/8 | 2-3/16 | 9/16 | 3/8 |
| 90101611 | 1/2 | 2-1/2 | 11/16 | 1/2 |

Packed: 1 pc.
Available WXS® coating only.
Designed for faster speeds and feeds with larger depth of cut.



List 9110

MAX-BN-EBD, 2 Flute, Stub Length, Ball End



| | | | | | |
|---------------------|---------|-----|------|-----|-------------|
| SPEED FEED P1199 | CARBIDE | WXS | STUB | 30° | SHANK h6 |
|---------------------|---------|-----|------|-----|-------------|

| Radius Tolerance | |
|------------------|----------|
| 1 ≤ D < 6 | ±0.005mm |
| D ≥ 6 | ±0.007mm |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 91100111 | 1 | 50 | 1.5 | 6 |
| 91100211 | 2 | 50 | 3.0 | 6 |
| 91100311 | 3 | 50 | 4.5 | 6 |
| 91100411 | 4 | 50 | 6.0 | 6 |

Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 91100611 | 6 | 50 | 9.0 | 6 |
| 91100811 | 8 | 55 | 12.0 | 8 |
| 91101011 | 10 | 55 | 15.0 | 10 |

Packed: 1 pc.
Available WXS® coating only.
Designed for faster speeds and feeds with larger depth of cut.



| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--|
| | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | 300 | | | 400 | 17-4 PH | 6061 7075 | | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 9010 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 9110 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |

good best





EXOCARB[®] MAX

Maximum Performance End Mills for Hardened Steels

List 9011

MAX-BN-LS-EBD, 2 Flute, Stub Length, Long Shank, Ball End



| | | | | | |
|---------------------|---------|-----|------|-----|-------------|
| SPEED FEED P1199 | CARBIDE | WXS | STUB | 30° | SHANK h6 |
|---------------------|---------|-----|------|-----|-------------|

| Radius Tolerance | |
|------------------|----------|
| 1/32 ≤ D ≤ 3/8 | ±0.0007" |

Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 90110111 | 1/32 | 3 | 3/64 | 1/4 |
| 90110211 | 1/16 | 3 | 3/32 | 1/4 |
| 90110311 | 1/8 | 3 | 3/16 | 1/4 |
| 90110411 | 3/16 | 3 | 9/32 | 1/4 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 90110511 | 1/4 | 3 | 3/8 | 1/4 |
| 90110611 | 5/16 | 3-3/16 | 15/32 | 5/16 |
| 90110711 | 3/8 | 3-3/16 | 9/16 | 3/8 |



Packed: 1 pc.
Available WXS[®] coating only.
Designed for faster speeds and feeds with larger depth of cut.

List 9111

MAX-BN-LS-EBD, 2 Flute, Stub Length, Long Shank, Ball End



| | | | | | |
|---------------------|---------|-----|------|-----|-------------|
| SPEED FEED P1199 | CARBIDE | WXS | STUB | 30° | SHANK h6 |
|---------------------|---------|-----|------|-----|-------------|

| Radius Tolerance | |
|------------------|----------|
| 1 ≤ D ≤ 10 | ±0.020mm |

Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 91110111 | 1 | 75 | 1.5 | 6 |
| 91110211 | 2 | 75 | 3.0 | 6 |
| 91110311 | 3 | 75 | 4.5 | 6 |
| 91110411 | 4 | 75 | 6.0 | 6 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 91110511 | 6 | 75 | 9.0 | 6 |
| 91110611 | 8 | 80 | 12.0 | 8 |
| 91110711 | 10 | 80 | 15.0 | 10 |



Packed: 1 pc.
Available WXS[®] coating only.
Designed for faster speeds and feeds with larger depth of cut.

OSG's Performance & Savings

Not machining steel over 54 HRC? Try EXOCARB[®] WXL[®] - List 3711 (p. 868)

Work Material

| List No. | P | | | | | | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-----------|---|--|--|--|
| | Carbon Steels | | | | | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | | | |
| | Low | Med. | High | Alloy Steels | 300 | | 400 | 17-4 PH | 6061 7075 | | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | | | | |
| | 1010 1018 | 1035 1045 | 1065 | | | | | | | | | | | | | | | 4140 4340 | | | | |
| 9011 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | |
| 9111 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | |

good best



List 9140

HARD-EMS, 6 Flute, Regular Length

| | | | | | |
|--------------------------|---------|-----|-----|-----|-------------|
| SPEED FEED P1204-1205 | CARBIDE | WXS | REG | 45° | SHANK h6 |
|--------------------------|---------|-----|-----|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 3 ≤ D ≤ 12 | +0 / -0.020mm |



| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 91400311 | 3 | 45 | 8 | 6 |
| 91400411 | 4 | 45 | 11 | 6 |
| 91400511 | 5 | 50 | 13 | 6 |
| 91400611 | 6 | 50 | 13 | 6 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 91400811 | 8 | 60 | 19 | 8 |
| 91401011 | 10 | 70 | 22 | 10 |
| 91401211 | 12 | 75 | 26 | 12 |

Units: mm

Packed: 1 pc.
Available WXS® coating only.
Center cutting applies only to diameter sizes over 5mm.



List 9144

HARD-EMS, 6 Flute, Regular Length, Corner Radius

| | | | | | |
|--------------------------|---------|-----|-----|-----|-------------|
| SPEED FEED P1204-1205 | CARBIDE | WXS | REG | 45° | SHANK h6 |
|--------------------------|---------|-----|-----|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 6 ≤ D ≤ 12 | +0 / -0.020mm |



| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|----------------|
| | D | R | L | Lc | d |
| 91440611 | 6 | 0.5 | 50 | 13 | 6 |
| 91440811 | 8 | 0.5 | 60 | 19 | 8 |
| 91441011 | 10 | 0.5 | 70 | 22 | 10 |

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|----------------|
| | D | R | L | Lc | d |
| 91441111 | 10 | 1.0 | 70 | 22 | 10 |
| 91441211 | 12 | 0.5 | 75 | 26 | 12 |
| 91441311 | 12 | 1.0 | 75 | 26 | 12 |

Units: mm

Packed: 1 pc.
Available WXS® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® Carb - List HP450 (p. 972)

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 9140 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 9144 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

good best





EXOCARB[®] MAX

Maximum Performance End Mills for Hardened Steels

List 9191

CBN-SXB, 2 Flute, Ball End, CBN

| | | | | | |
|----------------------------|------------|-----------|--|------------|--------------------|
| SPEED FEED P1202 | CBN | BR | | 30° | SHANK h6 |
|----------------------------|------------|-----------|--|------------|--------------------|

| Radius Tolerance | |
|------------------|----------|
| 0.4 ≤ D ≤ 3 | ±0.005mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|----------------|
| | D | L | Lc | L1 | d |
| 8525304 | 0.4 | 45 | 0.3 | 1.2 | 4 |
| 8525305 | 0.5 | 45 | 0.3 | 1.5 | 4 |
| 8525306 | 0.6 | 45 | 0.4 | 1.8 | 4 |
| 8525307 | 0.7 | 45 | 0.5 | 2.1 | 4 |
| 8525308 | 0.8 | 45 | 0.5 | 2.4 | 4 |
| 8525309 | 0.9 | 45 | 0.6 | 2.7 | 4 |
| 8525310 | 1.0 | 45 | 0.6 | 2.5 | 4 |
| 8525210 | 1.0 | 50 | 0.6 | 2.5 | 6 |
| 8525211 | 1.1 | 50 | 0.7 | 2.8 | 6 |
| 8525212 | 1.2 | 50 | 0.7 | 3.0 | 6 |
| 8525213 | 1.3 | 50 | 0.8 | 3.3 | 6 |
| 8525214 | 1.4 | 50 | 0.8 | 3.5 | 6 |
| 8525215 | 1.5 | 50 | 0.9 | 3.8 | 6 |
| 8525216 | 1.6 | 50 | 1.0 | 4.0 | 6 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|----------------|
| | D | L | Lc | L1 | d |
| 8525217 | 1.7 | 50 | 1.0 | 4.3 | 6 |
| 8525218 | 1.8 | 50 | 1.1 | 4.5 | 6 |
| 8525219 | 1.9 | 50 | 1.1 | 4.8 | 6 |
| 8525220 | 2.0 | 50 | 1.2 | 5.0 | 6 |
| 8525221 | 2.1 | 50 | 1.3 | 4.2 | 6 |
| 8525222 | 2.2 | 50 | 1.3 | 4.4 | 6 |
| 8525223 | 2.3 | 50 | 1.4 | 4.6 | 6 |
| 8525224 | 2.4 | 50 | 1.4 | 4.8 | 6 |
| 8525225 | 2.5 | 50 | 1.5 | 5.0 | 6 |
| 8525226 | 2.6 | 50 | 1.6 | 5.2 | 6 |
| 8525227 | 2.7 | 50 | 1.6 | 5.4 | 6 |
| 8525228 | 2.8 | 50 | 1.7 | 5.6 | 6 |
| 8525229 | 2.9 | 50 | 1.7 | 5.8 | 6 |
| 8525230 | 3.0 | 50 | 1.8 | 6.0 | 6 |

Packed: 1 pc.
Available Bright only.



List 9192

CBN-LN-SXB, 2 Flute, Long Neck, Ball End, CBN

| | | | | | |
|----------------------------|------------|-----------|--|------------|--------------------|
| SPEED FEED P1203 | CBN | BR | | 30° | SHANK h6 |
|----------------------------|------------|-----------|--|------------|--------------------|

| Radius Tolerance | |
|------------------|----------|
| 0.4 ≤ D ≤ 3 | ±0.050mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|----------------|
| | D | L | Lc | L1 | d |
| 8525622 | 0.4 | 45 | 0.3 | 2.0 | 4 |
| 8525623 | 0.4 | 45 | 0.3 | 3.0 | 4 |
| 8525633 | 0.6 | 45 | 0.4 | 3.0 | 4 |
| 8525634 | 0.6 | 45 | 0.4 | 4.5 | 4 |
| 8525654 | 1.0 | 45 | 0.6 | 4.0 | 4 |
| 8525655 | 1.0 | 45 | 0.6 | 5.0 | 4 |
| 8525656 | 1.0 | 45 | 0.6 | 6.0 | 4 |
| 8525657 | 1.0 | 45 | 0.6 | 7.5 | 4 |
| 8525854 | 1.0 | 50 | 0.6 | 4.0 | 6 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|----------------|
| | D | L | Lc | L1 | d |
| 8525855 | 1.0 | 50 | 0.6 | 5.0 | 6 |
| 8525856 | 1.0 | 50 | 0.6 | 6.0 | 6 |
| 8525857 | 1.0 | 50 | 0.6 | 7.5 | 6 |
| 8525877 | 1.5 | 50 | 0.9 | 7.5 | 6 |
| 8525903 | 2.0 | 50 | 1.2 | 6.0 | 6 |
| 8525904 | 2.0 | 50 | 1.2 | 8.0 | 6 |
| 8525905 | 2.0 | 50 | 1.2 | 10.0 | 6 |
| 8525956 | 3.0 | 50 | 1.8 | 12.0 | 6 |
| 8525957 | 3.0 | 50 | 1.8 | 15.0 | 6 |

Packed: 1 pc.
Available Bright only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|----------|---------|--------------|----------------|--------------------------|-------------------------------------|-------------------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| | 1010 | 1035 | 1065 | 4140 | 4340 | | | 7075 | | | | | | | | | |
| 9191 | | | | | | | | | | | | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 9192 | | | | | | | | | | | | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |

good best





List 9181

CBN-SXR, 2 Flute, Corner Radius, CBN



| | | | | |
|----------------------------|------------|-----------|------------|--------------------|
| SPEED FEED P1200 | CBN | BR | 30° | SHANK h6 |
|----------------------------|------------|-----------|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| D≤1 | +0 / -0.010mm |
| D>1 | +0 / -0.015mm |

Units: mm

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|----------------|
| | D | R | L | Lc | L1 | d |
| 8526210 | 0.5 | 0.05 | 45 | 0.3 | 1.5 | 4 |
| 8526211 | 0.5 | 0.10 | 45 | 0.3 | 1.5 | 4 |
| 8526220 | 1.0 | 0.05 | 45 | 0.6 | 2.5 | 4 |
| 8526221 | 1.0 | 0.10 | 45 | 0.6 | 2.5 | 4 |
| 8526222 | 1.0 | 0.20 | 45 | 0.6 | 2.5 | 4 |
| 8526223 | 1.0 | 0.30 | 45 | 0.6 | 2.5 | 4 |
| 8526231 | 1.5 | 0.10 | 50 | 0.9 | 3.8 | 6 |
| 8526232 | 1.5 | 0.20 | 50 | 0.9 | 3.8 | 6 |
| 8526233 | 1.5 | 0.30 | 50 | 0.9 | 3.8 | 6 |

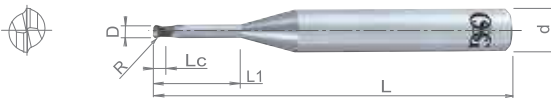
| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|----------------|
| | D | R | L | Lc | L1 | d |
| 8526241 | 2.0 | 0.10 | 50 | 1.2 | 5.0 | 6 |
| 8526242 | 2.0 | 0.20 | 50 | 1.2 | 5.0 | 6 |
| 8526243 | 2.0 | 0.30 | 50 | 1.2 | 5.0 | 6 |
| 8526245 | 2.0 | 0.50 | 50 | 1.2 | 5.0 | 6 |
| 8526261 | 3.0 | 0.10 | 50 | 1.8 | 6.0 | 6 |
| 8526262 | 3.0 | 0.20 | 50 | 1.8 | 6.0 | 6 |
| 8526263 | 3.0 | 0.30 | 50 | 1.8 | 6.0 | 6 |
| 8526265 | 3.0 | 0.50 | 50 | 1.8 | 6.0 | 6 |

Packed: 1 pc.
Available Bright only.



List 9182

CBN-LN-SXR, 2 Flute, Long Neck, Corner Radius, CBN



| | | | | |
|----------------------------|------------|-----------|------------|--------------------|
| SPEED FEED P1201 | CBN | BR | 30° | SHANK h6 |
|----------------------------|------------|-----------|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| D≤1 | +0 / -0.010mm |
| D>1 | +0 / -0.015mm |

| Radius Tolerance | |
|------------------|----------|
| 0.5≤D≤3 | ±0.005mm |

Units: mm

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|----------------|
| | D | R | L | Lc | L1 | d |
| 8526410 | 0.5 | 0.05 | 45 | 0.3 | 2.5 | 4 |
| 8526411 | 0.5 | 0.10 | 45 | 0.3 | 2.5 | 4 |
| 8526420 | 1.0 | 0.05 | 45 | 0.6 | 5.0 | 4 |
| 8526421 | 1.0 | 0.10 | 45 | 0.6 | 5.0 | 4 |
| 8526422 | 1.0 | 0.20 | 45 | 0.6 | 5.0 | 4 |
| 8526423 | 1.0 | 0.30 | 45 | 0.6 | 5.0 | 4 |
| 8526431 | 1.5 | 0.10 | 50 | 0.9 | 7.5 | 6 |
| 8526432 | 1.5 | 0.20 | 50 | 0.9 | 7.5 | 6 |
| 8526433 | 1.5 | 0.30 | 50 | 0.9 | 7.5 | 6 |

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|----------------|
| | D | R | L | Lc | L1 | d |
| 8526441 | 2.0 | 0.10 | 50 | 1.2 | 10.0 | 6 |
| 8526442 | 2.0 | 0.20 | 50 | 1.2 | 10.0 | 6 |
| 8526443 | 2.0 | 0.30 | 50 | 1.2 | 10.0 | 6 |
| 8526445 | 2.0 | 0.50 | 50 | 1.2 | 10.0 | 6 |
| 8526461 | 3.0 | 0.10 | 50 | 1.8 | 12.0 | 6 |
| 8526462 | 3.0 | 0.20 | 50 | 1.8 | 12.0 | 6 |
| 8526463 | 3.0 | 0.30 | 50 | 1.8 | 12.0 | 6 |
| 8526465 | 3.0 | 0.50 | 50 | 1.8 | 12.0 | 6 |

Packed: 1 pc.
Available Bright only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | | | | |
|----------|---------------|-----------|------|--------------|------------|------------------|-----|---------|-----------|-----------|---------|--------------|----------|-----------------|---------|-----------|-----------|-----------|--|--|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | | |
| | 1010 1018 | 1035 1045 | 1065 | 4140 4340 | | | | | | | | | | | | | | | | | |
| 9181 | | | | | | | | | | | | | | | | | | | | | |
| 9182 | | | | | | | | | | | | | | | | | | | | | |

good best



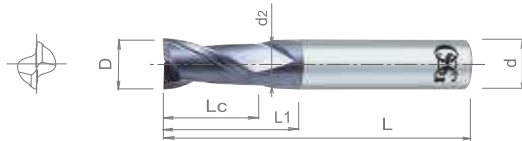


List 7020

2 Flute, Stub Length

| | | | | | |
|--------------------------|---------|-----|------|-----|-------------|
| SPEED FEED P1206-1207 | CARBIDE | DIA | STUB | 30° | SHANK h6 |
|--------------------------|---------|-----|------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/64 ≤ D ≤ 1/2 | +0 / -0.0020" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter | Coating Thickness | |
|------------|---------------|----------------|---------------|-------------|---------------|----------------|-------------------|------|
| | D | L | Lc | L1 | d2 | d | 12µm | 20µm |
| 70200016 | 1/64 | 1-3/4 | 3/64 | 3/32 | 0.015 | 1/8 | ◆ | |
| 70200116 | 1/32 | 1-3/4 | 3/32 | 1/4 | 0.028 | 1/8 | ◆ | |
| 70200216 | 3/64 | 1-3/4 | 3/16 | 1/2 | 0.040 | 1/8 | ◆ | |
| 70200316 | 1/16 | 1-3/4 | 3/16 | 1/2 | 0.056 | 1/8 | ◆ | |
| 70200416 | 5/64 | 1-3/4 | 1/4 | 1/2 | 0.070 | 1/8 | ◆ | |
| 70200516 | 3/32 | 1-3/4 | 3/8 | 1/2 | 0.088 | 1/8 | ◆ | |
| 70200716 | 1/8 | 1-3/4 | 1/2 | - | - | 1/8 | ◆ | |
| 70205716 | 1/8 | 1 3/4 | 1/2 | - | - | 1/8 | | ◆ |
| 70200816 | 5/32 | 2 | 9/16 | - | - | 5/32 | ◆ | |
| 70200916 | 3/16 | 2 | 3/4 | - | - | 3/16 | ◆ | |
| 70201116 | 1/4 | 2-1/2 | 3/4 | - | - | 1/4 | ◆ | |
| 70206116 | 1/4 | 2-1/2 | 3/4 | - | - | 1/4 | | ◆ |
| 70201316 | 5/16 | 2-1/2 | 13/16 | - | - | 5/16 | ◆ | |
| 70201416 | 3/8 | 2-1/2 | 7/8 | - | - | 3/8 | ◆ | |
| 70206416 | 3/8 | 2-1/2 | 7/8 | - | - | 3/8 | | ◆ |
| 70201616 | 1/2 | 3 | 1 | - | - | 1/2 | ◆ | |
| 70206616 | 1/2 | 3 | 1 | - | - | 1/2 | | ◆ |

Packed: 1 pc.
Available Diamond coating only.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | Other | | | |
|----------|---------------|--------------|------|--------------|------------|------------------|-----|---------|-------------------------------------|-------------------------------------|---------|--------------|----------|-------|---------------|-------------------------------------|---------------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Mg | Brass, Bronze | Graphite | Cobalt-Chrome |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | | | | |
| 7020 | 1010 1018 | 1035 1045 | 1065 | 4140 4340 | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | <input checked="" type="checkbox"/> | |

good best

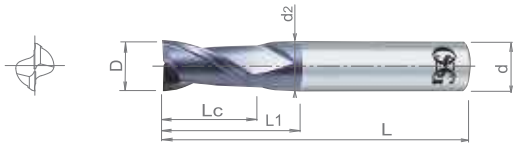


List 7120

D-RG-EDS, 2 Flute, Regular Length

| | | | | | |
|--------------------------|---------|-----|-----|-----|-------------|
| SPEED FEED P1206-1207 | CARBIDE | DIA | REG | 30° | SHANK h6 |
|--------------------------|---------|-----|-----|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1 ≤ D ≤ 12 | +0 / -0.050mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | L | Lc | L1 | d2 | d |
| 71200116 | 1 | 45 | 4 | 4.95 | 0.95 | 3 |
| 71200216 | 2 | 45 | 10 | 11.95 | 1.95 | 3 |
| 71200316 | 3 | 50 | 15 | - | - | 3 |
| 71200416 | 4 | 55 | 15 | - | - | 4 |
| 71200616 | 6 | 63 | 20 | - | - | 6 |
| 71200816 | 8 | 63 | 20 | - | - | 8 |
| 71201016 | 10 | 63 | 25 | - | - | 10 |
| 71201216 | 12 | 75 | 30 | - | - | 12 |

Packed: 1 pc.
Available Diamond coating only.
12µm Coating Thickness.

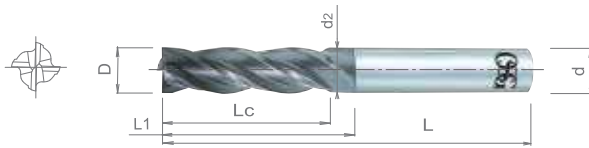


List 7040

D-GF-EMS, 4 Flute, Regular Length

| | | | | | |
|--------------------------|---------|-----|-----|-----|-------------|
| SPEED FEED P1206-1207 | CARBIDE | DIA | REG | 30° | SHANK h6 |
|--------------------------|---------|-----|-----|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/16 ≤ D ≤ 1/2 | +0 / -0.0020" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | L | Lc | L1 | d2 | d |
| 70400316 | 1/16 | 1-3/4 | 3/16 | 0.056 | 1/2 | 1/8 |
| 70400416 | 5/64 | 1-3/4 | 1/4 | 0.070 | 1/2 | 1/8 |
| 70400516 | 3/32 | 1-3/4 | 3/8 | 0.088 | 1/2 | 1/8 |
| 70400716 | 1/8 | 1-3/4 | 1/2 | - | - | 1/8 |
| 70400916 | 3/16 | 2 | 3/4 | - | - | 3/16 |
| 70401116 | 1/4 | 2-1/2 | 3/4 | - | - | 1/4 |
| 70401316 | 5/16 | 2-1/2 | 13/16 | - | - | 5/16 |
| 70401416 | 3/8 | 2-1/2 | 7/8 | - | - | 3/8 |
| 70401616 | 1/2 | 3 | 1 | - | - | 1/2 |

Packed: 1 pc.
Available Diamond coating only.
12µm Coating Thickness.



Work Material

| List No. | P | | | | | Die Steels | M | | | K Cast Iron | N | | S | | Other | | | | |
|----------|---------------|------|------|--------------|------------------|------------|----------|-----|--------------|----------------|-------------------------------------|-------------------------------------|---------------|----------|---------------|---------|-----------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Stainless Steels | | Aluminum | | Nickel Alloy | | Titanium | Mg | Brass, Bronze | Graphite | Cobalt-Chrome | | | | |
| | Low | Med. | High | | | | 300 | 400 | | | | | | | | 17-4 PH | 6061 7075 | Casting | Inconel |
| 7120 | 1010 | 1035 | 1065 | 4140 | 4340 | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | <input type="checkbox"/> | |
| 7040 | 1018 | 1045 | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | <input type="checkbox"/> |

good best



List 7041

D-GF-EML, 4 Flute, Long Length

| | | | | | |
|--------------------------|---------|-----|------|-----|-------------|
| SPEED FEED P1206-1207 | CARBIDE | DIA | LONG | 30° | SHANK h6 |
|--------------------------|---------|-----|------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/8 ≤ D ≤ 1/2 | +0 / -0.0020" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 70410716 | 1/8 | 3 | 1 | 1/8 |
| 70410916 | 3/16 | 4 | 1 | 3/16 |
| 70411116 | 1/4 | 4 | 1-1/2 | 1/4 |
| 70411416 | 3/8 | 4 | 1-1/2 | 3/8 |
| 70411616 | 1/2 | 5 | 2 | 1/2 |

Packed: 1 pc.
Available Diamond coating only.
12µm Coating Thickness.



List 7042

4 Flute, Stub Length, Long Shank

| | | | | | |
|--------------------------|---------|-----|------|-----|-------------|
| SPEED FEED P1206-1207 | CARBIDE | DIA | STUB | 30° | SHANK h6 |
|--------------------------|---------|-----|------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/16 ≤ D ≤ 1/2 | +0 / -0.0020" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | L | Lc | L1 | d2 | d |
| 70420116 | 1/16 | 3 | 1/16 | 0.313 | 0.059 | 1/16 |
| 70420216 | 3/32 | 3 | 3/32 | 0.469 | 0.089 | 3/32 |
| 70420316 | 1/8 | 3 | 1/8 | 0.625 | 0.119 | 1/8 |
| 70420416 | 3/16 | 3 | 3/16 | 0.938 | 0.178 | 3/16 |
| 70420516 | 1/4 | 4 | 1/4 | 0.750 | 0.238 | 1/4 |
| 70420616 | 5/16 | 4 | 5/16 | 0.938 | 0.297 | 5/16 |
| 70420716 | 3/8 | 4 | 3/8 | 1.125 | 0.356 | 3/8 |
| 70420816 | 1/2 | 6 | 1/2 | 1.500 | 0.475 | 1/2 |

Packed: 1 pc.
Available Diamond coating only.
12µm Coating Thickness.



Work Material

| List No. | P | | | | | | | | | | | M | K | N | | S | | Other | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|-----------|---------|-------------------------------------|-------------------------------------|--------------|----------|----|-------------------------------------|----------|---------------|---------|----------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | | | Nickel Alloy | Titanium | Mg | Brass, Bronze | Graphite | Cobalt-Chrome | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | | | | | | | Inconel | 6Al4V (30 HRC) |
| 7041 | 1010 | 1035 | 1065 | 4140 | 4340 | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input checked="" type="checkbox"/> | | | | |
| 7042 | 1018 | 1045 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input checked="" type="checkbox"/> | | | | |

good best





List 7072

4 Flute, Stub Length, Long Shank, Corner Radius

| | | | | | |
|--------------------------|---------|-----|------|-----|-------------|
| SPEED FEED P1206-1207 | CARBIDE | DIA | STUB | 30° | SHANK h6 |
|--------------------------|---------|-----|------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/8 ≤ D ≤ 1/2 | +0 / -0.0020" |



Units: Inch

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | R | L | Lc | L1 | d2 | d |
| 70720116 | 1/8 | 0.015 | 3 | 1/8 | 0.625 | 0.119 | 1/8 |
| 70720216 | 1/8 | 0.031 | 3 | 1/8 | 0.625 | 0.119 | 1/8 |
| 70720316 | 3/16 | 0.062 | 3 | 3/16 | 0.938 | 0.178 | 3/16 |
| 70720416 | 1/4 | 0.015 | 4 | 1/4 | 0.750 | 0.238 | 1/4 |
| 70720516 | 1/4 | 0.030 | 4 | 1/4 | 0.750 | 0.238 | 1/4 |
| 70720616 | 1/4 | 0.062 | 4 | 1/4 | 0.750 | 0.238 | 1/4 |
| 70720716 | 3/8 | 0.015 | 4 | 3/8 | 1.125 | 0.356 | 3/8 |
| 70720816 | 1/2 | 0.015 | 6 | 1/2 | 1.500 | 0.475 | 1/2 |

Packed: 1 pc. Available Diamond coating only.
12µm Coating Thickness.

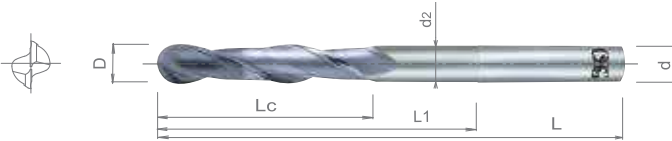


List 7010

D-RG-EBDR, 2 Flute, Regular Length, Ball End

| | | | | | |
|--------------------------|---------|-----|-----|-----|-------------|
| SPEED FEED P1206-1207 | CARBIDE | DIA | REG | 30° | SHANK h6 |
|--------------------------|---------|-----|-----|-----|-------------|

| Radius Tolerance | |
|------------------|---------------|
| 1/32 ≤ D ≤ 1/2 | +0 / -0.0020" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter | Coating Thickness | |
|------------|---------------|----------------|---------------|-------------|---------------|----------------|-------------------|------|
| | D | L | Lc | L1 | d2 | d | 12µm | 20µm |
| 70100116 | 1/32 | 1-3/4 | 3/32 | 1/4 | 0.028 | 1/8 | ◆ | |
| 70100216 | 3/64 | 1-3/4 | 3/16 | 1/2 | 0.040 | 1/8 | ◆ | |
| 70100316 | 1/16 | 1-3/4 | 3/16 | 1/2 | 0.056 | 1/8 | ◆ | |
| 70100416 | 5/64 | 1-3/4 | 1/4 | 1/2 | 0.070 | 1/8 | ◆ | |
| 70100516 | 3/32 | 1-3/4 | 3/8 | 1/2 | 0.088 | 1/8 | ◆ | |
| 70100716 | 1/8 | 1-3/4 | 1/2 | - | - | 1/8 | ◆ | |
| 70105716 | 1/8 | 1-3/4 | 1/2 | - | - | 1/8 | | ◆ |
| 70100816 | 5/32 | 2 | 9/16 | - | - | 5/32 | ◆ | |
| 70100916 | 3/16 | 2 | 3/4 | - | - | 3/16 | ◆ | |
| 70101116 | 1/4 | 2-1/2 | 3/4 | - | - | 1/4 | ◆ | |
| 70106116 | 1/4 | 2-1/2 | 3/4 | - | - | 1/4 | | ◆ |
| 70101316 | 5/16 | 2-1/2 | 13/16 | - | - | 5/16 | ◆ | |
| 70101416 | 3/8 | 2-1/2 | 7/8 | - | - | 3/8 | ◆ | |
| 70106416 | 3/8 | 2-1/2 | 7/8 | - | - | 3/8 | | ◆ |
| 70101616 | 1/2 | 3 | 1 | - | - | 1/2 | ◆ | |
| 70106616 | 1/2 | 3 | 1 | - | - | 1/2 | | ◆ |

Packed: 1 pc.
Available Diamond coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | Other | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|----------|---------|--------------|----------|-------|---------------|----------|---------------|---------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Mg | Brass, Bronze | Graphite | Cobalt-Chrome | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | | | | | Inconel |
| 7072 | 1010 | 1035 | 1065 | 4140 | 4340 | | | | | 6061 | 7075 | | | | | | | |
| 7010 | 1018 | 1045 | | | | | | | | 6061 | 7075 | | | | | | | |

good best



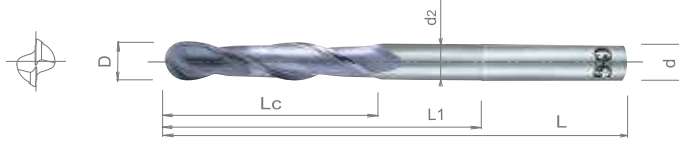


List 7110

D-RG-EBD, 2 Flute, Regular Length, Ball End

| | | | | | |
|--------------------------|---------|-----|-----|-----|-------------|
| SPEED FEED P1206-1207 | CARBIDE | DIA | REG | 30° | SHANK h6 |
|--------------------------|---------|-----|-----|-----|-------------|

| Radius Tolerance | |
|------------------|---------------|
| 1 ≤ D ≤ 12 | +0 / -0.020mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | L | Lc | L1 | d2 | d |
| 71100116 | 1 | 45 | 4 | 4.95 | 0.95 | 3 |
| 71100216 | 2 | 45 | 10 | 11.95 | 1.95 | 3 |
| 71100316 | 3 | 50 | 15 | - | - | 3 |
| 71100416 | 4 | 55 | 15 | - | - | 4 |
| 71100616 | 6 | 63 | 20 | - | - | 6 |
| 71100816 | 8 | 63 | 20 | - | - | 8 |
| 71101016 | 10 | 63 | 25 | - | - | 10 |
| 71101216 | 12 | 75 | 30 | - | - | 12 |

Packed: 1 pc.
Available Diamond coating only.
12µm Coating Thickness.

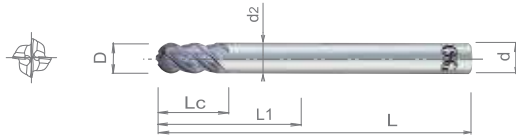


List 7030

D-GF-EBMR, 4 Flute, Regular Length, Ball End

| | | | | | |
|--------------------------|---------|-----|-----|-----|-------------|
| SPEED FEED P1206-1207 | CARBIDE | DIA | REG | 30° | SHANK h6 |
|--------------------------|---------|-----|-----|-----|-------------|

| Radius Tolerance | |
|------------------|---------------|
| 1/32 ≤ D ≤ 1/2 | +0 / -0.0015" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | L | Lc | L1 | d2 | d |
| 70300116 | 1/32 | 1-3/4 | 3/32 | 1/4 | 0.028 | 1/8 |
| 70300216 | 3/64 | 1-3/4 | 3/16 | 1/2 | 0.040 | 1/8 |
| 70300316 | 1/16 | 1-3/4 | 3/16 | 1/2 | 0.056 | 1/8 |
| 70300416 | 5/64 | 1-3/4 | 1/4 | 1/2 | 0.070 | 1/8 |
| 70300516 | 3/32 | 1-3/4 | 3/8 | 1/2 | 0.088 | 1/8 |
| 70300716 | 1/8 | 1-3/4 | 1/2 | - | - | 1/8 |
| 70300916 | 3/16 | 2 | 3/4 | - | - | 3/16 |
| 70301116 | 1/4 | 2-1/2 | 3/4 | - | - | 1/4 |
| 70301316 | 5/16 | 2-1/2 | 13/16 | - | - | 5/16 |
| 70301416 | 3/8 | 2-1/2 | 7/8 | - | - | 3/8 |
| 70301616 | 1/2 | 3 | 1 | - | - | 1/2 |

Packed: 1 pc.
Available Diamond coating only.
12µm Coating Thickness.



Work Material

| List No. | P | | | | Die Steels | M | | | K | N | | S | | Other | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|---|-------------------------------------|-------------------------------------|--------------|----------|-------|---------------|----------|---------------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Mg | Brass, Bronze | Graphite | Cobalt-Chrome |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | | | | |
| 7110 | 1010 | 1035 | 1065 | 4140 | 4340 | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| 7030 | 1018 | 1045 | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |

good best



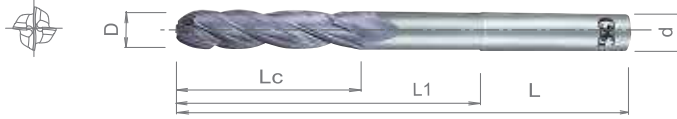


List 7031

D-GF-EBML, 4 Flute, Long Length, Ball End

| | | | | | |
|--------------------------|---------|-----|------|-----|-------------|
| SPEED FEED P1206-1207 | CARBIDE | DIA | LONG | 30° | SHANK h6 |
|--------------------------|---------|-----|------|-----|-------------|

| Radius Tolerance | |
|------------------|---------------|
| 3/16 ≤ D ≤ 1/2 | +0 / -0.0015" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 70310916 | 3/16 | 4 | 1 | 3/16 |
| 70311116 | 1/4 | 4 | 1-1/2 | 1/4 |
| 70311416 | 3/8 | 4 | 1-1/2 | 3/8 |
| 70311616 | 1/2 | 5 | 2 | 1/2 |

Packed: 1 pc.
Available Diamond coating only.
12µm Coating Thickness.

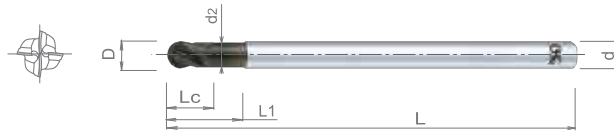


List 7032

4 Flute, Stub Length, Long Shank, Ball End

| | | | | | |
|--------------------------|---------|-----|------|-----|-------------|
| SPEED FEED P1206-1207 | CARBIDE | DIA | STUB | 30° | SHANK h6 |
|--------------------------|---------|-----|------|-----|-------------|

| Radius Tolerance | |
|------------------|---------------|
| 1/16 ≤ D ≤ 1/2 | +0 / -0.0015" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | L | Lc | L1 | d2 | d |
| 70320116 | 1/16 | 3 | 1/16 | 0.313 | 0.059 | 1/16 |
| 70320216 | 3/32 | 3 | 3/32 | 0.469 | 0.089 | 3/32 |
| 70320316 | 1/8 | 3 | 1/8 | 0.625 | 0.119 | 1/8 |
| 70320416 | 3/16 | 3 | 3/16 | 0.938 | 0.178 | 3/16 |
| 70320516 | 1/4 | 4 | 1/4 | 0.750 | 0.238 | 1/4 |
| 70320616 | 5/16 | 4 | 5/16 | 0.938 | 0.297 | 5/16 |
| 70320716 | 3/8 | 4 | 3/8 | 1.125 | 0.356 | 3/8 |
| 70320816 | 1/2 | 6 | 1/2 | 1.500 | 0.475 | 1/2 |

Packed: 1 pc.
Available Diamond coating only.
12µm Coating Thickness.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | Other | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|----------|---------|--------------|----------------|-------|---------------|----------|--------------------------|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Mg | Brass, Bronze | Graphite | Cobalt-Chrome | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | | | | | |
| 7031 | 1010 | 1035 | 1045 | 1065 | 4140 | 4340 | | | | | | | | | | | <input type="checkbox"/> | |
| 7032 | 1018 | 1045 | | | | | | | | | | | | | | | <input type="checkbox"/> | |

good best



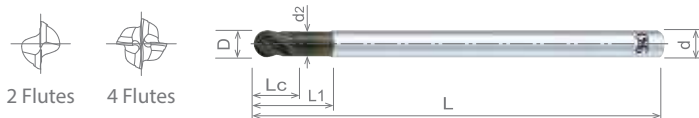


List 7173

4 Flute*, Stub Length, Long Shank, Ball End

| | | | | | | |
|--------------------------|---------|-----|--|------|-----|-------------|
| SPEED FEED P1206-1207 | CARBIDE | DIA | | STUB | 30° | SHANK h6 |
|--------------------------|---------|-----|--|------|-----|-------------|

| Radius Tolerance | |
|------------------|---------------|
| 0.5 ≤ D ≤ 12 | +0 / -0.015mm |



2 Flutes 4 Flutes

Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | L | Lc | L1 | d2 | d |
| 71730116* | 0.5 | 50 | 0.5 | 2.5 | 0.48 | 3 |
| 71730216 | 1.0 | 60 | 1.0 | 5.0 | 0.96 | 3 |
| 71730316 | 1.5 | 75 | 1.5 | 7.5 | 1.43 | 3 |
| 71730416 | 2.0 | 75 | 2.0 | 10.0 | 1.90 | 3 |
| 71730516 | 3.0 | 75 | 3.0 | 15.0 | 2.85 | 3 |
| 71730616 | 4.0 | 75 | 4.0 | 20.0 | 3.80 | 4 |
| 71730716 | 6.0 | 100 | 6.0 | 30.0 | 5.70 | 6 |
| 71730816 | 8.0 | 100 | 8.0 | 32.0 | 7.60 | 8 |
| 71730916 | 10.0 | 125 | 10.0 | 40.0 | 9.50 | 10 |
| 71731016 | 12.0 | 150 | 12.0 | 48.0 | 11.40 | 12 |

Packed: 1 pc.
 Available Diamond coating only.
 12µm Coating Thickness.
 *0.5mm is 2 flute.



Work Material

| List No. | P | | | | Die Steels | M | | | K | N | | S | | Other | | | |
|----------|---------------|--------------|------|--------------|------------|------------------|-----|---------|---|-------------------------------------|-------------------------------------|--------------|----------------|-------|---------------|-------------------------------------|---------------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Mg | Brass, Bronze | Graphite | Cobalt-Chrome |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | | | | |
| 7173 | 1010 1018 | 1035 1045 | 1065 | 4140 4340 | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | |

good best



List 7132

4 Flute, Stub Length, Long Shank, Corner Radius

| | | | | | |
|--------------------------|---------|-----|------|-----|-------------|
| SPEED FEED P1206-1207 | CARBIDE | DIA | STUB | 30° | SHANK h6 |
|--------------------------|---------|-----|------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 3 ≤ D ≤ 12 | +0 / -0.020mm |



Units: mm

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | R | L | Lc | L1 | d2 | d |
| 71320116 | 3 | 0.5 | 75 | 3 | 15 | 2.85 | 3 |
| 71320216 | 4 | 0.5 | 75 | 4 | 20 | 3.80 | 4 |
| 71320316 | 6 | 0.5 | 100 | 6 | 30 | 5.70 | 6 |
| 71320416 | 6 | 1.0 | 100 | 6 | 30 | 5.70 | 6 |
| 71320516 | 8 | 0.5 | 100 | 8 | 30 | 7.60 | 8 |
| 71320616 | 8 | 1.0 | 100 | 8 | 32 | 7.60 | 8 |
| 71320716 | 10 | 0.5 | 125 | 10 | 40 | 9.50 | 10 |
| 71320816 | 10 | 1.0 | 125 | 10 | 40 | 9.50 | 10 |
| 71320916 | 12 | 0.5 | 150 | 12 | 48 | 11.40 | 12 |
| 71321016 | 12 | 1.0 | 150 | 12 | 48 | 11.40 | 12 |

Packed: 1 pc.
Available Diamond coating only.
12µm Coating Thickness.



List 7140

4 Flute*, Regular Length

| | | | | | |
|--------------------------|---------|-----|-----|-----|-------------|
| SPEED FEED P1206-1207 | CARBIDE | DIA | REG | 30° | SHANK h6 |
|--------------------------|---------|-----|-----|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 0.5 ≤ D ≤ 12 | +0 / -0.020mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | L | Lc | L1 | d2 | d |
| 71400116 | 0.5 | 40 | 1.5 | 8 | 0.48 | 3 |
| 71400216 | 1.0 | 40 | 3 | 8 | 0.96 | 3 |
| 71400316 | 1.5 | 45 | 5 | 8 | 1.43 | 3 |
| 71400416 | 2.0 | 45 | 6 | 8 | 1.91 | 3 |
| 71400516 | 3.0 | 45 | 12 | - | - | 3 |
| 71400616 | 4.0 | 50 | 15 | - | - | 4 |
| 71400716 | 6.0 | 60 | 20 | - | - | 6 |
| 71400816 | 8.0 | 60 | 20 | - | - | 8 |
| 71400916 | 10.0 | 60 | 25 | - | - | 10 |
| 71401016 | 12.0 | 75 | 25 | - | - | 12 |

Packed: 1 pc. Available Diamond coating only.
12µm Coating Thickness.
*0.5mm is 2 flute.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | Other | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|-------------------------------------|-------------------------------------|--------------|----------------|-------|---------------|-------------------------------------|---------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Mg | Brass, Bronze | Graphite | Cobalt-Chrome |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | | | | |
| 7132 | 1010 | 1035 | 1065 | 4140 | 4340 | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | |
| 7140 | 1018 | 1045 | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | |

good best



List 7230

DIA-EBDSS, 2 or 4 Flute, Regular Length, Ball End, High Precision

| | | | | | | | |
|----------------------------|----------------|------------|--|------------|--|------------|--------------------|
| SPEED FEED P1208 | CARBIDE | DIA | | REG | | 30° | SHANK h6 |
|----------------------------|----------------|------------|--|------------|--|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/64 ≤ D ≤ 3/16 | +0 / -0.0005" |
| D = 1/4 | +0 / -0.0008" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | No. of Flutes |
|------------|---------------|----------------|---------------|----------------|---------------|
| | D | L | Lc | d | |
| 72300116 | 1/64 | 1-1/2 | 3/64 | 1/8 | 2 |
| 72300216 | 1/32 | 1-1/2 | 3/32 | 1/8 | 4 |
| 72300416 | 1/16 | 1-1/2 | 3/16 | 1/8 | 4 |
| 72300516 | 3/32 | 1-1/2 | 3/8 | 1/8 | 4 |
| 72300616 | 1/8 | 1-1/2 | 3/4 | 1/8 | 4 |
| 72300716 | 3/16 | 2 | 3/4 | 3/16 | 4 |
| 72300816 | 1/4 | 2-1/2 | 1 | 1/4 | 4 |

Packed: 1 pc.
Available Diamond coating only.
12µm Coating Thickness.

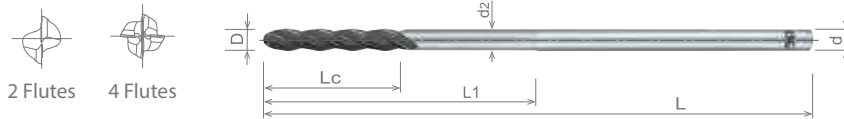


List 7231

DIA-LN-EBM, 2 or 4 Flute, Regular Length, Long Reach, Ball End, High Precision

| | | | | | | | |
|----------------------------|----------------|------------|--|------------|--|------------|--------------------|
| SPEED FEED P1208 | CARBIDE | DIA | | REG | | 30° | SHANK h6 |
|----------------------------|----------------|------------|--|------------|--|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/64 ≤ D ≤ 1/8 | +0 / -0.0004" |
| 3/16 ≤ D ≤ 1/4 | +0 / -0.0007" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter | Number of Flutes |
|------------|---------------|----------------|---------------|-------------|---------------|----------------|------------------|
| | D | L | Lc | L1 | d2 | d | |
| 72310116 | 1/64 | 1-1/2 | 3/64 | 0.16 | 0.012 | 1/8 | 2 |
| 72310216 | 1/32 | 1-1/2 | 3/32 | 0.31 | 0.027 | 1/8 | 4 |
| 72310316 | 3/64 | 1-1/2 | 3/16 | 0.47 | 0.043 | 1/8 | 4 |
| 72310416 | 1/16 | 1-1/2 | 3/16 | 0.63 | 0.058 | 1/8 | 4 |
| 72310516 | 3/32 | 2 | 3/8 | 0.94 | 0.088 | 1/8 | 4 |
| 72310616 | 1/8 | 3 | 3/4 | 1.50 | 0.120 | 1/8 | 4 |
| 72310716 | 3/16 | 4 | 3/4 | 1.88 | 0.183 | 3/16 | 4 |
| 72310816 | 1/4 | 4 | 1 | 2.50 | 0.245 | 1/4 | 4 |

Packed: 1 pc.
Available Diamond coating only.
12µm Coating Thickness.



Work Material

| List No. | P | | | | | M | K | N | | S | | Other | | | | | |
|----------|---------------|------|------|--------------|------------|---|---|--------------------------|--------------------------|---------|----------|--------------|----------|----|--------------------------|----------|---------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | | | Stainless Steels | | | Aluminum | Nickel Alloy | Titanium | Mg | Brass, Bronze | Graphite | Cobalt-Chrome |
| | Low | Med. | High | | | | | 300 | 400 | 17-4 PH | | | | | | | |
| 7230 | 1010 | 1035 | 1065 | 4140 | 4340 | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | | |
| 7231 | 1018 | 1045 | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | <input type="checkbox"/> | | |

good best





List 2050

4 Flute, Multiple Lengths, Square End

| | | | | |
|---------------------|---------|------|-------|-------------|
| SPEED FEED P1209 | CARBIDE | EXO® | Var.° | SHANK h6 |
|---------------------|---------|------|-------|-------------|

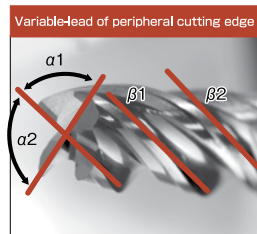
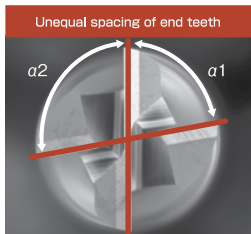
| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/8 ≤ D ≤ 1 | +0 / -0.0015" |



Units: Inch

| EDP Number | EDP Number w/ Weldon Flat | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|------------------------------|---------------|----------------|---------------|----------------|
| | | D | L | Lc | d |
| 205000111 | - | 1/8 | 1-1/2 | 3/8 | 1/8 |
| 205001111 | - | 3/16 | 2 | 7/16 | 3/16 |
| 205002111 | - | 1/4 | 2-1/2 | 7/16 | 1/4 |
| 205002211 | - | 1/4 | 2-1/2 | 3/4 | 1/4 |
| 205003111 | - | 5/16 | 2-1/2 | 13/16 | 5/16 |
| 205004111 | 205094111 | 3/8 | 2-1/2 | 1/2 | 3/8 |
| 205004211 | 205094211 | 3/8 | 2-1/2 | 7/8 | 3/8 |
| 205005111 | 205095111 | 7/16 | 2-3/4 | 1 | 7/16 |
| 205006111 | 205096111 | 1/2 | 2-1/2 | 5/8 | 1/2 |
| 205006211 | 205096211 | 1/2 | 3 | 1 | 1/2 |
| 205006311 | 205096311 | 1/2 | 3 | 1-1/4 | 1/2 |
| 205007111 | 205097111 | 5/8 | 3-1/2 | 1-1/4 | 5/8 |
| 205008111 | 205098111 | 3/4 | 4 | 1-1/2 | 3/4 |
| 205009111 | 205099111 | 1 | 4 | 1-1/2 | 1 |

Packed: 1 pc.
Available EXO® coating only.



The variable-lead shape stabilizes cutting resistance to isolate vibration.

OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® Carb VGX - List VG441 (p. 960)
Want to turbo-charge performance? Try A Brand® AE-VMS - List 8200 (p. 830)

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-----------|---------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 2050 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 2052

4 Flute, Multiple Lengths, Corner Radius

| | | | | | |
|----------------------------|----------------|------------|--|-------------|--------------------|
| SPEED FEED P1209 | CARBIDE | EXO | | Var. | SHANK h6 |
|----------------------------|----------------|------------|--|-------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/8 ≤ D ≤ 1 | +0 / -0.0015" |



Units: Inch

| EDP Number | Edp Number w/ Weldon Flat | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------------------|---------------|---------------|----------------|---------------|----------------|
| | | D | R | L | Lc | d |
| 205200111 | - | 1/8 | 0.010 | 1-1/2 | 3/8 | 1/8 |
| 205200211 | - | 1/8 | 0.015 | 1-1/2 | 3/8 | 1/8 |
| 205201111 | - | 3/16 | 0.015 | 2 | 7/16 | 3/16 |
| 205201211 | - | 3/16 | 0.030 | 2 | 7/16 | 3/16 |
| 205202111 | - | 1/4 | 0.015 | 2-1/2 | 3/8 | 1/4 |
| 205202211 | - | 1/4 | 0.030 | 2-1/2 | 3/8 | 1/4 |
| 205202311 | - | 1/4 | 0.015 | 2-1/2 | 3/4 | 1/4 |
| 205202411 | - | 1/4 | 0.030 | 2-1/2 | 3/4 | 1/4 |
| 205203111 | - | 5/16 | 0.015 | 2-1/2 | 5/8 | 5/16 |
| 205203211 | - | 5/16 | 0.030 | 2-1/2 | 5/8 | 5/16 |
| 205204111 | 205294111 | 3/8 | 0.030 | 2-1/2 | 1/2 | 3/8 |
| 205204211 | 205294211 | 3/8 | 0.030 | 2-1/2 | 7/8 | 3/8 |
| 205204311 | 205294311 | 3/8 | 0.045 | 2-1/2 | 7/8 | 3/8 |
| 205204411 | 205294411 | 3/8 | 0.060 | 2-1/2 | 7/8 | 3/8 |
| 205205111 | 205295111 | 7/16 | 0.015 | 2-3/4 | 1 | 7/16 |
| 205205211 | 205295211 | 7/16 | 0.030 | 2-3/4 | 1 | 7/16 |
| 205206111 | 205296111 | 1/2 | 0.030 | 2-1/2 | 5/8 | 1/2 |
| 205206211 | 205296211 | 1/2 | 0.030 | 3 | 1 | 1/2 |
| 205206311 | 205296311 | 1/2 | 0.060 | 3 | 1 | 1/2 |
| 205206411 | 205296411 | 1/2 | 0.015 | 3-1/4 | 1-1/4 | 1/2 |
| 205206511 | 205296511 | 1/2 | 0.030 | 3-1/4 | 1-1/4 | 1/2 |
| 205206611 | 205296611 | 1/2 | 0.045 | 3-1/4 | 1-1/4 | 1/2 |
| 205206711 | 205296711 | 1/2 | 0.060 | 3-1/4 | 1-1/4 | 1/2 |
| 205206811 | 205296811 | 1/2 | 0.090 | 3-1/4 | 1-1/4 | 1/2 |
| 205206911 | 205296911 | 1/2 | 0.125 | 3-1/4 | 1-1/4 | 1/2 |
| 205207111 | 205297111 | 5/8 | 0.030 | 3-1/2 | 1-1/4 | 5/8 |
| 205207211 | 205297211 | 5/8 | 0.060 | 3-1/2 | 1-1/4 | 5/8 |
| 205207311 | 205297311 | 5/8 | 0.090 | 3-1/2 | 1-1/4 | 5/8 |
| 205207411 | 205297411 | 5/8 | 0.125 | 3-1/2 | 1-1/4 | 5/8 |
| 205208111 | 205298111 | 3/4 | 0.030 | 3-1/2 | 1-1/2 | 3/4 |
| 205208211 | 205298211 | 3/4 | 0.060 | 3-1/2 | 1-1/2 | 3/4 |
| 205208311 | 205298311 | 3/4 | 0.090 | 4 | 1-1/2 | 3/4 |
| 205208411 | 205298411 | 3/4 | 0.125 | 4 | 1-1/2 | 3/4 |
| 205209111 | 205299111 | 1 | 0.030 | 4 | 1-1/2 | 1 |
| 205209211 | 205299211 | 1 | 0.060 | 4 | 1-1/2 | 1 |
| 205209311 | 205299311 | 1 | 0.090 | 4 | 1-1/2 | 1 |
| 205209411 | 205299411 | 1 | 0.125 | 4 | 1-1/2 | 1 |

Packed: 1 pc.
Available EXO® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® Carb VGX - List VG434 (p. 961)
Want to turbo-charge performance? Try A Brand® AE-CR-VMS - List 8210 (p. 832)

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-----------|---------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 2052 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 3815

SI-WC-RESF, 4 Flute, Low Helix, Corner Chamfer

SPEED FEED P1210-1211 CARBIDE WXL Var.° SHANK h6

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| D ≤ 3/8 | +0 / -0.0020" |
| D ≥ 1/2 | +0 / -0.0025" |



Units: Inch

| EDP Number | Mill Diameter | Chamfer Width | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|----------------|
| | D | C | L | Lc | d |
| 38150111 | 1/4 | 0.020 | 2-1/2 | 1/2 | 1/4 |
| 38150911 | 5/16 | 0.020 | 3 | 5/8 | 5/16 |
| 38151711 | 3/8 | 0.020 | 3 | 3/4 | 3/8 |
| 38152511 | 1/2 | 0.020 | 3-1/2 | 1 | 1/2 |
| 38153311 | 5/8 | 0.030 | 4 | 1-1/4 | 5/8 |
| 38154111 | 3/4 | 0.030 | 4-1/4 | 1-1/2 | 3/4 |
| 38154911 | 1 | 0.030 | 5 | 2 | 1 |

Packed: 1 pc.
Available WXL® coating only.



List 3820

SI-WC-RESF, 4 Flute, High Helix, Corner Chamfer

SPEED FEED P1210-1211 CARBIDE WXL Var.° SHANK h6

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| D ≤ 3/8 | +0 / -0.0020" |
| D ≥ 1/2 | +0 / -0.0025" |



Units: Inch

| EDP Number | Mill Diameter | Chamfer Width | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|----------------|
| | D | C | L | Lc | d |
| 38200211 | 1/4 | 0.020 | 2-1/2 | 1/2 | 1/4 |
| 38201011 | 5/16 | 0.020 | 3 | 5/8 | 5/16 |
| 38201811 | 3/8 | 0.020 | 3 | 3/4 | 3/8 |
| 38202611 | 1/2 | 0.020 | 3-1/2 | 1 | 1/2 |
| 38203411 | 5/8 | 0.030 | 4 | 1-1/4 | 5/8 |
| 38204211 | 3/4 | 0.030 | 4-1/4 | 1-1/2 | 3/4 |
| 38205011 | 1 | 0.030 | 5 | 2 | 1 |

Packed: 1 pc.
Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try EXOCARB® AERO - List 2015 (p. 924)

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 3815 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3820 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



List 3915

SI-WC-RESF, 4 Flute, Low Helix, Corner Chamfer

| | | | | | |
|---------------------------------|----------------|------------|--|--------------|--------------------|
| SPEED FEED P1210-1211 | CARBIDE | WXL | | Var.° | SHANK h6 |
|---------------------------------|----------------|------------|--|--------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| D≤12 | +0 / -0.050mm |
| D>12 | +0 / -0.060mm |



Units: mm

| EDP Number | Mill Diameter | Chamfer Width | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|----------------|
| | D | C | L | Lc | d |
| 3017406 | 6 | 0.5 | 60 | 13 | 6 |
| 3017408 | 8 | 0.5 | 80 | 19 | 8 |
| 3017410 | 10 | 0.5 | 80 | 22 | 10 |
| 3017412 | 12 | 0.5 | 80 | 26 | 12 |
| 39150811 | 14 | 0.6 | 85 | 26 | 14 |
| 39151211 | 16 | 0.6 | 100 | 32 | 16 |
| 39151611 | 18 | 0.6 | 100 | 32 | 18 |
| 39152011 | 20 | 0.6 | 105 | 38 | 20 |
| 39152411 | 25 | 0.6 | 120 | 45 | 25 |

Packed: 1 pc.
 Available WXL® coating only.



List 3920

SI-WC-RESF, 4 Flute, High Helix, Corner Chamfer

| | | | | | |
|---------------------------------|----------------|------------|--|--------------|--------------------|
| SPEED FEED P1210-1211 | CARBIDE | WXL | | Var.° | SHANK h6 |
|---------------------------------|----------------|------------|--|--------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| D≤12 | +0 / -0.050mm |
| D>12 | +0 / -0.060mm |



Units: mm

| EDP Number | Mill Diameter | Chamfer Width | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|----------------|
| | D | C | L | Lc | d |
| 3017456 | 6 | 0.5 | 60 | 13 | 6 |
| 3017458 | 8 | 0.5 | 80 | 19 | 8 |
| 3017460 | 10 | 0.5 | 80 | 22 | 10 |
| 3017462 | 12 | 0.5 | 80 | 26 | 12 |
| 39200911 | 14 | 0.6 | 85 | 26 | 14 |
| 39201311 | 16 | 0.6 | 100 | 32 | 16 |
| 39201711 | 18 | 0.6 | 100 | 32 | 18 |
| 39202111 | 20 | 0.6 | 105 | 38 | 20 |
| 39202511 | 25 | 0.6 | 120 | 45 | 25 |

Packed: 1 pc.
 Available WXL® coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | | Aluminum | | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 3915 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3920 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 3825

SI-WC-LN-RESF, Long Neck, 4 Flute, Low Helix, Corner Chamfer

SPEED FEED P1210-1211 CARBIDE WXL Var.° SHANK h6

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| D ≤ 3/8 | +0 / -0.0020" |
| D ≥ 1/2 | +0 / -0.0025" |



Units: Inch

| EDP Number | Mill Diameter | Chamfer Width | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | C | L | Lc | L1 | d2 | d |
| 38250511 | 1/4 | 0.020 | 2-1/2 | 1/2 | 1-1/4 | 0.2382 | 1/4 |
| 38251311 | 5/16 | 0.020 | 3 | 5/8 | 1-3/8 | 0.3007 | 5/16 |
| 38252111 | 3/8 | 0.020 | 3 | 3/4 | 1-1/2 | 0.3632 | 3/8 |
| 38252911 | 1/2 | 0.020 | 3-1/2 | 1 | 1-3/4 | 0.4882 | 1/2 |
| 38253711 | 5/8 | 0.030 | 4 | 1-1/4 | 2 | 0.6053 | 5/8 |
| 38254511 | 3/4 | 0.030 | 4-1/4 | 1-1/2 | 2-1/4 | 0.7264 | 3/4 |
| 38255311 | 1 | 0.030 | 5 | 2 | 2-3/4 | 0.9685 | 1 |

Packed: 1 pc.
Available WXL® coating only.



List 3830

SI-WC-LN-RESF, Long Neck, 4 Flute, High Helix, Corner Chamfer

SPEED FEED P1210-1211 CARBIDE WXL Var.° SHANK h6

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| D ≤ 3/8 | +0 / -0.0020" |
| D ≥ 1/2 | +0 / -0.0025" |



Units: Inch

| EDP Number | Mill Diameter | Chamfer Width | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | C | L | Lc | L1 | d2 | d |
| 38300611 | 1/4 | 0.020 | 2-1/2 | 1/2 | 1-1/4 | 0.2382 | 1/4 |
| 38301411 | 5/16 | 0.020 | 3 | 5/8 | 1-3/8 | 0.3007 | 5/16 |
| 38302211 | 3/8 | 0.020 | 3 | 3/4 | 1-1/2 | 0.3632 | 3/8 |
| 38303011 | 1/2 | 0.020 | 3-1/2 | 1 | 1-3/4 | 0.4882 | 1/2 |
| 38303811 | 5/8 | 0.030 | 4 | 1-1/4 | 2 | 0.6053 | 5/8 |
| 38304611 | 3/4 | 0.030 | 4-1/4 | 1-1/2 | 2-1/4 | 0.7264 | 3/4 |
| 38305411 | 1 | 0.030 | 5 | 2 | 2-3/4 | 0.9685 | 1 |

Packed: 1 pc.
Available WXL® coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 3825 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3830 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





EXOCARB® AERO ROUGHER

Carbide Rougher for Heavy Milling in Exotic Materials

List 2015

4 Flute, Regular Length, Corner Radius, Rougher

| | | | | | |
|---------------------|---------|-------|-----|-----|-------------|
| SPEED FEED P1212 | CARBIDE | TiAlN | REG | 40° | SHANK h6 |
|---------------------|---------|-------|-----|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/4 ≤ D ≤ 1 | +0 / -0.0015" |



Units: Inch

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|----------------|
| | D | R | L | Lc | d |
| 20150111 | 1/4 | 0.030 | 2 | 3/8 | 1/4 |
| 20150211 | 1/4 | 0.030 | 2-1/2 | 3/4 | 1/4 |
| 20150311 | 3/8 | 0.030 | 2 | 1/2 | 3/8 |
| 20150411 | 3/8 | 0.030 | 2-1/2 | 7/8 | 3/8 |
| 20150511 | 1/2 | 0.030 | 2-1/2 | 5/8 | 1/2 |
| 20150611 | 1/2 | 0.030 | 3 | 1-1/4 | 1/2 |
| 20150811 | 1/2 | 0.060 | 3 | 1-1/4 | 1/2 |
| 20151011 | 1/2 | 0.125 | 3 | 1-1/4 | 1/2 |
| 20151111 | 5/8 | 0.030 | 3 | 3/4 | 5/8 |
| 20151211 | 5/8 | 0.030 | 3-1/2 | 1-1/4 | 5/8 |
| 20151411 | 5/8 | 0.060 | 3-1/2 | 1-1/4 | 5/8 |
| 20151511 | 5/8 | 0.125 | 3-1/2 | 1-1/4 | 5/8 |
| 20151911 | 3/4 | 0.060 | 3-1/2 | 7/8 | 3/4 |
| 20152111 | 3/4 | 0.125 | 4 | 1-1/2 | 3/4 |
| 20152211 | 3/4 | 0.190 | 4 | 1-1/2 | 3/4 |
| 20152711 | 1 | 0.060 | 4 | 1-1/2 | 1 |
| 20152911 | 1 | 0.125 | 4 | 1-1/2 | 1 |
| 20153211 | 1 | 0.190 | 5 | 2-1/4 | 1 |

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® Carb - List HP400 (p. 975)
Want to turbo-charge performance? Try EXOCARB® AERO - List 3915 or 3920 (p. 922)

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|----------|---------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 2015 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 2100

UVX-TI-5FL, 5 Flute, Multiple Lengths

| | | | | | |
|---------------------|---------|------|--|-------|-------------|
| SPEED FEED P1213 | CARBIDE | EXO® | | Var.° | SHANK h6 |
|---------------------|---------|------|--|-------|-------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/2 ≤ D ≤ 1-1/4 | +0 / -0.002" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 21000711 | 1/2 | 2-1/2 | 5/8 | 1/2 |
| 21000811 | 1/2 | 3 | 1 | 1/2 |
| 21000911 | 1/2 | 3-1/2 | 1-1/4 | 1/2 |
| 21001011 | 1/2 | 3-1/2 | 1-5/8 | 1/2 |
| 21001111 | 5/8 | 3-1/2 | 1-1/4 | 5/8 |
| 21001211 | 5/8 | 4 | 1-7/8 | 5/8 |
| 21001311 | 3/4 | 4 | 1-1/2 | 3/4 |
| 21001411 | 3/4 | 5 | 2-1/4 | 3/4 |
| 21001511 | 1 | 4 | 1-1/2 | 1 |
| 21001611 | 1 | 6 | 3 | 1 |
| 21001711 | 1-1/4 | 4 | 1-1/2 | 1-1/4 |
| 21001811 | 1-1/4 | 6 | 3 | 1-1/4 |
| 21001911 | 1-1/4 | 7 | 4 | 1-1/4 |

Packed: 1 pc.
Available EXO® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® Carb VGx - List VG541 (p. 966)

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|---------------|--------------|------|--------------|--------------------------|--------------------------|--------------------------|---------|-----------|----------|---------|-------------------------------------|----------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 2100 | 1010 1018 | 1035 1045 | 1065 | 4140 4340 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | | | | | |

good best





EXOCARB® AERO UVX-Ti

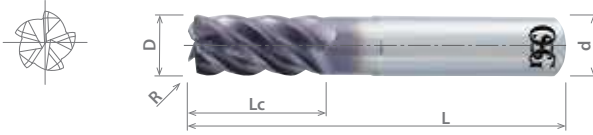
Variable Lead End Mill for Titanium Alloy

List 2106

UVX-TI-CR-5FL, 5 Flute, Multiple Lengths, Corner Radius

| | | | | | |
|----------------------------|----------------|-------------|--|--------------|--------------------|
| SPEED FEED P1213 | CARBIDE | EXO® | | Var.° | SHANK h6 |
|----------------------------|----------------|-------------|--|--------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|------------|
| 1/2 ≤ D ≤ 1-1/4 | +0/-0.002" |



Units: Inch

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|----------------|
| | D | R | L | Lc | d |
| 21062111 | 1/2 | 0.030 | 2-1/2 | 5/8 | 1/2 |
| 21062211 | 1/2 | 0.060 | 2-1/2 | 5/8 | 1/2 |
| 21062311 | 1/2 | 0.090 | 2-1/2 | 5/8 | 1/2 |
| 21062411 | 1/2 | 0.120 | 2-1/2 | 5/8 | 1/2 |
| 21062511 | 1/2 | 0.030 | 3 | 1 | 1/2 |
| 21062611 | 1/2 | 0.060 | 3 | 1 | 1/2 |
| 21062711 | 1/2 | 0.090 | 3 | 1 | 1/2 |
| 21062811 | 1/2 | 0.120 | 3 | 1 | 1/2 |
| 21062911 | 1/2 | 0.015 | 3-1/2 | 1-1/4 | 1/2 |
| 21063011 | 1/2 | 0.030 | 3-1/2 | 1-1/4 | 1/2 |
| 21063111 | 1/2 | 0.060 | 3-1/2 | 1-1/4 | 1/2 |
| 21063211 | 1/2 | 0.090 | 3-1/2 | 1-1/4 | 1/2 |
| 21063311 | 1/2 | 0.120 | 3-1/2 | 1-1/4 | 1/2 |
| 21063411 | 1/2 | 0.015 | 3-1/2 | 1-5/8 | 1/2 |
| 21063511 | 1/2 | 0.030 | 3-1/2 | 1-5/8 | 1/2 |
| 21063611 | 1/2 | 0.060 | 3-1/2 | 1-5/8 | 1/2 |
| 21063711 | 1/2 | 0.090 | 3-1/2 | 1-5/8 | 1/2 |
| 21063811 | 1/2 | 0.120 | 3-1/2 | 1-5/8 | 1/2 |
| 21063911 | 5/8 | 0.030 | 3-1/2 | 1-1/4 | 5/8 |
| 21064011 | 5/8 | 0.060 | 3-1/2 | 1-1/4 | 5/8 |
| 21064111 | 5/8 | 0.090 | 3-1/2 | 1-1/4 | 5/8 |
| 21064211 | 5/8 | 0.120 | 3-1/2 | 1-1/4 | 5/8 |
| 21064311 | 5/8 | 0.030 | 4 | 1-7/8 | 5/8 |
| 21064411 | 5/8 | 0.060 | 4 | 1-7/8 | 5/8 |
| 21064511 | 5/8 | 0.090 | 4 | 1-7/8 | 5/8 |
| 21064611 | 5/8 | 0.120 | 4 | 1-7/8 | 5/8 |
| 21064711 | 3/4 | 0.030 | 4 | 1-1/2 | 3/4 |
| 21064811 | 3/4 | 0.060 | 4 | 1-1/2 | 3/4 |
| 21064911 | 3/4 | 0.090 | 4 | 1-1/2 | 3/4 |
| 21065011 | 3/4 | 0.120 | 4 | 1-1/2 | 3/4 |
| 21065111 | 3/4 | 0.150 | 4 | 1-1/2 | 3/4 |
| 21065211 | 3/4 | 0.030 | 5 | 2-1/4 | 3/4 |
| 21065311 | 3/4 | 0.060 | 5 | 2-1/4 | 3/4 |
| 21065411 | 3/4 | 0.090 | 5 | 2-1/4 | 3/4 |
| 21065511 | 3/4 | 0.120 | 5 | 2-1/4 | 3/4 |
| 21065611 | 3/4 | 0.150 | 5 | 2-1/4 | 3/4 |
| 21065711 | 1 | 0.030 | 4 | 1-1/2 | 1 |
| 21065811 | 1 | 0.060 | 4 | 1-1/2 | 1 |
| 21065911 | 1 | 0.090 | 4 | 1-1/2 | 1 |
| 21066011 | 1 | 0.120 | 4 | 1-1/2 | 1 |
| 21066111 | 1 | 0.150 | 4 | 1-1/2 | 1 |
| 21066211 | 1 | 0.030 | 6 | 3 | 1 |
| 21066311 | 1 | 0.060 | 6 | 3 | 1 |
| 21066411 | 1 | 0.090 | 6 | 3 | 1 |
| 21066511 | 1 | 0.120 | 6 | 3 | 1 |
| 21066611 | 1 | 0.150 | 6 | 3 | 1 |
| 21066711 | 1 - 1/4 | 0.030 | 4 | 1-1/2 | 1 - 1/4 |
| 21066811 | 1 - 1/4 | 0.060 | 4 | 1-1/2 | 1 - 1/4 |
| 21066911 | 1 - 1/4 | 0.090 | 4 | 1-1/2 | 1 - 1/4 |
| 21067011 | 1 - 1/4 | 0.120 | 4 | 1-1/2 | 1 - 1/4 |
| 21067111 | 1 - 1/4 | 0.150 | 4 | 1-1/2 | 1 - 1/4 |
| 21067211 | 1 - 1/4 | 0.030 | 6 | 3 | 1 - 1/4 |
| 21067311 | 1 - 1/4 | 0.060 | 6 | 3 | 1 - 1/4 |
| 21067411 | 1 - 1/4 | 0.090 | 6 | 3 | 1 - 1/4 |
| 21067511 | 1 - 1/4 | 0.120 | 6 | 3 | 1 - 1/4 |

Packed: 1 pc.
Available EXO® coating only.





List 2106 (Continued)

UVX-TI-CR-5FL, 5 Flute, Multiple Lengths, Corner Radius

| | | | | |
|---------------------|---------|------|-------|-------------|
| SPEED FEED P1213 | CARBIDE | EXO® | Var.° | SHANK h6 |
|---------------------|---------|------|-------|-------------|

Units: Inch

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|----------------|
| | D | R | L | Lc | d |
| 21067611 | 1 - 1/4 | 0.150 | 6 | 3 | 1 - 1/4 |
| 21067711 | 1 - 1/4 | 0.030 | 7 | 4 | 1 - 1/4 |
| 21067811 | 1 - 1/4 | 0.060 | 7 | 4 | 1 - 1/4 |
| 21067911 | 1 - 1/4 | 0.090 | 7 | 4 | 1 - 1/4 |
| 21068011 | 1 - 1/4 | 0.120 | 7 | 4 | 1 - 1/4 |
| 21068111 | 1 - 1/4 | 0.150 | 7 | 4 | 1 - 1/4 |

Packed: 1 pc.
Available EXO® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® Carb VGx - List VG534 (p. 967-968)

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
|----------|---------------|------|------|--------------|------------|--------------------------|--------------------------|--------------------------|-----------|----------|---------|--------------|-------------------------------------|-----------------|-----------|-----------|-----------|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 2106 | 1010 | 1035 | 1065 | 4140 | 4340 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 7075 | | | <input checked="" type="checkbox"/> | | | | | |

good best





EXOCARB® AERO UVX-Ti

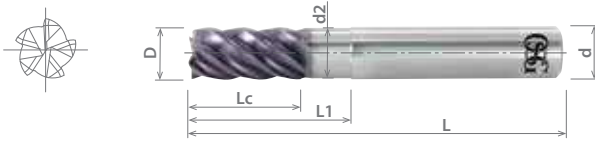
Variable Lead End Mill for Titanium Alloy

List 2104

UVX-TI-LN-5FL, 5 Flute, Regular Length, Reduced Neck, Square End

| | | | | | |
|---------------------|---------|------------------|-----|-------------------|-------------|
| SPEED FEED P1214 | CARBIDE | EXO [®] | REG | Var. [°] | SHANK h6 |
|---------------------|---------|------------------|-----|-------------------|-------------|

| Milling Diameter Tolerance | |
|----------------------------|------------|
| 12 ≤ D ≤ 25 | +0/-0.05mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | L | Lc | L1 | d2 | d |
| 8555320 | 12 | 90 | 24 | 36 | 11.5 | 12 |
| 8555360 | 16 | 100 | 32 | 48 | 15.5 | 16 |
| 8555400 | 20 | 120 | 40 | 60 | 19.5 | 20 |
| 8555450 | 25 | 140 | 50 | 75 | 24.5 | 25 |

Packed: 1 pc.
Available EXO[®] coating only.

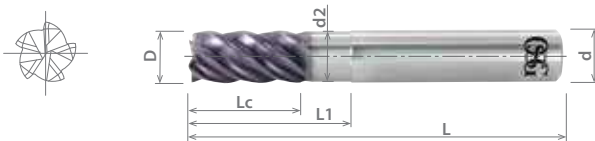


List 2102

UVX-TI-LN-5FL, 5 Flute, Regular Length, Reduced Neck, Square End

| | | | | | |
|---------------------|---------|------------------|-----|-------------------|-------------|
| SPEED FEED P1213 | CARBIDE | EXO [®] | REG | Var. [°] | SHANK h6 |
|---------------------|---------|------------------|-----|-------------------|-------------|

| Milling Diameter Tolerance | |
|----------------------------|------------|
| 1/2 ≤ D ≤ 1-1/4 | +0/-0.002" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | L | Lc | L1 | d2 | d |
| 21020011 | 1/2 | 3-1/2 | 1 | 1-1/2 | 0.480 | 1/2 |
| 21020111 | 5/8 | 4 | 1-1/4 | 1-7/8 | 0.605 | 5/8 |
| 21020211 | 3/4 | 6-1/2 | 1-1/2 | 2-1/4 | 0.730 | 3/4 |
| 21020311 | 1 | 5-1/2 | 2 | 3 | 0.980 | 1 |
| 21020411 | 1-1/4 | 6 | 2-1/2 | 3-3/4 | 1.230 | 1-1/4 |

Packed: 1 pc.
Available EXO[®] coating only.



Work Material

| List No. | P | | | | | M | | | K Cast Iron | N | | S Titanium | H | | | | | |
|----------|---------------------|----------------------|--------------|--------------|------------|------------------|-----|-----|----------------|----------|--------------|---------------|--------------|-----------------|---------|-------------------|------------|--------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | | Aluminum | | | Nickel Alloy | Hardened Steels | | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 4140 4340 | 300 | 400 | | 17-4 PH | 6061 7075 | | | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 2104 | | | | | | | | | | | | | | | | | | |
| 2102 | | | | | | | | | | | | | | | | | | |

good best





List 2108

UVX-TI-LN-CR-5FL, 5 Flute, Regular Length, Reduced Neck, Corner Radius

| | | | | | |
|---------------------|---------|-----|-----|------|-------------|
| SPEED FEED P1213 | CARBIDE | EXO | REG | Var. | SHANK h6 |
|---------------------|---------|-----|-----|------|-------------|

| Milling Diameter Tolerance | |
|----------------------------|------------|
| $1/2 \leq D \leq 1-1/4$ | +0/-0.002" |



Units: Inch

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | R | L | Lc | L1 | d2 | d |
| 21080011 | 1/2 | 0.03 | 3-1/2 | 1 | 1-1/2 | 0.480 | 1/2 |
| 21080111 | 1/2 | 0.06 | 3-1/2 | 1 | 1-1/2 | 0.480 | 1/2 |
| 21080211 | 1/2 | 0.09 | 3-1/2 | 1 | 1-1/2 | 0.480 | 1/2 |
| 21080311 | 1/2 | 0.12 | 3-1/2 | 1 | 1-1/2 | 0.480 | 1/2 |
| 21080411 | 5/8 | 0.03 | 4 | 1-1/4 | 1-7/8 | 0.605 | 5/8 |
| 21080511 | 5/8 | 0.06 | 4 | 1-1/4 | 1-7/8 | 0.605 | 5/8 |
| 21080611 | 5/8 | 0.09 | 4 | 1-1/4 | 1-7/8 | 0.605 | 5/8 |
| 21080711 | 5/8 | 0.12 | 4 | 1-1/4 | 1-7/8 | 0.605 | 5/8 |
| 21080811 | 3/4 | 0.03 | 6-1/2 | 1-1/2 | 2-1/4 | 0.730 | 3/4 |
| 21080911 | 3/4 | 0.06 | 6-1/2 | 1-1/2 | 2-1/4 | 0.730 | 3/4 |
| 21081011 | 3/4 | 0.09 | 6-1/2 | 1-1/2 | 2-1/4 | 0.730 | 3/4 |
| 21081111 | 3/4 | 0.12 | 6-1/2 | 1-1/2 | 2-1/4 | 0.730 | 3/4 |
| 21081211 | 3/4 | 0.15 | 6-1/2 | 1-1/2 | 2-1/4 | 0.730 | 3/4 |
| 21081311 | 1 | 0.03 | 5-1/2 | 2 | 3 | 0.980 | 1 |
| 21081411 | 1 | 0.06 | 5-1/2 | 2 | 3 | 0.980 | 1 |
| 21081511 | 1 | 0.09 | 5-1/2 | 2 | 3 | 0.980 | 1 |
| 21081611 | 1 | 0.12 | 5-1/2 | 2 | 3 | 0.980 | 1 |
| 21081711 | 1 | 0.15 | 5-1/2 | 2 | 3 | 0.980 | 1 |
| 21081811 | 1-1/4 | 0.03 | 6 | 2-1/2 | 3-3/4 | 1.230 | 1-1/4 |
| 21081911 | 1-1/4 | 0.06 | 6 | 2-1/2 | 3-3/4 | 1.230 | 1-1/4 |
| 21082011 | 1-1/4 | 0.09 | 6 | 2-1/2 | 3-3/4 | 1.230 | 1-1/4 |
| 21082111 | 1-1/4 | 0.12 | 6 | 2-1/2 | 3-3/4 | 1.230 | 1-1/4 |
| 21082211 | 1-1/4 | 0.15 | 6 | 2-1/2 | 3-3/4 | 1.230 | 1-1/4 |

Packed: 1 pc.
Available EXO® coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|-----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 2108 | | | | | | | | | | | | | | | | | | |

good best





EXOCARB® AERO UVX-Ti

Variable Lead End Mill for Titanium Alloy

List 2110

UVX-TI-LN-CR-5FL, 5 Flute, Regular Length, Reduced Neck, Corner Radius

| | | | | | |
|---------------------|---------|-----|-----|------|-------------|
| SPEED FEED P1214 | CARBIDE | EXO | REG | Var. | SHANK h6 |
|---------------------|---------|-----|-----|------|-------------|

| Milling Diameter Tolerance | |
|----------------------------|------------|
| 12 ≤ D ≤ 25 | +0/-0.05mm |



Units: mm

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | R | L | Lc | L1 | d2 | d |
| 8555321 | 12 | 1.0 | 90 | 24 | 36 | 11.5 | 12 |
| 8555322 | 12 | 1.5 | 90 | 24 | 36 | 11.5 | 12 |
| 8555323 | 12 | 2.0 | 90 | 24 | 36 | 11.5 | 12 |
| 8555324 | 12 | 2.5 | 90 | 24 | 36 | 11.5 | 12 |
| 8555325 | 12 | 3.0 | 90 | 24 | 36 | 11.5 | 12 |
| 8555326 | 12 | 4.0 | 90 | 24 | 36 | 11.5 | 12 |
| 8555361 | 16 | 1.0 | 100 | 32 | 48 | 15.5 | 16 |
| 8555362 | 16 | 1.5 | 100 | 32 | 48 | 15.5 | 16 |
| 8555363 | 16 | 2.0 | 100 | 32 | 48 | 15.5 | 16 |
| 8555364 | 16 | 2.5 | 100 | 32 | 48 | 15.5 | 16 |
| 8555365 | 16 | 3.0 | 100 | 32 | 48 | 15.5 | 16 |
| 8555366 | 16 | 4.0 | 100 | 32 | 48 | 15.5 | 16 |
| 8555401 | 20 | 1.0 | 120 | 40 | 60 | 19.5 | 20 |
| 8555402 | 20 | 1.5 | 120 | 40 | 60 | 19.5 | 20 |
| 8555403 | 20 | 2.0 | 120 | 40 | 60 | 19.5 | 20 |
| 8555404 | 20 | 2.5 | 120 | 40 | 60 | 19.5 | 20 |
| 8555405 | 20 | 3.0 | 120 | 40 | 60 | 19.5 | 20 |
| 8555406 | 20 | 4.0 | 120 | 40 | 60 | 19.5 | 20 |
| 8555407 | 20 | 5.0 | 120 | 40 | 60 | 19.5 | 20 |

Packed: 1 pc.
Available EXO® coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|---------------|--------------|------|--------------|--------------------------|--------------------------|--------------------------|---------|-----------|-----------|---------|-------------------------------------|----------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 2110 | 1010 1018 | 1035 1045 | 1065 | 4140 4340 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | | | | | |

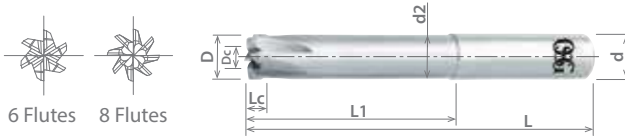
good best





List 2080

HFC-Ti, 6 & 8 Flute



| | | | | |
|----------------------------|----------------|-----------|--|--------------------|
| SPEED FEED P1215 | CARBIDE | BR | | SHANK h6 |
|----------------------------|----------------|-----------|--|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 5/8 ≤ D ≤ 1 | +0 / -0.002" |

Units: Inch

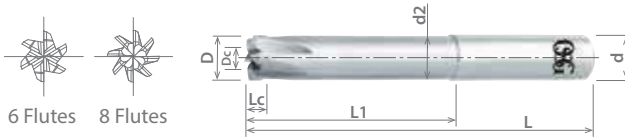
| EDP Number | Mill Diameter | Effective Diameter | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter | No. of Flutes |
|------------|---------------|--------------------|----------------|---------------|-------------|---------------|----------------|---------------|
| | D | Dc | L | Lc | L1 | d2 | d | |
| 20806250 | 5/8 | 0.304 | 4.72 | 0.197 | 2.76 | 0.586 | 5/8 | 6 |
| 20807500 | 3/4 | 0.365 | 4.72 | 0.197 | 2.76 | 0.711 | 3/4 | 8 |
| 20801000 | 1 | 0.486 | 4.72 | 0.197 | 2.76 | 0.961 | 1 | 8 |

Packed: 1 pc.
Available Bright only.



List 2081

HFC-Ti, 6 & 8 Flute



| | | | | |
|----------------------------|----------------|-----------|--|--------------------|
| SPEED FEED P1215 | CARBIDE | BR | | SHANK h6 |
|----------------------------|----------------|-----------|--|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 16 ≤ D ≤ 25 | +0 / -0.05mm |

Units: mm

| EDP Number | Mill Diameter | Effective Diameter | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter | No. of Flutes |
|------------|---------------|--------------------|----------------|---------------|-------------|---------------|----------------|---------------|
| | D | Dc | L | Lc | L1 | d2 | d | |
| 8555716 | 16 | 7.77 | 120 | 5 | 70 | 15 | 16 | 6 |
| 8555720 | 20 | 9.72 | 120 | 5 | 70 | 19 | 20 | 8 |
| 8555725 | 25 | 12.15 | 120 | 5 | 70 | 24 | 25 | 8 |

Packed: 1 pc.
Available Bright only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|---|-----------|---------|--------------------------|--------------|----------|-----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | | Aluminum | | | Nickel Alloy | Titanium | Hardened Steels | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | | | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 2080 | | | | | | | | | | | | <input type="checkbox"/> | | | | | |
| 2081 | | | | | | | | | | | | <input type="checkbox"/> | | | | | |

good best





EXOCARB® AERO DLC

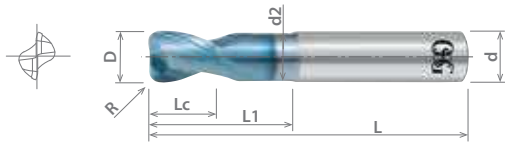
High Speed Carbide End Mills for Aluminum Alloy

List 2863

AERO-EDS, 2 Flute, Stub Length, Corner Radius

| | | | | | | |
|---------------------|---------|-----|--|------|-----|-------------|
| SPEED FEED P1216 | CARBIDE | DLC | | STUB | 25° | SHANK h6 |
|---------------------|---------|-----|--|------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/2 ≤ D ≤ 1 | +0 / -0.0012" |



Units: Inch

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | R | L | Lc | L1 | d2 | d |
| 28630000 | 1/2 | 0.030 | 4 | 3/4 | 2.205 | 0.461 | 1/2 |
| 28630100 | 1/2 | 0.060 | 4 | 3/4 | 2.205 | 0.461 | 1/2 |
| 28630200 | 1/2 | 0.090 | 4 | 3/4 | 2.205 | 0.461 | 1/2 |
| 28630400 | 1/2 | 0.120 | 4 | 3/4 | 2.205 | 0.461 | 1/2 |
| 28630600 | 5/8 | 0.030 | 4 | 1 | 2.205 | 0.559 | 5/8 |
| 28630700 | 5/8 | 0.060 | 4 | 1 | 2.205 | 0.559 | 5/8 |
| 28630800 | 5/8 | 0.090 | 4 | 1 | 2.205 | 0.559 | 5/8 |
| 28630900 | 5/8 | 0.120 | 4 | 1 | 2.205 | 0.559 | 5/8 |
| 28631000 | 5/8 | 0.190 | 4 | 1 | 2.205 | 0.559 | 5/8 |
| 28631200 | 3/4 | 0.030 | 4 | 1-1/8 | 2.205 | 0.669 | 3/4 |
| 28631300 | 3/4 | 0.060 | 4 | 1-1/8 | 2.205 | 0.669 | 3/4 |
| 28631400 | 3/4 | 0.090 | 4 | 1-1/8 | 2.205 | 0.669 | 3/4 |
| 28631500 | 3/4 | 0.120 | 4 | 1-1/8 | 2.205 | 0.669 | 3/4 |
| 28631600 | 3/4 | 0.190 | 4 | 1-1/8 | 2.205 | 0.669 | 3/4 |
| 28631800 | 7/8 | 0.030 | 4 | 1-5/16 | 2.205 | 0.787 | 7/8 |
| 28631900 | 7/8 | 0.060 | 4 | 1-5/16 | 2.205 | 0.787 | 7/8 |
| 28632000 | 7/8 | 0.090 | 4 | 1-5/16 | 2.205 | 0.787 | 7/8 |
| 28632100 | 7/8 | 0.120 | 4 | 1-5/16 | 2.205 | 0.787 | 7/8 |
| 28632200 | 7/8 | 0.190 | 4 | 1-5/16 | 2.205 | 0.787 | 7/8 |
| 28632400 | 1 | 0.030 | 4 | 1-1/2 | 2.205 | 0.921 | 1 |
| 28632500 | 1 | 0.060 | 4 | 1-1/2 | 2.205 | 0.921 | 1 |
| 28632600 | 1 | 0.090 | 4 | 1-1/2 | 2.205 | 0.921 | 1 |
| 28632700 | 1 | 0.120 | 4 | 1-1/2 | 2.205 | 0.921 | 1 |
| 28632800 | 1 | 0.190 | 4 | 1-1/2 | 2.205 | 0.921 | 1 |

Packed: 1 pc.
Available DLC coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try EXOCARB® AERO - List 2021 (p. 942)

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|-------------------------------------|-------------------------------------|----------------|--------------|----------|-----------------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | | Aluminum | | | Nickel Alloy | Titanium | Hardened Steels | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | | | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 2863 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |

good best



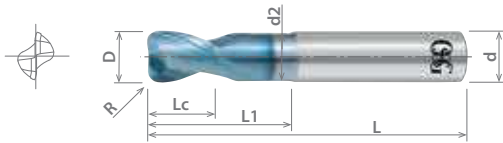


List 2963

AERO-EDS, 2 Flute, Stub Length, Corner Radius

| | | | | | | |
|----------------------------|----------------|------------|--|-------------|--|--------------------|
| SPEED FEED P1216 | CARBIDE | DLC | | STUB | | SHANK h6 |
|----------------------------|----------------|------------|--|-------------|--|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 12 ≤ D ≤ 25 | +0 / -0.03mm |



Units: mm

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | R | L | Lc | L1 | d2 | d |
| 8528822 | 12 | 1.0 | 90 | 14 | 40 | 11.0 | 12 |
| 8528823 | 12 | 1.6 | 90 | 14 | 40 | 11.0 | 12 |
| 8528826 | 12 | 3.0 | 90 | 14 | 40 | 11.0 | 12 |
| 8528862 | 16 | 1.0 | 100 | 18 | 45 | 14.4 | 16 |
| 8528863 | 16 | 1.6 | 100 | 18 | 45 | 14.4 | 16 |
| 8528866 | 16 | 3.0 | 100 | 18 | 45 | 14.4 | 16 |
| 8528902 | 20 | 1.0 | 110 | 22 | 56 | 18.0 | 20 |
| 8528903 | 20 | 1.6 | 110 | 22 | 56 | 18.0 | 20 |
| 8528906 | 20 | 3.0 | 110 | 22 | 56 | 18.0 | 20 |
| 8528952 | 25 | 1.0 | 110 | 27 | 56 | 23.0 | 25 |
| 8528953 | 25 | 1.6 | 110 | 27 | 56 | 23.0 | 25 |
| 8528956 | 25 | 3.0 | 110 | 27 | 56 | 23.0 | 25 |

Packed: 1 pc.
Available DLC coating only.



Work Material

| List No. | P | | | | Die Steels | M | | | K | N | | S | | H | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|---|-------------------------------------|-------------------------------------|---------|--------------|----------|-----------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 2963 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |

good best





EXOCARB® AERO DLC-CR

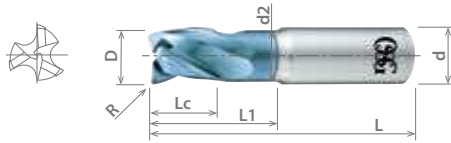
High Speed Carbide End Mills for Aluminum Alloy

List 2873

AERO-ETS, 3 Flute, Stub Length, Square & Corner Radius

| | | | | | |
|---------------------|---------|-----|------|-----|-------------|
| SPEED FEED P1217 | CARBIDE | DLC | STUB | 30° | SHANK h6 |
|---------------------|---------|-----|------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/2 ≤ D ≤ 1 | +0 / -0.0008" |



Units: Inch

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | R | L | Lc | L1 | d2 | d |
| 28730050 | 1/2 | - | 4 | 3/4 | 2.205 | 0.461 | 1/2 |
| 28730000 | 1/2 | 0.030 | 4 | 3/4 | 2.205 | 0.461 | 1/2 |
| 28730100 | 1/2 | 0.060 | 4 | 3/4 | 2.205 | 0.461 | 1/2 |
| 28730200 | 1/2 | 0.090 | 4 | 3/4 | 2.205 | 0.461 | 1/2 |
| 28730300 | 1/2 | 0.120 | 4 | 3/4 | 2.205 | 0.461 | 1/2 |
| 28731050 | 5/8 | - | 4 | 1 | 2.205 | 0.559 | 5/8 |
| 28731000 | 5/8 | 0.030 | 4 | 1 | 2.205 | 0.559 | 5/8 |
| 28731100 | 5/8 | 0.060 | 4 | 1 | 2.205 | 0.559 | 5/8 |
| 28731200 | 5/8 | 0.090 | 4 | 1 | 2.205 | 0.559 | 5/8 |
| 28731300 | 5/8 | 0.120 | 4 | 1 | 2.205 | 0.559 | 5/8 |
| 28731400 | 5/8 | 0.190 | 4 | 1 | 2.205 | 0.559 | 5/8 |
| 28732050 | 3/4 | - | 4 | 1-1/8 | 2.205 | 0.669 | 3/4 |
| 28732100 | 3/4 | 0.030 | 4 | 1-1/8 | 2.205 | 0.669 | 3/4 |
| 28732200 | 3/4 | 0.060 | 4 | 1-1/8 | 2.205 | 0.669 | 3/4 |
| 28732300 | 3/4 | 0.090 | 4 | 1-1/8 | 2.205 | 0.669 | 3/4 |
| 28732400 | 3/4 | 0.120 | 4 | 1-1/8 | 2.205 | 0.669 | 3/4 |
| 28732500 | 3/4 | 0.190 | 4 | 1-1/8 | 2.205 | 0.669 | 3/4 |
| 28734050 | 7/8 | - | 4 | 1-5/16 | 2.205 | 0.787 | 7/8 |
| 28734400 | 7/8 | 0.030 | 4 | 1-5/16 | 2.205 | 0.787 | 7/8 |
| 28734500 | 7/8 | 0.060 | 4 | 1-5/16 | 2.205 | 0.787 | 7/8 |
| 28734600 | 7/8 | 0.090 | 4 | 1-5/16 | 2.205 | 0.787 | 7/8 |
| 28734700 | 7/8 | 0.120 | 4 | 1-5/16 | 2.205 | 0.787 | 7/8 |
| 28734800 | 7/8 | 0.190 | 4 | 1-5/16 | 2.205 | 0.787 | 7/8 |
| 28735050 | 1 | - | 4 | 1-1/2 | 2.205 | 0.921 | 1 |
| 28735500 | 1 | 0.030 | 4 | 1-1/2 | 2.205 | 0.921 | 1 |
| 28735600 | 1 | 0.060 | 4 | 1-1/2 | 2.205 | 0.921 | 1 |
| 28735700 | 1 | 0.090 | 4 | 1-1/2 | 2.205 | 0.921 | 1 |
| 28735800 | 1 | 0.120 | 4 | 1-1/2 | 2.205 | 0.921 | 1 |
| 28735900 | 1 | 0.190 | 4 | 1-1/2 | 2.205 | 0.921 | 1 |

Packed: 1 pc.
Available DLC coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try EXOCARB® AERO - List 2041 (p. 946)

Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | | |
|----------|---------------------|----------------------|--------------|--------------|------------|------------------|-----|---------|-------------------------------------|-------------------------------------|---------|--------------|-------------------|-----------------|--------------|--------------|--------------|--|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 2873 | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | | |

good best



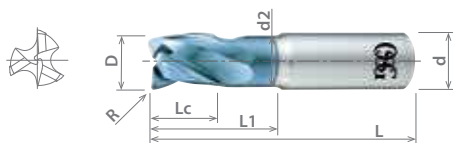


List 2973

AERO-ETS, 3 Flute, Stub Length, Square & Corner Radius

| | | | | | | |
|---------------------|---------|-----|--|------|-----|-------------|
| SPEED FEED P1217 | CARBIDE | DLC | | STUB | 30° | SHANK h6 |
|---------------------|---------|-----|--|------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 12 ≤ D ≤ 25 | +0 / -0.02mm |



Units: mm

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | R | L | Lc | L1 | d2 | d |
| 8533249 | 12 | - | 100 | 18 | 55 | 11.0 | 12 |
| 8533250 | 12 | 1.0 | 100 | 18 | 55 | 11.0 | 12 |
| 8533251 | 12 | 1.6 | 100 | 18 | 55 | 11.0 | 12 |
| 8533252 | 12 | 3.0 | 100 | 18 | 55 | 11.0 | 12 |
| 8533253 | 16 | - | 100 | 24 | 55 | 14.4 | 16 |
| 8533254 | 16 | 1.0 | 100 | 24 | 55 | 14.4 | 16 |
| 8533255 | 16 | 1.6 | 100 | 24 | 55 | 14.4 | 16 |
| 8533256 | 16 | 3.0 | 100 | 24 | 55 | 14.4 | 16 |
| 8533257 | 16 | 4.0 | 100 | 24 | 55 | 14.4 | 16 |
| 8533258 | 16 | 5.0 | 100 | 24 | 55 | 14.4 | 16 |
| 8533259 | 20 | - | 100 | 30 | 55 | 18.0 | 20 |
| 8533260 | 20 | 1.0 | 100 | 30 | 55 | 18.0 | 20 |
| 8533261 | 20 | 1.6 | 100 | 30 | 55 | 18.0 | 20 |
| 8533262 | 20 | 3.0 | 100 | 30 | 55 | 18.0 | 20 |
| 8533263 | 20 | 4.0 | 100 | 30 | 55 | 18.0 | 20 |
| 8533264 | 20 | 5.0 | 100 | 30 | 55 | 18.0 | 20 |
| 8533265 | 25 | - | 100 | 37.5 | 55 | 23.0 | 25 |
| 8533266 | 25 | 1.0 | 100 | 37.5 | 55 | 23.0 | 25 |
| 8533267 | 25 | 1.6 | 100 | 37.5 | 55 | 23.0 | 25 |
| 8533268 | 25 | 3.0 | 100 | 37.5 | 55 | 23.0 | 25 |
| 8533269 | 25 | 4.0 | 100 | 37.5 | 55 | 23.0 | 25 |
| 8533270 | 25 | 5.0 | 100 | 37.5 | 55 | 23.0 | 25 |

Packed: 1 pc.
Available DLC coating only.



| Work Material | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|--------------|------------|------------------|------|-----|-------------------------------------|-------------------------------------|-----------|------|--------------|----------|-----------------|---------|
| List No. | P | | | | | M | | | K | N | | S | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | | Aluminum | | | Nickel Alloy | Titanium | Hardened Steels | |
| | | Low | Med. | | | High | 4140 | 300 | 400 | 17-4 PH | Cast Iron | 6061 | | | Casting | Inconel |
| | 1010 | 1035 | 1065 | 4340 | 7075 | | | | | | | | | | | |
| 2973 | 1018 | 1045 | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |

good best





EXOCARB® AERO DLC-CR-OIL

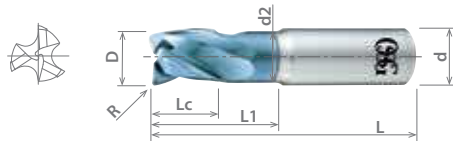
High Speed Coolant-Through End Mills for Aluminum Alloy

List 2874

AERO-O-ETS, 3 Flute, Stub Length, Coolant-Through, Square & Corner Radius

| | | | | | | | |
|---------------------|---------|-----|--|------|--|-----|-------------|
| SPEED FEED P1217 | CARBIDE | DLC | | STUB | | 30° | SHANK h6 |
|---------------------|---------|-----|--|------|--|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 5/8 ≤ D ≤ 1 | +0 / -0.0008" |



Units: Inch

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | R | L | Lc | L1 | d2 | d |
| 28740050 | 5/8 | - | 4 | 1.016 | 2.205 | 0.559 | 5/8 |
| 28741550 | 3/4 | - | 4 | 1.142 | 2.205 | 0.669 | 3/4 |
| 28740000 | 3/4 | 0.030 | 4 | 1.142 | 2.205 | 0.669 | 3/4 |
| 28740500 | 3/4 | 0.060 | 4 | 1.142 | 2.205 | 0.669 | 3/4 |
| 28741000 | 3/4 | 0.090 | 4 | 1.142 | 2.205 | 0.669 | 3/4 |
| 28741500 | 3/4 | 0.120 | 4 | 1.142 | 2.205 | 0.669 | 3/4 |
| 28742000 | 3/4 | 0.190 | 4 | 1.142 | 2.205 | 0.669 | 3/4 |
| 28741050 | 7/8 | - | 4 | 1.327 | 2.205 | 0.787 | 7/8 |
| 28740550 | 1 | - | 4 | 1.523 | 2.205 | 0.921 | 1 |
| 28742500 | 1 | 0.030 | 4 | 1.523 | 2.205 | 0.921 | 1 |
| 28743000 | 1 | 0.060 | 4 | 1.523 | 2.205 | 0.921 | 1 |
| 28743500 | 1 | 0.090 | 4 | 1.523 | 2.205 | 0.921 | 1 |
| 28744000 | 1 | 0.120 | 4 | 1.523 | 2.205 | 0.921 | 1 |
| 28744500 | 1 | 0.190 | 4 | 1.523 | 2.205 | 0.921 | 1 |

Packed: 1 pc.
Available DLC coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try EXOCARB® AERO - List 2041 (p. 946)

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-----------|-------------------------------------|-------------------------------------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 2874 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |

good best



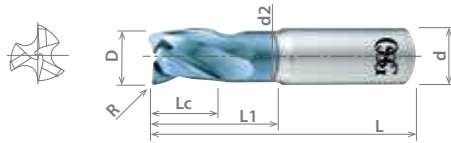


List 2974

AERO-O-ETS, 3 Flute, Stub Length, Coolant-Through, Square & Corner Radius

| | | | | | | | |
|----------------------------|----------------|------------|--|-------------|--|------------|--------------------|
| SPEED FEED P1218 | CARBIDE | DLC | | STUB | | 30° | SHANK h6 |
|----------------------------|----------------|------------|--|-------------|--|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 20 ≤ D ≤ 25 | +0 / -0.02mm |



Units: mm

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | R | L | Lc | L1 | d2 | d |
| 8533300 | 20 | - | 100 | 30.0 | 55 | 18 | 20 |
| 8533301 | 20 | 1.0 | 100 | 30.0 | 55 | 18 | 20 |
| 8533302 | 20 | 1.6 | 100 | 30.0 | 55 | 18 | 20 |
| 8533303 | 20 | 3.0 | 100 | 30.0 | 55 | 18 | 20 |
| 8533304 | 20 | 4.0 | 100 | 30.0 | 55 | 18 | 20 |
| 8533305 | 20 | 5.0 | 100 | 30.0 | 55 | 18 | 20 |
| 8533306 | 25 | - | 100 | 37.5 | 55 | 23 | 25 |
| 8533307 | 25 | 1.0 | 100 | 37.5 | 55 | 23 | 25 |
| 8533308 | 25 | 1.6 | 100 | 37.5 | 55 | 23 | 25 |
| 8533309 | 25 | 3.0 | 100 | 37.5 | 55 | 23 | 25 |
| 8533310 | 25 | 4.0 | 100 | 37.5 | 55 | 23 | 25 |
| 8533311 | 25 | 5.0 | 100 | 37.5 | 55 | 23 | 25 |

Packed: 1 pc.
Available DLC coating only.



Work Material

| List No. | P | | | | M | | | K | N | | S | H | | | | | |
|----------|---------------|--------------|------|--------------|------------|------------------|-----|---------|-----------|-----------|---------|--------------|----------|-----------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 2974 | 1010 1018 | 1035 1045 | 1065 | 4140 4340 | | | | | | | | | | | | | |

good best





EXOCARB® AERO DLC

High Speed Carbide End Mills for Aluminum Alloy

List 2843

AERO-ETL, 3 Flute, Long Length, Square & Corner Radius

| | | | | | |
|---------------------|---------|-----|------|-----|-------------|
| SPEED FEED P1218 | CARBIDE | DLC | LONG | 35° | SHANK h6 |
|---------------------|---------|-----|------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/2 ≤ D ≤ 1 | +0 / -0.0008" |



Units: Inch

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|----------------|
| | D | R | L | Lc | d |
| 28430000 | 1/2 | - | 4-1/2 | 2.024 | 1/2 |
| 28430400 | 1/2 | 0.030 | 4-1/2 | 2.024 | 1/2 |
| 28430550 | 1/2 | 0.060 | 4-1/2 | 2.024 | 1/2 |
| 28430600 | 1/2 | 0.090 | 4-1/2 | 2.024 | 1/2 |
| 28430700 | 1/2 | 0.120 | 4-1/2 | 2.024 | 1/2 |
| 28430800 | 1/2 | 0.150 | 4-1/2 | 2.024 | 1/2 |
| 28430900 | 1/2 | 0.190 | 4-1/2 | 2.024 | 1/2 |
| 28431000 | 5/8 | - | 4-1/2 | 2.024 | 5/8 |
| 28431550 | 5/8 | 0.030 | 4-1/2 | 2.024 | 5/8 |
| 28431600 | 5/8 | 0.060 | 4-1/2 | 2.024 | 5/8 |
| 28431700 | 5/8 | 0.090 | 4-1/2 | 2.024 | 5/8 |
| 28431800 | 5/8 | 0.120 | 4-1/2 | 2.024 | 5/8 |
| 28431900 | 5/8 | 0.150 | 4-1/2 | 2.024 | 5/8 |
| 28432050 | 5/8 | 0.190 | 4-1/2 | 2.024 | 5/8 |
| 28432000 | 3/4 | - | 4-1/2 | 2.024 | 3/4 |
| 28432600 | 3/4 | 0.030 | 4-1/2 | 2.024 | 3/4 |
| 28432700 | 3/4 | 0.060 | 4-1/2 | 2.024 | 3/4 |
| 28432800 | 3/4 | 0.090 | 4-1/2 | 2.024 | 3/4 |
| 28432900 | 3/4 | 0.120 | 4-1/2 | 2.024 | 3/4 |
| 28433050 | 3/4 | 0.150 | 4-1/2 | 2.024 | 3/4 |
| 28433100 | 3/4 | 0.190 | 4-1/2 | 2.024 | 3/4 |
| 28433500 | 7/8 | - | 4-1/2 | 2.024 | 7/8 |
| 28433800 | 7/8 | 0.030 | 4-1/2 | 2.024 | 7/8 |
| 28433900 | 7/8 | 0.060 | 4-1/2 | 2.024 | 7/8 |
| 28434050 | 7/8 | 0.090 | 4-1/2 | 2.024 | 7/8 |
| 28434100 | 7/8 | 0.120 | 4-1/2 | 2.024 | 7/8 |
| 28434200 | 7/8 | 0.150 | 4-1/2 | 2.024 | 7/8 |
| 28434300 | 7/8 | 0.190 | 4-1/2 | 2.024 | 7/8 |
| 28434500 | 1 | - | 4-1/2 | 2.024 | 1 |
| 28434900 | 1 | 0.030 | 4-1/2 | 2.024 | 1 |
| 28435050 | 1 | 0.030 | 4-1/2 | 2.024 | 1 |
| 28435100 | 1 | 0.090 | 4-1/2 | 2.024 | 1 |
| 28435200 | 1 | 0.120 | 4-1/2 | 2.024 | 1 |
| 28435300 | 1 | 0.150 | 4-1/2 | 2.024 | 1 |
| 28435400 | 1 | 0.190 | 4-1/2 | 2.024 | 1 |

Packed: 1 pc.
Available DLC coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try EXOCARB® AERO - List 2042 (p. 947)

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|---------------|--------------|------|--------------|------------|------------------|-----|---------|-----------|-------------------------------------|-------------------------------------|--------------|----------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 2843 | 1010 1018 | 1035 1045 | 1065 | 4140 4340 | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |

good best





List 2943

AERO-ETL, 3 Flute, Long Length, Square & Corner Radius

| | | | | | |
|---------------------|---------|-----|------|-----|-------------|
| SPEED FEED P1218 | CARBIDE | DLC | LONG | 35° | SHANK h6 |
|---------------------|---------|-----|------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 12 ≤ D ≤ 20 | +0 / -0.02mm |



Units: mm

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|----------------|
| | D | R | L | Lc | d |
| 8533350 | 12 | - | 110 | 50 | 12 |
| 8533351 | 12 | 1.0 | 110 | 50 | 12 |
| 8533352 | 12 | 1.6 | 110 | 50 | 12 |
| 8533353 | 12 | 3.0 | 110 | 50 | 12 |
| 8533354 | 12 | 4.0 | 110 | 50 | 12 |
| 8533355 | 16 | - | 110 | 50 | 16 |
| 8533356 | 16 | 1.0 | 110 | 50 | 16 |
| 8533357 | 16 | 1.6 | 110 | 50 | 16 |
| 8533358 | 16 | 3.0 | 110 | 50 | 16 |
| 8533359 | 16 | 4.0 | 110 | 50 | 16 |
| 8533360 | 16 | 5.0 | 110 | 50 | 16 |
| 8533361 | 20 | - | 110 | 50 | 20 |
| 8533362 | 20 | 1.0 | 110 | 50 | 20 |
| 8533363 | 20 | 1.6 | 110 | 50 | 20 |
| 8533364 | 20 | 3.0 | 110 | 50 | 20 |
| 8533365 | 20 | 4.0 | 110 | 50 | 20 |
| 8533366 | 20 | 5.0 | 110 | 50 | 20 |

Packed: 1 pc.
Available DLC coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | | | | | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|----------|---------|--------------|----------|-----------------|---------|-----------|-----------|-----------|--|--|--|--|--|--|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | | | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | | | | | | |
| 2943 | 1010 | 1035 | 1065 | 4140 | | | | | | 6061 | | | | | | | | | | | | | | | |

good best





EXOCARB® AERO DLC

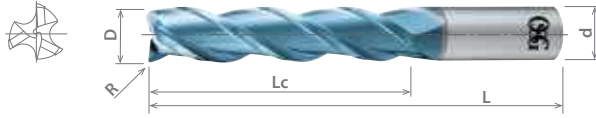
High Speed Carbide End Mills for Aluminum Alloy

List 2853

AERO-ETXL, 3 Flute, Extra Long Length, Square & Corner Radius

| | | | | | |
|---------------------|---------|-----|------------|-----|-------------|
| SPEED FEED P1219 | CARBIDE | DLC | EXTRA LONG | 35° | SHANK h6 |
|---------------------|---------|-----|------------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 3/4 ≤ D ≤ 1 | +0 / -0.0008" |



Units: Inch

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|----------------|
| | D | R | L | Lc | d |
| 28530000 | 3/4 | - | 6-1/2 | 4 | 3/4 |
| 28530100 | 3/4 | 0.030 | 6-1/2 | 4 | 3/4 |
| 28530200 | 3/4 | 0.060 | 6-1/2 | 4 | 3/4 |
| 28530300 | 3/4 | 0.090 | 6-1/2 | 4 | 3/4 |
| 28530400 | 3/4 | 0.120 | 6-1/2 | 4 | 3/4 |
| 28530500 | 3/4 | 0.150 | 6-1/2 | 4 | 3/4 |
| 28530600 | 3/4 | 0.190 | 6-1/2 | 4 | 3/4 |

Packed: 1 pc.
Available DLC coating only.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|----------|---------------|--------------|------|--------------|------------|------------------|-----|---------|----------------|-------------------------------------|-------------------------------------|--------------|----------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 2853 | 1010 1018 | 1035 1045 | 1065 | 4140 4340 | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |

good best



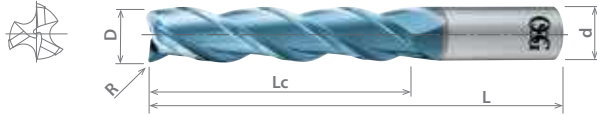


List 2953

AERO-ETXL, 3 Flute, Extra Long Length, Square & Corner Radius

| | | | | | | |
|----------------------------|----------------|------------|--|-------------------|------------|--------------------|
| SPEED FEED P1219 | CARBIDE | DLC | | EXTRA LONG | 35° | SHANK h6 |
|----------------------------|----------------|------------|--|-------------------|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 3/4 ≤ D ≤ 1 | +0 / -0.0008" |



Units: mm

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|----------------|
| | D | R | L | Lc | d |
| 8533400 | 20 | - | 160 | 100 | 20 |
| 8533401 | 20 | 1.0 | 160 | 100 | 20 |
| 8533402 | 20 | 1.6 | 160 | 100 | 20 |
| 8533403 | 20 | 3.0 | 160 | 100 | 20 |
| 8533404 | 20 | 4.0 | 160 | 100 | 20 |
| 8533405 | 20 | 5.0 | 160 | 100 | 20 |

Packed: 1 pc.
Available DLC coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|---------------|--------------|------|--------------|------------|------------------|-----|---------|-----------|-------------------------------------|-------------------------------------|--------------|----------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 2953 | 1010 1018 | 1035 1045 | 1065 | 4140 4340 | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |

good best



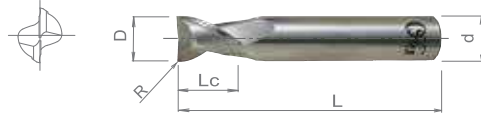


List 2021

2 Flute, Stub Length, Square & Corner Radius

| | | | | | | |
|---------------------|---------|----|--|------|-----|-------------|
| SPEED FEED P1220 | CARBIDE | BR | | STUB | 30° | SHANK h6 |
|---------------------|---------|----|--|------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/8 ≤ D ≤ 1 | +0 / -0.002" |



Units: Inch

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|----------------|
| | D | R | L | Lc | d |
| 20210100 | 1/8 | - | 1-1/2 | 1/4 | 1/8 |
| 20210200 | 1/8 | 0.01 | 1-1/2 | 1/4 | 1/8 |
| 20210500 | 5/32 | - | 2 | 5/16 | 3/16 |
| 20210600 | 5/32 | 0.02 | 2 | 5/16 | 3/16 |
| 20210900 | 3/16 | - | 2 | 5/16 | 3/16 |
| 20211000 | 3/16 | 0.02 | 2 | 5/16 | 3/16 |
| 20211300 | 7/32 | - | 2-1/2 | 3/8 | 1/4 |
| 20211400 | 7/32 | 0.02 | 2-1/2 | 3/8 | 1/4 |
| 20211700 | 1/4 | - | 2-1/2 | 3/8 | 1/4 |
| 20211800 | 1/4 | 0.02 | 2-1/2 | 3/8 | 1/4 |
| 20211900 | 1/4 | 0.03 | 2-1/2 | 3/8 | 1/4 |
| 20212000 | 1/4 | 0.06 | 2-1/2 | 3/8 | 1/4 |
| 20212100 | 9/32 | - | 2-1/2 | 7/16 | 5/16 |
| 20212500 | 5/16 | - | 2-1/2 | 7/16 | 5/16 |
| 20212600 | 5/16 | 0.02 | 2-1/2 | 7/16 | 5/16 |
| 20212700 | 5/16 | 0.03 | 2-1/2 | 7/16 | 5/16 |
| 20212900 | 11/32 | - | 2-1/2 | 1/2 | 3/8 |
| 20213000 | 11/32 | 0.02 | 2-1/2 | 1/2 | 3/8 |
| 20213300 | 3/8 | - | 2-1/2 | 1/2 | 3/8 |
| 20213400 | 3/8 | 0.02 | 2-1/2 | 1/2 | 3/8 |
| 20213500 | 3/8 | 0.03 | 2-1/2 | 1/2 | 3/8 |

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|----------------|
| | D | R | L | Lc | d |
| 20213600 | 3/8 | 0.06 | 2-1/2 | 1/2 | 3/8 |
| 20213700 | 13/32 | - | 2-3/4 | 9/16 | 7/16 |
| 20214100 | 7/16 | - | 2-3/4 | 9/16 | 7/16 |
| 20214200 | 7/16 | 0.02 | 2-3/4 | 9/16 | 7/16 |
| 20214500 | 15/32 | - | 3 | 5/8 | 1/2 |
| 20214900 | 1/2 | - | 3 | 5/8 | 1/2 |
| 20215000 | 1/2 | 0.02 | 3 | 5/8 | 1/2 |
| 20215100 | 1/2 | 0.03 | 3 | 5/8 | 1/2 |
| 20215200 | 1/2 | 0.06 | 3 | 5/8 | 1/2 |
| 20215300 | 5/8 | - | 3-1/2 | 3/4 | 5/8 |
| 20215400 | 5/8 | 0.03 | 3-1/2 | 3/4 | 5/8 |
| 20215500 | 5/8 | 0.06 | 3-1/2 | 3/4 | 5/8 |
| 20215600 | 5/8 | 0.09 | 3-1/2 | 3/4 | 5/8 |
| 20215700 | 3/4 | - | 4 | 1 | 3/4 |
| 20215800 | 3/4 | 0.06 | 4 | 1 | 3/4 |
| 20215900 | 3/4 | 0.09 | 4 | 1 | 3/4 |
| 20216000 | 3/4 | 0.12 | 4 | 1 | 3/4 |
| 20216100 | 1 | - | 4 | 1-1/4 | 1 |
| 20216200 | 1 | 0.06 | 4 | 1-1/4 | 1 |
| 20216300 | 1 | 0.09 | 4 | 1-1/4 | 1 |
| 20216400 | 1 | 0.12 | 4 | 1-1/4 | 1 |

Packed: 1 pc.
 EDPs above are stocked standard, DLC coating available upon request.
 Additional corner radii available upon request.



OSG's Performance & Savings

Don't require ultra-high performance? Try CARBIDE - List 412 or 495 (p. 998-999 or 1004)
 Want to turbo-charge performance? Try EXOCARB® DIAMOND - List 7020 (p. 910)

| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|-------------------------------------|-------------------------------------|--------------|----------------|-----------------|-----------|-----------|-----------|--|
| | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 2021 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |

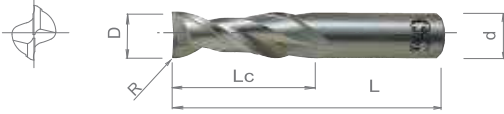
good best





List 2022

2 Flute, Regular Length, Square & Corner Radius



| | | | | | |
|---------------------|---------|----|-----|-----|-------------|
| SPEED FEED P1220 | CARBIDE | BR | REG | 30° | SHANK h6 |
|---------------------|---------|----|-----|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/8 ≤ D ≤ 1 | +0 / -0.002" |

Units: Inch

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|----------------|
| | D | R | L | Lc | d |
| 20220100 | 1/8 | - | 1-1/2 | 3/8 | 1/8 |
| 20220200 | 1/8 | 0.01 | 1-1/2 | 3/8 | 1/8 |
| 20220500 | 5/32 | - | 2 | 9/16 | 3/16 |
| 20220600 | 5/32 | 0.02 | 2 | 9/16 | 3/16 |
| 20220900 | 3/16 | - | 2 | 9/16 | 3/16 |
| 20221000 | 3/16 | 0.02 | 2 | 9/16 | 3/16 |
| 20221300 | 7/32 | - | 2-1/2 | 3/4 | 1/4 |
| 20221400 | 7/32 | 0.02 | 2-1/2 | 3/4 | 1/4 |
| 20221700 | 1/4 | - | 2-1/2 | 3/4 | 1/4 |
| 20221800 | 1/4 | 0.02 | 2-1/2 | 3/4 | 1/4 |
| 20221900 | 1/4 | 0.03 | 2-1/2 | 3/4 | 1/4 |
| 20222000 | 1/4 | 0.06 | 2-1/2 | 3/4 | 1/4 |
| 20222100 | 9/32 | - | 2-1/2 | 13/16 | 5/16 |
| 20222200 | 9/32 | 0.02 | 2-1/2 | 13/16 | 5/16 |
| 20222500 | 5/16 | - | 2-1/2 | 13/16 | 5/16 |
| 20222600 | 5/16 | 0.02 | 2-1/2 | 13/16 | 5/16 |
| 20222700 | 5/16 | 0.03 | 2-1/2 | 13/16 | 5/16 |
| 20222900 | 11/32 | - | 2-1/2 | 1 | 3/8 |
| 20223000 | 11/32 | 0.02 | 2-1/2 | 1 | 3/8 |
| 20223300 | 3/8 | - | 2-1/2 | 1 | 3/8 |
| 20223400 | 3/8 | 0.02 | 2-1/2 | 1 | 3/8 |
| 20223500 | 3/8 | 0.03 | 2-1/2 | 1 | 3/8 |
| 20223600 | 3/8 | 0.06 | 2-1/2 | 1 | 3/8 |

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|----------------|
| | D | R | L | Lc | d |
| 20223700 | 13/32 | - | 2-3/4 | 1 | 7/16 |
| 20223800 | 13/32 | 0.02 | 2-3/4 | 1 | 7/16 |
| 20224100 | 7/16 | - | 2-3/4 | 1 | 7/16 |
| 20224200 | 7/16 | 0.02 | 2-3/4 | 1 | 7/16 |
| 20224500 | 15/32 | - | 3 | 1-1/4 | 1/2 |
| 20224600 | 15/32 | 0.02 | 3 | 1-1/4 | 1/2 |
| 20224900 | 1/2 | - | 3 | 1-1/4 | 1/2 |
| 20225000 | 1/2 | 0.02 | 3 | 1-1/4 | 1/2 |
| 20225100 | 1/2 | 0.03 | 3 | 1-1/4 | 1/2 |
| 20225200 | 1/2 | 0.06 | 3 | 1-1/4 | 1/2 |
| 20225300 | 5/8 | - | 3-1/2 | 1-5/8 | 5/8 |
| 20225400 | 5/8 | 0.03 | 3-1/2 | 1-5/8 | 5/8 |
| 20225500 | 5/8 | 0.06 | 3-1/2 | 1-5/8 | 5/8 |
| 20225600 | 5/8 | 0.09 | 3-1/2 | 1-5/8 | 5/8 |
| 20225700 | 3/4 | - | 4 | 1-5/8 | 3/4 |
| 20225800 | 3/4 | 0.06 | 4 | 1-5/8 | 3/4 |
| 20225900 | 3/4 | 0.09 | 4 | 1-5/8 | 3/4 |
| 20226000 | 3/4 | 0.12 | 4 | 1-5/8 | 3/4 |
| 20226100 | 1 | - | 5 | 2 | 1 |
| 20226200 | 1 | 0.06 | 5 | 2 | 1 |
| 20226300 | 1 | 0.09 | 5 | 2 | 1 |
| 20226400 | 1 | 0.12 | 5 | 2 | 1 |

Packed: 1 pc.

EDPs above are stocked standard, DLC coating available upon request. Additional corner radii available upon request.



OSG's Performance & Savings

Don't require ultra-high performance? Try CARBIDE - List 402 or 495 (p. 993-995 or 1004)

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|---------------|--------------|------|--------------|------------|------------------|-----|---------|-------------------------------------|-------------------------------------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 2022 | 1010 1018 | 1035 1045 | 1065 | 4140 4340 | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |

good best



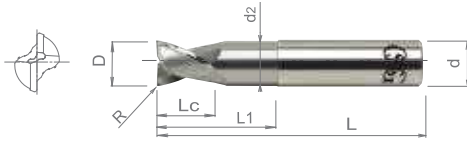


List 2023

2 Flute, Regular Length, Reduced Neck, Square & Corner Radius

| | | | | | |
|----------------------------|----------------|-----------|------------|------------|--------------------|
| SPEED FEED P1220 | CARBIDE | BR | REG | 30° | SHANK h6 |
|----------------------------|----------------|-----------|------------|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/4 ≤ D ≤ 1 | +0 / -0.002" |



Units: Inch

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | R | L | Lc | L1 | d2 | d |
| 20230100 | 1/4 | - | 2-1/2 | 1/4 | 1-1/8 | 0.246 | 1/4 |
| 20230200 | 1/4 | 0.02 | 2-1/2 | 1/4 | 1-1/8 | 0.246 | 1/4 |
| 20230300 | 1/4 | 0.03 | 2-1/2 | 1/4 | 1-1/8 | 0.246 | 1/4 |
| 20230400 | 1/4 | 0.06 | 2-1/2 | 1/4 | 1-1/8 | 0.246 | 1/4 |
| 20230500 | 1/2 | - | 3 | 1/2 | 1-3/8 | 0.496 | 1/2 |
| 20230600 | 1/2 | 0.02 | 3 | 1/2 | 1-3/8 | 0.496 | 1/2 |
| 20230700 | 1/2 | 0.03 | 3 | 1/2 | 1-3/8 | 0.496 | 1/2 |
| 20230800 | 1/2 | 0.06 | 3 | 1/2 | 1-3/8 | 0.496 | 1/2 |
| 20230900 | 5/8 | - | 3-1/2 | 5/8 | 1-5/8 | 0.621 | 5/8 |
| 20231000 | 5/8 | 0.03 | 3-1/2 | 5/8 | 1-5/8 | 0.621 | 5/8 |
| 20231100 | 5/8 | 0.06 | 3-1/2 | 5/8 | 1-5/8 | 0.621 | 5/8 |
| 20231200 | 5/8 | 0.09 | 3-1/2 | 5/8 | 1-5/8 | 0.621 | 5/8 |
| 20231300 | 3/4 | - | 4 | 3/4 | 2 | 0.746 | 3/4 |
| 20231400 | 3/4 | 0.06 | 4 | 3/4 | 2 | 0.746 | 3/4 |
| 20231500 | 3/4 | 0.09 | 4 | 3/4 | 2 | 0.746 | 3/4 |
| 20231600 | 3/4 | 0.12 | 4 | 3/4 | 2 | 0.746 | 3/4 |
| 20231700 | 1 | - | 5 | 1 | 2-5/8 | 0.992 | 1 |
| 20231800 | 1 | 0.06 | 5 | 1 | 2-5/8 | 0.992 | 1 |
| 20231900 | 1 | 0.09 | 5 | 1 | 2-5/8 | 0.992 | 1 |
| 20232000 | 1 | 0.12 | 5 | 1 | 2-5/8 | 0.992 | 1 |

Packed: 1 pc.

EDPs above are stocked standard, DLC coating available upon request.



Work Material

| List No. | P | | | | Die Steels | M | | | Cast Iron | N | | S | | H | | | |
|----------|---------------|--------------|------|--------------|------------|------------------|-----|---------|-------------------------------------|-------------------------------------|---------|--------------|----------|-----------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 2023 | 1010 1018 | 1035 1045 | 1065 | 4140 4340 | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |

good best



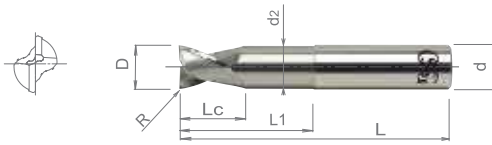


List 2024

2 Flute, Long Length, Reduced Neck, Square & Corner Radius

| | | | | | |
|---------------------|---------|----|------|-----|-------------|
| SPEED FEED P1220 | CARBIDE | BR | LONG | 30° | SHANK h6 |
|---------------------|---------|----|------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/4 ≤ D ≤ 1 | +0 / -0.002" |



Units: Inch

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | R | L | Lc | L1 | d2 | d |
| 20240100 | 1/4 | - | 4 | 1/4 | 2-1/8 | 0.246 | 1/4 |
| 20240200 | 1/4 | 0.02 | 4 | 1/4 | 2-1/8 | 0.246 | 1/4 |
| 20240300 | 1/4 | 0.03 | 4 | 1/4 | 2-1/8 | 0.246 | 1/4 |
| 20240400 | 1/4 | 0.06 | 4 | 1/4 | 2-1/8 | 0.246 | 1/4 |
| 20240500 | 1/2 | - | 4 | 1/2 | 2-1/8 | 0.496 | 1/2 |
| 20240600 | 1/2 | 0.02 | 4 | 1/2 | 2-1/8 | 0.496 | 1/2 |
| 20240700 | 1/2 | 0.03 | 4 | 1/2 | 2-1/8 | 0.496 | 1/2 |
| 20240800 | 1/2 | 0.06 | 4 | 1/2 | 2-1/8 | 0.496 | 1/2 |
| 20240900 | 5/8 | - | 6 | 5/8 | 2-3/8 | 0.621 | 5/8 |
| 20241000 | 5/8 | 0.03 | 6 | 5/8 | 2-3/8 | 0.621 | 5/8 |
| 20241100 | 5/8 | 0.06 | 6 | 5/8 | 2-3/8 | 0.621 | 5/8 |
| 20241200 | 5/8 | 0.09 | 6 | 5/8 | 2-3/8 | 0.621 | 5/8 |
| 20241300 | 3/4 | - | 6 | 3/4 | 2-1/2 | 0.746 | 3/4 |
| 20241400 | 3/4 | 0.06 | 6 | 3/4 | 2-1/2 | 0.746 | 3/4 |
| 20241500 | 3/4 | 0.09 | 6 | 3/4 | 2-1/2 | 0.746 | 3/4 |
| 20241600 | 3/4 | 0.12 | 6 | 3/4 | 2-1/2 | 0.746 | 3/4 |
| 20241700 | 1 | - | 6 | 1 | 3-3/8 | 0.992 | 1 |
| 20241800 | 1 | 0.06 | 6 | 1 | 3-3/8 | 0.992 | 1 |
| 20241900 | 1 | 0.09 | 6 | 1 | 3-3/8 | 0.992 | 1 |
| 20242000 | 1 | 0.12 | 6 | 1 | 3-3/8 | 0.992 | 1 |

Packed: 1 pc.

EDPs above are stocked standard, DLC coating available upon request.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-----------|-------------------------------------|-------------------------------------|--------------|-------------------|-----------------|-----------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 2024 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |

good best



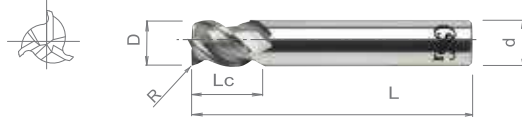


List 2041

3 Flute, Stub Length, Square & Corner Radius

| | | | | | | |
|---------------------|---------|----|--|------|-----|-------------|
| SPEED FEED P1221 | CARBIDE | BR | | STUB | 45° | SHANK h6 |
|---------------------|---------|----|--|------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/8 ≤ D ≤ 1 | +0 / -0.002" |



Units: Inch

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|----------------|
| | D | R | L | Lc | d |
| 20410100 | 1/8 | - | 1-1/2 | 1/4 | 1/8 |
| 20410200 | 1/8 | 0.01 | 1-1/2 | 1/4 | 1/8 |
| 20410900 | 3/16 | - | 2 | 5/16 | 3/16 |
| 20411000 | 3/16 | 0.02 | 2 | 5/16 | 3/16 |
| 20411700 | 1/4 | - | 2-1/2 | 3/8 | 1/4 |
| 20411800 | 1/4 | 0.02 | 2-1/2 | 3/8 | 1/4 |
| 20411900 | 1/4 | 0.03 | 2-1/2 | 3/8 | 1/4 |
| 20412000 | 1/4 | 0.06 | 2-1/2 | 3/8 | 1/4 |
| 20412500 | 5/16 | - | 2-1/2 | 7/16 | 5/16 |
| 20412600 | 5/16 | 0.02 | 2-1/2 | 7/16 | 5/16 |
| 20412700 | 5/16 | 0.03 | 2-1/2 | 7/16 | 5/16 |
| 20413300 | 3/8 | - | 2-1/2 | 1/2 | 3/8 |
| 20413400 | 3/8 | 0.02 | 2-1/2 | 1/2 | 3/8 |
| 20413500 | 3/8 | 0.03 | 2-1/2 | 1/2 | 3/8 |
| 20413600 | 3/8 | 0.06 | 2-1/2 | 1/2 | 3/8 |
| 20414100 | 7/16 | - | 2-3/4 | 9/16 | 7/16 |
| 20414200 | 7/16 | 0.02 | 2-3/4 | 9/16 | 7/16 |

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|----------------|
| | D | R | L | Lc | d |
| 20414900 | 1/2 | - | 3 | 5/8 | 1/2 |
| 20415000 | 1/2 | 0.02 | 3 | 5/8 | 1/2 |
| 20415100 | 1/2 | 0.03 | 3 | 5/8 | 1/2 |
| 20415200 | 1/2 | 0.06 | 3 | 5/8 | 1/2 |
| 20415300 | 5/8 | - | 3-1/2 | 3/4 | 5/8 |
| 20415400 | 5/8 | 0.03 | 3-1/2 | 3/4 | 5/8 |
| 20415500 | 5/8 | 0.06 | 3-1/2 | 3/4 | 5/8 |
| 20415600 | 5/8 | 0.09 | 3-1/2 | 3/4 | 5/8 |
| 20415700 | 3/4 | - | 4 | 1 | 3/4 |
| 20415800 | 3/4 | 0.06 | 4 | 1 | 3/4 |
| 20415900 | 3/4 | 0.09 | 4 | 1 | 3/4 |
| 20416000 | 3/4 | 0.12 | 4 | 1 | 3/4 |
| 20416100 | 1 | - | 4 | 1-1/4 | 1 |
| 20416200 | 1 | 0.06 | 4 | 1-1/4 | 1 |
| 20416300 | 1 | 0.09 | 4 | 1-1/4 | 1 |
| 20416400 | 1 | 0.12 | 4 | 1-1/4 | 1 |

Packed: 1 pc.
EDPs above are stocked standard, DLC coating available upon request.



OSG's Performance & Savings

Don't require ultra-high performance? Try CARBIDE - List 403 (p. 993-995)

Want to turbo-charge performance? Try EXOCARB® AERO DLC - List 2873 or 2874 (p. 934 or 936)

Work Material

| List No. | P | | | | | M | | | K Cast Iron | N | | S | | H | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|----------------|-------------------------------------|-------------------------------------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 2041 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |

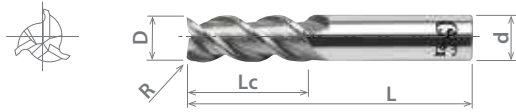
good best





List 2042

3 Flute, Regular Length, Square & Corner Radius



| | | | | | |
|---------------------|---------|----|-----|-----|-------------|
| SPEED FEED P1222 | CARBIDE | BR | REG | 45° | SHANK h6 |
|---------------------|---------|----|-----|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/8 ≤ D ≤ 1 | +0 / -0.002" |

Units: Inch

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|----------------|
| | D | R | L | Lc | d |
| 20420100 | 1/8 | - | 1-1/2 | 3/8 | 1/8 |
| 20420200 | 1/8 | 0.01 | 1-1/2 | 3/8 | 1/8 |
| 20420900 | 3/16 | - | 2 | 9/16 | 3/16 |
| 20421000 | 3/16 | 0.02 | 2 | 9/16 | 3/16 |
| 20421700 | 1/4 | - | 2-1/2 | 5/8 | 1/4 |
| 20421800 | 1/4 | 0.02 | 2-1/2 | 5/8 | 1/4 |
| 20421900 | 1/4 | 0.03 | 2-1/2 | 5/8 | 1/4 |
| 20422000 | 1/4 | 0.06 | 2-1/2 | 5/8 | 1/4 |
| 20422500 | 5/16 | - | 2-1/2 | 13/16 | 5/16 |
| 20422600 | 5/16 | 0.02 | 2-1/2 | 13/16 | 5/16 |
| 20422700 | 5/16 | 0.03 | 2-1/2 | 13/16 | 5/16 |
| 20423300 | 3/8 | - | 2-1/2 | 1 | 3/8 |
| 20423400 | 3/8 | 0.02 | 2-1/2 | 1 | 3/8 |
| 20423500 | 3/8 | 0.03 | 2-1/2 | 1 | 3/8 |
| 20423600 | 3/8 | 0.06 | 2-1/2 | 1 | 3/8 |
| 20424100 | 7/16 | - | 2-3/4 | 1-1/4 | 7/16 |
| 20424200 | 7/16 | 0.02 | 2-3/4 | 1-1/4 | 7/16 |

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|----------------|
| | D | R | L | Lc | d |
| 20424900 | 1/2 | - | 3 | 1-1/4 | 1/2 |
| 20425000 | 1/2 | 0.02 | 3 | 1-1/4 | 1/2 |
| 20425100 | 1/2 | 0.03 | 3 | 1-1/4 | 1/2 |
| 20425200 | 1/2 | 0.06 | 3 | 1-1/4 | 1/2 |
| 20425300 | 5/8 | - | 3-1/2 | 1-5/8 | 5/8 |
| 20425400 | 5/8 | 0.03 | 3-1/2 | 1-5/8 | 5/8 |
| 20425500 | 5/8 | 0.06 | 3-1/2 | 1-5/8 | 5/8 |
| 20425600 | 5/8 | 0.09 | 3-1/2 | 1-5/8 | 5/8 |
| 20425700 | 3/4 | - | 4 | 1-5/8 | 3/4 |
| 20425800 | 3/4 | 0.06 | 4 | 1-5/8 | 3/4 |
| 20425900 | 3/4 | 0.09 | 4 | 1-5/8 | 3/4 |
| 20426000 | 3/4 | 0.12 | 4 | 1-5/8 | 3/4 |
| 20426100 | 1 | - | 5 | 2 | 1 |
| 20426200 | 1 | 0.06 | 5 | 2 | 1 |
| 20426300 | 1 | 0.09 | 5 | 2 | 1 |
| 20426400 | 1 | 0.12 | 5 | 2 | 1 |



Packed: 1 pc.
EDPs above are stocked standard, DLC coating available upon request.

OSG's Performance & Savings

Don't require ultra-high performance? Try CARBIDE - List 403 (p. 993-995)
Want to turbo-charge performance? Try EXOCARB® AERO DLC - List 2843 (p. 938)

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|---------------|--------------|------|--------------|------------|------------------|-----|---------|-----------|-------------------------------------|-------------------------------------|--------------|----------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 2042 | 1010 1018 | 1035 1045 | 1065 | 4140 4340 | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |

good best



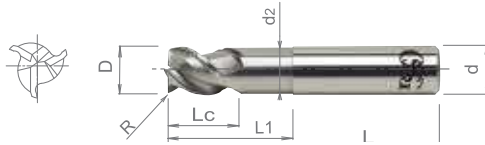


List 2043

3 Flute, Regular Length, Reduced Neck, Square & Corner Radius

| | | | | | |
|---------------------|---------|----|-----|-----|-------------|
| SPEED FEED P1222 | CARBIDE | BR | REG | 45° | SHANK h6 |
|---------------------|---------|----|-----|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/4 ≤ D ≤ 1 | +0 / -0.002" |



Units: Inch

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | R | L | Lc | L1 | d2 | d |
| 20430100 | 1/4 | - | 2-1/2 | 1/4 | 1-1/8 | 0.246 | 1/4 |
| 20430200 | 1/4 | 0.02 | 2-1/2 | 1/4 | 1-1/8 | 0.246 | 1/4 |
| 20430300 | 1/4 | 0.03 | 2-1/2 | 1/4 | 1-1/8 | 0.246 | 1/4 |
| 20430400 | 1/4 | 0.06 | 2-1/2 | 1/4 | 1-1/8 | 0.246 | 1/4 |
| 20430500 | 1/2 | - | 3 | 1/2 | 1-3/8 | 0.496 | 1/2 |
| 20430600 | 1/2 | 0.02 | 3 | 1/2 | 1-3/8 | 0.496 | 1/2 |
| 20430700 | 1/2 | 0.03 | 3 | 1/2 | 1-3/8 | 0.496 | 1/2 |
| 20430800 | 1/2 | 0.06 | 3 | 1/2 | 1-3/8 | 0.496 | 1/2 |
| 20430900 | 5/8 | - | 3-1/2 | 5/8 | 1-5/8 | 0.621 | 5/8 |
| 20431000 | 5/8 | 0.03 | 3-1/2 | 5/8 | 1-5/8 | 0.621 | 5/8 |
| 20431100 | 5/8 | 0.06 | 3-1/2 | 5/8 | 1-5/8 | 0.621 | 5/8 |
| 20431200 | 5/8 | 0.09 | 3-1/2 | 5/8 | 1-5/8 | 0.621 | 5/8 |
| 20431300 | 3/4 | - | 4 | 3/4 | 2 | 0.746 | 3/4 |
| 20431400 | 3/4 | 0.06 | 4 | 3/4 | 2 | 0.746 | 3/4 |
| 20431500 | 3/4 | 0.09 | 4 | 3/4 | 2 | 0.746 | 3/4 |
| 20431600 | 3/4 | 0.12 | 4 | 3/4 | 2 | 0.746 | 3/4 |
| 20431700 | 1 | - | 5 | 1 | 2-5/8 | 0.992 | 1 |
| 20431800 | 1 | 0.06 | 5 | 1 | 2-5/8 | 0.992 | 1 |
| 20431900 | 1 | 0.09 | 5 | 1 | 2-5/8 | 0.992 | 1 |
| 20432000 | 1 | 0.12 | 5 | 1 | 2-5/8 | 0.992 | 1 |

Packed: 1 pc.
EDPs above are stocked standard, DLC coating available upon request.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S Titanium | H | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|----------------|-------------------------------------|-------------------------------------|---------------|--------------|-----------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | | Nickel Alloy | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 2043 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |

good best



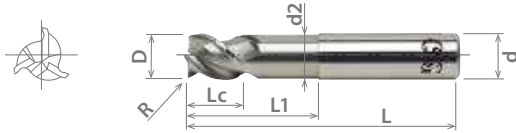


List 2048

3 Flute, Long Length, Reduced Neck, Square & Corner Radius

| | | | | | |
|---------------------|---------|----|------|-----|-------------|
| SPEED FEED P1222 | CARBIDE | BR | LONG | 45° | SHANK h6 |
|---------------------|---------|----|------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/4 ≤ D ≤ 1 | +0 / -0.002" |



Units: Inch

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | R | L | Lc | L1 | d2 | d |
| 20480100 | 1/4 | - | 4 | 1/4 | 2-1/8 | 0.246 | 1/4 |
| 20480200 | 1/4 | 0.02 | 4 | 1/4 | 2-1/8 | 0.246 | 1/4 |
| 20480300 | 1/4 | 0.03 | 4 | 1/4 | 2-1/8 | 0.246 | 1/4 |
| 20480400 | 1/4 | 0.06 | 4 | 1/4 | 2-1/8 | 0.246 | 1/4 |
| 20480500 | 1/2 | - | 4 | 1/2 | 2-1/8 | 0.496 | 1/2 |
| 20480600 | 1/2 | 0.02 | 4 | 1/2 | 2-1/8 | 0.496 | 1/2 |
| 20480700 | 1/2 | 0.03 | 4 | 1/2 | 2-1/8 | 0.496 | 1/2 |
| 20480800 | 1/2 | 0.06 | 4 | 1/2 | 2-1/8 | 0.496 | 1/2 |
| 20480900 | 5/8 | - | 6 | 5/8 | 2-3/8 | 0.621 | 5/8 |
| 20481000 | 5/8 | 0.03 | 6 | 5/8 | 2-3/8 | 0.621 | 5/8 |
| 20481100 | 5/8 | 0.06 | 6 | 5/8 | 2-3/8 | 0.621 | 5/8 |
| 20481200 | 5/8 | 0.09 | 6 | 5/8 | 2-3/8 | 0.621 | 5/8 |
| 20481300 | 3/4 | - | 6 | 3/4 | 2-1/2 | 0.746 | 3/4 |
| 20481400 | 3/4 | 0.06 | 6 | 3/4 | 2-1/2 | 0.746 | 3/4 |
| 20481500 | 3/4 | 0.09 | 6 | 3/4 | 2-1/2 | 0.746 | 3/4 |
| 20481600 | 3/4 | 0.12 | 6 | 3/4 | 2-1/2 | 0.746 | 3/4 |
| 20481700 | 1 | - | 6 | 1 | 3-3/8 | 0.992 | 1 |
| 20481800 | 1 | 0.06 | 6 | 1 | 3-3/8 | 0.992 | 1 |
| 20481900 | 1 | 0.09 | 6 | 1 | 3-3/8 | 0.992 | 1 |
| 20482000 | 1 | 0.12 | 6 | 1 | 3-3/8 | 0.992 | 1 |

Packed: 1 pc.

EDPs above are stocked standard, DLC coating available upon request.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|---------------------|----------------------|--------------|------------------------------|------------|------------------|-----|---------|-------------------------------------|-------------------------------------|---------|-------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 2048 | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | |

good best



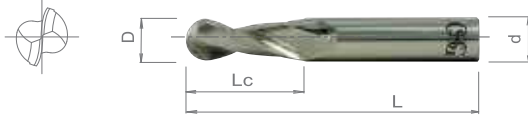


List 2010

2 Flute, Regular Length, Ball End

| | | | | | |
|----------------------------|----------------|-----------|------------|------------|--------------------|
| SPEED FEED P1223 | CARBIDE | BR | REG | 30° | SHANK h6 |
|----------------------------|----------------|-----------|------------|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/8 ≤ D ≤ 1 | +0 / -0.002" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 20100100 | 1/8 | 1-1/2 | 3/8 | 1/8 |
| 20100200 | 3/16 | 2 | 9/16 | 3/16 |
| 20100300 | 1/4 | 2-1/2 | 3/4 | 1/4 |
| 20100400 | 5/16 | 2-1/2 | 13/16 | 5/16 |
| 20100500 | 3/8 | 2-1/2 | 1 | 3/8 |
| 20100600 | 7/16 | 2-3/4 | 1 | 7/16 |
| 20100700 | 1/2 | 3 | 1-1/4 | 1/2 |
| 20100800 | 5/8 | 3-1/2 | 1-5/8 | 5/8 |
| 20100900 | 3/4 | 4 | 1-5/8 | 3/4 |
| 20101000 | 1 | 5 | 2 | 1 |

Packed: 1 pc.
Available Bright finish only.



OSG's Performance & Savings

Don't require ultra-high performance? Try CARBIDE - List 402BN (p. 1011-1013)
Want to turbo-charge performance? Try EXOCARB® DIAMOND - List 7010 (p. 913)

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|----------|---------|--------------|----------------|-----------------|-----------|-----------|-----------|--|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 2010 | 1010 | 1035 | 1065 | 4140 | 4340 | | | | | | | | | | | | | | |

good best



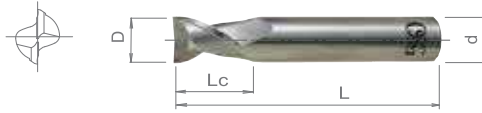


List 8120

CA-RG-EDS, 2 Flute, Regular Length

| | | | | | | |
|----------------------------|----------------|-----------|--|------------|------------|--------------------|
| SPEED FEED P1224 | CARBIDE | BR | | REG | 30° | SHANK h6 |
|----------------------------|----------------|-----------|--|------------|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| D ≤ 12 | +0 / -0.02mm |
| D > 12 | +0 / -0.03mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 8502010 | 1.0 | 40 | 2.5 | 4 |
| 8502015 | 1.5 | 40 | 4.0 | 4 |
| 8502020 | 2.0 | 40 | 6.0 | 4 |
| 8502025 | 2.5 | 40 | 8.0 | 4 |
| 8502030 | 3.0 | 45 | 8.0 | 6 |
| 8502035 | 3.5 | 45 | 10.0 | 6 |
| 8502040 | 4.0 | 45 | 11.0 | 6 |
| 8502045 | 4.5 | 45 | 11.0 | 6 |
| 8502050 | 5.0 | 50 | 13.0 | 6 |
| 8502055 | 5.5 | 50 | 13.0 | 6 |
| 8502060 | 6.0 | 50 | 13.0 | 6 |
| 8502065 | 6.5 | 60 | 16.0 | 8 |
| 8502070 | 7.0 | 60 | 16.0 | 8 |
| 8502075 | 7.5 | 60 | 16.0 | 8 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 8502080 | 8.0 | 60 | 19.0 | 8 |
| 8502085 | 8.5 | 70 | 19.0 | 10 |
| 8502090 | 9.0 | 70 | 19.0 | 10 |
| 8502095 | 9.5 | 70 | 19.0 | 10 |
| 8502100 | 10.0 | 70 | 22.0 | 10 |
| 8502105 | 10.5 | 75 | 22.0 | 12 |
| 8502110 | 11.0 | 75 | 22.0 | 12 |
| 8502115 | 11.5 | 75 | 22.0 | 12 |
| 8502120 | 12.0 | 75 | 26.0 | 12 |
| 8502130 | 13.0 | 85 | 26.0 | 12 |
| 8502140 | 14.0 | 85 | 26.0 | 12 |
| 8502150 | 15.0 | 90 | 26.0 | 16 |
| 8502160 | 16.0 | 100 | 32.0 | 16 |

Packed: 1 pc.
Available Bright finish only.



OSG's Performance & Savings

Don't require ultra-high performance? Try CARBIDE - List 402 (p. 993-995)
Want to turbo-charge performance? Try EXOCARB® DIAMOND - List 7120 (p. 911)

Work Material

| List No. | P | | | | Die Steels | M | | | Cast Iron | N | | S | | H | | | |
|----------|---------------|------|------|--------------|------------|------------------|-----|---------|-----------|-------------------------------------|-------------------------------------|--------------|----------|-----------------|----------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 8120 | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |

good best



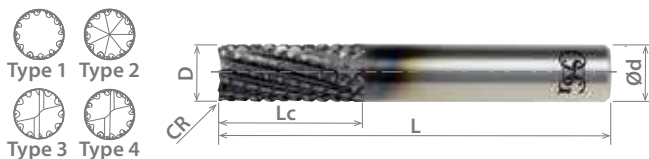


List 2061

Multiple Flutes, Regular Length, Nicked Router

| | | | | | |
|---------------------|---------|-----|--|-----|-------------|
| SPEED FEED P1225 | CARBIDE | DIA | | 15° | SHANK h6 |
|---------------------|---------|-----|--|-----|-------------|

| |
|------------------|
| Tolerance |
| +0/-0.002" |



Units: Inch

| EDP Number | Mill Diameter | Length of Cut | OAL | Shank Diameter | Number of Flutes | Type | Corner Radius |
|------------|---------------|---------------|-------|----------------|------------------|------|---------------|
| | D | Lc | L | d | | | |
| 20610116 | 1/8 | 1/4 | 1-1/2 | 1/8 | 6 | 2 | - |
| 20611116 | 1/8 | 3/8 | 1-1/2 | 1/8 | 6 | 3 | - |
| 20612116 | 1/8 | 1/2 | 1-1/2 | 1/8 | 8 | 3 | - |
| 20610216 | 3/16 | 3/8 | 2 | 3/16 | 2 | 2 | - |
| 20611216 | 3/16 | 9/16 | 2 | 3/16 | 6 | 3 | - |
| 20612216 | 3/16 | 3/4 | 2 | 3/16 | 8 | 3 | - |
| 20610316 | 1/4 | 1/2 | 2-1/2 | 1/4 | 8 | 2 | - |
| 20613416 | 1/4 | 3/4 | 2-1/2 | 1/4 | 8 | 2 | - |
| 20612316 | 1/4 | 3/4 | 2-1/2 | 1/4 | 10 | 2 | - |
| 20612416 | 1/4 | 3/4 | 2-1/2 | 1/4 | 12 | 2 | - |
| 20611316 | 1/4 | 3/4 | 2-1/2 | 1/4 | 10 | 3 | - |
| 20613216 | 1/4 | 1 | 3 | 1/4 | 8 | 2 | - |
| 20614316 | 1/4 | 1 | 3 | 1/4 | 10 | 2 | - |
| 20614400 | 1/4 | 1 | 3 | 1/4 | 12 | 2 | - |
| 20614416 | 1/4 | 1 | 3 | 1/4 | 12 | 2 | - |
| 20617316 | 1/4 | 1 | 3 | 1/4 | 12 | 2 | 0.030 |
| 20613316 | 1/4 | 1 | 3 | 1/4 | 10 | 3 | - |
| 20616316 | 1/4 | 1 | 3 | 1/4 | 8 | 4 | - |
| 20616416 | 1/4 | 1 | 3 | 1/4 | 12 | 4 | - |
| 20615316 | 1/4 | 1-1/4 | 4 | 1/4 | 12 | 1 | - |
| 20615216 | 1/4 | 1-1/4 | 4 | 1/4 | 8 | 2 | - |
| 20610416 | 5/16 | 1 | 2-1/2 | 5/16 | 10 | 3 | - |
| 20610516 | 3/8 | 3/4 | 2-1/2 | 3/8 | 12 | 2 | - |
| 20612516 | 3/8 | 1-1/8 | 3 | 3/8 | 12 | 2 | - |
| 20616816 | 3/8 | 1-1/8 | 3 | 3/8 | 12 | 2 | 0.030 |
| 20611516 | 3/8 | 1-1/8 | 3 | 3/8 | 12 | 3 | - |
| 20616516 | 3/8 | 1-1/4 | 3 | 3/8 | 12 | 4 | - |
| 20614516 | 3/8 | 1-1/2 | 4 | 3/8 | 12 | 2 | - |
| 20613516 | 3/8 | 1-1/2 | 4 | 3/8 | 12 | 3 | - |
| 20615516 | 3/8 | 2 | 4 | 3/8 | 12 | 1 | - |
| 20616716 | 1/2 | 7/8 | 2-7/8 | 1/2 | 14 | 1 | - |
| 20611716 | 1/2 | 1 | 3 | 1/2 | 14 | 2 | - |
| 20613716 | 1/2 | 1 | 3 | 1/2 | 14 | 2 | 0.030 |
| 20610716 | 1/2 | 1 | 3 | 1/2 | 14 | 3 | - |
| 20615716 | 1/2 | 1 | 3 | 1/2 | 14 | 4 | - |
| 20612716 | 1/2 | 2 | 4 | 1/2 | 16 | 2 | - |

Packed: 1 pc.

Red EDP numbers indicate the item is uncoated. All others Diamond coating only.



Type 1 - Non End Cutting

Type 2 - Burr End

Type 3 - End Mill Cut

Type 4 - Drill Point

| Work Material | | | | | | | | | | | | |
|---------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-----------------------------|-----------------------------|-------------------------------|
| List No. | Carbon Fiber (CFRP) | Glass Fiber (GFRP) | Aramid Fiber (AFRP) | Honeycomb | | | | | Carbon/Carbon | Carbon Fiber/Aluminum Stack | Carbon Fiber/Titanium Stack | Carbon Fiber/Al/Ti/CRES Stack |
| | | | | CFRP/Nomex | GFRP/Nomex | AFRP | CFRP/Al | Al/Al | | | | |
| 2061 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Good Best





List 2066

4 Flute, Regular Length, 30° Compression Router

| | | | | | |
|---------------------|---------|-----|--|-----|-------------|
| SPEED FEED P1225 | CARBIDE | DIA | | 30° | SHANK h6 |
|---------------------|---------|-----|--|-----|-------------|

| |
|------------------|
| Tolerance |
| +0/-0.002" |



Units: Inch

| EDP Number | Mill Diameter | Compression Length | Length of Cut | OAL | Shank Diameter |
|------------|---------------|--------------------|---------------|-------|----------------|
| | D | L2 | Lc | L | d |
| 20660116 | 1/8 | 1/8 | 0.560 | 1-1/2 | 1/8 |
| 20660316 | 1/4 | 1/4 | 0.750 | 2-1/2 | 1/4 |
| 20660516 | 3/8 | 3/8 | 0.875 | 3 | 3/8 |
| 20660716 | 1/2 | 1/2 | 1.500 | 3 | 1/2 |

Packed: 1 pc.
Available Diamond coating only.



| Work Material | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---------------|-----------------------------|-----------------------------|-------------------------------|
| List No. | Carbon Fiber (CFRP) | Glass Fiber (GFRP) | Aramid Fiber (AFRP) | Honeycomb | | | | | Carbon/Carbon | Carbon Fiber/Aluminum Stack | Carbon Fiber/Titanium Stack | Carbon Fiber/Al/Ti/CRES Stack |
| | | | | CFRP/Nomex | GFRP/Nomex | AFRP | CFRP/Al | Al/Al | | | | |
| 2066 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | |

Good Best





EXOPRO[®] AERO-HBC 45

OSG Diamond Coated Routers for Milling CFRP and Other Composites



List 2064

4 Flute, Regular Length, 45° Compression Router

| | | | | |
|---------------------|---------|-----|--|-------------|
| SPEED FEED P1225 | CARBIDE | DIA | | SHANK h6 |
|---------------------|---------|-----|--|-------------|

| |
|--------------------------------|
| Tolerance +0/-0.002" |
|--------------------------------|



Units: Inch

| EDP Number | Mill Diameter | Compression Length | Length of Cut | OAL | Shank Diameter |
|------------|---------------|--------------------|---------------|-----|----------------|
| | D | L2 | Lc | L | d |
| 20642516 | 1/4 | 1/4 | 3/4 | 3 | 1/4 |
| 20643516 | 3/8 | 3/8 | 3/4 | 3 | 3/8 |
| 20643616 | 3/8 | 3/8 | 2 | 4 | 3/8 |
| 20645016 | 1/2 | 1/2 | 1 | 3 | 1/2 |
| 20645116 | 1/2 | 1/2 | 2 | 4 | 1/2 |

Packed: 1 pc.
Available Diamond coating only.



Work Material

| List No. | Carbon Fiber (CFRP) | Glass Fiber (GFRP) | Aramid Fiber (AFRP) | Honeycomb | | | | | Carbon/Carbon | Carbon Fiber/Aluminum Stack | Carbon Fiber/Titanium Stack | Carbon Fiber/Al/Ti/CRES Stack |
|----------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---------------|-----------------------------|-----------------------------|-------------------------------|
| | | | | CFRP/Nomex | GFRP/Nomex | AFRP | CFRP/Al | Al/Al | | | | |
| 2064 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | |

Good Best





List 2068

2 Flute, Regular Length, 60° Compression Router

| | | | | |
|---------------------|---------|-----|--|-------------|
| SPEED FEED P1226 | CARBIDE | DIA | | SHANK h6 |
|---------------------|---------|-----|--|-------------|

| |
|--------------------------------|
| Tolerance +0/-0.002" |
|--------------------------------|



Units: Inch

| EDP Number | Mill Diameter | Compression Length | Length of Cut | OAL | Shank Diameter |
|------------|---------------|--------------------|---------------|-----|----------------|
| | D | L2 | Lc | L | d |
| 20682516 | 1/4 | 0.188 | 3/4 | 3 | 1/4 |
| 20683516 | 3/8 | 0.281 | 3/4 | 3 | 3/8 |
| 20683616 | 3/8 | 0.281 | 2 | 4 | 3/8 |
| 20685016 | 1/2 | 0.375 | 1 | 3 | 1/2 |
| 20685116 | 1/2 | 0.375 | 2 | 4 | 1/2 |

Packed: 1 pc.
Available Diamond coating only.



| Work Material | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|---------------|-----------------------------|-----------------------------|-------------------------------|
| List No. | Carbon Fiber (CFRP) | Glass Fiber (GFRP) | Aramid Fiber (AFRP) | Honeycomb | | | | | Carbon/Carbon | Carbon Fiber/Aluminum Stack | Carbon Fiber/Titanium Stack | Carbon Fiber/Al/Ti/CRES Stack |
| | | | | CFRP/Nomex | GFRP/Nomex | AFRP | CFRP/Al | Al/Al | | | | |
| 2068 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | |

Good Best





List 2680

Multiple Flute, Regular Length, Roughing Router

| | | | | | |
|----------------------------|----------------|------------|--|------------|--------------------|
| SPEED FEED P1227 | CARBIDE | DIA | | 15° | SHANK h6 |
|----------------------------|----------------|------------|--|------------|--------------------|

| |
|--------------------------------|
| Tolerance +0/-0.002" |
|--------------------------------|



Units: Inch

| EDP Number | Mill Diameter | Length of Cut | OAL | Shank Diameter | Number of Flutes |
|------------|---------------|---------------|-------|----------------|------------------|
| | D | Lc | L | d | |
| 26809316 | 15/64 | 3/4 | 2-1/2 | 1/4 | 4 |
| 26805316 | 1/4 | 1/2 | 2-1/2 | 1/4 | 4 |
| 26800316 | 1/4 | 3/4 | 2-1/2 | 1/4 | 4 |
| 26806316 | 1/4 | 1 | 3 | 1/4 | 4 |
| 26809416 | 5/16 | 15/16 | 3 | 3/8 | 6 |
| 26809516 | 23/64 | 1-1/8 | 3 | 3/8 | 6 |
| 26805516 | 3/8 | 3/4 | 3 | 3/8 | 6 |
| 26800516 | 3/8 | 1-1/8 | 3 | 3/8 | 6 |
| 26809616 | 7/16 | 1-5/16 | 3 | 1/2 | 8 |
| 26809716 | 31/64 | 1-1/2 | 3 | 1/2 | 8 |
| 26805716 | 1/2 | 1 | 3 | 1/2 | 8 |
| 26800716 | 1/2 | 1-1/2 | 3 | 1/2 | 8 |

Packed: 1 pc.
Available Diamond coating only.



Work Material

| List No. | Carbon Fiber (CFRP) | Glass Fiber (GFRP) | Aramid Fiber (AFRP) | Honeycomb | | | | | Carbon/Carbon | Carbon Fiber/Aluminum Stack | Carbon Fiber/Titanium Stack | Carbon Fiber/Al/Ti/CRES Stack |
|----------|-------------------------------------|-------------------------------------|---------------------|--------------------------|--------------------------|------|--------------------------|--------------------------|-------------------------------------|-----------------------------|-----------------------------|-------------------------------|
| | | | | CFRP/Nomex | GFRP/Nomex | AFRP | CFRP/Al | Al/Al | | | | |
| 2680 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |

Good Best





List 2650

Multiple Flute, Regular Length, Non End Cutting, Finishing Router

| | | | | |
|----------------------------|----------------|------------|------------|--------------------|
| SPEED FEED P1228 | CARBIDE | DIA | 15° | SHANK h6 |
|----------------------------|----------------|------------|------------|--------------------|

| |
|--------------------------------|
| Tolerance +0/-0.002" |
|--------------------------------|



Units: Inch

| EDP Number | Mill Diameter | Length of Cut | OAL | Shank Diameter | Number of Flutes |
|------------|---------------|---------------|-------|----------------|------------------|
| | D | Lc | L | d | |
| 26500316 | 1/4 | 3/4 | 2-1/2 | 1/4 | 8 |
| 26501316 | 1/4 | 1 | 3 | 1/4 | 8 |
| 26500616 | 3/8 | 1-1/8 | 3 | 3/8 | 12 |
| 26501516 | 3/8 | 1-1/2 | 3 | 3/8 | 12 |
| 26500716 | 1/2 | 1-1/2 | 4 | 1/2 | 14 |
| 26501716 | 1/2 | 2 | 4 | 1/2 | 14 |

Packed: 1 pc.
Available Diamond coating only.



| Work Material | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|---------------------|--------------------------|--------------------------|------|--------------------------|--------------------------|-------------------------------------|-----------------------------|-----------------------------|-------------------------------|
| List No. | Carbon Fiber (CFRP) | Glass Fiber (GFRP) | Aramid Fiber (AFRP) | Honeycomb | | | | | Carbon/Carbon | Carbon Fiber/Aluminum Stack | Carbon Fiber/Titanium Stack | Carbon Fiber/Al/Ti/CRES Stack |
| | | | | CFRP/Nomex | GFRP/Nomex | AFRP | CFRP/Al | Al/Al | | | | |
| 2650 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |

Good Best





CARBIDE AERO-HBC 60

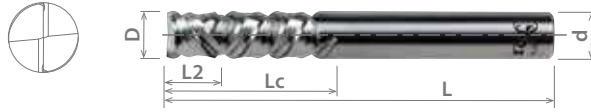
Carbide Router for Honeycomb & Other Composites

List 668

2 Flute, Regular Length, 60° Compression Router

| | | | | |
|----------------------------|----------------|-----------|--|--------------------|
| SPEED FEED P1226 | CARBIDE | BR | | SHANK h6 |
|----------------------------|----------------|-----------|--|--------------------|

| |
|---------------------------------|
| Tolerance +0/-0.0015" |
|---------------------------------|



Units: Inch

| EDP Number | Mill Diameter | Compression Length | Length of Cut | OAL | Shank Diameter |
|------------|---------------|--------------------|---------------|-------|----------------|
| | D | L2 | Lc | L | d |
| 668-2501 | 1/4 | 0.188 | 3/4 | 2 1/2 | 1/4 |
| 668-3751 | 3/8 | 0.281 | 3/4 | 3 | 3/8 |
| 668-3752 | 3/8 | 0.281 | 2 | 4 | 3/8 |
| 668-5001 | 1/2 | 0.375 | 1 | 3 | 1/2 |
| 668-5002 | 1/2 | 0.375 | 2 | 4 | 1/2 |

Packed: 1 pc.
Available Bright finish only.



Work Material

| List No. | Carbon Fiber (CFRP) | Glass Fiber (GFRP) | Aramid Fiber (AFRP) | Honeycomb | | | | | Carbon/Carbon | Carbon Fiber/Aluminum Stack | Carbon Fiber/Titanium Stack | Carbon Fiber/Al/ Ti/ CRES Stack |
|----------|---------------------|--------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|---------------|-----------------------------|-----------------------------|---------------------------------|
| | | | | CFRP/Nomex | GFRP/Nomex | AFRP | CFRP/Al | Al/Al | | | | |
| 668 | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | |

Good Best



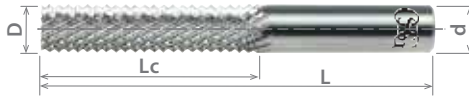
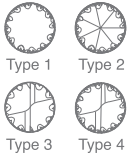


List 641R

Regular Length, General Purpose Router

| | | | | | |
|----------------------------|----------------|-----------|--|------------|--------------------|
| SPEED FEED P1229 | CARBIDE | BR | | 30° | SHANK h6 |
|----------------------------|----------------|-----------|--|------------|--------------------|

| |
|--------------------------------|
| Tolerance +0/-0.003" |
|--------------------------------|



Units: Inch

| EDP Number | Mill Diameter | Length of Cut | OAL | Shank Diameter | Type |
|------------|---------------|---------------|-----|----------------|------|
| | D | Lc | L | d | |
| 641-1871 | 3/16 | 1 | 3 | 1/4 | 1 |
| 641-1872 | 3/16 | 1 | 3 | 1/4 | 2 |
| 641-1873 | 3/16 | 1 | 3 | 1/4 | 3 |
| 641-1874 | 3/16 | 1 | 3 | 1/4 | 4 |
| 641-2501 | 1/4 | 1 | 3 | 1/4 | 1 |
| 641-2502 | 1/4 | 1 | 3 | 1/4 | 2 |
| 641-2503 | 1/4 | 1 | 3 | 1/4 | 3 |
| 641-2504 | 1/4 | 1 | 3 | 1/4 | 4 |
| 641-3751 | 3/8 | 1 | 3 | 3/8 | 1 |
| 641-3752 | 3/8 | 1 | 3 | 3/8 | 2 |
| 641-3753 | 3/8 | 1 | 3 | 3/8 | 3 |
| 641-3754 | 3/8 | 1 | 3 | 3/8 | 4 |
| 641-5001 | 1/2 | 1 | 3 | 1/2 | 1 |
| 641-5002 | 1/2 | 1 | 3 | 1/2 | 2 |
| 641-5003 | 1/2 | 1 | 3 | 1/2 | 3 |
| 641-5004 | 1/2 | 1 | 3 | 1/2 | 4 |

Packed: 1 pc.
Available Bright finish only.



Type #1 - Non End Cutting
Type #2 - Burr End
Type #3 - End Mill Cut
Type #4 - Drill Point

| Work Material | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|---------------------|--------------------------|--------------------------|------|--------------------------|--------------------------|--------------------------|-----------------------------|-----------------------------|-------------------------------|
| List No. | Carbon Fiber (CFRP) | Glass Fiber (GFRP) | Aramid Fiber (AFRP) | Honeycomb | | | | | Carbon/Carbon | Carbon Fiber/Aluminum Stack | Carbon Fiber/Titanium Stack | Carbon Fiber/Al/Ti/CRES Stack |
| | | | | CFRP/Nomex | GFRP/Nomex | AFRP | CFRP/Al | Al/Al | | | | |
| 641R | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | |

Good Best





HY-PRO® CARB VGX

High Performance Variable Geometry End Mills

List VG441

4 Flute, Multiple Lengths, Square End



| | | | | |
|----------------------------|----------------|--------------|------------|--------------------|
| SPEED FEED P1230 | CARBIDE | TiAlN | 35° | SHANK h6 |
|----------------------------|----------------|--------------|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/8 ≤ D ≤ 1 | +0 / -0.0015" |

Units: Inch

| EDP Number | EDP Number w/ Weldon Flat | Milling Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------------------|------------------|----------------|---------------|----------------|
| | | D | L | Lc | d |
| VG441-1250 | - | 1/8 | 1-1/2 | 3/8 | 1/8 |
| VG441-1875 | - | 3/16 | 2 | 7/16 | 3/16 |
| VG441-2500 | - | 1/4 | 2-1/2 | 7/16 | 1/4 |
| VG441-2501 | - | 1/4 | 2-1/2 | 3/4 | 1/4 |
| VG441-2502 | - | 1/4 | 3-1/4 | 1-1/4 | 1/4 |
| VG441-3125 | - | 5/16 | 2-1/2 | 13/16 | 5/16 |
| VG441-3126 | - | 5/16 | 3-1/4 | 1-1/4 | 5/16 |
| VG441-3127 | - | 5/16 | 4 | 1-5/8 | 5/16 |
| VG441-3750 | VG441-3752 | 3/8 | 2-1/2 | 1/2 | 3/8 |
| VG441-3751 | VG441-3753 | 3/8 | 2-1/2 | 7/8 | 3/8 |
| VG441-3754 | VG441-3755 | 3/8 | 4 | 1-1/2 | 3/8 |
| VG441-3756 | VG441-3757 | 3/8 | 4 | 2-1/2 | 3/8 |
| VG441-4375 | VG441-4376 | 7/16 | 2-3/4 | 1 | 7/16 |
| VG441-5007 | VG441-5000 | 1/2 | 2-1/2 | 5/8 | 1/2 |
| VG441-5008 | VG441-5001 | 1/2 | 3 | 1 | 1/2 |
| VG441-5009 | VG441-5002 | 1/2 | 3-1/2 | 1-1/4 | 1/2 |
| VG441-5010 | VG441-5003 | 1/2 | 4 | 1-1/2 | 1/2 |
| VG441-5011 | VG441-5004 | 1/2 | 4 | 2 | 1/2 |
| VG441-5012 | VG441-5005 | 1/2 | 4 | 2-1/2 | 1/2 |
| VG441-5013 | VG441-5006 | 1/2 | 5 | 3 | 1/2 |
| VG441-6255 | VG441-6250 | 5/8 | 3 | 3/4 | 5/8 |
| VG441-6256 | VG441-6251 | 5/8 | 3-1/2 | 1-1/4 | 5/8 |
| VG441-6257 | VG441-6252 | 5/8 | 5 | 1-5/8 | 5/8 |
| VG441-6258 | VG441-6253 | 5/8 | 5 | 2-1/4 | 5/8 |
| VG441-6259 | VG441-6254 | 5/8 | 6 | 3 | 5/8 |
| VG441-7506 | VG441-7500 | 3/4 | 3-1/2 | 7/8 | 3/4 |
| VG441-7507 | VG441-7501 | 3/4 | 4 | 1-1/2 | 3/4 |
| VG441-7508 | VG441-7502 | 3/4 | 4 | 1-5/8 | 3/4 |
| VG441-7509 | VG441-7503 | 3/4 | 5 | 2-1/4 | 3/4 |
| VG441-7510 | VG441-7504 | 3/4 | 6 | 3 | 3/4 |
| VG441-7511 | VG441-7505 | 3/4 | 6-1/4 | 4 | 3/4 |
| VG441-1005 | VG441-1000 | 1 | 4 | 1-1/2 | 1 |
| VG441-1006 | VG441-1001 | 1 | 5 | 2 | 1 |
| VG441-1007 | VG441-1002 | 1 | 5 | 2-1/2 | 1 |
| VG441-1008 | VG441-1003 | 1 | 6 | 3 | 1 |
| VG441-1009 | VG441-1004 | 1 | 7 | 4 | 1 |

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP441 (p. 969-970)
Want to turbo-charge performance? Try A Brand® AE-VMS - List 8200 (p. 830)

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------|---------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| VG441 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



List VG434

4 Flute, Multiple Lengths, Corner Radius

| | | | | |
|----------------------------|----------------|--------------|------------|--------------------|
| SPEED FEED P1230 | CARBIDE | TiAlN | 35° | SHANK h6 |
|----------------------------|----------------|--------------|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/8 ≤ D ≤ 1 | +0 / -0.0015" |



Units: Inch

| EDP Number | EDP Number w/ Weldon Flat | Milling Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------------------|------------------|---------------|----------------|---------------|----------------|
| | | D | R | L | Lc | d |
| VG434-1250 | - | 1/8 | 0.010 | 1-1/2 | 3/8 | 1/8 |
| VG434-1251 | - | 1/8 | 0.015 | 1-1/2 | 3/8 | 1/8 |
| VG434-1875 | - | 3/16 | 0.015 | 2 | 7/16 | 3/16 |
| VG434-1876 | - | 3/16 | 0.030 | 2 | 7/16 | 3/16 |
| VG434-2500 | - | 1/4 | 0.015 | 2-1/2 | 7/16 | 1/4 |
| VG434-2501 | - | 1/4 | 0.030 | 2-1/2 | 7/16 | 1/4 |
| VG434-2502 | - | 1/4 | 0.015 | 2-1/2 | 3/4 | 1/4 |
| VG434-2503 | - | 1/4 | 0.030 | 2-1/2 | 3/4 | 1/4 |
| VG434-2504 | - | 1/4 | 0.060 | 2-1/2 | 3/4 | 1/4 |
| VG434-3125 | - | 5/16 | 0.015 | 2-1/2 | 13/16 | 5/16 |
| VG434-3126 | - | 5/16 | 0.030 | 2-1/2 | 13/16 | 5/16 |
| VG434-3750 | VG434-3754 | 3/8 | 0.030 | 2-1/2 | 1/2 | 3/8 |
| VG434-3751 | VG434-3755 | 3/8 | 0.030 | 2-1/2 | 7/8 | 3/8 |
| VG434-3752 | VG434-3756 | 3/8 | 0.045 | 2-1/2 | 7/8 | 3/8 |
| VG434-3753 | VG434-3757 | 3/8 | 0.060 | 2-1/2 | 7/8 | 3/8 |
| VG434-3759 | VG434-3758 | 3/8 | 0.015 | 2-1/2 | 7/8 | 3/8 |
| VG434-4375 | VG434-4377 | 7/16 | 0.015 | 2-3/4 | 1 | 7/16 |
| VG434-4376 | VG434-4378 | 7/16 | 0.030 | 2-3/4 | 1 | 7/16 |
| VG434-5021 | VG434-5020 | 1/2 | 0.015 | 2-1/2 | 5/8 | 1/2 |
| VG434-5009 | VG434-5000 | 1/2 | 0.030 | 2-1/2 | 5/8 | 1/2 |
| VG434-5010 | VG434-5001 | 1/2 | 0.030 | 3 | 1 | 1/2 |
| VG434-5011 | VG434-5002 | 1/2 | 0.060 | 3 | 1 | 1/2 |
| VG434-5012 | VG434-5003 | 1/2 | 0.015 | 3-1/2 | 1-1/4 | 1/2 |
| VG434-5013 | VG434-5004 | 1/2 | 0.030 | 3-1/2 | 1-1/4 | 1/2 |
| VG434-5014 | VG434-5005 | 1/2 | 0.045 | 3-1/2 | 1-1/4 | 1/2 |
| VG434-5015 | VG434-5006 | 1/2 | 0.060 | 3-1/2 | 1-1/4 | 1/2 |
| VG434-5016 | VG434-5007 | 1/2 | 0.090 | 3-1/2 | 1-1/4 | 1/2 |
| VG434-5017 | VG434-5008 | 1/2 | 0.125 | 3-1/2 | 1-1/4 | 1/2 |
| VG434-5019 | VG434-5018 | 1/2 | 0.020 | 4 | 1-1/2 | 1/2 |
| VG434-6254 | VG434-6250 | 5/8 | 0.030 | 3-1/2 | 1-1/4 | 5/8 |
| VG434-6255 | VG434-6251 | 5/8 | 0.060 | 3-1/2 | 1-1/4 | 5/8 |
| VG434-6256 | VG434-6252 | 5/8 | 0.090 | 3-1/2 | 1-1/4 | 5/8 |
| VG434-6257 | VG434-6253 | 5/8 | 0.125 | 3-1/2 | 1-1/4 | 5/8 |
| VG434-7504 | VG434-7500 | 3/4 | 0.030 | 4 | 1-1/2 | 3/4 |
| VG434-7505 | VG434-7501 | 3/4 | 0.060 | 4 | 1-1/2 | 3/4 |
| VG434-7506 | VG434-7502 | 3/4 | 0.090 | 4 | 1-1/2 | 3/4 |
| VG434-7507 | VG434-7503 | 3/4 | 0.125 | 4 | 1-1/2 | 3/4 |
| VG434-7510 | VG434-7508 | 3/4 | 0.020 | 4 | 1-5/8 | 3/4 |
| VG434-7511 | VG434-7509 | 3/4 | 0.060 | 5 | 2-1/4 | 3/4 |
| VG434-1004 | VG434-1000 | 1 | 0.030 | 4 | 1-1/2 | 1 |
| VG434-1005 | VG434-1001 | 1 | 0.060 | 4 | 1-1/2 | 1 |
| VG434-1006 | VG434-1002 | 1 | 0.090 | 4 | 1-1/2 | 1 |
| VG434-1007 | VG434-1003 | 1 | 0.125 | 4 | 1-1/2 | 1 |

Packed: 1 pc.
Available TiAlN coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|---------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| VG434 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

good best





HY-PRO® CARB VGX

High Performance Variable Geometry End Mills

List VG436

4 Flute, Multiple Lengths, Corner Chamfer

| | | | | |
|----------------------------|----------------|--------------|------------|--------------------|
| SPEED FEED P1230 | CARBIDE | TiAlN | 35° | SHANK h6 |
|----------------------------|----------------|--------------|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/8 ≤ D ≤ 1 | +0 / -0.0015" |



Units: Inch

| EDP Number | EDP Number w/ Weldon Flat | Milling Diameter | Corner Chamfer | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------------------|------------------|----------------|----------------|---------------|----------------|
| | | D | C | L | Lc | d |
| VG436-1252 | - | 1/8 | 0.010 | 1-1/2 | 1/8 | 1/8 |
| VG436-1250 | - | 1/8 | 0.010 | 1-1/2 | 1/4 | 1/8 |
| VG436-1251 | - | 1/8 | 0.010 | 1-1/2 | 1/2 | 1/8 |
| VG436-1875 | - | 3/16 | 0.010 | 2 | 5/16 | 3/16 |
| VG436-1876 | - | 3/16 | 0.010 | 2-1/4 | 5/8 | 3/16 |
| VG436-2500 | - | 1/4 | 0.016 | 2 | 3/8 | 1/4 |
| VG436-2501 | - | 1/4 | 0.016 | 2-1/2 | 3/4 | 1/4 |
| VG436-3125 | - | 5/16 | 0.016 | 2 | 1/2 | 5/16 |
| VG436-3126 | - | 5/16 | 0.016 | 2-1/2 | 3/4 | 5/16 |
| - | VG436-3750 | 3/8 | 0.020 | 2 | 1/2 | 3/8 |
| - | VG436-3751 | 3/8 | 0.020 | 2-1/2 | 7/8 | 3/8 |
| - | VG436-4375 | 7/16 | 0.020 | 2-1/2 | 5/8 | 7/16 |
| - | VG436-4376 | 7/16 | 0.020 | 2-3/4 | 7/8 | 7/16 |
| - | VG436-5000 | 1/2 | 0.020 | 2-1/2 | 5/8 | 1/2 |
| - | VG436-5001 | 1/2 | 0.020 | 3 | 1 | 1/2 |
| - | VG436-5002 | 1/2 | 0.020 | 3-1/2 | 1-1/4 | 1/2 |
| - | VG436-5003 | 1/2 | 0.020 | 4 | 1-1/2 | 1/2 |
| - | VG436-6250 | 5/8 | 0.020 | 3 | 3/4 | 5/8 |
| - | VG436-6251 | 5/8 | 0.020 | 3-1/2 | 1-1/4 | 5/8 |
| - | VG436-6252 | 5/8 | 0.020 | 4-1/8 | 1-5/8 | 5/8 |
| - | VG436-7500 | 3/4 | 0.020 | 3-1/2 | 7/8 | 3/4 |
| - | VG436-7501 | 3/4 | 0.020 | 4 | 1-1/2 | 3/4 |
| - | VG436-7502 | 3/4 | 0.020 | 4 | 1-5/8 | 3/4 |
| - | VG436-1000 | 1 | 0.020 | 4 | 1-1/2 | 1 |
| - | VG436-1001 | 1 | 0.020 | 5 | 2 | 1 |

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP434 (p. 987-988)

Want to turbo-charge performance? Try A Brand® AE-CR-VMS - List 8210 (p. 832)

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|---------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| VG436 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

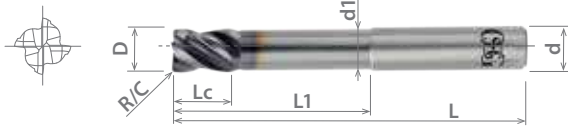


List VG446

4 Flute, Multiple Lengths, Reduced Neck, Corner Radius/Corner Chamfer

| | | | | |
|----------------------------|----------------|--------------|--|--------------------|
| SPEED FEED P1231 | CARBIDE | TiAlN | | SHANK h6 |
|----------------------------|----------------|--------------|--|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/4 ≤ D ≤ 1 | +0 / -0.0015" |



Units: Inch

| EDP Number | EDP Number w/ Weldon Flat | Milling Diameter | Corner Radius | Corner Chamfer | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------------------|------------------|---------------|----------------|----------------|---------------|-------------|---------------|----------------|
| | | D | R | C | L | Lc | L1 | d1 | d |
| VG446-2500 | - | 1/4 | 0.015 | - | 4 | 3/8 | 1-1/4 | 0.235 | 1/4 |
| VG446-2501 | - | 1/4 | 0.030 | - | 4 | 3/8 | 1-1/4 | 0.235 | 1/4 |
| VG446-2502 | - | 1/4 | - | 0.016 | 4 | 3/8 | 1-1/4 | 0.235 | 1/4 |
| - | VG446-3750 | 3/8 | 0.030 | - | 4 | 1/2 | 1-7/8 | 0.353 | 3/8 |
| - | VG446-3751 | 3/8 | 0.060 | - | 4 | 1/2 | 1-7/8 | 0.353 | 3/8 |
| - | VG446-3752 | 3/8 | - | 0.020 | 4 | 1/2 | 1-7/8 | 0.353 | 3/8 |
| - | VG446-5000 | 1/2 | 0.030 | - | 4 | 5/8 | 2-1/4 | 0.470 | 1/2 |
| - | VG446-5001 | 1/2 | 0.060 | - | 4 | 5/8 | 2-1/4 | 0.470 | 1/2 |
| - | VG446-5002 | 1/2 | 0.120 | - | 4 | 5/8 | 2-1/4 | 0.470 | 1/2 |
| - | VG446-5003 | 1/2 | - | 0.020 | 4 | 5/8 | 2-1/4 | 0.470 | 1/2 |
| - | VG446-6250 | 5/8 | 0.060 | - | 4-1/8 | 3/4 | 2-1/4 | 0.588 | 5/8 |
| - | VG446-6251 | 5/8 | 0.120 | - | 4-1/8 | 3/4 | 2-1/4 | 0.588 | 5/8 |
| - | VG446-6252 | 5/8 | - | 0.020 | 4-1/8 | 3/4 | 2-1/4 | 0.588 | 5/8 |
| - | VG446-6253 | 5/8 | - | 0.020 | 5 | 3/4 | 3-1/8 | 0.588 | 5/8 |
| - | VG446-7500 | 3/4 | - | 0.020 | 4-1/4 | 1 | 2-1/4 | 0.705 | 3/4 |
| - | VG446-7501 | 3/4 | 0.030 | - | 5-1/4 | 1 | 3-1/4 | 0.705 | 3/4 |
| - | VG446-7502 | 3/4 | 0.060 | - | 5-1/4 | 1 | 3-1/4 | 0.705 | 3/4 |
| - | VG446-7503 | 3/4 | 0.120 | - | 5-1/4 | 1 | 3-1/4 | 0.705 | 3/4 |
| - | VG446-7504 | 3/4 | - | 0.020 | 5-1/4 | 1 | 3-1/4 | 0.705 | 3/4 |
| - | VG446-1000 | 1 | - | 0.020 | 4-1/2 | 1-1/8 | 2-1/4 | 0.940 | 1 |
| - | VG446-1001 | 1 | 0.030 | - | 5-1/2 | 1-1/8 | 3-1/4 | 0.940 | 1 |
| - | VG446-1002 | 1 | 0.060 | - | 5-1/2 | 1-1/8 | 3-1/4 | 0.940 | 1 |
| - | VG446-1003 | 1 | 0.120 | - | 5-1/2 | 1-1/8 | 3-1/4 | 0.940 | 1 |
| - | VG446-1004 | 1 | - | 0.020 | 5-1/2 | 1-1/8 | 3-1/4 | 0.940 | 1 |
| - | VG446-1005 | 1 | - | 0.020 | 6-1/2 | 1-1/8 | 4-1/4 | 0.940 | 1 |

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try A Brand® AE-LN-CR-VMS - List 8220 (p. 834)

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|---------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| VG446 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

good best





HY-PRO® CARB VGX

High Performance Variable Geometry End Mills

List VG464

4 Flute, Multiple Lengths, Extended Length, Square End/Corner Chamfer

| | | | | |
|---------------------|---------|-------|-----|-------------|
| SPEED FEED P1231 | CARBIDE | TiAlN | 35° | SHANK h6 |
|---------------------|---------|-------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/4 ≤ D ≤ 1 | +0 / -0.0015" |



Units: Inch

| EDP Number | EDP Number w/ Weldon Flat | Milling Diameter | Corner Chamfer | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------------------|------------------|----------------|----------------|---------------|----------------|
| | | D | C | L | Lc | d |
| VG464-2500 | - | 1/4 | - | 4 | 3/8 | 1/4 |
| VG464-2501 | - | 1/4 | 0.016 | 4 | 3/8 | 1/4 |
| - | VG464-3750 | 3/8 | - | 4 | 1/2 | 3/8 |
| - | VG464-3751 | 3/8 | 0.020 | 4 | 1/2 | 3/8 |
| - | VG464-5000 | 1/2 | - | 5 | 5/8 | 1/2 |
| - | VG464-5001 | 1/2 | 0.020 | 5 | 5/8 | 1/2 |
| - | VG464-5002 | 1/2 | - | 6 | 5/8 | 1/2 |
| - | VG464-5003 | 1/2 | 0.020 | 6 | 5/8 | 1/2 |
| - | VG464-6250 | 5/8 | - | 6 | 3/4 | 5/8 |
| - | VG464-6251 | 5/8 | 0.020 | 6 | 3/4 | 5/8 |
| - | VG464-6252 | 5/8 | - | 7 | 3/4 | 5/8 |
| - | VG464-6253 | 5/8 | 0.020 | 7 | 3/4 | 5/8 |
| - | VG464-7500 | 3/4 | - | 6 | 1 | 3/4 |
| - | VG464-7501 | 3/4 | 0.020 | 6 | 1 | 3/4 |
| - | VG464-7502 | 3/4 | - | 7 | 1 | 3/4 |
| - | VG464-7503 | 3/4 | 0.020 | 7 | 1 | 3/4 |
| - | VG464-1000 | 1 | - | 6 | 1-1/8 | 1 |
| - | VG464-1001 | 1 | 0.020 | 6 | 1-1/8 | 1 |
| - | VG464-1002 | 1 | - | 7 | 1-1/8 | 1 |
| - | VG464-1003 | 1 | 0.020 | 7 | 1-1/8 | 1 |

Packed: 1 pc.
Available TiAlN coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|---------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| VG464 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



List VG441BN

4 Flute, Multiple Lengths, Ball Nose

| | | | | | |
|-----------------------------------|---------|-------|---------------|-----|-------------|
| SPEED FEED P1232 | CARBIDE | TiAlN | | 35° | SHANK h6 |
| Milling Diameter Tolerance | | | | | |
| 1/8 ≤ D ≤ 1-1/4 | | | +0 / -0.0015" | | |



Units: Inch

| EDP Number | EDP Number w/ Weldon Flat | Milling Diameter | Overall Length | Length of Cut | Shank Diameter |
|---------------|------------------------------|------------------|----------------|---------------|----------------|
| | | D | L | Lc | d |
| VG441-1250-BN | - | 1/8 | 2 | 1/2 | 1/8 |
| VG441-1875-BN | - | 3/16 | 2-1/4 | 5/8 | 3/16 |
| VG441-2500-BN | - | 1/4 | 2-1/2 | 3/4 | 1/4 |
| - | VG441-3125-BN | 5/16 | 2-1/2 | 3/4 | 5/16 |
| - | VG441-3750-BN | 3/8 | 2-1/2 | 7/8 | 3/8 |
| - | VG441-4375-BN | 7/16 | 2-1/2 | 7/8 | 7/16 |
| - | VG441-5000-BN | 1/2 | 3 | 1 | 1/2 |
| - | VG441-5010-BN | 1/2 | 3 | 1-1/4 | 1/2 |
| - | VG441-6250-BN | 5/8 | 3-1/2 | 1-1/4 | 5/8 |
| - | VG441-7500-BN | 3/4 | 4 | 1-1/2 | 3/4 |
| - | VG441-1000-BN | 1 | 4 | 1-1/2 | 1 |
| - | VG441-1010-BN | 1-1/4 | 5 | 2-1/4 | 1-1/4 |

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP441BN (p. 980-981)

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|----------|---------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| VG441BN | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |

good best





HY-PRO® CARB VGX

High Performance Variable Geometry End Mills

List VG541

5 Flute, Multiple Lengths, Square End

| | | | | |
|---------------------|---------|-------|-----|-------------|
| SPEED FEED P1233 | CARBIDE | TiAlN | 38° | SHANK h6 |
|---------------------|---------|-------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/8 ≤ D ≤ 1 | +0 / -0.0015" |



Units: Inch

| EDP Number | EDP Number w/ Weldon Flat | Milling Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------------------|------------------|----------------|---------------|----------------|
| | | D | L | Lc | d |
| VG541-1249 | - | 1/8 | 1-1/2 | 9/32 | 1/8 |
| VG541-1250 | - | 1/8 | 1-1/2 | 3/8 | 1/8 |
| VG541-1875 | - | 3/16 | 2 | 7/16 | 3/16 |
| VG541-1874 | - | 3/16 | 2-1/4 | 5/8 | 3/16 |
| VG541-2500 | - | 1/4 | 2 | 3/8 | 1/4 |
| VG541-2501 | - | 1/4 | 2-1/2 | 3/4 | 1/4 |
| VG541-3125 | - | 5/16 | 2 | 15/32 | 5/16 |
| VG541-3124 | - | 5/16 | 2-1/2 | 3/4 | 5/16 |
| VG541-3750 | VG541-3752 | 3/8 | 2 | 1/2 | 3/8 |
| VG541-3751 | VG541-3753 | 3/8 | 2-1/2 | 7/8 | 3/8 |
| VG541-5007 | VG541-5000 | 1/2 | 2-1/2 | 5/8 | 1/2 |
| VG541-5009 | VG541-5002 | 1/2 | 3-1/2 | 1-1/4 | 1/2 |
| VG541-6255 | VG541-6250 | 5/8 | 3 | 3/4 | 5/8 |
| VG541-6256 | VG541-6251 | 5/8 | 3-1/2 | 1-1/4 | 5/8 |
| VG541-7512 | VG541-7513 | 3/4 | 4 | 1-1/8 | 3/4 |
| VG541-7507 | VG541-7501 | 3/4 | 4 | 1-1/2 | 3/4 |
| VG541-1010 | VG541-1011 | 1 | 4 | 1-1/4 | 1 |
| VG541-1005 | VG541-1000 | 1 | 4 | 1-1/2 | 1 |

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP455 (p. 979)
Want to turbo-charge performance? Try EXOCARB® AERO - List 2106 (p. 926-927)

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|---------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| VG541 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

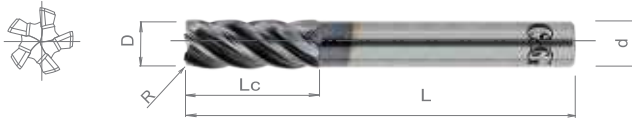
good best



List VG534

5 Flute, Multiple Lengths, Corner Radius

| | | | | |
|-----------------------------------|---------|-------|---------------|-------------|
| SPEED FEED P1233 | CARBIDE | TiAlN | | SHANK h6 |
| Milling Diameter Tolerance | | | | |
| 3/16 ≤ D ≤ 1 | | | +0 / -0.0015" | |



Units: Inch

| EDP Number | EDP Number w/ Weldon Flat | Milling Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------------------|------------------|---------------|----------------|---------------|----------------|
| | | D | R | L | Lc | d |
| VG534-1875 | - | 3/16 | 0.015 | 2 | 7/16 | 3/16 |
| VG534-1876 | - | 3/16 | 0.030 | 2 | 7/16 | 3/16 |
| VG534-1877 | - | 3/16 | 0.015 | 2-1/4 | 5/8 | 3/16 |
| VG534-1878 | - | 3/16 | 0.030 | 2-1/4 | 5/8 | 3/16 |
| VG534-2505 | - | 1/4 | 0.015 | 2 | 3/8 | 1/4 |
| VG534-2506 | - | 1/4 | 0.030 | 2 | 3/8 | 1/4 |
| VG534-2507 | - | 1/4 | 0.060 | 2 | 3/8 | 1/4 |
| VG534-2502 | - | 1/4 | 0.015 | 2-1/2 | 3/4 | 1/4 |
| VG534-2503 | - | 1/4 | 0.030 | 2-1/2 | 3/4 | 1/4 |
| VG534-2504 | - | 1/4 | 0.060 | 2-1/2 | 3/4 | 1/4 |
| VG534-3122 | - | 5/16 | 0.015 | 2-1/2 | 3/4 | 5/16 |
| VG534-3123 | - | 5/16 | 0.030 | 2-1/2 | 3/4 | 5/16 |
| VG534-3124 | - | 5/16 | 0.060 | 2-1/2 | 3/4 | 5/16 |
| VG534-3764 | VG534-3758 | 3/8 | 0.015 | 2 | 1/2 | 3/8 |
| VG534-3765 | VG534-3759 | 3/8 | 0.030 | 2 | 1/2 | 3/8 |
| VG534-3766 | VG534-3760 | 3/8 | 0.060 | 2 | 1/2 | 3/8 |
| VG534-3751 | VG534-3755 | 3/8 | 0.015 | 2-1/2 | 7/8 | 3/8 |
| VG534-3752 | VG534-3756 | 3/8 | 0.030 | 2-1/2 | 7/8 | 3/8 |
| VG534-3753 | VG534-3757 | 3/8 | 0.060 | 2-1/2 | 7/8 | 3/8 |
| VG534-5024 | VG534-5018 | 1/2 | 0.015 | 2-1/2 | 5/8 | 1/2 |
| VG534-5009 | VG534-5000 | 1/2 | 0.030 | 2-1/2 | 5/8 | 1/2 |
| VG534-5025 | VG534-5019 | 1/2 | 0.060 | 2-1/2 | 5/8 | 1/2 |
| VG534-5026 | VG534-5020 | 1/2 | 0.090 | 2-1/2 | 5/8 | 1/2 |
| VG534-5027 | VG534-5021 | 1/2 | 0.120 | 2-1/2 | 5/8 | 1/2 |
| VG534-5010 | VG534-5001 | 1/2 | 0.030 | 3 | 1 | 1/2 |
| VG534-5011 | VG534-5002 | 1/2 | 0.060 | 3 | 1 | 1/2 |
| VG534-5012 | VG534-5003 | 1/2 | 0.015 | 3-1/2 | 1-1/4 | 1/2 |
| VG534-5013 | VG534-5004 | 1/2 | 0.030 | 3-1/2 | 1-1/4 | 1/2 |
| VG534-5015 | VG534-5006 | 1/2 | 0.060 | 3-1/2 | 1-1/4 | 1/2 |
| VG534-5016 | VG534-5007 | 1/2 | 0.090 | 3-1/2 | 1-1/4 | 1/2 |
| VG534-5017 | VG534-5008 | 1/2 | 0.120 | 3-1/2 | 1-1/4 | 1/2 |
| VG534-6265 | VG534-6258 | 5/8 | 0.030 | 3 | 3/4 | 5/8 |
| VG534-6266 | VG534-6259 | 5/8 | 0.060 | 3 | 3/4 | 5/8 |
| VG534-6267 | VG534-6260 | 5/8 | 0.090 | 3 | 3/4 | 5/8 |
| VG534-6254 | VG534-6250 | 5/8 | 0.030 | 3-1/2 | 1-1/4 | 5/8 |
| VG534-6255 | VG534-6251 | 5/8 | 0.060 | 3-1/2 | 1-1/4 | 5/8 |
| VG534-6256 | VG534-6252 | 5/8 | 0.090 | 3-1/2 | 1-1/4 | 5/8 |
| VG534-7515 | VG534-7508 | 3/4 | 0.030 | 4 | 1-1/8 | 3/4 |
| VG534-7516 | VG534-7509 | 3/4 | 0.060 | 4 | 1-1/8 | 3/4 |
| VG534-7517 | VG534-7510 | 3/4 | 0.090 | 4 | 1-1/8 | 3/4 |
| VG534-7518 | VG534-7511 | 3/4 | 0.120 | 4 | 1-1/8 | 3/4 |
| VG534-7504 | VG534-7500 | 3/4 | 0.030 | 4 | 1-1/2 | 3/4 |

Packed: 1 pc.
Available TiAlN coating only.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| VG534 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

good best



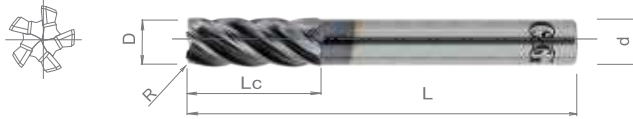


HY-PRO® CARB VGX

High Performance Variable Geometry End Mills

List VG534 (Continued)

5 Flute, Multiple Lengths, Corner Radius



| | | | | |
|---------------------|---------|-------|-----|-------------|
| SPEED FEED P1233 | CARBIDE | TiAlN | 38° | SHANK h6 |
|---------------------|---------|-------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 3/16 ≤ D ≤ 1 | +0 / -0.0015" |

Units: Inch

| EDP Number | EDP Number w/ Weldon Flat | Milling Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------------------|------------------|---------------|----------------|---------------|----------------|
| | | D | R | L | Lc | d |
| VG534-7505 | VG534-7501 | 3/4 | 0.060 | 4 | 1-1/2 | 3/4 |
| VG534-7506 | VG534-7502 | 3/4 | 0.090 | 4 | 1-1/2 | 3/4 |
| VG534-7507 | VG534-7503 | 3/4 | 0.120 | 4 | 1-1/2 | 3/4 |
| VG534-1017 | VG534-1010 | 1 | 0.030 | 4 | 1-1/4 | 1 |
| VG534-1018 | VG534-1011 | 1 | 0.060 | 4 | 1-1/4 | 1 |
| VG534-1019 | VG534-1012 | 1 | 0.090 | 4 | 1-1/4 | 1 |
| VG534-1020 | VG534-1013 | 1 | 0.120 | 4 | 1-1/4 | 1 |
| VG534-1004 | VG534-1000 | 1 | 0.030 | 4 | 1-1/2 | 1 |
| VG534-1005 | VG534-1001 | 1 | 0.060 | 4 | 1-1/2 | 1 |
| VG534-1006 | VG534-1002 | 1 | 0.090 | 4 | 1-1/2 | 1 |
| VG534-1007 | VG534-1003 | 1 | 0.120 | 4 | 1-1/2 | 1 |

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP455 (p. 979)

Want to turbo-charge performance? Try EXOPRO® - List 2055 (p. 841)

or EXOCARB® AERO - List 2106 (p. 926-927)

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|---------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| VG534 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

good best

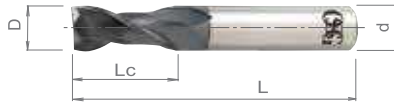




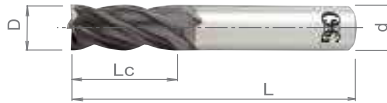
List HP421, HP441

| | | | | |
|---------------------------------|----------------|--------------|------------|--------------------|
| SPEED FEED P1234-1238 | CARBIDE | TiAIN | 35° | SHANK h6 |
|---------------------------------|----------------|--------------|------------|--------------------|

Multiple Flutes



HP421



HP441

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 3/64 ≤ D ≤ 1 | +0 / -0.0015" |

Units: Inch

| EDP Number | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|----------------------|----------------------|---------------|----------------|---------------|----------------|
| List HP421 (2 Flute) | List HP441 (4 Flute) | | | | |
| TiAIN | TiAIN | D | L | Lc | d |
| HP421-0469 | HP441-0469 | 3/64 | 1-1/2 | 9/64 | 1/8 |
| HP421-0625 | HP441-0625 | 1/16 | 1-1/2 | 3/16 | 1/8 |
| HP421-0781 | HP441-0781 | 5/64 | 1-1/2 | 1/4 | 1/8 |
| HP421-0938 | HP441-0938 | 3/32 | 1-1/2 | 5/16 | 1/8 |
| HP421-1094 | HP441-1094 | 7/64 | 1-1/2 | 3/8 | 1/8 |
| HP421-1250 | HP441-1250 | 1/8 | 1-1/2 | 1/2 | 1/8 |
| HP421-1406 | HP441-1406 | 9/64 | 2 | 1/2 | 3/16 |
| HP421-1562 | HP441-1562 | 5/32 | 2 | 9/16 | 3/16 |
| HP421-1719 | HP441-1719 | 11/64 | 2 | 9/16 | 3/16 |
| HP421-1875 | HP441-1875 | 3/16 | 2 | 5/8 | 3/16 |
| HP421-2031 | HP441-2031 | 13/64 | 2-1/2 | 5/8 | 1/4 |
| HP421-2188 | HP441-2188 | 7/32 | 2-1/2 | 5/8 | 1/4 |
| HP421-2500 | HP441-2500 | 1/4 | 2-1/2 | 3/4 | 1/4 |
| HP421-2812 | HP441-2812 | 9/32 | 2-1/2 | 3/4 | 5/16 |
| HP421-3125 | HP441-3125 | 5/16 | 2-1/2 | 13/16 | 5/16 |
| HP421-3438 | HP441-3438 | 11/32 | 2-1/2 | 7/8 | 3/8 |
| HP421-3750 | HP441-3750 | 3/8 | 2-1/2 | 1 | 3/8 |
| HP421-4062 | HP441-4062 | 13/32 | 2-3/4 | 1 | 7/16 |
| HP421-4375 | HP441-4375 | 7/16 | 2-3/4 | 1 | 7/16 |
| HP421-5000 | HP441-5000 | 1/2 | 3 | 1 | 1/2 |
| HP421-5625 | HP441-5625 | 9/16 | 3-1/2 | 1-1/8 | 9/16 |
| HP421-6250 | HP441-6250 | 5/8 | 3-1/2 | 1-1/4 | 5/8 |
| HP421-6875 | HP441-6875 | 11/16 | 4 | 1-3/8 | 3/4 |
| HP421-7500 | HP441-7500 | 3/4 | 4 | 1-1/2 | 3/4 |
| HP421-8750 | HP441-8750 | 7/8 | 4 | 1-1/2 | 7/8 |
| HP421-1000 | HP441-1000 | 1 | 4 | 1-1/2 | 1 |

Packed: 1 pc.
Available TiAIN coating only.

continued on next page

OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3620, 3621, 3720 or 3721 (p. 862, 863, 869 or 870)

Work Material

| Chart applies to all list numbers above | P | | | | | M | | | K | N | | S | | H | | | | |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| - | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



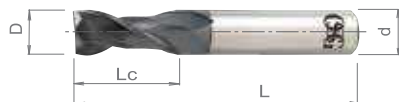


List HP421, HP441 (Continued)

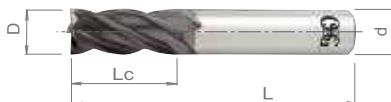
| | | | | |
|---------------------------------|----------------|--------------|------------|--------------------|
| SPEED FEED P1234-1238 | CARBIDE | TiAlN | 35° | SHANK h6 |
|---------------------------------|----------------|--------------|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1 ≤ D ≤ 25 | +0 / -0.038mm |

Multiple Flutes



HP421



HP441

Units: mm

| EDP Number | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|----------------------|----------------------|---------------|----------------|---------------|----------------|
| List HP421 (2 Flute) | List HP441 (4 Flute) | | | | |
| TiAlN | TiAlN | D | L | Lc | d |
| HP421-0394 | HP441-0394 | 1.0 | 39 | 3 | 3 |
| HP421-0591 | HP441-0591 | 1.5 | 39 | 5 | 3 |
| HP421-0787 | HP441-0787 | 2.0 | 39 | 7 | 3 |
| HP421-0984 | HP441-0984 | 2.5 | 39 | 8 | 3 |
| HP421-1181 | HP441-1181 | 3.0 | 39 | 10 | 3 |
| HP421-1378 | HP441-1378 | 3.5 | 51 | 12 | 4 |
| HP421-1575 | HP441-1575 | 4.0 | 51 | 14 | 4 |
| HP421-1772 | HP441-1772 | 4.5 | 51 | 14 | 5 |
| HP421-1968 | HP441-1968 | 5.0 | 51 | 16 | 5 |
| HP421-2362 | HP441-2362 | 6.0 | 64 | 19 | 6 |
| HP421-2756 | HP441-2756 | 7.0 | 64 | 19 | 8 |
| HP421-3150 | HP441-3150 | 8.0 | 64 | 21 | 8 |
| HP421-3543 | HP441-3543 | 9.0 | 70 | 22 | 10 |
| HP421-3937 | HP441-3937 | 10.0 | 70 | 25 | 10 |
| HP421-4331 | HP441-4331 | 11.0 | 70 | 25 | 11 |
| HP421-4724 | HP441-4724 | 12.0 | 76 | 25 | 12 |
| HP421-5512 | HP441-5512 | 14.0 | 89 | 30 | 14 |
| HP421-6299 | HP441-6299 | 16.0 | 89 | 32 | 16 |
| HP421-7087 | HP441-7087 | 18.0 | 102 | 35 | 18 |
| HP421-7874 | HP441-7874 | 20.0 | 102 | 38 | 20 |
| HP421-8661 | HP441-8661 | 22.0 | 102 | 38 | 22 |
| HP421-9843 | HP441-9843 | 25.0 | 102 | 38 | 25 |

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3620, 3621, 3720 or 3721 (p. 862, 863, 869 or 870)

Work Material

| Chart applies to all list numbers above | P | | | | | M | | | K | N | | S | | H | | | | |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| - | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

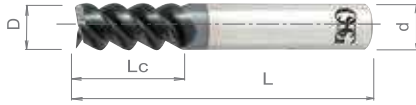


List HP460

3 Flute, High Helix

| | | | | | |
|---------------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P1239-1240 | CARBIDE | TiAlN | | 60° | SHANK h6 |
|---------------------------------|----------------|--------------|--|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/8 ≤ D ≤ 1 | +0 / -0.0015" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| TiAlN | D | L | Lc | d |
| HP460-1250 | 1/8 | 1-1/2 | 1/2 | 1/8 |
| HP460-1875 | 3/16 | 2 | 5/8 | 3/16 |
| HP460-2500 | 1/4 | 2-1/2 | 3/4 | 1/4 |
| HP460-3125 | 5/16 | 2-1/2 | 13/16 | 5/16 |
| HP460-3750 | 3/8 | 2-1/2 | 1 | 3/8 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| TiAlN | D | L | Lc | d |
| HP460-4375 | 7/16 | 2-3/4 | 1 | 7/16 |
| HP460-5000 | 1/2 | 3 | 1 | 1/2 |
| HP460-6250 | 5/8 | 3-1/2 | 1-1/4 | 5/8 |
| HP460-7500 | 3/4 | 4 | 1-1/2 | 3/4 |
| HP460-1000 | 1 | 4 | 1-1/2 | 1 |

Packed: 1 pc.
Available TiAlN coating only.

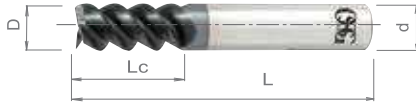


List HP460

3 Flute, High Helix

| | | | | | |
|---------------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P1239-1240 | CARBIDE | TiAlN | | 60° | SHANK h6 |
|---------------------------------|----------------|--------------|--|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 3 ≤ D ≤ 25 | +0 / -0.038mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| TiAlN | D | L | Lc | d |
| HP460-1181 | 3 | 64 | 12 | 6 |
| HP460-1575 | 4 | 64 | 14 | 6 |
| HP460-1968 | 5 | 64 | 16 | 6 |
| HP460-2362 | 6 | 64 | 19 | 6 |
| HP460-3150 | 8 | 64 | 21 | 8 |
| HP460-3937 | 10 | 70 | 25 | 10 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| TiAlN | D | L | Lc | d |
| HP460-4724 | 12 | 76 | 25 | 12 |
| HP460-5512 | 14 | 89 | 29 | 14 |
| HP460-6299 | 16 | 89 | 32 | 16 |
| HP460-7087 | 18 | 102 | 38 | 18 |
| HP460-7874 | 20 | 102 | 38 | 20 |
| HP460-9843 | 25 | 102 | 38 | 25 |

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 4445 (p. 883)

Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|---------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| HP460 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





HY-PRO® CARB

Performance Sub-Micrograin Carbide End Mills

List HP450

Multiple Flute

| | | | | |
|---------------------|---------|-------|-----|-------------|
| SPEED FEED P1241 | CARBIDE | TiAlN | 50° | SHANK h6 |
|---------------------|---------|-------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/8 ≤ D ≤ 1 | +0 / -0.0015" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | Number of Flutes |
|------------|---------------|----------------|---------------|----------------|------------------|
| TiAlN | D | L | Lc | d | |
| HP450-1250 | 1/8 | 1-1/2 | 1/2 | 1/8 | 4 |
| HP450-1875 | 3/16 | 2 | 5/8 | 3/16 | 4 |
| HP450-2500 | 1/4 | 2-1/2 | 3/4 | 1/4 | 6 |
| HP450-3125 | 5/16 | 2-1/2 | 13/16 | 5/16 | 6 |
| HP450-3750 | 3/8 | 2-1/2 | 1 | 3/8 | 6 |
| HP450-4375 | 7/16 | 2-3/4 | 1 | 7/16 | 6 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | Number of Flutes |
|------------|---------------|----------------|---------------|----------------|------------------|
| TiAlN | D | L | Lc | d | |
| HP450-5000 | 1/2 | 3 | 1 | 1/2 | 6 |
| HP450-5625 | 9/16 | 3-1/2 | 1-1/8 | 9/16 | 6 |
| HP450-6250 | 5/8 | 3-1/2 | 1-1/4 | 5/8 | 6 |
| HP450-7500 | 3/4 | 4 | 1-1/2 | 3/4 | 6 |
| HP450-8750 | 7/8 | 4 | 1-1/2 | 7/8 | 6 |
| HP450-1000 | 1 | 4 | 1-1/2 | 1 | 8 |

Packed: 1 pc.
Available TiAlN coating only.



List HP450

Multiple Flute

| | | | | |
|---------------------|---------|-------|-----|-------------|
| SPEED FEED P1241 | CARBIDE | TiAlN | 50° | SHANK h6 |
|---------------------|---------|-------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 3 ≤ D ≤ 25 | +0 / -0.038mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | Number of Flutes |
|------------|---------------|----------------|---------------|----------------|------------------|
| TiAlN | D | L | Lc | d | |
| HP450-1181 | 3 | 51 | 10 | 6 | 4 |
| HP450-1575 | 4 | 51 | 14 | 6 | 4 |
| HP450-1969 | 5 | 51 | 16 | 6 | 4 |
| HP450-2362 | 6 | 64 | 19 | 6 | 6 |
| HP450-3150 | 8 | 64 | 21 | 8 | 6 |
| HP450-3937 | 10 | 64 | 25 | 10 | 6 |
| HP450-4724 | 12 | 76 | 25 | 12 | 6 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | Number of Flutes |
|------------|---------------|----------------|---------------|----------------|------------------|
| TiAlN | D | L | Lc | d | |
| HP450-5512 | 14 | 89 | 30 | 14 | 6 |
| HP450-6299 | 16 | 89 | 35 | 16 | 6 |
| HP450-7087 | 18 | 102 | 35 | 18 | 6 |
| HP450-7874 | 20 | 102 | 38 | 20 | 6 |
| HP450-8661 | 22 | 102 | 38 | 22 | 6 |
| HP450-9843 | 25 | 102 | 38 | 25 | 8 |

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXS® - List 4440 or 4540 (p. 886 or 887)

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| HP450 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



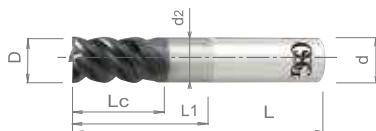


List HP453

4 Flute, Super Tough Mills

| | | | | | |
|----------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P1243 | CARBIDE | TiAlN | | 50° | SHANK h6 |
|----------------------------|----------------|--------------|--|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 4 ≤ D ≤ 20 | +0 / -0.038mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|---------------|----------------|
| TiAlN | D | L | Lc | L1 | d2 | d |
| HP453-1575 | 4 | 60 | 6 | 12 | 3.9 | 6 |
| HP453-2362 | 6 | 60 | 9 | 18 | 5.9 | 6 |
| HP453-3150 | 8 | 75 | 12 | 24 | 7.9 | 8 |
| HP453-3937 | 10 | 80 | 15 | 30 | 9.9 | 10 |
| HP453-4724 | 12 | 102 | 18 | 36 | 11.9 | 12 |
| HP453-6299 | 16 | 110 | 24 | 48 | 15.9 | 16 |
| HP453-7874 | 20 | 125 | 30 | 60 | 19.9 | 20 |

Packed: 1 pc.
Available TiAlN coating only.

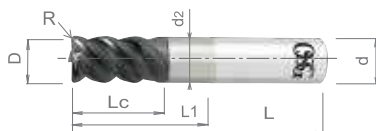


List HP456

4 Flute, Super Tough Mills, Corner Radius

| | | | | | |
|----------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P1243 | CARBIDE | TiAlN | | 50° | SHANK h6 |
|----------------------------|----------------|--------------|--|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 6 ≤ D ≤ 12 | +0 / -0.038mm |



Units: mm

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|
| TiAlN | D | R | L | Lc | L1 | d2 | d |
| HP456-2363 | 6 | 0.5 | 60 | 9 | 18 | 5.9 | 6 |
| HP456-2364 | 6 | 1.0 | 60 | 9 | 18 | 5.9 | 6 |
| HP456-3151 | 8 | 0.5 | 75 | 12 | 24 | 7.9 | 8 |
| HP456-3152 | 8 | 1.0 | 75 | 12 | 24 | 7.9 | 8 |
| HP456-3938 | 10 | 0.5 | 80 | 15 | 30 | 9.9 | 10 |
| HP456-3939 | 10 | 1.0 | 80 | 15 | 30 | 9.9 | 10 |
| HP456-4725 | 12 | 0.5 | 102 | 18 | 36 | 11.9 | 12 |
| HP456-4726 | 12 | 1.0 | 102 | 18 | 36 | 11.9 | 12 |
| HP456-4727 | 12 | 1.5 | 102 | 18 | 36 | 11.9 | 12 |

Packed: 1 pc.
Available TiAlN coating only.



Work Material

| Chart applies to all list numbers above | P | | | | | M | | | K | N | | S | | H | | | |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------|---------|--------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| - | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





HY-PRO® CARB

Performance Sub-Micrograin Carbide End Mills

List HP451

4 Flute, Super Tough Mills

| | | | | |
|--------------------------|---------|-------|-----|-------------|
| SPEED FEED P1242-1243 | CARBIDE | TiAlN | 50° | SHANK h6 |
|--------------------------|---------|-------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/8 ≤ D ≤ 1 | +0 / -0.0015" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| TiAlN | D | L | Lc | d |
| HP451-1250 | 1/8 | 2-1/4 | 3/4 | 1/8 |
| HP451-1875 | 3/16 | 2-1/4 | 3/4 | 3/16 |
| HP451-2500 | 1/4 | 3 | 1-1/8 | 1/4 |
| HP451-3125 | 5/16 | 3 | 1-1/8 | 5/16 |
| HP451-3750 | 3/8 | 3 | 1-1/8 | 3/8 |
| HP451-4375 | 7/16 | 4 | 2 | 7/16 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| TiAlN | D | L | Lc | d |
| HP451-5000 | 1/2 | 4 | 2 | 1/2 |
| HP451-6250 | 5/8 | 5 | 2-1/4 | 5/8 |
| HP451-7500 | 3/4 | 5 | 2-1/4 | 3/4 |
| HP451-1000 | 1 | 5 | 2-1/4 | 1 |

Packed: 1 pc.
Available TiAlN coating only.



List HP451

4 Flute, Super Tough Mills

| | | | | |
|--------------------------|---------|-------|-----|-------------|
| SPEED FEED P1242-1243 | CARBIDE | TiAlN | 50° | SHANK h6 |
|--------------------------|---------|-------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 4 ≤ D ≤ 20 | +0 / -0.038mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| TiAlN | D | L | Lc | d |
| HP451-1575 | 4 | 60 | 12 | 6 |
| HP451-2362 | 6 | 60 | 15 | 6 |
| HP451-3150 | 8 | 75 | 20 | 8 |
| HP451-3937 | 10 | 80 | 25 | 10 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| TiAlN | D | L | Lc | d |
| HP451-4724 | 12 | 102 | 30 | 12 |
| HP451-6299 | 16 | 110 | 40 | 16 |
| HP451-7874 | 20 | 125 | 45 | 20 |

Packed: 1 pc.
Available TiAlN coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| HP451 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



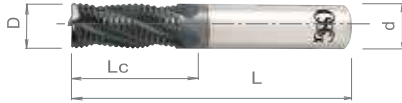


List HP400

4 Flute, Rougher

| | | | | |
|--------------------------|---------|-------|-----|-------------|
| SPEED FEED P1244-1245 | CARBIDE | TiAlN | 30° | SHANK h6 |
|--------------------------|---------|-------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/4 ≤ D ≤ 1 | +0 / -0.0015" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| TiAlN | D | L | Lc | d |
| HP400-2500 | 1/4 | 2-1/2 | 3/4 | 1/4 |
| HP400-3125 | 5/16 | 2-1/2 | 3/4 | 5/16 |
| HP400-3750 | 3/8 | 2-1/2 | 1 | 3/8 |
| HP400-5000 | 1/2 | 3 | 1-1/4 | 1/2 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| TiAlN | D | L | Lc | d |
| HP400-6250 | 5/8 | 3-1/2 | 1-5/8 | 5/8 |
| HP400-7500 | 3/4 | 4 | 1-5/8 | 3/4 |
| HP400-1000 | 1 | 4 | 1-3/4 | 1 |

Packed: 1 pc.
Available TiAlN coating only.



List HP400

4 Flute, Rougher

| | | | | |
|--------------------------|---------|-------|-----|-------------|
| SPEED FEED P1244-1245 | CARBIDE | TiAlN | 30° | SHANK h6 |
|--------------------------|---------|-------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 3 ≤ D ≤ 25 | +0 / -0.038mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| TiAlN | D | L | Lc | d |
| HP400-1181 | 3 | 64 | 10 | 6 |
| HP400-1575 | 4 | 64 | 14 | 6 |
| HP400-1968 | 5 | 64 | 15 | 6 |
| HP400-2362 | 6 | 64 | 19 | 6 |
| HP400-3150 | 8 | 64 | 21 | 8 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| TiAlN | D | L | Lc | d |
| HP400-3937 | 10 | 70 | 25 | 10 |
| HP400-4724 | 12 | 76 | 25 | 12 |
| HP400-6299 | 16 | 89 | 32 | 16 |
| HP400-7874 | 20 | 102 | 38 | 20 |
| HP400-9843 | 25 | 102 | 38 | 25 |

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® AERO - List 2015 (p. 924)

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| HP400 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





HY-PRO® CARB

Performance Sub-Micrograin Carbide End Mills

List HP410

2 Flute, Short Length, Necked

| | | | | | |
|----------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P1246 | CARBIDE | TiAlN | | 30° | SHANK h6 |
|----------------------------|----------------|--------------|--|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/32 ≤ D ≤ 3/16 | +0 / -0.0015" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|---------------|----------------|
| TiAlN | D | L | Lc | L1 | d2 | d |
| HP410-0312 | 1/32 | 2-1/2 | 3/64 | 5/16 | 0.029 | 1/4 |
| HP410-0625 | 1/16 | 2-1/2 | 3/32 | 5/8 | 0.060 | 1/4 |
| HP410-0938 | 3/32 | 2-1/2 | 9/64 | 15/16 | 0.091 | 1/4 |
| HP410-1250 | 1/8 | 3 | 3/16 | 1-1/4 | 0.123 | 1/4 |
| HP410-1875 | 3/16 | 4 | 9/32 | 1-7/8 | 0.183 | 1/4 |

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3791 (p. 866-867)

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------------|-----|---------|--------------------------|----------|---------|--------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| HP410 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best



List HP410

2 Flute, Short Length, Necked

| | | | | | |
|----------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P1246 | CARBIDE | TiAlN | | 30° | SHANK h6 |
|----------------------------|----------------|--------------|--|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 0.5 ≤ D ≤ 2.5 | +0 / -0.038mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|---------------|----------------|
| TiAlN | D | L | Lc | L1 | d2 | d |
| HP410-0197 | 0.5 | 60 | 0.7 | 2.5 | 0.45 | 6 |
| HP410-0236 | 0.6 | 60 | 0.9 | 3.0 | 0.55 | 6 |
| HP410-0315 | 0.8 | 60 | 1.2 | 4.0 | 0.75 | 6 |
| HP410-0394 | 1.0 | 60 | 1.5 | 5.0 | 0.95 | 6 |
| HP410-0472 | 1.2 | 60 | 1.8 | 6.0 | 1.15 | 6 |
| HP410-0551 | 1.4 | 60 | 2.1 | 7.0 | 1.35 | 6 |
| HP410-0591 | 1.5 | 60 | 2.3 | 7.5 | 1.45 | 6 |
| HP410-0630 | 1.6 | 60 | 2.4 | 8.0 | 1.55 | 6 |
| HP410-0709 | 1.8 | 60 | 2.7 | 9.0 | 1.75 | 6 |
| HP410-0787 | 2.0 | 60 | 3.0 | 10.0 | 1.95 | 6 |
| HP410-0984 | 2.5 | 60 | 3.7 | 12.5 | 2.40 | 6 |

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3791 (p. 866-867)

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------------|-----|---------|--------------------------|----------|---------|--------------|----------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| HP410 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





HY-PRO® CARB

Performance Sub-Micrograin Carbide End Mills

List HP411

4 Flute, Short Length, Long Neck

| | | | | | |
|----------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P1247 | CARBIDE | TiAlN | | 30° | SHANK h6 |
|----------------------------|----------------|--------------|--|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/8 ≤ D ≤ 1/4 | +0 / -0.0015" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|---------------|----------------|
| TiAlN | D | L | Lc | L1 | d2 | d |
| HP411-1250 | 1/8 | 3 | 3/16 | 5/8 | 0.119 | 1/4 |
| HP411-1875 | 3/16 | 3 | 9/32 | 15/16 | 0.182 | 1/4 |
| HP411-2500 | 1/4 | 4 | 3/8 | 1-1/4 | 0.244 | 1/4 |

Packed: 1 pc.
Available TiAlN coating only.



List HP411

4 Flute, Short Length, Long Neck

| | | | | | |
|----------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P1247 | CARBIDE | TiAlN | | 30° | SHANK h6 |
|----------------------------|----------------|--------------|--|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 3 ≤ D ≤ 6 | +0 / -0.038mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|---------------|----------------|
| TiAlN | D | L | Lc | L1 | d2 | d |
| HP411-1181 | 3.0 | 70 | 4.5 | 15.0 | 2.85 | 6 |
| HP411-1378 | 3.5 | 70 | 5.3 | 17.5 | 3.35 | 6 |
| HP411-1575 | 4.0 | 70 | 6.0 | 20.0 | 3.85 | 6 |
| HP411-1969 | 5.0 | 80 | 7.5 | 25.0 | 4.85 | 6 |
| HP411-2362 | 6.0 | 90 | 9.0 | 30.0 | 5.85 | 6 |

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3794 (p. 881-882)

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------------|-----|---------|--------------------------|-----------|---------|--------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| HP411 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best



List HP455

5 Flute, **Corner Protection**

| | | | | | |
|----------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P1248 | CARBIDE | TiAlN | | 45° | SHANK h6 |
|----------------------------|----------------|--------------|--|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/8 ≤ D ≤ 1 | +0 / -0.0015" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| TiAlN | D | L | Lc | d |
| HP455-1250 | 1/8 | 1-1/2 | 1/2 | 1/8 |
| HP455-1562 | 5/32 | 2 | 9/16 | 3/16 |
| HP455-1875 | 3/16 | 2 | 5/8 | 3/16 |
| HP455-2188 | 7/32 | 2-1/2 | 5/8 | 1/4 |
| HP455-2500 | 1/4 | 2-1/2 | 3/4 | 1/4 |
| HP455-2812 | 9/32 | 2-1/2 | 3/4 | 5/16 |
| HP455-3125 | 5/16 | 2-1/2 | 13/16 | 5/16 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| TiAlN | D | L | Lc | d |
| HP455-3750 | 3/8 | 2-1/2 | 1 | 3/8 |
| HP455-4375 | 7/16 | 2-3/4 | 1 | 7/16 |
| HP455-5000 | 1/2 | 3 | 1 | 1/2 |
| HP455-5625 | 9/16 | 3-1/2 | 1-1/8 | 9/16 |
| HP455-6250 | 5/8 | 3-1/2 | 1-1/4 | 5/8 |
| HP455-7500 | 3/4 | 4 | 1-1/2 | 3/4 |
| HP455-1000 | 1 | 4 | 1-1/2 | 1 |

Packed: 1 pc.
Available TiAlN coating only.



List HP455

5 Flute, **Corner Protection**

| | | | | | |
|----------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P1248 | CARBIDE | TiAlN | | 45° | SHANK h6 |
|----------------------------|----------------|--------------|--|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 3 ≤ D ≤ 25 | +0 / -0.038mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| TiAlN | D | L | Lc | d |
| HP455-1181 | 3 | 39 | 9 | 3 |
| HP455-1575 | 4 | 51 | 14 | 4 |
| HP455-1968 | 5 | 51 | 16 | 5 |
| HP455-2362 | 6 | 64 | 19 | 6 |
| HP455-2756 | 7 | 64 | 19 | 8 |
| HP455-3150 | 8 | 64 | 21 | 8 |
| HP455-3937 | 10 | 70 | 22 | 10 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| TiAlN | D | L | Lc | d |
| HP455-4331 | 11 | 70 | 25 | 11 |
| HP455-4724 | 12 | 76 | 25 | 12 |
| HP455-5512 | 14 | 89 | 30 | 14 |
| HP455-6299 | 16 | 89 | 32 | 16 |
| HP455-7874 | 20 | 102 | 38 | 20 |
| HP455-9843 | 25 | 102 | 38 | 25 |

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try HY-PRO® CARB VGX - List VG534 (p. 967-968)

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| HP455 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





HY-PRO® CARB

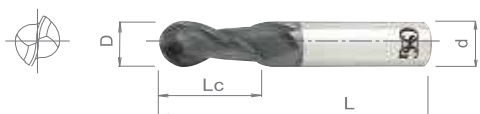
Performance Sub-Micrograin Carbide End Mills

List HP421BN, HP441BN

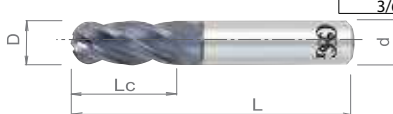
| | | | | |
|--------------------------|---------|-------|-----|-------------|
| SPEED FEED P1249-1250 | CARBIDE | TiAlN | 35° | SHANK h6 |
|--------------------------|---------|-------|-----|-------------|

2 or 4 Flute, Ball End

| Milling Diameter Tolerance | |
|----------------------------|-----------------|
| $3/64 \leq D \leq 1$ | $+0 / -0.0015"$ |



HP421BN



HP441BN

Units: Inch

| EDP Number | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------------------|------------------------|---------------|----------------|---------------|----------------|
| List HP421BN (2 Flute) | List HP441BN (4 Flute) | | | | |
| TiAlN | TiAlN | D | L | Lc | d |
| HP421-0469-BN | HP441-0469-BN | 3/64 | 1-1/2 | 9/64 | 1/8 |
| HP421-0625-BN | HP441-0625-BN | 1/16 | 1-1/2 | 3/16 | 1/8 |
| HP421-0781-BN | HP441-0781-BN | 5/64 | 1-1/2 | 1/4 | 1/8 |
| HP421-0938-BN | HP441-0938-BN | 3/32 | 1-1/2 | 5/16 | 1/8 |
| HP421-1094-BN | HP441-1094-BN | 7/64 | 1-1/2 | 3/8 | 1/8 |
| HP421-1250-BN | HP441-1250-BN | 1/8 | 1-1/2 | 1/2 | 1/8 |
| HP421-1406-BN | HP441-1406-BN | 9/64 | 2 | 1/2 | 3/16 |
| HP421-1562-BN | HP441-1562-BN | 5/32 | 2 | 9/16 | 3/16 |
| HP421-1719-BN | HP441-1719-BN | 11/64 | 2 | 9/16 | 3/16 |
| HP421-1875-BN | HP441-1875-BN | 3/16 | 2 | 5/8 | 3/16 |
| HP421-2031-BN | HP441-2031-BN | 13/64 | 2-1/2 | 5/8 | 1/4 |
| HP421-2188-BN | HP441-2188-BN | 7/32 | 2-1/2 | 5/8 | 1/4 |
| HP421-2500-BN | HP441-2500-BN | 1/4 | 2-1/2 | 3/4 | 1/4 |
| HP421-2812-BN | HP441-2812-BN | 9/32 | 2-1/2 | 3/4 | 5/16 |
| HP421-3125-BN | HP441-3125-BN | 5/16 | 2-1/2 | 13/16 | 5/16 |
| HP421-3438-BN | HP441-3438-BN | 11/32 | 2-1/2 | 7/8 | 3/8 |
| HP421-3750-BN | HP441-3750-BN | 3/8 | 2-1/2 | 1 | 3/8 |
| HP421-4062-BN | HP441-4062-BN | 13/32 | 2-3/4 | 1 | 7/16 |
| HP421-4375-BN | HP441-4375-BN | 7/16 | 2-3/4 | 1 | 7/16 |
| HP421-5000-BN | HP441-5000-BN | 1/2 | 3 | 1 | 1/2 |
| HP421-5625-BN | HP441-5625-BN | 9/16 | 3-1/2 | 1-1/8 | 9/16 |
| HP421-6250-BN | HP441-6250-BN | 5/8 | 3-1/2 | 1-1/4 | 5/8 |
| HP421-6875-BN | HP441-6875-BN | 11/16 | 4 | 1-3/8 | 3/4 |
| HP421-7500-BN | HP441-7500-BN | 3/4 | 4 | 1-1/2 | 3/4 |
| HP421-8750-BN | HP441-8750-BN | 7/8 | 4 | 1-1/2 | 7/8 |
| HP421-1000-BN | HP441-1000-BN | 1 | 4 | 1-1/2 | 1 |

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3610 (p. 853)
or EXOCARB® WXS® - List 4430 (p. 899)

Work Material

| Chart applies to all list numbers above | P | | | | | M | | | K | N | | S | | H | | | | |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| - | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

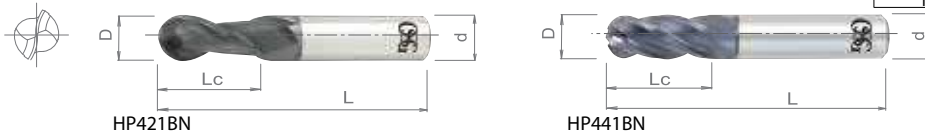


List HP421BN, HP441BN

2 or 4 Flute, Ball End

| | | | | |
|---------------------------------|----------------|--------------|------------|--------------------|
| SPEED FEED P1249-1250 | CARBIDE | TiAlN | 35° | SHANK h6 |
|---------------------------------|----------------|--------------|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1 ≤ D ≤ 25 | +0 / -0.038mm |



Units: mm

| EDP Number | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------------------|------------------------|---------------|----------------|---------------|----------------|
| List HP421BN (2 Flute) | List HP441BN (4 Flute) | | | | |
| TiAlN | TiAlN | D | L | Lc | d |
| HP421-0394-BN | HP441-0394-BN | 1.0 | 39 | 3 | 3 |
| HP421-0591-BN | HP441-0591-BN | 1.5 | 39 | 5 | 3 |
| HP421-0787-BN | HP441-0787-BN | 2.0 | 39 | 7 | 3 |
| HP421-0984-BN | HP441-0984-BN | 2.5 | 39 | 8 | 3 |
| HP421-1181-BN | HP441-1181-BN | 3.0 | 39 | 10 | 3 |
| HP421-1378-BN | HP441-1378-BN | 3.5 | 51 | 12 | 4 |
| HP421-1575-BN | HP441-1575-BN | 4.0 | 51 | 14 | 4 |
| HP421-1772-BN | HP441-1772-BN | 4.5 | 51 | 14 | 5 |
| HP421-1968-BN | HP441-1968-BN | 5.0 | 51 | 16 | 5 |
| HP421-2362-BN | HP441-2362-BN | 6.0 | 64 | 19 | 6 |
| HP421-2756-BN | HP441-2756-BN | 7.0 | 64 | 19 | 8 |
| HP421-3150-BN | HP441-3150-BN | 8.0 | 64 | 21 | 8 |
| HP421-3543-BN | HP441-3543-BN | 9.0 | 70 | 22 | 10 |
| HP421-3937-BN | HP441-3937-BN | 10.0 | 70 | 25 | 10 |
| HP421-4331-BN | HP441-4331-BN | 11.0 | 70 | 25 | 11 |
| HP421-4724-BN | HP441-4724-BN | 12.0 | 76 | 25 | 12 |
| HP421-5512-BN | HP441-5512-BN | 14.0 | 89 | 30 | 14 |
| HP421-6299-BN | HP441-6299-BN | 16.0 | 89 | 32 | 16 |
| HP421-7087-BN | HP441-7087-BN | 18.0 | 102 | 35 | 18 |
| HP421-7874-BN | HP441-7874-BN | 20.0 | 102 | 38 | 20 |
| HP421-8661-BN | HP441-8661-BN | 22.0 | 102 | 38 | 22 |
| HP421-9843-BN | HP441-9843-BN | 25.0 | 102 | 38 | 25 |

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3710 (p. 854)
or EXOCARB® WXS® - List 4530 (p. 900)

Work Material

| Chart applies to all list numbers above | P | | | | | M | | | K | N | | S | | H | | | |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| - | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





HY-PRO® CARB

Performance Sub-Micrograin Carbide End Mills

List HP416

2 Flute, Ball End



| | | | | |
|---------------------------------|----------------|--------------|------------|--------------------|
| SPEED FEED P1251-1252 | CARBIDE | TiAlN | 30° | SHANK h6 |
|---------------------------------|----------------|--------------|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/32 ≤ D ≤ 1/2 | +0 / -0.0015" |

Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| TiAlN | D | L | Lc | d |
| HP416-0312 | 1/32 | 2-1/2 | 1/16 | 1/4 |
| HP416-0625 | 1/16 | 2-1/2 | 1/8 | 1/4 |
| HP416-0938 | 3/32 | 2-1/2 | 3/16 | 1/4 |
| HP416-1250 | 1/8 | 3 | 1/4 | 1/4 |
| HP416-1875 | 3/16 | 3 | 3/8 | 1/4 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| TiAlN | D | L | Lc | d |
| HP416-2500 | 1/4 | 3 | 1/2 | 1/4 |
| HP416-3125 | 5/16 | 4 | 5/8 | 5/16 |
| HP416-3750 | 3/8 | 4 | 3/4 | 3/8 |
| HP416-5000 | 1/2 | 4 | 1 | 1/2 |

Packed: 1 pc.
Available TiAlN coating only.



List HP416

2 Flute, Ball End



| | | | | |
|---------------------------------|----------------|--------------|------------|--------------------|
| SPEED FEED P1251-1252 | CARBIDE | TiAlN | 30° | SHANK h6 |
|---------------------------------|----------------|--------------|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1 ≤ D ≤ 25 | +0 / -0.038mm |

Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| TiAlN | D | L | Lc | d |
| HP416-0394 | 1.0 | 50 | 2.5 | 4 |
| HP416-0472 | 1.2 | 50 | 3.0 | 4 |
| HP416-0551 | 1.4 | 50 | 3.5 | 4 |
| HP416-0591 | 1.5 | 50 | 4.0 | 4 |
| HP416-0630 | 1.6 | 50 | 4.0 | 4 |
| HP416-0709 | 1.8 | 50 | 4.5 | 4 |
| HP416-0787 | 2.0 | 50 | 5.0 | 6 |
| HP416-0984 | 2.5 | 60 | 6.0 | 6 |
| HP416-1181 | 3.0 | 60 | 8.0 | 6 |
| HP416-1378 | 3.5 | 70 | 8.0 | 6 |
| HP416-1575 | 4.0 | 70 | 8.0 | 6 |
| HP416-1576 | 4.0 | 60 | 8.0 | 4 |
| HP416-1772 | 4.5 | 80 | 10.0 | 6 |
| HP416-1969 | 5.0 | 80 | 10.0 | 6 |
| HP416-2165 | 5.5 | 90 | 12.0 | 6 |
| HP416-2362 | 6.0 | 90 | 12.0 | 6 |
| HP416-2559 | 6.5 | 90 | 14.0 | 8 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| TiAlN | D | L | Lc | d |
| HP416-2756 | 7.0 | 90 | 14.0 | 8 |
| HP416-2953 | 7.5 | 90 | 14.0 | 8 |
| HP416-3150 | 8.0 | 100 | 14.0 | 8 |
| HP416-3346 | 8.5 | 100 | 18.0 | 10 |
| HP416-3543 | 9.0 | 100 | 18.0 | 10 |
| HP416-3740 | 9.5 | 100 | 18.0 | 10 |
| HP416-3937 | 10.0 | 100 | 18.0 | 10 |
| HP416-4331 | 11.0 | 100 | 22.0 | 12 |
| HP416-4724 | 12.0 | 110 | 22.0 | 12 |
| HP416-5118 | 13.0 | 110 | 26.0 | 16 |
| HP416-5512 | 14.0 | 110 | 26.0 | 16 |
| HP416-5906 | 15.0 | 110 | 30.0 | 16 |
| HP416-6299 | 16.0 | 140 | 30.0 | 16 |
| HP416-7087 | 18.0 | 140 | 34.0 | 20 |
| HP416-7874 | 20.0 | 160 | 38.0 | 20 |
| HP416-9843 | 25.0 | 180 | 50.0 | 25 |

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3610 or 3710 (p. 853 or 854)

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | | | | | | |
| | Low | Med. | High | | | | | | | | | | | | | | | | | | | | | |
| | 1010 | 1035 | 1045 | 1065 | 4140 | 4340 | | | | 300 | 400 | 17-4 PH | | | 6061 | 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| HP416 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



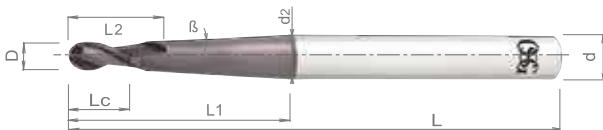


List HP418

2 Flute, Pencil Neck, Ball End

| | | | | | |
|---------------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P1253-1254 | CARBIDE | TiAlN | | 30° | SHANK h6 |
|---------------------------------|----------------|--------------|--|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 3/32 ≤ D ≤ 3/8 | +0 / -0.0015" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Non-Taper Neck Length | Maximum Neck Diameter | Neck Incline | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|-----------------------|-----------------------|--------------|----------------|
| TiAlN | D | L | Lc | L1 | L2 | d2 | β | d |
| HP418-0938 | 3/32 | 3 | 0.160 | 1.60 | 0.200 | 0.240 | 3° | 1/4 |
| HP418-1250 | 1/8 | 3 | 0.225 | 1.60 | 0.270 | 0.217 | 2° | 1/4 |
| HP418-1875 | 3/16 | 3-1/2 | 0.312 | 1.90 | 0.390 | 0.312 | 2° | 5/16 |
| HP418-2500 | 1/4 | 4 | 0.400 | 2.25 | 0.500 | 0.375 | 2° | 3/8 |
| HP418-3750 | 3/8 | 4 | 0.600 | 2.25 | 0.750 | 0.500 | 2° | 1/2 |

Packed: 1 pc.
Available TiAlN coating only.

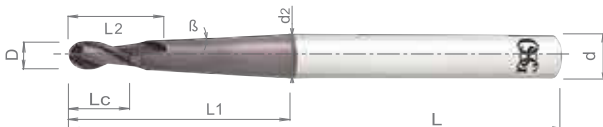


List HP418

2 Flute, Pencil Neck, Ball End

| | | | | | |
|---------------------------------|----------------|--------------|--|------------|--------------------|
| SPEED FEED P1253-1254 | CARBIDE | TiAlN | | 30° | SHANK h6 |
|---------------------------------|----------------|--------------|--|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1 ≤ D ≤ 12 | +0 / -0.038mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Non-Taper Neck Length | Maximum Neck Diameter | Neck Incline | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|-----------------------|-----------------------|--------------|----------------|
| TiAlN | D | L | Lc | L1 | L2 | d2 | B | d |
| HP418-0390 | 1 | 60 | 2.5 | 20.0 | 4.0 | 3.8 | 5.0° | 6 |
| HP418-0391 | 1 | 80 | 2.5 | 40.0 | 4.0 | 4.8 | 3.0° | 6 |
| HP418-0392 | 1 | 70 | 2.5 | 20.0 | 4.0 | 1.8 | 1.5° | 6 |
| HP418-0780 | 2 | 60 | 5.0 | 20.0 | 7.0 | 4.3 | 5.0° | 6 |
| HP418-0781 | 2 | 80 | 5.0 | 40.0 | 7.0 | 5.5 | 3.0° | 6 |
| HP418-0782 | 2 | 70 | 5.0 | 20.0 | 7.0 | 2.7 | 1.5° | 6 |
| HP418-1180 | 3 | 70 | 8.0 | 30.0 | 10.5 | 5.0 | 3.0° | 6 |
| HP418-1181 | 3 | 90 | 8.0 | 50.0 | 10.5 | 5.1 | 1.5° | 6 |
| HP418-1570 | 4 | 70 | 8.0 | 28.0 | 10.5 | 6.0 | 3.0° | 6 |
| HP418-1571 | 4 | 90 | 8.0 | 48.0 | 10.5 | 6.0 | 1.5° | 6 |
| HP418-1960 | 5 | 90 | 10.0 | 40.0 | 12.5 | 8.0 | 3.0° | 8 |
| HP418-1961 | 5 | 110 | 10.0 | 60.0 | 12.5 | 7.5 | 1.5° | 8 |
| HP418-2360 | 6 | 90 | 12.0 | 33.5 | 14.5 | 8.0 | 3.0° | 8 |
| HP418-2361 | 6 | 110 | 12.0 | 52.0 | 14.5 | 8.0 | 1.5° | 8 |
| HP418-3150 | 8 | 100 | 14.0 | 35.5 | 16.5 | 10.0 | 3.0° | 10 |
| HP418-3151 | 8 | 120 | 14.0 | 54.5 | 16.5 | 10.0 | 1.5° | 10 |
| HP418-3930 | 10 | 110 | 18.0 | 39.5 | 20.5 | 12.0 | 3.0° | 12 |
| HP418-3931 | 10 | 130 | 18.0 | 58.5 | 20.5 | 12.0 | 1.5° | 12 |
| HP418-4720 | 12 | 140 | 22.0 | 60.0 | 25.0 | 16.0 | 3.0° | 16 |
| HP418-4721 | 12 | 160 | 22.0 | 80.0 | 25.0 | 14.9 | 1.5° | 16 |

Packed: 1 pc.
Available TiAlN coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| HP418 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





HY-PRO® CARB

Performance Sub-Micrograin Carbide End Mills

List HP419

2 Flute, Necked, Ball End



| | | | | |
|--------------------------|---------|-------|-----|-------------|
| SPEED FEED P1255-1256 | CARBIDE | TiAlN | 30° | SHANK h6 |
|--------------------------|---------|-------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/32 ≤ D ≤ 3/16 | +0 / -0.0015" |

Units: Inch

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Neck Length | Neck Dia. | Shank Dia. |
|------------|-----------|----------------|---------------|-------------|-----------|------------|
| TiAlN | D | L | Lc | L1 | d2 | d |
| HP419-0312 | 1/32 | 2-1/2 | 1/32 | 5/16 | 0.029 | 1/4 |
| HP419-0625 | 1/16 | 2-1/2 | 1/16 | 5/8 | 0.060 | 1/4 |
| HP419-0938 | 3/32 | 2-1/2 | 3/32 | 15/16 | 0.091 | 1/4 |

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Neck Length | Neck Dia. | Shank Dia. |
|------------|-----------|----------------|---------------|-------------|-----------|------------|
| TiAlN | D | L | Lc | L1 | d2 | d |
| HP419-1250 | 1/8 | 3 | 1/8 | 1-1/4 | 0.123 | 1/4 |
| HP419-1875 | 3/16 | 4 | 3/16 | 1-7/8 | 0.183 | 1/4 |

Packed: 1 pc.
Available TiAlN coating only.



List HP419

2 Flute, Necked, Ball End



| | | | | |
|--------------------------|---------|-------|-----|-------------|
| SPEED FEED P1255-1256 | CARBIDE | TiAlN | 30° | SHANK h6 |
|--------------------------|---------|-------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 0.5 ≤ D ≤ 6 | +0 / -0.038mm |

Units: mm

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Neck Length | Neck Dia. | Shank Dia. |
|------------|-----------|----------------|---------------|-------------|-----------|------------|
| TiAlN | D | L | Lc | L1 | d2 | d |
| HP419-0197 | 0.5 | 60 | 0.5 | 2.5 | 0.45 | 6 |
| HP419-0236 | 0.6 | 60 | 0.6 | 3.0 | 0.55 | 6 |
| HP419-0315 | 0.8 | 60 | 0.8 | 4.0 | 0.75 | 6 |
| HP419-0394 | 1.0 | 60 | 1.0 | 5.0 | 0.95 | 6 |
| HP419-0472 | 1.2 | 60 | 1.2 | 6.0 | 1.15 | 6 |
| HP419-0551 | 1.4 | 60 | 1.4 | 7.0 | 1.35 | 6 |
| HP419-0591 | 1.5 | 60 | 1.5 | 7.5 | 1.45 | 6 |
| HP419-0630 | 1.6 | 60 | 1.6 | 8.0 | 1.55 | 6 |

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Neck Length | Neck Dia. | Shank Dia. |
|------------|-----------|----------------|---------------|-------------|-----------|------------|
| TiAlN | D | L | Lc | L1 | d2 | d |
| HP419-0709 | 1.8 | 60 | 1.8 | 9.0 | 1.75 | 6 |
| HP419-0787 | 2.0 | 60 | 2.0 | 10.0 | 1.95 | 6 |
| HP419-0984 | 2.5 | 60 | 2.5 | 12.5 | 2.40 | 6 |
| HP419-1181 | 3.0 | 70 | 3.0 | 15.0 | 2.85 | 6 |
| HP419-1378 | 3.5 | 70 | 3.5 | 17.5 | 3.35 | 6 |
| HP419-1575 | 4.0 | 70 | 4.0 | 20.0 | 3.85 | 6 |
| HP419-1969 | 5.0 | 80 | 5.0 | 25.0 | 4.85 | 6 |
| HP419-2362 | 6.0 | 90 | 6.0 | 30.0 | 5.85 | 6 |

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3690 or 3790 (p. 857 or 858-860)

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------------|-----|---------|--------------------------|-----------|---------|--------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| HP419 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best





List HP419L

2 Flute, Long Neck, Ball End

| | | | | |
|---------------------------------|----------------|--------------|------------|--------------------|
| SPEED FEED P1255-1256 | CARBIDE | TiAlN | 30° | SHANK h6 |
|---------------------------------|----------------|--------------|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 0.6 ≤ D ≤ 3 | +0 / -0.038mm |



Units: mm

| EDP Number | Mill Diameter | Overall Diameter | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|-------------|---------------|------------------|---------------|-------------|---------------|----------------|
| TiAlN | D | L | Lc | L1 | d2 | d |
| HP419L-0236 | 0.6 | 60 | 0.6 | 6 | 0.55 | 6 |
| HP419L-0315 | 0.8 | 60 | 0.8 | 8 | 0.75 | 6 |
| HP419L-0394 | 1.0 | 60 | 1.0 | 10 | 0.95 | 6 |
| HP419L-0472 | 1.2 | 60 | 1.2 | 12 | 1.15 | 6 |
| HP419L-0551 | 1.4 | 60 | 1.4 | 12 | 1.35 | 6 |
| HP419L-0591 | 1.5 | 60 | 1.5 | 12 | 1.45 | 6 |
| HP419L-0630 | 1.6 | 60 | 1.6 | 16 | 1.55 | 6 |
| HP419L-0709 | 1.8 | 60 | 1.8 | 16 | 1.75 | 6 |
| HP419L-0787 | 2.0 | 60 | 2.0 | 16 | 1.95 | 6 |
| HP419L-1181 | 3.0 | 70 | 3.0 | 30 | 2.85 | 6 |

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3790 (p. 858-860)

| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|------------|------------------|-----|--------------------------|-----------|----------|------|--------------|--------------------------|--------------------------|---------|-----------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| HP419L | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | |

good best





HY-PRO[®] CARB

Performance Sub-Micrograin Carbide End Mills

List HP413

2 Flute, Ball End



| | | | | |
|---------------------------|---------|-------|-----|-------------|
| SPEED FEED PP1255-1256 | CARBIDE | TiAlN | 30° | SHANK h6 |
|---------------------------|---------|-------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/32 ≤ D ≤ 3/16 | +0 / -0.0015" |

Units: Inch

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Neck Length | Neck Dia. | Shank Dia. |
|------------|-----------|----------------|---------------|-------------|-----------|------------|
| TiAlN | D | L | Lc | L1 | d2 | d |
| HP413-0312 | 1/32 | 2-1/2 | 1/32 | 5/32 | 0.029 | 1/4 |
| HP413-0625 | 1/16 | 2-1/2 | 1/16 | 5/16 | 0.060 | 1/4 |
| HP413-0938 | 3/32 | 2-1/2 | 3/32 | 15/32 | 0.091 | 1/4 |

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Neck Length | Neck Dia. | Shank Dia. |
|------------|-----------|----------------|---------------|-------------|-----------|------------|
| TiAlN | D | L | Lc | L1 | d2 | d |
| HP413-1250 | 1/8 | 3 | 1/8 | 5/8 | 0.123 | 1/4 |
| HP413-1875 | 3/16 | 4 | 3/16 | 15/16 | 0.183 | 1/4 |

Packed: 1 pc.
Available TiAlN coating only.



List HP413

2 Flute, Ball End



| | | | | |
|--------------------------|---------|-------|-----|-------------|
| SPEED FEED P1255-1256 | CARBIDE | TiAlN | 30° | SHANK h6 |
|--------------------------|---------|-------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1 ≤ D ≤ 6 | +0 / -0.038mm |

Units: mm

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Neck Length | Neck Dia. | Shank Dia. |
|------------|-----------|----------------|---------------|-------------|-----------|------------|
| TiAlN | D | L | Lc | L1 | d2 | d |
| HP413-0394 | 1.0 | 50 | 1.0 | 2.5 | 0.95 | 6 |
| HP413-0472 | 1.2 | 50 | 1.2 | 3.0 | 1.15 | 6 |
| HP413-0551 | 1.4 | 50 | 1.4 | 3.5 | 1.35 | 6 |
| HP413-0591 | 1.5 | 50 | 1.5 | 3.8 | 1.45 | 6 |
| HP413-0630 | 1.6 | 50 | 1.6 | 4.0 | 1.55 | 6 |
| HP413-0709 | 1.8 | 50 | 1.8 | 4.5 | 1.75 | 6 |
| HP413-0787 | 2.0 | 50 | 2.0 | 5.0 | 1.95 | 6 |

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Neck Length | Neck Dia. | Shank Dia. |
|------------|-----------|----------------|---------------|-------------|-----------|------------|
| TiAlN | D | L | Lc | L1 | d2 | d |
| HP413-0984 | 2.5 | 50 | 2.5 | 5.0 | 2.40 | 6 |
| HP413-1181 | 3.0 | 50 | 3.0 | 6.0 | 2.85 | 6 |
| HP413-1378 | 3.5 | 50 | 3.5 | 6.0 | 3.35 | 6 |
| HP413-1575 | 4.0 | 50 | 4.0 | 6.0 | 3.85 | 6 |
| HP413-1969 | 5.0 | 50 | 5.0 | 7.5 | 4.85 | 6 |
| HP413-2362 | 6.0 | 50 | 6.0 | 9.0 | 5.85 | 6 |

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB[®] WXL[®] - List 3610 or 3710 (p. 853 or 854)

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------------|-----|---------|--------------------------|-----------|---------|--------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| HP413 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



List HP432, HP434

2 or 4 Flute, Corner Radius

| | | | |
|---------------------------------|------------------|-----|-------------|
| SPEED FEED P1257- 1260 | CARBIDE TiAlN | 35° | SHANK h6 |
|---------------------------------|------------------|-----|-------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/8 ≤ D ≤ 1 | +0 / -0.0015" |



Units: Inch

| EDP Number | | Mill Dia. | Corner Radius | Overall Length | Length of Cut | Shank Dia. |
|----------------------|----------------------|-----------|---------------|----------------|---------------|------------|
| List HP432 (2 Flute) | List HP434 (4 Flute) | | | | | |
| TiAlN | TiAlN | D | R | L | Lc | d |
| HP432-1251 | HP434-1251 | 1/8 | 0.015 | 1-1/2 | 1/2 | 1/8 |
| HP432-1872 | HP434-1872 | 3/16 | 0.020 | 2 | 5/8 | 3/16 |
| HP432-2502 | HP434-2502 | 1/4 | 0.020 | 2-1/2 | 3/4 | 1/4 |
| HP432-2503 | HP434-2503 | 1/4 | 0.030 | 2-1/2 | 3/4 | 1/4 |
| HP432-3122 | HP434-3122 | 5/16 | 0.020 | 2-1/2 | 13/16 | 5/16 |
| HP432-3123 | HP434-3123 | 5/16 | 0.030 | 2-1/2 | 13/16 | 5/16 |
| HP432-3752 | HP434-3752 | 3/8 | 0.020 | 2-1/2 | 1 | 3/8 |
| HP432-3753 | HP434-3753 | 3/8 | 0.030 | 2-1/2 | 1 | 3/8 |
| HP432-5002 | HP434-5002 | 1/2 | 0.020 | 3 | 1 | 1/2 |
| HP432-5003 | HP434-5003 | 1/2 | 0.030 | 3 | 1 | 1/2 |
| HP432-5006 | HP434-5006 | 1/2 | 0.060 | 3 | 1 | 1/2 |
| HP432-6253 | HP434-6253 | 5/8 | 0.030 | 3-1/2 | 1-1/4 | 5/8 |
| HP432-6256 | HP434-6256 | 5/8 | 0.060 | 3-1/2 | 1-1/4 | 5/8 |
| HP432-6259 | HP434-6259 | 5/8 | 0.090 | 3-1/2 | 1-1/4 | 5/8 |
| HP432-7506 | HP434-7506 | 3/4 | 0.060 | 4 | 1-1/2 | 3/4 |
| HP432-7509 | HP434-7509 | 3/4 | 0.090 | 4 | 1-1/2 | 3/4 |
| HP432-7512 | HP434-7512 | 3/4 | 0.125 | 4 | 1-1/2 | 3/4 |
| HP432-1006 | HP434-1006 | 1 | 0.060 | 4 | 1-1/2 | 1 |
| HP432-1009 | HP434-1009 | 1 | 0.090 | 4 | 1-1/2 | 1 |
| HP432-1012 | HP434-1012 | 1 | 0.125 | 4 | 1-1/2 | 1 |

Packed: 1 pc.
Available TiAlN coating only.

➡ continued on next page ➡

| Work Material | | | | | | | | | | | | | | | | | |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|
| Chart applies to all list numbers above | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| | 1010 | 1035 | 1065 | 4140 | 4340 | 300 | 400 | 17-4 PH | 6061 | 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| - | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best





List HP432, HP434 (Continued)

| | | | | |
|---------------------------------|----------------|--------------|------------|--------------------|
| SPEED FEED P1257-1260 | CARBIDE | TiAlN | 35° | SHANK h6 |
|---------------------------------|----------------|--------------|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 3 ≤ D ≤ 12 | +0 / -0.038mm |



Units: mm

| EDP Number | | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|----------------------|----------------------|---------------|---------------|----------------|---------------|----------------|
| List HP432 (2 Flute) | List HP434 (4 Flute) | | | | | |
| TiAlN | TiAlN | D | R | L | Lc | d |
| HP432-1181 | HP434-1181 | 3 | 0.2 | 60 | 8 | 6 |
| HP432-1182 | HP434-1182 | 3 | 0.5 | 60 | 8 | 6 |
| HP432-1575 | HP434-1575 | 4 | 0.2 | 70 | 11 | 6 |
| HP432-1576 | HP434-1576 | 4 | 0.5 | 70 | 11 | 6 |
| HP432-1577 | HP434-1577 | 4 | 1.0 | 70 | 11 | 6 |
| HP432-1960 | HP434-1960 | 5 | 0.2 | 80 | 13 | 6 |
| HP432-1961 | HP434-1961 | 5 | 0.5 | 80 | 13 | 6 |
| HP432-1962 | HP434-1962 | 5 | 1.0 | 80 | 13 | 6 |
| HP432-2360 | HP434-2360 | 6 | 0.2 | 80 | 13 | 6 |
| HP432-2361 | HP434-2361 | 6 | 0.5 | 80 | 13 | 6 |
| HP432-2362 | HP434-2362 | 6 | 1.0 | 80 | 13 | 6 |
| HP432-2363 | HP434-2363 | 6 | 1.5 | 80 | 13 | 6 |
| HP432-2364 | HP434-2364 | 6 | 2.0 | 80 | 13 | 6 |
| HP432-3150 | HP434-3150 | 8 | 0.5 | 100 | 19 | 8 |
| HP432-3151 | HP434-3151 | 8 | 1.0 | 100 | 19 | 8 |
| HP432-3152 | HP434-3152 | 8 | 1.5 | 100 | 19 | 8 |
| HP432-3153 | HP434-3153 | 8 | 2.0 | 100 | 19 | 8 |
| HP432-3930 | HP434-3930 | 10 | 0.5 | 100 | 22 | 10 |
| HP432-3931 | HP434-3931 | 10 | 1.0 | 100 | 22 | 10 |
| HP432-3932 | HP434-3932 | 10 | 1.5 | 100 | 22 | 10 |
| HP432-3933 | HP434-3933 | 10 | 2.0 | 100 | 22 | 10 |
| HP432-3934 | HP434-3934 | 10 | 3.0 | 100 | 22 | 10 |
| HP432-4720 | HP434-4720 | 12 | 0.5 | 110 | 26 | 12 |
| HP432-4721 | HP434-4721 | 12 | 1.0 | 110 | 26 | 12 |
| HP432-4722 | HP434-4722 | 12 | 1.5 | 110 | 26 | 12 |
| HP432-4723 | HP434-4723 | 12 | 2.0 | 110 | 26 | 12 |
| HP432-4724 | HP434-4724 | 12 | 3.0 | 110 | 26 | 12 |

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3770 or 3771 (p. 879 or 880)

Work Material

| Chart applies to all list numbers above | P | | | | | M | | | K | N | | S | | H | | | | |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| - | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List HP433

2 Flute, Corner Radius

| | | | | |
|---------------------------------|----------------|--------------|------------|--------------------|
| SPEED FEED P1257-1260 | CARBIDE | TiAlN | 35° | SHANK h6 |
|---------------------------------|----------------|--------------|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 3 ≤ D ≤ 12 | +0 / -0.038mm |



Units: mm

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|
| Tialn | D | R | L | Lc | L1 | d2 | d |
| HP433-1181 | 3 | 0.2 | 60 | 4.5 | 14 | 2.8 | 6 |
| HP433-1182 | 3 | 0.5 | 60 | 4.5 | 14 | 2.8 | 6 |
| HP433-1575 | 4 | 0.2 | 70 | 6.0 | 25 | 3.7 | 6 |
| HP433-1576 | 4 | 0.5 | 70 | 6.0 | 25 | 3.7 | 6 |
| HP433-1577 | 4 | 1.0 | 70 | 6.0 | 25 | 3.7 | 6 |
| HP433-1960 | 5 | 0.2 | 80 | 7.5 | 30 | 4.6 | 6 |
| HP433-1961 | 5 | 0.5 | 80 | 7.5 | 30 | 4.6 | 6 |
| HP433-1962 | 5 | 1.0 | 80 | 7.5 | 30 | 4.6 | 6 |
| HP433-2360 | 6 | 0.2 | 80 | 9.0 | 35 | 5.5 | 6 |
| HP433-2361 | 6 | 0.5 | 80 | 9.0 | 35 | 5.5 | 6 |
| HP433-2362 | 6 | 1.0 | 80 | 9.0 | 35 | 5.5 | 6 |
| HP433-2363 | 6 | 1.5 | 80 | 9.0 | 35 | 5.5 | 6 |
| HP433-2364 | 6 | 2.0 | 80 | 9.0 | 35 | 5.5 | 6 |
| HP433-3150 | 8 | 0.5 | 100 | 12.0 | 40 | 7.4 | 8 |
| HP433-3151 | 8 | 1.0 | 100 | 12.0 | 40 | 7.4 | 8 |
| HP433-3152 | 8 | 1.5 | 100 | 12.0 | 40 | 7.4 | 8 |
| HP433-3153 | 8 | 2.0 | 100 | 12.0 | 40 | 7.4 | 8 |
| HP433-3930 | 10 | 0.5 | 100 | 15.0 | 45 | 9.2 | 10 |
| HP433-3931 | 10 | 1.0 | 100 | 15.0 | 45 | 9.2 | 10 |
| HP433-3932 | 10 | 1.5 | 100 | 15.0 | 45 | 9.2 | 10 |
| HP433-3933 | 10 | 2.0 | 100 | 15.0 | 45 | 9.2 | 10 |
| HP433-3934 | 10 | 3.0 | 100 | 15.0 | 45 | 9.2 | 10 |
| HP433-4720 | 12 | 0.5 | 110 | 18.0 | 50 | 11.0 | 12 |
| HP433-4721 | 12 | 1.0 | 110 | 18.0 | 50 | 11.0 | 12 |
| HP433-4722 | 12 | 1.5 | 110 | 18.0 | 50 | 11.0 | 12 |
| HP433-4723 | 12 | 2.0 | 110 | 18.0 | 50 | 11.0 | 12 |
| HP433-4724 | 12 | 3.0 | 110 | 18.0 | 50 | 11.0 | 12 |

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3770 (p. 879)

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| HP433 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





HY-PRO® CARB

Performance Sub-Micrograin Carbide End Mills

List HP435

4 Flute, Corner Radius

| | | | | |
|---------------------------------|----------------|--------------|------------|--------------------|
| SPEED FEED P1258-1260 | CARBIDE | TiAlN | 35° | SHANK h6 |
|---------------------------------|----------------|--------------|------------|--------------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 3 ≤ D ≤ 12 | +0 / -0.038mm |



Units: mm

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|
| TiAlN | D | R | L | Lc | L1 | d2 | d |
| HP435-1181 | 3 | 0.2 | 60 | 4.5 | 14 | 2.8 | 6 |
| HP435-1182 | 3 | 0.5 | 60 | 4.5 | 14 | 2.8 | 6 |
| HP435-1575 | 4 | 0.2 | 70 | 6.0 | 25 | 3.7 | 6 |
| HP435-1576 | 4 | 0.5 | 70 | 6.0 | 25 | 3.7 | 6 |
| HP435-1577 | 4 | 1.0 | 70 | 6.0 | 25 | 3.7 | 6 |
| HP435-1960 | 5 | 0.2 | 80 | 7.5 | 30 | 4.6 | 6 |
| HP435-1961 | 5 | 0.5 | 80 | 7.5 | 30 | 4.6 | 6 |
| HP435-1962 | 5 | 1.0 | 80 | 7.5 | 30 | 4.6 | 6 |
| HP435-2360 | 6 | 0.2 | 80 | 9.0 | 35 | 5.5 | 6 |
| HP435-2361 | 6 | 0.5 | 80 | 9.0 | 35 | 5.5 | 6 |
| HP435-2362 | 6 | 1.0 | 80 | 9.0 | 35 | 5.5 | 6 |
| HP435-2363 | 6 | 1.5 | 80 | 9.0 | 35 | 5.5 | 6 |
| HP435-2364 | 6 | 2.0 | 80 | 9.0 | 35 | 5.5 | 6 |
| HP435-3150 | 8 | 0.5 | 100 | 12.0 | 40 | 7.4 | 8 |
| HP435-3151 | 8 | 1.0 | 100 | 12.0 | 40 | 7.4 | 8 |
| HP435-3152 | 8 | 1.5 | 100 | 12.0 | 40 | 7.4 | 8 |
| HP435-3153 | 8 | 2.0 | 100 | 12.0 | 40 | 7.4 | 8 |
| HP435-3930 | 10 | 0.5 | 100 | 15.0 | 45 | 9.2 | 10 |
| HP435-3931 | 10 | 1.0 | 100 | 15.0 | 45 | 9.2 | 10 |
| HP435-3932 | 10 | 1.5 | 100 | 15.0 | 45 | 9.2 | 10 |
| HP435-3933 | 10 | 2.0 | 100 | 15.0 | 45 | 9.2 | 10 |
| HP435-3934 | 10 | 3.0 | 100 | 15.0 | 45 | 9.2 | 10 |
| HP435-4720 | 12 | 0.5 | 110 | 18.0 | 50 | 11.0 | 12 |
| HP435-4721 | 12 | 1.0 | 110 | 18.0 | 50 | 11.0 | 12 |
| HP435-4722 | 12 | 1.5 | 110 | 18.0 | 50 | 11.0 | 12 |
| HP435-4723 | 12 | 2.0 | 110 | 18.0 | 50 | 11.0 | 12 |
| HP435-4724 | 12 | 3.0 | 110 | 18.0 | 50 | 11.0 | 12 |

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3771 (p. 880)

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| HP435 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

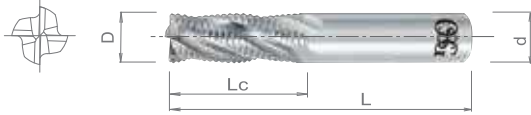


List 400

4 Flute, Roughy Mills

| | | | | | |
|---------------------------------|----------------|-----------|--------------|---|------------|
| SPEED FEED P1272-1273 | CARBIDE | BR | ROUGH |  | 30° |
|---------------------------------|----------------|-----------|--------------|---|------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/4 ≤ D ≤ 1 | +0 / -0.002" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 400-2500 | 1/4 | 2-1/2 | 3/4 | 1/4 |
| 400-3125 | 5/16 | 2-1/2 | 3/4 | 5/16 |
| 400-3750 | 3/8 | 2-1/2 | 1 | 3/8 |
| 400-5000 | 1/2 | 3 | 1-1/4 | 1/2 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 400-6250 | 5/8 | 3-1/2 | 1-5/8 | 5/8 |
| 400-7500 | 3/4 | 4 | 1-5/8 | 3/4 |
| 400-1000 | 1 | 4 | 1-3/4 | 1 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

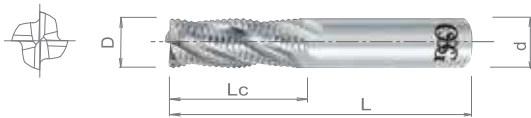


List 400

4 Flute, Roughy Mills

| | | | | | |
|---------------------------------|----------------|-----------|--------------|---|------------|
| SPEED FEED P1272-1273 | CARBIDE | BR | ROUGH |  | 30° |
|---------------------------------|----------------|-----------|--------------|---|------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 6 ≤ D ≤ 25 | +0 / -0.05mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 400-2362 | 6 | 64 | 19 | 6 |
| 400-3150 | 8 | 64 | 19 | 8 |
| 400-3937 | 10 | 70 | 25 | 10 |
| 400-4724 | 12 | 76 | 25 | 12 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 400-6299 | 16 | 89 | 32 | 16 |
| 400-7874 | 20 | 102 | 38 | 20 |
| 400-9843 | 25 | 102 | 38 | 25 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| List No. | Work Material | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 1010 | 1035 | 1045 | 1065 | 4140 | 4340 | | | | | | | | | | | |
| 400 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



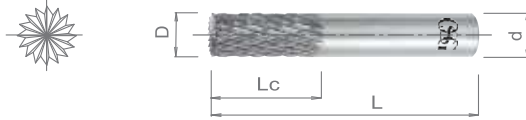


List 415

Standard Cut, Toughy Mills, (For use on lighter finishing cuts)

| | | |
|---------|----|-----|
| CARBIDE | BR | 15° |
|---------|----|-----|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/8 ≤ D ≤ 1/4 | +0 / -0.003" |
| 5/16 ≤ D ≤ 1/2 | +0 / -0.004" |
| 9/16 ≤ D ≤ 1 | +0 / -0.005" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 415-1250 | 1/8 | 1-1/2 | 1/2 | 1/8 |
| 415-1562 | 5/32 | 2 | 9/16 | 3/16 |
| 415-1875 | 3/16 | 2 | 5/8 | 3/16 |
| 415-2188 | 7/32 | 2-1/2 | 5/8 | 1/4 |
| 415-2500 | 1/4 | 2-1/2 | 3/4 | 1/4 |
| 415-3125 | 5/16 | 2-1/2 | 13/16 | 5/16 |
| 415-3750 | 3/8 | 2-1/2 | 1 | 3/8 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 415-4375 | 7/16 | 2-3/4 | 1 | 7/16 |
| 415-5000 | 1/2 | 3 | 1 | 1/2 |
| 415-5625 | 9/16 | 3-1/2 | 1-1/8 | 9/16 |
| 415-6250 | 5/8 | 3-1/2 | 1-1/4 | 5/8 |
| 415-7500 | 3/4 | 4 | 1-1/2 | 3/4 |
| 415-8750 | 7/8 | 4 | 1-1/2 | 7/8 |
| 415-1000 | 1 | 4 | 1-1/2 | 1 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

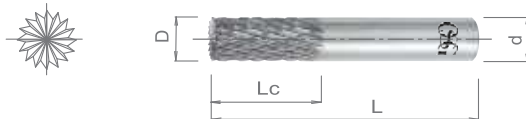


List 415C

Coarse Cut, Toughy Mills, (For use on heavy cuts)

| | | |
|---------|----|-----|
| CARBIDE | BR | 15° |
|---------|----|-----|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/8 ≤ D ≤ 1/4 | +0 / -0.003" |
| 5/16 ≤ D ≤ 1/2 | +0 / -0.004" |
| 9/16 ≤ D ≤ 1 | +0 / -0.005" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 415-1251 | 1/8 | 1-1/2 | 1/2 | 1/8 |
| 415-1561 | 5/32 | 2 | 9/16 | 3/16 |
| 415-1871 | 3/16 | 2 | 5/8 | 3/16 |
| 415-2181 | 7/32 | 2-1/2 | 5/8 | 1/4 |
| 415-2501 | 1/4 | 2-1/2 | 3/4 | 1/4 |
| 415-3121 | 5/16 | 2-1/2 | 13/16 | 5/16 |
| 415-3751 | 3/8 | 2-1/2 | 1 | 3/8 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 415-4371 | 7/16 | 2-3/4 | 1 | 7/16 |
| 415-5001 | 1/2 | 3 | 1 | 1/2 |
| 415-5621 | 9/16 | 3-1/2 | 1-1/8 | 9/16 |
| 415-6251 | 5/8 | 3-1/2 | 1-1/4 | 5/8 |
| 415-7501 | 3/4 | 4 | 1-1/2 | 3/4 |
| 415-8751 | 7/8 | 4 | 1-1/2 | 7/8 |
| 415-1001 | 1 | 4 | 1-1/2 | 1 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

| Chart applies to all list numbers above | P | | | | Die Steels | M | | | K | N | | S | | H | | | | | |
|---|---------------|------|------|--------------|------------|------------------|-----|---------|---|-----------|----------|---------|--------------|----------|-----------------|----------------|---------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 1010 | 1035 | 1065 | 4140 | 4340 | | | | | | 7075 | | | | | | | | | |
| | 1045 | | | | | | | | | | | | | | | | | | |

good best



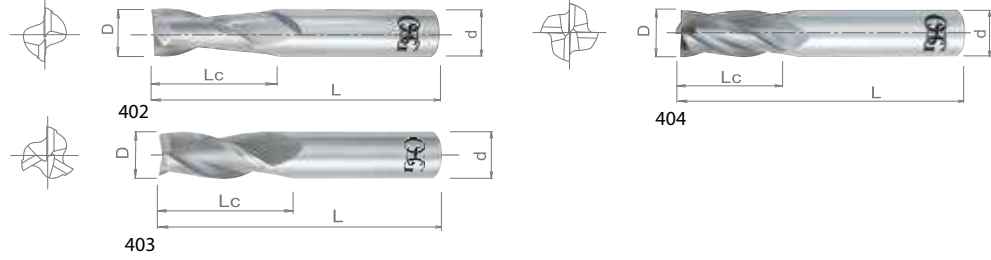


List 402, 403, 404

2, 3, or 4 Flute

SPEED FEED P1261-1267 CARBIDE TiAlN TiCN BR 30°

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/32 ≤ D ≤ 1 | +0 / -0.002" |



Units: Inch

| EDP Number | | | | | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | |
|--------------------|------------|--------------------|----------|--------------------|----------|---------------|----------------|---------------|----------------|------|
| List 402 (2 Flute) | | List 403 (3 Flute) | | List 404 (4 Flute) | | | | | | |
| Bright | TiCN | TiAlN | Bright | TiAlN | Bright | TiAlN | D | L | Lc | d |
| 402-0312 | - | 402-031211 | - | - | 404-0312 | 404-031211 | 1/32 | 1-1/2 | 1/8 | 1/8 |
| 402-0469 | - | 402-046911 | - | - | 404-0469 | 404-046911 | 3/64 | 1-1/2 | 9/64 | 1/8 |
| 402-0625 | - | 402-062511 | 403-0625 | 403-062511 | 404-0625 | 404-062511 | 1/16 | 1-1/2 | 3/16 | 1/8 |
| 402-0781 | - | 402-078111 | 403-0781 | 403-078111 | 404-0781 | 404-078111 | 5/64 | 1-1/2 | 1/4 | 1/8 |
| 402-0938 | - | 402-093811 | 403-0938 | 403-093811 | 404-0938 | 404-093811 | 3/32 | 1-1/2 | 5/16 | 1/8 |
| 402-0939 | - | - | 403-0939 | - | 404-0939 | 404-093911 | 3/32 | 1-1/2 | 3/8 | 1/8 |
| 402-1094 | - | 402-109411 | 403-1094 | 403-109411 | 404-1094 | 404-109411 | 7/64 | 1-1/2 | 3/8 | 1/8 |
| 402-1250 | - | 402-125011 | 403-1250 | 403-125011 | 404-1250 | 404-125011 | 1/8 | 1-1/2 | 1/2 | 1/8 |
| 402-1406 | - | 402-140611 | 403-1406 | 403-140611 | 404-1406 | 404-140611 | 9/64 | 2 | 1/2 | 3/16 |
| 402-1562 | - | 402-156211 | 403-1562 | 403-156211 | 404-1562 | 404-156211 | 5/32 | 2 | 9/16 | 3/16 |
| 402-1719 | - | 402-171911 | 403-1719 | 403-171911 | 404-1719 | 404-171911 | 11/64 | 2 | 9/16 | 3/16 |
| 402-1875 | - | 402-187511 | 403-1875 | 403-187511 | 404-1875 | 404-187511 | 3/16 | 2 | 5/8 | 3/16 |
| 402-2031 | - | 402-203111 | 403-2031 | 403-203111 | 404-2031 | 404-203111 | 13/64 | 2-1/2 | 5/8 | 1/4 |
| 402-2188 | - | 402-218811 | 403-2188 | 403-218811 | 404-2188 | 404-218811 | 7/32 | 2-1/2 | 5/8 | 1/4 |
| 402-2344 | - | 402-234411 | 403-2344 | 403-234411 | 404-2344 | 404-234411 | 15/64 | 2-1/2 | 3/4 | 1/4 |
| 402-2500 | - | 402-250011 | 403-2500 | 403-250011 | 404-2500 | 404-250011 | 1/4 | 2-1/2 | 3/4 | 1/4 |
| 402-2656 | - | 402-265611 | 403-2656 | 403-265611 | 404-2656 | 404-265611 | 17/64 | 2-1/2 | 3/4 | 5/16 |
| 402-2812 | - | 402-281211 | 403-2812 | 403-281211 | 404-2812 | 404-281211 | 9/32 | 2-1/2 | 3/4 | 5/16 |
| 402-2969 | - | 402-296911 | 403-2969 | 403-296911 | 404-2969 | 404-296911 | 19/64 | 2-1/2 | 13/16 | 5/16 |
| 402-3125 | - | 402-312511 | 403-3125 | 403-312511 | 404-3125 | 404-312511 | 5/16 | 2-1/2 | 13/16 | 5/16 |
| 402-3281 | - | 402-328111 | - | - | 404-3281 | 404-328111 | 21/64 | 2-1/2 | 7/8 | 3/8 |
| 402-3438 | - | 402-343811 | - | - | 404-3438 | 404-343811 | 11/32 | 2-1/2 | 7/8 | 3/8 |
| 402-3594 | - | 402-359411 | - | - | 404-3594 | 404-359411 | 23/64 | 2-1/2 | 7/8 | 3/8 |
| 402-3750 | 402-375008 | 402-375011 | 403-3750 | 403-375011 | 404-3750 | 404-375011 | 3/8 | 2-1/2 | 1 | 3/8 |
| 402-3906 | - | 402-390611 | - | - | 404-3906 | 404-390611 | 25/64 | 2-3/4 | 1 | 7/16 |
| 402-4062 | - | 402-406211 | - | - | 404-4062 | 404-406211 | 13/32 | 2-3/4 | 1 | 7/16 |
| 402-4219 | - | 402-421911 | - | - | 404-4219 | 404-421911 | 27/64 | 2-3/4 | 1 | 7/16 |
| 402-4375 | - | 402-437511 | 403-4375 | 403-437511 | 404-4375 | 404-437511 | 7/16 | 2-3/4 | 1 | 7/16 |
| 402-4531 | - | 402-453111 | - | - | 404-4531 | 404-453111 | 29/64 | 3 | 1 | 1/2 |
| 402-4688 | - | 402-468811 | - | - | 404-4688 | 404-468811 | 15/32 | 3 | 1 | 1/2 |
| 402-4844 | - | 402-484411 | - | - | 404-4844 | 404-484411 | 31/64 | 3 | 1 | 1/2 |
| 402-5000 | - | 402-500011 | 403-5000 | 403-500011 | 404-5000 | 404-500011 | 1/2 | 3 | 1 | 1/2 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

continued on next page

| List No. | Work Material | | | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | 300 | | 400 | 17-4 PH | 6061 7075 | | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | | |
| 402 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 403 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 404 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



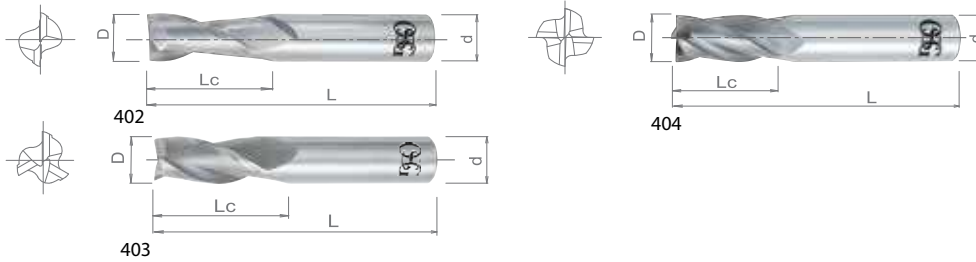


List 402, 403, 404 (Continued)

2, 3, or 4 Flute

| | | | | | | |
|--------------------------|---------|-------|------|----|--|-----|
| SPEED FEED P1261-1267 | CARBIDE | TiAlN | TiCN | BR | | 30° |
|--------------------------|---------|-------|------|----|--|-----|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/32 ≤ D ≤ 1 | +0 / -0.002" |



Units: Inch

| EDP Number | | | | | | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|--------------------|--------|--------------------|----------|--------------------|----------|------------|---------------|----------------|---------------|----------------|
| List 402 (2 Flute) | | List 403 (3 Flute) | | List 404 (4 Flute) | | | | | | |
| Bright | TiCN | TiAlN | Bright | TiAlN | Bright | TiAlN | D | L | Lc | d |
| 402-5625 | 562508 | 402-562511 | 403-5625 | 403-562511 | 404-5625 | 404-562511 | 9/16 | 3-1/2 | 1-1/8 | 9/16 |
| 402-6250 | - | 402-625011 | 403-6250 | 403-625011 | 404-6250 | 404-625011 | 5/8 | 3-1/2 | 1-1/4 | 5/8 |
| 402-6875 | - | 402-687511 | 403-6875 | 403-687511 | 404-6875 | 404-687511 | 11/16 | 4 | 1-3/8 | 3/4 |
| 402-7500 | - | 402-750011 | 403-7500 | 403-750011 | 404-7500 | 404-750011 | 3/4 | 4 | 1-1/2 | 3/4 |
| 402-8750 | - | 402-875011 | 403-8750 | 403-875011 | 404-8750 | 404-875011 | 7/8 | 4 | 1-1/2 | 7/8 |
| 402-1000 | - | 402-100011 | 403-1000 | 403-100011 | 404-1000 | 404-100011 | 1 | 4 | 1-1/2 | 1 |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 402 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 403 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 404 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



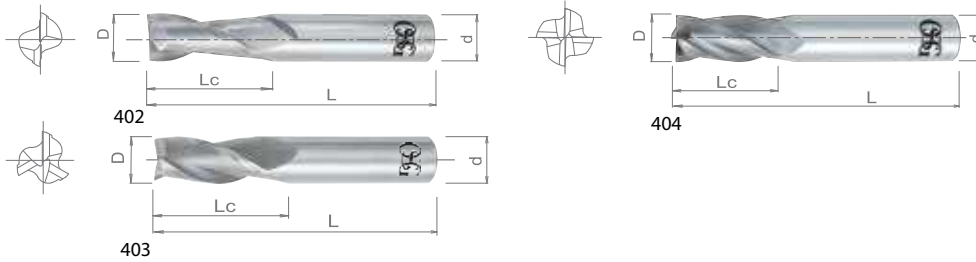


List 402, 403, 404

2, 3, or 4 Flute

SPEED FEED P1261-1267
 CARBIDE
 TiAlN
 TiCN
 BR
 30°

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 0.5 ≤ D ≤ 25 | +0 / -0.05mm |



Units: mm

| EDP Number | | | | | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|--------------------|------------|--------------------|------------|--------------------|------------|---------------|----------------|---------------|----------------|
| List 402 (2 Flute) | | List 403 (3 Flute) | | List 404 (4 Flute) | | | | | |
| Bright | TiAlN | Bright | TiAlN | Bright | TiAlN | D | L | Lc | d |
| 402-0197 | 402-019711 | - | - | - | - | 0.5 | 39 | 1.5 | 3 |
| 402-0394 | 402-039411 | 403-0394 | 403-039411 | 404-0394 | 404-039411 | 1.0 | 39 | 3.0 | 3 |
| 402-0591 | 402-059111 | 403-0591 | 403-059111 | 404-0591 | 404-059111 | 1.5 | 39 | 5.0 | 3 |
| 402-0787 | 402-078711 | 403-0787 | 403-078711 | 404-0787 | 404-078711 | 2.0 | 39 | 7.0 | 3 |
| 402-0984 | 402-098411 | 403-0984 | 403-098411 | 404-0984 | 404-098411 | 2.5 | 39 | 8.0 | 3 |
| 402-1181 | 402-118111 | 403-1181 | 403-118111 | 404-1181 | 404-118111 | 3.0 | 39 | 10.0 | 3 |
| 402-1378 | 402-137811 | 403-1378 | 403-137811 | 404-1378 | 404-137811 | 3.5 | 51 | 12.0 | 4 |
| 402-1575 | 402-157511 | 403-1575 | 403-157511 | 404-1575 | 404-157511 | 4.0 | 51 | 14.0 | 4 |
| 402-1772 | 402-177211 | 403-1772 | 403-177211 | 404-1772 | 404-177211 | 4.5 | 51 | 14.0 | 5 |
| 402-1968 | 402-196811 | 403-1968 | 403-196811 | 404-1968 | 404-196811 | 5.0 | 51 | 16.0 | 5 |
| 402-2362 | 402-236211 | 403-2362 | 403-236211 | 404-2362 | 404-236211 | 6.0 | 64 | 19.0 | 6 |
| 402-2756 | 402-275611 | 403-2756 | 403-275611 | 404-2756 | 404-275611 | 7.0 | 64 | 19.0 | 8 |
| 402-3150 | 402-315011 | 403-3150 | 403-315011 | 404-3150 | 404-315011 | 8.0 | 64 | 21.0 | 8 |
| 402-3543 | 402-354311 | 403-3543 | 403-354311 | 404-3543 | 404-354311 | 9.0 | 70 | 22.0 | 10 |
| 402-3937 | 402-393711 | 403-3937 | 403-393711 | 404-3937 | 404-393711 | 10.0 | 70 | 25.0 | 10 |
| 402-4331 | 402-433111 | 403-4331 | 403-433111 | 404-4331 | 404-433111 | 11.0 | 70 | 25.0 | 11 |
| 402-4724 | 402-472411 | 403-4724 | 403-472411 | 404-4724 | 404-472411 | 12.0 | 76 | 25.0 | 12 |
| 402-5512 | 402-551211 | 403-5512 | 403-551211 | 404-5512 | 404-551211 | 14.0 | 89 | 30.0 | 14 |
| 402-6299 | 402-629911 | 403-6299 | 403-629911 | 404-6299 | 404-629911 | 16.0 | 89 | 32.0 | 16 |
| 402-7087 | 402-708711 | 403-7087 | 403-708711 | 404-7087 | 404-708711 | 18.0 | 102 | 35.0 | 18 |
| 402-7874 | 402-787411 | 403-7874 | 403-787411 | 404-7874 | 404-787411 | 20.0 | 102 | 38.0 | 20 |
| 402-8661 | 402-866111 | 403-8661 | 403-866111 | 404-8661 | 404-866111 | 22.0 | 102 | 38.0 | 22 |
| 402-9843 | 402-984311 | 403-9843 | 403-984311 | 404-9843 | 404-984311 | 25.0 | 102 | 38.0 | 25 |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



| List No. | Work Material | | | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 402 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 403 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 404 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



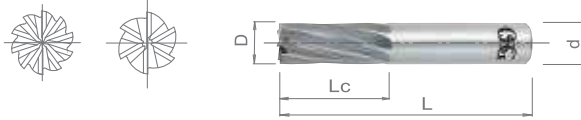


List 408

Multiple Flute, Slow Spiral

| | | | | |
|---------------------------------|----------------|-----------|--|------------|
| SPEED FEED P1265-1267 | CARBIDE | BR | | 15° |
|---------------------------------|----------------|-----------|--|------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/8 ≤ D ≤ 1 | +0 / -0.002" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | No. of Flutes |
|------------|---------------|----------------|---------------|----------------|---------------|
| Bright | D | L | Lc | d | |
| 408-1250 | 1/8 | 1-1/2 | 1/2 | 1/8 | 5 |
| 408-1562 | 5/32 | 2 | 9/16 | 3/16 | 6 |
| 408-1875 | 3/16 | 2 | 5/8 | 3/16 | 6 |
| 408-2500 | 1/4 | 2-1/2 | 3/4 | 1/4 | 6 |
| 408-2812 | 9/32 | 2-1/2 | 3/4 | 5/16 | 6 |
| 408-3125 | 5/16 | 2-1/2 | 13/16 | 5/16 | 6 |
| 408-3750 | 3/8 | 2-1/2 | 1 | 3/8 | 8 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | No. of Flutes |
|------------|---------------|----------------|---------------|----------------|---------------|
| Bright | D | L | Lc | d | |
| 408-4375 | 7/16 | 2-3/4 | 1 | 7/16 | 8 |
| 408-5000 | 1/2 | 3 | 1 | 1/2 | 8 |
| 408-5625 | 9/16 | 3-1/2 | 1-1/8 | 9/16 | 8 |
| 408-6250 | 5/8 | 3-1/2 | 1-1/4 | 5/8 | 10 |
| 408-6875 | 11/16 | 4 | 1-3/8 | 3/4 | 10 |
| 408-7500 | 3/4 | 4 | 1-1/2 | 3/4 | 10 |
| 408-1000 | 1 | 4 | 1-1/2 | 1 | 14 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

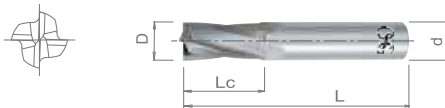


List 409

4 Flute, Slow Spiral

| | | | | | |
|---------------------------------|----------------|--------------|-----------|--|------------|
| SPEED FEED P1265-1267 | CARBIDE | TiAlN | BR | | 15° |
|---------------------------------|----------------|--------------|-----------|--|------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/16 ≤ D ≤ 1 | +0 / -0.002" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | |
|------------|---------------|----------------|---------------|----------------|------|
| Bright | TiAlN | D | L | Lc | d |
| 409-0625 | - | 1/16 | 1-1/2 | 3/16 | 1/8 |
| 409-0781 | - | 5/64 | 1-1/2 | 1/4 | 1/8 |
| 409-0938 | - | 3/32 | 1-1/2 | 3/8 | 1/8 |
| 409-1094 | - | 7/64 | 1-1/2 | 7/16 | 1/8 |
| 409-1250 | - | 1/8 | 1-1/2 | 1/2 | 1/8 |
| 409-1562 | - | 5/32 | 2 | 9/16 | 3/16 |
| 409-1875 | - | 3/16 | 2 | 5/8 | 3/16 |
| 409-2188 | - | 7/32 | 2-1/2 | 5/8 | 1/4 |
| 409-2500 | - | 1/4 | 2-1/2 | 3/4 | 1/4 |
| 409-2812 | - | 9/32 | 2-1/2 | 3/4 | 5/16 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | |
|------------|---------------|----------------|---------------|----------------|------|
| Bright | TiAlN | D | L | Lc | d |
| 409-3125 | - | 5/16 | 2-1/2 | 13/16 | 5/16 |
| 409-3750 | 409-375011 | 3/8 | 2-1/2 | 1 | 3/8 |
| 409-4375 | - | 7/16 | 2-3/4 | 1 | 7/16 |
| 409-5000 | - | 1/2 | 3 | 1 | 1/2 |
| 409-5625 | - | 9/16 | 3-1/2 | 1-1/8 | 9/16 |
| 409-6250 | - | 5/8 | 3-1/2 | 1-1/4 | 5/8 |
| 409-6875 | - | 11/16 | 4 | 1-3/8 | 3/4 |
| 409-7500 | - | 3/4 | 4 | 1-1/2 | 3/4 |
| 409-8750 | - | 7/8 | 4 | 1-1/2 | 7/8 |
| 409-1000 | - | 1 | 4 | 1-1/2 | 1 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

| Chart applies to all list numbers above | P | | | | | M | | | K | N | | S | H | | | | |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------------|-----|---------|--------------------------|----------|---------|--------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| | 1010 | 1035 | 1065 | 4140 | 4340 | | | | 6061 | 7075 | | | | | | | |
| - | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

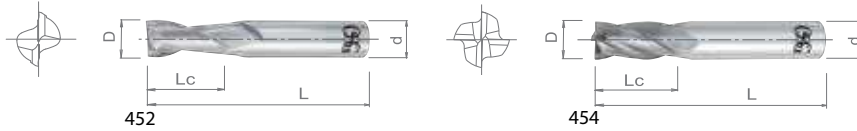


List 452, 454

2, or 4 Flute, Plus Tolerance

| | | | | | |
|---------------------------------|----------------|--------------|-----------|---|------------|
| SPEED FEED P1261-1267 | CARBIDE | TiAlN | BR |  | 30° |
|---------------------------------|----------------|--------------|-----------|---|------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/16 ≤ D ≤ 1 | +0.001" / -0 |



Units: Inch

| EDP Number | | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|--------------------|------------|--------------------|---------------|----------------|---------------|----------------|
| List 452 (2 Flute) | | List 454 (4 Flute) | | | | |
| Bright | TiAlN | Bright | D | L | Lc | d |
| 452-0625 | - | 454-0625 | 1/16 | 1-1/2 | 3/16 | 1/8 |
| 452-0938 | - | 454-0938 | 3/32 | 1-1/2 | 5/16 | 1/8 |
| 452-1250 | - | 454-1250 | 1/8 | 1-1/2 | 1/2 | 1/8 |
| 452-1562 | - | 454-1562 | 5/32 | 2 | 9/16 | 3/16 |
| 452-1875 | - | 454-1875 | 3/16 | 2 | 5/8 | 3/16 |
| 452-2188 | - | 454-2188 | 7/32 | 2-1/2 | 5/8 | 1/4 |
| 452-2500 | 452-250011 | 454-2500 | 1/4 | 2-1/2 | 3/4 | 1/4 |
| 452-2812 | - | 454-2812 | 9/32 | 2-1/2 | 3/4 | 5/16 |
| 452-3125 | - | 454-3125 | 5/16 | 2-1/2 | 13/16 | 5/16 |
| 452-3750 | - | 454-3750 | 3/8 | 2-1/2 | 1 | 3/8 |
| 452-4375 | - | 454-4375 | 7/16 | 2-3/4 | 1 | 7/16 |
| 452-5000 | - | 454-5000 | 1/2 | 3 | 1 | 1/2 |
| 452-5625 | - | 454-5625 | 9/16 | 3-1/2 | 1-1/8 | 9/16 |
| 452-6250 | - | 454-6250 | 5/8 | 3-1/2 | 1-1/4 | 5/8 |
| 452-6875 | - | 454-6875 | 11/16 | 4 | 1-3/8 | 3/4 |
| 452-7500 | - | 454-7500 | 3/4 | 4 | 1-1/2 | 3/4 |
| 452-1000 | - | 454-1000 | 1 | 4 | 1-1/2 | 1 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | | | |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Chart applies to all list numbers above | P | | | | | M | | | K | N | | S | | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| - | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



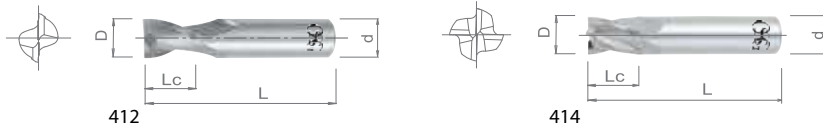


List 412, 414

2 or 4 Flute, Stub Length

| | | | | | | |
|--------------------------|---------|-------|------|----|--|-----|
| SPEED FEED P1261-1267 | CARBIDE | TiAlN | TiCN | BR | | 30° |
|--------------------------|---------|-------|------|----|--|-----|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/32 ≤ D ≤ 3/4 | +0 / -0.002" |



Units: Inch

| EDP Number | | | | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|--------------------|------------|--------------------|----------|------------|---------------|----------------|---------------|----------------|
| List 412 (2 Flute) | | List 414 (4 Flute) | | | | | | |
| Bright | TiCN | TiAlN | Bright | TiAlN | D | L | Lc | d |
| 412-0312 | 412-031208 | 412-031211 | 414-0312 | 414-031211 | 1/32 | 1-1/2 | 5/64 | 1/8 |
| 412-0469 | - | 412-046911 | 414-0469 | 414-046911 | 3/64 | 1-1/2 | 3/32 | 1/8 |
| 412-0625 | - | 412-062511 | 414-0625 | 414-062511 | 1/16 | 1-1/2 | 1/8 | 1/8 |
| 412-0781 | - | - | 414-0781 | 414-078111 | 5/64 | 1-1/2 | 5/32 | 1/8 |
| 412-0938 | 412-093808 | - | 414-0938 | 414-093811 | 3/32 | 1-1/2 | 3/16 | 1/8 |
| 412-1094 | - | - | 414-1094 | 414-109411 | 7/64 | 1-1/2 | 7/32 | 1/8 |
| 412-1250 | - | 412-125011 | 414-1250 | 414-125011 | 1/8 | 1-1/2 | 1/4 | 1/8 |
| 412-1406 | - | - | 414-1406 | 414-140611 | 9/64 | 2 | 9/32 | 3/16 |
| 412-1562 | 412-156208 | - | 414-1562 | 414-156211 | 5/32 | 2 | 5/16 | 3/16 |
| 412-1875 | 412-187508 | 412-187511 | 414-1875 | 414-187511 | 3/16 | 2 | 3/8 | 3/16 |
| 412-2188 | - | - | 414-2188 | 414-218811 | 7/32 | 2 | 7/16 | 1/4 |
| 412-2500 | - | 412-250011 | 414-2500 | 414-250011 | 1/4 | 2 | 1/2 | 1/4 |
| 412-3125 | - | 412-312511 | 414-3125 | 414-312511 | 5/16 | 2 | 1/2 | 5/16 |
| 412-3750 | - | 412-375011 | 414-3750 | 414-375011 | 3/8 | 2 | 5/8 | 3/8 |
| 412-4375 | - | - | 414-4375 | 414-437511 | 7/16 | 2-1/2 | 5/8 | 7/16 |
| 412-5000 | 412-500008 | 412-500011 | 414-5000 | 414-500011 | 1/2 | 2-1/2 | 5/8 | 1/2 |
| 412-6250 | - | - | 414-6250 | 414-625011 | 5/8 | 3 | 3/4 | 5/8 |
| 412-7500 | - | - | 414-7500 | 414-750011 | 3/4 | 3 | 1 | 3/4 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

| Chart applies to all list numbers above | P | | | | | | M | | | K | N | | S | H | | | | |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| - | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

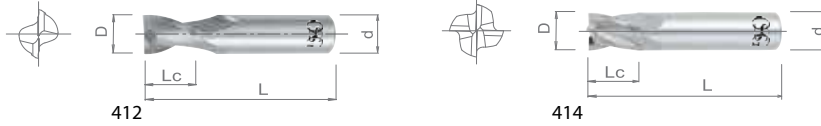


List 412, 414

2 or 4 Flute, Stub Length

| | | | | | | |
|---------------------------------|----------------|--------------|-------------|-----------|---|------------|
| SPEED FEED P1261-1267 | CARBIDE | TiAlN | TiCN | BR |  | 30° |
|---------------------------------|----------------|--------------|-------------|-----------|---|------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1 ≤ D ≤ 12 | +0 / -0.05mm |



Units: mm

| EDP Number | | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|--------------------|--------------------|------------|---------------|----------------|---------------|----------------|
| List 412 (2 Flute) | List 414 (4 Flute) | | | | | |
| Bright | Bright | TiAlN | D | L | Lc | d |
| 412-0394 | 414-0394 | 414-039411 | 1.0 | 39 | 2 | 3 |
| 412-0591 | 414-0591 | - | 1.5 | 39 | 3 | 3 |
| 412-0787 | 414-0787 | - | 2.0 | 39 | 4 | 3 |
| 412-0984 | 414-0984 | - | 2.5 | 39 | 5 | 3 |
| 412-1181 | 414-1181 | - | 3.0 | 39 | 6 | 3 |
| 412-1378 | 414-1378 | - | 3.5 | 51 | 7 | 4 |
| 412-1575 | 414-1575 | - | 4.0 | 51 | 8 | 4 |
| 412-1772 | 414-1772 | - | 4.5 | 51 | 9 | 5 |
| 412-1968 | 414-1968 | 414-196811 | 5.0 | 51 | 10 | 5 |
| 412-2362 | 414-2362 | - | 6.0 | 51 | 12 | 6 |
| 412-2756 | 414-2756 | - | 7.0 | 51 | 12 | 8 |
| 412-3150 | 414-3150 | - | 8.0 | 51 | 12 | 8 |
| 412-3543 | 414-3543 | - | 9.0 | 51 | 14 | 10 |
| 412-3937 | 414-3937 | - | 10.0 | 51 | 14 | 10 |
| 412-4331 | 414-4331 | - | 11.0 | 64 | 16 | 11 |
| 412-4724 | 414-4724 | - | 12.0 | 64 | 16 | 12 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | | | |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Chart applies to all list numbers above | P | | | | | M | | | K | N | | S | H | | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| - | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



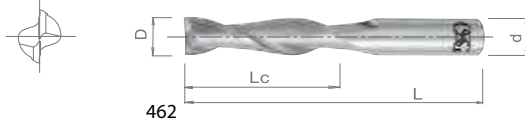


List 462, 464

2 or 4 Flute, Long Length

| | | | | | | |
|--------------------------|---------|-------|------|----|--|-----|
| SPEED FEED P1261-1267 | CARBIDE | TiAlN | TiCN | BR | | 30° |
|--------------------------|---------|-------|------|----|--|-----|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/8 ≤ D ≤ 1 | +0 / -0.002" |



Units: Inch

| EDP Number | | | | | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|--------------------|------------|------------|--------------------|------------|------------|---------------|----------------|---------------|----------------|
| List 462 (2 Flute) | | | List 464 (4 Flute) | | | | | | |
| Bright | TiCN | TiAlN | Bright | TiCN | TiAlN | D | L | Lc | d |
| 462-1250 | - | 462-125011 | 464-1250 | - | 464-125011 | 1/8 | 2-1/4 | 3/4 | 1/8 |
| 462-1875 | - | - | 464-1875 | - | 464-187511 | 3/16 | 2-1/4 | 3/4 | 3/16 |
| 462-2500 | - | 462-250011 | 464-2500 | - | 464-250011 | 1/4 | 3 | 1-1/8 | 1/4 |
| 462-3125 | - | 462-312511 | 464-3125 | - | 464-312511 | 5/16 | 3 | 1-1/8 | 5/16 |
| 462-3750 | 462-375008 | 462-375011 | 464-3750 | - | 464-375011 | 3/8 | 3 | 1-1/8 | 3/8 |
| 462-4375 | - | - | 464-4375 | 464-437508 | 464-437511 | 7/16 | 4 | 2 | 7/16 |
| 462-5000 | - | - | 464-5000 | - | 464-500011 | 1/2 | 4 | 2 | 1/2 |
| 462-5001 | 462-500108 | - | 464-5001 | 464-500108 | - | 1/2 | 4 | 1 | 1/2 |
| 462-6250 | 462-625008 | - | 464-6250 | - | 464-625011 | 5/8 | 5 | 2-1/4 | 5/8 |
| 462-7500 | - | - | 464-7500 | - | 464-750011 | 3/4 | 5 | 2-1/4 | 3/4 |
| 462-1000 | - | - | 464-1000 | 464-100008 | - | 1 | 5 | 2-1/4 | 1 |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 462 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 464 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

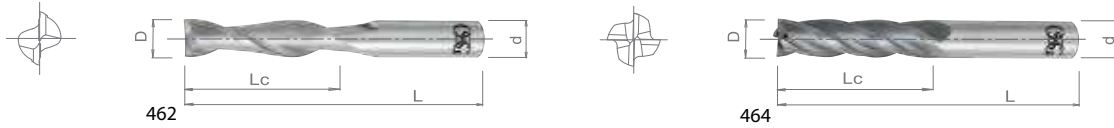


List 462, 464

2 or 4 Flute, Long Length

| | | | | | | |
|---------------------------------|----------------|--------------|-------------|-----------|---|------------|
| SPEED FEED P1261-1267 | CARBIDE | TiAlN | TiCN | BR |  | 30° |
|---------------------------------|----------------|--------------|-------------|-----------|---|------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 3 ≤ D ≤ 25 | +0 / -0.05mm |



Units: mm

| EDP Number | | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|--------------------|--------------------|------------|---------------|----------------|---------------|----------------|
| List 462 (2 Flute) | List 464 (4 Flute) | | | | | |
| Bright | Bright | TiAlN | D | L | Lc | d |
| 462-1181 | 464-1181 | - | 3 | 57 | 19 | 3 |
| 462-1575 | 464-1575 | - | 4 | 57 | 19 | 4 |
| 462-1968 | 464-1968 | 464-196811 | 5 | 64 | 25 | 5 |
| 462-2362 | 464-2362 | 464-236211 | 6 | 76 | 28 | 6 |
| 462-3150 | 464-3150 | 464-315011 | 8 | 76 | 29 | 8 |
| 462-3937 | 464-3937 | 464-393711 | 10 | 76 | 32 | 10 |
| 462-4724 | 464-4724 | 464-472411 | 12 | 102 | 51 | 12 |
| 462-5512 | 464-5512 | - | 14 | 127 | 57 | 14 |
| 462-6299 | 464-6299 | - | 16 | 127 | 57 | 16 |
| 462-7087 | 464-7087 | - | 18 | 127 | 57 | 18 |
| 462-7874 | 464-7874 | 464-787411 | 20 | 127 | 57 | 20 |
| 462-9843 | 464-9843 | - | 25 | 127 | 57 | 25 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3723 (p. 878) or EXOCARB® WXL® - List 3742 (p. 865)

| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 462 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 464 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



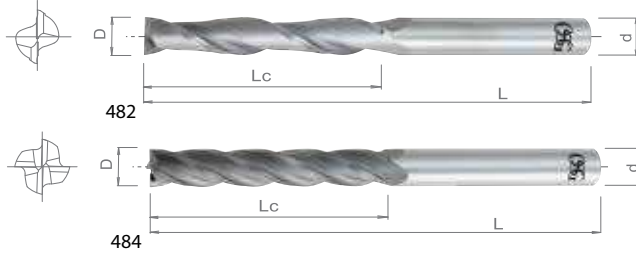


List 482, 484

2 or 4 Flute, Extra Long Length

| | | | | | | |
|--------------------------|---------|-------|------|----|--|-----|
| SPEED FEED P1261-1267 | CARBIDE | TiAlN | TiCN | BR | | 30° |
|--------------------------|---------|-------|------|----|--|-----|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/8 ≤ D ≤ 1 | +0 / -0.002" |



Units: Inch

| EDP Number | | | | | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|--------------------|------------|------------|--------------------|------------|------------|---------------|----------------|---------------|----------------|
| List 482 (2 Flute) | | | List 484 (4 Flute) | | | | | | |
| Bright | TiCN | TiAlN | Bright | TiCN | TiAlN | D | L | Lc | d |
| 482-1250 | - | 482-125011 | 484-1250 | - | 484-125011 | 1/8 | 3 | 1 | 1/8 |
| 482-1875 | 482-187508 | - | 484-1875 | - | 484-187511 | 3/16 | 3 | 1-1/8 | 3/16 |
| 482-1876 | - | - | 484-1876 | 484-187608 | - | 3/16 | 4 | 1 | 3/16 |
| 482-2500 | - | 482-250011 | 484-2500 | - | 484-250011 | 1/4 | 4 | 1-1/2 | 1/4 |
| 482-2501 | 482-250108 | - | 484-2501 | 484-250108 | - | 1/4 | 4 | 1 | 1/4 |
| 482-2502 | 482-250208 | - | 484-2502 | 484-250208 | - | 1/4 | 6 | 1-1/2 | 1/4 |
| 482-3125 | - | - | 484-3125 | - | 484-312511 | 5/16 | 4 | 1-5/8 | 5/16 |
| - | - | - | 484-3126 | 484-312608 | - | 5/16 | 4 | 1 | 5/16 |
| - | - | - | 484-3127 | 484-312708 | - | 5/16 | 6 | 1-1/2 | 5/16 |
| 482-3750 | - | - | 484-3750 | - | 484-375011 | 3/8 | 4 | 1-3/4 | 3/8 |
| - | - | - | 484-3751 | 484-375108 | - | 3/8 | 4 | 1 | 3/8 |
| - | - | - | 484-3752 | 484-375208 | - | 3/8 | 6 | 1-1/2 | 3/8 |
| - | - | - | 484-3753 | - | - | 3/8 | 6 | 3 | 3/8 |
| 482-4375 | - | - | 484-4375 | - | - | 7/16 | 6 | 3 | 7/16 |
| 482-5000 | 482-500008 | 482-500011 | 484-5000 | 484-500108 | 484-500011 | 1/2 | 6 | 3 | 1/2 |
| - | - | - | 484-5001 | - | - | 1/2 | 6 | 1-1/2 | 1/2 |
| 482-6250 | - | - | 484-6250 | - | 484-625011 | 5/8 | 6 | 3 | 5/8 |
| - | - | - | 484-6251 | 484-625108 | - | 5/8 | 6 | 2 | 5/8 |
| 482-7500 | - | - | 484-7500 | - | 484-750011 | 3/4 | 6 | 3 | 3/4 |
| - | - | - | 484-7501 | - | - | 3/4 | 6 | 2 | 3/4 |
| 482-1000 | - | - | 484-1000 | 484-100008 | 484-100011 | 1 | 6 | 3 | 1 |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 482 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 484 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best

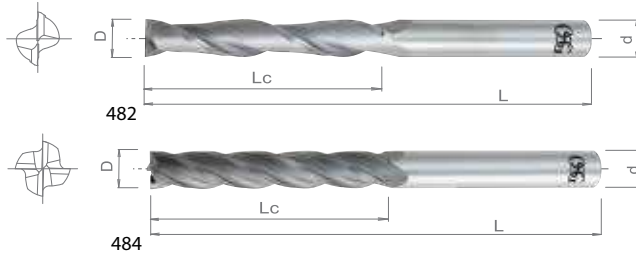


List 482, 484

2 or 4 Flute, Extra Long Length

| | | | | |
|---------------------------------|----------------|-----------|---|------------|
| SPEED FEED P1261-1267 | CARBIDE | BR |  | 30° |
|---------------------------------|----------------|-----------|---|------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 3 ≤ D ≤ 25 | +0 / -0.05mm |



Units: mm

| EDP Number | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|--------------------|--------------------|---------------|----------------|---------------|----------------|
| List 482 (2 Flute) | List 484 (4 Flute) | | | | |
| Bright | Bright | D | L | Lc | d |
| 482-1181 | 484-1181 | 3 | 76 | 25 | 3 |
| 482-1575 | 484-1575 | 4 | 76 | 28 | 4 |
| 482-1968 | 484-1968 | 5 | 76 | 32 | 5 |
| 482-2362 | 484-2362 | 6 | 102 | 38 | 6 |
| 482-3150 | 484-3150 | 8 | 102 | 42 | 8 |
| 482-3937 | 484-3937 | 10 | 102 | 45 | 10 |
| 482-4724 | 484-4724 | 12 | 153 | 76 | 12 |
| 482-5512 | 484-5512 | 14 | 153 | 76 | 14 |
| 482-6299 | 484-6299 | 16 | 153 | 76 | 16 |
| 482-7087 | 484-7087 | 18 | 153 | 76 | 18 |
| 482-7874 | 484-7874 | 20 | 153 | 76 | 20 |
| 482-9843 | 484-9843 | 25 | 153 | 76 | 25 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 482 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 484 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



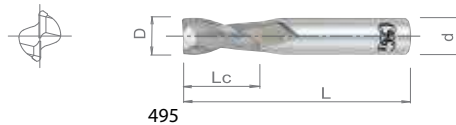


List 495, 496

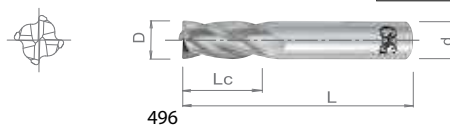
2 or 4 Flute, Corner Radius

| | | | | | |
|---------------------------------|----------------|--------------|-----------|--|------------|
| SPEED FEED P1261-1267 | CARBIDE | TiAlN | BR | | 30° |
|---------------------------------|----------------|--------------|-----------|--|------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/8 ≤ D ≤ 1 | +0 / -0.002" |



495



496

Units: Inch

| EDP Number | | | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Shank Diameter |
|--------------------|--------------------|------------|---------------|---------------|----------------|---------------|----------------|
| List 495 (2 Flute) | List 496 (4 Flute) | | | | | | |
| Bright | Bright | TiAlN | D | R | L | Lc | d |
| 495-1251 | 496-1251 | 496-125111 | 1/8 | 0.015 | 1-1/2 | 1/2 | 1/8 |
| 495-1872 | 496-1872 | 496-187211 | 3/16 | 0.020 | 2 | 5/8 | 3/16 |
| 495-1873 | 496-1873 | 496-187311 | 3/16 | 0.030 | 2 | 5/8 | 3/16 |
| 495-2502 | 496-2502 | 496-250211 | 1/4 | 0.020 | 2-1/2 | 3/4 | 1/4 |
| 495-2503 | 496-2503 | 496-250311 | 1/4 | 0.030 | 2-1/2 | 3/4 | 1/4 |
| 495-2504 | 496-2504 | - | 1/4 | 0.045 | 2-1/2 | 3/4 | 1/4 |
| 495-3122 | 496-3122 | 496-312211 | 5/16 | 0.020 | 2-1/2 | 13/16 | 5/16 |
| 495-3123 | 496-3123 | 496-312311 | 5/16 | 0.030 | 2-1/2 | 13/16 | 5/16 |
| 495-3124 | 496-3124 | - | 5/16 | 0.045 | 2-1/2 | 13/16 | 5/16 |
| 495-3752 | 496-3752 | - | 3/8 | 0.020 | 2-1/2 | 1 | 3/8 |
| 495-3753 | 496-3753 | 496-375311 | 3/8 | 0.030 | 2-1/2 | 1 | 3/8 |
| 495-3754 | 496-3754 | 496-375411 | 3/8 | 0.045 | 2-1/2 | 1 | 3/8 |
| 495-5002 | 496-5002 | 496-500211 | 1/2 | 0.020 | 3 | 1 | 1/2 |
| 495-5003 | 496-5003 | 496-500311 | 1/2 | 0.030 | 3 | 1 | 1/2 |
| 495-5004 | 496-5004 | - | 1/2 | 0.045 | 3 | 1 | 1/2 |
| 495-5006 | 496-5006 | 496-500611 | 1/2 | 0.060 | 3 | 1 | 1/2 |
| 495-6252 | 496-6252 | - | 5/8 | 0.020 | 3-1/2 | 1-1/4 | 5/8 |
| 495-6253 | 496-6253 | - | 5/8 | 0.030 | 3-1/2 | 1-1/4 | 5/8 |
| 495-6254 | 496-6254 | - | 5/8 | 0.045 | 3-1/2 | 1-1/4 | 5/8 |
| 495-6256 | 496-6256 | - | 5/8 | 0.060 | 3-1/2 | 1-1/4 | 5/8 |
| 495-6259 | 496-6259 | - | 5/8 | 0.090 | 3-1/2 | 1-1/4 | 5/8 |
| 495-7500 | 496-7500 | - | 3/4 | 0.125 | 4 | 1-1/2 | 3/4 |
| 495-7502 | 496-7502 | - | 3/4 | 0.020 | 4 | 1-1/2 | 3/4 |
| 495-7503 | 496-7503 | 496-750311 | 3/4 | 0.030 | 4 | 1-1/2 | 3/4 |
| 495-7504 | 496-7504 | - | 3/4 | 0.045 | 4 | 1-1/2 | 3/4 |
| 495-7506 | 496-7506 | - | 3/4 | 0.060 | 4 | 1-1/2 | 3/4 |
| 495-7509 | 496-7509 | - | 3/4 | 0.090 | 4 | 1-1/2 | 3/4 |
| 495-1000 | 496-1000 | - | 1 | 0.125 | 4 | 1-1/2 | 1 |
| 495-1002 | 496-1002 | - | 1 | 0.020 | 4 | 1-1/2 | 1 |
| 495-1003 | 496-1003 | - | 1 | 0.030 | 4 | 1-1/2 | 1 |
| 495-1004 | 496-1004 | - | 1 | 0.045 | 4 | 1-1/2 | 1 |
| 495-1006 | 496-1006 | - | 1 | 0.060 | 4 | 1-1/2 | 1 |
| 495-1009 | 496-1009 | - | 1 | 0.090 | 4 | 1-1/2 | 1 |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | | | |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Chart applies to all list numbers above | P | | | | | M | | | K | N | | S | | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| - | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

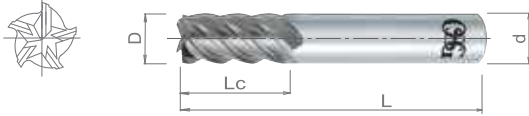


List 455C

5 Flute, Corner Protection

| | | | | | | |
|--------------------------|---------|-------|------|----|---|-----|
| SPEED FEED P1265-1267 | CARBIDE | TiAlN | TiCN | BR |  | 45° |
|--------------------------|---------|-------|------|----|---|-----|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/8 ≤ D ≤ 1 | +0 / -0.002" |



Units: Inch

| EDP Number | | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|------------|------------|---------------|----------------|---------------|----------------|
| Bright | TiCN | TiAlN | D | L | Lc | d |
| 455-1250 | 455-125008 | - | 1/8 | 1-1/2 | 1/2 | 1/8 |
| 455-1251 | 455-125108 | 455-125111 | 1/8 | 1-1/2 | 1/4 | 1/8 |
| 455-1562 | 455-156208 | 455-156211 | 5/32 | 2 | 9/16 | 3/16 |
| 455-1875 | 455-187508 | - | 3/16 | 2 | 5/8 | 3/16 |
| 455-1876 | 455-187608 | 455-187611 | 3/16 | 2 | 5/16 | 3/16 |
| 455-2188 | - | - | 7/32 | 2-1/2 | 5/8 | 1/4 |
| 455-2500 | 455-250008 | - | 1/4 | 2-1/2 | 3/4 | 1/4 |
| 455-2501 | 455-250108 | 455-250111 | 1/4 | 2 | 1/2 | 1/4 |
| 455-2502 | 455-250208 | 455-250211 | 1/4 | 4 | 1-1/4 | 1/4 |
| 455-2812 | - | - | 9/32 | 2-1/2 | 3/4 | 5/16 |
| 455-3125 | - | - | 5/16 | 2-1/2 | 13/16 | 5/16 |
| 455-3126 | 455-312608 | 455-312611 | 5/16 | 2 | 1/2 | 5/16 |
| 455-3127 | 455-312708 | 455-312711 | 5/16 | 4 | 1-1/4 | 5/16 |
| 455-3750 | - | - | 3/8 | 2-1/2 | 1 | 3/8 |
| 455-3751 | 455-375108 | 455-375111 | 3/8 | 2 | 5/8 | 3/8 |
| 455-3752 | 455-375208 | 455-375211 | 3/8 | 2-1/2 | 7/8 | 3/8 |
| 455-3753 | 455-375308 | 455-375311 | 3/8 | 4 | 1-1/2 | 3/8 |
| 455-4375 | 455-437508 | - | 7/16 | 2-3/4 | 1 | 7/16 |
| 455-4376 | 455-437608 | - | 7/16 | 2-1/2 | 5/8 | 7/16 |
| 455-4377 | - | - | 7/16 | 4 | 2 | 7/16 |
| 455-5000 | - | - | 1/2 | 3 | 1 | 1/2 |
| 455-5001 | 455-500108 | 455-500111 | 1/2 | 2-1/2 | 5/8 | 1/2 |
| 455-5002 | 455-500208 | 455-500211 | 1/2 | 3 | 1-1/4 | 1/2 |
| 455-5003 | 455-500308 | 455-500311 | 1/2 | 4-1/2 | 2 | 1/2 |
| 455-5625 | - | - | 9/16 | 3-1/2 | 1-1/8 | 9/16 |
| 455-6250 | 455-625008 | - | 5/8 | 3-1/2 | 1-1/4 | 5/8 |
| 455-6251 | 455-625108 | 455-625111 | 5/8 | 3 | 3/4 | 5/8 |
| 455-7500 | 455-750008 | - | 3/4 | 4 | 1-1/2 | 3/4 |
| 455-7501 | 455-750108 | 455-750111 | 3/4 | 3 | 1 | 3/4 |
| 455-7502 | 455-750208 | 455-750211 | 3/4 | 5 | 2-1/4 | 3/4 |
| 455-1000 | - | - | 1 | 4 | 1-1/2 | 1 |

Packed: 1 pc.
Corner Protection 0.005"~0.010"
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------------|-----|---------|--------------------------|-----------|---------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 455C | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 460C

3 Flute, High Helix

| | | | | |
|---------------------------------|----------------|-----------|--|------------|
| SPEED FEED P1261-1264 | CARBIDE | BR | | 60° |
|---------------------------------|----------------|-----------|--|------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/8 ≤ D ≤ 1 | +0 / -0.002" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 460-1250 | 1/8 | 1-1/2 | 1/2 | 1/8 |
| 460-1875 | 3/16 | 2 | 5/8 | 3/16 |
| 460-2500 | 1/4 | 2-1/2 | 3/4 | 1/4 |
| 460-3125 | 5/16 | 2-1/2 | 13/16 | 5/16 |
| 460-3750 | 3/8 | 2-1/2 | 1 | 3/8 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 460-4375 | 7/16 | 2-3/4 | 1 | 7/16 |
| 460-5000 | 1/2 | 3 | 1 | 1/2 |
| 460-6250 | 5/8 | 3-1/2 | 1-1/4 | 5/8 |
| 460-7500 | 3/4 | 4 | 1-1/2 | 3/4 |
| 460-1000 | 1 | 4 | 1-1/2 | 1 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



List 460C

3 Flute, High Helix

| | | | | |
|---------------------------------|----------------|-----------|--|------------|
| SPEED FEED P1261-1264 | CARBIDE | BR | | 60° |
|---------------------------------|----------------|-----------|--|------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 6 ≤ D ≤ 25 | +0 / -0.05mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 460-2362 | 6 | 64 | 19 | 6 |
| 460-3150 | 8 | 64 | 21 | 8 |
| 460-3937 | 10 | 70 | 25 | 10 |
| 460-4724 | 12 | 76 | 25 | 12 |
| 460-5512 | 14 | 89 | 29 | 14 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 460-6299 | 16 | 89 | 32 | 16 |
| 460-7087 | 18 | 102 | 38 | 18 |
| 460-7874 | 20 | 102 | 38 | 20 |
| 460-9843 | 25 | 102 | 38 | 25 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | 4140 4340 | | 300 | 400 | 17-4 PH | | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 460C | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

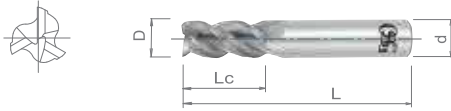
good best



List 445

3 Flute, RHS/RHC

| | | | | |
|---------------------------------|---------|----|--------------|-----|
| SPEED FEED P1261- 1264 | CARBIDE | BR | | 45° |
| Milling Diameter Tolerance | | | | |
| 1/16 ≤ D ≤ 1 | | | +0 / -0.002" | |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 445-0625 | 1/16 | 1-1/2 | 3/16 | 1/8 |
| 445-0938 | 3/32 | 1-1/2 | 5/16 | 1/8 |
| 445-1250 | 1/8 | 1-1/2 | 1/2 | 1/8 |
| 445-1562 | 5/32 | 2 | 9/16 | 3/16 |
| 445-1875 | 3/16 | 2 | 5/8 | 3/16 |
| 445-2188 | 7/32 | 2-1/2 | 5/8 | 1/4 |
| 445-2500 | 1/4 | 2-1/2 | 3/4 | 1/4 |
| 445-2812 | 9/32 | 2-1/2 | 3/4 | 5/16 |
| 445-3125 | 5/16 | 2-1/2 | 13/16 | 5/16 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 445-3750 | 3/8 | 2-1/2 | 1 | 3/8 |
| 445-4375 | 7/16 | 2-3/4 | 1 | 7/16 |
| 445-5000 | 1/2 | 3 | 1 | 1/2 |
| 445-5625 | 9/16 | 3-1/2 | 1-1/8 | 9/16 |
| 445-6250 | 5/8 | 3-1/2 | 1-1/4 | 5/8 |
| 445-6875 | 11/16 | 4 | 1-3/8 | 3/4 |
| 445-7500 | 3/4 | 4 | 1-1/2 | 3/4 |
| 445-8750 | 7/8 | 4 | 1-1/2 | 7/8 |
| 445-1000 | 1 | 4 | 1-1/2 | 1 |

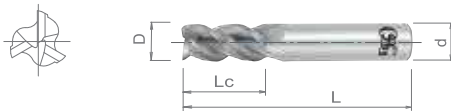
Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



List 445

3 Flute, RHS/RHC

| | | | | |
|---------------------------------|---------|----|--------------|-----|
| SPEED FEED P1261- 1264 | CARBIDE | BR | | 45° |
| Milling Diameter Tolerance | | | | |
| 1 ≤ D ≤ 20 | | | +0 / -0.05mm | |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 445-0394 | 1.0 | 39 | 3 | 3 |
| 445-0591 | 1.5 | 39 | 5 | 3 |
| 445-0787 | 2.0 | 39 | 7 | 3 |
| 445-0984 | 2.5 | 39 | 8 | 3 |
| 445-1181 | 3.0 | 39 | 10 | 3 |
| 445-1378 | 3.5 | 51 | 12 | 4 |
| 445-1575 | 4.0 | 51 | 14 | 4 |
| 445-1772 | 4.5 | 51 | 14 | 5 |
| 445-1968 | 5.0 | 51 | 16 | 5 |
| 445-2362 | 6.0 | 64 | 19 | 6 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 445-2756 | 7.0 | 64 | 19 | 8 |
| 445-3150 | 8.0 | 64 | 21 | 8 |
| 445-3543 | 9.0 | 70 | 22 | 10 |
| 445-3937 | 10.0 | 70 | 25 | 10 |
| 445-4331 | 11.0 | 70 | 25 | 11 |
| 445-4724 | 12.0 | 76 | 25 | 12 |
| 445-5512 | 14.0 | 89 | 30 | 14 |
| 445-6299 | 16.0 | 89 | 32 | 16 |
| 445-7087 | 18.0 | 102 | 35 | 18 |
| 445-7874 | 20.0 | 102 | 38 | 20 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| List No. | P | | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Stainless Steels | | | Aluminum | | | Nickel Alloy | Titanium | Hardened Steels | | | | | | |
| | Low | Med. | High | | 300 | | 400 | 17-4 PH | 6061 7075 | | | | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 445 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

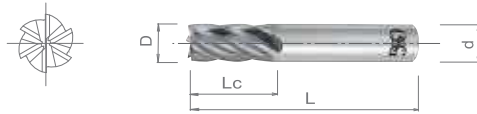




List 461

6 Flute, RHS/RHC

| | | | | | |
|--------------------------|----------------------------|--------------|----|--|-----|
| SPEED FEED P1265-1267 | CARBIDE | TiAlN | BR | | 30° |
| | Milling Diameter Tolerance | | | | |
| 1/8 ≤ D ≤ 1 | | +0 / -0.002" | | | |



Units: Inch

| EDP Number | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|------------|---------------|----------------|---------------|----------------|
| Bright | TiAlN | D | L | Lc | d |
| 461-1250 | - | 1/8 | 1-1/2 | 1/2 | 1/8 |
| 461-1562 | - | 5/32 | 2 | 9/16 | 3/16 |
| 461-1875 | 461-187511 | 3/16 | 2 | 5/8 | 3/16 |
| 461-2500 | 461-250011 | 1/4 | 2-1/2 | 3/4 | 1/4 |
| 461-2812 | - | 9/32 | 2-1/2 | 3/4 | 5/16 |
| 461-3125 | - | 5/16 | 2-1/2 | 13/16 | 5/16 |
| 461-3750 | 461-375011 | 3/8 | 2-1/2 | 1 | 3/8 |

| EDP Number | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|-------|---------------|----------------|---------------|----------------|
| Bright | TiAlN | D | L | Lc | d |
| 461-4375 | - | 7/16 | 2-3/4 | 1 | 7/16 |
| 461-5000 | - | 1/2 | 3 | 1 | 1/2 |
| 461-5625 | - | 9/16 | 3-1/2 | 1-1/8 | 9/16 |
| 461-6250 | - | 5/8 | 3-1/2 | 1-1/4 | 5/8 |
| 461-6875 | - | 11/16 | 4 | 1-3/8 | 3/4 |
| 461-7500 | - | 3/4 | 4 | 1-1/2 | 3/4 |
| 461-1000 | - | 1 | 4 | 1-1/2 | 1 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



List 461

6 Flute, RHS/RHC

| | | | | |
|--------------------------|----------------------------|--------------|--|-----|
| SPEED FEED P1265-1267 | CARBIDE | BR | | 30° |
| | Milling Diameter Tolerance | | | |
| 3 ≤ D ≤ 25 | | +0 / -0.05mm | | |



Units: mm

| EDP Number | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|----|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d | |
| 461-1181 | 3 | 39 | 10 | 3 | |
| 461-1575 | 4 | 51 | 14 | 4 | |
| 461-1968 | 5 | 51 | 16 | 5 | |
| 461-2362 | 6 | 64 | 19 | 6 | |
| 461-2756 | 7 | 64 | 19 | 7 | |
| 461-3150 | 8 | 64 | 21 | 8 | |
| 461-3543 | 9 | 70 | 22 | 10 | |
| 461-3937 | 10 | 70 | 25 | 10 | |

| EDP Number | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|----|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d | |
| 461-4331 | 11 | 70 | 25 | 11 | |
| 461-4724 | 12 | 76 | 25 | 12 | |
| 461-5512 | 14 | 89 | 30 | 14 | |
| 461-6299 | 16 | 89 | 32 | 16 | |
| 461-7087 | 18 | 102 | 35 | 18 | |
| 461-7874 | 20 | 102 | 38 | 20 | |
| 461-8661 | 22 | 102 | 38 | 22 | |
| 461-9843 | 25 | 102 | 38 | 25 | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| List No. | Work Material | | | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 461 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

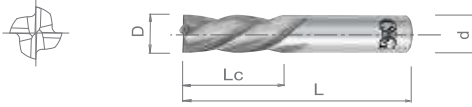


List 447

4 Flute, LHS/RHC

| | | | | | | |
|--------------------------|---------|-------|----|---|----|---|
| SPEED FEED P1265-1267 | CARBIDE | TiAlN | BR |  | LH |  |
|--------------------------|---------|-------|----|---|----|---|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/16 ≤ D ≤ 1 | +0 / -0.002" |



Units: Inch

| EDP Number | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|------------|---------------|----------------|---------------|----------------|
| Bright | TiAlN | D | L | Lc | d |
| 447-0625 | - | 1/16 | 1-1/2 | 3/16 | 1/8 |
| 447-1250 | 447-125011 | 1/8 | 1-1/2 | 1/2 | 1/8 |
| 447-1875 | 447-187511 | 3/16 | 2 | 5/8 | 3/16 |
| 447-2500 | 447-250011 | 1/4 | 2-1/2 | 3/4 | 1/4 |
| 447-3125 | - | 5/16 | 2-1/2 | 13/16 | 5/16 |

| EDP Number | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|-------|---------------|----------------|---------------|----------------|
| Bright | TiAlN | D | L | Lc | d |
| 447-3750 | - | 3/8 | 2-1/2 | 1 | 3/8 |
| 447-5000 | - | 1/2 | 3 | 1 | 1/2 |
| 447-6250 | - | 5/8 | 3-1/2 | 1-1/4 | 5/8 |
| 447-7500 | - | 3/4 | 4 | 1-1/2 | 3/4 |
| 447-1000 | - | 1 | 4 | 1-1/2 | 1 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 447 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



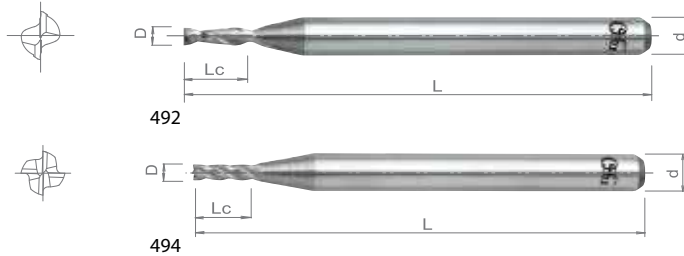


List 492, 494

2 or 4 Flute, Miniature

| | | | | | |
|----------------------------|----------------|--------------|-----------|--|------------|
| SPEED FEED P1274 | CARBIDE | TiAlN | BR | | 30° |
|----------------------------|----------------|--------------|-----------|--|------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 0.015 ≤ D ≤ 0.060 | +0 / -0.002" |



Units: Inch

| EDP Number | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|--------------------|--------------------|---------------|----------------|---------------|----------------|
| List 492 (2 Flute) | List 494 (4 Flute) | | | | |
| Bright | Bright | D | L | Lc | d |
| 492-0150 | - | 0.015 | 1-1/2 | 0.047 | 1/8 |
| 492-0200 | - | 0.020 | 1-1/2 | 0.063 | 1/8 |
| 492-0250 | - | 0.025 | 1-1/2 | 0.078 | 1/8 |
| 492-0300 | - | 0.030 | 1-1/2 | 0.094 | 1/8 |
| 492-0350 | 494-0350 | 0.035 | 1-1/2 | 0.109 | 1/8 |
| 492-0400 | 494-0400 | 0.040 | 1-1/2 | 0.125 | 1/8 |
| 492-0450 | 494-0450 | 0.045 | 1-1/2 | 0.140 | 1/8 |
| 492-0500 | 494-0500 | 0.050 | 1-1/2 | 0.156 | 1/8 |
| 492-0550 | 494-0550 | 0.055 | 1-1/2 | 0.171 | 1/8 |
| 492-0600 | 494-0600 | 0.060 | 1-1/2 | 0.188 | 1/8 |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order.



Work Material

| Chart applies to all list numbers above | P | | | | | M | | | K | N | | S | | H | | | |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| | 1010 | 1035 | 1065 | 4140 | 4340 | | | 7075 | | | | | | | | | |
| - | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best

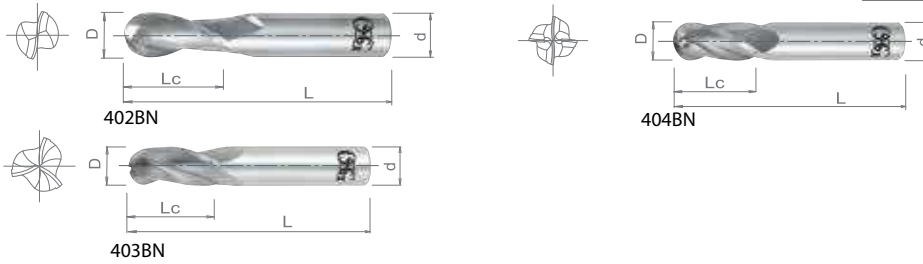


List 402BN, 403BN, 404BN

2, 3, or 4 Flute, Ball End

| | | | | | |
|---------------------------------|----------------|--------------|-----------|---|------------|
| SPEED FEED P1269-1271 | CARBIDE | TiAIN | BR |  | 30° |
|---------------------------------|----------------|--------------|-----------|---|------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/32 ≤ D ≤ 1 | +0 / -0.002" |



Units: Inch

| EDP Number | | | | | | Mill Dia. | Overall Length | Length of Cut | Shank Dia. |
|----------------------|---------------|----------------------|---------------|----------------------|---------------|-----------|----------------|---------------|------------|
| List 402BN (2 Flute) | | List 403BN (3 Flute) | | List 404BN (4 Flute) | | | | | |
| Bright | TiAIN | Bright | TiAIN | Bright | TiAIN | D | L | Lc | d |
| 402-0312-BN | 402-0312-BN11 | - | - | 404-0312-BN | 404-0312-BN11 | 1/32 | 1-1/2 | 1/8 | 1/8 |
| 402-0469-BN | 402-0469-BN11 | - | - | 404-0469-BN | 404-0469-BN11 | 3/64 | 1-1/2 | 9/64 | 1/8 |
| 402-0625-BN | 402-0625-BN11 | 403-0625-BN | 403-0625-BN11 | 404-0625-BN | 404-0625-BN11 | 1/16 | 1-1/2 | 3/16 | 1/8 |
| 402-0781-BN | 402-0781-BN11 | 403-0781-BN | 403-0781-BN11 | 404-0781-BN | 404-0781-BN11 | 5/64 | 1-1/2 | 1/4 | 1/8 |
| 402-0938-BN | 402-0938-BN11 | 403-0938-BN | 403-0938-BN11 | 404-0938-BN | 404-0938-BN11 | 3/32 | 1-1/2 | 5/16 | 1/8 |
| 402-1094-BN | 402-1094-BN11 | 403-1094-BN | 403-1094-BN11 | 404-1094-BN | 404-1094-BN11 | 7/64 | 1-1/2 | 3/8 | 1/8 |
| 402-1250-BN | 402-1250-BN11 | 403-1250-BN | 403-1250-BN11 | 404-1250-BN | 404-1250-BN11 | 1/8 | 1-1/2 | 1/2 | 1/8 |
| 402-1406-BN | 402-1406-BN11 | 403-1406-BN | 403-1406-BN11 | 404-1406-BN | 404-1406-BN11 | 9/64 | 2 | 1/2 | 3/16 |
| 402-1562-BN | 402-1562-BN11 | 403-1562-BN | 403-1562-BN11 | 404-1562-BN | 404-1562-BN11 | 5/32 | 2 | 9/16 | 3/16 |
| 402-1719-BN | 402-1719-BN11 | 403-1719-BN | 403-1719-BN11 | 404-1719-BN | 404-1719-BN11 | 11/64 | 2 | 9/16 | 3/16 |
| 402-1875-BN | 402-1875-BN11 | 403-1875-BN | 403-1875-BN11 | 404-1875-BN | 404-1875-BN11 | 3/16 | 2 | 5/8 | 3/16 |
| 402-2031-BN | 402-2031-BN11 | 403-2031-BN | 403-2031-BN11 | 404-2031-BN | 404-2031-BN11 | 13/64 | 2-1/2 | 5/8 | 1/4 |
| 402-2188-BN | 402-2188-BN11 | 403-2188-BN | 403-2188-BN11 | 404-2188-BN | 404-2188-BN11 | 7/32 | 2-1/2 | 5/8 | 1/4 |
| 402-2344-BN | 402-2344-BN11 | 403-2344-BN | 403-2344-BN11 | 404-2344-BN | 404-2344-BN11 | 15/64 | 2-1/2 | 3/4 | 1/4 |
| 402-2500-BN | 402-2500-BN11 | 403-2500-BN | 403-2500-BN11 | 404-2500-BN | 404-2500-BN11 | 1/4 | 2-1/2 | 3/4 | 1/4 |
| 402-2656-BN | 402-2656-BN11 | 403-2656-BN | 403-2656-BN11 | 404-2656-BN | 404-2656-BN11 | 17/64 | 2-1/2 | 3/4 | 5/16 |
| 402-2812-BN | 402-2812-BN11 | 403-2812-BN | - | 404-2812-BN | 404-2812-BN11 | 9/32 | 2-1/2 | 3/4 | 5/16 |
| 402-2969-BN | 402-2969-BN11 | 403-2969-BN | 403-2969-BN11 | 404-2969-BN | 404-2969-BN11 | 19/64 | 2-1/2 | 13/16 | 5/16 |
| 402-3125-BN | 402-3125-BN11 | 403-3125-BN | 403-3125-BN11 | 404-3125-BN | 404-3125-BN11 | 5/16 | 2-1/2 | 13/16 | 5/16 |
| 402-3281-BN | 402-3281-BN11 | - | - | 404-3281-BN | 404-3281-BN11 | 21/64 | 2-1/2 | 7/8 | 3/8 |
| 402-3438-BN | 402-3438-BN11 | - | - | 404-3438-BN | 404-3438-BN11 | 11/32 | 2-1/2 | 7/8 | 3/8 |
| 402-3594-BN | 402-3594-BN11 | - | - | 404-3594-BN | 404-3594-BN11 | 23/64 | 2-1/2 | 7/8 | 3/8 |
| 402-3750-BN | 402-3750-BN11 | 403-3750-BN | 403-3750-BN11 | 404-3750-BN | 404-3750-BN11 | 3/8 | 2-1/2 | 1 | 3/8 |
| 402-3906-BN | 402-3906-BN11 | - | - | 404-3906-BN | 404-3906-BN11 | 25/64 | 2-3/4 | 1 | 7/16 |
| 402-4062-BN | 402-4062-BN11 | - | - | 404-4062-BN | 404-4062-BN11 | 13/32 | 2-3/4 | 1 | 7/16 |
| 402-4219-BN | 402-4219-BN11 | - | - | 404-4219-BN | 404-4219-BN11 | 27/64 | 2-3/4 | 1 | 7/16 |
| 402-4375-BN | 402-4375-BN11 | 403-4375-BN | 403-4375-BN11 | 404-4375-BN | 404-4375-BN11 | 7/16 | 2-3/4 | 1 | 7/16 |
| 402-4531-BN | 402-4531-BN11 | - | - | 404-4531-BN | 404-4531-BN11 | 29/64 | 3 | 1 | 1/2 |
| 402-4688-BN | 402-4688-BN11 | - | - | 404-4688-BN | 404-4688-BN11 | 15/32 | 3 | 1 | 1/2 |
| 402-4844-BN | 402-4844-BN11 | - | - | 404-4844-BN | 404-4844-BN11 | 31/64 | 3 | 1 | 1/2 |
| 402-5000-BN | 402-5000-BN11 | 403-5000-BN | 403-5000-BN11 | 404-5000-BN | 404-5000-BN11 | 1/2 | 3 | 1 | 1/2 |
| 402-5625-BN | 402-5625-BN11 | 403-5625-BN | 403-5625-BN11 | 404-5625-BN | 404-5625-BN11 | 9/16 | 3-1/2 | 1-1/8 | 9/16 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

continued on next page 

| List No. | Work Material | | | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 402BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 403BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 404BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



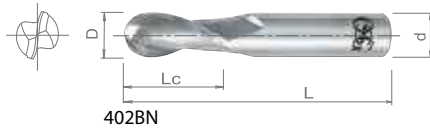


List 402BN, 403BN, 404BN (Cont.)

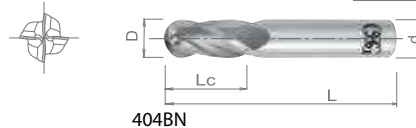
2, 3, or 4 Flute, Ball End

| | | | | | |
|---------------------------------|---------|-------|----|--|-----|
| SPEED FEED P1269- 1271 | CARBIDE | TiAlN | BR | | 30° |
|---------------------------------|---------|-------|----|--|-----|

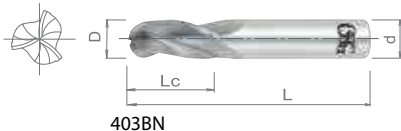
| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/32 ≤ D ≤ 1 | +0 / -0.002" |



402BN



404BN



403BN

Units: Inch

| EDP Number | | | | | | Mill Dia. | Overall Length | Length of Cut | Shank Dia. |
|----------------------|---------------|----------------------|---------------|----------------------|---------------|-----------|----------------|---------------|------------|
| List 402BN (2 Flute) | | List 403BN (3 Flute) | | List 404BN (4 Flute) | | | | | |
| Bright | TiAlN | Bright | TiAlN | Bright | TiAlN | D | L | Lc | d |
| 402-6250-BN | 402-6250-BN11 | 403-6250-BN | 403-6250-BN11 | 404-6250-BN | 404-6250-BN11 | 5/8 | 3-1/2 | 1-1/4 | 5/8 |
| 402-6875-BN | 402-6875-BN11 | 403-6875-BN | 403-6875-BN11 | 404-6875-BN | 404-6875-BN11 | 11/16 | 4 | 1-3/8 | 3/4 |
| 402-7500-BN | 402-7500-BN11 | 403-7500-BN | 403-7500-BN11 | 404-7500-BN | 404-7500-BN11 | 3/4 | 4 | 1-1/2 | 3/4 |
| 402-8750-BN | 402-8750-BN11 | 403-8750-BN | 403-8750-BN11 | 404-8750-BN | 404-8750-BN11 | 7/8 | 4 | 1-1/2 | 7/8 |
| 402-1000-BN | 402-1000-BN11 | 403-1000-BN | 403-1000-BN11 | 404-1000-BN | 404-1000-BN11 | 1 | 4 | 1-1/2 | 1 |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 402BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 403BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 404BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

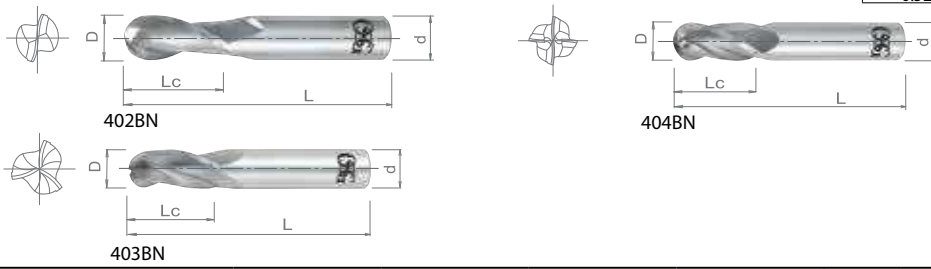


List 402BN, 403BN, 404BN

2, 3, or 4 Flute, Ball End

| | | | | | |
|---------------------------------|----------------|--------------|-----------|---|------------|
| SPEED FEED P1269-1271 | CARBIDE | TiAIN | BR |  | 30° |
|---------------------------------|----------------|--------------|-----------|---|------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 0.5 ≤ D ≤ 25 | +0 / -0.05mm |



Units: mm

| EDP Number | | | | | | Mill Dia. | Overall Length | Length of Cut | Shank Dia. |
|----------------------|---------------|----------------------|---------------|----------------------|---------------|-----------|----------------|---------------|------------|
| List 402BN (2 Flute) | | List 403BN (3 Flute) | | List 404BN (4 Flute) | | | | | |
| Bright | TiAIN | Bright | TiAIN | Bright | TiAIN | D | L | Lc | d |
| 402-0197-BN | 402-0197-BN11 | - | - | - | - | 0.5 | 39 | 1.5 | 3 |
| 402-0394-BN | 402-0394-BN11 | 403-0394-BN | 403-0394-BN11 | 404-0394-BN | 404-0394-BN11 | 1.0 | 39 | 3 | 3 |
| 402-0591-BN | 402-0591-BN11 | 403-0591-BN | 403-0591-BN11 | 404-0591-BN | 404-0591-BN11 | 1.5 | 39 | 5 | 3 |
| 402-0787-BN | 402-0787-BN11 | 403-0787-BN | 403-0787-BN11 | 404-0787-BN | 404-0787-BN11 | 2.0 | 39 | 7 | 3 |
| 402-0984-BN | 402-0984-BN11 | 403-0984-BN | 403-0984-BN11 | 404-0984-BN | 404-0984-BN11 | 2.5 | 39 | 8 | 3 |
| 402-1181-BN | 402-1181-BN11 | 403-1181-BN | 403-1181-BN11 | 404-1181-BN | 404-1181-BN11 | 3.0 | 39 | 10 | 3 |
| 402-1378-BN | 402-1378-BN11 | 403-1378-BN | 403-1378-BN11 | 404-1378-BN | 404-1378-BN11 | 3.5 | 51 | 12 | 4 |
| 402-1575-BN | 402-1575-BN11 | 403-1575-BN | 403-1575-BN11 | 404-1575-BN | 404-1575-BN11 | 4.0 | 51 | 14 | 4 |
| 402-1772-BN | 402-1772-BN11 | 403-1772-BN | 403-1772-BN11 | 404-1772-BN | 404-1772-BN11 | 4.5 | 51 | 14 | 5 |
| 402-1968-BN | 402-1968-BN11 | 403-1968-BN | 403-1968-BN11 | 404-1968-BN | 404-1968-BN11 | 5.0 | 51 | 16 | 5 |
| 402-2362-BN | 402-2362-BN11 | 403-2362-BN | 403-2362-BN11 | 404-2362-BN | 404-2362-BN11 | 6.0 | 64 | 19 | 6 |
| 402-2756-BN | 402-2756-BN11 | 403-2756-BN | 403-2756-BN11 | 404-2756-BN | 404-2756-BN11 | 7.0 | 64 | 19 | 8 |
| 402-3150-BN | 402-3150-BN11 | 403-3150-BN | 403-3150-BN11 | 404-3150-BN | 404-3150-BN11 | 8.0 | 64 | 21 | 8 |
| 402-3543-BN | 402-3543-BN11 | 403-3543-BN | 403-3543-BN11 | 404-3543-BN | 404-3543-BN11 | 9.0 | 70 | 22 | 10 |
| 402-3937-BN | 402-3937-BN11 | 403-3937-BN | 403-3937-BN11 | 404-3937-BN | 404-3937-BN11 | 10.0 | 70 | 25 | 10 |
| 402-4331-BN | 402-4331-BN11 | 403-4331-BN | 403-4331-BN11 | 404-4331-BN | 404-4331-BN11 | 11.0 | 70 | 25 | 11 |
| 402-4724-BN | 402-4724-BN11 | 403-4724-BN | 403-4724-BN11 | 404-4724-BN | 404-4724-BN11 | 12.0 | 76 | 25 | 12 |
| 402-5512-BN | 402-5512-BN11 | 403-5512-BN | 403-5512-BN11 | 404-5512-BN | 404-5512-BN11 | 14.0 | 89 | 30 | 14 |
| 402-6299-BN | 402-6299-BN11 | 403-6299-BN | 403-6299-BN11 | 404-6299-BN | 404-6299-BN11 | 16.0 | 89 | 32 | 16 |
| 402-7087-BN | 402-7087-BN11 | 403-7087-BN | 403-7087-BN11 | 404-7087-BN | 404-7087-BN11 | 18.0 | 102 | 35 | 18 |
| 402-7874-BN | 402-7874-BN11 | 403-7874-BN | 403-7874-BN11 | 404-7874-BN | 404-7874-BN11 | 20.0 | 102 | 38 | 20 |
| 402-8661-BN | 402-8661-BN11 | 403-8661-BN | 403-8661-BN11 | 404-8661-BN | 404-8661-BN11 | 22.0 | 102 | 38 | 22 |
| 402-9843-BN | 402-9843-BN11 | 403-9843-BN | 403-9843-BN11 | 404-9843-BN | 404-9843-BN11 | 25.0 | 102 | 38 | 25 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | 4140 4340 | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 402BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 403BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 404BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



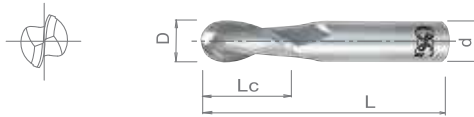


List 452BN

2 Flute, Ball End, Plus Tolerance

| | | | | |
|----------------------------|----------------|-----------|--|------------|
| SPEED FEED P1269 | CARBIDE | BR | | 30° |
|----------------------------|----------------|-----------|--|------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/16 ≤ D ≤ 1 | +0.001" / -0 |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|-------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 452-0625-BN | 1/16 | 1-1/2 | 3/16 | 1/8 |
| 452-0938-BN | 3/32 | 1-1/2 | 5/16 | 1/8 |
| 452-1250-BN | 1/8 | 1-1/2 | 1/2 | 1/8 |
| 452-1562-BN | 5/32 | 2 | 9/16 | 3/16 |
| 452-1875-BN | 3/16 | 2 | 5/8 | 3/16 |
| 452-2188-BN | 7/32 | 2-1/2 | 5/8 | 1/4 |
| 452-2500-BN | 1/4 | 2-1/2 | 3/4 | 1/4 |
| 452-2812-BN | 9/32 | 2-1/2 | 3/4 | 5/16 |
| 452-3125-BN | 5/16 | 2-1/2 | 13/16 | 5/16 |
| 452-3750-BN | 3/8 | 2-1/2 | 1 | 3/8 |
| 452-5000-BN | 1/2 | 3 | 1 | 1/2 |
| 452-5625-BN | 9/16 | 3-1/2 | 1-1/8 | 9/16 |
| 452-6250-BN | 5/8 | 3-1/2 | 1-1/4 | 5/8 |
| 452-6875-BN | 11/16 | 4 | 1-3/8 | 3/4 |
| 452-7500-BN | 3/4 | 4 | 1-1/2 | 3/4 |
| 452-1000-BN | 1 | 4 | 1-1/2 | 1 |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 452BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

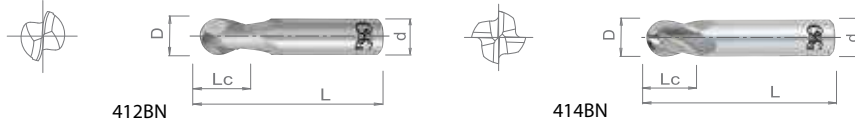


List 412BN, 414BN

2 or 4 Flute, Stub Length, Ball End

| | | | | | | | |
|--------------------------|---------|-------|------|----|------|---|-----|
| SPEED FEED P1269-1271 | CARBIDE | TiAlN | TiCN | BR | STUB |  | 30° |
|--------------------------|---------|-------|------|----|------|---|-----|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/32 ≤ D ≤ 3/4 | +0 / -0.002" |



Units: Inch

| EDP Number | | | | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|----------------------|---------------|----------------------|---------------|---------------|---------------|----------------|---------------|----------------|
| List 412BN (2 Flute) | | List 414BN (4 Flute) | | | | | | |
| Bright | TiAlN | Bright | TiCN | TiAlN | D | L | Lc | d |
| 412-0312-BN | 412-0312-BN11 | 414-0312-BN | - | 414-0312-BN11 | 1/32 | 1-1/2 | 5/64 | 1/8 |
| 412-0469-BN | - | 414-0469-BN | - | 414-0469-BN11 | 3/64 | 1-1/2 | 3/32 | 1/8 |
| 412-0625-BN | 412-0625-BN11 | 414-0625-BN | - | 414-0625-BN11 | 1/16 | 1-1/2 | 1/8 | 1/8 |
| 412-0781-BN | - | 414-0781-BN | - | 414-0781-BN11 | 5/64 | 1-1/2 | 5/32 | 1/8 |
| 412-0938-BN | - | 414-0938-BN | 414-0938-BN08 | 414-0938-BN11 | 3/32 | 1-1/2 | 3/16 | 1/8 |
| 412-1094-BN | - | 414-1094-BN | - | - | 7/64 | 1-1/2 | 7/32 | 1/8 |
| 412-1250-BN | 412-1250-BN11 | 414-1250-BN | 414-1250-BN08 | 414-1250-BN11 | 1/8 | 1-1/2 | 1/4 | 1/8 |
| 412-1406-BN | - | 414-1406-BN | - | - | 9/64 | 2 | 9/32 | 3/16 |
| 412-1562-BN | 412-1562-BN11 | 414-1562-BN | 414-1562-BN08 | - | 5/32 | 2 | 5/16 | 3/16 |
| 412-1875-BN | 412-1875-BN11 | 414-1875-BN | - | 414-1875-BN11 | 3/16 | 2 | 3/8 | 3/16 |
| 412-2188-BN | - | 414-2188-BN | - | - | 7/32 | 2 | 7/16 | 1/4 |
| 412-2500-BN | 412-2500-BN11 | 414-2500-BN | - | 414-2500-BN11 | 1/4 | 2 | 1/2 | 1/4 |
| 412-3125-BN | - | 414-3125-BN | 414-3125-BN08 | 414-3125-BN11 | 5/16 | 2 | 1/2 | 5/16 |
| 412-3750-BN | 412-3750-BN11 | 414-3750-BN | 414-3750-BN08 | 414-3750-BN11 | 3/8 | 2 | 5/8 | 3/8 |
| 412-4375-BN | - | 414-4375-BN | - | - | 7/16 | 2-1/2 | 5/8 | 7/16 |
| 412-5000-BN | 412-5000-BN11 | 414-5000-BN | 414-5000-BN08 | - | 1/2 | 2-1/2 | 5/8 | 1/2 |
| 412-6250-BN | - | 414-6250-BN | - | - | 5/8 | 3 | 3/4 | 5/8 |
| 412-7500-BN | - | 414-7500-BN | - | - | 3/4 | 3 | 1 | 3/4 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | | | |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Chart applies to all list numbers above | P | | | | | M | | | K | N | | S | | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| - | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



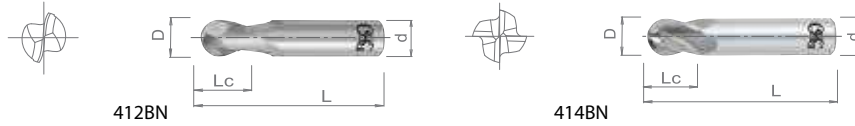


List 412BN, 414BN

2 or 4 Flute, Stub Length, Ball End

| | | | | | | | |
|--------------------------|---------|-------|------|----|------|--|-----|
| SPEED FEED P1269-1271 | CARBIDE | TiAlN | TiCN | BR | STUB | | 30° |
|--------------------------|---------|-------|------|----|------|--|-----|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1 ≤ D ≤ 12 | +0 / -0.05mm |



Units: mm

| EDP Number | | | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|----------------------|---------------|----------------------|---------------|---------------|----------------|---------------|----------------|
| List 412BN (2 Flute) | | List 414BN (4 Flute) | | | | | |
| Bright | TiAlN | Bright | TiAlN | D | L | Lc | d |
| 412-0394-BN | 412-0394-BN11 | 414-0394-BN | 414-0394-BN11 | 1.0 | 39 | 2 | 3 |
| 412-0591-BN | - | 414-0591-BN | - | 1.5 | 39 | 3 | 3 |
| 412-0787-BN | - | 414-0787-BN | - | 2.0 | 39 | 4 | 3 |
| 412-0984-BN | - | 414-0984-BN | - | 2.5 | 39 | 5 | 3 |
| 412-1181-BN | - | 414-1181-BN | - | 3.0 | 39 | 6 | 3 |
| 412-1378-BN | - | 414-1378-BN | - | 3.5 | 51 | 7 | 4 |
| 412-1575-BN | 412-1575-BN11 | 414-1575-BN | - | 4.0 | 51 | 8 | 4 |
| 412-1772-BN | - | 414-1772-BN | - | 4.5 | 51 | 9 | 5 |
| 412-1968-BN | - | 414-1968-BN | - | 5.0 | 51 | 10 | 5 |
| 412-2362-BN | - | 414-2362-BN | - | 6.0 | 51 | 12 | 6 |
| 412-2756-BN | - | 414-2756-BN | - | 7.0 | 51 | 12 | 8 |
| 412-3150-BN | - | 414-3150-BN | - | 8.0 | 51 | 12 | 8 |
| 412-3543-BN | - | 414-3543-BN | - | 9.0 | 51 | 14 | 10 |
| 412-3937-BN | - | 414-3937-BN | - | 10.0 | 51 | 14 | 10 |
| 412-4331-BN | - | 414-4331-BN | - | 11.0 | 64 | 16 | 11 |
| 412-4724-BN | - | 414-4724-BN | - | 12.0 | 64 | 16 | 12 |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | | | |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Chart applies to all list numbers above | P | | | | | M | | | K | N | | S | H | | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| - | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

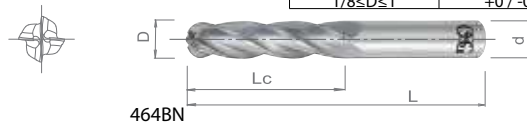
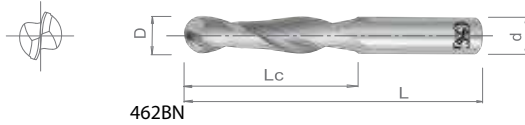


List 462BN, 464BN

2 or 4 Flute, Long Length, Ball End

| | | | | | | | |
|---------------------------------|----------------|--------------|-------------|-----------|-------------|---|------------|
| SPEED FEED P1269-1271 | CARBIDE | TiAlN | TiCN | BR | LONG |  | 30° |
|---------------------------------|----------------|--------------|-------------|-----------|-------------|---|------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/8 ≤ D ≤ 1 | +0 / -0.002" |



Units: Inch

| EDP Number | | | | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|----------------------|---------------|----------------------|---------------|---------------|---------------|----------------|---------------|----------------|
| List 462BN (2 Flute) | | List 464BN (4 Flute) | | | | | | |
| Bright | TiCN | Bright | TiCN | TiAlN | D | L | Lc | d |
| 462-1250-BN | - | 464-1250-BN | - | 464-1250-BN11 | 1/8 | 2-1/4 | 3/4 | 1/8 |
| 462-1875-BN | - | 464-1875-BN | - | 464-1875-BN11 | 3/16 | 2-1/4 | 3/4 | 3/16 |
| 462-2500-BN | 462-2500-BN08 | 464-2500-BN | - | 464-2500-BN11 | 1/4 | 3 | 1-1/8 | 1/4 |
| 462-3125-BN | - | 464-3125-BN | - | - | 5/16 | 3 | 1-1/8 | 5/16 |
| 462-3750-BN | - | 464-3750-BN | - | 464-3750-BN11 | 3/8 | 3 | 1-1/8 | 3/8 |
| 462-4375-BN | - | 464-4375-BN | - | - | 7/16 | 4 | 2 | 7/16 |
| 462-5000-BN | - | 464-5000-BN | 464-5000-BN08 | 464-5000-BN11 | 1/2 | 4 | 2 | 1/2 |
| 462-6250-BN | - | 464-6250-BN | - | - | 5/8 | 5 | 2-1/4 | 5/8 |
| 462-7500-BN | - | 464-7500-BN | - | - | 3/4 | 5 | 2-1/4 | 3/4 |
| 462-1000-BN | - | 464-1000-BN | - | - | 1 | 5 | 2-1/4 | 1 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

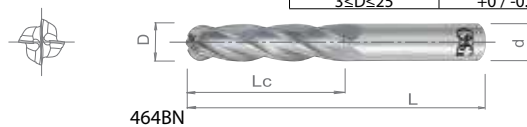
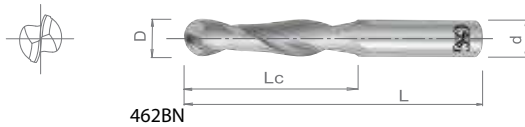


List 462BN, 464BN

2 or 4 Flute, Long Length, Ball End

| | | | | | |
|---------------------------------|----------------|-----------|-------------|---|------------|
| SPEED FEED P1269-1271 | CARBIDE | BR | LONG |  | 30° |
|---------------------------------|----------------|-----------|-------------|---|------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 3 ≤ D ≤ 25 | +0 / -0.05mm |



Units: mm

| EDP Number | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|----------------------|----------------------|---------------|----------------|---------------|----------------|
| List 462BN (2 Flute) | List 464BN (4 Flute) | | | | |
| Bright | Bright | D | L | Lc | d |
| 462-1181-BN | 464-1181-BN | 3 | 57 | 19 | 3 |
| 462-1575-BN | 464-1575-BN | 4 | 57 | 19 | 4 |
| 462-1968-BN | 464-1968-BN | 5 | 64 | 25 | 5 |
| 462-2362-BN | 464-2362-BN | 6 | 76 | 28 | 6 |
| 462-3150-BN | 464-3150-BN | 8 | 76 | 29 | 8 |
| 462-3937-BN | 464-3937-BN | 10 | 76 | 32 | 10 |
| 462-4724-BN | 464-4724-BN | 12 | 102 | 51 | 12 |
| 462-5512-BN | 464-5512-BN | 14 | 127 | 57 | 14 |
| 462-6299-BN | 464-6299-BN | 16 | 127 | 57 | 16 |
| 462-7087-BN | 464-7087-BN | 18 | 127 | 57 | 18 |
| 462-7874-BN | 464-7874-BN | 20 | 127 | 57 | 20 |
| 462-9843-BN | 464-9843-BN | 25 | 127 | 57 | 25 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | 300 | | 400 | 17-4 PH | 6061 7075 | | Casting | Inconel | 6Al4V (30 HRC) | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 462BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 464BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



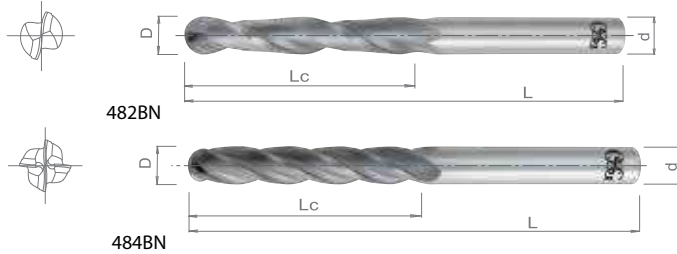


List 482BN, 484BN

2 or 4 Flute, Extra Long Length, Ball End

| | | | | | | |
|--------------------------|---------|-------|----|------------|--|-----|
| SPEED FEED P1269-1271 | CARBIDE | TiAlN | BR | EXTRA LONG | | 30° |
|--------------------------|---------|-------|----|------------|--|-----|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/8 ≤ D ≤ 1 | +0 / -0.002" |



Units: Inch

| EDP Number | | | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|----------------------|---------------|----------------------|---------------|---------------|----------------|---------------|----------------|
| List 482BN (2 Flute) | | List 484BN (4 Flute) | | | | | |
| Bright | TiAlN | Bright | TiAlN | D | L | Lc | d |
| 482-1250-BN | 482-1250-BN11 | 484-1250-BN | 484-1250-BN11 | 1/8 | 3 | 1 | 1/8 |
| 482-1875-BN | 482-1875-BN11 | 484-1875-BN | 484-1875-BN11 | 3/16 | 3 | 1-1/8 | 3/16 |
| 482-2500-BN | 482-2500-BN11 | 484-2500-BN | 484-2500-BN11 | 1/4 | 4 | 1-1/2 | 1/4 |
| 482-3125-BN | - | 484-3125-BN | 484-3125-BN11 | 5/16 | 4 | 1-5/8 | 5/16 |
| 482-3750-BN | - | 484-3750-BN | 484-3750-BN11 | 3/8 | 4 | 1-3/4 | 3/8 |
| 482-4375-BN | - | 484-4375-BN | - | 7/16 | 6 | 3 | 7/16 |
| 482-5000-BN | - | 484-5000-BN | 484-5000-BN11 | 1/2 | 6 | 3 | 1/2 |
| 482-6250-BN | - | 484-6250-BN | - | 5/8 | 6 | 3 | 5/8 |
| 482-7500-BN | - | 484-7500-BN | - | 3/4 | 6 | 3 | 3/4 |
| 482-1000-BN | - | 484-1000-BN | - | 1 | 6 | 3 | 1 |

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 482BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 484BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

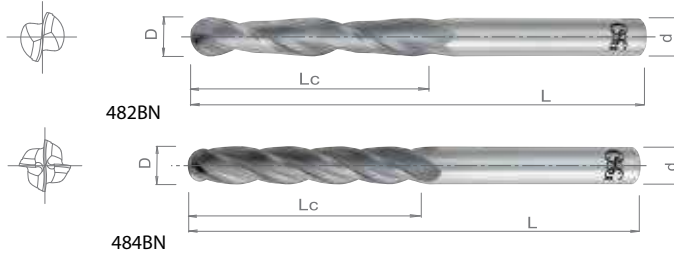


List 482BN, 484BN

2 or 4 Flute, Extra Long Length, Ball End

| | | | | | |
|--------------------------|---------|----|------------|---|-----|
| SPEED FEED P1269-1271 | CARBIDE | BR | EXTRA LONG |  | 30° |
|--------------------------|---------|----|------------|---|-----|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 3 ≤ D ≤ 25 | +0 / -0.05mm |



Units: mm

| EDP Number | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|----------------------|----------------------|---------------|----------------|---------------|----------------|
| List 482BN (2 Flute) | List 484BN (4 Flute) | | | | |
| Bright | Bright | D | L | Lc | d |
| 482-1181-BN | 484-1181-BN | 3 | 76 | 25 | 3 |
| 482-1575-BN | 484-1575-BN | 4 | 76 | 28 | 4 |
| 482-1968-BN | 484-1968-BN | 5 | 76 | 32 | 5 |
| 482-2362-BN | 484-2362-BN | 6 | 102 | 38 | 6 |
| 482-3150-BN | 484-3150-BN | 8 | 102 | 42 | 8 |
| 482-3937-BN | 484-3937-BN | 10 | 102 | 45 | 10 |
| 482-4724-BN | 484-4724-BN | 12 | 153 | 76 | 12 |
| 482-5512-BN | 484-5512-BN | 14 | 153 | 76 | 14 |
| 482-6299-BN | 484-6299-BN | 16 | 153 | 76 | 16 |
| 482-7087-BN | 484-7087-BN | 18 | 153 | 76 | 18 |
| 482-7874-BN | 484-7874-BN | 20 | 153 | 76 | 20 |
| 482-9843-BN | 484-9843-BN | 25 | 153 | 76 | 25 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 482BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 484BN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 497

2 Flute, Long Shank, Ball End

| | | | | |
|----------------------------|----------------|-----------|--|------------|
| SPEED FEED P1268 | CARBIDE | BR | | 15° |
|----------------------------|----------------|-----------|--|------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/8 ≤ D ≤ 1 | +0 / -0.002" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 497-1250 | 1/8 | 2-1/2 | 3/16 | 1/8 |
| 497-1875 | 3/16 | 4 | 9/32 | 3/16 |
| 497-2500 | 1/4 | 4 | 3/8 | 1/4 |
| 497-3125 | 5/16 | 4 | 15/32 | 5/16 |
| 497-3750 | 3/8 | 4 | 9/16 | 3/8 |
| 497-4375 | 7/16 | 5 | 21/32 | 7/16 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 497-5000 | 1/2 | 5 | 3/4 | 1/2 |
| 497-5625 | 9/16 | 5 | 27/32 | 9/16 |
| 497-6250 | 5/8 | 6 | 15/16 | 5/8 |
| 497-7500 | 3/4 | 6 | 1-1/8 | 3/4 |
| 497-1000 | 1 | 6 | 1-1/2 | 1 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



List 497

2 Flute, Long Shank, Ball End

| | | | | |
|----------------------------|----------------|-----------|--|------------|
| SPEED FEED P1268 | CARBIDE | BR | | 15° |
|----------------------------|----------------|-----------|--|------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 3 ≤ D ≤ 20 | +0 / -0.05mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 497-1181 | 3 | 63 | 4.5 | 3 |
| 497-1575 | 4 | 63 | 6.0 | 4 |
| 497-1968 | 5 | 63 | 7.5 | 5 |
| 497-2362 | 6 | 100 | 9.0 | 6 |
| 497-3150 | 8 | 100 | 12.0 | 8 |
| 497-3937 | 10 | 100 | 15.0 | 10 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 497-4331 | 11 | 127 | 16.5 | 11 |
| 497-4724 | 12 | 127 | 18.0 | 12 |
| 497-5512 | 14 | 127 | 21.0 | 14 |
| 497-6299 | 16 | 152 | 24.0 | 16 |
| 497-7087 | 18 | 152 | 27.0 | 18 |
| 497-7874 | 20 | 152 | 30.0 | 20 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

| List No. | P | | | | | | M | | | K | N | | S | | H | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 497 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



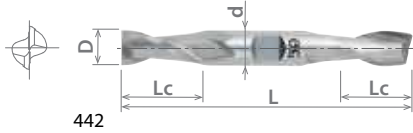


List 442, 444

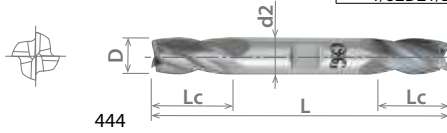
2 or 4 Flute

| | | | | | |
|--------------------------|---------|-------|----|--|-----|
| SPEED FEED P1261-1267 | CARBIDE | TiAlN | BR | | 30° |
|--------------------------|---------|-------|----|--|-----|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/8 ≤ D ≤ 1/2 | +0 / -0.002" |



442



444

Units: Inch

| EDP Number | | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|--------------------|--------------------|------------|---------------|----------------|---------------|----------------|
| List 442 (2 Flute) | List 444 (4 Flute) | | | | | |
| Bright | Bright | TiAlN | D | L | Lc | d |
| 442-1250 | 444-1250 | 444-125011 | 1/8 | 3-1/16 | 3/8 | 3/8 |
| 442-1562 | 444-1562 | - | 5/32 | 3-1/8 | 7/16 | 3/8 |
| 442-1875 | 444-1875 | 444-187511 | 3/16 | 3-1/4 | 1/2 | 3/8 |
| 442-2188 | 444-2188 | - | 7/32 | 3-3/8 | 9/16 | 3/8 |
| 442-2500 | 444-2500 | 444-250011 | 1/4 | 3-3/8 | 5/8 | 3/8 |
| 442-2812 | 444-2812 | - | 9/32 | 3-3/8 | 11/16 | 3/8 |
| 442-3125 | 444-3125 | - | 5/16 | 3-1/2 | 3/4 | 3/8 |
| 442-3438 | 444-3438 | - | 11/32 | 3-1/2 | 3/4 | 3/8 |
| 442-3750 | 444-3750 | 444-375011 | 3/8 | 3-1/2 | 3/4 | 3/8 |
| 442-4375 | 444-4375 | - | 7/16 | 4 | 7/8 | 1/2 |
| 442-5000 | 444-5000 | - | 1/2 | 4 | 1 | 1/2 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

| Chart applies to all list numbers above | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| | 1010 1018 | 1035 1045 | 1065 | 4140 4340 | | | | | | | | | | | | | |
| - | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

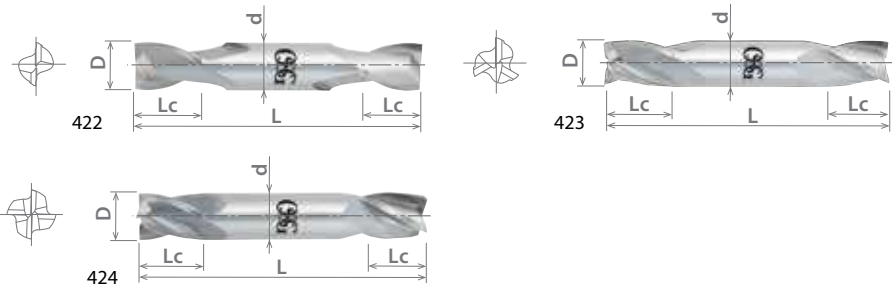


List 422, 423, 424

2, 3, or 4 Flute, Stub Length

| | | | | | | |
|---------------------------------|---------|-------|----|------|---|-----|
| SPEED FEED P1261- 1267 | CARBIDE | TiAlN | BR | STUB |  | 30° |
|---------------------------------|---------|-------|----|------|---|-----|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/32 ≤ D ≤ 1/2 | +0 / -0.002" |



Units: Inch

| EDP Number | | | | | | Mill Dia. | Overall Length | Length of Cut | Shank Dia. |
|--------------------|------------|--------------------|------------|--------------------|------------|-----------|----------------|---------------|------------|
| List 422 (2 Flute) | | List 423 (3 Flute) | | List 424 (4 Flute) | | | | | |
| Bright | TiAlN | Bright | TiAlN | Bright | TiAlN | D | L | Lc | d |
| 422-0312 | - | 423-0312 | - | 424-0312 | 424-031211 | 1/32 | 1-1/2 | 5/64 | 1/8 |
| 422-0469 | - | 423-0469 | - | 424-0469 | 424-046911 | 3/64 | 1-1/2 | 3/32 | 1/8 |
| 422-0625 | 422-062511 | 423-0625 | - | 424-0625 | 424-062511 | 1/16 | 1-1/2 | 1/8 | 1/8 |
| 422-0781 | - | - | - | 424-0781 | 424-078111 | 5/64 | 1-1/2 | 5/32 | 1/8 |
| 422-0938 | 422-093811 | 423-0938 | - | 424-0938 | 424-093811 | 3/32 | 1-1/2 | 3/16 | 1/8 |
| 422-1094 | - | - | - | 424-1094 | 424-109411 | 7/64 | 1-1/2 | 7/32 | 1/8 |
| 422-1250 | 422-125011 | 423-1250 | - | 424-1250 | 424-125011 | 1/8 | 1-1/2 | 1/4 | 1/8 |
| 422-1406 | - | - | - | 424-1406 | - | 9/64 | 2 | 9/32 | 3/16 |
| 422-1562 | - | 423-1562 | - | 424-1562 | 424-156211 | 5/32 | 2 | 5/16 | 3/16 |
| 422-1875 | 422-187511 | 423-1875 | - | 424-1875 | 424-187511 | 3/16 | 2 | 3/8 | 3/16 |
| 422-2188 | 422-218811 | 423-2188 | - | 424-2188 | - | 7/32 | 2-1/2 | 1/2 | 1/4 |
| 422-2500 | 422-250011 | 423-2500 | 423-250011 | 424-2500 | 424-250011 | 1/4 | 2-1/2 | 1/2 | 1/4 |
| 422-3125 | 422-312511 | 423-3125 | - | 424-3125 | 424-312511 | 5/16 | 2-1/2 | 1/2 | 5/16 |
| 422-3750 | 422-375011 | 423-3750 | 423-375011 | 424-3750 | 424-375011 | 3/8 | 2-1/2 | 1/2 | 3/8 |
| 422-4375 | - | 423-4375 | - | 424-4375 | - | 7/16 | 2-3/4 | 9/16 | 7/16 |
| 422-5000 | 422-500011 | 423-5000 | 423-500011 | 424-5000 | 424-500011 | 1/2 | 3 | 5/8 | 1/2 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|
| Chart applies to all list numbers above | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| | 1010 | 1035 | 1065 | 4140 | 4340 | | | | | | | | | | | | |
| - | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best



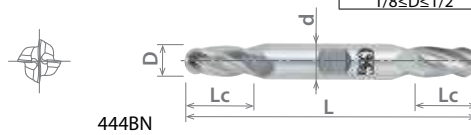
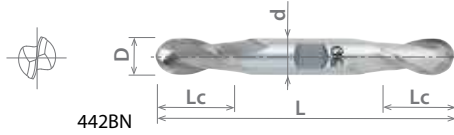


List 442BN, 444BN

2 or 4 Flute, Ball End

| | | | | | |
|---------------------------------|----------------|--------------|-----------|--|------------|
| SPEED FEED P1269-1271 | CARBIDE | TiAlN | BR | | 30° |
|---------------------------------|----------------|--------------|-----------|--|------------|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/8 ≤ D ≤ 1/2 | +0 / -0.002" |



Units: Inch

| EDP Number | | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|----------------------|----------------------|---------------|---------------|----------------|---------------|----------------|
| List 442BN (2 Flute) | List 444BN (4 Flute) | | | | | |
| Bright | Bright | TiAlN | D | L | Lc | d |
| 442-1250-BN | 444-1250-BN | 444-1250-BN11 | 1/8 | 3-1/16 | 3/8 | 3/8 |
| 442-1562-BN | 444-1562-BN | - | 5/32 | 3-1/8 | 7/16 | 3/8 |
| 442-1875-BN | 444-1875-BN | - | 3/16 | 3-1/4 | 1/2 | 3/8 |
| 442-2188-BN | 444-2188-BN | - | 7/32 | 3-3/8 | 9/16 | 3/8 |
| 442-2500-BN | 444-2500-BN | - | 1/4 | 3-3/8 | 5/8 | 3/8 |
| 442-2812-BN | 444-2812-BN | - | 9/32 | 3-3/8 | 11/16 | 3/8 |
| 442-3125-BN | 444-3125-BN | - | 5/16 | 3-1/2 | 3/4 | 3/8 |
| 442-3438-BN | 444-3438-BN | - | 11/32 | 3-1/2 | 3/4 | 3/8 |
| 442-3750-BN | 444-3750-BN | - | 3/8 | 3-1/2 | 3/4 | 3/8 |
| 442-4375-BN | 444-4375-BN | - | 7/16 | 4 | 7/8 | 1/2 |
| 442-5000-BN | 444-5000-BN | - | 1/2 | 4 | 1 | 1/2 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

| Chart applies to all list numbers above | P | | | | | M | | | K | N | | S | H | | | | |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| - | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



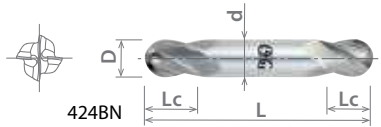
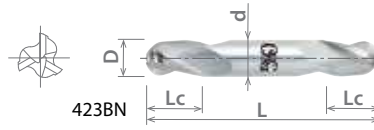
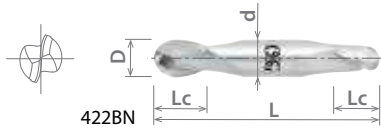


List 422BN, 423BN, 424BN

2, 3, or 4 Flute, Stub Length, Ball End

| | | | | | | |
|--------------------------|---------|-------|----|------|--|-----|
| SPEED FEED P1269-1271 | CARBIDE | TiAlN | BR | STUB | | 30° |
|--------------------------|---------|-------|----|------|--|-----|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/32 ≤ D ≤ 1/2 | +0 / -0.002" |



Units: Inch

| EDP Number | | | | | Mill Dia. | Overall Length | Length of Cut | Shank Dia. |
|----------------------|---------------|----------------------|----------------------|---------------|-----------|----------------|---------------|------------|
| List 422BN (2 Flute) | | List 423BN (3 Flute) | List 424BN (4 Flute) | | | | | |
| Bright | TiAlN | Bright | Bright | TiAlN | D | L | Lc | d |
| 422-0312-BN | 422-0312-BN11 | 423-0312-BN | 424-0312-BN | 424-0312-BN11 | 1/32 | 1-1/2 | 5/64 | 1/8 |
| 422-0469-BN | 422-0469-BN11 | 423-0469-BN | 424-0469-BN | 424-0469-BN11 | 3/64 | 1-1/2 | 3/32 | 1/8 |
| 422-0625-BN | 422-0625-BN11 | 423-0625-BN | 424-0625-BN | 424-0625-BN11 | 1/16 | 1-1/2 | 1/8 | 1/8 |
| 422-0781-BN | - | - | 424-0781-BN | - | 5/64 | 1-1/2 | 5/32 | 1/8 |
| 422-0938-BN | - | 423-0938-BN | 424-0938-BN | 424-0938-BN11 | 3/32 | 1-1/2 | 3/16 | 1/8 |
| 422-1094-BN | - | - | 424-1094-BN | - | 7/64 | 1-1/2 | 7/32 | 1/8 |
| 422-1250-BN | 422-1250-BN11 | 423-1250-BN | 424-1250-BN | 424-1250-BN11 | 1/8 | 1-1/2 | 1/4 | 1/8 |
| 422-1406-BN | - | - | 424-1406-BN | - | 9/64 | 2 | 9/32 | 3/16 |
| 422-1562-BN | - | 423-1562-BN | 424-1562-BN | - | 5/32 | 2 | 5/16 | 3/16 |
| 422-1875-BN | - | 423-1875-BN | 424-1875-BN | 424-1875-BN11 | 3/16 | 2 | 3/8 | 3/16 |
| 422-2188-BN | - | 423-2188-BN | 424-2188-BN | - | 7/32 | 2-1/2 | 1/2 | 1/4 |
| 422-2500-BN | - | 423-2500-BN | 424-2500-BN | 424-2500-BN11 | 1/4 | 2-1/2 | 1/2 | 1/4 |
| 422-3125-BN | - | 423-3125-BN | 424-3125-BN | - | 5/16 | 2-1/2 | 1/2 | 5/16 |
| 422-3750-BN | - | 423-3750-BN | 424-3750-BN | 424-3750-BN11 | 3/8 | 2-1/2 | 1/2 | 3/8 |
| 422-4375-BN | - | 423-4375-BN | 424-4375-BN | - | 7/16 | 2-3/4 | 9/16 | 7/16 |
| 422-5000-BN | - | 423-5000-BN | 424-5000-BN | 424-5000-BN11 | 1/2 | 3 | 5/8 | 1/2 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Chart applies to all list numbers above | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| - | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



List 500, 502

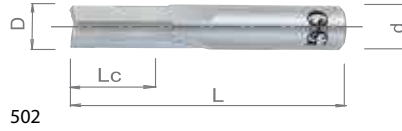
2 or 3 Flute, Straight



| Milling Diameter Tolerance | |
|----------------------------|-----------------|
| $3/32 \leq D \leq 1/2$ | $+0 / -0.003$ " |



500



502

Units: Inch

| EDP Number | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|--------------------|--------------------|---------------|----------------|---------------|----------------|
| List 500 (2 Flute) | List 502 (3 Flute) | | | | |
| Bright | Bright | D | L | Lc | d |
| 500-0938 | 502-0938 | 3/32 | 1-1/2 | 3/8 | 1/8 |
| 500-1250 | 502-1250 | 1/8 | 1-1/2 | 1/2 | 1/8 |
| 500-1875 | 502-1875 | 3/16 | 2 | 5/8 | 3/16 |
| 500-2500 | 502-2500 | 1/4 | 2-1/2 | 3/4 | 1/4 |
| 500-3125 | 502-3125 | 5/16 | 2-1/2 | 13/16 | 5/16 |
| 500-3750 | 502-3750 | 3/8 | 2-1/2 | 7/8 | 3/8 |
| 500-4375 | 502-4375 | 7/16 | 2-1/2 | 1 | 7/16 |
| 500-5000 | 502-5000 | 1/2 | 3 | 1 | 1/2 |

Packed: 1 pc.
Available Bright finish only.



List 640

CARBIDE BR

Fiberglass Routers, Diamond Cut

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/16 ≤ D ≤ 1/2 | +0 / -0.003" |



Type 1 - No End Cut



Type 2 - Bur End



Type 3 - End Mill Cut

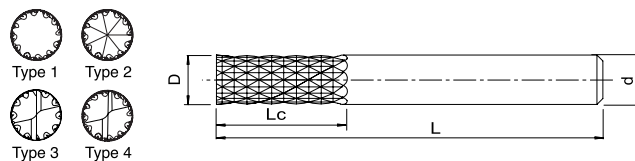


Type 4 - Drill Point

Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | Tool Type |
|------------|---------------|----------------|---------------|----------------|-----------|
| Bright | D | L | Lc | d | |
| 640-0621 | 1/16 | 1-1/2 | 3/16 | 1/8 | 1 |
| 640-0622 | 1/16 | 1-1/2 | 3/16 | 1/8 | 2 |
| 640-0623 | 1/16 | 1-1/2 | 3/16 | 1/8 | 3 |
| 640-0624 | 1/16 | 1-1/2 | 3/16 | 1/8 | 4 |
| 640-0931 | 3/32 | 1-1/2 | 5/16 | 1/8 | 1 |
| 640-0932 | 3/32 | 1-1/2 | 5/16 | 1/8 | 2 |
| 640-0933 | 3/32 | 1-1/2 | 5/16 | 1/8 | 3 |
| 640-0934 | 3/32 | 1-1/2 | 5/16 | 1/8 | 4 |
| 640-1251 | 1/8 | 1-1/2 | 7/16 | 1/8 | 1 |
| 640-1252 | 1/8 | 1-1/2 | 7/16 | 1/8 | 2 |
| 640-1253 | 1/8 | 1-1/2 | 7/16 | 1/8 | 3 |
| 640-1254 | 1/8 | 1-1/2 | 7/16 | 1/8 | 4 |
| 640-1871 | 3/16 | 2 | 5/8 | 3/16 | 1 |
| 640-1872 | 3/16 | 2 | 5/8 | 3/16 | 2 |
| 640-1873 | 3/16 | 2 | 5/8 | 3/16 | 3 |
| 640-1874 | 3/16 | 2 | 5/8 | 3/16 | 4 |
| 640-1881 | 3/16 | 2 | 5/8 | 1/4 | 1 |
| 640-1882 | 3/16 | 2 | 5/8 | 1/4 | 2 |
| 640-1883 | 3/16 | 2 | 5/8 | 1/4 | 3 |
| 640-1884 | 3/16 | 2 | 5/8 | 1/4 | 4 |
| 640-2501 | 1/4 | 2 | 3/4 | 1/4 | 1 |
| 640-2502 | 1/4 | 2 | 3/4 | 1/4 | 2 |
| 640-2503 | 1/4 | 2 | 3/4 | 1/4 | 3 |
| 640-2504 | 1/4 | 2 | 3/4 | 1/4 | 4 |
| 640-2511 | 1/4 | 2-1/2 | 3/4 | 1/4 | 1 |
| 640-2512 | 1/4 | 2-1/2 | 3/4 | 1/4 | 2 |
| 640-2513 | 1/4 | 2-1/2 | 3/4 | 1/4 | 3 |
| 640-2514 | 1/4 | 2-1/2 | 3/4 | 1/4 | 4 |
| 640-3121 | 5/16 | 2-1/2 | 1 | 5/16 | 1 |
| 640-3122 | 5/16 | 2-1/2 | 1 | 5/16 | 2 |
| 640-3123 | 5/16 | 2-1/2 | 1 | 5/16 | 3 |
| 640-3124 | 5/16 | 2-1/2 | 1 | 5/16 | 4 |
| 640-3751 | 3/8 | 2-1/2 | 1 | 3/8 | 1 |
| 640-3752 | 3/8 | 2-1/2 | 1 | 3/8 | 2 |
| 640-3753 | 3/8 | 2-1/2 | 1 | 3/8 | 3 |
| 640-3754 | 3/8 | 2-1/2 | 1 | 3/8 | 4 |
| 640-5001 | 1/2 | 3 | 1 | 1/2 | 1 |
| 640-5002 | 1/2 | 3 | 1 | 1/2 | 2 |
| 640-5003 | 1/2 | 3 | 1 | 1/2 | 3 |
| 640-5004 | 1/2 | 3 | 1 | 1/2 | 4 |

Packed: 1 pc.
Available Bright finish only.





List 04V-SO

4 Flute, Variable Index, Stub Length, Corner Chamfer

| | | | | | | | | |
|------------|---------------------------------|----------------|--------------|-----------------|--|-------------|--|--------------------|
| NEW | SPEED FEED P1275-1276 | CARBIDE | TiAIN | TYPE UNI | | STUB | | SHANK h6 |
|------------|---------------------------------|----------------|--------------|-----------------|--|-------------|--|--------------------|



Units: Inch

| EDP Number | Mill Diameter | Chamfer Width | Overall Length | Length of Cut | Shank Diameter |
|-------------|---------------|---------------|----------------|---------------|----------------|
| | D | C | L | Lc | d |
| 04V0474X-SO | 3/16 | 0.016x45° | 2-1/8 | 3/8 | 1/4 |
| 04V0633X-SO | 1/4 | 0.016x45° | 2-1/8 | 3/8 | 1/4 |
| 04V0792X-SO | 5/16 | 0.020x45° | 2-1/4 | 1/2 | 5/16 |
| 04V0951X-SO | 3/8 | 0.020x45° | 2-1/2 | 9/16 | 3/8 |
| 04V1268X-SO | 1/2 | 0.020x45° | 2-7/8 | 5/8 | 1/2 |
| 04V1586X-SO | 5/8 | 0.020x45° | 3-1/4 | 7/8 | 5/8 |
| 04V1903X-SO | 3/4 | 0.020x45° | 3-1/2 | 1 | 3/4 |

Packed: 1 pc.
Available TiAIN coating only.



List 04V-SO

4 Flute, Variable Index, Stub Length, Corner Chamfer

| | | | | | | | | |
|------------|---------------------------------|----------------|--------------|-----------------|--|-------------|--|--------------------|
| NEW | SPEED FEED P1275-1276 | CARBIDE | TiAIN | TYPE UNI | | STUB | | SHANK h6 |
|------------|---------------------------------|----------------|--------------|-----------------|--|-------------|--|--------------------|



Units: mm

| EDP Number | Mill Diameter | Chamfer Width | Overall Length | Length of Cut | Shank Diameter |
|-------------|---------------|---------------|----------------|---------------|----------------|
| | D | C | L | Lc | d |
| 04V0500X-SO | 5 | 0.4x45° | 54 | 9 | 6 |
| 04V0600X-SO | 6 | 0.4x45° | 54 | 10 | 6 |
| 04V0800X-SO | 8 | 0.5x45° | 58 | 12 | 8 |
| 04V1000X-SO | 10 | 0.5x45° | 66 | 14 | 10 |
| 04V1200X-SO | 12 | 0.5x45° | 73 | 16 | 12 |
| 04V1600X-SO | 16 | 0.5x45° | 82 | 22 | 16 |
| 04V2000X-SO | 20 | 0.5x45° | 92 | 26 | 20 |

Packed: 1 pc.
Available TiAIN coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|---------|-------------------------------------|-------------------------------------|--------------------------|-----------|-----------|-----------|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels ≤200HB | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 04V-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | |

good best



List 03V-SO

| | | | | | | | | |
|------------|---------------------------------|----------------|--------------|-----------------|---|------------|---|--------------------|
| NEW | SPEED FEED P1275-1276 | CARBIDE | TiAlN | TYPE UNI |  | REG |  40° | SHANK h6 |
|------------|---------------------------------|----------------|--------------|-----------------|---|------------|---|--------------------|

4 Flute, Variable Index, Regular Length, Corner Radius/Corner Chamfer



Units: Inch

| EDP Number | EDP Number w/ Weldon Flat | Mill Diameter | Corner Radius | Chamfer Width | Overall Length | Length of Cut | Shank Diameter |
|-------------|---------------------------|---------------|---------------|---------------|----------------|---------------|----------------|
| | | D | R | C | L | Lc | d |
| 03V0633X-SO | 03V0635X-SO | 1/4 | - | 0.016x45° | 2-1/2 | 1/2 | 1/4 |
| 03V0634X-SO | 03V0636X-SO | 1/4 | 0.015 | - | 2-1/2 | 1/2 | 1/4 |
| 03V0951X-SO | 03V0953X-SO | 3/8 | - | 0.020x45° | 2-1/2 | 7/8 | 3/8 |
| 03V0952X-SO | 03V0954X-SO | 3/8 | 0.015 | - | 2-1/2 | 7/8 | 3/8 |
| 03V1268X-SO | 03V1270X-SO | 1/2 | - | 0.020x45° | 3 | 1 | 1/2 |
| 03V1269X-SO | 03V1271X-SO | 1/2 | 0.03 | - | 3 | 1 | 1/2 |
| 03V1586X-SO | 03V1588X-SO | 5/8 | - | 0.020x45° | 3-1/2 | 1-1/4 | 5/8 |
| 03V1587X-SO | 03V1589X-SO | 5/8 | 0.03 | - | 3-1/2 | 1-1/4 | 5/8 |
| 03V1903X-SO | 03V1905X-SO | 3/4 | - | 0.020x45° | 4 | 1-1/2 | 3/4 |
| 03V1904X-SO | 03V1906X-SO | 3/4 | 0.03 | - | 4 | 1-1/2 | 3/4 |
| 03V2502X-SO | 03V2504X-SO | 1 | - | 0.020x45° | 4 | 1-1/2 | 1 |
| 03V2503X-SO | 03V2505X-SO | 1 | 0.03 | - | 4 | 1-1/2 | 1 |

Packed: 1 pc.
Available TiAlN coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|---------|-------------------------------------|-------------------------------------|--------------------------|-----------|-----------|-----------|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels ≤200HB | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 03V-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | |

good best

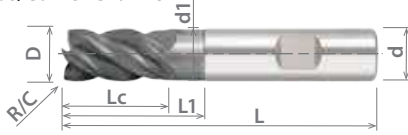




List 03V-SO

| | | | | | | | | |
|------------|---------------------------------|----------------|--------------|-----------------|--|------------|------------|--------------------|
| NEW | SPEED FEED P1275-1276 | CARBIDE | TiAlN | TYPE UNI | | REG | 40° | SHANK h6 |
|------------|---------------------------------|----------------|--------------|-----------------|--|------------|------------|--------------------|

4 Flute, Variable Index, Regular Length, Reduced Neck, Corner Radius/Corner Chamfer



Units: mm

| EDP Number | EDP Number w/ Weldon Flat | Mill Diameter | Corner Radius | Chamfer Width | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|-------------|---------------------------|---------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | | D | R | C | L | Lc | L1 | d1 | d |
| - | 03V0500X-SO | 5 | - | 0.2x45° | 57 | 13 | 18 | 4.8 | 6 |
| 03V0545X-SO | - | 5 | - | 0.4x45° | 57 | 13 | - | - | 6 |
| 03V0505X-SO | - | 5 | 0.5 | - | 57 | 13 | 25 | 4.8 | 6 |
| 03V0510X-SO | - | 5 | 1.0 | - | 57 | 13 | 25 | 4.8 | 6 |
| - | 03V0600X-SO | 6 | - | 0.2x45° | 57 | 13 | 18 | 5.8 | 6 |
| 03V0645X-SO | - | 6 | - | 0.4x45° | 57 | 13 | - | - | 6 |
| 03V0605X-SO | - | 6 | 0.5 | - | 57 | 13 | 25 | 5.8 | 6 |
| 03V0610X-SO | - | 6 | 1.0 | - | 57 | 13 | 25 | 5.8 | 6 |
| - | 03V0800X-SO | 8 | - | 0.25x45° | 63 | 19 | 24 | 7.7 | 8 |
| 03V0845X-SO | - | 8 | - | 0.5x45° | 63 | 19 | - | - | 8 |
| 03V0805X-SO | - | 8 | 0.5 | - | 63 | 19 | 31 | 7.8 | 8 |
| 03V0810X-SO | - | 8 | 1.0 | - | 63 | 19 | 31 | 7.8 | 8 |
| - | 03V1000X-SO | 10 | - | 0.25x45° | 72 | 22 | 32 | 9.7 | 10 |
| 03V1045X-SO | - | 10 | - | 0.5x45° | 72 | 22 | - | - | 10 |
| 03V1005X-SO | - | 10 | 0.5 | - | 72 | 22 | 34 | 9.8 | 10 |
| 03V1010X-SO | - | 10 | 1.0 | - | 72 | 22 | 34 | 9.8 | 10 |
| - | 03V1200X-SO | 12 | - | 0.3x45° | 83 | 26 | 36 | 11.6 | 12 |
| 03V1245X-SO | - | 12 | - | 0.75x45° | 83 | 26 | - | - | 12 |
| 03V1205X-SO | - | 12 | 0.5 | - | 83 | 26 | 38 | 11.8 | 12 |
| 03V1210X-SO | - | 12 | 1.0 | - | 83 | 26 | 38 | 11.8 | 12 |
| - | 03V1600X-SO | 16 | - | 0.4x45° | 92 | 32 | 42 | 15.5 | 16 |
| 03V1645X-SO | - | 16 | - | 0.75x45° | 92 | 32 | - | - | 16 |
| 03V1610X-SO | - | 16 | 1.0 | - | 92 | 32 | 44 | 15.8 | 16 |
| 03V1620X-SO | - | 16 | 2.0 | - | 92 | 32 | 44 | 15.8 | 16 |
| - | 03V2000X-SO | 20 | - | 0.4x45° | 104 | 38 | 48 | 19.5 | 20 |
| 03V2045X-SO | - | 20 | - | 0.75x45° | 104 | 38 | - | - | 20 |
| 03V2010X-SO | - | 20 | 1.0 | - | 104 | 38 | 50 | 19.8 | 20 |
| 03V2020X-SO | - | 20 | 2.0 | - | 104 | 38 | 50 | 19.8 | 20 |

Packed: 1 pc.
Available TiAlN coating only.



| Work Material | | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|---------|-------------------------------------|-------------------------------------|--------------------------|-----------|-----------|-----------|--|
| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels ≤200HB | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 03V-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | |

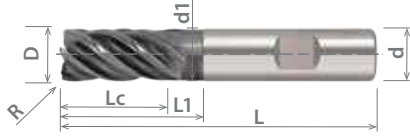
good best



List 05V-SO

5 Flute, Variable Index, Regular Length, Reduced Neck, Corner Radius

| | | | | | | | | |
|------------|---------------------------------|----------------|--------------|-----------------|---|------------|---|--------------------|
| NEW | SPEED FEED P1277-1278 | CARBIDE | TiAlN | TYPE UNI |  | REG |  | SHANK h6 |
|------------|---------------------------------|----------------|--------------|-----------------|---|------------|---|--------------------|



Units: Inch

| EDP Number | Mill Diameter | Corner Radius | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|-------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | D | R | L | Lc | L1 | d1 | d |
| 05V0476X-SO | 3/16 | 0.015 | 2-1/4 | 1/2 | 1 | 0.180 | 1/4 |
| 05V0477X-SO | 3/16 | 0.030 | 2-1/4 | 1/2 | 1 | 0.180 | 1/4 |
| 05V0636X-SO | 1/4 | 0.015 | 2-1/4 | 1/2 | 1 | 0.242 | 1/4 |
| 05V0634X-SO | 1/4 | 0.030 | 2-1/4 | 1/2 | 1 | 0.242 | 1/4 |
| 05V0632X-SO | 1/4 | 0.060 | 2-1/4 | 1/2 | 1 | 0.242 | 1/4 |
| 05V0795X-SO | 5/16 | 0.015 | 2-1/2 | 3/4 | 1-1/4 | 0.305 | 5/16 |
| 05V0793X-SO | 5/16 | 0.030 | 2-1/2 | 3/4 | 1-1/4 | 0.305 | 5/16 |
| 05V0791X-SO | 5/16 | 0.060 | 2-1/2 | 3/4 | 1-1/4 | 0.305 | 5/16 |
| 05V0954X-SO | 3/8 | 0.015 | 2-1/2 | 7/8 | 1-1/2 | 0.367 | 3/8 |
| 05V0952X-SO | 3/8 | 0.030 | 2-7/8 | 7/8 | 1-1/2 | 0.367 | 3/8 |
| 05V0950X-SO | 3/8 | 0.060 | 2-1/2 | 7/8 | 1-1/2 | 0.367 | 3/8 |
| 05V1271X-SO | 1/2 | 0.015 | 3 | 1 | 1-1/2 | 0.484 | 1/2 |
| 05V1269X-SO | 1/2 | 0.030 | 3-1/4 | 1 | 1-1/2 | 0.484 | 1/2 |
| 05V1267X-SO | 1/2 | 0.060 | 3-1/4 | 1 | 1-1/2 | 0.484 | 1/2 |
| 05V1265X-SO | 1/2 | 0.090 | 3-1/4 | 1 | 1-1/2 | 0.484 | 1/2 |
| 05V1263X-SO | 1/2 | 0.120 | 3 | 1 | 1-1/2 | 0.484 | 1/2 |
| 05V1589X-SO | 5/8 | 0.030 | 3-1/2 | 1-1/4 | 1-3/4 | 0.609 | 5/8 |
| 05V1587X-SO | 5/8 | 0.060 | 3-1/2 | 1-1/4 | 1-3/4 | 0.609 | 5/8 |
| 05V1585X-SO | 5/8 | 0.090 | 3-1/2 | 1-1/4 | 1-3/4 | 0.609 | 5/8 |
| 05V1906X-SO | 3/4 | 0.030 | 4 | 1-1/2 | 2 | 0.734 | 3/4 |
| 05V1904X-SO | 3/4 | 0.060 | 4 | 1-1/2 | 2 | 0.734 | 3/4 |
| 05V1902X-SO | 3/4 | 0.090 | 4 | 1-1/2 | 2 | 0.734 | 3/4 |
| 05V1900X-SO | 3/4 | 0.120 | 4 | 1-1/2 | 2 | 0.734 | 3/4 |

Packed: 1 pc.
Available TiAlN coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|----------|-------------------------------------|-------------------------------------|--------------------------|-----------------|---------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels ≤200HB | | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | 6061 7075 | | Casting | Inconel | | | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 05V-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | |

good best

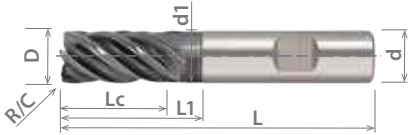




List 05V-SO

5 Flute, Variable Index, Regular Length, Reduced Neck, Corner Radius/Corner Chamfer

| | | | | | | | | |
|------------|---------------------------------|----------------|--------------|-----------------|--|------------|--|--------------------|
| NEW | SPEED FEED P1277-1278 | CARBIDE | TiAlN | TYPE UNI | | REG | | SHANK h6 |
|------------|---------------------------------|----------------|--------------|-----------------|--|------------|--|--------------------|



Units: mm

| EDP Number | EDP Number w/ Weldon Flat | Mill Diameter | Corner Radius | Chamfer Width | Overall Length | Length of Cut | Neck Length | Neck Diameter | Shank Diameter |
|-------------|---------------------------|---------------|---------------|---------------|----------------|---------------|-------------|---------------|----------------|
| | | D | R | C | L | Lc | L1 | d1 | d |
| - | 05V0500X-SO | 5 | - | 0.2x45° | 57 | 13 | 18 | 4.8 | 6 |
| 05V0545X-SO | - | 5 | - | 0.4x45° | 57 | 13 | - | - | 6 |
| 05V0505X-SO | - | 5 | 0.5 | - | 57 | 13 | 25 | 4.8 | 6 |
| 05V0510X-SO | - | 5 | 1.0 | - | 57 | 13 | 25 | 4.8 | 6 |
| - | 05V0600X-SO | 6 | - | 0.2x45° | 57 | 13 | 18 | 5.8 | 6 |
| 05V0645X-SO | - | 6 | - | 0.4x45° | 57 | 13 | - | - | 6 |
| 05V0605X-SO | - | 6 | 0.5 | - | 57 | 13 | 25 | 5.8 | 6 |
| 05V0610X-SO | - | 6 | 1.0 | - | 57 | 13 | 25 | 5.8 | 6 |
| - | 05V0800X-SO | 8 | - | 0.25x45° | 63 | 19 | 24 | 7.7 | 8 |
| 05V0845X-SO | - | 8 | - | 0.5x45° | 63 | 19 | - | - | 8 |
| 05V0805X-SO | - | 8 | 0.5 | - | 63 | 19 | 31 | 7.8 | 8 |
| 05V0810X-SO | - | 8 | 1.0 | - | 63 | 19 | 31 | 7.8 | 8 |
| - | 05V1000X-SO | 10 | - | 0.25x45° | 72 | 22 | 32 | 9.7 | 10 |
| 05V1045X-SO | - | 10 | - | 0.5x45° | 72 | 22 | - | - | 10 |
| 05V1005X-SO | - | 10 | 0.5 | - | 72 | 22 | 34 | 9.8 | 10 |
| 05V1010X-SO | - | 10 | 1.0 | - | 72 | 22 | 34 | 9.8 | 10 |
| - | 05V1200X-SO | 12 | - | 0.3x45° | 83 | 26 | 36 | 11.6 | 12 |
| 05V1245X-SO | - | 12 | - | 0.75x45° | 83 | 26 | - | - | 12 |
| 05V1205X-SO | - | 12 | 0.5 | - | 83 | 26 | 38 | 11.8 | 12 |
| 05V1210X-SO | - | 12 | 1.0 | - | 83 | 26 | 38 | 11.8 | 12 |
| - | 05V1600X-SO | 16 | - | 0.4x45° | 92 | 32 | 42 | 15.5 | 16 |
| 05V1645X-SO | - | 16 | - | 0.75x45° | 92 | 32 | - | - | 16 |
| 05V1610X-SO | - | 16 | 1.0 | - | 92 | 32 | 44 | 15.8 | 16 |
| 05V1620X-SO | - | 16 | 2.0 | - | 92 | 32 | 44 | 15.8 | 16 |
| - | 05V2000X-SO | 20 | - | 0.4x45° | 104 | 38 | 48 | 19.5 | 20 |
| 05V2045X-SO | - | 20 | - | 0.75x45° | 104 | 38 | - | - | 20 |
| 05V2010X-SO | - | 20 | 1.0 | - | 104 | 38 | 50 | 19.8 | 20 |
| 05V2020X-SO | - | 20 | 2.0 | - | 104 | 38 | 50 | 19.8 | 20 |

Packed: 1 pc.
Available TiAlN coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|---------|-------------------------------------|-------------------------------------|--------------------------|-----------|-----------|-----------|--|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels ≤200HB | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| | 1010 | 1035 | 1065 | 4140 | 4340 | | | | | | | | | | | | | |
| 05V-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | |

good best



List 03A-SO

2 Flute, Regular Length

| | | | | | | | | |
|------------|----------------------------|----------------|--------------|---------------|---|------------|---|--------------------|
| NEW | SPEED FEED P1279 | CARBIDE | TiAlN | TYPE N |  | REG |  | SHANK h6 |
|------------|----------------------------|----------------|--------------|---------------|---|------------|---|--------------------|



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|-------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 03A0100X-SO | 1.0 | 39 | 3 | 3 |
| 03A0150X-SO | 1.5 | 39 | 5 | 3 |
| 03A0200X-SO | 2.0 | 39 | 7 | 3 |
| 03A0250X-SO | 2.5 | 39 | 7 | 3 |
| 03A0300X-SO | 3.0 | 39 | 8 | 3 |
| 03A0400X-SO | 4.0 | 57 | 8 | 6 |
| 03A0500X-SO | 5.0 | 57 | 10 | 6 |
| 03A0600X-SO | 6.0 | 57 | 10 | 6 |
| 03A0800X-SO | 8.0 | 63 | 16 | 8 |
| 03A1000X-SO | 10.0 | 72 | 19 | 10 |
| 03A1200X-SO | 12.0 | 83 | 22 | 12 |
| 03A1400X-SO | 14.0 | 83 | 22 | 14 |
| 03A1600X-SO | 16.0 | 92 | 26 | 16 |
| 03A1800X-SO | 18.0 | 96 | 26 | 18 |
| 03A2000X-SO | 20.0 | 104 | 32 | 20 |

 Packed: 1 pc.
 Available TiAlN coating only.


Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels ≤200HB | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 03A-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

 good best


List 03K-SO

4 Flute, Regular Length

| | | | | | | | | |
|------------|----------------------------|----------------|--------------|---------------|---|------------|------------|--------------------|
| NEW | SPEED FEED P1280 | CARBIDE | TiAlN | TYPE N |  | REG | 30° | SHANK h6 |
|------------|----------------------------|----------------|--------------|---------------|---|------------|------------|--------------------|



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|-------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 03K0100X-SO | 1.0 | 39 | 3 | 3 |
| 03K0150X-SO | 1.5 | 39 | 5 | 3 |
| 03K0200X-SO | 2.0 | 39 | 7 | 3 |
| 03K0250X-SO | 2.5 | 39 | 7 | 3 |
| 03K0300X-SO | 3.0 | 39 | 9 | 3 |
| 03K0400X-SO | 4.0 | 57 | 11 | 6 |
| 03K0500X-SO | 5.0 | 57 | 13 | 6 |
| 03K0600X-SO | 6.0 | 57 | 13 | 6 |
| 03K0800X-SO | 8.0 | 63 | 19 | 8 |
| 03K1000X-SO | 10.0 | 72 | 22 | 10 |
| 03K1200X-SO | 12.0 | 83 | 26 | 12 |
| 03K1400X-SO | 14.0 | 83 | 26 | 14 |
| 03K1600X-SO | 16.0 | 92 | 32 | 16 |
| 03K1800X-SO | 18.0 | 96 | 32 | 18 |
| 03K2000X-SO | 20.0 | 104 | 38 | 20 |

Packed: 1 pc.
Available TiAlN coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------------------|--------------------------|----------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------|--------------------------|--------------------------|--------------------------|--------------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels ≤200HB | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 03K-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best



List 03M-SO

2 Flute, Regular Length, Ball Nose

| | | | | | | | | |
|------------|----------------------------|----------------|--------------|---------------|---|------------|---|--------------------|
| NEW | SPEED FEED P1279 | CARBIDE | TiAlN | TYPE N |  | REG |  30° | SHANK h6 |
|------------|----------------------------|----------------|--------------|---------------|---|------------|---|--------------------|



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|-------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 03M0100X-SO | 1.0 | 39 | 3 | 3 |
| 03M0150X-SO | 1.5 | 39 | 5 | 3 |
| 03M0200X-SO | 2.0 | 39 | 7 | 3 |
| 03M0250X-SO | 2.5 | 39 | 7 | 3 |
| 03M0300X-SO | 3.0 | 39 | 8 | 3 |
| 03M0400X-SO | 4.0 | 57 | 8 | 6 |
| 03M0500X-SO | 5.0 | 57 | 10 | 6 |
| 03M0600X-SO | 6.0 | 57 | 10 | 6 |
| 03M0800X-SO | 8.0 | 63 | 16 | 8 |
| 03M1000X-SO | 10.0 | 72 | 19 | 10 |
| 03M1200X-SO | 12.0 | 83 | 22 | 12 |
| 03M1400X-SO | 14.0 | 83 | 22 | 14 |
| 03M1600X-SO | 16.0 | 92 | 26 | 16 |
| 03M1800X-SO | 18.0 | 96 | 26 | 18 |
| 03M2000X-SO | 20.0 | 104 | 32 | 20 |

 Packed: 1 pc.
 Available TiAlN coating only.


Work Material

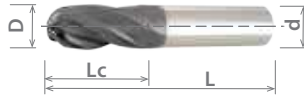
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|------------------------------|--------------------------|----------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels ≤200HB | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 03M-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

 good best


List 03P-SO

4 Flute, Regular Length, Ball Nose

| | | | | | | | | |
|------------|----------------------------|----------------|--------------|---------------|---|------------|--|--------------------|
| NEW | SPEED FEED P1280 | CARBIDE | TiAlN | TYPE N |  | REG |  30° | SHANK h6 |
|------------|----------------------------|----------------|--------------|---------------|---|------------|--|--------------------|



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|-------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 03P0100X-SO | 1.0 | 39 | 3 | 3 |
| 03P0150X-SO | 1.5 | 39 | 5 | 3 |
| 03P0200X-SO | 2.0 | 39 | 7 | 3 |
| 03P0250X-SO | 2.5 | 39 | 7 | 3 |
| 03P0300X-SO | 3.0 | 39 | 9 | 3 |
| 03P0400X-SO | 4.0 | 57 | 11 | 6 |
| 03P0500X-SO | 5.0 | 57 | 13 | 6 |
| 03P0600X-SO | 6.0 | 57 | 13 | 6 |
| 03P0800X-SO | 8.0 | 63 | 19 | 8 |
| 03P1000X-SO | 10.0 | 72 | 22 | 10 |
| 03P1200X-SO | 12.0 | 83 | 26 | 12 |
| 03P1400X-SO | 14.0 | 83 | 26 | 14 |
| 03P1600X-SO | 16.0 | 92 | 32 | 16 |
| 03P1800X-SO | 18.0 | 96 | 32 | 18 |
| 03P2000X-SO | 20.0 | 104 | 38 | 20 |

Packed: 1 pc.
Available TiAlN coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|------------------------------|--------------------------|----------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels ≤200HB | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 03P-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



List 03E-SO

4 Flute, Regular Length, Fine Pitch, Rougher

| | | | | | | | | |
|------------|----------------------------|----------------|--------------|-----------------|--|------------|--|--------------------|
| NEW | SPEED FEED P1281 | CARBIDE | TiAlN | TYPE UNI | | REG | | SHANK h6 |
|------------|----------------------------|----------------|--------------|-----------------|--|------------|--|--------------------|



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|-------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 03E0635X-SO | 1/4 | 2-1/2 | 3/4 | 1/4 |
| 03E0794X-SO | 5/16 | 2-1/2 | 3/4 | 5/16 |
| 03E0953X-SO | 3/8 | 2-1/2 | 7/8 | 3/8 |
| 03E1270X-SO | 1/2 | 3 | 1 | 1/2 |
| 03E1588X-SO | 5/8 | 3-1/2 | 1-1/4 | 5/8 |
| 03E1905X-SO | 3/4 | 4 | 1-1/2 | 3/4 |
| 03E2540X-SO | 1 | 4 | 2-1/2 | 1 |

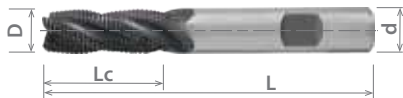
Packed: 1 pc.
Available TiAlN coating only.



List 03E-SO

4 Flute, Regular Length, Fine Pitch, Rougher

| | | | | | | | | |
|------------|----------------------------|----------------|--------------|-----------------|--|------------|--|--------------------|
| NEW | SPEED FEED P1281 | CARBIDE | TiAlN | TYPE UNI | | REG | | SHANK h6 |
|------------|----------------------------|----------------|--------------|-----------------|--|------------|--|--------------------|



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|-------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 03E0600X-SO | 6 | 57 | 13 | 6 |
| 03E0800X-SO | 8 | 63 | 16 | 8 |
| 03E1000X-SO | 10 | 72 | 22 | 10 |
| 03E1200X-SO | 12 | 83 | 26 | 12 |
| 03E1600X-SO | 16 | 92 | 32 | 16 |
| 03E2000X-SO | 20 | 104 | 38 | 20 |

Packed: 1 pc.
Available TiAlN coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------|---------|-------------------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels ≤200HB | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 03E-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | |

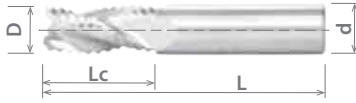
good best



List 03C-SO

3 Flute, Regular Length, Coarse Pitch, Rougher

| | | | | | | | | |
|------------|----------------------------|----------------|-----------|---------------|---|------------|------------|--------------------|
| NEW | SPEED FEED P1282 | CARBIDE | BR | TYPE W |  | REG | 30° | SHANK h6 |
|------------|----------------------------|----------------|-----------|---------------|---|------------|------------|--------------------|



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 03C0635-SO | 1/4 | 2-1/2 | 3/4 | 1/4 |
| 03C0794-SO | 5/16 | 2-1/2 | 3/4 | 5/16 |
| 03C0953-SO | 3/8 | 2-1/2 | 7/8 | 3/8 |
| 03C1270-SO | 1/2 | 3 | 1 | 1/2 |
| 03C1588-SO | 5/8 | 3-1/2 | 1-1/4 | 5/8 |
| 03C1905-SO | 3/4 | 4 | 1-1/2 | 3/4 |
| 03C2540-SO | 1 | 4 | 2-1/2 | 1 |

Packed: 1 pc.
Available Bright finish only.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | H | | | | |
|----------|---------------|--------------|------|--------------|------------|----------------------------|-----|---------|----------------|-------------------------------------|-------------------------------------|--------------|----------|-----------------|-------------------|---------|-----------|
| | Carbon Steels | | | Alloy Steels | | Stainless Steels ≤200HB | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 03C-SO | 1010 1018 | 1035 1045 | 1065 | 4140 4340 | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |

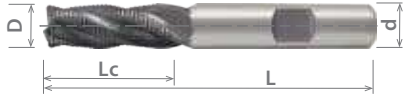
good best



List 03F-SO

4 Flute, Regular Length, Fine Pitch, Flat Crest, Rougher

| | | | | | | | | |
|------------|----------------------------|----------------|--------------|-----------------|---|------------|---|--------------------|
| NEW | SPEED FEED P1283 | CARBIDE | TiAlN | TYPE UNI |  | REG |  | SHANK h6 |
|------------|----------------------------|----------------|--------------|-----------------|---|------------|---|--------------------|



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|-------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 03F0635X-SO | 1/4 | 2-1/2 | 3/4 | 1/4 |
| 03F0794X-SO | 5/16 | 2-1/2 | 3/4 | 5/16 |
| 03F0953X-SO | 3/8 | 2-1/2 | 7/8 | 3/8 |
| 03F1270X-SO | 1/2 | 3 | 1 | 1/2 |
| 03F1588X-SO | 5/8 | 3-1/2 | 1-1/4 | 5/8 |
| 03F1905X-SO | 3/4 | 4 | 1-1/2 | 3/4 |
| 03F2540X-SO | 1 | 4 | 2-1/2 | 1 |

 Packed: 1 pc.
 Available TiAlN coating only.


Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------|---------|-------------------------------------|-------------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels ≤200HB | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 03F-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | |

 good best

List 03F-SO

4 Flute, Regular Length, Fine Pitch, Flat Crest, Rougher

| | | | | | | | | |
|------------|----------------------------|----------------|--------------|-----------------|---|------------|---|--------------------|
| NEW | SPEED FEED P1283 | CARBIDE | TiAlN | TYPE UNI |  | REG |  30° | SHANK h6 |
|------------|----------------------------|----------------|--------------|-----------------|---|------------|---|--------------------|



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|-------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 03F0600X-SO | 6 | 57 | 13 | 6 |
| 03F0800X-SO | 8 | 63 | 16 | 8 |
| 03F1000X-SO | 10 | 72 | 22 | 10 |
| 03F1200X-SO | 12 | 83 | 26 | 12 |
| 03F1600X-SO | 16 | 92 | 32 | 16 |
| 03F2000X-SO | 20 | 104 | 38 | 20 |

Packed: 1 pc.
Available TiAlN coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------|---------|-------------------------------------|-------------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels ≤200HB | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 03F-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | |

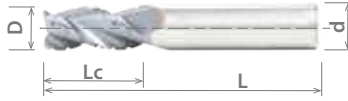
good best



List 03D-SO

3 Flute, Regular Length, Coarse Pitch, Flat Crest, Rougher

| | | | | | | | | |
|------------|----------------------------|----------------|--------------|-----------------|--|------------|--|--------------------|
| NEW | SPEED FEED P1284 | CARBIDE | TiAIN | TYPE UNI | | REG | | SHANK h6 |
|------------|----------------------------|----------------|--------------|-----------------|--|------------|--|--------------------|



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|-------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 03D0635X-SO | 1/4 | 2-1/2 | 3/4 | 1/4 |
| 03D0794X-SO | 5/16 | 2-1/2 | 3/4 | 5/16 |
| 03D0953X-SO | 3/8 | 2-1/2 | 7/8 | 3/8 |
| 03D1270X-SO | 1/2 | 3 | 1 | 1/2 |
| 03D1588X-SO | 5/8 | 3-1/2 | 1-1/4 | 5/8 |
| 03D1905X-SO | 3/4 | 4 | 1-1/2 | 3/4 |
| 03D2540X-SO | 1 | 4 | 2-1/2 | 1 |

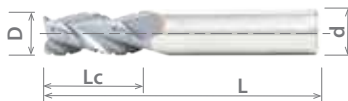
Packed: 1 pc.
Available TiAIN coating only.



List 03D-SO (SET)

INCH SET, 3 Flute, Regular Length, Coarse Pitch, Flat Crest, Rougher

| | | | | | | | | |
|------------|----------------------------|----------------|--------------|-----------------|--|------------|--|--------------------|
| NEW | SPEED FEED P1284 | CARBIDE | TiAIN | TYPE UNI | | REG | | SHANK h6 |
|------------|----------------------------|----------------|--------------|-----------------|--|------------|--|--------------------|



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|-------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 03D0001X-SO | 1/4 | 2-1/2 | 3/4 | 1/4 |
| | 5/16 | 2-1/2 | 3/4 | 5/16 |
| | 3/8 | 2-1/2 | 7/8 | 3/8 |
| | 1/2 | 3 | 1 | 1/2 |
| | 5/8 | 3-1/2 | 1-1/4 | 5/8 |

Packed: 1 pc.
Available TiAIN coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|----------|---------|-------------------------------------|----------------|-----------------|-----------|-----------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels ≤200HB | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 03D-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | | | | | |

good best

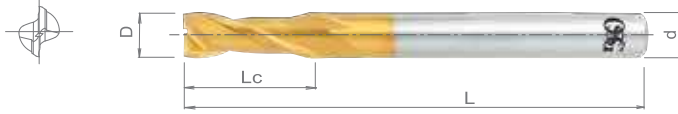


List 673

TIN-CPM-M-EDL, 2 Flute, Regular Length

| | | | | |
|--------------------------|------|-----|-----|-----|
| SPEED FEED P1297-1298 | VC10 | TiN | REG | 30° |
|--------------------------|------|-----|-----|-----|

| Milling Diameter Tolerance | |
|----------------------------|---------------------|
| 1/32 ≤ D ≤ 11/64 | +0 / -0.0011" |
| D = 3/16 | -0.0004" / -0.0015" |



| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 6737005 | 1/32 | 1-7/8 | 3/32 | 3/16 |
| 6737105 | 3/64 | 1-7/8 | 9/64 | 3/16 |
| 6737205 | 1/16 | 1-7/8 | 3/16 | 3/16 |
| 6737305 | 5/64 | 1-7/8 | 15/64 | 3/16 |
| 6737405 | 3/32 | 1-7/8 | 9/32 | 3/16 |
| 6737505 | 7/64 | 1-7/8 | 21/64 | 3/16 |

Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 6737605 | 1/8 | 1-7/8 | 3/8 | 3/16 |
| 6737705 | 9/64 | 1-7/8 | 13/32 | 3/16 |
| 6737805 | 5/32 | 1-7/8 | 7/16 | 3/16 |
| 6737905 | 11/64 | 1-7/8 | 1/2 | 3/16 |
| 6738005 | 3/16 | 1-7/8 | 1/2 | 3/16 |

Packed: 1 pc.
Available TiN coating only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| | 1010 1018 | 1035 1045 | 1065 | 4140 4340 | | | | | | | | | | | | | |
| 673 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



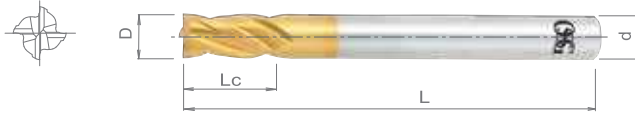


EXOMINI VC-10

Powdered Metal High Speed Steel

List 676

TIN-CPM-M-EMS, 4 Flute, Stub Length, Non-Center Cutting (Smaller than 1/8)



| | | | | | | |
|--------------------------|------|-----|--|--|------|-----|
| SPEED FEED P1299-1300 | VC10 | TiN | | | STUB | 30° |
|--------------------------|------|-----|--|--|------|-----|

| Milling Diameter Tolerance | |
|----------------------------|---------------------|
| 1/16 ≤ D ≤ 5/32 | +0.0011" / -0 |
| D = 3/16 | -0.0004" / -0.0015" |

Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 6767205 | 1/16 | 1-3/4 | 3/32 | 3/16 |
| 6767405 | 3/32 | 1-3/4 | 9/64 | 3/16 |
| 6767605 | 1/8 | 1-3/4 | 3/16 | 3/16 |

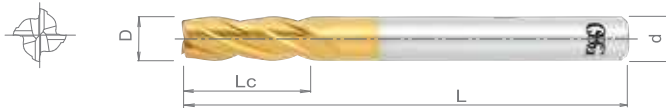
| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 6767805 | 5/32 | 1-3/4 | 15/64 | 3/16 |
| 6768005 | 3/16 | 1-3/4 | 9/32 | 3/16 |

Packed: 1 pc.
Available TiN coating only.



List 677

TIN-CPM-M-EML, 4 Flute, Regular Length, Non-Center Cutting (Smaller than 1/8)



| | | | | | | |
|--------------------------|------|-----|--|--|------|-----|
| SPEED FEED P1299-1300 | VC10 | TiN | | | STUB | 30° |
|--------------------------|------|-----|--|--|------|-----|

| Milling Diameter Tolerance | |
|----------------------------|---------------------|
| 1/16 ≤ D ≤ 5/32 | +0.0011" / -0 |
| D = 3/16 | -0.0004" / -0.0015" |

Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 6777205 | 1/16 | 1-7/8 | 3/16 | 3/16 |
| 6777405 | 3/32 | 1-7/8 | 9/32 | 3/16 |
| 6777605 | 1/8 | 1-7/8 | 3/8 | 3/16 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 6777805 | 5/32 | 1-7/8 | 7/16 | 3/16 |
| 6778005 | 3/16 | 1-7/8 | 1/2 | 3/16 |

Packed: 1 pc.
Available TiN coating only.



Work Material

| Chart applies to all list numbers above | P | | | | | M | | | K | N | | S | | H | | | |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| - | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

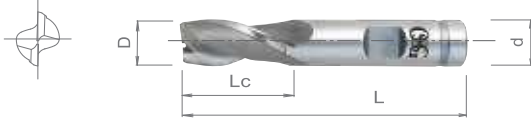


List 620

CPM-EDS, 2 Flute, Regular Length

| | | | | |
|--------------------------|------|----|-----|-----|
| SPEED FEED P1297-1298 | VC10 | BR | REG | 30° |
|--------------------------|------|----|-----|-----|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/8 ≤ D ≤ 1, 1/2 | +0.0011" / -0 |



| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 6200100 | 1/8 | 2-5/16 | 3/8 | 3/8 |
| 6200200 | 3/16 | 2-5/16 | 7/16 | 3/8 |
| 6200300 | 1/4 | 2-5/16 | 1/2 | 3/8 |
| 6200400 | 5/16 | 2-5/16 | 9/16 | 3/8 |
| 6200500 | 3/8 | 2-5/16 | 9/16 | 3/8 |
| 6201100 | 1/2 | 3 | 1 | 1/2 |

Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 6202100 | 5/8 | 3-7/16 | 1-5/16 | 5/8 |
| 6203100 | 3/4 | 3-9/16 | 1-5/16 | 3/4 |
| 6205100 | 1 | 4-1/8 | 1-5/8 | 1 |
| 6206100 | 1-1/4 | 4-1/8 | 1-5/8 | 1-1/4 |
| 6206200 | 1-1/2 | 4-1/8 | 1-5/8 | 1-1/4 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



List 621

CPM-EBD, 2 Flute, Regular Length, Ball End

| | | | | |
|---------------------|------|----|-----|-----|
| SPEED FEED P1301 | VC10 | BR | REG | 30° |
|---------------------|------|----|-----|-----|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/8 ≤ D ≤ 1, 1/2 | +0.0011" / -0 |



| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 6210100 | 1/8 | 2-5/16 | 3/8 | 3/8 |
| 6210200 | 3/16 | 2-3/8 | 1/2 | 3/8 |
| 6210300 | 1/4 | 2-7/16 | 5/8 | 3/8 |
| 6210400 | 5/16 | 2-1/2 | 3/4 | 3/8 |
| 6210500 | 3/8 | 2-1/2 | 3/4 | 3/8 |
| 6211100 | 1/2 | 3 | 1 | 1/2 |

Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 6212100 | 5/8 | 3-1/2 | 1-3/8 | 5/8 |
| 6213100 | 3/4 | 3-7/8 | 1-5/8 | 3/4 |
| 6215100 | 1 | 4-3/4 | 2-1/4 | 1 |
| 6216100 | 1-1/4 | 5 | 2-1/2 | 1-1/4 |
| 6216200 | 1-1/2 | 5 | 2-1/2 | 1-1/4 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-----------|
| Chart applies to all list numbers above | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| | 1010 | 1035 | 1065 | 4140 | 4340 | | | | | | | | | | | | |
| - | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best





EXOMILL VC-10

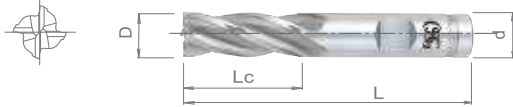
Powdered Metal High Speed Steel

List 641

CPM-CC-EMS, Multiple Flute, Regular Length

| | | | | |
|--------------------------|------|----|-----|-----|
| SPEED FEED P1299-1300 | VC10 | BR | REG | 30° |
|--------------------------|------|----|-----|-----|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/8 ≤ D ≤ 2 | +0.0011" / -0 |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | No. of Flutes |
|------------|---------------|----------------|---------------|----------------|---------------|
| | D | L | Lc | d | |
| 6410100 | 1/8 | 2-5/16 | 3/8 | 3/8 | 4 |
| 6410200 | 3/16 | 2-3/8 | 1/2 | 3/8 | 4 |
| 6410300 | 1/4 | 2-7/16 | 5/8 | 3/8 | 4 |
| 6410400 | 5/16 | 2-1/2 | 3/4 | 3/8 | 4 |
| 6410500 | 3/8 | 2-1/2 | 3/4 | 3/8 | 4 |
| 6410600 | 7/16 | 2-11/16 | 1 | 3/8 | 4 |
| 6411100 | 1/2 | 3-1/4 | 1-1/4 | 1/2 | 4 |
| 6411500 | 1/2 | 3-1/4 | 1-1/4 | 1/2 | 6 |
| 6412100 | 5/8 | 3-3/4 | 1-5/8 | 5/8 | 4 |
| 6412500 | 5/8 | 3-3/4 | 1-5/8 | 5/8 | 6 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | No. of Flutes |
|------------|---------------|----------------|---------------|----------------|---------------|
| | D | L | Lc | d | |
| 6413100 | 3/4 | 3-7/8 | 1-5/8 | 3/4 | 4 |
| 6413500 | 3/4 | 3-7/8 | 1-5/8 | 3/4 | 6 |
| 6414100 | 7/8 | 4-1/8 | 1-7/8 | 7/8 | 4 |
| 6414500 | 7/8 | 4-1/8 | 1-7/8 | 7/8 | 6 |
| 6415100 | 1 | 4-1/2 | 2 | 1 | 4 |
| 6415500 | 1 | 4-1/2 | 2 | 1 | 6 |
| 6416100 | 1-1/4 | 4-1/2 | 2 | 1-1/4 | 6 |
| 6416200 | 1-1/2 | 4-1/2 | 2 | 1-1/4 | 6 |
| 6416400 | 2 | 5-3/4 | 2 | 2 | 6 |



Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 641 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 644

CPM-EBM, Multiple Flute, Regular Length, Ball End

| | | | | | |
|----------------------------|-------------|-----------|--|------------|------------|
| SPEED FEED P1301 | VC10 | BR | | REG | 30° |
|----------------------------|-------------|-----------|--|------------|------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 3/8 ≤ D ≤ 1,1/2 | +0.0011" / -0 |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | No. of Flutes |
|------------|---------------|----------------|---------------|----------------|---------------|
| | D | L | Lc | d | |
| 6440500 | 3/8 | 2-1/2 | 3/4 | 3/8 | 4 |
| 6441100 | 1/2 | 3-1/4 | 1-1/4 | 1/2 | 4 |
| 6441500 | 1/2 | 3-1/4 | 1-1/4 | 1/2 | 6 |
| 6442100 | 5/8 | 3-3/4 | 1-5/8 | 5/8 | 4 |
| 6442500 | 5/8 | 3-3/4 | 1-5/8 | 5/8 | 6 |
| 6443100 | 3/4 | 3-7/8 | 1-5/8 | 3/4 | 4 |
| 6443500 | 3/4 | 3-7/8 | 1-5/8 | 3/4 | 6 |
| 6444100 | 7/8 | 4-1/8 | 1-7/8 | 7/8 | 4 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | No. of Flutes |
|------------|---------------|----------------|---------------|----------------|---------------|
| | D | L | Lc | d | |
| 6444500 | 7/8 | 4-1/8 | 1-7/8 | 7/8 | 6 |
| 6445100 | 1 | 4-1/2 | 2 | 1 | 4 |
| 6445500 | 1 | 4-1/2 | 2 | 1 | 6 |
| 6446100 | 1-1/4 | 4-1/2 | 2 | 1-1/4 | 4 |
| 6446500 | 1-1/4 | 4-1/2 | 2 | 1-1/4 | 6 |
| 6446200 | 1-1/2 | 4-1/2 | 2 | 1-1/4 | 4 |
| 6446600 | 1-1/2 | 4-1/2 | 2 | 1-1/4 | 6 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 644 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





EXOMILL VC-10

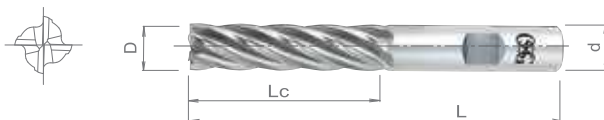
Powdered Metal High Speed Steel

List 646

CPM-CC-EML, Multiple Flute, Long Length

| | | | | | |
|--------------------------|------|----|--|------|-----|
| SPEED FEED P1299-1300 | VC10 | BR | | LONG | 30° |
|--------------------------|------|----|--|------|-----|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/4 ≤ D ≤ 2 | +0.0011" / -0 |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | No. of Flutes |
|------------|---------------|----------------|---------------|----------------|---------------|
| | D | L | Lc | d | |
| 6460300 | 1/4 | 3-1/16 | 1-1/4 | 3/8 | 4 |
| 6460500 | 3/8 | 3-1/4 | 1-1/2 | 3/8 | 4 |
| 6461100 | 1/2 | 4 | 2 | 1/2 | 4 |
| 6461500 | 1/2 | 4 | 2 | 1/2 | 6 |
| 6462100 | 5/8 | 4-5/8 | 2-1/2 | 5/8 | 4 |
| 6462500 | 5/8 | 4-5/8 | 2-1/2 | 5/8 | 6 |
| 6463100 | 3/4 | 5-1/4 | 3 | 3/4 | 4 |
| 6463500 | 3/4 | 5-1/4 | 3 | 3/4 | 6 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | No. of Flutes |
|------------|---------------|----------------|---------------|----------------|---------------|
| | D | L | Lc | d | |
| 6464100 | 7/8 | 5-3/4 | 3-1/2 | 7/8 | 4 |
| 6464500 | 7/8 | 5-3/4 | 3-1/2 | 7/8 | 6 |
| 6465100 | 1 | 6-1/2 | 4 | 1 | 4 |
| 6465500 | 1 | 6-1/2 | 4 | 1 | 6 |
| 6466100 | 1-1/4 | 6-1/2 | 4 | 1-1/4 | 6 |
| 6466200 | 1-1/2 | 6-1/2 | 4 | 1-1/4 | 6 |
| 6466400 | 2 | 7-3/4 | 4 | 2 | 6 |



Packed: 1 pc.

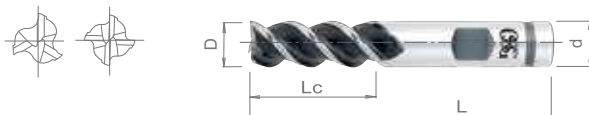
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

List 660

CPM-EHS, Multiple Flute, Regular Length, High Helix

| | | | | | |
|---------------------|------|----|--|-----|-----|
| SPEED FEED P1294 | VC10 | BR | | REG | 50° |
|---------------------|------|----|--|-----|-----|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/4 ≤ D ≤ 1 | +0.0011" / -0 |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | No. of Flutes |
|------------|---------------|----------------|---------------|----------------|---------------|
| | D | L | Lc | d | |
| 6600300 | 1/4 | 2-7/16 | 5/8 | 3/8 | 3 |
| 6600400 | 5/16 | 2-1/2 | 3/4 | 3/8 | 3 |
| 6600500 | 3/8 | 2-1/2 | 3/4 | 3/8 | 3 |
| 6600600 | 7/16 | 2-11/16 | 1 | 3/8 | 3 |
| 6601100 | 1/2 | 3-1/4 | 1-1/4 | 1/2 | 3 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | No. of Flutes |
|------------|---------------|----------------|---------------|----------------|---------------|
| | D | L | Lc | d | |
| 6602100 | 5/8 | 3-3/4 | 1-5/8 | 5/8 | 3 |
| 6603100 | 3/4 | 3-7/8 | 1-5/8 | 3/4 | 3 |
| 6604100 | 7/8 | 4-1/8 | 1-7/8 | 7/8 | 4 |
| 6605100 | 1 | 4-1/2 | 2 | 1 | 4 |



Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

Work Material

| List No. | P | | | | | | | | | | | | | | | M | | | K | N | | S | | H | | | |
|----------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---|--|---|--|---|--|--|--|
| | Carbon Steels | | | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | | | | | | | |
| | Low | Med. | High | 4140 4340 | 300 | | | 400 | 17-4 PH | 6061 7075 | | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | | | | | | | | |
| | 1010 1018 | 1035 1045 | 1065 | | | | | | | | | | | | | | | | | | | | | | | | |
| 646 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | |
| 660 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | |

good best

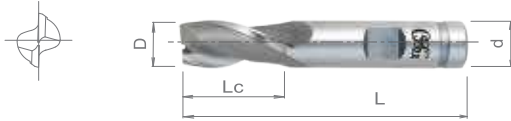


List 573

EDS, 2 Flute, Regular Length

| | | | | | | |
|----------------------------|-------------|-------------|-----------|--|------------|------------|
| SPEED FEED P1295 | HSSE | TiCN | BR | | REG | 30° |
|----------------------------|-------------|-------------|-----------|--|------------|------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/8 ≤ D ≤ 1 | +0.0011" / -0 |



Units: Inch

| EDP Number | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------|---------------|----------------|---------------|----------------|
| Bright | TiCN | D | L | Lc | d |
| 5730100 | 5730108 | 1/8 | 2-5/16 | 3/8 | 3/8 |
| 5730200 | - | 5/32 | 2-5/16 | 7/16 | 3/8 |
| 5730300 | 5730308 | 3/16 | 2-5/16 | 7/16 | 3/8 |
| 5730400 | 5730408 | 7/32 | 2-5/16 | 1/2 | 3/8 |
| 5730500 | 5730508 | 1/4 | 2-5/16 | 1/2 | 3/8 |
| 5730600 | 5730608 | 9/32 | 2-5/16 | 9/16 | 3/8 |
| 5730700 | 5730708 | 5/16 | 2-5/16 | 9/16 | 3/8 |
| 5730800 | 5730808 | 11/32 | 2-5/16 | 9/16 | 3/8 |
| 5730900 | 5730908 | 3/8 | 2-5/16 | 9/16 | 3/8 |
| 5731000 | 5731008 | 13/32 | 2-1/2 | 13/16 | 3/8 |
| 5731100 | 5731108 | 7/16 | 2-1/2 | 13/16 | 3/8 |
| 5731200 | 5731208 | 15/32 | 2-1/2 | 13/16 | 3/8 |
| 5731400 | 5731408 | 1/2 | 3 | 1 | 1/2 |
| 5731500 | 5731508 | 17/32 | 3-1/8 | 1-1/8 | 1/2 |
| 5731600 | 5731608 | 9/16 | 3-1/8 | 1-1/8 | 1/2 |

| EDP Number | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------|---------------|----------------|---------------|----------------|
| Bright | TiCN | D | L | Lc | d |
| 5731700 | 5731708 | 19/32 | 3-1/8 | 1-1/8 | 1/2 |
| 5732300 | 5732308 | 5/8 | 3-7/16 | 1-5/16 | 5/8 |
| 5731900 | 5731908 | 21/32 | 3-5/16 | 1-5/16 | 1/2 |
| 5732000 | 5732008 | 11/16 | 3-5/16 | 1-5/16 | 1/2 |
| 5732400 | 5732408 | 11/16 | 3-7/16 | 1-5/16 | 5/8 |
| 5732100 | 5732108 | 23/32 | 3-5/16 | 1-5/16 | 1/2 |
| 5733200 | 5733208 | 3/4 | 3-9/16 | 1-5/16 | 3/4 |
| 5732600 | 5732608 | 25/32 | 3-5/8 | 1-1/2 | 5/8 |
| 5732700 | 5732708 | 13/16 | 3-5/8 | 1-1/2 | 5/8 |
| 5732800 | 5732808 | 27/32 | 3-5/8 | 1-1/2 | 5/8 |
| 5733700 | 5733708 | 7/8 | 3-3/4 | 1-1/2 | 7/8 |
| 5733400 | 5733408 | 29/32 | 3-3/4 | 1-1/2 | 3/4 |
| 5733000 | 5733008 | 15/16 | 3-5/8 | 1-1/2 | 5/8 |
| 5733500 | 5733508 | 31/32 | 3-3/4 | 1-1/2 | 3/4 |
| 5733900 | 5733908 | 1 | 4-1/8 | 1-5/8 | 1 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



HY-PRO® V ADVANTAGE

HY-PRO® V End Mills are made from premium HSSE-V3 (3% Vanadium) high speed steel for increased toughness and tool life. Available with TiCN coating for increased wear resistance when machining abrasive materials. With no cobalt content, HY-PRO® V End Mills are environmentally safe when reground.

Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 573 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 574

CC-EMS, Multiple Flute, Regular Length

| | | | | | |
|--------------------------|------|------|----|-----|-----|
| SPEED FEED P1295-1296 | HSSE | TiCN | BR | REG | 30° |
|--------------------------|------|------|----|-----|-----|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/8 ≤ D ≤ 1 | +0.0011" / -0 |



Units: Inch

| EDP Number | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | Number of Flutes |
|------------|---------|---------------|----------------|---------------|----------------|------------------|
| Bright | TiCN | D | L | Lc | d | |
| 5740100 | 5740108 | 1/8 | 2-5/16 | 3/8 | 3/8 | 4 |
| 5740200 | 5740208 | 5/32 | 2-3/8 | 7/16 | 3/8 | 4 |
| 5740300 | 5740308 | 3/16 | 2-3/8 | 1/2 | 3/8 | 4 |
| 5740400 | 5740408 | 7/32 | 2-7/16 | 9/16 | 3/8 | 4 |
| 5740500 | 5740508 | 1/4 | 2-7/16 | 5/8 | 3/8 | 4 |
| 5740600 | 5740608 | 9/32 | 2-1/2 | 11/16 | 3/8 | 4 |
| 5740700 | 5740708 | 5/16 | 2-1/2 | 3/4 | 3/8 | 4 |
| 5740800 | 5740808 | 11/32 | 2-1/2 | 3/4 | 3/8 | 4 |
| 5740900 | 5740908 | 3/8 | 2-1/2 | 3/4 | 3/8 | 4 |
| 5741000 | 5741008 | 13/32 | 2-11/16 | 1 | 3/8 | 4 |
| 5741100 | 5741108 | 7/16 | 2-11/16 | 1 | 3/8 | 4 |
| 5741200 | 5741208 | 15/32 | 3-1/4 | 1-1/4 | 1/2 | 4 |
| 5741400 | 5741408 | 1/2 | 3-1/4 | 1-1/4 | 1/2 | 4 |
| 5741500 | 5741508 | 17/32 | 3-3/8 | 1-3/8 | 1/2 | 4 |
| 5741600 | 5741608 | 9/16 | 3-3/8 | 1-3/8 | 1/2 | 4 |
| 5741700 | 5741708 | 19/32 | 3-3/8 | 1-3/8 | 1/2 | 4 |
| 5742300 | 5742308 | 5/8 | 3-3/4 | 1-5/8 | 5/8 | 4 |
| 5741900 | 5741908 | 21/32 | 3-5/8 | 1-5/8 | 1/2 | 4 |
| 5742000 | 5742008 | 11/16 | 3-5/8 | 1-5/8 | 1/2 | 4 |
| 5742400 | 5742408 | 11/16 | 3-3/4 | 1-5/8 | 5/8 | 4 |
| 5742100 | 5742108 | 23/32 | 3-5/8 | 1-5/8 | 1/2 | 4 |
| 5743200 | 5743208 | 3/4 | 3-7/8 | 1-5/8 | 3/4 | 4 |
| 5742600 | 5742608 | 25/32 | 4 | 1-7/8 | 5/8 | 6 |
| 5742700 | 5742708 | 13/16 | 4 | 1-7/8 | 5/8 | 6 |
| 5742800 | 5742808 | 27/32 | 4 | 1-7/8 | 5/8 | 6 |
| 5743700 | 5743708 | 7/8 | 4-1/8 | 1-7/8 | 7/8 | 6 |
| 5743400 | 5743408 | 29/32 | 4-1/8 | 1-7/8 | 3/4 | 4 |
| 5743000 | 5743008 | 15/16 | 4 | 1-7/8 | 5/8 | 4 |
| 5743500 | 5743508 | 31/32 | 4-1/8 | 1-7/8 | 3/4 | 4 |
| 5743900 | 5743908 | 1 | 4-1/2 | 2 | 1 | 4 |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order.



HY-PRO® V ADVANTAGE

HY-PRO® V End Mills are made from premium HSSE-V3 (3% Vanadium) high speed steel for increased toughness and tool life. Available with TiCN coating for increased wear resistance when machining abrasive materials. With no cobalt content, HY-PRO® V End Mills are environmentally safe when reground.

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 574 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

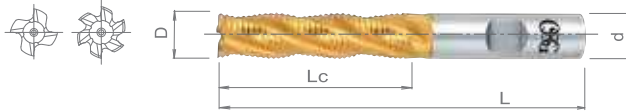




List 690

EXO-TIN-EX-REE, Multiple Flute, Regular Length, Non-Center Cutting

| | | | | | |
|---------------------|------|-----|-------|-----|-----|
| SPEED FEED P1293 | HSSE | TiN | ROUGH | REG | 30° |
|---------------------|------|-----|-------|-----|-----|



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | Number of Flutes |
|------------|---------------|----------------|---------------|----------------|------------------|
| | D | L | Lc | d | |
| 6909105 | 1/4 | 2-1/2 | 3/4 | 3/8 | 4 |
| 6909405 | 5/16 | 2-1/2 | 3/4 | 3/8 | 4 |
| 6909705 | 3/8 | 2-5/8 | 7/8 | 3/8 | 4 |
| 6909805 | 3/8 | 3-1/4 | 1-1/2 | 3/8 | 4 |
| 6900105 | 1/2 | 3-1/4 | 1-1/4 | 1/2 | 4 |
| 6900305 | 1/2 | 4 | 2 | 1/2 | 4 |
| 6900505 | 5/8 | 3-3/4 | 1-5/8 | 5/8 | 4 |
| 6900705 | 5/8 | 4-5/8 | 2-1/2 | 5/8 | 4 |
| 6900905 | 3/4 | 3-7/8 | 1-5/8 | 5/8 | 4 |
| 6901305 | 3/4 | 3-7/8 | 1-5/8 | 3/4 | 4 |
| 6901505 | 3/4 | 5-1/4 | 3 | 3/4 | 4 |
| 6901705 | 7/8 | 4-1/8 | 1-7/8 | 3/4 | 5 |
| 6910105 | 1 | 4-1/4 | 2 | 3/4 | 5 |
| 6910505 | 1 | 4-1/2 | 2 | 1 | 5 |
| 6910905 | 1 | 6-1/2 | 4 | 1 | 5 |
| 6912105 | 1-1/4 | 4-1/2 | 2 | 1-1/4 | 6 |
| 6912305 | 1-1/4 | 5-1/2 | 3 | 1-1/4 | 6 |
| 6912505 | 1-1/4 | 6-1/2 | 4 | 1-1/4 | 6 |
| 6913305 | 1-1/2 | 4-1/2 | 2 | 1-1/4 | 6 |
| 6913505 | 1-1/2 | 5-1/2 | 3 | 1-1/4 | 6 |
| 6920105 | 2 | 4-1/2 | 2 | 1-1/4 | 8 |
| 6920505 | 2 | 6-1/2 | 4 | 1-1/4 | 8 |
| 6920705 | 2 | 6-3/4 | 3 | 2 | 8 |
| 6920905 | 2 | 7-3/4 | 4 | 2 | 8 |

Packed: 1pc.
Available TiN coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 690 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





Roughing Cut

Cobalt High Speed Steel

List 450

EX-REEF, Multiple Flute, Fine Pitch, Non-Center Cutting

| | | | | | | | | | |
|----------------------------|---------------|-------------|-----------|-------------------|--|-------------|------------|-------------|------------|
| SPEED FEED P1285 | HSS-Co | TiCN | BR | FINE ROUGH | | STUB | REG | LONG | 30° |
|----------------------------|---------------|-------------|-----------|-------------------|--|-------------|------------|-------------|------------|



Units: Inch

| EDP Number | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | Number of Flutes |
|------------|---------|---------------|----------------|---------------|----------------|------------------|
| Bright | TiCN | D | L | Lc | d | |
| 4509000 | - | 3/16 | 2-3/8 | 1/2 | 3/8 | 4 |
| 4509100 | - | 1/4 | 2-1/2 | 3/4 | 3/8 | 3 |
| 4509200 | - | 1/4 | 3-1/16 | 1-1/4 | 3/8 | 3 |
| 4509400 | - | 5/16 | 2-1/2 | 3/4 | 3/8 | 3 |
| 4509500 | - | 5/16 | 3-1/8 | 1-3/8 | 3/8 | 3 |
| 4509700 | - | 3/8 | 2-5/8 | 7/8 | 3/8 | 4 |
| 4509800 | - | 3/8 | 3-1/4 | 1-1/2 | 3/8 | 4 |
| 4509900 | - | 7/16 | 2-11/16 | 1 | 3/8 | 4 |
| 4500000 | - | 7/16 | 3-1/4 | 1-1/4 | 1/2 | 4 |
| 4500100 | - | 1/2 | 3-1/4 | 1-1/4 | 1/2 | 4 |
| 4500300 | - | 1/2 | 4 | 2 | 1/2 | 4 |
| 4500500 | 4500508 | 5/8 | 3-3/4 | 1-5/8 | 5/8 | 4 |
| 4500700 | 4500708 | 5/8 | 4-5/8 | 2-1/2 | 5/8 | 4 |
| 4500800 | 4500808 | 5/8 | 5-1/8 | 3 | 5/8 | 4 |
| 4500900 | - | 3/4 | 3-7/8 | 1-5/8 | 5/8 | 4 |
| 4501000 | 4501008 | 3/4 | 4-1/2 | 2-1/4 | 3/4 | 4 |
| 4501300 | - | 3/4 | 3-7/8 | 1-5/8 | 3/4 | 4 |
| 4501100 | - | 3/4 | 5-1/4 | 3 | 5/8 | 4 |
| 4501500 | - | 3/4 | 5-1/4 | 3 | 3/4 | 4 |
| 4501600 | - | 3/4 | 6-1/4 | 4 | 3/4 | 4 |
| 4501700 | - | 7/8 | 4-1/8 | 1-7/8 | 3/4 | 5 |
| 4502100 | - | 7/8 | 4-1/8 | 1-7/8 | 7/8 | 5 |
| 4501900 | - | 7/8 | 5-3/4 | 3-1/2 | 3/4 | 5 |
| 4502300 | - | 7/8 | 5-3/4 | 3-1/2 | 7/8 | 5 |
| 4510100 | - | 1 | 4-1/4 | 2 | 3/4 | 5 |
| 4510500 | 4510508 | 1 | 4-1/2 | 2 | 1 | 5 |
| 4510700 | - | 1 | 5-1/2 | 3 | 1 | 5 |
| 4510900 | 4510908 | 1 | 6-1/2 | 4 | 1 | 5 |
| 4511500 | - | 1-1/8 | 4-1/2 | 2 | 1 | 5 |
| 4512100 | - | 1-1/4 | 4-1/2 | 2 | 1-1/4 | 6 |
| 4512300 | - | 1-1/4 | 5-1/2 | 3 | 1-1/4 | 6 |
| 4511900 | - | 1-1/4 | 6-1/4 | 4 | 3/4 | 6 |
| 4512500 | - | 1-1/4 | 6-1/2 | 4 | 1-1/4 | 6 |
| 4513300 | 4513308 | 1-1/2 | 4-1/2 | 2 | 1-1/4 | 6 |
| 4513500 | - | 1-1/2 | 5-1/2 | 3 | 1-1/4 | 6 |
| 4513100 | - | 1-1/2 | 6-1/4 | 4 | 3/4 | 6 |
| 4513700 | - | 1-1/2 | 6-1/2 | 4 | 1-1/4 | 6 |
| 4513900 | - | 1-1/2 | 7-1/2 | 5 | 1-1/4 | 6 |
| 4514500 | - | 1-3/4 | 6-1/2 | 4 | 1-1/4 | 6 |
| 4520100 | - | 2 | 4-1/2 | 2 | 1-1/4 | 8 |
| 4520700 | - | 2 | 6-3/4 | 3 | 2 | 8 |
| 4520500 | - | 2 | 6-1/2 | 4 | 1-1/4 | 8 |
| 4520900 | - | 2 | 7-3/4 | 4 | 2 | 8 |
| 4521100 | - | 2 | 9-3/4 | 6 | 2 | 8 |
| 4521300 | - | 2 | 11-3/4 | 8 | 2 | 8 |

Packed: 1pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

Note: 2" diameter shanks have combination drive.



| List No. | Work Material | | | | | | | | | | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | 4140 | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| | 1010 | 1035 | 1065 | 4340 | | | | | | 7075 | | | (30 HRC) | | | | |
| 450 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

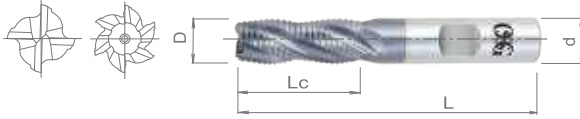




List 455

Multiple Flute, Roughing Cut, Fine Pitch

| | | | | | | | | | |
|---------------------|--------|-------|------|------------|--|------|-----|------|-----|
| SPEED FEED P1286 | HSS-Co | TiAlN | TiCN | FINE ROUGH | | STUB | REG | LONG | 30° |
|---------------------|--------|-------|------|------------|--|------|-----|------|-----|



Units: Inch

| EDP Number | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | Number of Flutes |
|------------|---------|---------------|----------------|---------------|----------------|------------------|
| TiCN | TiAlN | D | L | Lc | d | |
| 4558908 | - | 1/4 | 2-1/16 | 1/4 | 3/8 | 4 |
| 4559008 | 4559011 | 1/4 | 2-1/16 | 1/4 | 3/8 | 4 |
| 4569108 | - | 1/4 | 2-7/16 | 5/8 | 3/8 | 3 |
| 4559108 | 4559111 | 1/4 | 2-1/2 | 3/4 | 3/8 | 4 |
| 4559208 | 4559211 | 1/4 | 3-1/16 | 1-1/4 | 3/8 | 4 |
| 4559308 | 4559311 | 5/16 | 2-1/16 | 5/16 | 3/8 | 3 |
| 4559408 | 4559411 | 5/16 | 2-1/2 | 3/4 | 3/8 | 4 |
| 4559508 | 4559511 | 5/16 | 3-1/8 | 1-3/8 | 3/8 | 4 |
| 4559608 | 4559611 | 3/8 | 2-5/32 | 3/8 | 3/8 | 3 |
| 4559708 | 4559711 | 3/8 | 2-5/8 | 7/8 | 3/8 | 4 |
| 4559808 | 4559811 | 3/8 | 3-1/4 | 1-1/2 | 3/8 | 4 |
| 4569808 | - | 7/16 | 2-1/2 | 1/2 | 1/2 | 4 |
| 4559908 | - | 7/16 | 3-1/4 | 1-1/4 | 1/2 | 4 |
| 4550008 | 4550011 | 1/2 | 2-1/2 | 1/2 | 1/2 | 3 |
| 4560008 | - | 1/2 | 2-1/2 | 1/2 | 1/2 | 4 |
| 4550108 | 4550111 | 1/2 | 3-1/4 | 1-1/4 | 1/2 | 4 |
| 4550308 | 4550311 | 1/2 | 4 | 2 | 1/2 | 4 |
| 4560308 | - | 1/2 | 5 | 3 | 1/2 | 4 |
| 4550408 | 4550411 | 5/8 | 2-3/4 | 5/8 | 5/8 | 3 |
| 4560408 | - | 5/8 | 2-3/4 | 5/8 | 5/8 | 4 |
| 4550508 | 4550511 | 5/8 | 3-3/4 | 1-5/8 | 5/8 | 4 |
| 4550608 | - | 5/8 | 4-1/8 | 2 | 5/8 | 4 |
| 4550708 | 4550711 | 5/8 | 4-5/8 | 2-1/2 | 5/8 | 4 |
| 4551208 | 4551211 | 3/4 | 2-7/8 | 3/4 | 3/4 | 3 |
| 4561208 | - | 3/4 | 2-7/8 | 3/4 | 3/4 | 4 |
| 4551308 | 4551311 | 3/4 | 3-7/8 | 1-5/8 | 3/4 | 4 |
| 4551408 | - | 3/4 | 4-1/2 | 2-1/2 | 3/4 | 4 |
| 4551508 | 4551511 | 3/4 | 5-1/4 | 3 | 3/4 | 4 |
| 4551608 | - | 3/4 | 6-1/4 | 4 | 3/4 | 4 |
| 4552108 | - | 3/4 | 4-1/2 | 2-1/4 | 3/4 | 4 |
| 4561008 | - | 1 | 3-1/2 | 1 | 1 | 5 |
| 4560108 | 4560111 | 1 | 4-1/2 | 2 | 3/4 | 5 |
| 4560508 | 4560511 | 1 | 4-1/2 | 2 | 1 | 5 |
| 4560708 | 4560711 | 1 | 5-1/2 | 3 | 1 | 5 |
| 4560908 | 4560911 | 1 | 6-1/2 | 4 | 1 | 5 |
| 4562108 | 4562111 | 1-1/4 | 4-1/2 | 2 | 1-1/4 | 6 |
| 4562308 | 4562311 | 1-1/4 | 5-1/2 | 3 | 1-1/4 | 6 |
| 4562508 | 4562511 | 1-1/4 | 6-1/2 | 4 | 1-1/4 | 6 |
| 4563308 | 4563311 | 1-1/2 | 4-1/2 | 2 | 1-1/4 | 6 |
| 4563508 | 4563511 | 1-1/2 | 5-1/2 | 3 | 1-1/4 | 6 |
| 4563708 | 4563711 | 1-1/2 | 6-1/2 | 4 | 1-1/4 | 6 |
| 4570708 | - | 2 | 6-3/4 | 3 | 2 | 8 |
| 4570908 | - | 2 | 7-3/4 | 4 | 2 | 8 |
| 4571108 | 4571111 | 2 | 9-3/4 | 6 | 2 | 8 |
| 4571308 | - | 2 | 11-3/4 | 8 | 2 | 8 |

Packed: 1pc.

Available in TiCN or TiAlN only.

Center cutting available in stub length only.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 455 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





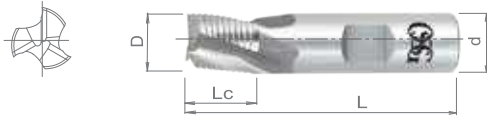
Roughing Cut

Cobalt High Speed Steel

List 420

Stub Length, Center Cutting, Fine Pitch

| | | | | | | |
|----------------------------|---------------|-----------|-------------------|--|-------------|------------|
| SPEED FEED P1285 | HSS-Co | BR | FINE ROUGH | | STUB | 25° |
|----------------------------|---------------|-----------|-------------------|--|-------------|------------|



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | Number of Flutes |
|------------|---------------|----------------|---------------|----------------|------------------|
| | D | L | Lc | d | |
| 4205000 | 1/4 | 2-1/16 | 1/4 | 3/8 | 3 |
| 4205100 | 3/8 | 2-5/32 | 3/8 | 3/8 | 3 |
| 4205200 | 1/2 | 2-1/2 | 1/2 | 1/2 | 3 |
| 4205300 | 5/8 | 2-3/4 | 5/8 | 5/8 | 3 |
| 4205400 | 3/4 | 2-7/8 | 3/4 | 3/4 | 3 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | Number of Flutes |
|------------|---------------|----------------|---------------|----------------|------------------|
| | D | L | Lc | d | |
| 4205500 | 7/8 | 3-1/8 | 7/8 | 3/4 | 3 |
| 4205600 | 1 | 3-1/2 | 1 | 3/4 | 3 |
| 4205700 | 1 | 3-3/4 | 1 | 1 | 3 |
| 4205800 | 1-1/4 | 3-3/4 | 1-1/4 | 1-1/4 | 4 |
| 4205900 | 1-1/2 | 3-3/4 | 1-1/4 | 1-1/4 | 6 |

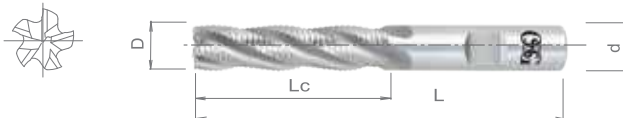
Packed: 1pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



List 460

Center Cutting, Fine Pitch

| | | | | | | | |
|---------------------------------|---------------|-----------|-------------------|--|------------|-------------|------------|
| SPEED FEED P1291-1292 | HSS-Co | BR | FINE ROUGH | | REG | LONG | 30° |
|---------------------------------|---------------|-----------|-------------------|--|------------|-------------|------------|



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | Number of Flutes |
|------------|---------------|----------------|---------------|----------------|------------------|
| | D | L | Lc | d | |
| 4600100 | 1/2 | 3-1/4 | 1-1/4 | 1/2 | 4 |
| 4600300 | 1/2 | 4 | 2 | 1/2 | 4 |
| 4600500 | 5/8 | 3-3/4 | 1-5/8 | 5/8 | 4 |
| 4600600 | 7/16 | 2-1/2 | 1/2 | 1/2 | 4 |
| 4600700 | 5/8 | 4-5/8 | 2-1/2 | 5/8 | 4 |
| 4601200 | 3/4 | 2-7/8 | 3/4 | 3/4 | 4 |
| 4601300 | 3/4 | 3-7/8 | 1-5/8 | 3/4 | 4 |
| 4601500 | 3/4 | 5-1/4 | 3 | 3/4 | 4 |
| 4610400 | 1 | 3-1/2 | 1 | 1 | 5 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | Number of Flutes |
|------------|---------------|----------------|---------------|----------------|------------------|
| | D | L | Lc | d | |
| 4610500 | 1 | 4-1/2 | 2 | 1 | 5 |
| 4610700 | 1 | 5-1/4 | 3 | 1 | 5 |
| 4610900 | 1 | 6-1/2 | 4 | 1 | 5 |
| 4612100 | 1-1/4 | 4-1/2 | 2 | 1-1/4 | 6 |
| 4612300 | 1-1/4 | 5-1/2 | 3 | 1-1/4 | 6 |
| 4612500 | 1-1/4 | 6-1/2 | 4 | 1-1/4 | 6 |
| 4613300 | 1-1/2 | 4-1/2 | 2 | 1-1/4 | 6 |
| 4613700 | 1-1/2 | 6-1/2 | 4 | 1-1/4 | 6 |

Packed: 1pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

| Chart applies to all list numbers above | P | | | | | | M | | | K | N | | S | H | | | |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| | 1010 | 1035 | 1065 | 4140 | 4340 | | | | | | | | | | | | |
| - | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

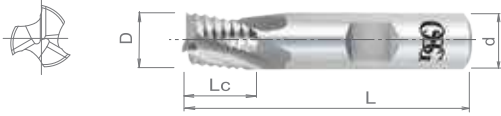
good best



List 410

3 Flute, Stub Length, Regular Pitch

| | | | | | | |
|----------------------------|---------------|-----------|--------------|--|-------------|------------|
| SPEED FEED P1289 | HSS-Co | BR | ROUGH | | STUB | 25° |
|----------------------------|---------------|-----------|--------------|--|-------------|------------|



| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 4105200 | 1/2 | 2-1/2 | 1/2 | 1/2 |
| 4105300 | 5/8 | 2-3/4 | 5/8 | 5/8 |

Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 4105400 | 3/4 | 2-7/8 | 3/4 | 3/4 |
| 4105700 | 1 | 3-1/2 | 1 | 1 |

Packed: 1pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



List 430E

3 Flute, for Aluminum

| | | | | | | | | |
|----------------------------|---------------|-----------|--------------|--|------------|------------|-------------|------------|
| SPEED FEED P1288 | HSS-Co | BR | ROUGH | | REG | MED | LONG | 35° |
|----------------------------|---------------|-----------|--------------|--|------------|------------|-------------|------------|



| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 4309700 | 3/8 | 2-5/8 | 7/8 | 3/8 |
| 4300100 | 1/2 | 3-1/4 | 1-1/4 | 1/2 |
| 4300300 | 1/2 | 4 | 2 | 1/2 |
| 4300500 | 5/8 | 3-3/4 | 1-5/8 | 5/8 |
| 4300700 | 5/8 | 4-5/8 | 2-1/2 | 5/8 |
| 4301200 | 3/4 | 3 | 3/4 | 3/4 |
| 4301300 | 3/4 | 3-7/8 | 1-5/8 | 3/4 |
| 4301500 | 3/4 | 5-1/4 | 3 | 3/4 |
| 4301700 | 7/8 | 4-1/8 | 1-7/8 | 3/4 |
| 4302100 | 7/8 | 4-1/8 | 1-7/8 | 7/8 |
| 4310300 | 1 | 3-1/2 | 1 | 1 |

Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 4310100 | 1 | 4-1/4 | 2 | 3/4 |
| 4310500 | 1 | 4-1/2 | 2 | 1 |
| 4310700 | 1 | 5-1/2 | 3 | 1 |
| 4310900 | 1 | 6-1/2 | 4 | 1 |
| 4312100 | 1-1/4 | 4-1/2 | 2 | 1-1/4 |
| 4312300 | 1-1/4 | 5-1/2 | 3 | 1-1/4 |
| 4312500 | 1-1/4 | 6-1/2 | 4 | 1-1/4 |
| 4313300 | 1-1/2 | 4-1/2 | 2 | 1-1/4 |
| 4313500 | 1-1/2 | 5-1/2 | 3 | 1-1/4 |
| 4313700 | 1-1/2 | 6-1/2 | 4 | 1-1/4 |

Packed: 1pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 410 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 430E | | | | | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | | |

good best





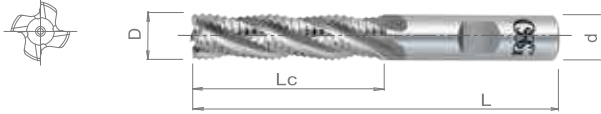
Roughing Cut

Cobalt High Speed Steel

List 490

| | | | | | | | | | |
|----------------------------|---------------|-----------|--------------|--|-------------|------------|------------|-------------|--|
| SPEED FEED P1289 | HSS-Co | BR | ROUGH | | STUB | REG | MED | LONG | |
|----------------------------|---------------|-----------|--------------|--|-------------|------------|------------|-------------|--|

Multiple Flute, Regular Pitch, General Purpose, Non-Center Cutting



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | Number of Flutes | EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | Number of Flutes |
|------------|---------------|----------------|---------------|----------------|------------------|------------|---------------|----------------|---------------|----------------|------------------|
| | D | L | Lc | d | | | D | L | Lc | d | |
| 4909000 | 1/4 | 2-7/16 | 5/8 | 5/8 | 4 | 4910700 | 1 | 5-1/2 | 3 | 1 | 5 |
| 4909100 | 1/4 | 2-1/2 | 3/4 | 3/8 | 4 | 4910900 | 1 | 6-1/2 | 4 | 1 | 5 |
| 4909200 | 1/4 | 3-1/16 | 1-1/4 | 3/8 | 4 | 4911500 | 1-1/8 | 4-1/2 | 2 | 1 | 5 |
| 4909400 | 5/16 | 2-1/2 | 3/4 | 3/8 | 4 | 4912100 | 1-1/4 | 4-1/2 | 2 | 1-1/4 | 6 |
| 4909500 | 5/16 | 3-1/8 | 1-3/8 | 3/8 | 4 | 4912300 | 1-1/4 | 5-1/2 | 3 | 1-1/4 | 6 |
| 4909700 | 3/8 | 2-5/8 | 7/8 | 3/8 | 4 | 4911900 | 1-1/4 | 6-1/4 | 4 | 3/4 | 6 |
| 4909800 | 3/8 | 3-1/4 | 1-1/2 | 3/8 | 4 | 4912500 | 1-1/4 | 6-1/2 | 4 | 1-1/4 | 6 |
| 4909900 | 7/16 | 2-11/16 | 1 | 3/8 | 4 | 4913300 | 1-1/2 | 4-1/2 | 2 | 1-1/4 | 6 |
| 4900100 | 1/2 | 3-1/4 | 1-1/4 | 1/2 | 4 | 4913500 | 1-1/2 | 5-1/2 | 3 | 1-1/4 | 6 |
| 4900300 | 1/2 | 4 | 2 | 1/2 | 4 | 4913100 | 1-1/2 | 6-1/4 | 4 | 3/4 | 6 |
| 4900500 | 5/8 | 3-3/4 | 1-5/8 | 5/8 | 4 | 4913700 | 1-1/2 | 6-1/2 | 4 | 1-1/4 | 6 |
| 4900600 | 5/8 | 4-1/8 | 2 | 5/8 | 4 | 4913900 | 1-1/2 | 7-1/2 | 5 | 1-1/4 | 6 |
| 4900700 | 5/8 | 4-5/8 | 2-1/2 | 5/8 | 4 | 4914500 | 1-3/4 | 6-1/2 | 4 | 1-1/4 | 6 |
| 4900800 | 5/8 | 5-1/8 | 3 | 5/8 | 4 | 4926100 | 2 | 4-1/2 | 2 | 1-1/4 | 6 |
| 4900900 | 3/4 | 3-7/8 | 1-5/8 | 5/8 | 4 | 4920100 | 2 | 4-1/2 | 2 | 1-1/4 | 8 |
| 4901300 | 3/4 | 3-7/8 | 1-5/8 | 3/4 | 4 | 4926700 | 2 | 6-3/4 | 3 | 2 | 6 |
| 4901100 | 3/4 | 5-1/4 | 3 | 5/8 | 4 | 4920700 | 2 | 6-3/4 | 3 | 2 | 8 |
| 4901400 | 3/4 | 4-1/2 | 2-1/4 | 3/4 | 4 | 4926500 | 2 | 6-1/2 | 4 | 1-1/4 | 6 |
| 4901500 | 3/4 | 5-1/4 | 3 | 3/4 | 4 | 4920500 | 2 | 6-1/2 | 4 | 1-1/4 | 8 |
| 4901700 | 7/8 | 4-1/8 | 1-7/8 | 3/4 | 5 | 4926900 | 2 | 7-3/4 | 4 | 2 | 6 |
| 4902100 | 7/8 | 4-1/8 | 1-7/8 | 7/8 | 5 | 4920900 | 2 | 7-3/4 | 4 | 2 | 8 |
| 4901900 | 7/8 | 5-3/4 | 3-1/2 | 3/4 | 5 | 4927100 | 2 | 9-3/4 | 6 | 2 | 6 |
| 4902300 | 7/8 | 5-3/4 | 3-1/2 | 7/8 | 5 | 4921100 | 2 | 9-3/4 | 6 | 2 | 8 |
| 4910100 | 1 | 4-1/4 | 2 | 3/4 | 5 | 4927300 | 2 | 11-3/4 | 8 | 2 | 6 |
| 4910500 | 1 | 4-1/2 | 2 | 1 | 5 | 4921300 | 2 | 11-3/4 | 8 | 2 | 8 |

Packed: 1pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order.

2" diameter shanks have combination drive.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 490 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

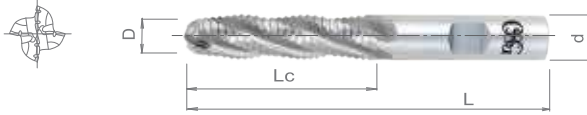




List 440

EX-REB, Multiple Flute, Regular Pitch, Ball End, General Purpose

| | | | | | | |
|---------------------|--------|----|-------|-----|------|-----|
| SPEED FEED P1287 | HSS-Co | BR | ROUGH | REG | LONG | 30° |
|---------------------|--------|----|-------|-----|------|-----|



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | Number of Flutes |
|------------|---------------|----------------|---------------|----------------|------------------|
| | D | L | Lc | d | |
| 4400100 | 1/2 | 3-1/4 | 1-1/4 | 1/2 | 4 |
| 4400300 | 1/2 | 4 | 2 | 1/2 | 4 |
| 4400500 | 5/8 | 3-3/4 | 1-5/8 | 5/8 | 4 |
| 4400700 | 5/8 | 4-5/8 | 2-1/2 | 5/8 | 4 |
| 4401300 | 3/4 | 3-7/8 | 1-5/8 | 3/4 | 4 |
| 4401500 | 3/4 | 5-1/4 | 3 | 3/4 | 4 |
| 4410500 | 1 | 4-1/2 | 2 | 1 | 4 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | Number of Flutes |
|------------|---------------|----------------|---------------|----------------|------------------|
| | D | L | Lc | d | |
| 4410900 | 1 | 6-1/2 | 4 | 1 | 4 |
| 4412100 | 1-1/4 | 4-1/2 | 2 | 1-1/4 | 6 |
| 4412500 | 1-1/4 | 6-1/2 | 4 | 1-1/4 | 6 |
| 4413300 | 1-1/2 | 4-1/2 | 2 | 1-1/4 | 6 |
| 4413700 | 1-1/2 | 6-1/2 | 4 | 1-1/4 | 6 |
| 4420900 | 2 | 7-3/4 | 4 | 2 | 8 |
| 4421100 | 2 | 9-3/4 | 6 | 2 | 8 |

Packed: 1pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.
2" diameter shanks have combination drive.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 440 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

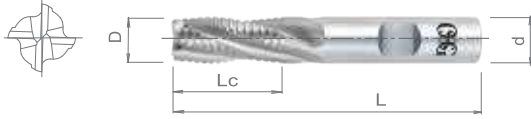
good best



List 470

CC-RFE, Multiple Flute, Rough & Finish

| | | | | | | | | |
|------------------------|--------|----|-----------------|--|------|-----|------|--|
| SPEED FEED P1290 | HSS-Co | BR | ROUGH FINISH | | STUB | REG | LONG | |
|------------------------|--------|----|-----------------|--|------|-----|------|--|



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | Number of Flutes |
|------------|---------------|----------------|---------------|----------------|------------------|
| Bright | D | L | Lc | d | |
| 4709100 | 1/4 | 2-1/2 | 3/4 | 3/8 | 4 |
| 4709400 | 5/16 | 2-1/2 | 3/4 | 3/8 | 4 |
| 4709500 | 3/8 | 2-5/32 | 3/8 | 3/8 | 4 |
| 4709600 | 3/8 | 2-1/2 | 3/4 | 3/8 | 4 |
| 4709700 | 3/8 | 2-5/8 | 7/8 | 3/8 | 4 |
| 4700200 | 3/8 | 3-1/4 | 1-1/2 | 3/8 | 4 |
| 4700000 | 1/2 | 2-1/2 | 1/2 | 1/2 | 4 |
| 4700100 | 1/2 | 3-1/4 | 1-1/4 | 1/2 | 4 |
| 4700300 | 1/2 | 4 | 2 | 1/2 | 4 |
| 4700500 | 5/8 | 3-3/4 | 1-5/8 | 5/8 | 4 |
| 4700600 | 5/8 | 4-1/8 | 2 | 5/8 | 4 |
| 4700700 | 5/8 | 4-5/8 | 2-1/2 | 5/8 | 4 |
| 4700900 | 3/4 | 3-7/8 | 1-5/8 | 5/8 | 4 |
| 4701300 | 3/4 | 3-7/8 | 1-5/8 | 3/4 | 4 |
| 4701400 | 3/4 | 4-1/2 | 2-1/4 | 3/4 | 4 |
| 4701500 | 3/4 | 5-1/4 | 3 | 3/4 | 4 |
| 4701700 | 7/8 | 4-1/8 | 1-7/8 | 3/4 | 4 |
| 4701900 | 7/8 | 5-3/4 | 3-1/2 | 3/4 | 5 |
| 4702100 | 7/8 | 4-1/8 | 1-7/8 | 7/8 | 4 |
| 4710000 | 1 | 3-1/2 | 1 | 1 | 5 |
| 4710100 | 1 | 4-1/4 | 2 | 3/4 | 4 |
| 4716100 | 1 | 4-1/4 | 2 | 3/4 | 6 |
| 4710500 | 1 | 4-1/2 | 2 | 1 | 4 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | Number of Flutes |
|------------|---------------|----------------|---------------|----------------|------------------|
| Bright | D | L | Lc | d | |
| 4710600 | 1 | 4-1/2 | 2 | 1 | 5 |
| 4716500 | 1 | 4-1/2 | 2 | 1 | 6 |
| 4710900 | 1 | 6-1/2 | 4 | 1 | 4 |
| 4716900 | 1 | 6-1/2 | 4 | 1 | 6 |
| 4711500 | 1-1/8 | 4-1/2 | 2 | 1 | 5 |
| 4712100 | 1-1/4 | 4-1/2 | 2 | 1-1/4 | 6 |
| 4712300 | 1-1/4 | 5-1/2 | 3 | 1-1/4 | 6 |
| 4712500 | 1-1/4 | 6-1/2 | 4 | 1-1/4 | 6 |
| 4713300 | 1-1/2 | 4-1/2 | 2 | 1-1/4 | 6 |
| 4713500 | 1-1/2 | 5-1/2 | 3 | 1-1/4 | 6 |
| 4713700 | 1-1/2 | 6-1/2 | 4 | 1-1/4 | 6 |
| 4713900 | 1-1/2 | 7-1/2 | 5 | 1-1/4 | 6 |
| 4720100 | 2 | 4-1/2 | 2 | 1-1/4 | 8 |
| 4726700 | 2 | 6-3/4 | 3 | 2 | 6 |
| 4726500 | 2 | 6-1/2 | 4 | 1-1/4 | 6 |
| 4720500 | 2 | 6-1/2 | 4 | 1-1/4 | 8 |
| 4726900 | 2 | 7-3/4 | 4 | 2 | 6 |
| 4720900 | 2 | 7-3/4 | 4 | 2 | 8 |
| 4727100 | 2 | 9-3/4 | 6 | 2 | 6 |
| 4721100 | 2 | 9-3/4 | 6 | 2 | 8 |
| 4727300 | 2 | 11-3/4 | 8 | 2 | 6 |
| 4721300 | 2 | 11-3/4 | 8 | 2 | 8 |

Packed: 1pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.
2" diameter shanks have combination drive.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 470 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

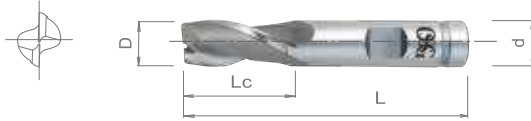


List 520

2 Flute, Regular Length

| | | | | | |
|--------------------------|--------|-----|----|-----|-----|
| SPEED FEED P1297-1298 | HSS-Co | TiN | BR | REG | 30° |
|--------------------------|--------|-----|----|-----|-----|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/8 ≤ D ≤ 2 | +0.003" / -0 |



Units: Inch

| EDP Number | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------|---------------|----------------|---------------|----------------|
| Bright | TiN | D | L | Lc | d |
| 5200100 | 5200105 | 1/8 | 2-5/16 | 3/8 | 3/8 |
| 5209100 | - | 5/32 | 2-5/16 | 7/16 | 3/8 |
| 5200200 | 5200205 | 3/16 | 2-5/16 | 7/16 | 3/8 |
| 5209200 | - | 7/32 | 2-5/16 | 1/2 | 3/8 |
| 5200300 | 5200305 | 1/4 | 2-5/16 | 1/2 | 3/8 |
| 5209300 | - | 9/32 | 2-5/16 | 9/16 | 3/8 |
| 5200400 | 5200405 | 5/16 | 2-5/16 | 9/16 | 3/8 |
| 5209400 | - | 11/32 | 2-5/16 | 9/16 | 3/8 |
| 5200500 | 5200505 | 3/8 | 2-5/16 | 9/16 | 3/8 |
| 5209500 | - | 13/32 | 2-1/2 | 13/16 | 3/8 |
| 5200600 | 5200605 | 7/16 | 2-1/2 | 13/16 | 3/8 |
| 5209700 | - | 15/32 | 2-1/2 | 13/16 | 3/8 |
| 5200700 | 5201105 | 1/2 | 2-1/2 | 13/16 | 3/8 |
| 5201100 | - | 1/2 | 3 | 1 | 1/2 |
| 5201600 | - | 17/32 | 3-1/8 | 1-1/8 | 1/2 |
| 5201200 | - | 9/16 | 3-1/8 | 1-1/8 | 1/2 |
| 5201700 | - | 19/32 | 3-1/8 | 1-1/8 | 1/2 |
| 5201300 | 5201305 | 5/8 | 3-1/8 | 1-1/8 | 1/2 |
| 5202100 | 5202105 | 5/8 | 3-7/16 | 1-5/16 | 5/8 |
| 5201800 | - | 21/32 | 3-5/16 | 1-5/16 | 1/2 |
| 5201400 | - | 11/16 | 3-5/16 | 1-5/16 | 1/2 |
| 5202200 | - | 11/16 | 3-7/16 | 1-5/16 | 5/8 |
| 5201900 | - | 23/32 | 3-5/16 | 1-5/16 | 1/2 |
| 5201500 | 5201505 | 3/4 | 3-5/16 | 1-5/16 | 1/2 |
| 5202300 | - | 3/4 | 3-7/16 | 1-5/16 | 5/8 |

| EDP Number | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------|---------------|----------------|---------------|----------------|
| Bright | TiN | D | L | Lc | d |
| 5203100 | 5203105 | 3/4 | 3-9/16 | 1-5/16 | 3/4 |
| 5202800 | - | 25/32 | 3-5/8 | 1-1/2 | 5/8 |
| 5202400 | - | 13/16 | 3-5/8 | 1-1/2 | 5/8 |
| 5202900 | - | 27/32 | 3-5/8 | 1-1/2 | 5/8 |
| 5202500 | - | 7/8 | 3-5/8 | 1-1/2 | 5/8 |
| 5203200 | 5203205 | 7/8 | 3-3/4 | 1-1/2 | 3/4 |
| 5204100 | 5204105 | 7/8 | 3-3/4 | 1-1/2 | 7/8 |
| 5203400 | - | 29/32 | 3-3/4 | 1-1/2 | 3/4 |
| 5202600 | - | 15/16 | 3-5/8 | 1-1/2 | 5/8 |
| 5203500 | - | 31/32 | 3-3/4 | 1-1/2 | 3/4 |
| 5202700 | - | 1 | 3-5/8 | 1-1/2 | 5/8 |
| 5203300 | 5203305 | 1 | 3-3/4 | 1-1/2 | 3/4 |
| 5204200 | - | 1 | 3-3/4 | 1-1/2 | 7/8 |
| 5205100 | 5205105 | 1 | 4-1/8 | 1-5/8 | 1 |
| 5204300 | - | 1-1/8 | 3-7/8 | 1-5/8 | 7/8 |
| 5205200 | - | 1-1/8 | 4-1/8 | 1-5/8 | 1 |
| 5204400 | - | 1-1/4 | 3-7/8 | 1-5/8 | 7/8 |
| 5205300 | - | 1-1/4 | 4-1/8 | 1-5/8 | 1 |
| 5206100 | - | 1-1/4 | 4-1/8 | 1-5/8 | 1-1/4 |
| 5205400 | - | 1-3/8 | 4-1/8 | 1-5/8 | 1 |
| 5205500 | - | 1-1/2 | 4-1/8 | 1-5/8 | 1 |
| 5206200 | - | 1-1/2 | 4-1/8 | 1-5/8 | 1-1/4 |
| 5206300 | - | 1-3/4 | 4-1/8 | 1-5/8 | 1-1/4 |
| 5206400 | - | 2 | 4-1/8 | 1-5/8 | 1-1/4 |
| 5207400 | - | 2 | 5-3/4 | 2 | 2 |

Packed: 1pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.
2" diameter shanks have combination drive.



| List No. | Work Material | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 520 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



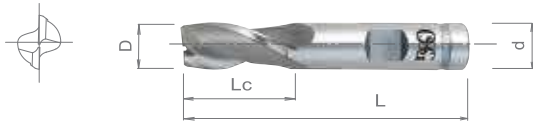


List 580

EDS, 2 Flute, Regular Length

| | | | | | |
|----------------------------|---------------|-----------|--|------------|------------|
| SPEED FEED P1302 | HSS-Co | BR | | REG | 30° |
|----------------------------|---------------|-----------|--|------------|------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 3 ≤ D ≤ 50 | +0.028mm / -0 |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5800100 | 3.0 | 58.7 | 9.52 | 9.52 |
| 5808100 | 3.5 | 58.7 | 11.11 | 9.52 |
| 5800200 | 4.0 | 58.7 | 11.11 | 9.52 |
| 5808200 | 4.5 | 58.7 | 11.11 | 9.52 |
| 5800300 | 5.0 | 58.7 | 12.70 | 9.52 |
| 5808300 | 5.5 | 58.7 | 12.70 | 9.52 |
| 5800400 | 6.0 | 58.7 | 12.70 | 9.52 |
| 5808400 | 6.5 | 58.7 | 12.70 | 9.52 |
| 5800500 | 7.0 | 58.7 | 14.28 | 9.52 |
| 5808500 | 7.5 | 58.7 | 14.28 | 9.52 |
| 5800600 | 8.0 | 58.7 | 14.28 | 9.52 |
| 5808600 | 8.5 | 58.7 | 14.28 | 9.52 |
| 5800700 | 9.0 | 58.7 | 14.28 | 9.52 |
| 5808700 | 9.5 | 58.7 | 14.28 | 9.52 |
| 5800800 | 10.0 | 63.5 | 20.63 | 9.52 |
| 5808800 | 10.5 | 63.5 | 20.63 | 9.52 |
| 5800900 | 11.0 | 63.5 | 20.63 | 9.52 |
| 5808900 | 11.5 | 63.5 | 20.63 | 9.52 |
| 5801100 | 12.0 | 76.2 | 25.40 | 12.70 |
| 5809100 | 12.5 | 79.3 | 28.57 | 12.70 |
| 5801200 | 13.0 | 79.3 | 28.57 | 12.70 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5809200 | 13.5 | 79.3 | 28.57 | 12.70 |
| 5801300 | 14.0 | 79.3 | 28.57 | 12.70 |
| 5809300 | 14.5 | 79.3 | 28.57 | 12.70 |
| 5801400 | 15.0 | 79.3 | 28.57 | 12.70 |
| 5802100 | 16.0 | 87.3 | 33.33 | 15.87 |
| 5802200 | 17.0 | 87.3 | 33.33 | 15.87 |
| 5802300 | 18.0 | 87.3 | 33.33 | 15.87 |
| 5803100 | 19.0 | 90.4 | 33.33 | 19.05 |
| 5803200 | 20.0 | 95.2 | 38.10 | 19.05 |
| 5803300 | 21.0 | 95.2 | 38.10 | 19.05 |
| 5804100 | 22.0 | 95.2 | 38.10 | 22.22 |
| 5804200 | 23.0 | 95.2 | 38.10 | 22.22 |
| 5805100 | 24.0 | 104.7 | 41.27 | 25.40 |
| 5805200 | 25.0 | 104.7 | 41.27 | 25.40 |
| 5805300 | 28.0 | 104.7 | 41.27 | 25.40 |
| 5806100 | 32.0 | 104.7 | 41.27 | 31.75 |
| 5806200 | 36.0 | 104.7 | 41.27 | 31.75 |
| 5806300 | 40.0 | 104.7 | 41.27 | 31.75 |
| 5806400 | 45.0 | 104.7 | 41.27 | 31.75 |
| 5806500 | 50.0 | 104.7 | 41.27 | 31.75 |

Packed: 1pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 580 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



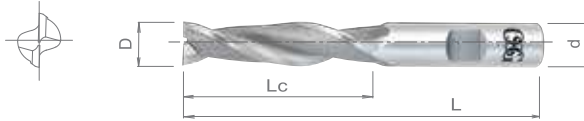


List 525

EDL, 2 Flute, Long Length

| | | | | | |
|---------------------------------|---------------|-----------|--|-------------|------------|
| SPEED FEED P1297-1298 | HSS-Co | BR | | LONG | 30° |
|---------------------------------|---------------|-----------|--|-------------|------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 3/8 ≤ D ≤ 2 | +0.0011" / -0 |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5250500 | 3/8 | 3-1/4 | 1-1/2 | 3/8 |
| 5251100 | 1/2 | 4 | 2 | 1/2 |
| 5252100 | 5/8 | 4-1/8 | 2 | 5/8 |
| 5253100 | 3/4 | 4-1/2 | 2-1/4 | 3/4 |
| 5254100 | 7/8 | 4-3/4 | 2-1/2 | 7/8 |
| 5255100 | 1 | 5-1/2 | 3 | 1 |
| 5255200 | 1-1/8 | 5-1/2 | 3 | 1 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5255300 | 1-1/4 | 5-1/2 | 3 | 1 |
| 5256100 | 1-1/4 | 5-1/2 | 3 | 1-1/4 |
| 5256200 | 1-1/2 | 5-1/2 | 3 | 1-1/4 |
| 5256300 | 1-3/4 | 5-1/2 | 3 | 1-1/4 |
| 5256400 | 2 | 5-1/2 | 3 | 1-1/4 |
| 5257400 | 2 | 6-3/4 | 3 | 2 |

Packed: 1pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.
Note: 2" diameter shanks have combination drive.

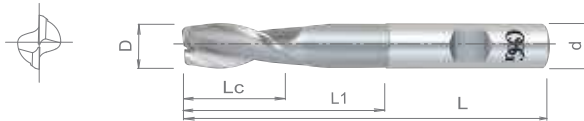


List 527

LS-EDS, 2 Flute, Regular Length, Reduced Neck

| | | | | | |
|---------------------------------|---------------|-----------|--|------------|------------|
| SPEED FEED P1297-1298 | HSS-Co | BR | | REG | 30° |
|---------------------------------|---------------|-----------|--|------------|------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/8 ≤ D ≤ 1, 1/4 | +0.0011" / -0 |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|----------------|
| Bright | D | L | Lc | L1 | d |
| 5270100 | 1/8 | 2-3/8 | 3/8 | 13/16 | 3/8 |
| 5270200 | 3/16 | 2-11/16 | 1/2 | 1-1/8 | 3/8 |
| 5270300 | 1/4 | 3-1/16 | 5/8 | 1-1/2 | 3/8 |
| 5270400 | 5/16 | 3-5/16 | 3/4 | 1-3/4 | 3/8 |
| 5270500 | 3/8 | 3-5/16 | 3/4 | 1-3/4 | 3/8 |
| 5271100 | 1/2 | 4 | 1 | 2-1/4 | 1/2 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|----------------|
| Bright | D | L | Lc | L1 | d |
| 5272100 | 5/8 | 4-5/8 | 1-3/8 | 2-3/4 | 5/8 |
| 5273100 | 3/4 | 5-3/8 | 1-5/8 | 3-3/8 | 3/4 |
| 5274100 | 7/8 | 6 | 2 | 4 | 7/8 |
| 5275100 | 1 | 7-1/4 | 2-1/2 | 5 | 1 |
| 5276100 | 1-1/4 | 7-1/4 | 3 | 5 | 1-1/4 |

Packed: 1pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

| Chart applies to all list numbers above | P | | | | | M | | | K | N | | S | | H | | | |
|---|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| - | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



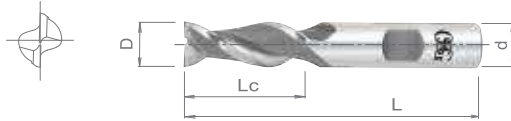


List 530

AL-EDS, 2 Flute, Regular Length, for Aluminum, High Helix

| | | | | | |
|---------------------------------|---------------|-----------|--|------------|------------|
| SPEED FEED P1297-1298 | HSS-Co | BR | | REG | 40° |
|---------------------------------|---------------|-----------|--|------------|------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/4 ≤ D ≤ 2 | +0.0011" / -0 |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5300300 | 1/4 | 2-7/16 | 5/8 | 3/8 |
| 5300400 | 5/16 | 2-1/2 | 3/4 | 3/8 |
| 5300500 | 3/8 | 2-1/2 | 3/4 | 3/8 |
| 5300600 | 7/16 | 2-11/16 | 1 | 3/8 |
| 5301100 | 1/2 | 3-1/4 | 1-1/4 | 1/2 |
| 5302100 | 5/8 | 3-3/4 | 1-5/8 | 5/8 |
| 5303100 | 3/4 | 3-7/8 | 1-5/8 | 3/4 |
| 5303200 | 7/8 | 4-1/8 | 1-7/8 | 3/4 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5303300 | 1 | 4-1/8 | 1-7/8 | 3/4 |
| 5304100 | 7/8 | 4-1/8 | 1-7/8 | 7/8 |
| 5305100 | 1 | 4-1/2 | 2 | 1 |
| 5306100 | 1-1/4 | 4-1/2 | 2 | 1-1/4 |
| 5306200 | 1-1/2 | 4-1/2 | 2 | 1-1/4 |
| 5306300 | 1-3/4 | 4-1/2 | 2 | 1-1/4 |
| 5306400 | 2 | 4-1/2 | 2 | 1-1/4 |

Packed: 1pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

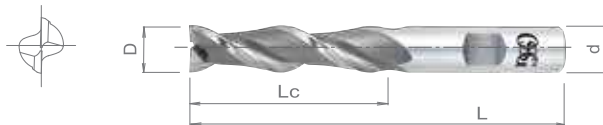


List 535

AL-EDL, 2 Flute, Long Length, for Aluminum, High Helix

| | | | | | |
|---------------------------------|---------------|-----------|--|-------------|------------|
| SPEED FEED P1297-1298 | HSS-Co | BR | | LONG | 40° |
|---------------------------------|---------------|-----------|--|-------------|------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/4 ≤ D ≤ 2 | +0.0011" / -0 |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5350300 | 1/4 | 3-1/16 | 1-1/4 | 3/8 |
| 5350400 | 5/16 | 3-1/8 | 1-3/8 | 3/8 |
| 5350500 | 3/8 | 3-1/4 | 1-1/2 | 3/8 |
| 5351000 | 7/16 | 3-3/4 | 1-3/4 | 1/2 |
| 5351100 | 1/2 | 4 | 2 | 1/2 |
| 5352100 | 5/8 | 4-5/8 | 2-1/2 | 5/8 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5353100 | 3/4 | 5-1/4 | 3 | 3/4 |
| 5355100 | 1 | 6-1/2 | 4 | 1 |
| 5356100 | 1-1/4 | 6-1/2 | 4 | 1-1/4 |
| 5356200 | 1-1/2 | 6-1/2 | 4 | 1-1/4 |
| 5356400 | 2 | 6-1/2 | 4 | 1-1/4 |

Packed: 1pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

| Chart applies to all list numbers above | P | | | | | M | | | K | N | | S | | H | | | |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| | 1010 | 1035 | 1065 | 4140 | 4340 | | | | 6061 | 7075 | | | | | | | |
| - | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

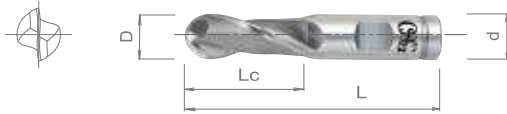


List 521

EBD, 2 Flute, Regular Length, Ball End

| | | | | | |
|----------------------------|---------------|-----------|---|------------|------------|
| SPEED FEED P1301 | HSS-Co | BR |  | REG | 30° |
|----------------------------|---------------|-----------|---|------------|------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/8 ≤ D ≤ 1, 1/2 | +0.0011" / -0 |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5210100 | 1/8 | 2-5/16 | 3/8 | 3/8 |
| 5210200 | 3/16 | 2-3/8 | 1/2 | 3/8 |
| 5210300 | 1/4 | 2-7/16 | 5/8 | 3/8 |
| 5210400 | 5/16 | 2-1/2 | 3/4 | 3/8 |
| 5210500 | 3/8 | 2-1/2 | 3/4 | 3/8 |
| 5210600 | 3/8 | 3-1/4 | 1-1/2 | 3/8 |
| 5219600 | 7/16 | 3 | 1 | 1/2 |
| 5211100 | 1/2 | 3 | 1 | 1/2 |
| 5217100 | 1/2 | 4 | 2 | 1/2 |
| 5211200 | 9/16 | 3-1/8 | 1-1/8 | 1/2 |
| 5211300 | 5/8 | 3-1/8 | 1-1/8 | 1/2 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5212100 | 5/8 | 3-1/2 | 1-3/8 | 5/8 |
| 5211500 | 3/4 | 3-5/16 | 1-5/16 | 1/2 |
| 5213100 | 3/4 | 3-7/8 | 1-5/8 | 3/4 |
| 5214300 | 3/4 | 5-1/4 | 3 | 3/4 |
| 5213200 | 7/8 | 4-1/8 | 1-7/8 | 3/4 |
| 5214100 | 7/8 | 4-1/4 | 2 | 7/8 |
| 5213300 | 1 | 4-1/2 | 2-1/4 | 3/4 |
| 5215100 | 1 | 4-3/4 | 2-1/4 | 1 |
| 5215200 | 1-1/8 | 4-3/4 | 2-1/4 | 1 |
| 5216100 | 1-1/4 | 5 | 2-1/2 | 1-1/4 |
| 5216200 | 1-1/2 | 5 | 2-1/2 | 1-1/4 |

Packed: 1pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

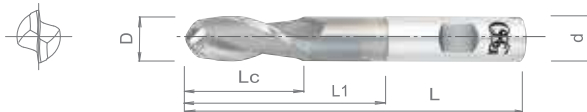


List 526

LS-EBD, 2 Flute, Regular Length, Ball End, Reduced Neck

| | | | | | |
|----------------------------|---------------|-----------|--|------------|------------|
| SPEED FEED P1301 | HSS-Co | BR |  | REG | 30° |
|----------------------------|---------------|-----------|--|------------|------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/8 ≤ D ≤ 1 | +0.0011" / -0 |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|----------------|
| Bright | D | L | Lc | L1 | d |
| 5260100 | 1/8 | 2-3/8 | 3/8 | 13/16 | 3/8 |
| 5260200 | 3/16 | 2-11/16 | 1/2 | 1-1/8 | 3/8 |
| 5260300 | 1/4 | 3-1/16 | 5/8 | 1-1/2 | 3/8 |
| 5260400 | 5/16 | 3-5/16 | 3/4 | 1-3/4 | 3/8 |
| 5260500 | 3/8 | 3-5/16 | 3/4 | 1-3/4 | 3/8 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Neck Length | Shank Diameter |
|------------|---------------|----------------|---------------|-------------|----------------|
| Bright | D | L | Lc | L1 | d |
| 5269600 | 7/16 | 3-11/16 | 1 | 1-7/8 | 1/2 |
| 5261100 | 1/2 | 4 | 1 | 2-1/4 | 1/2 |
| 5262100 | 5/8 | 4-5/8 | 1-3/8 | 2-3/4 | 5/8 |
| 5263100 | 3/4 | 5-3/8 | 1-5/8 | 3-3/8 | 3/4 |
| 5265100 | 1 | 7-1/4 | 2-1/2 | 5 | 1 |

Packed: 1pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

| Chart applies to all list numbers above | P | | | | | M | | | K | N | | S | | H | | | |
|---|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| | 1010 | 1035 | 1065 | 4140 | 4340 | | | | | | | | | | | | |
| - | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best



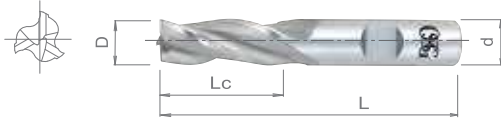


List 531

ETS, 3 Flute, Regular Length

| | | | | | |
|----------------------------|---------------|-----------|--|------------|------------|
| SPEED FEED P1304 | HSS-Co | BR | | REG | 30° |
|----------------------------|---------------|-----------|--|------------|------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/8 ≤ D ≤ 2 | +0.0011" / -0 |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5310100 | 1/8 | 2-5/16 | 3/8 | 3/8 |
| 5310200 | 3/16 | 2-3/8 | 1/2 | 3/8 |
| 5310300 | 1/4 | 2-7/16 | 5/8 | 3/8 |
| 5310400 | 5/16 | 2-1/2 | 3/4 | 3/8 |
| 5310500 | 3/8 | 2-1/2 | 3/4 | 3/8 |
| 5310600 | 7/16 | 2-11/16 | 1 | 3/8 |
| 5310700 | 1/2 | 2-11/16 | 1 | 3/8 |
| 5311100 | 1/2 | 3-1/4 | 1-1/4 | 1/2 |
| 5311200 | 9/16 | 3-3/8 | 1-3/8 | 1/2 |
| 5311300 | 5/8 | 3-3/8 | 1-3/8 | 1/2 |
| 5312100 | 5/8 | 3-3/4 | 1-5/8 | 5/8 |
| 5311500 | 3/4 | 3-5/8 | 1-5/8 | 1/2 |
| 5312300 | 3/4 | 3-3/4 | 1-5/8 | 5/8 |
| 5313100 | 3/4 | 3-7/8 | 1-5/8 | 3/4 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5312500 | 7/8 | 4 | 1-7/8 | 5/8 |
| 5313200 | 7/8 | 4-1/8 | 1-7/8 | 3/4 |
| 5314100 | 7/8 | 4-1/8 | 1-7/8 | 7/8 |
| 5312700 | 1 | 4 | 1-7/8 | 5/8 |
| 5313300 | 1 | 4-1/8 | 1-7/8 | 3/4 |
| 5314200 | 1 | 4-1/8 | 1-7/8 | 7/8 |
| 5315100 | 1 | 4-1/2 | 2 | 1 |
| 5315200 | 1-1/8 | 4-1/2 | 2 | 1 |
| 5315300 | 1-1/4 | 4-1/2 | 2 | 1 |
| 5316100 | 1-1/4 | 4-1/2 | 2 | 1-1/4 |
| 5315500 | 1-1/2 | 4-1/2 | 2 | 1 |
| 5316200 | 1-1/2 | 4-1/2 | 2 | 1-1/4 |
| 5316300 | 1-3/4 | 4-1/2 | 2 | 1-1/4 |
| 5316400 | 2 | 4-1/2 | 2 | 1-1/4 |

Packed: 1pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 531 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

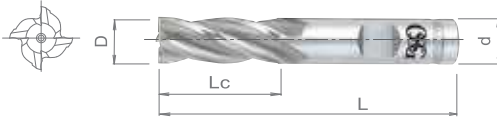


List 581

CE-EMS, Multiple Flute, Regular Length, Non-Center Cutting

| | | | | | |
|----------------------------|---------------|-----------|--|------------|------------|
| SPEED FEED P1303 | HSS-Co | BR | | REG | 30° |
|----------------------------|---------------|-----------|--|------------|------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 3 ≤ D ≤ 45 | +0.028mm / -0 |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | Number of Flutes |
|------------|---------------|----------------|---------------|----------------|------------------|
| Bright | D | L | Lc | d | |
| 5810100 | 3.0 | 58.7 | 9.52 | 9.52 | 4 |
| 5818100 | 3.5 | 60.3 | 11.11 | 9.52 | 4 |
| 5810200 | 4.0 | 60.3 | 11.11 | 9.52 | 4 |
| 5818200 | 4.5 | 60.3 | 12.70 | 9.52 | 4 |
| 5810300 | 5.0 | 61.9 | 14.28 | 9.52 | 4 |
| 5818300 | 5.5 | 61.9 | 14.28 | 9.52 | 4 |
| 5810400 | 6.0 | 61.9 | 15.87 | 9.52 | 4 |
| 5818400 | 6.5 | 61.9 | 15.87 | 9.52 | 4 |
| 5810500 | 7.0 | 63.5 | 17.46 | 9.52 | 4 |
| 5818500 | 7.5 | 63.5 | 19.05 | 9.52 | 4 |
| 5810600 | 8.0 | 63.5 | 19.05 | 9.52 | 4 |
| 5818600 | 8.5 | 63.5 | 19.05 | 9.52 | 4 |
| 5810700 | 9.0 | 63.5 | 19.05 | 9.52 | 4 |
| 5818700 | 9.5 | 63.5 | 19.05 | 9.52 | 4 |
| 5810800 | 10.0 | 63.5 | 19.05 | 9.52 | 4 |
| 5818800 | 10.5 | 68.2 | 25.40 | 9.52 | 4 |
| 5810900 | 11.0 | 68.2 | 25.40 | 9.52 | 4 |
| 5818900 | 11.5 | 68.2 | 25.40 | 9.52 | 4 |
| 5811100 | 12.0 | 82.5 | 31.75 | 12.70 | 4 |
| 5819100 | 12.5 | 82.5 | 31.75 | 12.70 | 4 |
| 5811200 | 13.0 | 82.5 | 31.75 | 12.70 | 4 |
| 5819200 | 13.5 | 85.7 | 34.92 | 12.70 | 4 |
| 5811300 | 14.0 | 85.7 | 34.92 | 12.70 | 4 |
| 5819300 | 14.5 | 85.7 | 34.92 | 12.70 | 4 |
| 5811400 | 15.0 | 85.7 | 34.92 | 12.70 | 4 |
| 5812100 | 16.0 | 95.2 | 41.27 | 15.87 | 4 |
| 5812200 | 17.0 | 95.2 | 41.27 | 15.87 | 4 |
| 5812300 | 18.0 | 95.2 | 41.27 | 15.87 | 4 |
| 5813100 | 19.0 | 98.4 | 41.27 | 19.05 | 4 |
| 5813200 | 20.0 | 104.7 | 47.62 | 19.05 | 4 |
| 5813300 | 21.0 | 104.7 | 47.62 | 19.05 | 4 |
| 5814100 | 22.0 | 104.7 | 47.62 | 22.22 | 4 |
| 5814200 | 23.0 | 104.7 | 47.62 | 22.22 | 4 |
| 5815100 | 24.0 | 114.3 | 50.80 | 25.40 | 4 |
| 5815200 | 25.0 | 114.3 | 50.80 | 25.40 | 4 |
| 5815300 | 28.0 | 114.3 | 50.80 | 25.40 | 6 |
| 5816100 | 32.0 | 114.3 | 50.80 | 31.75 | 6 |
| 5816200 | 36.0 | 114.3 | 50.80 | 31.75 | 6 |
| 5816300 | 40.0 | 114.3 | 50.80 | 31.75 | 6 |
| 5816400 | 45.0 | 114.3 | 50.80 | 31.75 | 6 |

Packed: 1pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 581 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





Single End

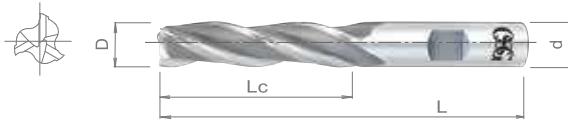
Cobalt High Speed Steel

List 536

ETL, 3 Flute, Long Length

| | | | | | |
|----------------------------|---------------|-----------|--|-------------|------------|
| SPEED FEED P1304 | HSS-Co | BR | | LONG | 30° |
|----------------------------|---------------|-----------|--|-------------|------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/4 ≤ D ≤ 2 | +0.0011" / -0 |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 5360300 | 1/4 | 3-1/16 | 1-1/4 | 3/8 |
| 5360400 | 5/16 | 3-1/8 | 1-3/8 | 3/8 |
| 5360500 | 3/8 | 3-1/4 | 1-1/2 | 3/8 |
| 5361000 | 7/16 | 3-3/4 | 1-3/4 | 1/2 |
| 5361100 | 1/2 | 4 | 2 | 1/2 |
| 5362100 | 5/8 | 4-5/8 | 2-1/2 | 5/8 |
| 5363100 | 3/4 | 5-1/4 | 3 | 3/4 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 5364100 | 7/8 | 5-3/4 | 3-1/2 | 7/8 |
| 5365100 | 1 | 6-1/2 | 4 | 1 |
| 5366100 | 1-1/4 | 6-1/2 | 4 | 1-1/4 |
| 5366200 | 1-1/2 | 6-1/2 | 4 | 1-1/4 |
| 5366400 | 2 | 6-1/2 | 4 | 1-1/4 |



Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 536 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

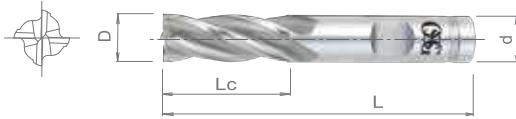


List 541

Multiple Flute, Regular Length

| | | | | | | | |
|--------------------------|--------|-------|------|-----|----|-----|-----|
| SPEED FEED P1299-1300 | HSS-Co | TiAlN | TiCN | TiN | BR | REG | 30° |
|--------------------------|--------|-------|------|-----|----|-----|-----|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/8 ≤ D ≤ 2 | +0.0011" / -0 |



Units: Inch

| EDP | | | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | Number of Flutes |
|---------|---------|---------|---------|---------------|----------------|---------------|----------------|------------------|
| Bright | TiN | TiCN | TiAlN | D | L | Lc | d | |
| 5410100 | 5410105 | 5410108 | - | 1/8 | 2-5/16 | 3/8 | 3/8 | 4 |
| 5410200 | 5410205 | 5410208 | - | 3/16 | 2-3/8 | 1/2 | 3/8 | 4 |
| 5417000 | - | - | - | 1/4 | 2-1/16 | 1/4 | 3/8 | 4 |
| 5410300 | 5410305 | 5410308 | - | 1/4 | 2-7/16 | 5/8 | 3/8 | 4 |
| 5410400 | 5410405 | 5410408 | - | 5/16 | 2-1/2 | 3/4 | 3/8 | 4 |
| 5417100 | - | 5417108 | - | 3/8 | 2-1/8 | 3/8 | 3/8 | 4 |
| 5410500 | 5410505 | 5410508 | - | 3/8 | 2-1/2 | 3/4 | 3/8 | 4 |
| 5410900 | - | - | - | 7/16 | 3-1/4 | 1-1/4 | 1/2 | 4 |
| 5411000 | - | 5411008 | - | 1/2 | 2-1/2 | 1/2 | 1/2 | 4 |
| 5411100 | 5411105 | - | - | 1/2 | 3-1/4 | 1-1/4 | 1/2 | 4 |
| 5411500 | - | - | - | 1/2 | 3-1/4 | 1-1/4 | 1/2 | 6 |
| 5411700 | - | - | - | 9/16 | 3-3/8 | 1-3/8 | 1/2 | 4 |
| 5412000 | - | 5412008 | - | 5/8 | 2-3/4 | 5/8 | 5/8 | 4 |
| 5412100 | 5412105 | 5412108 | 5412111 | 5/8 | 3-3/4 | 1-5/8 | 5/8 | 4 |
| 5412500 | - | 5412508 | - | 5/8 | 3-3/4 | 1-5/8 | 5/8 | 6 |
| 5412200 | - | - | - | 11/16 | 3-3/4 | 1-5/8 | 5/8 | 4 |
| 5412600 | - | - | - | 11/16 | 3-3/4 | 1-5/8 | 5/8 | 6 |
| 5413000 | - | - | - | 3/4 | 3 | 3/4 | 3/4 | 4 |
| 5413100 | 5413105 | 5413108 | - | 3/4 | 3-7/8 | 1-5/8 | 3/4 | 4 |
| 5413500 | - | - | - | 3/4 | 3-7/8 | 1-5/8 | 3/4 | 6 |
| 5414100 | 5414105 | 5414108 | - | 7/8 | 4-1/8 | 1-7/8 | 7/8 | 4 |
| 5414500 | - | - | - | 7/8 | 4-1/8 | 1-7/8 | 7/8 | 6 |
| 5414900 | - | - | - | 1 | 4-1/8 | 1-7/8 | 3/4 | 4 |
| 5415000 | - | - | - | 1 | 4-1/8 | 1-7/8 | 3/4 | 6 |
| 5415100 | 5415105 | 5415108 | 5415111 | 1 | 4-1/2 | 2 | 1 | 4 |
| 5415500 | - | - | 5415511 | 1 | 4-1/2 | 2 | 1 | 6 |
| 5415200 | - | - | - | 1-1/8 | 4-1/2 | 2 | 1 | 4 |
| 5415600 | - | - | - | 1-1/8 | 4-1/2 | 2 | 1 | 6 |
| 5416100 | - | 5416108 | - | 1-1/4 | 4-1/2 | 2 | 1-1/4 | 4 |
| 5416500 | - | - | - | 1-1/4 | 4-1/2 | 2 | 1-1/4 | 6 |
| 5416200 | - | 5416208 | - | 1-1/2 | 4-1/2 | 2 | 1-1/4 | 4 |
| 5416600 | - | - | - | 1-1/2 | 4-1/2 | 2 | 1-1/4 | 6 |
| 5416400 | - | - | - | 2 | 4-1/2 | 2 | 1-1/4 | 6 |
| 5418400 | - | - | - | 2 | 5-3/4 | 2 | 2 | 6 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| List No. | Work Material | | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 541 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



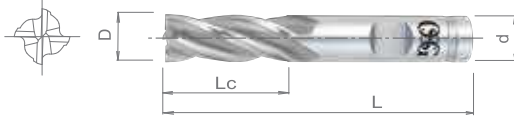


List 548

CC-EMN, 4 Flute, Medium Length

| | | | | | |
|--------------------------|--------|------|----|-----|-----|
| SPEED FEED P1299-1300 | HSS-Co | TiCN | BR | MED | 30° |
|--------------------------|--------|------|----|-----|-----|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 5/8 ≤ D ≤ 1,1/2 | +0.0011" / -0 |



Units: Inch

| EDP Number | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | Number of Flutes |
|------------|---------|---------------|----------------|---------------|----------------|------------------|
| Bright | TiCN | D | L | Lc | d | |
| 5483100 | - | 5/8 | 4-1/8 | 2 | 5/8 | 4 |
| 5484100 | 5484108 | 3/4 | 4-1/2 | 2-1/4 | 3/4 | 4 |
| 5485100 | 5485108 | 1 | 5-1/2 | 3 | 1 | 4 |
| - | 5485208 | 1 | 5-1/2 | 3 | 1 | 4 |
| 5486100 | 5486108 | 1-1/4 | 5-1/2 | 3 | 1-1/4 | 4 |
| 5486200 | 5486208 | 1-1/2 | 5-1/2 | 3 | 1-1/4 | 4 |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

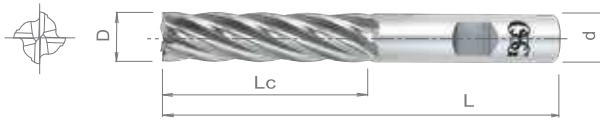


List 546

CC-EML, Multiple Flute, Long Length

| | | | | | |
|--------------------------|--------|------|----|------|-----|
| SPEED FEED P1299-1300 | HSS-Co | TiCN | BR | LONG | 30° |
|--------------------------|--------|------|----|------|-----|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/4 ≤ D ≤ 2 | +0.0011" / -0 |



Units: Inch

| EDP Number | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | Number of Flutes |
|------------|---------|---------------|----------------|---------------|----------------|------------------|
| Bright | TiCN | D | L | Lc | d | |
| 5460300 | 5460308 | 1/4 | 3-1/16 | 1-1/4 | 3/8 | 4 |
| 5460400 | 5460408 | 5/16 | 3-1/8 | 1-3/8 | 3/8 | 4 |
| 5460500 | 5460508 | 3/8 | 3-1/4 | 1-1/2 | 3/8 | 4 |
| 5461100 | 5461108 | 1/2 | 4 | 2 | 1/2 | 4 |
| 5461500 | - | 1/2 | 4 | 2 | 1/2 | 6 |
| 5462100 | 5462108 | 5/8 | 4-5/8 | 2-1/2 | 5/8 | 4 |
| 5462500 | - | 5/8 | 4-5/8 | 2-1/2 | 5/8 | 6 |
| 5463100 | 5463108 | 3/4 | 5-1/4 | 3 | 3/4 | 4 |
| 5463500 | - | 3/4 | 5-1/4 | 3 | 3/4 | 6 |
| 5464100 | 5464108 | 7/8 | 5-3/4 | 3-1/2 | 7/8 | 4 |
| 5464500 | - | 7/8 | 5-3/4 | 3-1/2 | 7/8 | 6 |
| 5465100 | 5465108 | 1 | 6-1/2 | 4 | 1 | 4 |
| 5465500 | - | 1 | 6-1/2 | 4 | 1 | 6 |
| 5466100 | - | 1-1/4 | 6-1/2 | 4 | 1-1/4 | 4 |
| 5466500 | - | 1-1/4 | 6-1/2 | 4 | 1-1/4 | 6 |
| 5466600 | - | 1-1/2 | 6-1/2 | 4 | 1-1/4 | 6 |
| 5466400 | - | 2 | 6-1/2 | 4 | 1-1/4 | 6 |
| 5468400 | - | 2 | 7-3/4 | 4 | 2 | 6 |
| 5469400 | - | 2 | 9-3/4 | 6 | 2 | 6 |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

| Chart applies to all list numbers above | P | | | | | M | | | K | N | | S | | H | | | |
|---|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| - | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

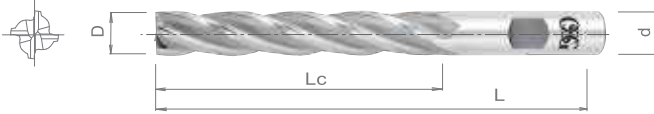


List 558

CC-EXML, Multiple Flute, Extra Long Length

| | | | | | | |
|--------------------------|--------|------|----|---|------------|-----|
| SPEED FEED P1299-1300 | HSS-Co | TiCN | BR |  | EXTRA LONG | 30° |
|--------------------------|--------|------|----|---|------------|-----|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/4 ≤ D ≤ 2 | +0.0011" / -0 |



Units: Inch

| EDP Number | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | Number of Flutes |
|------------|---------|---------------|----------------|---------------|----------------|------------------|
| Bright | TiCN | D | L | Lc | d | |
| 5580300 | - | 1/4 | 3-9/16 | 1-3/4 | 3/8 | 4 |
| 5580400 | - | 5/16 | 3-3/4 | 2 | 3/8 | 4 |
| 5580500 | - | 3/8 | 4-1/4 | 2-1/2 | 3/8 | 4 |
| 5581100 | 5581108 | 1/2 | 5 | 3 | 1/2 | 4 |
| 5581500 | - | 1/2 | 5 | 3 | 1/2 | 6 |
| 5582100 | 5582108 | 5/8 | 6-1/8 | 4 | 5/8 | 4 |
| 5582500 | - | 5/8 | 6-1/8 | 4 | 5/8 | 6 |
| 5583100 | 5583108 | 3/4 | 6-1/4 | 4 | 3/4 | 4 |
| 5583500 | - | 3/4 | 6-1/4 | 4 | 3/4 | 6 |
| 5584100 | 5584108 | 7/8 | 7-1/4 | 5 | 7/8 | 4 |
| 5584500 | - | 7/8 | 7-1/4 | 5 | 7/8 | 6 |
| 5585100 | 5585108 | 1 | 8-1/2 | 6 | 1 | 4 |
| 5585500 | 5585508 | 1 | 8-1/2 | 6 | 1 | 6 |
| 5586100 | - | 1-1/4 | 8-1/2 | 6 | 1-1/4 | 4 |
| 5586500 | - | 1-1/4 | 8-1/2 | 6 | 1-1/4 | 6 |
| 5586600 | - | 1-1/2 | 10-1/2 | 8 | 1-1/4 | 6 |
| 5588400 | - | 2 | 11-3/4 | 8 | 2 | 6 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



| List No. | Work Material | | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | | |
| 558 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



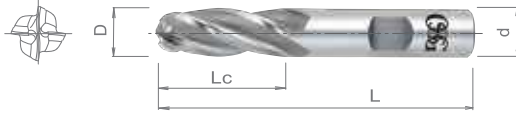


List 544

EBM, 4 Flute, Regular Length, Ball End

| | | | | | |
|----------------------------|---------------|-----------|--|------------|------------|
| SPEED FEED P1301 | HSS-Co | BR | | REG | 30° |
|----------------------------|---------------|-----------|--|------------|------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 3/8 ≤ D ≤ 1,1/2 | +0.0011" / -0 |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5440500 | 3/8 | 2-1/2 | 3/4 | 3/8 |
| 5449700 | 7/16 | 3-1/4 | 1-1/4 | 1/2 |
| 5441100 | 1/2 | 3-1/4 | 1-1/4 | 1/2 |
| 5442100 | 5/8 | 3-3/4 | 1-5/8 | 5/8 |
| 5442200 | 5/8 | 4-5/8 | 2-1/2 | 5/8 |
| 5443100 | 3/4 | 3-7/8 | 1-5/8 | 3/4 |
| 5444100 | 7/8 | 4-1/8 | 1-7/8 | 7/8 |
| 5445100 | 1 | 4-1/2 | 2 | 1 |
| 5446100 | 1-1/4 | 4-1/2 | 2 | 1-1/4 |
| 5446200 | 1-1/2 | 4-1/2 | 2 | 1-1/4 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 544 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

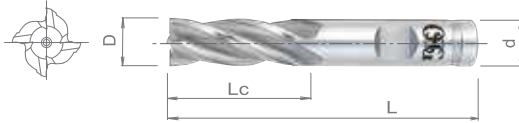


List 540

Multiple Flute, Regular Length, Non-Center Cutting

| | | | | | |
|--------------------------|--------|-----|----|-----|-----|
| SPEED FEED P1299-1300 | HSS-Co | TiN | BR | REG | 30° |
|--------------------------|--------|-----|----|-----|-----|

| Milling Diameter Tolerance | |
|----------------------------|--------------|
| 1/8 ≤ D ≤ 2 | +0.003" / -0 |



Units: Inch

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Shank Dia. | No. of Flutes | | |
|------------|-----------|----------------|---------------|------------|---------------|--------|-----|
| | | | | | | Bright | TiN |
| | D | L | Lc | d | | | |
| 5400100 | 5400105 | 1/8 | 2-5/16 | 3/8 | 3/8 | 4 | |
| 5409100 | - | 5/32 | 2-3/8 | 7/16 | 3/8 | 4 | |
| 5400200 | 5400205 | 3/16 | 2-3/8 | 1/2 | 3/8 | 4 | |
| 5409200 | - | 7/32 | 2-7/16 | 9/16 | 3/8 | 4 | |
| 5400300 | 5400305 | 1/4 | 2-7/16 | 5/8 | 3/8 | 4 | |
| 5409300 | - | 9/32 | 2-1/2 | 11/16 | 3/8 | 4 | |
| 5400400 | 5400405 | 5/16 | 2-1/2 | 3/4 | 3/8 | 4 | |
| 5409400 | - | 11/32 | 2-1/2 | 3/4 | 3/8 | 4 | |
| 5400500 | 5400505 | 3/8 | 2-1/2 | 3/4 | 3/8 | 4 | |
| 5409500 | - | 13/32 | 2-11/16 | 1 | 3/8 | 4 | |
| 5400600 | 5400605 | 7/16 | 2-11/16 | 1 | 3/8 | 4 | |
| 5409700 | - | 15/32 | 3-1/4 | 1-1/4 | 1/2 | 4 | |
| 5400700 | - | 1/2 | 2-11/16 | 1 | 3/8 | 4 | |
| 5401100 | 5401105 | 1/2 | 3-1/4 | 1-1/4 | 1/2 | 4 | |
| 5401600 | - | 17/32 | 3-3/8 | 1-3/8 | 1/2 | 4 | |
| 5401200 | - | 9/16 | 3-3/8 | 1-3/8 | 1/2 | 4 | |
| 5401700 | - | 19/32 | 3-3/8 | 1-3/8 | 1/2 | 4 | |
| 5401300 | 5401305 | 5/8 | 3-3/8 | 1-3/8 | 1/2 | 4 | |
| 5402100 | - | 5/8 | 3-3/4 | 1-5/8 | 5/8 | 4 | |
| 5401800 | - | 21/32 | 3-5/8 | 1-5/8 | 1/2 | 4 | |
| 5401400 | - | 11/16 | 3-5/8 | 1-5/8 | 1/2 | 4 | |
| 5402200 | - | 11/16 | 3-3/4 | 1-5/8 | 5/8 | 4 | |
| 5401900 | - | 23/32 | 3-5/8 | 1-5/8 | 1/2 | 4 | |
| 5401500 | 5401505 | 3/4 | 3-5/8 | 1-5/8 | 1/2 | 4 | |
| 5402300 | - | 3/4 | 3-3/4 | 1-5/8 | 5/8 | 4 | |
| 5403100 | 5403105 | 3/4 | 3-7/8 | 1-5/8 | 3/4 | 4 | |

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Shank Dia. | No. of Flutes | | |
|------------|-----------|----------------|---------------|------------|---------------|--------|-----|
| | | | | | | Bright | TiN |
| | D | L | Lc | d | | | |
| 5402800 | - | 25/32 | 4 | 1-7/8 | 5/8 | 4 | |
| 5402400 | - | 13/16 | 4 | 1-7/8 | 5/8 | 6 | |
| 5402900 | - | 27/32 | 4 | 1-7/8 | 5/8 | 6 | |
| 5402500 | - | 7/8 | 4 | 1-7/8 | 5/8 | 6 | |
| 5403200 | 5403205 | 7/8 | 4-1/8 | 1-7/8 | 3/4 | 4 | |
| 5404100 | - | 7/8 | 4-1/8 | 1-7/8 | 7/8 | 4 | |
| 5403400 | - | 29/32 | 4-1/8 | 1-7/8 | 3/4 | 4 | |
| 5402600 | - | 15/16 | 4 | 1-7/8 | 5/8 | 6 | |
| 5403500 | - | 31/32 | 4-1/8 | 1-7/8 | 3/4 | 4 | |
| 5402700 | - | 1 | 4 | 1-7/8 | 5/8 | 6 | |
| 5403300 | 5403305 | 1 | 4-1/8 | 1-7/8 | 3/4 | 4 | |
| 5404200 | - | 1 | 4-1/8 | 1-7/8 | 7/8 | 4 | |
| 5405100 | 5405105 | 1 | 4-1/2 | 2 | 1 | 4 | |
| 5404300 | - | 1-1/8 | 4-1/4 | 2 | 7/8 | 6 | |
| 5405200 | - | 1-1/8 | 4-1/2 | 2 | 1 | 6 | |
| 5404400 | - | 1-1/4 | 4-1/4 | 2 | 7/8 | 6 | |
| 5405300 | - | 1-1/4 | 4-1/2 | 2 | 1 | 6 | |
| 5406100 | - | 1-1/4 | 4-1/2 | 2 | 1-1/4 | 6 | |
| 5405400 | - | 1-3/8 | 4-1/2 | 2 | 1 | 6 | |
| 5405500 | - | 1-1/2 | 4-1/2 | 2 | 1 | 6 | |
| 5406200 | - | 1-1/2 | 4-1/2 | 2 | 1-1/4 | 6 | |
| 5406300 | - | 1-3/4 | 4-1/2 | 2 | 1-1/4 | 6 | |
| 5406400 | - | 2 | 4-1/2 | 2 | 1-1/4 | 8 | |
| 5407400 | - | 2 | 5-3/4 | 2 | 2 | 4 | |
| 5408400 | - | 2 | 5-3/4 | 2 | 2 | 6 | |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.
Note: 2" diameter shanks have combination drive.



| List No. | Work Material | | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 540 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





Single End

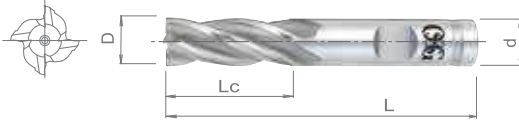
Cobalt High Speed Steel

List 547

CE-EMS, Multiple Flute, Medium Length, Non-Center Cutting

| | | | | | |
|---------------------------------|---------------|-----------|--|------------|------------|
| SPEED FEED P1299-1300 | HSS-Co | BR | | MED | 30° |
|---------------------------------|---------------|-----------|--|------------|------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1 ≤ D ≤ 2 | +0.0011" / -0 |



Units: Inch

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Shank Dia. | No. of Flutes |
|------------|-----------|----------------|---------------|------------|---------------|
| Bright | D | L | Lc | d | |
| 5475100 | 1 | 5-1/2 | 3 | 1 | 4 |
| 5476100 | 1-1/4 | 5-1/2 | 3 | 1-1/4 | 6 |
| 5476200 | 1-1/2 | 5-1/2 | 3 | 1-1/4 | 6 |

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Shank Dia. | No. of Flutes |
|------------|-----------|----------------|---------------|------------|---------------|
| Bright | D | L | Lc | d | |
| 5476300 | 1-3/4 | 5-1/2 | 3 | 1-1/4 | 6 |
| 5476400 | 2 | 5-1/2 | 3 | 1-1/4 | 8 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.
Note: 2" diameter shanks have combination drive.



List 545

EML, Multiple Flute, Long Length, Non-Center Cutting

| | | | | | |
|---------------------------------|---------------|-----------|--|-------------|------------|
| SPEED FEED P1299-1300 | HSS-Co | BR | | LONG | 30° |
|---------------------------------|---------------|-----------|--|-------------|------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/4 ≤ D ≤ 2 | +0.0011" / -0 |



Units: Inch

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Shank Dia. | No. of Flutes |
|------------|-----------|----------------|---------------|------------|---------------|
| Bright | D | L | Lc | d | |
| 5450300 | 1/4 | 3-1/16 | 1-1/4 | 3/8 | 4 |
| 5450400 | 5/16 | 3-1/8 | 1-3/8 | 3/8 | 4 |
| 5450500 | 3/8 | 3-1/4 | 1-1/2 | 3/8 | 4 |
| 5451000 | 7/16 | 3-3/4 | 1-3/4 | 1/2 | 4 |
| 5451100 | 1/2 | 4 | 2 | 1/2 | 4 |
| 5452100 | 5/8 | 4-5/8 | 2-1/2 | 5/8 | 4 |
| 5453100 | 3/4 | 5-1/4 | 3 | 3/4 | 4 |
| 5454100 | 7/8 | 5-3/4 | 3-1/2 | 7/8 | 4 |
| 5455100 | 1 | 6-1/2 | 4 | 1 | 4 |

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Shank Dia. | No. of Flutes |
|------------|-----------|----------------|---------------|------------|---------------|
| Bright | D | L | Lc | d | |
| 5455200 | 1-1/8 | 6-1/2 | 4 | 1 | 6 |
| 5455300 | 1-1/4 | 6-1/2 | 4 | 1 | 6 |
| 5456100 | 1-1/4 | 6-1/2 | 4 | 1-1/4 | 6 |
| 5455500 | 1-1/2 | 6-1/2 | 4 | 1 | 6 |
| 5456200 | 1-1/2 | 6-1/2 | 4 | 1-1/4 | 6 |
| 5456300 | 1-3/4 | 6-1/2 | 4 | 1-1/4 | 6 |
| 5456400 | 2 | 6-1/2 | 4 | 1-1/4 | 8 |
| 5457400 | 2 | 7-3/4 | 4 | 2 | 4 |
| 5458400 | 2 | 7-3/4 | 4 | 2 | 6 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.
Note: 2" diameter shanks have combination drive.



Work Material

| Chart applies to all list numbers above | P | | | | | M | | | K | N | | S | | H | | | | |
|---|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| - | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



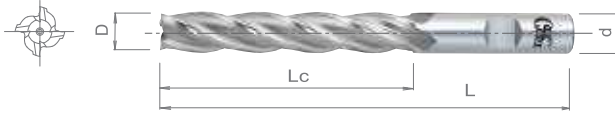


List 557

CE-EXML, Multiple Flute, Extra Long Length, Non-Center Cutting

| | | | | | |
|---------------------------------|---------------|-----------|--|-------------------|------------|
| SPEED FEED P1299-1300 | HSS-Co | BR | | EXTRA LONG | 30° |
|---------------------------------|---------------|-----------|--|-------------------|------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/4 ≤ D ≤ 2 | +0.0011" / -0 |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | Number of Flutes |
|------------|---------------|----------------|---------------|----------------|------------------|
| Bright | D | L | Lc | d | |
| 5570300 | 1/4 | 3-9/16 | 1-3/4 | 3/8 | 4 |
| 5570400 | 5/16 | 3-3/4 | 2 | 3/8 | 4 |
| 5570500 | 3/8 | 4-1/4 | 2-1/2 | 3/8 | 4 |
| 5571100 | 1/2 | 5 | 3 | 1/2 | 4 |
| 5572100 | 5/8 | 6-1/8 | 4 | 5/8 | 4 |
| 5573100 | 3/4 | 6-1/4 | 4 | 3/4 | 4 |
| 5574100 | 7/8 | 7-1/4 | 5 | 7/8 | 4 |
| 5575100 | 1 | 8-1/2 | 6 | 1 | 4 |
| 5576100 | 1-1/4 | 8-1/2 | 6 | 1-1/4 | 6 |
| 5576200 | 1-1/2 | 10-1/2 | 8 | 1-1/4 | 6 |
| 5578400 | 2 | 11-3/4 | 8 | 2 | 6 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 557 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



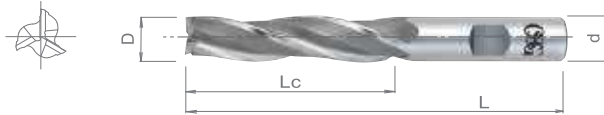


List 591

TPET, 3 Flute, 1° Taper per Side

| | | | | | | | |
|----------------------------|---------------|-----------|--|------------|-------------|-------------------|------------|
| SPEED FEED P1305 | HSS-Co | BR | | REG | LONG | EXTRA LONG | 25° |
|----------------------------|---------------|-----------|--|------------|-------------|-------------------|------------|

| Taper Angle Tolerance | |
|-----------------------|-----------|
| 1/6 ≤ D ≤ 5/8 | +0 / -10' |



Units: Inch

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Shank Dia. |
|------------|-----------|----------------|---------------|------------|
| Bright | D | L | Lc | d |
| 5910100 | 1/16 | 1-3/4 | 1/2 | 3/16 |
| 5910200 | 1/16 | 2-1/4 | 1 | 3/16 |
| 5911100 | 5/64 | 1-3/4 | 1/2 | 3/16 |
| 5911200 | 5/64 | 2-1/4 | 1 | 3/16 |
| 5912100 | 3/32 | 2 | 3/4 | 3/16 |
| 5912400 | 3/32 | 2-11/16 | 1-1/2 | 3/16 |
| 5914100 | 1/8 | 1-5/8 | 3/8 | 3/16 |
| 5914200 | 1/8 | 2 | 3/4 | 3/16 |
| 5914300 | 1/8 | 2-1/4 | 1 | 3/16 |
| 5915100 | 3/16 | 2-5/8 | 3/4 | 3/8 |
| 5915200 | 3/16 | 3-1/8 | 1-1/4 | 3/8 |

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Shank Dia. |
|------------|-----------|----------------|---------------|------------|
| Bright | D | L | Lc | d |
| 5916100 | 1/4 | 2-1/2 | 3/4 | 3/8 |
| 5916300 | 1/4 | 3 | 1-1/4 | 3/8 |
| 5916400 | 1/4 | 4 | 2-1/4 | 3/8 |
| 5916500 | 1/4 | 5 | 3-1/4 | 3/8 |
| 5917100 | 3/8 | 3-1/4 | 1-1/4 | 1/2 |
| 5917200 | 3/8 | 4-1/4 | 2-1/4 | 1/2 |
| 5917300 | 3/8 | 5-1/4 | 3-1/4 | 1/2 |
| 5918100 | 1/2 | 3-1/4 | 1-1/4 | 1/2 |
| 5918200 | 1/2 | 4-1/4 | 2-1/4 | 1/2 |
| 5918300 | 1/2 | 5-3/8 | 3-1/4 | 5/8 |
| 5919100 | 5/8 | 6-1/2 | 4-1/4 | 3/4 |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List 593

TPET, 3 Flute, 2° Taper per Side

| | | | | | | | |
|----------------------------|---------------|-----------|--|------------|-------------|-------------------|------------|
| SPEED FEED P1306 | HSS-Co | BR | | REG | LONG | EXTRA LONG | 25° |
|----------------------------|---------------|-----------|--|------------|-------------|-------------------|------------|

| Taper Angle Tolerance | |
|-----------------------|-----------|
| 1/6 ≤ D ≤ 5/8 | +0 / -10' |



Units: Inch

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Shank Dia. |
|------------|-----------|----------------|---------------|------------|
| Bright | D | L | Lc | d |
| 5930100 | 1/16 | 1-3/4 | 1/2 | 3/16 |
| 5930200 | 1/16 | 2-1/4 | 1 | 3/16 |
| 5931100 | 5/64 | 1-3/4 | 1/2 | 3/16 |
| 5931200 | 5/64 | 2-1/4 | 1 | 3/16 |
| 5931300 | 5/64 | 2-11/16 | 1-1/2 | 3/16 |
| 5932100 | 3/32 | 2 | 3/4 | 3/16 |
| 5932300 | 3/32 | 2-1/2 | 1-1/4 | 3/16 |
| 5934200 | 1/8 | 2 | 3/4 | 3/16 |
| 5934300 | 1/8 | 2-7/8 | 1 | 3/8 |
| 5935100 | 3/16 | 2-5/8 | 3/4 | 3/8 |
| 5935200 | 3/16 | 3-1/8 | 1-1/4 | 3/8 |

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Shank Dia. |
|------------|-----------|----------------|---------------|------------|
| Bright | D | L | Lc | d |
| 5936100 | 1/4 | 2-1/2 | 3/4 | 3/8 |
| 5936300 | 1/4 | 3 | 1-1/4 | 3/8 |
| 5936400 | 1/4 | 4-3/8 | 2-1/4 | 1/2 |
| 5936500 | 1/4 | 5-1/4 | 3-1/4 | 1/2 |
| 5937100 | 3/8 | 3-1/4 | 1-1/4 | 1/2 |
| 5937200 | 3/8 | 4-1/4 | 2-1/4 | 1/2 |
| 5937300 | 3/8 | 5-3/8 | 3-1/4 | 5/8 |
| 5938100 | 1/2 | 3-1/4 | 1-1/4 | 1/2 |
| 5938200 | 1/2 | 4-3/8 | 2-1/4 | 5/8 |
| 5938300 | 1/2 | 5-3/8 | 3-1/4 | 5/8 |
| 5939100 | 5/8 | 6-1/2 | 4-1/4 | 3/4 |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

| Chart applies to all list numbers above | P | | | | | M | | | K | N | | S | H | | | | |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| - | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

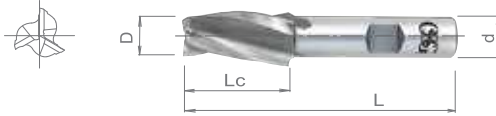


List 594

TPET, 3 Flute, 3° Taper per Side

| | | | | | | |
|---------------------|--------|----|-----|------|------------|-----|
| SPEED FEED P1306 | HSS-Co | BR | REG | LONG | EXTRA LONG | 25° |
|---------------------|--------|----|-----|------|------------|-----|

| Taper Angle Tolerance | |
|-----------------------|-----------|
| 3/32 ≤ D ≤ 1/2 | +0 / -10' |



Units: Inch

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Shank Dia. |
|------------|-----------|----------------|---------------|------------|
| Bright | D | L | Lc | d |
| 5942200 | 3/32 | 2-7/8 | 1 | 3/8 |
| 5942300 | 3/32 | 3-1/8 | 1-1/4 | 3/8 |
| 5942400 | 3/32 | 3-3/8 | 1-1/2 | 3/8 |
| 5942500 | 3/32 | 3-3/4 | 2 | 3/8 |
| 5942600 | 3/32 | 4-1/4 | 2-1/2 | 3/8 |
| 5943100 | 7/64 | 2-7/8 | 1 | 3/8 |
| 5943200 | 7/64 | 3-3/8 | 1-1/2 | 3/8 |
| 5943300 | 7/64 | 3-3/4 | 2 | 3/8 |
| 5944200 | 1/8 | 2-5/8 | 3/4 | 3/8 |
| 5944300 | 1/8 | 2-7/8 | 1 | 3/8 |
| 5944400 | 1/8 | 3 | 1-1/8 | 3/8 |
| 5944700 | 1/8 | 3-3/8 | 1-1/2 | 3/8 |
| 5944800 | 1/8 | 3-3/4 | 2 | 3/8 |
| 5944900 | 1/8 | 4-1/2 | 2-1/2 | 1/2 |
| 5945000 | 1/8 | 5 | 3 | 1/2 |
| 5945100 | 3/16 | 2-5/8 | 3/4 | 3/8 |

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Shank Dia. |
|------------|-----------|----------------|---------------|------------|
| Bright | D | L | Lc | d |
| 5945200 | 3/16 | 3-1/8 | 1-1/4 | 3/8 |
| 5945400 | 3/16 | 4-1/2 | 2-1/2 | 1/2 |
| 5945500 | 3/16 | 5 | 3 | 1/2 |
| 5945600 | 3/16 | 5-3/8 | 3-1/4 | 5/8 |
| 5945700 | 3/16 | 6-1/8 | 4 | 5/8 |
| 5946100 | 1/4 | 2-1/2 | 3/4 | 3/8 |
| 5946200 | 1/4 | 2-3/4 | 1 | 3/8 |
| 5946300 | 1/4 | 3-1/4 | 1-1/4 | 1/2 |
| 5946400 | 1/4 | 4-1/4 | 2-1/4 | 1/2 |
| 5946500 | 1/4 | 5-1/4 | 3-1/4 | 1/2 |
| 5946600 | 1/4 | 6-1/4 | 4 | 3/4 |
| 5947100 | 3/8 | 3-1/4 | 1-1/4 | 1/2 |
| 5947200 | 3/8 | 4-3/8 | 2-1/4 | 5/8 |
| 5947300 | 3/8 | 5-3/8 | 3-1/4 | 5/8 |
| 5948100 | 1/2 | 3-1/4 | 1-1/4 | 1/2 |
| 5948200 | 1/2 | 4-3/8 | 2-1/4 | 5/8 |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | | |
|----------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 594 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



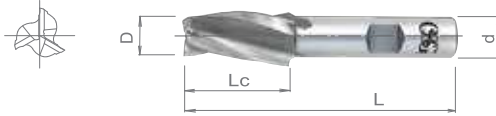


List 595

TPET, 3 Flute, 5° Taper per Side

| | | | | | | |
|---------------------|--------|----|-----|------|------------|-----|
| SPEED FEED P1307 | HSS-Co | BR | REG | LONG | EXTRA LONG | 25° |
|---------------------|--------|----|-----|------|------------|-----|

| Taper Angle Tolerance | |
|-----------------------|-----------|
| 3/32 ≤ D ≤ 1/2 | +0 / -10' |



Units: Inch

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Shank Dia. |
|------------|-----------|----------------|---------------|------------|
| Bright | D | L | Lc | d |
| 5952100 | 3/32 | 2-5/8 | 3/4 | 3/8 |
| 5952200 | 3/32 | 2-7/8 | 1 | 3/8 |
| 5952300 | 3/32 | 3 | 1-1/4 | 3/8 |
| 5952400 | 3/32 | 3-5/16 | 1-1/2 | 3/8 |
| 5952500 | 3/32 | 4 | 2 | 1/2 |
| 5952600 | 3/32 | 4-5/8 | 2-1/2 | 5/8 |
| 5953100 | 7/64 | 2-7/8 | 1 | 3/8 |
| 5953200 | 7/64 | 3-5/16 | 1-1/2 | 3/8 |
| 5953300 | 7/64 | 4 | 2 | 1/2 |
| 5954200 | 1/8 | 2-5/8 | 3/4 | 3/8 |
| 5954300 | 1/8 | 2-7/8 | 1 | 3/8 |
| 5954400 | 1/8 | 2-7/8 | 1-1/8 | 3/8 |
| 5954700 | 1/8 | 3-1/4 | 1-1/2 | 3/8 |
| 5954800 | 1/8 | 3-3/4 | 2 | 3/8 |
| 5954900 | 1/8 | 4-1/2 | 2-1/2 | 1/2 |
| 5955000 | 1/8 | 5-1/4 | 3 | 3/4 |

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Shank Dia. |
|------------|-----------|----------------|---------------|------------|
| Bright | D | L | Lc | d |
| 5955100 | 3/16 | 2-9/16 | 3/4 | 3/8 |
| 5955200 | 3/16 | 3-3/8 | 1-1/4 | 1/2 |
| 5955400 | 3/16 | 4-5/8 | 2-1/2 | 5/8 |
| 5955500 | 3/16 | 5-1/4 | 3 | 3/4 |
| 5955600 | 3/16 | 5-1/2 | 3-1/4 | 3/4 |
| 5955700 | 3/16 | 6-1/4 | 4 | 3/4 |
| 5956100 | 1/4 | 2-1/2 | 3/4 | 3/8 |
| 5956200 | 1/4 | 3 | 1 | 1/2 |
| 5956300 | 1/4 | 3-1/4 | 1-1/4 | 1/2 |
| 5956400 | 1/4 | 4-3/8 | 2-1/4 | 5/8 |
| 5956500 | 1/4 | 5-1/2 | 3-1/4 | 3/4 |
| 5956600 | 1/4 | 6-1/4 | 4 | 3/4 |
| 5957100 | 3/8 | 3-3/8 | 1-1/4 | 5/8 |
| 5957200 | 3/8 | 4-1/2 | 2-1/4 | 3/4 |
| 5957300 | 3/8 | 5-1/2 | 3-1/4 | 3/4 |
| 5958100 | 1/2 | 3-1/4 | 1-1/4 | 1/2 |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 595 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



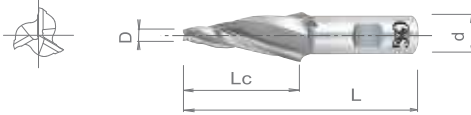


List 596

TPET, 3 Flute, 7° Taper per Side

| | | | | | |
|---------------------|--------|----|-----|------|-----|
| SPEED FEED P1307 | HSS-Co | BR | REG | LONG | 25° |
|---------------------|--------|----|-----|------|-----|

| Taper Angle Tolerance | |
|-----------------------|-----------|
| 5/64 ≤ D ≤ 1/2 | +0 / -10' |



Units: Inch

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Shank Dia. |
|------------|-----------|----------------|---------------|------------|
| Bright | D | L | Lc | d |
| 5961200 | 5/64 | 2-3/4 | 1 | 3/8 |
| 5962200 | 3/32 | 2-3/4 | 1 | 3/8 |
| 5962300 | 3/32 | 3 | 1-1/4 | 3/8 |
| 5962400 | 3/32 | 3-1/2 | 1-1/2 | 1/2 |
| 5964200 | 1/8 | 2-9/16 | 3/4 | 3/8 |
| 5964300 | 1/8 | 2-3/4 | 1 | 3/8 |
| 5964700 | 1/8 | 3-1/2 | 1-1/2 | 1/2 |

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Shank Dia. |
|------------|-----------|----------------|---------------|------------|
| Bright | D | L | Lc | d |
| 5965200 | 3/16 | 3-1/4 | 1-1/4 | 1/2 |
| 5966100 | 1/4 | 2-1/2 | 3/4 | 3/8 |
| 5966300 | 1/4 | 3-1/4 | 1-1/4 | 1/2 |
| 5966400 | 1/4 | 4-1/2 | 2-1/4 | 3/4 |
| 5967200 | 3/8 | 4-1/2 | 2-1/4 | 3/4 |
| 5968100 | 1/2 | 3-3/8 | 1-1/4 | 5/8 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

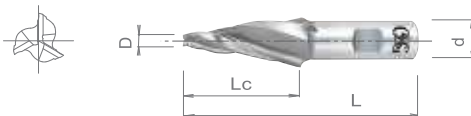


List 597

TPET, 3 Flute, 10° Taper per Side

| | | | | | |
|---------------------|--------|----|-----|------|-----|
| SPEED FEED P1308 | HSS-Co | BR | REG | LONG | 25° |
|---------------------|--------|----|-----|------|-----|

| Taper Angle Tolerance | |
|-----------------------|-----------|
| 3/32 ≤ D ≤ 1/4 | +0 / -10' |



Units: Inch

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Shank Dia. |
|------------|-----------|----------------|---------------|------------|
| Bright | D | L | Lc | d |
| 5972400 | 3/32 | 3-5/8 | 1-1/2 | 5/8 |
| 5974200 | 1/8 | 2-3/4 | 3/4 | 1/2 |
| 5974500 | 1/8 | 3-3/8 | 1-1/4 | 5/8 |

| EDP Number | Mill Dia. | Overall Length | Length of Cut | Shank Dia. |
|------------|-----------|----------------|---------------|------------|
| Bright | D | L | Lc | d |
| 5976100 | 1/4 | 2-3/4 | 3/4 | 1/2 |
| 5976300 | 1/4 | 3-3/8 | 1-1/4 | 5/8 |
| 5976400 | 1/4 | 4-1/2 | 2-1/4 | 3/4 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

| Chart applies to all list numbers above | P | | | | | | M | | | K | N | | S | | H | | | |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| | 1010 | 1035 | 1065 | 4140 | 4340 | | | | | | | | | | | | | |
| - | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best





Double End

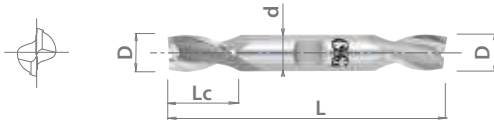
Cobalt High Speed Steel

List 522

2 Flute, Regular Length

| | | | | | |
|--------------------------|--------|-----|----|-----|-----|
| SPEED FEED P1297-1298 | HSS-Co | TiN | BR | REG | 30° |
|--------------------------|--------|-----|----|-----|-----|

| Milling Diameter Tolerance | |
|----------------------------|---------------|
| 1/8 ≤ D ≤ 1 | +0 / -0.0011" |



Units: Inch

| EDP Number | | Mill Dia. | Overall Length | Length of Cut | Shank Dia. |
|------------|---------|-----------|----------------|---------------|------------|
| Bright | TiN | D | L | Lc | d |
| 5220100 | 5220105 | 1/8 | 3-1/16 | 3/8 | 3/8 |
| 5226000 | - | 9/64 | 3-1/8 | 7/16 | 3/8 |
| 5229100 | - | 5/32 | 3-1/8 | 7/16 | 3/8 |
| 5226100 | - | 11/64 | 3-1/8 | 7/16 | 3/8 |
| 5220200 | 5220205 | 3/16 | 3-1/8 | 7/16 | 3/8 |
| 5226200 | - | 13/64 | 3-1/8 | 1/2 | 3/8 |
| 5229200 | - | 7/32 | 3-1/8 | 1/2 | 3/8 |
| 5226300 | - | 15/64 | 3-1/8 | 1/2 | 3/8 |
| 5220300 | 5220305 | 1/4 | 3-1/8 | 1/2 | 3/8 |
| 5226400 | - | 17/64 | 3-1/8 | 9/16 | 3/8 |
| 5229300 | - | 9/32 | 3-1/8 | 9/16 | 3/8 |
| 5226500 | - | 19/64 | 3-1/8 | 9/16 | 3/8 |
| 5220400 | 5220405 | 5/16 | 3-1/8 | 9/16 | 3/8 |
| 5226600 | - | 21/64 | 3-1/8 | 9/16 | 3/8 |
| 5229400 | - | 11/32 | 3-1/8 | 9/16 | 3/8 |
| 5226700 | - | 23/64 | 3-1/8 | 9/16 | 3/8 |
| 5220500 | 5220505 | 3/8 | 3-1/8 | 9/16 | 3/8 |
| 5226800 | - | 25/64 | 3-3/4 | 13/16 | 1/2 |
| 5229500 | - | 13/32 | 3-3/4 | 13/16 | 1/2 |
| 5226900 | - | 27/64 | 3-3/4 | 13/16 | 1/2 |
| 5229600 | 5229605 | 7/16 | 3-3/4 | 13/16 | 1/2 |

| EDP Number | | Mill Dia. | Overall Length | Length of Cut | Shank Dia. |
|------------|---------|-----------|----------------|---------------|------------|
| Bright | TiN | D | L | Lc | d |
| 5227000 | - | 29/64 | 3-3/4 | 13/16 | 1/2 |
| 5229700 | - | 15/32 | 3-3/4 | 13/16 | 1/2 |
| 5227100 | - | 31/64 | 3-3/4 | 13/16 | 1/2 |
| 5221100 | 5221105 | 1/2 | 3-3/4 | 13/16 | 1/2 |
| 5227200 | - | 17/32 | 4-1/2 | 1-1/8 | 5/8 |
| 5229800 | - | 9/16 | 4-1/2 | 1-1/8 | 5/8 |
| 5227300 | - | 19/32 | 4-1/2 | 1-1/8 | 5/8 |
| 5222100 | 5222105 | 5/8 | 4-1/2 | 1-1/8 | 5/8 |
| 5227400 | - | 21/32 | 5 | 1-5/16 | 3/4 |
| 5229900 | - | 11/16 | 5 | 1-5/16 | 3/4 |
| 5227500 | - | 23/32 | 5 | 1-5/16 | 3/4 |
| 5223100 | 5223105 | 3/4 | 5 | 1-5/16 | 3/4 |
| 5227600 | - | 25/32 | 5-1/2 | 1-9/16 | 7/8 |
| 5227700 | - | 13/16 | 5-1/2 | 1-9/16 | 7/8 |
| 5227800 | - | 27/32 | 5-1/2 | 1-9/16 | 7/8 |
| 5224100 | 5224105 | 7/8 | 5-1/2 | 1-9/16 | 7/8 |
| 5228000 | - | 29/32 | 5-7/8 | 1-5/8 | 1 |
| 5228100 | - | 15/16 | 5-7/8 | 1-5/8 | 1 |
| 5228200 | - | 31/32 | 5-7/8 | 1-5/8 | 1 |
| 5225100 | 5225105 | 1 | 5-7/8 | 1-5/8 | 1 |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 522 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best

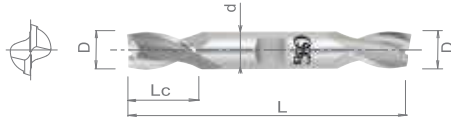


List 582

DDE, 2 Flute, Regular Length

| | | | | | |
|----------------------------|---------------|-----------|---|------------|------------|
| SPEED FEED P1302 | HSS-Co | BR |  | REG | 30° |
|----------------------------|---------------|-----------|---|------------|------------|

| Milling Diameter Tolerance | |
|----------------------------|----------------|
| 1 ≤ D ≤ 25 | +0 / - 0.028mm |



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5827100 | 1.0 | 57.1 | 2.38 | 4.76 |
| 5827200 | 1.5 | 57.1 | 4.76 | 4.76 |
| 5827400 | 2.0 | 57.1 | 5.95 | 4.76 |
| 5827500 | 2.5 | 57.1 | 7.14 | 4.76 |
| 5820100 | 3.0 | 77.7 | 9.52 | 9.52 |
| 5828100 | 3.5 | 79.3 | 11.11 | 9.52 |
| 5820200 | 4.0 | 79.3 | 11.11 | 9.52 |
| 5828200 | 4.5 | 79.3 | 11.11 | 9.52 |
| 5820300 | 5.0 | 79.3 | 12.70 | 9.52 |
| 5828300 | 5.5 | 79.3 | 12.70 | 9.52 |
| 5820400 | 6.0 | 79.3 | 12.70 | 9.52 |
| 5828400 | 6.5 | 79.3 | 12.70 | 9.52 |
| 5820500 | 7.0 | 79.3 | 14.28 | 9.52 |
| 5828500 | 7.5 | 79.3 | 14.28 | 9.52 |
| 5820600 | 8.0 | 79.3 | 14.28 | 9.52 |
| 5828600 | 8.5 | 79.3 | 14.28 | 9.52 |
| 5820700 | 9.0 | 79.3 | 14.28 | 9.52 |
| 5828700 | 9.5 | 79.3 | 14.28 | 9.52 |
| 5820800 | 10.0 | 95.2 | 20.63 | 12.70 |
| 5828800 | 10.5 | 95.2 | 20.63 | 12.70 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5820900 | 11.0 | 95.2 | 20.63 | 12.70 |
| 5828900 | 11.5 | 95.2 | 20.63 | 12.70 |
| 5821100 | 12.0 | 95.2 | 20.63 | 12.70 |
| 5829100 | 12.5 | 95.2 | 20.63 | 12.70 |
| 5821200 | 13.0 | 114.3 | 28.57 | 15.87 |
| 5829200 | 13.5 | 114.3 | 28.57 | 15.87 |
| 5821300 | 14.0 | 114.3 | 28.57 | 15.87 |
| 5829300 | 14.5 | 114.3 | 28.57 | 15.87 |
| 5821400 | 15.0 | 114.3 | 28.57 | 15.87 |
| 5822100 | 16.0 | 127.0 | 33.33 | 19.05 |
| 5822200 | 17.0 | 127.0 | 33.33 | 19.05 |
| 5822300 | 18.0 | 127.0 | 33.33 | 19.05 |
| 5823100 | 19.0 | 127.0 | 33.33 | 19.05 |
| 5823200 | 20.0 | 139.7 | 39.68 | 22.22 |
| 5823300 | 21.0 | 139.7 | 39.68 | 22.22 |
| 5824100 | 22.0 | 139.7 | 39.68 | 22.22 |
| 5824200 | 23.0 | 149.2 | 41.27 | 25.40 |
| 5825100 | 24.0 | 149.2 | 41.27 | 25.40 |
| 5825200 | 25.0 | 149.2 | 41.27 | 25.40 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.
4.76mm diameter shanks have straight shanks.



| List No. | Work Material | | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | P | | | | | M | | | K | N | | S | | H | | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 582 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





Double End

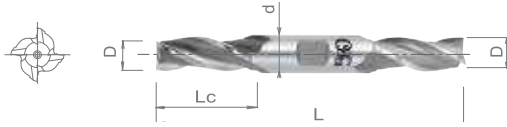
Cobalt High Speed Steel

List 532

TDE, 3 Flute, Regular Length

| | | | | |
|----------------------------|---------------|-----------|------------|------------|
| SPEED FEED P1304 | HSS-Co | BR | REG | 30° |
|----------------------------|---------------|-----------|------------|------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------------|
| D<Shk Dia | +0.0011" / -0 |
| D=Shk Dia | -0.0004" / -0.0015" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5320100 | 1/8 | 3-1/16 | 3/8 | 3/8 |
| 5320200 | 3/16 | 3-1/4 | 1/2 | 3/8 |
| 5320300 | 1/4 | 3-3/8 | 5/8 | 3/8 |
| 5320400 | 5/16 | 3-1/2 | 3/4 | 3/8 |
| 5320500 | 3/8 | 3-1/2 | 3/4 | 3/8 |
| 5329600 | 7/16 | 4-1/8 | 1 | 1/2 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5321100 | 1/2 | 4-1/8 | 1 | 1/2 |
| 5329800 | 9/16 | 5 | 1-3/8 | 5/8 |
| 5322100 | 5/8 | 5 | 1-3/8 | 5/8 |
| 5323100 | 3/4 | 5-5/8 | 1-5/8 | 3/4 |
| 5324100 | 7/8 | 6-1/8 | 1-7/8 | 7/8 |
| 5325100 | 1 | 6-3/8 | 1-7/8 | 1 |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 532 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

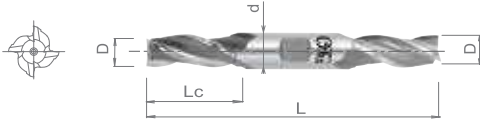


List 542

4 Flute, Regular Length, Non-Center Cutting

| | | | | | |
|---------------------------------|--------|-----|----|-----|-----|
| SPEED FEED P1299- 1300 | HSS-Co | TiN | BR | REG | 30° |
|---------------------------------|--------|-----|----|-----|-----|

| Milling Diameter Tolerance | |
|----------------------------|-------------------|
| D<Shk Dia | +0.0011" / -0 |
| D=Shk Dia | -0.0004"/-0.0015" |



Units: Inch

| EDP Number | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------|---------------|----------------|---------------|----------------|
| Bright | TiN | D | L | Lc | d |
| 5420100 | 5420105 | 1/8 | 3-1/16 | 3/8 | 3/8 |
| 5426000 | - | 9/64 | 3-1/8 | 7/16 | 3/8 |
| 5429100 | - | 5/32 | 3-1/8 | 7/16 | 3/8 |
| 5426100 | - | 11/64 | 3-1/4 | 1/2 | 3/8 |
| 5420200 | 5420205 | 3/16 | 3-1/4 | 1/2 | 3/8 |
| 5426200 | - | 13/64 | 3-1/4 | 9/16 | 3/8 |
| 5429200 | - | 7/32 | 3-1/4 | 9/16 | 3/8 |
| 5426300 | - | 15/64 | 3-3/8 | 5/8 | 3/8 |
| 5420300 | 5420305 | 1/4 | 3-3/8 | 5/8 | 3/8 |
| 5426400 | - | 17/64 | 3-3/8 | 11/16 | 3/8 |
| 5429300 | - | 9/32 | 3-3/8 | 11/16 | 3/8 |
| 5426500 | - | 19/64 | 3-1/2 | 3/4 | 3/8 |
| 5420400 | 5420405 | 5/16 | 3-1/2 | 3/4 | 3/8 |
| 5426600 | - | 21/64 | 3-1/2 | 3/4 | 3/8 |
| 5429400 | - | 11/32 | 3-1/2 | 3/4 | 3/8 |
| 5426700 | - | 23/64 | 3-1/2 | 3/4 | 3/8 |
| 5420500 | 5420505 | 3/8 | 3-1/2 | 3/4 | 3/8 |
| 5426800 | - | 25/64 | 4-1/8 | 1 | 1/2 |
| 5429500 | - | 13/32 | 4-1/8 | 1 | 1/2 |
| 5426900 | - | 27/64 | 4-1/8 | 1 | 1/2 |

| EDP Number | | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------|---------------|----------------|---------------|----------------|
| Bright | TiN | D | L | Lc | d |
| 5429600 | 5429605 | 7/16 | 4-1/8 | 1 | 1/2 |
| 5427000 | - | 29/64 | 4-1/8 | 1 | 1/2 |
| 5429700 | - | 15/32 | 4-1/8 | 1 | 1/2 |
| 5427100 | - | 31/64 | 4-1/8 | 1 | 1/2 |
| 5421100 | 5421105 | 1/2 | 4-1/8 | 1 | 1/2 |
| 5427200 | - | 17/32 | 5 | 1-3/8 | 5/8 |
| 5429800 | - | 9/16 | 5 | 1-3/8 | 5/8 |
| 5427300 | - | 19/32 | 5 | 1-3/8 | 5/8 |
| 5422100 | 5422105 | 5/8 | 5 | 1-3/8 | 5/8 |
| 5427400 | - | 21/32 | 5-5/8 | 1-5/8 | 3/4 |
| 5429900 | - | 11/16 | 5-5/8 | 1-5/8 | 3/4 |
| 5427500 | - | 23/32 | 5-5/8 | 1-5/8 | 3/4 |
| 5423100 | 5423105 | 3/4 | 5-5/8 | 1-5/8 | 3/4 |
| 5427600 | - | 25/32 | 6-1/8 | 1-7/8 | 7/8 |
| 5428100 | - | 13/16 | 6-1/8 | 1-7/8 | 7/8 |
| 5424100 | 5424105 | 7/8 | 6-1/8 | 1-7/8 | 7/8 |
| 5428000 | - | 29/32 | 6-3/8 | 1-7/8 | 1 |
| 5428200 | - | 15/16 | 6-3/8 | 1-7/8 | 1 |
| 5428300 | - | 31/32 | 6-3/8 | 1-7/8 | 1 |
| 5425100 | 5425105 | 1 | 6-3/8 | 1-7/8 | 1 |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| | 1010 | 1035 | 1065 | 4140 | 4340 | 300 | 400 | 17-4 PH | 6061 | 7075 | | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| 542 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

good best





Double End

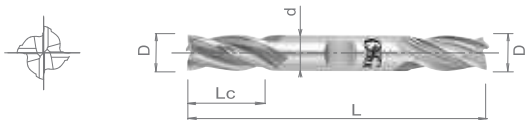
Cobalt High Speed Steel

List 543

4 Flute, Regular Length

| | | | | |
|---------------------------------|---------------|-----------|------------|------------|
| SPEED FEED P1299-1300 | HSS-Co | BR | REG | 30° |
|---------------------------------|---------------|-----------|------------|------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------------|
| D<Shk Dia | +0 / -0.0011" |
| D=Shk Dia | -0.0004" / -0.0015" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5430100 | 1/8 | 3-1/16 | 3/8 | 3/8 |
| 5430200 | 3/16 | 3-1/4 | 1/2 | 3/8 |
| 5430300 | 1/4 | 3-3/8 | 5/8 | 3/8 |
| 5430400 | 5/16 | 3-1/2 | 3/4 | 3/8 |
| 5430500 | 3/8 | 3-1/2 | 3/4 | 3/8 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5431100 | 1/2 | 4-1/8 | 1 | 1/2 |
| 5432100 | 5/8 | 5 | 1-3/8 | 5/8 |
| 5433100 | 3/4 | 5-5/8 | 1-5/8 | 3/4 |
| 5434100 | 7/8 | 6-1/8 | 1-7/8 | 7/8 |
| 5435100 | 1 | 6-3/8 | 1-7/8 | 1 |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

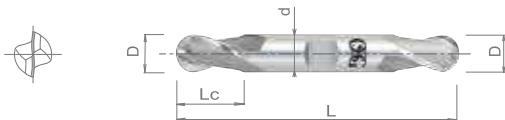


List 523

DDEB, 2 Flute, Regular Length, Ball End

| | | | | |
|----------------------------|---------------|-----------|------------|------------|
| SPEED FEED P1301 | HSS-Co | BR | REG | 30° |
|----------------------------|---------------|-----------|------------|------------|

| Milling Diameter Tolerance | |
|----------------------------|---------------------|
| D<Shk Dia | +0 / -0.0011" |
| D=Shk Dia | -0.0004" / -0.0015" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5230100 | 1/8 | 3-1/16 | 3/8 | 3/8 |
| 5230200 | 3/16 | 3-1/8 | 7/16 | 3/8 |
| 5230300 | 1/4 | 3-1/8 | 1/2 | 3/8 |
| 5230400 | 5/16 | 3-1/8 | 9/16 | 3/8 |
| 5230500 | 3/8 | 3-1/8 | 9/16 | 3/8 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5239600 | 7/16 | 3-3/4 | 13/16 | 1/2 |
| 5231100 | 1/2 | 3-3/4 | 13/16 | 1/2 |
| 5232100 | 5/8 | 4-1/2 | 1-1/8 | 5/8 |
| 5233100 | 3/4 | 5 | 1-5/16 | 3/4 |
| 5235100 | 1 | 5-7/8 | 1-5/8 | 1 |

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

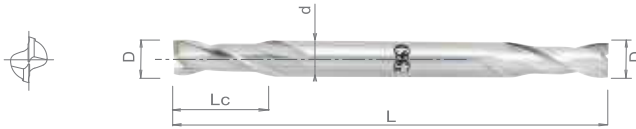
| List No. | P | | | | | M | | | K | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | 6061 7075 | Casting | Inconel | | | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| 543 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 523 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best



List 562

M-DDE, 2 Flute, Stub Length, Miniature



| | | | | |
|--------|----|---|------|---|
| HSS-Co | BR |  | STUB |  |
|--------|----|---|------|---|

| Milling Diameter Tolerance | |
|----------------------------|---------------------|
| D < Shk Dia | +0 / -0.0011" |
| D = Shk Dia | -0.0004" / -0.0015" |

Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5627000 | 1/32 | 2 | 3/64 | 3/16 |
| 5627100 | 3/64 | 2 | 1/16 | 3/16 |
| 5627200 | 1/16 | 2 | 3/32 | 3/16 |
| 5627300 | 5/64 | 2 | 1/8 | 3/16 |
| 5627400 | 3/32 | 2 | 9/64 | 3/16 |
| 5627500 | 7/64 | 2 | 5/32 | 3/16 |

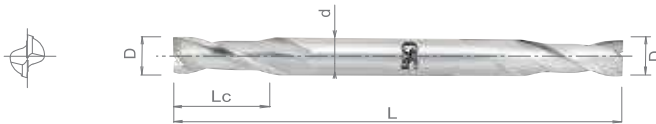
| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5627600 | 1/8 | 2 | 3/16 | 3/16 |
| 5627700 | 9/64 | 2 | 7/32 | 3/16 |
| 5627800 | 5/32 | 2 | 15/64 | 3/16 |
| 5627900 | 11/64 | 2 | 1/4 | 3/16 |
| 5628000 | 3/16 | 2 | 9/32 | 3/16 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



List 563

M-DDE, 2 Flute, Regular Length, Miniature



| | | | | |
|--------|----|---|-----|---|
| HSS-Co | BR |  | REG |  |
|--------|----|---|-----|---|

| Milling Diameter Tolerance | |
|----------------------------|---------------------|
| D < Shk Dia | +0 / -0.0011" |
| D = Shk Dia | -0.0004" / -0.0015" |

Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5637000 | 1/32 | 2-1/4 | 3/32 | 3/16 |
| 5637100 | 3/64 | 2-1/4 | 9/64 | 3/16 |
| 5637200 | 1/16 | 2-1/4 | 3/16 | 3/16 |
| 5637300 | 5/64 | 2-1/4 | 15/64 | 3/16 |
| 5637400 | 3/32 | 2-1/4 | 9/32 | 3/16 |
| 5637500 | 7/64 | 2-1/4 | 21/64 | 3/16 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5637600 | 1/8 | 2-1/4 | 3/8 | 3/16 |
| 5637700 | 9/64 | 2-1/4 | 13/32 | 3/16 |
| 5637800 | 5/32 | 2-1/4 | 7/16 | 3/16 |
| 5637900 | 11/64 | 2-1/4 | 1/2 | 3/16 |
| 5638000 | 3/16 | 2-1/4 | 1/2 | 3/16 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

| Chart applies to all list numbers above | P | | | | | M | | | K | N | | S | | H | | | | |
|---|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| - | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





Double End

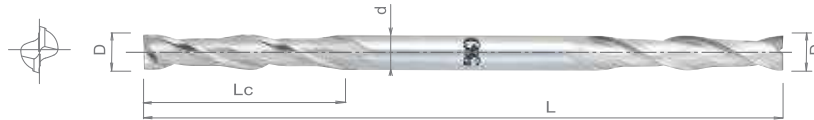
Cobalt High Speed Steel

List 564

M-DDEL, 2 Flute, Long Length, Miniature

| | | | | |
|--------|----|--|------|--|
| HSS-Co | BR | | LONG | |
|--------|----|--|------|--|

| Milling Diameter Tolerance | |
|----------------------------|---------------------|
| D < Shk Dia | +0.0011" / -0 |
| D = Shk Dia | -0.0004" / -0.0015" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5647200 | 1/16 | 2-1/2 | 7/32 | 3/16 |
| 5647400 | 3/32 | 2-5/8 | 9/32 | 3/16 |
| 5647600 | 1/8 | 3-1/8 | 3/4 | 3/16 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5647800 | 5/32 | 3-1/4 | 7/8 | 3/16 |
| 5648000 | 3/16 | 3-3/8 | 1 | 3/16 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

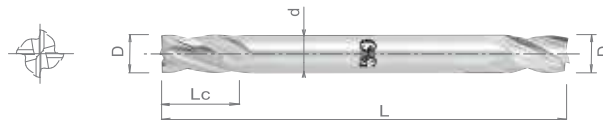


List 566

M-FDE, 4 Flute, Stub Length, Miniature

| | | | | |
|--------|----|--|------|--|
| HSS-Co | BR | | STUB | |
|--------|----|--|------|--|

| Milling Diameter Tolerance | |
|----------------------------|---------------------|
| D < Shk Dia | +0.0011" / -0 |
| D = Shk Dia | -0.0004" / -0.0015" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5667200 | 1/16 | 2 | 3/32 | 3/16 |
| 5667400 | 3/32 | 2 | 9/64 | 3/16 |
| 5667600 | 1/8 | 2 | 3/16 | 3/16 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5667800 | 5/32 | 2 | 15/64 | 3/16 |
| 5668000 | 3/16 | 2 | 9/32 | 3/16 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| 564 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 566 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best

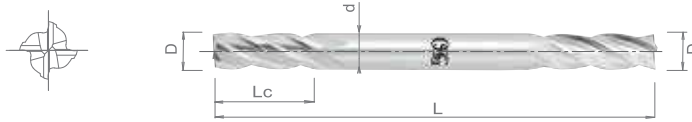


List 567

M-FDE, 4 Flute, Regular Length, Miniature, Non-Center Cutting



| Milling Diameter Tolerance | |
|----------------------------|---------------------|
| D < Shk Dia | +0.0011" / -0 |
| D = Shk Dia | -0.0004" / -0.0015" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5677200 | 1/16 | 2-1/4 | 0.177 | 3/16 |
| 5677400 | 3/32 | 2-1/4 | 0.267 | 3/16 |
| 5677600 | 1/8 | 2-1/4 | 0.362 | 3/16 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5677800 | 5/32 | 2-1/4 | 0.417 | 3/16 |
| 5678000 | 3/16 | 2-1/4 | 0.480 | 3/16 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

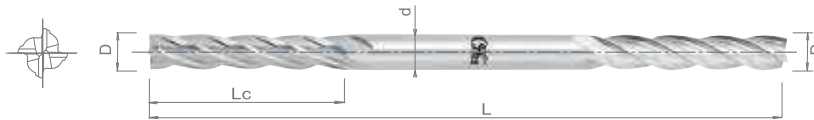


List 568

M-FDEL, 4 Flute, Long Length, Miniature, Non-Center Cutting



| Milling Diameter Tolerance | |
|----------------------------|---------------------|
| D < Shk Dia | +0.0011" / -0 |
| D = Shk Dia | -0.0004" / -0.0015" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5687200 | 1/16 | 2-1/2 | 0.220 | 3/16 |
| 5687400 | 3/32 | 2-5/8 | 0.279 | 3/16 |
| 5687600 | 1/8 | 3-1/8 | 0.732 | 3/16 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5687800 | 5/32 | 3-1/4 | 0.854 | 3/16 |
| 5688000 | 3/16 | 3-3/8 | 0.980 | 3/16 |

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

| Chart applies to all list numbers above | P | | | | | M | | | K | N | | S | | H | | | | |
|---|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC |
| - | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





Double End

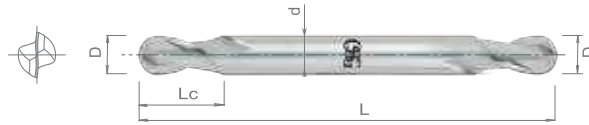
Cobalt High Speed Steel

List 570

M-DDEB, 2 Flute, Stub Length, Ball End, Miniature



| Milling Diameter Tolerance | |
|----------------------------|---------------------|
| D < Shk Dia | +0 / -0.0011" |
| D = Shk Dia | -0.0004" / -0.0015" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5707200 | 1/16 | 2 | 3/32 | 3/16 |
| 5707400 | 3/32 | 2 | 9/64 | 3/16 |
| 5707600 | 1/8 | 2 | 3/16 | 3/16 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5707800 | 5/32 | 2 | 15/64 | 3/16 |
| 5708000 | 3/16 | 2 | 9/32 | 3/16 |



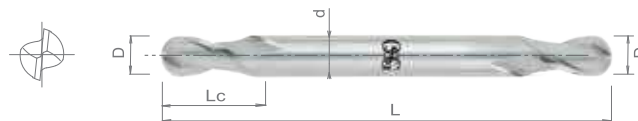
Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

List 571

M-DDEB, 2 Flute, Regular Length, Ball End, Miniature



| Milling Diameter Tolerance | |
|----------------------------|---------------------|
| D < Shk Dia | +0 / -0.0011" |
| D = Shk Dia | -0.0004" / -0.0015" |



Units: Inch

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5717200 | 1/16 | 2-1/4 | 3/16 | 3/16 |
| 5717400 | 3/32 | 2-1/4 | 9/32 | 3/16 |
| 5717600 | 1/8 | 2-1/4 | 3/8 | 3/16 |

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|------------|---------------|----------------|---------------|----------------|
| Bright | D | L | Lc | d |
| 5717800 | 5/32 | 2-1/4 | 7/16 | 3/16 |
| 5718000 | 3/16 | 2-1/4 | 1/2 | 3/16 |



Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

Work Material

| Chart applies to all list numbers above | P | | | | | M | | | K | N | | S | H | | | | |
|---|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC |
| - | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

good best





List 310-SO

2 Flute, Regular Length

| | | | | | | | | |
|------------|----------------------------|----------------|--------------|---------------|--|------------|------------|--------------------|
| NEW | SPEED FEED P1309 | HSS-Co8 | TiAlN | TYPE N | | REG | 30° | SHANK h7 |
|------------|----------------------------|----------------|--------------|---------------|--|------------|------------|--------------------|



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|-------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 3100200A-SO | 2.0 | 48 | 4 | 6 |
| 3100250A-SO | 2.5 | 49 | 5 | 6 |
| 3100300A-SO | 3.0 | 49 | 5 | 6 |
| 3100350A-SO | 3.5 | 50 | 6 | 6 |
| 3100400A-SO | 4.0 | 51 | 7 | 6 |
| 3100450A-SO | 4.5 | 51 | 7 | 6 |
| 3100500A-SO | 5.0 | 52 | 8 | 6 |
| 3100550A-SO | 5.5 | 52 | 8 | 6 |
| 3100600A-SO | 6.0 | 52 | 8 | 6 |
| 3100650A-SO | 6.5 | 60 | 10 | 10 |
| 3100700A-SO | 7.0 | 60 | 10 | 10 |
| 3100750A-SO | 7.5 | 60 | 10 | 10 |
| 3100800A-SO | 8.0 | 61 | 11 | 10 |
| 3100850A-SO | 8.5 | 61 | 11 | 10 |
| 3100900A-SO | 9.0 | 61 | 11 | 10 |
| 3100950A-SO | 9.5 | 61 | 11 | 10 |
| 3101000A-SO | 10.0 | 63 | 13 | 10 |
| 3101100A-SO | 11.0 | 70 | 13 | 12 |
| 3101200A-SO | 12.0 | 73 | 16 | 12 |
| 3101300A-SO | 13.0 | 73 | 16 | 12 |
| 3101400A-SO | 14.0 | 73 | 16 | 12 |
| 3101500A-SO | 15.0 | 73 | 16 | 12 |
| 3101600A-SO | 16.0 | 79 | 19 | 16 |
| 3101700A-SO | 17.0 | 79 | 19 | 16 |
| 3101800A-SO | 18.0 | 79 | 19 | 16 |
| 3101900A-SO | 19.0 | 79 | 19 | 16 |
| 3102000A-SO | 20.0 | 88 | 22 | 20 |
| 3102200A-SO | 22.0 | 88 | 22 | 20 |
| 3102400A-SO | 24.0 | 102 | 26 | 25 |
| 3102500A-SO | 25.0 | 102 | 26 | 25 |

Packed: 1 pc.
Available TiAlN coating only.



| Work Material | | | | | | | | | | | | | | | | | |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------------|-----------------|-----------|-----------|-----------|
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
| | Carbon Steels | | | Alloy Steels | Die Steels | Stainless Steels ≤200HB | | | Cast Iron | Aluminum | | Nickel Alloy | Titanium | Hardened Steels | | | |
| | Low | Med. | High | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | Inconel | 6Al4V (30 HRC) | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 310-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | |

good best



List 314-SO

4 & 6 Flute, Regular Length

| | | | | | | | | |
|------------|----------------------------|---------|-------|--------|--|-----|-----|-------------|
| NEW | SPEED FEED P1310 | HSS-Co8 | TiAlN | TYPE N | | REG | 30° | SHANK h7 |
|------------|----------------------------|---------|-------|--------|--|-----|-----|-------------|



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter | Number of Flutes |
|-------------|---------------|----------------|---------------|----------------|------------------|
| | D | L | Lc | d | |
| 3140300A-SO | 3 | 52 | 8 | 6 | 4 |
| 3140400A-SO | 4 | 55 | 11 | 6 | 4 |
| 3140500A-SO | 5 | 57 | 13 | 6 | 4 |
| 3140600A-SO | 6 | 57 | 13 | 6 | 4 |
| 3140700A-SO | 7 | 66 | 16 | 10 | 4 |
| 3140800A-SO | 8 | 69 | 19 | 10 | 4 |
| 3140900A-SO | 9 | 69 | 19 | 10 | 4 |
| 3141000A-SO | 10 | 72 | 22 | 10 | 4 |
| 3141100A-SO | 11 | 79 | 22 | 12 | 4 |
| 3141200A-SO | 12 | 83 | 26 | 12 | 4 |
| 3141300A-SO | 13 | 83 | 26 | 12 | 4 |
| 3141400A-SO | 14 | 83 | 26 | 12 | 4 |
| 3141500A-SO | 15 | 83 | 26 | 12 | 4 |
| 3141600A-SO | 16 | 92 | 32 | 16 | 4 |
| 3141800A-SO | 18 | 92 | 32 | 16 | 4 |
| 3141900A-SO | 19 | 92 | 32 | 16 | 4 |
| 3142000A-SO | 20 | 104 | 38 | 20 | 4 |
| 3142200A-SO | 22 | 104 | 38 | 20 | 6 |
| 3142500A-SO | 25 | 121 | 45 | 25 | 6 |

Packed: 1 pc.
 Available TiAlN coating only.
 Note: Center cutting in sizes 20mm and smaller.



Work Material

| List No. | P | | | | Die Steels | M | | | K Cast Iron | N | | S | | H | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------|----------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | | Stainless Steels ≤200HB | | | | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 314-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | |

 good best


List 312-SO

2 Flute, Ball Nose, Regular Length

| | | | | | | | | |
|------------|----------------------------|----------------|--------------|---------------|---|------------|--|--------------------|
| NEW | SPEED FEED P1309 | HSS-Co8 | TiAlN | TYPE N |  | REG |  30° | SHANK h7 |
|------------|----------------------------|----------------|--------------|---------------|---|------------|--|--------------------|



Units: mm

| EDP Number | Mill Diameter | Overall Length | Length of Cut | Shank Diameter |
|-------------|---------------|----------------|---------------|----------------|
| | D | L | Lc | d |
| 3120200A-SO | 2 | 48 | 4 | 6 |
| 3120300A-SO | 3 | 49 | 5 | 6 |
| 3120400A-SO | 4 | 51 | 7 | 6 |
| 3120500A-SO | 5 | 52 | 8 | 6 |
| 3120600A-SO | 6 | 52 | 8 | 6 |
| 3120700A-SO | 7 | 60 | 10 | 10 |
| 3120800A-SO | 8 | 61 | 11 | 10 |
| 3120900A-SO | 9 | 61 | 11 | 10 |
| 3121000A-SO | 10 | 63 | 13 | 10 |
| 3121100A-SO | 11 | 70 | 13 | 12 |
| 3121200A-SO | 12 | 73 | 16 | 12 |
| 3121300A-SO | 13 | 73 | 16 | 12 |
| 3121400A-SO | 14 | 73 | 16 | 12 |
| 3121500A-SO | 15 | 73 | 16 | 12 |
| 3121600A-SO | 16 | 79 | 19 | 16 |
| 3121800A-SO | 18 | 79 | 19 | 16 |
| 3122000A-SO | 20 | 88 | 22 | 20 |
| 3122200A-SO | 22 | 88 | 22 | 20 |
| 3122400A-SO | 24 | 102 | 26 | 25 |
| 3122500A-SO | 25 | 102 | 26 | 25 |

Packed: 1 pc.
Available TiAlN coating only.



Work Material

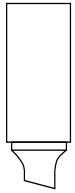
| List No. | P | | | | | M | | | K | N | | S | H | | | | |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------|----------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------|-----------------|--------------|--------------|--------------|
| | Carbon Steels | | | Alloy Steels 4140 4340 | Die Steels | Stainless Steels ≤200HB | | | Cast Iron | Aluminum | | Nickel Alloy Inconel | Titanium 6Al4V (30 HRC) | Hardened Steels | | | |
| | Low 1010 1018 | Med. 1035 1045 | High 1065 | | | 300 | 400 | 17-4 PH | | 6061 7075 | Casting | | | ~35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| 312-SO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | |

good best





Shapes & SCTI Identification



Series SA
Cylindrical



Series SC
Cylindrical Ball End



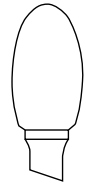
Series SF
Round Nose Tree



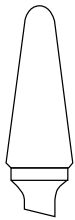
Series SG
Pointed Tree



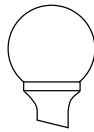
Series SM
Pointed Cone



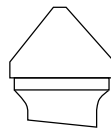
Series SE
Egg Shape



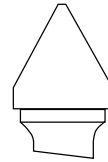
Series SL
14 Degree
Included Angle



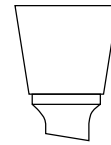
Series SD
Ball Shape



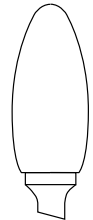
Series SK
90 Degree
Included Angle



Series SJ
60 Degree
Included Angle



Series SN
Inverted Taper

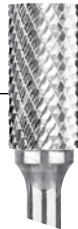


Series SH
Flame Shape

Styles of Cut

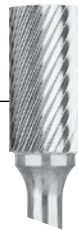
Medium Tough Cut

Engineered specifically for tough applications. Tough cut insures faster, splinter-free cutting in weld and alloy castings with increased tool life.



Medium Right Hand Spiral

General purpose - Recommended for stock removal and a smooth finish.



Aluminum Cut

Designed for use on aluminum, non-ferrous metals, soft steel, reinforced plastics, and other soft materials.



Recommended Cutting Speeds for Carbide Burs

| Diameter | RPM | Maximum RPM |
|----------|-----------------|-------------|
| 1/16" | 55,000 - 85,000 | 90,000 |
| 3/32" | 50,000 - 60,000 | 85,000 |
| 1/8" | 35,000 - 65,000 | 80,000 |
| 3/16" | 30,000 - 55,000 | 75,000 |
| 1/4" | 25,000 - 50,000 | 70,000 |
| 5/16" | 18,000 - 38,000 | 65,000 |
| 3/8" | 17,000 - 38,000 | 63,000 |
| 7/16" | 13,000 - 37,000 | 55,000 |
| 1/2" | 14,000 - 36,000 | 50,000 |
| 5/8" | 11,000 - 23,000 | 40,000 |
| 3/4" | 8,000 - 19,000 | 30,000 |
| 1" | 7,000 - 18,000 | 25,000 |

NOTE: Use lower speeds when cutting harder ferrous materials and higher speeds for softer non-ferrous materials.

Coarse and Fine Cuts are available on request.




1/4" Shank


6mm Shank

List 801 — Cylindrical

Units: Inch


| Medium Tough Cut | EDP Number | End Cut Suffix | Style | Dia. | Flute Length |
|---|------------|----------------|--------|------|--------------|
|  | 801-1250 | -EC | SA-11* | 1/8 | 1/2 |
| | 801-1875 | -EC | SA-14* | 3/16 | 5/8 |
| | 801-2500 | -EC | SA-1* | 1/4 | 5/8 |
| | 801-3125 | -EC | SA-2 | 5/16 | 3/4 |
| | 801-3750 | -EC | SA-3 | 3/8 | 3/4 |
| | 801-4375 | -EC | SA-4 | 7/16 | 1 |
| | 801-5001 | -EC | SA-5F | 1/2 | 1/2 |
| | 801-5000 | -EC | SA-5 | 1/2 | 1 |
| | 801-6250 | -EC | SA-6 | 5/8 | 1 |
| | 801-7500 | -EC | SA-16 | 3/4 | 3/4 |
| | 801-7501 | -EC | SA-7 | 3/4 | 1 |
| | 801-1000 | -EC | SA-9 | 1 | 1 |

Units: mm


| Medium Tough Cut | EDP Number | End Cut Suffix | Style | Dia. | Flute Length |
|---|-------------|----------------|--------|------|--------------|
|  | 801-1250-60 | -EC | SA-11* | 3 | 12 |
| | 801-1875-60 | -EC | SA-14* | 5 | 16 |
| | 801-2362 | -EC | SA-1* | 6 | 16 |
| | 801-3125-60 | -EC | SA-2 | 8 | 19 |
| | 801-3750-60 | -EC | SA-3 | 9 | 19 |
| | 801-4375-60 | -EC | SA-4 | 11 | 25 |
| | 801-5001-60 | -EC | SA-5F | 12 | 12 |
| | 801-5000-60 | -EC | SA-5 | 12 | 25 |
| | 801-6250-60 | -EC | SA-6 | 16 | 25 |
| | 801-7500-60 | -EC | SA-16 | 19 | 19 |
| | 801-7501-60 | -EC | SA-7 | 19 | 25 |
| | 801-1000-60 | -EC | SA-9 | 25 | 25 |

List 802 — Cylindrical Ball End

Units: Inch


| Medium Tough Cut | EDP Number | Style | Dia. | Flute Length |
|--|------------|--------|------|--------------|
|  | 802-1250 | SC-11* | 1/8 | 1/2 |
| | 802-1875 | SC-14* | 3/16 | 5/8 |
| | 802-2500 | SC-1* | 1/4 | 5/8 |
| | 802-3125 | SC-2 | 5/16 | 3/4 |
| | 802-3750 | SC-3 | 3/8 | 3/4 |
| | 802-4375 | SC-4 | 7/16 | 1 |
| | 802-5000 | SC-5 | 1/2 | 1 |
| | 802-6250 | SC-6 | 5/8 | 1 |
| | 802-7500 | SC-7 | 3/4 | 1 |

Units: mm


| Medium Tough Cut | EDP Number | Style | Dia. | Flute Length |
|--|-------------|--------|------|--------------|
|  | 802-1250-60 | SC-11* | 3 | 12 |
| | 802-1875-60 | SC-14* | 5 | 16 |
| | 802-2362 | SC-1* | 6 | 16 |
| | 802-3125-60 | SC-2 | 8 | 19 |
| | 802-3750-60 | SC-3 | 9 | 19 |
| | 802-4375-60 | SC-4 | 11 | 25 |
| | 802-5000-60 | SC-5 | 12 | 25 |
| | 802-6250-60 | SC-6 | 16 | 25 |
| | 802-7500-60 | SC-7 | 19 | 25 |

List 803 — Round Nose Tree

Units: Inch

| Medium Tough Cut | EDP Number | Style | Dia. | Flute Length |
|---|------------|-------|------|--------------|
|  | 803-2500 | SF-1* | 1/4 | 5/8 |
| | 803-3750 | SF-3 | 3/8 | 3/4 |
| | 803-5001 | SF-13 | 1/2 | 3/4 |
| | 803-5000 | SF-5 | 1/2 | 1 |
| | 803-6250 | SF-6 | 5/8 | 1 |
| | 803-7500 | SF-7 | 3/4 | 1 |
| | 803-7501 | SF-14 | 3/4 | 1-1/4 |
| | 803-7502 | SF-15 | 3/4 | 1-1/2 |

Units: mm

| Medium Tough Cut | EDP Number | Style | Dia. | Flute Length |
|---|-------------|-------|------|--------------|
|  | 803-2362 | SF-1* | 6 | 16 |
| | 803-3750-60 | SF-3 | 9 | 19 |
| | 803-5001-60 | SF-13 | 12 | 19 |
| | 803-5000-60 | SF-5 | 12 | 25 |
| | 803-6250-60 | SF-6 | 16 | 25 |
| | 803-7500-60 | SF-7 | 19 | 25 |
| | 803-7501-60 | SF-14 | 19 | 31 |
| | 803-7502-60 | SF-15 | 19 | 38 |



*Indicates 1/4" brazed carbide shank 2" OAL; all others have 1/4" diameter hardened steel shank (3/8" diameter shanks available).

*Indicates 6mm brazed carbide shank 50mm OAL; all others have 6mm diameter hardened steel shank (9mm diameter shanks available).




1/4" Shank


6mm Shank

List 901 — Cylindrical

Units: Inch


| Medium Right Hand Spiral | EDP Number | End Cut Suffix | Style | Dia. | Flute Length |
|---|------------|----------------|--------|------|--------------|
|  | 901-1250 | -EC | SA-11* | 1/8 | 1/2 |
| | 901-1875 | -EC | SA-14* | 3/16 | 5/8 |
| | 901-2500 | -EC | SA-1* | 1/4 | 5/8 |
| | 901-3125 | -EC | SA-2 | 5/16 | 3/4 |
| | 901-3750 | -EC | SA-3 | 3/8 | 3/4 |
| | 901-4375 | -EC | SA-4 | 7/16 | 1 |
| | 901-5001 | - | SA-5F | 1/2 | 1/2 |
| | 901-5000 | -EC | SA-5 | 1/2 | 1 |
| | 901-6250 | -EC | SA-6 | 5/8 | 1 |
| | 901-7500 | -EC | SA-16 | 3/4 | 3/4 |
| | 901-7501 | -EC | SA-7 | 3/4 | 1 |
| | 901-1000 | -EC | SA-9 | 1 | 1 |

Units: mm


| Medium Right Hand Spiral | EDP Number | End Cut Suffix | Style | Dia. | Flute Length |
|---|-------------|----------------|--------|------|--------------|
|  | 901-1250-60 | -EC | SA-11* | 3 | 12 |
| | 901-1875-60 | -EC | SA-14* | 5 | 16 |
| | 901-2362 | -EC | SA-1* | 6 | 16 |
| | 901-3125-60 | -EC | SA-2 | 8 | 19 |
| | 901-3750-60 | -EC | SA-3 | 9 | 19 |
| | 901-4375-60 | -EC | SA-4 | 11 | 25 |
| | 901-5001-60 | -EC | SA-5F | 12 | 12 |
| | 901-5000-60 | -EC | SA-5 | 12 | 25 |
| | 901-6250-60 | -EC | SA-6 | 16 | 25 |
| | 901-7500-60 | -EC | SA-16 | 19 | 19 |
| | 901-7501-60 | -EC | SA-7 | 19 | 25 |
| | 901-1000-60 | -EC | SA-9 | 25 | 25 |

List 902 — Cylindrical Ball End

Units: Inch


| Medium Right Hand Spiral | EDP Number | Style | Dia. | Flute Length |
|--|------------|--------|------|--------------|
|  | 902-1250 | SC-11* | 1/8 | 1/2 |
| | 902-1875 | SC-14* | 3/16 | 5/8 |
| | 902-2500 | SC-1* | 1/4 | 5/8 |
| | 902-3125 | SC-2 | 5/16 | 3/4 |
| | 902-3750 | SC-3 | 3/8 | 3/4 |
| | 902-4375 | SC-4 | 7/16 | 1 |
| | 902-5000 | SC-5 | 1/2 | 1 |
| | 902-6250 | SC-6 | 5/8 | 1 |
| | 902-7500 | SC-7 | 3/4 | 1 |

Units: mm


| Medium Right Hand Spiral | EDP Number | Style | Dia. | Flute Length |
|--|-------------|--------|------|--------------|
|  | 902-1250-60 | SC-11* | 3 | 12 |
| | 902-1875-60 | SC-14* | 5 | 16 |
| | 902-2362 | SC-1* | 6 | 16 |
| | 902-3125-60 | SC-2 | 8 | 19 |
| | 902-3750-60 | SC-3 | 9 | 19 |
| | 902-4375-60 | SC-4 | 11 | 25 |
| | 902-5000-60 | SC-5 | 12 | 25 |
| | 902-6250-60 | SC-6 | 16 | 25 |
| | 902-7500-60 | SC-7 | 19 | 25 |

List 903 — Round Nose Tree

Units: Inch

| Medium Right Hand Spiral | EDP Number | Style | Dia. | Flute Length |
|---|------------|-------|------|--------------|
|  | 903-2500 | SF-1* | 1/4 | 5/8 |
| | 903-3750 | SF-3 | 3/8 | 3/4 |
| | 903-5001 | SF-13 | 1/2 | 3/4 |
| | 903-5000 | SF-5 | 1/2 | 1 |
| | 903-6250 | SF-6 | 5/8 | 1 |
| | 903-7500 | SF-7 | 3/4 | 1 |
| | 903-7501 | SF-14 | 3/4 | 1-1/4 |
| | 903-7502 | SF-15 | 3/4 | 1-1/2 |

Units: mm

| Medium Right Hand Spiral | EDP Number | Style | Dia. | Flute Length |
|---|-------------|-------|------|--------------|
|  | 903-2362 | SF-1* | 6 | 16 |
| | 903-3750-60 | SF-3 | 9 | 19 |
| | 903-5001-60 | SF-13 | 12 | 19 |
| | 903-5000-60 | SF-5 | 12 | 25 |
| | 903-6250-60 | SF-6 | 16 | 25 |
| | 903-7500-60 | SF-7 | 19 | 25 |
| | 903-7501-60 | SF-14 | 19 | 32 |
| | 903-7502-60 | SF-15 | 19 | 38 |



*Indicates 1/4" brazed carbide shank 2" OAL; all others have 1/4" diameter hardened steel shank (3/8" diameter shanks available).

*Indicates 6mm brazed carbide shank 50mm OAL; all others have 6mm diameter hardened steel shank (9mm diameter shanks available).




1/4" Shank


6mm Shank

List 804 — Pointed Tree

Units: Inch


| Medium Tough Cut | EDP Number | Style | Dia. | Flute Length |
|---|------------|-------|------|--------------|
|  | 804-2500 | SG-1* | 1/4 | 5/8 |
| | 804-3125 | SG-2 | 5/16 | 3/4 |
| | 804-3750 | SG-3 | 3/8 | 3/4 |
| | 804-5001 | SG-13 | 1/2 | 3/4 |
| | 804-5000 | SG-5 | 1/2 | 1 |
| | 804-6250 | SG-6 | 5/8 | 1 |
| | 804-7500 | SG-7 | 3/4 | 1 |
| | 804-7501 | SG-15 | 3/4 | 1-1/2 |

Units: mm


| Medium Tough Cut | EDP Number | Style | Dia. | Flute Length |
|---|-------------|-------|------|--------------|
|  | 804-2362 | SG-1* | 6 | 16 |
| | 804-3125-60 | SG-2 | 8 | 19 |
| | 804-3750-60 | SG-3 | 9 | 19 |
| | 804-5001-60 | SG-13 | 12 | 19 |
| | 804-5000-60 | SG-5 | 12 | 25 |
| | 804-6250-60 | SG-6 | 16 | 25 |
| | 804-7500-60 | SG-7 | 19 | 25 |
| | 804-7501-60 | SG-15 | 19 | 38 |

List 805 — Pointed Cone

Units: Inch


| Medium Tough Cut | EDP Number | Style | Dia. | Flute Length | Incl. Ang. Deg. |
|---|------------|-------|------|--------------|-----------------|
|  | 805-2500 | SM-1* | 1/4 | 1/2 | 22 |
| | 805-2501 | SM-2* | 1/4 | 3/4 | 14 |
| | 805-2502 | SM-3* | 1/4 | 1 | 10 |
| | 805-3750 | SM-4 | 3/8 | 5/8 | 28 |
| | 805-5000 | SM-5 | 1/2 | 7/8 | 28 |
| | 805-6250 | SM-6 | 5/8 | 1 | 31 |
| | | | | | |

Units: mm


| Medium Tough Cut | EDP Number | Style | Dia. | Flute Length | Incl. Ang. Deg. |
|---|-------------|-------|------|--------------|-----------------|
|  | 805-2362 | SM-1* | 6 | 12 | 22 |
| | 805-2363 | SM-2* | 6 | 19 | 14 |
| | 805-2364 | SM-3* | 6 | 25 | 10 |
| | 805-3750-60 | SM-4* | 9 | 16 | 28 |
| | 805-5000-60 | SM-5 | 12 | 22 | 28 |
| | 805-6250-60 | SM-6 | 16 | 25 | 31 |
| | | | | | |

List 806 — Egg Shape

Units: Inch

| Medium Tough Cut | EDP Number | Style | Dia. | Flute Length |
|---|------------|-------|------|--------------|
|  | 806-2500 | SE-1* | 1/4 | 3/8 |
| | 806-3750 | SE-3 | 3/8 | 5/8 |
| | 806-5000 | SE-5 | 1/2 | 7/8 |
| | 806-6250 | SE-6 | 5/8 | 1 |
| | 806-7500 | SE-7 | 3/4 | 1 |
| | | | | |

Units: mm

| Medium Tough Cut | EDP Number | Style | Dia. | Flute Length |
|---|-------------|-------|------|--------------|
|  | 806-2362 | SE-1* | 6 | 9 |
| | 806-3750-60 | SE-3 | 9 | 16 |
| | 806-5000-60 | SE-5 | 12 | 22 |
| | 806-6250-60 | SE-6 | 16 | 25 |
| | 806-7500-60 | SE-7 | 19 | 25 |
| | | | | |

*Indicates 1/4" brazed carbide shank 2" OAL; all others have 1/4" diameter hardened steel shank (3/8" diameter shanks available).

*Indicates 6mm brazed carbide shank 50mm OAL; all others have 6mm diameter hardened steel shank (9mm diameter shanks available).






1/4" Shank


6mm Shank

List 904 — Pointed Tree

Units: Inch


| Medium Right Hand Spiral | EDP Number | Style | Dia. | Flute Length |
|---|------------|-------|------|--------------|
|  | 904-2500 | SG-1* | 1/4 | 5/8 |
| | 904-3125 | SG-2 | 5/16 | 3/4 |
| | 904-3750 | SG-3 | 3/8 | 3/4 |
| | 904-5001 | SG-13 | 1/2 | 3/4 |
| | 904-5000 | SG-5 | 1/2 | 1 |
| | 904-6250 | SG-6 | 5/8 | 1 |
| | 904-7500 | SG-7 | 3/4 | 1 |
| | 904-7501 | SG-15 | 3/4 | 1-1/2 |

Units: mm


| Medium Right Hand Spiral | EDP Number | Style | Dia. | Flute Length |
|---|-------------|-------|------|--------------|
|  | 904-2362 | SG-1* | 6 | 16 |
| | 904-3125-60 | SG-2 | 8 | 19 |
| | 904-3750-60 | SG-3 | 9 | 19 |
| | 904-5001-60 | SG-13 | 12 | 19 |
| | 904-5000-60 | SG-5 | 12 | 25 |
| | 904-6250-60 | SG-6 | 16 | 25 |
| | 904-7500-60 | SG-7 | 19 | 25 |
| | 904-7501-60 | SG-15 | 19 | 38 |

List 905 — Pointed Cone

Units: Inch


| Medium Right Hand Spiral | EDP Number | Style | Dia. | Flute Length | Incl. Ang. Deg. |
|--|------------|-------|------|--------------|-----------------|
|  | 905-2500 | SM-1* | 1/4 | 1/2 | 22 |
| | 905-2501 | SM-2* | 1/4 | 3/4 | 14 |
| | 905-2502 | SM-3* | 1/4 | 1 | 10 |
| | 905-3750 | SM-4 | 3/8 | 5/8 | 28 |
| | 905-5000 | SM-5 | 1/2 | 7/8 | 28 |
| | 905-6250 | SM-6 | 5/8 | 1 | 31 |

Units: mm


| Medium Right Hand Spiral | EDP Number | Style | Dia. | Flute Length | Incl. Ang. Deg. |
|--|-------------|-------|------|--------------|-----------------|
|  | 905-2362 | SM-1* | 6 | 12 | 22 |
| | 905-2363 | SM-2* | 6 | 19 | 14 |
| | 905-2364 | SM-3* | 6 | 25 | 10 |
| | 905-3750-60 | SM-4 | 9 | 16 | 28 |
| | 905-5000-60 | SM-5 | 12 | 22 | 28 |
| | 905-6250-60 | SM-6 | 16 | 25 | 31 |

List 906 — Egg Shape

Units: Inch

| Medium Right Hand Spiral | EDP Number | Style | Dia. | Flute Length |
|---|------------|-------|------|--------------|
|  | 906-2500 | SE-1* | 1/4 | 3/8 |
| | 906-3750 | SE-3 | 3/8 | 5/8 |
| | 906-5000 | SE-5 | 1/2 | 7/8 |
| | 906-6250 | SE-6 | 5/8 | 1 |
| | 906-7500 | SE-7 | 3/4 | 1 |

Units: mm

| Medium Right Hand Spiral | EDP Number | Style | Dia. | Flute Length |
|---|-------------|-------|------|--------------|
|  | 906-2362 | SE-1* | 6.0 | 9 |
| | 906-3750-60 | SE-3 | 9.5 | 16 |
| | 906-5000-60 | SE-5 | 12.7 | 22 |
| | 906-6250-60 | SE-6 | 16.0 | 25 |
| | 906-7500-60 | SE-7 | 19.0 | 25 |



*Indicates 1/4" brazed carbide shank 2" OAL; all others have 1/4" diameter hardened steel shank (3/8" diameter shanks available).

*Indicates 6mm brazed carbide shank 50mm OAL; all others have 6mm diameter hardened steel shank (9mm diameter shanks available).




1/4" Shank


6mm Shank

List 807 — 14° Included Angle

Units: Inch


| Medium Tough Cut | EDP Number | Style | Dia. | Flute Length | Incl. Ang. Deg. |
|---|------------|-------|------|--------------|-----------------|
|  | 807-2500 | SL-1* | 1/4 | 5/8 | 14 |
| | 807-3125 | SL-2 | 5/16 | 7/8 | 14 |
| | 807-3750 | SL-3 | 3/8 | 1-1/16 | 14 |
| | 807-5000 | SL-4 | 1/2 | 1-1/8 | 14 |
| | 807-6250 | SL-5 | 5/8 | 1-5/16 | 14 |
| | 807-7500 | SL-7 | 3/4 | 1-1/2 | 14 |
| | | | | | |

Units: mm


| Medium Tough Cut | EDP Number | Style | Dia. | Flute Length | Incl. Ang. Deg. |
|---|-------------|-------|------|--------------|-----------------|
|  | 807-2362 | SL-1* | 6 | 16 | 14 |
| | 807-3125-60 | SL-2 | 8 | 22 | 14 |
| | 807-3750-60 | SL-3 | 9 | 26 | 14 |
| | 807-5000-60 | SL-4 | 12 | 28 | 14 |
| | 807-6250-60 | SL-5 | 16 | 33 | 14 |
| | 807-7500-60 | SL-7 | 19 | 38 | 14 |
| | | | | | |

List 808 — Ball Shape

Units: Inch


| Medium Tough Cut | EDP Number | Style | Diameter |
|--|------------|--------|----------|
|  | 808-1250 | SD-11* | 1/8 |
| | 808-1875 | SD-14* | 3/16 |
| | 808-2500 | SD-1* | 1/4 |
| | 808-3125 | SD-2 | 5/16 |
| | 808-3750 | SD-3 | 3/8 |
| | 808-5000 | SD-5 | 1/2 |
| | 808-6250 | SD-6 | 5/8 |
| | 808-7500 | SD-7 | 3/4 |
| | 808-1000 | SD-9 | 1 |
| | | | |

Units: mm


| Medium Tough Cut | EDP Number | Style | Diameter |
|--|-------------|--------|----------|
|  | 808-1250-60 | SD-11* | 3 |
| | 808-1875-60 | SD-14* | 5 |
| | 808-2362 | SD-1* | 6 |
| | 808-3125-60 | SD-2 | 8 |
| | 808-3750-60 | SD-3 | 9 |
| | 808-5000-60 | SD-5 | 12 |
| | 808-6250-60 | SD-6 | 16 |
| | 808-7500-60 | SD-7 | 19 |
| | 808-1000-60 | SD-9 | 25 |
| | | | |

List 849 — 90° Cone

Units: Inch

| Medium Tough Cut | EDP Number | Style | Dia. | Incl. Ang. Deg. |
|---|------------|-------|------|-----------------|
|  | 849-2500 | SK-1* | 1/4 | 90 |
| | 849-3750 | SK-3 | 3/8 | 90 |
| | 849-5000 | SK-5 | 1/2 | 90 |
| | 849-6250 | SK-6 | 5/8 | 90 |
| | 849-7500 | SK-7 | 3/4 | 90 |
| | 849-1000 | SK-9 | 1 | 90 |
| | | | | |

Units: mm

| Medium Tough Cut | EDP Number | Style | Dia. | Incl. Ang. Deg. |
|---|-------------|-------|------|-----------------|
|  | 849-2362 | SK-1* | 6 | 90 |
| | 849-3750-60 | SK-3 | 9 | 90 |
| | 849-5000-60 | SK-5 | 12 | 90 |
| | 849-6250-60 | SK-6 | 16 | 90 |
| | 849-7500-60 | SK-7 | 19 | 90 |
| | 849-1000-60 | SK-9 | 25 | 90 |
| | | | | |

*Indicates 1/4" brazed carbide shank 2" OAL; all others have 1/4" diameter hardened steel shank (3/8" diameter shanks available).

*Indicates 6mm brazed carbide shank 50mm OAL; all others have 6mm diameter hardened steel shank (9mm diameter shanks available).






1/4" Shank


6mm Shank

List 907 — 14° Included Angle

Units: Inch


| Medium Right Hand Spiral | EDP Number | Style | Dia. | Flute Length | Incl. Ang. Deg. |
|---|------------|-------|------|--------------|-----------------|
|  | 907-2500 | SL-1* | 1/4 | 5/8 | 14 |
| | 907-3125 | SL-2 | 5/16 | 7/8 | 14 |
| | 907-3750 | SL-3 | 3/8 | 1-1/16 | 14 |
| | 907-5000 | SL-4 | 1/2 | 1-1/8 | 14 |
| | 907-6250 | SL-5 | 5/8 | 1-5/16 | 14 |
| | 907-7500 | SL-7 | 3/4 | 1-1/2 | 14 |
| | | | | | |

Units: mm


| Medium Right Hand Spiral | EDP Number | Style | Dia. | Flute Length | Incl. Ang. Deg. |
|---|-------------|-------|------|--------------|-----------------|
|  | 907-2362 | SL-1* | 6 | 16 | 14 |
| | 907-3125-60 | SL-2 | 8 | 22 | 14 |
| | 907-3750-60 | SL-3 | 9 | 26 | 14 |
| | 907-5000-60 | SL-4 | 12 | 28 | 14 |
| | 907-6250-60 | SL-5 | 16 | 33 | 14 |
| | 907-7500-60 | SL-7 | 19 | 38 | 14 |
| | | | | | |

List 908 — Ball Shape

Units: Inch


| Medium Right Hand Spiral | EDP Number | Style | Diameter |
|--|------------|--------|----------|
|  | 908-1250 | SD-11* | 1/8 |
| | 908-1875 | SD-14* | 3/16 |
| | 908-2500 | SD-1* | 1/4 |
| | 908-3125 | SD-2 | 5/16 |
| | 908-3750 | SD-3 | 3/8 |
| | 908-5000 | SD-5 | 1/2 |
| | 908-6250 | SD-6 | 5/8 |
| | 908-7500 | SD-7 | 3/4 |
| | 908-1000 | SD-9 | 1 |
| | | | |

Units: mm


| Medium Right Hand Spiral | EDP Number | Style | Diameter |
|--|-------------|--------|----------|
|  | 908-1250-60 | SD-11* | 3 |
| | 908-1875-60 | SD-14* | 5 |
| | 908-2362 | SD-1* | 6 |
| | 908-3125-60 | SD-2 | 8 |
| | 908-3750-60 | SD-3 | 9 |
| | 908-5000-60 | SD-5 | 12 |
| | 908-6250-60 | SD-6 | 16 |
| | 908-7500-60 | SD-7 | 19 |
| | 908-1000-60 | SD-9 | 25 |
| | | | |

List 949 — 90° Cone

Units: Inch

| Medium Right Hand Spiral | EDP Number | Style | Dia. | Incl. Ang. Deg. |
|---|------------|-------|------|-----------------|
|  | 949-2500 | SK-1* | 1/4 | 90 |
| | 949-3750 | SK-3 | 3/8 | 90 |
| | 949-5000 | SK-5 | 1/2 | 90 |
| | 949-6250 | SK-6 | 5/8 | 90 |
| | 949-7500 | SK-7 | 3/4 | 90 |
| | 949-1000 | SK-9 | 1 | 90 |
| | | | | |

Units: mm

| Medium Right Hand Spiral | EDP Number | Style | Dia. | Incl. Ang. Deg. |
|---|-------------|-------|------|-----------------|
|  | 949-2362 | SK-1* | 6 | 90 |
| | 949-3750-60 | SK-3 | 9 | 90 |
| | 949-5000-60 | SK-5 | 12 | 90 |
| | 949-6250-60 | SK-6 | 16 | 90 |
| | 949-7500-60 | SK-7 | 19 | 90 |
| | 949-1000-60 | SK-9 | 25 | 90 |
| | | | | |



*Indicates 1/4" brazed carbide shank 2" OAL; all others have 1/4" diameter hardened steel shank (3/8" diameter shanks available).

*Indicates 6mm brazed carbide shank 50mm OAL; all others have 6mm diameter hardened steel shank (9mm diameter shanks available).




1/4" Shank


6mm Shank

List 850 — 60° Cone

Units: Inch


| Medium Tough Cut | EDP Number | Style | Dia. | Incl. Ang. Deg. |
|---|------------|-------|------|-----------------|
|  | 850-2500 | SJ-1* | 1/4 | 60 |
| | 850-3750 | SJ-3 | 3/8 | 60 |
| | 850-5000 | SJ-5 | 1/2 | 60 |
| | 850-6250 | SJ-6 | 5/8 | 60 |
| | 850-7500 | SJ-7 | 3/4 | 60 |
| | 850-1000 | SJ-9 | 1 | 60 |

Units: mm


| Medium Tough Cut | EDP Number | Style | Dia. | Incl. Ang. Deg. |
|---|-------------|-------|------|-----------------|
|  | 850-2362 | SJ-1* | 6 | 60 |
| | 850-3750-60 | SJ-3 | 9 | 60 |
| | 850-5000-60 | SJ-5 | 12 | 60 |
| | 850-6250-60 | SJ-6 | 16 | 60 |
| | 850-7500-60 | SJ-7 | 19 | 60 |
| | 850-1000-60 | SJ-9 | 25 | 60 |

List 851 — Flame Shape

Units: Inch


| Medium Tough Cut | EDP Number | Style | Dia. | Flute Length |
|--|------------|-------|------|--------------|
|  | 851-3125 | SH-2 | 5/16 | 3/4 |
| | 851-5000 | SH-5 | 1/2 | 1-1/4 |
| | 851-6250 | SH-6 | 5/8 | 1-7/16 |
| | 851-7500 | SH-7 | 3/4 | 1-5/8 |
| | | | | |

Units: mm


| Medium Tough Cut | EDP Number | Style | Dia. | Flute Length |
|--|-------------|-------|------|--------------|
|  | 851-3125-60 | SH-2 | 8 | 19 |
| | 851-5000-60 | SH-5 | 12 | 31 |
| | 851-6250-60 | SH-6 | 16 | 36 |
| | 851-7500-60 | SH-7 | 19 | 41 |
| | | | | |

List 852 — Inverted Taper

Units: Inch

| Medium Tough Cut | EDP Number | Style | Dia. | Flute Length | Incl. Ang. Deg. |
|---|------------|-------|------|--------------|-----------------|
|  | 852-2500 | SN-1* | 1/4 | 5/16 | 10 |
| | 852-3750 | SN-2 | 3/8 | 3/8 | 13 |
| | 852-5000 | SN-4 | 1/2 | 1/2 | 28 |
| | 852-6250 | SN-6 | 5/8 | 3/4 | 18 |
| | 852-7500 | SN-7 | 3/4 | 5/8 | 30 |

Units: mm

| Medium Tough Cut | EDP Number | Style | Dia. | Flute Length | Incl. Ang. Deg. |
|---|-------------|-------|------|--------------|-----------------|
|  | 852-2362 | SN-1* | 6.0 | 8 | 10 |
| | 852-3750-60 | SN-2 | 9.5 | 9 | 13 |
| | 852-5000-60 | SN-4 | 12.0 | 12 | 28 |
| | 852-6250-60 | SN-6 | 16.0 | 19 | 18 |
| | 852-7500-60 | SN-7 | 19.0 | 16 | 30 |



*Indicates 1/4" brazed carbide shank 2" OAL; all others have 1/4" diameter hardened steel shank (3/8" diameter shanks available).

*Indicates 6mm brazed carbide shank 50mm OAL; all others have 6mm diameter hardened steel shank (9mm diameter shanks available).






1/4" Shank


6mm Shank

List 950 — 60° Cone

Units: Inch


| Medium Right Hand Spiral | EDP Number | Style | Dia. | Incl. Ang. Deg. |
|---|------------|-------|------|-----------------|
|  | 950-2500 | SJ-1* | 1/4 | 60 |
| | 950-3750 | SJ-3 | 3/8 | 60 |
| | 950-5000 | SJ-5 | 1/2 | 60 |
| | 950-6250 | SJ-6 | 5/8 | 60 |
| | 950-7500 | SJ-7 | 3/4 | 60 |
| | 950-1000 | SJ-9 | 1 | 60 |

Units: mm


| Medium Right Hand Spiral | EDP Number | Style | Dia. | Incl. Ang. Deg. |
|---|-------------|-------|------|-----------------|
|  | 950-2362 | SJ-1* | 6 | 60 |
| | 950-3750-60 | SJ-3 | 9 | 60 |
| | 950-5000-60 | SJ-5 | 12 | 60 |
| | 950-6250-60 | SJ-6 | 16 | 60 |
| | 950-7500-60 | SJ-7 | 19 | 60 |
| | 950-1000-60 | SJ-9 | 25 | 60 |

List 951 — Flame Shape

Units: Inch


| Medium Right Hand Spiral | EDP Number | Style | Dia. | Flute Length |
|--|------------|-------|------|--------------|
|  | 951-3125 | SH-2 | 5/16 | 3/4 |
| | 951-5000 | SH-5 | 1/2 | 1-1/4 |
| | 951-6250 | SH-6 | 5/8 | 1-7/16 |
| | 951-7500 | SH-7 | 3/4 | 1-5/8 |

Units: mm


| Medium Right Hand Spiral | EDP Number | Style | Dia. | Flute Length |
|--|-------------|-------|------|--------------|
|  | 951-3125-60 | SH-2 | 8 | 19 |
| | 951-5000-60 | SH-5 | 12 | 31 |
| | 951-6250-60 | SH-6 | 16 | 36 |
| | 951-7500-60 | SH-7 | 19 | 41 |

List 952 — Inverted Taper

Units: Inch

| Medium Right Hand Spiral | EDP Number | Style | Dia. | Flute Length | Incl. Ang. Deg. |
|---|------------|-------|------|--------------|-----------------|
|  | 952-2500 | SN-1* | 1/4 | 5/16 | 10 |
| | 952-3750 | SN-2 | 3/8 | 3/8 | 13 |
| | 952-5000 | SN-4 | 1/2 | 1/2 | 28 |
| | 952-6250 | SN-6 | 5/8 | 3/4 | 18 |
| | 952-7500 | SN-7 | 3/4 | 5/8 | 30 |

Units: mm

| Medium Right Hand Spiral | EDP Number | Style | Dia. | Flute Length | Incl. Ang. Deg. |
|---|-------------|-------|------|--------------|-----------------|
|  | 952-2362 | SN-1* | 6 | 8 | 10 |
| | 952-3750-60 | SN-2 | 9 | 9 | 13 |
| | 952-5000-60 | SN-4 | 12 | 12 | 28 |
| | 952-6250-60 | SN-6 | 16 | 19 | 18 |
| | 952-7500-60 | SN-7 | 19 | 16 | 30 |



*Indicates 1/4" brazed carbide shank 2" OAL; all others have 1/4" diameter hardened steel shank (3/8" diameter shanks available).

*Indicates 6mm brazed carbide shank 50mm OAL; all others have 6mm diameter hardened steel shank (9mm diameter shanks available).




1/4" Steel Shank (6" OAL)


6mm Steel Shank (152mm OAL)

List 861 — Cylindrical

Units: Inch


| Medium Tough Cut | EDP Number | Style | Dia. | Flute Length |
|---|------------|--------|------|--------------|
|  | 861-3750 | SA-3L6 | 3/8 | 3/4 |
| | 861-5000 | SA-5L6 | 1/2 | 1 |
| | | | | |
| | | | | |
| | | | | |

Units: mm


| Medium Tough Cut | EDP Number | Style | Dia. | Flute Length |
|---|-------------|--------|------|--------------|
|  | 861-3750-60 | SA-3L6 | 9 | 19 |
| | 861-5000-60 | SA-5L6 | 12 | 25 |
| | | | | |
| | | | | |
| | | | | |

List 862 — Cylindrical Ball End

Units: Inch


| Medium Tough Cut | EDP Number | Style | Dia. | Flute Length |
|--|------------|--------|------|--------------|
|  | 862-3750 | SC-3L6 | 3/8 | 3/4 |
| | 862-5000 | SC-5L6 | 1/2 | 1 |
| | | | | |
| | | | | |
| | | | | |

Units: mm


| Medium Tough Cut | EDP Number | Style | Dia. | Flute Length |
|--|-------------|--------|------|--------------|
|  | 862-3750-60 | SC-3L6 | 9 | 19 |
| | 862-5000-60 | SC-5L6 | 12 | 25 |
| | | | | |
| | | | | |
| | | | | |

List 863 — Round Nose Tree

Units: Inch

| Medium Tough Cut | EDP Number | Style | Dia. | Flute Length |
|---|------------|--------|------|--------------|
|  | 863-3750 | SF-3L6 | 3/8 | 3/4 |
| | 863-5000 | SF-5L6 | 1/2 | 1 |
| | | | | |
| | | | | |
| | | | | |

Units: mm

| Medium Tough Cut | EDP Number | Style | Dia. | Flute Length |
|---|-------------|--------|------|--------------|
|  | 863-3750-60 | SF-3L6 | 9 | 19 |
| | 863-5000-60 | SF-5L6 | 12 | 25 |
| | | | | |
| | | | | |
| | | | | |




1/4" Steel Shank (6" OAL)


6mm Steel Shank (152mm OAL)

List 961 — Cylindrical

Units: Inch


| Medium Right Hand Spiral | EDP Number | Style | Dia. | Flute Length |
|---|------------|--------|------|--------------|
|  | 961-3750 | SA-3L6 | 3/8 | 3/4 |
| | 961-5000 | SA-5L6 | 1/2 | 1 |
| | | | | |
| | | | | |
| | | | | |

Units: mm


| Medium Right Hand Spiral | EDP Number | Style | Dia. | Flute Length |
|---|-------------|--------|------|--------------|
|  | 961-3750-60 | SA-3L6 | 9 | 19 |
| | 961-5000-60 | SA-5L6 | 12 | 25 |
| | | | | |
| | | | | |
| | | | | |

List 962 — Cylindrical Ball End

Units: Inch


| Medium Right Hand Spiral | EDP Number | Style | Dia. | Flute Length |
|--|------------|--------|------|--------------|
|  | 962-3750 | SC-3L6 | 3/8 | 3/4 |
| | 962-5000 | SC-5L6 | 1/2 | 1 |
| | | | | |
| | | | | |
| | | | | |

Units: mm


| Medium Right Hand Spiral | EDP Number | Style | Dia. | Flute Length |
|--|-------------|--------|------|--------------|
|  | 962-3750-60 | SC-3L6 | 9 | 19 |
| | 962-5000-60 | SC-5L6 | 12 | 25 |
| | | | | |
| | | | | |
| | | | | |

List 963 — Round Nose Tree

Units: Inch

| Medium Right Hand Spiral | EDP Number | Style | Dia. | Flute Length |
|---|------------|--------|------|--------------|
|  | 963-3750 | SF-3L6 | 3/8 | 3/4 |
| | 963-5000 | SF-5L6 | 1/2 | 1 |
| | | | | |
| | | | | |
| | | | | |

Units: mm

| Medium Right Hand Spiral | EDP Number | Style | Dia. | Flute Length |
|---|-------------|--------|------|--------------|
|  | 963-3750-60 | SF-3L6 | 9 | 19 |
| | 963-5000-60 | SF-5L6 | 12 | 25 |
| | | | | |
| | | | | |
| | | | | |




1/4" Steel Shank (6" OAL)


6mm Steel Shank (152mm OAL)

List 867 — 14° Included Angle

Units: Inch


| Medium Tough Cut | EDP Number | Style | Dia. | Flute Length |
|---|------------|--------|------|--------------|
|  | 867-3750 | SL-3L6 | 3/8 | 1-1/16 |
| | 867-5000 | SL-5L6 | 1/2 | 1-1/8 |
| | | | | |
| | | | | |
| | | | | |

Units: mm


| Medium Tough Cut | EDP Number | Style | Dia. | Flute Length |
|---|-------------|--------|------|--------------|
|  | 867-3750-60 | SL-3L6 | 9 | 26 |
| | 867-5000-60 | SL-5L6 | 12 | 28 |
| | | | | |
| | | | | |
| | | | | |

List 868 — Ball Shape

Units: Inch

| Medium Tough Cut | EDP Number | Style | Dia. |
|--|------------|--------|------|
|  | 868-3750 | SD-3L6 | 3/8 |
| | 868-5000 | SD-5L6 | 1/2 |
| | | | |
| | | | |
| | | | |

Units: mm

| Medium Tough Cut | EDP Number | Style | Dia. |
|--|-------------|--------|------|
|  | 868-3750-60 | SD-3L6 | 9 |
| | 868-5000-60 | SD-5L6 | 12 |
| | | | |
| | | | |
| | | | |




1/4" Steel Shank (6" OAL)


6mm Steel Shank (152mm OAL)

List 967 — 14° Included Angle

Units: Inch


| Medium Right Hand Spiral | EDP Number | Style | Dia. | Flute Length |
|---|------------|--------|------|--------------|
|  | 967-3750 | SL-3L6 | 3/8 | 1-1/16 |
| | 967-5000 | SL-5L6 | 1/2 | 1-1/8 |
| | | | | |
| | | | | |
| | | | | |

Units: mm


| Medium Right Hand Spiral | EDP Number | Style | Dia. | Flute Length |
|---|-------------|--------|------|--------------|
|  | 967-3750-60 | SL-3L6 | 9 | 26 |
| | 967-5000-60 | SL-5L6 | 12 | 28 |
| | | | | |
| | | | | |
| | | | | |

List 968 — Ball Shape

Units: Inch

| Medium Right Hand Spiral | EDP Number | Style | Dia. |
|--|------------|--------|------|
|  | 968-3750 | SD-3L6 | 3/8 |
| | 968-5000 | SD-5L6 | 1/2 |
| | | | |
| | | | |
| | | | |

Units: mm

| Medium Right Hand Spiral | EDP Number | Style | Dia. |
|--|-------------|--------|------|
|  | 968-3750-60 | SD-3L6 | 9 |
| | 968-5000-60 | SD-5L6 | 12 |
| | | | |
| | | | |
| | | | |




1/4" Shank (For Aluminum)


6mm Shank (For Aluminum)

List 881 — Cylindrical

Units: Inch


| Aluminium Cut | EDP Number | Style | Dia. | Flute Length |
|---|------------|--------|------|--------------|
|  | 881-2500 | SA-1A* | 1/4 | 5/8 |
| | 881-3750 | SA-3A | 3/8 | 3/4 |
| | 881-5000 | SA-5A | 1/2 | 1 |
| | 881-6250 | SA-6A | 5/8 | 1 |
| | 881-7500 | SA-7A | 3/4 | 1 |
| | | | | |

Units: mm


| Aluminium Cut | EDP Number | Style | Dia. | Flute Length |
|---|-------------|---------|------|--------------|
|  | 881-2362 | SA-1MA* | 6 | 16 |
| | 881-3125-60 | SA-2MA | 8 | 19 |
| | 881-3750-60 | SA-3MA | 9 | 19 |
| | 881-5000-60 | SA-5MA | 12 | 25 |
| | 881-6250-60 | SA-6MA | 16 | 25 |
| | 881-7500-60 | SA-7MA | 19 | 25 |
| | | | | |

List 882 — Cylindrical Ball End

Units: Inch


| Aluminium Cut | EDP Number | Style | Dia. | Flute Length |
|--|------------|--------|------|--------------|
|  | 882-2500 | SC-1A* | 1/4 | 5/8 |
| | 882-3750 | SC-3A | 3/8 | 3/4 |
| | 882-5000 | SC-5A | 1/2 | 1 |
| | 882-6250 | SC-6A | 5/8 | 1 |
| | 882-7500 | SC-7A | 3/4 | 1 |
| | | | | |

Units: mm


| Aluminium Cut | EDP Number | Style | Dia. | Flute Length |
|--|-------------|--------|------|--------------|
|  | 882-2362 | SC-1MA | 6 | 19 |
| | 882-3750-60 | SC-3MA | 9 | 19 |
| | 882-5000-60 | SC-5MA | 12 | 25 |
| | 882-6250-60 | SC-6MA | 16 | 25 |
| | 882-7500-60 | SC-7MA | 19 | 25 |
| | | | | |

List 883 — Round Nose Tree

Units: Inch

| Aluminium Cut | EDP Number | Style | Dia. | Flute Length |
|---|------------|--------|------|--------------|
|  | 883-2500 | SF-1A* | 1/4 | 5/8 |
| | 883-3750 | SF-3A | 3/8 | 3/4 |
| | 883-5000 | SF-5A | 1/2 | 1 |
| | 883-6250 | SF-6A | 5/8 | 1 |
| | 883-7500 | SF-14A | 3/4 | 1-1/4 |
| | | | | |

Units: mm

| Aluminium Cut | EDP Number | Style | Dia. | Flute Length |
|---|-------------|---------|------|--------------|
|  | 883-2362 | SF-1MA | 6 | 16 |
| | 883-3750-60 | SF-3MA | 9 | 19 |
| | 883-5000-60 | SF-5MA | 12 | 25 |
| | 883-6250-60 | SF-6MA | 16 | 25 |
| | 883-7500-60 | SF-14MA | 19 | 32 |
| | | | | |

Aluminum cut burs are designed for use on:

- Aluminum
- Non-ferrous metals
- Soft Steel
- Reinforced plastics
- Other soft materials

Also provide excellent work finish with minimum loading when cutting soft, sticky materials.



*Indicates 1/4" brazed carbide shank 2" OAL; all others have 1/4" diameter hardened steel shank (3/8" diameter shanks available).

*Indicates 6mm brazed carbide shank 50mm OAL; all others have 6mm diameter hardened steel shank (9mm diameter shanks available).






1/4" Shank (For Aluminum)


6mm Shank (For Aluminum)

List 885 — Flame Shape

Units: Inch


| Aluminium Cut | EDP Number | Style | Dia. | Flute Length |
|---|------------|-------|------|--------------|
|  | 885-5000 | SH-5A | 1/2 | 1-1/4 |
| | 885-6250 | SH-6A | 5/8 | 1-7/16 |
| | 885-7500 | SH-7A | 3/4 | 1-5/8 |
| | | | | |
| | | | | |

Units: mm


| Aluminium Cut | EDP Number | Style | Dia. | Flute Length |
|---|-------------|--------|------|--------------|
|  | 885-5000-60 | SH-5MA | 12 | 32 |
| | 885-6250-60 | SH-6MA | 16 | 37 |
| | 885-7500-60 | SH-7MA | 19 | 41 |
| | | | | |
| | | | | |

List 886 — Egg Shape

Units: Inch


| Aluminium Cut | EDP Number | Style | Dia. | Flute Length |
|---|------------|-------|------|--------------|
|  | 886-3750 | SE-3A | 3/8 | 5/8 |
| | 886-5000 | SE-5A | 1/2 | 7/8 |
| | 886-6250 | SE-6A | 5/8 | 1 |
| | 886-7500 | SE-7A | 3/4 | 1 |
| | | | | |
| | | | | |

Units: mm


| Aluminium Cut | EDP Number | Style | Dia. | Flute Length |
|---|-------------|--------|------|--------------|
|  | 886-3750-60 | SE-3MA | 9 | 16 |
| | 886-5000-60 | SE-5MA | 12 | 22 |
| | 886-6250-60 | SE-6MA | 16 | 25 |
| | 886-7500-60 | SE-7MA | 19 | 25 |
| | | | | |
| | | | | |

List 887 — 14° Included Angle

Units: Inch


| Aluminium Cut | EDP Number | Style | Dia. | Flute Length |
|---|------------|-------|------|--------------|
|  | 887-3750 | SL-3A | 3/8 | 1-1/16 |
| | 887-5000 | SL-5A | 1/2 | 1-1/8 |
| | 887-6250 | SL-6A | 5/8 | 1-5/16 |
| | 887-7500 | SL-7A | 3/4 | 1-1/2 |
| | | | | |
| | | | | |

Units: mm


| Aluminium Cut | EDP Number | Style | Dia. | Flute Length |
|---|-------------|--------|------|--------------|
|  | 887-3750-60 | SL-3MA | 9 | 27 |
| | 887-5000-60 | SL-4MA | 12 | 29 |
| | 887-6250-60 | SL-5MA | 16 | 33 |
| | 887-7500-60 | SL-7MA | 19 | 38 |
| | | | | |
| | | | | |

List 888 — Ball Shape

Units: Inch

| Aluminium Cut | EDP Number | Style | Dia. |
|---|------------|--------|------|
|  | 888-2500 | SD-1A* | 1/4 |
| | 888-3750 | SD-3A | 3/8 |
| | 888-5000 | SD-5A | 1/2 |
| | 888-6250 | SD-6A | 5/8 |
| | | | |
| | | | |

Units: mm

| Aluminium Cut | EDP Number | Style | Dia. |
|---|-------------|---------|------|
|  | 888-2362 | SD-1MA* | 6 |
| | 888-3125-60 | SD-2MA | 8 |
| | 888-3750-60 | SD-3MA | 9 |
| | 888-5000-60 | SD-5MA | 12 |
| | 888-6250-60 | SD-6MA | 16 |
| | | | |



*Indicates 1/4" brazed carbide shank 2" OAL; all others have 1/4" diameter hardened steel shank (3/8" diameter shanks available).

*Indicates 6mm brazed carbide shank 50mm OAL; all others have 6mm diameter hardened steel shank (9mm diameter shanks available).



1/8" Shank Dia. (1-1/2" OAL)

List 800 — Inch Sizes, Tough Cut

Units: Inch



Style: SA-42
Size: 3/32 x 7/16
EDP Number: 800-8001



Style: SA-43
Size: 1/8 x 9/16
EDP Number: 800-8002



Style: SB-43
Size: 1/8 x 9/16
EDP Number: 800-8003



Style: SC-42
Size: 1/8 x 9/16
EDP Number: 800-8004



Style: SG-44
Size: 1/8 x 1/2
EDP Number: 800-8005



Style: SF-42
Size: 1/8 x 1/2
EDP Number: 800-8006



Style: SC-41
Size: 3/32 x 7/16
EDP Number: 800-8007



Style: SA-41
Size: 1/16 x 1/4
EDP Number: 800-8008



Style: SE-41
Size: 1/8 x 7/32
EDP Number: 800-8010



Style: SM-41
Size: 1/8 x 11/32
Inc. Taper Deg.: 12
EDP Number: 800-8011



Style: SM-42
Size: 1/8 x 7/16
Inc. Taper Deg.: 14
EDP Number: 800-8012



Style: SM-43
Size: 1/8 x 5/8
Inc. Taper Deg.: 7
EDP Number: 800-8013



Style: SN-42
Size: 1/8 x 3/16
Inc. Taper Deg.: 10 INVERTED
EDP Number: 900-9014



Style: SJ-42
Size: 1/8 x 3/32
Inc. Taper Deg.: 60
EDP Number: 800-8015



Style: SK-42
Size: 1/8 x 1/16
Inc. Taper Deg.: 90
EDP Number: 800-8016



Style: SL-42
Size: 1/8 x 1/2
Inc. Taper Deg.: 8
EDP Number: 800-8017



Style: SD-41
Size: 3/32
EDP Number: 800-8018



Style: SD-42
Size: 1/8
EDP Number: 800-8019



Style: SH-41
Size: 1/8 x 1/4
EDP Number: 800-8020





3mm Shank Dia. (38mm OAL)

List 800 — Metric Sizes, Tough Cut

Units: mm



Style: SA-42
Size: 2.38 x 11
EDP Number: 800-8001-30



Style: SA-43
Size: 3 x 14
EDP Number: 800-8002-30



Style: SB-43
Size: 3 x 14
EDP Number: 800-8003-30



Style: SC-42
Size: 3 x 14
EDP Number: 800-8004-30



Style: SG-44
Size: 3 x 12
EDP Number: 800-8005-30



Style: SF-42
Size: 3 x 12
EDP Number: 800-8006-30



Style: SC-41
Size: 2.38 x 14
EDP Number: 800-8007-30



Style: SA-41
Size: 1.59 x 6
EDP Number: 800-8008-30



Style: SB-ECO
Size: 3
EDP Number: 800-8009-30



Style: SE-41
Size: 3 x 5.5
EDP Number: 800-8010-30



Style: SM-41
Size: 3 x 8
Inc. Taper Deg.: 12
EDP Number: 800-8011-30



Style: SM-42
Size: 3 x 11
Inc. Taper Deg.: 14
EDP Number: 800-8012-30



Style: SM-43
Size: 3 x 16
Inc. Taper Deg.: 7
EDP Number: 800-8013-30



Style: SN-42
Size: 3 x 5
Inc. Taper Deg.: 10 INVERTED
EDP Number: 800-8014-30



Style: SJ-42
Size: 3 x 2.5
Inc. Taper Deg.: 60
EDP Number: 800-8015-30



Style: SK-42
Size: 3 x 1.5
Inc. Taper Deg.: 90
EDP Number: 800-8016-30



Style: SL-42
Size: 3 x 12
Inc. Taper Deg.: 8
EDP Number: 800-8017-30



Style: SD-41
Size: 2.38
EDP Number: 800-8018-30



Style: SD-42
Size: 3
EDP Number: 800-8019-30



Style: SH-41
Size: 3 x 6
EDP Number: 800-8020-30



1/8" Shank Dia. (1-1/2" OAL)

List 900 — Inch Sizes, Medium Right Hand Spiral

Units: Inch



Style: SA-42
Size: 3/32 x 7/16
EDP Number: 900-9001



Style: SA-43
Size: 1/8 x 9/16
EDP Number: 900-9002



Style: SB-43
Size: 1/8 x 9/16
EDP Number: 900-9003



Style: SC-42
Size: 1/8 x 9/16
EDP Number: 900-9004



Style: SG-44
Size: 1/8 x 1/2
EDP Number: 900-9005



Style: SF-42
Size: 1/8 x 1/2
EDP Number: 900-9006



Style: SC-41
Size: 3/32 x 7/16
EDP Number: 900-9007



Style: SA-41
Size: 1/16 x 1/4
EDP Number: 900-9008



Style: SB-ECO
Size: 1/8
EDP Number: 900-9009



Style: SE-41
Size: 1/8 x 7/32
EDP Number: 900-9010



Style: SM-41
Size: 1/8 x 11/32
Inc. Taper Deg.: 12
EDP Number: 900-9011



Style: SM-42
Size: 1/8 x 7/16
Inc. Taper Deg.: 14
EDP Number: 900-9012



Style: SM-43
Size: 1/8 x 5/8
Inc. Taper Deg.: 7
EDP Number: 900-9013



Style: SN-42
Size: 1/8 x 3/16
Inc. Taper Deg.: 10 INVERTED
EDP Number: 900-9014



Style: SJ-42
Size: 1/8 x 3/32
Inc. Taper Deg.: 60
EDP Number: 900-9015



Style: SK-42
Size: 1/8 x 1/16
Inc. Taper Deg.: 90
EDP Number: 900-9016



Style: SL-42
Size: 1/8 x 1/2
Inc. Taper Deg.: 8
EDP Number: 900-9017



Style: SD-41
Size: 3/32
EDP Number: 900-9018



Style: SD-42
Size: 1/8
EDP Number: 900-9019



Style: SH-41
Size: 1/8 x 1/4
EDP Number: 900-9020





3mm Shank Dia. (38mm OAL)

List 900 — Metric Sizes, Medium Right Hand Spiral

Units: mm



Style: SA-42
Size: 2.38 x 11
EDP Number: 900-9001-30



Style: SA-43
Size: 3 x 14
EDP Number: 900-9002-30



Style: SB-43
Size: 3 x 14
EDP Number: 900-9003-30



Style: SC-42
Size: 3 x 14
EDP Number: 900-9004-30



Style: SG-44
Size: 3 x 12
EDP Number: 900-9005-30



Style: SF-42
Size: 3 x 12
EDP Number: 900-9006-30



Style: SC-41
Size: 2.38 x 14
EDP Number: 900-9007-30



Style: SA-41
Size: 1.59 x 6
EDP Number: 900-9008-30



Style: SB-ECO
Size: 3
EDP Number: 900-9009-30



Style: SE-41
Size: 3 x 5.5
EDP Number: 900-9010-30



Style: SM-41
Size: 3 x 8
Inc. Taper Deg.: 12
EDP Number: 900-9011-30



Style: SM-42
Size: 3 x 11
Inc. Taper Deg.: 14
EDP Number: 900-9012-30



Style: SM-43
Size: 3 x 16
Inc. Taper Deg.: 7
EDP Number: 900-9013-30



Style: SN-42
Size: 3 x 5
Inc. Taper Deg.: 10 INVERTED
EDP Number: 900-9014-30



Style: SJ-42
Size: 3 x 2.5
Inc. Taper Deg.: 60
EDP Number: 900-9015-30



Style: SK-42
Size: 3 x 1.5
Inc. Taper Deg.: 90
EDP Number: 900-9016-30



Style: SL-42
Size: 3 x 12
Inc. Taper Deg.: 8
EDP Number: 900-9017-30



Style: SD-41
Size: 2.38
EDP Number: 900-9018-30



Style: SD-42
Size: 3
EDP Number: 900-9019-30












Style: SH-41
Size: 3 x 6
EDP Number: 900-9020-30



1/4" Diameter Carbide Burs (1/8" Hardened Steel Shank)

List 815 — Inch Sizes, Tough Cut










Units: Inch

| | Cylindrical | Cylindrical Ball End | Round Nose Tree | Pointed Tree | Pointed Cone | End Cut | Ball Shape | Egg Shape | Inverted Taper |
|-------------------------|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |
| Style: | SA-51 | SC-51 | SF-51 | SG-51 | SM-51 | SB-51 | SD-51 | SE-51 | SN-51 |
| Size: | 1/4 x 1/2 | 1/4 x 1/2 | 1/4 x 1/2 | 1/4 x 1/2 | 1/4 x 1/2 | 1/4 x 3/16 | 1/4 | 1/4 x 3/8 | 1/4 x 1/4 |
| Inc. Taper Deg.: | | | | | 22 | | | | 10 INVERTED |
| EDP Number: | 815-0001 | 815-0002 | 815-0003 | 815-0004 | 815-0005 | 815-0006 | 815-0007 | 815-0008 | 815-0009 |

6mm Diameter Carbide Burs (3mm Hardened Steel Shank)

List 815 — Metric Sizes, Tough Cut

Units: mm

| | Cylindrical | Cylindrical Ball End | Round Nose Tree | Pointed Tree | Pointed Cone | End Cut | Ball Shape | Egg Shape | Inverted Taper |
|-------------------------|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |
| Style: | SA-51 | SC-51 | SF-51 | SG-51 | SM-51 | SB-51 | SD-51 | SE-51 | SN-51 |
| Size: | 6.35 x 12 | 6.35 x 12 | 6.35 x 12 | 6.35 x 12 | 6.35 x 12 | 6.35 x 5 | 6.35 | 6.35 x 9 | 6.35 x 6.35 |
| Inc. Taper Deg.: | | | | | | 22 | | | 10 INVERTED |
| EDP Number: | 815-0001-30 | 815-0002-30 | 815-0003-30 | 815-0004-30 | 815-0005-30 | 815-0006-30 | 815-0007-30 | 815-0008-30 | 815-0009-30 |



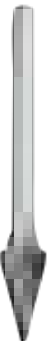
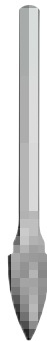


1/4" Diameter Carbide Burs (1/8" Hardened Steel Shank)

List 915 — Inch Sizes, Medium Right Hand Spiral

Units: Inch

| | Cylindrical | Cylindrical Ball End | Round Nose Tree | Pointed Tree | Pointed Cone | End Cut | Ball Shape | Egg Shape | Inverted Taper |
|---|---|---|---|---|---|---|---|---|----------------|
|  |  |  |  |  |  |  |  |  | |
| Style: | SA-51 | SC-51 | SF-51 | SG-51 | SM-51 | SB-51 | SD-51 | SE-51 | SN-51 |
| Size: | 1/4 x 1/2 | 1/4 x 1/2 | 1/4 x 1/2 | 1/4 x 1/2 | 1/4 x 1/2 | 1/4 x 3/16 | 1/4 | 1/4 x 3/8 | 1/4 x 1/4 |
| Inc. Taper Deg.: | | | | | | 22 | | | 10 INVERTED |
| EDP Number: | 915-0001 | 915-0002 | 915-0003 | 915-0004 | 915-0005 | 915-0006 | 915-0007 | 915-0008 | 915-0009 |



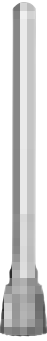
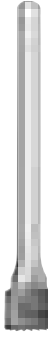
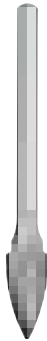
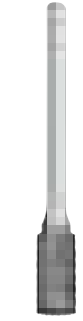
| | | | | | | | | | |
|-------------------------|-----------|-----------|-----------|-----------|-----------|------------|----------|-----------|-------------|
| Style: | SA-51 | SC-51 | SF-51 | SG-51 | SM-51 | SB-51 | SD-51 | SE-51 | SN-51 |
| Size: | 1/4 x 1/2 | 1/4 x 1/2 | 1/4 x 1/2 | 1/4 x 1/2 | 1/4 x 1/2 | 1/4 x 3/16 | 1/4 | 1/4 x 3/8 | 1/4 x 1/4 |
| Inc. Taper Deg.: | | | | | | 22 | | | 10 INVERTED |
| EDP Number: | 915-0001 | 915-0002 | 915-0003 | 915-0004 | 915-0005 | 915-0006 | 915-0007 | 915-0008 | 915-0009 |

6mm Diameter Carbide Burs (3mm Hardened Steel Shank)

List 915 — Metric Sizes, Medium Right Hand Spiral

Units: mm

| | Cylindrical | Cylindrical Ball End | Round Nose Tree | Pointed Tree | Pointed Cone | End Cut | Ball Shape | Egg Shape | Inverted Taper |
|---|---|---|---|---|---|---|---|---|----------------|
|  |  |  |  |  |  |  |  |  | |
| Style: | SA-51 | SC-51 | SF-51 | SG-51 | SM-51 | SB-51 | SD-51 | SE-51 | SN-51 |
| Size: | 6.35 x 12 | 6.35 x 12 | 6.35 x 12 | 6.35 x 12 | 6.35 x 12 | 6.35 x 5 | 6.35 | 6.35 x 9 | 6.35 x 6.35 |
| Inc. Taper Deg.: | | | | | | 22 | | | 10 INVERTED |
| EDP Number: | 915-0001-30 | 915-0002-30 | 915-0003-30 | 915-0004-30 | 915-0005-30 | 915-0006-30 | 915-0007-30 | 915-0008-30 | 915-0009-30 |



| | | | | | | | | | |
|-------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Style: | SA-51 | SC-51 | SF-51 | SG-51 | SM-51 | SB-51 | SD-51 | SE-51 | SN-51 |
| Size: | 6.35 x 12 | 6.35 x 12 | 6.35 x 12 | 6.35 x 12 | 6.35 x 12 | 6.35 x 5 | 6.35 | 6.35 x 9 | 6.35 x 6.35 |
| Inc. Taper Deg.: | | | | | | 22 | | | 10 INVERTED |
| EDP Number: | 915-0001-30 | 915-0002-30 | 915-0003-30 | 915-0004-30 | 915-0005-30 | 915-0006-30 | 915-0007-30 | 915-0008-30 | 915-0009-30 |



1/8" Brazed Carbide Shank (1-1/2" OAL)

List 820 — Inch Sizes, Tough Cut

Units: Inch

| | | | | | | |
|-------------------------|---|---|---|---|---|---|
| |  |  |  |  |  |  |
| Style: | SA-52 | SA-53 | SC-52 | SC-53 | SF-53 | SG-53 |
| Size: | 5/32 x 1/2 | 3/16 x 1/2 | 5/32 x 1/2 | 3/16 x 1/2 | 3/16 x 1/2 | 3/16 x 1/2 |
| EDP Number: | 820-0001 | 820-0011 | 820-0002 | 820-0012 | 820-0003 | 820-0004 |
| |  |  |  |  |  |  |
| Style: | SM-53 | SE-53 | SL-53 | SD-53 | SH-53 | SN-53 |
| Size: | 3/16 x 1/2 | 3/16 x 9/32 | 3/16 x 1/2 | 3/16 | 3/16 x 3/8 | 3/16 x 1/4 |
| Inc. Taper Deg.: | 16 | | 14 | | | 10 INVERTED |
| EDP Number: | 820-0005 | 820-0006 | 820-0007 | 820-0008 | 820-0009 | 820-0010 |

3mm Brazed Carbide Shank (38mm OAL)

List 820 — Metric Sizes, Tough Cut

Units: mm

| | | | | | | |
|-------------------------|---|---|---|---|---|---|
| |  |  |  |  |  |  |
| Style: | SA-52 | SA-53 | SC-52 | SC-53 | SF-53 | SG-53 |
| Size: | 3.97 x 12 | 4.76 x 12 | 3.97 x 12 | 4.76 x 12 | 4.76 x 12 | 4.76 x 12 |
| EDP Number: | 820-0001-30 | 820-0011-30 | 820-0002-30 | 820-0012-30 | 820-0003-30 | 820-0004-30 |
| |  |  |  |  |  |  |
| Style: | SM-53 | SE-53 | SL-53 | SD-53 | SH-53 | SN-53 |
| Size: | 3.97 x 12 | 4.76 x 12 | 3.97 x 12 | 4.76 | 4.76 x 9 | 4.76 x 6 |
| Inc. Taper Deg.: | 16 | | 14 | | | 10 INVERTED |
| EDP Number: | 820-0005-30 | 820-0006-30 | 820-0007-30 | 820-0008-30 | 820-0009-30 | 820-0010-30 |

















1/8" Brazed Carbide Shank (1-1/2" OAL)

List 920 — Inch Sizes, Medium Right Hand Spiral













Units: Inch

| | | | | | | |
|-------------------------|---|---|---|---|---|---|
| |  |  |  |  |  |  |
| Style: | SA-52 | SA-53 | SC-52 | SC-53 | SF-53 | SG-53 |
| Size: | 5/32 x 1/2 | 3/16x1/2 | 5/32 x 1/2 | 3/16 x 1/2 | 3/16 x 1/2 | 3/16 x 1/2 |
| EDP Number: | 920-0001 | 920-0011 | 920-0002 | 920-0012 | 920-0003 | 920-0004 |
| |  |  |  |  |  |  |
| Style: | SM-53 | SE-53 | SL-53 | SD-53 | SH-53 | SN-53 |
| Size: | 3/16 x 1/2 | 3/16 x 9/32 | 3/16 x 1/2 | 3/16 | 3/16 x 3/8 | 3/16 x 1/4 |
| Inc. Taper Deg.: | 16 | | 14 | | | 10 INVERTED |
| EDP Number: | 920-0005 | 920-0006 | 920-0007 | 920-0008 | 920-0009 | 920-0010 |

3mm Brazed Carbide Shank (38mm OAL)

List 920 — Metric Sizes, Medium Right Hand Spiral

Units: mm

| | | | | | | |
|-------------------------|---|---|---|---|---|---|
| |  |  |  |  |  |  |
| Style: | SA-52 | SA-53 | SC-52 | SC-53 | SF-53 | SG-53 |
| Size: | 3.97 x 12 | 4.76 x 12 | 3.97 x 12 | 4.76 x 12 | 4.76 x 12 | 4.76 x 12 |
| EDP Number: | 920-0001-30 | 920-0011-30 | 920-0002-30 | 920-0012-30 | 920-0003-30 | 920-0004-30 |
| |  |  |  |  |  |  |
| Style: | SM-53 | SE-53 | SL-53 | SD-53 | SH-53 | SN-53 |
| Size: | 3.97 x 12 | 4.76 x 12 | 3.97 x 12 | 4.76 | 4.76 x 9 | 4.76 x 6 |
| Inc. Taper Deg.: | 16 | | 14 | | | 10 INVERTED |
| EDP Number: | 920-0005-30 | 920-0006-30 | 920-0007-30 | 920-0008-30 | 920-0009-30 | 920-0010-30 |



MILLING

Technical






A Brand® AE-VMS

Advanced Performance Anti-Vibration Carbide End Mill

List 8200 - A Brand® AE-VMS : 4 Flute, Multiple Lengths

List 8205 - A Brand® AE-VMS : 4 Flute, Regular Length

Side Milling

| Hardness | - | | < 30 HRC | | - | | 30-45 HRC | | |
|---------------|--|-------------|-----------------------------|-------------|------------------|-------------|---------------------------------------|-------------|------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Tool Steels Alloy Steels | | Stainless Steels | | Prehardened Steels Hardened Steels | | |
| Cutting Speed | 330-490 SFM | | 330-490 SFM | | 200-330 SFM | | 260-395 SFM | | |
| Depth of Cut | $aa=1.5D$ $ar=0.2D$  | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | |
| 1/64 | - | 25,000 | 20.0 | 25,000 | 20.0 | 25,000 | 20.0 | 25,000 | 20.0 |
| 1/32 | - | 25,000 | 20.0 | 25,000 | 20.0 | 25,000 | 20.0 | 25,000 | 20.0 |
| - | 1 | 22,298 | 17.8 | 22,298 | 17.8 | 22,298 | 17.8 | 22,298 | 17.8 |
| 3/64 | - | 18,728 | 15.0 | 18,728 | 15.0 | 18,728 | 15.0 | 18,728 | 15.0 |
| - | 1.5 | 14,865 | 17.8 | 14,865 | 17.8 | 14,865 | 17.8 | 14,865 | 17.8 |
| 1/16 | - | 14,046 | 16.9 | 14,046 | 16.9 | 14,046 | 16.9 | 14,046 | 16.9 |
| 5/64 | - | 11,237 | 13.5 | 11,237 | 13.5 | 11,237 | 13.5 | 11,237 | 13.5 |
| - | 2 | 11,149 | 17.8 | 11,149 | 17.8 | 11,149 | 17.8 | 11,149 | 17.8 |
| 3/32 | - | 9,364 | 15.0 | 9,364 | 15.0 | 9,364 | 15.0 | 9,364 | 15.0 |
| - | 2.5 | 8,919 | 17.8 | 8,919 | 17.8 | 8,919 | 17.8 | 8,919 | 17.8 |
| 7/64 | - | 8,724 | 17.4 | 8,724 | 17.4 | 8,724 | 17.4 | 8,724 | 17.4 |
| - | 3 | 13,896 | 66.7 | 12,603 | 40.3 | 8,079 | 19.4 | 10,664 | 29.9 |
| - | 4 | 10,422 | 70.9 | 9,452 | 45.4 | 6,059 | 21.8 | 7,998 | 32.0 |
| 3/16 | - | 8,753 | 59.5 | 7,939 | 38.1 | 5,089 | 18.3 | 6,718 | 26.9 |
| - | 5 | 8,337 | 80.0 | 7,562 | 48.4 | 4,847 | 21.3 | 6,398 | 35.8 |
| - | 6 | 6,948 | 83.4 | 6,302 | 60.5 | 4,201 | 25.2 | 5,332 | 42.7 |
| 1/4 | - | 6,565 | 78.8 | 5,954 | 57.2 | 3,969 | 23.8 | 5,038 | 40.3 |
| 5/16 | - | 5,252 | 63.0 | 4,763 | 45.7 | 3,176 | 19.1 | 4,031 | 32.2 |
| - | 8 | 5,211 | 70.9 | 4,726 | 60.5 | 3,151 | 23.9 | 3,999 | 41.6 |
| 3/8 | - | 4,377 | 59.5 | 3,969 | 50.8 | 2,646 | 20.1 | 3,359 | 34.9 |
| - | 10 | 4,169 | 65.0 | 3,781 | 52.9 | 2,521 | 23.2 | 3,199 | 35.8 |
| 7/16 | - | 3,751 | 58.5 | 3,402 | 47.6 | 2,268 | 20.9 | 2,879 | 32.2 |
| - | 12 | 3,474 | 54.2 | 3,151 | 49.2 | 2,101 | 21.0 | 2,666 | 29.9 |
| 1/2 | - | 3,282 | 51.2 | 2,977 | 46.4 | 1,985 | 19.8 | 2,519 | 28.2 |
| 5/8 | - | 2,656 | 41.4 | 2,382 | 37.2 | 1,405 | 14.0 | 2,015 | 22.6 |
| 3/4 | - | 2,214 | 41.6 | 1,985 | 34.1 | 1,170 | 15.0 | 1,679 | 20.8 |
| 1 | - | 1,660 | 31.2 | 1,469 | 25.3 | 878 | 11.9 | 1,260 | 16.1 |

1. The above milling condition is a guideline for overhang length 3D.
2. Use a rigid and precise machine and holder.
3. Please use a suitable fluid with high smoke retardant properties.
4. During dry (no fluid) milling, please use air blow to remove chips from the milling area and to eliminate chip packing.
5. Please use water-soluble coolant when machining stainless steel.
6. Reduce speed and feed as well as depth of cut when high precision is required.
7. Adjust the speed and feed accordingly when the overhang length is longer than specified.

continued on next page





Slotting

| Hardness | - | | <30 HRC | | - | | 30-45 HRC | | | | | | | |
|---------------|---|-------------|-----------------------------|-------------|---|--------|---------------------------------------|-------------|------------|------|---------|------|------------|--|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Tool Steels Alloy Steels | | Stainless Steels | | Prehardened Steels Hardened Steels | | | | | | | |
| Cutting Speed | 260-395 SFM | | 230-360 SFM | | 155-260 SFM | | 195-330 SFM | | | | | | | |
| Depth of Cut | $a_a=1.0D$ | | | | <table border="1"> <tr> <th>Dia</th> <th>a_a</th> </tr> <tr> <td>$D \leq 6$</td> <td>0.5D</td> </tr> <tr> <td>$D > 6$</td> <td>1.0D</td> </tr> </table> | | Dia | a_a | $D \leq 6$ | 0.5D | $D > 6$ | 1.0D | $a_a=1.0D$ | |
| Dia | a_a | | | | | | | | | | | | | |
| $D \leq 6$ | 0.5D | | | | | | | | | | | | | |
| $D > 6$ | 1.0D | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | Speed RPM | Feed in/min | | | | | | |
| 1/64 | - | 25,000 | 10.0 | 25,000 | 10.0 | 25,000 | 10.0 | 25,000 | 10.0 | | | | | |
| 1/32 | - | 25,000 | 10.0 | 25,000 | 10.0 | 24,427 | 19.5 | 25,000 | 10.0 | | | | | |
| - | 1 | 25,000 | 20.0 | 25,000 | 20.0 | 19,389 | 15.5 | 22,298 | 17.8 | | | | | |
| 3/64 | - | 24,427 | 19.5 | 21,578 | 17.3 | 16,285 | 13.0 | 18,728 | 15.0 | | | | | |
| - | 1.5 | 19,389 | 23.3 | 17,127 | 20.6 | 12,926 | 15.5 | 14,865 | 17.8 | | | | | |
| 1/16 | - | 18,321 | 22.0 | 16,183 | 19.4 | 12,214 | 14.7 | 14,046 | 16.9 | | | | | |
| 5/64 | - | 14,656 | 17.6 | 12,947 | 15.5 | 9,771 | 15.6 | 11,237 | 13.5 | | | | | |
| - | 2 | 14,542 | 23.3 | 12,845 | 20.6 | 9,695 | 15.5 | 11,149 | 17.8 | | | | | |
| 3/32 | - | 12,214 | 19.5 | 10,789 | 17.3 | 8,142 | 19.5 | 9,364 | 15.0 | | | | | |
| - | 2.5 | 11,634 | 32.6 | 10,276 | 24.7 | 7,756 | 18.6 | 8,919 | 17.8 | | | | | |
| 7/64 | - | 10,469 | 29.3 | 9,248 | 22.2 | 8,201 | 19.7 | 8,026 | 16.1 | | | | | |
| - | 3 | 10,664 | 38.4 | 8,564 | 24.0 | 7,594 | 18.2 | 7,433 | 17.8 | | | | | |
| - | 4 | 7,998 | 38.4 | 7,150 | 28.6 | 5,696 | 20.5 | 5,574 | 17.8 | | | | | |
| 3/16 | - | 6,718 | 32.2 | 6,005 | 24.0 | 4,784 | 17.2 | 4,682 | 15.0 | | | | | |
| - | 5 | 6,398 | 41.0 | 5,720 | 32.0 | 4,556 | 21.9 | 4,460 | 21.4 | | | | | |
| - | 6 | 5,332 | 42.7 | 4,767 | 34.3 | 3,797 | 15.2 | 3,716 | 23.8 | | | | | |
| 1/4 | - | 5,038 | 40.3 | 4,504 | 32.4 | 3,588 | 14.4 | 3,511 | 22.5 | | | | | |
| 5/16 | - | 4,031 | 32.2 | 3,603 | 25.9 | 2,870 | 14.9 | 2,809 | 18.0 | | | | | |
| - | 8 | 3,999 | 35.2 | 3,575 | 28.6 | 2,848 | 14.8 | 2,787 | 22.3 | | | | | |
| 3/8 | - | 3,359 | 29.6 | 3,003 | 24.0 | 2,392 | 13.4 | 2,341 | 18.7 | | | | | |
| - | 10 | 3,199 | 33.3 | 2,860 | 27.5 | 2,278 | 14.6 | 2,230 | 19.6 | | | | | |
| 7/16 | - | 2,879 | 29.9 | 2,574 | 24.7 | 2,050 | 13.9 | 2,007 | 17.7 | | | | | |
| - | 12 | 2,666 | 32.0 | 2,383 | 25.7 | 1,899 | 12.9 | 2,101 | 21.8 | | | | | |
| 1/2 | - | 2,519 | 30.2 | 2,252 | 24.3 | 1,794 | 12.2 | 1,985 | 20.6 | | | | | |
| 5/8 | - | 2,015 | 24.2 | 1,802 | 19.5 | 1,221 | 12.2 | 1,588 | 16.5 | | | | | |
| 3/4 | - | 1,679 | 20.2 | 1,476 | 15.9 | 1,018 | 11.0 | 1,349 | 14.0 | | | | | |
| 1 | - | 1,260 | 15.1 | 1,088 | 12.2 | 592 | 6.6 | 992 | 10.3 | | | | | |

1. The above milling condition is a guideline for overhang length 3D.
2. Use a rigid and precise machine and holder.
3. Please use a suitable fluid with high smoke retardant properties.
4. During dry (no fluid) milling, please use air blow to remove chips from the milling area and to eliminate chip packing.
5. Please use water-soluble coolant when machining stainless steel.
6. Reduce speed and feed as well as depth of cut when high precision is required.
7. Adjust the speed and feed accordingly when the overhang length is longer than specified (refer to Parameter Reduction Chart below).

Parameter Reduction Chart by Length to Diameter Ratio

| Hardness | - | | Up to 30 HRC | | 30-45 HRC | | - | |
|---------------|---|-------------|-----------------------------|-------------|---------------------------------------|-------------|------------------|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Tool Steels Alloy Steels | | Prehardened Steels Hardened Steels | | Stainless Steels | |
| L/D | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| Slotting | 4 | 80% | 70% | | 70% | | 60% | |
| | 5 | 70% | 60% | | 60% | | 50% | |
| Side Milling | 4 | 90% | 90% | | 80% | | 70% | |
| | 5 | 80% | 80% | | 70% | | 70% | |





List 8210 - A Brand® AE-CR-VMS : 4 Flute, Multiple Lengths, Corner Radius

List 8215 - A Brand® AE-CR-VMS : 4 Flute, Regular Length, Corner Radius

Side Milling

| Hardness | - | | <30 HRC | | - | | 30-45 HRC | | |
|---------------|---|-------------|-----------------------------|-------------|------------------|-------------|---------------------------------------|-------------|------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Tool Steels Alloy Steels | | Stainless Steels | | Prehardened Steels Hardened Steels | | |
| Cutting Speed | 330-490 SFM | | 330-490 SFM | | 200-330 SFM | | 260-395 SFM | | |
| Depth of Cut | $a_a=1.5D$ $a_r=0.2D$ | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | |
| - | 3 | 13,896 | 55.6 | 12,765 | 35.7 | 8,079 | 16.2 | 10,664 | 25.6 |
| - | 4 | 10,422 | 62.5 | 9,573 | 38.3 | 6,059 | 19.4 | 7,998 | 25.6 |
| 3/16 | - | 8,753 | 52.5 | 8,041 | 32.2 | 5,089 | 16.3 | 6,718 | 21.5 |
| - | 5 | 8,337 | 66.7 | 7,659 | 39.8 | 4,847 | 17.5 | 6,398 | 28.2 |
| - | 6 | 6,948 | 77.8 | 6,382 | 56.2 | 4,201 | 21.8 | 5,332 | 38.4 |
| 1/4 | - | 6,565 | 73.5 | 6,031 | 53.1 | 3,969 | 20.6 | 5,038 | 36.3 |
| 5/16 | - | 5,252 | 58.8 | 4,824 | 42.5 | 3,176 | 16.5 | 4,031 | 29.0 |
| - | 8 | 5,211 | 66.7 | 4,787 | 57.4 | 3,151 | 21.4 | 3,999 | 36.8 |
| 3/8 | - | 4,377 | 56.0 | 4,020 | 48.2 | 2,646 | 18.0 | 3,359 | 30.9 |
| - | 10 | 4,169 | 61.7 | 3,829 | 52.1 | 2,521 | 20.2 | 3,199 | 32.0 |
| 7/16 | - | 3,751 | 55.5 | 3,446 | 46.9 | 2,268 | 18.1 | 2,879 | 28.8 |
| - | 12 | 3,474 | 51.4 | 3,191 | 48.5 | 2,101 | 18.5 | 2,666 | 26.7 |
| 1/2 | - | 3,282 | 48.6 | 3,015 | 45.8 | 1,985 | 17.5 | 2,519 | 25.2 |
| 5/8 | - | 2,626 | 38.9 | 2,412 | 36.7 | 1,588 | 14.0 | 2,015 | 20.2 |
| 3/4 | - | 2,188 | 32.4 | 2,010 | 30.6 | 1,323 | 11.6 | 1,679 | 16.8 |
| 1 | - | 1,641 | 24.3 | 1,508 | 22.9 | 992 | 8.7 | 1,260 | 12.6 |

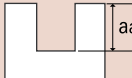
1. The above milling condition is a guideline for overhang length 3D.
2. Use a rigid and precise machine and holder.
3. Please use a suitable fluid with high smoke retardant properties.
4. During dry (no fluid) milling, please use air blow to remove chips from the milling area and to eliminate chip packing.
5. Please use water-soluble coolant when machining stainless steel.
6. Reduce speed and feed as well as depth of cut when high precision is required.
7. Adjust the speed and feed accordingly when the overhang length is longer than specified (refer to Parameter Reduction Chart on next page).

continued on next page





Slotting

| Hardness | - | | <30 HRC | | - | | 30-45 HRC | | | | | | | |
|---------------|---|-------------|-----------------------------|-------------|--|-------------|---------------------------------------|-------------|------------|------|---------|------|------------|--|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Tool Steels Alloy Steels | | Stainless Steels | | Prehardened Steels Hardened Steels | | | | | | | |
| Cutting Speed | 260-395 SFM | | 230-360 SFM | | 155-260 SFM | | 160-260 SFM | | | | | | | |
| Depth of Cut | $a_a=1.0D$ | | | | <table border="1"> <tr> <th>Dia</th> <th>a_a</th> </tr> <tr> <td>$D \leq 6$</td> <td>0.5D</td> </tr> <tr> <td>$D > 6$</td> <td>1.0D</td> </tr> </table>  | | Dia | a_a | $D \leq 6$ | 0.5D | $D > 6$ | 1.0D | $a_a=1.0D$ | |
| Dia | a_a | | | | | | | | | | | | | |
| $D \leq 6$ | 0.5D | | | | | | | | | | | | | |
| $D > 6$ | 1.0D | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | |
| - | 3 | 10,664 | 29.9 | 9,695 | 23.3 | 7,433 | 14.9 | 8,402 | 16.8 | | | | | |
| - | 4 | 7,998 | 32.0 | 7,271 | 23.3 | 5,574 | 15.6 | 6,302 | 15.1 | | | | | |
| 3/16 | - | 6,718 | 26.9 | 6,107 | 19.5 | 4,682 | 13.1 | 5,293 | 12.7 | | | | | |
| - | 5 | 6,398 | 33.3 | 5,817 | 27.9 | 4,460 | 17.8 | 5,041 | 18.1 | | | | | |
| - | 6 | 5,332 | 40.5 | 4,847 | 27.1 | 3,716 | 14.9 | 4,201 | 23.5 | | | | | |
| 1/4 | - | 5,038 | 38.3 | 4,580 | 25.6 | 3,511 | 14.0 | 3,969 | 22.2 | | | | | |
| 5/16 | - | 4,031 | 30.6 | 3,664 | 20.5 | 2,809 | 11.2 | 3,176 | 17.8 | | | | | |
| - | 8 | 3,999 | 33.6 | 3,635 | 27.6 | 2,787 | 13.4 | 3,151 | 22.7 | | | | | |
| 3/8 | - | 3,359 | 28.2 | 3,053 | 23.2 | 2,341 | 11.2 | 2,646 | 19.1 | | | | | |
| - | 10 | 3,199 | 32.0 | 2,908 | 25.6 | 2,230 | 12.5 | 2,521 | 20.2 | | | | | |
| 7/16 | - | 2,879 | 28.8 | 2,617 | 23.0 | 2,007 | 11.2 | 2,268 | 18.1 | | | | | |
| - | 12 | 2,666 | 29.9 | 2,424 | 25.2 | 1,858 | 11.9 | 2,101 | 19.3 | | | | | |
| 1/2 | - | 2,519 | 28.2 | 2,290 | 23.8 | 1,756 | 11.2 | 1,985 | 18.3 | | | | | |
| 5/8 | - | 2,015 | 22.6 | 1,832 | 19.1 | 1,405 | 9.0 | 1,588 | 14.6 | | | | | |
| 3/4 | - | 1,679 | 18.8 | 1,527 | 15.9 | 1,170 | 7.5 | 1,323 | 12.2 | | | | | |
| 1 | - | 1,260 | 14.1 | 1,145 | 11.9 | 878 | 5.6 | 992 | 9.1 | | | | | |

- The above milling condition is a guideline for overhang length 3D.
- Use a rigid and precise machine and holder.
- Please use a suitable fluid with high smoke retardant properties.
- During dry (no fluid) milling, please use air blow to remove chips from the milling area and to eliminate chip packing.
- Please use water-soluble coolant when machining stainless steel.
- Reduce speed and feed as well as depth of cut when high precision is required.
- Adjust the speed and feed accordingly when the overhang length is longer than specified (refer to Parameter Reduction Chart below).

Parameter Reduction Chart by Length to Diameter Ratio


| Hardness | - | | Up to 30 HRC | | 30-45 HRC | | - | |
|---------------|---|-------------|-----------------------------|-------------|---------------------------------------|-------------|------------------|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Tool Steels Alloy Steels | | Prehardened Steels Hardened Steels | | Stainless Steels | |
| L/D | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| Slotting | 4 | 80% | 70% | | 70% | | 60% | |
| | 5 | 70% | 60% | | 60% | | 50% | |
| Side Milling | 4 | 90% | 90% | | 80% | | 70% | |
| | 5 | 80% | 80% | | 70% | | 70% | |





List 8206 - A Brand® AE-VMSS : 4 Flute, Stub Length

Side Milling

| Hardness | - | | - | | - | | 30-45 HRC | |
|---------------|--|-------------|-----------------------------|-------------|--------------------|-------------|-----------------|-------------|
| Work Material | Mild Steels | | Alloy Steels Tool Steels | | Stainless 300, 400 | | Hardened Steels | |
| Cutting Speed | 330-495 SFM | | 330-495 SFM | | 195-330 SFM | | 260-395 SFM | |
| Depth of Cut | $aa=1.5D$ $ar=0.2D$  | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1.0 | 25,000 | 21.7 | 25,000 | 23.7 | 22,300 | 17.7 | 25,000 | 20.1 |
| 1.5 | 25,000 | 35.5 | 21,200 | 29.9 | 14,900 | 18.1 | 17,000 | 21.3 |
| 2.0 | 19,900 | 56.3 | 17,500 | 33.1 | 11,100 | 18.5 | 14,300 | 24.8 |
| 2.5 | 15,900 | 62.6 | 14,000 | 35.4 | 8,900 | 18.9 | 11,500 | 27.2 |
| 3.0 | 13,800 | 65.4 | 12,700 | 42.1 | 8,000 | 18.9 | 10,600 | 29.9 |
| 4.0 | 10,400 | 72.0 | 9,600 | 45.3 | 6,000 | 20.9 | 8,000 | 31.5 |
| 5.0 | 8,300 | 78.3 | 7,600 | 48.0 | 4,800 | 22.0 | 6,400 | 35.4 |
| 6.0 | 6,900 | 81.5 | 6,400 | 60.6 | 4,200 | 25.2 | 5,300 | 41.7 |
| 8.0 | 5,200 | 69.7 | 4,800 | 60.6 | 3,200 | 24.0 | 4,000 | 40.9 |
| 10.0 | 4,100 | 64.6 | 3,800 | 53.9 | 2,500 | 22.8 | 3,200 | 35.4 |
| 12.0 | 3,500 | 55.1 | 3,200 | 50.4 | 2,100 | 20.9 | 2,700 | 29.9 |

1. The above milling condition is a guideline for overhang length 3D.
2. Use a rigid and precise machine and holder.
3. Please use a suitable fluid with high smoke retardant properties.
4. During dry (no fluid) milling, please use air blow to remove chips from the milling area and to eliminate chip packing.
5. Please use water-soluble coolant when machining stainless steel.
6. Reduce speed and feed as well as depth of cut when high precision is required.
7. Adjust the speed and feed accordingly when the overhang length is longer than specified (refer to Parameter Reduction Chart on next page).

continued on next page





Slotting

| Hardness | - | | - | | - | | 30-45 HRC | | | | | | | |
|---------------|--------------|----------------|-----------------------------|----------------|--|----------------|-----------------|----------------|-----|------|-----|------|--|--|
| Work Material | Mild Steels | | Alloy Steels Tool Steels | | Stainless 300, 400 | | Hardened Steels | | | | | | | |
| Cutting Speed | 260-395 SFM | | 330-360 SFM | | 160-260 SFM | | 195-330 SFM | | | | | | | |
| Depth of Cut | $a_r=1D$ | | | | <table border="1"> <tr> <th>Dia</th> <th>aa</th> </tr> <tr> <td>D≤6</td> <td>0.5D</td> </tr> <tr> <td>D>6</td> <td>1.0D</td> </tr> </table> | | Dia | aa | D≤6 | 0.5D | D>6 | 1.0D | | |
| Dia | aa | | | | | | | | | | | | | |
| D≤6 | 0.5D | | | | | | | | | | | | | |
| D>6 | 1.0D | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | |
| 1.0 | 25,000 | 19.5 | 25,000 | 18.1 | 19,100 | 13.4 | 22,300 | 14.2 | | | | | | |
| 1.5 | 19,100 | 24.0 | 17,000 | 18.9 | 12,700 | 14.2 | 14,900 | 16.5 | | | | | | |
| 2.0 | 14,300 | 24.8 | 12,700 | 20.1 | 9,600 | 15.0 | 11,100 | 17.3 | | | | | | |
| 2.5 | 11,500 | 30.7 | 10,200 | 22.4 | 7,600 | 16.9 | 8,900 | 18.1 | | | | | | |
| 3.0 | 10,600 | 36.6 | 9,600 | 27.2 | 7,400 | 18.5 | 8,500 | 20.1 | | | | | | |
| 4.0 | 8,000 | 37.8 | 7,200 | 28.3 | 5,600 | 19.3 | 6,400 | 20.1 | | | | | | |
| 5.0 | 6,400 | 40.2 | 5,700 | 31.5 | 4,500 | 22.0 | 5,100 | 24.0 | | | | | | |
| 6.0 | 5,300 | 40.6 | 4,800 | 35.4 | 3,700 | 14.6 | 4,200 | 26.4 | | | | | | |
| 8.0 | 4,000 | 35.8 | 3,600 | 28.3 | 2,800 | 14.6 | 3,200 | 25.2 | | | | | | |
| 10.0 | 3,200 | 33.1 | 2,900 | 27.6 | 2,200 | 13.8 | 2,500 | 21.7 | | | | | | |
| 12.0 | 2,700 | 31.9 | 2,400 | 26.4 | 1,900 | 13.0 | 2,100 | 21.7 | | | | | | |

1. The above milling condition is a guideline for overhang length 3D.
2. Use a rigid and precise machine and holder.
3. Please use a suitable fluid with high smoke retardant properties.
4. During dry (no fluid) milling, please use air blow to remove chips from the milling area and to eliminate chip packing.
5. Please use water-soluble coolant when machining stainless steel.
6. Reduce speed and feed as well as depth of cut when high precision is required.
7. Adjust the speed and feed accordingly when the overhang length is longer than specified (refer to Parameter Reduction Chart below).

Parameter Reduction Chart by Length to Diameter Ratio

| | | | | | | | | |
|---------------|---|----------------|-----------------------------|----------------|---------------------------------------|----------------|------------------|----------------|
| Hardness | - | | Up to 30 HRC | | 30-45 HRC | | - | |
| Work Material | Mild Steels Carbon Steels Cast Iron | | Tool Steels Alloy Steels | | Prehardened Steels Hardened Steels | | Stainless Steels | |
| L/D | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| Slotting | 4 | 80% | 70% | | 70% | | 60% | |
| | 5 | 70% | 60% | | 60% | | 50% | |
| Side Milling | 4 | 90% | 90% | | 80% | | 70% | |
| | 5 | 80% | 80% | | 70% | | 70% | |



A Brand® AE-LN-VMSS

Advanced Performance Anti-Vibration Carbide End Mill

List 8230 - A Brand® AE-LN-VMSS : 4 Flute, Stub Length, Long Neck

List 8235 - A Brand® AE-LN-VMSS : 4 Flute, Stub Length, Long Neck

Side Milling

| | | | | | | | | | |
|---------------|--------------------------|--------------|-----------------------------|--------------|--------------------|--------------|----------------|--------------|----------------|
| Hardness | - | | - | | - | | 30-45 HRC | | |
| Work Material | Mild Steels | | Alloy Steels Tool Steels | | Stainless 300, 400 | | Hardened Steel | | |
| Cutting Speed | 260-395 SFM | | 230-360 SFM | | 130-260 SFM | | 160-260 SFM | | |
| Depth of Cut | $a_a=1.5D$ $a_r=0.2D$ | | | | | | | | |
| Mill Dia. | | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| - | 6 | 5,520 | 65.4 | 5,120 | 48.4 | 2,940 | 17.7 | 3,710 | 29.1 |
| 1/4 | - | 5,221 | 62.7 | 4,840 | 46.5 | 2,779 | 16.7 | 3,511 | 28.1 |
| 5/16 | - | 4,177 | 50.1 | 3,872 | 37.2 | 2,223 | 13.3 | 2,809 | 22.5 |
| - | 8 | 4,160 | 55.9 | 3,840 | 48.4 | 2,240 | 16.9 | 2,800 | 28.7 |
| 3/8 | - | 3,491 | 47.5 | 3,226 | 41.3 | 1,883 | 14.3 | 2,351 | 24.5 |
| - | 10 | 3,280 | 51.6 | 3,040 | 43.3 | 1,750 | 16.1 | 2,240 | 24.8 |
| 7/16 | - | 2,949 | 46.0 | 2,739 | 39.4 | 1,579 | 14.5 | 2,015 | 22.6 |
| - | 12 | 2,800 | 44.1 | 2,560 | 40.2 | 1,470 | 14.6 | 1,890 | 20.9 |
| 1/2 | - | 2,649 | 41.3 | 2,420 | 37.7 | 1,389 | 13.9 | 1,786 | 20.0 |
| 5/8 | - | 2,107 | 32.9 | 1,936 | 30.2 | 1,099 | 11.0 | 1,405 | 15.7 |
| 3/4 | - | 1,756 | 27.4 | 1,613 | 25.2 | 916 | 9.2 | 1,170 | 13.1 |
| 1 | - | 1,317 | 21.1 | 1,210 | 19.4 | 687 | 6.9 | 878 | 9.8 |


1. Use a rigid and precise machine and holder.
2. Please use a suitable fluid with high smoke retardant properties.
3. During dry (no fluid) milling, please use air blow to remove chips from the milling area and to eliminate chip packing.
4. Please use water-soluble coolant when machining stainless steel.
5. Reduce speed and feed as well as depth of cut when high precision is required.





List 8220 - A Brand® AE-LN-CR-VMS : 4 Flute, Long Neck, Corner Radius

Side Milling

| Hardness | - | | <30 HRC | | - | | 30-45 HRC | |
|---------------|---|-------------|-----------------------------|-------------|------------------|-------------|---------------------------------------|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Tool Steels Alloy Steels | | Stainless Steels | | Prehardened Steels Hardened Steels | |
| Cutting Speed | 260-395 SFM | | 230-360 SFM | | 130-260 SFM | | 130-260 SFM | |
| Depth of Cut | $a_a = 1.5D$ $a_r = 0.02D$  | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/4 | 5,191 | 62.3 | 4,809 | 46.2 | 2,748 | 16.5 | 3,511 | 28.1 |
| 5/16 | 4,153 | 49.8 | 3,847 | 36.9 | 2,198 | 13.2 | 2,809 | 22.5 |
| 3/8 | 3,461 | 47.1 | 3,206 | 41.0 | 1,832 | 13.9 | 2,341 | 24.3 |
| 7/16 | 2,966 | 46.3 | 2,748 | 39.6 | 1,570 | 14.4 | 2,007 | 22.5 |
| 1/2 | 2,595 | 40.5 | 2,405 | 37.5 | 1,374 | 13.7 | 1,756 | 19.7 |
| 5/8 | 2,076 | 32.4 | 1,924 | 30.0 | 1,099 | 11.0 | 1,405 | 15.7 |
| 3/4 | 1,730 | 27.0 | 1,603 | 25.0 | 916 | 9.2 | 1,170 | 13.1 |
| 1 | 1,298 | 20.2 | 1,202 | 18.8 | 687 | 6.9 | 878 | 10.5 |

1. Use a rigid and precise machine and holder.
2. Please use a suitable fluid with high smoke retardant properties.
3. During dry (no fluid) milling, please use air blow to remove chips from the milling area and to eliminate chip packing.
4. Please use water-soluble coolant when machining stainless steel.
5. Reduce speed and feed as well as depth of cut when high precision is required.



A Brand® AE-VML & AE-NIK-VML

Advanced Performance Anti-Vibration Carbide End Mill


List 8201 - A Brand® AE-VML : 4 Flute, Long Length

List 8207 - A Brand® AE-VML : 4 Flute, Long Length

List 8202 - A Brand® AE-NIK-VML : 4 Flute, Long Length, Nicks


List 8208 - A Brand® AE-NIK-VML : 4 Flute, Long Length, Nicks

3D Side Milling ($a_r=0.05D$)

| | | | | | | | | | |
|---------------|---|--------|-----------------------------|--------|--------------------|--------|-------------------|--------|------|
| Hardness | - | | - | | - | | 30-45 HRC | | |
| Work Material | Mild Steels | | Alloy Steels Tool Steels | | Stainless 300, 400 | | Hardened Steels | | |
| Cutting Speed | 525 (450-590) SFM | | 490 (425-560) SFM | | 410 (330-460) SFM | | 460 (390-525) SFM | | |
| Depth of Cut | $a_a=3D$ $a_r=0.05D$  | | | | | | | | |
| Mill Dia. | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | |
| Inch | RPM | in/min | RPM | in/min | RPM | in/min | RPM | in/min | |
| mm | | | | | | | | | |
| - | 6 | 8,500 | 97.6 | 8,000 | 85.8 | 6,600 | 65.4 | 7,400 | 79.1 |
| 1/4 | - | 8,031 | 93.2 | 7,557 | 81.6 | 6,229 | 62.3 | 6,992 | 75.5 |
| 5/16 | - | 6,424 | 74.5 | 6,046 | 65.3 | 4,983 | 49.8 | 5,594 | 60.4 |
| - | 8 | 6,400 | 73.6 | 6,000 | 64.2 | 5,000 | 49.6 | 5,600 | 59.8 |
| 3/8 | - | 5,374 | 62.3 | 5,038 | 54.4 | 4,204 | 42.0 | 4,702 | 50.8 |
| - | 10 | 5,100 | 68.1 | 4,800 | 56.7 | 4,000 | 44.1 | 4,500 | 53.1 |
| - | 12 | 4,200 | 56.3 | 4,000 | 47.2 | 3,300 | 36.2 | 3,700 | 43.7 |
| 1/2 | - | 3,969 | 54.0 | 3,779 | 45.3 | 3,115 | 33.6 | 3,496 | 42.0 |

1. Use a rigid and precise machine and holder.
2. Please use a suitable fluid with high smoke retardant properties.
3. During dry (no fluid) milling, please use air blow to remove chips from the milling area and to eliminate chip packing.
4. Please use water-soluble coolant when machining stainless steel.

3D Side Milling ($a_r=0.1D$)

| | | | | | | | | | |
|---------------|--|--------|-----------------------------|--------|--------------------|--------|-------------------|--------|------|
| Hardness | - | | - | | - | | 30-45 HRC | | |
| Work Material | Mild Steels | | Alloy Steels Tool Steels | | Stainless 300, 400 | | Hardened Steels | | |
| Cutting Speed | 720 (655-790) SFM | | 560 (490-620) SFM | | 425 (360-490) SFM | | 440 (360-490) SFM | | |
| Depth of Cut | $a_a=3D$ $a_r=0.1D$  | | | | | | | | |
| Mill Dia. | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | |
| Inch | RPM | in/min | RPM | in/min | RPM | in/min | RPM | in/min | |
| mm | | | | | | | | | |
| - | 6 | 11,700 | 125.2 | 9,000 | 89.4 | 6,900 | 63.0 | 7,200 | 71.3 |
| 1/4 | - | 11,053 | 119.4 | 8,504 | 85.0 | 6,519 | 60.0 | 6,809 | 68.1 |
| 5/16 | - | 8,843 | 95.5 | 6,803 | 68.0 | 5,215 | 48.0 | 5,447 | 54.5 |
| - | 8 | 8,800 | 94.1 | 6,800 | 67.3 | 5,200 | 47.6 | 5,400 | 53.5 |
| 3/8 | - | 7,389 | 79.8 | 5,710 | 57.1 | 4,366 | 40.2 | 4,539 | 45.4 |
| - | 10 | 7,000 | 88.2 | 5,400 | 59.4 | 4,100 | 42.1 | 4,300 | 47.2 |
| - | 12 | 5,800 | 73.2 | 4,500 | 49.6 | 3,500 | 35.8 | 3,600 | 39.8 |
| 1/2 | - | 5,481 | 70.2 | 4,252 | 47.6 | 3,305 | 34.4 | 3,405 | 38.1 |

1. Use a rigid and precise machine and holder.
2. Please use a suitable fluid with high smoke retardant properties.
3. During dry (no fluid) milling, please use air blow to remove chips from the milling area and to eliminate chip packing.
4. Please use water-soluble coolant when machining stainless steel.

continued on next page





3D Side Milling ($a_r=0.15D$)

| | | | | | | | | | |
|---------------|-------------------------|--------|-----------------------------|--------|--------------------|--------|-------------------|--------|------|
| Hardness | - | | - | | - | | 30-45 HRC | | |
| Work Material | Mild Steels | | Alloy Steels Tool Steels | | Stainless 300, 400 | | Hardened Steels | | |
| Cutting Speed | 460 (395-525) SFM | | 330 (260-395) SFM | | 280 (195-330) SFM | | 295 (230-360) SFM | | |
| Depth of Cut | $a_a=3D$ $a_r=0.15D$ | | | | | | | | |
| Mill Dia. | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | |
| Inch | RPM | in/min | RPM | in/min | RPM | in/min | RPM | in/min | |
| mm | | | | | | | | | |
| - | 6 | 7,400 | 73.2 | 5,600 | 51.2 | 4,500 | 37.4 | 4,800 | 43.7 |
| 1/4 | - | 6,992 | 69.9 | 5,298 | 48.7 | 4,260 | 35.8 | 4,534 | 41.7 |
| 5/16 | - | 5,594 | 55.9 | 4,238 | 39.0 | 3,408 | 28.6 | 3,627 | 33.4 |
| - | 8 | 5,600 | 55.5 | 4,200 | 38.2 | 3,400 | 28.3 | 3,600 | 33.1 |
| 3/8 | - | 4,702 | 47.0 | 3,532 | 32.5 | 2,860 | 24.0 | 3,023 | 27.8 |
| - | 10 | 4,500 | 53.1 | 3,300 | 33.9 | 2,700 | 25.6 | 2,900 | 29.5 |
| - | 12 | 3,700 | 43.7 | 2,800 | 28.7 | 2,300 | 21.7 | 2,400 | 24.4 |
| 1/2 | - | 3,496 | 42.0 | 2,649 | 27.5 | 2,176 | 20.9 | 2,267 | 22.7 |

1. Use a rigid and precise machine and holder.
2. Please use a suitable fluid with high smoke retardant properties.
3. During dry (no fluid) milling, please use air blow to remove chips from the milling area and to eliminate chip packing.
4. Please use water-soluble coolant when machining stainless steel.

3D Side Milling ($a_r=0.2D$)

| | | | | | | | | | |
|---------------|------------------------|--------|-----------------------------|--------|--------------------|--------|-------------------|--------|------|
| Hardness | - | | - | | - | | 30-45 HRC | | |
| Work Material | Mild Steels | | Alloy Steels Tool Steels | | Stainless 300, 400 | | Hardened Steels | | |
| Cutting Speed | 330 (260-395) SFM | | 260 (195-330) SFM | | 210 (130-260) SFM | | 230 (165-295) SFM | | |
| Depth of Cut | $a_a=3D$ $a_r=0.2D$ | | | | | | | | |
| Mill Dia. | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | |
| Inch | RPM | in/min | RPM | in/min | RPM | in/min | RPM | in/min | |
| mm | | | | | | | | | |
| - | 6 | 5,300 | 48.4 | 4,200 | 35.0 | 3,500 | 26.4 | 3,700 | 30.7 |
| 1/4 | - | 5,008 | 46.1 | 3,969 | 33.3 | 3,313 | 25.2 | 3,496 | 29.4 |
| 5/16 | - | 4,006 | 36.9 | 3,176 | 26.7 | 2,650 | 20.1 | 2,797 | 23.5 |
| - | 8 | 4,000 | 36.6 | 3,200 | 26.8 | 2,600 | 19.7 | 2,800 | 23.2 |
| 3/8 | - | 3,359 | 30.9 | 2,687 | 22.6 | 2,188 | 16.6 | 2,351 | 19.7 |
| - | 10 | 3,200 | 35.4 | 2,500 | 23.6 | 2,100 | 18.1 | 2,200 | 20.9 |
| - | 12 | 2,700 | 29.9 | 2,100 | 19.7 | 1,700 | 14.6 | 1,900 | 18.1 |
| 1/2 | - | 2,550 | 28.6 | 1,985 | 18.3 | 1,603 | 13.5 | 1,794 | 17.2 |

1. Use a rigid and precise machine and holder.
2. Please use a suitable fluid with high smoke retardant properties.
3. During dry (no fluid) milling, please use air blow to remove chips from the milling area and to eliminate chip packing.
4. Please use water-soluble coolant when machining stainless steel.

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A Brand® AE-VML & AE-NIK-VML

Advanced Performance Anti-Vibration Carbide End Mill


List 8201 - A Brand® AE-VML : 4 Flute, Long Length (Continued)

List 8207 - A Brand® AE-VML : 4 Flute, Long Length (Continued)

List 8202 - A Brand® AE-NIK-VML : 4 Flute, Long Length, Nicks (Continued)


List 8208 - A Brand® AE-NIK-VML : 4 Flute, Long Length, Nicks (Continued)

4D Side Milling ($a_r=0.05D$)

| | | | | | | | | | |
|---------------|---|--------|-----------------------------|--------|--------------------|--------|-------------------|--------|------|
| Hardness | - | | - | | - | | 30-45 HRC | | |
| Work Material | Mild Steels | | Alloy Steels Tool Steels | | Stainless 300, 400 | | Hardened Steels | | |
| Cutting Speed | 460 (395-525) SFM | | 425 (360-490) SFM | | 375 (295-425) SFM | | 395 (330-460) SFM | | |
| Depth of Cut | $a_a=4D$ $a_r=0.05D$  | | | | | | | | |
| Mill Dia. | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | |
| Inch | RPM | in/min | RPM | in/min | RPM | in/min | RPM | in/min | |
| mm | | | | | | | | | |
| - | 6 | 7,400 | 79.1 | 6,900 | 68.5 | 6,100 | 55.9 | 6,400 | 63.4 |
| 1/4 | - | 6,992 | 75.5 | 6,519 | 65.2 | 5,771 | 53.1 | 6,046 | 60.5 |
| 5/16 | - | 5,594 | 60.4 | 5,582 | 55.8 | 4,617 | 42.5 | 4,837 | 48.4 |
| - | 8 | 5,600 | 59.8 | 5,200 | 51.6 | 4,600 | 42.1 | 4,800 | 47.6 |
| 3/8 | - | 4,702 | 50.8 | 4,366 | 43.7 | 3,868 | 35.6 | 4,031 | 40.3 |
| - | 10 | 4,500 | 56.7 | 4,100 | 48.4 | 3,700 | 37.8 | 3,800 | 44.9 |
| - | 12 | 3,700 | 46.5 | 3,500 | 41.3 | 3,100 | 31.9 | 3,200 | 37.8 |
| 1/2 | - | 3,496 | 43.4 | 3,305 | 39.7 | 2,931 | 30.5 | 3,023 | 36.3 |

1. Use a rigid and precise machine and holder.
2. Please use a suitable fluid with high smoke retardant properties.
3. During dry (no fluid) milling, please use air blow to remove chips from the milling area and to eliminate chip packing.
4. Please use water-soluble coolant when machining stainless steel.

4D Side Milling ($a_r=0.1D$)

| | | | | | | | | | |
|---------------|--|--------|-----------------------------|--------|--------------------|--------|-------------------|--------|------|
| Hardness | - | | - | | - | | 30-45 HRC | | |
| Work Material | Mild Steels | | Alloy Steels Tool Steels | | Stainless 300, 400 | | Hardened Steels | | |
| Cutting Speed | 655 (590-720) SFM | | 525 (460-590) SFM | | 410 (360-460) SFM | | 425 (360-490) SFM | | |
| Depth of Cut | $a_a=4D$ $a_r=0.1D$  | | | | | | | | |
| Mill Dia. | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | |
| Inch | RPM | in/min | RPM | in/min | RPM | in/min | RPM | in/min | |
| mm | | | | | | | | | |
| - | 6 | 10,600 | 105.1 | 8,500 | 77.6 | 6,600 | 55.1 | 6,900 | 63.0 |
| 1/4 | - | 10,015 | 100.2 | 8,031 | 73.9 | 6,229 | 52.3 | 6,519 | 60.0 |
| 5/16 | - | 8,012 | 80.1 | 6,424 | 59.1 | 4,983 | 41.9 | 5,215 | 48.0 |
| - | 8 | 8,000 | 79.5 | 6,400 | 58.3 | 5,000 | 41.7 | 5,200 | 47.6 |
| 3/8 | - | 6,718 | 67.2 | 5,374 | 49.4 | 4,204 | 35.3 | 4,366 | 40.2 |
| - | 10 | 6,400 | 75.6 | 5,100 | 52.4 | 4,000 | 37.8 | 4,100 | 42.1 |
| - | 12 | 5,300 | 62.6 | 4,200 | 42.9 | 3,300 | 31.1 | 3,500 | 35.8 |
| 1/2 | - | 5,008 | 60.1 | 3,969 | 41.3 | 3,115 | 29.9 | 3,305 | 34.4 |

1. Use a rigid and precise machine and holder.
2. Please use a suitable fluid with high smoke retardant properties.
3. During dry (no fluid) milling, please use air blow to remove chips from the milling area and to eliminate chip packing.
4. Please use water-soluble coolant when machining stainless steel.

continued on next page





4D Side Milling ($a_r=0.15D$)

| Hardness | - | | - | | - | | 30-45 HRC | | |
|---------------|-------------------------|-------|-----------------------------|-------|--------------------|-------|-------------------|-------|--------|
| Work Material | Mild Steels | | Alloy Steels Tool Steels | | Stainless 300, 400 | | Hardened Steels | | |
| Cutting Speed | 440 (360-490) SFM | | 375 (330-460) SFM | | 245 (160-295) SFM | | 280 (195-330) SFM | | |
| Depth of Cut | $a_a=4D$ $a_r=0.15D$ | | | | | | | | |
| Mill Dia. | Speed | Feed | Speed | Feed | Speed | Feed | Speed | Feed | |
| Inch | mm | RPM | in/min | RPM | in/min | RPM | in/min | RPM | in/min |
| - | 6 | 7,200 | 65.7 | 6,100 | 50.8 | 4,000 | 30.3 | 4,500 | 37.4 |
| 1/4 | - | 6,809 | 62.6 | 5,771 | 48.5 | 3,786 | 28.8 | 4,260 | 35.8 |
| 5/16 | - | 5,447 | 50.1 | 4,617 | 38.8 | 3,029 | 23.0 | 3,408 | 28.6 |
| - | 8 | 5,400 | 49.2 | 4,600 | 38.6 | 3,000 | 22.8 | 3,400 | 28.3 |
| 3/8 | - | 4,539 | 41.8 | 3,868 | 32.5 | 2,524 | 19.2 | 2,860 | 24.0 |
| - | 10 | 4,300 | 47.2 | 3,700 | 35.0 | 2,400 | 20.9 | 2,700 | 25.6 |
| - | 12 | 3,600 | 39.8 | 3,100 | 29.1 | 2,000 | 17.3 | 2,300 | 21.7 |
| 1/2 | - | 3,405 | 38.1 | 2,931 | 27.0 | 1,893 | 16.7 | 2,176 | 20.9 |


1. Use a rigid and precise machine and holder.
2. Please use a suitable fluid with high smoke retardant properties.
3. During dry (no fluid) milling, please use air blow to remove chips from the milling area and to eliminate chip packing.
4. Please use water-soluble coolant when machining stainless steel.





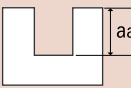
List 2055 - EXOPRO® UVX-Ni : 5 Flute - Corner Radius

Side Milling

| | | |
|---------------|--|----------------|
| Hardness | | |
| Work Material | High Temp. Alloys Inconel Hastelloy | |
| Cutting Speed | 125-150 SFM | |
| Depth of Cut | $a_a = \leq 0.5D$ $a_r = \leq 0.3D$  | |
| Mill Dia. | Speed RPM | Feed in/min |
| 1/4 | 2,100 | 11.0 |
| 5/16 | 1,600 | 10.0 |
| 3/8 | 1,400 | 10.0 |
| 1/2 | 1,100 | 9.5 |
| 5/8 | 800 | 9.0 |
| 3/4 | 650 | 8.0 |
| 1 | 500 | 7.0 |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed.
3. Use a suitable cutting fluid with high smoke retardant.

Slotting

| | | |
|---------------|---|----------------|
| Hardness | | |
| Work Material | High Temp. Alloys Inconel Hastelloy | |
| Cutting Speed | 75-100 SFM | |
| Depth of Cut | $a_a = \leq 0.5D$  | |
| Mill Dia. | Speed RPM | Feed in/min |
| 1/4 | 1,300 | 7.0 |
| 5/16 | 1,000 | 6.5 |
| 3/8 | 900 | 6.0 |
| 1/2 | 700 | 5.5 |
| 5/8 | 500 | 5.0 |
| 3/4 | 400 | 4.5 |
| 1 | 300 | 4.0 |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed.
3. Use a suitable cutting fluid with high smoke retardant.



List 9510 - EXOPRO[®] PHX : Deep Feed, Ball Nose
List 9590 - EXOPRO[®] PHX : 3 Flute, Long Neck, Ball Nose
List 9581 - EXOPRO[®] PHX : Pencil-Neck, Deep-Feed, Ball Nose





Side Milling

| Hardness | | | <38 HRC | | | | 38-53 HRC | | | | <53 HRC | | | | <55 HRC | | | | |
|---------------|------|-----------------------------|----------------------------------|------------------|----------|--------|----------------|------------------|----------|--------|----------------|------------------|----------|--------|----------------|------------------|----------|--------|-------------------|
| Work Material | | | Hardened and Pre-hardened Steels | | | | | | | | | | | | | | | | |
| Cutting Speed | | | 60-400 SFM | | | | 60-310 SFM | | | | 105-250 SFM | | | | 62-410 SFM | | | | |
| R (mm) | L/D | Recom'd Cutting Angle | Speed (RPM) | Feed (in/min) | aa | | Speed (RPM) | Feed (in/min) | aa | | Speed (RPM) | Feed (in/min) | aa | | Speed (RPM) | Feed (in/min) | aa | | Clearance (in) |
| | | | | | DOC (in) | | | | DOC (in) | | | | DOC (in) | | | | DOC (in) | | |
| | | | | | Aa | Ar | | | Aa | Ar | | | Aa | Ar | | | Aa | Ar | |
| 0.5 | 6 | 0.3° | 18,000 | 39.4 | 0.0020 | 0.0063 | 18,000 | 35.4 | 0.0020 | 0.0063 | 18,000 | 11.0 | 0.0003 | 0.0012 | 18,000 | 47.2 | 0.0012 | 0.0012 | 0.0020 |
| | 10 | 0.3° | 16,000 | 31.5 | 0.0016 | 0.0063 | 16,000 | 31.5 | 0.0016 | 0.0063 | 16,000 | 4.7 | 0.0001 | 0.0118 | 16,000 | 39.4 | 0.0012 | 0.0012 | 0.0012 |
| | 15 | 0.3° | 8,000 | 16.5 | 0.0012 | 0.0063 | 8,000 | 16.5 | 0.0012 | 0.0063 | - | - | - | - | 8,000 | 19.7 | 0.0012 | 0.0012 | 0.0012 |
| | 20 | 0.3° | 6,000 | 11.8 | 0.0008 | 0.0047 | 6,000 | 11.8 | 0.0008 | 0.0047 | - | - | - | - | 6,000 | 15.0 | 0.0012 | 0.0012 | 0.0012 |
| | 25 | 0.3° | 6,000 | 5.1 | 0.0008 | 0.0031 | 6,000 | 5.1 | 0.0008 | 0.0031 | - | - | - | - | 6,000 | 13.8 | 0.0012 | 0.0012 | 0.0012 |
| 0.75 | 6 | 0.3° | 18,000 | 59.1 | 0.0039 | 0.0118 | 16,000 | 51.2 | 0.0039 | 0.0118 | 16,000 | 25.6 | 0.0028 | 0.0059 | 18,000 | 43.3 | 0.0016 | 0.0016 | 0.0020 |
| | 10 | 0.3° | 15,000 | 43.3 | 0.0024 | 0.0098 | 15,000 | 37.4 | 0.0024 | 0.0098 | 15,000 | 12.6 | 0.0004 | 0.0039 | 15,000 | 35.4 | 0.0016 | 0.0016 | 0.0012 |
| | 16 | 0.3° | 7,500 | 9.1 | 0.0008 | 0.0079 | 7,500 | 7.9 | 0.0008 | 0.0079 | 7,500 | 11.8 | 0.0003 | 0.0020 | 7,500 | 17.7 | 0.0016 | 0.0016 | 0.0012 |
| 1.0 | 6 | 0.3° | 18,000 | 63.0 | 0.0079 | 0.0236 | 15,000 | 55.1 | 0.0079 | 0.0157 | 12,000 | 23.6 | 0.0059 | 0.0059 | 15,000 | 708.7 | 0.0024 | 0.0020 | 0.0039 |
| | 10 | 0.3° | 12,000 | 49.2 | 0.0055 | 0.0157 | 12,000 | 43.3 | 0.0055 | 0.0157 | 12,000 | 23.6 | 0.0039 | 0.0020 | 12,000 | 59.1 | 0.0024 | 0.0020 | 0.0028 |
| | 15 | 0.3° | 7,800 | 32.3 | 0.0055 | 0.0157 | 7,800 | 30.7 | 0.0055 | 0.0157 | 7,800 | 17.7 | 0.0028 | 0.0020 | 7,800 | 38.6 | 0.0024 | 0.0020 | 0.0028 |
| | 20 | 0.3° | 6,200 | 25.6 | 0.0051 | 0.0157 | 6,200 | 23.6 | 0.0051 | 0.0118 | 6,200 | 13.4 | 0.0020 | 0.0020 | 6,200 | 23.6 | 0.0024 | 0.0020 | 0.0020 |
| | 25 | 0.3° | 4,700 | 19.7 | 0.0047 | 0.0118 | 4,700 | 19.7 | 0.0047 | 0.0118 | - | - | - | - | 4,700 | 17.7 | 0.0024 | 0.0020 | 0.0020 |
| | 30 | 0.3° | 3,500 | 15.7 | 0.0039 | 0.0118 | 3,500 | 15.7 | 0.0039 | 0.0118 | - | - | - | - | 3,500 | 17.7 | 0.0024 | 0.0020 | 0.0020 |
| | 35 | 0.3° | 3,500 | 15.7 | 0.0028 | 0.0118 | 3,500 | 15.7 | 0.0028 | 0.0118 | - | - | - | - | 3,500 | 17.7 | 0.0024 | 0.0020 | 0.0012 |
| | 40 | 0.3° | 3,500 | 11.8 | 0.0028 | 0.0098 | 3,500 | 11.8 | 0.0028 | 0.0098 | - | - | - | - | 3,500 | 17.7 | 0.0024 | 0.0020 | 0.0012 |
| | 45 | 0.3° | 3,500 | 7.9 | 0.0028 | 0.0079 | 3,500 | 7.9 | 0.0028 | 0.0079 | - | - | - | - | 3,500 | 17.7 | 0.0024 | 0.0020 | 0.0012 |
| 1.5 | 10 | 0.3° | 12,000 | 74.8 | 0.0083 | 0.0197 | 8,000 | 47.2 | 0.0083 | 0.0197 | 8,000 | 27.6 | 0.0051 | 0.0039 | 11,000 | 80.7 | 0.0035 | 0.0031 | 0.0039 |
| | 15 | 0.3° | 10,000 | 61.0 | 0.0079 | 0.0197 | 8,000 | 47.2 | 0.0079 | 0.0197 | 8,000 | 21.7 | 0.0039 | 0.0039 | 10,000 | 74.8 | 0.0035 | 0.0031 | 0.0028 |
| | 20 | 0.3° | 7,500 | 45.3 | 0.0075 | 0.0197 | 7,200 | 43.3 | 0.0075 | 0.0197 | 7,200 | 18.9 | 0.0024 | 0.0028 | 7,500 | 55.1 | 0.0035 | 0.0031 | 0.0028 |
| | 25 | 0.3° | 4,800 | 29.5 | 0.0075 | 0.0197 | 4,600 | 27.6 | 0.0075 | 0.0197 | 4,600 | 12.6 | 0.0016 | 0.0020 | 4,800 | 35.4 | 0.0035 | 0.0031 | 0.0020 |
| | 30 | 0.3° | 4,000 | 24.8 | 0.0063 | 0.0157 | 3,400 | 19.7 | 0.0063 | 0.0157 | 3,400 | 9.4 | 0.0008 | 0.0012 | 3,800 | 28.3 | 0.0035 | 0.0031 | 0.0012 |
| | 40 | 0.3° | 2,800 | 17.3 | 0.0051 | 0.0157 | 2,600 | 15.7 | 0.0051 | 0.0157 | - | - | - | - | 2,600 | 19.7 | 0.0035 | 0.0031 | 0.0012 |
| 2.0 | 10 | 0.5° | 9,600 | 78.7 | 0.0118 | 0.0236 | 6,000 | 49.2 | 0.0118 | 0.0236 | 6,000 | 31.5 | 0.0059 | 0.0039 | 9,500 | 94.5 | 0.0047 | 0.0039 | 0.0039 |
| | 15 | 0.5° | 9,300 | 74.8 | 0.0106 | 0.0236 | 6,000 | 47.2 | 0.0106 | 0.0236 | 6,000 | 31.5 | 0.0047 | 0.0039 | 9,000 | 88.6 | 0.0047 | 0.0039 | 0.0039 |
| | 20 | 0.5° | 7,600 | 61.0 | 0.0098 | 0.0236 | 6,000 | 45.3 | 0.0098 | 0.0236 | 6,000 | 27.6 | 0.0039 | 0.0028 | 8,200 | 80.7 | 0.0047 | 0.0039 | 0.0039 |
| | 25 | 0.5° | 6,100 | 49.2 | 0.0091 | 0.0236 | 5,500 | 43.3 | 0.0091 | 0.0236 | 5,500 | 17.7 | 0.0020 | 0.0028 | 5,500 | 53.1 | 0.0047 | 0.0039 | 0.0028 |
| | 30 | 0.5° | 5,000 | 41.3 | 0.0079 | 0.0236 | 4,500 | 31.5 | 0.0079 | 0.0236 | 4,500 | 13.8 | 0.0012 | 0.0020 | 4,500 | 43.3 | 0.0047 | 0.0039 | 0.0028 |
| | 35 | 0.5° | 3,600 | 29.5 | 0.0063 | 0.0197 | 3,600 | 25.6 | 0.0063 | 0.0197 | 3,600 | 11.0 | 0.0004 | 0.0012 | 3,600 | 35.4 | 0.0047 | 0.0039 | 0.0020 |
| | 40 | 0.5° | 3,000 | 24.8 | 0.0047 | 0.0197 | 3,000 | 21.7 | 0.0047 | 0.0197 | 3,000 | 5.9 | 0.0003 | 0.0004 | 3,000 | 29.5 | 0.0047 | 0.0039 | 0.0020 |
| | 45 | 0.5° | 2,700 | 21.7 | 0.0039 | 0.0157 | 2,700 | 19.7 | 0.0039 | 0.0157 | - | - | - | - | 2,700 | 26.8 | 0.0047 | 0.0039 | 0.0012 |
| | 50 | 0.5° | 2,500 | 20.5 | 0.0039 | 0.0157 | 2,500 | 17.7 | 0.0039 | 0.0157 | - | - | - | - | 2,500 | 24.8 | 0.0047 | 0.0039 | 0.0012 |
| 60 | 0.5° | 2,100 | 16.9 | 0.0031 | 0.0157 | 2,100 | 15.7 | 0.0031 | 0.0157 | - | - | - | - | 2,100 | 20.9 | 0.0047 | 0.0039 | 0.0012 | |

- The above mentioned conditions according to projection lengths are intended as general guidelines for reference only. Adjustments should be made based on actual milling conditions.
- For 0.5R - 2.5R, the machining conditions are based on chucking the tool up to the base of the neck.
- Highly rigid machines and tool holders should be used.
- Tool vibrations should be kept at a minimum level for maximum accuracy.
- In the case of linear machining, do not use the Ar value, instead refer to the Aa value.
- More stable high-feed machining in the corners can be attained by setting an R insertion or deceleration on the CAM or machine side.
- When cutting load fluctuates (in the corners, etc.) or when high-precision is required, be sure to control the rotational speed.
- When cutting at greater than the recommended cutting angle, reduce the feed.

continued on next page



| Hardness | | | <38 HRC | | 38-53 HRC | | | | <53 HRC | | <55 HRC | | | | | | | | |
|---------------|-----|-----------------------------|----------------------------------|------------------|---|--------|----------------|------------------|---|--------|----------------|------------------|--|--------|----------------|------------------|---|--------|-------------------|
| Work Material | | | Hardened and Pre-hardened Steels | | | | | | | | | | | | | | | | |
| Cutting Speed | | | 60-400 SFM | | | | 60-310 SFM | | | | 105-250 SFM | | | | 62-410 SFM | | | | |
| R (mm) | L/D | Recom'd Cutting Angle | Speed (RPM) | Feed (in/min) | DOC (in) | | Speed (RPM) | Feed (in/min) | DOC (in) | | Speed (RPM) | Feed (in/min) | DOC (in) | | Speed (RPM) | Feed (in/min) | DOC (in) | | Clearance (in) |
| | | | | | Aa | Ar | | | Aa | Ar | | | Aa | Ar | | | Aa | Ar | |
| | | | | |  | | | |  | | | |  | | | |  | | |
| 10.0 | 70 | 0.5° | 1,900 | 59.1 | 0.0472 | 0.1417 | 1,200 | 19.7 | 0.0472 | 0.0709 | 1,200 | 19.7 | 0.0315 | 0.0059 | 1,900 | 94.5 | 0.0236 | 0.0197 | 0.0079 |
| | 90 | 0.5° | 1,500 | 47.2 | 0.0433 | 0.1417 | 1,200 | 19.7 | 0.0433 | 0.0709 | 1,200 | 19.7 | 0.0315 | 0.0059 | 1,500 | 74.8 | 0.0236 | 0.0197 | 0.0059 |
| | 110 | 0.5° | 1,300 | 39.4 | 0.0354 | 0.1378 | 1,200 | 19.7 | 0.0354 | 0.0709 | 1,200 | 19.7 | 0.0315 | 0.0039 | 1,300 | 63.0 | 0.0236 | 0.0197 | 0.0039 |
| | 130 | 0.5° | 1,100 | 33.5 | 0.0276 | 0.1339 | 1,100 | 17.7 | 0.0276 | 0.0709 | 1,100 | 17.7 | 0.0276 | 0.0039 | 1,100 | 55.1 | 0.0236 | 0.0197 | 0.0028 |
| | 150 | 0.5° | 760 | 23.6 | 0.0197 | 0.1299 | 760 | 12.6 | 0.0197 | 0.0709 | 760 | 12.6 | 0.0197 | 0.0028 | 760 | 37.4 | 0.0236 | 0.0197 | 0.0020 |

- The above mentioned conditions according to projection lengths are intended as general guidelines for reference only. Adjustments should be made based on actual milling conditions.
- For 0.5R - 2.5R, the machining conditions are based on chucking the tool up to the base of the neck.
- Highly rigid machines and tool holders should be used.
- Tool vibrations should be kept at a minimum level for maximum accuracy.
- In the case of linear machining, do not use the Ar value, instead refer to the Aa value.
- More stable high-feed machining in the corners can be attained by setting an R insertion or deceleration on the CAM or machine side.
- When cutting load fluctuates (in the corners, etc.) or when high-precision is required, be sure to control the rotational speed.
- When cutting at greater than the recommended cutting angle, reduce the feed.



List 9570 - EXOPRO[®] PHX: High Feed, Corner Radius

List 9575 - EXOPRO[®] PHX: Deep Feed, Corner Radius

List 9576 - EXOPRO[®] PHX: Long Neck, Deep Feed, Corner Radius

List 9580 - EXOPRO[®] PHX: Pencil Neck, Deep Feed, Corner Radius




Side Milling

| Hardness | | | | <40 HRC | | | | 40-55 HRC | | | | 55-60 HRC | | | | | | | |
|---------------|--------|-------|---------------------|-------------------------------|---------------|-------------------|--------|----------------|---------------|-------------------|--------|--|---------------|-------------------|--------|----------------------|--|--|--|
| Work Material | | | | Mild Steels and Carbon Steels | | | | | | | | Hardened Steels and Prehardened Steels | | | | | | | |
| | | | | High Feed Roughing | | | | Semi-Finishing | | | | Finishing | | | | | | | |
| Cutting Speed | | | | 60-410 SFM | | | | 60-250 SFM | | | | 60-410 SFM | | | | | | | |
| D (mm) | r (mm) | L1 | Rec'd Cutting Angle | Speed (RPM) | Feed (in/min) | aa | | Speed (RPM) | Feed (in/min) | aa | | Speed (RPM) | Feed (in/min) | aa | | Stock to Remove (in) | | | |
| | | | | | | Depth of Cut (in) | | | | Depth of Cut (in) | | | | Depth of Cut (in) | | | | | |
| | | | | | | Aa | Ar | | | Aa | Ar | | | Aa | Ar | | | | |
| 1.0 | R0.3 | 10 | 0.3° | 16,000 | 35.4 | 0.0012 | 0.0055 | 16,000 | 35.4 | 0.0012 | 0.0055 | 16,000 | 35.4 | 0.0016 | 0.0055 | 0.0020 | | | |
| | | 15 | 0.3° | 8,000 | 17.7 | 0.0012 | 0.0055 | 8,000 | 17.7 | 0.0012 | 0.0055 | 8,000 | 17.7 | 0.0016 | 0.0055 | 0.0020 | | | |
| | | 20 | 0.3° | 6,000 | 13.8 | 0.0008 | 0.0055 | 6,000 | 13.8 | 0.0008 | 0.0055 | 6,000 | 13.8 | 0.0016 | 0.0055 | 0.0012 | | | |
| | | 25 | 0.3° | 6,000 | 11.8 | 0.0004 | 0.0051 | 6,000 | 11.8 | 0.0004 | 0.0051 | 6,000 | 11.8 | 0.0016 | 0.0055 | 0.0012 | | | |
| | | 30 | 0.3° | 6,000 | 9.8 | 0.0004 | 0.0047 | 6,000 | 9.8 | 0.0004 | 0.0047 | 6,000 | 9.8 | 0.0016 | 0.0055 | 0.0012 | | | |
| 1.5 | R0.3 | 10 | 0.3° | 16,000 | 55.1 | 0.0020 | 0.0118 | 16,000 | 47.2 | 0.0020 | 0.0118 | 16,000 | 55.1 | 0.0016 | 0.0138 | 0.0028 | | | |
| | | 15 | 0.3° | 8,000 | 31.5 | 0.0020 | 0.0118 | 8,000 | 23.6 | 0.0020 | 0.0118 | 8,000 | 31.5 | 0.0016 | 0.0138 | 0.0020 | | | |
| | | 20 | 0.3° | 5,500 | 21.7 | 0.0016 | 0.0118 | 5,500 | 19.7 | 0.0016 | 0.0118 | 5,500 | 21.7 | 0.0016 | 0.0138 | 0.0020 | | | |
| | | 25 | 0.3° | 5,000 | 19.7 | 0.0016 | 0.0118 | 5,000 | 17.7 | 0.0016 | 0.0118 | 5,000 | 19.7 | 0.0016 | 0.0138 | 0.0012 | | | |
| | | 30 | 0.3° | 4,500 | 17.7 | 0.0016 | 0.0118 | 4,500 | 15.7 | 0.0016 | 0.0118 | 4,500 | 17.7 | 0.0016 | 0.0138 | 0.0012 | | | |
| 2.0 | R0.5 | 10 | 0.3° | 12,000 | 57.1 | 0.0059 | 0.0157 | 12,000 | 43.3 | 0.0059 | 0.0157 | 12,000 | 43.3 | 0.0024 | 0.0157 | 0.0028 | | | |
| | | 15 | 0.3° | 7,800 | 35.4 | 0.0047 | 0.0157 | 7,800 | 27.6 | 0.0039 | 0.0157 | 7,800 | 27.6 | 0.0024 | 0.0157 | 0.0028 | | | |
| | | 20 | 0.3° | 6,200 | 29.5 | 0.0039 | 0.0118 | 6,200 | 23.6 | 0.0028 | 0.0118 | 6,200 | 23.6 | 0.0024 | 0.0157 | 0.0020 | | | |
| | | 25 | 0.3° | 4,700 | 21.7 | 0.0028 | 0.0118 | 4,700 | 19.7 | 0.0024 | 0.0118 | 4,700 | 19.7 | 0.0024 | 0.0157 | 0.0020 | | | |
| | | 30 | 0.3° | 3,500 | 15.7 | 0.0028 | 0.0118 | 3,500 | 15.7 | 0.0020 | 0.0118 | 3,500 | 15.7 | 0.0024 | 0.0157 | 0.0020 | | | |
| | | 35 | 0.3° | 3,500 | 15.7 | 0.0028 | 0.0079 | 3,500 | 15.7 | 0.0016 | 0.0079 | 3,500 | 15.7 | 0.0024 | 0.0157 | 0.0012 | | | |
| | | 40 | 0.3° | 3,500 | 11.8 | 0.0028 | 0.0079 | 3,500 | 11.8 | 0.0016 | 0.0079 | 3,500 | 11.8 | 0.0024 | 0.0157 | 0.0012 | | | |
| | | 45 | 0.3° | 3,500 | 7.9 | 0.0028 | 0.0079 | 3,500 | 7.9 | 0.0012 | 0.0079 | 3,500 | 7.9 | 0.0024 | 0.0157 | 0.0012 | | | |
| | | 50 | 0.3° | 3,500 | 5.9 | 0.0024 | 0.0039 | 3,500 | 5.9 | 0.0012 | 0.0039 | 3,500 | 7.9 | 0.0024 | 0.0157 | 0.0012 | | | |
| 60 | 0.3° | 3,500 | 5.9 | 0.0020 | 0.0039 | 3,500 | 5.9 | 0.0012 | 0.0039 | 3,500 | 7.9 | 0.0024 | 0.0157 | 0.0012 | | | | | |
| 3.0 | R0.8 | 10 | 0.3° | 11,000 | 65.0 | 0.0051 | 0.0236 | 8,000 | 47.2 | 0.0051 | 0.0236 | 11,000 | 82.7 | 0.0039 | 0.0197 | 0.0039 | | | |
| | | 15 | 0.3° | 10,000 | 59.1 | 0.0051 | 0.0236 | 8,000 | 47.2 | 0.0051 | 0.0236 | 10,000 | 74.8 | 0.0039 | 0.0197 | 0.0028 | | | |
| | | 20 | 0.3° | 7,500 | 43.3 | 0.0005 | 0.0197 | 7,200 | 39.4 | 0.0005 | 0.0197 | 7,500 | 55.1 | 0.0039 | 0.0197 | 0.0028 | | | |
| | | 25 | 0.3° | 4,800 | 27.6 | 0.0047 | 0.0157 | 4,600 | 25.6 | 0.0047 | 0.0157 | 4,800 | 35.4 | 0.0039 | 0.0197 | 0.0020 | | | |
| | | 30 | 0.3° | 3,800 | 21.7 | 0.0039 | 0.0157 | 3,400 | 19.7 | 0.0039 | 0.0157 | 3,800 | 29.5 | 0.0039 | 0.0197 | 0.0012 | | | |
| | | 40 | 0.3° | 2,600 | 17.7 | 0.0031 | 0.0118 | 2,600 | 15.7 | 0.0031 | 0.0118 | 2,600 | 21.7 | 0.0039 | 0.0197 | 0.0012 | | | |
| | | 50 | 0.3° | 2,200 | 13.8 | 0.0024 | 0.0118 | 2,200 | 11.8 | 0.0024 | 0.0118 | 2,200 | 17.7 | 0.0039 | 0.0197 | 0.0012 | | | |
| 60 | 0.3° | 2,200 | 13.8 | 0.0016 | 0.0118 | 2,200 | 11.8 | 0.0016 | 0.0118 | 2,200 | 15.7 | 0.0039 | 0.0197 | 0.0012 | | | | | |
| 4.0 | R1 | 10 | 0.5° | 9,500 | 82.7 | 0.0079 | 0.0354 | 6,000 | 49.2 | 0.0079 | 0.0354 | 9,500 | 88.6 | 0.0047 | 0.0315 | 0.0039 | | | |
| | | 15 | 0.5° | 9,000 | 78.7 | 0.0079 | 0.0315 | 6,000 | 49.2 | 0.0079 | 0.0315 | 9,000 | 84.6 | 0.0047 | 0.0315 | 0.0039 | | | |
| | | 20 | 0.5° | 8,200 | 66.9 | 0.0079 | 0.0276 | 6,000 | 49.2 | 0.0055 | 0.0276 | 8,200 | 78.7 | 0.0047 | 0.0276 | 0.0039 | | | |
| | | 25 | 0.5° | 5,500 | 55.1 | 0.0059 | 0.0276 | 5,500 | 45.3 | 0.0043 | 0.0276 | 5,500 | 53.1 | 0.0047 | 0.0276 | 0.0028 | | | |
| | | 30 | 0.5° | 4,500 | 45.3 | 0.0059 | 0.0276 | 4,500 | 35.4 | 0.0035 | 0.0276 | 4,500 | 43.3 | 0.0047 | 0.0276 | 0.0028 | | | |
| | | 35 | 0.5° | 3,600 | 43.3 | 0.0047 | 0.0236 | 3,600 | 29.5 | 0.0035 | 0.0236 | 3,600 | 35.4 | 0.0047 | 0.0276 | 0.0020 | | | |
| | | 40 | 0.5° | 3,000 | 35.4 | 0.0047 | 0.0236 | 3,000 | 25.6 | 0.0035 | 0.0236 | 3,000 | 31.5 | 0.0047 | 0.0276 | 0.0020 | | | |
| | | 45 | 0.5° | 2,700 | 33.5 | 0.0039 | 0.0197 | 2,700 | 23.6 | 0.0031 | 0.0197 | 2,700 | 29.5 | 0.0047 | 0.0276 | 0.0012 | | | |
| | | 50 | 0.5° | 2,500 | 31.5 | 0.0039 | 0.0197 | 2,500 | 21.7 | 0.0031 | 0.0197 | 2,500 | 23.6 | 0.0047 | 0.0276 | 0.0012 | | | |
| 60 | 0.5° | 2,100 | 27.6 | 0.0031 | 0.0197 | 2,100 | 17.7 | 0.0024 | 0.0197 | 2,100 | 19.7 | 0.0047 | 0.0276 | 0.0012 | | | | | |
| 5.0 | R1 | 10 | 0.5° | 7,700 | 98.4 | 0.0079 | 0.0472 | 4,800 | 141.7 | 0.0079 | 0.0472 | 7,700 | 70.9 | 0.0047 | 0.0472 | 0.0039 | | | |
| | | 15 | 0.5° | 7,700 | 94.5 | 0.0079 | 0.0472 | 4,800 | 133.9 | 0.0063 | 0.0472 | 6,100 | 57.1 | 0.0047 | 0.0472 | 0.0039 | | | |
| | | 20 | 0.5° | 7,700 | 94.5 | 0.0079 | 0.0472 | 4,800 | 133.9 | 0.0063 | 0.0472 | 6,100 | 57.1 | 0.0047 | 0.0472 | 0.0039 | | | |
| | | 25 | 0.5° | 5,100 | 86.6 | 0.0067 | 0.0394 | 4,800 | 118.1 | 0.0051 | 0.0394 | 5,100 | 47.2 | 0.0047 | 0.0472 | 0.0028 | | | |
| | | 30 | 0.5° | 5,100 | 86.6 | 0.0067 | 0.0394 | 4,800 | 118.1 | 0.0051 | 0.0394 | 5,100 | 47.2 | 0.0047 | 0.0472 | 0.0028 | | | |
| | | 35 | 0.5° | 4,400 | 66.9 | 0.0059 | 0.0394 | 4,400 | 94.5 | 0.0035 | 0.0394 | 4,400 | 39.4 | 0.0047 | 0.0472 | 0.0020 | | | |
| | | 40 | 0.5° | 3,100 | 43.3 | 0.0059 | 0.0394 | 3,100 | 59.1 | 0.0031 | 0.0394 | 3,100 | 29.5 | 0.0047 | 0.0472 | 0.0020 | | | |

continued on next page



Side Milling

| Hardness | | | | <40 HRC | | | | 40-55 HRC | | | | 55-60 HRC | | | | | | | |
|---------------|--------|-----|---------------------|-------------------------------|---------------|---|--------|----------------|---------------|---|--------|--|---------------|---|--------|----------------------|--|--|--|
| Work Material | | | | Mild Steels and Carbon Steels | | | | | | | | Hardened Steels and Prehardened Steels | | | | | | | |
| | | | | High Feed Roughing | | | | Semi-Finishing | | | | Finishing | | | | | | | |
| Cutting Speed | | | | 60-410 SFM | | | | 60-250 SFM | | | | 60-410 SFM | | | | | | | |
| D (mm) | r (mm) | L1 | Rec'd Cutting Angle | Speed (RPM) | Feed (in/min) | Depth of Cut (in) | | Speed (RPM) | Feed (in/min) | Depth of Cut (in) | | Speed (RPM) | Feed (in/min) | Depth of Cut (in) | | Stock to Remove (in) | | | |
| | | | | | | Aa | Ar | | | Aa | Ar | | | Aa | Ar | | | | |
| | | | | | |  | | | |  | | | |  | | | | | |
| 6.0 | R1.5 | 24 | 0.5° | 6,500 | 255.9 | 0.0138 | 0.0512 | 4,000 | 66.9 | 0.0094 | 0.0512 | 6,500 | 74.8 | 0.0059 | 0.0472 | 0.0039 | | | |
| | | 30 | 0.5° | 5,100 | 200.8 | 0.0094 | 0.0472 | 4,000 | 66.9 | 0.0091 | 0.0472 | 5,100 | 59.1 | 0.0059 | 0.0472 | 0.0039 | | | |
| | | 36 | 0.5° | 4,200 | 165.4 | 0.0079 | 0.0394 | 4,000 | 66.9 | 0.0075 | 0.0394 | 4,200 | 49.2 | 0.0059 | 0.0472 | 0.0028 | | | |
| | | 42 | 0.5° | 3,700 | 145.7 | 0.0059 | 0.0394 | 3,700 | 55.1 | 0.0055 | 0.0394 | 3,700 | 43.3 | 0.0059 | 0.0472 | 0.0028 | | | |
| | | 48 | 0.5° | 2,600 | 102.4 | 0.0051 | 0.0354 | 2,600 | 35.4 | 0.0055 | 0.0354 | 2,600 | 31.5 | 0.0059 | 0.0472 | 0.0020 | | | |
| | | 54 | 0.5° | 2,100 | 82.7 | 0.0039 | 0.0354 | 2,100 | 31.5 | 0.0039 | 0.0354 | 2,100 | 25.6 | 0.0059 | 0.0472 | 0.0020 | | | |
| | | 66 | 0.5° | 1,900 | 74.8 | 0.0031 | 0.0354 | 1,900 | 27.6 | 0.0031 | 0.0354 | 1,900 | 21.7 | 0.0059 | 0.0472 | 0.0012 | | | |
| | | 80 | 0.5° | 1,700 | 66.9 | 0.0020 | 0.0354 | 1,700 | 23.6 | 0.0020 | 0.0354 | 1,700 | 17.7 | 0.0059 | 0.0472 | 0.0012 | | | |
| 8.0 | R2 | 30 | 0.5° | 4,800 | 78.7 | 0.0197 | 0.0669 | 3,000 | 49.2 | 0.0118 | 0.0630 | 4,800 | 70.9 | 0.0071 | 0.0630 | 0.0039 | | | |
| | | 40 | 0.5° | 3,800 | 74.8 | 0.0157 | 0.0630 | 3,000 | 49.2 | 0.0118 | 0.0630 | 3,800 | 55.1 | 0.0071 | 0.0630 | 0.0039 | | | |
| | | 48 | 0.5° | 3,200 | 66.9 | 0.0106 | 0.0551 | 3,000 | 49.2 | 0.0102 | 0.0551 | 2,300 | 45.3 | 0.0071 | 0.0630 | 0.0028 | | | |
| | | 56 | 0.5° | 2,700 | 51.2 | 0.0079 | 0.0551 | 2,700 | 43.3 | 0.0079 | 0.0551 | 2,700 | 39.4 | 0.0071 | 0.0630 | 0.0028 | | | |
| | | 64 | 0.5° | 1,900 | 34.6 | 0.0079 | 0.0512 | 1,900 | 31.5 | 0.0079 | 0.0512 | 1,900 | 27.6 | 0.0071 | 0.0630 | 0.0020 | | | |
| | | 80 | 0.5° | 1,500 | 27.6 | 0.0059 | 0.0512 | 1,500 | 27.6 | 0.0059 | 0.0512 | 1,500 | 21.7 | 0.0071 | 0.0630 | 0.0012 | | | |
| | | 100 | 0.5° | 1,200 | 25.6 | 0.0059 | 0.0512 | 1,200 | 25.6 | 0.0059 | 0.0512 | 1,200 | 19.7 | 0.0071 | 0.0630 | 0.0012 | | | |
| | | 120 | 0.5° | 1,000 | 21.7 | 0.0039 | 0.0512 | 1,000 | 21.7 | 0.0039 | 0.0512 | 1,000 | 17.7 | 0.0071 | 0.0630 | 0.0012 | | | |
| 10.0 | R2 | 35 | 0.5° | 3,800 | 82.7 | 0.0197 | 0.0984 | 2,400 | 94.5 | 0.0118 | 0.0630 | 3,800 | 149.6 | 0.0079 | 0.0945 | 0.0039 | | | |
| | | 50 | 0.5° | 3,100 | 76.8 | 0.0157 | 0.0945 | 2,400 | 94.5 | 0.0118 | 0.0630 | 3,100 | 122.0 | 0.0079 | 0.0945 | 0.0039 | | | |
| | | 60 | 0.5° | 2,500 | 68.9 | 0.0106 | 0.0787 | 2,400 | 94.5 | 0.0106 | 0.0630 | 2,500 | 98.4 | 0.0079 | 0.0945 | 0.0039 | | | |
| | | 70 | 0.5° | 2,200 | 53.1 | 0.0079 | 0.0787 | 2,200 | 86.6 | 0.0079 | 0.0630 | 2,200 | 86.6 | 0.0079 | 0.0945 | 0.0028 | | | |
| | | 80 | 0.5° | 1,500 | 35.4 | 0.0075 | 0.0787 | 1,500 | 59.1 | 0.0075 | 0.0630 | 1,500 | 59.1 | 0.0079 | 0.0945 | 0.0028 | | | |
| | | 100 | 0.5° | 1,200 | 28.3 | 0.0063 | 0.0787 | 1,200 | 47.2 | 0.0063 | 0.0630 | 1,200 | 47.2 | 0.0079 | 0.0945 | 0.0020 | | | |
| | | 120 | 0.5° | 1,050 | 25.6 | 0.0051 | 0.0787 | 1,000 | 39.4 | 0.0051 | 0.0630 | 1,050 | 41.3 | 0.0079 | 0.0945 | 0.0020 | | | |
| | | 140 | 0.5° | 850 | 21.7 | 0.0039 | 0.0591 | 800 | 31.5 | 0.0039 | 0.0551 | 850 | 33.5 | 0.0079 | 0.0945 | 0.0012 | | | |
| 12.0 | R2 | 160 | 0.5° | 700 | 19.7 | 0.0028 | 0.0591 | 700 | 27.6 | 0.0028 | 0.0551 | 700 | 27.6 | 0.0079 | 0.0945 | 0.0012 | | | |
| | | 45 | 0.5° | 3,200 | 86.6 | 0.0236 | 0.1339 | 2,000 | 78.7 | 0.0118 | 0.0630 | 3,200 | 126.0 | 0.0094 | 0.1260 | 0.0059 | | | |
| | | 60 | 0.5° | 2,500 | 82.7 | 0.0197 | 0.1260 | 2,000 | 78.7 | 0.0118 | 0.0630 | 2,500 | 98.4 | 0.0094 | 0.1260 | 0.0059 | | | |
| | | 70 | 0.5° | 2,100 | 74.8 | 0.0157 | 0.1102 | 2,000 | 78.7 | 0.0110 | 0.0630 | 2,100 | 82.7 | 0.0094 | 0.1260 | 0.0039 | | | |
| | | 85 | 0.5° | 1,800 | 59.1 | 0.0118 | 0.1063 | 1,500 | 59.1 | 0.0087 | 0.0630 | 1,800 | 70.9 | 0.0094 | 0.1260 | 0.0039 | | | |
| | | 100 | 0.5° | 1,300 | 39.4 | 0.0079 | 0.1024 | 1,200 | 47.2 | 0.0079 | 0.0630 | 1,300 | 51.2 | 0.0094 | 0.1260 | 0.0039 | | | |
| | | 120 | 0.5° | 1,000 | 27.6 | 0.0059 | 0.0984 | 1,000 | 39.4 | 0.0059 | 0.0630 | 1,000 | 39.4 | 0.0094 | 0.1260 | 0.0020 | | | |
| | | 140 | 0.5° | 900 | 23.6 | 0.0059 | 0.0787 | 900 | 35.4 | 0.0039 | 0.0630 | 900 | 35.4 | 0.0094 | 0.1260 | 0.0020 | | | |
| 160 | 0.5° | 700 | 19.7 | 0.0039 | 0.0787 | 700 | 27.6 | 0.0039 | 0.0630 | 700 | 27.6 | 0.0094 | 0.1260 | 0.0020 | | | | | |

1. The above mentioned conditions according to projection lengths are intended as general guidelines for reference only. Adjustments should be made based on actual milling conditions.
2. Highly rigid machines and tool holders should be used.
3. Tool vibrations should be kept at a minimum level for maximum accuracy.
4. In the case of linear machining, do not use the Ar value, instead refer to the Aa value.
5. Under general machining conditions, air-blow cutting method is recommended.
6. More stable high-feed machining in the corners can be attained by setting an R insertion or deceleration on the CAM or machine side.
7. When cutting load fluctuates (in the corners, etc.) or when high-precision is required, be sure to control the rotational speed.
8. When cutting at greater than the recommended cutting angle, reduce the feed.
9. When the depth of cut is less than the specified amount as listed above, the feed rate can be increased up to 150%.
10. When the depth of cut is greater than the specified amount as listed above, the feed rate can be reduced by no more than 60% to ensure stable milling.

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List 9570 - EXOPRO[®] PHX: High Feed, Corner Radius (Continued)

List 9575 - EXOPRO[®] PHX: Deep Feed, Corner Radius (Continued)

List 9576 - EXOPRO[®] PHX: Long Neck, Deep Feed, Corner Radius (Continued)

List 9580 - EXOPRO[®] PHX: Pencil Neck, Deep Feed, Corner Radius (Continued)

Side Milling

| Hardness | | | | <40 HRC | | | | 40-55 HRC | | | | 55-60 HRC | | | | |
|---------------|-----------|-------|---------------------------|-------------------------------|------------------|-----------------------|--------|--|------------------|-----------------------|--------|----------------|------------------|-----------------------|--------|----------------------------|
| Work Material | | | | Mild Steels and Carbon Steels | | | | Hardened Steels and Prehardened Steels | | | | | | | | |
| | | | | High Feed Roughing | | | | Semi-Finishing | | | | Finishing | | | | |
| Cutting Speed | | | | 60-410 SFM | | | | 60-250 SFM | | | | 60-410 SFM | | | | |
| D (mm) | r (mm) | L1 | Rec'd Cutting Angle | Speed (RPM) | Feed (in/min) | Depth of Cut (in) | | Speed (RPM) | Feed (in/min) | Depth of Cut (in) | | Speed (RPM) | Feed (in/min) | Depth of Cut (in) | | Stock to Remove (in) |
| | | | | | | Aa | Ar | | | Aa | Ar | | | Aa | Ar | |
| | | | | | | 16.0 | R3 | | | 55 | 0.5° | | | 2,400 | 78.7 | |
| 80 | 0.5° | 1,900 | 74.8 | 0.0185 | 0.1575 | | | 1,500 | 59.1 | 0.0118 | 0.0630 | 1,900 | 74.8 | 0.0118 | 0.1575 | 0.0059 |
| 90 | 0.5° | 1,600 | 66.9 | 0.0157 | 0.1339 | | | 1,500 | 59.1 | 0.0118 | 0.0630 | 1,600 | 63.0 | 0.0118 | 0.1575 | 0.0039 |
| 105 | 0.5° | 1,400 | 51.2 | 0.0114 | 0.1299 | | | 1,400 | 55.1 | 0.0110 | 0.0630 | 1,400 | 55.1 | 0.0118 | 0.1575 | 0.0028 |
| 20.0 | R3 | 120 | 0.5° | 1,000 | 33.5 | 0.0079 | 0.1260 | 1,000 | 39.4 | 0.0079 | 0.0630 | 1,000 | 39.4 | 0.0118 | 0.1575 | 0.0020 |
| | | 70 | 0.5° | 1,900 | 78.7 | 0.0197 | 0.2165 | 1,200 | 47.2 | 0.0118 | 0.0630 | 1,900 | 74.8 | 0.0165 | 0.2165 | 0.0079 |
| | | 90 | 0.5° | 1,500 | 74.8 | 0.0185 | 0.2087 | 1,200 | 47.2 | 0.0118 | 0.0630 | 1,500 | 59.1 | 0.0165 | 0.2165 | 0.0059 |
| | | 110 | 0.5° | 1,300 | 66.9 | 0.0165 | 0.1654 | 1,200 | 47.2 | 0.0118 | 0.0630 | 1,300 | 51.2 | 0.0165 | 0.2165 | 0.0039 |
| 150 | 0.5° | 130 | 0.5° | 1,100 | 51.2 | 0.0122 | 0.1496 | 1,100 | 43.3 | 0.0118 | 0.0630 | 1,100 | 43.3 | 0.0165 | 0.2165 | 0.0028 |
| | | 760 | 29.9 | 0.0098 | 0.1339 | 760 | 29.9 | 0.0091 | 0.0630 | 760 | 29.9 | 0.0165 | 0.2165 | 0.0020 | | |

1. The above mentioned conditions according to projection lengths are intended as general guidelines for reference only. Adjustments should be made based on actual milling conditions.
2. Highly rigid machines and tool holders should be used.
3. Tool vibrations should be kept at a minimum level for maximum accuracy.
4. In the case of linear machining, do not use the Ar value, instead refer to the Aa value.
5. Under general machining conditions, air-blow cutting method is recommended.
6. More stable high-feed machining in the corners can be attained by setting an R insertion or deceleration on the CAM or machine side.
7. When cutting load fluctuates (in the corners, etc.) or when high-precision is required, be sure to control the rotational speed.
8. When cutting at greater than the recommended cutting angle, reduce the feed.
9. When the depth of cut is less than the specified amount as listed above, the feed rate can be increased up to 150%.
10. When the depth of cut is greater than the specified amount as listed above, the feed rate can be reduced by no more than 60% to ensure stable milling.



List 9592 - EXOPRO[®] PHX : Pencil-Neck, Deep Feed, Corner Radius

Side Milling

| Hardness | | <41 HRC | | | | 42-55 HRC | | | | 49-55 HRC | | | | | | | | | |
|---------------|-----------|----------------------------------|----------------|------------------|------------|-------------|--------|----------------|------------------|-------------|-------------|--------|----------------|------------------|-------------------|--------|--------|--|--|
| Work Material | | Hardened and Pre-hardened Steels | | | | | | | | | | | | | | | | | |
| Cutting Speed | | 110-395 SFM | | | | 110-250 SFM | | | | 110-410 SFM | | | | | | | | | |
| D (mm) | r (mm) | L2 (mm) | Speed (RPM) | Feed (in/min) | | DOC (in) | | Speed (RPM) | Feed (in/min) | | DOC (in) | | Speed (RPM) | Feed (in/min) | DOC (in) | | | | |
| | | | | Slotting | Contouring | Aa | Ar | | Slotting | Contouring | Aa | Ar | | | Contour Finishing | Aa | | | |
| 0.8 | | 2 | 18,000 | 28.3 | 36.6 | 0.0008 | 0.0079 | 18,000 | 28.3 | 36.6 | 0.0008 | 0.0079 | 18,000 | 45.3 | 0.0006 | | | | |
| | | 4 | 18,000 | 28.3 | 36.6 | 0.0008 | 0.0079 | 18,000 | 28.3 | 36.6 | 0.0008 | 0.0079 | 18,000 | 45.3 | 0.0006 | | | | |
| | | 6 | 18,000 | 28.3 | 36.6 | 0.0008 | 0.0079 | 18,000 | 28.3 | 36.6 | 0.0008 | 0.0079 | 18,000 | 45.3 | 0.0006 | | | | |
| | | 8 | 15,000 | 21.3 | 26.8 | 0.0006 | 0.0079 | 15,000 | 21.3 | 24.8 | 0.0005 | 0.0079 | 16,000 | 27.6 | 0.0005 | | | | |
| 1.0 | 0.1 | 4 | 18,000 | 32.7 | 43.3 | 0.0012 | 0.0091 | 18,000 | 32.7 | 34.6 | 0.0012 | 0.0091 | 18,000 | 56.7 | 0.0006 | | | | |
| | | 6 | 18,000 | 32.7 | 43.3 | 0.0009 | 0.0091 | 18,000 | 32.7 | 34.6 | 0.0009 | 0.0091 | 18,000 | 56.7 | 0.0006 | | | | |
| | | 8 | 15,000 | 29.5 | 39.4 | 0.0005 | 0.0091 | 15,000 | 29.5 | 31.5 | 0.0005 | 0.0091 | 15,000 | 47.2 | 0.0006 | | | | |
| | | 10 | 12,000 | 11.8 | 19.7 | 0.0003 | 0.0079 | 12,000 | 11.8 | 15.7 | 0.0003 | 0.0079 | 12,000 | 37.8 | 0.0006 | | | | |
| | | 12 | 10,500 | 8.7 | 14.2 | 0.0002 | 0.0071 | 10,500 | 8.7 | 11.3 | 0.0002 | 0.0071 | 10,500 | 33.1 | 0.0006 | | | | |
| | | 4 | 18,000 | 32.7 | 43.3 | 0.0012 | 0.0091 | 18,000 | 32.7 | 34.6 | 0.0012 | 0.0091 | 18,000 | 56.7 | 0.0007 | | | | |
| | 0.2 | 6 | 18,000 | 32.7 | 43.3 | 0.0009 | 0.0091 | 18,000 | 32.7 | 34.6 | 0.0009 | 0.0091 | 18,000 | 56.7 | 0.0007 | | | | |
| | | 8 | 15,000 | 29.5 | 39.4 | 0.0005 | 0.0091 | 15,000 | 29.5 | 31.5 | 0.0005 | 0.0091 | 15,000 | 47.2 | 0.0007 | | | | |
| | | 10 | 12,000 | 11.8 | 19.7 | 0.0003 | 0.0079 | 12,000 | 11.8 | 15.7 | 0.0003 | 0.0079 | 12,000 | 37.8 | 0.0007 | | | | |
| | | 12 | 10,500 | 8.7 | 14.2 | 0.0002 | 0.0071 | 10,500 | 8.7 | 11.4 | 0.0002 | 0.0071 | 10,500 | 33.1 | 0.0007 | | | | |
| | | 4 | 18,000 | 32.7 | 49.6 | 0.0012 | 0.0091 | 18,000 | 32.7 | 39.4 | 0.0012 | 0.0091 | 18,000 | 56.7 | 0.0009 | | | | |
| | | 6 | 18,000 | 32.7 | 44.1 | 0.0009 | 0.0091 | 18,000 | 32.7 | 35.0 | 0.0009 | 0.0091 | 18,000 | 56.7 | 0.0009 | | | | |
| 1.5 | 0.1 | 4 | 18,000 | 48.4 | 65.0 | 0.0012 | 0.0134 | 16,000 | 42.5 | 51.2 | 0.0012 | 0.0134 | 18,000 | 63.8 | 0.0006 | | | | |
| | | 8 | 18,000 | 48.4 | 65.0 | 0.0010 | 0.0134 | 16,000 | 42.5 | 51.2 | 0.0010 | 0.0134 | 18,000 | 63.8 | 0.0006 | | | | |
| | | 12 | 10,000 | 18.9 | 31.5 | 0.0005 | 0.0118 | 10,000 | 17.7 | 29.5 | 0.0005 | 0.0118 | 10,000 | 35.4 | 0.0006 | | | | |
| | 0.2 | 4 | 18,000 | 48.4 | 65.0 | 0.0012 | 0.0134 | 16,000 | 42.5 | 51.2 | 0.0012 | 0.0134 | 18,000 | 63.8 | 0.0007 | | | | |
| | | 6 | 18,000 | 48.4 | 65.0 | 0.0011 | 0.0134 | 16,000 | 42.5 | 51.2 | 0.0011 | 0.0134 | 18,000 | 63.8 | 0.0007 | | | | |
| | | 8 | 18,000 | 48.4 | 65.0 | 0.0010 | 0.0134 | 16,000 | 42.5 | 51.2 | 0.0010 | 0.0134 | 18,000 | 63.8 | 0.0007 | | | | |
| 2.0 | 0.1 | 8 | 18,000 | 69.3 | 87.0 | 0.0012 | 0.0181 | 12,000 | 39.4 | 51.2 | 0.0012 | 0.0181 | 18,000 | 63.8 | 0.0006 | | | | |
| | | 10 | 15,000 | 63.8 | 85.0 | 0.0012 | 0.0181 | 12,000 | 39.4 | 47.2 | 0.0012 | 0.0181 | 15,000 | 53.1 | 0.0006 | | | | |
| | | 12 | 13,000 | 52.0 | 69.3 | 0.0009 | 0.0181 | 12,000 | 37.4 | 45.3 | 0.0009 | 0.0181 | 13,000 | 46.1 | 0.0006 | | | | |
| | | 16 | 7,600 | 29.5 | 39.4 | 0.0005 | 0.0181 | 7,600 | 23.6 | 30.7 | 0.0005 | 0.0181 | 7,000 | 24.8 | 0.0006 | | | | |
| | | 0.3 | 8 | 18,000 | 63.8 | 87.0 | 0.0020 | 0.0181 | 12,000 | 39.4 | 51.2 | 0.0020 | 0.0181 | 18,000 | 63.8 | 0.0009 | | | |
| | | 12 | 13,000 | 52.0 | 69.3 | 0.0016 | 0.0181 | 12,000 | 37.4 | 45.3 | 0.0016 | 0.0181 | 13,000 | 46.1 | 0.0009 | | | | |
| | 0.5 | 6 | 18,000 | 69.3 | 87.0 | 0.0031 | 0.0177 | 12,000 | 33.5 | 51.2 | 0.0031 | 0.0177 | 18,000 | 63.8 | 0.0010 | | | | |
| | | 8 | 18,000 | 69.3 | 87.0 | 0.0030 | 0.0177 | 12,000 | 33.5 | 51.2 | 0.0030 | 0.0177 | 18,000 | 63.8 | 0.0010 | | | | |
| | | 10 | 15,000 | 63.8 | 85.0 | 0.0028 | 0.0177 | 12,000 | 31.5 | 47.2 | 0.0028 | 0.0177 | 15,000 | 53.1 | 0.0010 | | | | |
| | | 12 | 13,000 | 52.0 | 69.3 | 0.0024 | 0.0177 | 12,000 | 27.6 | 45.3 | 0.0024 | 0.0177 | 13,000 | 46.1 | 0.0010 | | | | |
| | | 3.0 | 0.3 | 12 | 12,700 | 55.1 | 91.3 | 0.0018 | 0.0276 | 8,000 | 33.1 | 47.2 | 0.0018 | 0.0276 | 13,000 | 46.1 | 0.0009 | | |

1. Adjust the speed, feed, and plunge depth in accordance with operating conditions, including the machining shape, machine rigidity, holder rigidity, and work holding force.
2. If the speed and feed rates cannot increase due to equipment performance, operate by reducing the speed and feed rates at the same ratio.
3. High cutting speeds and feed rates can cause cutter wear or reduce machining precision. Therefore, operate by reducing the feed rate as needed.
4. Depending on the shape to be machined, if the end mill chatters during machining, it can bite into the shape. Therefore, operate by reducing the speed and feed rates at the same ratio.
5. For precise, detailed machining, use a dedicated machine that operates quietly.
6. Operate by keeping the runout at the tip of the end mill below 5 microns (.0002").
7. To perform finish machining with a high level of efficiency, keep the speed and feed rates below 2 times.
8. To finish a flat surface, operate at a speed range with a minimal amount of equipment vibration, making sure that the feed rate does not cause the equipment to wobble.
9. To finish machine a curved surface using the corner radius tool, operate by changing the machining pitch.
10. Set the inclined cut angle approximately between 0.3° and 0.5°.



For Standard LDR (Up to 6:1)

Speeds

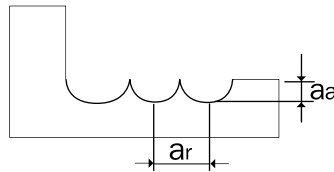
| Diameter | Roughing & Semi-finishing | | | Finishing | | |
|----------|---------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | RPM | | | RPM | | |
| | 30 - 40 HRC | 40 - 50 HRC | 50 - 60 HRC | 30 - 40 HRC | 40 - 50 HRC | 50 - 60 HRC |
| 1/32 | 38,400 – 60,000 | 32,000 – 50,000 | 24,600 – 40,000 | 20,000 – 50,000 | 20,000 – 50,000 | 20,000 – 50,000 |
| 1/16 | 26,400 – 42,000 | 22,000 – 35,000 | 16,600 – 28,000 | 20,000 – 50,000 | 20,000 – 50,000 | 20,000 – 50,000 |
| 3/32 | 21,600 – 31,200 | 18,000 – 26,000 | 13,400 – 20,800 | 20,000 – 50,000 | 20,000 – 50,000 | 20,000 – 50,000 |
| 1/8 | 19,200 – 28,800 | 16,000 – 24,000 | 11,800 – 19,200 | 20,000 – 38,000 | 20,000 – 50,000 | 20,000 – 30,500 |
| 3/16 | 15,000 – 19,776 | 12,500 – 16,480 | 9,000 – 13,184 | 20,000 – 26,000 | 20,000 – 34,000 | 16,000 – 20,300 |
| 1/4 | 12,120 – 16,800 | 10,100 – 14,000 | 7,080 – 11,200 | 15,000 – 18,000 | 18,000 – 24,400 | 12,000 – 15,000 |
| 5/16 | 11,400 – 15,900 | 9,200 – 13,250 | 6,360 – 10,600 | 12,000 – 14,000 | 14,600 – 19,000 | 9,700 – 12,000 |
| 3/8 | 10,560 – 14,520 | 8,800 – 12,100 | 6,040 – 9,680 | 10,000 – 12,000 | 12,000 – 16,200 | 8,100 – 10,000 |
| 7/16 | 9,480 – 12,480 | 7,900 – 10,400 | 5,320 – 8,320 | 8,700 – 10,400 | 10,000 – 13,900 | 6,900 – 8,700 |
| 1/2 | 8,280 – 10,920 | 6,900 – 9,100 | 4,520 – 7,280 | 7,800 – 9,800 | 9,100 – 12,200 | 6,100 – 7,600 |

Chip Load per Tooth

| Diameter | 30 - 40 HRC | | 40 - 50 HRC | | 50 - 60 HRC | |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | Rough & Semi | Finishing | Rough & Semi | Finishing | Rough & Semi | Finishing |
| 1/32 | 0.0006 – 0.0010 | 0.0006 – 0.0009 | 0.0006 – 0.0008 | 0.0005 – 0.0007 | 0.0004 – 0.0007 | 0.0004 – 0.0006 |
| 1/16 | 0.0012 – 0.0016 | 0.0010 – 0.0015 | 0.0010 – 0.0015 | 0.0010 – 0.0014 | 0.0008 – 0.0012 | 0.0007 – 0.0010 |
| 3/32 | 0.0020 – 0.0025 | 0.0014 – 0.0024 | 0.0015 – 0.0022 | 0.0014 – 0.0020 | 0.0012 – 0.0020 | 0.0010 – 0.0014 |
| 1/8 | 0.0025 – 0.0030 | 0.0019 – 0.0028 | 0.0020 – 0.0027 | 0.0019 – 0.0026 | 0.0017 – 0.0022 | 0.0015 – 0.0020 |
| 3/16 | 0.0035 – 0.0043 | 0.0032 – 0.0042 | 0.0032 – 0.0041 | 0.0030 – 0.0040 | 0.0030 – 0.0039 | 0.0023 – 0.0031 |
| 1/4 | 0.0050 – 0.0060 | 0.0040 – 0.0053 | 0.0050 – 0.0057 | 0.0040 – 0.0051 | 0.0040 – 0.0050 | 0.0038 – 0.0048 |
| 5/16 | 0.0063 – 0.0070 | 0.0053 – 0.0068 | 0.0052 – 0.0066 | 0.0052 – 0.0063 | 0.0051 – 0.0062 | 0.0046 – 0.0054 |
| 3/8 | 0.0070 – 0.0080 | 0.0062 – 0.0079 | 0.0062 – 0.0077 | 0.0054 – 0.0065 | 0.0060 – 0.0072 | 0.0050 – 0.0061 |
| 7/16 | 0.0080 – 0.0087 | 0.0068 – 0.0086 | 0.0068 – 0.0084 | 0.0060 – 0.0078 | 0.0066 – 0.0080 | 0.0053 – 0.0070 |
| 1/2 | 0.0087 – 0.0100 | 0.0080 – 0.0094 | 0.0080 – 0.0092 | 0.0070 – 0.0090 | 0.0078 – 0.0090 | 0.0062 – 0.0081 |

Axial Depths of Cut (aa)

30 - 40 HRC 10% Diameter
 40 - 50 HRC 7% Diameter
 50 - 60 HRC 5% Diameter



Radial Depths of Cut (ar)

Up to 35% D for roughing and semi-finishing operations. However, radial depths of cut are normally determined by the surface finish requirements, specific to each application.

continued on next page





For Long LDR (6:1 to 8:1)

Speeds

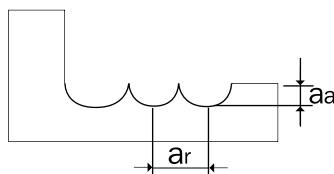
| Diameter | Roughing & Semi-finishing | | | Finishing | | |
|----------|---------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | RPM | | | RPM | | |
| | 30 - 40 HRC | 40 - 50 HRC | 50 - 60 HRC | 30 - 40 HRC | 40 - 50 HRC | 50 - 60 HRC |
| 1/32 | 28,800 – 45,000 | 24,000 – 37,500 | 18,450 – 30,000 | 15,000 – 37,500 | 15,000 – 37,500 | 15,000 – 37,500 |
| 1/16 | 19,800 – 31,500 | 16,500 – 26,250 | 12,450 – 21,000 | 15,000 – 37,500 | 15,000 – 37,500 | 15,000 – 37,500 |
| 3/32 | 16,200 – 23,400 | 13,500 – 19,500 | 10,050 – 15,600 | 15,000 – 37,500 | 15,000 – 37,500 | 15,000 – 37,500 |
| 1/8 | 14,400 – 21,600 | 12,000 – 18,000 | 8,850 – 14,400 | 15,000 – 37,500 | 15,000 – 28,500 | 15,000 – 22,875 |
| 3/16 | 11,250 – 14,832 | 9,375 – 12,360 | 6,750 – 9,888 | 15,000 – 25,500 | 15,000 – 19,500 | 12,000 – 15,225 |
| 1/4 | 9,090 – 12,600 | 7,575 – 10,500 | 5,310 – 8,400 | 13,500 – 18,300 | 11,250 – 13,500 | 9,000 – 11,250 |
| 5/16 | 8,550 – 11,925 | 6,900 – 9,845 | 4,770 – 7,950 | 10,950 – 14,250 | 9,000 – 10,500 | 7,275 – 9,000 |
| 3/8 | 7,920 – 10,890 | 6,600 – 9,075 | 4,530 – 7,260 | 9,000 – 12,150 | 7,500 – 9,000 | 6,075 – 7,500 |
| 7/16 | 7,110 – 9,360 | 5,925 – 7,800 | 3,990 – 6,240 | 7,500 – 10,425 | 6,525 – 7,800 | 5,175 – 6,525 |
| 1/2 | 6,210 – 8,190 | 5,175 – 6,825 | 3,390 – 5,460 | 6,825 – 9,150 | 5,850 – 7,350 | 4,575 – 5,700 |

Chip Load per Tooth

| Diameter | 30 - 40 HRC | | 40 - 50 HRC | | 50 - 60 HRC | |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | Rough & Semi | Finishing | Rough & Semi | Finishing | Rough & Semi | Finishing |
| 1/32 | 0.0005 – 0.0008 | 0.0004 – 0.0007 | 0.0004 – 0.0005 | 0.0005 – 0.0006 | 0.0003 – 0.0005 | 0.0003 – 0.0005 |
| 1/16 | 0.0009 – 0.0012 | 0.0008 – 0.0011 | 0.0008 – 0.0011 | 0.0008 – 0.0011 | 0.0006 – 0.0009 | 0.0005 – 0.0008 |
| 3/32 | 0.0015 – 0.0019 | 0.0011 – 0.0018 | 0.0011 – 0.0017 | 0.0011 – 0.0015 | 0.0009 – 0.0015 | 0.0008 – 0.0011 |
| 1/8 | 0.0019 – 0.0023 | 0.0014 – 0.0021 | 0.0015 – 0.0020 | 0.0014 – 0.0020 | 0.0013 – 0.0017 | 0.0011 – 0.0015 |
| 3/16 | 0.0026 – 0.0032 | 0.0024 – 0.0032 | 0.0024 – 0.0031 | 0.0023 – 0.0030 | 0.0023 – 0.0029 | 0.0017 – 0.0023 |
| 1/4 | 0.0038 – 0.0045 | 0.0030 – 0.0040 | 0.0038 – 0.0043 | 0.0030 – 0.0038 | 0.0030 – 0.0038 | 0.0029 – 0.0036 |
| 5/16 | 0.0047 – 0.0053 | 0.0040 – 0.0051 | 0.0039 – 0.0050 | 0.0039 – 0.0047 | 0.0038 – 0.0047 | 0.0035 – 0.0041 |
| 3/8 | 0.0053 – 0.0060 | 0.0047 – 0.0059 | 0.0047 – 0.0058 | 0.0041 – 0.0049 | 0.0045 – 0.0054 | 0.0038 – 0.0046 |
| 7/16 | 0.0060 – 0.0065 | 0.0051 – 0.0065 | 0.0051 – 0.0063 | 0.0045 – 0.0059 | 0.0050 – 0.0060 | 0.0040 – 0.0053 |
| 1/2 | 0.0065 – 0.0075 | 0.0060 – 0.0071 | 0.0060 – 0.0069 | 0.0053 – 0.0068 | 0.0059 – 0.0068 | 0.0047 – 0.0061 |

Axial Depths of Cut (aa)

30 - 40 HRC 10% Diameter
 40 - 50 HRC 7% Diameter
 50 - 60 HRC 5% Diameter



Radial Depths of Cut (ar)

Up to 35% D for roughing and semi-finishing operations. However, radial depths of cut are normally determined by the surface finish requirements, specific to each application.

continued on next page





For Extra Long LDR (Beyond 8:1) (Continued)

Speeds

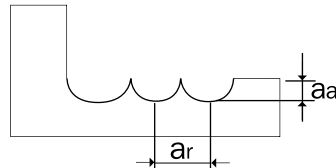
| Diameter | Roughing & Semi-finishing | | | Finishing | | |
|----------|---------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | RPM | | | RPM | | |
| | 30 - 40 HRC | 40 - 50 HRC | 50 - 60 HRC | 30 - 40 HRC | 40 - 50 HRC | 50 - 60 HRC |
| 1/32 | 19,200 – 30,000 | 16,000 – 25,000 | 12,300 – 20,000 | 10,000 – 25,000 | 10,000 – 25,000 | 10,000 – 25,000 |
| 1/16 | 13,200 – 21,000 | 11,000 – 17,500 | 8,300 – 14,000 | 10,000 – 25,000 | 10,000 – 25,000 | 10,000 – 25,000 |
| 3/32 | 10,800 – 15,600 | 9,000 – 13,000 | 6,700 – 10,400 | 10,000 – 25,000 | 10,000 – 25,000 | 10,000 – 25,000 |
| 1/8 | 9,600 – 14,400 | 8,000 – 12,000 | 5,900 – 9,600 | 10,000 – 25,000 | 10,000 – 19,000 | 10,000 – 15,250 |
| 3/16 | 7,500 – 9,888 | 6,250 – 8,240 | 4,500 – 6,592 | 10,000 – 17,000 | 10,000 – 13,000 | 8,000 – 10,150 |
| 1/4 | 6,060 – 8,400 | 5,050 – 7,000 | 3,540 – 5,600 | 9,000 – 12,200 | 7,500 – 9,000 | 6,000 – 7,500 |
| 5/16 | 5,700 – 7,950 | 4,600 – 6,625 | 3,180 – 5,300 | 7,300 – 9,500 | 6,000 – 7,000 | 4,850 – 6,000 |
| 3/8 | 5,280 – 7,260 | 4,400 – 6,050 | 3,020 – 4,840 | 6,000 – 8,100 | 5,000 – 6,000 | 4,050 – 5,000 |
| 7/16 | 4,740 – 6,240 | 3,950 – 5,200 | 2,660 – 4,160 | 5,000 – 6,950 | 4,350 – 5,200 | 3,450 – 4,350 |
| 1/2 | 4,140 – 5,460 | 3,450 – 4,550 | 2,260 – 3,640 | 4,550 – 6,100 | 3,900 – 4,900 | 3,050 – 3,800 |

Chip Load per Tooth

| Diameter | 30 - 40 HRC | | 40 - 50 HRC | | 50 - 60 HRC | |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | Rough & Semi | Finishing | Rough & Semi | Finishing | Rough & Semi | Finishing |
| 1/32 | 0.0003 – 0.0005 | 0.0003 – 0.0005 | 0.0003 – 0.0004 | 0.0003 – 0.0004 | 0.0002 – 0.0004 | 0.0002 – 0.0003 |
| 1/16 | 0.0006 – 0.0008 | 0.0005 – 0.0008 | 0.0005 – 0.0008 | 0.0005 – 0.0007 | 0.0004 – 0.0006 | 0.0004 – 0.0005 |
| 3/32 | 0.0010 – 0.0013 | 0.0007 – 0.0012 | 0.0008 – 0.0011 | 0.0007 – 0.0010 | 0.0006 – 0.0010 | 0.0005 – 0.0007 |
| 1/8 | 0.0013 – 0.0015 | 0.0010 – 0.0014 | 0.0010 – 0.0014 | 0.0010 – 0.0013 | 0.0009 – 0.0011 | 0.0008 – 0.0010 |
| 3/16 | 0.0018 – 0.0022 | 0.0016 – 0.0021 | 0.0016 – 0.0021 | 0.0015 – 0.0020 | 0.0015 – 0.0020 | 0.0012 – 0.0016 |
| 1/4 | 0.0025 – 0.0030 | 0.0020 – 0.0027 | 0.0025 – 0.0029 | 0.0020 – 0.0026 | 0.0020 – 0.0025 | 0.0019 – 0.0024 |
| 5/16 | 0.0032 – 0.0035 | 0.0027 – 0.0034 | 0.0026 – 0.0033 | 0.0026 – 0.0032 | 0.0026 – 0.0031 | 0.0023 – 0.0027 |
| 3/8 | 0.0035 – 0.0040 | 0.0031 – 0.0040 | 0.0031 – 0.0039 | 0.0027 – 0.0033 | 0.0030 – 0.0036 | 0.0025 – 0.0031 |
| 7/16 | 0.0040 – 0.0044 | 0.0034 – 0.0043 | 0.0034 – 0.0042 | 0.0030 – 0.0039 | 0.0033 – 0.0040 | 0.0027 – 0.0035 |
| 1/2 | 0.0044 – 0.0050 | 0.0040 – 0.0047 | 0.0040 – 0.0046 | 0.0035 – 0.0045 | 0.0039 – 0.0045 | 0.0031 – 0.0041 |

Axial Depths of Cut (aa)

30 - 40 HRC 10% Diameter
 40 - 50 HRC 7% Diameter
 50 - 60 HRC 5% Diameter



Radial Depths of Cut (ar)

Up to 35% D for roughing and semi-finishing operations. However, radial depths of cut are normally determined by the surface finish requirements, specific to each application.





List 3610 - EXOCARB® WXL®: Ball End, Regular Length, 2 Flute

Standard Milling

| Hardness | - | | <32 HRC | | 33-41 HRC | | 42-50 HRC | | | | | | | | | | |
|---------------|--|-------------|--|-------------|--|-------------|-----------|-------------|------------|-------|------|--|--|--------------------|--|----------------------|--|
| Work Material | Aluminum Copper Alloy | | Cast Iron, Carbon Steel, Alloy Steels, Stainless, Die Steels | | Hardened Steels Pre-hardened Steels, P20, H13, S7, A2 | | | | | | | | | | | | |
| Cutting Speed | 388 SFM | | 324 SFM | | 263 SFM | | 233 SFM | | | | | | | | | | |
| Depth of Cut | <table border="1"> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> <tr> <td>D<1/16</td> <td>0.05D</td> <td>0.2D</td> </tr> <tr> <td>1/16≤D≤1/2</td> <td>0.10D</td> <td>0.2D</td> </tr> </table> | | Dia | aa | ar | D<1/16 | 0.05D | 0.2D | 1/16≤D≤1/2 | 0.10D | 0.2D | | | aa=0.1D ar=0.2D | | aa=0.05D ar=0.10D | |
| | Dia | aa | ar | | | | | | | | | | | | | | |
| D<1/16 | 0.05D | 0.2D | | | | | | | | | | | | | | | |
| 1/16≤D≤1/2 | 0.10D | 0.2D | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | |
| 1/32 | 25,000 | 35.0 | 25,000 | 35.0 | 32,149 | 35.0 | 28,482 | 30.0 | | | | | | | | | |
| 1/16 | 23,715 | 61.7 | 19,803 | 51.5 | 16,075 | 41.8 | 14,241 | 34.2 | | | | | | | | | |
| 3/32 | 15,810 | 60.1 | 13,202 | 50.2 | 10,716 | 40.7 | 9,494 | 34.2 | | | | | | | | | |
| 1/8 | 11,857 | 56.9 | 9,901 | 47.5 | 8,037 | 38.6 | 7,120 | 31.3 | | | | | | | | | |
| 5/32 | 9,486 | 57.7 | 7,921 | 48.2 | 6,430 | 39.1 | 5,696 | 32.3 | | | | | | | | | |
| 3/16 | 7,905 | 58.5 | 6,601 | 48.8 | 5,358 | 39.7 | 4,747 | 33.2 | | | | | | | | | |
| 1/4 | 5,929 | 54.5 | 4,951 | 45.5 | 4,019 | 37.0 | 3,560 | 32.0 | | | | | | | | | |
| 5/16 | 4,743 | 56.9 | 3,961 | 47.5 | 3,215 | 38.6 | 2,848 | 32.5 | | | | | | | | | |
| 3/8 | 3,952 | 55.3 | 3,300 | 46.2 | 2,679 | 37.5 | 2,373 | 28.5 | | | | | | | | | |
| 1/2 | 2,964 | 51.6 | 2,475 | 43.1 | 2,009 | 35.0 | 1,780 | 30.6 | | | | | | | | | |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

High Speed Light Milling

| Hardness | - | | <32 HRC | | 33-41 HRC | | 42-50 HRC | | | | | | | | | | | | | | | |
|---------------|------------------------|-------------|--|-------------|--|-------------|-----------|-------------|-------|-------|-----------|-------|-------|-------|-------|-------|--|--|----------------------|--|--|--|
| Work Material | Copper Copper Alloy | | Cast Iron, Carbon Steel, Alloy Steels, Stainless, Die Steels | | Hardened Steels Pre-hardened Steels, P20, H13, S7, A2 | | | | | | | | | | | | | | | | | |
| Cutting Speed | 659 SFM | | 713 SFM | | 651 SFM | | 561 SFM | | | | | | | | | | | | | | | |
| Depth of Cut | aa=0.02D ar=0.05D | | <table border="1"> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> <tr> <td>D≤3/16</td> <td>0.02D</td> <td>0.05D</td> </tr> <tr> <td>1/4≤D≤3/8</td> <td>0.05D</td> <td>0.10D</td> </tr> <tr> <td>D=1/2</td> <td>0.40D</td> <td>0.20D</td> </tr> </table> | | Dia | aa | ar | D≤3/16 | 0.02D | 0.05D | 1/4≤D≤3/8 | 0.05D | 0.10D | D=1/2 | 0.40D | 0.20D | | | aa=0.02D ar=0.05D | | | |
| | Dia | aa | ar | | | | | | | | | | | | | | | | | | | |
| D≤3/16 | 0.02D | 0.05D | | | | | | | | | | | | | | | | | | | | |
| 1/4≤D≤3/8 | 0.05D | 0.10D | | | | | | | | | | | | | | | | | | | | |
| D=1/2 | 0.40D | 0.20D | | | | | | | | | | | | | | | | | | | | |
| Mill Diameter | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | | | | | |
| 1/32 | 25,000 | 35.0 | 25,000 | 35.0 | 25,000 | 35.0 | 25,000 | 30.0 | | | | | | | | | | | | | | |
| 1/16 | 25,000 | 65.0 | 25,000 | 65.0 | 25,000 | 65.0 | 25,000 | 60.0 | | | | | | | | | | | | | | |
| 3/32 | 25,000 | 95.0 | 25,000 | 95.0 | 25,000 | 95.0 | 22,859 | 82.3 | | | | | | | | | | | | | | |
| 1/8 | 20,139 | 96.7 | 21,789 | 104.6 | 19,895 | 95.5 | 17,144 | 75.4 | | | | | | | | | | | | | | |
| 5/32 | 16,111 | 98.0 | 17,431 | 106.0 | 15,916 | 96.8 | 13,715 | 77.7 | | | | | | | | | | | | | | |
| 3/16 | 13,426 | 99.4 | 14,526 | 107.5 | 13,263 | 98.1 | 11,429 | 80.0 | | | | | | | | | | | | | | |
| 1/4 | 10,070 | 92.6 | 10,895 | 100.2 | 9,947 | 91.5 | 8,572 | 77.1 | | | | | | | | | | | | | | |
| 5/16 | 8,056 | 96.7 | 8,716 | 104.6 | 7,958 | 95.5 | 6,858 | 78.2 | | | | | | | | | | | | | | |
| 3/8 | 6,713 | 94.0 | 7,263 | 101.7 | 6,632 | 92.8 | 5,715 | 68.6 | | | | | | | | | | | | | | |
| 1/2 | 5,035 | 87.6 | 5,447 | 94.8 | 4,974 | 86.5 | 4,286 | 73.7 | | | | | | | | | | | | | | |

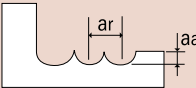
1. The indicated speeds and feeds are for high speed light milling for use with high speed/high precision machining centers.
2. Do not use flammable fluids because tools with considerable wear can cause sparks.
3. We recommend using air blow. When using cutting fluids, use a high quality fluid with high smoke retardant.





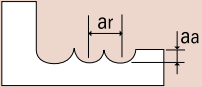
List 3710 - EXOCARB® WXL®: Ball End, Regular Length, 2 Flute

Standard Milling

| Hardness | - | | <32 HRC | | 33-41 HRC | | 42-50 HRC | |
|---------------|----------------------------|----------------|---|----------------|--|----------------|----------------------------|----------------|
| Work Material | Copper Copper Alloy | | Cast Iron, Carbon Steel, Alloy Steels, Stainless, Die Steels | | Hardened Steels Pre-hardened Steels, P20, H13, S7, A2 | | | |
| Cutting Speed | 388 SFM | | 324 SFM | | 263 SFM | | 233 SFM | |
| Depth of Cut | $a_a=0.05D$ $a_r=0.10D$ | |  | | $a_a=0.03D$ $a_r=0.10D$ | | $a_a=0.02D$ $a_r=0.05D$ | |
| Mill Diameter | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 0.1 | 25,000 | 5.0 | 25,000 | 5.0 | 25,000 | 5.0 | 25,000 | 5.0 |
| 0.2 | 25,000 | 10.0 | 25,000 | 10.0 | 25,000 | 10.0 | 25,000 | 10.0 |
| 0.4 | 25,000 | 20.0 | 25,000 | 20.0 | 25,000 | 20.0 | 25,000 | 15.0 |
| 0.6 | 25,000 | 30.0 | 25,000 | 30.0 | 25,000 | 30.0 | 25,000 | 21.0 |
| 0.8 | 25,000 | 40.0 | 25,000 | 40.0 | 25,000 | 40.0 | 25,000 | 27.5 |
| 1.0 | 25,000 | 45.0 | 25,000 | 45.0 | 25,000 | 45.0 | 22,610 | 31.7 |
| 2.0 | 18,830 | 60.3 | 15,720 | 50.3 | 12,760 | 40.8 | 11,310 | 29.4 |
| 3.0 | 12,550 | 67.8 | 10,480 | 56.6 | 8,510 | 46.0 | 7,540 | 33.2 |
| 4.0 | 9,410 | 73.4 | 7,860 | 61.3 | 6,380 | 49.8 | 5,650 | 40.7 |
| 6.0 | 6,280 | 67.8 | 5,240 | 56.6 | 4,250 | 45.9 | 3,770 | 33.2 |
| 8.0 | 4,710 | 63.1 | 3,930 | 52.7 | 3,190 | 42.7 | 2,830 | 31.7 |
| 10.0 | 3,770 | 57.3 | 3,140 | 47.7 | 2,550 | 38.8 | 2,260 | 28.0 |
| 12.0 | 3,140 | 56.5 | 2,620 | 47.2 | 2,130 | 38.3 | 1,880 | 29.3 |
| 16.0 | 2,350 | 42.3 | 1,970 | 35.5 | 1,600 | 28.8 | 1,410 | 22.0 |
| 20.0 | 1,880 | 33.8 | 1,570 | 28.3 | 1,280 | 23.0 | 1,130 | 17.6 |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

High Speed Light Milling

| Hardness | - | | <32 HRC | | 33-41 HRC | | 42-50 HRC | |
|---------------|----------------------------|----------------|---|----------------|--|----------------|----------------------------|----------------|
| Work Material | Copper Copper Alloy | | Cast Iron, Carbon Steel, Alloy Steels, Stainless, Die Steels | | Hardened Steels Pre-hardened Steels, P20, H13, S7, A2 | | | |
| Cutting Speed | 659 SFM | | 713 SFM | | 651 SFM | | 561 SFM | |
| Depth of Cut | $a_a=0.02D$ $a_r=0.05D$ | |  | | $a_a=0.02D$ $a_r=0.05D$ | | $a_a=0.01D$ $a_r=0.05D$ | |
| Mill Diameter | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1.0 | 25,000 | 45.0 | 25,000 | 45.0 | 25,000 | 45.0 | 25,000 | 35.0 |
| 2.0 | 25,000 | 80.0 | 25,000 | 80.0 | 25,000 | 80.0 | 25,000 | 65.0 |
| 3.0 | 21,320 | 115.1 | 23,060 | 124.5 | 21,060 | 113.7 | 18,150 | 79.9 |
| 4.0 | 15,990 | 124.7 | 17,300 | 134.9 | 15,790 | 123.2 | 13,610 | 98.0 |
| 6.0 | 10,660 | 115.1 | 11,530 | 124.5 | 10,530 | 113.7 | 9,070 | 79.8 |
| 8.0 | 8,000 | 107.2 | 8,650 | 115.9 | 7,900 | 105.9 | 6,810 | 76.3 |
| 10.0 | 6,400 | 97.3 | 6,920 | 105.2 | 6,320 | 96.1 | 5,450 | 67.6 |
| 12.0 | 5,330 | 95.9 | 5,770 | 103.9 | 5,270 | 94.9 | 4,540 | 70.8 |
| 16.0 | 4,000 | 72.0 | 4,330 | 77.9 | 3,950 | 71.1 | 3,400 | 53.0 |
| 20.0 | 3,200 | 57.6 | 3,460 | 62.3 | 3,160 | 56.9 | 2,720 | 42.4 |


1. The indicated speeds and feeds are for high speed light milling for use with high speed/high precision machining centers.
2. Do not use flammable fluids because tools with considerable wear can cause sparks.
3. We recommend using air blow. When using cutting fluids, use a high quality fluid with high smoke retardant.






List 3670 - EXOCARB® WXL®: 4 Flute, Regular Length, Corner Radius

Side Milling

| Hardness | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | |
|---------------|--|-------------|-----------------------------|-------------|--|-------------|---|-------------|-------------------------|-------------|-----------------|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Alloy Steels Tool Steels | | Hardened Steels Pre-hardened Steels | | Stainless Steels Pre-hardened Steels | | Hardened Steels | | Hardened Steels | |
| Cutting Speed | 396 SFM | | 294 SFM | | 258 SFM | | 192 SFM | | 156 SFM | | 96 SFM | |
| Depth of Cut | $a_a=1.2D$ $a_r=0.2D$  | | | | | | $a_a=1D$ $a_r=0.1D$ | | $a_a=1D$ $a_r=0.05D$ | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/16 | 24,000 | 38.4 | 18,000 | 28.8 | 15,600 | 25.0 | 12,000 | 19.2 | 9,600 | 11.5 | 6,000 | 4.8 |
| 5/64 | 19,200 | 38.4 | 14,400 | 28.8 | 12,480 | 25.0 | 9,600 | 19.2 | 7,680 | 12.3 | 4,800 | 5.8 |
| 3/32 | 16,080 | 38.6 | 12,000 | 28.8 | 10,380 | 24.9 | 7,980 | 19.2 | 6,420 | 12.8 | 4,020 | 4.8 |
| 7/64 | 13,740 | 38.5 | 10,320 | 28.9 | 8,940 | 25.0 | 6,900 | 19.3 | 5,520 | 13.2 | 3,480 | 5.6 |
| 1/8 | 12,000 | 43.2 | 9,000 | 28.8 | 7,800 | 25.0 | 6,000 | 19.2 | 4,800 | 13.4 | 3,000 | 6.0 |
| 5/32 | 9,600 | 46.1 | 7,200 | 31.7 | 6,240 | 27.5 | 4,800 | 21.1 | 3,840 | 15.4 | 2,400 | 7.7 |
| 3/16 | 8,040 | 51.5 | 6,000 | 36.0 | 5,220 | 31.3 | 4,020 | 22.5 | 3,180 | 17.8 | 1,980 | 9.5 |
| 7/32 | 6,900 | 55.2 | 5,160 | 37.2 | 4,440 | 30.2 | 3,420 | 23.3 | 2,760 | 16.6 | 1,740 | 9.0 |
| 1/4 | 6,000 | 55.2 | 4,500 | 39.6 | 3,900 | 31.2 | 3,000 | 24.0 | 2,400 | 16.3 | 1,500 | 9.0 |
| 5/16 | 4,800 | 57.6 | 3,600 | 38.9 | 3,120 | 32.4 | 2,400 | 24.0 | 1,920 | 16.9 | 1,200 | 9.6 |
| 3/8 | 4,020 | 56.3 | 3,000 | 38.4 | 2,640 | 30.6 | 1,980 | 22.2 | 1,620 | 16.2 | 1,020 | 9.4 |
| 7/16 | 3,480 | 55.7 | 2,580 | 38.2 | 2,280 | 31.0 | 1,740 | 22.3 | 1,380 | 16.0 | 840 | 8.4 |
| 1/2 | 3,000 | 54.0 | 2,280 | 35.6 | 1,980 | 27.7 | 1,500 | 19.2 | 1,200 | 13.9 | 750 | 8.1 |
| 5/8 | 2,400 | 43.2 | 1,800 | 28.1 | 1,600 | 22.4 | 1,200 | 15.4 | 980 | 11.4 | 600 | 6.5 |
| 3/4 | 2,000 | 36.0 | 1,500 | 23.4 | 1,300 | 18.2 | 1,000 | 12.8 | 800 | 9.3 | 500 | 5.4 |
| 1 | 1,500 | 27.0 | 1,100 | 17.2 | 1,000 | 14.0 | 750 | 9.6 | 600 | 7.0 | 380 | 4.1 |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

High Speed Light Milling

| Hardness | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | | | | | | | | | | | | | | | | | | | | | | |
|---------------|---|-------------|----------------------------|-------------|---|-------------|--|-------------|--|-------------|-------|-------|-------|------|-------|-------|------|-------|-------|------|-------|--|--|-----|-------|-------|--------|------|-------|--------|------|-------|
| Work Material | Carbon Steels 1045, 1055 | | Alloy Steels 4140, 4340 | | Hardened Steels Pre-hardened Steels D2, H13, 17-4PH | | Tool Steels, Hardened Steels Pre-hardened Steels, D2, H13 | | Hardened Steels Heat Resistant Steels | | | | | | | | | | | | | | | | | | | | | | | |
| Cutting Speed | 1,560 SFM | | 1,380 SFM | | 960 SFM | | 600 SFM | | 310 SFM | | | | | | | | | | | | | | | | | | | | | | | |
| Depth of Cut | a_a  | | | | | | <table border="1"> <thead> <tr><th>Dia</th><th>a_a</th><th>a_r</th></tr> </thead> <tbody> <tr><td>D<1/8</td><td>1.5D</td><td>0.01D</td></tr> <tr><td>1/8≤D</td><td>1.5D</td><td>0.02D</td></tr> <tr><td>5/8<D</td><td>1.5D</td><td>0.05D</td></tr> </tbody> </table> | | | Dia | a_a | a_r | D<1/8 | 1.5D | 0.01D | 1/8≤D | 1.5D | 0.02D | 5/8<D | 1.5D | 0.05D | <table border="1"> <thead> <tr><th>Dia</th><th>a_a</th><th>a_r</th></tr> </thead> <tbody> <tr><td>D≤5/16</td><td>1.0D</td><td>0.01D</td></tr> <tr><td>5/16<D</td><td>1.0D</td><td>0.02D</td></tr> </tbody> </table> | | Dia | a_a | a_r | D≤5/16 | 1.0D | 0.01D | 5/16<D | 1.0D | 0.02D |
| Dia | a_a | a_r | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D<1/8 | 1.5D | 0.01D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1/8≤D | 1.5D | 0.02D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5/8<D | 1.5D | 0.05D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dia | a_a | a_r | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D≤5/16 | 1.0D | 0.01D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5/16<D | 1.0D | 0.02D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | | | | | | | | | | | | | |
| 1/4 | 24,000 | 220.8 | 21,000 | 184.8 | 14,760 | 118.1 | 9,000 | 72.0 | 4,800 | 32.6 | | | | | | | | | | | | | | | | | | | | | | |
| 9/32 | 20,400 | 212.2 | 18,000 | 172.8 | 13,200 | 121.4 | 7,920 | 69.7 | 4,200 | 33.6 | | | | | | | | | | | | | | | | | | | | | | |
| 5/16 | 18,840 | 226.1 | 16,320 | 176.3 | 12,000 | 124.8 | 7,200 | 72.0 | 3,840 | 33.8 | | | | | | | | | | | | | | | | | | | | | | |
| 3/8 | 15,600 | 218.4 | 13,800 | 176.6 | 9,960 | 115.5 | 6,000 | 67.2 | 3,120 | 31.2 | | | | | | | | | | | | | | | | | | | | | | |
| 7/16 | 13,200 | 211.2 | 12,000 | 177.6 | 8,640 | 117.5 | 5,160 | 66.0 | 2,760 | 32.0 | | | | | | | | | | | | | | | | | | | | | | |
| 1/2 | 11,880 | 213.8 | 10,440 | 162.9 | 7,440 | 104.2 | 4,440 | 56.8 | 2,400 | 27.8 | | | | | | | | | | | | | | | | | | | | | | |
| 5/8 | 9,500 | 171.0 | 8,400 | 131.1 | 5,900 | 82.6 | 3,670 | 47.0 | 1,900 | 22.1 | | | | | | | | | | | | | | | | | | | | | | |
| 3/4 | 7,950 | 143.1 | 7,000 | 109.2 | 4,950 | 69.3 | 3,050 | 39.0 | 1,580 | 18.3 | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 5,960 | 107.3 | 5,270 | 82.3 | 3,700 | 51.8 | 2,300 | 29.5 | 1,180 | 13.7 | | | | | | | | | | | | | | | | | | | | | | |

1. The indicated speeds and feeds are for high speed light milling for use with high speed/high precision machining centers.
2. Do not use flammable fluids because tools with considerable wear can cause sparks.
3. We recommend using air blow. When using cutting fluids, use a high quality fluid with high smoke retardant.





List 3604 - EXOCARB® WXL®: Regular Length, 4 Flute

Side Milling

| Hardness | - | | <32 HRC | | 33-41 HRC | | 42-50 HRC | | | | | | | | | | |
|---------------|--|----------------|--|----------------|--|----------------|--------------|----------------|------|-------|--------|------|-------|--|--|-------------------------|--|
| Work Material | Aluminum Copper Alloy | | Cast Iron, Carbon Steel, Alloy Steels, Stainless, Die Steels | | Hardened Steels Pre-hardened Steels, P20, H13, S7, A2 | | | | | | | | | | | | |
| Cutting Speed | 974 SFM | | 250 SFM | | 172 SFM | | 153 SFM | | | | | | | | | | |
| Depth of Cut | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D<7/64</td> <td>1.5D</td> <td>0.05D</td> </tr> <tr> <td>7/64≤D</td> <td>1.5D</td> <td>0.10D</td> </tr> </tbody> </table> | | | | Dia | aa | ar | D<7/64 | 1.5D | 0.05D | 7/64≤D | 1.5D | 0.10D | | | $aa=1.0D$ $ar=0.02D$ | |
| | Dia | aa | ar | | | | | | | | | | | | | | |
| D<7/64 | 1.5D | 0.05D | | | | | | | | | | | | | | | |
| 7/64≤D | 1.5D | 0.10D | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | |
| 1/16 | 25,000 | 40.0 | 14,000 | 22.4 | 8,200 | 13.1 | 7,400 | 11.8 | | | | | | | | | |
| 5/64 | 25,000 | 50.0 | 12,000 | 24.0 | 7,000 | 14.0 | 6,350 | 12.7 | | | | | | | | | |
| 3/32 | 25,000 | 60.0 | 10,800 | 25.9 | 6,600 | 15.8 | 5,950 | 14.3 | | | | | | | | | |
| 7/64 | 25,000 | 70.0 | 8,900 | 24.9 | 5,750 | 16.1 | 5,150 | 14.4 | | | | | | | | | |
| 1/8 | 25,000 | 90.0 | 7,000 | 25.2 | 4,800 | 15.4 | 4,200 | 13.4 | | | | | | | | | |
| 5/32 | 25,000 | 130.0 | 6,050 | 31.5 | 4,250 | 20.4 | 3,700 | 16.3 | | | | | | | | | |
| 3/16 | 21,500 | 137.6 | 5,500 | 35.2 | 3,900 | 23.4 | 3,425 | 19.2 | | | | | | | | | |
| 7/32 | 17,500 | 140.0 | 4,100 | 32.8 | 2,950 | 20.1 | 2,650 | 18.0 | | | | | | | | | |
| 1/4 | 14,000 | 128.8 | 3,800 | 35.0 | 2,600 | 20.8 | 2,300 | 18.4 | | | | | | | | | |
| 9/32 | 12,500 | 130.0 | 3,400 | 35.4 | 2,400 | 23.0 | 2,100 | 18.5 | | | | | | | | | |
| 5/16 | 12,000 | 144.0 | 3,050 | 36.6 | 2,200 | 25.5 | 1,950 | 19.5 | | | | | | | | | |
| 3/8 | 10,100 | 141.4 | 2,750 | 38.5 | 1,975 | 22.9 | 1,750 | 19.6 | | | | | | | | | |
| 7/16 | 8,700 | 139.2 | 2,250 | 36.0 | 1,600 | 21.8 | 1,425 | 18.2 | | | | | | | | | |
| 1/2 | 7,400 | 133.2 | 1,900 | 34.2 | 1,350 | 18.9 | 1,200 | 15.8 | | | | | | | | | |
| 5/8 | 6,000 | 110.4 | 1,500 | 27.6 | 1,100 | 16.3 | 995 | 13.9 | | | | | | | | | |
| 3/4 | 5,000 | 94.0 | 1,275 | 24.0 | 950 | 16.3 | 850 | 13.9 | | | | | | | | | |
| 1 | 3,750 | 69.4 | 950 | 17.6 | 690 | 11.8 | 630 | 10.3 | | | | | | | | | |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

High Speed Light Milling

| Hardness | - | | <32 HRC | | 33-41 HRC | | 42-50 HRC | | | | | | | | | | | | | | | | | | | |
|---------------|--|----------------|--|----------------|--|----------------|--------------|----------------|------|-------|--------|------|-------|--|--|--|--|-----|----|----|--------|------|-------|--------|------|-------|
| Work Material | Aluminum Copper Alloy | | Cast Iron, Carbon Steel, Alloy Steels, Stainless, Die Steels | | Hardened Steels Pre-hardened Steels, P20, H13, S7, A2 | | | | | | | | | | | | | | | | | | | | | |
| Cutting Speed | 1,627 SFM | | 1,231 SFM | | 803 SFM | | 482 SFM | | | | | | | | | | | | | | | | | | | |
| Depth of Cut | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D<5/16</td> <td>1.5D</td> <td>0.01D</td> </tr> <tr> <td>5/16≤D</td> <td>1.5D</td> <td>0.02D</td> </tr> </tbody> </table> | | | | Dia | aa | ar | D<5/16 | 1.5D | 0.01D | 5/16≤D | 1.5D | 0.02D | | | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D<5/16</td> <td>1.0D</td> <td>0.01D</td> </tr> <tr> <td>5/16≤D</td> <td>1.0D</td> <td>0.02D</td> </tr> </tbody> </table> | | Dia | aa | ar | D<5/16 | 1.0D | 0.01D | 5/16≤D | 1.0D | 0.02D |
| | Dia | aa | ar | | | | | | | | | | | | | | | | | | | | | | | |
| D<5/16 | 1.5D | 0.01D | | | | | | | | | | | | | | | | | | | | | | | | |
| 5/16≤D | 1.5D | 0.02D | | | | | | | | | | | | | | | | | | | | | | | | |
| Dia | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | |
| D<5/16 | 1.0D | 0.01D | | | | | | | | | | | | | | | | | | | | | | | | |
| 5/16≤D | 1.0D | 0.02D | | | | | | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | | | | | | | | | |
| 7/32 | 25,000 | 200.0 | 20,000 | 160.0 | 13,000 | 88.4 | 7,950 | 54.1 | | | | | | | | | | | | | | | | | | |
| 1/4 | 22,500 | 207.0 | 19,000 | 174.8 | 11,500 | 92.0 | 7,000 | 56.0 | | | | | | | | | | | | | | | | | | |
| 9/32 | 24,000 | 249.6 | 17,500 | 182.0 | 10,500 | 100.8 | 6,250 | 55.0 | | | | | | | | | | | | | | | | | | |
| 5/16 | 19,500 | 234.0 | 14,500 | 174.0 | 9,900 | 114.8 | 5,950 | 59.5 | | | | | | | | | | | | | | | | | | |
| 3/8 | 17,500 | 245.0 | 13,250 | 185.5 | 8,900 | 103.2 | 5,350 | 59.9 | | | | | | | | | | | | | | | | | | |
| 7/16 | 14,250 | 228.0 | 10,950 | 175.2 | 7,275 | 98.9 | 4,350 | 55.7 | | | | | | | | | | | | | | | | | | |
| 1/2 | 12,000 | 216.0 | 9,200 | 165.6 | 6,125 | 85.8 | 3,675 | 48.5 | | | | | | | | | | | | | | | | | | |
| 5/8 | 9,700 | 178.5 | 7,450 | 137.1 | 4,950 | 73.3 | 2,950 | 41.3 | | | | | | | | | | | | | | | | | | |
| 3/4 | 9,150 | 172.0 | 6,275 | 118.0 | 4,175 | 71.8 | 2,500 | 41.0 | | | | | | | | | | | | | | | | | | |
| 1 | 6,200 | 114.7 | 4,700 | 88.4 | 3,050 | 51.9 | 1,850 | 30.5 | | | | | | | | | | | | | | | | | | |

1. The indicated speeds and feeds are for high speed light milling for use with high speed/high precision machining centers.
2. Do not use flammable fluids because tools with considerable wear can cause sparks.
3. We recommend using air blow. When using cutting fluids, use a high quality fluid with high smoke retardant.





Standard Milling

| Hardness | | - | | | | <32 HRC | | | | 33-41 HRC | | | | 42-50 HRC | | | |
|---------------|---------|--------------------------|-------------|---------|---------|--|-------------|---------|---------|------------------------------|-------------|---------|---------|------------|-------------|---------|---------|
| Work Material | | Aluminum Copper Alloy | | | | Cast Iron, Carbon Steel, Alloy Steel, Stainless Steel, Die Steel | | | | Prehardened & Hardened Steel | | | | | | | |
| Cutting Speed | | 90-460 SFM | | | | 80-340 SFM | | | | 80-280 SFM | | | | 80-280 SFM | | | |
| Depth of Cut | | | | | | | | | | | | | | | | | |
| Mill Dia. | L1 (mm) | Speed RPM | Feed in/min | aa (in) | ar (in) | Speed RPM | Feed in/min | aa (in) | ar (in) | Speed RPM | Feed in/min | aa (in) | ar (in) | Speed RPM | Feed in/min | aa (in) | ar (in) |
| 4 | 20 | 7,000 | 23.6 | 0.0197 | 0.0504 | 6,000 | 15.7 | 0.0079 | 0.0252 | 5,000 | 9.8 | 0.0079 | 0.0236 | 5,000 | 9.8 | 0.0079 | 0.0157 |
| 4 | 25 | 7,000 | 23.6 | 0.0197 | 0.0504 | 6,000 | 15.7 | 0.0079 | 0.0252 | 5,000 | 9.8 | 0.0079 | 0.0236 | 5,000 | 9.8 | 0.0079 | 0.0157 |
| 4 | 30 | 7,000 | 23.6 | 0.0157 | 0.0504 | 6,000 | 15.7 | 0.0079 | 0.0252 | 5,000 | 9.8 | 0.0079 | 0.0220 | 5,000 | 9.8 | 0.0047 | 0.0079 |
| 4 | 35 | 7,000 | 23.6 | 0.0157 | 0.0504 | 6,000 | 15.7 | 0.0079 | 0.0252 | 5,000 | 9.8 | 0.0079 | 0.0220 | 5,000 | 9.8 | 0.0047 | 0.0079 |
| 4 | 40 | 5,000 | 14.8 | 0.0138 | 0.0504 | 5,000 | 9.8 | 0.0079 | 0.0252 | 4,000 | 7.9 | 0.0079 | 0.0220 | 4,000 | 7.9 | 0.0047 | 0.0079 |
| 4 | 45 | 5,000 | 14.8 | 0.0138 | 0.0504 | 5,000 | 9.8 | 0.0079 | 0.0252 | 4,000 | 7.9 | 0.0079 | 0.0220 | 4,000 | 7.9 | 0.0047 | 0.0079 |
| 4 | 50 | 5,000 | 14.8 | 0.0138 | 0.0504 | 5,000 | 9.8 | 0.0079 | 0.0252 | 4,000 | 7.9 | 0.0079 | 0.0220 | 4,000 | 7.9 | 0.0047 | 0.0079 |
| 5 | 10 | 9,000 | 53.1 | 0.0236 | 0.0709 | 6,500 | 35.4 | 0.0098 | 0.0354 | 5,000 | 29.5 | 0.0098 | 0.0276 | 5,000 | 29.5 | 0.0098 | 0.0197 |
| 5 | 15 | 9,000 | 53.1 | 0.0236 | 0.0709 | 6,500 | 35.4 | 0.0098 | 0.0354 | 5,000 | 29.5 | 0.0098 | 0.0276 | 5,000 | 29.5 | 0.0098 | 0.0197 |
| 5 | 20 | 7,000 | 29.5 | 0.0236 | 0.0709 | 6,500 | 19.7 | 0.0098 | 0.0354 | 5,000 | 15.7 | 0.0098 | 0.0276 | 5,000 | 15.7 | 0.0098 | 0.0197 |
| 5 | 25 | 6,000 | 29.5 | 0.0236 | 0.0709 | 5,000 | 19.7 | 0.0098 | 0.0354 | 4,000 | 9.8 | 0.0098 | 0.0276 | 4,000 | 9.8 | 0.0098 | 0.0197 |
| 5 | 30 | 6,000 | 29.5 | 0.0236 | 0.0709 | 5,000 | 19.7 | 0.0098 | 0.0354 | 4,000 | 9.8 | 0.0098 | 0.0276 | 4,000 | 9.8 | 0.0098 | 0.0197 |
| 5 | 35 | 6,000 | 29.5 | 0.0236 | 0.0709 | 5,000 | 19.7 | 0.0098 | 0.0354 | 4,000 | 9.8 | 0.0098 | 0.0276 | 4,000 | 9.8 | 0.0098 | 0.0197 |
| 5 | 40 | 5,000 | 23.6 | 0.0157 | 0.0709 | 4,000 | 15.7 | 0.0098 | 0.0354 | 4,000 | 7.9 | 0.0098 | 0.0236 | 4,000 | 7.9 | 0.0079 | 0.0098 |
| 5 | 45 | 5,000 | 23.6 | 0.0157 | 0.0709 | 4,000 | 15.7 | 0.0098 | 0.0354 | 4,000 | 7.9 | 0.0098 | 0.0236 | 4,000 | 7.9 | 0.0079 | 0.0098 |
| 5 | 50 | 5,000 | 17.7 | 0.0157 | 0.0709 | 4,000 | 11.8 | 0.0098 | 0.0354 | 4,000 | 7.9 | 0.0098 | 0.0236 | 4,000 | 7.9 | 0.0079 | 0.0098 |
| 6 | 10 | 7,000 | 59.1 | 0.0295 | 0.0945 | 5,500 | 39.4 | 0.0118 | 0.0472 | 4,500 | 31.5 | 0.0118 | 0.0378 | 4,500 | 31.5 | 0.0118 | 0.0236 |
| 6 | 20 | 7,000 | 47.2 | 0.0295 | 0.0945 | 5,500 | 31.5 | 0.0118 | 0.0472 | 4,500 | 23.6 | 0.0118 | 0.0378 | 4,500 | 23.6 | 0.0118 | 0.0236 |
| 6 | 25 | 6,000 | 35.4 | 0.0295 | 0.0945 | 5,500 | 23.6 | 0.0118 | 0.0472 | 4,500 | 15.7 | 0.0118 | 0.0378 | 4,500 | 15.7 | 0.0118 | 0.0236 |
| 6 | 30 | 5,000 | 23.6 | 0.0295 | 0.0945 | 4,000 | 15.7 | 0.0118 | 0.0472 | 4,000 | 11.8 | 0.0118 | 0.0378 | 4,000 | 11.8 | 0.0118 | 0.0236 |
| 6 | 35 | 5,000 | 23.6 | 0.0295 | 0.0945 | 4,000 | 15.7 | 0.0118 | 0.0472 | 4,000 | 11.8 | 0.0118 | 0.0378 | 4,000 | 11.8 | 0.0118 | 0.0236 |
| 6 | 40 | 5,000 | 23.6 | 0.0236 | 0.0945 | 4,000 | 15.7 | 0.0118 | 0.0472 | 4,000 | 11.8 | 0.0118 | 0.0378 | 4,000 | 11.8 | 0.0118 | 0.0236 |
| 6 | 45 | 5,000 | 23.6 | 0.0236 | 0.0945 | 4,000 | 15.7 | 0.0118 | 0.0472 | 4,000 | 11.8 | 0.0118 | 0.0378 | 4,000 | 11.8 | 0.0118 | 0.0236 |
| 6 | 50 | 5,000 | 23.6 | 0.0236 | 0.0945 | 4,000 | 15.7 | 0.0118 | 0.0472 | 4,000 | 11.8 | 0.0118 | 0.0378 | 4,000 | 11.81 | 0.0118 | 0.0118 |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

continued on next page





List 3690: Ball End, Regular Length, 2 Flute, Long Neck, Rib Processing (Continued)

List 3790: Ball End, Regular Length, 2 Flute, Long Neck, Rib Processing (Continued)

High Speed Milling

| Hardness | | - | | <32 HRC | | | | 33-41 HRC | | | | 42-50 HRC | | | | | |
|---------------|---------|--------------------------|-------------|---------|---------|--|-------------|-----------|---------|------------------------------|-------------|-----------|---------|------------|-------------|---------|---------|
| Work Material | | Aluminum Copper Alloy | | | | Cast Iron, Carbon Steel, Alloy Steel, Stainless Steel, Die Steel | | | | Prehardened & Hardened Steel | | | | | | | |
| Cutting Speed | | 90-460 SFM | | | | 80-340 SFM | | | | 80-280 SFM | | | | 80-280 SFM | | | |
| Depth of Cut | | | | | | | | | | | | | | | | | |
| Mill Dia. | L1 (mm) | Speed RPM | Feed in/min | aa (in) | ar (in) | Speed RPM | Feed in/min | aa (in) | ar (in) | Speed RPM | Feed in/min | aa (in) | ar (in) | Speed RPM | Feed in/min | aa (in) | ar (in) |
| 0.1 | 0.3 | 50,000 | 11.0 | 0.0002 | 0.0002 | 50,000 | 5.91 | 0.0002 | 0.0002 | 50,000 | 3.94 | 0.0002 | 0.0002 | 50,000 | 2.76 | 0.0002 | 0.0002 |
| 0.1 | 0.5 | 50,000 | 8.7 | 0.0002 | 0.0002 | 50,000 | 4.72 | 0.0002 | 0.0002 | 50,000 | 3.15 | 0.0002 | 0.0002 | 50,000 | 1.97 | 0.0002 | 0.0002 |
| 0.2 | 0.3 | 50,000 | 19.3 | 0.0008 | 0.0008 | 50,000 | 15.75 | 0.0004 | 0.0004 | 50,000 | 14.96 | 0.0004 | 0.0004 | 50,000 | 14.96 | 0.0002 | 0.0002 |
| 0.2 | 0.5 | 50,000 | 19.3 | 0.0008 | 0.0008 | 50,000 | 15.75 | 0.0004 | 0.0004 | 50,000 | 14.96 | 0.0004 | 0.0004 | 50,000 | 14.96 | 0.0002 | 0.0002 |
| 0.2 | 0.75 | 50,000 | 17.3 | 0.0008 | 0.0008 | 50,000 | 14.17 | 0.0004 | 0.0004 | 50,000 | 13.39 | 0.0004 | 0.0004 | 50,000 | 13.39 | 0.0002 | 0.0002 |
| 0.2 | 1 | 50,000 | 17.3 | 0.0008 | 0.0008 | 50,000 | 14.17 | 0.0004 | 0.0004 | 50,000 | 13.39 | 0.0004 | 0.0004 | 50,000 | 13.39 | 0.0002 | 0.0002 |
| 0.2 | 1.25 | 50,000 | 15.4 | 0.0008 | 0.0008 | 47,000 | 12.60 | 0.0004 | 0.0004 | 47,000 | 11.81 | 0.0004 | 0.0004 | 47,000 | 11.81 | 0.0002 | 0.0002 |
| 0.2 | 1.5 | 50,000 | 14.2 | 0.0008 | 0.0008 | 45,000 | 11.81 | 0.0004 | 0.0004 | 45,000 | 11.02 | 0.0004 | 0.0004 | 45,000 | 11.02 | 0.0002 | 0.0002 |
| 0.2 | 1.75 | 50,000 | 13.8 | 0.0008 | 0.0008 | 42,000 | 10.24 | 0.0004 | 0.0004 | 42,000 | 9.45 | 0.0004 | 0.0004 | 42,000 | 9.45 | 0.0002 | 0.0002 |
| 0.2 | 2 | 50,000 | 12.6 | 0.0004 | 0.0004 | 38,000 | 9.06 | 0.0002 | 0.0002 | 38,000 | 8.27 | 0.0002 | 0.0002 | 37,000 | 7.87 | 0.0002 | 0.0002 |
| 0.2 | 2.5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0.2 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0.3 | 0.5 | 50,000 | 29.5 | 0.0008 | 0.0012 | 50,000 | 24.41 | 0.0004 | 0.0006 | 50,000 | 23.62 | 0.0004 | 0.0006 | 50,000 | 23.62 | 0.0002 | 0.0002 |
| 0.3 | 0.6 | 50,000 | 28.7 | 0.0008 | 0.0012 | 50,000 | 23.62 | 0.0004 | 0.0006 | 50,000 | 22.44 | 0.0004 | 0.0006 | 50,000 | 22.44 | 0.0002 | 0.0002 |
| 0.3 | 0.75 | 50,000 | 28.7 | 0.0008 | 0.0012 | 50,000 | 23.62 | 0.0004 | 0.0006 | 50,000 | 22.44 | 0.0004 | 0.0006 | 50,000 | 22.44 | 0.0002 | 0.0002 |
| 0.3 | 1 | 50,000 | 28.7 | 0.0008 | 0.0012 | 50,000 | 23.62 | 0.0004 | 0.0006 | 50,000 | 22.44 | 0.0004 | 0.0006 | 50,000 | 22.44 | 0.0002 | 0.0002 |
| 0.3 | 1.25 | 50,000 | 28.7 | 0.0008 | 0.0012 | 50,000 | 23.62 | 0.0004 | 0.0006 | 50,000 | 22.44 | 0.0004 | 0.0006 | 50,000 | 22.44 | 0.0002 | 0.0002 |
| 0.3 | 1.5 | 50,000 | 28.7 | 0.0008 | 0.0012 | 50,000 | 23.62 | 0.0004 | 0.0006 | 50,000 | 22.44 | 0.0004 | 0.0006 | 50,000 | 22.44 | 0.0002 | 0.0002 |
| 0.3 | 1.75 | 50,000 | 24.0 | 0.0008 | 0.0012 | 47,000 | 20.08 | 0.0004 | 0.0006 | 47,000 | 18.90 | 0.0004 | 0.0006 | 47,000 | 18.90 | 0.0002 | 0.0002 |
| 0.3 | 2 | 50,000 | 22.8 | 0.0008 | 0.0012 | 45,000 | 18.90 | 0.0004 | 0.0006 | 45,000 | 17.72 | 0.0004 | 0.0006 | 45,000 | 17.72 | 0.0002 | 0.0002 |
| 0.3 | 2.25 | 50,000 | 19.3 | 0.0008 | 0.0008 | 45,000 | 15.75 | 0.0004 | 0.0004 | 45,000 | 14.96 | 0.0004 | 0.0004 | 45,000 | 14.96 | 0.0004 | 0.0004 |
| 0.3 | 2.5 | 50,000 | 14.2 | 0.0008 | 0.0008 | 40,000 | 11.81 | 0.0004 | 0.0004 | 40,000 | 11.02 | 0.0004 | 0.0004 | 40,000 | 11.02 | 0.0004 | 0.0004 |
| 0.3 | 2.75 | 50,000 | 12.6 | 0.0008 | 0.0008 | 38,000 | 9.84 | 0.0004 | 0.0004 | 38,000 | 9.06 | 0.0004 | 0.0004 | 38,000 | 9.06 | 0.0004 | 0.0004 |
| 0.3 | 3 | 50,000 | 11.4 | 0.0008 | 0.0008 | 38,000 | 9.84 | 0.0004 | 0.0004 | 38,000 | 9.06 | 0.0004 | 0.0004 | 37,000 | 9.06 | 0.0002 | 0.0004 |
| 0.3 | 3.5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0.3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0.3 | 4.5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0.3 | 5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0.4 | 0.5 | 50,000 | 43.3 | 0.0010 | 0.0020 | 50,000 | 36.22 | 0.0006 | 0.0010 | 50,000 | 34.25 | 0.0006 | 0.0008 | 50,000 | 34.25 | 0.0004 | 0.0004 |
| 0.4 | 0.75 | 50,000 | 42.9 | 0.0010 | 0.0020 | 50,000 | 35.43 | 0.0006 | 0.0010 | 50,000 | 33.46 | 0.0006 | 0.0008 | 50,000 | 33.46 | 0.0004 | 0.0004 |
| 0.4 | 1 | 50,000 | 42.9 | 0.0010 | 0.0020 | 50,000 | 35.43 | 0.0006 | 0.0010 | 50,000 | 33.46 | 0.0006 | 0.0008 | 50,000 | 33.46 | 0.0004 | 0.0004 |
| 0.4 | 1.5 | 50,000 | 38.2 | 0.0010 | 0.0020 | 50,000 | 31.50 | 0.0006 | 0.0010 | 50,000 | 29.92 | 0.0006 | 0.0008 | 50,000 | 29.92 | 0.0004 | 0.0004 |
| 0.4 | 2 | 50,000 | 33.5 | 0.0010 | 0.0020 | 50,000 | 27.56 | 0.0006 | 0.0010 | 50,000 | 25.98 | 0.0006 | 0.0008 | 50,000 | 25.98 | 0.0004 | 0.0004 |
| 0.4 | 2.5 | 50,000 | 26.4 | 0.0010 | 0.0020 | 45,000 | 21.65 | 0.0006 | 0.0010 | 45,000 | 20.47 | 0.0006 | 0.0008 | 45,000 | 20.47 | 0.0004 | 0.0004 |
| 0.4 | 3 | 48,000 | 21.3 | 0.0010 | 0.0020 | 43,000 | 19.69 | 0.0006 | 0.0010 | 43,000 | 18.50 | 0.0006 | 0.0008 | 43,000 | 18.50 | 0.0004 | 0.0004 |
| 0.4 | 3.5 | 45,000 | 18.1 | 0.0010 | 0.0020 | 40,000 | 16.54 | 0.0006 | 0.0010 | 40,000 | 15.75 | 0.0006 | 0.0008 | 40,000 | 15.75 | 0.0004 | 0.0004 |
| 0.4 | 4 | 40,000 | 15.7 | 0.0004 | 0.0012 | 36,000 | 14.57 | 0.0002 | 0.0006 | 36,000 | 13.78 | 0.0002 | 0.0005 | 35,000 | 13.39 | 0.0002 | 0.0004 |
| 0.4 | 4.5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0.4 | 5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0.4 | 5.5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0.4 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0.5 | 1 | 50,000 | 55.9 | 0.0016 | 0.0020 | 50,000 | 43.31 | 0.0008 | 0.0010 | 50,000 | 41.34 | 0.0008 | 0.0008 | 50,000 | 41.34 | 0.0004 | 0.0004 |
| 0.5 | 1.5 | 50,000 | 55.9 | 0.0016 | 0.0020 | 50,000 | 43.31 | 0.0008 | 0.0010 | 50,000 | 41.34 | 0.0008 | 0.0008 | 50,000 | 41.34 | 0.0004 | 0.0004 |
| 0.5 | 2 | 50,000 | 55.1 | 0.0016 | 0.0020 | 50,000 | 39.37 | 0.0008 | 0.0010 | 50,000 | 37.40 | 0.0008 | 0.0008 | 50,000 | 37.40 | 0.0004 | 0.0004 |
| 0.5 | 2.5 | 50,000 | 54.3 | 0.0016 | 0.0020 | 50,000 | 39.37 | 0.0008 | 0.0010 | 50,000 | 37.40 | 0.0008 | 0.0008 | 50,000 | 37.40 | 0.0004 | 0.0004 |
| 0.5 | 3 | 50,000 | 46.9 | 0.0016 | 0.0020 | 48,000 | 35.43 | 0.0008 | 0.0010 | 48,000 | 33.46 | 0.0008 | 0.0008 | 48,000 | 33.46 | 0.0004 | 0.0004 |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

continued on next page





High Speed Milling

| Hardness | | - | | <32 HRC | | 33-41 HRC | | 42-50 HRC | | | | | | | | | |
|---------------|---------|--------------------------|-------------|--|---------|------------------------------|-------------|------------|---------|-----------|-------------|---------|---------|-----------|-------------|---------|---------|
| Work Material | | Aluminum Copper Alloy | | Cast Iron, Carbon Steel, Alloy Steel, Stainless Steel, Die Steel | | Prehardened & Hardened Steel | | | | | | | | | | | |
| Cutting Speed | | 90-460 SFM | | 80-340 SFM | | 80-280 SFM | | 80-280 SFM | | | | | | | | | |
| Depth of Cut | | | | | | | | | | | | | | | | | |
| Mill Dia. | L1 (mm) | Speed RPM | Feed in/min | aa (in) | ar (in) | Speed RPM | Feed in/min | aa (in) | ar (in) | Speed RPM | Feed in/min | aa (in) | ar (in) | Speed RPM | Feed in/min | aa (in) | ar (in) |
| 0.5 | 3.5 | 50,000 | 44.9 | 0.0016 | 0.0020 | 45,000 | 27.56 | 0.0008 | 0.0010 | 45,000 | 25.59 | 0.0008 | 0.0008 | 45,000 | 25.59 | 0.0004 | 0.0004 |
| 0.5 | 4 | 45,000 | 39.4 | 0.0016 | 0.0020 | 43,000 | 23.62 | 0.0008 | 0.0010 | 43,000 | 22.44 | 0.0008 | 0.0008 | 43,000 | 22.44 | 0.0004 | 0.0004 |
| 0.5 | 4.5 | 38,000 | 37.0 | 0.0016 | 0.0020 | 38,000 | 19.69 | 0.0008 | 0.0010 | 38,000 | 18.50 | 0.0008 | 0.0008 | 38,000 | 18.50 | 0.0004 | 0.0004 |
| 0.5 | 5 | 30,000 | 29.9 | 0.0016 | 0.0020 | 30,000 | 15.75 | 0.0008 | 0.0010 | 30,000 | 14.96 | 0.0008 | 0.0008 | 29,000 | 14.17 | 0.0004 | 0.0004 |
| 0.5 | 5.5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0.5 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0.5 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0.5 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0.5 | 9 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0.5 | 10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0.6 | 1 | 50,000 | 65.4 | 0.0018 | 0.0047 | 50,000 | 55.12 | 0.0012 | 0.0024 | 50,000 | 51.18 | 0.0012 | 0.0020 | 50,000 | 51.18 | 0.0012 | 0.0012 |
| 0.6 | 1.5 | 50,000 | 63.0 | 0.0018 | 0.0047 | 50,000 | 51.18 | 0.0012 | 0.0024 | 50,000 | 47.24 | 0.0012 | 0.0020 | 50,000 | 47.24 | 0.0012 | 0.0012 |
| 0.6 | 2 | 50,000 | 63.0 | 0.0018 | 0.0047 | 50,000 | 51.18 | 0.0012 | 0.0024 | 50,000 | 47.24 | 0.0012 | 0.0020 | 50,000 | 47.24 | 0.0012 | 0.0012 |
| 0.6 | 2.5 | 50,000 | 61.0 | 0.0018 | 0.0047 | 50,000 | 47.24 | 0.0012 | 0.0024 | 50,000 | 43.31 | 0.0012 | 0.0020 | 50,000 | 43.31 | 0.0012 | 0.0012 |
| 0.6 | 3 | 50,000 | 61.0 | 0.0018 | 0.0047 | 50,000 | 47.24 | 0.0012 | 0.0024 | 50,000 | 43.31 | 0.0012 | 0.0020 | 50,000 | 43.31 | 0.0012 | 0.0012 |
| 0.6 | 3.5 | 50,000 | 52.8 | 0.0018 | 0.0047 | 45,000 | 39.37 | 0.0012 | 0.0024 | 45,000 | 37.40 | 0.0012 | 0.0016 | 45,000 | 37.40 | 0.0012 | 0.0012 |
| 0.6 | 4 | 50,000 | 47.2 | 0.0018 | 0.0047 | 40,000 | 35.43 | 0.0012 | 0.0024 | 40,000 | 33.46 | 0.0012 | 0.0016 | 40,000 | 33.46 | 0.0012 | 0.0012 |
| 0.6 | 4.5 | 45,000 | 40.9 | 0.0018 | 0.0047 | 34,000 | 30.71 | 0.0012 | 0.0024 | 34,000 | 29.13 | 0.0012 | 0.0016 | 34,000 | 29.13 | 0.0012 | 0.0012 |
| 0.6 | 5 | 30,000 | 37.8 | 0.0018 | 0.0047 | 30,000 | 26.77 | 0.0012 | 0.0024 | 30,000 | 25.20 | 0.0012 | 0.0016 | 30,000 | 25.20 | 0.0008 | 0.0008 |
| 0.6 | 5.5 | 30,000 | 32.3 | 0.0018 | 0.0047 | 28,000 | 25.59 | 0.0012 | 0.0024 | 28,000 | 24.02 | 0.0012 | 0.0016 | 28,000 | 24.02 | 0.0008 | 0.0008 |
| 0.6 | 6 | 30,000 | 28.3 | 0.0018 | 0.0047 | 26,000 | 23.62 | 0.0012 | 0.0024 | 26,000 | 22.44 | 0.0012 | 0.0016 | 25,000 | 21.26 | 0.0008 | 0.0008 |
| 0.6 | 6.5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0.6 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0.6 | 7.5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0.6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0.6 | 8.5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0.6 | 9 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0.6 | 9.5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0.6 | 10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0.6 | 11 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0.6 | 12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0.8 | 2 | 50,000 | 86.6 | 0.0024 | 0.0063 | 50,000 | 78.74 | 0.0016 | 0.0031 | 50,000 | 74.80 | 0.0016 | 0.0024 | 50,000 | 74.80 | 0.0016 | 0.0016 |
| 0.8 | 3 | 50,000 | 68.5 | 0.0024 | 0.0063 | 48,000 | 62.99 | 0.0016 | 0.0031 | 48,000 | 59.06 | 0.0016 | 0.0024 | 48,000 | 59.06 | 0.0016 | 0.0016 |
| 0.8 | 4 | 50,000 | 66.1 | 0.0024 | 0.0063 | 40,000 | 47.24 | 0.0016 | 0.0031 | 40,000 | 43.31 | 0.0016 | 0.0024 | 40,000 | 43.31 | 0.0016 | 0.0016 |
| 0.8 | 5 | 43,000 | 63.0 | 0.0024 | 0.0047 | 34,000 | 37.40 | 0.0016 | 0.0024 | 34,000 | 35.43 | 0.0016 | 0.0020 | 34,000 | 35.43 | 0.0008 | 0.0010 |
| 0.8 | 6 | 32,000 | 49.6 | 0.0024 | 0.0047 | 30,000 | 31.50 | 0.0016 | 0.0024 | 30,000 | 29.92 | 0.0016 | 0.0020 | 30,000 | 29.92 | 0.0008 | 0.0010 |
| 0.8 | 7 | 30,000 | 39.4 | 0.0024 | 0.0047 | 25,000 | 23.62 | 0.0016 | 0.0024 | 25,000 | 22.44 | 0.0016 | 0.0020 | 25,000 | 22.44 | 0.0008 | 0.0010 |
| 0.8 | 8 | 24,000 | 28.3 | 0.0024 | 0.0047 | 23,000 | 17.72 | 0.0016 | 0.0024 | 23,000 | 16.54 | 0.0016 | 0.0020 | 23,000 | 16.54 | 0.0008 | 0.0010 |
| 0.8 | 9 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0.8 | 10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 0.8 | 12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1 | 2.5 | 50,000 | 128.7 | 0.0030 | 0.0079 | 50,000 | 133.86 | 0.0020 | 0.0039 | 50,000 | 125.98 | 0.0020 | 0.0031 | 50,000 | 125.98 | 0.0020 | 0.0020 |
| 1 | 3 | 50,000 | 120.5 | 0.0030 | 0.0079 | 45,000 | 125.98 | 0.0020 | 0.0039 | 45,000 | 118.11 | 0.0020 | 0.0031 | 45,000 | 118.11 | 0.0020 | 0.0020 |
| 1 | 4 | 50,000 | 118.1 | 0.0030 | 0.0079 | 40,000 | 118.11 | 0.0020 | 0.0039 | 40,000 | 112.20 | 0.0020 | 0.0031 | 40,000 | 112.20 | 0.0020 | 0.0020 |
| 1 | 5 | 47,000 | 113.0 | 0.0030 | 0.0079 | 36,000 | 90.55 | 0.0020 | 0.0039 | 36,000 | 82.68 | 0.0020 | 0.0031 | 36,000 | 82.68 | 0.0020 | 0.0020 |
| 1 | 6 | 43,000 | 102.4 | 0.0030 | 0.0079 | 30,000 | 78.74 | 0.0020 | 0.0039 | 30,000 | 74.80 | 0.0020 | 0.0031 | 30,000 | 74.80 | 0.0020 | 0.0020 |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

continued on next page





List 3690: Ball End, Regular Length, 2 Flute, Long Neck, Rib Processing (Continued)

List 3790: Ball End, Regular Length, 2 Flute, Long Neck, Rib Processing (Continued)

High Speed Milling

| Hardness | | - | | | | <32 HRC | | | | 33-41 HRC | | | | 42-50 HRC | | | |
|---------------|---------|--------------------------|-------------|---------|---------|--|-------------|---------|---------|------------------------------|-------------|---------|---------|------------|-------------|---------|---------|
| Work Material | | Aluminum Copper Alloy | | | | Cast Iron, Carbon Steel, Alloy Steel, Stainless Steel, Die Steel | | | | Prehardened & Hardened Steel | | | | | | | |
| Cutting Speed | | 90-460 SFM | | | | 80-340 SFM | | | | 80-280 SFM | | | | 80-280 SFM | | | |
| Depth of Cut | | | | | | | | | | | | | | | | | |
| Mill Dia. | L1 (mm) | Speed RPM | Feed in/min | aa (in) | ar (in) | Speed RPM | Feed in/min | aa (in) | ar (in) | Speed RPM | Feed in/min | aa (in) | ar (in) | Speed RPM | Feed in/min | aa (in) | ar (in) |
| 1 | 7 | 30,000 | 92.5 | 0.0030 | 0.0059 | 27,000 | 66.93 | 0.0020 | 0.0030 | 27,000 | 62.99 | 0.0020 | 0.0024 | 27,000 | 62.99 | 0.0012 | 0.0012 |
| 1 | 8 | 27,000 | 78.7 | 0.0030 | 0.0059 | 26,000 | 62.99 | 0.0020 | 0.0030 | 26,000 | 59.06 | 0.0020 | 0.0024 | 26,000 | 59.06 | 0.0012 | 0.0012 |
| 1 | 9 | 26,000 | 60.6 | 0.0030 | 0.0059 | 24,000 | 47.24 | 0.0020 | 0.0030 | 24,000 | 43.31 | 0.0020 | 0.0024 | 24,000 | 43.31 | 0.0012 | 0.0012 |
| 1 | 10 | 24,000 | 55.1 | 0.0024 | 0.0047 | 22,000 | 43.31 | 0.0012 | 0.0020 | 22,000 | 39.37 | 0.0012 | 0.0016 | 21,000 | 37.40 | 0.0004 | 0.0006 |
| 1 | 12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1 | 14 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1 | 16 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1 | 18 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1 | 20 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1 | 22 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1.2 | 4 | 40,000 | 118.1 | 0.0035 | 0.0094 | 40,000 | 118.11 | 0.0024 | 0.0047 | 40,000 | 112.20 | 0.0024 | 0.0039 | 40,000 | 112.20 | 0.0024 | 0.0024 |
| 1.2 | 6 | 35,000 | 102.4 | 0.0035 | 0.0094 | 32,000 | 82.68 | 0.0024 | 0.0047 | 32,000 | 78.74 | 0.0024 | 0.0039 | 32,000 | 78.74 | 0.0024 | 0.0024 |
| 1.2 | 8 | 30,000 | 78.7 | 0.0035 | 0.0094 | 25,000 | 66.93 | 0.0024 | 0.0047 | 25,000 | 62.99 | 0.0024 | 0.0039 | 25,000 | 62.99 | 0.0024 | 0.0024 |
| 1.2 | 10 | 21,000 | 55.1 | 0.0035 | 0.0071 | 20,000 | 47.24 | 0.0024 | 0.0035 | 20,000 | 43.31 | 0.0024 | 0.0028 | 18,000 | 38.98 | 0.0012 | 0.0012 |
| 1.2 | 12 | 20,000 | 39.4 | 0.0035 | 0.0071 | 19,000 | 35.43 | 0.0024 | 0.0035 | 17,000 | 33.46 | 0.0024 | 0.0028 | 16,000 | 31.50 | 0.0012 | 0.0012 |
| 1.2 | 14 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1.2 | 16 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1.2 | 18 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1.2 | 20 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1.2 | 24 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1.4 | 8 | 30,000 | 82.7 | 0.0039 | 0.0110 | 25,000 | 66.93 | 0.0028 | 0.0055 | 25,000 | 62.99 | 0.0028 | 0.0039 | 25,000 | 62.99 | 0.0028 | 0.0028 |
| 1.4 | 12 | 22,000 | 47.6 | 0.0039 | 0.0079 | 19,000 | 39.37 | 0.0028 | 0.0039 | 19,000 | 37.40 | 0.0028 | 0.0031 | 19,000 | 37.40 | 0.0028 | 0.0028 |
| 1.4 | 16 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1.5 | 3 | 50,000 | 209.8 | 0.0047 | 0.0118 | 50,000 | 188.98 | 0.0031 | 0.0059 | 50,000 | 188.98 | 0.0031 | 0.0047 | 50,000 | 188.98 | 0.0031 | 0.0039 |
| 1.5 | 4 | 42,000 | 161.8 | 0.0047 | 0.0118 | 40,000 | 153.54 | 0.0031 | 0.0059 | 40,000 | 145.67 | 0.0031 | 0.0047 | 40,000 | 145.67 | 0.0031 | 0.0039 |
| 1.5 | 6 | 32,000 | 118.1 | 0.0047 | 0.0118 | 30,000 | 114.17 | 0.0031 | 0.0059 | 30,000 | 106.30 | 0.0031 | 0.0047 | 30,000 | 106.30 | 0.0031 | 0.0039 |
| 1.5 | 8 | 30,000 | 104.3 | 0.0047 | 0.0118 | 24,000 | 90.55 | 0.0031 | 0.0059 | 24,000 | 82.68 | 0.0031 | 0.0047 | 24,000 | 82.68 | 0.0031 | 0.0039 |
| 1.5 | 10 | 30,000 | 94.5 | 0.0047 | 0.0118 | 24,000 | 78.74 | 0.0031 | 0.0059 | 24,000 | 74.80 | 0.0031 | 0.0047 | 24,000 | 74.80 | 0.0031 | 0.0039 |
| 1.5 | 12 | 24,000 | 55.1 | 0.0047 | 0.0094 | 21,000 | 55.12 | 0.0031 | 0.0047 | 21,000 | 51.18 | 0.0031 | 0.0035 | 21,000 | 51.18 | 0.0020 | 0.0024 |
| 1.5 | 14 | 22,000 | 55.1 | 0.0047 | 0.0094 | 18,000 | 47.24 | 0.0031 | 0.0047 | 18,000 | 43.31 | 0.0031 | 0.0035 | 17,000 | 43.31 | 0.0020 | 0.0024 |
| 1.5 | 16 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1.5 | 18 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1.5 | 20 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1.5 | 22 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1.5 | 30 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1.6 | 4 | 40,000 | 177.2 | 0.0047 | 0.0126 | 38,000 | 157.48 | 0.0031 | 0.0063 | 38,000 | 149.61 | 0.0031 | 0.0051 | 38,000 | 141.73 | 0.0031 | 0.0039 |
| 1.6 | 8 | 26,000 | 118.1 | 0.0047 | 0.0126 | 24,000 | 118.11 | 0.0031 | 0.0063 | 24,000 | 110.24 | 0.0031 | 0.0051 | 23,000 | 102.36 | 0.0031 | 0.0039 |
| 1.6 | 12 | 24,000 | 94.5 | 0.0047 | 0.0094 | 21,000 | 70.87 | 0.0031 | 0.0047 | 21,000 | 66.93 | 0.0031 | 0.0031 | 20,000 | 62.99 | 0.0020 | 0.0020 |
| 1.6 | 16 | 18,000 | 63.0 | 0.0047 | 0.0094 | 16,000 | 31.50 | 0.0031 | 0.0047 | 16,000 | 29.92 | 0.0031 | 0.0031 | 15,000 | 27.56 | 0.0020 | 0.0020 |
| 1.6 | 20 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1.8 | 8 | 25,000 | 126.0 | 0.0051 | 0.0142 | 24,000 | 118.11 | 0.0035 | 0.0071 | 24,000 | 110.24 | 0.0035 | 0.0063 | 23,000 | 102.36 | 0.0035 | 0.0047 |
| 1.8 | 12 | 22,000 | 98.4 | 0.0051 | 0.0142 | 18,000 | 70.87 | 0.0035 | 0.0071 | 15,800 | 59.06 | 0.0035 | 0.0063 | 14,700 | 53.15 | 0.0035 | 0.0047 |
| 1.8 | 16 | 16,000 | 47.2 | 0.0051 | 0.0106 | 16,000 | 38.58 | 0.0035 | 0.0055 | 14,000 | 33.46 | 0.0035 | 0.0047 | 13,000 | 30.71 | 0.0020 | 0.0024 |
| 1.8 | 20 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2 | 3 | 50,000 | 228.3 | 0.0059 | 0.0220 | 50,000 | 220.47 | 0.0039 | 0.0110 | 50,000 | 220.47 | 0.0039 | 0.0110 | 47,000 | 208.66 | 0.0039 | 0.0079 |
| 2 | 4 | 50,000 | 228.3 | 0.0059 | 0.0220 | 50,000 | 220.47 | 0.0039 | 0.0110 | 50,000 | 220.47 | 0.0039 | 0.0110 | 47,000 | 208.66 | 0.0039 | 0.0079 |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

continued on next page





High Speed Milling

| Hardness | | - | | | | <32 HRC | | | | 33-41 HRC | | | | 42-50 HRC | | | |
|---------------|---------|--------------------------|-------------|---------|---------|--|-------------|---------|---------|------------------------------|-------------|---------|---------|------------|-------------|---------|---------|
| Work Material | | Aluminum Copper Alloy | | | | Cast Iron, Carbon Steel, Alloy Steel, Stainless Steel, Die Steel | | | | Prehardened & Hardened Steel | | | | | | | |
| Cutting Speed | | 90-460 SFM | | | | 80-340 SFM | | | | 80-280 SFM | | | | 80-280 SFM | | | |
| Depth of Cut | | | | | | | | | | | | | | | | | |
| Mill Dia. | L1 (mm) | Speed RPM | Feed in/min | aa (in) | ar (in) | Speed RPM | Feed in/min | aa (in) | ar (in) | Speed RPM | Feed in/min | aa (in) | ar (in) | Speed RPM | Feed in/min | aa (in) | ar (in) |
| 2 | 6 | 38,000 | 157.5 | 0.0059 | 0.0220 | 36,000 | 118.11 | 0.0039 | 0.0110 | 36,000 | 110.24 | 0.0039 | 0.0110 | 34,000 | 102.36 | 0.0039 | 0.0079 |
| 2 | 8 | 27,000 | 132.3 | 0.0059 | 0.0220 | 25,000 | 102.36 | 0.0039 | 0.0110 | 25,000 | 94.49 | 0.0039 | 0.0110 | 23,000 | 86.61 | 0.0039 | 0.0079 |
| 2 | 10 | 22,000 | 120.1 | 0.0059 | 0.0220 | 20,000 | 94.49 | 0.0039 | 0.0110 | 20,000 | 86.61 | 0.0039 | 0.0110 | 19,000 | 78.74 | 0.0039 | 0.0079 |
| 2 | 12 | 16,000 | 101.6 | 0.0059 | 0.0220 | 16,000 | 78.74 | 0.0039 | 0.0110 | 16,000 | 74.80 | 0.0039 | 0.0110 | 15,000 | 66.93 | 0.0039 | 0.0079 |
| 2 | 14 | 15,000 | 94.5 | 0.0059 | 0.0220 | 15,000 | 70.87 | 0.0039 | 0.0110 | 15,000 | 66.93 | 0.0039 | 0.0110 | 14,000 | 59.06 | 0.0039 | 0.0079 |
| 2 | 16 | 14,000 | 86.6 | 0.0059 | 0.0165 | 14,000 | 66.93 | 0.0039 | 0.0083 | 14,000 | 62.99 | 0.0039 | 0.0071 | 13,000 | 55.12 | 0.0024 | 0.0039 |
| 2 | 18 | 13,000 | 78.7 | 0.0059 | 0.0165 | 13,000 | 62.99 | 0.0039 | 0.0083 | 13,000 | 59.06 | 0.0039 | 0.0071 | 12,000 | 51.18 | 0.0024 | 0.0039 |
| 2 | 20 | 12,000 | 47.2 | 0.0059 | 0.0165 | 12,000 | 47.24 | 0.0039 | 0.0083 | 11,000 | 43.31 | 0.0039 | 0.0071 | 10,000 | 39.37 | 0.0024 | 0.0039 |
| 2 | 22 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2 | 25 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2 | 30 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2 | 35 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2 | 40 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2.5 | 6 | 32,000 | 218.5 | 0.0071 | 0.0276 | 28,000 | 181.10 | 0.0047 | 0.0138 | 28,000 | 169.29 | 0.0047 | 0.0118 | 25,000 | 145.67 | 0.0039 | 0.0098 |
| 2.5 | 10 | 21,000 | 157.5 | 0.0071 | 0.0276 | 20,000 | 129.92 | 0.0047 | 0.0138 | 20,000 | 122.05 | 0.0047 | 0.0118 | 18,000 | 106.30 | 0.0039 | 0.0098 |
| 2.5 | 15 | 17,000 | 118.1 | 0.0071 | 0.0276 | 17,000 | 110.24 | 0.0047 | 0.0138 | 17,000 | 102.36 | 0.0047 | 0.0118 | 16,000 | 94.49 | 0.0039 | 0.0098 |
| 2.5 | 20 | 15,000 | 70.9 | 0.0071 | 0.0220 | 15,000 | 70.87 | 0.0047 | 0.0110 | 15,000 | 66.93 | 0.0047 | 0.0079 | 14,000 | 59.06 | 0.0031 | 0.0059 |
| 2.5 | 25 | 12,000 | 39.8 | 0.0071 | 0.0220 | 12,000 | 39.37 | 0.0047 | 0.0110 | 12,000 | 37.40 | 0.0047 | 0.0079 | 10,000 | 33.86 | 0.0031 | 0.0059 |
| 2.5 | 30 | 10,000 | 31.5 | 0.0071 | 0.0220 | - | - | - | - | - | - | - | - | - | - | - | - |
| 2.5 | 35 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3 | 6 | 42,000 | 267.7 | 0.0079 | 0.0331 | 41,500 | 244.09 | 0.0059 | 0.0165 | 41,500 | 244.09 | 0.0059 | 0.0165 | 32,000 | 188.98 | 0.0059 | 0.0118 |
| 3 | 8 | 32,000 | 181.1 | 0.0079 | 0.0331 | 30,000 | 177.17 | 0.0059 | 0.0165 | 30,000 | 165.35 | 0.0059 | 0.0142 | 25,000 | 137.80 | 0.0059 | 0.0118 |
| 3 | 10 | 28,000 | 157.5 | 0.0079 | 0.0331 | 25,000 | 149.61 | 0.0059 | 0.0165 | 25,000 | 141.73 | 0.0059 | 0.0142 | 20,000 | 110.24 | 0.0059 | 0.0118 |
| 3 | 12 | 24,000 | 120.1 | 0.0079 | 0.0331 | 20,000 | 118.11 | 0.0059 | 0.0165 | 20,000 | 110.24 | 0.0059 | 0.0142 | 18,000 | 98.43 | 0.0059 | 0.0118 |
| 3 | 14 | 22,000 | 114.2 | 0.0079 | 0.0331 | 18,000 | 106.30 | 0.0059 | 0.0165 | 18,000 | 98.43 | 0.0059 | 0.0142 | 15,000 | 78.74 | 0.0059 | 0.0118 |
| 3 | 15 | 20,000 | 110.2 | 0.0079 | 0.0331 | 16,000 | 94.49 | 0.0059 | 0.0165 | 16,000 | 86.61 | 0.0059 | 0.0142 | 13,000 | 66.93 | 0.0059 | 0.0118 |
| 3 | 16 | 20,000 | 102.4 | 0.0079 | 0.0331 | 16,000 | 78.74 | 0.0059 | 0.0165 | 16,000 | 74.80 | 0.0059 | 0.0142 | 13,000 | 59.06 | 0.0059 | 0.0118 |
| 3 | 20 | 16,000 | 86.6 | 0.0079 | 0.0331 | 14,000 | 70.87 | 0.0059 | 0.0165 | 14,000 | 66.93 | 0.0059 | 0.0142 | 11,000 | 51.18 | 0.0059 | 0.0118 |
| 3 | 25 | 16,000 | 70.9 | 0.0079 | 0.0331 | 12,000 | 47.24 | 0.0059 | 0.0165 | 12,000 | 43.31 | 0.0059 | 0.0118 | 9,000 | 32.28 | 0.0035 | 0.0059 |
| 3 | 30 | 12,000 | 39.4 | 0.0079 | 0.0331 | 10,000 | 31.50 | 0.0059 | 0.0165 | 9,000 | 29.92 | 0.0059 | 0.0118 | 7,800 | 23.23 | 0.0035 | 0.0059 |
| 3 | 35 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3 | 40 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3.5 | 10 | 26,000 | 212.6 | 0.0157 | 0.0386 | 25,000 | 147.64 | 0.0059 | 0.0193 | 25,000 | 137.80 | 0.0059 | 0.0165 | 19,500 | 104.72 | 0.0059 | 0.0138 |
| 3.5 | 15 | 20,000 | 157.5 | 0.0157 | 0.0386 | 18,000 | 118.11 | 0.0059 | 0.0193 | 18,000 | 110.24 | 0.0059 | 0.0165 | 14,000 | 85.83 | 0.0059 | 0.0138 |
| 3.5 | 20 | 18,000 | 118.1 | 0.0157 | 0.0386 | 16,000 | 106.30 | 0.0059 | 0.0193 | 16,000 | 98.43 | 0.0059 | 0.0165 | 12,000 | 72.83 | 0.0059 | 0.0138 |
| 3.5 | 25 | 14,000 | 110.2 | 0.0157 | 0.0386 | 12,000 | 78.74 | 0.0059 | 0.0193 | 12,000 | 74.80 | 0.0059 | 0.0165 | 9,000 | 55.12 | 0.0059 | 0.0138 |
| 3.5 | 30 | 10,000 | 86.6 | 0.0157 | 0.0386 | 10,000 | 62.99 | 0.0059 | 0.0193 | 10,000 | 59.06 | 0.0059 | 0.0138 | 8,000 | 47.24 | 0.0039 | 0.0079 |
| 3.5 | 35 | 10,000 | 47.2 | 0.0157 | 0.0386 | 10,000 | 39.37 | 0.0059 | 0.0193 | 10,000 | 37.40 | 0.0059 | 0.0138 | 7,000 | 26.38 | 0.0039 | 0.0079 |
| 3.5 | 40 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3.5 | 45 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 4 | 8 | 31,000 | 224.4 | 0.0197 | 0.0504 | 31,000 | 224.41 | 0.0079 | 0.0252 | 31,000 | 224.41 | 0.0079 | 0.0236 | 24,000 | 173.23 | 0.0079 | 0.0157 |
| 4 | 10 | 25,000 | 177.2 | 0.0197 | 0.0504 | 25,000 | 177.17 | 0.0079 | 0.0252 | 25,000 | 165.35 | 0.0079 | 0.0236 | 20,000 | 129.92 | 0.0079 | 0.0157 |
| 4 | 12 | 20,000 | 157.5 | 0.0197 | 0.0504 | 20,000 | 141.73 | 0.0079 | 0.0252 | 20,000 | 133.86 | 0.0079 | 0.0236 | 16,000 | 106.30 | 0.0079 | 0.0157 |
| 4 | 14 | 20,000 | 157.5 | 0.0197 | 0.0504 | 20,000 | 141.73 | 0.0079 | 0.0252 | 20,000 | 133.86 | 0.0079 | 0.0236 | 16,000 | 106.30 | 0.0079 | 0.0157 |
| 4 | 15 | 20,000 | 157.5 | 0.0197 | 0.0504 | 20,000 | 141.73 | 0.0079 | 0.0252 | 20,000 | 133.86 | 0.0079 | 0.0236 | 16,000 | 106.30 | 0.0079 | 0.0157 |
| 4 | 16 | 20,000 | 136.2 | 0.0197 | 0.0504 | 18,000 | 125.98 | 0.0079 | 0.0252 | 18,000 | 118.11 | 0.0079 | 0.0236 | 14,000 | 90.55 | 0.0079 | 0.0157 |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

continued on next page

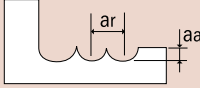




List 3690: Ball End, Regular Length, 2 Flute, Long Neck, Rib Processing (Continued)

List 3790: Ball End, Regular Length, 2 Flute, Long Neck, Rib Processing (Continued)

High Speed Milling

| Hardness | - | | <32 HRC | | | | 33-41 HRC | | | | 42-50 HRC | | | | | | |
|---------------|---|-----------|-------------|---------|--|-----------|-------------|---------|------------------------------|-----------|-------------|---------|------------|-----------|-------------|---------|---------|
| Work Material | Aluminum Copper Alloy | | | | Cast Iron, Carbon Steel, Alloy Steel, Stainless Steel, Die Steel | | | | Prehardened & Hardened Steel | | | | | | | | |
| Cutting Speed | 90-460 SFM | | | | 80-340 SFM | | | | 80-280 SFM | | | | 80-280 SFM | | | | |
| Depth of Cut |  | | | | | | | | | | | | | | | | |
| Mill Dia. | L1 (mm) | Speed RPM | Feed in/min | aa (in) | ar (in) | Speed RPM | Feed in/min | aa (in) | ar (in) | Speed RPM | Feed in/min | aa (in) | ar (in) | Speed RPM | Feed in/min | aa (in) | ar (in) |
| 4 | 20 | 18,000 | 118.1 | 0.0197 | 0.0504 | 16,000 | 110.24 | 0.0079 | 0.0252 | 16,000 | 102.36 | 0.0079 | 0.0236 | 12,000 | 74.80 | 0.0079 | 0.0157 |
| 4 | 25 | 18,000 | 118.1 | 0.0197 | 0.0504 | 16,000 | 110.24 | 0.0079 | 0.0252 | 16,000 | 102.36 | 0.0079 | 0.0236 | 12,000 | 74.80 | 0.0079 | 0.0157 |
| 4 | 30 | 16,000 | 112.2 | 0.0157 | 0.0504 | 14,000 | 94.49 | 0.0079 | 0.0252 | 14,000 | 86.61 | 0.0079 | 0.0220 | 11,000 | 66.93 | 0.0047 | 0.0079 |
| 4 | 35 | 14,000 | 86.6 | 0.0157 | 0.0504 | 12,000 | 70.87 | 0.0079 | 0.0252 | 12,000 | 66.93 | 0.0079 | 0.0220 | 9,000 | 66.93 | 0.0047 | 0.0079 |
| 4 | 40 | 12,000 | 63.0 | 0.0138 | 0.0504 | 10,000 | 51.18 | 0.0079 | 0.0252 | 10,000 | 47.24 | 0.0079 | 0.0220 | 7,000 | 33.07 | 0.0047 | 0.0079 |
| 4 | 45 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 4 | 50 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 5 | 10 | 25,000 | 220.5 | 0.0236 | 0.0709 | 25,000 | 212.60 | 0.0098 | 0.0354 | 25,000 | 212.60 | 0.0098 | 0.0276 | 19,000 | 157.48 | 0.0098 | 0.0197 |
| 5 | 15 | 20,000 | 173.2 | 0.0236 | 0.0709 | 20,000 | 165.35 | 0.0098 | 0.0354 | 20,000 | 153.54 | 0.0098 | 0.0276 | 16,000 | 122.05 | 0.0098 | 0.0197 |
| 5 | 20 | 18,000 | 149.6 | 0.0236 | 0.0709 | 16,000 | 137.80 | 0.0098 | 0.0354 | 16,000 | 129.92 | 0.0098 | 0.0276 | 12,000 | 94.49 | 0.0098 | 0.0197 |
| 5 | 25 | 20,000 | 133.9 | 0.0236 | 0.0709 | 15,000 | 125.98 | 0.0098 | 0.0354 | 15,000 | 118.11 | 0.0098 | 0.0276 | 12,000 | 94.49 | 0.0098 | 0.0197 |
| 5 | 30 | 16,000 | 114.2 | 0.0236 | 0.0709 | 14,000 | 98.43 | 0.0098 | 0.0354 | 14,000 | 90.55 | 0.0098 | 0.0276 | 11,000 | 70.87 | 0.0098 | 0.0197 |
| 5 | 35 | 14,000 | 86.6 | 0.0236 | 0.0709 | 12,000 | 62.99 | 0.0098 | 0.0354 | 12,000 | 59.06 | 0.0098 | 0.0276 | 9,000 | 43.31 | 0.0098 | 0.0197 |
| 5 | 40 | 12,000 | 70.9 | 0.0157 | 0.0709 | 10,000 | 47.24 | 0.0098 | 0.0354 | 10,000 | 43.31 | 0.0098 | 0.0236 | 8,000 | 34.65 | 0.0079 | 0.0098 |
| 5 | 45 | 9,000 | 47.2 | 0.0157 | 0.0709 | 9,000 | 35.43 | 0.0098 | 0.0354 | 9,000 | 33.46 | 0.0098 | 0.0236 | 7,000 | 25.98 | 0.0079 | 0.0098 |
| 5 | 50 | 8,000 | 43.3 | 0.0157 | 0.0709 | 8,000 | 31.50 | 0.0098 | 0.0354 | 8,000 | 29.92 | 0.0098 | 0.0236 | 6,000 | 22.44 | 0.0079 | 0.0098 |
| 6 | 10 | 22,000 | 232.3 | 0.0295 | 0.0945 | 20,000 | 212.60 | 0.0118 | 0.0472 | 20,000 | 196.85 | 0.0118 | 0.0378 | 15,000 | 147.64 | 0.0118 | 0.0236 |
| 6 | 20 | 18,000 | 173.2 | 0.0295 | 0.0945 | 16,000 | 165.35 | 0.0118 | 0.0472 | 16,000 | 153.54 | 0.0118 | 0.0378 | 12,000 | 114.17 | 0.0118 | 0.0236 |
| 6 | 25 | 14,000 | 157.5 | 0.0295 | 0.0945 | 12,000 | 125.98 | 0.0118 | 0.0472 | 12,000 | 118.11 | 0.0118 | 0.0378 | 9,000 | 88.58 | 0.0118 | 0.0236 |
| 6 | 30 | 10,000 | 126.0 | 0.0295 | 0.0945 | 10,000 | 102.36 | 0.0118 | 0.0472 | 10,000 | 94.49 | 0.0118 | 0.0378 | 8,000 | 74.80 | 0.0118 | 0.0236 |
| 6 | 35 | 9,000 | 118.1 | 0.0295 | 0.0945 | 9,000 | 90.55 | 0.0118 | 0.0472 | 9,000 | 82.68 | 0.0118 | 0.0378 | 7,000 | 62.99 | 0.0118 | 0.0236 |
| 6 | 40 | 9,000 | 110.2 | 0.0236 | 0.0945 | 9,000 | 78.74 | 0.0118 | 0.0472 | 9,000 | 74.80 | 0.0118 | 0.0378 | 7,000 | 55.12 | 0.0118 | 0.0236 |
| 6 | 45 | 8,000 | 98.4 | 0.0236 | 0.0945 | 8,000 | 70.87 | 0.0118 | 0.0472 | 8,000 | 66.93 | 0.0118 | 0.0378 | 6,500 | 51.18 | 0.0118 | 0.0236 |
| 6 | 50 | 7,000 | 90.6 | 0.0236 | 0.0945 | 7,000 | 62.99 | 0.0118 | 0.0472 | 7,000 | 59.06 | 0.0118 | 0.0378 | 5,500 | 43.31 | 0.0118 | 0.0118 |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.





List 3619 - EXOCARB® WXL®: 2 Flute, Square End, Stub Length

Slotting

| Hardness | - | <32 HRC | 33-41 HRC | 42-50 HRC | | | | | | |
|---------------|---|-------------|--|-------------|-----------|-------------|-----------|-------------|---------|------|
| Work Material | Copper | Mild Steels | Hardened Steels Pre-hardened Steels | | | | | | | |
| Cutting Speed | 495 SFM | 245 SFM | 175 SFM | 150 SFM | | | | | | |
| Depth of Cut | <table border="1" style="display: inline-table; margin-right: 20px;"> <thead> <tr> <th>Dia</th> <th>aa</th> </tr> </thead> <tbody> <tr> <td>D < 1/8</td> <td>0.3D</td> </tr> <tr> <td>1/8 ≤ D</td> <td>0.5D</td> </tr> </tbody> </table> | | | | Dia | aa | D < 1/8 | 0.3D | 1/8 ≤ D | 0.5D |
| Dia | aa | | | | | | | | | |
| D < 1/8 | 0.3D | | | | | | | | | |
| 1/8 ≤ D | 0.5D | | | | | | | | | |
| Mill Diameter | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | |
| 1/16 | 25,000 | 10.7 | 15,000 | 6.2 | 10,700 | 4.6 | 9,200 | 3.2 | | |
| 5/64 | 24,200 | 12.9 | 12,000 | 6.6 | 8,600 | 4.5 | 7,300 | 3.3 | | |
| 3/32 | 20,200 | 14.3 | 10,000 | 7.2 | 7,100 | 4.1 | 6,100 | 3.1 | | |
| 7/64 | 17,300 | 15.5 | 8,600 | 8.3 | 6,100 | 4.5 | 5,200 | 3.3 | | |
| 1/8 | 15,100 | 17.5 | 7,500 | 8.6 | 5,300 | 4.7 | 4,600 | 3.5 | | |
| 5/32 | 12,100 | 18.8 | 6,000 | 9.6 | 4,300 | 5.2 | 3,700 | 3.8 | | |
| 3/16 | 10,100 | 21.1 | 5,000 | 11.0 | 3,600 | 5.1 | 3,000 | 3.7 | | |
| 1/4 | 7,600 | 22.2 | 3,700 | 11.2 | 2,700 | 5.3 | 2,300 | 4.0 | | |
| 5/16 | 6,000 | 21.9 | 3,000 | 10.7 | 2,100 | 4.8 | 1,800 | 3.8 | | |
| 3/8 | 5,000 | 20.7 | 2,500 | 10.7 | 1,800 | 5.1 | 1,500 | 4.1 | | |
| 7/16 | 4,300 | 20.2 | 2,100 | 9.9 | 1,500 | 4.8 | 1,300 | 4.5 | | |
| 1/2 | 3,800 | 20.0 | 1,900 | 9.8 | 1,300 | 4.7 | 1,200 | 3.8 | | |
| 5/8 | 3,000 | 16.5 | 1,500 | 8.3 | 1,000 | 4.2 | 900 | 3.6 | | |
| 3/4 | 2,500 | 13.8 | 1,200 | 6.9 | 900 | 4.1 | 800 | 3.2 | | |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.





List 3620 - EXOCARB® WXL®: Stub Length, 2 Flute

List 3621 - EXOCARB® WXL®: Regular Length, 2 Flute

Slotting

| Hardness | - | <32 HRC | 33-41 HRC | 42-50 HRC | | | | | | |
|---------------|--|------------------------------|--|-------------|-----------|-------------|-----------|-------------|--|--|
| Work Material | Copper Copper Alloy | Mild Steels Carbon Steels | Hardened Steels Pre-hardened Steels, Stainless Steels | | | | | | | |
| Cutting Speed | 495 SFM | 245 SFM | 175 SFM | 150 SFM | | | | | | |
| Depth of Cut | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> </tr> </thead> <tbody> <tr> <td>D<1/8</td> <td>0.3D</td> </tr> <tr> <td>1/8≤D</td> <td>0.5D</td> </tr> </tbody> </table> | | Dia | aa | D<1/8 | 0.3D | 1/8≤D | 0.5D | | |
| Dia | aa | | | | | | | | | |
| D<1/8 | 0.3D | | | | | | | | | |
| 1/8≤D | 0.5D | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | |
| 1/16 | 25,000 | 10.2 | 14,700 | 5.8 | 10,500 | 4.4 | 8,900 | 3.0 | | |
| 5/64 | 24,000 | 12.2 | 11,800 | 6.2 | 8,300 | 4.2 | 7,200 | 3.1 | | |
| 3/32 | 20,500 | 13.8 | 9,800 | 6.7 | 7,000 | 3.9 | 6,000 | 3.0 | | |
| 7/64 | 17,500 | 15.0 | 8,400 | 7.7 | 6,000 | 4.3 | 5,100 | 3.2 | | |
| 1/8 | 15,000 | 16.5 | 7,300 | 8.0 | 5,200 | 4.5 | 4,600 | 3.4 | | |
| 5/32 | 12,000 | 17.7 | 5,900 | 9.0 | 4,200 | 4.9 | 3,700 | 3.7 | | |
| 3/16 | 10,500 | 20.9 | 4,900 | 10.2 | 3,700 | 5.1 | 3,100 | 3.7 | | |
| 7/32 | 8,700 | 21.3 | 4,300 | 10.6 | 3,100 | 5.1 | 2,600 | 3.9 | | |
| 1/4 | 7,500 | 20.9 | 3,700 | 10.6 | 2,700 | 5.1 | 2,300 | 3.9 | | |
| 9/32 | 6,900 | 20.9 | 3,400 | 10.6 | 2,500 | 5.1 | 2,100 | 3.9 | | |
| 5/16 | 5,900 | 20.5 | 3,000 | 10.2 | 2,200 | 4.9 | 1,900 | 3.9 | | |
| 3/8 | 5,100 | 20.1 | 2,500 | 10.2 | 1,800 | 4.9 | 1,500 | 4.0 | | |
| 7/16 | 4,400 | 19.7 | 2,100 | 9.4 | 1,600 | 4.9 | 1,300 | 4.4 | | |
| 1/2 | 4,000 | 20.1 | 1,900 | 9.4 | 1,400 | 4.9 | 1,200 | 3.7 | | |
| 5/8 | 3,000 | 15.7 | 1,500 | 7.9 | 1,100 | 4.5 | 900 | 3.5 | | |
| 3/4 | 2,600 | 13.6 | 1,200 | 6.5 | 900 | 3.9 | 800 | 3.1 | | |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.





List 3704 - EXOCARB® WXL®: Regular Length, 4 Flute

Side Milling

| Hardness | - | | <32 HRC | | 33-41 HRC | | 42-50 HRC | | | | | | | | | | |
|---------------|------------------------|----------------|--|----------------|---|----------------|--------------|----------------|-----|------|-------|-----|------|-------|-------------------------|--|--|
| Work Material | Copper Copper Alloy | | Mild Steels Carbon Steels | | Hardened Steels Prehardened Steels Stainless Steels | | | | | | | | | | | | |
| Cutting Speed | 516-990 SFM | | 248-254 SFM | | 143-184 SFM | | 129-164 SFM | | | | | | | | | | |
| Depth of Cut | | | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D<3</td> <td>1.5D</td> <td>0.05D</td> </tr> <tr> <td>3≤D</td> <td>1.5D</td> <td>0.10D</td> </tr> </tbody> </table> | | | Dia | aa | ar | D<3 | 1.5D | 0.05D | 3≤D | 1.5D | 0.10D | aa = 1.0D ar = 0.02D | | |
| | | | Dia | aa | ar | | | | | | | | | | | | |
| D<3 | 1.5D | 0.05D | | | | | | | | | | | | | | | |
| 3≤D | 1.5D | 0.10D | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | |
| 1.0 | 25,000 | 8.7 | 24,000 | 8.3 | 14,000 | 3.1 | 12,500 | 2.8 | | | | | | | | | |
| 1.5 | 25,000 | 19.2 | 16,000 | 12.2 | 9,250 | 4.5 | 8,400 | 4.1 | | | | | | | | | |
| 2.0 | 25,000 | 22.8 | 12,000 | 11.6 | 7,000 | 4.3 | 6,350 | 3.9 | | | | | | | | | |
| 2.5 | 25,000 | 49.2 | 9,600 | 18.9 | 6,200 | 5.5 | 5,550 | 4.9 | | | | | | | | | |
| 3.0 | 25,000 | 49.2 | 8,150 | 16.9 | 5,300 | 4.9 | 4,750 | 4.3 | | | | | | | | | |
| 4.0 | 24,000 | 66.9 | 6,050 | 17.7 | 4,250 | 5.3 | 3,700 | 4.5 | | | | | | | | | |
| 5.0 | 19,000 | 78.7 | 4,900 | 20.5 | 3,550 | 5.5 | 3,150 | 4.9 | | | | | | | | | |
| 6.0 | 16,000 | 78.7 | 4,100 | 20.5 | 2,950 | 5.7 | 2,650 | 5.1 | | | | | | | | | |
| 8.0 | 12,000 | 74.8 | 3,050 | 19.9 | 2,200 | 5.7 | 1,950 | 5.1 | | | | | | | | | |
| 10.0 | 9,500 | 74.8 | 2,450 | 19.9 | 1,750 | 5.7 | 1,550 | 5.1 | | | | | | | | | |
| 12.0 | 7,900 | 74.8 | 2,050 | 19.9 | 1,450 | 5.7 | 1,300 | 5.1 | | | | | | | | | |
| 14.0 | 6,800 | 74.8 | 1,750 | 19.5 | 1,250 | 5.7 | 1,100 | 4.9 | | | | | | | | | |
| 15.0 | 6,300 | 74.8 | 1,600 | 19.3 | 1,150 | 5.3 | 1,050 | 4.7 | | | | | | | | | |
| 16.0 | 5,900 | 70.9 | 1,500 | 18.9 | 1,100 | 5.1 | 995 | 4.5 | | | | | | | | | |
| 18.0 | 5,300 | 70.9 | 1,350 | 18.5 | 990 | 4.5 | 880 | 4.1 | | | | | | | | | |
| 20.0 | 4,800 | 68.4 | 1,200 | 17.5 | 890 | 4.1 | 795 | 3.7 | | | | | | | | | |
| 25.0 | 3,800 | 55.1 | 970 | 14.2 | 710 | 3.3 | 635 | 3.0 | | | | | | | | | |
| 30.0 | 3,200 | 44.7 | 815 | 11.8 | 590 | 2.8 | 530 | 2.4 | | | | | | | | | |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

High Speed Milling

| Hardness | - | | <32 HRC | | 33-41 HRC | | 42-50 HRC | | | | | | | | | | |
|---------------|------------------------|----------------|--|----------------|--|----------------|--------------|----------------|-----|------|-------|-----|------|-------|-------------------------|--|--|
| Work Material | Copper Copper Alloy | | Mild Steels Carbon Steels | | Hardened Steels Pre-hardened Steels | | | | | | | | | | | | |
| Cutting Speed | 1597-1625 SFM | | 1197-1238 SFM | | 805-820 SFM | | 480-492 SFM | | | | | | | | | | |
| Depth of Cut | | | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D<3</td> <td>1.5D</td> <td>0.01D</td> </tr> <tr> <td>3≤D</td> <td>1.5D</td> <td>0.02D</td> </tr> </tbody> </table> | | | Dia | aa | ar | D<3 | 1.5D | 0.01D | 3≤D | 1.5D | 0.02D | aa = 1.0D ar = 0.02D | | |
| | | | Dia | aa | ar | | | | | | | | | | | | |
| D<3 | 1.5D | 0.01D | | | | | | | | | | | | | | | |
| 3≤D | 1.5D | 0.02D | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | |
| 6 | 25,000 | 109.8 | 20,000 | 90.6 | 13,000 | 59.1 | 7,950 | 31.3 | | | | | | | | | |
| 8 | 19,500 | 118.1 | 14,500 | 90.6 | 9,900 | 57.1 | 5,950 | 31.3 | | | | | | | | | |
| 10 | 15,500 | 114.2 | 12,000 | 90.6 | 7,950 | 57.1 | 4,750 | 31.3 | | | | | | | | | |
| 12 | 13,000 | 118.1 | 9,900 | 90.6 | 6,600 | 57.1 | 3,950 | 31.1 | | | | | | | | | |
| 14 | 11,100 | 110.2 | 8,500 | 86.6 | 5,650 | 53.1 | 3,400 | 29.1 | | | | | | | | | |
| 15 | 10,500 | 110.2 | 7,950 | 84.6 | 5,250 | 53.1 | 3,150 | 28.7 | | | | | | | | | |
| 16 | 9,700 | 106.3 | 7,450 | 82.7 | 4,950 | 53.1 | 2,950 | 28.1 | | | | | | | | | |
| 18 | 8,600 | 106.3 | 6,600 | 82.7 | 4,400 | 51.2 | 2,650 | 27.8 | | | | | | | | | |
| 20 | 7,800 | 102.4 | 5,950 | 78.7 | 3,950 | 51.2 | 2,350 | 26.2 | | | | | | | | | |
| 25 | 6,200 | 78.7 | 4,750 | 63.0 | 3,150 | 41.3 | 1,900 | 22.0 | | | | | | | | | |
| 30 | 5,200 | 66.9 | 3,950 | 53.1 | 2,650 | 35.0 | 1,550 | 17.9 | | | | | | | | | |





List 3742 - EXOCARB® WXL®: 4 Flute, Long Length

Side Milling

| Hardness | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | | | | | | | | | | | | | | | | | | |
|---------------|---|-------------|-----------------------------|-------------|--|-------------|--|-------------|-----------------|-------------|------|------|------|--|--|---|--|-----|----|----|-----|----|-------|-----|----|------|-------------------------|--|
| Work Material | Mild Steel Carbon Steels Cast Iron | | Alloy Steels Tool Steels | | Hardened Steels Pre-hardened Steels | | Hardened Steels Pre-hardened Steels | | Hardened Steels | | | | | | | | | | | | | | | | | | | |
| Cutting Speed | 200 SFM | | 160 SFM | | 130 SFM | | 110 SFM | | 80 SFM | | | | | | | | | | | | | | | | | | | |
| Depth of Cut | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D≤20</td> <td>2.5D</td> <td>0.05D</td> </tr> <tr> <td>20<D</td> <td>2.5D</td> <td>0.1D</td> </tr> </tbody> </table> | | | | Dia | aa | ar | D≤20 | 2.5D | 0.05D | 20<D | 2.5D | 0.1D | | | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D≤8</td> <td>1D</td> <td>0.01D</td> </tr> <tr> <td>8<D</td> <td>1D</td> <td>0.5D</td> </tr> </tbody> </table> | | Dia | aa | ar | D≤8 | 1D | 0.01D | 8<D | 1D | 0.5D | aa = 2.5D ar = 0.02D | |
| | Dia | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | | |
| D≤20 | 2.5D | 0.05D | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20<D | 2.5D | 0.1D | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dia | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D≤8 | 1D | 0.01D | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8<D | 1D | 0.5D | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | | | | | | | | | |
| 3 | 6,350 | 8.9 | 5,300 | 7.5 | 4,200 | 5.9 | 3,700 | 5.2 | 2,600 | 3.6 | | | | | | | | | | | | | | | | | | |
| 4 | 4,750 | 8.9 | 3,950 | 7.5 | 3,150 | 5.9 | 2,750 | 5.2 | 1,950 | 3.7 | | | | | | | | | | | | | | | | | | |
| 5 | 3,800 | 8.9 | 3,150 | 7.5 | 2,500 | 5.9 | 2,200 | 5.2 | 1,550 | 3.6 | | | | | | | | | | | | | | | | | | |
| 6 | 3,150 | 8.9 | 2,650 | 7.5 | 2,100 | 5.9 | 1,850 | 5.2 | 1,300 | 3.7 | | | | | | | | | | | | | | | | | | |
| 8 | 2,350 | 8.9 | 1,950 | 7.5 | 1,550 | 5.9 | 1,350 | 5.1 | 995 | 3.8 | | | | | | | | | | | | | | | | | | |
| 10 | 1,900 | 8.9 | 1,550 | 7.5 | 1,250 | 5.9 | 1,100 | 5.2 | 795 | 3.7 | | | | | | | | | | | | | | | | | | |
| 12 | 1,550 | 8.9 | 1,300 | 7.5 | 1,050 | 6.0 | 925 | 5.3 | 660 | 3.8 | | | | | | | | | | | | | | | | | | |
| 14 | 1,350 | 8.9 | 1,100 | 7.5 | 905 | 6.0 | 795 | 5.2 | 565 | 3.7 | | | | | | | | | | | | | | | | | | |
| 16 | 1,150 | 8.9 | 995 | 7.5 | 795 | 6.2 | 695 | 5.4 | 495 | 3.8 | | | | | | | | | | | | | | | | | | |
| 18 | 1,050 | 8.9 | 880 | 7.5 | 705 | 6.0 | 615 | 5.2 | 440 | 3.7 | | | | | | | | | | | | | | | | | | |
| 20 | 955 | 8.9 | 795 | 7.5 | 635 | 5.9 | 555 | 5.2 | 395 | 3.7 | | | | | | | | | | | | | | | | | | |
| 22 | 865 | 8.9 | 720 | 7.5 | 575 | 5.9 | 505 | 5.2 | 360 | 3.7 | | | | | | | | | | | | | | | | | | |
| 24 | 795 | 8.7 | 660 | 7.1 | 530 | 5.8 | 460 | 5.0 | 330 | 3.6 | | | | | | | | | | | | | | | | | | |
| 25 | 760 | 8.3 | 635 | 6.7 | 505 | 5.5 | 445 | 4.9 | 315 | 3.4 | | | | | | | | | | | | | | | | | | |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously,
3. Use a suitable cutting fluid with high smoke retardant.





List 3711 - EXOCARB® WXL®: 2 Flute, Ball End, Stub Length, Long Shank

Side Milling

| Hardness | - | <20 HRC | 20-30 HRC | 30-38 HRC | 38-45 HRC | 45-55 HRC | 55-60 HRC | | | | | | | |
|---------------|-------------|------------------------------|-----------------------------|--|------------------------------------|-----------------|---------------------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|
| Work Material | Cast Iron | Mild Steels Carbon Steels | Alloy Steels Tool Steels | Hardened Steels Pre-hardened Steels | Stainless Steel Hardened Steels | Hardened Steels | Hardened Steels | | | | | | | |
| Cutting Speed | 330-490 SFM | 330-390 SFM | 300-330 SFM | 230-260 SFM | 200-230 SFM | 170-200 SFM | 120-150 SFM | | | | | | | |
| Depth of Cut | | | | | aa=0.1D ar=0.2D | | aa=0.05D ar=0.1D | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1 | 25,000 | 50.0 | 25,000 | 50.0 | 25,000 | 50.0 | 25,000 | 50.0 | 22,000 | 35.2 | 19,000 | 26.6 | 14,000 | 19.6 |
| 2 | 23,500 | 79.9 | 19,000 | 64.6 | 15,500 | 52.7 | 12,500 | 42.5 | 11,000 | 35.2 | 9,500 | 26.6 | 7,150 | 20.0 |
| 3 | 15,500 | 74.4 | 12,500 | 60.0 | 10,500 | 50.4 | 8,450 | 40.6 | 7,400 | 32.6 | 6,350 | 25.4 | 4,750 | 19.0 |
| 4 | 11,500 | 69.0 | 9,500 | 57.0 | 7,950 | 47.7 | 6,350 | 38.1 | 5,550 | 31.1 | 4,750 | 24.7 | 3,550 | 18.5 |
| 5 | 9,500 | 72.2 | 7,600 | 57.8 | 6,350 | 48.3 | 5,050 | 38.4 | 4,450 | 32.0 | 3,800 | 25.8 | 2,850 | 19.4 |
| 6 | 7,950 | 70.0 | 6,350 | 55.9 | 5,300 | 46.6 | 4,200 | 37.0 | 3,700 | 31.1 | 3,150 | 25.2 | 2,350 | 18.8 |
| 8 | 5,950 | 71.4 | 4,750 | 57.0 | 3,950 | 47.4 | 3,150 | 37.8 | 2,750 | 31.9 | 2,350 | 26.3 | 1,750 | 19.6 |
| 10 | 4,750 | 67.5 | 3,800 | 54.0 | 3,150 | 44.7 | 2,500 | 35.5 | 2,200 | 30.4 | 1,900 | 25.5 | 1,400 | 18.8 |
| 12 | 3,950 | 67.2 | 3,150 | 53.6 | 2,650 | 45.1 | 2,100 | 35.7 | 1,850 | 30.7 | 1,550 | 24.8 | 1,150 | 18.4 |
| 14 | 3,400 | 57.8 | 2,700 | 45.9 | 2,250 | 38.3 | 1,800 | 30.6 | 1,550 | 25.7 | 1,350 | 21.6 | 1,000 | 16.0 |
| 16 | 2,950 | 50.2 | 2,350 | 40.0 | 1,950 | 33.2 | 1,550 | 26.4 | 1,350 | 22.4 | 1,150 | 18.4 | 895 | 14.3 |
| 18 | 2,650 | 45.1 | 2,100 | 35.7 | 1,750 | 29.8 | 1,400 | 23.8 | 1,200 | 19.9 | 1,050 | 16.8 | 795 | 12.7 |
| 20 | 2,350 | 40.0 | 1,900 | 32.3 | 1,550 | 26.4 | 1,250 | 21.3 | 1,100 | 18.3 | 955 | 15.3 | 715 | 11.4 |
| 25 | 1,900 | 32.3 | 1,500 | 25.5 | 1,250 | 21.3 | 1,000 | 17.0 | 890 | 14.8 | 760 | 12.2 | 570 | 9.1 |
| 30 | 1,500 | 26.4 | 1,250 | 21.3 | 1,050 | 17.9 | 845 | 14.4 | 740 | 12.3 | 635 | 10.2 | 475 | 7.6 |

1. Use a rigid and precise machine and holder.
2. Use a suitable cutting fluid with high smoke retardant.
3. When the length of tool extension from the machine is long, reduce the speed and feed.





List 3791 - EXOCARB® WXL®: 2 Flute, Stub Length

Slotting

| Hardness | | - | | | <32 HRC | | | 33-41 HRC | | | 42-50 HRC | | | |
|---------------|---------|------------------------|---------------|---------|------------------------------|---------------|---------|--|---------------|---------|-------------|---------------|---------|--------|
| Work Material | | Copper Copper Alloy | | | Mild Steels Carbon Steels | | | Hardened Steels Pre-hardened Steels Stainless Steels | | | | | | |
| Cutting Speed | | 45-376 SFM* | | | 41-309 SFM* | | | 41-309 SFM* | | | 40-258 SFM* | | | |
| Depth of Cut | | | | | | | | | | | | | | |
| D (mm) | L2 (mm) | Speed (RPM) | Feed (in/min) | aa (in) | Speed (RPM) | Feed (in/min) | aa (in) | Speed (RPM) | Feed (in/min) | aa (in) | Speed (RPM) | Feed (in/min) | aa (in) | |
| 0.2 | 0.5 | 25,000 | 13.7 | 0.0009 | 25,000 | 13.8 | 0.0007 | 25,000 | 13.8 | 0.0006 | 25,000 | 8.5 | 0.0005 | |
| | 1 | 25,000 | 10.6 | 0.0006 | 25,000 | 10.8 | 0.0005 | 25,000 | 10.8 | 0.0004 | 25,000 | 6.8 | 0.0004 | |
| | 1.5 | 25,000 | 8.6 | 0.0004 | 25,000 | 8.8 | 0.0003 | 25,000 | 8.8 | 0.0003 | 25,000 | 5.9 | 0.0002 | |
| | 2 | 24,000 | 8.7 | 0.0002 | 22,000 | 7.9 | 0.0002 | 22,000 | 7.9 | 0.0002 | 20,000 | 4.7 | 0.0001 | |
| | 2.5 | 22,000 | 7.5 | 0.0002 | 20,000 | 7.1 | 0.0002 | 20,000 | 6.7 | 0.0002 | 20,000 | 3.9 | 0.0001 | |
| | 3 | 22,000 | 7.1 | 0.0002 | 20,000 | 6.7 | 0.0001 | 20,000 | 6.3 | 0.0001 | 20,000 | 3.5 | 0.0001 | |
| | 3.5 | 22,000 | 5.9 | 0.0002 | 20,000 | 5.5 | 0.0001 | 20,000 | 5.1 | 0.0001 | 20,000 | 3.1 | 0.0001 | |
| 4 | 22,000 | 1.6 | 0.0001 | 20,000 | 1.6 | 0.0001 | 20,000 | 1.4 | 0.0001 | 20,000 | 1.2 | 0.0001 | | |
| 0.3 | 1 | 25,000 | 12.3 | 0.0013 | 25,000 | 12.3 | 0.0011 | 25,000 | 10.8 | 0.0009 | 25,000 | 10.2 | 0.0007 | |
| | 1.5 | 25,000 | 11.0 | 0.0011 | 25,000 | 11.1 | 0.0009 | 25,000 | 9.2 | 0.0008 | 25,000 | 8.5 | 0.0006 | |
| | 2 | 25,000 | 10.6 | 0.0009 | 25,000 | 10.5 | 0.0008 | 25,000 | 8.8 | 0.0007 | 25,000 | 7.9 | 0.0005 | |
| | 2.5 | 25,000 | 9.7 | 0.0007 | 25,000 | 9.8 | 0.0006 | 25,000 | 8.1 | 0.0005 | 25,000 | 7.5 | 0.0003 | |
| | 3 | 25,000 | 11.1 | 0.0004 | 22,000 | 9.8 | 0.0004 | 22,000 | 6.3 | 0.0003 | 20,000 | 5.9 | 0.0002 | |
| | 4 | 24,000 | 8.7 | 0.0003 | 20,000 | 7.5 | 0.0003 | 20,000 | 5.9 | 0.0002 | 20,000 | 5.1 | 0.0001 | |
| | 5 | 24,000 | 7.5 | 0.0002 | 20,000 | 6.3 | 0.0002 | 20,000 | 5.5 | 0.0001 | 18,000 | 4.7 | 0.0001 | |
| | 6 | 24,000 | 3.9 | 0.0001 | 20,000 | 3.5 | 0.0001 | 20,000 | 3.1 | 0.0001 | 16,000 | 2.4 | 0.0001 | |
| | 9 | 19,000 | 1.2 | 0.0001 | 16,000 | 1.2 | 0.0001 | 16,000 | 1.2 | 0.0001 | 13,000 | 0.8 | 0.0001 | |
| 0.4 | 1.5 | 25,000 | 13.3 | 0.0013 | 25,000 | 13.5 | 0.0011 | 25,000 | 11.7 | 0.0009 | 25,000 | 11.2 | 0.0007 | |
| | 2 | 25,000 | 12.3 | 0.0012 | 25,000 | 12.3 | 0.0010 | 25,000 | 10.8 | 0.0009 | 25,000 | 10.2 | 0.0007 | |
| | 3 | 25,000 | 10.6 | 0.0008 | 25,000 | 10.5 | 0.0007 | 25,000 | 8.8 | 0.0006 | 25,000 | 7.9 | 0.0004 | |
| | 4 | 25,000 | 11.1 | 0.0006 | 22,000 | 9.8 | 0.0005 | 22,000 | 7.9 | 0.0004 | 20,000 | 5.9 | 0.0003 | |
| | 5 | 24,000 | 9.4 | 0.0003 | 20,000 | 7.9 | 0.0002 | 20,000 | 6.3 | 0.0002 | 20,000 | 5.1 | 0.0001 | |
| | 6 | 24,000 | 8.3 | 0.0002 | 20,000 | 7.1 | 0.0002 | 20,000 | 5.5 | 0.0002 | 20,000 | 4.7 | 0.0001 | |
| | 7 | 24,000 | 6.3 | 0.0002 | 20,000 | 5.5 | 0.0002 | 20,000 | 4.7 | 0.0001 | 20,000 | 4.3 | 0.0001 | |
| | 8 | 24,000 | 5.9 | 0.0001 | 20,000 | 5.1 | 0.0001 | 20,000 | 4.3 | 0.0001 | 20,000 | 3.9 | 0.0001 | |
| | 9 | 24,000 | 5.5 | 0.0001 | 20,000 | 4.7 | 0.0001 | 20,000 | 3.9 | 0.0001 | 20,000 | 3.1 | 0.0001 | |
| | 10 | 24,000 | 5.1 | 0.0001 | 20,000 | 4.3 | 0.0001 | 20,000 | 3.3 | 0.0001 | 18,000 | 2.8 | 0.0001 | |
| | 12 | 24,000 | 3.9 | 0.0001 | 20,000 | 3.5 | 0.0001 | 20,000 | 3.1 | 0.0001 | 16,000 | 2.4 | 0.0001 | |
| | 0.5 | 1.5 | 25,000 | 16.9 | 0.0021 | 25,000 | 16.9 | 0.0018 | 25,000 | 12.9 | 0.0015 | 25,000 | 11.2 | 0.0012 |
| 2 | | 25,000 | 15.3 | 0.0021 | 25,000 | 15.4 | 0.0018 | 25,000 | 12.3 | 0.0015 | 25,000 | 10.2 | 0.0012 | |
| 3 | | 25,000 | 14.8 | 0.0014 | 25,000 | 14.8 | 0.0012 | 25,000 | 11.8 | 0.0011 | 25,000 | 10.2 | 0.0009 | |
| 4 | | 25,000 | 14.1 | 0.0010 | 25,000 | 14.1 | 0.0008 | 25,000 | 11.2 | 0.0007 | 25,000 | 9.8 | 0.0006 | |
| 5 | | 25,000 | 13.2 | 0.0007 | 25,000 | 13.4 | 0.0006 | 25,000 | 11.8 | 0.0004 | 22,000 | 9.1 | 0.0003 | |
| 6 | | 25,000 | 15.6 | 0.0003 | 22,000 | 13.8 | 0.0002 | 22,000 | 8.7 | 0.0002 | 20,000 | 7.1 | 0.0002 | |
| 7 | | 24,000 | 15.0 | 0.0002 | 20,000 | 12.6 | 0.0002 | 20,000 | 7.9 | 0.0002 | 20,000 | 6.7 | 0.0001 | |
| 8 | | 24,000 | 12.6 | 0.0002 | 20,000 | 10.6 | 0.0002 | 20,000 | 7.1 | 0.0001 | 20,000 | 5.9 | 0.0001 | |
| 9 | | 24,000 | 11.8 | 0.0001 | 20,000 | 9.8 | 0.0001 | 18,000 | 6.3 | 0.0001 | 18,000 | 5.5 | 0.0001 | |
| 10 | | 24,000 | 9.4 | 0.0001 | 20,000 | 7.9 | 0.0001 | 18,000 | 5.9 | 0.0001 | 18,000 | 5.1 | 0.0001 | |
| 12 | | 24,000 | 7.5 | 0.0001 | 20,000 | 6.3 | 0.0001 | 18,000 | 4.7 | 0.0001 | 18,000 | 3.9 | 0.0001 | |
| 15 | | 21,500 | 3.9 | 0.0001 | 18,000 | 3.5 | 0.0001 | 16,000 | 3.1 | 0.0001 | 16,000 | 2.8 | 0.0001 | |
| 0.6 | | 2 | 25,000 | 18.4 | 0.0026 | 25,000 | 18.5 | 0.0021 | 25,000 | 12.3 | 0.0018 | 25,000 | 10.9 | 0.0014 |
| | | 3 | 25,000 | 16.9 | 0.0024 | 25,000 | 16.9 | 0.0020 | 25,000 | 11.1 | 0.0016 | 25,000 | 10.2 | 0.0012 |
| | | 4 | 25,000 | 15.9 | 0.0019 | 25,000 | 15.8 | 0.0016 | 25,000 | 10.5 | 0.0013 | 25,000 | 7.9 | 0.0010 |
| | 5 | 25,000 | 14.1 | 0.0014 | 25,000 | 14.1 | 0.0012 | 25,000 | 8.7 | 0.0008 | 22,000 | 7.1 | 0.0008 | |
| | 6 | 25,000 | 11.1 | 0.0009 | 22,000 | 9.8 | 0.0007 | 22,000 | 7.9 | 0.0006 | 20,000 | 5.9 | 0.0005 | |
| | 7 | 25,000 | 11.1 | 0.0005 | 22,000 | 9.8 | 0.0004 | 22,000 | 7.9 | 0.0003 | 20,000 | 5.9 | 0.0003 | |
| | 8 | 25,000 | 11.1 | 0.0003 | 22,000 | 9.8 | 0.0003 | 22,000 | 7.9 | 0.0002 | 20,000 | 5.9 | 0.0002 | |

1. Use a rigid and precise machine and holder.
 2. When chattering occurs, reduce the speed and feed simultaneously.
 3. Use a suitable cutting fluid with high smoke retardant.
- * Maximum speed will vary by diameter.

continued on next page





Slotting

| Hardness | | - | | | <32 HRC | | | 33-41 HRC | | | 42-50 HRC | | |
|---------------|---------|------------------------|---------------|---------|------------------------------|---------------|---------|--|---------------|---------|-------------|---------------|---------|
| Work Material | | Copper Copper Alloy | | | Mild Steels Carbon Steels | | | Hardened Steels Pre-hardened Steels Stainless Steels | | | | | |
| Cutting Speed | | 45-376 SFM* | | | 41-309 SFM* | | | 41-309 SFM* | | | 40-258 SFM* | | |
| Depth of Cut | | | | | | | | | | | | | |
| D (mm) | L2 (mm) | Speed (RPM) | Feed (in/min) | aa (in) | Speed (RPM) | Feed (in/min) | aa (in) | Speed (RPM) | Feed (in/min) | aa (in) | Speed (RPM) | Feed (in/min) | aa (in) |
| 0.6 | 10 | 24,000 | 9.4 | 0.0002 | 20,000 | 7.9 | 0.0002 | 18,000 | 5.9 | 0.0002 | 18,000 | 5.1 | 0.0001 |
| | 12 | 21,500 | 8.7 | 0.0001 | 18,000 | 7.5 | 0.0001 | 18,000 | 5.9 | 0.0001 | 18,000 | 4.7 | 0.0001 |
| | 15 | 21,500 | 5.9 | 0.0001 | 18,000 | 5.1 | 0.0001 | 16,000 | 4.3 | 0.0001 | 16,000 | 3.9 | 0.0001 |
| | 18 | 18,000 | 3.5 | 0.0001 | 15,000 | 3.1 | 0.0001 | 14,000 | 2.8 | 0.0001 | 14,000 | 2.4 | 0.0001 |
| 0.7 | 2 | 25,000 | 18.4 | 0.0030 | 25,000 | 18.5 | 0.0025 | 25,000 | 15.4 | 0.0021 | 25,000 | 15.1 | 0.0017 |
| | 4 | 25,000 | 15.9 | 0.0022 | 25,000 | 15.8 | 0.0018 | 25,000 | 10.5 | 0.0015 | 22,000 | 11.8 | 0.0012 |
| | 6 | 25,000 | 15.9 | 0.0014 | 25,000 | 15.8 | 0.0011 | 25,000 | 7.0 | 0.0010 | 22,000 | 7.9 | 0.0008 |
| | 8 | 25,000 | 11.1 | 0.0008 | 22,000 | 9.8 | 0.0007 | 22,000 | 7.9 | 0.0006 | 20,000 | 5.9 | 0.0004 |
| 10 | 25,000 | 11.1 | 0.0004 | 22,000 | 9.8 | 0.0003 | 22,000 | 7.9 | 0.0003 | 20,000 | 5.9 | 0.0002 | |
| 0.8 | 4 | 25,000 | 18.4 | 0.0025 | 25,000 | 18.5 | 0.0021 | 25,000 | 18.5 | 0.0017 | 25,000 | 15.7 | 0.0014 |
| | 6 | 25,000 | 17.1 | 0.0016 | 25,000 | 17.0 | 0.0013 | 25,000 | 15.1 | 0.0011 | 21,000 | 11.8 | 0.0009 |
| | 8 | 25,000 | 15.6 | 0.0011 | 22,000 | 13.8 | 0.0009 | 22,000 | 11.8 | 0.0008 | 18,000 | 9.8 | 0.0006 |
| | 10 | 25,000 | 15.6 | 0.0005 | 22,000 | 13.8 | 0.0004 | 22,000 | 11.8 | 0.0003 | 18,000 | 9.4 | 0.0002 |
| | 12 | 20,500 | 14.2 | 0.0003 | 17,000 | 11.8 | 0.0003 | 17,000 | 11.8 | 0.0002 | 15,000 | 7.9 | 0.0002 |
| | 14 | 20,500 | 12.6 | 0.0002 | 17,000 | 10.6 | 0.0001 | 17,000 | 9.8 | 0.0001 | 13,000 | 6.7 | 0.0001 |
| | 16 | 19,000 | 10.6 | 0.0001 | 16,000 | 9.1 | 0.0001 | 16,000 | 8.7 | 0.0001 | 12,000 | 5.9 | 0.0001 |
| | 20 | 17,000 | 7.9 | 0.0001 | 14,000 | 6.7 | 0.0001 | 14,000 | 6.3 | 0.0001 | 12,000 | 5.1 | 0.0001 |
| 24 | 14,500 | 3.9 | 0.0001 | 12,000 | 3.5 | 0.0001 | 12,000 | 3.1 | 0.0001 | 10,000 | 2.8 | 0.0001 | |
| 0.9 | 4 | 25,000 | 37.1 | 0.0028 | 25,000 | 36.9 | 0.0024 | 25,000 | 28.2 | 0.0024 | 23,000 | 25.6 | 0.0016 |
| | 6 | 25,000 | 32.8 | 0.0028 | 25,000 | 32.8 | 0.0023 | 25,000 | 27.4 | 0.0020 | 22,000 | 23.6 | 0.0016 |
| | 8 | 25,000 | 30.5 | 0.0018 | 25,000 | 30.3 | 0.0015 | 25,000 | 23.6 | 0.0013 | 19,000 | 15.7 | 0.0010 |
| | 10 | 24,000 | 28.3 | 0.0013 | 20,000 | 23.6 | 0.0011 | 20,000 | 19.7 | 0.0009 | 16,000 | 11.8 | 0.0007 |
| | 15 | 20,500 | 14.2 | 0.0004 | 17,000 | 11.8 | 0.0003 | 17,000 | 11.8 | 0.0002 | 16,000 | 11.8 | 0.0002 |
| 1.0 | 3 | 25,000 | 39.6 | 0.0043 | 25,000 | 39.4 | 0.0035 | 25,000 | 36.1 | 0.0031 | 22,000 | 31.5 | 0.0024 |
| | 4 | 25,000 | 38.3 | 0.0038 | 25,000 | 37.7 | 0.0031 | 25,000 | 36.1 | 0.0028 | 22,000 | 25.6 | 0.0020 |
| | 5 | 25,000 | 35.5 | 0.0038 | 25,000 | 36.1 | 0.0031 | 25,000 | 33.4 | 0.0028 | 20,000 | 23.6 | 0.0018 |
| | 6 | 25,000 | 36.3 | 0.0033 | 25,000 | 36.5 | 0.0028 | 25,000 | 34.1 | 0.0024 | 20,000 | 23.6 | 0.0016 |
| | 7 | 25,000 | 39.4 | 0.0024 | 25,000 | 39.4 | 0.0020 | 24,000 | 31.5 | 0.0020 | 20,000 | 19.7 | 0.0012 |
| | 8 | 25,000 | 34.4 | 0.0019 | 23,000 | 31.5 | 0.0016 | 22,000 | 27.6 | 0.0016 | 18,000 | 15.7 | 0.0012 |
| | 9 | 24,000 | 33.1 | 0.0014 | 20,000 | 27.6 | 0.0012 | 19,000 | 23.6 | 0.0012 | 18,000 | 15.7 | 0.0010 |
| | 10 | 23,000 | 28.3 | 0.0014 | 19,000 | 23.6 | 0.0012 | 18,000 | 19.7 | 0.0011 | 15,000 | 11.8 | 0.0008 |
| | 12 | 23,000 | 28.3 | 0.0009 | 19,000 | 23.6 | 0.0008 | 18,000 | 19.7 | 0.0007 | 15,000 | 11.8 | 0.0004 |
| | 14 | 18,000 | 18.9 | 0.0005 | 15,000 | 15.7 | 0.0004 | 15,000 | 15.7 | 0.0004 | 12,000 | 7.9 | 0.0003 |
| | 16 | 18,000 | 14.2 | 0.0004 | 15,000 | 11.8 | 0.0003 | 15,000 | 11.8 | 0.0003 | 12,000 | 7.9 | 0.0002 |
| | 18 | 15,500 | 10.6 | 0.0003 | 13,000 | 9.1 | 0.0002 | 13,000 | 8.7 | 0.0002 | 11,000 | 7.1 | 0.0002 |
| | 20 | 14,500 | 8.7 | 0.0002 | 12,000 | 7.5 | 0.0002 | 11,000 | 7.1 | 0.0002 | 10,000 | 5.1 | 0.0001 |
| | 22 | 13,000 | 7.5 | 0.0002 | 11,000 | 6.3 | 0.0001 | 10,000 | 5.9 | 0.0001 | 9,000 | 3.9 | 0.0001 |
| 25 | 11,000 | 3.9 | 0.0002 | 9,000 | 3.5 | 0.0001 | 9,000 | 3.3 | 0.0001 | 8,500 | 3.1 | 0.0001 | |
| 30 | 9,600 | 1.6 | 0.0001 | 8,000 | 1.6 | 0.0001 | 8,000 | 1.4 | 0.0001 | 8,000 | 1.2 | 0.0001 | |
| 1.2 | 4 | 25,000 | 44.1 | 0.0043 | 24,000 | 43.3 | 0.0035 | 23,000 | 39.4 | 0.0031 | 18,000 | 27.6 | 0.0024 |
| | 6 | 25,000 | 42.9 | 0.0038 | 23,000 | 39.4 | 0.0031 | 22,000 | 35.4 | 0.0028 | 17,000 | 23.6 | 0.0020 |
| | 8 | 24,000 | 33.1 | 0.0033 | 20,000 | 27.6 | 0.0028 | 19,000 | 27.6 | 0.0020 | 14,000 | 15.7 | 0.0016 |
| | 10 | 24,000 | 33.1 | 0.0024 | 20,000 | 27.6 | 0.0020 | 19,000 | 27.6 | 0.0016 | 14,000 | 15.7 | 0.0012 |
| | 12 | 20,500 | 28.3 | 0.0019 | 17,000 | 23.6 | 0.0016 | 16,000 | 19.7 | 0.0012 | 11,000 | 11.8 | 0.0008 |
| | 14 | 18,000 | 21.3 | 0.0007 | 15,000 | 17.7 | 0.0006 | 13,000 | 15.0 | 0.0005 | 11,000 | 9.8 | 0.0004 |
| | 16 | 14,500 | 14.2 | 0.0004 | 12,000 | 11.8 | 0.0003 | 11,000 | 9.8 | 0.0003 | 10,000 | 8.7 | 0.0002 |
| | 20 | 12,000 | 9.4 | 0.0002 | 10,000 | 7.9 | 0.0002 | 10,000 | 7.5 | 0.0002 | 9,000 | 7.1 | 0.0002 |

1. Use a rigid and precise machine and holder.
 2. When chattering occurs, reduce the speed and feed simultaneously.
 3. Use a suitable cutting fluid with high smoke retardant.
- * Maximum speed will vary by diameter.

continued on next page





List 3791 - EXOCARB® WXL®: 2 Flute, Stub Length (Continued)

Slotting

| Hardness | | - | | | <32 HRC | | | 33-41 HRC | | | 42-50 HRC | | |
|---------------|---------|------------------------|---------------|---------|------------------------------|---------------|---------|--|---------------|---------|-------------|---------------|---------|
| Work Material | | Copper Copper Alloy | | | Mild Steels Carbon Steels | | | Hardened Steels Pre-hardened Steels Stainless Steels | | | | | |
| Cutting Speed | | 45-376 SFM* | | | 41-309 SFM* | | | 41-309 SFM* | | | 40-258 SFM* | | |
| Depth of Cut | | | | | | | | | | | | | |
| D (mm) | L2 (mm) | Speed (RPM) | Feed (in/min) | aa (in) | Speed (RPM) | Feed (in/min) | aa (in) | Speed (RPM) | Feed (in/min) | aa (in) | Speed (RPM) | Feed (in/min) | aa (in) |
| 1.4 | 6 | 24,000 | 47.2 | 0.0061 | 20,000 | 39.4 | 0.0051 | 19,000 | 35.4 | 0.0043 | 15,000 | 23.6 | 0.0035 |
| | 8 | 21,500 | 37.8 | 0.0043 | 18,000 | 31.5 | 0.0035 | 17,000 | 27.6 | 0.0031 | 13,000 | 15.7 | 0.0024 |
| | 10 | 21,500 | 37.8 | 0.0028 | 18,000 | 31.5 | 0.0024 | 17,000 | 27.6 | 0.0020 | 13,000 | 15.7 | 0.0016 |
| | 12 | 21,500 | 37.8 | 0.0024 | 18,000 | 31.5 | 0.0020 | 17,000 | 27.6 | 0.0016 | 13,000 | 15.7 | 0.0012 |
| | 14 | 18,000 | 28.3 | 0.0019 | 15,000 | 23.6 | 0.0016 | 14,000 | 19.7 | 0.0014 | 11,000 | 11.8 | 0.0012 |
| | 16 | 18,000 | 28.3 | 0.0014 | 15,000 | 23.6 | 0.0012 | 14,000 | 19.7 | 0.0008 | 11,000 | 11.8 | 0.0008 |
| | 22 | 12,000 | 11.8 | 0.0002 | 10,000 | 9.8 | 0.0002 | 9,000 | 8.3 | 0.0002 | 8,000 | 7.1 | 0.0002 |
| 1.5 | 4 | 21,500 | 47.2 | 0.0066 | 18,000 | 39.4 | 0.0055 | 18,000 | 35.4 | 0.0043 | 14,000 | 23.6 | 0.0035 |
| | 6 | 21,500 | 47.2 | 0.0066 | 18,000 | 39.4 | 0.0055 | 18,000 | 35.4 | 0.0043 | 14,000 | 23.6 | 0.0035 |
| | 8 | 19,000 | 37.8 | 0.0047 | 16,000 | 31.5 | 0.0039 | 15,000 | 27.6 | 0.0031 | 12,000 | 15.7 | 0.0028 |
| | 10 | 19,000 | 37.8 | 0.0038 | 16,000 | 31.5 | 0.0031 | 15,000 | 27.6 | 0.0028 | 12,000 | 15.7 | 0.0020 |
| | 12 | 19,000 | 37.8 | 0.0028 | 16,000 | 31.5 | 0.0024 | 15,000 | 27.6 | 0.0020 | 12,000 | 15.7 | 0.0016 |
| | 14 | 19,000 | 37.8 | 0.0024 | 16,000 | 31.5 | 0.0020 | 15,000 | 27.6 | 0.0018 | 12,000 | 15.7 | 0.0014 |
| | 16 | 17,000 | 28.3 | 0.0024 | 14,000 | 23.6 | 0.0020 | 13,000 | 19.7 | 0.0016 | 10,000 | 11.8 | 0.0012 |
| | 18 | 17,000 | 28.3 | 0.0014 | 14,000 | 23.6 | 0.0012 | 13,000 | 19.7 | 0.0008 | 10,000 | 11.8 | 0.0008 |
| | 20 | 14,500 | 19.7 | 0.0009 | 12,000 | 16.5 | 0.0008 | 11,000 | 15.0 | 0.0006 | 10,000 | 11.8 | 0.0004 |
| | 25 | 12,000 | 13.4 | 0.0004 | 10,000 | 11.4 | 0.0003 | 9,000 | 9.1 | 0.0003 | 8,000 | 8.3 | 0.0002 |
| | 30 | 9,000 | 7.9 | 0.0002 | 7,500 | 6.7 | 0.0002 | 7,400 | 5.9 | 0.0002 | 7,000 | 5.1 | 0.0001 |
| | 38 | 8,150 | 3.9 | 0.0002 | 6,800 | 3.5 | 0.0002 | 6,700 | 3.3 | 0.0001 | 6,000 | 3.0 | 0.0001 |
| | 40 | 7,200 | 3.5 | 0.0002 | 6,000 | 3.0 | 0.0001 | 5,900 | 2.8 | 0.0001 | 5,600 | 2.4 | 0.0001 |
| 45 | 6,600 | 2.0 | 0.0002 | 5,500 | 1.8 | 0.0001 | 5,400 | 1.6 | 0.0001 | 5,400 | 1.6 | 0.0000 | |
| 1.6 | 6 | 20,500 | 47.2 | 0.0071 | 17,000 | 39.4 | 0.0059 | 17,000 | 35.4 | 0.0051 | 13,000 | 23.6 | 0.0039 |
| | 8 | 18,000 | 37.8 | 0.0066 | 15,000 | 31.5 | 0.0055 | 15,000 | 27.6 | 0.0047 | 11,000 | 15.7 | 0.0039 |
| | 10 | 18,000 | 37.8 | 0.0052 | 15,000 | 31.5 | 0.0043 | 15,000 | 27.6 | 0.0035 | 11,000 | 15.7 | 0.0028 |
| | 12 | 18,000 | 37.8 | 0.0033 | 15,000 | 31.5 | 0.0028 | 15,000 | 27.6 | 0.0024 | 11,000 | 15.7 | 0.0020 |
| | 14 | 18,000 | 37.8 | 0.0028 | 15,000 | 31.5 | 0.0024 | 15,000 | 27.6 | 0.0020 | 11,000 | 15.7 | 0.0016 |
| | 16 | 15,500 | 28.3 | 0.0024 | 13,000 | 23.6 | 0.0020 | 13,000 | 19.7 | 0.0016 | 9,000 | 11.8 | 0.0014 |
| | 18 | 15,500 | 28.3 | 0.0019 | 13,000 | 23.6 | 0.0016 | 13,000 | 19.7 | 0.0012 | 9,000 | 11.8 | 0.0012 |
| | 20 | 15,500 | 28.3 | 0.0009 | 13,000 | 23.6 | 0.0008 | 13,000 | 19.7 | 0.0008 | 9,000 | 11.8 | 0.0004 |
| 1.8 | 6 | 19,000 | 51.2 | 0.0104 | 16,000 | 43.3 | 0.0087 | 15,000 | 39.4 | 0.0071 | 12,000 | 27.6 | 0.0055 |
| | 8 | 19,000 | 51.2 | 0.0099 | 16,000 | 43.3 | 0.0083 | 15,000 | 39.4 | 0.0067 | 12,000 | 27.6 | 0.0051 |
| | 10 | 17,000 | 37.8 | 0.0057 | 14,000 | 31.5 | 0.0047 | 14,000 | 27.6 | 0.0039 | 10,000 | 19.7 | 0.0031 |
| | 12 | 17,000 | 37.8 | 0.0047 | 14,000 | 31.5 | 0.0039 | 14,000 | 27.6 | 0.0031 | 10,000 | 19.7 | 0.0028 |
| | 14 | 17,000 | 37.8 | 0.0038 | 14,000 | 31.5 | 0.0031 | 14,000 | 27.6 | 0.0024 | 10,000 | 19.7 | 0.0020 |
| | 16 | 17,000 | 37.8 | 0.0033 | 14,000 | 31.5 | 0.0028 | 14,000 | 27.6 | 0.0020 | 10,000 | 19.7 | 0.0016 |
| | 18 | 14,500 | 28.3 | 0.0024 | 12,000 | 23.6 | 0.0020 | 12,000 | 19.7 | 0.0018 | 8,000 | 15.7 | 0.0014 |
| | 20 | 14,500 | 28.3 | 0.0019 | 12,000 | 23.6 | 0.0016 | 12,000 | 19.7 | 0.0016 | 8,000 | 15.7 | 0.0012 |
| 25 | 9,600 | 14.2 | 0.0004 | 8,000 | 11.8 | 0.0004 | 7,000 | 9.8 | 0.0003 | 6,000 | 7.9 | 0.0003 | |
| 2.0 | 6 | 18,000 | 51.2 | 0.0146 | 15,000 | 43.3 | 0.0122 | 14,000 | 39.4 | 0.0102 | 11,000 | 27.6 | 0.0083 |
| | 8 | 18,000 | 51.2 | 0.0123 | 15,000 | 43.3 | 0.0102 | 14,000 | 39.4 | 0.0087 | 11,000 | 27.6 | 0.0071 |
| | 10 | 15,500 | 37.8 | 0.0113 | 13,000 | 31.5 | 0.0094 | 12,000 | 27.6 | 0.0079 | 9,000 | 19.7 | 0.0063 |
| | 12 | 15,500 | 37.8 | 0.0061 | 13,000 | 31.5 | 0.0051 | 12,000 | 27.6 | 0.0043 | 9,000 | 19.7 | 0.0035 |
| | 14 | 15,500 | 37.8 | 0.0052 | 13,000 | 31.5 | 0.0043 | 12,000 | 27.6 | 0.0035 | 9,000 | 19.7 | 0.0028 |
| | 16 | 15,500 | 37.8 | 0.0038 | 13,000 | 31.5 | 0.0031 | 12,000 | 27.6 | 0.0028 | 9,000 | 19.7 | 0.0024 |
| | 18 | 15,500 | 37.8 | 0.0033 | 13,000 | 31.5 | 0.0028 | 12,000 | 27.6 | 0.0024 | 9,000 | 19.7 | 0.0020 |
| | 20 | 13,000 | 28.3 | 0.0024 | 11,000 | 23.6 | 0.0020 | 10,000 | 19.7 | 0.0020 | 7,000 | 15.7 | 0.0016 |
| 25 | 13,000 | 28.3 | 0.0014 | 11,000 | 23.6 | 0.0012 | 10,000 | 19.7 | 0.0008 | 7,000 | 15.7 | 0.0008 | |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

* Maximum speed will vary by diameter.

continued on next page





Slotting

| Hardness | | - | | | <32 HRC | | | 33-41 HRC | | | 42-50 HRC | | |
|---------------|---------|------------------------|---------------|---------|------------------------------|---------------|---------|--|---------------|---------|-------------|---------------|---------|
| Work Material | | Copper Copper Alloy | | | Mild Steels Carbon Steels | | | Hardened Steels Pre-hardened Steels Stainless Steels | | | | | |
| Cutting Speed | | 45-376 SFM* | | | 41-309 SFM* | | | 41-309 SFM* | | | 40-258 SFM* | | |
| Depth of Cut | | | | | | | | | | | | | |
| D (mm) | L2 (mm) | Speed (RPM) | Feed (in/min) | aa (in) | Speed (RPM) | Feed (in/min) | aa (in) | Speed (RPM) | Feed (in/min) | aa (in) | Speed (RPM) | Feed (in/min) | aa (in) |
| 2.0 | 30 | 13,000 | 28.3 | 0.0009 | 11,000 | 23.6 | 0.0008 | 10,000 | 19.7 | 0.0004 | 7,000 | 15.7 | 0.0004 |
| | 35 | 11,000 | 18.1 | 0.0004 | 9,000 | 15.4 | 0.0004 | 8,000 | 15.0 | 0.0003 | 6,000 | 10.6 | 0.0003 |
| | 40 | 7,800 | 9.4 | 0.0002 | 6,500 | 7.9 | 0.0002 | 6,000 | 7.1 | 0.0002 | 6,000 | 5.5 | 0.0001 |
| | 50 | 6,950 | 4.7 | 0.0001 | 5,800 | 3.9 | 0.0001 | 5,700 | 3.7 | 0.0001 | 5,000 | 3.1 | 0.0001 |
| | 60 | 6,000 | 2.4 | 0.0000 | 5,000 | 2.0 | 0.0000 | 5,000 | 1.8 | 0.0000 | 5,000 | 1.6 | 0.0000 |
| 2.5 | 8 | 14,500 | 51.2 | 0.0184 | 12,000 | 43.3 | 0.0154 | 11,000 | 39.4 | 0.0130 | 9,000 | 27.6 | 0.0102 |
| | 10 | 14,500 | 51.2 | 0.0156 | 12,000 | 43.3 | 0.0130 | 11,000 | 39.4 | 0.0110 | 9,000 | 27.6 | 0.0087 |
| | 12 | 14,500 | 51.2 | 0.0109 | 12,000 | 43.3 | 0.0091 | 11,000 | 39.4 | 0.0075 | 9,000 | 27.6 | 0.0059 |
| | 14 | 12,000 | 37.8 | 0.0080 | 10,000 | 31.5 | 0.0067 | 9,000 | 27.6 | 0.0055 | 7,000 | 19.7 | 0.0043 |
| | 16 | 12,000 | 37.8 | 0.0057 | 10,000 | 31.5 | 0.0047 | 9,000 | 27.6 | 0.0039 | 7,000 | 19.7 | 0.0031 |
| | 18 | 12,000 | 37.8 | 0.0052 | 10,000 | 31.5 | 0.0043 | 9,000 | 27.6 | 0.0035 | 7,000 | 19.7 | 0.0028 |
| | 20 | 12,000 | 37.8 | 0.0043 | 10,000 | 31.5 | 0.0035 | 9,000 | 27.6 | 0.0031 | 7,000 | 19.7 | 0.0024 |
| | 25 | 9,600 | 28.3 | 0.0038 | 8,000 | 23.6 | 0.0031 | 8,000 | 19.7 | 0.0024 | 6,000 | 15.7 | 0.0020 |
| | 30 | 9,600 | 28.3 | 0.0014 | 8,000 | 23.6 | 0.0012 | 8,000 | 19.7 | 0.0012 | 6,000 | 15.7 | 0.0008 |
| | 40 | 7,800 | 13.0 | 0.0003 | 6,500 | 11.0 | 0.0003 | 6,000 | 10.6 | 0.0002 | 6,000 | 9.4 | 0.0002 |
| 50 | 6,950 | 7.9 | 0.0001 | 5,800 | 6.7 | 0.0001 | 5,700 | 6.3 | 0.0001 | 5,000 | 5.1 | 0.0001 | |
| 3.0 | 8 | 12,000 | 51.2 | 0.0170 | 10,000 | 43.3 | 0.0142 | 10,000 | 39.4 | 0.0118 | 8,000 | 27.6 | 0.0094 |
| | 10 | 12,000 | 51.2 | 0.0137 | 10,000 | 43.3 | 0.0114 | 10,000 | 39.4 | 0.0094 | 8,000 | 27.6 | 0.0075 |
| | 12 | 12,000 | 51.2 | 0.0128 | 10,000 | 43.3 | 0.0106 | 10,000 | 39.4 | 0.0091 | 8,000 | 27.6 | 0.0071 |
| | 14 | 12,000 | 51.2 | 0.0118 | 10,000 | 43.3 | 0.0098 | 10,000 | 39.4 | 0.0083 | 8,000 | 27.6 | 0.0067 |
| | 16 | 12,000 | 37.8 | 0.0094 | 10,000 | 31.5 | 0.0079 | 9,000 | 27.6 | 0.0067 | 6,000 | 19.7 | 0.0051 |
| | 18 | 12,000 | 37.8 | 0.0066 | 10,000 | 31.5 | 0.0055 | 9,000 | 27.6 | 0.0047 | 6,000 | 19.7 | 0.0039 |
| | 20 | 12,000 | 37.8 | 0.0061 | 10,000 | 31.5 | 0.0051 | 9,000 | 27.6 | 0.0043 | 6,000 | 19.7 | 0.0031 |
| | 25 | 12,000 | 37.8 | 0.0052 | 10,000 | 31.5 | 0.0043 | 9,000 | 27.6 | 0.0035 | 6,000 | 19.7 | 0.0028 |
| | 30 | 9,600 | 28.3 | 0.0043 | 8,000 | 23.6 | 0.0035 | 7,000 | 19.7 | 0.0031 | 5,000 | 15.7 | 0.0024 |
| | 35 | 9,600 | 28.3 | 0.0033 | 8,000 | 23.6 | 0.0028 | 7,000 | 19.7 | 0.0024 | 5,000 | 15.7 | 0.0020 |
| 40 | 9,600 | 28.3 | 0.0019 | 8,000 | 23.6 | 0.0016 | 7,000 | 19.7 | 0.0012 | 5,000 | 15.7 | 0.0008 | |
| 50 | 6,950 | 12.6 | 0.0004 | 5,800 | 10.6 | 0.0004 | 5,700 | 9.4 | 0.0002 | 5,000 | 7.9 | 0.0002 | |
| 4.0 | 12 | 8,550 | 53.1 | 0.0180 | 7,000 | 43.3 | 0.0150 | 7,000 | 39.4 | 0.0126 | 6,000 | 27.6 | 0.0102 |
| | 16 | 8,550 | 53.1 | 0.0170 | 7,000 | 43.3 | 0.0142 | 7,000 | 39.4 | 0.0118 | 6,000 | 27.6 | 0.0094 |
| | 20 | 8,550 | 38.2 | 0.0161 | 7,000 | 31.5 | 0.0134 | 6,000 | 27.6 | 0.0110 | 5,000 | 19.7 | 0.0087 |
| | 25 | 8,550 | 38.2 | 0.0123 | 7,000 | 31.5 | 0.0102 | 6,000 | 27.6 | 0.0087 | 5,000 | 19.7 | 0.0071 |
| | 30 | 8,550 | 38.2 | 0.0090 | 7,000 | 31.5 | 0.0075 | 6,000 | 27.6 | 0.0063 | 5,000 | 19.7 | 0.0051 |
| | 35 | 8,550 | 38.2 | 0.0080 | 7,000 | 31.5 | 0.0067 | 6,000 | 27.6 | 0.0055 | 5,000 | 19.7 | 0.0043 |
| | 40 | 7,300 | 28.7 | 0.0066 | 6,000 | 23.6 | 0.0055 | 5,000 | 23.6 | 0.0047 | 4,000 | 15.7 | 0.0039 |
| | 45 | 7,300 | 28.7 | 0.0057 | 6,000 | 23.6 | 0.0047 | 5,000 | 23.6 | 0.0039 | 4,000 | 15.7 | 0.0031 |
| | 50 | 7,300 | 28.7 | 0.0024 | 6,000 | 23.6 | 0.0020 | 5,000 | 23.6 | 0.0016 | 4,000 | 15.7 | 0.0012 |
| 60 | 6,100 | 13.4 | 0.0009 | 5,000 | 11.0 | 0.0008 | 5,000 | 10.6 | 0.0008 | 4,000 | 9.8 | 0.0004 | |
| 5.0 | 16 | 7,300 | 53.1 | 0.0213 | 6,000 | 43.3 | 0.0177 | 5,000 | 35.4 | 0.0150 | 5,000 | 23.6 | 0.0118 |
| | 20 | 7,300 | 45.3 | 0.0203 | 6,000 | 37.4 | 0.0169 | 5,000 | 30.7 | 0.0142 | 5,000 | 23.6 | 0.0114 |
| | 25 | 6,100 | 38.2 | 0.0198 | 5,000 | 31.5 | 0.0165 | 5,000 | 27.6 | 0.0138 | 5,000 | 23.6 | 0.0110 |
| | 30 | 6,100 | 38.2 | 0.0180 | 5,000 | 31.5 | 0.0150 | 5,000 | 27.6 | 0.0118 | 5,000 | 23.6 | 0.0098 |
| | 35 | 6,100 | 38.2 | 0.0156 | 5,000 | 31.5 | 0.0130 | 5,000 | 27.6 | 0.0110 | 5,000 | 23.6 | 0.0087 |
| | 40 | 6,100 | 28.7 | 0.0134 | 5,000 | 23.6 | 0.0110 | 4,000 | 22.8 | 0.0079 | 4,000 | 19.7 | 0.0071 |
| | 50 | 4,900 | 24.0 | 0.0071 | 4,000 | 19.7 | 0.0059 | 3,000 | 15.7 | 0.0051 | 3,000 | 15.7 | 0.0039 |
| 60 | 4,900 | 16.5 | 0.0028 | 4,000 | 13.8 | 0.0024 | 3,000 | 13.0 | 0.0024 | 3,000 | 11.8 | 0.0016 | |

1. Use a rigid and precise machine and holder.
 2. When chattering occurs, reduce the speed and feed simultaneously.
 3. Use a suitable cutting fluid with high smoke retardant.
- * Maximum speed will vary by diameter.





List 3720 - EXOCARB® WXL®: 2 Flute, Stub Length

Slotting

| Hardness | - | | <32 HRC | | 33-41 HRC | | 42-50 HRC | | | | | | | | | | | |
|---------------|-------------------------|-------------|---|-------------|--|-------------|-------------|-------------|-------|------|-----|------|--|--|--|--|--|--|
| Work Material | Copper Copper Alloys | | Mild Steels Carbon Steels | | Hardened Steels, Pre-hardened Steels Stainless Steels | | | | | | | | | | | | | |
| Cutting Speed | 52-682 SFM* | | 41-323 SFM* | | 41-241 SFM* | | 41-208 SFM* | | | | | | | | | | | |
| Depth of Cut | | | <table border="1"> <tr><th>Dia</th><th>aa</th></tr> <tr><td>D<1</td><td>0.1D</td></tr> <tr><td>1≤D<3</td><td>0.3D</td></tr> <tr><td>3≤D</td><td>0.5D</td></tr> </table> | | Dia | aa | D<1 | 0.1D | 1≤D<3 | 0.3D | 3≤D | 0.5D | | | | | | |
| | Dia | aa | | | | | | | | | | | | | | | | |
| D<1 | 0.1D | | | | | | | | | | | | | | | | | |
| 1≤D<3 | 0.3D | | | | | | | | | | | | | | | | | |
| 3≤D | 0.5D | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | |
| 0.1 | 25,000 | 2.4 | 25,000 | 2.0 | 25,000 | 1.8 | 25,000 | 0.9 | | | | | | | | | | |
| 0.2 | 25,000 | 3.3 | 25,000 | 2.7 | 25,000 | 2.2 | 25,000 | 1.1 | | | | | | | | | | |
| 0.3 | 25,000 | 4.1 | 25,000 | 3.4 | 25,000 | 2.5 | 25,000 | 1.7 | | | | | | | | | | |
| 0.4 | 25,000 | 4.5 | 25,000 | 3.7 | 25,000 | 2.7 | 25,000 | 2.1 | | | | | | | | | | |
| 0.5 | 25,000 | 4.9 | 25,000 | 3.8 | 25,000 | 3.5 | 25,000 | 2.7 | | | | | | | | | | |
| 0.6 | 25,000 | 5.5 | 25,000 | 4.4 | 24,500 | 4.3 | 21,000 | 3.0 | | | | | | | | | | |
| 0.7 | 25,000 | 6.1 | 25,000 | 4.9 | 21,500 | 4.3 | 18,500 | 3.0 | | | | | | | | | | |
| 0.8 | 25,000 | 7.1 | 25,000 | 5.5 | 19,500 | 4.3 | 17,000 | 3.1 | | | | | | | | | | |
| 0.9 | 25,000 | 7.9 | 23,500 | 5.9 | 17,000 | 4.3 | 15,000 | 3.1 | | | | | | | | | | |
| 1.0 | 25,000 | 8.5 | 22,000 | 5.9 | 15,500 | 4.3 | 13,500 | 3.1 | | | | | | | | | | |
| 1.1 | 25,000 | 8.3 | 20,000 | 5.9 | 14,000 | 4.3 | 12,500 | 3.1 | | | | | | | | | | |
| 1.2 | 25,000 | 8.3 | 18,500 | 5.9 | 13,500 | 4.3 | 11,500 | 3.1 | | | | | | | | | | |
| 1.3 | 25,000 | 8.6 | 17,500 | 5.9 | 12,500 | 4.3 | 11,000 | 3.1 | | | | | | | | | | |
| 1.4 | 25,000 | 9.2 | 16,000 | 5.9 | 11,500 | 4.3 | 10,000 | 3.1 | | | | | | | | | | |
| 1.5 | 25,000 | 9.8 | 15,500 | 5.9 | 11,000 | 4.3 | 9,900 | 3.1 | | | | | | | | | | |
| 1.6 | 25,000 | 10.1 | 15,000 | 5.9 | 10,500 | 4.3 | 9,400 | 3.1 | | | | | | | | | | |
| 1.7 | 25,000 | 10.8 | 14,000 | 5.9 | 9,900 | 4.3 | 8,800 | 3.1 | | | | | | | | | | |
| 1.8 | 25,000 | 11.4 | 13,500 | 6.3 | 9,400 | 4.3 | 8,500 | 3.1 | | | | | | | | | | |
| 1.9 | 25,000 | 12.1 | 12,500 | 6.3 | 8,800 | 4.3 | 7,900 | 3.3 | | | | | | | | | | |
| 2.0 | 25,000 | 12.5 | 12,000 | 6.3 | 8,700 | 4.3 | 7,900 | 3.5 | | | | | | | | | | |
| 2.1 | 25,000 | 13.9 | 11,500 | 6.7 | 8,300 | 4.3 | 7,400 | 3.5 | | | | | | | | | | |
| 2.2 | 25,000 | 14.4 | 11,000 | 6.7 | 8,200 | 4.3 | 7,200 | 3.5 | | | | | | | | | | |
| 2.3 | 25,000 | 14.7 | 11,000 | 7.1 | 8,000 | 4.3 | 7,000 | 3.5 | | | | | | | | | | |
| 2.4 | 25,000 | 16.3 | 10,500 | 7.1 | 7,900 | 4.3 | 6,900 | 3.5 | | | | | | | | | | |
| 2.5 | 24,500 | 16.9 | 10,500 | 7.9 | 7,600 | 4.3 | 6,600 | 3.5 | | | | | | | | | | |
| 2.6 | 23,500 | 18.5 | 9,800 | 7.9 | 7,400 | 4.9 | 6,300 | 3.5 | | | | | | | | | | |
| 2.7 | 23,000 | 18.5 | 9,500 | 7.9 | 7,100 | 4.9 | 6,100 | 3.5 | | | | | | | | | | |
| 2.8 | 22,000 | 18.5 | 9,100 | 8.3 | 6,900 | 4.9 | 5,800 | 3.7 | | | | | | | | | | |
| 2.9 | 21,500 | 18.5 | 8,800 | 8.3 | 6,700 | 4.9 | 5,700 | 3.7 | | | | | | | | | | |
| 3.0 | 21,000 | 21.3 | 8,900 | 9.1 | 6,800 | 5.1 | 5,700 | 3.9 | | | | | | | | | | |
| 3.1 | 20,000 | 21.7 | 8,700 | 9.4 | 6,700 | 5.1 | 5,600 | 3.9 | | | | | | | | | | |
| 3.2 | 19,500 | 22.0 | 8,400 | 9.4 | 6,500 | 5.7 | 5,400 | 4.1 | | | | | | | | | | |
| 3.3 | 19,000 | 22.0 | 8,100 | 9.8 | 6,300 | 5.7 | 5,200 | 4.1 | | | | | | | | | | |
| 3.4 | 18,000 | 22.0 | 7,900 | 9.8 | 6,100 | 5.7 | 5,100 | 4.1 | | | | | | | | | | |
| 3.5 | 18,000 | 22.0 | 7,800 | 9.8 | 6,000 | 6.1 | 5,000 | 4.1 | | | | | | | | | | |
| 3.6 | 17,500 | 22.8 | 7,600 | 10.6 | 5,900 | 6.1 | 4,900 | 4.3 | | | | | | | | | | |
| 3.7 | 16,500 | 22.8 | 7,400 | 10.6 | 5,700 | 6.1 | 4,700 | 4.3 | | | | | | | | | | |
| 3.8 | 16,000 | 23.2 | 7,300 | 11.0 | 5,700 | 6.1 | 4,600 | 4.3 | | | | | | | | | | |
| 3.9 | 15,500 | 23.2 | 7,100 | 11.0 | 5,500 | 6.3 | 4,500 | 4.3 | | | | | | | | | | |
| 4.0 | 15,500 | 23.6 | 7,000 | 11.0 | 5,500 | 6.3 | 4,500 | 4.5 | | | | | | | | | | |
| 4.1 | 15,500 | 25.2 | 6,900 | 11.4 | 5,400 | 6.3 | 4,400 | 4.5 | | | | | | | | | | |
| 4.2 | 15,000 | 25.2 | 6,800 | 11.4 | 5,300 | 6.3 | 4,400 | 4.5 | | | | | | | | | | |
| 4.3 | 14,000 | 25.2 | 6,700 | 12.2 | 5,200 | 6.3 | 4,300 | 4.5 | | | | | | | | | | |
| 4.4 | 14,000 | 26.4 | 6,600 | 12.6 | 5,100 | 6.7 | 4,200 | 4.9 | | | | | | | | | | |
| 4.5 | 14,000 | 26.4 | 6,600 | 12.6 | 5,100 | 6.7 | 4,200 | 4.9 | | | | | | | | | | |
| 4.6 | 13,500 | 27.6 | 6,500 | 13.0 | 4,900 | 6.7 | 4,100 | 4.9 | | | | | | | | | | |
| 4.7 | 13,500 | 27.6 | 6,500 | 13.8 | 4,900 | 6.7 | 4,100 | 4.9 | | | | | | | | | | |
| 4.8 | 13,500 | 28.0 | 6,400 | 13.8 | 4,800 | 6.7 | 4,100 | 4.9 | | | | | | | | | | |
| 4.9 | 13,500 | 28.0 | 6,300 | 14.2 | 4,700 | 6.7 | 4,000 | 4.9 | | | | | | | | | | |
| 5.0 | 12,500 | 28.3 | 6,200 | 14.6 | 4,600 | 6.7 | 3,900 | 5.1 | | | | | | | | | | |

1. Use a rigid and precise machine and holder.
 2. When chattering occurs, reduce the speed and feed simultaneously.
 3. Use a suitable cutting fluid with high smoke retardant.
- *Maximum speed will vary by diameter.

continued on next page





Slotting

| Hardness | - | <32 HRC | 33-41 HRC | 42-50 HRC | | | | | | | | |
|---------------|---|------------------------------|--|-------------|-----------|-------------|-----------|-------------|-------|------|-----|------|
| Work Material | Copper Copper Alloys | Mild Steels Carbon Steels | Hardened Steels, Pre-hardened Steels Stainless Steels | | | | | | | | | |
| Cutting Speed | 52-682 SFM* | 41-323 SFM* | 41-241 SFM* | 41-208 SFM* | | | | | | | | |
| Depth of Cut | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> </tr> </thead> <tbody> <tr> <td>D<1</td> <td>0.1D</td> </tr> <tr> <td>1≤D<3</td> <td>0.3D</td> </tr> <tr> <td>3≤D</td> <td>0.5D</td> </tr> </tbody> </table> | | | | Dia | aa | D<1 | 0.1D | 1≤D<3 | 0.3D | 3≤D | 0.5D |
| | Dia | aa | | | | | | | | | | |
| D<1 | 0.1D | | | | | | | | | | | |
| 1≤D<3 | 0.3D | | | | | | | | | | | |
| 3≤D | 0.5D | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | |
| 5.1 | 12,500 | 28.3 | 6,100 | 14.6 | 4,500 | 6.7 | 3,900 | 5.1 | | | | |
| 5.2 | 12,000 | 28.3 | 6,000 | 14.6 | 4,400 | 6.7 | 3,800 | 5.1 | | | | |
| 5.3 | 12,000 | 28.3 | 5,900 | 14.6 | 4,400 | 6.7 | 3,800 | 5.1 | | | | |
| 5.4 | 11,500 | 28.3 | 5,800 | 14.6 | 4,300 | 6.7 | 3,600 | 5.1 | | | | |
| 5.5 | 11,500 | 28.3 | 5,700 | 14.6 | 4,200 | 6.7 | 3,500 | 5.1 | | | | |
| 5.6 | 11,500 | 28.3 | 5,600 | 14.6 | 4,100 | 6.7 | 3,500 | 5.1 | | | | |
| 5.7 | 11,000 | 28.3 | 5,500 | 14.6 | 4,000 | 6.7 | 3,400 | 5.1 | | | | |
| 5.8 | 11,000 | 28.0 | 5,400 | 14.6 | 3,900 | 6.7 | 3,300 | 5.1 | | | | |
| 5.9 | 10,500 | 28.0 | 5,300 | 14.6 | 3,800 | 6.7 | 3,300 | 5.1 | | | | |
| 6.0 | 10,000 | 28.0 | 5,200 | 14.6 | 3,800 | 6.7 | 3,200 | 5.1 | | | | |



1. Use a rigid and precise machine and holder.
 2. When chattering occurs, reduce the speed and feed simultaneously.
 3. Use a suitable cutting fluid with high smoke retardant.
- *Maximum speed will vary by diameter.





List 3721 - EXOCARB® WXL®: 2 Flute, Stub Length

Slotting

| Hardness | - | | <32 HRC | | 33-41 HRC | | 42-50 HRC | | | | | | | | | | | |
|---------------|------------------------|-------------|---|-------------|--|-------------|-----------|-------------|-------|------|-----|------|--|--|--|--|--|--|
| Work Material | Copper Copper Alloy | | Mild Steels Carbon Steels | | Hardened Steels, Pre-hardened Steels Stainless Steels | | | | | | | | | | | | | |
| Depth of Cut | | | <table border="1"> <tr> <th>Dia</th> <th>aa</th> </tr> <tr> <td>D<1</td> <td>0.1D</td> </tr> <tr> <td>1≤D<3</td> <td>0.3D</td> </tr> <tr> <td>3≤D</td> <td>0.5D</td> </tr> </table> | | Dia | aa | D<1 | 0.1D | 1≤D<3 | 0.3D | 3≤D | 0.5D | | | | | | |
| | Dia | aa | | | | | | | | | | | | | | | | |
| D<1 | 0.1D | | | | | | | | | | | | | | | | | |
| 1≤D<3 | 0.3D | | | | | | | | | | | | | | | | | |
| 3≤D | 0.5D | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | |
| 0.1 | 25,000 | 2.0 | 25,000 | 2.2 | 25,000 | 1.8 | 25,000 | 0.9 | | | | | | | | | | |
| 0.2 | 25,000 | 2.8 | 25,000 | 2.8 | 25,000 | 2.3 | 25,000 | 1.1 | | | | | | | | | | |
| 0.3 | 25,000 | 3.3 | 25,000 | 3.4 | 25,000 | 2.5 | 25,000 | 1.7 | | | | | | | | | | |
| 0.4 | 25,000 | 3.7 | 25,000 | 3.7 | 25,000 | 2.8 | 25,000 | 2.1 | | | | | | | | | | |
| 0.5 | 25,000 | 3.9 | 25,000 | 3.8 | 25,000 | 3.5 | 22,000 | 2.4 | | | | | | | | | | |
| 0.6 | 25,000 | 4.5 | 25,000 | 4.4 | 19,500 | 3.5 | 17,000 | 2.4 | | | | | | | | | | |
| 0.7 | 25,000 | 4.9 | 24,000 | 4.7 | 17,000 | 3.5 | 15,000 | 2.4 | | | | | | | | | | |
| 0.8 | 25,000 | 5.7 | 21,500 | 4.7 | 15,500 | 3.5 | 13,500 | 2.6 | | | | | | | | | | |
| 0.9 | 25,000 | 6.4 | 19,000 | 4.7 | 13,500 | 3.5 | 12,000 | 2.6 | | | | | | | | | | |
| 1.0 | 25,000 | 7.3 | 17,500 | 4.7 | 12,500 | 3.5 | 11,000 | 2.6 | | | | | | | | | | |
| 1.1 | 25,000 | 7.8 | 16,000 | 4.7 | 11,500 | 3.5 | 9,900 | 2.6 | | | | | | | | | | |
| 1.2 | 25,000 | 8.3 | 15,000 | 4.7 | 10,500 | 3.5 | 9,300 | 2.6 | | | | | | | | | | |
| 1.3 | 25,000 | 8.5 | 14,000 | 4.7 | 9,900 | 3.5 | 8,700 | 2.6 | | | | | | | | | | |
| 1.4 | 25,000 | 9.3 | 13,000 | 4.7 | 9,200 | 3.5 | 8,100 | 2.6 | | | | | | | | | | |
| 1.5 | 25,000 | 9.8 | 12,500 | 4.7 | 8,900 | 3.5 | 7,900 | 2.6 | | | | | | | | | | |
| 1.6 | 25,000 | 10.2 | 12,000 | 4.7 | 8,500 | 3.5 | 7,500 | 2.6 | | | | | | | | | | |
| 1.7 | 25,000 | 10.9 | 11,000 | 4.7 | 7,900 | 3.5 | 7,000 | 2.6 | | | | | | | | | | |
| 1.8 | 25,000 | 11.2 | 10,500 | 5.1 | 7,500 | 3.5 | 6,800 | 2.7 | | | | | | | | | | |
| 1.9 | 25,000 | 12.1 | 10,000 | 5.1 | 7,100 | 3.5 | 6,300 | 2.7 | | | | | | | | | | |
| 2.0 | 24,000 | 12.2 | 9,700 | 5.1 | 7,000 | 3.5 | 6,300 | 2.8 | | | | | | | | | | |
| 2.1 | 23,000 | 13.0 | 9,300 | 5.5 | 6,600 | 3.5 | 5,900 | 2.8 | | | | | | | | | | |
| 2.2 | 22,500 | 13.0 | 9,000 | 5.5 | 6,500 | 3.5 | 5,700 | 2.8 | | | | | | | | | | |
| 2.3 | 22,000 | 13.0 | 8,800 | 5.9 | 6,400 | 3.5 | 5,600 | 2.8 | | | | | | | | | | |
| 2.4 | 20,500 | 13.8 | 8,600 | 5.9 | 6,300 | 3.5 | 5,500 | 2.8 | | | | | | | | | | |
| 2.5 | 20,000 | 13.8 | 8,200 | 6.3 | 6,100 | 3.5 | 5,300 | 2.8 | | | | | | | | | | |
| 2.6 | 19,000 | 15.0 | 7,900 | 6.3 | 5,900 | 3.9 | 5,000 | 2.8 | | | | | | | | | | |
| 2.7 | 18,000 | 15.0 | 7,600 | 6.3 | 5,700 | 3.9 | 4,900 | 2.8 | | | | | | | | | | |
| 2.8 | 17,500 | 15.0 | 7,300 | 6.7 | 5,500 | 3.9 | 4,700 | 3.0 | | | | | | | | | | |
| 2.9 | 17,000 | 15.0 | 7,100 | 6.7 | 5,300 | 3.9 | 4,500 | 3.0 | | | | | | | | | | |
| 3.0 | 16,000 | 15.7 | 6,900 | 6.7 | 5,300 | 3.9 | 4,400 | 3.0 | | | | | | | | | | |
| 3.1 | 15,500 | 16.1 | 6,700 | 7.1 | 5,100 | 3.9 | 4,300 | 3.0 | | | | | | | | | | |
| 3.2 | 15,000 | 16.5 | 6,500 | 7.1 | 5,000 | 4.3 | 4,200 | 3.1 | | | | | | | | | | |
| 3.3 | 14,500 | 16.5 | 6,300 | 7.5 | 4,800 | 4.3 | 4,000 | 3.1 | | | | | | | | | | |
| 3.4 | 14,000 | 16.5 | 6,100 | 7.5 | 4,600 | 4.3 | 3,900 | 3.1 | | | | | | | | | | |
| 3.5 | 14,000 | 16.5 | 6,000 | 7.5 | 4,600 | 4.7 | 3,800 | 3.1 | | | | | | | | | | |
| 3.6 | 13,500 | 16.9 | 5,900 | 7.9 | 4,500 | 4.7 | 3,700 | 3.3 | | | | | | | | | | |
| 3.7 | 12,500 | 16.9 | 5,700 | 7.9 | 4,400 | 4.7 | 3,600 | 3.3 | | | | | | | | | | |
| 3.8 | 12,500 | 17.3 | 5,600 | 8.3 | 4,400 | 4.7 | 3,600 | 3.3 | | | | | | | | | | |
| 3.9 | 12,000 | 17.3 | 5,500 | 8.3 | 4,200 | 4.9 | 3,500 | 3.3 | | | | | | | | | | |
| 4.0 | 12,000 | 17.7 | 5,400 | 8.3 | 4,200 | 4.9 | 3,500 | 3.5 | | | | | | | | | | |
| 4.1 | 11,500 | 18.9 | 5,300 | 8.7 | 4,100 | 4.9 | 3,400 | 3.5 | | | | | | | | | | |
| 4.2 | 11,500 | 18.9 | 5,300 | 8.7 | 4,100 | 4.9 | 3,300 | 3.5 | | | | | | | | | | |
| 4.3 | 11,000 | 18.9 | 5,200 | 9.1 | 4,000 | 4.9 | 3,300 | 3.5 | | | | | | | | | | |
| 4.4 | 11,000 | 19.7 | 5,100 | 9.4 | 3,900 | 5.1 | 3,200 | 3.7 | | | | | | | | | | |
| 4.5 | 10,500 | 19.7 | 5,100 | 9.4 | 3,900 | 5.1 | 3,200 | 3.7 | | | | | | | | | | |
| 4.6 | 10,500 | 20.5 | 5,000 | 9.8 | 3,800 | 5.1 | 3,200 | 3.7 | | | | | | | | | | |
| 4.7 | 10,500 | 20.5 | 5,000 | 10.2 | 3,800 | 5.1 | 3,100 | 3.7 | | | | | | | | | | |
| 4.8 | 10,500 | 20.9 | 4,900 | 10.2 | 3,700 | 5.1 | 3,100 | 3.7 | | | | | | | | | | |
| 4.9 | 10,000 | 20.9 | 4,900 | 10.6 | 3,600 | 5.1 | 3,100 | 3.7 | | | | | | | | | | |
| 5.0 | 9,500 | 21.3 | 4,800 | 10.6 | 3,500 | 5.1 | 3,000 | 3.9 | | | | | | | | | | |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

continued on next page





Slotting

| Hardness | - | | <32 HRC | | 33-41 HRC | | 42-50 HRC | | | | | | | | | | | |
|---------------|------------------------|----------------|---|----------------|--|----------------|--------------|----------------|-------|------|-----|------|--|--|--|--|--|--|
| Work Material | Copper Copper Alloy | | Mild Steels Carbon Steels | | Hardened Steels, Pre-hardened Steels Stainless Steels | | | | | | | | | | | | | |
| Depth of Cut | | | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> </tr> </thead> <tbody> <tr> <td>D<1</td> <td>0.1D</td> </tr> <tr> <td>1≤D<3</td> <td>0.3D</td> </tr> <tr> <td>3≤D</td> <td>0.5D</td> </tr> </tbody> </table> | | Dia | aa | D<1 | 0.1D | 1≤D<3 | 0.3D | 3≤D | 0.5D | | | | | | |
| | Dia | aa | | | | | | | | | | | | | | | | |
| D<1 | 0.1D | | | | | | | | | | | | | | | | | |
| 1≤D<3 | 0.3D | | | | | | | | | | | | | | | | | |
| 3≤D | 0.5D | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | |
| 5.1 | 9,500 | 21.3 | 4,700 | 10.6 | 3,500 | 5.1 | 3,000 | 3.9 | | | | | | | | | | |
| 5.2 | 9,300 | 21.3 | 4,600 | 10.6 | 3,400 | 5.1 | 2,900 | 3.9 | | | | | | | | | | |
| 5.3 | 9,200 | 21.3 | 4,600 | 10.6 | 3,400 | 5.1 | 2,900 | 3.9 | | | | | | | | | | |
| 5.4 | 9,000 | 21.3 | 4,500 | 10.6 | 3,300 | 5.1 | 2,800 | 3.9 | | | | | | | | | | |
| 5.5 | 8,800 | 21.3 | 4,400 | 10.6 | 3,200 | 5.1 | 2,700 | 3.9 | | | | | | | | | | |
| 5.6 | 8,700 | 21.3 | 4,300 | 10.6 | 3,100 | 5.1 | 2,600 | 3.9 | | | | | | | | | | |
| 5.7 | 8,500 | 21.3 | 4,200 | 10.6 | 3,100 | 5.1 | 2,600 | 3.9 | | | | | | | | | | |
| 5.8 | 8,400 | 20.9 | 4,200 | 10.6 | 3,000 | 5.1 | 2,600 | 3.9 | | | | | | | | | | |
| 5.9 | 8,200 | 20.9 | 4,100 | 10.6 | 2,900 | 5.1 | 2,500 | 3.9 | | | | | | | | | | |
| 6.0 | 7,900 | 20.9 | 4,000 | 10.6 | 2,900 | 5.1 | 2,500 | 3.9 | | | | | | | | | | |
| 6.5 | 7,500 | 20.9 | 3,700 | 10.6 | 2,700 | 5.1 | 2,300 | 3.9 | | | | | | | | | | |
| 7.0 | 6,900 | 20.9 | 3,400 | 10.6 | 2,500 | 5.1 | 2,100 | 3.9 | | | | | | | | | | |
| 7.5 | 6,400 | 20.9 | 3,200 | 10.6 | 2,300 | 5.1 | 2,000 | 3.9 | | | | | | | | | | |
| 8.0 | 5,900 | 20.5 | 3,000 | 10.2 | 2,200 | 4.9 | 1,900 | 3.9 | | | | | | | | | | |
| 8.5 | 5,600 | 20.5 | 2,800 | 10.2 | 2,000 | 4.9 | 1,700 | 3.9 | | | | | | | | | | |
| 9.0 | 5,300 | 20.1 | 2,600 | 10.2 | 1,900 | 4.9 | 1,500 | 3.9 | | | | | | | | | | |
| 9.5 | 5,100 | 20.1 | 2,500 | 10.2 | 1,800 | 4.9 | 1,400 | 3.7 | | | | | | | | | | |
| 10.0 | 4,700 | 19.7 | 2,400 | 9.8 | 1,700 | 4.9 | 1,500 | 3.7 | | | | | | | | | | |
| 11.0 | 4,400 | 19.7 | 2,200 | 9.8 | 1,600 | 4.9 | 1,100 | 3.7 | | | | | | | | | | |
| 12.0 | 4,000 | 20.1 | 2,000 | 9.8 | 1,400 | 4.9 | 1,200 | 3.7 | | | | | | | | | | |
| 16.0 | 3,000 | 15.7 | 1,500 | 7.9 | 1,100 | 4.5 | 800 | 3.1 | | | | | | | | | | |
| 18.0 | 2,700 | 14.2 | 1,300 | 7.1 | 900 | 3.9 | 700 | 2.8 | | | | | | | | | | |
| 20.0 | 2,400 | 11.8 | 1,200 | 5.9 | 800 | 3.5 | 600 | 2.4 | | | | | | | | | | |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.





List 3712: 2 Flute, Ball End, Stub Length, Pencil Neck

Standard Milling

| Hardness | | | | - | | | | <32 HRC | | | | 33-41 HRC | | | | 42-50 HRC | | | |
|---------------|---------|---------|-----------------------|------------------------|--------|--------|--------|------------------------------|--------|--------|--------|--|--------|--------|--------|-----------|--------|--------|--------|
| Work Material | | | | Copper Copper Alloy | | | | Mild Steels Carbon Steels | | | | Hardened Steels Pre-hardened Steels | | | | | | | |
| Cutting Speed | | | | 66-464 SFM | | | | 66-340 SFM | | | | 66-279 SFM | | | | | | | |
| Depth of Cut | | | | | | | | | | | | | | | | | | | |
| R (mm) | theta_n | L2 (mm) | Recom'd Cutting Angle | | | | | | | | | | | | | | | | |
| | | | | Aa | Ar | Aa | Ar | Aa | Ar | Aa | Ar | Aa | Ar | Aa | Ar | Aa | Ar | Aa | Ar |
| 0.10 | 0.5° | 1 | 0.3° | 25,000 | 6.2 | 0.0008 | 0.0008 | 25,000 | 4.6 | 0.0004 | 0.0004 | 25,000 | 4.6 | 0.0004 | 0.0004 | 25,000 | 3.1 | 0.0002 | 0.0002 |
| | 0.5° | 1.5 | 0.3° | 25,000 | 6.2 | 0.0008 | 0.0008 | 25,000 | 4.6 | 0.0004 | 0.0004 | 25,000 | 4.6 | 0.0004 | 0.0004 | 25,000 | 3.1 | 0.0002 | 0.0002 |
| | 0.5° | 2 | 0.3° | 25,000 | 4.6 | 0.0008 | 0.0008 | 25,000 | 3.1 | 0.0004 | 0.0004 | 25,000 | 3.1 | 0.0004 | 0.0004 | 25,000 | 2.5 | 0.0002 | 0.0002 |
| | 0.5° | 2.5 | 0.3° | 25,000 | 4.6 | 0.0004 | 0.0004 | 25,000 | 3.1 | 0.0002 | 0.0002 | 25,000 | 3.1 | 0.0002 | 0.0002 | 25,000 | 2.5 | 0.0002 | 0.0002 |
| | 0.5° | 3 | 0.3° | 25,000 | 3.1 | 0.0004 | 0.0004 | 25,000 | 2.5 | 0.0002 | 0.0002 | 25,000 | 2.5 | 0.0002 | 0.0002 | 25,000 | 1.8 | 0.0001 | 0.0002 |
| | 1° | 2 | 0.3° | 25,000 | 4.6 | 0.0008 | 0.0008 | 25,000 | 3.1 | 0.0004 | 0.0004 | 25,000 | 3.1 | 0.0004 | 0.0004 | 25,000 | 2.5 | 0.0002 | 0.0002 |
| | 1° | 2.5 | 0.3° | 25,000 | 4.6 | 0.0008 | 0.0008 | 25,000 | 3.1 | 0.0004 | 0.0004 | 25,000 | 3.1 | 0.0004 | 0.0004 | 25,000 | 2.5 | 0.0002 | 0.0002 |
| 1° | 3 | 0.3° | 25,000 | 4.6 | 0.0004 | 0.0004 | 25,000 | 3.1 | 0.0002 | 0.0002 | 25,000 | 3.1 | 0.0002 | 0.0002 | 25,000 | 2.5 | 0.0002 | 0.0002 | |
| 0.15 | 0.5° | 2 | 0.3° | 25,000 | 18.5 | 0.0008 | 0.0012 | 25,000 | 9.2 | 0.0004 | 0.0006 | 25,000 | 6.2 | 0.0004 | 0.0006 | 25,000 | 6.2 | 0.0002 | 0.0002 |
| | 0.5° | 3 | 0.3° | 25,000 | 13.8 | 0.0008 | 0.0008 | 25,000 | 9.2 | 0.0004 | 0.0004 | 25,000 | 6.2 | 0.0004 | 0.0004 | 25,000 | 6.2 | 0.0004 | 0.0004 |
| | 1° | 3 | 0.3° | 25,000 | 13.8 | 0.0008 | 0.0008 | 25,000 | 9.2 | 0.0004 | 0.0006 | 25,000 | 6.2 | 0.0004 | 0.0006 | 25,000 | 6.2 | 0.0002 | 0.0002 |
| | 1° | 4 | 0.3° | 25,000 | 13.8 | 0.0008 | 0.0008 | 25,000 | 9.2 | 0.0004 | 0.0004 | 25,000 | 6.2 | 0.0004 | 0.0004 | 25,000 | 6.2 | 0.0004 | 0.0004 |
| 0.20 | 0.5° | 2 | 0.3° | 25,000 | 16.4 | 0.0012 | 0.0020 | 25,000 | 12.3 | 0.0006 | 0.0010 | 25,000 | 9.2 | 0.0006 | 0.0008 | 25,000 | 9.2 | 0.0004 | 0.0004 |
| | 0.5° | 3 | 0.3° | 25,000 | 16.4 | 0.0010 | 0.0020 | 25,000 | 10.9 | 0.0006 | 0.0010 | 25,000 | 7.3 | 0.0006 | 0.0008 | 25,000 | 7.3 | 0.0004 | 0.0004 |
| | 0.5° | 4 | 0.3° | 25,000 | 16.4 | 0.0008 | 0.0020 | 25,000 | 10.9 | 0.0006 | 0.0010 | 25,000 | 7.3 | 0.0006 | 0.0008 | 25,000 | 7.3 | 0.0004 | 0.0004 |
| | 0.5° | 5 | 0.3° | 25,000 | 14.6 | 0.0006 | 0.0020 | 25,000 | 10.9 | 0.0002 | 0.0006 | 25,000 | 7.3 | 0.0002 | 0.0005 | 25,000 | 7.3 | 0.0002 | 0.0004 |
| | 0.5° | 6 | 0.3° | 25,000 | 10.9 | 0.0004 | 0.0012 | 25,000 | 10.9 | 0.0002 | 0.0006 | 25,000 | 7.3 | 0.0002 | 0.0005 | 25,000 | 7.3 | 0.0002 | 0.0004 |
| | 1° | 4 | 0.3° | 25,000 | 16.4 | 0.0010 | 0.0020 | 25,000 | 10.9 | 0.0006 | 0.0010 | 25,000 | 7.3 | 0.0006 | 0.0008 | 25,000 | 7.3 | 0.0004 | 0.0004 |
| | 1° | 5 | 0.3° | 25,000 | 16.4 | 0.0008 | 0.0020 | 25,000 | 10.9 | 0.0006 | 0.0010 | 25,000 | 7.3 | 0.0006 | 0.0008 | 25,000 | 7.3 | 0.0004 | 0.0004 |
| 1° | 6 | 0.3° | 25,000 | 14.6 | 0.0006 | 0.0020 | 25,000 | 10.9 | 0.0002 | 0.0006 | 25,000 | 7.3 | 0.0002 | 0.0005 | 25,000 | 7.3 | 0.0002 | 0.0004 | |
| 0.25 | 0.5° | 4 | 0.3° | 25,000 | 18.5 | 0.0016 | 0.0020 | 25,000 | 12.3 | 0.0008 | 0.0010 | 25,000 | 9.2 | 0.0008 | 0.0008 | 25,000 | 9.2 | 0.0004 | 0.0006 |
| | 0.5° | 6 | 0.3° | 25,000 | 16.4 | 0.0016 | 0.0020 | 20,000 | 7.9 | 0.0008 | 0.0010 | 20,000 | 5.9 | 0.0008 | 0.0008 | 20,000 | 5.9 | 0.0004 | 0.0004 |
| | 0.5° | 8 | 0.3° | 21,000 | 11.8 | 0.0008 | 0.0012 | 20,000 | 7.9 | 0.0004 | 0.0006 | 20,000 | 5.9 | 0.0004 | 0.0004 | 20,000 | 5.9 | 0.0004 | 0.0004 |
| | 0.5° | 10 | 0.3° | 21,000 | 11.8 | 0.0008 | 0.0012 | 20,000 | 7.9 | 0.0004 | 0.0006 | 20,000 | 5.9 | 0.0004 | 0.0004 | 20,000 | 5.9 | 0.0002 | 0.0004 |
| | 1° | 4 | 0.3° | 25,000 | 18.5 | 0.0016 | 0.0020 | 25,000 | 12.3 | 0.0008 | 0.0010 | 25,000 | 9.2 | 0.0008 | 0.0008 | 25,000 | 9.2 | 0.0004 | 0.0004 |
| | 1° | 6 | 0.3° | 25,000 | 16.4 | 0.0016 | 0.0020 | 25,000 | 12.3 | 0.0008 | 0.0010 | 25,000 | 9.2 | 0.0008 | 0.0008 | 25,000 | 9.2 | 0.0004 | 0.0004 |
| | 1° | 8 | 0.3° | 25,000 | 16.4 | 0.0016 | 0.0020 | 20,000 | 7.9 | 0.0008 | 0.0010 | 20,000 | 5.9 | 0.0008 | 0.0008 | 20,000 | 5.9 | 0.0004 | 0.0004 |
| | 1° | 10 | 0.3° | 21,000 | 11.8 | 0.0008 | 0.0012 | 20,000 | 7.9 | 0.0008 | 0.0010 | 20,000 | 5.9 | 0.0008 | 0.0008 | 20,000 | 5.9 | 0.0004 | 0.0004 |
| 1° | 12 | 0.3° | 21,000 | 11.8 | 0.0008 | 0.0012 | 20,000 | 7.9 | 0.0004 | 0.0006 | 20,000 | 5.9 | 0.0004 | 0.0004 | 20,000 | 5.9 | 0.0004 | 0.0004 | |
| 0.30 | 0.5° | 2 | 0.3° | 25,000 | 20.8 | 0.0018 | 0.0047 | 25,000 | 13.8 | 0.0012 | 0.0024 | 25,000 | 9.2 | 0.0012 | 0.0020 | 25,000 | 9.2 | 0.0012 | 0.0012 |
| | 0.5° | 4 | 0.3° | 25,000 | 12.3 | 0.0018 | 0.0047 | 25,000 | 9.8 | 0.0012 | 0.0024 | 24,000 | 7.9 | 0.0012 | 0.0020 | 24,000 | 7.9 | 0.0012 | 0.0012 |
| | 0.5° | 6 | 0.3° | 25,000 | 12.3 | 0.0018 | 0.0047 | 25,000 | 9.8 | 0.0012 | 0.0024 | 24,000 | 7.9 | 0.0012 | 0.0016 | 24,000 | 7.9 | 0.0008 | 0.0008 |
| | 0.5° | 8 | 0.3° | 25,000 | 8.9 | 0.0018 | 0.0047 | 20,000 | 5.9 | 0.0012 | 0.0024 | 20,000 | 5.9 | 0.0012 | 0.0016 | 20,000 | 5.9 | 0.0008 | 0.0008 |
| | 0.5° | 10 | 0.3° | 25,000 | 8.9 | 0.0018 | 0.0047 | 20,000 | 5.9 | 0.0012 | 0.0024 | 20,000 | 5.9 | 0.0012 | 0.0016 | 20,000 | 5.9 | 0.0008 | 0.0008 |
| | 0.5° | 12 | 0.3° | 25,000 | 8.9 | 0.0018 | 0.0047 | 20,000 | 5.9 | 0.0012 | 0.0024 | 20,000 | 5.9 | 0.0008 | 0.0016 | 20,000 | 5.9 | 0.0004 | 0.0004 |
| | 0.5° | 16 | 0.3° | 20,000 | 5.9 | 0.0010 | 0.0020 | 20,000 | 5.9 | 0.0012 | 0.0024 | 20,000 | 5.9 | 0.0004 | 0.0016 | 20,000 | 5.9 | 0.0004 | 0.0004 |
| | 1° | 4 | 0.3° | 25,000 | 12.3 | 0.0018 | 0.0047 | 25,000 | 9.8 | 0.0012 | 0.0024 | 24,000 | 7.9 | 0.0012 | 0.0020 | 24,000 | 7.9 | 0.0012 | 0.0012 |
| | 1° | 6 | 0.3° | 25,000 | 12.3 | 0.0018 | 0.0047 | 25,000 | 9.8 | 0.0012 | 0.0024 | 24,000 | 7.9 | 0.0012 | 0.0016 | 24,000 | 7.9 | 0.0008 | 0.0008 |
| | 1° | 8 | 0.3° | 25,000 | 12.3 | 0.0018 | 0.0047 | 25,000 | 9.8 | 0.0012 | 0.0024 | 24,000 | 7.9 | 0.0012 | 0.0016 | 24,000 | 7.9 | 0.0008 | 0.0008 |
| | 1° | 10 | 0.3° | 25,000 | 8.9 | 0.0018 | 0.0047 | 20,000 | 5.9 | 0.0012 | 0.0024 | 20,000 | 5.9 | 0.0012 | 0.0016 | 20,000 | 5.9 | 0.0008 | 0.0008 |
| | 1° | 12 | 0.3° | 25,000 | 8.9 | 0.0018 | 0.0047 | 20,000 | 5.9 | 0.0012 | 0.0024 | 20,000 | 5.9 | 0.0012 | 0.0016 | 20,000 | 5.9 | 0.0008 | 0.0008 |
| | 1° | 16 | 0.3° | 25,000 | 8.9 | 0.0018 | 0.0047 | 20,000 | 5.9 | 0.0012 | 0.0024 | 20,000 | 5.9 | 0.0012 | 0.0016 | 20,000 | 5.9 | 0.0008 | 0.0008 |
| 0.40 | 0.5° | 4 | 0.3° | 25,000 | 24.6 | 0.0024 | 0.0063 | 23,000 | 17.7 | 0.0016 | 0.0031 | 21,000 | 11.8 | 0.0016 | 0.0024 | 21,000 | 11.8 | 0.0016 | 0.0031 |
| | 0.5° | 6 | 0.3° | 24,000 | 14.8 | 0.0024 | 0.0047 | 21,000 | 9.8 | 0.0016 | 0.0024 | 19,000 | 7.9 | 0.0016 | 0.0020 | 19,000 | 7.9 | 0.0012 | 0.0020 |
| | 0.5° | 8 | 0.3° | 24,000 | 14.8 | 0.0024 | 0.0047 | 21,000 | 9.8 | 0.0016 | 0.0024 | 19,000 | 7.9 | 0.0016 | 0.0020 | 19,000 | 7.9 | 0.0012 | 0.0020 |
| | 0.5° | 12 | 0.3° | 22,000 | 8.9 | 0.0024 | 0.0047 | 19,000 | 5.9 | 0.0016 | 0.0024 | 17,000 | 5.9 | 0.0016 | 0.0020 | 17,000 | 5.9 | 0.0008 | 0.0020 |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

continued on next page





List 3712: 2 Flute, Ball End, Stub Length, Pencil Neck (Continued)

Standard Milling

| Hardness | | | | - | | <32 HRC | | 33-41 HRC | | 42-50 HRC | | | | | | | | | |
|---------------|---------|---------|-----------------------|------------------------|--------|------------------------------|--------|--|--------|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Work Material | | | | Copper Copper Alloy | | Mild Steels Carbon Steels | | Hardened Steels Pre-hardened Steels | | | | | | | | | | | |
| Cutting Speed | | | | 66-464 SFM | | 66-340 SFM | | 66-279 SFM | | | | | | | | | | | |
| Depth of Cut | | | | | | | | | | | | | | | | | | | |
| R (mm) | theta_n | L2 (mm) | Recom'd Cutting Angle | | | | | | | | | | | | | | | | |
| | | | | Aa | Ar | Aa | Ar | Aa | Ar | Aa | Ar | Aa | Ar | Aa | Ar | | | | |
| 0.75 | 1° | 10 | 0.3° | 18,000 | 29.5 | 0.0055 | 0.0118 | 15,000 | 19.7 | 0.0031 | 0.0059 | 12,000 | 13.8 | 0.0031 | 0.0059 | 12,000 | 11.8 | 0.0031 | 0.0059 |
| | 1° | 12 | 0.3° | 17,000 | 17.7 | 0.0055 | 0.0118 | 15,000 | 11.8 | 0.0031 | 0.0059 | 12,000 | 9.8 | 0.0031 | 0.0059 | 12,000 | 9.8 | 0.0031 | 0.0059 |
| | 1° | 16 | 0.3° | 17,000 | 17.7 | 0.0047 | 0.0118 | 15,000 | 11.8 | 0.0031 | 0.0059 | 12,000 | 9.8 | 0.0031 | 0.0059 | 12,000 | 9.8 | 0.0031 | 0.0059 |
| | 1° | 20 | 0.3° | 17,000 | 17.7 | 0.0047 | 0.0094 | 15,000 | 11.8 | 0.0031 | 0.0047 | 12,000 | 9.8 | 0.0031 | 0.0039 | 12,000 | 9.8 | 0.0030 | 0.0039 |
| | 1° | 25 | 0.3° | 17,000 | 17.7 | 0.0047 | 0.0094 | 15,000 | 11.8 | 0.0031 | 0.0047 | 12,000 | 9.8 | 0.0031 | 0.0039 | 12,000 | 9.8 | 0.0020 | 0.0039 |
| | 1° | 30 | 0.3° | 13,000 | 11.8 | 0.0035 | 0.0079 | 12,000 | 7.9 | 0.0024 | 0.0039 | 9,500 | 5.9 | 0.0024 | 0.0039 | 9,500 | 5.9 | 0.0012 | 0.0039 |
| | 1° | 35 | 0.3° | 13,000 | 11.8 | 0.0035 | 0.0079 | 12,000 | 7.9 | 0.0024 | 0.0039 | 9,500 | 5.9 | 0.0024 | 0.0039 | 9,500 | 5.9 | 0.0008 | 0.0039 |
| | 1.5° | 10 | 0.3° | 18,000 | 29.5 | 0.0047 | 0.0118 | 15,000 | 19.7 | 0.0031 | 0.0059 | 12,000 | 13.8 | 0.0031 | 0.0059 | 12,000 | 11.8 | 0.0031 | 0.0059 |
| | 1.5° | 12 | 0.3° | 17,000 | 17.7 | 0.0047 | 0.0118 | 15,000 | 11.8 | 0.0031 | 0.0059 | 12,000 | 9.8 | 0.0031 | 0.0059 | 12,000 | 9.8 | 0.0031 | 0.0059 |
| | 1.5° | 16 | 0.3° | 17,000 | 17.7 | 0.0047 | 0.0118 | 15,000 | 11.8 | 0.0031 | 0.0059 | 12,000 | 9.8 | 0.0031 | 0.0059 | 12,000 | 9.8 | 0.0031 | 0.0059 |
| | 1.5° | 20 | 0.3° | 17,000 | 17.7 | 0.0047 | 0.0118 | 15,000 | 11.8 | 0.0031 | 0.0059 | 12,000 | 9.8 | 0.0031 | 0.0059 | 12,000 | 9.8 | 0.0031 | 0.0059 |
| | 1.5° | 25 | 0.3° | 17,000 | 17.7 | 0.0047 | 0.0094 | 15,000 | 11.8 | 0.0031 | 0.0047 | 12,000 | 9.8 | 0.0031 | 0.0039 | 12,000 | 9.8 | 0.0030 | 0.0039 |
| | 1.5° | 30 | 0.3° | 17,000 | 17.7 | 0.0047 | 0.0094 | 15,000 | 11.8 | 0.0031 | 0.0047 | 12,000 | 9.8 | 0.0031 | 0.0039 | 12,000 | 9.8 | 0.0030 | 0.0039 |
| | 1.5° | 35 | 0.3° | 13,000 | 11.8 | 0.0030 | 0.0079 | 12,000 | 7.9 | 0.0024 | 0.0039 | 9,500 | 5.9 | 0.0024 | 0.0039 | 9,500 | 5.9 | 0.0020 | 0.0039 |
| 2° | 38.6 | 0.3° | 17,000 | 17.7 | 0.0047 | 0.0094 | 15,000 | 11.8 | 0.0031 | 0.0047 | 12,000 | 9.8 | 0.0031 | 0.0039 | 12,000 | 9.8 | 0.0030 | 0.0039 | |
| 1.00 | 0.5° | 8 | 0.3° | 16,500 | 41.3 | 0.0079 | 0.0220 | 16,500 | 27.6 | 0.0039 | 0.0110 | 13,500 | 19.7 | 0.0039 | 0.0110 | 13,500 | 19.7 | 0.0039 | 0.0079 |
| | 0.5° | 10 | 0.3° | 16,500 | 41.3 | 0.0079 | 0.0220 | 16,500 | 27.6 | 0.0039 | 0.0110 | 13,500 | 19.7 | 0.0039 | 0.0110 | 13,500 | 19.7 | 0.0039 | 0.0079 |
| | 0.5° | 12 | 0.3° | 16,500 | 41.3 | 0.0079 | 0.0220 | 16,500 | 27.6 | 0.0039 | 0.0110 | 13,500 | 19.7 | 0.0039 | 0.0110 | 13,500 | 19.7 | 0.0039 | 0.0079 |
| | 0.5° | 16 | 0.3° | 14,000 | 29.5 | 0.0059 | 0.0220 | 13,000 | 19.7 | 0.0039 | 0.0110 | 10,000 | 11.8 | 0.0039 | 0.0110 | 10,000 | 11.8 | 0.0039 | 0.0079 |
| | 0.5° | 20 | 0.3° | 14,000 | 29.5 | 0.0059 | 0.0220 | 13,000 | 19.7 | 0.0039 | 0.0110 | 10,000 | 11.8 | 0.0039 | 0.0110 | 10,000 | 11.8 | 0.0039 | 0.0079 |
| | 0.5° | 25 | 0.3° | 11,000 | 14.8 | 0.0059 | 0.0165 | 10,000 | 9.8 | 0.0039 | 0.0083 | 8,000 | 7.9 | 0.0039 | 0.0071 | 8,000 | 7.9 | 0.0024 | 0.0039 |
| | 0.5° | 30 | 0.3° | 11,000 | 14.8 | 0.0059 | 0.0165 | 10,000 | 9.8 | 0.0039 | 0.0083 | 8,000 | 7.9 | 0.0039 | 0.0071 | 8,000 | 7.9 | 0.0024 | 0.0039 |
| | 0.5° | 35 | 0.3° | 11,000 | 14.8 | 0.0059 | 0.0165 | 10,000 | 9.8 | 0.0039 | 0.0083 | 8,000 | 7.9 | 0.0039 | 0.0071 | 8,000 | 7.9 | 0.0024 | 0.0039 |
| | 0.5° | 40 | 0.3° | 11,000 | 14.8 | 0.0059 | 0.0165 | 10,000 | 9.8 | 0.0039 | 0.0083 | 8,000 | 7.9 | 0.0039 | 0.0071 | 8,000 | 7.9 | 0.0024 | 0.0039 |
| | 1° | 16 | 0.3° | 16,500 | 41.3 | 0.0079 | 0.0220 | 16,500 | 27.6 | 0.0039 | 0.0110 | 13,500 | 19.7 | 0.0039 | 0.0110 | 13,500 | 19.7 | 0.0039 | 0.0079 |
| | 1° | 20 | 0.3° | 14,000 | 29.5 | 0.0079 | 0.0220 | 13,000 | 19.7 | 0.0039 | 0.0110 | 10,000 | 11.8 | 0.0039 | 0.0110 | 10,000 | 11.8 | 0.0039 | 0.0079 |
| | 1° | 25 | 0.3° | 14,000 | 29.5 | 0.0059 | 0.0220 | 13,000 | 19.7 | 0.0039 | 0.0110 | 10,000 | 11.8 | 0.0039 | 0.0110 | 10,000 | 11.8 | 0.0039 | 0.0079 |
| | 1° | 30 | 0.3° | 11,000 | 14.8 | 0.0059 | 0.0165 | 10,000 | 9.8 | 0.0039 | 0.0083 | 8,000 | 7.9 | 0.0039 | 0.0071 | 8,000 | 7.9 | 0.0031 | 0.0039 |
| | 1° | 35 | 0.3° | 11,000 | 14.8 | 0.0059 | 0.0165 | 10,000 | 9.8 | 0.0039 | 0.0083 | 8,000 | 7.9 | 0.0039 | 0.0071 | 8,000 | 7.9 | 0.0031 | 0.0039 |
| | 1° | 40 | 0.3° | 11,000 | 14.8 | 0.0059 | 0.0165 | 10,000 | 9.8 | 0.0039 | 0.0083 | 8,000 | 7.9 | 0.0039 | 0.0071 | 8,000 | 7.9 | 0.0024 | 0.0039 |
| | 1° | 50 | 0.3° | 11,000 | 14.8 | 0.0059 | 0.0165 | 10,000 | 9.8 | 0.0039 | 0.0083 | 8,000 | 7.9 | 0.0039 | 0.0071 | 8,000 | 7.9 | 0.0024 | 0.0039 |
| | 1° | 60 | 0.3° | 11,000 | 14.8 | 0.0059 | 0.0165 | 10,000 | 9.8 | 0.0039 | 0.0083 | 8,000 | 7.9 | 0.0039 | 0.0071 | 8,000 | 7.9 | 0.0024 | 0.0039 |
| | 1° | 70 | 0.3° | 11,000 | 14.8 | 0.0059 | 0.0165 | 10,000 | 9.8 | 0.0039 | 0.0083 | 8,000 | 7.9 | 0.0039 | 0.0071 | 8,000 | 7.9 | 0.0024 | 0.0039 |
| | 1.5° | 16 | 0.3° | 16,500 | 41.3 | 0.0079 | 0.0220 | 16,500 | 27.6 | 0.0039 | 0.0110 | 13,500 | 19.7 | 0.0039 | 0.0110 | 13,500 | 19.7 | 0.0039 | 0.0079 |
| | 1.5° | 20 | 0.3° | 16,500 | 41.3 | 0.0079 | 0.0220 | 16,500 | 27.6 | 0.0039 | 0.0110 | 13,500 | 19.7 | 0.0039 | 0.0110 | 13,500 | 19.7 | 0.0039 | 0.0079 |
| 1.5° | 25 | 0.3° | 14,000 | 29.5 | 0.0059 | 0.0220 | 13,000 | 19.7 | 0.0039 | 0.0110 | 10,000 | 11.8 | 0.0039 | 0.0110 | 10,000 | 11.8 | 0.0039 | 0.0079 | |
| 1.5° | 30 | 0.3° | 14,000 | 29.5 | 0.0059 | 0.0220 | 13,000 | 19.7 | 0.0039 | 0.0110 | 10,000 | 11.8 | 0.0039 | 0.0110 | 10,000 | 11.8 | 0.0039 | 0.0079 | |
| 1.5° | 35 | 0.3° | 14,000 | 29.5 | 0.0059 | 0.0220 | 13,000 | 19.7 | 0.0039 | 0.0110 | 10,000 | 11.8 | 0.0039 | 0.0110 | 10,000 | 11.8 | 0.0039 | 0.0079 | |
| 1.5° | 41.5 | 0.3° | 11,000 | 14.8 | 0.0059 | 0.0165 | 10,000 | 9.8 | 0.0039 | 0.0083 | 8,000 | 7.9 | 0.0039 | 0.0071 | 8,000 | 7.9 | 0.0024 | 0.0039 | |
| 2° | 31.5 | 0.3° | 14,000 | 29.5 | 0.0059 | 0.0220 | 13,000 | 19.7 | 0.0039 | 0.0110 | 10,000 | 11.8 | 0.0039 | 0.0110 | 10,000 | 11.8 | 0.0039 | 0.0079 | |
| 1.50 | 0.5° | 8 | 0.3° | 15,000 | 47.2 | 0.0079 | 0.0331 | 9,500 | 31.5 | 0.0059 | 0.0165 | 7,500 | 23.6 | 0.0059 | 0.0165 | 7,500 | 23.6 | 0.0059 | 0.0118 |
| | 0.5° | 10 | 0.3° | 15,000 | 47.2 | 0.0079 | 0.0331 | 9,500 | 31.5 | 0.0059 | 0.0165 | 7,500 | 23.6 | 0.0059 | 0.0165 | 7,500 | 23.6 | 0.0059 | 0.0118 |
| | 0.5° | 12 | 0.3° | 12,000 | 35.4 | 0.0079 | 0.0331 | 9,500 | 23.6 | 0.0059 | 0.0165 | 7,500 | 15.7 | 0.0059 | 0.0142 | 7,500 | 15.7 | 0.0059 | 0.0118 |
| | 0.5° | 16 | 0.3° | 10,000 | 35.4 | 0.0079 | 0.0331 | 9,500 | 23.6 | 0.0059 | 0.0165 | 7,500 | 15.7 | 0.0059 | 0.0142 | 7,500 | 15.7 | 0.0059 | 0.0118 |
| | 0.5° | 20 | 0.3° | 10,000 | 17.7 | 0.0079 | 0.0331 | 8,500 | 11.8 | 0.0059 | 0.0165 | 6,500 | 9.8 | 0.0059 | 0.0142 | 6,500 | 9.8 | 0.0059 | 0.0118 |
| | 0.5° | 25 | 0.3° | 10,000 | 17.7 | 0.0079 | 0.0331 | 8,500 | 11.8 | 0.0059 | 0.0165 | 6,500 | 9.8 | 0.0059 | 0.0142 | 6,500 | 9.8 | 0.0059 | 0.0118 |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

continued on next page





Standard Milling

| Hardness | | | | - | | | | <32 HRC | | | | 33-41 HRC | | | | 42-50 HRC | | | |
|---------------|------|------------|-----------------------------|------------------------|------------------|----------------------|--------|------------------------------|------------------|----------------------|--------|--|------------------|----------------------|--------|----------------|------------------|----------------------|--------|
| Work Material | | | | Copper Copper Alloy | | | | Mild Steels Carbon Steels | | | | Hardened Steels Pre-hardened Steels | | | | | | | |
| Cutting Speed | | | | 66-464 SFM | | | | 66-340 SFM | | | | 66-279 SFM | | | | | | | |
| Depth of Cut | | | | | | | | | | | | | | | | | | | |
| R (mm) | θn | L2 (mm) | Recom'd Cutting Angle | Speed (RPM) | Feed (in/min) | Depth of Cut (in) | | Speed (RPM) | Feed (in/min) | Depth of Cut (in) | | Speed (RPM) | Feed (in/min) | Depth of Cut (in) | | Speed (RPM) | Feed (in/min) | Depth of Cut (in) | |
| | | | | | | Aa | Ar | | | Aa | Ar | | | Aa | Ar | | | | |
| 1.50 | 0.5° | 30 | 0.3° | 10,000 | 17.7 | 0.0079 | 0.0331 | 8,500 | 11.8 | 0.0059 | 0.0165 | 6,500 | 9.8 | 0.0059 | 0.0118 | 6,500 | 9.8 | 0.0035 | 0.0059 |
| | 0.5° | 35 | 0.3° | 10,000 | 17.7 | 0.0079 | 0.0331 | 8,500 | 11.8 | 0.0059 | 0.0165 | 6,500 | 9.8 | 0.0059 | 0.0118 | 6,500 | 9.8 | 0.0035 | 0.0059 |
| | 0.5° | 40 | 0.3° | 9,000 | 14.8 | 0.0079 | 0.0331 | 7,500 | 9.8 | 0.0059 | 0.0165 | 6,000 | 7.9 | 0.0059 | 0.0118 | 6,000 | 7.9 | 0.0035 | 0.0059 |
| | 0.5° | 50 | 0.3° | 9,000 | 14.8 | 0.0079 | 0.0331 | 7,500 | 9.8 | 0.0059 | 0.0165 | 6,000 | 7.9 | 0.0059 | 0.0118 | 6,000 | 7.9 | 0.0035 | 0.0059 |
| | 1° | 20 | 0.3° | 10,000 | 35.4 | 0.0079 | 0.0331 | 9,500 | 23.6 | 0.0059 | 0.0165 | 7,500 | 15.7 | 0.0059 | 0.0142 | 7,500 | 15.7 | 0.0059 | 0.0118 |
| | 1° | 25 | 0.3° | 10,000 | 17.7 | 0.0079 | 0.0331 | 8,500 | 11.8 | 0.0059 | 0.0165 | 6,500 | 9.8 | 0.0059 | 0.0142 | 6,500 | 9.8 | 0.0059 | 0.0118 |
| | 1° | 30 | 0.3° | 10,000 | 17.7 | 0.0079 | 0.0331 | 8,500 | 11.8 | 0.0059 | 0.0165 | 6,500 | 9.8 | 0.0059 | 0.0142 | 6,500 | 9.8 | 0.0059 | 0.0118 |
| | 1° | 35 | 0.3° | 10,000 | 17.7 | 0.0079 | 0.0331 | 8,500 | 11.8 | 0.0059 | 0.0165 | 6,500 | 9.8 | 0.0059 | 0.0118 | 6,500 | 9.8 | 0.0035 | 0.0059 |
| | 1° | 40 | 0.3° | 10,000 | 17.7 | 0.0079 | 0.0331 | 8,500 | 11.8 | 0.0059 | 0.0165 | 6,500 | 9.8 | 0.0059 | 0.0118 | 6,500 | 9.8 | 0.0035 | 0.0059 |
| | 1° | 50 | 0.3° | 9,000 | 14.8 | 0.0079 | 0.0331 | 7,500 | 9.8 | 0.0059 | 0.0165 | 6,000 | 7.9 | 0.0059 | 0.0118 | 6,000 | 7.9 | 0.0035 | 0.0059 |
| | 1° | 60 | 0.3° | 9,000 | 14.8 | 0.0079 | 0.0331 | 7,500 | 9.8 | 0.0059 | 0.0165 | 6,000 | 7.9 | 0.0059 | 0.0118 | 6,000 | 7.9 | 0.0035 | 0.0059 |
| | 1° | 70 | 0.3° | 9,000 | 14.8 | 0.0079 | 0.0331 | 7,500 | 9.8 | 0.0059 | 0.0165 | 6,000 | 7.9 | 0.0059 | 0.0118 | 6,000 | 7.9 | 0.0035 | 0.0059 |
| | 1.5° | 20 | 0.3° | 10,000 | 35.4 | 0.0118 | 0.0331 | 9,500 | 23.6 | 0.0059 | 0.0165 | 7,500 | 15.7 | 0.0059 | 0.0142 | 7,500 | 15.7 | 0.0059 | 0.0118 |
| | 1.5° | 25 | 0.3° | 10,000 | 17.7 | 0.0098 | 0.0331 | 8,500 | 11.8 | 0.0059 | 0.0165 | 6,500 | 9.8 | 0.0059 | 0.0142 | 6,500 | 9.8 | 0.0059 | 0.0118 |
| | 1.5° | 30 | 0.3° | 10,000 | 17.7 | 0.0098 | 0.0331 | 8,500 | 11.8 | 0.0059 | 0.0165 | 6,500 | 9.8 | 0.0059 | 0.0142 | 6,500 | 9.8 | 0.0059 | 0.0118 |
| | 1.5° | 35 | 0.3° | 10,000 | 17.7 | 0.0098 | 0.0331 | 8,500 | 11.8 | 0.0059 | 0.0165 | 6,500 | 9.8 | 0.0059 | 0.0142 | 6,500 | 9.8 | 0.0059 | 0.0118 |
| | 1.5° | 40 | 0.3° | 10,000 | 17.7 | 0.0098 | 0.0331 | 8,500 | 11.8 | 0.0059 | 0.0165 | 6,500 | 9.8 | 0.0059 | 0.0142 | 6,500 | 9.8 | 0.0059 | 0.0118 |
| | 1.5° | 50 | 0.3° | 10,000 | 17.7 | 0.0079 | 0.0331 | 8,500 | 11.8 | 0.0059 | 0.0165 | 6,500 | 9.8 | 0.0059 | 0.0118 | 6,500 | 9.8 | 0.0035 | 0.0059 |
| 1.5° | 62.5 | 0.3° | 10,000 | 17.7 | 0.0079 | 0.0331 | 8,500 | 11.8 | 0.0059 | 0.0165 | 6,500 | 9.8 | 0.0059 | 0.0118 | 6,500 | 9.8 | 0.0035 | 0.0059 | |
| 1.5° | 47.5 | 0.3° | 10,000 | 17.7 | 0.0098 | 0.0331 | 8,500 | 11.8 | 0.0059 | 0.0165 | 6,500 | 9.8 | 0.0059 | 0.0142 | 6,500 | 9.8 | 0.0059 | 0.0118 | |
| 2.00 | 1° | 20 | 0.5° | 9,000 | 35.4 | 0.0197 | 0.0504 | 7,500 | 23.6 | 0.0079 | 0.0252 | 6,000 | 15.7 | 0.0079 | 0.0236 | 6,000 | 15.7 | 0.0079 | 0.0157 |
| | 1° | 30 | 0.5° | 7,000 | 23.6 | 0.0197 | 0.0504 | 6,000 | 15.7 | 0.0079 | 0.0252 | 5,000 | 9.8 | 0.0079 | 0.0236 | 5,000 | 9.8 | 0.0079 | 0.0157 |
| | 1° | 40 | 0.5° | 7,000 | 23.6 | 0.0157 | 0.0504 | 6,000 | 15.7 | 0.0079 | 0.0252 | 5,000 | 9.8 | 0.0079 | 0.0220 | 5,000 | 9.8 | 0.0047 | 0.0118 |
| | 1° | 50 | 0.5° | 7,000 | 23.6 | 0.0157 | 0.0504 | 6,000 | 15.7 | 0.0079 | 0.0252 | 5,000 | 9.8 | 0.0079 | 0.0220 | 5,000 | 9.8 | 0.0047 | 0.0079 |
| | 1° | 60 | 0.5° | 5,000 | 14.8 | 0.0138 | 0.0504 | 5,000 | 9.8 | 0.0079 | 0.0252 | 4,000 | 7.9 | 0.0079 | 0.0220 | 4,000 | 7.9 | 0.0047 | 0.0079 |
| | 1.5° | 44.2 | 0.5° | 7,000 | 23.6 | 0.0197 | 0.0504 | 6,000 | 15.7 | 0.0079 | 0.0252 | 5,000 | 9.8 | 0.0079 | 0.0236 | 5,000 | 9.8 | 0.0079 | 0.0157 |
| 2.50 | 2° | 34 | 0.5° | 7,000 | 23.6 | 0.0197 | 0.0504 | 6,000 | 15.7 | 0.0079 | 0.0252 | 5,000 | 9.8 | 0.0079 | 0.0236 | 5,000 | 9.8 | 0.0079 | 0.0197 |
| | 1° | 30 | 0.5° | 7,000 | 29.5 | 0.0236 | 0.0709 | 6,500 | 19.7 | 0.0098 | 0.0354 | 5,000 | 15.7 | 0.0098 | 0.0276 | 5,000 | 15.7 | 0.0098 | 0.0197 |
| | 1° | 40 | 0.5° | 6,000 | 29.5 | 0.0236 | 0.0709 | 5,000 | 19.7 | 0.0098 | 0.0354 | 4,000 | 9.8 | 0.0098 | 0.0276 | 4,000 | 9.8 | 0.0098 | 0.0197 |
| | 1° | 60 | 0.5° | 5,000 | 23.6 | 0.0157 | 0.0709 | 4,000 | 15.7 | 0.0098 | 0.0354 | 4,000 | 7.9 | 0.0098 | 0.0236 | 4,000 | 7.9 | 0.0079 | 0.0098 |
| | 1.5° | 26.9 | 0.5° | 9,000 | 53.1 | 0.0236 | 0.0709 | 6,500 | 35.4 | 0.0098 | 0.0354 | 5,000 | 29.5 | 0.0098 | 0.0276 | 5,000 | 29.5 | 0.0098 | 0.0197 |
| 3.00 | 1.5° | 65.1 | 0.5° | 6,000 | 29.5 | 0.0236 | 0.0709 | 5,000 | 19.7 | 0.0098 | 0.0354 | 4,000 | 9.8 | 0.0098 | 0.0276 | 4,000 | 9.8 | 0.0098 | 0.0197 |
| | 2° | 50.1 | 0.5° | 6,000 | 29.5 | 0.0236 | 0.0709 | 5,000 | 19.7 | 0.0098 | 0.0354 | 4,000 | 9.8 | 0.0098 | 0.0276 | 4,000 | 9.8 | 0.0098 | 0.0197 |
| | 1° | 30 | 0.5° | 7,000 | 47.2 | 0.0295 | 0.0945 | 5,500 | 31.5 | 0.0118 | 0.0472 | 4,500 | 23.6 | 0.0118 | 0.0378 | 4,500 | 23.6 | 0.0118 | 0.0236 |
| | 1° | 40 | 0.5° | 5,000 | 23.6 | 0.0295 | 0.0945 | 4,000 | 15.7 | 0.0118 | 0.0472 | 4,000 | 11.8 | 0.0118 | 0.0378 | 4,000 | 11.8 | 0.0118 | 0.0236 |
| | 1° | 50 | 0.5° | 5,000 | 23.6 | 0.0236 | 0.0945 | 4,000 | 15.7 | 0.0118 | 0.0472 | 4,000 | 11.8 | 0.0118 | 0.0378 | 4,000 | 11.8 | 0.0118 | 0.0236 |
| | 1° | 60 | 0.5° | 5,000 | 23.6 | 0.0236 | 0.0945 | 4,000 | 15.7 | 0.0118 | 0.0472 | 4,000 | 11.8 | 0.0118 | 0.0378 | 4,000 | 11.8 | 0.0118 | 0.0236 |
| | 1° | 70 | 0.5° | 5,000 | 23.6 | 0.0236 | 0.0945 | 4,000 | 15.7 | 0.0118 | 0.0472 | 4,000 | 11.8 | 0.0118 | 0.0378 | 4,000 | 11.8 | 0.0118 | 0.0118 |
| | 1° | 80 | 0.5° | 5,000 | 23.6 | 0.0177 | 0.0945 | 4,000 | 15.7 | 0.0079 | 0.0472 | 4,000 | 11.8 | 0.0079 | 0.0378 | 4,000 | 11.8 | 0.0079 | 0.0118 |
| 1.5° | 49 | 0.5° | 5,000 | 23.6 | 0.0236 | 0.0945 | 4,000 | 15.7 | 0.0118 | 0.0472 | 4,000 | 11.8 | 0.0118 | 0.0378 | 4,000 | 11.8 | 0.0118 | 0.0236 | |
| 2° | 36 | 0.5° | 7,000 | 47.2 | 0.0295 | 0.0945 | 5,500 | 31.5 | 0.0118 | 0.0472 | 4,500 | 23.6 | 0.0118 | 0.0378 | 4,500 | 23.6 | 0.0118 | 0.0236 | |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

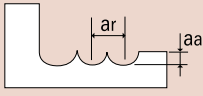
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List 3712: 2 Flute, Ball End, Stub Length, Pencil Neck (Continued)

High Speed Milling

| Hardness | | | | - | | | | <32 HRC | | | | 33-41 HRC | | | | 42-50 HRC | | | |
|---------------|------|------------|-----------------------------|---|------------------|----------------------|--------|-------------------------------|------------------|----------------------|--------|--|------------------|----------------------|--------|-------------------------------|------------------|----------------------|--------|
| Work Material | | | | Copper Copper Alloy | | | | Mild Steels Carbon Steels | | | | Hardened Steels Pre-hardened Steels | | | | | | | |
| Cutting Speed | | | | 103-1031 SFM | | | | 78-928 SFM | | | | | | | | 76-774 SFM | | | |
| Depth of Cut | | | |  | | | | | | | | | | | | | | | |
| R (mm) | θn | L2 (mm) | Recom'd Cutting Angle | Speed (min ⁻¹) | Feed (in/min) | Depth of Cut (in) | | Speed (min ⁻¹) | Feed (in/min) | Depth of Cut (in) | | Speed (min ⁻¹) | Feed (in/min) | Depth of Cut (in) | | Speed (min ⁻¹) | Feed (in/min) | Depth of Cut (in) | |
| | | | | | | Aa | Ar | | | Aa | Ar | | | Aa | Ar | | | Aa | Ar |
| 0.75 | 1° | 10 | 0.3° | 32,000 | 118.1 | 0.0047 | 0.0118 | 30,000 | 114.2 | 0.0030 | 0.0059 | 30,000 | 106.3 | 0.0030 | 0.0047 | 30,000 | 106.3 | 0.0030 | 0.0039 |
| | 1° | 12 | 0.3° | 30,000 | 104.3 | 0.0047 | 0.0118 | 24,000 | 90.6 | 0.0030 | 0.0059 | 24,000 | 82.7 | 0.0030 | 0.0047 | 24,000 | 82.7 | 0.0030 | 0.0039 |
| | 1° | 16 | 0.3° | 30,000 | 94.5 | 0.0047 | 0.0118 | 24,000 | 78.7 | 0.0030 | 0.0059 | 24,000 | 74.8 | 0.0030 | 0.0047 | 24,000 | 74.8 | 0.0030 | 0.0039 |
| | 1° | 20 | 0.3° | 24,000 | 55.1 | 0.0047 | 0.0079 | 21,000 | 55.1 | 0.0030 | 0.0039 | 21,000 | 51.2 | 0.0030 | 0.0035 | 21,000 | 51.2 | 0.0020 | 0.0024 |
| | 1° | 25 | 0.3° | 22,000 | 55.1 | 0.0039 | 0.0079 | 18,000 | 47.2 | 0.0020 | 0.0039 | 18,000 | 43.3 | 0.0020 | 0.0035 | 17,000 | 43.3 | 0.0020 | 0.0024 |
| | 1° | 30 | 0.3° | 22,000 | 55.1 | 0.0028 | 0.0079 | 18,000 | 47.2 | 0.0020 | 0.0039 | 18,000 | 43.3 | 0.0020 | 0.0028 | 17,000 | 43.3 | 0.0012 | 0.0012 |
| | 1° | 35 | 0.3° | 22,000 | 43.3 | 0.0028 | 0.0079 | 18,000 | 39.4 | 0.0020 | 0.0039 | 18,000 | 35.4 | 0.0020 | 0.0028 | 17,000 | 35.4 | 0.0008 | 0.0012 |
| | 1.5° | 10 | 0.3° | 32,000 | 118.1 | 0.0047 | 0.0118 | 30,000 | 114.2 | 0.0030 | 0.0059 | 30,000 | 106.3 | 0.0030 | 0.0047 | 30,000 | 106.3 | 0.0030 | 0.0039 |
| | 1.5° | 12 | 0.3° | 32,000 | 118.1 | 0.0047 | 0.0118 | 30,000 | 114.2 | 0.0030 | 0.0059 | 30,000 | 106.3 | 0.0030 | 0.0047 | 30,000 | 106.3 | 0.0030 | 0.0039 |
| | 1.5° | 16 | 0.3° | 30,000 | 94.5 | 0.0047 | 0.0118 | 24,000 | 78.7 | 0.0030 | 0.0059 | 24,000 | 74.8 | 0.0030 | 0.0047 | 24,000 | 74.8 | 0.0030 | 0.0039 |
| | 1.5° | 20 | 0.3° | 30,000 | 94.5 | 0.0047 | 0.0118 | 24,000 | 78.7 | 0.0030 | 0.0059 | 24,000 | 74.8 | 0.0030 | 0.0047 | 24,000 | 74.8 | 0.0031 | 0.0039 |
| | 1.5° | 25 | 0.3° | 24,000 | 55.1 | 0.0039 | 0.0079 | 21,000 | 55.1 | 0.0030 | 0.0039 | 21,000 | 51.2 | 0.0030 | 0.0035 | 21,000 | 51.2 | 0.0020 | 0.0024 |
| | 1.5° | 30 | 0.3° | 24,000 | 55.1 | 0.0039 | 0.0079 | 21,000 | 55.1 | 0.0030 | 0.0039 | 21,000 | 51.2 | 0.0030 | 0.0035 | 21,000 | 51.2 | 0.0020 | 0.0024 |
| | 1.5° | 35 | 0.3° | 22,000 | 55.1 | 0.0020 | 0.0079 | 18,000 | 47.2 | 0.0020 | 0.0039 | 18,000 | 43.3 | 0.0020 | 0.0028 | 17,000 | 43.3 | 0.0008 | 0.0012 |
| | 2° | 38.6 | 0.3° | 24,000 | 55.1 | 0.0039 | 0.0079 | 21,000 | 55.1 | 0.0030 | 0.0039 | 21,000 | 51.2 | 0.0030 | 0.0035 | 21,000 | 51.2 | 0.0020 | 0.0024 |
| | 1.00 | 0.5° | 8 | 0.3° | 27,000 | 131.9 | 0.0059 | 0.0157 | 25,000 | 102.4 | 0.0039 | 0.0079 | 25,000 | 94.5 | 0.0039 | 0.0079 | 23,000 | 86.6 | 0.0039 |
| 0.5° | | 10 | 0.3° | 22,000 | 120.1 | 0.0059 | 0.0157 | 20,000 | 94.5 | 0.0039 | 0.0079 | 20,000 | 86.6 | 0.0039 | 0.0079 | 19,000 | 78.7 | 0.0039 | 0.0079 |
| 0.5° | | 12 | 0.3° | 22,000 | 120.1 | 0.0059 | 0.0157 | 20,000 | 94.5 | 0.0039 | 0.0079 | 20,000 | 86.6 | 0.0039 | 0.0079 | 19,000 | 78.7 | 0.0039 | 0.0079 |
| 0.5° | | 16 | 0.3° | 15,000 | 94.5 | 0.0059 | 0.0118 | 15,000 | 70.9 | 0.0039 | 0.0079 | 15,000 | 66.9 | 0.0039 | 0.0079 | 14,000 | 59.1 | 0.0039 | 0.0079 |
| 0.5° | | 20 | 0.3° | 15,000 | 86.6 | 0.0059 | 0.0079 | 14,000 | 66.9 | 0.0039 | 0.0039 | 14,000 | 63.0 | 0.0039 | 0.0039 | 13,000 | 55.1 | 0.0039 | 0.0039 |
| 0.5° | | 25 | 0.3° | 12,000 | 47.2 | 0.0039 | 0.0079 | 12,000 | 47.2 | 0.0020 | 0.0039 | 11,000 | 43.3 | 0.0020 | 0.0039 | 10,000 | 39.4 | 0.0020 | 0.0039 |
| 0.5° | | 30 | 0.3° | 12,000 | 39.4 | 0.0039 | 0.0079 | 12,000 | 39.4 | 0.0020 | 0.0039 | 11,000 | 35.4 | 0.0020 | 0.0039 | 10,000 | 31.5 | 0.0020 | 0.0039 |
| 0.5° | | 35 | 0.3° | 12,000 | 39.4 | 0.0030 | 0.0079 | 12,000 | 39.4 | 0.0012 | 0.0039 | 11,000 | 35.4 | 0.0012 | 0.0039 | 10,000 | 31.5 | 0.0012 | 0.0039 |
| 0.5° | | 40 | 0.3° | 12,000 | 31.5 | 0.0020 | 0.0079 | 12,000 | 31.5 | 0.0008 | 0.0039 | 11,000 | 31.5 | 0.0008 | 0.0039 | 10,000 | 27.6 | 0.0008 | 0.0039 |
| 1° | | 16 | 0.3° | 22,000 | 120.1 | 0.0059 | 0.0157 | 20,000 | 94.5 | 0.0039 | 0.0079 | 20,000 | 86.6 | 0.0039 | 0.0079 | 19,000 | 78.7 | 0.0039 | 0.0079 |
| 1° | | 20 | 0.3° | 15,000 | 94.5 | 0.0059 | 0.0118 | 15,000 | 70.9 | 0.0039 | 0.0079 | 15,000 | 66.9 | 0.0039 | 0.0079 | 14,000 | 59.1 | 0.0039 | 0.0079 |
| 1° | | 25 | 0.3° | 15,000 | 86.6 | 0.0059 | 0.0079 | 14,000 | 66.9 | 0.0039 | 0.0039 | 14,000 | 63.0 | 0.0039 | 0.0039 | 13,000 | 55.1 | 0.0039 | 0.0039 |
| 1° | | 30 | 0.3° | 14,000 | 86.6 | 0.0059 | 0.0079 | 14,000 | 66.9 | 0.0039 | 0.0039 | 14,000 | 63.0 | 0.0039 | 0.0039 | 13,000 | 55.1 | 0.0028 | 0.0039 |
| 1° | | 35 | 0.3° | 12,000 | 47.2 | 0.0039 | 0.0079 | 12,000 | 47.2 | 0.0020 | 0.0039 | 11,000 | 43.3 | 0.0020 | 0.0039 | 10,000 | 39.4 | 0.0020 | 0.0039 |
| 1° | | 40 | 0.3° | 12,000 | 39.4 | 0.0039 | 0.0079 | 12,000 | 39.4 | 0.0020 | 0.0039 | 11,000 | 35.4 | 0.0020 | 0.0039 | 10,000 | 31.5 | 0.0020 | 0.0039 |
| 1° | | 50 | 0.3° | 12,000 | 39.4 | 0.0030 | 0.0079 | 12,000 | 39.4 | 0.0012 | 0.0039 | 11,000 | 35.4 | 0.0012 | 0.0039 | 10,000 | 31.5 | 0.0012 | 0.0039 |
| 1° | | 60 | 0.3° | 12,000 | 31.5 | 0.0020 | 0.0079 | 12,000 | 31.5 | 0.0008 | 0.0039 | 11,000 | 31.5 | 0.0008 | 0.0039 | 10,000 | 27.6 | 0.0008 | 0.0039 |
| 1° | | 70 | 0.3° | 12,000 | 31.5 | 0.0012 | 0.0039 | 12,000 | 31.5 | 0.0004 | 0.0020 | 11,000 | 31.5 | 0.0004 | 0.0020 | 10,000 | 27.6 | 0.0004 | 0.0020 |
| 1.5° | | 16 | 0.3° | 22,000 | 120.1 | 0.0079 | 0.0157 | 20,000 | 94.5 | 0.0039 | 0.0079 | 20,000 | 86.6 | 0.0039 | 0.0079 | 19,000 | 78.7 | 0.0039 | 0.0079 |
| 1.5° | | 20 | 0.3° | 22,000 | 120.1 | 0.0079 | 0.0157 | 20,000 | 94.5 | 0.0039 | 0.0079 | 20,000 | 86.6 | 0.0039 | 0.0079 | 19,000 | 78.7 | 0.0039 | 0.0079 |
| 1.5° | 25 | 0.3° | 15,000 | 94.5 | 0.0059 | 0.0118 | 15,000 | 70.9 | 0.0039 | 0.0079 | 15,000 | 66.9 | 0.0039 | 0.0079 | 14,000 | 59.1 | 0.0039 | 0.0079 | |
| 1.5° | 30 | 0.3° | 15,000 | 86.6 | 0.0059 | 0.0079 | 14,000 | 66.9 | 0.0039 | 0.0039 | 14,000 | 63.0 | 0.0039 | 0.0039 | 13,000 | 55.1 | 0.0039 | 0.0039 | |
| 1.5° | 35 | 0.3° | 15,000 | 86.6 | 0.0059 | 0.0079 | 14,000 | 66.9 | 0.0039 | 0.0039 | 14,000 | 63.0 | 0.0039 | 0.0039 | 13,000 | 55.1 | 0.0039 | 0.0039 | |
| 1.5° | 41.5 | 0.3° | 12,000 | 47.2 | 0.0039 | 0.0079 | 12,000 | 47.2 | 0.0020 | 0.0039 | 11,000 | 43.3 | 0.0020 | 0.0039 | 10,000 | 39.4 | 0.0020 | 0.0039 | |
| 2° | 31.5 | 0.3° | 15,000 | 94.5 | 0.0059 | 0.0118 | 15,000 | 70.9 | 0.0039 | 0.0079 | 15,000 | 66.9 | 0.0039 | 0.0079 | 14,000 | 59.1 | 0.0039 | 0.0079 | |
| 1.50 | 0.5° | 8 | 0.3° | 32,000 | 181.1 | 0.0079 | 0.0236 | 30,000 | 177.2 | 0.0059 | 0.0118 | 30,000 | 165.4 | 0.0059 | 0.0118 | 25,000 | 137.8 | 0.0059 | 0.0118 |
| | 0.5° | 10 | 0.3° | 28,000 | 157.5 | 0.0079 | 0.0236 | 25,000 | 149.6 | 0.0059 | 0.0118 | 25,000 | 141.7 | 0.0059 | 0.0118 | 20,000 | 110.2 | 0.0059 | 0.0118 |
| | 0.5° | 12 | 0.3° | 28,000 | 157.5 | 0.0079 | 0.0236 | 25,000 | 149.6 | 0.0059 | 0.0118 | 25,000 | 141.7 | 0.0059 | 0.0118 | 20,000 | 110.2 | 0.0059 | 0.0118 |
| | 0.5° | 16 | 0.3° | 22,000 | 114.2 | 0.0079 | 0.0236 | 18,000 | 106.3 | 0.0059 | 0.0118 | 18,000 | 98.4 | 0.0059 | 0.0118 | 15,000 | 78.7 | 0.0059 | 0.0118 |
| | 0.5° | 20 | 0.3° | 20,000 | 102.4 | 0.0059 | 0.0157 | 16,000 | 78.7 | 0.0039 | 0.0079 | 16,000 | 74.8 | 0.0039 | 0.0079 | 13,000 | 59.1 | 0.0039 | 0.0079 |
| | 0.5° | 25 | 0.3° | 16,000 | 86.6 | 0.0059 | 0.0157 | 14,000 | 70.9 | 0.0039 | 0.0079 | 14,000 | 66.9 | 0.0039 | 0.0079 | 11,000 | 51.2 | 0.0039 | 0.0079 |
| 0.5° | 30 | 0.3° | 16,000 | 70.9 | 0.0049 | 0.0079 | 12,000 | 47.2 | 0.0020 | 0.0039 | 12,000 | 43.3 | 0.0020 | 0.0039 | 9,000 | 32.3 | 0.0020 | 0.0039 | |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

continued on next page





High Speed Milling

| Hardness | | | | - | | | | <32 HRC | | | | 33-41 HRC | | | | 42-50 HRC | | | |
|---------------|------|------------|-----------------------------|-------------------------------|------------------|----------------------|--------|-------------------------------|------------------|----------------------|--------|--|------------------|----------------------|--------|-------------------------------|------------------|----------------------|--------|
| Work Material | | | | Copper Copper Alloy | | | | Mild Steels Carbon Steels | | | | Hardened Steels Pre-hardened Steels | | | | | | | |
| Cutting Speed | | | | 103-1031 SFM | | | | 78-928 SFM | | | | | | | | 76-774 SFM | | | |
| Depth of Cut | | | | | | | | | | | | | | | | | | | |
| R (mm) | θn | L2 (mm) | Recom'd Cutting Angle | Speed (min ⁻¹) | Feed (in/min) | Depth of Cut (in) | | Speed (min ⁻¹) | Feed (in/min) | Depth of Cut (in) | | Speed (min ⁻¹) | Feed (in/min) | Depth of Cut (in) | | Speed (min ⁻¹) | Feed (in/min) | Depth of Cut (in) | |
| | | | | | | Aa | Ar | | | Aa | Ar | | | Aa | Ar | | | Aa | Ar |
| 1.50 | 0.5° | 35 | 0.3° | 12,000 | 39.4 | 0.0030 | 0.0039 | 10,000 | 31.5 | 0.0012 | 0.0020 | 9,000 | 29.9 | 0.0012 | 0.0020 | 7,800 | 23.2 | 0.0012 | 0.0020 |
| | 0.5° | 40 | 0.3° | 12,000 | 31.5 | 0.0030 | 0.0039 | 10,000 | 23.6 | 0.0012 | 0.0020 | 9,000 | 23.6 | 0.0012 | 0.0020 | 7,800 | 18.9 | 0.0012 | 0.0020 |
| | 0.5° | 50 | 0.3° | 10,000 | 25.6 | 0.0020 | 0.0039 | 8,000 | 19.7 | 0.0008 | 0.0020 | 7,500 | 19.7 | 0.0008 | 0.0020 | 6,200 | 15.7 | 0.0008 | 0.0020 |
| | 1° | 20 | 0.3° | 22,000 | 114.2 | 0.0079 | 0.0236 | 18,000 | 106.3 | 0.0059 | 0.0118 | 18,000 | 98.4 | 0.0059 | 0.0118 | 15,000 | 78.7 | 0.0059 | 0.0118 |
| | 1° | 25 | 0.3° | 20,000 | 102.4 | 0.0079 | 0.0157 | 16,000 | 78.7 | 0.0039 | 0.0079 | 16,000 | 74.8 | 0.0039 | 0.0079 | 13,000 | 59.1 | 0.0039 | 0.0079 |
| | 1° | 30 | 0.3° | 16,000 | 86.6 | 0.0079 | 0.0157 | 14,000 | 70.9 | 0.0039 | 0.0079 | 14,000 | 66.9 | 0.0039 | 0.0079 | 11,000 | 51.2 | 0.0039 | 0.0079 |
| | 1° | 35 | 0.3° | 16,000 | 70.9 | 0.0049 | 0.0079 | 12,000 | 47.2 | 0.0020 | 0.0039 | 12,000 | 43.3 | 0.0020 | 0.0039 | 9,000 | 32.3 | 0.0020 | 0.0039 |
| | 1° | 40 | 0.3° | 16,000 | 70.9 | 0.0049 | 0.0079 | 12,000 | 47.2 | 0.0020 | 0.0039 | 12,000 | 43.3 | 0.0020 | 0.0039 | 9,000 | 32.3 | 0.0020 | 0.0039 |
| | 1° | 50 | 0.3° | 12,000 | 39.4 | 0.0030 | 0.0039 | 10,000 | 31.5 | 0.0012 | 0.0020 | 9,000 | 29.9 | 0.0012 | 0.0020 | 7,800 | 23.2 | 0.0012 | 0.0020 |
| | 1° | 60 | 0.3° | 12,000 | 31.5 | 0.0030 | 0.0039 | 10,000 | 23.6 | 0.0012 | 0.0020 | 9,000 | 23.6 | 0.0012 | 0.0020 | 7,800 | 18.9 | 0.0012 | 0.0020 |
| | 1° | 70 | 0.3° | 10,000 | 25.6 | 0.0020 | 0.0039 | 8,000 | 19.7 | 0.0008 | 0.0020 | 7,500 | 19.7 | 0.0008 | 0.0020 | 6,200 | 15.7 | 0.0008 | 0.0020 |
| | 1.5° | 20 | 0.3° | 22,000 | 114.2 | 0.0098 | 0.0236 | 18,000 | 106.3 | 0.0059 | 0.0118 | 18,000 | 98.4 | 0.0059 | 0.0118 | 15,000 | 78.7 | 0.0059 | 0.0118 |
| | 1.5° | 25 | 0.3° | 20,000 | 102.4 | 0.0079 | 0.0157 | 16,000 | 78.7 | 0.0039 | 0.0079 | 16,000 | 74.8 | 0.0039 | 0.0079 | 13,000 | 59.1 | 0.0039 | 0.0079 |
| | 1.5° | 30 | 0.3° | 20,000 | 102.4 | 0.0079 | 0.0157 | 16,000 | 78.7 | 0.0039 | 0.0079 | 16,000 | 74.8 | 0.0039 | 0.0079 | 13,000 | 59.1 | 0.0039 | 0.0079 |
| | 1.5° | 35 | 0.3° | 16,000 | 86.6 | 0.0079 | 0.0157 | 14,000 | 70.9 | 0.0039 | 0.0079 | 14,000 | 66.9 | 0.0039 | 0.0079 | 11,000 | 51.2 | 0.0039 | 0.0079 |
| | 1.5° | 40 | 0.3° | 16,000 | 86.6 | 0.0079 | 0.0157 | 14,000 | 70.9 | 0.0039 | 0.0079 | 14,000 | 66.9 | 0.0039 | 0.0079 | 11,000 | 51.2 | 0.0039 | 0.0079 |
| | 1.5° | 50 | 0.3° | 16,000 | 70.9 | 0.0049 | 0.0079 | 12,000 | 47.2 | 0.0020 | 0.0039 | 12,000 | 43.3 | 0.0020 | 0.0039 | 9,000 | 32.3 | 0.0020 | 0.0039 |
| | 1.5° | 62.5 | 0.3° | 12,000 | 39.4 | 0.0030 | 0.0039 | 10,000 | 31.5 | 0.0012 | 0.0020 | 9,000 | 29.9 | 0.0012 | 0.0020 | 7,800 | 23.2 | 0.0012 | 0.0020 |
| 1.5° | 47.5 | 0.3° | 16,000 | 86.6 | 0.0098 | 0.0157 | 14,000 | 70.9 | 0.0039 | 0.0079 | 14,000 | 66.9 | 0.0039 | 0.0079 | 11,000 | 51.2 | 0.0039 | 0.0079 | |
| 2.00 | 1° | 20 | 0.5° | 20,000 | 135.8 | 0.0157 | 0.0236 | 18,000 | 126.0 | 0.0079 | 0.0197 | 18,000 | 118.1 | 0.0079 | 0.0197 | 14,000 | 90.6 | 0.0079 | 0.0197 |
| | 1° | 30 | 0.5° | 18,000 | 118.1 | 0.0157 | 0.0197 | 16,000 | 110.2 | 0.0079 | 0.0157 | 16,000 | 102.4 | 0.0079 | 0.0157 | 12,000 | 74.8 | 0.0079 | 0.0157 |
| | 1° | 40 | 0.5° | 18,000 | 118.1 | 0.0098 | 0.0236 | 16,000 | 110.2 | 0.0039 | 0.0118 | 16,000 | 102.4 | 0.0039 | 0.0118 | 12,000 | 74.8 | 0.0039 | 0.0118 |
| | 1° | 50 | 0.5° | 14,000 | 86.6 | 0.0098 | 0.0157 | 12,000 | 70.9 | 0.0039 | 0.0079 | 12,000 | 66.9 | 0.0039 | 0.0079 | 9,000 | 66.9 | 0.0039 | 0.0079 |
| | 1° | 60 | 0.5° | 16,000 | 70.9 | 0.0049 | 0.0079 | 12,000 | 47.2 | 0.0020 | 0.0039 | 12,000 | 43.3 | 0.0020 | 0.0039 | 9,000 | 32.3 | 0.0020 | 0.0039 |
| | 1.5° | 44.2 | 0.5° | 18,000 | 118.1 | 0.0098 | 0.0236 | 16,000 | 110.2 | 0.0039 | 0.0118 | 16,000 | 102.4 | 0.0039 | 0.0118 | 12,000 | 74.8 | 0.0039 | 0.0118 |
| 2.50 | 2° | 34 | 0.5° | 20,000 | 135.8 | 0.0157 | 0.0236 | 18,000 | 126.0 | 0.0079 | 0.0197 | 18,000 | 118.1 | 0.0079 | 0.0197 | 14,000 | 90.6 | 0.0079 | 0.0197 |
| | 1° | 30 | 0.5° | 20,000 | 133.9 | 0.0157 | 0.0295 | 15,000 | 126.0 | 0.0079 | 0.0118 | 15,000 | 118.1 | 0.0079 | 0.0118 | 12,000 | 94.5 | 0.0079 | 0.0118 |
| | 1° | 40 | 0.5° | 16,000 | 114.2 | 0.0098 | 0.0295 | 14,000 | 98.4 | 0.0039 | 0.0118 | 14,000 | 90.6 | 0.0039 | 0.0118 | 11,000 | 70.9 | 0.0039 | 0.0118 |
| | 1° | 60 | 0.5° | 12,000 | 70.9 | 0.0098 | 0.0197 | 10,000 | 47.2 | 0.0039 | 0.0079 | 10,000 | 43.3 | 0.0039 | 0.0079 | 8,000 | 34.6 | 0.0039 | 0.0079 |
| | 1.5° | 26.9 | 0.5° | 18,000 | 149.6 | 0.0197 | 0.0492 | 16,000 | 137.8 | 0.0098 | 0.0197 | 16,000 | 129.9 | 0.0098 | 0.0197 | 12,000 | 94.5 | 0.0098 | 0.0197 |
| | 1.5° | 65.1 | 0.5° | 14,000 | 86.6 | 0.0098 | 0.0295 | 12,000 | 63.0 | 0.0039 | 0.0118 | 12,000 | 59.1 | 0.0039 | 0.0118 | 9,000 | 43.3 | 0.0039 | 0.0118 |
| 3.00 | 2° | 50.1 | 0.5° | 16,000 | 114.2 | 0.0098 | 0.0295 | 14,000 | 98.4 | 0.0039 | 0.0118 | 14,000 | 90.6 | 0.0039 | 0.0118 | 11,000 | 70.9 | 0.0039 | 0.0118 |
| | 1° | 30 | 0.5° | 14,000 | 157.5 | 0.0236 | 0.0492 | 12,000 | 126.0 | 0.0118 | 0.0197 | 12,000 | 118.1 | 0.0118 | 0.0197 | 9,000 | 88.6 | 0.0118 | 0.0197 |
| | 1° | 40 | 0.5° | 10,000 | 126.0 | 0.0236 | 0.0492 | 10,000 | 102.4 | 0.0118 | 0.0197 | 10,000 | 94.5 | 0.0118 | 0.0197 | 8,000 | 74.8 | 0.0118 | 0.0197 |
| | 1° | 50 | 0.5° | 9,000 | 118.1 | 0.0157 | 0.0394 | 9,000 | 90.6 | 0.0079 | 0.0157 | 9,000 | 82.7 | 0.0079 | 0.0157 | 7,000 | 63.0 | 0.0079 | 0.0157 |
| | 1° | 60 | 0.5° | 9,000 | 110.2 | 0.0157 | 0.0295 | 9,000 | 78.7 | 0.0079 | 0.0118 | 9,000 | 74.8 | 0.0079 | 0.0118 | 7,000 | 55.1 | 0.0079 | 0.0118 |
| | 1° | 70 | 0.5° | 7,000 | 90.6 | 0.0157 | 0.0295 | 7,000 | 63.0 | 0.0079 | 0.0118 | 7,000 | 59.1 | 0.0079 | 0.0118 | 5,500 | 43.3 | 0.0079 | 0.0118 |
| | 1° | 80 | 0.5° | 6,000 | 78.7 | 0.0118 | 0.0295 | 6,000 | 51.2 | 0.0059 | 0.0118 | 6,000 | 47.2 | 0.0059 | 0.0118 | 5,000 | 35.4 | 0.0059 | 0.0118 |
| | 1.5° | 49 | 0.5° | 10,000 | 126.0 | 0.0236 | 0.0492 | 10,000 | 102.4 | 0.0118 | 0.0197 | 10,000 | 94.5 | 0.0118 | 0.0197 | 8,000 | 74.8 | 0.0118 | 0.0197 |
| 2° | 36 | 0.5° | 14,000 | 157.5 | 0.0236 | 0.0492 | 12,000 | 126.0 | 0.0118 | 0.0197 | 12,000 | 118.1 | 0.0118 | 0.0197 | 9,000 | 88.6 | 0.0118 | 0.0197 | |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.





List 3722: 2 Flute, Regular Length

Slotting

| Hardness | - | | <32 HRC | | 33-41 HRC | | 42-50 HRC | | | | | | | | | | | |
|---------------|------------------------|----------------|---|----------------|--|----------------|--------------|----------------|-------|------|-----|------|--|--|--|--|--|--|
| Work Material | Copper Copper Alloy | | Mild Steels Carbon Steels | | Hardened Steels, Pre-hardened Steels Stainless Steels | | | | | | | | | | | | | |
| Cutting Speed | 52-522 SFM | | 33-251 SFM | | 33-186 SFM | | 33-159 SFM | | | | | | | | | | | |
| Depth of Cut | | | <table border="1"> <tr><th>Dia</th><th>aa</th></tr> <tr><td>D<1</td><td>0.1D</td></tr> <tr><td>1≤D<3</td><td>0.3D</td></tr> <tr><td>3≤D</td><td>0.5D</td></tr> </table> | | Dia | aa | D<1 | 0.1D | 1≤D<3 | 0.3D | 3≤D | 0.5D | | | | | | |
| | Dia | aa | | | | | | | | | | | | | | | | |
| D<1 | 0.1D | | | | | | | | | | | | | | | | | |
| 1≤D<3 | 0.3D | | | | | | | | | | | | | | | | | |
| 3≤D | 0.5D | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | |
| 0.1 | 25,000 | 2.0 | 25,000 | 2.2 | 25,000 | 1.8 | 25,000 | 0.9 | | | | | | | | | | |
| 0.2 | 25,000 | 2.8 | 25,000 | 2.8 | 25,000 | 2.3 | 25,000 | 1.1 | | | | | | | | | | |
| 0.3 | 25,000 | 3.3 | 25,000 | 3.4 | 25,000 | 2.5 | 25,000 | 1.7 | | | | | | | | | | |
| 0.4 | 25,000 | 3.7 | 25,000 | 3.7 | 25,000 | 2.8 | 25,000 | 2.1 | | | | | | | | | | |
| 0.5 | 25,000 | 3.9 | 25,000 | 3.8 | 25,000 | 3.5 | 22,000 | 2.4 | | | | | | | | | | |
| 0.6 | 25,000 | 4.5 | 25,000 | 4.4 | 19,500 | 3.5 | 17,000 | 2.4 | | | | | | | | | | |
| 0.7 | 25,000 | 4.9 | 24,000 | 4.7 | 17,000 | 3.5 | 15,000 | 2.4 | | | | | | | | | | |
| 0.8 | 25,000 | 5.7 | 21,500 | 4.7 | 15,500 | 3.5 | 13,500 | 2.6 | | | | | | | | | | |
| 0.9 | 25,000 | 6.4 | 19,000 | 4.7 | 13,500 | 3.5 | 12,000 | 2.6 | | | | | | | | | | |
| 1.0 | 25,000 | 7.3 | 17,500 | 4.7 | 12,500 | 3.5 | 11,000 | 2.6 | | | | | | | | | | |
| 1.1 | 25,000 | 7.8 | 16,000 | 4.7 | 11,500 | 3.5 | 9,900 | 2.6 | | | | | | | | | | |
| 1.2 | 25,000 | 8.3 | 15,000 | 4.7 | 10,500 | 3.5 | 9,300 | 2.6 | | | | | | | | | | |
| 1.3 | 25,000 | 8.5 | 14,000 | 4.7 | 9,900 | 3.5 | 8,700 | 2.6 | | | | | | | | | | |
| 1.4 | 25,000 | 9.3 | 13,000 | 4.7 | 9,200 | 3.5 | 8,100 | 2.6 | | | | | | | | | | |
| 1.5 | 25,000 | 9.8 | 12,500 | 4.7 | 8,900 | 3.5 | 7,900 | 2.6 | | | | | | | | | | |
| 1.6 | 25,000 | 10.2 | 12,000 | 4.7 | 8,500 | 3.5 | 7,500 | 2.6 | | | | | | | | | | |
| 1.7 | 25,000 | 10.9 | 11,000 | 4.7 | 7,900 | 3.5 | 7,000 | 2.6 | | | | | | | | | | |
| 1.8 | 25,000 | 11.2 | 10,500 | 5.1 | 7,500 | 3.5 | 6,800 | 2.7 | | | | | | | | | | |
| 1.9 | 25,000 | 12.1 | 10,000 | 5.1 | 7,100 | 3.5 | 6,300 | 2.7 | | | | | | | | | | |
| 2.0 | 24,000 | 12.2 | 9,700 | 5.1 | 7,000 | 3.5 | 6,300 | 2.8 | | | | | | | | | | |
| 2.1 | 23,000 | 13.0 | 9,300 | 5.5 | 6,600 | 3.5 | 5,900 | 2.8 | | | | | | | | | | |
| 2.2 | 22,500 | 13.0 | 9,000 | 5.5 | 6,500 | 3.5 | 5,700 | 2.8 | | | | | | | | | | |
| 2.3 | 22,000 | 13.0 | 8,800 | 5.9 | 6,400 | 3.5 | 5,600 | 2.8 | | | | | | | | | | |
| 2.4 | 20,500 | 13.8 | 8,600 | 5.9 | 6,300 | 3.5 | 5,500 | 2.8 | | | | | | | | | | |
| 2.5 | 20,000 | 13.8 | 8,200 | 6.3 | 6,100 | 3.5 | 5,300 | 2.8 | | | | | | | | | | |
| 2.6 | 19,000 | 15.0 | 7,900 | 6.3 | 5,900 | 3.9 | 5,000 | 2.8 | | | | | | | | | | |
| 2.7 | 18,000 | 15.0 | 7,600 | 6.3 | 5,700 | 3.9 | 4,900 | 2.8 | | | | | | | | | | |
| 2.8 | 17,500 | 15.0 | 7,300 | 6.7 | 5,500 | 3.9 | 4,700 | 3.0 | | | | | | | | | | |
| 2.9 | 17,000 | 15.0 | 7,100 | 6.7 | 5,300 | 3.9 | 4,500 | 3.0 | | | | | | | | | | |
| 3.0 | 16,000 | 15.7 | 6,900 | 6.7 | 5,300 | 3.9 | 4,400 | 3.0 | | | | | | | | | | |
| 3.1 | 15,500 | 16.1 | 6,700 | 7.1 | 5,100 | 3.9 | 4,300 | 3.0 | | | | | | | | | | |
| 3.2 | 15,000 | 16.5 | 6,500 | 7.1 | 5,000 | 4.3 | 4,200 | 3.1 | | | | | | | | | | |
| 3.3 | 14,500 | 16.5 | 6,300 | 7.5 | 4,800 | 4.3 | 4,000 | 3.1 | | | | | | | | | | |
| 3.4 | 14,000 | 16.5 | 6,100 | 7.5 | 4,600 | 4.3 | 3,900 | 3.1 | | | | | | | | | | |
| 3.5 | 14,000 | 16.5 | 6,000 | 7.5 | 4,600 | 4.7 | 3,800 | 3.1 | | | | | | | | | | |
| 3.6 | 13,500 | 16.9 | 5,900 | 7.9 | 4,500 | 4.7 | 3,700 | 3.3 | | | | | | | | | | |
| 3.7 | 12,500 | 16.9 | 5,700 | 7.9 | 4,400 | 4.7 | 3,600 | 3.3 | | | | | | | | | | |
| 3.8 | 12,500 | 17.3 | 5,600 | 8.3 | 4,400 | 4.7 | 3,600 | 3.3 | | | | | | | | | | |
| 3.9 | 12,000 | 17.3 | 5,500 | 8.3 | 4,200 | 4.9 | 3,500 | 3.3 | | | | | | | | | | |
| 4.0 | 12,000 | 17.7 | 5,400 | 8.3 | 4,200 | 4.9 | 3,500 | 3.5 | | | | | | | | | | |
| 4.1 | 11,500 | 18.9 | 5,300 | 8.7 | 4,100 | 4.9 | 3,400 | 3.5 | | | | | | | | | | |
| 4.2 | 11,500 | 18.9 | 5,300 | 8.7 | 4,100 | 4.9 | 3,300 | 3.5 | | | | | | | | | | |
| 4.3 | 11,000 | 18.9 | 5,200 | 9.1 | 4,000 | 4.9 | 3,300 | 3.5 | | | | | | | | | | |
| 4.4 | 11,000 | 19.7 | 5,100 | 9.4 | 3,900 | 5.1 | 3,200 | 3.7 | | | | | | | | | | |
| 4.5 | 10,500 | 19.7 | 5,100 | 9.4 | 3,900 | 5.1 | 3,200 | 3.7 | | | | | | | | | | |
| 4.6 | 10,500 | 20.5 | 5,000 | 9.8 | 3,800 | 5.1 | 3,200 | 3.7 | | | | | | | | | | |
| 4.7 | 10,500 | 20.5 | 5,000 | 10.2 | 3,800 | 5.1 | 3,100 | 3.7 | | | | | | | | | | |
| 4.8 | 10,500 | 20.9 | 4,900 | 10.2 | 3,700 | 5.1 | 3,100 | 3.7 | | | | | | | | | | |

1. Use a rigid and precise machine and holder.
2. Use a suitable cutting fluid with high smoke retardant.
3. When the length of tool extension from the machine is long, reduce the speed and feed.

continued on next page





Slotting

| Hardness | - | | <32 HRC | | 33-41 HRC | | 42-50 HRC | | | | | | | | | |
|---------------|---|----------------|------------------------------|----------------|--|----------------|--------------|----------------|-------|------|-----|------|--|--|--|--|
| Work Material | Copper Copper Alloy | | Mild Steels Carbon Steels | | Hardened Steels, Pre-hardened Steels Stainless Steels | | | | | | | | | | | |
| Cutting Speed | 52-522 SFM | | 33-251 SFM | | 33-186 SFM | | 33-159 SFM | | | | | | | | | |
| Depth of Cut | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> </tr> </thead> <tbody> <tr> <td>D<1</td> <td>0.1D</td> </tr> <tr> <td>1≤D<3</td> <td>0.3D</td> </tr> <tr> <td>3≤D</td> <td>0.5D</td> </tr> </tbody> </table> | | | | Dia | aa | D<1 | 0.1D | 1≤D<3 | 0.3D | 3≤D | 0.5D | | | | |
| Dia | aa | | | | | | | | | | | | | | | |
| D<1 | 0.1D | | | | | | | | | | | | | | | |
| 1≤D<3 | 0.3D | | | | | | | | | | | | | | | |
| 3≤D | 0.5D | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | |
| 4.9 | 10,000 | 20.9 | 4,900 | 10.6 | 3,600 | 5.1 | 3,100 | 3.7 | | | | | | | | |
| 5.0 | 9,500 | 21.3 | 4,800 | 10.6 | 3,500 | 5.1 | 3,000 | 3.9 | | | | | | | | |
| 5.1 | 9,500 | 21.3 | 4,700 | 10.6 | 3,500 | 5.1 | 3,000 | 3.9 | | | | | | | | |
| 5.2 | 9,300 | 21.3 | 4,600 | 10.6 | 3,400 | 5.1 | 2,900 | 3.9 | | | | | | | | |
| 5.3 | 9,200 | 21.3 | 4,600 | 10.6 | 3,400 | 5.1 | 2,900 | 3.9 | | | | | | | | |
| 5.4 | 9,000 | 21.3 | 4,500 | 10.6 | 3,300 | 5.1 | 2,800 | 3.9 | | | | | | | | |
| 5.5 | 8,800 | 21.3 | 4,400 | 10.6 | 3,200 | 5.1 | 2,700 | 3.9 | | | | | | | | |
| 5.6 | 8,700 | 21.3 | 4,300 | 10.6 | 3,100 | 5.1 | 2,600 | 3.9 | | | | | | | | |
| 5.7 | 8,500 | 21.3 | 4,200 | 10.6 | 3,100 | 5.1 | 2,600 | 3.9 | | | | | | | | |
| 5.8 | 8,400 | 20.9 | 4,200 | 10.6 | 3,000 | 5.1 | 2,600 | 3.9 | | | | | | | | |
| 5.9 | 8,200 | 20.9 | 4,100 | 10.6 | 2,900 | 5.1 | 2,500 | 3.9 | | | | | | | | |
| 6.0 | 7,900 | 20.9 | 4,000 | 10.6 | 2,900 | 5.1 | 2,500 | 3.9 | | | | | | | | |
| 6.5 | 7,500 | 20.9 | 3,700 | 10.6 | 2,700 | 5.1 | 2,300 | 3.9 | | | | | | | | |
| 7.0 | 6,900 | 20.9 | 3,400 | 10.6 | 2,500 | 5.1 | 2,100 | 3.9 | | | | | | | | |
| 7.5 | 6,400 | 20.9 | 3,200 | 10.6 | 2,300 | 5.1 | 2,000 | 3.9 | | | | | | | | |
| 8.0 | 5,900 | 20.5 | 3,000 | 10.2 | 2,200 | 4.9 | 1,900 | 3.9 | | | | | | | | |
| 8.5 | 5,600 | 20.5 | 2,800 | 10.2 | 2,000 | 4.9 | 1,700 | 3.9 | | | | | | | | |
| 9.0 | 5,300 | 20.1 | 2,600 | 10.2 | 1,900 | 4.9 | 1,500 | 3.9 | | | | | | | | |
| 9.5 | 5,100 | 20.1 | 2,500 | 10.2 | 1,800 | 4.9 | 1,400 | 3.7 | | | | | | | | |
| 10.0 | 4,700 | 19.7 | 2,400 | 9.8 | 1,700 | 4.9 | 1,500 | 3.7 | | | | | | | | |
| 11.0 | 4,400 | 19.7 | 2,200 | 9.8 | 1,600 | 4.9 | 1,100 | 3.7 | | | | | | | | |
| 12.0 | 4,000 | 20.1 | 2,000 | 9.8 | 1,400 | 4.9 | 1,200 | 3.7 | | | | | | | | |
| 16.0 | 3,000 | 15.7 | 1,500 | 7.9 | 1,100 | 4.5 | 800 | 3.1 | | | | | | | | |
| 18.0 | 2,700 | 14.2 | 1,300 | 7.1 | 900 | 3.9 | 700 | 2.8 | | | | | | | | |
| 20.0 | 2,400 | 11.8 | 1,200 | 5.9 | 800 | 3.5 | 600 | 2.4 | | | | | | | | |


1. Use a rigid and precise machine and holder.
2. Use a suitable cutting fluid with high smoke retardant.
3. When the length of tool extension from the machine is long, reduce the speed and feed.





List 3723: 2 Flute, Long Length

Side Milling

| Hardness | - | | <32 HRC | | 33-41 HRC | | 42-50 HRC | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------|--|-------------|------------------------------|-------------|--|-------------|-----------|-------------|-----|----|-------|--|--|-----|----|----|-------|----|--------|---------|----|-------|-------|----|-------|-----|----|------|---|--|--|--|--|--|
| Work Material | Copper Copper Alloy | | Mild Steels Carbon Steels | | Hardened Steels, Pre-hardened Steels Stainless Steels | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Cutting Speed | 66-116 SFM | | 46-76 SFM | | 39-76 SFM | | 57-67 SFM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Depth of Cut | <table border="1"> <tr><th>Dia</th><th>aa</th><th>ar</th></tr> <tr><td>D<1</td><td>4D</td><td>0.05D</td></tr> <tr><td>1≤D</td><td>4D</td><td>0.01D</td></tr> </table> | | Dia | aa | ar | D<1 | 4D | 0.05D | 1≤D | 4D | 0.01D | <table border="1"> <tr><th>Dia</th><th>aa</th><th>ar</th></tr> <tr><td>D<0.3</td><td>4D</td><td>0.015D</td></tr> <tr><td>0.3≤D<1</td><td>4D</td><td>0.03D</td></tr> <tr><td>1≤D<3</td><td>4D</td><td>0.05D</td></tr> <tr><td>3≤D</td><td>4D</td><td>0.1D</td></tr> </table> | | Dia | aa | ar | D<0.3 | 4D | 0.015D | 0.3≤D<1 | 4D | 0.03D | 1≤D<3 | 4D | 0.05D | 3≤D | 4D | 0.1D |  | | | | | |
| | Dia | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D<1 | 4D | 0.05D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1≤D | 4D | 0.01D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dia | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D<0.3 | 4D | 0.015D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.3≤D<1 | 4D | 0.03D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1≤D<3 | 4D | 0.05D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3≤D | 4D | 0.1D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.2 | 25,000 | 2.8 | 25,000 | 1.3 | 25,000 | 1.5 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.3 | 25,000 | 3.4 | 19,730 | 1.4 | 18,600 | 1.3 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.4 | 22,070 | 3.8 | 14,800 | 1.6 | 13,950 | 1.3 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.5 | 17,660 | 4.2 | 11,840 | 1.6 | 11,160 | 1.4 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.6 | 14,720 | 4.3 | 9,860 | 1.6 | 9,300 | 1.5 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.7 | 12,610 | 3.7 | 8,460 | 1.6 | 7,970 | 1.8 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.8 | 11,040 | 4.3 | 7,400 | 1.6 | 6,970 | 1.8 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.9 | 9,810 | 3.9 | 6,580 | 1.6 | 6,200 | 1.8 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.0 | 8,830 | 4.3 | 5,920 | 1.8 | 5,580 | 1.6 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.1 | 8,030 | 4.7 | 5,380 | 1.8 | 5,070 | 1.6 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.2 | 7,360 | 4.4 | 4,930 | 1.8 | 4,650 | 1.6 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.3 | 6,790 | 4.3 | 4,550 | 1.8 | 4,290 | 1.6 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.4 | 6,310 | 4.3 | 4,230 | 1.8 | 3,990 | 1.6 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.5 | 5,890 | 4.3 | 3,950 | 1.8 | 3,720 | 1.6 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.6 | 5,520 | 4.1 | 3,700 | 1.8 | 3,490 | 1.6 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.7 | 5,190 | 4.0 | 3,480 | 1.7 | 3,280 | 1.5 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.8 | 4,910 | 4.0 | 3,290 | 1.8 | 3,100 | 1.6 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.9 | 4,650 | 4.0 | 3,120 | 1.7 | 2,940 | 1.5 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.0 | 4,410 | 4.0 | 2,960 | 1.7 | 2,790 | 1.6 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.1 | 4,200 | 4.1 | 2,820 | 1.7 | 2,660 | 1.5 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.2 | 4,010 | 4.5 | 2,690 | 2.0 | 2,540 | 1.5 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.3 | 3,840 | 4.4 | 2,570 | 1.9 | 2,430 | 1.5 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.4 | 3,680 | 4.3 | 2,470 | 2.1 | 2,320 | 1.5 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.5 | 3,530 | 4.7 | 2,370 | 2.1 | 2,230 | 1.4 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.6 | 3,400 | 4.8 | 2,280 | 2.1 | 2,150 | 1.4 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.7 | 3,270 | 5.2 | 2,190 | 2.1 | 2,070 | 1.6 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.8 | 3,150 | 5.2 | 2,110 | 2.1 | 1,990 | 1.6 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.9 | 3,040 | 5.1 | 2,040 | 2.3 | 1,920 | 1.6 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.0 | 2,940 | 5.1 | 1,970 | 2.2 | 1,860 | 1.7 | 2,010 | 3.1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.1 | 2,850 | 5.6 | 1,910 | 2.3 | 1,800 | 1.8 | 1,940 | 3.2 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.2 | 2,760 | 5.8 | 1,850 | 2.4 | 1,740 | 1.7 | 1,880 | 3.3 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.3 | 2,680 | 5.8 | 1,790 | 2.4 | 1,690 | 1.9 | 1,820 | 3.4 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.4 | 2,600 | 5.8 | 1,740 | 2.7 | 1,640 | 2.0 | 1,770 | 3.3 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.5 | 2,520 | 5.7 | 1,690 | 2.6 | 1,590 | 1.9 | 1,720 | 3.4 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.6 | 2,450 | 5.7 | 1,640 | 2.5 | 1,550 | 2.0 | 1,670 | 3.5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.7 | 2,390 | 5.9 | 1,600 | 2.6 | 1,510 | 2.1 | 1,630 | 3.6 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.8 | 2,320 | 6.2 | 1,560 | 2.5 | 1,470 | 2.0 | 1,580 | 3.5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.9 | 2,260 | 6.3 | 1,520 | 2.8 | 1,430 | 2.1 | 1,540 | 3.4 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.0 | 2,210 | 6.2 | 1,480 | 2.7 | 1,390 | 2.2 | 1,500 | 3.8 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.1 | 2,150 | 6.4 | 1,440 | 2.7 | 1,360 | 2.2 | 1,470 | 3.7 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.2 | 2,100 | 6.8 | 1,410 | 2.8 | 1,330 | 2.1 | 1,430 | 3.6 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.3 | 2,050 | 6.7 | 1,380 | 2.9 | 1,300 | 2.2 | 1,400 | 3.5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.4 | 2,010 | 7.1 | 1,350 | 2.8 | 1,270 | 2.2 | 1,370 | 3.7 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.5 | 1,960 | 7.4 | 1,320 | 2.9 | 1,240 | 2.1 | 1,340 | 3.8 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.6 | 1,920 | 7.2 | 1,290 | 2.9 | 1,210 | 2.1 | 1,310 | 3.8 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.7 | 1,880 | 7.0 | 1,260 | 3.0 | 1,190 | 2.0 | 1,280 | 3.7 | | | | | | | | | | | | | | | | | | | | | | | | | | |

1. Use a rigid and precise machine and holder.
2. Use a suitable cutting fluid with high smoke retardant.
3. When the length of tool extension from the machine is long, reduce the speed and feed.

continued on next page





Side Milling

| Hardness | - | | <32 HRC | | 33-41 HRC | | 42-50 HRC | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------|--|----------------|------------------------------|----------------|--|----------------|--------------|----------------|-----|----|-------|--|--|--|--|-----|----------------|----------------|-------|----|--------|---------|----|-------|-------|----|-------|-----|----|------|--|--|
| Work Material | Copper Copper Alloy | | Mild Steels Carbon Steels | | Hardened Steels, Pre-hardened Steels Stainless Steels | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Cutting Speed | 66-116 SFM | | 46-76 SFM | | 39-76 SFM | | 57-67 SFM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Depth of Cut | <table border="1"> <thead> <tr> <th>Dia</th> <th>a_a</th> <th>a_r</th> </tr> </thead> <tbody> <tr> <td>D<1</td> <td>4D</td> <td>0.05D</td> </tr> <tr> <td>1≤D</td> <td>4D</td> <td>0.01D</td> </tr> </tbody> </table> | | Dia | a _a | a _r | D<1 | 4D | 0.05D | 1≤D | 4D | 0.01D | <table border="1"> <thead> <tr> <th>Dia</th> <th>a_a</th> <th>a_r</th> </tr> </thead> <tbody> <tr> <td>D<0.3</td> <td>4D</td> <td>0.015D</td> </tr> <tr> <td>0.3≤D<1</td> <td>4D</td> <td>0.03D</td> </tr> <tr> <td>1≤D<3</td> <td>4D</td> <td>0.05D</td> </tr> <tr> <td>3≤D</td> <td>4D</td> <td>0.1D</td> </tr> </tbody> </table> | | | | Dia | a _a | a _r | D<0.3 | 4D | 0.015D | 0.3≤D<1 | 4D | 0.03D | 1≤D<3 | 4D | 0.05D | 3≤D | 4D | 0.1D | | |
| | Dia | a _a | a _r | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D<1 | 4D | 0.05D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1≤D | 4D | 0.01D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dia | a _a | a _r | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D<0.3 | 4D | 0.015D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.3≤D<1 | 4D | 0.03D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1≤D<3 | 4D | 0.05D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3≤D | 4D | 0.1D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.8 | 1,840 | 6.9 | 1,230 | 2.9 | 1,160 | 2.0 | 1,250 | 3.6 | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.9 | 1,800 | 7.4 | 1,210 | 3.1 | 1,140 | 2.1 | 1,230 | 3.5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.0 | 1,770 | 7.3 | 1,180 | 3.2 | 1,120 | 2.0 | 1,200 | 3.6 | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.1 | 1,730 | 7.5 | 1,160 | 3.1 | 1,090 | 2.0 | 1,180 | 3.9 | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.2 | 1,700 | 7.4 | 1,140 | 3.0 | 1,070 | 2.0 | 1,160 | 3.8 | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.3 | 1,670 | 7.7 | 1,120 | 3.2 | 1,050 | 2.1 | 1,140 | 3.7 | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.4 | 1,640 | 7.5 | 1,100 | 3.2 | 1,030 | 2.0 | 1,110 | 3.7 | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.5 | 1,610 | 7.4 | 1,080 | 3.1 | 1,010 | 2.0 | 1,090 | 3.9 | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.6 | 1,580 | 7.7 | 1,060 | 3.0 | 1,000 | 2.0 | 1,070 | 3.8 | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.7 | 1,550 | 7.5 | 1,040 | 3.0 | 980 | 1.9 | 1,060 | 3.8 | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.8 | 1,520 | 7.4 | 1,020 | 3.2 | 960 | 2.1 | 1,040 | 3.7 | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.9 | 1,500 | 7.7 | 1,000 | 3.1 | 950 | 2.0 | 1,020 | 4.0 | | | | | | | | | | | | | | | | | | | | | | | | |
| 6.0 | 1,470 | 7.6 | 990 | 3.1 | 930 | 2.0 | 1,000 | 3.9 | | | | | | | | | | | | | | | | | | | | | | | | |
| 8.0 | 1,100 | 7.9 | 740 | 3.1 | 700 | 2.0 | 750 | 3.7 | | | | | | | | | | | | | | | | | | | | | | | | |
| 10.0 | 880 | 7.7 | 590 | 3.0 | 560 | 2.0 | 600 | 3.6 | | | | | | | | | | | | | | | | | | | | | | | | |
| 12.0 | 740 | 7.2 | 490 | 2.9 | 460 | 2.0 | 500 | 3.6 | | | | | | | | | | | | | | | | | | | | | | | | |

1. Use a rigid and precise machine and holder.
2. Use a suitable cutting fluid with high smoke retardant.
3. When the length of tool extension from the machine is long, reduce the speed and feed.





List 3770: 2 Flute, Corner Radius, Regular Length

Slotting

| Hardness | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------|--|-------------|-----------------------------|-------------|---|-------------|---|-------------|-----------------|-------------|-----------------|-------------|--|--|--|--|--|--|--|--|-----|----|-----|------|-----|------|--|--|--|--|-----|----|-----|------|-------|------|-----|------|
| Work Material | Mild Steel Carbon Steels | | Alloy Steels Tool Steels | | Hardened Steels Pre-hardened Steels | | Hardened Steels Pre-hardened Steels | | Hardened Steels | | Hardened Steels | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Cutting Speed | 275 SFM | | 220 SFM | | 180 SFM | | 150 SFM | | 100 SFM | | 65 SFM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Depth of Cut | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> </tr> </thead> <tbody> <tr> <td>D<1</td> <td>0.1D</td> </tr> <tr> <td>1≤D<3</td> <td>0.3D</td> </tr> <tr> <td>3<D</td> <td>0.5D</td> </tr> </tbody> </table> | | | | Dia | aa | D<1 | 0.1D | 1≤D<3 | 0.3D | 3<D | 0.5D | | | | | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> </tr> </thead> <tbody> <tr> <td>D<1</td> <td>0.2D</td> </tr> <tr> <td>1≤D</td> <td>0.5D</td> </tr> </tbody> </table> | | | | Dia | aa | D<1 | 0.2D | 1≤D | 0.5D | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> </tr> </thead> <tbody> <tr> <td>D<1</td> <td>0.1D</td> </tr> <tr> <td>1≤D<3</td> <td>0.2D</td> </tr> <tr> <td>3<D</td> <td>0.5D</td> </tr> </tbody> </table> | | | | Dia | aa | D<1 | 0.1D | 1≤D<3 | 0.2D | 3<D | 0.5D |
| | Dia | aa | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D<1 | 0.1D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1≤D<3 | 0.3D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3<D | 0.5D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dia | aa | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D<1 | 0.2D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1≤D | 0.5D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dia | aa | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D<1 | 0.1D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1≤D<3 | 0.2D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3<D | 0.5D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.2 | 25,000 | 2.7 | 25,000 | 2.7 | 25,000 | 2.3 | 25,000 | 1.1 | 25,000 | 1.0 | 25,000 | 1.0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.3 | 25,000 | 3.5 | 25,000 | 3.5 | 25,000 | 2.4 | 25,000 | 1.7 | 32,340 | 1.3 | 21,020 | 1.3 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.4 | 25,000 | 3.8 | 25,000 | 3.8 | 25,000 | 2.7 | 25,000 | 2.2 | 24,260 | 1.7 | 15,770 | 1.3 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.5 | 25,000 | 3.8 | 25,000 | 4.1 | 25,000 | 3.5 | 25,000 | 2.7 | 19,410 | 1.7 | 12,610 | 1.3 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.6 | 25,000 | 3.4 | 25,000 | 5.0 | 25,000 | 4.2 | 24,260 | 3.1 | 16,170 | 1.7 | 10,510 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.8 | 25,000 | 5.0 | 25,000 | 6.6 | 21,830 | 4.9 | 18,190 | 3.5 | 12,130 | 1.7 | 7,880 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.0 | 25,000 | 6.5 | 21,350 | 7.2 | 17,470 | 4.9 | 14,550 | 3.4 | 9,700 | 1.7 | 6,310 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.5 | 17,790 | 6.5 | 14,230 | 6.6 | 11,640 | 4.6 | 9,700 | 3.2 | 6,470 | 2.0 | 4,200 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.0 | 13,340 | 6.4 | 10,670 | 6.2 | 8,730 | 4.4 | 7,280 | 3.2 | 4,850 | 2.0 | 3,150 | 1.1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.0 | 8,890 | 9.5 | 7,120 | 6.6 | 5,820 | 4.3 | 4,850 | 3.3 | 3,230 | 2.1 | 2,100 | 1.3 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.0 | 6,670 | 10.4 | 5,340 | 8.0 | 4,370 | 5.0 | 3,640 | 3.6 | 2,430 | 2.2 | 1,580 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.0 | 5,340 | 12.5 | 4,270 | 9.2 | 3,490 | 5.0 | 2,910 | 3.7 | 1,940 | 2.2 | 1,260 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6.0 | 4,450 | 12.2 | 3,560 | 9.2 | 2,910 | 5.0 | 2,430 | 3.8 | 1,620 | 2.3 | 1,050 | 1.0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8.0 | 3,340 | 11.7 | 2,670 | 9.2 | 2,180 | 4.9 | 1,820 | 3.7 | 1,210 | 2.1 | 790 | 1.0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10.0 | 2,670 | 11.1 | 2,130 | 9.0 | 1,750 | 4.9 | 1,460 | 3.6 | 970 | 2.0 | 630 | 1.0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12.0 | 2,220 | 11.1 | 1,780 | 9.0 | 1,460 | 4.9 | 1,210 | 3.6 | 810 | 1.8 | 530 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14.0 | 1,910 | 11.0 | 1,520 | 8.6 | 1,250 | 4.3 | 1,040 | 3.7 | 690 | 1.6 | 450 | 0.7 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16.0 | 1,670 | 10.3 | 1,330 | 7.8 | 1,090 | 3.9 | 910 | 3.1 | 610 | 1.4 | 390 | 0.6 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18.0 | 1,480 | 9.3 | 1,190 | 7.0 | 970 | 3.4 | 810 | 2.9 | 540 | 1.2 | 350 | 0.6 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20.0 | 1,330 | 8.3 | 1,070 | 6.2 | 870 | 3.0 | 730 | 2.5 | 490 | 1.2 | 320 | 0.5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22.0 | 1,210 | 7.6 | 970 | 5.6 | 790 | 2.7 | 660 | 2.3 | 440 | 1.0 | 290 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24.0 | 1,110 | 7.0 | 890 | 5.2 | 730 | 2.6 | 610 | 2.1 | 400 | 1.0 | 260 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25.0 | 1,070 | 6.6 | 850 | 5.0 | 700 | 2.6 | 580 | 2.1 | 390 | 0.8 | 250 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30.0 | 890 | 5.5 | 710 | 4.1 | 580 | 2.0 | 490 | 1.7 | 320 | 0.8 | 210 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | |


1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.






List 3771: 4 Flute, Corner Radius, Regular Length

Side Milling

| Hardness | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | |
|---------------|--|-------------|-----------------------------|-------------|---|-------------|---|-------------|-------------------------|-------------|-----------------|-------------|
| Work Material | Mild Steel Carbon Steels Cast Iron | | Alloy Steels Tool Steels | | Hardened Steels Pre-hardened Steels | | Hardened Steels Pre-hardened Steels | | Hardened Steels | | Hardened Steels | |
| Cutting Speed | 396 SFM | | 294 SFM | | 258 SFM | | 192 SFM | | 156 SFM | | 96 SFM | |
| Depth of Cut | $a_a=1.2D$ $a_r=0.2D$  | | | | | | $a_a=1D$ $a_r=0.1D$ | | $a_a=1D$ $a_r=0.05D$ | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 3 | 12,810 | 40.6 | 9,510 | 28.4 | 8,340 | 24.9 | 6,210 | 18.5 | 5,050 | 13.0 | 3,100 | 5.5 |
| 4 | 9,680 | 46.5 | 7,190 | 31.6 | 6,310 | 27.8 | 4,690 | 20.7 | 3,810 | 15.3 | 2,350 | 7.5 |
| 5 | 7,680 | 49.2 | 5,710 | 34.2 | 5,010 | 30.0 | 3,730 | 20.9 | 3,030 | 17.0 | 1,860 | 8.9 |
| 6 | 6,400 | 54.8 | 4,750 | 37.8 | 4,170 | 30.7 | 3,100 | 22.9 | 2,520 | 16.1 | 1,550 | 8.6 |
| 8 | 4,800 | 57.6 | 3,570 | 38.5 | 3,130 | 32.5 | 2,330 | 23.3 | 1,890 | 16.7 | 1,160 | 9.3 |
| 10 | 3,840 | 53.8 | 2,850 | 36.5 | 2,500 | 29.0 | 1,860 | 20.9 | 1,510 | 15.1 | 930 | 8.6 |
| 12 | 3,200 | 54.2 | 2,380 | 36.1 | 2,090 | 28.8 | 1,550 | 19.9 | 1,260 | 14.6 | 780 | 8.1 |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

High Speed Light Milling

| Hardness | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | | | | | | | | | | | | | | | | |
|---------------|--|-------------|----------------------------|-------------|---|-------------|--|-------------|--|-------------|------|-------|-----|------|-------|--|--|-----|----|----|-----|------|-------|-----|------|-------|
| Work Material | Carbon Steels 1045, 1055 | | Alloy Steels 4140, 4340 | | Hardened Steels Pre-hardened Steels D2, H13, 17-4PH | | Tool Steels, Hardened Steels Pre-hardened Steels, D2, H13 | | Hardened Steels Heat Resistant Steels | | | | | | | | | | | | | | | | | |
| Cutting Speed | 1,560 SFM | | 1,380 SFM | | 960 SFM | | 600 SFM | | 130 SFM | | | | | | | | | | | | | | | | | |
| Depth of Cut | <table border="1"> <thead> <tr><th>Dia</th><th>aa</th><th>ar</th></tr> </thead> <tbody> <tr><td>D<3</td><td>1.5D</td><td>0.01D</td></tr> <tr><td>3≤D</td><td>1.5D</td><td>0.02D</td></tr> </tbody> </table>  | | | | | | Dia | aa | ar | D<3 | 1.5D | 0.01D | 3≤D | 1.5D | 0.02D | <table border="1"> <thead> <tr><th>Dia</th><th>aa</th><th>ar</th></tr> </thead> <tbody> <tr><td>D<8</td><td>1.0D</td><td>0.01D</td></tr> <tr><td>8≤D</td><td>1.0D</td><td>0.02D</td></tr> </tbody> </table> | | Dia | aa | ar | D<8 | 1.0D | 0.01D | 8≤D | 1.0D | 0.02D |
| Dia | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | |
| D<3 | 1.5D | 0.01D | | | | | | | | | | | | | | | | | | | | | | | | |
| 3≤D | 1.5D | 0.02D | | | | | | | | | | | | | | | | | | | | | | | | |
| Dia | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | |
| D<8 | 1.0D | 0.01D | | | | | | | | | | | | | | | | | | | | | | | | |
| 8≤D | 1.0D | 0.02D | | | | | | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | | | | | | | |
| 3 | 25,000.0 | 230.0 | 25,000 | 220.0 | 25,000 | 200.0 | 19,410 | 155.2 | 4,200 | 28.6 | | | | | | | | | | | | | | | | |
| 4 | 25,000.0 | 260.0 | 25,000 | 240.0 | 23,470 | 215.9 | 14,670 | 129.1 | 3,180 | 25.4 | | | | | | | | | | | | | | | | |
| 5 | 25,000.0 | 300.0 | 25,000 | 270.0 | 18,630 | 193.7 | 11,640 | 116.4 | 2,520 | 22.2 | | | | | | | | | | | | | | | | |
| 6 | 25,000.0 | 322.6 | 22,320 | 261.5 | 15,520 | 169.9 | 9,700 | 102.3 | 2,100 | 19.6 | | | | | | | | | | | | | | | | |
| 8 | 18,920.0 | 264.9 | 16,740 | 214.2 | 11,640 | 135.1 | 7,280 | 81.5 | 1,580 | 15.8 | | | | | | | | | | | | | | | | |
| 10 | 15,140.0 | 242.2 | 13,390 | 198.2 | 9,310 | 126.7 | 5,820 | 74.5 | 1,260 | 14.6 | | | | | | | | | | | | | | | | |
| 12 | 12,610.0 | 213.8 | 11,160 | 169.3 | 7,760 | 107.0 | 4,850 | 62.1 | 1,050 | 12.2 | | | | | | | | | | | | | | | | |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.





List 3794: 4 Flute, Long Neck, Stub Length

Slotting

| Hardness | | - | | | <32 HRC | | | 33-41 HRC | | | 42-50 HRC | | |
|---------------|---------|------------------------|---------------|---------|------------------------------|---------------|---------|--|---------------|---------|-------------|---------------|---------|
| Work Material | | Copper Copper Alloy | | | Mild Steels Carbon Steels | | | Hardened Steels Pre-hardened Steels Stainless Steels | | | | | |
| Cutting Speed | | 173-374 SFM | | | 144-309 SFM | | | 130-309 SFM | | | 101-248 SFM | | |
| Depth of Cut | | | | | | | | | | | | | |
| D (mm) | L2 (mm) | Speed (RPM) | Feed (in/min) | aa (in) | Speed (RPM) | Feed (in/min) | aa (in) | Speed (RPM) | Feed (in/min) | aa (in) | Speed (RPM) | Feed (in/min) | aa (in) |
| 1.0 | 4 | 25,000 | 62.8 | 0.0031 | 21,980 | 54.8 | 0.0028 | 21,300 | 46.1 | 0.0028 | 16,930 | 29.7 | 0.0020 |
| | 6 | 25,000 | 57.5 | 0.0031 | 21,980 | 51.3 | 0.0028 | 21,300 | 43.5 | 0.0024 | 16,930 | 30.0 | 0.0016 |
| | 8 | 25,000 | 51.9 | 0.0020 | 21,980 | 45.1 | 0.0016 | 21,300 | 40.0 | 0.0016 | 16,930 | 22.2 | 0.0012 |
| | 10 | 25,000 | 47.1 | 0.0016 | 21,980 | 42.8 | 0.0012 | 21,300 | 34.9 | 0.0011 | 16,930 | 20.0 | 0.0008 |
| | 12 | 25,000 | 47.1 | 0.0008 | 21,980 | 42.8 | 0.0008 | 21,300 | 34.9 | 0.0007 | 16,930 | 20.0 | 0.0004 |
| | 16 | 25,000 | 26.3 | 0.0004 | 21,980 | 23.1 | 0.0003 | 21,300 | 25.2 | 0.0003 | 16,930 | 16.7 | 0.0002 |
| 1.2 | 6 | 22,110 | 60.2 | 0.0039 | 18,310 | 50.2 | 0.0031 | 17,750 | 42.9 | 0.0028 | 14,110 | 29.4 | 0.0020 |
| | 8 | 22,110 | 52.6 | 0.0031 | 18,310 | 43.3 | 0.0028 | 17,750 | 38.6 | 0.0020 | 14,110 | 23.8 | 0.0016 |
| | 10 | 22,110 | 39.9 | 0.0024 | 18,310 | 33.9 | 0.0020 | 17,750 | 38.6 | 0.0016 | 14,110 | 23.8 | 0.0012 |
| | 12 | 22,110 | 46.7 | 0.0020 | 18,310 | 39.9 | 0.0016 | 17,750 | 32.8 | 0.0012 | 14,110 | 22.7 | 0.0008 |
| | 16 | 22,110 | 36.0 | 0.0004 | 18,310 | 30.0 | 0.0003 | 17,750 | 23.5 | 0.0003 | 14,110 | 18.3 | 0.0002 |
| 1.4 | 6 | 18,960 | 60.6 | 0.0055 | 15,700 | 49.4 | 0.0047 | 15,210 | 42.6 | 0.0043 | 12,090 | 28.6 | 0.0035 |
| | 8 | 18,960 | 50.3 | 0.0043 | 15,700 | 41.2 | 0.0035 | 15,210 | 37.0 | 0.0031 | 12,090 | 22.0 | 0.0024 |
| | 10 | 18,960 | 50.3 | 0.0028 | 15,700 | 41.2 | 0.0024 | 15,210 | 37.0 | 0.0020 | 12,090 | 22.0 | 0.0016 |
| | 12 | 18,960 | 50.3 | 0.0024 | 15,700 | 41.2 | 0.0020 | 15,210 | 37.0 | 0.0016 | 12,090 | 22.0 | 0.0012 |
| | 14 | 18,960 | 45.6 | 0.0020 | 15,700 | 38.7 | 0.0016 | 15,210 | 32.1 | 0.0014 | 12,090 | 19.5 | 0.0012 |
| | 16 | 18,960 | 45.6 | 0.0016 | 15,700 | 38.7 | 0.0012 | 15,210 | 32.1 | 0.0008 | 12,090 | 19.5 | 0.0008 |
| | 22 | 18,960 | 31.7 | 0.0004 | 15,700 | 26.6 | 0.0002 | 15,210 | 20.6 | 0.0002 | 12,090 | 16.1 | 0.0002 |
| 1.5 | 6 | 17,690 | 66.4 | 0.0055 | 14,650 | 54.5 | 0.0047 | 14,200 | 41.9 | 0.0043 | 11,290 | 28.6 | 0.0035 |
| | 8 | 17,690 | 53.2 | 0.0047 | 14,650 | 43.3 | 0.0039 | 14,200 | 39.1 | 0.0031 | 11,290 | 22.2 | 0.0028 |
| | 10 | 17,690 | 53.2 | 0.0039 | 14,650 | 43.3 | 0.0031 | 14,200 | 39.1 | 0.0028 | 11,290 | 22.2 | 0.0020 |
| | 12 | 17,690 | 53.2 | 0.0028 | 14,650 | 43.3 | 0.0024 | 14,200 | 39.1 | 0.0020 | 11,290 | 22.2 | 0.0016 |
| | 14 | 17,690 | 53.2 | 0.0024 | 14,650 | 43.3 | 0.0020 | 14,200 | 39.1 | 0.0018 | 11,290 | 22.2 | 0.0014 |
| | 16 | 17,690 | 45.1 | 0.0024 | 14,650 | 38.7 | 0.0020 | 14,200 | 32.2 | 0.0016 | 11,290 | 20.0 | 0.0012 |
| | 18 | 17,690 | 45.1 | 0.0016 | 14,650 | 38.7 | 0.0012 | 14,200 | 32.2 | 0.0008 | 11,290 | 20.0 | 0.0008 |
| | 20 | 17,690 | 38.4 | 0.0008 | 14,650 | 32.2 | 0.0008 | 14,200 | 29.0 | 0.0006 | 11,290 | 20.0 | 0.0004 |
| 1.6 | 6 | 16,590 | 65.3 | 0.0067 | 13,740 | 54.1 | 0.0055 | 13,310 | 41.6 | 0.0051 | 10,580 | 28.8 | 0.0039 |
| | 8 | 16,590 | 56.2 | 0.0063 | 13,740 | 46.9 | 0.0051 | 13,310 | 36.7 | 0.0047 | 10,580 | 22.7 | 0.0039 |
| | 10 | 16,590 | 52.6 | 0.0051 | 13,740 | 43.3 | 0.0043 | 13,310 | 36.7 | 0.0035 | 10,580 | 22.7 | 0.0028 |
| | 12 | 16,590 | 52.6 | 0.0031 | 13,740 | 43.3 | 0.0028 | 13,310 | 36.7 | 0.0024 | 10,580 | 22.7 | 0.0020 |
| | 14 | 16,590 | 52.6 | 0.0028 | 13,740 | 43.3 | 0.0024 | 13,310 | 36.7 | 0.0020 | 10,580 | 22.7 | 0.0016 |
| | 16 | 16,590 | 46.3 | 0.0024 | 13,740 | 39.1 | 0.0020 | 13,310 | 30.2 | 0.0016 | 10,580 | 20.8 | 0.0014 |
| | 18 | 16,590 | 46.3 | 0.0020 | 13,740 | 39.1 | 0.0016 | 13,310 | 30.2 | 0.0012 | 10,580 | 20.8 | 0.0012 |
| | 20 | 16,590 | 46.3 | 0.0008 | 13,740 | 39.1 | 0.0008 | 13,310 | 30.2 | 0.0008 | 10,580 | 20.8 | 0.0004 |
| 1.8 | 6 | 14,740 | 68.7 | 0.0094 | 12,210 | 57.1 | 0.0079 | 11,830 | 46.6 | 0.0071 | 9,410 | 32.4 | 0.0055 |
| | 8 | 14,740 | 77.9 | 0.0091 | 12,210 | 57.1 | 0.0075 | 11,830 | 46.6 | 0.0067 | 9,410 | 32.4 | 0.0051 |
| | 10 | 14,740 | 49.5 | 0.0055 | 12,210 | 41.2 | 0.0047 | 11,830 | 34.9 | 0.0039 | 9,410 | 27.8 | 0.0031 |
| | 12 | 14,740 | 49.5 | 0.0047 | 12,210 | 41.2 | 0.0039 | 11,830 | 34.9 | 0.0031 | 9,410 | 27.8 | 0.0028 |
| | 14 | 14,740 | 49.5 | 0.0039 | 12,210 | 41.2 | 0.0031 | 11,830 | 34.9 | 0.0024 | 9,410 | 27.8 | 0.0020 |
| | 16 | 14,740 | 49.5 | 0.0031 | 12,210 | 41.2 | 0.0028 | 11,830 | 34.9 | 0.0020 | 9,410 | 27.8 | 0.0016 |
| | 18 | 14,740 | 44.0 | 0.0024 | 12,210 | 37.7 | 0.0020 | 11,830 | 29.1 | 0.0018 | 9,410 | 27.8 | 0.0014 |
| | 20 | 14,740 | 44.0 | 0.0020 | 12,210 | 37.7 | 0.0016 | 11,830 | 29.1 | 0.0016 | 9,410 | 27.8 | 0.0012 |
| 25 | 14,740 | 34.5 | 0.0004 | 12,210 | 28.8 | 0.0004 | 11,830 | 24.6 | 0.0003 | 9,410 | 18.5 | 0.0003 | |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.
4. When length of the tool extension from the machine is long, reduce the speed and feed.

continued on next page





Slotting

| Hardness | | - | | | <32 HRC | | | 33-41 HRC | | | 42-50 HRC | | |
|---------------|---------|------------------------|---------------|---------|------------------------------|---------------|---------|--|---------------|---------|-------------|---------------|---------|
| Work Material | | Copper Copper Alloy | | | Mild Steels Carbon Steels | | | Hardened Steels Pre-hardened Steels Stainless Steels | | | | | |
| Cutting Speed | | 173-374 SFM | | | 144-309 SFM | | | 130-309 SFM | | | 101-248 SFM | | |
| Depth of Cut | | | | | | | | | | | | | |
| D (mm) | L2 (mm) | Speed (RPM) | Feed (in/min) | aa (in) | Speed (RPM) | Feed (in/min) | aa (in) | Speed (RPM) | Feed (in/min) | aa (in) | Speed (RPM) | Feed (in/min) | aa (in) |
| 2.0 | 6 | 13,270 | 68.2 | 0.0134 | 10,990 | 54.8 | 0.0110 | 10,650 | 44.9 | 0.0102 | 8,470 | 31.8 | 0.0083 |
| | 8 | 13,270 | 68.2 | 0.0122 | 10,990 | 54.8 | 0.0102 | 10,650 | 44.9 | 0.0087 | 8,470 | 31.8 | 0.0071 |
| | 10 | 13,270 | 54.3 | 0.0114 | 10,990 | 43.3 | 0.0094 | 10,650 | 36.7 | 0.0079 | 8,470 | 27.8 | 0.0063 |
| | 12 | 13,270 | 50.6 | 0.0063 | 10,990 | 39.9 | 0.0051 | 10,650 | 36.7 | 0.0043 | 8,470 | 27.8 | 0.0035 |
| | 14 | 13,270 | 50.6 | 0.0051 | 10,990 | 39.9 | 0.0043 | 10,650 | 36.7 | 0.0035 | 8,470 | 27.8 | 0.0028 |
| | 16 | 13,270 | 50.6 | 0.0039 | 10,990 | 39.9 | 0.0031 | 10,650 | 36.7 | 0.0028 | 8,470 | 27.8 | 0.0024 |
| | 18 | 13,270 | 50.6 | 0.0031 | 10,990 | 39.9 | 0.0028 | 10,650 | 36.7 | 0.0024 | 8,470 | 27.8 | 0.0020 |
| | 20 | 13,270 | 46.2 | 0.0024 | 10,990 | 37.0 | 0.0020 | 10,650 | 31.4 | 0.0020 | 8,470 | 28.6 | 0.0016 |
| 2.5 | 25 | 13,270 | 46.2 | 0.0016 | 10,990 | 37.0 | 0.0012 | 10,650 | 31.4 | 0.0008 | 8,470 | 28.6 | 0.0008 |
| | 30 | 13,270 | 46.2 | 0.0008 | 10,990 | 37.0 | 0.0008 | 10,650 | 31.4 | 0.0004 | 8,470 | 28.6 | 0.0004 |
| | 8 | 10,610 | 67.7 | 0.0165 | 8,790 | 54.8 | 0.0138 | 8,520 | 45.7 | 0.0130 | 6,770 | 31.1 | 0.0102 |
| | 12 | 10,610 | 67.7 | 0.0110 | 8,790 | 54.8 | 0.0091 | 8,520 | 45.7 | 0.0075 | 6,770 | 31.1 | 0.0059 |
| | 16 | 10,610 | 52.2 | 0.0055 | 8,790 | 41.5 | 0.0047 | 8,520 | 39.1 | 0.0039 | 6,770 | 28.6 | 0.0031 |
| 3.0 | 20 | 10,610 | 52.2 | 0.0043 | 8,790 | 41.5 | 0.0035 | 8,520 | 39.1 | 0.0031 | 6,770 | 28.6 | 0.0024 |
| | 25 | 10,610 | 50.1 | 0.0039 | 8,790 | 40.7 | 0.0031 | 8,520 | 31.4 | 0.0024 | 6,770 | 26.7 | 0.0020 |
| | 8 | 8,850 | 68.2 | 0.0150 | 7,330 | 54.8 | 0.0126 | 7,100 | 41.9 | 0.0118 | 5,640 | 29.2 | 0.0094 |
| | 12 | 8,850 | 62.4 | 0.0126 | 7,330 | 50.5 | 0.0106 | 7,100 | 41.9 | 0.0091 | 5,640 | 29.2 | 0.0071 |
| | 16 | 8,850 | 43.5 | 0.0094 | 7,330 | 34.6 | 0.0079 | 7,100 | 32.6 | 0.0067 | 5,640 | 27.8 | 0.0051 |
| | 20 | 8,850 | 43.5 | 0.0063 | 7,330 | 34.6 | 0.0051 | 7,100 | 32.6 | 0.0043 | 5,640 | 27.8 | 0.0031 |
| | 25 | 8,850 | 43.5 | 0.0051 | 7,330 | 34.6 | 0.0043 | 7,100 | 32.6 | 0.0035 | 5,640 | 27.8 | 0.0028 |
| 30 | 8,850 | 41.7 | 0.0043 | 7,330 | 33.9 | 0.0035 | 7,100 | 29.9 | 0.0031 | 5,640 | 26.7 | 0.0024 | |



1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.
4. When length of the tool extension from the machine is long, reduce the speed and feed.





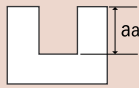
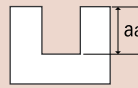
List 4445: 4 Flute, Corner Radius, High Helix, Regular Length

Side Milling

| Hardness | <25 HRC | | 25-35 HRC | | 38-45 HRC | | 40-50 HRC | | 45-55 HRC | | 20-45 HRC | |
|---------------|--|-------------|-----------------------------|-------------|----------------------------------|-------------|---|-------------|-----------------------------|-------------|-------------------------------------|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Alloy Steels Tool Steels | | Hardened Steels 304 Stainless | | Hardened Steels Pre-hardened Steels | | Titanium Alloy Ti-6Al-4V | | Heat Resistant Alloys Inconel | |
| Cutting Speed | 220-328 SFM | | 130-220 SFM | | 115-210 SFM | | 98-150 SFM | | 65-195 SFM | | 65-130 SFM | |
| Depth of Cut | $a_a=1.5D$ $a_r=0.1D$  | | | | | | $a_a=1.5D$ $a_r=0.05D$  | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/8 | 8,375 | 26.3 | 5,350 | 14.5 | 4,950 | 11.0 | 3,800 | 12.1 | 3,970 | 11.1 | 2,965 | 5.3 |
| 3/16 | 5,580 | 37.9 | 3,565 | 18.0 | 3,300 | 12.1 | 2,525 | 13.5 | 2,650 | 12.5 | 1,975 | 5.8 |
| 1/4 | 4,200 | 31.0 | 2,675 | 16.3 | 2,475 | 11.7 | 1,900 | 11.2 | 1,990 | 11.7 | 1,480 | 5.8 |
| 5/16 | 3,350 | 36.6 | 2,140 | 22.9 | 2,000 | 15.7 | 1,500 | 11.8 | 1,600 | 12.6 | 1,185 | 7.7 |
| 3/8 | 2,800 | 39.4 | 1,750 | 23.6 | 1,650 | 22.3 | 1,260 | 16.2 | 1,320 | 12.9 | 990 | 8.1 |
| 1/2 | 2,100 | 29.3 | 1,335 | 18.7 | 1,240 | 16.9 | 950 | 12.0 | 1,000 | 12.5 | 740 | 5.8 |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

Slotting

| Hardness | <25 HRC | | 25-35 HRC | | 38-45 HRC | | 40-50 HRC | | 45-55 HRC | | 20-45 HRC | |
|---------------|--|-------------|-----------------------------|-------------|----------------------------------|-------------|--|-------------|-----------------------------|-------------|-------------------------------------|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Alloy Steels Tool Steels | | Hardened Steels 304 Stainless | | Hardened Steels Pre-hardened Steels | | Titanium Alloy Ti-6Al-4V | | Heat Resistant Alloys Inconel | |
| Cutting Speed | 130-260 SFM | | 65-165 SFM | | 65-165 SFM | | 50-115 SFM | | 65-115 SFM | | 50-80 SFM | |
| Depth of Cut | $a_a=0.5D$  | | | | | | $a_a=0.2D$  | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/8 | 5,960 | 11.7 | 3,970 | 7.8 | 3,970 | 6.7 | 2,500 | 4.1 | 2,750 | 4.3 | 2,000 | 2.9 |
| 3/16 | 3,970 | 12.3 | 2,650 | 8.8 | 2,650 | 7.1 | 1,650 | 4.7 | 1,800 | 4.7 | 1,300 | 3.1 |
| 1/4 | 2,980 | 10.9 | 1,990 | 7.8 | 1,990 | 6.1 | 1,250 | 4.9 | 1,375 | 5.0 | 1,000 | 2.6 |
| 5/16 | 2,400 | 13.8 | 1,600 | 9.8 | 1,600 | 6.7 | 1,000 | 5.9 | 1,100 | 6.7 | 800 | 3.1 |
| 3/8 | 2,000 | 14.5 | 1,320 | 10.3 | 1,320 | 7.0 | 835 | 6.5 | 900 | 6.8 | 640 | 3.1 |
| 1/2 | 1,500 | 11.8 | 1,000 | 6.7 | 1,000 | 7.0 | 625 | 5.9 | 690 | 5.6 | 500 | 2.8 |

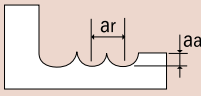
1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.



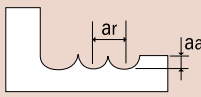


List 4410: Ball End, Stub Length, 2 Flute

Standard Milling

| Hardness | <40 HRC | | 40-45 HRC | | 45-55 HRC | | 55-60 HRC | | 60-65 HRC | |
|---------------|--|-------------|---|-------------|--|-------------|---|-------------|-----------|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Tool Steels Hardened Steels Pre-hardened Steels | | Hardened Steels | | | | | |
| Cutting Speed | 825 SFM | | 660 SFM | | 490 SFM | | 410 SFM | | 330 SFM | |
| Depth of Cut | $a_a=0.05D$ $a_r=0.1D$ $a_a \text{ Max} = \text{less than } 0.024''$ | |  | | $a_a=0.03D$ $a_r=0.1D$ $a_a \text{ Max} = \text{less than } 0.020''$ | | $a_a=0.02D$ $a_r=0.05D$ $a_a \text{ Max} = \text{less than } 0.012''$ | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/32 | 25,000 | 25.0 | 25,000 | 25.0 | 25,000 | 25.0 | 25,000 | 25.0 | 25,000 | 25.0 |
| 1/16 | 25,000 | 40.0 | 25,000 | 40.0 | 25,000 | 40.0 | 25,000 | 40.0 | 20,170 | 32.3 |
| 3/32 | 25,000 | 80.0 | 25,000 | 80.0 | 19,966 | 63.9 | 16,706 | 53.5 | 13,446 | 43.0 |
| 1/8 | 25,000 | 100.0 | 20,170 | 80.7 | 14,974 | 59.9 | 12,530 | 50.1 | 10,085 | 40.3 |
| 3/16 | 16,808 | 90.8 | 13,446 | 72.6 | 9,983 | 53.9 | 8,353 | 45.1 | 6,723 | 36.3 |
| 1/4 | 12,606 | 108.4 | 10,085 | 86.7 | 7,487 | 64.4 | 6,265 | 53.9 | 5,042 | 43.4 |
| 5/16 | 10,085 | 100.8 | 8,068 | 80.7 | 5,990 | 59.9 | 5,012 | 50.1 | 4,034 | 40.3 |
| 3/8 | 8,404 | 92.4 | 6,723 | 74.0 | 4,991 | 54.9 | 4,177 | 45.9 | 3,362 | 37.0 |
| 1/2 | 6,303 | 88.2 | 5,042 | 70.6 | 3,744 | 52.4 | 3,132 | 43.9 | 2,521 | 35.3 |

High Speed Light Milling

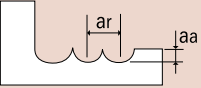
| Hardness | <40 HRC | | 40-45 HRC | | 45-55 HRC | | 55-60 HRC | | 60-65 HRC | |
|---------------|---|-------------|---|-------------|---|-------------|---|-------------|-----------|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Tool Steels Hardened Steels Pre-hardened Steels | | Hardened Steels | | | | | |
| Cutting Speed | 1275 SFM | | 985 SFM | | 820 SFM | | 650 SFM | | 490 SFM | |
| Depth of Cut | $a_a=0.02D$ $a_r=0.05D$ $a_a \text{ Max} = \text{less than } 0.012''$ | |  | | $a_a=0.02D$ $a_r=0.05D$ $a_a \text{ Max} = \text{less than } 0.008''$ | | $a_a=0.01D$ $a_r=0.05D$ $a_a \text{ Max} = \text{less than } 0.004''$ | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/32 | 25,000 | 25.0 | 25,000 | 25.0 | 25,000 | 25.0 | 25,000 | 25.0 | 25,000 | 25.0 |
| 1/16 | 25,000 | 40.0 | 25,000 | 40.0 | 25,000 | 40.0 | 25,000 | 40.0 | 25,000 | 40.0 |
| 3/32 | 25,000 | 80.0 | 25,000 | 80.0 | 25,000 | 80.0 | 25,000 | 80.0 | 19,966 | 63.9 |
| 1/8 | 25,000 | 100.0 | 25,000 | 100.0 | 25,000 | 100.0 | 19,864 | 79.5 | 14,974 | 59.9 |
| 3/16 | 25,000 | 135.0 | 20,068 | 108.4 | 16,706 | 90.2 | 13,243 | 71.5 | 9,983 | 53.9 |
| 1/4 | 19,482 | 167.5 | 15,051 | 129.4 | 12,530 | 107.8 | 9,932 | 85.4 | 7,487 | 64.4 |
| 5/16 | 15,586 | 155.9 | 12,041 | 120.4 | 10,024 | 100.2 | 7,946 | 79.5 | 5,990 | 59.9 |
| 3/8 | 12,988 | 142.9 | 10,034 | 110.4 | 8,353 | 91.9 | 6,621 | 72.8 | 4,991 | 54.9 |
| 1/2 | 9,741 | 136.4 | 7,525 | 105.4 | 6,265 | 87.7 | 4,966 | 69.5 | 3,744 | 52.4 |



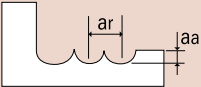


List 4510: Ball End, Stub Length, 2 Flute

Standard Milling

| Hardness | <40 HRC | | 40-45 HRC | | 45-55 HRC | | 55-60 HRC | | 60-65 HRC | |
|---------------|---|-------------|---|------|---|-------------|--|-------------|-----------|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Tool Steels Hardened Steels Pre-hardened Steels | | Hardened Steels | | | | | |
| Cutting Speed | 825 SFM | | 660 SFM | | 490 SFM | | 410 SFM | | 330 SFM | |
| Depth of Cut | $a_a=0.05D$ $a_r=0.1D$ a_a Max = less than 0.024" | |  | | $a_a=0.02D$ $a_r=0.1D$ a_a Max = less than 0.020" | | $a_a=0.02D$ $a_r=0.05D$ a_a Max = less than 0.012" | | | |
| Mill Dia. | Speed RPM | Feed in/min | | | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1.0 | 25,000 | 25.0 | 25,000 | 25.0 | 25,000 | 25.0 | 39,781 | 39.8 | 25,000 | 25.0 |
| 1.5 | 25,000 | 40.0 | 25,000 | 40.0 | 25,000 | 40.0 | 26,500 | 42.4 | 21,000 | 33.6 |
| 2.0 | 25,000 | 50.0 | 25,000 | 50.0 | 24,000 | 48.0 | 20,000 | 40.0 | 16,000 | 32.0 |
| 3.0 | 25,000 | 95.0 | 21,350 | 81.1 | 16,000 | 60.8 | 13,500 | 51.3 | 10,500 | 39.9 |
| 4.0 | 20,010 | 92.1 | 16,010 | 73.6 | 12,000 | 55.2 | 9,950 | 45.8 | 7,950 | 36.6 |
| 5.0 | 16,010 | 92.9 | 12,810 | 74.3 | 9,550 | 55.4 | 7,950 | 46.1 | 6,350 | 36.8 |
| 6.0 | 13,340 | 114.7 | 10,670 | 91.8 | 7,950 | 68.4 | 6,650 | 57.2 | 5,300 | 45.6 |
| 8.0 | 10,010 | 100.1 | 8,000 | 80.0 | 5,950 | 59.5 | 4,950 | 49.5 | 4,000 | 40.0 |
| 10.0 | 8,000 | 89.7 | 6,400 | 71.7 | 4,800 | 53.8 | 4,000 | 44.8 | 3,200 | 35.8 |
| 12.0 | 6,670 | 93.4 | 5,340 | 74.7 | 4,000 | 56.0 | 3,300 | 46.2 | 2,650 | 37.1 |
| 16.0 | 5,000 | 75.0 | 4,000 | 60.0 | 3,000 | 45.0 | 2,500 | 37.5 | 2,000 | 30.0 |
| 20.0 | 4,000 | 60.0 | 3,200 | 48.0 | 2,400 | 36.0 | 2,000 | 30.0 | 1,600 | 24.0 |
| 25.0 | 3,200 | 48.0 | 2,560 | 38.4 | 1,900 | 28.5 | 1,600 | 24.0 | 1,280 | 19.2 |

High Speed Light Milling

| Hardness | <40 HRC | | 40-45 HRC | | 45-55 HRC | | 55-60 HRC | | 60-65 HRC | |
|---------------|--|-------------|---|-------|--|-------------|--|-------------|-----------|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Tool Steels Hardened Steels Pre-hardened Steels | | Hardened Steels | | | | | |
| Cutting Speed | 1275 SFM | | 985 SFM | | 820 SFM | | 650 SFM | | 490 SFM | |
| Depth of Cut | $a_a=0.02D$ $a_r=0.05D$ a_a Max = less than 0.012" | |  | | $a_a=0.02D$ $a_r=0.05D$ a_a Max = less than 0.008" | | $a_a=0.01D$ $a_r=0.05D$ a_a Max = less than 0.004" | | | |
| Mill Dia. | Speed RPM | Feed in/min | | | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1.0 | 25,000 | 25.0 | 25,000 | 25.0 | 25,000 | 25.0 | 25,000 | 25.0 | 25,000 | 25.0 |
| 1.5 | 25,000 | 40.0 | 25,000 | 40.0 | 25,000 | 40.0 | 25,000 | 40.0 | 25,000 | 40.0 |
| 2.0 | 25,000 | 50.0 | 25,000 | 50.0 | 25,000 | 50.0 | 25,000 | 50.0 | 24,000 | 48.0 |
| 3.0 | 25,000 | 95.0 | 25,000 | 95.0 | 25,000 | 95.0 | 21,000 | 79.8 | 16,000 | 60.8 |
| 4.0 | 25,000 | 115.0 | 24,000 | 110.4 | 20,000 | 92.0 | 16,000 | 73.6 | 12,000 | 55.2 |
| 5.0 | 25,000 | 145.0 | 19,000 | 110.2 | 16,000 | 92.8 | 12,600 | 73.0 | 9,550 | 55.4 |
| 6.0 | 20,500 | 176.3 | 16,000 | 137.6 | 13,500 | 116.1 | 10,500 | 90.3 | 7,950 | 68.4 |
| 8.0 | 15,500 | 155.0 | 12,000 | 120.0 | 9,950 | 99.5 | 7,950 | 79.5 | 5,950 | 59.5 |
| 10.0 | 12,500 | 140.0 | 9,550 | 107.0 | 7,950 | 89.0 | 6,350 | 71.1 | 4,800 | 53.8 |
| 12.0 | 10,500 | 147.0 | 7,950 | 111.3 | 6,650 | 93.1 | 5,300 | 74.2 | 4,000 | 56.0 |
| 16.0 | 7,750 | 116.3 | 5,950 | 89.3 | 4,950 | 74.3 | 4,000 | 60.0 | 3,000 | 45.0 |
| 20.0 | 6,200 | 93.0 | 4,800 | 72.0 | 4,000 | 60.0 | 3,200 | 48.0 | 2,400 | 36.0 |
| 25.0 | 4,950 | 74.3 | 3,800 | 57.0 | 3,200 | 48.0 | 2,550 | 38.3 | 1,900 | 28.5 |





List 4440: Regular Length, Multiple Flute

Standard Milling

| Hardness | <40 HRC | | 40-45 HRC | | 45-55 HRC | | 55-60 HRC | | 60-65 HRC | | 65-70 HRC | |
|---------------|---|-------------|---|-------------|---|-------------|---|-------------|---|-------------|-----------|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Tool Steels Hardened Steels Pre-hardened Steels | | Hardened Steels | | | | | | | |
| Depth of Cut | Dia | aa | ar | | aa=1.5D ar=0.05D arMax=less than 0.040" | | aa=1.5D ar=0.03D arMax=less than 0.020" | | aa=1D ar=0.02D arMax=less than 0.020" | | | |
| | D≤1.5 | 1.5D | 0.02D | | | | | | | | | |
| | 1.5<D≤2.5 | 1.5D | 0.05D | | | | | | | | | |
| | 2.5<D | 1.5D | 0.1D | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/16 | 25,000 | 62.5 | 25,000 | 61.0 | 20,170 | 50.4 | 15,120 | 26.0 | 13,808 | 21.0 | 10,085 | 13.0 |
| 3/32 | 18,912 | 71.0 | 16,991 | 63.0 | 13,446 | 50.4 | 10,080 | 26.0 | 9,205 | 21.0 | 6,723 | 13.0 |
| 1/8 | 14,185 | 71.0 | 12,744 | 63.0 | 10,085 | 50.4 | 7,560 | 26.0 | 6,904 | 21.0 | 5,042 | 13.0 |
| 3/16 | 9,456 | 71.0 | 8,496 | 63.0 | 6,723 | 50.4 | 5,041 | 26.0 | 4,602 | 21.0 | 3,362 | 13.0 |
| 1/4 | 7,092 | 104.0 | 6,372 | 95.0 | 5,042 | 75.6 | 3,780 | 40.0 | 3,452 | 31.0 | 2,521 | 20.0 |
| 5/16 | 5,673 | 104.0 | 5,100 | 95.0 | 4,034 | 75.6 | 3,024 | 40.0 | 2,761 | 31.0 | 2,017 | 20.0 |
| 3/8 | 4,728 | 104.0 | 4,248 | 95.0 | 3,362 | 75.6 | 2,520 | 40.0 | 2,301 | 31.0 | 1,681 | 20.0 |
| 1/2 | 3,546 | 104.0 | 3,186 | 95.0 | 2,521 | 75.6 | 1,890 | 40.0 | 1,726 | 31.0 | 1,261 | 20.0 |
| 5/8 | 2,839 | 104.0 | 2,550 | 95.0 | 2,017 | 75.6 | 1,512 | 40.0 | 1,382 | 31.0 | 1,008 | 20.0 |
| 3/4 | 2,375 | 104.0 | 2,125 | 95.0 | 1,681 | 75.6 | 1,260 | 40.0 | 1,152 | 31.0 | 840 | 20.0 |

High Speed Light Milling

| Hardness | <40 HRC | | 40-45 HRC | | 45-55 HRC | | 55-60 HRC | | 60-65 HRC | | 65-70 HRC | |
|---------------|---|-------------|---|-------------|---|-------------|---|-------------|-----------|-------------|-----------|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Tool Steels Hardened Steels Pre-hardened Steels | | Hardened Steels | | | | | | | |
| Depth of Cut | aa=1D ar=0.05D arMax=less than 0.020" | | aa=1D ar=0.03D arMax=less than 0.020" | | aa=1D ar=0.02D arMax=less than 0.008" | | aa=1D ar=0.01D arMax=less than 0.008" | | | | | |
| | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/16 | 25,000 | 61.3 | 25,000 | 61.3 | 25,000 | 61.4 | 25,000 | 50.5 | 25,000 | 43.8 | 20,160 | 32.0 |
| 3/32 | 25,000 | 91.9 | 25,000 | 91.9 | 25,000 | 91.9 | 21,429 | 65.0 | 20,160 | 53.0 | 13,440 | 32.0 |
| 1/8 | 25,000 | 122.5 | 25,000 | 122.5 | 25,000 | 122.5 | 16,072 | 65.0 | 15,120 | 53.0 | 10,080 | 32.0 |
| 3/16 | 20,048 | 147.4 | 19,200 | 141.1 | 16,706 | 122.8 | 10,714 | 65.0 | 10,080 | 53.0 | 6,720 | 32.0 |
| 1/4 | 15,036 | 221.0 | 14,400 | 211.7 | 12,530 | 184.2 | 8,036 | 96.5 | 7,560 | 79.0 | 5,040 | 47.0 |
| 5/16 | 12,028 | 221.0 | 11,520 | 211.7 | 10,024 | 184.2 | 6,428 | 96.5 | 6,048 | 79.0 | 4,032 | 47.0 |
| 3/8 | 10,024 | 221.0 | 9,600 | 211.7 | 8,353 | 184.2 | 5,357 | 96.5 | 5,040 | 79.0 | 3,360 | 47.0 |
| 1/2 | 7,518 | 221.0 | 7,200 | 211.7 | 6,265 | 184.2 | 4,018 | 96.5 | 3,780 | 79.0 | 2,520 | 47.0 |
| 5/8 | 6,012 | 221.0 | 5,764 | 211.7 | 5,012 | 184.2 | 3,216 | 96.5 | 3,025 | 79.0 | 2,017 | 47.0 |
| 3/4 | 5,010 | 221.0 | 4,804 | 211.7 | 4,177 | 184.2 | 2,680 | 96.5 | 2,521 | 79.0 | 1,681 | 47.0 |





List 4540: Regular Length, Multiple Flute

Standard Milling

| Hardness | <40 HRC | | 40-45 HRC | | 45-55 HRC | | 55-60 HRC | | 60-65 HRC | | 65-70 HRC | |
|---------------|---|-------|---|------|---|-------------|---|-------------|---|-------------|-----------|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Tool Steels Hardened Steels Pre-hardened Steels | | Hardened Steels | | | | | | | |
| Depth of Cut | Dia | aa | ar | | aa=1.5D ar=0.05D arMax=less than 0.040" | | aa=1.5D ar=0.03D arMax=less than 0.020" | | aa=1D ar=0.02D arMax=less than 0.020" | | | |
| | D≤1.5 | 1.5D | 0.02D | | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1 | 25,000 | 39.3 | 25,000 | 39.0 | 25,000 | 38.4 | 24,050 | 26.4 | 21,900 | 21.1 | 16,000 | 13.2 |
| 2 | 22,500 | 70.9 | 20,200 | 63.0 | 16,000 | 49.2 | 12,000 | 26.4 | 11,000 | 21.1 | 7,950 | 13.2 |
| 3 | 15,000 | 70.9 | 13,500 | 63.0 | 10,500 | 49.2 | 7,950 | 26.4 | 7,450 | 21.1 | 5,300 | 13.2 |
| 4 | 11,000 | 70.9 | 9,950 | 63.0 | 7,950 | 49.2 | 5,950 | 26.4 | 5,550 | 21.1 | 4,000 | 13.2 |
| 5 | 8,900 | 70.9 | 7,950 | 63.0 | 6,350 | 49.2 | 4,800 | 26.4 | 4,450 | 21.1 | 3,200 | 13.2 |
| 6 | 7,450 | 104.3 | 6,650 | 94.5 | 5,300 | 74.8 | 4,000 | 39.4 | 3,700 | 31.5 | 2,650 | 19.9 |
| 8 | 5,550 | 104.3 | 4,950 | 94.5 | 4,000 | 74.8 | 3,000 | 39.4 | 2,800 | 31.5 | 2,000 | 19.9 |
| 10 | 4,450 | 104.3 | 4,000 | 94.5 | 3,200 | 74.8 | 2,400 | 39.4 | 2,250 | 31.5 | 1,600 | 19.9 |
| 12 | 3,700 | 104.3 | 3,300 | 94.5 | 2,650 | 74.8 | 2,000 | 39.4 | 1,850 | 31.5 | 1,350 | 19.9 |
| 16 | 2,700 | 94.5 | 2,400 | 82.7 | 1,950 | 66.9 | 1,450 | 36.6 | 1,350 | 31.5 | 995 | 19.9 |
| 20 | 2,200 | 84.6 | 1,950 | 74.8 | 1,550 | 59.1 | 1,150 | 33.3 | 1,100 | 27.4 | 800 | 19.9 |
| 25 | 1,700 | 96.5 | 1,550 | 82.7 | 1,250 | 59.1 | 955 | 36.0 | 890 | 29.5 | 635 | 19.9 |

1. Use a rigid and precise machine and holder.
2. We suggest using an air blow. If using cutting fluids, use a high quality fluid with smoke retardant.
3. When the length of tool extension from the machine is long, reduce the speed and feed.

High Speed Light Milling

| Hardness | <40 HRC | | 40-45 HRC | | 45-55 HRC | | 55-60 HRC | | 60-65 HRC | | 65-70 HRC | |
|---------------|---|-------------|---|---|-----------------|---|-------------|---|-------------|-----------|-------------|-----------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Tool Steels Hardened Steels Pre-hardened Steels | | Hardened Steels | | | | | | | |
| Depth of Cut | aa=1D ar=0.05D arMax=less than 0.020" | | | aa=1D ar=0.03D arMax=less than 0.020" | | aa=1D ar=0.02D arMax=less than 0.008" | | aa=1D ar=0.01D arMax=less than 0.008" | | | | |
| | Speed RPM | Feed in/min | | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM |
| 1 | 25,000 | 31.5 | 25,000 | 39.4 | 25,000 | 39.4 | 25,000 | 31.5 | 25,000 | 27.9 | 25,000 | 21.9 |
| 2 | 25,000 | 67.4 | 25,000 | 78.7 | 25,000 | 78.8 | 25,000 | 63.7 | 24,000 | 53.1 | 16,000 | 31.5 |
| 3 | 25,000 | 106.0 | 25,000 | 116.9 | 25,000 | 118.9 | 17,000 | 65.0 | 16,000 | 53.1 | 10,500 | 31.5 |
| 4 | 24,000 | 153.5 | 24,000 | 149.6 | 20,000 | 126.0 | 12,500 | 65.0 | 12,000 | 53.1 | 7,950 | 31.5 |
| 5 | 19,000 | 161.4 | 19,000 | 149.6 | 16,000 | 126.0 | 10,000 | 65.0 | 9,550 | 53.1 | 6,350 | 31.5 |
| 6 | 16,000 | 226.4 | 16,000 | 226.4 | 13,500 | 189.0 | 8,500 | 96.5 | 7,950 | 78.7 | 5,300 | 47.2 |
| 8 | 12,000 | 226.4 | 12,000 | 226.4 | 9,950 | 189.0 | 6,350 | 96.5 | 5,950 | 78.7 | 4,000 | 47.2 |
| 10 | 9,550 | 226.4 | 9,550 | 226.4 | 7,950 | 189.0 | 5,100 | 96.5 | 4,800 | 78.7 | 3,200 | 47.2 |
| 12 | 7,950 | 226.4 | 7,950 | 226.4 | 6,650 | 189.0 | 4,250 | 96.5 | 4,000 | 78.7 | 2,650 | 47.2 |
| 16 | 5,950 | 202.76 | 5,950 | 202.8 | 4,950 | 167.3 | 3,150 | 88.6 | 2,950 | 72.8 | 1,950 | 47.2 |
| 20 | 4,750 | 181.10 | 4,750 | 181.1 | 3,950 | 143.7 | 2,500 | 80.7 | 2,350 | 61.0 | 1,550 | 43.3 |
| 25 | 3,800 | 210.63 | 3,800 | 198.8 | 3,150 | 149.6 | 2,000 | 78.7 | 1,900 | 49.2 | 1,250 | 41.3 |

1. Use a rigid and precise machine and holder.
2. We suggest using an air blow. If using cutting fluids, use a high quality fluid with smoke retardant.
3. When the length of tool extension from the machine is long, reduce the speed and feed.





List 4471: Stub Length, 4 Flute, Corner Radius

Standard Milling

| Hardness | <40 HRC | | 40-45 HRC | | 45-55 HRC | | 55-60 HRC | | 60-65 HRC | | | | | | | | | | |
|---------------|--|-------------|---|-------------|-----------------|-------------|-----------|-------------|-----------|-------------|------|-------|--|---|--|---|--|---|--|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Tool Steels Hardened Steels Pre-hardened Steels | | Hardened Steels | | | | | | | | | | | | | | |
| Depth of Cut | <table border="1"> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> <tr> <td>D≤1/16</td> <td>1.5D</td> <td>0.05D</td> </tr> <tr> <td>D>1/16</td> <td>1.5D</td> <td>0.10D</td> </tr> </table> | | | Dia | aa | ar | D≤1/16 | 1.5D | 0.05D | D>1/16 | 1.5D | 0.10D | | aa=1.5D ar=0.05D ar Max=less than 0.04" | | aa=1.5D ar=0.03D ar Max=less than 0.02" | | aa=1.0D ar=0.02D ar Max=less than 0.02" | |
| | Dia | aa | ar | | | | | | | | | | | | | | | | |
| D≤1/16 | 1.5D | 0.05D | | | | | | | | | | | | | | | | | |
| D>1/16 | 1.5D | 0.10D | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | |
| 1/16 | 25,000 | 70.0 | 25,000 | 70.0 | 20,170 | 56.5 | 15,158 | 36.4 | 14,180 | 22.7 | | | | | | | | | |
| 3/32 | 18,743 | 75.0 | 16,828 | 67.3 | 13,446 | 53.8 | 10,105 | 30.3 | 9,453 | 22.7 | | | | | | | | | |
| 1/8 | 14,058 | 73.1 | 12,621 | 65.6 | 10,085 | 52.4 | 7,579 | 27.3 | 7,090 | 25.5 | | | | | | | | | |
| 3/16 | 9,372 | 60.0 | 8,414 | 53.9 | 6,723 | 43.0 | 5,053 | 22.2 | 4,727 | 20.8 | | | | | | | | | |
| 1/4 | 7,029 | 101.2 | 6,311 | 90.9 | 5,042 | 72.6 | 3,789 | 37.9 | 3,545 | 31.2 | | | | | | | | | |
| 3/8 | 4,686 | 105.0 | 4,207 | 94.2 | 3,362 | 75.3 | 2,526 | 39.4 | 2,363 | 31.2 | | | | | | | | | |
| 1/2 | 3,514 | 99.8 | 3,155 | 89.6 | 2,521 | 71.6 | 1,895 | 38.7 | 1,772 | 31.2 | | | | | | | | | |

1. The indicated speeds and feeds are for high speed light milling for use with high speed/high precision machining centers.
2. Do not use flammable fluids because tools with considerable wear can cause sparks.
3. We recommend using air blow. When using cutting fluids, use a high quality fluid with high smoke retardant.

High Speed Light Milling

| Hardness | <40 HRC | | 40-45 HRC | | 45-55 HRC | | 55-60 HRC | | 60-65 HRC | |
|---------------|---|-----------|---|-------|---|-------------|--|-------------|--|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Tool Steels Hardened Steels Pre-hardened Steels | | Hardened Steels | | | | | |
| Depth of Cut | aa=1.0D ar=0.05D ar Max = less than 0.02" | | | | aa=1.0D ar=0.03D ar Max = less than 0.02" | | aa=1.0D ar=0.02D ar Max = less than 0.008" | | aa=1.0D ar=0.01D ar Max = less than 0.008" | |
| | Mill Dia. | Speed RPM | Feed in/min | | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/16 | 25,000 | 70.0 | 25,000 | 70.0 | 25,000 | 70.0 | 25,000 | 50.0 | 25,000 | 50.0 |
| 3/32 | 25,000 | 100.0 | 25,000 | 100.0 | 25,000 | 100.0 | 21,433 | 68.6 | 20,170 | 56.5 |
| 1/8 | 25,000 | 130.0 | 25,000 | 130.0 | 25,000 | 130.0 | 16,075 | 70.7 | 15,127 | 54.5 |
| 3/16 | 20,068 | 128.4 | 20,068 | 128.4 | 16,706 | 106.9 | 10,716 | 72.9 | 10,085 | 52.4 |
| 1/4 | 15,051 | 216.7 | 15,051 | 216.7 | 12,530 | 180.4 | 8,037 | 93.2 | 7,564 | 78.7 |
| 3/8 | 10,034 | 224.8 | 10,034 | 224.8 | 8,353 | 187.1 | 5,358 | 96.4 | 5,042 | 78.7 |
| 1/2 | 7,525 | 213.7 | 7,525 | 213.7 | 6,265 | 177.9 | 4,019 | 93.2 | 3,782 | 75.6 |

1. The indicated speeds and feeds are for high speed light milling for use with high speed/high precision machining centers.
2. Do not use flammable fluids because tools with considerable wear can cause sparks.
3. We recommend using air blow. When using cutting fluids, use a high quality fluid with high smoke retardant.





List 4571: Stub Length, 4 Flute, Corner Radius

Standard Milling

| Hardness | <40 HRC | | 40-45 HRC | | 45-55 HRC | | 55-60 HRC | | 60-65 HRC | | | | | | | | | | |
|---------------|--|----------------|---|----------------|-----------------|-------------|-----------|-------------|-----------|-------------|-------|--|--|--|--|--|--|--|--|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Tool Steels Hardened Steels Pre-hardened Steels | | Hardened Steels | | | | | | | | | | | | | | |
| Depth of Cut | <table border="1"> <tr> <th>Dia</th> <th>a_a</th> <th>a_r</th> </tr> <tr> <td>D=2</td> <td>1.5D</td> <td>0.05D</td> </tr> <tr> <td>2<D</td> <td>1.5D</td> <td>0.10D</td> </tr> </table> | | Dia | a _a | a _r | D=2 | 1.5D | 0.05D | 2<D | 1.5D | 0.10D | | | a _a =1.5D a _r =0.05D arMax=less than 0.04" | | a _a =1.5D a _r =0.03D arMax=less than 0.02" | | a _a =1.0D a _r =0.02D arMax=less than 0.02" | |
| | Dia | a _a | a _r | | | | | | | | | | | | | | | | |
| D=2 | 1.5D | 0.05D | | | | | | | | | | | | | | | | | |
| 2<D | 1.5D | 0.10D | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | |
| 2 | 22,316 | 71.4 | 20,036 | 64.1 | 16,010 | 51.2 | 12,031 | 24.1 | 11,255 | 22.5 | | | | | | | | | |
| 3 | 14,878 | 71.4 | 13,358 | 64.1 | 10,673 | 51.2 | 8,021 | 25.7 | 7,503 | 21.0 | | | | | | | | | |
| 4 | 11,158 | 71.4 | 10,018 | 64.1 | 8,005 | 51.2 | 6,016 | 26.5 | 5,628 | 20.3 | | | | | | | | | |
| 5 | 8,927 | 85.7 | 8,015 | 76.9 | 6,404 | 61.5 | 4,813 | 25.0 | 4,502 | 21.6 | | | | | | | | | |
| 6 | 7,439 | 104.1 | 6,679 | 93.5 | 5,337 | 74.7 | 4,010 | 38.5 | 3,752 | 31.5 | | | | | | | | | |
| 8 | 5,579 | 104.9 | 5,009 | 94.2 | 4,002 | 75.2 | 3,008 | 39.7 | 2,814 | 31.5 | | | | | | | | | |
| 10 | 4,463 | 103.5 | 4,007 | 93.0 | 3,202 | 74.3 | 2,406 | 39.5 | 2,251 | 31.5 | | | | | | | | | |
| 12 | 3,719 | 104.1 | 3,339 | 93.5 | 2,668 | 74.7 | 2,005 | 39.3 | 1,876 | 32.3 | | | | | | | | | |

1. The indicated speeds and feeds are for high speed light milling for use with high speed/high precision machining centers.
2. Do not use flammable fluids because tools with considerable wear can cause sparks.
3. We recommend using air blow. When using cutting fluids, use a high quality fluid with high smoke retardant.

High Speed Light Milling

| Hardness | <40 HRC | | 40-45 HRC | | 45-55 HRC | | 55-60 HRC | | 60-65 HRC | |
|---------------|--|-----------|---|-----------|--|-----------|---|-----------|---|-----------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Tool Steels Hardened Steels Pre-hardened Steels | | Hardened Steels | | | | | |
| Depth of Cut | a _a =1.0D a _r =0.05D arMax=less than 0.02" | | | | a _a =1.0D a _r =0.03D arMax=less than 0.02" | | a _a =1.0D a _r =0.02D arMax=less than 0.008" | | a _a =1.0D a _r =0.01D arMax=less than 0.008" | |
| | Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM |
| 2 | 25,000 | 80.0 | 25,000 | 80.0 | 25,000 | 80.0 | 25,000 | 60.0 | 24,014 | 48.0 |
| 3 | 25,000 | 120.0 | 25,000 | 120.0 | 25,000 | 120.0 | 17,012 | 68.0 | 16,010 | 51.2 |
| 4 | 23,893 | 152.9 | 23,893 | 152.9 | 19,891 | 127.3 | 12,759 | 66.3 | 12,007 | 52.8 |
| 5 | 19,115 | 183.5 | 19,115 | 183.5 | 15,913 | 152.8 | 10,207 | 65.3 | 9,606 | 53.8 |
| 6 | 15,929 | 223.0 | 15,929 | 223.0 | 13,260 | 185.6 | 8,506 | 95.3 | 8,005 | 80.0 |
| 8 | 11,947 | 224.6 | 11,947 | 224.6 | 9,945 | 187.0 | 6,380 | 97.0 | 6,004 | 79.2 |
| 10 | 9,557 | 221.7 | 9,557 | 221.7 | 7,956 | 184.6 | 5,104 | 95.9 | 4,803 | 76.8 |
| 12 | 7,964 | 223.0 | 7,964 | 223.0 | 6,630 | 185.6 | 4,253 | 97.0 | 4,002 | 78.4 |

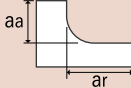
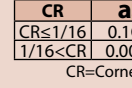
1. The indicated speeds and feeds are for high speed light milling for use with high speed/high precision machining centers.
2. Do not use flammable fluids because tools with considerable wear can cause sparks.
3. We recommend using air blow. When using cutting fluids, use a high quality fluid with high smoke retardant.





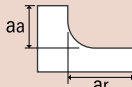
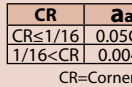
List 4470: Stub Length, Corner Radius, High Feed

Standard Milling

| Hardness | <40 HRC | | 40 to 45 HRC | | 45-55 HRC | | 55-60 HRC | | 60-65 HRC | | |
|---------------|---|----------------|---|---|--------------------|-----------------|----------------|---|--------------------|-----------------|----------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Tool Steels Hardened Steels Pre-hardened Steels | | Hardened Steels | | | | | | |
| Depth of Cut | CR | a _a | a _r |  | CR | a _a | a _r |  | CR | a _a | a _r |
| | CR≤1/16 1/16<CR | 0.2CR 0.02" | 0.5D 0.5D | | CR≤1/16 1/16<CR | 0.2CR 0.016" | 0.5D 0.5D | | CR≤1/16 1/16<CR | 0.1CR 0.008" | 0.5D 0.5D |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | |
| 1/8 | 12,224 | 252 | 8,404 | 158 | 6,112 | 103 | 3,667 | 41 | 3,056 | 34 | |
| 3/16 | 8,149 | 252 | 5,603 | 158 | 4,075 | 103 | 2,445 | 41 | 2,037 | 34 | |
| 1/4 | 6,112 | 336 | 4,202 | 210 | 3,056 | 138 | 1,834 | 55 | 1,528 | 46 | |
| 5/16 | 4,890 | 336 | 3,362 | 210 | 2,445 | 138 | 1,467 | 55 | 1,222 | 46 | |
| 3/8 | 4,075 | 336 | 2,801 | 210 | 2,037 | 138 | 1,222 | 55 | 1,019 | 46 | |
| 1/2 | 3,056 | 336 | 2,101 | 210 | 1,528 | 138 | 917 | 55 | 764 | 46 | |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

High Feed Milling

| Hardness | <40 HRC | | 40-45 HRC | | 45-55 HRC | | 55-60 HRC | | 60-65 HRC | |
|---------------|---|-------------|---|--------------------|-----------------|----------------|---|--------------------|------------------|----------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Tool Steels Hardened Steels Pre-hardened Steels | | Hardened Steels | | | | | |
| Depth of Cut | a _a =0.1CR a _r =0.3D | |  | CR | a _a | a _r |  | CR | a _a | a _r |
| | CR=Corner Radius | | | CR≤1/16 1/16<CR | 0.1CR 0.008" | 0.3D 0.3D | | CR≤1/16 1/16<CR | 0.05CR 0.004" | 0.3D 0.3D |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/8 | 23,990 | 495 | 18,030 | 338 | 16,808 | 284 | 11,918 | 134 | 9,168 | 103 |
| 3/16 | 15,993 | 495 | 12,020 | 338 | 11,205 | 284 | 7,946 | 134 | 6,112 | 103 |
| 1/4 | 11,995 | 660 | 9,015 | 451 | 8,404 | 378 | 5,959 | 179 | 4,584 | 138 |
| 5/16 | 9,596 | 660 | 7,212 | 451 | 6,723 | 378 | 4,767 | 179 | 3,667 | 138 |
| 3/8 | 7,997 | 660 | 6,010 | 451 | 5,603 | 378 | 3,973 | 179 | 3,056 | 138 |
| 1/2 | 5,997 | 660 | 4,508 | 451 | 4,202 | 378 | 2,980 | 179 | 2,292 | 138 |

1. The indicated speeds and feeds are for high speed light milling for use with high speed/high precision machining centers.
2. Do not use flammable fluids because tools with considerable wear can cause sparks.
3. We recommend using air blow. When using cutting fluids, use a high quality fluid with high smoke retardant.





List 4570: Stub Length, Corner Radius, High Feed

Standard Milling

| Hardness | <40 HRC | | 40-45 HRC | | 45-55 HRC | | 55-60 HRC | | 60-65 HRC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------|---|-----------|---|-----------|-----------------|-----------|-------------|-----------|-------------|-----------|-------------|--|--|--|----|----|----|------|-------|------|------|--------|------|--|--|--|--|--|--|----|----|----|------|-------|------|------|--------|------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Tool Steels Hardened Steels Pre-hardened Steels | | Hardened Steels | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Depth of Cut | <table border="1"> <tr><th>CR</th><th>aa</th><th>ar</th></tr> <tr><td>CR≤2</td><td>0.2CR</td><td>0.5D</td></tr> <tr><td>2<CR</td><td>0.02"</td><td>0.5D</td></tr> </table> | | CR | aa | ar | CR≤2 | 0.2CR | 0.5D | 2<CR | 0.02" | 0.5D | | <table border="1"> <tr><th>CR</th><th>aa</th><th>ar</th></tr> <tr><td>CR≤2</td><td>0.2CR</td><td>0.5D</td></tr> <tr><td>2<CR</td><td>0.016"</td><td>0.5D</td></tr> </table> | | CR | aa | ar | CR≤2 | 0.2CR | 0.5D | 2<CR | 0.016" | 0.5D | <table border="1"> <tr><th>CR</th><th>aa</th><th>ar</th></tr> <tr><td>CR≤2</td><td>0.1CR</td><td>0.5D</td></tr> <tr><td>2<CR</td><td>0.008"</td><td>0.5D</td></tr> </table> | | | | | | CR | aa | ar | CR≤2 | 0.1CR | 0.5D | 2<CR | 0.008" | 0.5D |
| | CR | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR≤2 | 0.2CR | 0.5D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2<CR | 0.02" | 0.5D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR≤2 | 0.2CR | 0.5D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2<CR | 0.016" | 0.5D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR≤2 | 0.1CR | 0.5D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2<CR | 0.008" | 0.5D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR=Corner Radius | Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2 | 19,406 | 252 | 13,341 | 158 | 9,703 | 103 | 5,822 | 41 | 4,851 | 34 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | 12,937 | 336 | 8,894 | 210 | 6,469 | 138 | 3,881 | 55 | 3,234 | 46 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4 | 9,703 | 336 | 6,671 | 210 | 4,851 | 138 | 2,911 | 55 | 2,426 | 46 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 5 | 7,762 | 336 | 5,337 | 210 | 3,881 | 138 | 2,329 | 55 | 1,941 | 46 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 6 | 6,469 | 336 | 4,447 | 210 | 3,234 | 138 | 1,941 | 55 | 1,617 | 46 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 7 | 5,544 | 336 | 3,812 | 210 | 2,772 | 138 | 1,663 | 55 | 1,386 | 46 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 8 | 4,851 | 336 | 3,335 | 210 | 2,426 | 138 | 1,455 | 55 | 1,213 | 46 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 9 | 4,312 | 336 | 2,965 | 210 | 2,156 | 138 | 1,294 | 55 | 1,078 | 46 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 10 | 3,881 | 336 | 2,668 | 210 | 1,941 | 138 | 1,164 | 55 | 970 | 46 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 11 | 3,528 | 336 | 2,426 | 210 | 1,764 | 138 | 1,058 | 55 | 882 | 46 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 12 | 3,234 | 336 | 2,224 | 210 | 1,617 | 138 | 970 | 55 | 809 | 46 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 13 | 2,985 | 336 | 2,053 | 210 | 1,493 | 138 | 896 | 55 | 746 | 46 | | | | | | | | | | | | | | | | | | | | | | | | | | | |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

High Feed Milling

| Hardness | <40 HRC | | 40-45 HRC | | 45-55 HRC | | 55-60 HRC | | 60-65 HRC | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------|--|-----------|---|-----------|-----------------|-----------|-------------|--|-------------|-----------|-------------|----|------|-------|------|------|--------|------|---|--|--|--|--|--|----|----|----|------|--------|------|------|--------|------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Tool Steels Hardened Steels Pre-hardened Steels | | Hardened Steels | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Depth of Cut | <table border="1"> <tr><th>aa</th><th>ar</th></tr> <tr><td>aa=0.1CR</td><td>ar=0.3D</td></tr> </table> | | aa | ar | aa=0.1CR | ar=0.3D | | <table border="1"> <tr><th>CR</th><th>aa</th><th>ar</th></tr> <tr><td>CR≤2</td><td>0.1CR</td><td>0.3D</td></tr> <tr><td>2<CR</td><td>0.008"</td><td>0.3D</td></tr> </table> | | CR | aa | ar | CR≤2 | 0.1CR | 0.3D | 2<CR | 0.008" | 0.3D | <table border="1"> <tr><th>CR</th><th>aa</th><th>ar</th></tr> <tr><td>CR≤2</td><td>0.05CR</td><td>0.3D</td></tr> <tr><td>2<CR</td><td>0.004"</td><td>0.3D</td></tr> </table> | | | | | | CR | aa | ar | CR≤2 | 0.05CR | 0.3D | 2<CR | 0.004" | 0.3D |
| | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| aa=0.1CR | ar=0.3D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR≤2 | 0.1CR | 0.3D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2<CR | 0.008" | 0.3D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR≤2 | 0.05CR | 0.3D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2<CR | 0.004" | 0.3D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR=Corner Radius | Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | | | | | | | | | | | | | |
| | 2 | 25,000 | 325 | 25,000 | 295 | 25,000 | 266 | 18,920 | 134 | 14,554 | 103 | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | 25,000 | 650 | 19,082 | 451 | 17,788 | 378 | 12,614 | 179 | 9,703 | 138 | | | | | | | | | | | | | | | | | | | | | | |
| | 4 | 19,042 | 660 | 14,312 | 451 | 13,341 | 378 | 9,460 | 179 | 7,277 | 138 | | | | | | | | | | | | | | | | | | | | | | |
| | 5 | 15,233 | 660 | 11,449 | 451 | 10,673 | 378 | 7,568 | 179 | 5,822 | 138 | | | | | | | | | | | | | | | | | | | | | | |
| | 6 | 12,694 | 660 | 9,541 | 451 | 8,894 | 378 | 6,307 | 179 | 4,851 | 138 | | | | | | | | | | | | | | | | | | | | | | |
| | 7 | 10,881 | 660 | 8,178 | 451 | 7,624 | 378 | 5,406 | 179 | 4,158 | 138 | | | | | | | | | | | | | | | | | | | | | | |
| | 8 | 9,521 | 660 | 7,156 | 451 | 6,671 | 378 | 4,730 | 179 | 3,639 | 138 | | | | | | | | | | | | | | | | | | | | | | |
| | 9 | 8,463 | 660 | 6,361 | 451 | 5,929 | 378 | 4,205 | 179 | 3,234 | 138 | | | | | | | | | | | | | | | | | | | | | | |
| | 10 | 7,617 | 660 | 5,725 | 451 | 5,337 | 378 | 3,784 | 179 | 2,911 | 138 | | | | | | | | | | | | | | | | | | | | | | |
| | 11 | 6,924 | 660 | 5,204 | 451 | 4,851 | 378 | 3,440 | 179 | 2,646 | 138 | | | | | | | | | | | | | | | | | | | | | | |
| | 12 | 6,347 | 660 | 4,771 | 451 | 4,447 | 378 | 3,153 | 179 | 2,426 | 138 | | | | | | | | | | | | | | | | | | | | | | |
| | 13 | 5,859 | 660 | 4,404 | 451 | 4,105 | 378 | 2,911 | 179 | 2,239 | 138 | | | | | | | | | | | | | | | | | | | | | | |

1. The indicated speeds and feeds are for high speed light milling for use with high speed/high precision machining centers.
2. Do not use flammable fluids because tools with considerable wear can cause sparks.
3. We recommend using air blow. When using cutting fluids, use a high quality fluid with high smoke retardant.





List 4472: Regular Length, Corner Radius, High Feed

Standard Milling

| Hardness | - | | <40 HRC | | 40-45 HRC | | 45-55 HRC | | 55-60 HRC | | 60-65 HRC | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------|---|-------------|------------------------------|-------------|---|-------------|-----------------|-------------|-----------|-------------|-----------|-------------|--|--|--|--|--|--|----|----|----|---------|-------|------|---------|--------|------|--|--|--|----|----|----|---------|-------|------|---------|--------|------|
| Work Material | Cast Iron | | Mild Steels Carbon Steels | | Tool Steels Stainless Steel Hardened Steels Prehardened Steels | | Hardened Steels | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Depth of Cut | <table border="1"> <tr><th>CR</th><th>aa</th><th>ar</th></tr> <tr><td>CR≤1/16</td><td>0.2CR</td><td>0.5D</td></tr> <tr><td>1/16<CR</td><td>0.02"</td><td>0.5D</td></tr> </table> | | | CR | aa | ar | CR≤1/16 | 0.2CR | 0.5D | 1/16<CR | 0.02" | 0.5D | | | | <table border="1"> <tr><th>CR</th><th>aa</th><th>ar</th></tr> <tr><td>CR≤1/16</td><td>0.1CR</td><td>0.5D</td></tr> <tr><td>1/16<CR</td><td>0.008"</td><td>0.5D</td></tr> </table> | | | CR | aa | ar | CR≤1/16 | 0.1CR | 0.5D | 1/16<CR | 0.008" | 0.5D | <table border="1"> <tr><th>CR</th><th>aa</th><th>ar</th></tr> <tr><td>CR≤1/16</td><td>0.2CR</td><td>0.5D</td></tr> <tr><td>1/16<CR</td><td>0.016"</td><td>0.5D</td></tr> </table> | | | CR | aa | ar | CR≤1/16 | 0.2CR | 0.5D | 1/16<CR | 0.016" | 0.5D |
| | CR | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR≤1/16 | 0.2CR | 0.5D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1/16<CR | 0.02" | 0.5D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR≤1/16 | 0.1CR | 0.5D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1/16<CR | 0.008" | 0.5D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR≤1/16 | 0.2CR | 0.5D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1/16<CR | 0.016" | 0.5D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1/8 | 10,080 | 255 | 7,950 | 175 | 7,030 | 150 | 5,040 | 100 | 3,060 | 40 | 2,690 | 28 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3/16 | 6,720 | 265 | 5,300 | 190 | 4,690 | 165 | 3,360 | 110 | 2,040 | 42 | 1,790 | 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1/4 | 5,040 | 275 | 3,970 | 200 | 3,510 | 175 | 2,520 | 115 | 1,530 | 45 | 1,340 | 32 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5/16 | 4,030 | 275 | 3,180 | 200 | 2,810 | 175 | 2,020 | 115 | 1,220 | 45 | 1,080 | 32 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3/8 | 3,360 | 275 | 2,650 | 200 | 2,340 | 175 | 1,680 | 115 | 1,020 | 45 | 900 | 32 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1/2 | 2,520 | 275 | 1,990 | 200 | 1,760 | 175 | 1,260 | 115 | 760 | 45 | 670 | 32 | | | | | | | | | | | | | | | | | | | | | | | | | | | |

1. Use a rigid and precise machine and holder.
2. These milling conditions are based on milling with circular interpolation at corners; for milling without circular interpolation (such as right angle cornering), reduce the speed to 50-70% and the cutting depth to 50-80% of the above conditions.
3. We recommend using air blow or MQL (mist).
4. Please adjust the speed, feed and cutting depth according to actual cutting conditions.
5. When entering into the part, reduce the feed to 30-60% of the above conditions, with a ramping angle < 2°.
6. These milling conditions are for a tool overhang less than 4xD; for longer overhangs, reduce the speed, feed and cutting depth to prevent chattering.

High Feed Milling

| Hardness | - | | <40 HRC | | 40-45 HRC | | 45-55 HRC | | 55-60 HRC | | 60-65 HRC | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------|--|-------------|------------------------------|-------------|---|-------------|-----------------|-------------|-----------|-------------|-----------|-------------|--|--|--|--|--|--|----|----|----|---------|-------|------|---------|--------|------|---|--|--|----|----|----|---------|--------|------|---------|--------|------|
| Work Material | Cast Iron | | Mild Steels Carbon Steels | | Tool Steels Stainless Steel Hardened Steels Prehardened Steels | | Hardened Steels | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Depth of Cut | <table border="1"> <tr><th>CR</th><th>aa</th><th>ar</th></tr> <tr><td>CR≤1/16</td><td>0.1CR</td><td>0.3D</td></tr> <tr><td>1/16<CR</td><td>0.008"</td><td>0.3D</td></tr> </table> | | | CR | aa | ar | CR≤1/16 | 0.1CR | 0.3D | 1/16<CR | 0.008" | 0.3D | | | | <table border="1"> <tr><th>CR</th><th>aa</th><th>ar</th></tr> <tr><td>CR≤1/16</td><td>0.1CR</td><td>0.3D</td></tr> <tr><td>1/16<CR</td><td>0.008"</td><td>0.3D</td></tr> </table> | | | CR | aa | ar | CR≤1/16 | 0.1CR | 0.3D | 1/16<CR | 0.008" | 0.3D | <table border="1"> <tr><th>CR</th><th>aa</th><th>ar</th></tr> <tr><td>CR≤1/16</td><td>0.05CR</td><td>0.3D</td></tr> <tr><td>1/16<CR</td><td>0.004"</td><td>0.3D</td></tr> </table> | | | CR | aa | ar | CR≤1/16 | 0.05CR | 0.3D | 1/16<CR | 0.004" | 0.3D |
| | CR | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR≤1/16 | 0.1CR | 0.3D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1/16<CR | 0.008" | 0.3D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR≤1/16 | 0.1CR | 0.3D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1/16<CR | 0.008" | 0.3D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR≤1/16 | 0.05CR | 0.3D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1/16<CR | 0.004" | 0.3D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1/8 | 19,860 | 490 | 19,860 | 470 | 14,970 | 330 | 14,970 | 305 | 10,080 | 125 | 9,780 | 90 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3/16 | 13,240 | 500 | 13,240 | 470 | 9,980 | 355 | 13,240 | 325 | 6,720 | 140 | 6,520 | 100 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1/4 | 9,930 | 545 | 9,930 | 500 | 7,490 | 375 | 9,930 | 340 | 5,040 | 150 | 4,890 | 150 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5/16 | 7,950 | 545 | 7,950 | 500 | 5,990 | 375 | 7,950 | 340 | 4,030 | 150 | 3,910 | 150 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3/8 | 6,620 | 545 | 6,620 | 500 | 4,990 | 375 | 6,620 | 340 | 3,360 | 150 | 3,260 | 150 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1/2 | 4,970 | 545 | 4,970 | 500 | 3,740 | 375 | 4,970 | 340 | 2,520 | 150 | 2,440 | 150 | | | | | | | | | | | | | | | | | | | | | | | | | | | |

1. Use a rigid and precise machine and holder.
2. These milling conditions are based on milling with circular interpolation at corners; for milling without circular interpolation (such as right angle cornering), reduce the speed to 50-70% and the cutting depth to 50-80% of the above conditions.
3. We recommend using air blow or MQL (mist).
4. Please adjust the speed, feed and cutting depth according to actual cutting conditions.
5. When entering into the part, reduce the feed to 30-60% of the above conditions, with a ramping angle < 2°.
6. These milling conditions are for a tool overhang less than 4xD; for longer overhangs, reduce the speed, feed and cutting depth to prevent chattering.





List 4572: Regular Length, Corner Radius, High Feed

Standard Milling

| Hardness | - | | <40 HRC | | 40-45 HRC | | 45-55 HRC | | 55-60 HRC | | 60-65 HRC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------|---|-------------|------------------------------|-------------|---|-------------|-----------------|-------------|-----------|-------------|-----------|-------------|--|--|--|--|--|----|----|----|------|-------|------|------|--------|------|--|--|--|--|--|--|----|----|----|------|-------|------|------|--------|------|
| Work Material | Cast Iron | | Mild Steels Carbon Steels | | Tool Steels Stainless Steel Hardened Steels Prehardened Steels | | Hardened Steels | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Depth of Cut | <table border="1"> <tr><th>CR</th><th>aa</th><th>ar</th></tr> <tr><td>CR≤2</td><td>0.2CR</td><td>0.5D</td></tr> <tr><td>2<CR</td><td>0.02"</td><td>0.5D</td></tr> </table> | | | CR | aa | ar | CR≤2 | 0.2CR | 0.5D | 2<CR | 0.02" | 0.5D | | | <table border="1"> <tr><th>CR</th><th>aa</th><th>ar</th></tr> <tr><td>CR≤2</td><td>0.1CR</td><td>0.5D</td></tr> <tr><td>2<CR</td><td>0.008"</td><td>0.5D</td></tr> </table> | | | CR | aa | ar | CR≤2 | 0.1CR | 0.5D | 2<CR | 0.008" | 0.5D | <table border="1"> <tr><th>CR</th><th>aa</th><th>ar</th></tr> <tr><td>CR≤2</td><td>0.2CR</td><td>0.5D</td></tr> <tr><td>2<CR</td><td>0.016"</td><td>0.5D</td></tr> </table> | | | | | | CR | aa | ar | CR≤2 | 0.2CR | 0.5D | 2<CR | 0.016" | 0.5D |
| | CR | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR≤2 | 0.2CR | 0.5D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2<CR | 0.02" | 0.5D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR≤2 | 0.1CR | 0.5D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2<CR | 0.008" | 0.5D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR≤2 | 0.2CR | 0.5D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2<CR | 0.016" | 0.5D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 16,000 | 207 | 12,500 | 150 | 11,000 | 132 | 7,950 | 85 | 4,750 | 34 | 4,270 | 24 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 10,500 | 246 | 8,500 | 177 | 7,450 | 154 | 5,300 | 102 | 3,200 | 39 | 2,850 | 28 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 7,950 | 260 | 6,350 | 189 | 5,550 | 165 | 4,000 | 108 | 2,400 | 41 | 2,150 | 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 5,300 | 276 | 4,250 | 201 | 3,700 | 175 | 2,650 | 112 | 1,600 | 45 | 1,400 | 32 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 4,000 | 276 | 3,200 | 201 | 2,800 | 175 | 2,000 | 112 | 1,200 | 45 | 1,050 | 32 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 3,200 | 276 | 2,550 | 201 | 2,250 | 175 | 1,600 | 112 | 955 | 45 | 860 | 32 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | 2,650 | 276 | 2,100 | 201 | 1,850 | 175 | 1,350 | 112 | 795 | 45 | 715 | 32 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

1. Use a rigid and precise machine and holder.
2. These milling conditions are based on milling with circular interpolation at corners; for milling without circular interpolation (such as right angle cornering), reduce the speed to 50-70% and the cutting depth to 50-80% of the above conditions.
3. We recommend using air blow or MQL (mist).
4. Please adjust the speed, feed and cutting depth according to actual cutting conditions.
5. When entering into the part, reduce the feed to 30-60% of the above conditions, with a ramping angle < 2°.
6. These milling conditions are for a tool overhang less than 4xD; for longer overhangs, reduce the speed, feed and cutting depth to prevent chattering.

High Feed Milling

| Hardness | - | | <40 HRC | | 40-45 HRC | | 45-55 HRC | | 55-60 HRC | | 60-65 HRC | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------|--|-------------|------------------------------|-------------|---|-------------|-----------------|-------------|-----------|--|-----------|-------------|----|----|----|------|-------|------|------|--------|------|---|--|--|--|--|--|----|----|----|------|--------|------|------|--------|------|
| Work Material | Cast Iron | | Mild Steels Carbon Steels | | Tool Steels Stainless Steel Hardened Steels Prehardened Steels | | Hardened Steels | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Depth of Cut | <table border="1"> <tr><th>aa</th><th>ar</th></tr> <tr><td>aa=0.1CR</td><td>ar=0.3D</td></tr> </table> | | | aa | ar | aa=0.1CR | ar=0.3D | | | <table border="1"> <tr><th>CR</th><th>aa</th><th>ar</th></tr> <tr><td>CR≤2</td><td>0.1CR</td><td>0.3D</td></tr> <tr><td>2<CR</td><td>0.008"</td><td>0.3D</td></tr> </table> | | | CR | aa | ar | CR≤2 | 0.1CR | 0.3D | 2<CR | 0.008" | 0.3D | <table border="1"> <tr><th>CR</th><th>aa</th><th>ar</th></tr> <tr><td>CR≤2</td><td>0.05CR</td><td>0.3D</td></tr> <tr><td>2<CR</td><td>0.004"</td><td>0.3D</td></tr> </table> | | | | | | CR | aa | ar | CR≤2 | 0.05CR | 0.3D | 2<CR | 0.004" | 0.3D |
| | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| aa=0.1CR | ar=0.3D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR≤2 | 0.1CR | 0.3D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2<CR | 0.008" | 0.3D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR≤2 | 0.05CR | 0.3D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2<CR | 0.004" | 0.3D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 25,000 | 324 | 25,000 | 294 | 24,000 | 281 | 24,000 | 254 | 16,000 | 112 | 14,400 | 81 | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 21,000 | 492 | 21,000 | 472 | 16,000 | 331 | 16,000 | 309 | 10,500 | 130 | 9,450 | 93 | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 16,000 | 512 | 16,000 | 472 | 12,000 | 354 | 12,000 | 323 | 7,950 | 140 | 7,150 | 100 | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 10,600 | 551 | 10,600 | 500 | 7,950 | 376 | 7,950 | 339 | 5,300 | 150 | 5,300 | 150 | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 7,950 | 551 | 7,950 | 500 | 5,950 | 376 | 5,950 | 339 | 4,000 | 150 | 4,000 | 150 | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 6,350 | 551 | 6,350 | 500 | 4,750 | 376 | 4,750 | 339 | 3,200 | 150 | 3,200 | 150 | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | 5,300 | 551 | 5,300 | 500 | 4,000 | 376 | 4,000 | 339 | 2,650 | 150 | 2,650 | 150 | | | | | | | | | | | | | | | | | | | | | | | | |

1. Use a rigid and precise machine and holder.
2. These milling conditions are based on milling with circular interpolation at corners; for milling without circular interpolation (such as right angle cornering), reduce the speed to 50-70% and the cutting depth to 50-80% of the above conditions.
3. We recommend using air blow or MQL (mist).
4. Please adjust the speed, feed and cutting depth according to actual cutting conditions.
5. When entering into the part, reduce the feed to 30-60% of the above conditions, with a ramping angle < 2°.
6. These milling conditions are for a tool overhang less than 4xD; for longer overhangs, reduce the speed, feed and cutting depth to prevent chattering.





List 4592: Corner Radius, Stub Length, 2 Flute, Long Neck, Rib Processing

Standard Milling

| Hardness | | | | | | | | | <45 HRC | 45-55 HRC | 55-65 HRC | | | |
|---------------|---------|---------|---------|--------|--------|--------|--------|--------|--|--|--------------------|-----------|------------------|-----------|
| Work Material | | | | | | | | | Hardened Steels Pre-hardened Steels (SDK61, H13, NAK80, P21) | Hardened Steels Pre-hardened Steels (SDK61, H13, STAVAX, 420F) | Hardened Steels | | | |
| Depth of Cut | | | | | | | | | % of DOC's suggested on the left | | | | | |
| | aa (in) | | | | | | | | aa=120% ar=120% | | aa=100% ar=100% | | aa=60% ar=80% | |
| | Dia. | L1 | R0.05 | R0.1 | R0.2 | R0.3 | R0.5 | R1 | ar (in) | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM |
| 0.4 | 1 | 0.00028 | — | — | — | — | — | 0.0047 | 25,000 | 14.0 | 25,000 | 14.0 | 19,800 | 11.1 |
| | 1.5 | 0.00028 | — | — | — | — | — | 0.0047 | 25,000 | 14.0 | 25,000 | 14.0 | 19,800 | 11.1 |
| | 2 | 0.00020 | 0.00031 | — | — | — | — | 0.0040 | 25,000 | 10.0 | 25,000 | 10.0 | 19,800 | 7.9 |
| | 3 | 0.00008 | 0.00012 | — | — | — | — | 0.0030 | 25,000 | 4.0 | 23,100 | 3.7 | 18,700 | 3.0 |
| 4 | 0.00004 | 0.00008 | — | — | — | — | 0.0014 | 22,000 | 1.8 | 22,000 | 1.8 | 18,700 | 1.5 | |
| 0.5 | 1 | 0.00028 | 0.00039 | — | — | — | — | 0.0059 | 25,000 | 14.0 | 25,000 | 14.0 | 18,700 | 10.5 |
| | 2 | 0.00028 | 0.00039 | — | — | — | — | 0.0059 | 25,000 | 14.0 | 25,000 | 14.0 | 18,700 | 10.5 |
| | 3 | 0.00012 | 0.00020 | — | — | — | — | 0.0041 | 25,000 | 6.0 | 24,200 | 5.8 | 17,600 | 4.2 |
| | 4 | 0.00008 | 0.00012 | — | — | — | — | 0.0004 | 25,000 | 4.0 | 23,100 | 3.7 | 17,050 | 2.7 |
| | 5 | 0.00004 | 0.00008 | — | — | — | — | 0.0018 | 24,200 | 1.9 | 22,550 | 1.8 | 16,500 | 1.3 |
| | 6 | 0.00004 | 0.00004 | — | — | — | — | 0.0012 | 22,000 | 1.8 | 22,000 | 1.8 | 16,500 | 1.3 |
| 0.6 | 2 | — | 0.00047 | — | — | — | — | 0.0071 | 25,000 | 23.5 | 25,000 | 23.5 | 17,600 | 16.5 |
| | 4 | — | 0.00020 | — | — | — | — | 0.0048 | 25,000 | 10.0 | 22,000 | 8.8 | 16,500 | 6.6 |
| | 6 | — | 0.00008 | — | — | — | — | 0.0021 | 22,000 | 3.5 | 20,900 | 3.3 | 15,400 | 2.5 |
| 0.8 | 4 | — | 0.00063 | 0.0013 | — | — | — | 0.0094 | 25,000 | 65.0 | 22,000 | 57.2 | 15,400 | 40.0 |
| | 6 | — | 0.00028 | 0.0006 | — | — | — | 0.0094 | 23,100 | 27.7 | 19,800 | 23.8 | 14,850 | 17.8 |
| | 8 | — | — | 0.0003 | — | — | — | 0.0085 | 19,800 | 11.9 | 18,700 | 11.2 | 14,300 | 8.6 |
| 1.0 | 4 | 0.00039 | 0.00079 | 0.0016 | 0.0020 | — | — | 0.0118 | 24,200 | 77.4 | 22,000 | 70.4 | 13,200 | 42.2 |
| | 6 | 0.00020 | 0.00039 | 0.0008 | 0.0010 | — | — | 0.0083 | 22,000 | 35.2 | 18,700 | 29.9 | 13,200 | 21.1 |
| | 8 | 0.00012 | 0.00024 | 0.0005 | 0.0006 | — | — | 0.0071 | 17,600 | 17.6 | 16,500 | 16.5 | 12,650 | 12.7 |
| | 10 | 0.00008 | 0.00016 | 0.0003 | 0.0004 | — | — | 0.0035 | 16,500 | 9.9 | 15,400 | 9.2 | 12,100 | 7.3 |
| | 12 | 0.00004 | 0.00012 | 0.0002 | 0.0003 | — | — | 0.0024 | 16,500 | 6.6 | 14,300 | 5.7 | 12,100 | 4.8 |
| | 16 | — | — | 0.0002 | — | — | — | 0.0012 | 13,200 | 5.3 | 13,200 | 5.3 | 11,550 | 4.6 |
| | 20 | — | — | 0.0001 | — | — | — | 0.0009 | 11,000 | 2.2 | 11,000 | 2.2 | 11,000 | 2.2 |
| 1.2 | 6 | — | — | 0.0013 | 0.0016 | — | — | 0.0142 | 18,700 | 48.6 | 15,400 | 40.0 | 11,000 | 28.6 |
| | 8 | — | — | 0.0007 | 0.0009 | — | — | 0.0099 | 15,400 | 21.6 | 13,200 | 18.5 | 11,000 | 15.4 |
| | 10 | — | — | 0.0004 | 0.0006 | — | — | 0.0085 | 15,400 | 12.3 | 13,200 | 10.6 | 9,900 | 7.9 |
| 1.5 | 6 | — | — | 0.0016 | 0.0024 | — | — | 0.0177 | 15,400 | 49.3 | 13,200 | 42.2 | 8,800 | 28.2 |
| | 8 | — | — | 0.0010 | 0.0015 | — | — | 0.0150 | 13,200 | 26.4 | 11,000 | 22.0 | 7,700 | 15.4 |
| | 10 | — | — | 0.0007 | 0.0011 | — | — | 0.0115 | 13,200 | 18.5 | 11,000 | 15.4 | 7,700 | 10.8 |
| | 12 | — | — | 0.0005 | 0.0007 | — | — | 0.0106 | 13,200 | 13.2 | 11,000 | 11.0 | 7,150 | 7.2 |
| | 16 | — | — | 0.0003 | 0.0004 | — | — | 0.0044 | 11,000 | 6.6 | 9,900 | 5.9 | 6,600 | 4.0 |
| 2.0 | 8 | — | 0.00079 | 0.0016 | 0.0024 | 0.0030 | — | 0.0236 | 12,100 | 38.7 | 9,900 | 31.7 | 6,600 | 21.1 |
| | 10 | — | 0.00063 | 0.0013 | 0.0019 | 0.0024 | — | 0.0201 | 9,900 | 25.7 | 7,700 | 20.0 | 6,600 | 17.2 |
| | 12 | — | 0.00039 | 0.0008 | 0.0012 | 0.0015 | — | 0.0165 | 9,900 | 15.8 | 7,700 | 12.3 | 6,600 | 10.6 |
| | 16 | — | 0.00024 | 0.0005 | 0.0007 | 0.0009 | — | 0.0142 | 9,900 | 9.9 | 7,700 | 7.7 | 6,050 | 6.1 |
| | 20 | — | 0.00016 | 0.0003 | 0.0005 | 0.0006 | — | 0.0071 | 7,700 | 4.6 | 7,150 | 4.3 | 5,500 | 3.3 |
| 25 | — | 0.00008 | 0.0002 | 0.0003 | 0.0004 | — | 0.0047 | 7,700 | 3.1 | 6,600 | 2.6 | 4,950 | 2.0 | |
| 2.5 | 10 | — | — | 0.0016 | — | 0.0030 | — | 0.0295 | 9,900 | 31.7 | 8,800 | 28.2 | 5,500 | 17.6 |
| | 20 | — | — | 0.0008 | — | 0.0015 | — | 0.0177 | 7,700 | 12.3 | 6,600 | 10.6 | 4,950 | 7.9 |
| | 30 | — | — | 0.0002 | — | 0.0004 | — | 0.0059 | 6,600 | 2.6 | 5,500 | 2.2 | 4,400 | 1.8 |
| 3.0 | 8 | — | — | 0.0016 | — | — | — | 0.0354 | 8,800 | 28.2 | 7,700 | 24.6 | 5,500 | 17.6 |
| | 12 | — | — | 0.0016 | 0.0024 | 0.0030 | — | 0.0354 | 8,800 | 28.2 | 7,700 | 24.6 | 5,500 | 17.6 |
| | 16 | — | — | 0.0011 | 0.0017 | 0.0020 | — | 0.0283 | 6,600 | 14.5 | 6,600 | 14.5 | 5,500 | 12.1 |
| | 20 | — | — | 0.0007 | 0.0011 | 0.0013 | — | 0.0241 | 6,600 | 9.2 | 6,600 | 9.2 | 5,500 | 7.7 |
| | 25 | — | — | 0.0005 | 0.0007 | 0.0009 | — | 0.0213 | 6,600 | 6.6 | 6,600 | 6.6 | 4,950 | 5.0 |
| | 30 | — | — | 0.0003 | 0.0005 | 0.0006 | — | 0.0106 | 5,500 | 3.3 | 5,500 | 3.3 | 4,400 | 2.6 |
| | 35 | — | — | 0.0002 | 0.0004 | 0.0004 | — | 0.0071 | 5,500 | 2.2 | 4,950 | 2.0 | 4,400 | 1.8 |
| 4.0 | 16 | — | — | 0.0016 | 0.0024 | 0.0030 | 0.0047 | 0.0472 | 6,600 | 21.1 | 4,950 | 15.8 | 4,400 | 14.1 |
| | 20 | — | — | 0.0013 | 0.0019 | 0.0024 | 0.0079 | 0.0402 | 5,500 | 14.3 | 4,400 | 11.4 | 4,400 | 11.4 |
| | 25 | — | — | 0.0008 | 0.0012 | 0.0015 | 0.0024 | 0.0321 | 5,500 | 8.8 | 4,400 | 7.0 | 4,400 | 7.0 |
| | 30 | — | — | 0.0006 | 0.0008 | 0.0010 | 0.0016 | 0.0293 | 5,500 | 6.6 | 4,400 | 5.3 | 4,400 | 5.3 |
| | 40 | — | — | 0.0003 | 0.0005 | 0.0006 | 0.0009 | 0.0142 | 4,400 | 2.6 | 4,400 | 2.6 | 4,400 | 2.6 |
| | 50 | — | — | 0.0002 | 0.0003 | 0.0004 | 0.0006 | 0.0085 | 4,400 | 1.8 | 4,400 | 1.8 | 3,850 | 1.5 |





List 4590: Ball End, Stub Length, 2 Flute, Long Neck, Rib Processing

Standard Milling (up to 38HRC)

| Hardness | | <20 HRC | | | | 20-30 HRC | | | | 30-38 HRC | | | |
|---------------|-----|---------------------------------------|-------------|---------|---------|---------------------------|-------------|---------|---------|--------------------------------------|-------------|---------|---------|
| Work Material | | Mild Steels, Carbon Steels, Cast Iron | | | | Alloy Steels, Tool Steels | | | | Hardened Steels, Pre-hardened Steels | | | |
| Depth of Cut | | | | | | | | | | | | | |
| Mill Dia. | L1 | Speed RPM | Feed in/min | aa (in) | ar (in) | Speed RPM | Feed in/min | aa (in) | ar (in) | Speed RPM | Feed in/min | aa (in) | ar (in) |
| 0.1 | 0.3 | 25,000 | 1.4 | 0.0001 | 0.0001 | 25,000 | 1.4 | 0.0001 | 0.0001 | 25,000 | 1.4 | 0.0001 | 0.0001 |
| | 0.5 | 25,000 | 1.0 | 0.0001 | 0.0001 | 25,000 | 1.0 | 0.0001 | 0.0001 | 25,000 | 1.0 | 0.0001 | 0.0001 |
| 0.2 | 0.5 | 25,000 | 7.8 | 0.0002 | 0.0002 | 25,000 | 7.8 | 0.0002 | 0.0002 | 25,000 | 7.6 | 0.0002 | 0.0002 |
| | 1 | 25,000 | 7.1 | 0.0002 | 0.0002 | 25,000 | 7.1 | 0.0002 | 0.0002 | 25,000 | 6.7 | 0.0002 | 0.0002 |
| | 1.5 | 25,000 | 6.5 | 0.0002 | 0.0002 | 25,000 | 6.5 | 0.0002 | 0.0002 | 25,000 | 6.1 | 0.0002 | 0.0002 |
| | 3 | 25,000 | 4.6 | 0.0002 | 0.0002 | 25,000 | 4.6 | 0.0002 | 0.0002 | 25,000 | 4.3 | 0.0002 | 0.0002 |
| 0.3 | 1 | 25,000 | 11.8 | 0.0002 | 0.0004 | 25,000 | 11.8 | 0.0002 | 0.0004 | 25,000 | 11.2 | 0.0002 | 0.0002 |
| | 3 | 25,000 | 6.4 | 0.0002 | 0.0002 | 25,000 | 6.4 | 0.0002 | 0.0002 | 25,000 | 6.0 | 0.0002 | 0.0002 |
| | 5 | 25,000 | 3.4 | 0.0002 | 0.0002 | 25,000 | 3.4 | 0.0002 | 0.0002 | 25,000 | 3.2 | 0.0002 | 0.0002 |
| 0.4 | 1 | 25,000 | 17.4 | 0.0004 | 0.0008 | 25,000 | 17.7 | 0.0004 | 0.0008 | 25,000 | 16.7 | 0.0004 | 0.0004 |
| | 3 | 25,000 | 11.4 | 0.0002 | 0.0004 | 25,000 | 11.4 | 0.0002 | 0.0004 | 25,000 | 10.7 | 0.0002 | 0.0002 |
| | 6 | 25,000 | 6.6 | 0.0002 | 0.0002 | 25,000 | 6.6 | 0.0002 | 0.0002 | 25,000 | 6.2 | 0.0002 | 0.0002 |
| 0.5 | 1 | 25,000 | 21.6 | 0.0006 | 0.0012 | 25,000 | 21.6 | 0.0006 | 0.0012 | 25,000 | 20.6 | 0.0006 | 0.0006 |
| | 5 | 25,000 | 13.1 | 0.0002 | 0.0004 | 25,000 | 13.1 | 0.0002 | 0.0004 | 25,000 | 12.5 | 0.0002 | 0.0002 |
| | 10 | 20,000 | 3.9 | 0.0002 | 0.0002 | 20,000 | 3.9 | 0.0002 | 0.0002 | 20,000 | 3.7 | 0.0002 | 0.0002 |
| 0.6 | 1 | 25,000 | 21.6 | 0.0012 | 0.0020 | 25,000 | 26.5 | 0.0012 | 0.0020 | 25,000 | 23.6 | 0.0012 | 0.0012 |
| | 5 | 25,000 | 22.3 | 0.0004 | 0.0008 | 25,000 | 22.3 | 0.0004 | 0.0008 | 25,000 | 21.0 | 0.0004 | 0.0004 |
| | 12 | 18,000 | 4.7 | 0.0002 | 0.0002 | 18,000 | 4.7 | 0.0002 | 0.0002 | 18,000 | 4.3 | 0.0002 | 0.0002 |
| 0.8 | 2 | 25,000 | 39.3 | 0.0016 | 0.0031 | 25,000 | 39.3 | 0.0016 | 0.0031 | 25,000 | 37.4 | 0.0016 | 0.0016 |
| | 6 | 25,000 | 26.3 | 0.0012 | 0.0020 | 25,000 | 26.3 | 0.0012 | 0.0020 | 25,000 | 24.9 | 0.0012 | 0.0012 |
| | 12 | 17,000 | 9.8 | 0.0002 | 0.0002 | 17,000 | 9.8 | 0.0002 | 0.0002 | 17,000 | 9.1 | 0.0002 | 0.0002 |
| 1.0 | 2 | 25,000 | 72.8 | 0.0020 | 0.0039 | 25,000 | 72.8 | 0.0020 | 0.0039 | 25,000 | 72.8 | 0.0020 | 0.0020 |
| | 5 | 25,000 | 62.9 | 0.0020 | 0.0039 | 25,000 | 62.9 | 0.0020 | 0.0039 | 25,000 | 57.4 | 0.0020 | 0.0020 |
| | 10 | 22,000 | 43.3 | 0.0004 | 0.0008 | 22,000 | 43.3 | 0.0004 | 0.0008 | 22,000 | 39.4 | 0.0004 | 0.0004 |
| | 20 | 13,000 | 11.8 | 0.0002 | 0.0002 | 13,000 | 11.8 | 0.0002 | 0.0002 | 13,000 | 11.2 | 0.0002 | 0.0002 |
| 1.2 | 2 | 25,000 | 74.8 | 0.0024 | 0.0047 | 25,000 | 74.8 | 0.0024 | 0.0047 | 25,000 | 70.8 | 0.0024 | 0.0024 |
| | 5 | 25,000 | 57.4 | 0.0024 | 0.0047 | 25,000 | 57.4 | 0.0024 | 0.0047 | 25,000 | 56.6 | 0.0024 | 0.0024 |
| | 10 | 20,000 | 47.2 | 0.0020 | 0.0039 | 20,000 | 47.2 | 0.0020 | 0.0039 | 20,000 | 43.3 | 0.0020 | 0.0020 |
| | 20 | 14,000 | 12.6 | 0.0002 | 0.0002 | 14,000 | 12.6 | 0.0002 | 0.0002 | 14,000 | 11.8 | 0.0002 | 0.0002 |
| 1.5 | 3 | 25,000 | 94.5 | 0.0030 | 0.0059 | 25,000 | 94.5 | 0.0030 | 0.0059 | 25,000 | 94.5 | 0.0030 | 0.0030 |
| | 6 | 25,000 | 95.2 | 0.0030 | 0.0059 | 25,000 | 95.2 | 0.0030 | 0.0059 | 25,000 | 88.6 | 0.0030 | 0.0030 |
| | 10 | 24,000 | 78.7 | 0.0020 | 0.0059 | 24,000 | 78.7 | 0.0030 | 0.0059 | 24,000 | 74.8 | 0.0030 | 0.0030 |
| | 16 | 16,000 | 31.5 | 0.0020 | 0.0039 | 16,000 | 31.5 | 0.0020 | 0.0039 | 16,000 | 29.9 | 0.0020 | 0.0020 |
| | 20 | 13,000 | 14.2 | 0.0008 | 0.0020 | 13,000 | 14.2 | 0.0008 | 0.0020 | 13,000 | 13.4 | 0.0008 | 0.0008 |
| | 30 | 12,000 | 7.9 | 0.0002 | 0.0004 | 12,000 | 7.9 | 0.0002 | 0.0004 | 12,000 | 7.5 | 0.0002 | 0.0002 |
| 2.0 | 4 | 25,000 | 110.2 | 0.0039 | 0.0079 | 25,000 | 110.2 | 0.0039 | 0.0079 | 25,000 | 110.2 | 0.0039 | 0.0039 |
| | 8 | 25,000 | 102.4 | 0.0039 | 0.0079 | 25,000 | 102.4 | 0.0039 | 0.0079 | 25,000 | 94.5 | 0.0039 | 0.0039 |
| | 16 | 14,000 | 66.9 | 0.0039 | 0.0039 | 14,000 | 66.9 | 0.0039 | 0.0039 | 14,000 | 74.8 | 0.0039 | 0.0039 |
| | 20 | 12,000 | 47.2 | 0.0020 | 0.0039 | 12,000 | 47.2 | 0.0020 | 0.0039 | 12,000 | 43.3 | 0.0020 | 0.0020 |
| | 30 | 10,000 | 19.7 | 0.0008 | 0.0020 | 10,000 | 19.7 | 0.0008 | 0.0020 | 10,000 | 18.5 | 0.0008 | 0.0008 |
| | 40 | 7,000 | 5.9 | 0.0008 | 0.0012 | 7,000 | 5.9 | 0.0008 | 0.0012 | 7,000 | 5.5 | 0.0008 | 0.0008 |
| 3.0 | 6 | 25,000 | 147.0 | 0.0059 | 0.0118 | 25,000 | 147.0 | 0.0059 | 0.0118 | 25,000 | 147.0 | 0.0059 | 0.0059 |
| | 12 | 20,000 | 118.1 | 0.0059 | 0.0118 | 20,000 | 118.1 | 0.0059 | 0.0118 | 20,000 | 110.2 | 0.0059 | 0.0059 |
| | 16 | 16,000 | 78.7 | 0.0039 | 0.0079 | 16,000 | 78.7 | 0.0039 | 0.0079 | 16,000 | 74.8 | 0.0039 | 0.0039 |
| | 20 | 14,000 | 70.9 | 0.0039 | 0.0079 | 14,000 | 70.9 | 0.0039 | 0.0079 | 14,000 | 66.9 | 0.0039 | 0.0039 |
| | 30 | 10,000 | 31.5 | 0.0012 | 0.0020 | 10,000 | 31.5 | 0.0012 | 0.0020 | 10,000 | 29.9 | 0.0012 | 0.0012 |
| | 40 | 7,000 | 19.7 | 0.0008 | 0.0012 | 7,000 | 19.7 | 0.0008 | 0.0012 | 7,000 | 18.5 | 0.0008 | 0.0008 |
| 3.5 | 15 | 18,000 | 118.1 | 0.0039 | 0.0118 | 18,000 | 118.1 | 0.0039 | 0.0118 | 18,000 | 110.2 | 0.0039 | 0.0039 |
| | 25 | 12,000 | 78.7 | 0.0039 | 0.0039 | 12,000 | 78.7 | 0.0039 | 0.0039 | 12,000 | 74.8 | 0.0039 | 0.0039 |
| | 35 | 10,000 | 39.4 | 0.0020 | 0.0020 | 10,000 | 39.4 | 0.0020 | 0.0020 | 10,000 | 37.4 | 0.0020 | 0.0020 |
| | 45 | 7,000 | 23.6 | 0.0012 | 0.0012 | 7,000 | 23.6 | 0.0012 | 0.0012 | 7,000 | 22.4 | 0.0012 | 0.0012 |

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Standard Milling (up to 38HRC)

| Hardness | | <20 HRC | | | | 20-30 HRC | | | | 30-38 HRC | | | |
|---------------|----|---------------------------------------|-------------|---------|---------|---------------------------|-------------|---------|---------|--------------------------------------|-------------|---------|---------|
| Work Material | | Mild Steels, Carbon Steels, Cast Iron | | | | Alloy Steels, Tool Steels | | | | Hardened Steels, Pre-hardened Steels | | | |
| Depth of Cut | | | | | | | | | | | | | |
| Mill Dia. | L1 | Speed RPM | Feed in/min | aa (in) | ar (in) | Speed RPM | Feed in/min | aa (in) | ar (in) | Speed RPM | Feed in/min | aa (in) | ar (in) |
| 4.0 | 8 | 25,000 | 181.0 | 0.0079 | 0.0197 | 25,000 | 181.0 | 0.0079 | 0.0197 | 25,000 | 181.0 | 0.0079 | 0.0079 |
| | 16 | 18,000 | 126.0 | 0.0079 | 0.0197 | 18,000 | 126.0 | 0.0079 | 0.0197 | 18,000 | 118.1 | 0.0079 | 0.0079 |
| | 20 | 16,000 | 110.2 | 0.0079 | 0.0157 | 16,000 | 110.2 | 0.0079 | 0.0157 | 16,000 | 102.4 | 0.0079 | 0.0079 |
| | 30 | 14,000 | 94.5 | 0.0039 | 0.0079 | 14,000 | 94.5 | 0.0039 | 0.0079 | 14,000 | 86.6 | 0.0039 | 0.0039 |
| | 40 | 10,000 | 51.2 | 0.0020 | 0.0039 | 10,000 | 51.2 | 0.0020 | 0.0039 | 10,000 | 47.2 | 0.0020 | 0.0020 |
| 5.0 | 10 | 25,000 | 212.6 | 0.0098 | 0.0197 | 25,000 | 212.6 | 0.0098 | 0.0197 | 25,000 | 212.6 | 0.0098 | 0.0197 |
| | 20 | 16,000 | 137.8 | 0.0098 | 0.0197 | 16,000 | 137.8 | 0.0098 | 0.0197 | 16,000 | 129.9 | 0.0098 | 0.0197 |
| | 30 | 14,000 | 98.4 | 0.0039 | 0.0118 | 14,000 | 98.4 | 0.0039 | 0.0118 | 14,000 | 90.6 | 0.0039 | 0.0118 |
| | 40 | 10,000 | 47.2 | 0.0039 | 0.0079 | 10,000 | 47.2 | 0.0039 | 0.0079 | 10,000 | 43.3 | 0.0039 | 0.0079 |
| | 50 | 8,000 | 31.5 | 0.0039 | 0.0039 | 8,000 | 31.5 | 0.0039 | 0.0039 | 8,000 | 29.9 | 0.0039 | 0.0039 |
| 6.0 | 12 | 20,000 | 204.7 | 0.0118 | 0.0197 | 20,000 | 204.7 | 0.0118 | 0.0197 | 20,000 | 204.7 | 0.0118 | 0.0197 |
| | 20 | 16,000 | 165.4 | 0.0118 | 0.0197 | 16,000 | 165.4 | 0.0118 | 0.0197 | 16,000 | 153.5 | 0.0118 | 0.0197 |
| | 30 | 10,000 | 102.4 | 0.0118 | 0.0197 | 10,000 | 102.4 | 0.0118 | 0.0197 | 10,000 | 94.5 | 0.0118 | 0.0197 |
| | 40 | 9,000 | 78.7 | 0.0079 | 0.0118 | 9,000 | 78.7 | 0.0079 | 0.0118 | 9,000 | 74.8 | 0.0079 | 0.0118 |
| | 50 | 7,000 | 63.0 | 0.0079 | 0.0118 | 7,000 | 63.0 | 0.0079 | 0.0118 | 7,000 | 59.1 | 0.0079 | 0.0118 |

Standard Milling (38 to 60HRC)

| Hardness | | 38-45 HRC | | | | 45-55 HRC | | | | 55-60 HRC | | | |
|---------------|-----|--|-------------|---------|---------|-----------------|-------------|---------|---------|-----------------|-------------|---------|---------|
| Work Material | | Stainless Steels, Hardened Steels, Pre-hardened Steels | | | | Hardened Steels | | | | Hardened Steels | | | |
| Depth of Cut | | | | | | | | | | | | | |
| Mill Dia. | L1 | Speed RPM | Feed in/min | aa (in) | ar (in) | Speed RPM | Feed in/min | aa (in) | ar (in) | Speed RPM | Feed in/min | aa (in) | ar (in) |
| 0.1 | 0.3 | 50,000 | 2.8 | 0.0001 | 0.0001 | 50,000 | 2.4 | 0.0001 | 0.0001 | - | - | - | - |
| | 0.5 | 50,000 | 2.0 | 0.0001 | 0.0001 | 50,000 | 1.6 | 0.0001 | 0.0001 | - | - | - | - |
| 0.2 | 0.5 | 50,000 | 15.0 | 0.0002 | 0.0002 | 50,000 | 10.2 | 0.0002 | 0.0002 | 50,000 | 7.9 | 0.0002 | 0.0002 |
| | 1 | 50,000 | 13.4 | 0.0002 | 0.0002 | 50,000 | 9.1 | 0.0002 | 0.0002 | 43,000 | 7.1 | 0.0002 | 0.0002 |
| | 1.5 | 45,000 | 11.0 | 0.0002 | 0.0002 | 45,000 | 7.5 | 0.0002 | 0.0002 | 41,000 | 5.1 | 0.0002 | 0.0002 |
| | 3 | 32,000 | 5.5 | 0.0002 | 0.0002 | 31,000 | 3.5 | 0.0002 | 0.0002 | 31,000 | 2.8 | 0.0002 | 0.0002 |
| 0.3 | 1 | 50,000 | 22.4 | 0.0002 | 0.0002 | 50,000 | 15.4 | 0.0002 | 0.0002 | 50,000 | 12.2 | 0.0002 | 0.0004 |
| | 3 | 38,000 | 9.1 | 0.0002 | 0.0002 | 37,000 | 5.9 | 0.0002 | 0.0002 | 33,000 | 3.9 | 0.0002 | 0.0002 |
| | 5 | 29,000 | 3.7 | 0.0002 | 0.0002 | 28,000 | 2.4 | 0.0002 | 0.0002 | 28,000 | 2.0 | 0.0002 | 0.0002 |
| 0.4 | 1 | 50,000 | 33.5 | 0.0004 | 0.0004 | 50,000 | 20.5 | 0.0004 | 0.0004 | 50,000 | 17.3 | 0.0003 | 0.0006 |
| | 3 | 43,000 | 18.5 | 0.0002 | 0.0002 | 43,000 | 11.0 | 0.0002 | 0.0002 | 38,000 | 8.7 | 0.0002 | 0.0004 |
| | 6 | 30,000 | 7.5 | 0.0002 | 0.0002 | 29,000 | 4.7 | 0.0002 | 0.0002 | 26,000 | 3.9 | 0.0002 | 0.0002 |
| 0.5 | 1 | 50,000 | 41.3 | 0.0006 | 0.0006 | 50,000 | 28.7 | 0.0006 | 0.0006 | 50,000 | 22.8 | 0.0004 | 0.0008 |
| | 5 | 30,000 | 15.0 | 0.0002 | 0.0002 | 29,000 | 9.8 | 0.0002 | 0.0002 | 26,000 | 6.7 | 0.0002 | 0.0004 |
| | 10 | 20,000 | 3.7 | 0.0002 | 0.0002 | 20,000 | 3.9 | 0.0002 | 0.0002 | 20,000 | 3.5 | 0.0002 | 0.0002 |
| 0.6 | 1 | 50,000 | 47.2 | 0.0012 | 0.0012 | 50,000 | 33.1 | 0.0012 | 0.0012 | 50,000 | 26.4 | 0.0004 | 0.0008 |
| | 5 | 30,000 | 25.2 | 0.0004 | 0.0004 | 30,000 | 17.3 | 0.0004 | 0.0004 | 27,000 | 12.2 | 0.0004 | 0.0008 |
| | 12 | 18,000 | 4.3 | 0.0002 | 0.0002 | 17,000 | 3.1 | 0.0002 | 0.0002 | 17,000 | 2.8 | 0.0002 | 0.0002 |

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List 4590: Ball End, Stub Length, 2 Flute, Long Neck, Rib Processing (Continued)

Standard Milling (38 to 60HRC)

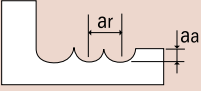
| Hardness | | 38-45 HRC | | | | 45-55 HRC | | | | 55-60 HRC | | | |
|---------------|-------|--|-------------|---------|---------|-----------------|-------------|---------|---------|-----------------|-------------|---------|---------|
| Work Material | | Stainless Steels, Hardened Steels Pre-hardened Steels | | | | Hardened Steels | | | | Hardened Steels | | | |
| Depth of Cut | | | | | | | | | | | | | |
| Mill Dia. | L1 | Speed RPM | Feed in/min | aa (in) | ar (in) | Speed RPM | Feed in/min | aa (in) | ar (in) | Speed RPM | Feed in/min | aa (in) | ar (in) |
| 0.8 | 2 | 50,000 | 74.8 | 0.0016 | 0.0016 | 50,000 | 63.0 | 0.0016 | 0.0016 | 50,000 | 47.2 | 0.0006 | 0.0012 |
| | 6 | 30,000 | 29.9 | 0.0012 | 0.0012 | 30,000 | 25.6 | 0.0012 | 0.0012 | 27,000 | 18.1 | 0.0006 | 0.0012 |
| | 12 | 17,000 | 9.1 | 0.0002 | 0.0002 | 16,000 | 6.3 | 0.0002 | 0.0002 | 16,000 | 4.3 | 0.0002 | 0.0002 |
| 1.0 | 2 | 50,000 | 145.7 | 0.0020 | 0.0020 | 50,000 | 145.7 | 0.0020 | 0.0020 | 50,000 | 118.1 | 0.0008 | 0.0020 |
| | 5 | 36,000 | 82.7 | 0.0020 | 0.0020 | 36,000 | 63.0 | 0.0020 | 0.0020 | 36,000 | 47.2 | 0.0008 | 0.0020 |
| | 10 | 22,000 | 39.4 | 0.0004 | 0.0004 | 21,000 | 29.9 | 0.0004 | 0.0004 | 18,000 | 20.5 | 0.0004 | 0.0008 |
| | 20 | 13,000 | 11.2 | 0.0002 | 0.0002 | 12,000 | 7.1 | 0.0002 | 0.0002 | 12,000 | 5.5 | 0.0002 | 0.0002 |
| 1.2 | 2 | 50,000 | 141.7 | 0.0024 | 0.0024 | 50,000 | 141.7 | 0.0024 | 0.0024 | 50,000 | 118.1 | 0.0008 | 0.0020 |
| | 5 | 36,000 | 78.7 | 0.0024 | 0.0024 | 32,000 | 63.0 | 0.0024 | 0.0024 | 30,000 | 47.2 | 0.0008 | 0.0020 |
| | 10 | 20,000 | 43.3 | 0.0020 | 0.0020 | 18,000 | 31.5 | 0.0020 | 0.0020 | 16,000 | 22.0 | 0.0008 | 0.0020 |
| | 20 | 13,000 | 11.8 | 0.0002 | 0.0002 | 12,000 | 7.1 | 0.0002 | 0.0002 | 10,000 | 4.7 | 0.0002 | 0.0002 |
| 1.5 | 3 | 50,000 | 189.0 | 0.0030 | 0.0030 | 50,000 | 189.0 | 0.0030 | 0.0030 | 50,000 | 153.5 | 0.0012 | 0.0024 |
| | 6 | 30,000 | 106.3 | 0.0030 | 0.0030 | 30,000 | 86.6 | 0.0030 | 0.0030 | 27,000 | 59.1 | 0.0012 | 0.0024 |
| | 10 | 24,000 | 74.8 | 0.0030 | 0.0030 | 24,000 | 59.1 | 0.0030 | 0.0030 | 21,000 | 39.4 | 0.0012 | 0.0024 |
| | 16 | 14,000 | 29.9 | 0.0020 | 0.0020 | 13,000 | 22.0 | 0.0020 | 0.0020 | 10,000 | 13.4 | 0.0012 | 0.0020 |
| | 20 | 12,000 | 13.4 | 0.0008 | 0.0008 | 11,000 | 9.4 | 0.0008 | 0.0008 | 9,000 | 5.9 | 0.0008 | 0.0020 |
| | 30 | 11,000 | 7.5 | 0.0002 | 0.0002 | 10,000 | 4.7 | 0.0002 | 0.0002 | 9,000 | 3.5 | 0.0002 | 0.0004 |
| 2.0 | 4 | 50,000 | 220.5 | 0.0039 | 0.0039 | 47,000 | 208.7 | 0.0039 | 0.0039 | 40,000 | 141.7 | 0.0020 | 0.0039 |
| | 8 | 25,000 | 94.5 | 0.0039 | 0.0039 | 24,000 | 90.6 | 0.0039 | 0.0039 | 20,000 | 59.1 | 0.0020 | 0.0039 |
| | 16 | 14,000 | 74.8 | 0.0039 | 0.0039 | 13,000 | 55.1 | 0.0039 | 0.0039 | 11,000 | 37.4 | 0.0020 | 0.0039 |
| | 20 | 11,000 | 43.3 | 0.0020 | 0.0020 | 10,000 | 35.0 | 0.0020 | 0.0020 | 9,000 | 25.2 | 0.0020 | 0.0039 |
| | 30 | 9,000 | 18.5 | 0.0008 | 0.0008 | 9,000 | 14.2 | 0.0008 | 0.0008 | 7,500 | 9.4 | 0.0008 | 0.0020 |
| 40 | 6,000 | 5.5 | 0.0002 | 0.0002 | 6,000 | 3.9 | 0.0002 | 0.0002 | 6,000 | 3.5 | 0.0002 | 0.0012 | |
| 3.0 | 6 | 41,500 | 244.1 | 0.0059 | 0.0059 | 32,000 | 189.0 | 0.0059 | 0.0059 | 26,500 | 129.9 | 0.0024 | 0.0059 |
| | 12 | 20,000 | 110.2 | 0.0059 | 0.0059 | 18,000 | 98.4 | 0.0059 | 0.0059 | 16,000 | 66.9 | 0.0024 | 0.0059 |
| | 16 | 16,000 | 74.8 | 0.0039 | 0.0039 | 13,000 | 59.1 | 0.0039 | 0.0039 | 11,000 | 43.3 | 0.0024 | 0.0059 |
| | 20 | 14,000 | 66.9 | 0.0039 | 0.0039 | 11,000 | 39.4 | 0.0039 | 0.0039 | 10,000 | 39.4 | 0.0024 | 0.0059 |
| | 30 | 9,000 | 29.9 | 0.0012 | 0.0012 | 7,000 | 23.2 | 0.0012 | 0.0012 | 6,000 | 15.7 | 0.0012 | 0.0020 |
| | 40 | 6,500 | 18.5 | 0.0008 | 0.0008 | 5,000 | 14.2 | 0.0008 | 0.0008 | 4,000 | 9.1 | 0.0008 | 0.0012 |
| 3.5 | 15 | 18,000 | 110.2 | 0.0039 | 0.0039 | 14,000 | 78.7 | 0.0039 | 0.0039 | 12,000 | 51.2 | 0.0028 | 0.0059 |
| | 25 | 12,000 | 74.8 | 0.0039 | 0.0039 | 9,000 | 51.2 | 0.0039 | 0.0039 | 8,000 | 36.2 | 0.0028 | 0.0059 |
| | 35 | 9,000 | 37.4 | 0.0020 | 0.0020 | 7,000 | 27.6 | 0.0020 | 0.0020 | 5,000 | 15.7 | 0.0020 | 0.0020 |
| | 45 | 6,500 | 22.4 | 0.0012 | 0.0012 | 5,000 | 16.5 | 0.0012 | 0.0012 | 4,000 | 10.2 | 0.0012 | 0.0012 |
| 4.0 | 8 | 31,000 | 224.4 | 0.0079 | 0.0079 | 24,000 | 173.2 | 0.0079 | 0.0079 | 20,000 | 126.0 | 0.0031 | 0.0079 |
| | 16 | 18,000 | 118.1 | 0.0079 | 0.0079 | 14,000 | 98.4 | 0.0079 | 0.0079 | 10,000 | 51.2 | 0.0031 | 0.0079 |
| | 20 | 16,000 | 102.4 | 0.0079 | 0.0079 | 14,000 | 90.6 | 0.0079 | 0.0079 | 8,000 | 39.4 | 0.0031 | 0.0079 |
| | 30 | 14,000 | 86.6 | 0.0039 | 0.0039 | 12,000 | 74.8 | 0.0039 | 0.0039 | 5,000 | 24.8 | 0.0031 | 0.0079 |
| | 40 | 9,000 | 47.2 | 0.0020 | 0.0020 | 8,000 | 39.4 | 0.0020 | 0.0020 | 4,000 | 15.7 | 0.0020 | 0.0039 |
| | 50 | 6,500 | 26.0 | 0.0008 | 0.0008 | 6,000 | 23.6 | 0.0008 | 0.0008 | 3,600 | 11.0 | 0.0008 | 0.0020 |
| 5.0 | 10 | 25,000 | 212.6 | 0.0098 | 0.0197 | 19,000 | 157.5 | 0.0098 | 0.0197 | 16,000 | 110.2 | 0.0039 | 0.0098 |
| | 20 | 16,000 | 129.9 | 0.0098 | 0.0197 | 13,000 | 106.3 | 0.0098 | 0.0197 | 8,000 | 51.2 | 0.0039 | 0.0098 |
| | 30 | 14,000 | 90.6 | 0.0039 | 0.0118 | 11,000 | 70.9 | 0.0039 | 0.0118 | 4,000 | 20.5 | 0.0039 | 0.0098 |
| | 40 | 10,000 | 43.3 | 0.0039 | 0.0079 | 9,000 | 39.0 | 0.0039 | 0.0079 | 3,000 | 10.2 | 0.0039 | 0.0079 |
| | 50 | 7,500 | 29.9 | 0.0039 | 0.0039 | 7,000 | 24.0 | 0.0039 | 0.0039 | 2,800 | 7.5 | 0.0039 | 0.0039 |
| 6.0 | 12 | 20,000 | 204.7 | 0.0118 | 0.0197 | 16,000 | 133.9 | 0.0118 | 0.0197 | 13,500 | 98.4 | 0.0039 | 0.0079 |
| | 20 | 16,000 | 153.5 | 0.0118 | 0.0197 | 12,000 | 118.1 | 0.0118 | 0.0197 | 8,000 | 63.0 | 0.0039 | 0.0079 |
| | 30 | 10,000 | 94.5 | 0.0118 | 0.0197 | 9,000 | 82.7 | 0.0118 | 0.0197 | 4,000 | 29.1 | 0.0039 | 0.0079 |
| | 40 | 9,000 | 74.8 | 0.0079 | 0.0118 | 9,000 | 70.9 | 0.0079 | 0.0118 | 3,000 | 18.9 | 0.0039 | 0.0079 |
| | 50 | 7,000 | 59.1 | 0.0079 | 0.0118 | 7,000 | 55.1 | 0.0079 | 0.0118 | 2,500 | 15.7 | 0.0039 | 0.0079 |





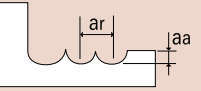
List 4430: True 4 Flute, Ball End, Regular Length

Standard Milling

| Hardness | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | |
|---------------|---|-------------|---|-------------|--|-------------|-----------------|-------------|---------------------------|-------------|-----------------|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Hardened Steels Pre-hardened Steels | | Hardened Steels Pre-hardened Steels | | Hardened Steels | | Hardened Steels | | Hardened Steels | |
| Cutting Speed | 690 SFM | | 540 SFM | | 500 SFM | | 410 SFM | | 390 SFM | | 320 SFM | |
| Depth of Cut | $a_a=0.05D$ $a_r=0.1D$ | |  | | $a_a=0.03D$ $a_r=0.1D$ | | | | $a_a=0.02D$ $a_r=0.1D$ | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/4 | 10,500 | 182 | 8,190 | 140 | 7,699 | 126 | 6,313 | 93 | 5,871 | 80 | 4,873 | 67 |
| 5/16 | 8,400 | 165 | 6,500 | 127 | 6,110 | 108 | 5,010 | 77 | 4,659 | 66 | 4,100 | 55 |
| 3/8 | 7,000 | 160 | 5,460 | 123 | 5,132 | 105 | 4,209 | 74 | 3,914 | 64 | 3,444 | 51 |
| 1/2 | 5,200 | 130 | 4,050 | 100 | 3,807 | 85 | 3,122 | 60 | 2,903 | 52 | 2,555 | 52 |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

High Feed Milling

| Hardness | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | |
|---------------|---|-------------|---|-------------|--|-------------|-----------------|-------------|----------------------------|-------------|-----------------|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Hardened Steels Pre-hardened Steels | | Hardened Steels Pre-hardened Steels | | Hardened Steels | | Hardened Steels | | Hardened Steels | |
| Cutting Speed | 1080 SFM | | 870 SFM | | 820 SFM | | 670 SFM | | 625 SFM | | 550 SFM | |
| Depth of Cut | $a_a=0.05D$ $a_r=0.05D$ | |  | | $a_a=0.03D$ $a_r=0.05D$ | | | | $a_a=0.02D$ $a_r=0.05D$ | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/4 | 17,000 | 295 | 13,260 | 227 | 12,464 | 205 | 10,221 | 151 | 9,505 | 130 | 7,889 | 108 |
| 5/16 | 13,590 | 276 | 10,600 | 212 | 9,964 | 180 | 8,171 | 128 | 7,599 | 110 | 6,687 | 91 |
| 3/8 | 11,300 | 256 | 8,814 | 197 | 8,285 | 167 | 6,794 | 119 | 6,318 | 102 | 5,560 | 82 |
| 1/2 | 8,520 | 215 | 6,646 | 165 | 6,247 | 140 | 5,122 | 100 | 4,764 | 86 | 4,192 | 86 |

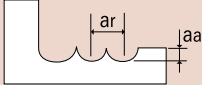
1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.





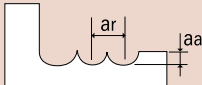
List 4530: True 4 Flute, Ball End, Regular Length

Standard Milling

| Hardness | <30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | | 60-65 HRC | |
|---------------|--|-------------|--|-------------|--|-------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Hardened Steels Pre-hardened Steels | | Hardened Steels Pre-hardened Steels | | Hardened Steels | | Hardened Steels | | Hardened Steels | |
| Cutting Speed | 740 SFM | | 570 SFM | | 540 SFM | | 440 SFM | | 410 SFM | | 340 SFM | |
| Depth of Cut | $a_a=0.05D$ $a_r=0.1D$  | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 6 | 11,900 | 207 | 9,280 | 154 | 8,750 | 139 | 7,160 | 103 | 6,630 | 85 | 5,480 | 70 |
| 8 | 8,950 | 180 | 6,960 | 141 | 6,570 | 119 | 5,370 | 87 | 4,970 | 75 | 4,380 | 62 |
| 10 | 7,160 | 163 | 5,570 | 126 | 5,250 | 106 | 4,300 | 76 | 3,980 | 65 | 3,500 | 53 |
| 12 | 5,970 | 150 | 4,640 | 117 | 4,380 | 99 | 3,580 | 70 | 3,320 | 60 | 2,920 | 44 |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

High Feed Milling

| Hardness | <30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | | 60-65 HRC | |
|---------------|---|-------------|--|-------------|--|-------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Hardened Steels Pre-hardened Steels | | Hardened Steels Pre-hardened Steels | | Hardened Steels | | Hardened Steels | | Hardened Steels | |
| Cutting Speed | 1,100 SFM | | 1,050 SFM | | 1,010 SFM | | 850 SFM | | 690 SFM | | 630 SFM | |
| Depth of Cut | $a_a=0.02D$ $a_r=0.05D$  | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 6 | 18,000 | 314 | 17,000 | 283 | 16,400 | 261 | 13,800 | 198 | 11,100 | 143 | 10,100 | 122 |
| 8 | 13,500 | 273 | 12,700 | 257 | 12,300 | 224 | 10,300 | 167 | 8,360 | 126 | 7,560 | 107 |
| 10 | 10,800 | 245 | 10,200 | 231 | 9,870 | 199 | 8,280 | 146 | 6,680 | 109 | 6,050 | 91 |
| 12 | 9,020 | 227 | 8,490 | 214 | 8,220 | 187 | 6,900 | 135 | 5,570 | 101 | 5,040 | 76 |

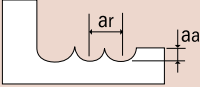
1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.





List 4413: Ball Nose, Regular Length, 2 Flute, Sphere Type

Profiling

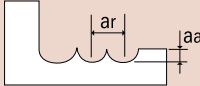
| Hardness | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | |
|---------------|---|-------------|-----------------------------|-------------|--|-------------|--|-------------|-----------------|-------------|-----------------|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Alloy Steels Tool Steels | | Hardened Steels Pre-hardened Steels | | Stainless Steels Pre-hardened Steels | | Hardened Steels | | Hardened Steels | |
| Cutting Speed | 720 SFM | | 640 SFM | | 580 SFM | | 560 SFM | | 520 SFM | | 440 SFM | |
| Depth of Cut | $a_a=0.05D$ $a_r=0.1D$ | | | | | |  $a_a=0.02D$ $a_r=0.1D$ | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/16 | 25,000 | 48.9 | 25,000 | 43.0 | 25,000 | 43.0 | 25,000 | 43.0 | 25,000 | 43.0 | 25,000 | 39.9 |
| 3/32 | 25,000 | 83.7 | 25,000 | 65.9 | 23,650 | 62.3 | 22,800 | 60.1 | 21,200 | 55.8 | 17,950 | 45.9 |
| 1/8 | 22,000 | 98.2 | 19,550 | 71.0 | 17,700 | 61.2 | 17,100 | 57.0 | 15,900 | 53.6 | 13,450 | 44.0 |
| 3/16 | 14,650 | 91.2 | 13,050 | 72.0 | 11,800 | 63.9 | 11,400 | 59.8 | 10,600 | 56.1 | 8,950 | 48.1 |
| 1/4 | 11,000 | 85.6 | 9,800 | 71.9 | 8,850 | 66.0 | 8,550 | 63.0 | 7,950 | 58.8 | 6,700 | 49.1 |
| 5/16 | 8,800 | 70.7 | 7,800 | 53.6 | 7,100 | 48.5 | 6,850 | 47.2 | 6,350 | 43.0 | 5,400 | 37.8 |
| 3/8 | 7,350 | 59.1 | 6,500 | 42.2 | 5,900 | 38.8 | 5,700 | 38.5 | 5,300 | 35.6 | 4,500 | 30.3 |
| 1/2 | 5,500 | 47.2 | 4,900 | 31.0 | 4,450 | 29.5 | 4,300 | 30.0 | 3,950 | 28.0 | 3,350 | 22.7 |





List 4513: Ball Nose, Regular Length, 2 Flute, Sphere Type

Profiling

| Hardness | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | |
|---------------|---|-------------|---------------------------|-------------|--|-------------|---|-------------|---------------------------|-------------|-----------------|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Alloy Steels Tool Tool | | Hardened Steels Pre-hardened Steels | | Stainless Steels Pre-hardened Steels | | Hardened Steels | | Hardened Steels | |
| Cutting Speed | 720 SFM | | 640 SFM | | 580 SFM | | 470 SFM | | 520 SFM | | 440 SFM | |
| Depth of Cut | $a_a=0.05D$ $a_r=0.1D$ | | | | | |  | | $a_a=0.02D$ $a_r=0.1D$ | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1 | 25,000 | 26.5 | 25,000 | 26.5 | 25,000 | 26.5 | 25,000 | 26.5 | 25,000 | 26.5 | 25,000 | 23.3 |
| 2 | 25,000 | 70.3 | 24,000 | 53.1 | 24,000 | 53.1 | 23,500 | 51.2 | 24,000 | 53.1 | 22,000 | 47.2 |
| 4 | 17,500 | 98.4 | 15,500 | 70.9 | 14,000 | 61.0 | 11,500 | 49.2 | 12,500 | 53.1 | 11,000 | 45.3 |
| 5 | 14,000 | 91.5 | 12,400 | 71.9 | 11,250 | 64.0 | 10,900 | 60.0 | 10,100 | 56.1 | 8,550 | 48.3 |
| 6 | 11,500 | 84.6 | 10,500 | 72.8 | 9,500 | 66.9 | 7,950 | 55.1 | 8,450 | 59.1 | 7,400 | 51.2 |
| 8 | 8,750 | 70.9 | 7,950 | 55.1 | 7,150 | 49.2 | 5,950 | 41.3 | 6,350 | 43.3 | 5,550 | 39.2 |
| 10 | 7,000 | 59.1 | 6,350 | 43.3 | 5,700 | 39.4 | 4,750 | 33.7 | 5,050 | 35.6 | 4,450 | 31.5 |

1. Use a rigid and precise machine and holder.
2. Use a suitable cutting fluid with high smoke retardant.





List 4581: 4 Flute, Ball End, Tapered

Slotting

| Hardness | <20 HRC | | | 20-30 HRC | | | 30-38 HRC | | | 38-45 HRC | | | 45-55 HRC | | |
|---------------|---|-------------|--------|-----------------------------|-------------|--------|--|-------------|--------|-------------------------------------|-------------|--------|-----------------|-------------|--------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | | Alloy Steels Tool Steels | | | Hardened Steels Pre-hardened Steels | | | Stainless Steels Hardened Steels | | | Hardened Steels | | |
| Cutting Speed | 400 SFM | | | 330 SFM | | | 300 SFM | | | 240 SFM | | | 160 SFM | | |
| Depth of Cut | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | aa | Speed RPM | Feed in/min | aa | Speed RPM | Feed in/min | aa | Speed RPM | Feed in/min | aa | Speed RPM | Feed in/min | aa |
| 0.5 | 25,000 | 20.0 | 0.0004 | 25,000 | 20.0 | 0.0004 | 25,000 | 20.0 | 0.0004 | 25,000 | 20.0 | 0.0004 | 25,000 | 10.0 | 0.0002 |
| 0.6 | 25,000 | 42.5 | 0.0009 | 25,000 | 42.5 | 0.0009 | 25,000 | 42.5 | 0.0009 | 25,000 | 42.5 | 0.0009 | 25,000 | 22.5 | 0.0005 |
| 0.7 | 25,000 | 65.0 | 0.0013 | 25,000 | 65.0 | 0.0013 | 25,000 | 65.0 | 0.0013 | 25,000 | 65.0 | 0.0013 | 22,178 | 31.0 | 0.0007 |
| 0.8 | 25,000 | 87.5 | 0.0018 | 25,000 | 87.5 | 0.0018 | 25,000 | 87.5 | 0.0018 | 25,000 | 87.5 | 0.0018 | 19,406 | 36.9 | 0.0010 |
| 0.9 | 25,000 | 110.0 | 0.0022 | 25,000 | 110.0 | 0.0022 | 25,000 | 110.0 | 0.0022 | 25,000 | 110.0 | 0.0022 | 17,249 | 41.4 | 0.0012 |
| 1.0 | 25,000 | 132.5 | 0.0027 | 25,000 | 132.5 | 0.0027 | 25,000 | 132.5 | 0.0027 | 23,287 | 123.4 | 0.0027 | 15,524 | 45.0 | 0.0015 |
| 1.2 | 25,000 | 155.0 | 0.0031 | 25,000 | 155.0 | 0.0031 | 24,257 | 150.4 | 0.0031 | 19,406 | 120.3 | 0.0031 | 12,937 | 44.0 | 0.0017 |
| 1.5 | 25,000 | 177.5 | 0.0036 | 21,346 | 151.6 | 0.0036 | 19,406 | 137.8 | 0.0036 | 15,524 | 110.2 | 0.0036 | 10,350 | 40.4 | 0.0020 |
| 1.6 | 24,257 | 194.1 | 0.0040 | 20,012 | 160.1 | 0.0040 | 18,193 | 145.5 | 0.0040 | 14,554 | 116.4 | 0.0040 | 9,703 | 42.7 | 0.0022 |
| 1.8 | 21,562 | 191.9 | 0.0045 | 17,788 | 158.3 | 0.0045 | 16,171 | 143.9 | 0.0045 | 12,937 | 115.1 | 0.0045 | 8,625 | 42.3 | 0.0025 |
| 2.0 | 19,406 | 190.2 | 0.0049 | 16,010 | 156.9 | 0.0049 | 14,554 | 142.6 | 0.0049 | 11,643 | 114.1 | 0.0049 | 7,762 | 41.9 | 0.0027 |
| 2.5 | 15,524 | 166.1 | 0.0054 | 12,808 | 137.0 | 0.0054 | 11,643 | 124.6 | 0.0054 | 9,315 | 99.7 | 0.0054 | 6,210 | 36.6 | 0.0030 |
| 3.0 | 12,937 | 150.1 | 0.0058 | 10,673 | 123.8 | 0.0058 | 9,703 | 112.6 | 0.0058 | 7,762 | 90.0 | 0.0058 | 5,175 | 33.1 | 0.0032 |

1. To achieve flute depth, sequential use of each neck length is most effective.
2. When corner processing, reduce the feed rate by approximately half.
3. Use cutting fluid.





List 4541: 4 & 6 Flute, Corner Radius, Regular Length

Standard Milling

| Hardness | <40 HRC | | 40-45 HRC | | 45-55 HRC | | 55-60 HRC | | 60-65 HRC | | 65-70 HRC | | | | | | | | | | | | | | | | |
|------------------------|--|-------------|---|-------------|-----------------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-------|------|------|------------------------|--|--|--|---|--|---|--|---|--|--|--|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Tool Steels Hardened Steels Pre-hardened Steels | | Hardened Steels | | | | | | | | | | | | | | | | | | | | | | |
| Depth of Cut | <table border="1"> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> <tr> <td>D≤1.5</td> <td>1.5D</td> <td>0.02D</td> </tr> <tr> <td>1.5<D≤2.5</td> <td>1.5D</td> <td>0.05D</td> </tr> <tr> <td>2.5<D</td> <td>1.5D</td> <td>0.1D</td> </tr> <tr> <td colspan="3">arMax=less than 0.040"</td> </tr> </table> | | | Dia | aa | ar | D≤1.5 | 1.5D | 0.02D | 1.5<D≤2.5 | 1.5D | 0.05D | 2.5<D | 1.5D | 0.1D | arMax=less than 0.040" | | | | $aa=1.5D$ $ar=0.05D$ arMax=Less than 0.040" | | $aa=1.5D$ $ar=0.03D$ arMax=Less than 0.020" | | $aa=1D$ $ar=0.02D$ arMax=Less than 0.020" | | | |
| | Dia | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | |
| D≤1.5 | 1.5D | 0.02D | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.5<D≤2.5 | 1.5D | 0.05D | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.5<D | 1.5D | 0.1D | | | | | | | | | | | | | | | | | | | | | | | | | |
| arMax=less than 0.040" | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | | | | | | |
| 1 | 25,000 | 39.3 | 25,000 | 39.0 | 25,000 | 38.4 | 24,050 | 26.4 | 21,900 | 21.1 | 16,000 | 13.2 | | | | | | | | | | | | | | | |
| 2 | 22,500 | 70.9 | 20,200 | 63.0 | 16,000 | 49.2 | 12,000 | 26.4 | 11,000 | 21.1 | 7,950 | 13.2 | | | | | | | | | | | | | | | |
| 3 | 15,000 | 70.9 | 13,500 | 63.0 | 10,500 | 49.2 | 7,950 | 26.4 | 7,450 | 21.1 | 5,300 | 13.2 | | | | | | | | | | | | | | | |
| 4 | 11,000 | 70.9 | 9,950 | 63.0 | 7,950 | 49.2 | 5,950 | 26.4 | 5,550 | 21.1 | 4,000 | 13.2 | | | | | | | | | | | | | | | |
| 5 | 8,900 | 70.9 | 7,950 | 63.0 | 6,350 | 49.2 | 4,800 | 26.4 | 4,450 | 21.1 | 3,200 | 13.2 | | | | | | | | | | | | | | | |
| 6 | 7,450 | 104.3 | 6,650 | 94.5 | 5,300 | 74.8 | 4,000 | 39.4 | 3,700 | 31.5 | 2,650 | 19.9 | | | | | | | | | | | | | | | |
| 8 | 5,550 | 104.3 | 4,950 | 94.5 | 4,000 | 74.8 | 3,000 | 39.4 | 2,800 | 31.5 | 2,000 | 19.9 | | | | | | | | | | | | | | | |
| 10 | 4,450 | 104.3 | 4,000 | 94.5 | 3,200 | 74.8 | 2,400 | 39.4 | 2,250 | 31.5 | 1,600 | 19.9 | | | | | | | | | | | | | | | |
| 12 | 3,700 | 104.3 | 3,300 | 94.5 | 2,650 | 74.8 | 2,000 | 39.4 | 1,850 | 31.5 | 1,350 | 19.9 | | | | | | | | | | | | | | | |

1. Use a rigid and precise machine and holder.
2. We suggest using an air blow. If using cutting fluids, use a high quality fluid with smoke retardant.
3. When the length of tool extension from the machine is long, reduce the speed and feed.

High Feed Milling

| Hardness | <40 HRC | | 40-45 HRC | | 45-55 HRC | | 55-60 HRC | | 60-65 HRC | | 65-70 HRC | |
|---------------|---|-------------|---|-------------|---|-------------|---|-------------|---|-------------|-----------|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Tool Steels Hardened Steels Pre-hardened Steels | | Hardened Steels | | | | | | | |
| Depth of Cut | $aa=1D$ $ar=0.05D$ arMax=Less than 0.020" | | | | $aa=1D$ $ar=0.03D$ arMax=Less than 0.020" | | $aa=1D$ $ar=0.02D$ arMax=Less than 0.008" | | $aa=1D$ $ar=0.01D$ arMax=Less than 0.008" | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1 | 25,000 | 31.5 | 25,000 | 39.4 | 25,000 | 39.4 | 25,000 | 31.5 | 25,000 | 27.9 | 25,000 | 21.9 |
| 2 | 25,000 | 67.4 | 25,000 | 78.7 | 25,000 | 78.8 | 25,000 | 63.7 | 24,000 | 53.1 | 16,000 | 31.5 |
| 3 | 25,000 | 106.0 | 25,000 | 116.9 | 25,000 | 118.9 | 17,000 | 65.0 | 16,000 | 53.1 | 10,500 | 31.5 |
| 4 | 24,000 | 153.5 | 24,000 | 149.6 | 20,000 | 126.0 | 12,500 | 65.0 | 12,000 | 53.1 | 7,950 | 31.5 |
| 5 | 19,000 | 161.4 | 19,000 | 149.6 | 16,000 | 126.0 | 10,000 | 65.0 | 9,550 | 53.1 | 6,350 | 31.5 |
| 6 | 16,000 | 226.4 | 16,000 | 226.4 | 13,500 | 189.0 | 8,500 | 96.5 | 7,950 | 78.7 | 5,300 | 47.2 |
| 8 | 12,000 | 226.4 | 12,000 | 226.4 | 9,950 | 189.0 | 6,350 | 96.5 | 5,950 | 78.7 | 4,000 | 47.2 |
| 10 | 9,550 | 226.4 | 9,550 | 226.4 | 7,950 | 189.0 | 5,100 | 96.5 | 4,800 | 78.7 | 3,200 | 47.2 |
| 12 | 7,950 | 226.4 | 7,950 | 226.4 | 6,650 | 189.0 | 4,250 | 96.5 | 4,000 | 78.7 | 2,650 | 47.2 |

1. Use a rigid and precise machine and holder.
2. We suggest using an air blow. If using cutting fluids, use a high quality fluid with smoke retardant.
3. When the length of tool extension from the machine is long, reduce the speed and feed.





List 9010: MAX Ball, Stub Length, 2 Flute

List 9110: MAX Ball, Stub Length, 2 Flute

List 9011: MAX Ball, Long Shank, 2 Flute

List 9111: MAX Ball, Long Shank, 2 Flute

High Speed Light Milling

| Hardness | <45 HRC | | <50 HRC | | <55 HRC | | <60 HRC | | <65 HRC | | | | | | | | | | | | | | | | | | | | | | | |
|---------------|---|----------------|-----------------|-------------|-----------------|----------------|-----------------|-------------|-----------------|-------------|------|-------|------|------|------|--|--|--|---|--|--|-----|----------------|----------------|-----|-------|------|------|-------|-------|---|--|
| Work Material | Hardened Steels | | Hardened Steels | | Hardened Steels | | Hardened Steels | | Hardened Steels | | | | | | | | | | | | | | | | | | | | | | | |
| Cutting Speed | 1,650 SFM | | 1,250 SFM | | 900 SFM | | 740 SFM | | 410 SFM | | | | | | | | | | | | | | | | | | | | | | | |
| Depth of Cut | <table border="1"> <tr><th>Dia</th><th>a_a</th><th>a_r</th></tr> <tr><td>D≤2</td><td>0.6D</td><td>0.1D</td></tr> <tr><td>D≤4</td><td>0.1D</td><td>0.15D</td></tr> <tr><td>D≤10</td><td>0.2D</td><td>0.2D</td></tr> </table> | | | Dia | a _a | a _r | D≤2 | 0.6D | 0.1D | D≤4 | 0.1D | 0.15D | D≤10 | 0.2D | 0.2D | | | | <table border="1"> <tr><th>Dia</th><th>a_a</th><th>a_r</th></tr> <tr><td>D≤4</td><td>0.05D</td><td>0.1D</td></tr> <tr><td>D≤10</td><td>0.10D</td><td>0.15D</td></tr> </table> | | | Dia | a _a | a _r | D≤4 | 0.05D | 0.1D | D≤10 | 0.10D | 0.15D | a _a =0.02D a _r =0.1D | |
| | Dia | a _a | a _r | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D≤2 | 0.6D | 0.1D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D≤4 | 0.1D | 0.15D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D≤10 | 0.2D | 0.2D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dia | a _a | a _r | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D≤4 | 0.05D | 0.1D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D≤10 | 0.10D | 0.15D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 25,000 | 100 | 25,000 | 85 | 25,000 | 76 | 25,000 | 60 | 25,000 | 19 | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 25,000 | 175 | 25,000 | 150 | 25,000 | 130 | 25,000 | 87 | 20,000 | 63 | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 25,000 | 175 | 25,000 | 150 | 25,000 | 130 | 25,000 | 105 | 15,000 | 57 | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 25,000 | 159 | 25,000 | 135 | 22,000 | 130 | 18,000 | 105 | 10,000 | 53 | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 25,000 | 157 | 20,000 | 133 | 15,000 | 118 | 12,000 | 94 | 6,600 | 47 | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 20,000 | 138 | 15,000 | 117 | 11,000 | 104 | 9,000 | 83 | 5,000 | 41 | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 15,000 | 125 | 12,000 | 106 | 8,750 | 94 | 7,200 | 75 | 4,000 | 38 | | | | | | | | | | | | | | | | | | | | | | |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

High Speed Light Milling

| Hardness | <45 HRC | | <50 HRC | | <55 HRC | | <60 HRC | | <65 HRC | | | | | | | | | | | | | | | | | | | | | | | |
|---------------|---|----------------|-----------------|-------------|-----------------|----------------|-----------------|-------------|-----------------|-------------|------|-------|-------|------|------|--|--|--|--|--|--|-----|----------------|----------------|-------|-------|------|-------|-------|-------|---|--|
| Work Material | Hardened Steels | | Hardened Steels | | Hardened Steels | | Hardened Steels | | Hardened Steels | | | | | | | | | | | | | | | | | | | | | | | |
| Cutting Speed | 1,600 SFM | | 1,300 SFM | | 1,000 SFM | | 790 SFM | | 430 SFM | | | | | | | | | | | | | | | | | | | | | | | |
| Depth of Cut | <table border="1"> <tr><th>Dia</th><th>a_a</th><th>a_r</th></tr> <tr><td>D≤1/16</td><td>0.6D</td><td>0.1D</td></tr> <tr><td>D≤1/8</td><td>0.1D</td><td>0.15D</td></tr> <tr><td>D≤3/8</td><td>0.2D</td><td>0.2D</td></tr> </table> | | | Dia | a _a | a _r | D≤1/16 | 0.6D | 0.1D | D≤1/8 | 0.1D | 0.15D | D≤3/8 | 0.2D | 0.2D | | | | <table border="1"> <tr><th>Dia</th><th>a_a</th><th>a_r</th></tr> <tr><td>D≤1/8</td><td>0.05D</td><td>0.1D</td></tr> <tr><td>D≤3/8</td><td>0.10D</td><td>0.15D</td></tr> </table> | | | Dia | a _a | a _r | D≤1/8 | 0.05D | 0.1D | D≤3/8 | 0.10D | 0.15D | a _a =0.02D a _r =0.1D | |
| | Dia | a _a | a _r | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D≤1/16 | 0.6D | 0.1D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D≤1/8 | 0.1D | 0.15D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D≤3/8 | 0.2D | 0.2D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dia | a _a | a _r | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D≤1/8 | 0.05D | 0.1D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D≤3/8 | 0.10D | 0.15D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | | | | | | | | | | | | | |
| 1/32 | 25,000 | 100 | 25,000 | 85 | 25,000 | 76 | 25,000 | 60 | 25,000 | 19 | | | | | | | | | | | | | | | | | | | | | | |
| 1/16 | 25,000 | 150 | 25,000 | 140 | 25,000 | 120 | 25,000 | 68 | 20,000 | 57 | | | | | | | | | | | | | | | | | | | | | | |
| 1/8 | 25,000 | 175 | 25,000 | 150 | 25,000 | 130 | 25,000 | 105 | 15,000 | 63 | | | | | | | | | | | | | | | | | | | | | | |
| 3/16 | 25,000 | 159 | 25,000 | 143 | 17,000 | 125 | 16,000 | 100 | 9,000 | 50 | | | | | | | | | | | | | | | | | | | | | | |
| 1/4 | 25,000 | 157 | 20,000 | 133 | 15,000 | 118 | 12,000 | 94 | 6,600 | 47 | | | | | | | | | | | | | | | | | | | | | | |
| 5/16 | 20,000 | 138 | 15,000 | 117 | 11,000 | 104 | 9,000 | 83 | 5,000 | 41 | | | | | | | | | | | | | | | | | | | | | | |
| 3/8 | 15,000 | 125 | 12,000 | 106 | 8,750 | 94 | 7,200 | 75 | 4,000 | 38 | | | | | | | | | | | | | | | | | | | | | | |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.





List 9181: 2 Flute, Corner Radius, CBN, Stub Length

Standard Milling

| Hardness | | | <50 HRC | 50-60 HRC | | 60-68 HRC | | |
|-------------------|-----------------------|-----|-----------------|-------------|-------------|-------------|-------------|-------------|
| Work Material | Standard Depth of Cut | | Hardened Steels | | | | | |
| Cutting Speed | | | 258-598 SFM | | 258-495 SFM | | 196-397 SFM | |
| Depth of Cut (mm) | | | aa=1D | ar=1D | aa=0.8D | ar=0.8D | aa=0.5D | ar=0.5D |
| Mill Dia. | aa | ar | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 0.5 | 0.02 | 0.2 | 25,000 | 19.7 | 25,000 | 19.7 | 25,000 | 19.7 |
| 1.0 | 0.02 | 0.2 | 25,000 | 29.5 | 25,000 | 29.7 | 25,000 | 29.4 |
| 1.5 | 0.03 | 0.4 | 25,000 | 39.6 | 24,280 | 38.8 | 19,100 | 29.5 |
| 2.0 | 0.04 | 0.4 | 21,110 | 34.4 | 18,410 | 30.2 | 14,480 | 21.0 |
| 3.0 | 0.05 | 0.6 | 13,900 | 22.1 | 12,130 | 22.0 | 9,540 | 15.0 |

1. Use a rigid and precise machine and holder.
2. We suggest using air blow or MQL (mist).
3. When using low speed machines, use the maximum speed and adjust feed rate.
4. During heavy load operations such as corner processing, reduce the speed and feed.
5. The run out of the end mill should be within 10 microns (.0004") after chucking.



List 9182: 2 Flute, Corner Radius, Long Neck, CBN, Stub Length

Standard Milling

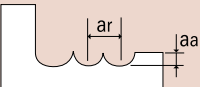
| Hardness | | | <50 HRC | | 50-60 HRC | | 60-68 HRC | |
|----------------------|--------------------------|-----|-----------------|----------------|--------------|----------------|--------------|----------------|
| Work Material | Standard Depth of Cut | | Hardened Steels | | | | | |
| Cutting Speed | | | 155-361 SFM | | 155-309 SFM | | 119-240 SFM | |
| Depth of Cut (mm) | | | aa=1D | ar=1D | aa=0.5D | ar=0.5D | aa=0.4D | ar=0.4D |
| Mill Dia. | aa | ar | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 0.5 | 0.02 | 0.1 | 25,000 | 19.5 | 25,000 | 19.7 | 25,000 | 20.1 |
| 1.0 | 0.02 | 0.1 | 25,000 | 29.5 | 22,310 | 25.5 | 17,460 | 20.7 |
| 1.5 | 0.03 | 0.2 | 16,830 | 26.8 | 14,890 | 24.1 | 11,650 | 17.7 |
| 2.0 | 0.03 | 0.2 | 12,760 | 20.6 | 11,290 | 18.4 | 8,840 | 12.7 |
| 3.0 | 0.05 | 0.3 | 8,400 | 13.2 | 7,430 | 11.6 | 5,820 | 9.0 |

1. Use a rigid and precise machine and holder.
2. We suggest using air blow or MQL (mist).
3. When using low speed machines, use the maximum speed and adjust feed rate.
4. During heavy load operations such as corner processing, reduce the speed and feed.
5. The run out of the end mill should be within 10 microns (.0004") after chucking.



List 9191: CBN, Ball End, Long Length, 2 Flute

Standard Milling

| Hardness | 30-45 HRC | | 45-55 HRC | | 55-60 HRC | | 60-68 HRC | |
|----------------|--|-------------|-----------------|-------------|---|-------------|----------------------------|-------------|
| Work Material | Hardened Steels Pre-hardened Steels | | Hardened Steels | | | | | |
| Depth of Cut | $a_a=0.015D$ $a_r=0.04D$ | | | |  | | $a_a=0.01D$ $a_r=0.03D$ | |
| Mill Dia. (mm) | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 0.4 | 25,000 | 39.3 | 25,000 | 39.3 | 25,000 | 39.3 | 25,000 | 39.3 |
| 0.6 | 25,000 | 39.3 | 25,000 | 39.3 | 25,000 | 39.3 | 25,000 | 39.3 |
| 1.0 | 25,000 | 59.0 | 25,000 | 59.0 | 25,000 | 59.0 | 25,000 | 59.0 |
| 2.0 | 25,000 | 78.7 | 25,000 | 78.7 | 25,000 | 78.7 | 25,000 | 78.7 |
| 3.0 | 25,000 | 78.7 | 25,000 | 78.7 | 25,000 | 78.7 | 21,500 | 66.9 |

1. Use a rigid and precise machine and holder.
2. We suggest using air blow or MQL (mist).
3. When using low speed machines, use the maximum speed and adjust feed rate.
4. During heavy load operations such as corner processing, reduce the speed and feed.
5. The run out of the end mill should be within 10 microns (.0004") after chucking.



List 9192: 2 Flute, Ball End, Super Long Neck, CBN, Stub Length

Standard Milling

| Hardness | 30-45 HRC | | 45-55 HRC | | 55-60 HRC | | 60-68 HRC | |
|-------------------|--|----------------|-----------------|----------------|--------------|----------------|----------------------------|----------------|
| Work Material | Hardened Steels Pre-hardened Steels | | Hardened Steels | | | | | |
| Depth of Cut | $a_a=0.015D$ $a_r=0.04D$ | | | | | | $a_a=0.01D$ $a_r=0.03D$ | |
| Mill Dia. (mm) | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 0.4 | 25,000 | 39.4 | 25,000 | 39.4 | 25,000 | 39.4 | 25,000 | 39.4 |
| 0.6 | 25,000 | 39.4 | 25,000 | 39.4 | 25,000 | 39.4 | 25,000 | 39.4 |
| 1.0 | 25,000 | 59.1 | 25,000 | 59.1 | 25,000 | 59.1 | 25,000 | 59.1 |
| 2.0 | 25,000 | 78.8 | 25,000 | 78.8 | 25,000 | 78.8 | 25,000 | 76.9 |
| 3.0 | 25,000 | 78.4 | 25,000 | 78.4 | 25,000 | 78.0 | 21,500 | 66.9 |

1. Use a rigid and precise machine and holder.
2. We suggest using air blow or MQL (mist).
3. When using low speed machines, use the maximum speed and adjust feed rate.
4. During heavy load operations such as corner processing, reduce the speed and feed.
5. The run out of the end mill should be within 10 microns (.0004") after chucking.



List 9140: MAX-HARD, Regular Length, 6 Flute

List 9144: MAX-HARD, Regular Length, 6 Flute, Corner Radius

Side Milling

| Hardness | - | | <40 HRC | | 40-45 HRC | | 45-55 HRC | | 55-60 HRC | | 60-65 HRC | | 65-70 HRC | | | |
|---------------|---|--------|--|--------|--------------------------------|--------|---------------------------------|--------|------------------------------------|--------|------------------------------------|--------|------------------------------------|--------|-------------|--|
| Work Material | Carbon Steels Cast Iron Mild Steels | | Hardened Steels Pre-hardened Steels Alloy Steels | | Tool Steels Hardened Steels | | Hardened Steels Alloy Steels | | Hardened Steels | | | | | | | |
| Cutting Speed | 460 SFM | | 460 SFM | | 410 SFM | | 330 SFM | | 250 SFM | | 230 SFM | | 165 SFM | | | |
| Depth of Cut | Dia | | aa | | ar | | | | aa=1.5D ar=0.05D arMax=1.0mm | | aa=1.5D ar=0.03D arMax=0.5mm | | aa=1.0D ar=0.02D arMax=0.5mm | | | |
| | D=1 | | 1.5D | | 0.02D | | | | | | | | | | | |
| Mill Dia. | Speed RPM | | Feed in/min | | Speed RPM | | Feed in/min | | Speed RPM | | Feed in/min | | Speed RPM | | Feed in/min | |
| | 1 | 20,000 | 31.5 | 20,000 | 31.5 | 20,000 | 31.5 | 20,000 | 31.5 | 20,000 | 22.0 | 20,000 | 18.9 | 16,000 | 13.4 | |
| 2 | 20,000 | 63.0 | 20,000 | 63.0 | 20,000 | 63.0 | 16,000 | 49.2 | 12,000 | 26.4 | 11,000 | 21.1 | 7,950 | 13.4 | | |
| 3 | 15,000 | 70.9 | 15,000 | 70.9 | 13,500 | 63.0 | 10,500 | 49.2 | 7,950 | 26.4 | 7,450 | 21.1 | 5,300 | 13.4 | | |
| 4 | 11,000 | 70.9 | 11,000 | 70.9 | 9,950 | 63.0 | 7,950 | 49.2 | 5,950 | 26.4 | 5,550 | 21.1 | 4,000 | 13.4 | | |
| 5 | 8,900 | 70.9 | 8,900 | 70.9 | 7,950 | 63.0 | 6,350 | 49.2 | 4,750 | 26.4 | 4,450 | 21.1 | 3,200 | 13.4 | | |
| 6 | 7,450 | 104.3 | 7,450 | 104.3 | 6,650 | 94.5 | 5,300 | 74.8 | 4,000 | 39.4 | 3,700 | 31.5 | 2,650 | 19.9 | | |
| 8 | 5,550 | 104.3 | 5,550 | 104.3 | 4,950 | 94.5 | 4,000 | 74.8 | 3,000 | 39.4 | 2,800 | 31.5 | 2,000 | 19.9 | | |
| 10 | 4,450 | 104.3 | 4,450 | 104.3 | 4,000 | 94.5 | 3,200 | 74.8 | 2,400 | 39.4 | 2,250 | 31.5 | 1,600 | 19.9 | | |
| 12 | 3,700 | 104.3 | 3,700 | 104.3 | 3,300 | 94.5 | 2,650 | 74.8 | 2,000 | 39.4 | 1,850 | 31.5 | 1,350 | 19.9 | | |

1. Use a rigid and precise machine and holder.
2. We suggest using an air blow or MQL (Mist).
3. When using low speed machines, use the maximum speed and adjust feedrate.
4. During heavy load operations such as corner processing, reduce the speed and feed.
5. The run out of the end mill should be within 10 microns (0.0004")

continued on next page





High Speed Light Milling

| Hardness | - | <40 HRC | 40-45 HRC | 45-55 HRC | 55-60 HRC | 60-65 HRC | 65-70 HRC | | | | | | | |
|---------------|---|--|--------------------------------|--|--|--|-----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|
| Work Material | Carbon Steels Cast Iron Mild Steels | Hardened Steels Pre-hardened Steels Alloy Steels | Tool Steels Hardened Steels | Hardened Steels Alloy Steels | Hardened Steels | | | | | | | | | |
| Cutting Speed | 1030 SFM | 985 SFM | 985 SFM | 820 SFM | 525 SFM | 490 SFM | 330 SFM | | | | | | | |
| Depth of Cut | $a_a=1.0D$ $a_r=0.05D$ arMax=0.8mm | $a_a=1.0D$ $a_r=0.05D$ arMax=0.5mm | | $a_a=1.0D$ $a_r=0.03D$ arMax=0.5mm | $a_a=1.0D$ $a_r=0.02D$ arMax=0.2mm | $a_a=1.0D$ $a_r=0.01D$ arMax=0.2mm | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1 | 25000 | 31.5 | 25000 | 31.5 | 25000 | 39.4 | 25000 | 39.4 | 25000 | 31.5 | 25000 | 28.0 | 25000 | 22.0 |
| 2 | 25000 | 66.9 | 25000 | 67.3 | 25000 | 78.7 | 25000 | 78.7 | 25000 | 63.7 | 24000 | 53.1 | 16000 | 31.5 |
| 3 | 25000 | 105.7 | 25000 | 106.1 | 25000 | 116.9 | 25000 | 118.9 | 17000 | 65.0 | 16000 | 53.1 | 10500 | 31.5 |
| 4 | 25000 | 162.1 | 24000 | 153.5 | 24000 | 149.6 | 20000 | 126.0 | 12500 | 65.0 | 12000 | 53.1 | 7950 | 31.5 |
| 5 | 20500 | 173.2 | 19000 | 161.4 | 19000 | 149.6 | 16000 | 126.0 | 10000 | 65.0 | 9550 | 53.1 | 6350 | 31.5 |
| 6 | 17000 | 240.2 | 16000 | 226.4 | 16000 | 226.4 | 13500 | 189.0 | 8500 | 96.5 | 7950 | 78.7 | 5300 | 47.2 |
| 8 | 12500 | 240.2 | 12000 | 226.4 | 12000 | 226.4 | 9950 | 189.0 | 6350 | 96.5 | 5950 | 78.7 | 4000 | 47.2 |
| 10 | 10000 | 240.2 | 9550 | 226.4 | 9550 | 226.4 | 7950 | 189.0 | 5100 | 96.5 | 4800 | 78.7 | 3200 | 47.2 |
| 12 | 8500 | 240.2 | 7950 | 226.4 | 7950 | 226.4 | 6650 | 189.0 | 4250 | 96.5 | 4000 | 78.7 | 2650 | 47.2 |

1. Use a rigid and precise machine and holder.
2. We suggest using an air blow or MQL (Mist).
3. When using low speed machines, use the maximum speed and adjust feedrate.
4. During heavy load operations such as corner processing, reduce the speed and feed.
5. The run out of the end mill should be within 10 microns (0.0004")





- List 7020:** Stub Length, 2 Flute
- List 7120:** Regular Length, 2 Flute
- List 7040:** Inch, Stub Length, 4 Flute
- List 7041:** Long Length, 4 Flute
- List 7042:** Stub Length, 4 Flute, Long Shank
- List 7072:** Inch, Stub Length, 4 Flute, Long Shank, Corner Radius
- List 7010:** Long Length, 2 Flute
- List 7110:** Ball End, Regular Length, 2 Flute
- List 7030:** Ball End, Regular Length, 4 Flute
- List 7031:** Ball End, Long Length, 4 Flute
- List 7032:** Inch, Ball End, Stub Length, 4 Flute, Long Shank
- List 7173:** Metric, Ball End, Stub Length, 4 Flute, Long Shank
- List 7132:** Metric, Stub Length, 4 Flute, Long Shank, Corner Radius
- List 7140:** Metric, Stub Length, 4 Flute

Standard

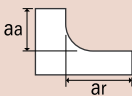

| Work Material | Graphite | | | Green Ceramic Thermoset Plastic | | | Fiber Filler Plastics | | | | | | | | | | | | | | | | | | | |
|---------------|--|---------------|-----------|------------------------------------|-----------|---------------|--------------------------|-------|-------|-------|-------|-------|--|---|--|--|-----|----|----|-------|------|-------|-------|----|------|--|
| Cutting Speed | 160-300 SFM | | | 80-140 SFM | | | 130-800 SFM | | | | | | | | | | | | | | | | | | | |
| Depth of Cut | <table border="1"> <tr><th>Dia</th><th>aa</th><th>ar</th></tr> <tr><td>D≤1/8</td><td>0.02D</td><td>0.05D</td></tr> <tr><td>D>1/8</td><td>0.10D</td><td>0.20D</td></tr> </table> | | | Dia | aa | ar | D≤1/8 | 0.02D | 0.05D | D>1/8 | 0.10D | 0.20D | | <table border="1"> <tr><th>Dia</th><th>aa</th><th>ar</th></tr> <tr><td>D≤1/8</td><td>0.5D</td><td>0.05D</td></tr> <tr><td>D>1/8</td><td>1D</td><td>0.1D</td></tr> </table> | | | Dia | aa | ar | D≤1/8 | 0.5D | 0.05D | D>1/8 | 1D | 0.1D | |
| | Dia | aa | ar | | | | | | | | | | | | | | | | | | | | | | | |
| D≤1/8 | 0.02D | 0.05D | | | | | | | | | | | | | | | | | | | | | | | | |
| D>1/8 | 0.10D | 0.20D | | | | | | | | | | | | | | | | | | | | | | | | |
| Dia | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | |
| D≤1/8 | 0.5D | 0.05D | | | | | | | | | | | | | | | | | | | | | | | | |
| D>1/8 | 1D | 0.1D | | | | | | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/tooth | Speed RPM | Feed in/tooth | Speed RPM | Feed in/tooth | | | | | | | | | | | | | | | | | | | | |
| 1/32 | 25,000 | 0.0005-0.0010 | 13,450 | 0.0005-0.0010 | 25,000 | 0.0004-0.0008 | | | | | | | | | | | | | | | | | | | | |
| 1/16 | 14,060 | 0.0010-0.0020 | 6,720 | 0.0010-0.0020 | 25,000 | 0.0010-0.0020 | | | | | | | | | | | | | | | | | | | | |
| 3/32 | 9,370 | 0.0010-0.0020 | 4,480 | 0.0010-0.0020 | 19,560 | 0.0010-0.0020 | | | | | | | | | | | | | | | | | | | | |
| 1/8 | 7,030 | 0.0010-0.0020 | 3,360 | 0.0010-0.0020 | 14,670 | 0.0010-0.0020 | | | | | | | | | | | | | | | | | | | | |
| 3/16 | 4,690 | 0.0010-0.0020 | 2,240 | 0.0010-0.0020 | 9,780 | 0.0010-0.0020 | | | | | | | | | | | | | | | | | | | | |
| 1/4 | 3,510 | 0.0020-0.0040 | 1,680 | 0.0020-0.0040 | 7,330 | 0.0015-0.0030 | | | | | | | | | | | | | | | | | | | | |
| 5/16 | 2,810 | 0.0020-0.0040 | 1,350 | 0.0020-0.0040 | 5,870 | 0.0020-0.0040 | | | | | | | | | | | | | | | | | | | | |
| 3/8 | 2,340 | 0.0030-0.0050 | 1,120 | 0.0030-0.0050 | 4,890 | 0.0030-0.0050 | | | | | | | | | | | | | | | | | | | | |
| 1/2 | 1,760 | 0.0030-0.0050 | 840 | 0.0030-0.0050 | 3,670 | 0.0030-0.0050 | | | | | | | | | | | | | | | | | | | | |

1. Please reduce speed and feed by 20% when L/D>3D.
2. Please reduce speed and feed by 30% when slotting > 0.5D.
3. Please reduce depth of cut if running at elevated speed and feed.

continued on next page



Standard

| Work Material | Aluminum Alloys | | Metal Matrix Composite (MMC, AISiC) | | Copper Alloys | | | | | | | | | | | | | | | | | | | |
|---------------|--|---------------|--|---------------|---------------|---------------|-------|-------|---------|-------|-------|---|---|--|-----|----|----|---------|------|-------|---------|----|------|---|
| Cutting Speed | 160-800 SFM | | 100-750 SFM | | 328-649 SFM | | | | | | | | | | | | | | | | | | | |
| Depth of Cut | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D ≤ 1/8</td> <td>0.02D</td> <td>0.05D</td> </tr> <tr> <td>D > 1/8</td> <td>0.10D</td> <td>0.20D</td> </tr> </tbody> </table> | | Dia | aa | ar | D ≤ 1/8 | 0.02D | 0.05D | D > 1/8 | 0.10D | 0.20D |  | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D ≤ 1/8</td> <td>0.5D</td> <td>0.05D</td> </tr> <tr> <td>D > 1/8</td> <td>1D</td> <td>0.1D</td> </tr> </tbody> </table> | | Dia | aa | ar | D ≤ 1/8 | 0.5D | 0.05D | D > 1/8 | 1D | 0.1D |  |
| Dia | aa | ar | | | | | | | | | | | | | | | | | | | | | | |
| D ≤ 1/8 | 0.02D | 0.05D | | | | | | | | | | | | | | | | | | | | | | |
| D > 1/8 | 0.10D | 0.20D | | | | | | | | | | | | | | | | | | | | | | |
| Dia | aa | ar | | | | | | | | | | | | | | | | | | | | | | |
| D ≤ 1/8 | 0.5D | 0.05D | | | | | | | | | | | | | | | | | | | | | | |
| D > 1/8 | 1D | 0.1D | | | | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/tooth | Speed RPM | Feed in/tooth | Speed RPM | Feed in/tooth | | | | | | | | | | | | | | | | | | |
| 1/32 | 25,000 | 0.0004–0.0008 | 25,000 | 0.0004–0.0008 | 25,000 | 0.0004–0.0008 | | | | | | | | | | | | | | | | | | |
| 1/16 | 25,000 | 0.0010–0.0020 | 25,000 | 0.0010–0.0020 | 25,000 | 0.0010–0.0020 | | | | | | | | | | | | | | | | | | |
| 3/32 | 19,560 | 0.0010–0.0020 | 17,320 | 0.0010–0.0020 | 19,890 | 0.0010–0.0020 | | | | | | | | | | | | | | | | | | |
| 1/8 | 14,670 | 0.0010–0.0020 | 12,990 | 0.0010–0.0020 | 14,910 | 0.0010–0.0020 | | | | | | | | | | | | | | | | | | |
| 3/16 | 9,780 | 0.0010–0.0020 | 8,660 | 0.0010–0.0020 | 9,940 | 0.0010–0.0020 | | | | | | | | | | | | | | | | | | |
| 1/4 | 7,330 | 0.0015–0.0030 | 6,500 | 0.0015–0.0030 | 7,460 | 0.0015–0.0030 | | | | | | | | | | | | | | | | | | |
| 5/16 | 5,870 | 0.0020–0.0040 | 5,200 | 0.0020–0.0040 | 5,960 | 0.0020–0.0040 | | | | | | | | | | | | | | | | | | |
| 3/8 | 4,890 | 0.0030–0.0050 | 4,330 | 0.0030–0.0050 | 4,970 | 0.0030–0.0050 | | | | | | | | | | | | | | | | | | |
| 1/2 | 3,670 | 0.0030–0.0050 | 3,250 | 0.0030–0.0050 | 3,730 | 0.0030–0.0050 | | | | | | | | | | | | | | | | | | |



List 7230: Ball End, Long Reach, 2 & 4 Flute

List 7231: Ball End, Regular Length, 2 & 4 Flute, Long Reach

Side Milling

| Work Material | Graphite | | | | | | | | | | | |
|---------------|--|-----------|---------------|----|----|-------|-------|-------|-------|-------|-------|--|
| Cutting Speed | 160-300 SFM | | | | | | | | | | | |
| Depth of Cut | <table border="1"> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> <tr> <td>D≤1/8</td> <td>0.02D</td> <td>0.05D</td> </tr> <tr> <td>D>1/8</td> <td>0.10D</td> <td>0.20D</td> </tr> </table> | | Dia | aa | ar | D≤1/8 | 0.02D | 0.05D | D>1/8 | 0.10D | 0.20D | |
| Dia | aa | ar | | | | | | | | | | |
| D≤1/8 | 0.02D | 0.05D | | | | | | | | | | |
| D>1/8 | 0.10D | 0.20D | | | | | | | | | | |
| Mill Dia. | Style | Speed RPM | Feed in/tooth | | | | | | | | | |
| 1/64 | Regular | 25,000 | 0.0002–0.0005 | | | | | | | | | |
| 1/64 | Long | 25,000 | 0.0001–0.0003 | | | | | | | | | |
| 1/32 | Regular | 25,000 | 0.0005–0.0010 | | | | | | | | | |
| 1/32 | Long | 25,000 | 0.0003–0.0007 | | | | | | | | | |
| 1/16 | Regular | 14,000 | 0.0010–0.0020 | | | | | | | | | |
| 1/16 | Long | 13,700 | 0.0006–0.0012 | | | | | | | | | |
| 3/32 | Regular | 9,500 | 0.0010–0.0020 | | | | | | | | | |
| 3/32 | Long | 9,300 | 0.0006–0.0012 | | | | | | | | | |
| 1/8 | Regular | 7,000 | 0.0010–0.0020 | | | | | | | | | |
| 1/8 | Long | 6,850 | 0.0006–0.0012 | | | | | | | | | |
| 3/16 | Regular | 4,700 | 0.0010–0.0020 | | | | | | | | | |
| 3/16 | Long | 4,600 | 0.0006–0.0012 | | | | | | | | | |
| 1/4 | Regular | 3,500 | 0.0020–0.0040 | | | | | | | | | |
| 1/4 | Long | 3,430 | 0.0012–0.0024 | | | | | | | | | |


1. Please reduce speed and feed by 20% when L/D>3D.
2. Please reduce speed and feed by 30% when slotting > 0.5D.
3. Please reduce depth of cut if running at elevated speed and feed.



List 2050: Regular Length, 4 Flute

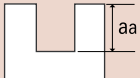
List 2052: Regular Length, 4 Flute, Corner Radius

Side Milling

| Hardness | - | | <30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | - | |
|---------------|--|-------------|--|-------------|--|-------------|-------------------------------------|-------------|-------------------------------------|-------------|---|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Alloy Steels Pre-hardened Steels Tool Steels | | Hardened Steels Pre-hardened Steels | | Stainless Steels Hardened Steels | | Stainless Steels Titanium Alloys | | High Temp. Alloys Inconel Hastelloy | |
| Depth of Cut | $a_a=1.5D$ $a_r=0.2D$  | | | | | | $a_a=1.5D$ $a_r=0.1D$ | | $a_a=1.5D$ $a_r=0.05D$ | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/8 | 11,900 | 41.2 | 9,075 | 30.0 | 7,640 | 23.2 | 7,275 | 23.0 | 7,030 | 20.4 | 3,600 | 8.2 |
| 3/16 | 8,395 | 54.0 | 6,500 | 43.7 | 5,540 | 30.0 | 5,215 | 32.1 | 5,075 | 27.9 | 2,590 | 10.1 |
| 1/4 | 6,420 | 60.0 | 4,965 | 44.6 | 4,220 | 33.2 | 3,970 | 31.0 | 3,850 | 26.0 | 1,985 | 9.3 |
| 5/16 | 5,135 | 62.0 | 4,000 | 43.8 | 3,385 | 32.3 | 3,180 | 32.2 | 3,080 | 26.9 | 1,590 | 8.8 |
| 3/8 | 4,280 | 59.5 | 3,330 | 43.0 | 2,820 | 29.8 | 2,650 | 29.2 | 2,570 | 26.2 | 1,325 | 9.0 |
| 7/16 | 3,670 | 59.4 | 2,855 | 42.4 | 2,420 | 29.5 | 2,270 | 28.8 | 2,200 | 25.5 | 1,135 | 9.0 |
| 1/2 | 3,200 | 51.8 | 2,500 | 37.2 | 2,115 | 26.6 | 1,985 | 25.1 | 1,925 | 22.3 | 995 | 7.9 |
| 5/8 | 2,565 | 47.5 | 2,000 | 37.0 | 1,695 | 24.9 | 1,590 | 21.8 | 1,540 | 19.8 | 795 | 8.6 |
| 3/4 | 2,140 | 40.5 | 1,665 | 30.9 | 1,410 | 24.2 | 1,325 | 21.5 | 1,285 | 18.6 | 660 | 8.2 |
| 1 | 1,605 | 33.7 | 1,250 | 26.6 | 1,060 | 20.2 | 995 | 18.9 | 965 | 15.2 | 495 | 7.0 |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

Slotting

| Hardness | - | | <30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | - | |
|---------------|--|-------------|--|-------------|--|-------------|-------------------------------------|-------------|-------------------------------------|-------------|---|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Alloy Steels Pre-hardened Steels Tool Steels | | Hardened Steels Pre-hardened Steels | | Stainless Steels Hardened Steels | | Stainless Steels Titanium Alloys | | High Temp. Alloys Inconel Hastelloy | |
| Depth of Cut | $a_a=1D$  | | | | | | $a_a=0.5D$ | | $a_a=0.2D$ | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/8 | 9,932 | 26.8 | 8,098 | 25.1 | 7,487 | 20.2 | 7,029 | 17.6 | 6,876 | 17.2 | 2,414 | 5.1 |
| 3/16 | 6,621 | 31.1 | 5,399 | 31.3 | 4,991 | 22.5 | 4,686 | 22.0 | 4,584 | 21.5 | 1,609 | 6.0 |
| 1/4 | 4,966 | 28.3 | 4,049 | 23.9 | 3,744 | 21.7 | 3,514 | 21.8 | 3,438 | 21.0 | 1,207 | 5.7 |
| 5/16 | 3,973 | 24.2 | 3,239 | 22.0 | 2,995 | 21.9 | 2,812 | 20.8 | 2,750 | 20.4 | 966 | 6.3 |
| 3/8 | 3,311 | 24.5 | 2,699 | 22.9 | 2,496 | 19.7 | 2,343 | 19.2 | 2,292 | 18.6 | 805 | 5.9 |
| 7/16 | 2,838 | 22.7 | 2,314 | 24.3 | 2,139 | 18.2 | 2,008 | 17.7 | 1,965 | 17.5 | 690 | 5.8 |
| 1/2 | 2,483 | 21.1 | 2,025 | 17.8 | 1,872 | 17.6 | 1,757 | 16.7 | 1,719 | 16.5 | 604 | 5.6 |
| 5/8 | 1,986 | 22.2 | 1,620 | 17.2 | 1,497 | 14.7 | 1,406 | 14.6 | 1,375 | 14.6 | 483 | 4.4 |
| 3/4 | 1,655 | 19.9 | 1,350 | 15.4 | 1,248 | 14.4 | 1,171 | 13.7 | 1,146 | 13.4 | 402 | 4.5 |
| 1 | 1,242 | 17.8 | 1,012 | 14.7 | 936 | 12.4 | 879 | 11.2 | 860 | 9.3 | 302 | 4.2 |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.
4. When length of the tool extension from the machine is long, reduce the speed and feed.


List 3815 & 3915: 4 Flute, Low Helix, Corner Chamfer

List 3820 & 3920: 4 Flute, High Helix, Corner Chamfer

List 3825: Long Neck, 4 Flute, Low Helix, Corner Chamfer

List 3830: Long Neck, 4 Flute, High Helix, Corner Chamfer

Side Milling

| Hardness | | - | | - | | <30 HRC | | <45 HRC | | - | | - | |
|---------------|----|--|----------------|------------------------------|----------------|-----------------------------|----------------|--------------------------------------|----------------|------------------------|----------------|-----------------------------|----------------|
| Work Material | | Cast Iron | | Mild Steels Carbon Steels | | Alloy Steels Tool Steels | | Hardened Steel Pre-hardened Steel | | Stainless Steel 304 | | Titanium Alloy Ti-6AL-4V | |
| Depth of Cut | | $a_a \leq 1.5D$ $a_r \leq 0.3D$  | | | | | | | | | | | |
| Mill Dia. | | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| - | 6 | 4,770 | 24.0 | 6,370 | 27.9 | 4,770 | 15.7 | 4,240 | 12.9 | 3,710 | 11.4 | 2,650 | 7.0 |
| 1/4 | - | 4,510 | 26.8 | 6,020 | 34.6 | 4,510 | 18.1 | 4,005 | 15.2 | 3,500 | 13.9 | 2,510 | 8.2 |
| 5/16 | - | 3,610 | 36.1 | 4,825 | 38.4 | 3,610 | 21.4 | 3,210 | 18.6 | 2,810 | 15.1 | 2,010 | 9.3 |
| - | 8 | 3,580 | 37.0 | 4,770 | 42.9 | 3,580 | 24.0 | 3,180 | 20.1 | 2,790 | 17.7 | 1,990 | 10.6 |
| 3/8 | - | 3,005 | 37.3 | 4,015 | 43.1 | 3,005 | 24.3 | 2,670 | 20.1 | 2,340 | 17.7 | 1,670 | 10.6 |
| - | 10 | 2,860 | 37.4 | 3,820 | 43.3 | 2,860 | 24.4 | 2,550 | 20.1 | 2,230 | 17.7 | 1,590 | 10.6 |
| - | 12 | 2,390 | 33.8 | 3,180 | 38.9 | 2,390 | 22.0 | 2,120 | 18.1 | 1,860 | 16.1 | 1,330 | 9.8 |
| 1/2 | - | 2,250 | 33.5 | 3,010 | 38.6 | 2,250 | 21.8 | 2,005 | 18.0 | 1,750 | 15.9 | 1,260 | 9.7 |
| - | 14 | 2,045 | 33.2 | 2,730 | 38.3 | 2,045 | 21.6 | 1,820 | 17.9 | 1,560 | 15.7 | 1,140 | 9.6 |
| 5/8 | - | 1,800 | 32.8 | 2,410 | 38.0 | 1,800 | 21.4 | 1,610 | 17.8 | 1,400 | 15.5 | 1,010 | 9.5 |
| - | 16 | 1,790 | 32.2 | 2,390 | 37.7 | 1,790 | 21.2 | 1,590 | 17.7 | 1,390 | 15.3 | 990 | 9.4 |
| - | 18 | 1,590 | 31.4 | 2,130 | 36.9 | 1,590 | 21.0 | 1,420 | 17.3 | 1,240 | 14.9 | 890 | 9.1 |
| 3/4 | - | 1,500 | 30.9 | 2,010 | 36.1 | 1,500 | 19.8 | 1,340 | 16.9 | 1,170 | 14.5 | 840 | 8.8 |
| - | 20 | 1,430 | 30.3 | 1,910 | 35.0 | 1,430 | 19.6 | 1,280 | 16.5 | 1,110 | 14.1 | 800 | 8.6 |
| - | 25 | 1,145 | 25.6 | 1,530 | 28.8 | 1,145 | 16.8 | 1,020 | 15.3 | 890 | 13.3 | 640 | 7.7 |
| 1 | - | 1,127 | 25.2 | 1,505 | 28.2 | 1,127 | 16.3 | 1,000 | 15.0 | 875 | 12.8 | 630 | 7.4 |

1. Use a rigid and precise machine and holder.
2. Please adjust the speed and feed when cutting depth is large or when machines with low rigidity are used.
3. Please use a suitable fluid with high smoke retardant properties.
4. During Dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.

continued on next page





Slotting

| Hardness | - | | - | | <30 HRC | | <45 HRC | | - | | - | | |
|---------------|--|-------------|------------------------------|-------------|-----------------------------|-------------|--------------------------------------|-------------|------------------------|-------------|-----------------------------|-------------|-----|
| Work Material | Cast Iron | | Mild Steels Carbon Steels | | Alloy Steels Tool Steels | | Hardened Steel Pre-hardened Steel | | Stainless Steel 304 | | Titanium Alloy Ti-6AL-4V | | |
| Depth of Cut | $a_a \leq 1D$ $a_r \text{ Max} = 0.472$ | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | |
| - | 6 | 3,710 | 16.9 | 5,840 | 22.8 | 4,240 | 12.5 | 3,710 | 10.2 | 3,180 | 8.6 | 2,120 | 5.1 |
| 1/4 | - | 3,500 | 17.4 | 5,520 | 23.4 | 4,005 | 12.8 | 3,500 | 10.6 | 3,010 | 8.9 | 2,005 | 5.2 |
| 5/16 | - | 2,805 | 17.9 | 4,420 | 24.7 | 3,210 | 13.4 | 2,805 | 10.9 | 2,415 | 9.4 | 1,605 | 5.4 |
| - | 8 | 2,790 | 18.5 | 4,380 | 25.5 | 3,180 | 13.7 | 2,790 | 11.4 | 2,390 | 9.8 | 1,590 | 5.5 |
| 3/8 | - | 2,340 | 19.4 | 3,680 | 26.5 | 2,670 | 14.3 | 2,340 | 11.8 | 2,010 | 10.2 | 1,335 | 5.7 |
| - | 10 | 2,230 | 20.0 | 3,500 | 27.5 | 2,550 | 14.9 | 2,230 | 12.2 | 1,910 | 10.6 | 1,270 | 5.9 |
| - | 12 | 1,860 | 18.5 | 2,920 | 25.1 | 2,120 | 13.7 | 1,860 | 11.4 | 1,590 | 9.4 | 1,060 | 5.5 |
| 1/2 | - | 1,750 | 18.4 | 2,760 | 25.0 | 2,005 | 13.6 | 1,750 | 11.3 | 1,505 | 9.4 | 1,000 | 5.5 |
| - | 14 | 1,590 | 18.3 | 2,505 | 24.9 | 1,820 | 13.5 | 1,590 | 11.2 | 1,370 | 9.4 | 910 | 5.5 |
| 5/8 | - | 1,400 | 18.2 | 2,210 | 24.8 | 1,600 | 13.4 | 1,400 | 11.1 | 1,205 | 9.4 | 805 | 5.5 |
| - | 16 | 1,390 | 18.1 | 2,190 | 24.8 | 1,590 | 13.3 | 1,390 | 11.0 | 1,190 | 9.4 | 800 | 5.5 |
| - | 18 | 1,240 | 17.9 | 1,950 | 24.5 | 1,415 | 13.2 | 1,240 | 10.8 | 1,065 | 9.2 | 710 | 5.4 |
| 3/4 | - | 1,170 | 17.6 | 1,840 | 24.3 | 1,335 | 13.0 | 1,170 | 10.7 | 1,005 | 9.1 | 670 | 5.2 |
| - | 20 | 1,110 | 17.3 | 1,750 | 24.0 | 1,270 | 12.9 | 1,110 | 10.6 | 950 | 9.0 | 640 | 5.1 |
| - | 25 | 890 | 16.8 | 1,400 | 23.3 | 1,020 | 12.1 | 890 | 9.8 | 765 | 8.2 | 510 | 4.7 |
| 1 | - | 875 | 16.6 | 1,380 | 22.6 | 1,000 | 11.7 | 875 | 9.6 | 755 | 7.9 | 500 | 4.6 |

1. Use a rigid and precise machine and holder.
2. Please adjust the speed and feed when cutting depth is large or when machines with low rigidity are used.
3. Please use a suitable fluid with high smoke retardant properties.
4. During Dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.






EXOCARB® AERO ROUGHER

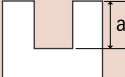
Carbide Rougher for Heavy Milling in Exotic Materials

List 2015: Regular Length, 4 Flute, Roughing

Side Milling

| Hardness | 35-45 HRC | | 45-55 HRC | | <40 HRC | | >40 HRC | | - | |
|---------------|--|-------------|---------------------------|-------------|-------------|-------------|---------------------------|-------------|------------------------------|-------------|
| Work Material | Stainless Steel | | Stainless Steel | | Titanium | | Titanium | | Inconel, Waspaloy, Hastelloy | |
| Cutting Speed | 450-490 SFM | | 310-350 SFM | | 210-240 SFM | | 150-165 SFM | | 80-90 SFM | |
| Depth of Cut | $a_a=1.5D$ $a_r=0.4D$  | | $a_a=1.5D$ $a_r=0.33D$ | | | | $a_a=1.5D$ $a_r=0.25D$ | | $a_a=1.0D$ $a_r=0.20D$ | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/4 | 7,181 | 28.7 | 5,040 | 16.1 | 3,440 | 22.0 | 2,408 | 12.5 | 1,300 | 3.1 |
| 3/8 | 4,788 | 30.6 | 3,360 | 17.5 | 2,294 | 19.3 | 1,605 | 11.6 | 867 | 3.5 |
| 1/2 | 3,590 | 30.2 | 2,520 | 16.1 | 1,720 | 17.8 | 1,204 | 11.1 | 650 | 3.1 |
| 5/8 | 2,873 | 29.9 | 2,016 | 16.9 | 1,376 | 19.8 | 963 | 11.9 | 520 | 3.3 |
| 3/4 | 2,394 | 32.6 | 1,680 | 17.5 | 1,147 | 18.4 | 802 | 12.5 | 433 | 3.5 |
| 1 | 1,795 | 25.8 | 1,260 | 14.6 | 860 | 14.8 | 602 | 9.6 | 325 | 2.9 |

Slotting

| Hardness | 35-45 HRC | | 45-55 HRC | | <40 HRC | | >40 HRC | | - | |
|---------------|--|-------------|-----------------|-------------|-------------|-------------|-------------|-------------|------------------------------|-------------|
| Work Material | Stainless Steel | | Stainless Steel | | Titanium | | Titanium | | Inconel, Waspaloy, Hastelloy | |
| Cutting Speed | 450-490 SFM | | 310-350 SFM | | 210-240 SFM | | 150-165 SFM | | 80-90 SFM | |
| Depth of Cut | $a_a=0.5D$  | | | | $a_a=0.3D$ | | $a_a=0.25D$ | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/4 | 7,181 | 23.0 | 5,040 | 12.9 | 3,440 | 17.6 | 2,408 | 10.0 | 1,300 | 2.5 |
| 3/8 | 4,788 | 24.5 | 3,360 | 14.0 | 2,294 | 15.4 | 1,605 | 9.3 | 867 | 2.8 |
| 1/2 | 3,590 | 24.2 | 2,520 | 12.9 | 1,720 | 14.3 | 1,204 | 8.9 | 650 | 2.5 |
| 5/8 | 2,873 | 23.9 | 2,016 | 13.5 | 1,376 | 15.9 | 963 | 9.5 | 520 | 2.7 |
| 3/4 | 2,394 | 26.0 | 1,680 | 14.0 | 1,147 | 14.7 | 802 | 10.0 | 433 | 2.8 |
| 1 | 1,795 | 20.7 | 1,260 | 11.7 | 860 | 11.8 | 602 | 7.7 | 325 | 2.5 |




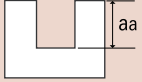


List 2100: 5 Flute, Square End

List 2106: 5 Flute, Corner Radius

List 2102: 5 Flute, Regular Length, Reduced Neck, Square End

List 2108: 5 Flute, Regular Length, Reduced Neck, Corner Radius

| | Side Milling | | Slotting | |
|---------------|---|-------------|---|-------------|
| Cutting Speed | 200-265 SFM | | 100-165 SFM | |
| Depth of Cut | $a_a \leq 1.8D$ $a_r = 0.2D$  | | $a_a \leq 1D$  | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/2 | 1,800 | 31.9 | 1,030 | 10.2 |
| 5/8 | 1,435 | 25.5 | 825 | 8.2 |
| 3/4 | 1,200 | 25.7 | 700 | 8.3 |
| 1 | 900 | 19.7 | 515 | 6.0 |

1. Use a rigid and precise machine and holder.

2. The above cutting conditions are to be used as general guidelines. Please adjust the speed, feed and cutting depth according to actual cutting conditions.

3. Water soluble coolant is highly recommended.


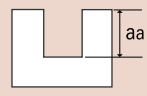


EXOCARB® AERO UVX-Ti

Variable Lead End Mill for Titanium Alloy

List 2104: 5 Flute, Regular Length, Reduced Neck, Square End

List 2110: 5 Flute, Regular Length, Reduced Neck, Corner Radius

| | Side Milling | | Slotting | |
|---------------|---|-------------|---|-------------|
| Cutting Speed | 200-265 SFM | | 100-165 SFM | |
| Depth of Cut | $a_a \leq 1.8D$ $a_r = 0.2D$  | | $a_a \leq 1D$  | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 12 | 1,900 | 33.7 | 1,100 | 10.8 |
| 16 | 1,400 | 24.8 | 820 | 8.1 |
| 20 | 1,100 | 23.6 | 655 | 7.7 |
| 25 | 900 | 19.7 | 525 | 6.2 |

1. Use a rigid and precise machine and holder.
2. The above cutting conditions are to be used as general guidelines. Please adjust the speed, feed and cutting depth according to actual cutting conditions.
3. Water soluble coolant is highly recommended.


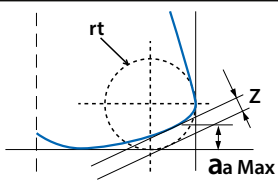




List 2080: 6 & 8 Flute, Inch

List 2081: 6 & 8 Flute, Metric

Contour Milling

| Work Material | | Titanium Alloy (Ti-6Al-4V) | | | | | |
|---|----|--|----------------|------------------|--------|-------|--|
| Cutting Speed | | 165 - 330 SFM | | | | | |
| Depth of Cut | | $a_a \leq 0.035D$ $a_r \leq 0.39D$  | | | | | |
| Mill Dia. | | Speed RPM | Feed in/min | Ramping Angle | R (rt) | Z | |
| in | mm | | | | | | |
| 5/8 | - | 1,500 | 164 | 2° | 0.031 | 0.016 | |
| - | 16 | 1,490 | 175 | | 0.033 | 0.018 | |
| 3/4 | - | 1,250 | 132 | | 0.037 | 0.021 | |
| - | 20 | 1,190 | 140 | | 0.039 | 0.022 | |
| - | 25 | 850 | 189 | | 0.047 | 0.029 | |
| 1 | - | 935 | 192 | | 0.049 | 0.030 | |
|  | | | | | | | |

1. During machining, please program the milling paths according to the recommended simulated R (rt) respective to the individual end mill diameter.
2. Using water soluble coolant is highly recommended.



List 2863: 2 Flute, Stub Length, Corner Radius

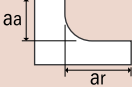
| | | | | | | | |
|---------------|---|-------------|-----------|------|----|--|--|
| Work Material | Aluminum Alloy | | | | | | |
| Cutting Speed | 3,280 - 9,840 SFM | | | | | | |
| Depth of Cut | <table border="1"> <tr> <td>aa</td> <td>ar</td> </tr> <tr> <td>0.6D</td> <td>1D</td> </tr> </table> | aa | ar | 0.6D | 1D | | |
| aa | ar | | | | | | |
| 0.6D | 1D | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | | | | | |
| 1/2 | ≤33000 | ≤360 IPM | | | | | |
| 5/8 | ≤33000 | ≤470 IPM | | | | | |
| 3/4 | ≤33000 | ≤590 IPM | | | | | |
| 1 | ≤33000 | ≤590 IPM | | | | | |

List 2963: 2 Flute, Stub Length, Corner Radius

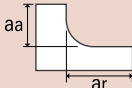
| | | | | | | | |
|---------------|---|-------------|-----------|------|----|--|--|
| Work Material | Aluminum Alloy | | | | | | |
| Cutting Speed | 3,280 - 9,840 SFM | | | | | | |
| Depth of Cut | <table border="1"> <tr> <td>aa</td> <td>ar</td> </tr> <tr> <td>0.6D</td> <td>1D</td> </tr> </table> | aa | ar | 0.6D | 1D | | |
| aa | ar | | | | | | |
| 0.6D | 1D | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | | | | | |
| 12 | ≤33000 | ≤360 IPM | | | | | |
| 16 | ≤33000 | ≤470 IPM | | | | | |
| 20 | ≤33000 | ≤590 IPM | | | | | |
| 25 | ≤33000 | ≤590 IPM | | | | | |



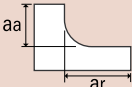
List 2873: 3 Flute, Stub Length

| Work Material | Aluminum Alloy | | | | | | |
|---------------|---|-------------|-----------|------|----|--|--|
| Depth of Cut | <table border="1"> <tr> <td>aa</td> <td>ar</td> </tr> <tr> <td>0.4D</td> <td>1D</td> </tr> </table> | aa | ar | 0.4D | 1D |  | |
| aa | ar | | | | | | |
| 0.4D | 1D | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | | | | | |
| 5/8 | ≤33000 | ≤790 IPM | | | | | |
| 3/4 | ≤33000 | ≤1010 IPM | | | | | |
| 1 | ≤33000 | ≤1280 IPM | | | | | |

List 2973: 3 Flute, Stub Length

| Work Material | Aluminum Alloy | | | | | | |
|---------------|---|-------------|-----------|------|----|--|--|
| Depth of Cut | <table border="1"> <tr> <td>aa</td> <td>ar</td> </tr> <tr> <td>0.4D</td> <td>1D</td> </tr> </table> | aa | ar | 0.4D | 1D |  | |
| aa | ar | | | | | | |
| 0.4D | 1D | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | | | | | |
| 20 | ≤33000 | ≤1010 IPM | | | | | |
| 25 | ≤33000 | ≤1280 IPM | | | | | |

List 2874: 3 Flute, Stub Length, Coolant-Through

| Work Material | Aluminum Alloy | | | | | | |
|---------------|---|-------------|-----------|------|----|--|--|
| Depth of Cut | <table border="1"> <tr> <td>aa</td> <td>ar</td> </tr> <tr> <td>0.4D</td> <td>1D</td> </tr> </table> | aa | ar | 0.4D | 1D |  | |
| aa | ar | | | | | | |
| 0.4D | 1D | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | | | | | |
| 3/4 | ≤33000 | ≤1010 IPM | | | | | |
| 1 | ≤33000 | ≤1280 IPM | | | | | |



List 2974: 3 Flute, Stub Length, Coolant-Through

| Work Material | Aluminum Alloy | | | | | | |
|---------------|---|-------------|-------|-------|------|----|--|
| Depth of Cut | <table border="1"> <tr> <th>a_a</th> <th>a_r</th> </tr> <tr> <td>0.4D</td> <td>1D</td> </tr> </table> | | a_a | a_r | 0.4D | 1D | |
| a_a | a_r | | | | | | |
| 0.4D | 1D | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | | | | | |
| 20 | ≤33000 | ≤1010 IPM | | | | | |
| 25 | ≤33000 | ≤1280 IPM | | | | | |

List 2843: 3 Flute, Long Length

| Work Material | Aluminum Alloy | | | | | | | | | | | | | | | | | |
|---------------|---|-------------|-----|-------|-------|-----|-------|--------|-----|-------|--------|-----|-------|--------|---|-------|--------|--|
| Cutting Speed | 3,280 SFM - 9,840 SFM | | | | | | | | | | | | | | | | | |
| Depth of Cut | <table border="1"> <tr> <th>Dia</th> <th>a_a</th> <th>a_r</th> </tr> <tr> <td>1/2</td> <td>≤1.77</td> <td>≤0.006</td> </tr> <tr> <td>5/8</td> <td>≤1.77</td> <td>≤0.008</td> </tr> <tr> <td>3/4</td> <td>≤1.77</td> <td>≤0.012</td> </tr> <tr> <td>1</td> <td>≤1.77</td> <td>≤0.012</td> </tr> </table> | | Dia | a_a | a_r | 1/2 | ≤1.77 | ≤0.006 | 5/8 | ≤1.77 | ≤0.008 | 3/4 | ≤1.77 | ≤0.012 | 1 | ≤1.77 | ≤0.012 | |
| Dia | a_a | a_r | | | | | | | | | | | | | | | | |
| 1/2 | ≤1.77 | ≤0.006 | | | | | | | | | | | | | | | | |
| 5/8 | ≤1.77 | ≤0.008 | | | | | | | | | | | | | | | | |
| 3/4 | ≤1.77 | ≤0.012 | | | | | | | | | | | | | | | | |
| 1 | ≤1.77 | ≤0.012 | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | | | | | | | | | | | | | | | | |
| 1/2 | ≤14000 | ≤157 IPM | | | | | | | | | | | | | | | | |
| 5/8 | ≤14000 | ≤197 IPM | | | | | | | | | | | | | | | | |
| 3/4 | ≤14000 | ≤236 IPM | | | | | | | | | | | | | | | | |
| 1 | ≤14000 | ≤236 IPM | | | | | | | | | | | | | | | | |

List 2943: 3 Flute, Long Length

| Work Material | Aluminum Alloy | | | | | | | | | | | | | | | | | |
|---------------|---|-------------|-----|-------|-------|----|-------|--------|----|-------|--------|----|-------|--------|----|-------|--------|--|
| Cutting Speed | 3,280 SFM - 9,840 SFM | | | | | | | | | | | | | | | | | |
| Depth of Cut | <table border="1"> <tr> <th>Dia</th> <th>a_a</th> <th>a_r</th> </tr> <tr> <td>12</td> <td>≤1.77</td> <td>≤0.006</td> </tr> <tr> <td>16</td> <td>≤1.77</td> <td>≤0.008</td> </tr> <tr> <td>20</td> <td>≤1.77</td> <td>≤0.012</td> </tr> <tr> <td>25</td> <td>≤1.77</td> <td>≤0.012</td> </tr> </table> | | Dia | a_a | a_r | 12 | ≤1.77 | ≤0.006 | 16 | ≤1.77 | ≤0.008 | 20 | ≤1.77 | ≤0.012 | 25 | ≤1.77 | ≤0.012 | |
| Dia | a_a | a_r | | | | | | | | | | | | | | | | |
| 12 | ≤1.77 | ≤0.006 | | | | | | | | | | | | | | | | |
| 16 | ≤1.77 | ≤0.008 | | | | | | | | | | | | | | | | |
| 20 | ≤1.77 | ≤0.012 | | | | | | | | | | | | | | | | |
| 25 | ≤1.77 | ≤0.012 | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | | | | | | | | | | | | | | | | |
| 12 | ≤14000 | ≤157 IPM | | | | | | | | | | | | | | | | |
| 16 | ≤14000 | ≤197 IPM | | | | | | | | | | | | | | | | |
| 20 | ≤14000 | ≤236 IPM | | | | | | | | | | | | | | | | |
| 25 | ≤14000 | ≤236 IPM | | | | | | | | | | | | | | | | |





List 2853: 3 Flute, Extra Long Length

| | | | | | | |
|---------------|--|----------------|-------------|-------------|--------------|--|
| Work Material | Aluminum Alloy | | | | | |
| Depth of Cut | <table border="1"> <tr> <td>\bar{a}_a</td> <td>\bar{a}_r</td> </tr> <tr> <td>≤ 3.74</td> <td>≤ 0.008</td> </tr> </table> | \bar{a}_a | \bar{a}_r | ≤ 3.74 | ≤ 0.008 | |
| \bar{a}_a | \bar{a}_r | | | | | |
| ≤ 3.74 | ≤ 0.008 | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | | | | |
| 3/4 | ≤ 14000 | ≤ 236 IPM | | | | |

List 2953: 3 Flute, Extra Long Length

| | | | | | | |
|---------------|--|----------------|-------------|-------------|--------------|--|
| Work Material | Aluminum Alloy | | | | | |
| Depth of Cut | <table border="1"> <tr> <td>\bar{a}_a</td> <td>\bar{a}_r</td> </tr> <tr> <td>≤ 3.74</td> <td>≤ 0.008</td> </tr> </table> | \bar{a}_a | \bar{a}_r | ≤ 3.74 | ≤ 0.008 | |
| \bar{a}_a | \bar{a}_r | | | | | |
| ≤ 3.74 | ≤ 0.008 | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | | | | |
| 20 | ≤ 14000 | ≤ 236 IPM | | | | |



List 2021: Stub Length - 2 Flute - Square & Corner Radius

Slotting

| Work Material | Aluminum Alloys A6061, A7075 | | Aluminum Alloy Casting Si<13% | |
|---------------|---------------------------------|-------------|----------------------------------|-------------|
| Cutting Speed | 1,190 SFM | | 1,080 SFM | |
| Depth of Cut | <1D Depth of Cut | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/8 | 25,000 | 100 | 25,000 | 100 |
| 3/16 | 24,400 | 195 | 22,000 | 175 |
| 1/4 | 18,300 | 200 | 16,500 | 180 |
| 3/8 | 12,200 | 195 | 11,000 | 175 |
| 7/16 | 10,400 | 210 | 9,350 | 190 |
| 1/2 | 9,100 | 225 | 8,200 | 200 |
| 5/8 | 7,300 | 205 | 6,600 | 185 |
| 3/4 | 6,100 | 195 | 5,500 | 175 |
| 1 | 4,500 | 180 | 4,050 | 160 |

1. Use a rigid and precise machine and holder.
2. Use a water soluble cutting fluid.
3. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used.

List 2022: Regular Length - 2 Flute - Square & Corner Radius

List 2023: Regular Length - 2 Flute - Reduced Neck

List 2024: Long Length - 2 Flute - Reduced Neck

Slotting

| Work Material | Aluminum Alloys A6061, A7075 | | Aluminum Alloy Casting Si<13% | |
|---------------|---------------------------------|-------------|----------------------------------|-------------|
| Cutting Speed | 990 SFM | | 890 SFM | |
| Depth of Cut | <0.6D Depth of Cut | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/8 | 25,000 | 100 | 25,000 | 100 |
| 3/16 | 20,300 | 160 | 18,300 | 145 |
| 1/4 | 15,200 | 170 | 13,700 | 150 |
| 3/8 | 10,100 | 160 | 9,100 | 145 |
| 7/16 | 8,700 | 175 | 7,800 | 160 |
| 1/2 | 7,600 | 190 | 6,800 | 170 |
| 5/8 | 6,100 | 170 | 5,500 | 150 |
| 3/4 | 5,100 | 160 | 4,600 | 145 |
| 1 | 3,800 | 150 | 3,400 | 135 |

1. Use a rigid and precise machine and holder.
2. Use a water soluble cutting fluid.
3. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used.





List 2041: Stub Length - 3 Flute - Square & Corner Radius

Slotting

| Work Material | Aluminum Alloys A6061, A7075 | | | |
|---------------------|---------------------------------|--------|--|----------------|
| Depth of Cut | <0.5D Depth of Cut | | | |
| Mill Dia. (inch) | Speed RPM | IPT | | Feed in/min |
| 1/8 | 25,000 | 0.0014 | | 105.0 |
| 3/16 | 24,400 | 0.0028 | | 205.0 |
| 1/4 | 18,300 | 0.0039 | | 211.4 |
| 3/8 | 12,200 | 0.0056 | | 205.0 |
| 7/16 | 10,400 | 0.0070 | | 218.4 |
| 1/2 | 9,100 | 0.0088 | | 238.9 |
| 5/8 | 7,300 | 0.0098 | | 214.6 |
| 3/4 | 6,100 | 0.0112 | | 205.0 |
| 1 | 4,500 | 0.0140 | | 189.0 |





List 2042: Regular Length - 3 Flute - Square & Corner Radius

List 2043: Regular Length - 3 Flute - Reduced Neck - Square & Corner Radius

List 2048: Regular Length - 3 Flute - Reduced Neck - Square & Corner Radius

Slotting

| Work Material | Aluminum Alloys A6061, A7075 | | | |
|---------------|---------------------------------|--------|----------------|--|
| Depth of Cut | <0.5D Depth of Cut | | | |
| Mill Dia. | Speed RPM | IPT | Feed in/min | |
| 1/8 | 25,000 | 0.0014 | 105.0 | |
| 3/16 | 20,300 | 0.0028 | 170.5 | |
| 1/4 | 15,200 | 0.0039 | 175.6 | |
| 3/8 | 10,100 | 0.0056 | 169.7 | |
| 7/16 | 8,700 | 0.0070 | 182.7 | |
| 1/2 | 7,600 | 0.0088 | 199.5 | |
| 5/8 | 6,100 | 0.0098 | 179.3 | |
| 3/4 | 5,100 | 0.0112 | 171.4 | |
| 1 | 3,800 | 0.0140 | 159.6 | |





List 2010: Ball End, Regular Length, 2 Flute

Slotting

| Work Material | Aluminum Alloy A6061, A7075 | | Aluminum Alloy Casting | |
|---------------|--------------------------------|----------------|---------------------------|----------------|
| Cutting Speed | 990 SFM | | 900 SFM | |
| Depth of Cut | <0.6D Depth of Cut | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/8 | 25,000 | 139.1 | 25,000 | 130.6 |
| 3/16 | 20,170 | 171.9 | 18,336 | 147.4 |
| 1/4 | 15,127 | 174.3 | 13,752 | 151.0 |
| 5/16 | 12,102 | 178.2 | 11,002 | 154.1 |
| 3/8 | 10,085 | 181.9 | 9,168 | 157.5 |
| 7/16 | 8,644 | 185.0 | 7,858 | 160.5 |
| 1/2 | 7,564 | 188.1 | 6,876 | 164.6 |
| 5/8 | 6,051 | 180.4 | 5,501 | 156.0 |
| 3/4 | 5,042 | 177.3 | 4,584 | 153.2 |
| 1 | 3,782 | 173.2 | 3,438 | 149.9 |

1. Use a rigid and precise machine and holder.
2. Use a water soluble cutting fluid.
3. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used.

Profiling

| Work Material | Aluminum Alloy A6061, A7075 | | Aluminum Alloy Casting | |
|---------------|--------------------------------|----------------|---------------------------|----------------|
| Cutting Speed | 1190 SFM | | 1100 SFM | |
| Depth of Cut | Aa = 0.1D Ar = 0.2D | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/8 | 25,000 | 139.1 | 25,000 | 130.6 |
| 3/16 | 24,244 | 206.7 | 22,411 | 180.1 |
| 1/4 | 18,183 | 209.5 | 16,808 | 184.6 |
| 5/16 | 14,547 | 214.2 | 13,446 | 188.4 |
| 3/8 | 12,122 | 218.6 | 11,205 | 192.5 |
| 7/16 | 10,390 | 222.4 | 9,605 | 196.2 |
| 1/2 | 9,092 | 226.1 | 8,404 | 201.1 |
| 5/8 | 7,273 | 216.9 | 6,723 | 190.7 |
| 3/4 | 6,061 | 213.1 | 5,603 | 187.2 |
| 1 | 4,546 | 208.2 | 4,202 | 183.2 |


1. Use a rigid and precise machine and holder.
2. Use a water soluble cutting fluid.
3. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used.






List 8120: Regular Length - 2 Flute

Side Milling

| Work Material | Aluminum Alloys | | Copper Alloys | |
|---------------|--------------------------|-------------|---|-------------|
| Cutting Speed | 650 SFM | | 245 SFM | |
| Depth of Cut | $a_a=1.5D$ $a_r=0.1D$ | |  | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1 | 25,000 | 6.8 | 23,500 | 8.7 |
| 2 | 25,000 | 12.9 | 11,500 | 8.5 |
| 3 | 21,000 | 27.6 | 7,950 | 9.8 |
| 4 | 15,500 | 28.5 | 5,950 | 11.0 |
| 5 | 12,500 | 29.9 | 4,750 | 11.6 |
| 6 | 10,500 | 32.7 | 3,950 | 12.2 |
| 8 | 7,950 | 35.0 | 2,950 | 13.8 |
| 10 | 6,350 | 39.2 | 2,350 | 14.4 |
| 12 | 5,300 | 41.3 | 1,950 | 15.4 |
| 14 | 4,500 | 41.3 | 1,700 | 15.6 |
| 16 | 3,950 | 41.3 | 1,450 | 15.4 |
| 18 | 3,500 | 41.3 | 1,300 | 15.4 |
| 20 | 3,150 | 41.3 | 1,150 | 15.2 |

1. Use a rigid and precise machine and holder.
2. Use a water soluble cutting fluid.
3. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used.

Slotting

| Work Material | Aluminum Alloys | | Copper Alloys | |
|---------------|-----------------|-------------|---|-------------|
| Cutting Speed | 490 SFM | | 245 SFM | |
| Depth of Cut | $a_a=1D$ | |  | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1 | 25,000 | 6.8 | 23,500 | 8.7 |
| 2 | 23,500 | 12.2 | 11,500 | 8.5 |
| 3 | 15,500 | 20.3 | 7,950 | 9.8 |
| 4 | 11,500 | 21.3 | 5,950 | 11.0 |
| 5 | 9,500 | 22.6 | 4,750 | 11.6 |
| 6 | 7,950 | 24.8 | 3,950 | 12.2 |
| 8 | 5,950 | 26.2 | 2,950 | 13.8 |
| 10 | 4,750 | 29.3 | 2,350 | 14.4 |
| 12 | 3,950 | 31.1 | 1,950 | 15.4 |
| 14 | 3,400 | 31.3 | 1,700 | 15.6 |
| 16 | 2,950 | 31.3 | 1,450 | 15.4 |
| 18 | 2,650 | 31.3 | 1,300 | 15.4 |
| 20 | 2,350 | 30.9 | 1,150 | 15.2 |

1. Use a rigid and precise machine and holder.
2. Use a water soluble cutting fluid.
3. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used.






List 2061: BNC, Nick Router

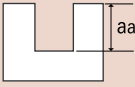
List 2066: HBC, Compression Router, 30° Helix

List 2064: HBC 45, Compression Router, 45° Helix

Side Milling

| | | |
|-----------------------|---|-----------------|
| Work Material | Carbon & Glass Fiber Reinforced Plastics | |
| Cutting Speed | 400-800 SFM | |
| Depth of Cut | $aa < 1.5D$ $ar < 1D$  | |
| Drill Diameter (Inch) | Speed RPM | Feed IPR |
| 1/8 | 12,200 - 24,400 | 0.0011 - 0.0022 |
| 3/16 | 8,100 - 16,300 | 0.0021 - 0.0042 |
| 1/4 | 6,100 - 12,200 | 0.0033 - 0.0067 |
| 5/16 | 5,000 - 9,800 | 0.0047 - 0.0093 |
| 3/8 | 4,100 - 8,100 | 0.0067 - 0.0133 |
| 1/2 | 3,000 - 6,100 | 0.0111 - 0.0222 |

Slotting

| | | |
|-----------------------|--|-----------------|
| Work Material | Carbon & Glass Fiber Reinforced Plastics | |
| Cutting Speed | 300-600 SFM | |
| Depth of Cut | $aa < 1D$  | |
| Drill Diameter (Inch) | Speed RPM | Feed IPR |
| 1/8 | 9,200 - 18,300 | 0.0016 - 0.0020 |
| 3/16 | 6,100 - 12,200 | 0.0020 - 0.0024 |
| 1/4 | 4,600 - 9,200 | 0.004 - 0.005 |
| 5/16 | 3,600 - 7,300 | 0.006 - 0.008 |
| 3/8 | 3,000 - 6,100 | 0.009 - 0.012 |
| 1/2 | 2,300 - 4,600 | 0.012 - 0.020 |

1. The conditions listed above are based on approximately 1xDc thickness of part with rigid work holding.
2. Conventional cut is recommended at part side for good surface finish.
3. Milling speed can be increased by 20-50% with the use of appropriate cutting oil.
4. Please provide appropriate measures against dust (Such as vacuum dust collection).
5. Depending on the workpiece thickness and form as well as work holding, vibration may occur. When it occurs, please adjust RPM and feed rate.

Feed Reduction


| Material Thickness | Feed Reduction |
|--------------------|----------------|
| $\leq 0.25D$ | x80% |
| 0.25D ~ 0.5D | x150% |
| 0.5D ~ 1D | x120% |
| 1D ~ 2D | x80% |
| 2D ~ 3D | x50% |



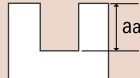
List 2068: HBC 60, Compression Router, 60° Helix

List 668: HBC 60, Compression Router, 60° Helix, Bright

Side Milling

| Work Material | Carbon & Glass Fiber Reinforced Plastics | | Honeycomb Structures & Aramid Fiber Reinforced Plastics | |
|-----------------------|--|-----------------|--|-----------------|
| Cutting Speed | 400-800 SFM | | 1,000-2,600 SFM | |
| Depth of Cut | $a_a < 1.5D$ $a_r < 1D$ | |  | |
| Drill Diameter (Inch) | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| 1/4 | 6,100 - 12,200 | 0.0033 - 0.0067 | 15,300 - 39,700 | 0.0003 - 0.0007 |
| 3/8 | 4,000 - 8,100 | 0.0067 - 0.0133 | 10,100 - 26,500 | 0.0006 - 0.0009 |
| 1/2 | 3,000 - 6,100 | 0.0111 - 0.0222 | 7,600 - 19,900 | 0.0011 - 0.0014 |

Slotting

| Work Material | Carbon & Glass Fiber Reinforced Plastics | | Honeycomb Structures & Aramid Fiber Reinforced Plastics | |
|-----------------------|--|-----------------|---|-----------------|
| Cutting Speed | 300-600 SFM | | 750-1,900 SFM | |
| Depth of Cut | $a_a < 1D$ | |  | |
| Drill Diameter (Inch) | Speed RPM | Feed IPR | Speed RPM | Feed IPR |
| 1/4 | 4,600 - 9,200 | 0.0021 - 0.0043 | 11,500 - 29,000 | 0.0002 - 0.0005 |
| 3/8 | 4,000 - 8,000 | 0.0044 - 0.0089 | 7,600 - 19,400 | 0.0007 - 0.0011 |
| 1/2 | 3,000 - 6,100 | 0.0071 - 0.0143 | 5,700 - 14,500 | 0.0013 - 0.0017 |

1. The conditions listed above are based on approximately 1xDc thickness of part with rigid work holding.
2. Conventional cut is recommended at part side for good surface finish.
3. Milling speed can be increased by 20-50% with the use of appropriate cutting oil.
4. Please provide appropriate measures against dust (Such as vacuum dust collection).
5. Depending on the workpiece thickness and form as well as work holding, vibration may occur. When it occurs, please adjust RPM and feed rate.
6. Kevlar laminate machinability can vary greatly by fiber and resin. If hole quality is not achieved with the feed rates provided above, reducing the feed rates may produce better quality surfaces.

Feed Reduction


| Material Thickness | Feed Reduction |
|--------------------|----------------|
| $\leq 0.25D$ | x80% |
| 0.25D ~ 0.5D | x150% |
| 0.5D ~ 1D | x120% |
| 1D ~ 2D | x80% |
| 2D ~ 3D | x50% |



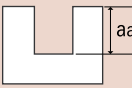


List 2680: REC, Rougher Router

Side Milling

| | | |
|-----------------------|---|-----------------|
| Work Material | Carbon & Glass Fiber Reinforced Plastics | |
| Cutting Speed | 400-800 SFM | |
| Depth of Cut | $a_a < 1.5D$ $a_r < 1D$  | |
| Drill Diameter (Inch) | Speed RPM | Feed IPR |
| 1/4 | 6,100 - 12,200 | 0.0067 - 0.0200 |
| 3/8 | 4,100 - 8,100 | 0.0200 - 0.0400 |
| 1/2 | 3,000 - 6,100 | 0.0333 - 0.0667 |

Slotting

| | | |
|-----------------------|---|-----------------|
| Work Material | Carbon & Glass Fiber Reinforced Plastics | |
| Cutting Speed | 300-600 SFM | |
| Depth of Cut | $a_a < 1D$  | |
| Drill Diameter (Inch) | Speed RPM | Feed IPR |
| 1/4 | 4,600 - 9,200 | 0.0064 - 0.0129 |
| 3/8 | 3,000 - 6,100 | 0.0133 - 0.0267 |
| 1/2 | 2,300 - 4,600 | 0.0214 - 0.0429 |

1. The conditions listed above are based on approximately 1xDc thickness of part with rigid work holding.
2. Conventional cut is recommended at part side for good surface finish.
3. Milling speed can be increased by 20-50% with the use of appropriate cutting oil.
4. Please provide appropriate measures against dust (Such as vacuum dust collection).
5. Depending on the workpiece thickness and form as well as work holding, vibration may occur. When it occurs, please adjust RPM and feed rate.

Feed Reduction


| Material Thickness | Feed Reduction |
|--------------------|----------------|
| ≤0.25D | x80% |
| 0.25D ~ 0.5D | x150% |
| 0.5D ~ 1D | x120% |
| 1D ~ 2D | x80% |
| 2D ~ 3D | x50% |





List 2650: MFR, Finishing Router

Side Milling

| | | |
|-----------------------|---|---------------|
| Work Material | Carbon & Glass Fiber Reinforced Plastics | |
| Cutting Speed | 325-600 SFM | |
| Depth of Cut | $a_a < 1.0D$ $a_r \leq 0.2D$  | |
| Drill Diameter (Inch) | Speed RPM | Feed IPR |
| 1/4 | 5,000 - 9,000 | 0.009 - 0.016 |
| 3/8 | 3,300 - 6,000 | 0.019 - 0.047 |
| 1/2 | 2,500 - 4,000 | 0.028 - 0.055 |

1. The conditions listed above are based on approximately 1xDc thickness of part with rigid work holding.
2. Conventional cut is recommended at part side for good surface finish.
3. Milling speed can be increased by 20-50% with the use of appropriate cutting oil.
4. Please provide appropriate measures against dust (Such as vacuum dust collection).
5. Depending on the workpiece thickness and form as well as work holding, vibration may occur. When it occurs, please adjust RPM and feed rate.


Feed Reduction

| Material Thickness | Feed Reduction |
|--------------------|----------------|
| $\leq 0.25D$ | x80% |
| 0.25D ~ 0.5D | x150% |
| 0.5D ~ 1D | x120% |
| 1D ~ 2D | x80% |
| 2D ~ 3D | x50% |

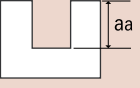


List 641R: HFR, Hand Router

Side Milling

| | | |
|-----------------------|---|-----------------|
| Work Material | Carbon & Glass Fiber Reinforced Plastics | |
| Cutting Speed | 400-800 SFM | |
| Depth of Cut | $a_a < 1.5D$ $a_r < 1D$  | |
| Drill Diameter (Inch) | Speed RPM | Feed IPR |
| 3/16 | 8,100 - 16,300 | 0.0015 - 0.0027 |
| 1/4 | 6,100 - 12,200 | 0.0033 - 0.0067 |
| 3/8 | 4,100 - 8,100 | 0.0067 - 0.0117 |
| 1/2 | 3,000 - 6,100 | 0.0111 - 0.0222 |

Slotting

| | | |
|-----------------------|--|-----------------|
| Work Material | Carbon & Glass Fiber Reinforced Plastics | |
| Cutting Speed | 300-600 SFM | |
| Depth of Cut | $a_a < 1D$  | |
| Drill Diameter (Inch) | Speed RPM | Feed IPR |
| 3/16 | 6,100 - 12,200 | 0.0010 - 0.0020 |
| 1/4 | 4,600 - 9,200 | 0.0021 - 0.0043 |
| 3/8 | 3,100 - 6,100 | 0.0044 - 0.0078 |
| 1/2 | 2,300 - 4,600 | 0.0071 - 0.0143 |



List VG441: 4 Flute

List VG434: 4 Flute - Corner Radius

List VG436: 4 Flute - Corner Chamfer

Side Milling

| Hardness | <25 HRC | | 25-30 HRC | | 30-35 HRC | | 35-45 HRC | | 45-50 HRC | | <40 HRC | | <45 HRC | |
|---------------|---|-------------|---|-------------|--|-------------|--|-------------|--------------------|-------------|--------------------|-------------|---|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | 400 Stainless Steels Alloy Steels Tool Steels | | 300 Stainless Steels Hardened Steels Pre-hardened Steels | | PH Stainless Steels Hardened Steels | | Hardened Steels | | Titanium Alloys | | High Temp. Alloys Inconel Hastelloy | |
| Cutting Speed | 400-500 SFM | | 300-400 SFM | | 200-350 SFM | | 200-250 SFM | | 175-225 SFM | | 150-250 SFM | | 100-135 SFM | |
| Depth of Cut | Aa=1.5D Ar=0.5D | | | | | | Aa=1.5D Ar=0.5D | | Aa=1.5D Ar=0.5D | | Aa=1.5D Ar=0.5D | | Aa=1.25D Ar=0.3D | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/8 | 13,750 | 44.0 | 10,695 | 25.7 | 8,400 | 18.6 | 6,875 | 15.2 | 6,110 | 14.5 | 6,110 | 12.9 | 3,665 | 9.5 |
| 3/16 | 9,170 | 46.8 | 7,130 | 28.8 | 5,600 | 20.6 | 4,585 | 16.9 | 4,075 | 16.3 | 4,075 | 13.7 | 2,445 | 10.9 |
| 1/4 | 6,875 | 46.8 | 5,350 | 31.1 | 4,200 | 20.3 | 3,440 | 16.7 | 3,050 | 16.8 | 3,050 | 13.9 | 1,835 | 11.2 |
| 5/16 | 5,500 | 48.1 | 4,210 | 31.8 | 3,350 | 21.4 | 2,750 | 17.6 | 2,450 | 17.8 | 2,450 | 15.1 | 1,465 | 11.7 |
| 3/8 | 4,585 | 47.1 | 3,565 | 30.5 | 2,800 | 20.6 | 2,290 | 16.9 | 2,040 | 16.3 | 2,040 | 14.6 | 1,220 | 11.1 |
| 7/16 | 3,930 | 45.4 | 3,055 | 30.2 | 2,400 | 20.1 | 1,965 | 16.5 | 1,750 | 16.3 | 1,750 | 14.0 | 1,050 | 11.1 |
| 1/2 | 3,440 | 45.4 | 2,675 | 29.2 | 2,100 | 19.5 | 1,720 | 15.9 | 1,525 | 15.7 | 1,525 | 13.9 | 915 | 10.8 |
| 5/8 | 2,750 | 40.6 | 2,140 | 27.7 | 1,700 | 19.0 | 1,375 | 15.4 | 1,225 | 14.7 | 1,225 | 12.5 | 730 | 9.9 |
| 3/4 | 2,290 | 37.3 | 1,785 | 25.3 | 1,400 | 16.8 | 1,150 | 13.8 | 1,025 | 13.5 | 1,025 | 11.8 | 610 | 9.3 |
| 1 | 1,720 | 33.0 | 1,340 | 22.8 | 1,050 | 14.9 | 860 | 12.2 | 765 | 12.2 | 765 | 10.6 | 460 | 8.4 |

Slotting

| Hardness | <25 HRC | | 25-30 HRC | | 30-35 HRC | | 35-45 HRC | | 45-50 HRC | | < 40 HRC | | < 45 HRC | |
|---------------|---|-------------|---|-------------|--|-------------|--|-------------|-----------------|-------------|-----------------|-------------|---|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | 400 Stainless Steels Alloy Steels Tool Steels | | 300 Stainless Steels Hardened Steels Pre-hardened Steels | | PH Stainless Steels Hardened Steels | | Hardened Steels | | Titanium Alloys | | High Temp. Alloys Inconel Hastelloy | |
| Cutting Speed | 325-400 SFM | | 250-325 SFM | | 175-275 SFM | | 160-200 SFM | | 140-180 SFM | | 125-200 SFM | | 75-100 SFM | |
| Depth of Cut | Aa=1D | | | | | | Aa=0.75D | | Aa=0.75D | | Aa=0.75D | | Aa=0.25D | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/8 | 11,240 | 35.8 | 8,860 | 21.3 | 6,900 | 15.4 | 5,500 | 10.7 | 4,890 | 11.6 | 5,050 | 10.6 | 2,750 | 7.3 |
| 3/16 | 7,495 | 38.5 | 5,910 | 23.9 | 4,600 | 17.5 | 3,670 | 11.5 | 3,260 | 12.8 | 3,350 | 11.5 | 1,835 | 8.1 |
| 1/4 | 5,620 | 37.9 | 4,430 | 25.5 | 3,450 | 17.2 | 2,750 | 12.2 | 2,445 | 14.0 | 2,550 | 11.8 | 1,375 | 8.1 |
| 5/16 | 4,500 | 39.4 | 3,545 | 26.8 | 2,750 | 18.3 | 2,200 | 12.9 | 1,955 | 14.2 | 2,000 | 11.8 | 1,100 | 9.0 |
| 3/8 | 3,750 | 38.2 | 2,955 | 25.5 | 2,300 | 17.5 | 1,835 | 12.2 | 1,630 | 12.8 | 1,700 | 11.6 | 915 | 8.3 |
| 7/16 | 3,210 | 37.1 | 2,530 | 24.7 | 1,950 | 16.7 | 1,575 | 11.8 | 1,395 | 12.8 | 1,450 | 11.8 | 785 | 8.3 |
| 1/2 | 2,810 | 37.2 | 2,215 | 24.2 | 1,700 | 16.1 | 1,375 | 11.5 | 1,225 | 12.8 | 1,300 | 12.1 | 690 | 8.1 |
| 5/8 | 2,250 | 33.1 | 1,775 | 22.5 | 1,400 | 15.9 | 1,100 | 11.0 | 975 | 11.6 | 1,000 | 10.0 | 550 | 7.6 |
| 3/4 | 1,875 | 31.1 | 1,480 | 20.9 | 1,150 | 14.4 | 920 | 10.0 | 815 | 10.5 | 850 | 9.4 | 460 | 6.9 |
| 1 | 1,405 | 26.7 | 1,110 | 18.7 | 875 | 12.6 | 685 | 8.6 | 610 | 9.8 | 650 | 9.0 | 345 | 6.5 |






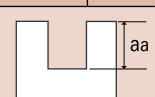
List VG446: 4 Flute - Reduced Neck

List VG464: 4 Flute - Extended Length

Side Milling

| Hardness | <25 HRC | | 25-30 HRC | | 30-35 HRC | | 35-45 HRC | | 45-50 HRC | | < 40 HRC | | < 45 HRC | |
|---------------|--|-------------|---|-------------|--|-------------|--|-------------|--------------------------|-------------|--------------------------|-------------|---|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | 400 Stainless Steels Alloy Steels Tool Steels | | 300 Stainless Steels Hardened Steels Pre-hardened Steels | | PH Stainless Steels Hardened Steels | | Hardened Steels | | Titanium Alloys | | High Temp. Alloys Inconel Hastelloy | |
| Cutting Speed | 400-500 SFM | | 300-400 SFM | | 200-350 SFM | | 200-250 SFM | | 175-225 SFM | | 150-250 SFM | | 100-135 SFM | |
| Depth of Cut | $Aa=1D$ $Ar=0.4D$  | | | | | | $Aa=0.75D$ $Ar=0.35D$ | | $Aa=0.75D$ $Ar=0.15D$ | | $Aa=0.75D$ $Ar=0.35D$ | | $Aa=0.75D$ $Ar=0.15D$ | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/4 | 6,875 | 46.8 | 5,350 | 31.1 | 4,200 | 20.3 | 3,440 | 16.7 | 3,050 | 16.8 | 3,050 | 13.9 | 1,835 | 11.2 |
| 3/8 | 4,585 | 47.1 | 3,565 | 30.5 | 2,800 | 20.6 | 2,290 | 16.9 | 2,040 | 16.3 | 2,040 | 14.6 | 1,220 | 11.1 |
| 1/2 | 3,440 | 45.4 | 2,675 | 29.2 | 2,100 | 19.5 | 1,720 | 15.9 | 1,525 | 15.7 | 1,525 | 13.9 | 915 | 10.8 |
| 5/8 | 2,750 | 40.6 | 2,140 | 27.7 | 1,700 | 19.0 | 1,375 | 15.4 | 1,225 | 14.7 | 1,225 | 12.5 | 730 | 9.9 |
| 3/4 | 2,290 | 37.3 | 1,785 | 25.3 | 1,400 | 16.8 | 1,150 | 13.8 | 1,025 | 13.5 | 1,025 | 11.8 | 610 | 9.3 |
| 1 | 1,720 | 33.0 | 1,340 | 22.8 | 1,050 | 14.9 | 860 | 12.2 | 765 | 12.2 | 765 | 10.6 | 460 | 8.4 |

Slotting


| Hardness | <25 HRC | | 25-30 HRC | | 30-35 HRC | | 35-45 HRC | | 45-50 HRC | | <40 HRC | | <45 HRC | |
|---------------|---|-------------|---|-------------|--|-------------|--|-------------|-----------------|-------------|-----------------|-------------|---|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | 400 Stainless Steels Alloy Steels Tool Steels | | 300 Stainless Steels Hardened Steels Pre-hardened Steels | | PH Stainless Steels Hardened Steels | | Hardened Steels | | Titanium Alloys | | High Temp. Alloys Inconel Hastelloy | |
| Cutting Speed | 325-400 SFM | | 250-325 SFM | | 175-275 SFM | | 160-200 SFM | | 140-180 SFM | | 125-200 SFM | | 75-100 SFM | |
| Depth of Cut | $Aa=0.6D$  | | | | | | $Aa=0.4D$ | | $Aa=0.25D$ | | $Aa=0.4D$ | | $Aa=0.15D$ | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/4 | 5,620 | 37.9 | 4,430 | 25.5 | 3,450 | 17.2 | 2,750 | 12.2 | 2,445 | 14.0 | 2,550 | 11.8 | 1,375 | 8.1 |
| 3/8 | 3,750 | 38.2 | 2,955 | 25.5 | 2,300 | 17.5 | 1,835 | 12.2 | 1,630 | 12.8 | 1,700 | 11.6 | 915 | 8.3 |
| 1/2 | 2,810 | 37.2 | 2,215 | 24.2 | 1,700 | 16.1 | 1,375 | 11.5 | 1,225 | 12.8 | 1,300 | 12.1 | 690 | 8.1 |
| 5/8 | 2,250 | 33.1 | 1,775 | 22.5 | 1,400 | 15.9 | 1,100 | 11.0 | 975 | 11.6 | 1,000 | 10.0 | 550 | 7.6 |
| 3/4 | 1,875 | 31.1 | 1,480 | 20.9 | 1,150 | 14.4 | 920 | 10.0 | 815 | 10.5 | 850 | 9.4 | 460 | 6.9 |
| 1 | 1,405 | 26.7 | 1,110 | 18.7 | 875 | 12.6 | 685 | 8.6 | 610 | 9.8 | 650 | 9.0 | 345 | 6.5 |



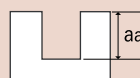


List VG441BN: 4 Flute - Ball Nose

Side Milling

| Hardness | <25 HRC | 25-30 HRC | 30-35 HRC | 35-45 HRC | 45-50 HRC | <40 HRC | <45 HRC | | | | | | | |
|---------------|--|---|--|--|-----------------|---------------------|---|------------------|-----------|-------------|-----------|-------------|-----------|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | 400 Stainless Steels Alloy Steels Tool Steels | 300 Stainless Steels Hardened Steels Pre-hardened Steels | PH Stainless Steels Hardened Steels | Hardened Steels | Titanium Alloys | High Temp. Alloys Inconel Hastelloy | | | | | | | |
| Cutting Speed | 400-500 SFM | 300-400 SFM | 200-350 SFM | 200-250 SFM | 175-225 SFM | 150-250 SFM | 100-135 SFM | | | | | | | |
| Depth of Cut | Aa=1.5D Ar=0.5D  | | | Aa=1.25D Ar=0.4D | | Aa=1.25D Ar=0.4D | | Aa=1D Ar=0.2D | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/8 | 13,750 | 44.0 | 10,695 | 25.7 | 8,400 | 18.6 | 6,875 | 15.2 | 6,110 | 14.5 | 6,110 | 12.9 | 3,665 | 9.5 |
| 3/16 | 9,170 | 46.8 | 7,130 | 28.8 | 5,600 | 20.6 | 4,585 | 16.9 | 4,075 | 16.3 | 4,075 | 13.7 | 2,445 | 10.9 |
| 1/4 | 6,875 | 46.8 | 5,350 | 31.1 | 4,200 | 20.3 | 3,440 | 16.7 | 3,050 | 16.8 | 3,050 | 13.9 | 1,835 | 11.2 |
| 5/16 | 5,500 | 48.1 | 4,210 | 31.8 | 3,350 | 21.4 | 2,750 | 17.6 | 2,450 | 17.8 | 2,450 | 15.1 | 1,465 | 11.7 |
| 3/8 | 4,585 | 47.1 | 3,565 | 30.5 | 2,800 | 20.6 | 2,290 | 16.9 | 2,040 | 16.3 | 2,040 | 14.6 | 1,220 | 11.1 |
| 7/16 | 3,930 | 45.4 | 3,055 | 30.2 | 2,400 | 20.1 | 1,965 | 16.5 | 1,750 | 16.3 | 1,750 | 14.0 | 1,050 | 11.1 |
| 1/2 | 3,440 | 45.4 | 2,675 | 29.2 | 2,100 | 19.5 | 1,720 | 15.9 | 1,525 | 15.7 | 1,525 | 13.9 | 915 | 10.8 |
| 5/8 | 2,750 | 40.6 | 2,140 | 27.7 | 1,700 | 19.0 | 1,375 | 15.4 | 1,225 | 14.7 | 1,225 | 12.5 | 730 | 9.9 |
| 3/4 | 2,290 | 37.3 | 1,785 | 25.3 | 1,400 | 16.8 | 1,150 | 13.8 | 1,025 | 13.5 | 1,025 | 11.8 | 610 | 9.3 |
| 1 | 1,720 | 33.0 | 1,340 | 22.8 | 1,050 | 14.9 | 860 | 12.2 | 765 | 12.2 | 765 | 10.6 | 460 | 8.4 |
| 1 1/4 | 1,375 | 26.4 | 1,070 | 18.2 | 850 | 12.1 | 690 | 9.8 | 610 | 9.7 | 610 | 8.3 | 365 | 6.7 |

Slotting

| Hardness | <25 HRC | 25-30 HRC | 30-35 HRC | 35-45 HRC | 45-50 HRC | <40 HRC | <45 HRC | | | | | | | |
|---------------|---|---|--|--|-----------------|-----------------|---|-------------|-----------|-------------|-----------|-------------|-----------|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | 400 Stainless Steels Alloy Steels Tool Steels | 300 Stainless Steels Hardened Steels Pre-hardened Steels | PH Stainless Steels Hardened Steels | Hardened Steels | Titanium Alloys | High Temp. Alloys Inconel Hastelloy | | | | | | | |
| Cutting Speed | 325-400 SFM | 250-325 SFM | 175-275 SFM | 160-200 SFM | 140-180 SFM | 125-200 SFM | 75-100 SFM | | | | | | | |
| Depth of Cut | Aa=1D  | | | Aa=0.75D | | Aa=0.5D | | Aa=0.2D | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/8 | 11,240 | 35.8 | 8,860 | 21.3 | 6,900 | 15.4 | 5,500 | 10.7 | 4,890 | 11.6 | 5,050 | 10.6 | 2,750 | 7.3 |
| 3/16 | 7,495 | 38.5 | 5,910 | 23.9 | 4,600 | 17.5 | 3,670 | 11.5 | 3,260 | 12.8 | 3,350 | 11.5 | 1,835 | 8.1 |
| 1/4 | 5,620 | 37.9 | 4,430 | 25.5 | 3,450 | 17.2 | 2,750 | 12.2 | 2,445 | 14.0 | 2,550 | 11.8 | 1,375 | 8.1 |
| 5/16 | 4,500 | 39.4 | 3,545 | 26.8 | 2,750 | 18.3 | 2,200 | 12.9 | 1,955 | 14.2 | 2,000 | 11.8 | 1,100 | 9.0 |
| 3/8 | 3,750 | 38.2 | 2,955 | 25.5 | 2,300 | 17.5 | 1,835 | 12.2 | 1,630 | 12.8 | 1,700 | 11.6 | 915 | 8.3 |
| 7/16 | 3,210 | 37.1 | 2,530 | 24.7 | 1,950 | 16.7 | 1,575 | 11.8 | 1,395 | 12.8 | 1,450 | 11.8 | 785 | 8.3 |
| 1/2 | 2,810 | 37.2 | 2,215 | 24.2 | 1,700 | 16.1 | 1,375 | 11.5 | 1,225 | 12.8 | 1,300 | 12.1 | 690 | 8.1 |
| 5/8 | 2,250 | 33.1 | 1,775 | 22.5 | 1,400 | 15.9 | 1,100 | 11.0 | 975 | 11.6 | 1,000 | 10.0 | 550 | 7.6 |
| 3/4 | 1,875 | 31.1 | 1,480 | 20.9 | 1,150 | 14.4 | 920 | 10.0 | 815 | 10.5 | 850 | 9.4 | 460 | 6.9 |
| 1 | 1,405 | 26.7 | 1,110 | 18.7 | 875 | 12.6 | 685 | 8.6 | 610 | 9.8 | 650 | 9.0 | 345 | 6.5 |
| 1 1/4 | 1,115 | 21.2 | 885 | 14.9 | 700 | 10.1 | 550 | 6.9 | 490 | 7.8 | 500 | 6.9 | 275 | 5.1 |






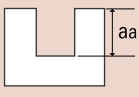
List VG541: 5 Flute

List VG534: 5 Flute - Corner Radius

Side Milling

| Hardness | <25 HRC | | 25-30 HRC | | 30-35 HRC | | 35-45 HRC | | 45-50 HRC | | <40 HRC | | <45 HRC | |
|---------------|---|-------------|---|-------------|--|-------------|--|-------------|---------------------|-------------|---------------------|-------------|---|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | 400 Stainless Steels Alloy Steels Tool Steels | | 300 Stainless Steels Hardened Steels Pre-hardened Steels | | PH Stainless Steels Hardened Steels | | Hardened Steels | | Titanium Alloys | | High Temp. Alloys Inconel Hastelloy | |
| Cutting Speed | 400-500 SFM | | 300-400 SFM | | 200-350 SFM | | 200-250 SFM | | 175-225 SFM | | 150-250 SFM | | 100-135 SFM | |
| Depth of Cut | Aa=1.25D Ar=0.5D  | | | | | | Aa=1.25D Ar=0.4D | | Aa=1.25D Ar=0.2D | | Aa=1.25D Ar=0.5D | | Aa=1D Ar=0.2D | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/8 | 13,750 | 55.0 | 10,695 | 32.2 | 8,400 | 23.2 | 6,875 | 19.0 | 6,110 | 18.2 | 6,110 | 16.1 | 3,665 | 11.8 |
| 3/16 | 9,170 | 58.5 | 7,130 | 36.1 | 5,600 | 25.8 | 4,585 | 21.1 | 4,075 | 20.4 | 4,075 | 17.2 | 2,445 | 13.6 |
| 1/4 | 6,875 | 58.4 | 5,350 | 38.9 | 4,200 | 25.4 | 3,440 | 20.8 | 3,050 | 21.1 | 3,050 | 17.4 | 1,835 | 14.1 |
| 5/16 | 5,500 | 60.2 | 4,210 | 39.7 | 3,350 | 26.8 | 2,750 | 22.0 | 2,450 | 22.2 | 2,450 | 18.9 | 1,465 | 14.7 |
| 3/8 | 4,585 | 58.8 | 3,565 | 38.1 | 2,800 | 25.8 | 2,290 | 21.1 | 2,040 | 20.4 | 2,040 | 18.3 | 1,220 | 13.9 |
| 7/16 | 3,930 | 56.8 | 3,055 | 37.8 | 2,400 | 25.1 | 1,965 | 20.6 | 1,750 | 20.4 | 1,750 | 17.5 | 1,050 | 13.8 |
| 1/2 | 3,440 | 56.8 | 2,675 | 36.5 | 2,100 | 24.3 | 1,720 | 19.9 | 1,525 | 19.6 | 1,525 | 17.4 | 915 | 13.4 |
| 5/8 | 2,750 | 50.7 | 2,140 | 34.6 | 1,700 | 23.8 | 1,375 | 19.3 | 1,225 | 18.4 | 1,225 | 15.6 | 730 | 12.4 |
| 3/4 | 2,290 | 46.7 | 1,785 | 31.6 | 1,400 | 21.0 | 1,150 | 17.3 | 1,025 | 16.8 | 1,025 | 14.8 | 610 | 11.6 |
| 1 | 1,720 | 41.3 | 1,340 | 28.5 | 1,050 | 18.7 | 860 | 15.3 | 765 | 15.3 | 765 | 13.2 | 460 | 10.5 |

Slotting

| Hardness | <25 HRC | | 25-30 HRC | | 30-35 HRC | | 35-45 HRC | | 45-50 HRC | | <40 HRC | | <45 HRC | |
|---------------|---|-------------|---|-------------|--|-------------|--|-------------|-----------------|-------------|-----------------|-------------|---|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | 400 Stainless Steels Alloy Steels Tool Steels | | 300 Stainless Steels Hardened Steels Pre-hardened Steels | | PH Stainless Steels Hardened Steels | | Hardened Steels | | Titanium Alloys | | High Temp. Alloys Inconel Hastelloy | |
| Cutting Speed | 325-400 SFM | | 250-325 SFM | | 175-275 SFM | | 160-200 SFM | | 140-180 SFM | | 125-200 SFM | | 75-100 SFM | |
| Depth of Cut | Aa=1D  | | | | | | Aa=0.75D | | Aa=0.5D | | Aa=0.5D | | Aa=0.2D | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/8 | 11,240 | 44.8 | 8,860 | 26.6 | 6,900 | 19.3 | 5,500 | 13.4 | 4,890 | 14.6 | 5,050 | 13.3 | 2,750 | 9.1 |
| 3/16 | 7,495 | 48.2 | 5,910 | 29.9 | 4,600 | 21.9 | 3,670 | 14.3 | 3,260 | 16.0 | 3,350 | 14.3 | 1,835 | 10.2 |
| 1/4 | 5,620 | 47.5 | 4,430 | 31.9 | 3,450 | 21.6 | 2,750 | 15.3 | 2,445 | 17.5 | 2,550 | 14.8 | 1,375 | 10.2 |
| 5/16 | 4,500 | 49.2 | 3,545 | 33.4 | 2,750 | 22.9 | 2,200 | 16.1 | 1,955 | 17.8 | 2,000 | 14.8 | 1,100 | 11.2 |
| 3/8 | 3,750 | 47.8 | 2,955 | 31.9 | 2,300 | 21.9 | 1,835 | 15.3 | 1,630 | 16.0 | 1,700 | 14.5 | 915 | 10.4 |
| 7/16 | 3,210 | 46.4 | 2,530 | 30.8 | 1,950 | 20.9 | 1,575 | 14.8 | 1,395 | 16.0 | 1,450 | 14.7 | 785 | 10.3 |
| 1/2 | 2,810 | 46.5 | 2,215 | 30.2 | 1,700 | 20.1 | 1,375 | 14.3 | 1,225 | 16.0 | 1,300 | 15.1 | 690 | 10.2 |
| 5/8 | 2,250 | 41.4 | 1,775 | 28.2 | 1,400 | 19.8 | 1,100 | 13.8 | 975 | 14.5 | 1,000 | 12.5 | 550 | 9.6 |
| 3/4 | 1,875 | 38.8 | 1,480 | 26.1 | 1,150 | 18.0 | 920 | 12.5 | 815 | 13.1 | 850 | 11.8 | 460 | 8.7 |
| 1 | 1,405 | 33.4 | 1,110 | 23.4 | 875 | 15.8 | 685 | 10.7 | 610 | 12.2 | 650 | 11.3 | 345 | 8.0 |





List HP421

Slotting (Fractional)

| Hardness | – | | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | | | | | | | | | | | |
|---------------|-----------|-------------|------------------------------|-------------|--|-------------|--|-------------|---|-------------|--------------------|-------------|--------------------|-------------|------|--|------------|--|-------|--|--------|--|-------|--|
| Work Material | Cast Iron | | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | Hardened Steels | | | | | | | | | | | |
| Cutting Speed | 360 SFM | | 330 SFM | | 260 SFM | | 220 SFM | | 180 SFM | | 120 SFM | | 80 SFM | | | | | | | | | | | |
| Depth of Cut | | | | | | | | | | | | | Dia | | aa | | Dia | | aa | | Dia | | aa | |
| | | | | | | | | | | | | | D<1/16 | | 0.1D | | D<1/16 | | 0.02D | | D<1/16 | | 0.01D | |
| | | | | | | | | | | | | | 1/16≤D≤1/8 | | 0.3D | | 1/16≤D≤1/8 | | 0.02D | | 1/8≤D | | 0.05D | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | |
| 1/16 | 21,990 | 7.9 | 20,150 | 7.2 | 15,880 | 7.2 | 13,440 | 5.1 | 10,990 | 3.5 | 7,330 | 2.0 | 4,890 | 1.3 | | | | | | | | | | |
| 3/32 | 14,660 | 9.6 | 13,440 | 8.8 | 10,590 | 7.3 | 8,960 | 5.1 | 7,330 | 3.7 | 4,890 | 2.3 | 3,260 | 1.3 | | | | | | | | | | |
| 1/8 | 10,990 | 12.4 | 10,080 | 11.5 | 7,940 | 8.0 | 6,720 | 5.4 | 5,500 | 4.0 | 3,660 | 2.5 | 2,440 | 1.5 | | | | | | | | | | |
| 5/32 | 8,790 | 13.6 | 8,060 | 12.4 | 6,350 | 9.2 | 5,370 | 6.1 | 4,230 | 4.2 | 2,930 | 2.6 | 1,870 | 1.4 | | | | | | | | | | |
| 3/16 | 7,190 | 15.4 | 6,540 | 14.0 | 5,325 | 10.5 | 4,455 | 6.0 | 3,785 | 4.5 | 2,360 | 2.6 | 1,590 | 1.4 | | | | | | | | | | |
| 1/4 | 5,600 | 16.0 | 5,090 | 14.5 | 4,125 | 11.1 | 3,375 | 6.0 | 2,870 | 4.7 | 1,775 | 2.6 | 1,205 | 1.2 | | | | | | | | | | |
| 5/16 | 4,395 | 15.3 | 4,000 | 13.9 | 3,270 | 11.1 | 2,660 | 5.9 | 2,295 | 4.7 | 1,390 | 2.4 | 960 | 1.2 | | | | | | | | | | |
| 3/8 | 3,695 | 14.7 | 3,360 | 13.3 | 2,735 | 11.0 | 2,225 | 5.9 | 1,910 | 4.5 | 1,200 | 2.4 | 800 | 1.2 | | | | | | | | | | |
| 7/16 | 3,160 | 14.5 | 2,870 | 13.2 | 2,345 | 10.9 | 1,895 | 5.9 | 1,630 | 4.4 | 1,035 | 2.3 | 690 | 1.0 | | | | | | | | | | |
| 1/2 | 2,760 | 14.5 | 2,510 | 13.2 | 2,030 | 10.6 | 1,655 | 5.6 | 1,415 | 4.4 | 900 | 2.1 | 600 | 0.9 | | | | | | | | | | |
| 5/8 | 2,195 | 12.6 | 1,995 | 12.3 | 1,625 | 9.5 | 1,330 | 4.7 | 1,150 | 4.0 | 720 | 1.7 | 470 | 0.7 | | | | | | | | | | |
| 3/4 | 1,760 | 11.1 | 1,605 | 10.0 | 1,305 | 7.6 | 1,095 | 3.8 | 935 | 3.2 | 580 | 1.4 | 410 | 0.6 | | | | | | | | | | |
| 1 | 1,360 | 8.5 | 1,240 | 7.7 | 1,020 | 6.0 | 840 | 3.0 | 720 | 2.6 | 440 | 0.9 | 300 | 0.5 | | | | | | | | | | |

For side milling, increase feeds 20% to 50%.

Slotting (Metric)

| Hardness | – | | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | | | | | | | | | | | |
|---------------|-----------|-------------|------------------------------|-------------|--|-------------|--|-------------|---|-------------|--------------------|-------------|--------------------|-------------|------|--|-------|--|-------|--|-----|--|-------|--|
| Work Material | Cast Iron | | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | Hardened Steels | | | | | | | | | | | |
| Cutting Speed | 360 SFM | | 330 SFM | | 260 SFM | | 220 SFM | | 180 SFM | | 120 SFM | | 80 SFM | | | | | | | | | | | |
| Depth of Cut | | | | | | | | | | | | | Dia | | aa | | Dia | | aa | | Dia | | aa | |
| | | | | | | | | | | | | | D<1 | | 0.1D | | D<1 | | 0.02D | | D<1 | | 0.01D | |
| | | | | | | | | | | | | | 1≤D≤3 | | 0.3D | | 1≤D≤3 | | 0.02D | | 3≤D | | 0.05D | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | |
| 1 | 25,000 | 6.5 | 25,000 | 6.6 | 25,000 | 8.4 | 21,330 | 6.0 | 17,450 | 4.1 | 11,634 | 2.0 | 7,756 | 1.5 | | | | | | | | | | |
| 2 | 17,424 | 8.4 | 15,840 | 7.6 | 12,096 | 7.0 | 10,660 | 5.3 | 9,144 | 4.0 | 5,688 | 2.3 | 3,960 | 1.4 | | | | | | | | | | |
| 3 | 11,750 | 12.5 | 10,656 | 11.4 | 8,400 | 7.8 | 7,110 | 5.2 | 5,817 | 3.9 | 3,960 | 2.6 | 2,585 | 1.5 | | | | | | | | | | |
| 4 | 8,730 | 13.6 | 8,000 | 12.6 | 6,300 | 9.4 | 5,330 | 6.1 | 4,363 | 4.4 | 2,908 | 2.6 | 1,939 | 1.5 | | | | | | | | | | |
| 5 | 6,980 | 16.4 | 6,400 | 15.0 | 5,040 | 10.9 | 4,270 | 6.1 | 3,490 | 4.5 | 2,327 | 2.7 | 1,551 | 1.4 | | | | | | | | | | |
| 6 | 5,820 | 16.0 | 5,330 | 14.6 | 4,200 | 10.8 | 3,560 | 6.2 | 2,908 | 4.5 | 1,939 | 2.8 | 1,293 | 1.2 | | | | | | | | | | |
| 8 | 4,360 | 15.3 | 4,000 | 14.1 | 3,150 | 10.8 | 2,670 | 5.9 | 2,181 | 4.5 | 1,454 | 2.5 | 969 | 1.2 | | | | | | | | | | |
| 10 | 3,490 | 14.5 | 3,200 | 13.3 | 2,520 | 10.7 | 2,130 | 6.0 | 1,745 | 4.3 | 1,163 | 2.4 | 776 | 1.2 | | | | | | | | | | |
| 12 | 2,910 | 14.5 | 2,670 | 13.3 | 2,100 | 10.6 | 1,780 | 6.0 | 1,454 | 4.3 | 969 | 2.2 | 646 | 1.0 | | | | | | | | | | |
| 14 | 2,490 | 14.4 | 2,290 | 13.2 | 1,800 | 10.2 | 1,520 | 5.2 | 1,246 | 4.4 | 831 | 2.0 | 554 | 0.9 | | | | | | | | | | |
| 16 | 2,180 | 12.5 | 2,000 | 12.4 | 1,580 | 9.2 | 1,330 | 4.7 | 1,091 | 3.8 | 727 | 1.7 | 485 | 0.7 | | | | | | | | | | |
| 18 | 1,940 | 12.2 | 1,780 | 11.2 | 1,400 | 8.3 | 1,190 | 4.2 | 969 | 3.4 | 646 | 1.4 | 431 | 0.7 | | | | | | | | | | |
| 20 | 1,750 | 10.9 | 1,600 | 10.0 | 1,260 | 7.3 | 1,070 | 3.7 | 873 | 3.0 | 582 | 1.4 | 388 | 0.6 | | | | | | | | | | |
| 22 | 1,590 | 9.9 | 1,460 | 9.1 | 1,150 | 6.8 | 970 | 3.3 | 793 | 2.8 | 529 | 1.2 | 353 | 0.5 | | | | | | | | | | |
| 25 | 1,400 | 8.7 | 1,280 | 7.9 | 1,010 | 6.0 | 850 | 3.1 | 698 | 2.5 | 465 | 1.0 | 310 | 0.5 | | | | | | | | | | |

For side milling, increase feeds 20% to 50%.


For High Speed milling parameters, see pg 1211-1212.





List HP441

Side Milling (Fractional)

| Hardness | – | | <20 HRC | | <30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | | | | | | | | | | |
|---------------|---|-------------|------------------------------|-------------|--|-------------|--|-------------|--|-------------|-----------------|-------------|-----------------|-------------|-------|---------|------|-------|---------|------|-------|-------------------|--|
| Work Material | Cast Iron | | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | Hardened Steels | | | | | | | | | | |
| Cutting Speed | 390 SFM | | 330 SFM | | 270 SFM | | 220 SFM | | 190 SFM | | 120 SFM | | 80 SFM | | | | | | | | | | |
| Depth of Cut | <table border="1" style="display: inline-table; margin-right: 20px;"> <thead> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D ≤ 1/8</td> <td>1.5D</td> <td>0.05D</td> </tr> <tr> <td>1/8 < D</td> <td>1.5D</td> <td>0.10D</td> </tr> </tbody> </table>  | | | | | | | | | | | | Dia | aa | ar | D ≤ 1/8 | 1.5D | 0.05D | 1/8 < D | 1.5D | 0.10D | aa=1D ar=0.02D | |
| | | | | | | | | | | | | | Dia | aa | ar | | | | | | | | |
| | | | | | | | | | | | | | D ≤ 1/8 | 1.5D | 0.05D | | | | | | | | |
| 1/8 < D | 1.5D | 0.10D | | | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | |
| 1/16 | 23,820 | 17.6 | 20,155 | 13.9 | 15,670 | 11.2 | 13,435 | 5.8 | 11,605 | 4.9 | 7,330 | 2.8 | 5,400 | 1.6 | | | | | | | | | |
| 3/32 | 16,305 | 21.5 | 13,720 | 18.1 | 11,550 | 14.5 | 10,075 | 8.3 | 8,735 | 7.6 | 4,885 | 3.4 | 3,260 | 2.2 | | | | | | | | | |
| 1/8 | 12,060 | 28.4 | 10,205 | 24.0 | 8,245 | 16.0 | 7,075 | 10.75 | 9,335 | 8.3 | 3,665 | 3.3 | 2,445 | 2.3 | | | | | | | | | |
| 5/32 | 9,630 | 29.9 | 8,060 | 25.0 | 6,720 | 17.9 | 5,170 | 17.9 | 4,475 | 17.9 | 2,930 | 3.6 | 1,955 | 2.4 | | | | | | | | | |
| 3/16 | 8,075 | 33.7 | 6,740 | 28.3 | 5,720 | 22.0 | 4,455 | 22.0 | 3,935 | 22.0 | 2,360 | 3.5 | 1,565 | 2.0 | | | | | | | | | |
| 1/4 | 5,955 | 29.0 | 5,090 | 28.9 | 4,235 | 20.0 | 3,375 | 20.0 | 3,030 | 20.0 | 1,775 | 3.3 | 1,205 | 1.9 | | | | | | | | | |
| 5/16 | 4,820 | 33.6 | 4,000 | 27.8 | 3,330 | 19.8 | 2,660 | 19.8 | 2,360 | 19.8 | 1,390 | 3.2 | 960 | 1.7 | | | | | | | | | |
| 3/8 | 4,005 | 33.6 | 3,360 | 27.8 | 2,795 | 19.8 | 2,225 | 19.8 | 1,970 | 19.8 | 1,200 | 3.8 | 800 | 1.7 | | | | | | | | | |
| 7/16 | 3,440 | 33.6 | 2,870 | 27.8 | 2,405 | 19.8 | 1,895 | 19.8 | 1,690 | 19.8 | 1,035 | 3.4 | 690 | 1.5 | | | | | | | | | |
| 1/2 | 3,010 | 32.7 | 2,510 | 27.5 | 2,090 | 19.7 | 1,655 | 19.7 | 1,475 | 19.7 | 900 | 2.7 | 600 | 1.3 | | | | | | | | | |
| 5/8 | 2,355 | 31.4 | 1,995 | 26.1 | 1,630 | 19.6 | 1,325 | 19.6 | 1,200 | 19.6 | 720 | 2.3 | 470 | 0.9 | | | | | | | | | |
| 3/4 | 1,920 | 29.7 | 1,605 | 24.9 | 1,350 | 15.7 | 1,095 | 15.7 | 975 | 15.7 | 580 | 1.7 | 405 | 1.0 | | | | | | | | | |
| 1 | 1,485 | 23.3 | 1,240 | 19.5 | 1,050 | 14.0 | 840 | 14.0 | 750 | 14.0 | 440 | 1.4 | 300 | 0.7 | | | | | | | | | |

continued on next page





List HP441 (Continued)

Side Milling (Metric)

| Hardness | – | | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | | | | | | | | | | | | |
|---------------|--|----------------|------------------------------|----------------|--|----------------|--|----------------|---|----------------|--------------------|----------------|--------------------|----------------|----|-----|------|-------|-----|------|-------|--|--|-------------------------|--|
| Work Material | Cast Iron | | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | Hardened Steels | | | | | | | | | | | | |
| Cutting Speed | 390 SFM | | 330 SFM | | 270 SFM | | 220 SFM | | 190 SFM | | 120 SFM | | 80 SFM | | | | | | | | | | | | |
| Depth of Cut | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D≤3</td> <td>1.5D</td> <td>0.05D</td> </tr> <tr> <td>3<D</td> <td>1.5D</td> <td>0.10D</td> </tr> </tbody> </table> | | | | | | | | | | | | Dia | aa | ar | D≤3 | 1.5D | 0.05D | 3<D | 1.5D | 0.10D | | | $a_a=1D$ $a_r=0.02D$ | |
| | Dia | aa | ar | | | | | | | | | | | | | | | | | | | | | | |
| | D≤3 | 1.5D | 0.05D | | | | | | | | | | | | | | | | | | | | | | |
| 3<D | 1.5D | 0.10D | | | | | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | | |
| 1 | 25,000 | 13.6 | 25,000 | 13.7 | 25,000 | 14.4 | 21,330 | 7.6 | 18,420 | 6.6 | 11,635 | 3.9 | 7,755 | 2.4 | | | | | | | | | | | |
| 2 | 18,905 | 17.6 | 15,995 | 14.9 | 13,090 | 12.8 | 10,188 | 6.1 | 9,240 | 5.6 | 5,772 | 3.4 | 4,050 | 2.3 | | | | | | | | | | | |
| 3 | 12,605 | 29.7 | 10,665 | 25.1 | 8,725 | 17.0 | 7,110 | 5.9 | 6,140 | 5.8 | 3,816 | 3.5 | 2,585 | 2.4 | | | | | | | | | | | |
| 4 | 9,450 | 29.4 | 8,000 | 24.8 | 6,545 | 14.5 | 5,330 | 6.5 | 4,605 | 5.5 | 2,910 | 3.6 | 1,940 | 2.3 | | | | | | | | | | | |
| 5 | 7,560 | 34.7 | 6,400 | 30.2 | 5,235 | 20.2 | 4,265 | 6.8 | 3,685 | 5.9 | 2,325 | 3.7 | 1,550 | 2.1 | | | | | | | | | | | |
| 6 | 6,300 | 30.8 | 5,330 | 30.2 | 4,365 | 20.6 | 3,555 | 7.2 | 3,070 | 6.2 | 1,940 | 3.6 | 1,295 | 2.0 | | | | | | | | | | | |
| 8 | 4,725 | 32.9 | 4,000 | 27.8 | 3,270 | 19.4 | 2,665 | 6.9 | 2,300 | 6.0 | 1,455 | 3.4 | 970 | 1.7 | | | | | | | | | | | |
| 10 | 3,780 | 34.5 | 3,200 | 28.8 | 2,620 | 20.2 | 2,135 | 7.2 | 1,840 | 6.2 | 1,165 | 4.1 | 775 | 1.7 | | | | | | | | | | | |
| 12 | 3,150 | 34.3 | 2,665 | 29.3 | 2,180 | 20.5 | 1,775 | 7.4 | 1,535 | 6.2 | 970 | 2.9 | 645 | 1.4 | | | | | | | | | | | |
| 14 | 2,700 | 31.2 | 2,285 | 27.2 | 1,870 | 19.7 | 1,525 | 7.0 | 1,315 | 5.9 | 830 | 2.4 | 555 | 1.2 | | | | | | | | | | | |
| 16 | 2,365 | 31.5 | 2,000 | 26.1 | 1,635 | 19.6 | 1,335 | 6.2 | 1,150 | 5.2 | 725 | 2.3 | 485 | 1.0 | | | | | | | | | | | |
| 18 | 2,100 | 31.0 | 1,775 | 26.1 | 1,455 | 19.3 | 1,185 | 5.4 | 1,025 | 4.8 | 645 | 2.0 | 430 | 1.0 | | | | | | | | | | | |
| 20 | 1,890 | 29.3 | 1,600 | 24.8 | 1,310 | 15.3 | 1,065 | 4.9 | 920 | 4.3 | 580 | 1.7 | 390 | 0.9 | | | | | | | | | | | |
| 22 | 1,720 | 27.1 | 1,455 | 23.0 | 1,190 | 16.0 | 970 | 4.4 | 835 | 3.9 | 530 | 1.5 | 355 | 0.8 | | | | | | | | | | | |
| 25 | 1,510 | 23.7 | 1,280 | 20.2 | 1,045 | 13.9 | 855 | 3.9 | 735 | 3.4 | 465 | 1.5 | 310 | 0.7 | | | | | | | | | | | |


For High Speed see milling parameters, pg 1211-1212.

continued on next page



List HP421, HP441 (Continued)

High Speed Light Milling (Fractional)

| Hardness | <20 HRC | 20-30 HRC | 30-38 HRC | 38-45 HRC | 45-55 HRC | | | | | | | | | | | | | | | | | | | | | | | |
|---------------|--|---|---|--|-----------------|-------------|-----------|-------------|-----------|-------------|------|-------|-------|------|-------|---|--|--|--|-----|----|----|--------|----|-------|--------|----|-------|
| Work Material | Mild Steels Carbon Steels | Alloy Steels Tool Steels Ti Alloys (Annealed) | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | Hardened Steels | | | | | | | | | | | | | | | | | | | | | | | |
| Cutting Speed | 1,310 SFM | 1,150 SFM | 820 SFM | 490 SFM | 260 SFM | | | | | | | | | | | | | | | | | | | | | | | |
| Depth of Cut | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D<5/16</td> <td>1.5D</td> <td>0.01D</td> </tr> <tr> <td>5/16≤D<5/8</td> <td>1.5D</td> <td>0.02D</td> </tr> <tr> <td>5/8≤D</td> <td>1.5D</td> <td>0.05D</td> </tr> </tbody> </table> | | | Dia | aa | ar | D<5/16 | 1.5D | 0.01D | 5/16≤D<5/8 | 1.5D | 0.02D | 5/8≤D | 1.5D | 0.05D |  | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D≤5/16</td> <td>1D</td> <td>0.01D</td> </tr> <tr> <td>5/16<D</td> <td>1D</td> <td>0.02D</td> </tr> </tbody> </table> | | | Dia | aa | ar | D≤5/16 | 1D | 0.01D | 5/16<D | 1D | 0.02D |
| | Dia | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | | |
| D<5/16 | 1.5D | 0.01D | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5/16≤D<5/8 | 1.5D | 0.02D | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5/8≤D | 1.5D | 0.05D | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dia | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D≤5/16 | 1D | 0.01D | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5/16<D | 1D | 0.02D | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | | | | | | | | | |
| 1/16 | 25,000 | 14.7 | 25,000 | 18.8 | 25,000 | 18.4 | 25,000 | 16.6 | 15,900 | 11.9 | | | | | | | | | | | | | | | | | | |
| 3/32 | 25,000 | 27.1 | 25,000 | 31.2 | 25,000 | 32.6 | 20,800 | 24.4 | 11,050 | 14.2 | | | | | | | | | | | | | | | | | | |
| 1/8 | 25,000 | 49.3 | 25,000 | 49.6 | 25,000 | 49 | 15,200 | 26 | 8,050 | 14.6 | | | | | | | | | | | | | | | | | | |
| 5/32 | 25,000 | 64.7 | 25,000 | 64.4 | 20,100 | 52.8 | 12,000 | 26.8 | 6,400 | 16.1 | | | | | | | | | | | | | | | | | | |
| 3/16 | 25,000 | 104.5 | 23,550 | 81.1 | 16,850 | 54.3 | 10,100 | 28.7 | 5,350 | 17.3 | | | | | | | | | | | | | | | | | | |
| 1/4 | 20,000 | 96.5 | 17,600 | 84.3 | 12,450 | 58.7 | 7,600 | 31.1 | 4,000 | 16.5 | | | | | | | | | | | | | | | | | | |
| 5/16 | 15,650 | 96.5 | 13,650 | 82.7 | 9,950 | 57.1 | 6,000 | 31.1 | 3,150 | 16.5 | | | | | | | | | | | | | | | | | | |
| 3/8 | 13,200 | 97.6 | 11,550 | 82.7 | 8,400 | 57.1 | 5,000 | 31.1 | 2,650 | 16.5 | | | | | | | | | | | | | | | | | | |
| 7/16 | 11,350 | 97.2 | 10,000 | 82.7 | 7,150 | 57.1 | 4,300 | 31.1 | 2,250 | 16.1 | | | | | | | | | | | | | | | | | | |
| 1/2 | 9,950 | 94.9 | 8,750 | 81.1 | 6,250 | 55.5 | 3,750 | 30.3 | 1,950 | 15.7 | | | | | | | | | | | | | | | | | | |
| 5/8 | 8,000 | 88.6 | 7,000 | 76.8 | 4,950 | 53.1 | 2,950 | 28 | 1,550 | 14.6 | | | | | | | | | | | | | | | | | | |
| 3/4 | 6,650 | 85.4 | 5,800 | 73.6 | 4,150 | 51.2 | 2,450 | 26.8 | 1,300 | 14.2 | | | | | | | | | | | | | | | | | | |
| 1 | 4,950 | 65.7 | 4,400 | 58.3 | 3,100 | 40.6 | 1,850 | 21.7 | 950 | 10.6 | | | | | | | | | | | | | | | | | | |

Reduce feeds 50% for Series HP421 High Speed Light Milling.

continued on next page →



List HP421, HP441 (Continued)

High Speed Light Milling (Metric)

| Hardness | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | | | | | | | | | | | | | | | | | | | | |
|---------------|--|-------------|---|-------------|---|-------------|--|-------------|-----------------|-------------|------|-------|------|------|-------|--|--|--|--|--|--|-----|----|----|-----|----|-------|-----|----|-------|
| Work Material | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | | | | | | | | | | | | | | | | | | | | |
| Cutting Speed | 1,310 SFM | | 1,150 SFM | | 820 SFM | | 490 SFM | | 260 SFM | | | | | | | | | | | | | | | | | | | | | |
| Depth of Cut | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D<8</td> <td>1.5D</td> <td>0.01D</td> </tr> <tr> <td>8≤D<16</td> <td>1.5D</td> <td>0.02D</td> </tr> <tr> <td>16≤D</td> <td>1.5D</td> <td>0.05D</td> </tr> </tbody> </table> | | | Dia | aa | ar | D<8 | 1.5D | 0.01D | 8≤D<16 | 1.5D | 0.02D | 16≤D | 1.5D | 0.05D | | | | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D≤8</td> <td>1D</td> <td>0.01D</td> </tr> <tr> <td>8<D</td> <td>1D</td> <td>0.02D</td> </tr> </tbody> </table> | | | Dia | aa | ar | D≤8 | 1D | 0.01D | 8<D | 1D | 0.02D |
| | Dia | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D<8 | 1.5D | 0.01D | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8≤D<16 | 1.5D | 0.02D | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16≤D | 1.5D | 0.05D | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dia | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D≤8 | 1D | 0.01D | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8<D | 1D | 0.02D | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | | | | | | | | | | | |
| 1 | 25,000 | 10.9 | 25,000 | 12.4 | 25,000 | 12.4 | 25,000 | 11.2 | 25,000 | 12.8 | | | | | | | | | | | | | | | | | | | | |
| 2 | 25,000 | 19.2 | 25,000 | 24.7 | 25,000 | 27.2 | 23,850 | 23.6 | 12,700 | 14.2 | | | | | | | | | | | | | | | | | | | | |
| 3 | 25,000 | 46.8 | 25,000 | 47.2 | 25,000 | 46.4 | 15,900 | 26.0 | 8,450 | 14.2 | | | | | | | | | | | | | | | | | | | | |
| 4 | 25,000 | 65.6 | 25,000 | 65.4 | 19,900 | 53.1 | 11,900 | 27.2 | 6,350 | 16.5 | | | | | | | | | | | | | | | | | | | | |
| 5 | 25,000 | 119.8 | 22,250 | 83.9 | 15,900 | 55.1 | 9,550 | 29.5 | 5,050 | 17.7 | | | | | | | | | | | | | | | | | | | | |
| 6 | 21,000 | 96.5 | 18,500 | 84.6 | 13,000 | 59.1 | 7,950 | 31.3 | 4,200 | 16.5 | | | | | | | | | | | | | | | | | | | | |
| 8 | 15,500 | 96.5 | 13,500 | 82.7 | 9,900 | 57.1 | 5,950 | 31.3 | 3,150 | 16.7 | | | | | | | | | | | | | | | | | | | | |
| 10 | 12,500 | 98.4 | 11,000 | 82.7 | 7,950 | 57.1 | 4,750 | 31.5 | 2,500 | 16.5 | | | | | | | | | | | | | | | | | | | | |
| 12 | 10,500 | 96.5 | 9,250 | 82.7 | 6,600 | 57.1 | 3,950 | 31.1 | 2,100 | 16.1 | | | | | | | | | | | | | | | | | | | | |
| 14 | 9,050 | 92.5 | 7,950 | 78.7 | 5,650 | 53.1 | 3,400 | 29.1 | 1,800 | 15.4 | | | | | | | | | | | | | | | | | | | | |
| 16 | 7,950 | 88.6 | 6,950 | 76.8 | 4,950 | 53.1 | 2,950 | 28.1 | 1,550 | 14.8 | | | | | | | | | | | | | | | | | | | | |
| 18 | 7,050 | 88.6 | 6,150 | 74.8 | 4,400 | 51.2 | 2,650 | 27.8 | 1,400 | 14.8 | | | | | | | | | | | | | | | | | | | | |
| 20 | 6,350 | 82.7 | 5,550 | 72.8 | 3,950 | 51.2 | 2,350 | 26.2 | 1,250 | 14.0 | | | | | | | | | | | | | | | | | | | | |
| 22 | 5,750 | 76.8 | 5,050 | 66.9 | 3,600 | 47.2 | 2,150 | 25.0 | 1,150 | 12.8 | | | | | | | | | | | | | | | | | | | | |
| 24 | 5,300 | 70.9 | 4,600 | 61.0 | 3,300 | 43.3 | 1,950 | 22.6 | 1,050 | 11.6 | | | | | | | | | | | | | | | | | | | | |
| 25 | 5,050 | 66.9 | 4,450 | 59.1 | 3,150 | 41.3 | 1,900 | 22.0 | 1,000 | 11.0 | | | | | | | | | | | | | | | | | | | | |


Reduce feeds 50% for Series HP421 High Speed Light Milling.






List HP460

Side Milling (Fractional)

| Hardness | – | | <20 HRC | | 20-35 HRC | | 35-45 HRC | | 45-55 HRC | |
|---------------|--|-------------|-------------------------------------|-------------|---|--------------------------|---|-------------|-----------------|-------------|
| Work Material | Aluminum | | Medium Carbon Steels Mild Steels | | Pre-hardened Steels Stainless Steels Die & Alloy Steels | | Pre-hardened Steels Stainless Steels Die & Alloy Steels | | Hardened Steels | |
| Cutting Speed | 550 SFM | | 180 SFM | | 120 SFM | | 78 SFM | | 60 SFM | |
| Depth of Cut | $a_a=1.5D$ $a_r=0.1D$  | | | | | $a_a=1.5D$ $a_r=0.1D$ | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/4 | 8,280 | 26.0 | 2,880 | 12.7 | 1,920 | 8.0 | 1,191 | 3.4 | 960 | 1.4 |
| 5/16 | 6,718 | 28.0 | 2,160 | 12.7 | 1,440 | 8.0 | 960 | 3.6 | 720 | 1.4 |
| 3/8 | 5,598 | 31.4 | 1,832 | 17.6 | 1,221 | 8.6 | 768 | 3.6 | 611 | 1.5 |
| 1/2 | 4,200 | 28.3 | 1,440 | 17.0 | 960 | 8.5 | 595 | 3.4 | 480 | 1.4 |
| 5/8 | 3,359 | 30.5 | 1,080 | 18.8 | 720 | 8.5 | 480 | 3.6 | 360 | 1.4 |
| 3/4 | 2,799 | 31.4 | 916 | 20.5 | 611 | 10.1 | 384 | 3.6 | 305 | 1.5 |
| 1 | 2,040 | 28.3 | 696 | 16.6 | 456 | 8.5 | 300 | 3.6 | 228 | 1.4 |

Side Milling (Metric)

| Hardness | – | | <20 HRC | | 20-35 HRC | | 35-45 HRC | | 45-55 HRC | |
|---------------|--|-------------|-------------------------------------|-------------|---|--------------------------|---|-------------|-----------------|-------------|
| Work Material | Aluminum | | Medium Carbon Steels Mild Steels | | Pre-hardened Steels Stainless Steels Die & Alloy Steels | | Pre-hardened Steels Stainless Steels Die & Alloy Steels | | Hardened Steels | |
| Cutting Speed | 550 SFM | | 180 SFM | | 120 SFM | | 78 SFM | | 60 SFM | |
| Depth of Cut | $a_a=1.5D$ $a_r=0.1D$  | | | | | $a_a=1.5D$ $a_r=0.1D$ | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 3 | 17,770 | 12.8 | 5,760 | 6.1 | 3,840 | 4.0 | 2,640 | 1.8 | 1,920 | 0.7 |
| 4 | 13,330 | 17.5 | 4,320 | 8.5 | 2,880 | 5.7 | 1,920 | 2.4 | 1,440 | 0.9 |
| 5 | 10,660 | 20.8 | 3,480 | 10.4 | 2,400 | 7.3 | 1,560 | 3.9 | 1,200 | 1.2 |
| 6 | 8,890 | 26.0 | 2,880 | 12.8 | 1,920 | 8.0 | 1,272 | 3.5 | 960 | 1.4 |
| 8 | 6,670 | 26.0 | 2,160 | 12.8 | 1,440 | 8.0 | 960 | 3.5 | 720 | 1.4 |
| 10 | 5,330 | 28.3 | 1,680 | 16.1 | 1,140 | 8.0 | 768 | 3.5 | 576 | 1.4 |
| 12 | 4,440 | 28.3 | 1,440 | 17.0 | 960 | 8.5 | 636 | 3.5 | 480 | 1.4 |
| 16 | 3,330 | 28.3 | 1,080 | 18.9 | 720 | 8.5 | 480 | 3.5 | 360 | 1.4 |
| 20 | 2,670 | 28.3 | 864 | 19.4 | 576 | 9.4 | 384 | 3.5 | 288 | 1.4 |
| 25 | 2,040 | 28.3 | 696 | 16.5 | 456 | 8.5 | 300 | 3.5 | 228 | 1.4 |

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List HP460: (continued)

Slotting (Fractional)

| Hardness | <20 HRC | | 20-35 HRC | | 35-45 HRC | | 45-55 HRC | | | | | | | |
|---------------|--|-------------|---|-------------|---|-------------|-----------------|-------------|--|--|---------|--|--|--|
| Work Material | Medium Carbon Steels Mild Steels | | Pre-hardened Steels Stainless Steels Die & Alloy Steels | | Pre-hardened Steels Stainless Steels Die & Alloy Steels | | Hardened Steels | | | | | | | |
| Cutting Speed | 150 SFM | | 102 SFM | | 66 SFM | | 52 SFM | | | | | | | |
| Depth of Cut | <table border="1"> <tr> <th>Dia</th> <th>aa</th> </tr> <tr> <td>D<1/2</td> <td>1.0D</td> </tr> <tr> <td>1/2≤D</td> <td>0.5D</td> </tr> </table> | | Dia | aa | D<1/2 | 1.0D | 1/2≤D | 0.5D | | | aa=0.5D | | | |
| | Dia | aa | | | | | | | | | | | | |
| D<1/2 | 1.0D | | | | | | | | | | | | | |
| 1/2≤D | 0.5D | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | |
| 1/4 | 2,290 | 8.9 | 1,632 | 5.6 | 1,008 | 2.2 | 816 | 1.0 | | | | | | |
| 5/16 | 1,836 | 9.5 | 1,224 | 5.6 | 816 | 2.4 | 612 | 1.0 | | | | | | |
| 3/8 | 1,527 | 11.7 | 1,038 | 6.0 | 648 | 2.4 | 529 | 1.1 | | | | | | |
| 1/2 | 1,145 | 11.0 | 816 | 6.1 | 504 | 2.2 | 408 | 1.0 | | | | | | |
| 5/8 | 912 | 12.7 | 612 | 6.1 | 408 | 2.4 | 312 | 1.0 | | | | | | |
| 3/4 | 744 | 13.2 | 492 | 6.6 | 324 | 2.4 | 265 | 1.1 | | | | | | |
| 1 | 600 | 11.3 | 384 | 6.1 | 252 | 2.4 | 192 | 1.0 | | | | | | |

Slotting (Metric)


| Hardness | <20 HRC | | 20-35 HRC | | 35-45 HRC | | 45-55 HRC | | | | | | | |
|---------------|--|-------------|---|-------------|---|-------------|-----------------|-------------|--|--|---------|--|--|--|
| Work Material | Medium Carbon Steels Mild Steels | | Pre-hardened Steels Stainless Steels Die & Alloy Steels | | Pre-hardened Steels Stainless Steels Die & Alloy Steels | | Hardened Steels | | | | | | | |
| Cutting Speed | 150 SFM | | 102 SFM | | 66 SFM | | 52 SFM | | | | | | | |
| Depth of Cut | <table border="1"> <tr> <th>Dia</th> <th>aa</th> </tr> <tr> <td>D<12</td> <td>1.0D</td> </tr> <tr> <td>12≤D</td> <td>0.5D</td> </tr> </table> | | Dia | aa | D<12 | 1.0D | 12≤D | 0.5D | | | aa=0.5D | | | |
| | Dia | aa | | | | | | | | | | | | |
| D<12 | 1.0D | | | | | | | | | | | | | |
| 12≤D | 0.5D | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | |
| 3 | 4,920 | 4.7 | 3,296 | 2.6 | 2,133 | 1.1 | 1,680 | 0.5 | | | | | | |
| 4 | 3,720 | 6.1 | 2,472 | 3.4 | 1,680 | 1.7 | 1,320 | 0.6 | | | | | | |
| 5 | 3,000 | 8.0 | 1,978 | 4.3 | 1,320 | 2.0 | 1,008 | 0.7 | | | | | | |
| 6 | 2,448 | 9.4 | 1,632 | 5.7 | 1,080 | 2.4 | 816 | 0.9 | | | | | | |
| 8 | 1,836 | 9.4 | 1,224 | 5.7 | 816 | 2.4 | 612 | 0.9 | | | | | | |
| 10 | 1,428 | 10.9 | 972 | 5.7 | 648 | 2.4 | 492 | 0.9 | | | | | | |
| 12 | 1,224 | 11.8 | 816 | 6.1 | 540 | 2.4 | 408 | 0.9 | | | | | | |
| 16 | 912 | 12.8 | 612 | 6.1 | 408 | 2.4 | 312 | 0.9 | | | | | | |
| 20 | 744 | 13.2 | 492 | 6.6 | 324 | 2.4 | 240 | 0.9 | | | | | | |
| 25 | 600 | 11.3 | 384 | 6.1 | 252 | 2.4 | 192 | 0.9 | | | | | | |






List HP450

Side Milling (Fractional)

| Hardness | <25 HRC | | 25-45 HRC | | 45-55 HRC | | 55-65 HRC | | 30-40 HRC | | 25-45 HRC | |
|---------------|--|----------------|-----------------------------|----------------|--------------------------------|----------------|--------------------------------|----------------|----------------|----------------|--------------------------------|----------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Alloy Steels Tool Steels | | Hardened Steels Tool Steels | | Hardened Steels Tool Steels | | Titanium Alloy | | Nickel Base High-Temp Alloy | |
| Cutting Speed | 312-540 SFM | | 156-312 SFM | | 96-156 SFM | | 60-96 SFM | | 156-276 SFM | | 48-80 SFM | |
| Depth of Cut | $a_a=1.5D$ $a_r=0.1D$  | | | | $a_a=1.5D$ $a_r=0.05D$ | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/8 | 13,008 | 80.8 | 7,145 | 21.6 | 3,847 | 8.5 | 2,280 | 4.8 | 6,595 | 44.0 | 1,954 | 2.8 |
| 5/32 | 10,406 | 85.3 | 5,716 | 22.9 | 3,078 | 11.2 | 1,905 | 5.1 | 5,276 | 49.5 | 1,563 | 3.0 |
| 3/16 | 8,672 | 77.6 | 4,763 | 23.8 | 2,565 | 12.8 | 1,588 | 4.9 | 4,397 | 52.8 | 1,303 | 4.8 |
| 1/4 | 6,360 | 122.4 | 3,480 | 39.6 | 1,920 | 14.4 | 1,191 | 6.5 | 3,298 | 55.0 | 977 | 5.6 |
| 5/16 | 5,203 | 122.3 | 2,858 | 42.9 | 1,539 | 15.4 | 996 | 7.2 | 2,638 | 57.7 | 782 | 6.0 |
| 3/8 | 4,336 | 112.5 | 2,382 | 43.7 | 1,282 | 14.7 | 804 | 7.2 | 2,198 | 52.4 | 651 | 6.5 |
| 1/2 | 3,252 | 93.1 | 1,786 | 33.5 | 960 | 13.2 | 595 | 5.3 | 1,649 | 47.1 | 489 | 4.3 |
| 5/8 | 2,640 | 75.6 | 1,440 | 27.6 | 769 | 11.5 | 476 | 4.3 | 1,319 | 46.2 | 391 | 4.5 |
| 3/4 | 2,160 | 61.2 | 1,140 | 21.6 | 641 | 8.0 | 397 | 3.4 | 1,099 | 40.6 | 326 | 4.9 |
| 1 | 1,626 | 61.1 | 900 | 22.8 | 481 | 9.0 | 300 | 3.6 | 824 | 27.5 | 244 | 2.7 |

Side Milling (Metric)


| Hardness | <25 HRC | | 25-45 HRC | | 45-55 HRC | | 55-65 HRC | | 30-40 HRC | | 25-45 HRC | |
|---------------|--|----------------|-----------------------------|----------------|--------------------------------|----------------|--------------------------------|----------------|----------------|----------------|--------------------------------|----------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Alloy Steels Tool Steels | | Hardened Steels Tool Steels | | Hardened Steels Tool Steels | | Titanium Alloy | | Nickel Base High-Temp Alloy | |
| Cutting Speed | 312-540 SFM | | 156-312 SFM | | 96-156 SFM | | 60-96 SFM | | 156-276 SFM | | 48-80 SFM | |
| Depth of Cut | $a_a=1.5D$ $a_r=0.1D$  | | | | $a_a=1.5D$ $a_r=0.05D$ | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 3 | 13,766 | 85.6 | 7,562 | 22.5 | 4,072 | 9.5 | 2,521 | 5.2 | 6,980 | 45.8 | 2,068 | 2.6 |
| 4 | 10,325 | 84.7 | 5,671 | 22.3 | 3,054 | 10.9 | 1,800 | 4.7 | 5,235 | 48.3 | 1,551 | 3.2 |
| 5 | 8,260 | 74.2 | 4,537 | 22.3 | 2,443 | 11.8 | 1,560 | 4.7 | 4,188 | 49.5 | 1,241 | 4.2 |
| 6 | 6,883 | 132.9 | 3,781 | 43.6 | 2,036 | 15.0 | 1,320 | 7.6 | 3,490 | 58.9 | 1,034 | 5.2 |
| 8 | 5,162 | 121.9 | 2,836 | 43.1 | 1,527 | 15.0 | 996 | 7.1 | 2,618 | 58.0 | 776 | 5.3 |
| 10 | 4,130 | 106.7 | 2,160 | 40.2 | 1,222 | 14.0 | 756 | 6.7 | 2,094 | 50.7 | 620 | 5.5 |
| 12 | 3,480 | 99.2 | 1,920 | 36.4 | 1,018 | 14.0 | 630 | 5.8 | 1,745 | 49.1 | 517 | 4.8 |
| 16 | 2,640 | 75.6 | 1,440 | 27.4 | 763 | 11.0 | 473 | 4.2 | 1,309 | 45.1 | 388 | 4.1 |
| 20 | 2,160 | 61.4 | 1,140 | 21.7 | 611 | 8.0 | 378 | 3.6 | 1,047 | 38.0 | 310 | 4.3 |
| 25 | 1,652 | 62.4 | 900 | 22.4 | 489 | 9.2 | 300 | 3.8 | 838 | 27.5 | 248 | 3.3 |



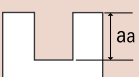


List HP451

Side Milling (Fractional)

| Hardness | - | | - | | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | |
|---------------|--|-------------|-----------|-------------|------------------------------|-------------|---|-------------|---|-------------|--|-------------|
| Work Material | Aluminum Alloy | | Cast Iron | | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | |
| Cutting Speed | 361 SFM | | 279 SFM | | 328 SFM | | 262 SFM | | 197 SFM | | 131 SFM | |
| Depth of Cut | $d_a=1.5D$ $d_r=0.1D$  | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/8 | 11,030 | 54.3 | 8,520 | 34.5 | 10,030 | 74.0 | 8,020 | 64.1 | 6,010 | 19.7 | 4,010 | 11.8 |
| 1/4 | 5,800 | 51.2 | 4,260 | 32.7 | 5,010 | 63.2 | 4,200 | 59.1 | 3,010 | 14.8 | 2,100 | 10.2 |
| 5/16 | 4,400 | 47.2 | 3,400 | 27.6 | 4,000 | 63.0 | 3,200 | 55.1 | 2,400 | 24.4 | 1,600 | 16.1 |
| 3/8 | 3,500 | 43.3 | 2,700 | 26.8 | 3,200 | 55.1 | 2,665 | 54.6 | 1,900 | 23.6 | 1,300 | 16.1 |
| 1/2 | 2,900 | 39.4 | 2,130 | 24.1 | 2,505 | 51.1 | 2,100 | 47.2 | 1,505 | 18.9 | 1,050 | 13.8 |
| 5/8 | 2,200 | 35.4 | 1,700 | 21.7 | 2,000 | 43.3 | 1,600 | 37.4 | 1,200 | 15.4 | 800 | 13.0 |
| 3/4 | 1,750 | 31.5 | 1,350 | 17.7 | 1,670 | 32.8 | 1,335 | 31.5 | 950 | 12.6 | 650 | 10.2 |

Slotting (Fractional)

| Hardness | - | | - | | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | |
|---------------|--|-------------|-----------|-------------|------------------------------|-------------|---|-------------|---|-------------|--|-------------|
| Work Material | Aluminum Alloy | | Cast Iron | | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | |
| Cutting Speed | 361 SFM | | 138 SFM | | 295 SFM | | 243 SFM | | 163 SFM | | 111 SFM | |
| Depth of Cut | $d_a=1.0D$  | | | | | | $d_a=0.5D$ | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/8 | 11,030 | 45.0 | 4,260 | 16.7 | 9,020 | 31.1 | 7,450 | 22.0 | 4,920 | 14.0 | 3,390 | 9.5 |
| 1/4 | 5,800 | 39.4 | 2,105 | 13.7 | 4,505 | 27.1 | 3,900 | 24.8 | 2,620 | 13.4 | 1,695 | 9.8 |
| 5/16 | 4,400 | 37.4 | 1,700 | 13.0 | 3,600 | 26.0 | 2,970 | 22.8 | 1,960 | 13.4 | 1,355 | 10.3 |
| 3/8 | 3,500 | 35.4 | 1,350 | 11.8 | 2,880 | 23.6 | 2,475 | 19.7 | 1,660 | 13.1 | 1,130 | 9.7 |
| 1/2 | 2,900 | 31.5 | 1,055 | 10.4 | 2,250 | 21.1 | 1,950 | 17.7 | 1,310 | 11.4 | 845 | 8.6 |
| 5/8 | 2,200 | 27.6 | 850 | 18.9 | 1,800 | 18.9 | 1,480 | 26.8 | 980 | 8.7 | 680 | 8.0 |
| 3/4 | 1,750 | 23.6 | 675 | 16.5 | 1,500 | 15.3 | 1,235 | 13.4 | 830 | 7.7 | 565 | 6.5 |


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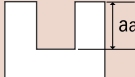


List HP451, HP453, HP456 (Continued)

Side Milling (Metric)

| Hardness | – | | – | | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | |
|---------------|--|-------------|-----------|-------------|------------------------------|-------------|---|-------------|---|-------------|--|-------------|
| Work Material | Aluminum Alloy | | Cast Iron | | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | |
| Cutting Speed | 433 SFM | | 334 SFM | | 393 SFM | | 315 SFM | | 236 SFM | | 157 SFM | |
| Depth of Cut | $d_a=1.5D$ $a_r=0.1D$  | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 4 | 10,560 | 52.0 | 8,160 | 33.1 | 9,600 | 70.9 | 7,680 | 61.4 | 5,760 | 18.9 | 3,840 | 11.3 |
| 6 | 6,960 | 61.4 | 5,400 | 37.8 | 6,360 | 80.3 | 5,040 | 70.9 | 3,840 | 18.9 | 2,520 | 12.3 |
| 8 | 5,280 | 56.7 | 4,080 | 33.1 | 4,800 | 75.6 | 3,840 | 66.1 | 2,880 | 29.3 | 1,920 | 19.4 |
| 10 | 4,200 | 52.0 | 3,240 | 32.1 | 3,840 | 66.1 | 3,000 | 61.4 | 2,280 | 28.3 | 1,560 | 19.4 |
| 12 | 3,480 | 47.2 | 2,760 | 31.2 | 3,240 | 66.1 | 2,520 | 56.7 | 1,920 | 24.1 | 1,260 | 16.5 |
| 16 | 2,640 | 42.5 | 2,040 | 26.0 | 2,400 | 52.0 | 1,920 | 44.9 | 1,440 | 18.4 | 960 | 15.6 |
| 20 | 2,100 | 37.8 | 1,620 | 21.3 | 2,160 | 42.5 | 1,500 | 35.4 | 1,140 | 15.1 | 780 | 12.3 |

Slotting (Metric)


| Hardness | – | | – | | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | |
|---------------|--|-------------|-----------|-------------|------------------------------|-------------|---|-------------|---|-------------|--|-------------|
| Work Material | Aluminum Alloy | | Cast Iron | | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | |
| Cutting Speed | 433 SFM | | 160 SFM | | 355 SFM | | 297 SFM | | 198 SFM | | 118 SFM | |
| Depth of Cut | $d_a=1.0D$  | | | | | | $d_a=0.5D$ | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 4 | 10,490 | 54.7 | 3,840 | 15.1 | 8,640 | 29.8 | 7,200 | 21.3 | 4,800 | 13.7 | 2,880 | 8.0 |
| 6 | 6,960 | 47.2 | 2,520 | 17.5 | 5,760 | 34.5 | 4,800 | 29.8 | 3,240 | 16.1 | 1,920 | 10.9 |
| 8 | 5,280 | 44.9 | 1,920 | 15.6 | 4,320 | 31.2 | 3,600 | 27.4 | 2,400 | 16.1 | 1,440 | 10.9 |
| 10 | 4,200 | 42.5 | 1,560 | 14.2 | 3,480 | 28.3 | 2,880 | 22.2 | 1,920 | 14.6 | 1,140 | 9.9 |
| 12 | 3,480 | 37.8 | 1,272 | 13.7 | 2,880 | 27.4 | 2,400 | 21.3 | 1,560 | 13.7 | 960 | 9.4 |
| 16 | 2,640 | 33.1 | 960 | 22.7 | 2,160 | 22.7 | 1,800 | 32.1 | 1,200 | 10.4 | 720 | 8.5 |
| 20 | 2,100 | 28.3 | 780 | 19.8 | 1,680 | 19.8 | 1,440 | 15.1 | 960 | 8.5 | 576 | 6.6 |






List HP400

Side Milling (Fractional)

| Hardness | - | | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | |
|---------------|--|-------------|------------------------------|-------------|---|-------------|--|-------------|-------------------------------------|-------------|
| Work Material | Cast Iron | | Medium Steels Mild Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels | | Stainless Steels Hardened Steels | |
| Cutting Speed | 320-460 SFM | | 262-393 SFM | | 230-328 SFM | | 164-262 SFM | | 115-213 SFM | |
| Depth of Cut | $\bar{a}a=1.5D$ $\bar{a}r=0.4D$  | | | | | | $\bar{a}a=1.5D$ $\bar{a}r=0.3D$ | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/4 | 6,350 | 29.9 | 5,300 | 25.2 | 4,500 | 14.2 | 3,450 | 11.0 | 2,650 | 8.3 |
| 5/16 | 4,750 | 29.9 | 4,000 | 25.2 | 3,400 | 16.1 | 2,600 | 12.2 | 2,000 | 9.4 |
| 3/8 | 3,800 | 29.9 | 3,200 | 25.2 | 2,700 | 16.9 | 2,050 | 13.0 | 1,600 | 10.2 |
| 1/2 | 3,200 | 30.3 | 2,650 | 25.2 | 2,250 | 17.7 | 1,700 | 13.4 | 1,350 | 10.6 |
| 5/8 | 2,400 | 30.3 | 2,000 | 25.2 | 1,700 | 18.9 | 1,300 | 14.2 | 1,000 | 11.0 |
| 3/4 | 1,900 | 29.9 | 1,600 | 24.0 | 1,350 | 18.5 | 1,050 | 13.8 | 800 | 10.2 |
| 1 | 1,500 | 29.9 | 1,150 | 24.0 | 1,000 | 18.5 | 800 | 13.8 | 600 | 10.2 |

Side Milling (Fractional)


| Hardness | - | | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | |
|---------------|--|-------------|------------------------------|-------------|---|-------------|--|-------------|-------------------------------------|-------------|
| Work Material | Cast Iron | | Medium Steels Mild Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels | | Stainless Steels Hardened Steels | |
| Cutting Speed | 320-460 SFM | | 262-393 SFM | | 230-328 SFM | | 164-262 SFM | | 115-213 SFM | |
| Depth of Cut | $\bar{a}a=1.5D$ $\bar{a}r=0.4D$  | | | | | | $\bar{a}a=1.5D$ $\bar{a}r=0.3D$ | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 3 | 12,610 | 25.3 | 10,590 | 21.3 | 9,020 | 10.7 | 6,890 | 8.1 | 5,300 | 6.3 |
| 4 | 9,460 | 25.3 | 7,940 | 21.3 | 6,770 | 10.7 | 5,170 | 8.1 | 3,980 | 6.3 |
| 5 | 7,570 | 28.3 | 6,360 | 23.8 | 5,410 | 13.3 | 4,130 | 10.2 | 3,180 | 7.8 |
| 6 | 6,310 | 28.3 | 5,300 | 23.8 | 4,510 | 13.3 | 3,440 | 10.2 | 2,650 | 7.8 |
| 8 | 4,730 | 29.8 | 3,970 | 25.0 | 3,380 | 16.0 | 2,580 | 12.2 | 1,990 | 9.4 |
| 10 | 3,780 | 29.8 | 3,180 | 25.0 | 2,710 | 17.9 | 2,070 | 13.9 | 1,590 | 10.6 |
| 12 | 3,150 | 29.8 | 2,650 | 25.0 | 2,260 | 17.1 | 1,720 | 13.0 | 1,330 | 10.6 |
| 16 | 2,370 | 29.8 | 1,990 | 25.0 | 1,690 | 19.2 | 1,290 | 14.2 | 990 | 10.6 |
| 20 | 1,890 | 29.8 | 1,590 | 25.0 | 1,350 | 19.2 | 1,030 | 14.2 | 800 | 10.6 |
| 25 | 1,510 | 29.8 | 1,270 | 25.0 | 1,080 | 19.2 | 830 | 14.2 | 640 | 10.6 |

continued on next page

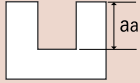




Slotting (Fractional)

| Hardness | – | | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | |
|---------------|--|-------------|------------------------------|-------------|---|-------------|--|-------------|-------------------------------------|-------------|
| Work Material | Cast Iron | | Medium Steels Mild Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels | | Stainless Steels Hardened Steels | |
| Cutting Speed | 262-393 SFM | | 230-328 SFM | | 180-279 SFM | | 130-230 SFM | | 95-195 SFM | |
| Depth of Cut | $da=0.75D$  | | | | | $da=0.5D$ | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/4 | 5,300 | 25.2 | 4,500 | 21.3 | 3,700 | 11.8 | 2,900 | 9.1 | 2,400 | 7.5 |
| 5/16 | 4,000 | 25.2 | 3,400 | 21.3 | 2,800 | 13.4 | 2,200 | 10.2 | 1,800 | 8.7 |
| 3/8 | 3,200 | 25.2 | 2,700 | 21.3 | 2,250 | 14.2 | 1,750 | 11 | 1,450 | 9.1 |
| 1/2 | 2,650 | 25.2 | 2,250 | 21.3 | 1,850 | 14.6 | 1,450 | 11.4 | 1,200 | 9.4 |
| 5/8 | 2,000 | 25.2 | 1,700 | 21.3 | 1,400 | 15.4 | 1,100 | 12.2 | 900 | 9.8 |
| 3/4 | 1,600 | 25.2 | 1,350 | 20.1 | 1,100 | 15.4 | 900 | 11.8 | 700 | 9.1 |
| 1 | 1,150 | 25.2 | 950 | 20.1 | 800 | 15.4 | 700 | 11.8 | 500 | 9.1 |

Slotting (Metric)

| Hardness | – | | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | |
|---------------|--|-------------|------------------------------|-------------|---|-------------|--|-------------|-------------------------------------|-------------|
| Work Material | Cast Iron | | Medium Steels Mild Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels | | Stainless Steels Hardened Steels | |
| Cutting Speed | 335 SFM | | 230 SFM | | 295 SFM | | 217 SFM | | 177 SFM | |
| Depth of Cut | $da=0.75D$  | | | | | $da=0.5D$ | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 6 | 5,400 | 25.5 | 3,700 | 17.5 | 4,800 | 15.3 | 3,480 | 10.9 | 2,880 | 9.0 |
| 8 | 4,100 | 25.5 | 2,800 | 17.5 | 3,600 | 17.2 | 2,640 | 12.3 | 2,160 | 10.4 |
| 10 | 3,300 | 25.5 | 2,200 | 17.5 | 2,900 | 18.3 | 2,100 | 13.2 | 1,740 | 10.9 |
| 12 | 2,700 | 25.5 | 1,900 | 17.5 | 2,400 | 18.9 | 1,740 | 13.7 | 1,440 | 11.3 |
| 16 | 2,000 | 25.5 | 1,400 | 17.5 | 1,800 | 20.0 | 1,320 | 14.6 | 1,080 | 11.8 |
| 20 | 1,600 | 25.5 | 1,100 | 16.4 | 1,450 | 20.0 | 1,080 | 14.2 | 840 | 10.9 |
| 25 | 1,300 | 25.5 | 900 | 23.5 | 1,150 | 18.1 | 840 | 13.0 | 680 | 9.8 |





List HP410

Slotting (Fractional)

| Hardness | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | | | | | | | |
|---------------|--|----------------|---|----------------|---|-------------|--|-------------|-----------------|-------------|-----------------------|-------------|--|--|--|--|--|--|
| Work Material | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | Hardened Steels | | | | | | | |
| Cutting Speed | 262 SFM | | 213 SFM | | 180 SFM | | 164 SFM | | 98 SFM | | 49 SFM | | | | | | | |
| Depth of Cut | <table border="1"> <tr><th>Dia</th><th>a_a</th></tr> <tr><td>D<1/16</td><td>0.05D</td></tr> <tr><td>1/16≤D</td><td>0.10D</td></tr> </table> | | Dia | a _a | D<1/16 | 0.05D | 1/16≤D | 0.10D | | | a _a =0.02D | | | | | | | |
| | Dia | a _a | | | | | | | | | | | | | | | | |
| D<1/16 | 0.05D | | | | | | | | | | | | | | | | | |
| 1/16≤D | 0.10D | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | |
| 1/32 | 25,000 | 12.5 | 25,000 | 12.8 | 22,000 | 9.8 | 20,000 | 7.9 | 12,000 | 3.1 | 6,000 | 1.2 | | | | | | |
| 1/16 | 16,000 | 23.6 | 13,000 | 19.7 | 11,500 | 15.7 | 10,000 | 9.8 | 6,000 | 3.1 | 3,000 | 1.2 | | | | | | |
| 3/32 | 10,500 | 23.6 | 8,650 | 19.7 | 7,100 | 15.7 | 6,700 | 9.8 | 4,000 | 3.1 | 2,000 | 1.2 | | | | | | |
| 1/8 | 8,020 | 18.0 | 6,510 | 14.8 | 5,510 | 12.2 | 5,010 | 8.0 | 3,000 | 2.4 | 1,500 | 0.9 | | | | | | |
| 3/16 | 5,340 | 12.0 | 4,340 | 9.9 | 3,670 | 8.1 | 3,340 | 5.3 | 2,000 | 2.4 | 1,000 | 0.9 | | | | | | |

For side milling, increase feeds 20% to 50%.

Slotting (Metric)

| Hardness | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | | | | | | | |
|---------------|--|----------------|---|----------------|---|-------------|--|-------------|-----------------|-------------|-----------------------|-------------|--|--|--|--|--|--|
| Work Material | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | Hardened Steels | | | | | | | |
| Cutting Speed | 262 SFM | | 213 SFM | | 180 SFM | | 164 SFM | | 98 SFM | | 49 SFM | | | | | | | |
| Depth of Cut | <table border="1"> <tr><th>Dia</th><th>a_a</th></tr> <tr><td>D<1.5</td><td>0.05D</td></tr> <tr><td>1.5≤D</td><td>0.10D</td></tr> </table> | | Dia | a _a | D<1.5 | 0.05D | 1.5≤D | 0.10D | | | a _a =0.02D | | | | | | | |
| | Dia | a _a | | | | | | | | | | | | | | | | |
| D<1.5 | 0.05D | | | | | | | | | | | | | | | | | |
| 1.5≤D | 0.10D | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | |
| 0.5 | 25,000 | 7.7 | 25,000 | 6.2 | 25,000 | 6.2 | 25,000 | 4.8 | 19,000 | 3.2 | 9,500 | 1.1 | | | | | | |
| 0.6 | 25,000 | 9.2 | 25,000 | 7.7 | 25,000 | 7.3 | 25,000 | 7.9 | 15,800 | 3.2 | 8,000 | 1.1 | | | | | | |
| 0.8 | 25,000 | 12.3 | 25,000 | 12.8 | 22,000 | 9.8 | 20,000 | 8.3 | 12,000 | 3.2 | 6,000 | 1.1 | | | | | | |
| 1 | 25,000 | 15.4 | 25,000 | 20.6 | 17,500 | 13.8 | 16,000 | 10.5 | 9,500 | 3.2 | 4,800 | 1.1 | | | | | | |
| 1.5 | 17,000 | 22.4 | 13,800 | 19.3 | 11,700 | 15.6 | 10,600 | 10.4 | 6,300 | 3.2 | 3,200 | 1.1 | | | | | | |
| 2 | 12,700 | 22.4 | 10,300 | 19.3 | 8,800 | 15.6 | 8,000 | 10.4 | 4,800 | 3.2 | 2,400 | 1.1 | | | | | | |
| 2.5 | 10,200 | 22.4 | 8,300 | 19.3 | 7,000 | 15.6 | 6,400 | 10.4 | 3,800 | 3.2 | 1,900 | 1.1 | | | | | | |

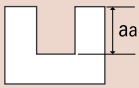
For side milling, increase feeds 20% to 50%.



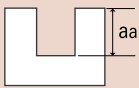


List HP411

Slotting (Fractional)

| Hardness | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | |
|---------------|--|-------------|---|-------------|---|-------------|--|-------------|-----------------|-------------|-----------------|-------------|
| Work Material | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | Hardened Steels | |
| Cutting Speed | 294 SFM | | 236 SFM | | 196 SFM | | 164 SFM | | 105 SFM | | 72 SFM | |
| Depth of Cut | $a_a=0.1D$  | | | | | | $a_a=0.02D$ | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/8 | 8,900 | 39.4 | 7,200 | 27.6 | 5,900 | 19.7 | 5,100 | 15.7 | 3,200 | 5.9 | 2,100 | 2.0 |
| 3/16 | 6,000 | 39.4 | 4,800 | 27.6 | 4,000 | 19.7 | 3,400 | 15.7 | 2,200 | 5.9 | 1,500 | 2.0 |
| 1/4 | 4,500 | 39.4 | 3,600 | 27.6 | 3,000 | 19.7 | 2,500 | 15.7 | 1,600 | 5.9 | 1,100 | 2.0 |

Slotting (Metric)


| Hardness | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | |
|---------------|--|-------------|---|-------------|---|-------------|--|-------------|-----------------|-------------|-----------------|-------------|
| Work Material | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | Hardened Steels | |
| Cutting Speed | 294 SFM | | 236 SFM | | 196 SFM | | 164 SFM | | 105 SFM | | 72 SFM | |
| Depth of Cut | $a_a=0.1D$  | | | | | | $a_a=0.02D$ | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 3 | 9,500 | 42.1 | 7,600 | 29.3 | 6,300 | 20.9 | 5,300 | 16.4 | 3,400 | 6.3 | 2,350 | 2.1 |
| 4 | 7,100 | 42.1 | 5,700 | 29.3 | 4,750 | 20.9 | 4,000 | 16.4 | 2,550 | 7.1 | 1,750 | 2.1 |
| 5 | 5,700 | 42.1 | 4,600 | 29.3 | 3,800 | 20.9 | 3,200 | 16.4 | 2,050 | 7.1 | 1,400 | 2.1 |
| 6 | 4,800 | 42.1 | 3,800 | 29.3 | 3,150 | 20.9 | 2,650 | 16.4 | 1,700 | 7.1 | 1,150 | 2.1 |






List HP455

Side Milling (Fractional)

| Hardness | <30 HRC | | 30-38 HRC | | 38-45 HRC | |
|---------------|--|-------------|--|-------------|--|-------------|
| Work Material | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | |
| Cutting Speed | 156 SFM | | 144 SFM | | 114 SFM | |
| Depth of Cut | $a_a=1.5D$ $a_r=0.1D$  | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/8 | 4,806 | 13.1 | 4,404 | 5.2 | 3,444 | 4.0 |
| 5/32 | 3,780 | 13.1 | 3,523 | 5.2 | 2,754 | 4.0 |
| 3/16 | 3,186 | 13.9 | 2,936 | 5.2 | 2,292 | 4.0 |
| 7/32 | 2,742 | 14.2 | 2,516 | 5.2 | 1,956 | 4.0 |
| 1/4 | 2,385 | 14.2 | 2,202 | 5.2 | 1,716 | 4.0 |
| 9/32 | 2,142 | 14.2 | 1,957 | 5.2 | 1,554 | 4.0 |
| 5/16 | 1,884 | 14.2 | 1,761 | 5.2 | 1,380 | 4.0 |
| 3/8 | 1,590 | 14.2 | 1,468 | 5.2 | 1,158 | 4.0 |
| 7/16 | 1,368 | 14.2 | 1,258 | 5.2 | 990 | 4.0 |
| 1/2 | 1,194 | 14.6 | 1,101 | 5.2 | 864 | 4.0 |
| 9/16 | 1,056 | 15.7 | 979 | 5.2 | 762 | 4.0 |
| 5/8 | 948 | 16.6 | 881 | 5.2 | 684 | 4.0 |
| 3/4 | 795 | 16.7 | 734 | 4.9 | 558 | 4.0 |
| 7/8 | 672 | 15.1 | 629 | 4.4 | 486 | 3.6 |
| 1 | 588 | 13.1 | 550 | 4.0 | 432 | 3.1 |

Side Milling (Metric)

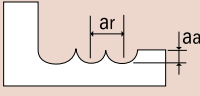
| Hardness | <30 HRC | | 30-38 HRC | | 38-45 HRC | |
|---------------|--|-------------|--|-------------|--|-------------|
| Work Material | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | |
| Cutting Speed | 156 SFM | | 144 SFM | | 114 SFM | |
| Depth of Cut | $a_a=1.5D$ $a_r=0.1D$  | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 3 | 5,049 | 13.1 | 4,661 | 5.2 | 3,690 | 4.0 |
| 4 | 3,780 | 13.1 | 3,495 | 5.2 | 2,754 | 4.0 |
| 5 | 2,934 | 14.2 | 2,796 | 5.2 | 2,214 | 4.0 |
| 6 | 2,524 | 14.2 | 2,330 | 5.2 | 1,845 | 4.0 |
| 7 | 2,142 | 14.2 | 1,997 | 5.2 | 1,554 | 4.0 |
| 8 | 1,884 | 14.2 | 1,748 | 5.2 | 1,380 | 4.0 |
| 10 | 1,464 | 14.2 | 1,398 | 5.2 | 1,107 | 4.0 |
| 11 | 1,368 | 14.2 | 1,271 | 5.2 | 990 | 4.0 |
| 12 | 1,262 | 14.6 | 1,165 | 5.2 | 922 | 4.0 |
| 14 | 1,056 | 15.7 | 999 | 5.2 | 762 | 4.0 |
| 16 | 948 | 16.6 | 874 | 5.2 | 684 | 4.0 |
| 20 | 768 | 16.7 | 699 | 4.9 | 558 | 4.0 |
| 25 | 588 | 13.1 | 559 | 4.0 | 432 | 3.1 |





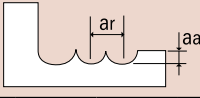
List HP421BN, HP441BN

Profiling Milling (Fractional)

| Hardness | - | | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | |
|---------------|--|----------------|------------------------------|----------------|--|----------------|--|----------------|---|----------------|---------------------------|----------------|--------------------|----------------|
| Work Material | Cast Iron | | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | Hardened Steels | |
| Cutting Speed | 575 SFM | | 460 SFM | | 375 SFM | | 310 SFM | | 260 SFM | | 230 SFM | | 165 SFM | |
| Depth of Cut | $a_a=0.1D$ $a_r=0.2D$  | | | | | | | | | | $a_a=0.05D$ $a_r=0.1D$ | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/16 | 25,000 | 31.3 | 25,000 | 30.5 | 23,000 | 25.1 | 19,000 | 16.9 | 16,000 | 11.4 | 14,000 | 8.5 | 10,000 | 5.3 |
| 3/32 | 23,500 | 42.6 | 18,800 | 34.2 | 15,300 | 27.4 | 12,600 | 18.2 | 10,600 | 12.7 | 9,400 | 9.3 | 6,700 | 5.7 |
| 1/8 | 17,500 | 45.3 | 14,000 | 36.2 | 11,600 | 29.5 | 9,300 | 19.3 | 8,150 | 14.6 | 7,000 | 10.6 | 5,200 | 7.1 |
| 5/32 | 14,050 | 44.1 | 11,550 | 35.8 | 9,700 | 29.5 | 7,750 | 20.5 | 6,750 | 16.9 | 5,800 | 12.2 | 4,300 | 7.9 |
| 3/16 | 11,750 | 48.0 | 9,500 | 39.0 | 7,900 | 29.9 | 6,300 | 20.9 | 5,550 | 17.3 | 4,700 | 13.0 | 3,550 | 7.9 |
| 1/4 | 8,750 | 53.1 | 7,000 | 42.9 | 5,800 | 33.1 | 4,600 | 22.8 | 4,050 | 19.3 | 3,450 | 14.2 | 2,550 | 8.7 |
| 5/16 | 7,250 | 60.6 | 5,800 | 48.8 | 4,800 | 36.6 | 3,800 | 25.6 | 3,350 | 20.9 | 2,850 | 15.0 | 2,100 | 9.4 |
| 3/8 | 5,900 | 57.1 | 4,700 | 45.3 | 3,900 | 35.0 | 3,100 | 24.4 | 2,700 | 20.5 | 2,350 | 15.4 | 1,700 | 9.4 |
| 7/16 | 4,950 | 53.1 | 3,950 | 42.1 | 3,300 | 33.1 | 2,600 | 23.2 | 2,300 | 19.7 | 1,950 | 14.6 | 1,450 | 9.1 |
| 1/2 | 4,350 | 50.4 | 3,450 | 40.6 | 2,900 | 31.9 | 2,300 | 22.4 | 2,000 | 18.9 | 1,700 | 14.2 | 1,250 | 8.7 |
| 5/8 | 3,600 | 49.6 | 2,850 | 39.4 | 2,350 | 30.3 | 1,850 | 22.4 | 1,600 | 17.7 | 1,400 | 12.6 | 1,050 | 8.7 |
| 3/4 | 3,000 | 46.1 | 2,400 | 36.6 | 2,000 | 28.0 | 1,600 | 21.7 | 1,350 | 17.3 | 1,200 | 11.8 | 900 | 7.9 |
| 1 | 2,450 | 37.6 | 1,760 | 31.3 | 1,430 | 21.5 | 1,185 | 16.5 | 1,000 | 13.5 | 880 | 9.6 | 630 | 6.5 |

Increase feeds 40% to 50% for Series HP441BN.

Profiling Milling (Metric)

| Hardness | - | | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | |
|---------------|--|----------------|------------------------------|----------------|--|----------------|--|----------------|---|----------------|---------------------------|----------------|--------------------|----------------|
| Work Material | Cast Iron | | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | Hardened Steels | |
| Cutting Speed | 575 SFM | | 460 SFM | | 375 SFM | | 310 SFM | | 260 SFM | | 230 SFM | | 165 SFM | |
| Depth of Cut | $a_a=0.1D$ $a_r=0.2D$  | | | | | | | | | | $a_a=0.05D$ $a_r=0.1D$ | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1 | 25,000 | 23.5 | 25,000 | 23.5 | 25,000 | 19.3 | 25,000 | 15.7 | 25,000 | 12.7 | 25,000 | 10.8 | 16,000 | 6.2 |
| 2 | 25,000 | 38.9 | 22,350 | 34.9 | 18,200 | 28.1 | 15,050 | 18.7 | 12,600 | 12.8 | 11,150 | 9.5 | 8,000 | 6.0 |
| 3 | 18,600 | 46.4 | 14,900 | 37.4 | 12,150 | 29.9 | 10,050 | 20.0 | 8,400 | 14.0 | 7,450 | 10.5 | 5,350 | 6.8 |
| 4 | 14,000 | 44.5 | 11,150 | 34.9 | 9,100 | 28.1 | 7,550 | 20.5 | 6,300 | 16.2 | 5,600 | 12.2 | 4,000 | 7.5 |
| 5 | 11,200 | 50.1 | 8,950 | 40.7 | 7,300 | 29.7 | 6,000 | 21.5 | 5,050 | 17.0 | 4,450 | 13.4 | 3,200 | 8.0 |
| 6 | 9,300 | 52.6 | 7,450 | 42.9 | 6,050 | 32.4 | 5,000 | 23.5 | 4,200 | 18.7 | 3,700 | 14.5 | 2,650 | 8.7 |
| 8 | 7,000 | 59.2 | 5,600 | 47.8 | 4,550 | 35.2 | 3,750 | 25.5 | 3,150 | 20.1 | 2,800 | 14.9 | 2,000 | 9.3 |
| 10 | 5,600 | 56.5 | 4,450 | 44.7 | 3,650 | 34.4 | 3,000 | 25.1 | 2,500 | 19.8 | 2,250 | 15.9 | 1,600 | 9.5 |
| 12 | 4,650 | 52.6 | 3,700 | 41.9 | 3,050 | 32.9 | 2,500 | 23.9 | 2,100 | 19.6 | 1,850 | 15.0 | 1,350 | 9.3 |
| 14 | 4,000 | 48.6 | 3,200 | 40.2 | 2,600 | 30.7 | 2,150 | 22.3 | 1,800 | 17.7 | 1,600 | 14.0 | 1,150 | 8.5 |
| 16 | 3,500 | 48.6 | 2,800 | 39.0 | 2,300 | 29.8 | 1,900 | 22.7 | 1,600 | 17.6 | 1,400 | 12.9 | 1,000 | 8.0 |
| 18 | 3,100 | 46.1 | 2,500 | 37.1 | 2,050 | 28.1 | 1,650 | 22.0 | 1,400 | 17.4 | 1,250 | 12.1 | 900 | 7.8 |
| 20 | 2,800 | 43.3 | 2,250 | 35.0 | 1,800 | 25.7 | 1,500 | 20.8 | 1,250 | 16.2 | 1,100 | 11.1 | 800 | 7.3 |
| 22 | 2,550 | 42.1 | 2,050 | 32.4 | 1,650 | 22.5 | 1,350 | 18.9 | 1,150 | 15.3 | 1,000 | 10.4 | 750 | 7.5 |
| 25 | 2,250 | 36.8 | 1,800 | 31.7 | 1,450 | 21.3 | 1,200 | 17.0 | 1,000 | 12.9 | 900 | 9.6 | 650 | 6.5 |

Increase feeds 40% to 50% for Series HP441BN.

continued on next page





List HP421BN, HP441BN: (continued)

High Speed Light Milling (Fractional)

| Hardness | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | | | | | | | | | | |
|---------------|------------------------------|-------------|---|-------------|--|-------------|---|-------------|-----------------|-------------|-----------------|-------------|-----|-------|-------|---------------|-------|-------|------------|-------|-------|
| Work Material | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | Hardened Steels | | | | | | | | | | |
| Cutting Speed | 985 SFM | | 855 SFM | | 740 SFM | | 590 SFM | | 590 SFM | | 400 SFM | | | | | | | | | | |
| Depth of Cut | $a_a=0.02D$ $a_r=0.05D$ | | | | | | <table border="1"> <thead> <tr> <th>Dia</th> <th>a_a</th> <th>a_r</th> </tr> </thead> <tbody> <tr> <td>$D \leq 5/32$</td> <td>0.02D</td> <td>0.05D</td> </tr> <tr> <td>$5/32 < D$</td> <td>0.13D</td> <td>0.05D</td> </tr> </tbody> </table> | | | | | | Dia | a_a | a_r | $D \leq 5/32$ | 0.02D | 0.05D | $5/32 < D$ | 0.13D | 0.05D |
| | | | | | | | Dia | a_a | a_r | | | | | | | | | | | | |
| $D \leq 5/32$ | 0.02D | 0.05D | | | | | | | | | | | | | | | | | | | |
| $5/32 < D$ | 0.13D | 0.05D | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | |
| 1/16 | 25,000 | 80.3 | 25,000 | 77.6 | 25,000 | 69.9 | 25,000 | 65.9 | 25,000 | 63.4 | 24,450 | 54.3 | | | | | | | | | |
| 3/32 | 25,000 | 125.5 | 25,000 | 127.6 | 25,000 | 115.4 | 24,050 | 104.4 | 24,050 | 99.4 | 16,300 | 58.4 | | | | | | | | | |
| 1/8 | 25,000 | 174.8 | 25,000 | 181.6 | 22,650 | 146.5 | 18,050 | 110.5 | 18,050 | 106.7 | 12,250 | 59.7 | | | | | | | | | |
| 5/32 | 24,100 | 192.4 | 20,900 | 177.8 | 18,100 | 129.3 | 14,450 | 101.7 | 14,450 | 96.7 | 9,800 | 52.9 | | | | | | | | | |
| 3/16 | 20,100 | 198.9 | 17,450 | 180.2 | 15,100 | 121.5 | 12,050 | 96.5 | 12,050 | 96.3 | 8,150 | 49.3 | | | | | | | | | |
| 1/4 | 15,050 | 189.5 | 13,100 | 164.9 | 11,300 | 106.1 | 9,000 | 83.8 | 9,000 | 83.8 | 6,100 | 42.0 | | | | | | | | | |
| 5/16 | 12,050 | 151.1 | 10,500 | 132.4 | 9,050 | 83.9 | 7,250 | 67.7 | 7,250 | 67.7 | 5,000 | 35.4 | | | | | | | | | |
| 3/8 | 10,050 | 125.1 | 8,700 | 108.4 | 7,400 | 69.3 | 5,900 | 55.1 | 5,900 | 55.1 | 4,100 | 28.7 | | | | | | | | | |
| 7/16 | 8,250 | 102.8 | 7,450 | 92.3 | 6,200 | 57.9 | 4,950 | 45.7 | 4,950 | 45.7 | 3,400 | 24.0 | | | | | | | | | |
| 1/2 | 7,250 | 90.2 | 6,550 | 81.3 | 5,450 | 50.4 | 4,300 | 40.2 | 4,300 | 40.2 | 3,000 | 20.9 | | | | | | | | | |
| 5/8 | 6,050 | 75.6 | 5,200 | 63.8 | 4,500 | 41.7 | 3,600 | 33.9 | 3,600 | 33.9 | 2,450 | 17.3 | | | | | | | | | |
| 3/4 | 5,050 | 62.6 | 4,350 | 54.7 | 3,750 | 35.4 | 3,000 | 28.3 | 3,000 | 28.3 | 2,100 | 14.6 | | | | | | | | | |
| 1 | 3,765 | 46.8 | 3,270 | 41.1 | 2,830 | 26.7 | 2,250 | 21.2 | 2,250 | 21.2 | 1,530 | 10.6 | | | | | | | | | |

Increase feeds 40% to 50% for Series HP441BN.

High Speed Light Milling (Metric)

| Hardness | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | | | | | | | | | | |
|---------------|------------------------------|-------------|---|-------------|--|-------------|---|-------------|-----------------|-------------|-----------------|-------------|-----|-------|-------|------------|-------|-------|---------|-------|-------|
| Work Material | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | Hardened Steels | | | | | | | | | | |
| Cutting Speed | 985 SFM | | 855 SFM | | 740 SFM | | 590 SFM | | 590 SFM | | 400 SFM | | | | | | | | | | |
| Depth of Cut | $a_a=0.02D$ $a_r=0.05D$ | | | | | | <table border="1"> <thead> <tr> <th>Dia</th> <th>a_a</th> <th>a_r</th> </tr> </thead> <tbody> <tr> <td>$D \leq 4$</td> <td>0.02D</td> <td>0.05D</td> </tr> <tr> <td>$4 < D$</td> <td>0.13D</td> <td>0.05D</td> </tr> </tbody> </table> | | | | | | Dia | a_a | a_r | $D \leq 4$ | 0.02D | 0.05D | $4 < D$ | 0.13D | 0.05D |
| | | | | | | | Dia | a_a | a_r | | | | | | | | | | | | |
| $D \leq 4$ | 0.02D | 0.05D | | | | | | | | | | | | | | | | | | | |
| $4 < D$ | 0.13D | 0.05D | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | |
| 1 | 25,000 | 55 | 25,000 | 55 | 25,000 | 49 | 25,000 | 47 | 25,000 | 47 | 25,000 | 39 | | | | | | | | | |
| 2 | 25,000 | 108 | 25,000 | 109 | 25,000 | 99 | 25,000 | 93 | 25,000 | 93 | 19,400 | 60 | | | | | | | | | |
| 3 | 25,000 | 170 | 25,000 | 175 | 23,950 | 151 | 19,100 | 113 | 19,100 | 113 | 12,950 | 62 | | | | | | | | | |
| 4 | 23,900 | 192 | 20,750 | 178 | 17,950 | 129 | 14,350 | 102 | 14,350 | 102 | 9,700 | 53 | | | | | | | | | |
| 5 | 19,150 | 202 | 16,600 | 181 | 14,350 | 119 | 11,450 | 96 | 11,450 | 96 | 7,750 | 49 | | | | | | | | | |
| 6 | 15,950 | 201 | 13,850 | 174 | 12,000 | 113 | 9,550 | 89 | 9,550 | 89 | 6,450 | 44 | | | | | | | | | |
| 8 | 12,000 | 150 | 10,400 | 131 | 9,000 | 83 | 7,150 | 67 | 7,150 | 67 | 4,850 | 34 | | | | | | | | | |
| 10 | 9,550 | 119 | 8,300 | 103 | 7,200 | 67 | 5,750 | 54 | 5,750 | 54 | 3,900 | 28 | | | | | | | | | |
| 12 | 7,950 | 99 | 6,900 | 85 | 6,000 | 56 | 4,750 | 44 | 4,750 | 44 | 3,250 | 23 | | | | | | | | | |
| 14 | 6,850 | 85 | 5,950 | 73 | 5,150 | 48 | 4,100 | 39 | 4,100 | 39 | 2,750 | 19 | | | | | | | | | |
| 16 | 6,000 | 75 | 5,200 | 64 | 4,500 | 42 | 3,600 | 34 | 3,600 | 34 | 2,450 | 17 | | | | | | | | | |
| 18 | 5,300 | 65 | 4,600 | 58 | 4,000 | 38 | 3,200 | 30 | 3,200 | 30 | 2,150 | 15 | | | | | | | | | |
| 20 | 4,800 | 60 | 4,150 | 52 | 3,600 | 34 | 2,850 | 27 | 2,850 | 27 | 1,950 | 14 | | | | | | | | | |
| 22 | 4,350 | 54 | 3,750 | 47 | 3,250 | 31 | 2,600 | 24 | 2,600 | 24 | 1,750 | 12 | | | | | | | | | |
| 25 | 3,850 | 48 | 3,300 | 41 | 2,850 | 27 | 2,300 | 22 | 2,300 | 22 | 1,550 | 11 | | | | | | | | | |

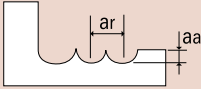
Increase feeds 40% to 50% for Series HP441BN.



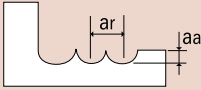


List HP416

Profiling Milling (Fractional)

| Hardness | - | | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | |
|---------------|--|----------------|------------------------------|----------------|--|----------------|--|----------------|---|----------------|---------------------------------------|----------------|--------------------|----------------|
| Work Material | Cast Iron | | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | Hardened Steels | |
| Cutting Speed | 575 SFM | | 460 SFM | | 375 SFM | | 310 SFM | | 260 SFM | | 230 SFM | | 165 SFM | |
| Depth of Cut | $\bar{a}_a=0.1D$ $\bar{a}_r=0.2D$  | | | | | | | | | | $\bar{a}_a=0.05D$ $\bar{a}_r=0.1D$ | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/32 | 25,000 | 11.6 | 25,000 | 12.8 | 25,000 | 11.4 | 25,000 | 9.2 | 25,000 | 7.5 | 25,000 | 6.3 | 20,200 | 4.6 |
| 1/16 | 25,000 | 31.3 | 25,000 | 30.5 | 23,000 | 25.1 | 19,000 | 16.9 | 15,900 | 11.4 | 14,050 | 8.5 | 10,100 | 5.3 |
| 3/32 | 23,450 | 42.6 | 18,800 | 34.2 | 15,300 | 27.4 | 12,650 | 18.3 | 10,600 | 12.7 | 9,400 | 9.3 | 6,750 | 5.7 |
| 1/8 | 17,050 | 44.1 | 14,050 | 36.3 | 11,450 | 29.1 | 9,300 | 19.3 | 8,150 | 14.6 | 7,000 | 10.6 | 5,200 | 7.1 |
| 3/16 | 11,750 | 48.0 | 9,400 | 38.6 | 7,650 | 29.0 | 6,300 | 20.9 | 5,550 | 17.3 | 4,700 | 13.0 | 3,550 | 7.9 |
| 1/4 | 8,750 | 53.1 | 7,050 | 43.2 | 5,800 | 33.1 | 4,600 | 22.8 | 4,050 | 19.3 | 3,450 | 14.2 | 2,550 | 8.7 |
| 5/16 | 7,250 | 60.6 | 5,650 | 47.5 | 4,800 | 36.6 | 3,800 | 25.6 | 3,350 | 20.9 | 2,850 | 15.0 | 2,100 | 9.4 |
| 3/8 | 5,900 | 57.1 | 4,700 | 45.3 | 3,900 | 35.0 | 3,100 | 24.4 | 2,700 | 20.5 | 2,350 | 15.4 | 1,700 | 9.4 |
| 1/2 | 4,350 | 50.4 | 3,450 | 40.6 | 2,900 | 31.9 | 2,300 | 22.4 | 2,000 | 18.9 | 1,700 | 14.2 | 1,250 | 8.7 |

Profiling Milling (Metric)

| Hardness | - | | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | |
|---------------|--|----------------|------------------------------|----------------|--|----------------|--|----------------|---|----------------|---------------------------------------|----------------|--------------------|----------------|
| Work Material | Cast Iron | | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | Hardened Steels | |
| Cutting Speed | 575 SFM | | 460 SFM | | 375 SFM | | 310 SFM | | 260 SFM | | 230 SFM | | 165 SFM | |
| Depth of Cut | $\bar{a}_a=0.1D$ $\bar{a}_r=0.2D$  | | | | | | | | | | $\bar{a}_a=0.05D$ $\bar{a}_r=0.1D$ | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1 | 25,000 | 23.5 | 25,000 | 23.5 | 25,000 | 19.3 | 25,000 | 15.7 | 25,000 | 12.7 | 25,000 | 10.8 | 16,000 | 6.2 |
| 2 | 25,000 | 38.9 | 22,350 | 34.9 | 18,200 | 28.1 | 15,050 | 18.7 | 12,600 | 12.8 | 11,150 | 9.5 | 8,000 | 6.0 |
| 3 | 18,600 | 46.4 | 14,900 | 37.4 | 12,150 | 29.9 | 10,050 | 20.0 | 8,400 | 14.0 | 7,450 | 10.5 | 5,350 | 6.8 |
| 4 | 13,950 | 44.3 | 11,150 | 34.9 | 9,100 | 28.1 | 7,550 | 20.5 | 6,300 | 16.2 | 5,600 | 12.2 | 4,000 | 7.5 |
| 5 | 11,150 | 49.8 | 8,950 | 40.7 | 7,300 | 29.7 | 6,000 | 21.5 | 5,050 | 17.0 | 4,450 | 13.4 | 3,200 | 8.0 |
| 6 | 9,300 | 52.6 | 7,450 | 42.9 | 6,050 | 32.4 | 5,000 | 23.5 | 4,200 | 18.7 | 3,700 | 14.5 | 2,650 | 8.7 |
| 8 | 7,000 | 59.2 | 5,600 | 47.8 | 4,550 | 35.2 | 3,750 | 25.5 | 3,150 | 20.1 | 2,800 | 14.9 | 2,000 | 9.3 |
| 10 | 5,600 | 56.5 | 4,450 | 44.7 | 3,650 | 34.4 | 3,000 | 25.1 | 2,500 | 19.8 | 2,250 | 15.9 | 1,600 | 9.5 |
| 12 | 4,650 | 52.6 | 3,700 | 41.9 | 3,050 | 32.9 | 2,500 | 23.9 | 2,100 | 19.6 | 1,850 | 15.0 | 1,350 | 9.3 |
| 14 | 4,000 | 48.6 | 3,200 | 40.2 | 2,600 | 30.7 | 2,150 | 22.3 | 1,800 | 17.7 | 1,600 | 14.0 | 1,150 | 8.5 |
| 16 | 3,500 | 48.6 | 2,800 | 39.0 | 2,300 | 29.8 | 1,900 | 22.7 | 1,600 | 17.6 | 1,400 | 12.9 | 1,000 | 8.0 |
| 18 | 3,100 | 46.1 | 2,500 | 37.1 | 2,000 | 27.4 | 1,650 | 22.0 | 1,400 | 17.4 | 1,250 | 12.1 | 900 | 7.8 |
| 20 | 2,800 | 43.3 | 2,250 | 35.0 | 1,800 | 25.7 | 1,500 | 20.8 | 1,250 | 16.2 | 1,100 | 11.1 | 800 | 7.3 |
| 22 | 2,550 | 42.1 | 2,050 | 32.4 | 1,650 | 22.5 | 1,350 | 18.9 | 1,150 | 15.3 | 1,000 | 10.4 | 750 | 7.5 |
| 25 | 2,250 | 36.8 | 1,800 | 31.7 | 1,450 | 21.3 | 1,200 | 17.0 | 1,000 | 12.9 | 900 | 9.6 | 650 | 6.5 |

continued on next page →





List HP416: (continued)

High Speed Light Milling (Fractional)

| Hardness | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | | | | | | | | | | |
|---------------|--------------------------------------|-------------|---|-------------|--|-------------|--|-------------|---|-------------|-----------------|-------------|-----|------------|------------|---------------|-------|-------|------------|-------|-------|
| Work Material | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | Hardened Steels | | | | | | | | | | |
| Cutting Speed | 985 SFM | | 855 SFM | | 740 SFM | | 590 SFM | | 590 SFM | | 400 SFM | | | | | | | | | | |
| Depth of Cut | $\bar{a}a=0.02D$ $\bar{a}r=0.05D$ | | | | | | | | <table border="1"> <thead> <tr> <th>Dia</th> <th>$\bar{a}a$</th> <th>$\bar{a}r$</th> </tr> </thead> <tbody> <tr> <td>$D \leq 5/32$</td> <td>0.02D</td> <td>0.05D</td> </tr> <tr> <td>$5/32 < D$</td> <td>0.13D</td> <td>0.05D</td> </tr> </tbody> </table> | | | | Dia | $\bar{a}a$ | $\bar{a}r$ | $D \leq 5/32$ | 0.02D | 0.05D | $5/32 < D$ | 0.13D | 0.05D |
| | | | | | | | | | Dia | $\bar{a}a$ | $\bar{a}r$ | | | | | | | | | | |
| $D \leq 5/32$ | 0.02D | 0.05D | | | | | | | | | | | | | | | | | | | |
| $5/32 < D$ | 0.13D | 0.05D | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | |
| 1/32 | 25,000 | 35.0 | 25,000 | 39.3 | 25,000 | 35.1 | 25,000 | 33.0 | 25,000 | 31.7 | 25,000 | 27.7 | | | | | | | | | |
| 1/16 | 25,000 | 80.3 | 25,000 | 77.6 | 25,000 | 69.9 | 25,000 | 65.9 | 25,000 | 63.4 | 24,450 | 54.3 | | | | | | | | | |
| 3/32 | 25,000 | 125.5 | 25,000 | 127.6 | 25,000 | 115.4 | 24,050 | 104.4 | 24,050 | 99.4 | 16,300 | 58.4 | | | | | | | | | |
| 1/8 | 25,000 | 174.8 | 25,000 | 181.6 | 22,650 | 146.5 | 18,050 | 110.5 | 18,050 | 106.7 | 12,250 | 59.7 | | | | | | | | | |
| 3/16 | 20,100 | 198.9 | 17,450 | 180.2 | 15,100 | 121.5 | 11,400 | 91.3 | 12,050 | 96.3 | 8,150 | 49.3 | | | | | | | | | |
| 1/4 | 15,050 | 189.5 | 13,050 | 164.3 | 11,300 | 106.1 | 8,750 | 81.5 | 8,750 | 81.5 | 6,050 | 41.7 | | | | | | | | | |
| 5/16 | 11,650 | 146.1 | 10,150 | 128.0 | 9,050 | 83.9 | 7,250 | 67.7 | 7,250 | 67.7 | 5,000 | 35.4 | | | | | | | | | |
| 3/8 | 9,800 | 122.0 | 8,500 | 105.9 | 7,400 | 69.3 | 5,900 | 55.1 | 5,900 | 55.1 | 4,100 | 28.7 | | | | | | | | | |
| 1/2 | 7,250 | 90.2 | 6,250 | 77.6 | 5,450 | 50.4 | 4,300 | 40.2 | 4,300 | 40.2 | 3,000 | 20.9 | | | | | | | | | |

High Speed Light Milling (Metric)

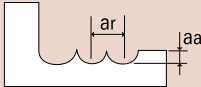
| Hardness | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | | | | | | | | | | |
|---------------|--------------------------------------|-------------|---|-------------|--|-------------|--|-------------|---|-------------|-----------------|-------------|-----|------------|------------|------------|-------|-------|---------|-------|-------|
| Work Material | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | Hardened Steels | | | | | | | | | | |
| Cutting Speed | 985 SFM | | 855 SFM | | 740 SFM | | 590 SFM | | 590 SFM | | 400 SFM | | | | | | | | | | |
| Depth of Cut | $\bar{a}a=0.02D$ $\bar{a}r=0.05D$ | | | | | | | | <table border="1"> <thead> <tr> <th>Dia</th> <th>$\bar{a}a$</th> <th>$\bar{a}r$</th> </tr> </thead> <tbody> <tr> <td>$D \leq 8$</td> <td>0.02D</td> <td>0.05D</td> </tr> <tr> <td>$8 < D$</td> <td>0.13D</td> <td>0.05D</td> </tr> </tbody> </table> | | | | Dia | $\bar{a}a$ | $\bar{a}r$ | $D \leq 8$ | 0.02D | 0.05D | $8 < D$ | 0.13D | 0.05D |
| | | | | | | | | | Dia | $\bar{a}a$ | $\bar{a}r$ | | | | | | | | | | |
| $D \leq 8$ | 0.02D | 0.05D | | | | | | | | | | | | | | | | | | | |
| $8 < D$ | 0.13D | 0.05D | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | |
| 1 | 25,000 | 55.1 | 25,000 | 55.1 | 25,000 | 49.2 | 25,000 | 46.6 | 25,000 | 44.6 | 25,000 | 39.4 | | | | | | | | | |
| 2 | 25,000 | 107.8 | 25,000 | 108.6 | 25,000 | 98.9 | 25,000 | 92.8 | 25,000 | 88.0 | 19,400 | 60.2 | | | | | | | | | |
| 3 | 25,000 | 169.7 | 25,000 | 174.8 | 23,950 | 151.3 | 19,100 | 113.2 | 19,100 | 110.1 | 12,950 | 61.6 | | | | | | | | | |
| 4 | 23,900 | 192.0 | 20,750 | 177.9 | 18,000 | 129.2 | 14,300 | 101.3 | 14,300 | 96.2 | 9,700 | 52.3 | | | | | | | | | |
| 5 | 19,150 | 201.5 | 16,600 | 180.7 | 14,350 | 119.2 | 11,450 | 96.0 | 11,450 | 96.4 | 7,435 | 46.9 | | | | | | | | | |
| 6 | 15,950 | 200.4 | 13,850 | 173.6 | 12,000 | 112.4 | 9,550 | 89.0 | 9,550 | 89.0 | 6,305 | 43.3 | | | | | | | | | |
| 8 | 11,950 | 149.3 | 10,100 | 127.2 | 9,025 | 83.5 | 7,215 | 67.3 | 7,215 | 67.3 | 5,000 | 35.0 | | | | | | | | | |
| 10 | 9,550 | 118.7 | 8,025 | 99.2 | 6,950 | 65.0 | 5,540 | 51.6 | 5,540 | 51.6 | 3,840 | 27.2 | | | | | | | | | |
| 12 | 7,540 | 93.3 | 6,510 | 80.3 | 5,650 | 52.4 | 4,500 | 41.3 | 4,500 | 41.3 | 3,125 | 21.7 | | | | | | | | | |
| 14 | 6,800 | 84.6 | 5,900 | 72.8 | 5,100 | 47.2 | 4,050 | 38.2 | 4,050 | 38.2 | 2,800 | 19.7 | | | | | | | | | |
| 16 | 6,000 | 75.2 | 5,190 | 63.4 | 4,485 | 41.3 | 3,575 | 33.5 | 3,575 | 33.5 | 2,465 | 17.3 | | | | | | | | | |
| 18 | 5,300 | 65.0 | 4,550 | 57.1 | 3,950 | 37.0 | 3,150 | 29.5 | 3,150 | 29.5 | 2,200 | 15.4 | | | | | | | | | |
| 20 | 4,890 | 60.6 | 4,215 | 52.8 | 3,650 | 34.3 | 2,925 | 27.6 | 2,925 | 27.6 | 2,010 | 14.2 | | | | | | | | | |
| 22 | 4,255 | 53.1 | 3,710 | 46.1 | 3,190 | 29.9 | 2,550 | 24.0 | 2,550 | 24.0 | 1,755 | 12.2 | | | | | | | | | |
| 25 | 3,740 | 46.5 | 3,250 | 40.6 | 2,805 | 26.4 | 2,215 | 20.9 | 2,215 | 20.9 | 1,525 | 10.6 | | | | | | | | | |



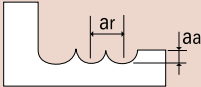


List HP418

Profiling Milling (Fractional)

| Hardness | – | | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | |
|---------------|--|----------------|------------------------------|----------------|--|----------------|--|----------------|---|----------------|---------------------------|----------------|--------------------|----------------|
| Work Material | Cast Iron | | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | Hardened Steels | |
| Cutting Speed | 497 SFM | | 397 SFM | | 330 SFM | | 262 SFM | | 230 SFM | | 196 SFM | | 146 SFM | |
| Depth of Cut | $a_a=0.1D$ $a_r=0.2D$  | | | | | | | | | | $a_a=0.05D$ $a_r=0.1D$ | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 3/32 | 20,450 | 37.0 | 16,520 | 30.1 | 13,590 | 24.5 | 10,955 | 15.8 | 9,625 | 11.4 | 8,295 | 8.3 | 6,235 | 5.5 |
| 1/8 | 14,800 | 37.0 | 11,975 | 30.1 | 10,050 | 24.8 | 8,080 | 16.2 | 7,075 | 12.0 | 6,070 | 8.7 | 4,540 | 5.7 |
| 3/16 | 9,975 | 40.3 | 8,050 | 32.8 | 6,730 | 24.9 | 5,355 | 17.5 | 4,710 | 14.6 | 4,025 | 11.1 | 3,015 | 6.9 |
| 1/4 | 7,600 | 43.0 | 6,070 | 35.0 | 5,060 | 27.2 | 4,015 | 18.9 | 3,530 | 15.8 | 3,010 | 11.8 | 2,245 | 7.4 |
| 3/8 | 5,035 | 48.1 | 4,025 | 38.6 | 3,340 | 29.7 | 2,650 | 20.9 | 2,330 | 17.1 | 2,005 | 13.1 | 1,480 | 8.3 |

Profiling Milling (Metric)

| Hardness | – | | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | |
|---------------|--|----------------|------------------------------|----------------|--|----------------|--|----------------|---|----------------|---------------------------|----------------|--------------------|----------------|
| Work Material | Cast Iron | | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | Hardened Steels | |
| Cutting Speed | 497 SFM | | 397 SFM | | 330 SFM | | 262 SFM | | 230 SFM | | 196 SFM | | 146 SFM | |
| Depth of Cut | $a_a=0.1D$ $a_r=0.2D$  | | | | | | | | | | $a_a=0.05D$ $a_r=0.1D$ | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1 | 25,000 | 23.5 | 25,000 | 23.5 | 25,000 | 19.3 | 2,500 | 1.6 | 25,000 | 12.7 | 19,050 | 8.2 | 14,200 | 5.5 |
| 2 | 25,000 | 38.9 | 19,250 | 30.1 | 16,000 | 24.7 | 12,700 | 15.8 | 11,150 | 11.3 | 9,500 | 8.1 | 7,100 | 5.3 |
| 3 | 16,100 | 40.2 | 12,850 | 32.2 | 10,700 | 26.4 | 8,500 | 16.9 | 7,450 | 12.4 | 6,350 | 8.9 | 4,750 | 6.0 |
| 4 | 12,050 | 38.3 | 9,650 | 30.2 | 8,000 | 24.7 | 6,350 | 17.2 | 5,600 | 14.4 | 4,750 | 10.4 | 3,550 | 6.7 |
| 5 | 9,650 | 43.1 | 7,700 | 35.0 | 6,400 | 26.0 | 5,100 | 18.2 | 4,450 | 15.0 | 3,800 | 11.5 | 2,850 | 7.1 |
| 6 | 8,050 | 45.5 | 6,400 | 36.8 | 5,350 | 28.6 | 4,250 | 20.0 | 3,700 | 16.5 | 3,150 | 12.4 | 2,350 | 7.7 |
| 8 | 6,050 | 51.2 | 4,800 | 41.0 | 4,000 | 30.9 | 3,200 | 21.8 | 2,800 | 17.9 | 2,400 | 12.8 | 1,750 | 8.1 |
| 10 | 4,850 | 49.0 | 3,850 | 38.7 | 3,200 | 30.1 | 2,550 | 21.3 | 2,250 | 17.8 | 1,900 | 13.4 | 1,400 | 8.3 |
| 12 | 4,000 | 45.3 | 3,200 | 36.2 | 2,650 | 28.6 | 2,100 | 20.1 | 1,850 | 17.3 | 1,600 | 13.0 | 1,200 | 8.3 |

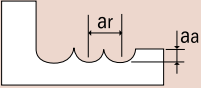
continued on next page



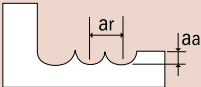


List HP418: (continued)

High Speed Light Milling (Fractional)

| Hardness | - | | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | | | | | | | | | |
|---------------|---|-------------|---|-------------|--|-------------|--|-------------|---|-------------|-----------------|-------------|-----|-------|-------|---------------|-------|-------|------------|-------|-------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | Hardened Steels | | | | | | | | | | |
| Cutting Speed | 980 SFM | | 850 SFM | | 740 SFM | | 590 SFM | | 590 SFM | | 410 SFM | | | | | | | | | | |
| Depth of Cut | $a_a=0.02D$ $a_r=0.05D$ | | | |  | | | | <table border="1"> <thead> <tr> <th>Dia</th> <th>a_a</th> <th>a_r</th> </tr> </thead> <tbody> <tr> <td>$D \leq 5/32$</td> <td>0.02D</td> <td>0.05D</td> </tr> <tr> <td>$5/32 < D$</td> <td>0.13D</td> <td>0.05D</td> </tr> </tbody> </table> | | | | Dia | a_a | a_r | $D \leq 5/32$ | 0.02D | 0.05D | $5/32 < D$ | 0.13D | 0.05D |
| Dia | a_a | a_r | | | | | | | | | | | | | | | | | | | |
| $D \leq 5/32$ | 0.02D | 0.05D | | | | | | | | | | | | | | | | | | | |
| $5/32 < D$ | 0.13D | 0.05D | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | |
| 3/32 | 25,000 | 125.3 | 25,000 | 126.7 | 25,000 | 115.8 | 24,050 | 104.2 | 24,050 | 99.8 | 16,700 | 60.1 | | | | | | | | | |
| 1/8 | 25,000 | 170.0 | 25,000 | 175.2 | 22,650 | 143.3 | 18,050 | 107.2 | 18,050 | 104.0 | 12,550 | 60.1 | | | | | | | | | |
| 3/16 | 17,350 | 166.8 | 17,350 | 176.0 | 15,050 | 119.3 | 12,050 | 95.6 | 12,050 | 95.2 | 8,350 | 50.4 | | | | | | | | | |
| 1/4 | 13,000 | 163.6 | 12,880 | 161.7 | 11,050 | 103.8 | 9,080 | 84.8 | 9,080 | 84.8 | 6,305 | 43.5 | | | | | | | | | |
| 3/8 | 8,650 | 107.7 | 8,660 | 108.0 | 7,575 | 70.7 | 6,035 | 56.4 | 6,035 | 56.4 | 4,180 | 29.6 | | | | | | | | | |

High Speed Light Milling (Metric)

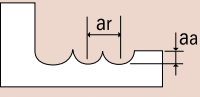
| Hardness | - | | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | | | | | | | | | |
|---------------|------------------------------|-------------|---|-------------|---|-------------|--|-------------|---|-------------|-----------------|-------------|-----|-------|-------|------------|-------|-------|---------|-------|-------|
| Work Material | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | Hardened Steels | | | | | | | | | | |
| Cutting Speed | 980 SFM | | 850 SFM | | 740 SFM | | 590 SFM | | 590 SFM | | 410 SFM | | | | | | | | | | |
| Depth of Cut | $a_a=0.02D$ $a_r=0.05D$ | | | |  | | | | <table border="1"> <thead> <tr> <th>Dia</th> <th>a_a</th> <th>a_r</th> </tr> </thead> <tbody> <tr> <td>$D \leq 8$</td> <td>0.02D</td> <td>0.05D</td> </tr> <tr> <td>$8 < D$</td> <td>0.13D</td> <td>0.05D</td> </tr> </tbody> </table> | | | | Dia | a_a | a_r | $D \leq 8$ | 0.02D | 0.05D | $8 < D$ | 0.13D | 0.05D |
| Dia | a_a | a_r | | | | | | | | | | | | | | | | | | | |
| $D \leq 8$ | 0.02D | 0.05D | | | | | | | | | | | | | | | | | | | |
| $8 < D$ | 0.13D | 0.05D | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | |
| 1 | 25,000 | 55.1 | 25,000 | 55.1 | 25,000 | 49.2 | 25,000 | 44.6 | 25,000 | 44.6 | 25,000 | 39.4 | | | | | | | | | |
| 2 | 25,000 | 107.8 | 25,000 | 108.6 | 25,000 | 98.9 | 25,000 | 88.0 | 25,000 | 88.0 | 19,900 | 61.8 | | | | | | | | | |
| 3 | 25,000 | 169.7 | 25,000 | 174.9 | 24,000 | 151.7 | 19,100 | 110.1 | 19,100 | 110.1 | 13,250 | 63.0 | | | | | | | | | |
| 4 | 20,650 | 165.9 | 20,650 | 177.0 | 17,950 | 128.9 | 14,300 | 96.2 | 14,300 | 96.2 | 9,950 | 53.6 | | | | | | | | | |
| 5 | 16,500 | 173.6 | 16,500 | 179.6 | 14,350 | 119.2 | 11,450 | 96.4 | 11,450 | 96.4 | 7,950 | 50.1 | | | | | | | | | |
| 6 | 13,750 | 172.8 | 13,750 | 172.3 | 12,000 | 112.4 | 9,550 | 89.0 | 9,550 | 89.0 | 6,650 | 45.7 | | | | | | | | | |
| 8 | 10,300 | 128.6 | 10,300 | 129.7 | 9,000 | 83.2 | 7,150 | 66.7 | 7,150 | 66.7 | 5,000 | 35.0 | | | | | | | | | |
| 10 | 8,250 | 102.5 | 8,250 | 102.0 | 7,200 | 67.3 | 5,750 | 53.5 | 5,750 | 53.5 | 4,000 | 28.3 | | | | | | | | | |
| 12 | 6,900 | 85.4 | 6,900 | 85.1 | 6,000 | 55.6 | 4,750 | 43.6 | 4,750 | 43.6 | 3,300 | 22.9 | | | | | | | | | |





List HP419, HP413

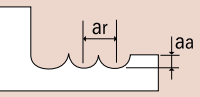
Profiling Milling (Fractional)

| Hardness | – | | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | |
|---------------|--|----------------|------------------------------|----------------|--|----------------|--|----------------|---|----------------|---------------------------------------|----------------|--------------------|----------------|
| Work Material | Cast Iron | | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | Hardened Steels | |
| Cutting Speed | 574 SFM | | 460 SFM | | 377 SFM | | 295 SFM | | 262 SFM | | 230 SFM | | 164 SFM | |
| Depth of Cut | $\bar{a}_a=0.1D$ $\bar{a}_r=0.2D$  | | | | | | | | | | $\bar{a}_a=0.05D$ $\bar{a}_r=0.1D$ | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/32 | 25,000 | 23.4 | 25,000 | 23.4 | 25,000 | 18.8 | 25,000 | 12.1 | 25,000 | 8.6 | 25,000 | 8.7 | 20,050 | 6.3 |
| 1/16 | 25,000 | 31.6 | 25,000 | 30.9 | 23,050 | 25.5 | 18,050 | 16.1 | 16,000 | 11.7 | 14,050 | 8.6 | 10,050 | 5.5 |
| 3/32 | 23,400 | 42.3 | 18,750 | 34.2 | 15,350 | 27.7 | 12,050 | 17.3 | 10,700 | 12.7 | 9,400 | 9.4 | 6,700 | 5.9 |
| 1/8 | 17,760 | 44.4 | 14,370 | 36.1 | 12,060 | 29.8 | 9,690 | 19.5 | 8,490 | 14.4 | 7,280 | 10.4 | 5,440 | 6.9 |
| 3/16 | 11,970 | 48.3 | 9,660 | 39.4 | 8,070 | 29.9 | 6,420 | 21.0 | 5,650 | 17.5 | 4,830 | 13.3 | 3,610 | 8.3 |

Reduce speeds and feeds 10% to 25% for Series HP419.

List HP419, HP419L, HP413

Profiling Milling (Metric)

| Hardness | – | | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | |
|---------------|--|----------------|------------------------------|----------------|--|----------------|--|----------------|---|----------------|---------------------------------------|----------------|--------------------|----------------|
| Work Material | Cast Iron | | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | Hardened Steels | |
| Cutting Speed | 574 SFM | | 460 SFM | | 377 SFM | | 295 SFM | | 262 SFM | | 230 SFM | | 164 SFM | |
| Depth of Cut | $\bar{a}_a=0.1D$ $\bar{a}_r=0.2D$  | | | | | | | | | | $\bar{a}_a=0.05D$ $\bar{a}_r=0.1D$ | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 0.5 | 25,000 | 19.2 | 25,000 | 19.2 | 25,000 | 15.4 | 25,000 | 9.7 | 25,000 | 7.7 | 25,000 | 4.3 | 25,000 | 4.4 |
| 0.6 | 25,000 | 20.8 | 25,000 | 20.8 | 25,000 | 16.9 | 25,000 | 10.3 | 25,000 | 8.2 | 25,000 | 4.7 | 25,000 | 4.5 |
| 0.8 | 25,000 | 23.1 | 25,000 | 23.1 | 25,000 | 18.2 | 25,000 | 10.8 | 25,000 | 8.5 | 25,000 | 8.2 | 19,900 | 6.0 |
| 1.0 | 25,000 | 23.5 | 25,000 | 23.5 | 25,000 | 19.3 | 25,000 | 15.7 | 25,000 | 12.7 | 25,000 | 10.8 | 15,900 | 6.1 |
| 2.0 | 25,000 | 38.9 | 22,350 | 34.9 | 18,300 | 28.2 | 14,300 | 17.7 | 12,700 | 12.9 | 11,150 | 9.5 | 7,950 | 5.9 |
| 3.0 | 18,600 | 46.4 | 14,900 | 37.4 | 12,200 | 30.1 | 9,550 | 19.0 | 8,500 | 14.2 | 7,450 | 10.5 | 5,300 | 6.7 |
| 4.0 | 13,950 | 44.3 | 11,150 | 34.9 | 9,150 | 28.2 | 7,150 | 19.4 | 6,350 | 16.4 | 5,600 | 12.2 | 4,000 | 7.5 |
| 5.0 | 11,150 | 49.8 | 9,000 | 40.9 | 7,300 | 29.7 | 5,750 | 20.6 | 5,100 | 17.2 | 4,450 | 13.4 | 3,200 | 8.0 |
| 6.0 | 9,300 | 52.6 | 7,450 | 42.9 | 6,100 | 32.6 | 4,750 | 22.4 | 4,250 | 19.0 | 3,700 | 14.5 | 2,650 | 8.7 |
| 8.0 | 7,000 | 59.2 | 5,600 | 47.8 | 4,600 | 35.6 | 3,600 | 24.6 | 3,200 | 20.4 | 2,800 | 14.9 | 2,000 | 9.3 |
| 10.0 | 5,550 | 56.0 | 4,450 | 44.7 | 3,650 | 34.4 | 2,850 | 23.8 | 2,550 | 20.2 | 2,250 | 15.9 | 1,600 | 9.5 |
| 12.0 | 4,650 | 52.7 | 3,700 | 41.9 | 3,050 | 32.9 | 2,400 | 22.9 | 2,100 | 19.6 | 1,850 | 15.0 | 1,350 | 9.3 |

Reduce feeds 10% to 20% for Series HP419L.

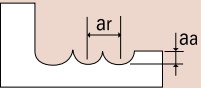
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List HP419, HP413: (continued)

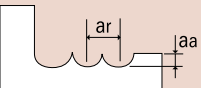
High Speed Light Milling (Fractional)

| Hardness | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | | | | | | | | | | |
|---------------|--|-------------|---|-------------|--|-------------|---|-------------|-----------------|-------------|-----------------|-------------|-----|-------|-------|---------------|-------|-------|------------|-------|-------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | Hardened Steels | | | | | | | | | | |
| Cutting Speed | 951 SFM | | 820 SFM | | 722 SFM | | 574 SFM | | 574 SFM | | 394 SFM | | | | | | | | | | |
| Depth of Cut | $a_a=0.1D$ $a_r=0.2D$  | | | | | | <table border="1"> <thead> <tr> <th>Dia</th> <th>a_a</th> <th>a_r</th> </tr> </thead> <tbody> <tr> <td>$D \leq 5/32$</td> <td>0.02D</td> <td>0.05D</td> </tr> <tr> <td>$5/32 < D$</td> <td>0.13D</td> <td>0.05D</td> </tr> </tbody> </table> | | | | | | Dia | a_a | a_r | $D \leq 5/32$ | 0.02D | 0.05D | $5/32 < D$ | 0.13D | 0.05D |
| Dia | a_a | a_r | | | | | | | | | | | | | | | | | | | |
| $D \leq 5/32$ | 0.02D | 0.05D | | | | | | | | | | | | | | | | | | | |
| $5/32 < D$ | 0.13D | 0.05D | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | |
| 1/32 | 25,000 | 43.3 | 25,000 | 43.3 | 25,000 | 39.4 | 25,000 | 37.4 | 25,000 | 35.3 | 25,000 | 30.8 | | | | | | | | | |
| 1/16 | 25,000 | 80.8 | 25,000 | 78.1 | 25,000 | 70.3 | 25,000 | 66.3 | 25,000 | 64.0 | 24,060 | 53.6 | | | | | | | | | |
| 3/32 | 25,000 | 125.3 | 25,000 | 126.7 | 25,000 | 115.8 | 23,370 | 101.2 | 23,370 | 96.9 | 16,040 | 57.6 | | | | | | | | | |
| 1/8 | 25,000 | 169.9 | 25,000 | 175.1 | 22,050 | 139.5 | 17,530 | 104.1 | 17,530 | 101.1 | 12,030 | 57.6 | | | | | | | | | |
| 3/16 | 19,360 | 186.1 | 16,700 | 169.4 | 14,700 | 116.4 | 11,680 | 92.7 | 11,680 | 92.2 | 8,020 | 48.4 | | | | | | | | | |

Reduce speeds and feeds 10% to 25% for Series HP419.

List HP419, HP419L, HP413: (continued)

High Speed Light Milling (Metric)

| Hardness | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | | | | | | | | | | |
|---------------|--|-------------|---|-------------|--|-------------|---|-------------|-----------------|-------------|-----------------|-------------|-----|-------|-------|------------|-------|-------|---------|-------|-------|
| Work Material | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | Hardened Steels | | | | | | | | | | |
| Cutting Speed | 951 SFM | | 820 SFM | | 722 SFM | | 574 SFM | | 574 SFM | | 394 SFM | | | | | | | | | | |
| Depth of Cut | $a_a=0.1D$ $a_r=0.2D$  | | | | | | <table border="1"> <thead> <tr> <th>Dia</th> <th>a_a</th> <th>a_r</th> </tr> </thead> <tbody> <tr> <td>$D \leq 8$</td> <td>0.02D</td> <td>0.05D</td> </tr> <tr> <td>$8 < D$</td> <td>0.13D</td> <td>0.05D</td> </tr> </tbody> </table> | | | | | | Dia | a_a | a_r | $D \leq 8$ | 0.02D | 0.05D | $8 < D$ | 0.13D | 0.05D |
| Dia | a_a | a_r | | | | | | | | | | | | | | | | | | | |
| $D \leq 8$ | 0.02D | 0.05D | | | | | | | | | | | | | | | | | | | |
| $8 < D$ | 0.13D | 0.05D | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | |
| 0.5 | 25,000 | 28.5 | 25,000 | 27.6 | 25,000 | 27.6 | 25,000 | 23.6 | 25,000 | 22.6 | 25,000 | 22.6 | | | | | | | | | |
| 0.6 | 25,000 | 32.5 | 25,000 | 32.5 | 25,000 | 32.5 | 25,000 | 27.6 | 25,000 | 27.1 | 25,000 | 27.1 | | | | | | | | | |
| 0.8 | 25,000 | 43.3 | 25,000 | 43.3 | 25,000 | 39.4 | 25,000 | 37.4 | 25,000 | 35.4 | 25,000 | 30.8 | | | | | | | | | |
| 1.0 | 25,000 | 55.1 | 25,000 | 55.1 | 25,000 | 49.2 | 25,000 | 46.6 | 25,000 | 44.6 | 25,000 | 39.4 | | | | | | | | | |
| 2.0 | 25,000 | 108.1 | 25,000 | 108.6 | 25,000 | 98.9 | 25,000 | 92.8 | 25,000 | 88.5 | 19,100 | 59.3 | | | | | | | | | |
| 3.0 | 25,000 | 169.9 | 25,000 | 175.1 | 23,330 | 147.6 | 18,550 | 110.1 | 18,550 | 107.0 | 12,730 | 61.0 | | | | | | | | | |
| 4.0 | 23,050 | 185.3 | 19,870 | 170.4 | 17,500 | 125.7 | 13,910 | 98.7 | 13,910 | 94.0 | 9,550 | 51.8 | | | | | | | | | |
| 5.0 | 18,440 | 194.4 | 15,900 | 173.5 | 14,000 | 116.6 | 11,130 | 93.4 | 11,130 | 93.8 | 7,640 | 48.2 | | | | | | | | | |
| 6.0 | 15,360 | 193.4 | 13,250 | 166.3 | 11,670 | 109.6 | 9,280 | 86.6 | 9,280 | 86.6 | 6,370 | 43.9 | | | | | | | | | |
| 8.0 | 11,530 | 144.2 | 9,940 | 125.3 | 8,750 | 80.9 | 6,960 | 65.2 | 6,960 | 65.2 | 4,780 | 33.8 | | | | | | | | | |
| 10.0 | 9,220 | 114.6 | 7,950 | 98.6 | 7,000 | 65.5 | 5,570 | 51.9 | 5,570 | 51.9 | 3,820 | 27.0 | | | | | | | | | |
| 12.0 | 7,680 | 95.3 | 6,630 | 82.0 | 5,830 | 54.0 | 4,640 | 42.8 | 4,640 | 42.8 | 3,180 | 22.4 | | | | | | | | | |

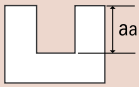
Reduce feeds 10% to 20% for Series HP419L.





List HP432

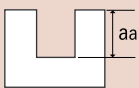
Slotting (Fractional)

| Hardness | – | | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | | | |
|---------------|-----------|-------------|------------------------------|-------------|--|-------------|--|-------------|---|-------------|--------------------|-------------|--------------------|-------------|-------|--|
| Work Material | Cast Iron | | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | Hardened Steels | | | |
| Cutting Speed | 360 SFM | | 330 SFM | | 260 SFM | | 220 SFM | | 180 SFM | | 120 SFM | | 80 SFM | | | |
| Depth of Cut | | | Dia | | aa | |  | | | | Dia | | aa | | | |
| | | | D<1/16 | | 0.1D | | | | D<1/16 | | 0.02D | | D<1/16 | | 0.01D | |
| | | | 1/16≤D≤1/8 | | 0.3D | | | | 1/16≤D | | 0.05D | | 1/16≤D≤1/8 | | 0.02D | |
| | | 1/8≤D | | 0.5D | | | | | | 1/8≤D | | 0.05D | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | |
| 1/8 | 10,990 | 12.4 | 10,075 | 11.5 | 7,940 | 8.0 | 6,720 | 5.4 | 5,495 | 4.0 | 3,665 | 2.5 | 2,445 | 1.5 | | |
| 3/16 | 7,330 | 15.7 | 6,720 | 14.4 | 5,295 | 10.4 | 4,480 | 6.0 | 3,665 | 4.4 | 2,445 | 2.7 | 1,630 | 1.4 | | |
| 1/4 | 5,500 | 15.7 | 5,040 | 14.4 | 3,970 | 10.7 | 3,360 | 6.0 | 2,750 | 4.5 | 1,830 | 2.7 | 1,220 | 1.2 | | |
| 5/16 | 4,395 | 15.3 | 4,030 | 14.0 | 3,175 | 10.8 | 2,685 | 6.0 | 2,200 | 4.5 | 1,465 | 2.5 | 975 | 1.2 | | |
| 3/8 | 3,665 | 14.6 | 3,360 | 13.3 | 2,645 | 10.6 | 2,240 | 5.9 | 1,830 | 4.3 | 1,220 | 2.4 | 815 | 1.2 | | |
| 1/2 | 2,750 | 14.4 | 2,520 | 13.3 | 1,985 | 10.4 | 1,680 | 5.7 | 1,375 | 4.3 | 915 | 2.1 | 610 | 0.9 | | |
| 5/8 | 2,200 | 12.6 | 2,015 | 12.4 | 1,590 | 9.3 | 1,345 | 4.8 | 1,100 | 3.8 | 735 | 1.7 | 490 | 0.7 | | |
| 3/4 | 1,830 | 11.5 | 1,680 | 10.5 | 1,325 | 7.7 | 1,120 | 3.9 | 915 | 3.1 | 610 | 1.5 | 410 | 0.6 | | |
| 1 | 1,375 | 8.6 | 1,260 | 7.8 | 990 | 5.8 | 840 | 3.0 | 685 | 2.5 | 460 | 0.9 | 305 | 0.5 | | |

For side milling, increase feeds 20% to 50%.

List HP432, HP433

Slotting (Metric)

| Hardness | – | | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | | | |
|---------------|-----------|-------------|------------------------------|-------------|--|-------------|--|-------------|---|-------------|--------------------|-------------|--------------------|-------------|-------|--|
| Work Material | Cast Iron | | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | Hardened Steels | | | |
| Cutting Speed | 360 SFM | | 330 SFM | | 260 SFM | | 220 SFM | | 180 SFM | | 120 SFM | | 80 SFM | | | |
| Depth of Cut | | | Dia | | aa | |  | | | | Dia | | aa | | | |
| | | | D<1 | | 0.1D | | | | D<1 | | 0.02D | | D<1 | | 0.01D | |
| | | | 1≤D<3 | | 0.3D | | | | 1≤D | | 0.05D | | 1≤D<3 | | 0.02D | |
| | | 3≤D | | 0.5D | | | | | | 3≤D | | 0.05D | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | |
| 3 | 11,635 | 12.4 | 10,665 | 11.4 | 8,400 | 7.8 | 7,110 | 5.2 | 5,815 | 3.9 | 3,880 | 2.5 | 2,585 | 1.5 | | |
| 4 | 8,725 | 14.7 | 8,000 | 13.5 | 6,300 | 10.5 | 5,330 | 7.0 | 4,365 | 5.0 | 2,910 | 2.9 | 1,940 | 1.7 | | |
| 5 | 6,980 | 19.7 | 6,400 | 17.9 | 5,040 | 13.4 | 4,265 | 7.4 | 3,490 | 5.6 | 2,325 | 3.2 | 1,550 | 1.7 | | |
| 6 | 5,815 | 19.3 | 5,330 | 17.6 | 4,200 | 13.4 | 3,555 | 7.4 | 2,910 | 5.6 | 1,940 | 3.2 | 1,295 | 1.4 | | |
| 8 | 4,365 | 18.4 | 4,000 | 16.7 | 3,150 | 13.4 | 2,665 | 7.0 | 2,180 | 5.6 | 1,455 | 2.9 | 970 | 1.4 | | |
| 10 | 3,490 | 17.4 | 3,200 | 15.8 | 2,520 | 13.1 | 2,135 | 7.0 | 1,745 | 5.3 | 1,165 | 2.9 | 775 | 1.4 | | |
| 12 | 2,910 | 17.4 | 2,665 | 15.8 | 2,100 | 13.1 | 1,775 | 7.0 | 1,454 | 5.3 | 970 | 2.6 | 645 | 1.1 | | |

For side milling, increase feeds 20% to 50%.


▶ continued on next page ▶





List HP434


Side Milling (Fractional)

| Hardness | – | | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | | | | | | | | | | | | |
|---------------|--|----------------|------------------------------|----------------|--|----------------|--|----------------|---|----------------|--------------------|----------------|--------------------|----------------|----------------|-------|------|-------|-------|------|-------|---|--|---|--|
| Work Material | Cast Iron | | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | Hardened Steels | | | | | | | | | | | | |
| Cutting Speed | 390 SFM | | 330 SFM | | 270 SFM | | 220 SFM | | 190 SFM | | 120 SFM | | 80 SFM | | | | | | | | | | | | |
| Depth of Cut | <table border="1"> <thead> <tr> <th>Dia</th> <th>a_a</th> <th>a_r</th> </tr> </thead> <tbody> <tr> <td>D≤1/8</td> <td>1.5D</td> <td>0.05D</td> </tr> <tr> <td>1/8<D</td> <td>1.5D</td> <td>0.10D</td> </tr> </tbody> </table> | | | | | | | | | | | | Dia | a _a | a _r | D≤1/8 | 1.5D | 0.05D | 1/8<D | 1.5D | 0.10D |  | | a _a =1D a _r =0.02D | |
| | Dia | a _a | a _r | | | | | | | | | | | | | | | | | | | | | | |
| D≤1/8 | 1.5D | 0.05D | | | | | | | | | | | | | | | | | | | | | | | |
| 1/8<D | 1.5D | 0.10D | | | | | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | | |
| 1/8 | 11,910 | 28.0 | 10,075 | 23.7 | 8,245 | 16.0 | 6,720 | 5.6 | 5,800 | 5.5 | 3,665 | 3.3 | 2,445 | 2.3 | | | | | | | | | | | |
| 3/16 | 7,940 | 33.1 | 6,720 | 28.2 | 5,495 | 18.0 | 4,480 | 6.5 | 3,870 | 5.6 | 2,445 | 3.6 | 1,630 | 2.1 | | | | | | | | | | | |
| 1/4 | 5,955 | 29.0 | 5,040 | 28.6 | 4,120 | 19.5 | 3,360 | 6.9 | 2,900 | 5.8 | 1,830 | 3.4 | 1,220 | 1.9 | | | | | | | | | | | |
| 5/16 | 4,765 | 33.2 | 4,030 | 28.0 | 3,300 | 19.6 | 2,685 | 7.0 | 2,320 | 6.0 | 1,465 | 3.4 | 975 | 1.7 | | | | | | | | | | | |
| 3/8 | 3,970 | 33.3 | 3,360 | 27.8 | 2,750 | 19.5 | 2,240 | 6.9 | 1,935 | 6.0 | 1,220 | 3.9 | 815 | 1.7 | | | | | | | | | | | |
| 1/2 | 2,975 | 32.3 | 2,520 | 27.6 | 2,060 | 19.4 | 1,680 | 7.0 | 1,450 | 5.9 | 915 | 2.7 | 610 | 1.3 | | | | | | | | | | | |
| 5/8 | 2,380 | 31.7 | 2,015 | 26.4 | 1,650 | 19.8 | 1,345 | 6.2 | 1,160 | 5.2 | 735 | 2.3 | 490 | 0.9 | | | | | | | | | | | |
| 3/4 | 1,985 | 30.7 | 1,680 | 26.1 | 1,375 | 16.0 | 1,120 | 5.1 | 965 | 4.5 | 610 | 1.8 | 405 | 1.0 | | | | | | | | | | | |
| 1 | 1,490 | 23.4 | 1,260 | 19.8 | 1,030 | 13.7 | 840 | 3.9 | 725 | 3.4 | 460 | 1.5 | 305 | 0.7 | | | | | | | | | | | |

For Slotting, reduce feeds 20% to 50%.

List HP434, HP435

Side Milling (Metric)

| Hardness | – | | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | 55-60 HRC | | | | | | | | | | | | |
|---------------|--|----------------|------------------------------|----------------|--|----------------|--|----------------|---|----------------|-----------------|----------------|-----------------|----------------|----------------|-----|------|-------|-----|------|-------|---|--|---|--|
| Work Material | Cast Iron | | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | Hardened Steels | | | | | | | | | | | | |
| Cutting Speed | 390 SFM | | 330 SFM | | 270 SFM | | 220 SFM | | 190 SFM | | 120 SFM | | 80 SFM | | | | | | | | | | | | |
| Depth of Cut | <table border="1"> <thead> <tr> <th>Dia</th> <th>a_a</th> <th>a_r</th> </tr> </thead> <tbody> <tr> <td>D≤3</td> <td>1.5D</td> <td>0.05D</td> </tr> <tr> <td>3<D</td> <td>1.5D</td> <td>0.10D</td> </tr> </tbody> </table> | | | | | | | | | | | | Dia | a _a | a _r | D≤3 | 1.5D | 0.05D | 3<D | 1.5D | 0.10D |  | | a _a =1D a _r =0.02D | |
| | Dia | a _a | a _r | | | | | | | | | | | | | | | | | | | | | | |
| D≤3 | 1.5D | 0.05D | | | | | | | | | | | | | | | | | | | | | | | |
| 3<D | 1.5D | 0.10D | | | | | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | | |
| 3 | 12,605 | 29.7 | 10,665 | 25.1 | 8,725 | 17.0 | 7,110 | 5.9 | 6,140 | 5.8 | 3,880 | 3.6 | 2,585 | 2.4 | | | | | | | | | | | |
| 4 | 9,450 | 29.4 | 8,000 | 24.8 | 6,545 | 14.5 | 5,330 | 6.5 | 4,605 | 5.5 | 2,910 | 3.6 | 1,940 | 2.3 | | | | | | | | | | | |
| 5 | 7,560 | 34.7 | 6,400 | 30.2 | 5,235 | 20.2 | 4,265 | 6.8 | 3,685 | 5.9 | 2,325 | 3.7 | 1,550 | 2.1 | | | | | | | | | | | |
| 6 | 6,300 | 30.7 | 5,330 | 30.2 | 4,365 | 20.6 | 3,555 | 7.2 | 3,070 | 6.2 | 1,940 | 3.6 | 1,295 | 2.0 | | | | | | | | | | | |
| 8 | 4,725 | 32.9 | 4,000 | 27.8 | 3,270 | 19.4 | 2,665 | 6.9 | 2,300 | 6.0 | 1,455 | 3.4 | 970 | 1.7 | | | | | | | | | | | |
| 10 | 3,780 | 34.5 | 3,200 | 28.8 | 2,620 | 20.2 | 2,135 | 7.2 | 1,840 | 6.2 | 1,165 | 4.1 | 775 | 1.7 | | | | | | | | | | | |
| 12 | 3,150 | 34.3 | 2,665 | 29.3 | 2,180 | 20.5 | 1,775 | 7.4 | 1,535 | 6.2 | 970 | 2.9 | 645 | 1.4 | | | | | | | | | | | |

For Slotting, reduce feeds 20% to 50%.

continued on next page





List HP432, HP434 (Continued)

High Speed Light Milling (Fractional)

| Hardness | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | | | | | | | | | | | | | | | | | | | | |
|---------------|--|-------------|---|-------------|--|-------------|--|-------------|-----------------|-------------|------|-------|-------|------|-------|--|--|--|--|--|--|-----|----|----|--------|----|-------|--------|----|-------|
| Work Material | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | | | | | | | | | | | | | | | | | | | | |
| Cutting Speed | 1,310 SFM | | 1,150 SFM | | 820 SFM | | 490 SFM | | 260 SFM | | | | | | | | | | | | | | | | | | | | | |
| Depth of Cut | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D≤5/16</td> <td>1.5D</td> <td>0.01D</td> </tr> <tr> <td>5/16<D≤5/8</td> <td>1.5D</td> <td>0.02D</td> </tr> <tr> <td>5/8<D</td> <td>1.5D</td> <td>0.05D</td> </tr> </tbody> </table> | | | Dia | aa | ar | D≤5/16 | 1.5D | 0.01D | 5/16<D≤5/8 | 1.5D | 0.02D | 5/8<D | 1.5D | 0.05D | | | | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D≤5/16</td> <td>1D</td> <td>0.01D</td> </tr> <tr> <td>5/16<D</td> <td>1D</td> <td>0.02D</td> </tr> </tbody> </table> | | | Dia | aa | ar | D≤5/16 | 1D | 0.01D | 5/16<D | 1D | 0.02D |
| | Dia | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D≤5/16 | 1.5D | 0.01D | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5/16<D≤5/8 | 1.5D | 0.02D | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5/8<D | 1.5D | 0.05D | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dia | aa | ar | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D≤5/16 | 1D | 0.01D | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5/16<D | 1D | 0.02D | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | | | | | | | | | | | |
| 1/8 | 25,000 | 49.3 | 25,000 | 49.6 | 25,000 | 49.0 | 14,960 | 25.6 | 7,940 | 14.4 | | | | | | | | | | | | | | | | | | | | |
| 3/16 | 25,000 | 104.5 | 23,410 | 80.6 | 16,690 | 53.8 | 9,975 | 28.3 | 5,295 | 17.1 | | | | | | | | | | | | | | | | | | | | |
| 1/4 | 20,000 | 96.5 | 17,555 | 84.1 | 12,520 | 59.0 | 7,480 | 30.6 | 3,970 | 16.4 | | | | | | | | | | | | | | | | | | | | |
| 5/16 | 16,000 | 98.7 | 14,045 | 85.1 | 10,015 | 57.5 | 5,985 | 31.0 | 3,175 | 16.6 | | | | | | | | | | | | | | | | | | | | |
| 3/8 | 13,335 | 98.6 | 11,705 | 83.8 | 8,345 | 56.7 | 4,985 | 31.0 | 2,645 | 16.5 | | | | | | | | | | | | | | | | | | | | |
| 1/2 | 10,000 | 95.4 | 8,780 | 81.4 | 6,260 | 55.6 | 3,740 | 30.2 | 1,985 | 16.0 | | | | | | | | | | | | | | | | | | | | |
| 5/8 | 8,000 | 88.6 | 7,025 | 77.1 | 5,010 | 53.7 | 2,990 | 28.4 | 1,590 | 15.0 | | | | | | | | | | | | | | | | | | | | |
| 3/4 | 6,665 | 85.6 | 5,850 | 74.2 | 4,175 | 51.5 | 2,495 | 27.3 | 1,325 | 14.5 | | | | | | | | | | | | | | | | | | | | |
| 1 | 5,000 | 66.4 | 4,390 | 58.2 | 3,130 | 41.0 | 1,870 | 21.9 | 990 | 11.0 | | | | | | | | | | | | | | | | | | | | |

Reduce feeds 50% for Series HP432 High speed Light Milling.

continued on next page →





List HP432, HP434, HP433, HP435: (continued)

High Speed Light Milling (Metric)


| Hardness | <20 HRC | | 20-30 HRC | | 30-38 HRC | | 38-45 HRC | | 45-55 HRC | | | | | | | | | | | | | | | | | | | | | |
|---------------|--|----------------|---|-------------|--|----------------|--|-------------|-----------------|-------------|------|-------|------|------|-------|--|--|--|--|--|--|-----|----------------|----------------|-----|----|-------|-----|----|-------|
| Work Material | Mild Steels Carbon Steels | | Alloy Steels Tool Steels Ti Alloys (Annealed) | | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | | Hardened Steels | | | | | | | | | | | | | | | | | | | | | |
| Cutting Speed | 1,310 SFM | | 1,150 SFM | | 820 SFM | | 490 SFM | | 260 SFM | | | | | | | | | | | | | | | | | | | | | |
| Depth of Cut | <table border="1"> <thead> <tr> <th>Dia</th> <th>a_a</th> <th>a_r</th> </tr> </thead> <tbody> <tr> <td>D≤8</td> <td>1.5D</td> <td>0.01D</td> </tr> <tr> <td>8<D≤16</td> <td>1.5D</td> <td>0.02D</td> </tr> <tr> <td>16<D</td> <td>1.5D</td> <td>0.05D</td> </tr> </tbody> </table> | | | Dia | a _a | a _r | D≤8 | 1.5D | 0.01D | 8<D≤16 | 1.5D | 0.02D | 16<D | 1.5D | 0.05D | | | | <table border="1"> <thead> <tr> <th>Dia</th> <th>a_a</th> <th>a_r</th> </tr> </thead> <tbody> <tr> <td>D≤8</td> <td>1D</td> <td>0.01D</td> </tr> <tr> <td>8<D</td> <td>1D</td> <td>0.02D</td> </tr> </tbody> </table> | | | Dia | a _a | a _r | D≤8 | 1D | 0.01D | 8<D | 1D | 0.02D |
| | Dia | a _a | a _r | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D≤8 | 1.5D | 0.01D | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8<D≤16 | 1.5D | 0.02D | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16<D | 1.5D | 0.05D | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dia | a _a | a _r | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D≤8 | 1D | 0.01D | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8<D | 1D | 0.02D | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | | | | | | | | | | | | |
| 3 | 25,000 | 46.8 | 25,000 | 47.2 | 25,000 | 46.4 | 15,835 | 25.9 | 8,400 | 14.1 | | | | | | | | | | | | | | | | | | | | |
| 4 | 25,000 | 65.6 | 25,000 | 65.4 | 19,875 | 53.1 | 11,875 | 27.1 | 6,300 | 16.4 | | | | | | | | | | | | | | | | | | | | |
| 5 | 25,000 | 96.7 | 22,300 | 84.0 | 15,900 | 55.1 | 9,500 | 29.4 | 5,040 | 17.7 | | | | | | | | | | | | | | | | | | | | |
| 6 | 21,165 | 97.2 | 18,580 | 85.0 | 13,250 | 60.2 | 7,915 | 31.2 | 4,200 | 16.5 | | | | | | | | | | | | | | | | | | | | |
| 8 | 15,875 | 98.8 | 13,935 | 85.3 | 9,935 | 57.3 | 5,940 | 31.2 | 3,150 | 16.7 | | | | | | | | | | | | | | | | | | | | |
| 10 | 12,700 | 100.0 | 11,150 | 83.8 | 7,950 | 57.1 | 4,750 | 31.5 | 2,520 | 16.7 | | | | | | | | | | | | | | | | | | | | |
| 12 | 10,585 | 97.2 | 9,290 | 83.0 | 6,625 | 57.3 | 3,960 | 31.2 | 2,100 | 16.1 | | | | | | | | | | | | | | | | | | | | |

Reduce feeds 50% for Series HP432 High speed Light Milling.



Standard 2 Flute and 3 Flute Carbide

Side Milling (Fractional)

| Hardness | - | | - | | <20 HRC | | 20-30 HRC | | 30-40 HRC | | 40-50 HRC | |
|---------------|--|-------------|-------------|-------------|-----------------------------------|-------------|--|-------------|--|-------------|-----------------|-------------|
| Work Material | Aluminum | | Cast Iron | | Mild Carbon Steels Mild Steels | | Pre-hardened Steels Die & Alloy Steels | | Pre-hardened Steels Die & Alloy Steels | | Hardened Steels | |
| Cutting Speed | 330-400 SFM | | 100-150 SFM | | 100-150 SFM | | 80-115 SFM | | 80-100 SFM | | 50 SFM | |
| Depth of Cut | $da=1.5D$ $dr=0.1D$  | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 0.015 | 25,000 | 3.9 | 25,000 | 3.1 | 25,000 | 1.7 | 24,810 | 1.2 | 2,290 | 0.1 | 12,725 | 0.2 |
| 0.02 | 25,000 | 7.1 | 23,855 | 5.2 | 23,855 | 2.6 | 18,605 | 1.6 | 17,175 | 0.8 | 9,540 | 0.4 |
| 0.03 | 25,000 | 11.1 | 15,905 | 4.9 | 15,905 | 2.7 | 12,405 | 1.7 | 11,450 | 0.8 | 6,360 | 0.4 |
| 3/64 | 25,000 | 14.0 | 10,180 | 5.0 | 10,180 | 3.1 | 7,940 | 2.4 | 7,330 | 1.3 | 4,070 | 0.5 |
| 1/16 | 22,290 | 18.6 | 7,635 | 5.5 | 7,635 | 3.4 | 5,955 | 2.7 | 5,495 | 1.4 | 3,055 | 0.6 |
| 5/64 | 17,830 | 19.7 | 6,105 | 8.4 | 6,105 | 3.7 | 4,765 | 2.9 | 4,395 | 1.5 | 2,445 | 1.0 |
| 1/8 | 11,145 | 15.8 | 3,815 | 9.5 | 3,815 | 5.0 | 2,975 | 3.9 | 2,750 | 1.6 | 1,525 | 1.0 |
| 5/32 | 8,915 | 17.5 | 3,055 | 10.2 | 3,055 | 5.9 | 2,380 | 4.2 | 2,200 | 1.7 | 1,220 | 1.0 |
| 3/16 | 7,430 | 18.5 | 2,545 | 10.7 | 2,545 | 7.2 | 1,985 | 4.6 | 1,830 | 1.7 | 1,020 | 1.1 |
| 1/4 | 5,575 | 16.5 | 1,910 | 9.6 | 1,910 | 6.4 | 1,490 | 4.3 | 1,375 | 1.5 | 765 | 1.0 |
| 5/16 | 4,460 | 18.5 | 1,525 | 10.0 | 1,525 | 6.7 | 1,190 | 4.4 | 1,100 | 1.7 | 610 | 1.0 |
| 3/8 | 3,715 | 19.5 | 1,270 | 11.2 | 1,270 | 8.1 | 990 | 4.6 | 915 | 1.7 | 510 | 1.1 |
| 1/2 | 2,785 | 19.5 | 955 | 10.0 | 955 | 7.2 | 745 | 4.3 | 685 | 1.5 | 380 | 1.0 |
| 5/8 | 2,230 | 20.8 | 765 | 12.6 | 765 | 8.3 | 595 | 4.9 | 550 | 1.7 | 305 | 1.0 |
| 3/4 | 1,860 | 21.5 | 635 | 13.2 | 635 | 8.8 | 495 | 5.5 | 460 | 1.7 | 255 | 1.1 |
| 1 | 1,395 | 18.3 | 475 | 12.6 | 475 | 8.3 | 370 | 4.8 | 345 | 1.3 | 190 | 0.8 |

1. Increase speeds & feeds 5-10% for Series 412 and 422.
2. Reduce speeds & feeds 20-30% for Series 462.
3. Reduce speeds & feeds 40-50% for Series 482.
4. Increase speeds & feeds 20-30% for 402 TiN.
5. Column for Hardened Steels (40-50 HRC) is for Series 402 TiN and 403 TiN only.
6. Increase speeds & feeds 20-30% for Series 403 and 445.
7. Increase speeds & feeds 20-40% for Series 403 TiN.


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Standard 2 Flute and 3 Flute Carbide: (continued)

Side Milling (Metric)

| Hardness | - | | - | | <20 HRC | | 20-30 HRC | | 30-40 HRC | | 40-50 HRC | |
|---------------|--|-------------|-------------|-------------|-----------------------------------|-------------|---|-------------|---|-------------|-----------------|-------------|
| Work Material | Aluminum | | Cast Iron | | Mild Carbon Steels Mild Steels | | Pre-hardened Steels Die & Alloy Steels | | Pre-hardened Steels Die & Alloy Steels | | Hardened Steels | |
| Cutting Speed | 330-400 SFM | | 100-150 SFM | | 100-150 SFM | | 80-115 SFM | | 80-100 SFM | | 50 SFM | |
| Depth of Cut | $aa=1.5D$ $ar=0.1D$  | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 0.3 | 25,000 | 3.9 | 25,000 | 3.1 | 25,000 | 1.6 | 25,000 | 1.2 | 25,000 | 0.6 | 16,160 | 0.3 |
| 0.5 | 25,000 | 7.1 | 24,235 | 5.3 | 24,235 | 2.6 | 18,905 | 1.6 | 17,450 | 0.8 | 9,695 | 0.4 |
| 0.8 | 25,000 | 11.1 | 15,145 | 4.7 | 15,145 | 2.6 | 11,815 | 1.6 | 10,905 | 0.8 | 6,060 | 0.4 |
| 1.0 | 25,000 | 14.1 | 12,120 | 6.0 | 12,120 | 3.7 | 9,450 | 2.8 | 8,725 | 1.5 | 4,845 | 0.6 |
| 1.5 | 23,590 | 19.7 | 8,080 | 5.9 | 8,080 | 3.6 | 6,300 | 2.8 | 5,815 | 1.5 | 3,230 | 0.6 |
| 2.0 | 17,695 | 19.6 | 6,060 | 8.4 | 6,060 | 3.7 | 4,725 | 2.8 | 4,365 | 1.5 | 2,425 | 0.6 |
| 3.0 | 11,795 | 16.7 | 4,040 | 10.0 | 4,040 | 5.3 | 3,150 | 4.2 | 2,910 | 1.6 | 1,615 | 1.0 |
| 4.0 | 8,845 | 17.4 | 3,030 | 10.1 | 3,030 | 5.9 | 2,365 | 4.2 | 2,180 | 1.6 | 1,210 | 1.0 |
| 5.0 | 7,075 | 17.6 | 2,425 | 10.2 | 2,425 | 6.8 | 1,890 | 4.4 | 1,745 | 1.6 | 970 | 1.0 |
| 6.0 | 5,900 | 17.5 | 2,020 | 10.1 | 2,020 | 6.7 | 1,575 | 4.6 | 1,455 | 1.6 | 810 | 1.0 |
| 8.0 | 4,425 | 18.3 | 1,515 | 9.9 | 1,515 | 6.6 | 1,180 | 4.4 | 1,090 | 1.6 | 605 | 1.0 |
| 10.0 | 3,540 | 18.6 | 1,210 | 10.7 | 1,210 | 7.7 | 945 | 4.4 | 875 | 1.6 | 485 | 1.0 |
| 12.0 | 2,950 | 20.6 | 1,010 | 10.6 | 1,010 | 7.6 | 790 | 4.6 | 725 | 1.6 | 405 | 1.0 |
| 16.0 | 2,210 | 20.6 | 755 | 12.4 | 755 | 8.3 | 590 | 4.9 | 545 | 1.6 | 305 | 1.0 |
| 20.0 | 1,770 | 20.5 | 605 | 12.6 | 605 | 8.4 | 475 | 5.3 | 435 | 1.6 | 240 | 1.0 |
| 25.0 | 1,415 | 18.6 | 485 | 12.8 | 485 | 8.5 | 380 | 4.9 | 350 | 1.3 | 195 | 0.8 |


1. Increase speeds & feeds 5-10% for Series 412 and 422.
2. Reduce speeds & feeds 20-30% for Series 462.
3. Reduce speeds & feeds 40-50% for Series 482.
4. Increase speeds & feeds 20-30% for 402 TiN.
5. Column for Hardened Steels (40-50 HRC) is for Series 402 TiN and 403 TiN only.
6. Increase speeds & feeds 20-30% for Series 403 and 445.
7. Increase speeds & feeds 20-40% for Series 403 TiN.

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Standard 2 Flute and 3 Flute Carbide: (continued)

Slotting (Fractional)

| Hardness | - | - | <20 HRC | 20-30 HRC | 30-40 HRC | 40-50 HRC | | | | | | | | |
|---------------|--|-------------|-----------------------------------|---|---|-----------------|-----------|-------------|-----------|-------------|-------------|-------------|--------|-------|
| Work Material | Aluminum | Cast Iron | Mild Carbon Steels Mild Steels | Pre-hardened Steels Die & Alloy Steels | Pre-hardened Steels Die & Alloy Steels | Hardened Steels | | | | | | | | |
| Cutting Speed | 330 SFM | 100-150 SFM | 100-130 SFM | 65-100 SFM | 65-82 SFM | 43 SFM | | | | | | | | |
| Depth of Cut | <table border="1" style="display: inline-table; margin-right: 20px;"> <thead> <tr> <th>Dia</th> <th>aa</th> </tr> </thead> <tbody> <tr> <td>D<1/32</td> <td>0.25D</td> </tr> <tr> <td>1/32<D<5/64</td> <td>0.50D</td> </tr> <tr> <td>5/64<D</td> <td>1.00D</td> </tr> </tbody> </table>  | | | | | | Dia | aa | D<1/32 | 0.25D | 1/32<D<5/64 | 0.50D | 5/64<D | 1.00D |
| | | | | | | | Dia | aa | | | | | | |
| D<1/32 | 0.25D | | | | | | | | | | | | | |
| 1/32<D<5/64 | 0.50D | | | | | | | | | | | | | |
| 5/64<D | 1.00D | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | |
| 0.015 | 25,000 | 1.8 | 25,000 | 3.1 | 25,000 | 1.2 | 20,990 | 0.7 | 18,700 | 0.4 | 10,940 | 0.2 | | |
| 0.020 | 25,000 | 3.2 | 23,855 | 5.2 | 21,945 | 1.8 | 15,745 | 1.0 | 14,025 | 0.7 | 8,205 | 0.3 | | |
| 0.030 | 25,000 | 4.9 | 15,905 | 4.9 | 14,630 | 2.6 | 10,495 | 1.3 | 9,350 | 0.7 | 5,470 | 0.3 | | |
| 3/64 | 25,000 | 6.3 | 10,180 | 4.0 | 9,365 | 2.2 | 6,720 | 1.1 | 5,985 | 0.5 | 3,500 | 0.2 | | |
| 1/16 | 20,155 | 7.5 | 7,635 | 4.4 | 7,025 | 2.9 | 5,040 | 1.1 | 4,490 | 0.7 | 2,625 | 0.3 | | |
| 5/64 | 16,120 | 11.9 | 6,105 | 5.1 | 5,620 | 3.5 | 4,030 | 1.9 | 3,590 | 1.1 | 2,100 | 0.5 | | |
| 1/8 | 10,075 | 10.6 | 3,815 | 5.1 | 3,510 | 3.2 | 2,520 | 2.4 | 2,245 | 1.0 | 1,315 | 0.5 | | |
| 5/32 | 8,060 | 11.9 | 3,055 | 5.4 | 2,810 | 3.5 | 2,015 | 2.6 | 1,795 | 1.1 | 1,050 | 0.5 | | |
| 3/16 | 6,720 | 12.6 | 2,545 | 5.7 | 2,340 | 3.7 | 1,680 | 2.6 | 1,495 | 1.1 | 875 | 0.6 | | |
| 1/4 | 5,040 | 11.2 | 1,910 | 6.4 | 1,755 | 3.2 | 1,260 | 2.4 | 1,120 | 1.0 | 655 | 0.5 | | |
| 5/16 | 4,030 | 11.9 | 1,525 | 7.9 | 1,405 | 3.4 | 1,010 | 2.6 | 890 | 1.1 | 525 | 0.5 | | |
| 3/8 | 3,360 | 12.6 | 1,270 | 8.4 | 1,170 | 3.7 | 840 | 2.6 | 750 | 1.1 | 440 | 0.6 | | |
| 1/2 | 2,520 | 11.2 | 955 | 7.5 | 880 | 3.2 | 630 | 2.4 | 560 | 1.0 | 330 | 0.5 | | |
| 5/8 | 2,015 | 11.9 | 765 | 7.9 | 700 | 3.4 | 505 | 2.6 | 450 | 1.4 | 265 | 0.4 | | |
| 3/4 | 1,680 | 12.4 | 635 | 8.3 | 585 | 3.6 | 420 | 2.8 | 375 | 1.4 | 220 | 0.4 | | |
| 1 | 1,260 | 11.9 | 475 | 7.9 | 440 | 3.4 | 315 | 2.6 | 280 | 1.3 | 165 | 0.3 | | |

1. Increase speeds & feeds 5-10% for Series 412 and 422.
2. Reduce speeds & feeds 20-30% for Series 462.
3. Reduce speeds & feeds 40-50% for Series 482.
4. Increase speeds & feeds 20-30% for 402 TiN.
5. Column for Hardened Steels (40-50 HRC) is for Series 402 TiN and 403 TiN only.
6. Increase speeds & feeds 20-30% for Series 403 and 445.
7. Increase speeds & feeds 20-40% for Series 403 TiN.


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Standard 2 Flute and 3 Flute Carbide: (continued)

Slotting (Metric)


| Hardness | - | - | <20 HRC | 20-30 HRC | 30-40 HRC | 40-50 HRC | | | | | | | | |
|---------------|---|-------------|-----------------------------------|---|---|-----------------|-----------|-------------|-----------|-------------|-----------|-------------|-----|-------|
| Work Material | Aluminum | Cast Iron | Mild Carbon Steels Mild Steels | Pre-hardened Steels Die & Alloy Steels | Pre-hardened Steels Die & Alloy Steels | Hardened Steels | | | | | | | | |
| Cutting Speed | 330 SFM | 100-150 SFM | 100-130 SFM | 65-100 SFM | 65-82 SFM | 43 SFM | | | | | | | | |
| Depth of Cut | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> </tr> </thead> <tbody> <tr> <td>D<0.8</td> <td>0.25D</td> </tr> <tr> <td>0.8<D<2</td> <td>0.50D</td> </tr> <tr> <td>2<D</td> <td>1.00D</td> </tr> </tbody> </table>  | | | | | | Dia | aa | D<0.8 | 0.25D | 0.8<D<2 | 0.50D | 2<D | 1.00D |
| | | | | | | | Dia | aa | | | | | | |
| D<0.8 | 0.25D | | | | | | | | | | | | | |
| 0.8<D<2 | 0.50D | | | | | | | | | | | | | |
| 2<D | 1.00D | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | |
| 0.3 | 25,000 | 1.8 | 25,000 | 3.1 | 25,000 | 1.1 | 25,000 | 0.8 | 23,750 | 0.6 | 13,895 | 0.2 | | |
| 0.5 | 25,000 | 3.2 | 24,235 | 5.3 | 22,300 | 1.8 | 15,995 | 1.0 | 14,250 | 0.7 | 8,335 | 0.3 | | |
| 0.8 | 25,000 | 4.9 | 15,150 | 4.7 | 13,935 | 2.5 | 10,000 | 1.2 | 8,905 | 0.7 | 5,210 | 0.3 | | |
| 1.0 | 25,000 | 6.2 | 12,120 | 4.8 | 11,150 | 2.6 | 8,000 | 1.3 | 7,125 | 0.6 | 4,170 | 0.3 | | |
| 1.5 | 21,330 | 7.9 | 8,080 | 4.7 | 7,435 | 3.1 | 5,330 | 1.1 | 4,750 | 0.7 | 2,780 | 0.4 | | |
| 2.0 | 15,995 | 11.8 | 6,060 | 5.0 | 5,575 | 3.5 | 4,000 | 1.9 | 3,565 | 1.1 | 2,085 | 0.5 | | |
| 3.0 | 10,665 | 11.2 | 4,040 | 5.4 | 3,715 | 3.4 | 2,665 | 2.6 | 2,375 | 1.1 | 1,390 | 0.5 | | |
| 4.0 | 8,000 | 11.8 | 3,030 | 5.4 | 2,785 | 3.5 | 2,000 | 2.6 | 1,780 | 1.1 | 1,040 | 0.5 | | |
| 5.0 | 6,400 | 12.0 | 2,425 | 5.5 | 2,230 | 3.5 | 1,600 | 2.5 | 1,425 | 1.1 | 835 | 0.6 | | |
| 6.0 | 5,330 | 11.9 | 2,020 | 6.7 | 1,860 | 3.5 | 1,335 | 2.6 | 1,190 | 1.1 | 695 | 0.5 | | |
| 8.0 | 4,000 | 11.8 | 1,515 | 7.8 | 1,395 | 3.4 | 1,000 | 2.6 | 890 | 1.1 | 520 | 0.5 | | |
| 10.0 | 3,200 | 12.0 | 1,210 | 8.0 | 1,115 | 3.5 | 800 | 2.5 | 715 | 1.1 | 415 | 0.5 | | |
| 12.0 | 2,665 | 11.9 | 1,010 | 8.0 | 930 | 3.5 | 665 | 2.6 | 595 | 1.0 | 345 | 0.5 | | |
| 16.0 | 2,000 | 11.8 | 755 | 7.8 | 695 | 3.4 | 500 | 2.6 | 445 | 1.3 | 260 | 0.4 | | |
| 20.0 | 1,600 | 11.8 | 605 | 7.9 | 555 | 3.5 | 400 | 2.7 | 355 | 1.3 | 210 | 0.3 | | |
| 25.0 | 1,280 | 12.1 | 485 | 8.0 | 445 | 3.5 | 320 | 2.7 | 285 | 1.3 | 165 | 0.3 | | |

1. Increase speeds & feeds 5-10% for Series 412 and 422.
2. Reduce speeds & feeds 20-30% for Series 462.
3. Reduce speeds & feeds 40-50% for Series 482.
4. Increase speeds & feeds 20-30% for 402 TiN.
5. Column for Hardened Steels (40-50 HRC) is for Series 402 TiN and 403 TiN only.
6. Increase speeds & feeds 20-30% for Series 403 and 445.
7. Increase speeds & feeds 20-40% for Series 403 TiN.



Standard 4 Flute and Multiple Flute Carbide

Side Milling (Fractional)

| Hardness | - | | - | | <20 HRC | | 20-30 HRC | | 30-40 HRC | | 40-50 HRC | |
|---------------|--|----------------|--------------|----------------|-----------------------------------|----------------|--|----------------|--|----------------|-----------------|----------------|
| Work Material | Aluminum | | Cast Iron | | Mild Carbon Steels Mild Steels | | Pre-hardened Steels Die & Alloy Steels | | Pre-hardened Steels Die & Alloy Steels | | Hardened Steels | |
| Cutting Speed | 330-400 SFM | | 100-150 SFM | | 100-150 SFM | | 80-115 SFM | | 80-100 SFM | | 50 SFM | |
| Depth of Cut | $da=1.5D$ $dr=0.1D$  | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 0.030 | 25,000 | 15.5 | 15,905 | 6.9 | 15,905 | 3.7 | 12,405 | 2.5 | 11,450 | 1.1 | 6,360 | 0.6 |
| 3/64 | 25,000 | 19.7 | 10,180 | 7.0 | 10,180 | 4.3 | 7,940 | 3.3 | 7,330 | 1.8 | 4,070 | 0.7 |
| 1/16 | 22,290 | 26.1 | 7,635 | 7.7 | 7,635 | 4.8 | 5,955 | 3.7 | 5,495 | 2.0 | 3,055 | 0.8 |
| 5/64 | 17,830 | 27.6 | 6,105 | 11.9 | 6,105 | 5.2 | 4,765 | 3.9 | 4,395 | 2.2 | 2,445 | 0.8 |
| 1/8 | 11,145 | 22.1 | 3,815 | 13.3 | 3,815 | 7.0 | 2,975 | 5.6 | 2,750 | 2.2 | 1,525 | 1.3 |
| 5/32 | 8,915 | 24.6 | 3,055 | 14.2 | 3,055 | 8.3 | 2,380 | 6.0 | 2,200 | 2.3 | 1,220 | 1.4 |
| 3/16 | 7,430 | 26.0 | 2,545 | 15.0 | 2,545 | 10.0 | 1,985 | 6.3 | 1,830 | 2.4 | 1,020 | 1.5 |
| 1/4 | 5,575 | 23.2 | 1,910 | 13.4 | 1,910 | 8.9 | 1,490 | 5.9 | 1,375 | 2.1 | 765 | 1.3 |
| 5/16 | 4,460 | 25.9 | 1,525 | 14.0 | 1,525 | 9.3 | 1,190 | 6.0 | 1,100 | 2.3 | 610 | 1.4 |
| 3/8 | 3,715 | 27.3 | 1,270 | 15.7 | 1,270 | 11.1 | 990 | 6.3 | 915 | 2.4 | 510 | 1.5 |
| 1/2 | 2,785 | 27.1 | 955 | 14.0 | 955 | 9.9 | 745 | 5.9 | 685 | 2.1 | 380 | 1.3 |
| 5/8 | 2,230 | 29.0 | 765 | 17.6 | 765 | 11.7 | 595 | 7.0 | 550 | 2.3 | 305 | 1.4 |
| 3/4 | 1,860 | 30.1 | 635 | 18.5 | 635 | 12.3 | 495 | 7.8 | 460 | 2.4 | 255 | 1.5 |
| 1 | 1,395 | 25.7 | 475 | 17.6 | 475 | 11.7 | 375 | 7.0 | 345 | 1.8 | 190 | 1.1 |

1. Reduce speeds & feeds 20-30% for Series 464.
2. Reduce speeds & feeds 40-50% for Series 484.
3. Slotting is not recommended for Series 484.
4. Increase speeds & feeds 20-30 % for Series 404 TiN.
5. Column for Hardened Steels (40-50 HRC), is for Series 404 TiN only.


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Standard 4 Flute and Multiple Flute Carbide: (continued)

Side Milling (Metric)

| Hardness | - | | - | | <20 HRC | | 20-30 HRC | | 30-40 HRC | | 40-50 HRC | |
|---------------|--|----------------|--------------|----------------|-----------------------------------|----------------|--|----------------|--|----------------|-----------------|----------------|
| Work Material | Aluminum | | Cast Iron | | Mild Carbon Steels Mild Steels | | Pre-hardened Steels Die & Alloy Steels | | Pre-hardened Steels Die & Alloy Steels | | Hardened Steels | |
| Cutting Speed | 330-400 SFM | | 100-150 SFM | | 100-150 SFM | | 80-115 SFM | | 80-100 SFM | | 50 SFM | |
| Depth of Cut | $da=1.5D$ $dr=0.1D$  | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 0.8 | 25,000 | 15.5 | 15,150 | 6.5 | 15,150 | 3.6 | 11,815 | 2.3 | 10,905 | 1.1 | 6,060 | 0.6 |
| 1.0 | 25,000 | 19.7 | 12,120 | 8.4 | 12,120 | 5.2 | 9,450 | 4.0 | 8,725 | 2.1 | 4,845 | 0.8 |
| 1.5 | 23,590 | 27.6 | 8,080 | 8.2 | 8,080 | 5.1 | 6,300 | 4.0 | 5,815 | 2.1 | 3,230 | 0.8 |
| 2.0 | 17,695 | 27.4 | 6,060 | 11.8 | 6,060 | 5.2 | 4,725 | 4.0 | 4,365 | 2.1 | 2,425 | 0.8 |
| 3.0 | 11,795 | 23.4 | 4,040 | 14.1 | 4,040 | 7.4 | 3,150 | 5.9 | 2,910 | 2.3 | 1,615 | 1.4 |
| 4.0 | 8,845 | 24.4 | 3,030 | 14.1 | 3,030 | 8.2 | 2,365 | 6.0 | 2,180 | 2.3 | 1,210 | 1.4 |
| 5.0 | 7,075 | 24.7 | 2,425 | 14.3 | 2,425 | 9.5 | 1,890 | 6.0 | 1,745 | 2.3 | 970 | 1.4 |
| 6.0 | 5,900 | 24.5 | 2,020 | 14.2 | 2,020 | 9.4 | 1,575 | 6.2 | 1,455 | 2.3 | 810 | 1.4 |
| 8.0 | 4,425 | 25.7 | 1,515 | 13.9 | 1,515 | 9.3 | 1,180 | 6.0 | 1,090 | 2.3 | 605 | 1.4 |
| 10.0 | 3,540 | 26.0 | 1,210 | 15.0 | 1,210 | 10.5 | 945 | 6.0 | 875 | 2.3 | 485 | 1.4 |
| 12.0 | 2,950 | 28.8 | 1,010 | 14.8 | 1,010 | 10.4 | 790 | 6.2 | 725 | 2.2 | 405 | 1.4 |
| 16.0 | 2,210 | 28.8 | 755 | 17.3 | 755 | 11.6 | 590 | 6.9 | 545 | 2.3 | 305 | 1.4 |
| 20.0 | 1,770 | 28.6 | 605 | 17.6 | 605 | 11.7 | 475 | 7.4 | 435 | 2.3 | 240 | 1.4 |
| 25.0 | 1,415 | 26.0 | 485 | 17.9 | 485 | 11.9 | 380 | 7.0 | 350 | 1.8 | 195 | 1.1 |

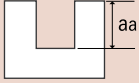
1. Reduce speeds & feeds 20-30% for Series 464.
2. Reduce speeds & feeds 40-50% for Series 484.
3. Slotting is not recommended for Series 484.
4. Increase speeds & feeds 20-30 % for Series 404 TiN.
5. Column for Hardened Steels (40-50 HRC), is for Series 404 TiN only.

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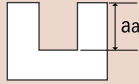


Standard 4 Flute and Multiple Flute Carbide: (continued)

Slotting (Fractional)

| Hardness | - | - | <20 HRC | 20-30 HRC | 30-40 HRC | 40-50 HRC | | | | | | | | |
|---------------|--|-------------|-----------------------------------|---|---|-----------------|-----------|-------------|-----------|-------------|-------------|-------------|--------|------|
| Work Material | Aluminum | Cast Iron | Mild Carbon Steels Mild Steels | Pre-hardened Steels Die & Alloy Steels | Pre-hardened Steels Die & Alloy Steels | Hardened Steels | | | | | | | | |
| Cutting Speed | 330 SFM | 100-150 SFM | 100-130 SFM | 65-100 SFM | 65-82 SFM | 43 SFM | | | | | | | | |
| Depth of Cut | <table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th>Dia</th> <th>aa</th> </tr> </thead> <tbody> <tr> <td>D<1/32</td> <td>0.2D</td> </tr> <tr> <td>1/32<D<5/64</td> <td>0.3D</td> </tr> <tr> <td>5/64<D</td> <td>0.5D</td> </tr> </tbody> </table>  | | | | | | Dia | aa | D<1/32 | 0.2D | 1/32<D<5/64 | 0.3D | 5/64<D | 0.5D |
| | Dia | aa | | | | | | | | | | | | |
| | D<1/32 | 0.2D | | | | | | | | | | | | |
| | 1/32<D<5/64 | 0.3D | | | | | | | | | | | | |
| 5/64<D | 0.5D | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | |
| 0.030 | 25,000 | 6.9 | 15,905 | 6.9 | 14,630 | 3.7 | 10,495 | 1.8 | 9,350 | 0.9 | 5,470 | 0.4 | | |
| 3/64 | 25,000 | 8.7 | 10,180 | 5.7 | 9,365 | 3.1 | 6,720 | 1.5 | 5,985 | 0.7 | 3,500 | 0.3 | | |
| 1/16 | 20,155 | 10.5 | 7,635 | 6.3 | 7,025 | 4.0 | 5,040 | 1.6 | 4,490 | 1.0 | 2,625 | 0.5 | | |
| 5/64 | 16,120 | 16.6 | 6,105 | 7.1 | 5,620 | 4.9 | 4,030 | 2.7 | 3,590 | 1.5 | 2,100 | 0.8 | | |
| 1/8 | 10,075 | 14.8 | 3,815 | 7.1 | 3,510 | 4.5 | 2,520 | 3.4 | 2,245 | 1.5 | 1,315 | 0.7 | | |
| 5/32 | 8,060 | 16.6 | 3,055 | 7.7 | 2,810 | 4.9 | 2,015 | 3.6 | 1,795 | 1.5 | 1,050 | 0.8 | | |
| 3/16 | 6,720 | 17.6 | 2,545 | 8.1 | 2,340 | 5.1 | 1,680 | 3.6 | 1,495 | 1.6 | 875 | 0.8 | | |
| 1/4 | 5,040 | 15.7 | 1,910 | 8.9 | 1,755 | 4.6 | 1,260 | 3.4 | 1,120 | 1.5 | 655 | 0.7 | | |
| 5/16 | 4,030 | 16.6 | 1,525 | 11.0 | 1,405 | 4.8 | 1,010 | 3.6 | 900 | 1.5 | 525 | 0.8 | | |
| 3/8 | 3,360 | 17.6 | 1,270 | 11.8 | 1,170 | 5.1 | 840 | 3.6 | 750 | 1.6 | 440 | 0.8 | | |
| 1/2 | 2,520 | 15.7 | 955 | 10.5 | 880 | 4.6 | 630 | 3.3 | 560 | 1.4 | 330 | 0.7 | | |
| 5/8 | 2,015 | 16.6 | 765 | 11.1 | 700 | 4.8 | 505 | 3.7 | 450 | 1.8 | 265 | 0.6 | | |
| 3/4 | 1,680 | 17.3 | 635 | 11.6 | 585 | 5.1 | 420 | 3.9 | 375 | 1.9 | 220 | 0.6 | | |
| 1 | 1,260 | 16.6 | 475 | 11.0 | 440 | 4.8 | 315 | 3.7 | 280 | 1.8 | 165 | 0.3 | | |

Slotting (Metric)

| Hardness | - | - | <20 HRC | 20-30 HRC | 30-40 HRC | 40-50 HRC | | | | | | | | |
|---------------|--|-------------|-----------------------------------|---|---|-----------------|-----------|-------------|-----------|-------------|-----------|-------------|-----|------|
| Work Material | Aluminum | Cast Iron | Mild Carbon Steels Mild Steels | Pre-hardened Steels Die & Alloy Steels | Pre-hardened Steels Die & Alloy Steels | Hardened Steels | | | | | | | | |
| Cutting Speed | 330 SFM | 100-150 SFM | 100-130 SFM | 65-100 SFM | 65-82 SFM | 43 SFM | | | | | | | | |
| Depth of Cut | <table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th>Dia</th> <th>aa</th> </tr> </thead> <tbody> <tr> <td>D<0.8</td> <td>0.2D</td> </tr> <tr> <td>0.8<D<2</td> <td>0.3D</td> </tr> <tr> <td>2<D</td> <td>0.5D</td> </tr> </tbody> </table>  | | | | | | Dia | aa | D<0.8 | 0.2D | 0.8<D<2 | 0.3D | 2<D | 0.5D |
| | Dia | aa | | | | | | | | | | | | |
| | D<0.8 | 0.2D | | | | | | | | | | | | |
| | 0.8<D<2 | 0.3D | | | | | | | | | | | | |
| 2<D | 0.5D | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | |
| 0.8 | 25,000 | 6.9 | 15,150 | 6.5 | 13,935 | 3.4 | 10,000 | 1.7 | 8,905 | 0.9 | 5,210 | 0.3 | | |
| 1.0 | 25,000 | 8.7 | 12,120 | 6.8 | 11,150 | 3.7 | 8,000 | 1.8 | 7,125 | 0.8 | 4,170 | 0.3 | | |
| 1.5 | 21,330 | 11.1 | 8,080 | 6.7 | 7,435 | 4.3 | 5,330 | 1.6 | 4,750 | 1.0 | 2,780 | 0.5 | | |
| 2.0 | 15,995 | 16.5 | 6,060 | 7.1 | 5,575 | 4.9 | 4,000 | 2.7 | 3,565 | 1.5 | 2,085 | 0.8 | | |
| 3.0 | 10,665 | 15.7 | 4,040 | 7.5 | 3,715 | 4.8 | 2,665 | 3.6 | 2,375 | 1.5 | 1,390 | 0.8 | | |
| 4.0 | 8,000 | 16.5 | 3,030 | 7.6 | 2,785 | 4.9 | 2,000 | 3.6 | 1,780 | 1.5 | 1,040 | 0.8 | | |
| 5.0 | 6,400 | 16.8 | 2,425 | 7.7 | 2,230 | 4.9 | 1,600 | 3.5 | 1,425 | 1.5 | 835 | 0.8 | | |
| 6.0 | 5,330 | 16.6 | 2,020 | 9.4 | 1,860 | 4.8 | 1,335 | 3.6 | 1,190 | 1.5 | 695 | 0.8 | | |
| 8.0 | 4,000 | 16.5 | 1,515 | 10.9 | 1,395 | 4.8 | 1,000 | 3.6 | 890 | 1.5 | 520 | 0.8 | | |
| 10.0 | 3,200 | 16.8 | 1,210 | 11.2 | 1,115 | 4.9 | 800 | 3.5 | 715 | 1.5 | 415 | 0.7 | | |
| 12.0 | 2,665 | 16.6 | 1,010 | 11.1 | 930 | 4.8 | 665 | 3.5 | 595 | 1.4 | 345 | 0.7 | | |
| 16.0 | 2,000 | 16.5 | 755 | 10.9 | 695 | 4.8 | 500 | 3.7 | 445 | 1.8 | 260 | 0.6 | | |
| 20.0 | 1,600 | 16.5 | 605 | 11.1 | 555 | 4.9 | 400 | 3.8 | 355 | 1.7 | 210 | 0.5 | | |
| 25.0 | 1,280 | 16.9 | 485 | 11.3 | 445 | 4.9 | 320 | 3.8 | 285 | 1.8 | 165 | 0.4 | | |



List 497

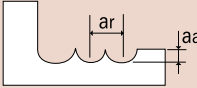
Profiling (Fractional)

| Hardness | – | | <20 HRC | | 20-30 HRC | | 30-40 HRC | | 40-50 HRC | | | | | | | |
|---------------|------------|-------------|-----------------------------------|-------------|---|-------------|--|-------------|-----------------|-------------|-----------|-------|--|--|--|--|
| Work Material | Cast Iron | | Mild Carbon Steels Mild Steels | | Pre-hardened Steels Stainless Steel Die & Alloy Steels | | Pre-hardened Steels Stainless Steel Die & Alloy Steels | | Hardened Steels | | | | | | | |
| Cutting Speed | 390 SFM | | 390 SFM | | 330 SFM | | 260 SFM | | 200 SFM | | | | | | | |
| Depth of Cut | $a_r=0.3D$ | | | | <table border="1"> <thead> <tr> <th>Dia</th> <th>a_a</th> </tr> </thead> <tbody> <tr> <td>$D \leq 5/8$</td> <td>0.05D</td> </tr> <tr> <td>$5/8 < D$</td> <td>0.03D</td> </tr> </tbody> </table> | | Dia | a_a | $D \leq 5/8$ | 0.05D | $5/8 < D$ | 0.03D | | | | |
| Dia | | | | | a_a | | | | | | | | | | | |
| $D \leq 5/8$ | 0.05D | | | | | | | | | | | | | | | |
| $5/8 < D$ | 0.03D | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | |
| 1/8 | 11,910 | 33.7 | 11,910 | 28.8 | 10,075 | 22.8 | 7,940 | 14.9 | 6,105 | 11.4 | | | | | | |
| 3/16 | 7,940 | 29.8 | 7,940 | 24.0 | 6,720 | 20.2 | 5,295 | 14.9 | 4,080 | 11.9 | | | | | | |
| 1/4 | 5,955 | 28.2 | 5,955 | 22.7 | 5,040 | 18.9 | 3,970 | 14.8 | 3,055 | 11.3 | | | | | | |
| 5/16 | 4,765 | 26.8 | 4,765 | 22.3 | 4,030 | 18.2 | 3,175 | 15.1 | 2,445 | 11.5 | | | | | | |
| 3/8 | 3,970 | 22.3 | 3,970 | 19.0 | 3,360 | 16.0 | 2,645 | 12.4 | 2,035 | 9.3 | | | | | | |
| 7/16 | 3,400 | 18.8 | 3,400 | 16.1 | 2,880 | 13.5 | 2,270 | 10.9 | 1,745 | 8.3 | | | | | | |
| 1/2 | 2,975 | 17.0 | 2,975 | 13.6 | 2,520 | 12.2 | 1,985 | 9.5 | 1,525 | 7.2 | | | | | | |
| 9/16 | 2,645 | 14.9 | 2,645 | 12.4 | 2,240 | 11.2 | 1,765 | 8.4 | 1,355 | 6.8 | | | | | | |
| 5/8 | 2,380 | 13.9 | 2,380 | 10.9 | 2,015 | 9.1 | 1,590 | 8.0 | 1,220 | 6.1 | | | | | | |
| 3/4 | 1,985 | 11.5 | 1,985 | 9.4 | 1,680 | 8.4 | 1,325 | 6.1 | 1,020 | 5.4 | | | | | | |
| 1 | 1,490 | 8.9 | 1,490 | 7.0 | 1,260 | 5.8 | 990 | 5.0 | 765 | 4.0 | | | | | | |



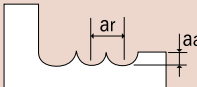
Standard Ball Nose Carbide 2 Flute and 3 Flute

Profiling (Fractional)

| Hardness | - | | - | | <20 HRC | | 20-30 HRC | | 30-40 HRC | | 40-50 HRC | |
|---------------|---|-------------|-----------|-------------|-----------------------------------|-------------|---|-------------|---|-------------|-----------------|-------------|
| Work Material | Aluminum | | Cast Iron | | Mild Carbon Steels Mild Steels | | Pre-hardened Steels Die & Alloy Steels | | Pre-hardened Steels Die & Alloy Steels | | Hardened Steels | |
| Cutting Speed | 330 SFM | | 115 SFM | | 115 SFM | | 80 SFM | | 65 SFM | | 82 SFM | |
| Depth of Cut | $da=0.3D$ $dr=0.7D$  | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 3/64 | 25,000 | 5.9 | 9,365 | 3.0 | 9,365 | 2.6 | 6,515 | 1.5 | 5,295 | 0.7 | 6,675 | 1.5 |
| 5/64 | 16,120 | 7.6 | 5,620 | 3.5 | 5,620 | 3.1 | 3,910 | 1.8 | 3,175 | 0.9 | 4,005 | 1.8 |
| 1/8 | 10,075 | 7.6 | 3,510 | 3.7 | 3,510 | 3.3 | 2,445 | 1.9 | 1,985 | 1.1 | 2,505 | 2.1 |
| 5/32 | 8,060 | 7.6 | 2,810 | 3.9 | 2,810 | 3.5 | 1,954 | 2.0 | 1,590 | 1.2 | 2,005 | 2.2 |
| 3/16 | 6,720 | 7.9 | 2,340 | 4.1 | 2,340 | 3.7 | 1,630 | 2.0 | 1,325 | 1.2 | 1,670 | 2.3 |
| 1/4 | 5,040 | 7.1 | 1,760 | 3.6 | 1,760 | 3.2 | 1,220 | 1.8 | 990 | 1.2 | 1,250 | 2.1 |
| 5/16 | 4,030 | 8.8 | 1,405 | 3.9 | 1,405 | 3.5 | 975 | 2.0 | 795 | 1.2 | 1,000 | 2.2 |
| 13/32 | 3,100 | 8.4 | 1,080 | 3.8 | 1,080 | 3.4 | 750 | 1.9 | 610 | 1.1 | 770 | 2.1 |
| 15/32 | 2,685 | 9.0 | 935 | 3.9 | 935 | 3.5 | 650 | 2.0 | 530 | 1.2 | 670 | 2.2 |
| 5/8 | 2,015 | 8.8 | 700 | 3.9 | 700 | 3.5 | 490 | 2.0 | 395 | 1.2 | 500 | 2.2 |
| 25/32 | 1,610 | 8.8 | 560 | 3.9 | 560 | 3.5 | 390 | 2.0 | 320 | 1.2 | 400 | 2.2 |
| 1 | 1,260 | 9.1 | 440 | 3.8 | 440 | 3.4 | 305 | 1.9 | 250 | 1.2 | 315 | 2.2 |

1. Increase speeds & feeds 5-10% for Series 412BN, 414BN, 442BN and 444BN.
2. Reduce speeds & feeds 20-30% for Series 462BN and 464BN.
3. Reduce speeds & feeds 40-50% for Series 482BN and 484BN.
4. Increase speeds & feeds 20-30% for Series 402BN TiN and 404BN TiN.
5. Column for Hardened Steels (40-50 HRC) is for 402BN TiN and 404BN TiN only.

Profiling (Metric)

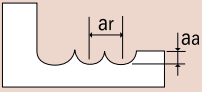
| Hardness | - | | - | | <20 HRC | | 20-30 HRC | | 30-40 HRC | | 40-50 HRC | |
|---------------|---|-------------|-----------|-------------|-----------------------------------|-------------|---|-------------|---|-------------|-----------------|-------------|
| Work Material | Aluminum | | Cast Iron | | Mild Carbon Steels Mild Steels | | Pre-hardened Steels Die & Alloy Steels | | Pre-hardened Steels Die & Alloy Steels | | Hardened Steels | |
| Cutting Speed | 330 SFM | | 115 SFM | | 115 SFM | | 80 SFM | | 65 SFM | | 82 SFM | |
| Depth of Cut | $da=0.3D$ $dr=0.7D$  | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1 | 25,000 | 5.8 | 11,130 | 3.6 | 11,130 | 3.2 | 7,950 | 1.8 | 6,360 | 0.9 | 7,950 | 1.8 |
| 2 | 15,905 | 7.4 | 5,565 | 3.5 | 5,565 | 3.1 | 3,975 | 1.8 | 3,180 | 0.9 | 3,975 | 1.8 |
| 3 | 10,600 | 7.9 | 3,710 | 3.9 | 3,710 | 3.6 | 2,650 | 2.0 | 2,120 | 1.2 | 2,650 | 2.2 |
| 4 | 7,950 | 7.4 | 2,785 | 3.9 | 2,785 | 3.5 | 1,990 | 2.0 | 1,590 | 1.2 | 1,990 | 2.2 |
| 5 | 6,360 | 7.4 | 2,225 | 4.0 | 2,225 | 3.6 | 1,590 | 2.0 | 1,270 | 1.2 | 1,590 | 2.2 |
| 6 | 5,300 | 7.5 | 1,855 | 3.8 | 1,855 | 3.5 | 1,325 | 2.0 | 1,060 | 1.3 | 1,325 | 2.2 |
| 8 | 3,975 | 8.6 | 1,390 | 3.9 | 1,390 | 3.5 | 995 | 2.0 | 795 | 1.2 | 995 | 2.2 |
| 10 | 3,180 | 8.6 | 1,115 | 4.0 | 1,115 | 3.6 | 795 | 2.0 | 635 | 1.2 | 795 | 2.2 |
| 12 | 2,650 | 8.8 | 930 | 3.9 | 930 | 3.5 | 665 | 2.0 | 530 | 1.2 | 665 | 2.2 |
| 16 | 1,990 | 8.6 | 695 | 3.9 | 695 | 3.5 | 495 | 1.9 | 400 | 1.2 | 495 | 2.1 |
| 20 | 1,590 | 8.6 | 555 | 3.9 | 555 | 3.5 | 400 | 2.0 | 320 | 1.2 | 400 | 2.2 |
| 25 | 1,270 | 9.2 | 445 | 3.9 | 445 | 3.5 | 320 | 2.0 | 255 | 1.2 | 320 | 2.2 |

1. Increase speeds & feeds 5-10% for Series 412BN, 414BN, 442BN and 444BN.
2. Reduce speeds & feeds 20-30% for Series 462BN and 464BN.
3. Reduce speeds & feeds 40-50% for Series 482BN and 484BN.
4. Increase speeds & feeds 20-30% for Series 402BN TiN and 404BN TiN.
5. Column for Hardened Steels (40-50 HRC) is for 402BN TiN and 404BN TiN only.



Standard Ball Nose Carbide 4 Flute and Multiple Flute

Profiling (Fractional)

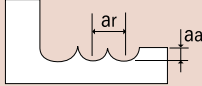
| Hardness | - | | - | | <20 HRC | | 20-30 HRC | | 30-40 HRC | | 40-50 HRC | |
|---------------|---|-------------|-------------|-------------|-----------------------------------|-------------|---|-------------|---|-------------|-----------------|-------------|
| Work Material | Aluminum | | Cast Iron | | Mild Carbon Steels Mild Steels | | Pre-hardened Steels Die & Alloy Steels | | Pre-hardened Steels Die & Alloy Steels | | Hardened Steels | |
| Cutting Speed | 330 SFM | | 100-115 SFM | | 100-130 SFM | | 65-100 SFM | | 65-82 SFM | | 43 SFM | |
| Depth of Cut | $a_a=0.3D$ $a_r=0.7D$  | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 3/64 | 25,000 | 8.2 | 8,755 | 4.0 | 9,365 | 3.7 | 6,720 | 2.1 | 5,985 | 1.2 | 3,500 | 1.1 |
| 5/64 | 16,120 | 10.6 | 5,250 | 4.7 | 5,620 | 4.4 | 4,030 | 2.5 | 3,590 | 1.5 | 2,100 | 1.3 |
| 1/8 | 10,075 | 10.6 | 3,280 | 4.9 | 3,510 | 4.7 | 2,520 | 2.7 | 2,245 | 1.8 | 1,315 | 1.5 |
| 5/32 | 8,060 | 10.6 | 2,625 | 5.2 | 2,810 | 5.0 | 2,015 | 2.8 | 1,795 | 1.9 | 1,050 | 1.6 |
| 3/16 | 6,720 | 11.0 | 2,190 | 5.5 | 2,340 | 5.3 | 1,680 | 2.9 | 1,495 | 2.0 | 875 | 1.6 |
| 1/4 | 5,040 | 10.0 | 1,640 | 4.7 | 1,755 | 4.6 | 1,260 | 2.7 | 1,120 | 1.9 | 655 | 1.5 |
| 5/16 | 4,030 | 12.2 | 1,315 | 5.2 | 1,405 | 5.0 | 1,010 | 2.8 | 900 | 1.9 | 525 | 1.6 |
| 13/32 | 3,100 | 11.7 | 1,010 | 5.1 | 1,080 | 4.9 | 775 | 2.7 | 690 | 1.8 | 405 | 1.5 |
| 15/32 | 2,685 | 12.5 | 875 | 5.2 | 935 | 5.0 | 670 | 2.8 | 600 | 1.9 | 350 | 1.6 |
| 5/8 | 2,015 | 12.2 | 655 | 5.1 | 700 | 5.0 | 505 | 2.8 | 450 | 1.9 | 265 | 1.6 |
| 25/32 | 1,610 | 12.2 | 525 | 5.2 | 560 | 5.0 | 405 | 2.8 | 360 | 1.9 | 210 | 1.6 |
| 1 | 1,260 | 12.7 | 410 | 5.0 | 440 | 4.9 | 315 | 2.8 | 280 | 1.9 | 165 | 1.5 |

1. Increase speeds & feeds 5-10% for Series 412BN, 414BN, 442BN and 444BN.
2. Reduce speeds & feeds 20-30% for Series 462BN and 464BN.
3. Reduce speeds & feeds 40-50% for Series 482BN and 484BN.
4. Increase speeds & feeds 20-30% for Series 402BN TiN and 404BN TiN.
5. Column for Hardened Steels (40-50 HRC) is for 402BN TiN and 404BN TiN only.

continued on next page



Profiling (Metric)



| Hardness | - | | - | | <20 HRC | | 20-30 HRC | | 30-40 HRC | | 40-50 HRC | |
|---------------|---|-------------|-------------|-------------|-----------------------------------|-------------|---|-------------|---|-------------|-----------------|-------------|
| Work Material | Aluminum | | Cast Iron | | Mild Carbon Steels Mild Steels | | Pre-hardened Steels Die & Alloy Steels | | Pre-hardened Steels Die & Alloy Steels | | Hardened Steels | |
| Cutting Speed | 330 SFM | | 100-115 SFM | | 100-130 SFM | | 65-100 SFM | | 65-82 SFM | | 43 SFM | |
| Depth of Cut | $a_a=0.3D$ $a_r=0.7D$  | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1 | 25,000 | 7.0 | 10,420 | 4.7 | 11,150 | 4.5 | 8,000 | 2.5 | 7,125 | 1.5 | 4,170 | 1.3 |
| 2 | 15,995 | 8.9 | 5,210 | 4.6 | 5,575 | 4.4 | 4,000 | 2.5 | 3,565 | 1.5 | 2,085 | 1.3 |
| 3 | 10,665 | 9.5 | 3,475 | 5.2 | 3,715 | 5.0 | 2,665 | 2.8 | 2,375 | 1.9 | 1,390 | 1.6 |
| 4 | 8,000 | 8.9 | 2,605 | 5.1 | 2,785 | 4.9 | 2,000 | 2.8 | 1,780 | 1.8 | 1,040 | 1.6 |
| 5 | 6,400 | 8.9 | 2,085 | 5.2 | 2,230 | 5.0 | 1,600 | 2.8 | 1,425 | 1.8 | 835 | 1.6 |
| 6 | 5,330 | 8.9 | 1,735 | 5.0 | 1,860 | 4.9 | 1,335 | 2.8 | 1,190 | 2.0 | 695 | 1.6 |
| 8 | 4,000 | 12.1 | 1,305 | 5.1 | 1,395 | 4.9 | 1,000 | 2.8 | 890 | 1.8 | 520 | 1.6 |
| 10 | 3,200 | 12.1 | 1,040 | 5.2 | 1,115 | 5.0 | 800 | 2.8 | 715 | 1.8 | 415 | 1.6 |
| 12 | 2,665 | 12.4 | 870 | 5.2 | 930 | 5.0 | 665 | 2.8 | 595 | 1.9 | 345 | 1.6 |
| 16 | 2,000 | 12.1 | 650 | 5.1 | 695 | 4.9 | 500 | 2.8 | 445 | 1.8 | 260 | 1.6 |
| 20 | 1,600 | 12.1 | 520 | 5.1 | 555 | 4.9 | 400 | 2.8 | 355 | 1.8 | 210 | 1.6 |
| 25 | 1,280 | 12.9 | 415 | 5.1 | 445 | 4.9 | 320 | 2.8 | 285 | 1.9 | 165 | 1.6 |

1. Increase speeds & feeds 5-10% for Series 412BN, 414BN, 442BN and 444BN.
2. Reduce speeds & feeds 20-30% for Series 462BN and 464BN.
3. Reduce speeds & feeds 40-50% for Series 482BN and 484BN.
4. Increase speeds & feeds 20-30% for Series 402BN TiN and 404BN TiN.
5. Column for Hardened Steels (40-50 HRC) is for 402BN TiN and 404BN TiN only.

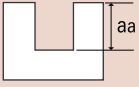
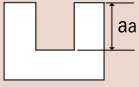
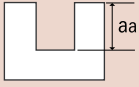


List 400: 4 flute

Side Milling

| Hardness | <20 HRC | | 20-30 HRC | | 30-40 HRC | | 40-50 HRC | |
|---------------|-------------------------------------|-------------|---|-------------|---|-------------|---|-------------|
| Work Material | Medium Carbon Steels Mild Steels | | Pre-hardened Steels Stainless Steels Die & Alloy Steels | | Pre-hardened Steels Stainless Steels Die & Alloy Steels | | Hardened Steels | |
| Cutting Speed | 130 SFM | | 100 SFM | | 66 SFM | | 50 SFM | |
| Depth of Cut | $a_a=1.5D$ $a_r=0.1D$ | |  | | $a_a=1.5D$ $a_r=0.1D$ | |  | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 6 | 2,100 | 15.7 | 1,615 | 12.7 | 1,065 | 8.3 | 810 | 6.4 |
| 8 | 1,575 | 15.5 | 1,210 | 11.9 | 800 | 7.9 | 605 | 6.0 |
| 10 | 1,260 | 15.1 | 970 | 11.7 | 640 | 7.7 | 485 | 6.0 |
| 12 | 1,050 | 15.0 | 810 | 11.6 | 535 | 7.7 | 405 | 6.0 |
| 16 | 790 | 15.6 | 605 | 11.9 | 400 | 7.9 | 305 | 6.0 |
| 20 | 630 | 12.8 | 485 | 9.9 | 320 | 6.6 | 240 | 4.9 |
| 25 | 505 | 11.7 | 390 | 9.3 | 255 | 6.0 | 195 | 4.4 |



Slotting

| Hardness | <20 HRC | | 20-30 HRC | | 35-45 HRC | | 45-55 HRC | | | | | | | |
|---------------|--|-------------|---|-------------|---|-------------|-----------------|-------------|---|--|---|--|--|--|
| Work Material | Medium Carbon Steels Mild Steels | | Pre-hardened Steels Stainless Steels Die & Alloy Steels | | Pre-hardened Steels Stainless Steels Die & Alloy Steels | | Hardened Steels | | | | | | | |
| Cutting Speed | 110 SFM | | 85 SFM | | 56 SFM | | 43 SFM | | | | | | | |
| Depth of Cut | <table border="1"> <tr><th>Dia</th><th>a_a</th></tr> <tr><td>$D \leq 12$</td><td>1.0D</td></tr> <tr><td>$D > 12$</td><td>0.5D</td></tr> </table> | | Dia | a_a | $D \leq 12$ | 1.0D | $D > 12$ | 0.5D |  | | $a_a=0.5D$  | | $a_a=0.5D$  | |
| Dia | a_a | | | | | | | | | | | | | |
| $D \leq 12$ | 1.0D | | | | | | | | | | | | | |
| $D > 12$ | 0.5D | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | |
| 6 | 1,775 | 5.3 | 1,375 | 4.1 | 905 | 2.7 | 695 | 2.1 | | | | | | |
| 8 | 1,335 | 5.3 | 1,030 | 4.1 | 680 | 2.7 | 520 | 2.0 | | | | | | |
| 10 | 1,065 | 5.2 | 825 | 4.1 | 545 | 2.7 | 415 | 2.0 | | | | | | |
| 12 | 890 | 5.3 | 685 | 4.0 | 450 | 2.7 | 345 | 2.0 | | | | | | |
| 16 | 665 | 5.2 | 515 | 4.1 | 340 | 2.7 | 260 | 2.0 | | | | | | |
| 20 | 535 | 4.3 | 410 | 3.4 | 270 | 2.3 | 210 | 1.7 | | | | | | |
| 25 | 425 | 3.6 | 330 | 2.9 | 215 | 1.9 | 165 | 1.4 | | | | | | |

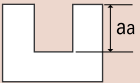
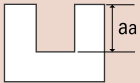
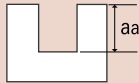
continued on next page 



Side Milling

| Hardness | <20 HRC | | 20-30 HRC | | 30-40 HRC | | 40-50 HRC | |
|---------------|-------------------------------------|-------------|---|-------------|---|-------------|---|-------------|
| Work Material | Medium Carbon Steels Mild Steels | | Pre-hardened Steels Stainless Steels Die & Alloy Steels | | Pre-hardened Steels Stainless Steels Die & Alloy Steels | | Hardened Steels | |
| Cutting Speed | 130 SFM | | 100 SFM | | 66 SFM | | 50 SFM | |
| Depth of Cut | $a_a=1.5D$ $a_r=0.1D$ | |  | | $a_a=1.5D$ $a_r=0.1D$ | |  | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/4 | 2,100 | 16 | 1,600 | 13 | 1,000 | 8 | 800 | 6 |
| 5/16 | 1,600 | 16 | 1,200 | 12 | 800 | 8 | 600 | 6 |
| 3/8 | 1,300 | 15 | 950 | 11 | 650 | 8 | 480 | 6 |
| 1/2 | 1,060 | 15 | 800 | 11 | 500 | 7 | 400 | 6 |
| 5/8 | 800 | 16 | 600 | 12 | 400 | 8 | 300 | 6 |
| 3/4 | 640 | 13 | 480 | 10 | 330 | 7 | 240 | 5 |
| 1 | 510 | 12 | 380 | 9 | 250 | 5 | 190 | 4 |

Slotting

| Hardness | <20 HRC | | 20-30 HRC | | 30-40 HRC | | 40-50 HRC | | | | | | | |
|---------------|--|-------------|---|-------------|---|-------------|-----------------|-------------|---|--|---|--|--|--|
| Work Material | Medium Carbon Steels Mild Steels | | Pre-hardened Steels Stainless Steels Die & Alloy Steels | | Pre-hardened Steels Stainless Steels Die & Alloy Steels | | Hardened Steels | | | | | | | |
| Cutting Speed | 110 SFM | | 85 SFM | | 56 SFM | | 43 SFM | | | | | | | |
| Depth of Cut | <table border="1" style="display: inline-table;"> <tr> <th>Dia</th> <th>a_a</th> </tr> <tr> <td>$D \leq 1/2$</td> <td>1.0D</td> </tr> <tr> <td>$D > 1/2$</td> <td>0.5D</td> </tr> </table> | | Dia | a_a | $D \leq 1/2$ | 1.0D | $D > 1/2$ | 0.5D |  | | $a_a=0.5D$  | | $a_a=0.5D$  | |
| Dia | a_a | | | | | | | | | | | | | |
| $D \leq 1/2$ | 1.0D | | | | | | | | | | | | | |
| $D > 1/2$ | 0.5D | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | |
| 1/4 | 1,700 | 5 | 1,300 | 4 | 850 | 3 | 700 | 2 | | | | | | |
| 5/16 | 1,350 | 5 | 1,000 | 4 | 700 | 3 | 520 | 2 | | | | | | |
| 3/8 | 1,120 | 5 | 850 | 4 | 570 | 3 | 480 | 2 | | | | | | |
| 1/2 | 840 | 5 | 650 | 4 | 450 | 3 | 330 | 2 | | | | | | |
| 5/8 | 650 | 5 | 520 | 4 | 340 | 3 | 260 | 2 | | | | | | |
| 3/4 | 560 | 4 | 430 | 4 | 290 | 2 | 220 | 2 | | | | | | |
| 1 | 420 | 3 | 350 | 3 | 220 | 2 | 170 | 2 | | | | | | |



List 492, 494: Miniature

Side Milling


| Hardness | - | | <145 Brinell | | <20 HRC | | 20-30 HRC | | 30-40 HRC | |
|---------------|---|----------------|---|----------------|---|----------------|---|----------------|--|----------------|
| Work Material | Aluminum Aluminum Alloys Plastics Wood | | Mild Steels Cast Iron Brass Bronze | | Mild Steel Forging Hard Brass and Bronze Copper | | Medium Tensile Steels Unalloyed Titanium Tool Steels Heat Resistant Ferritic Low Alloys | | High Tensile Steel Medium Strength Stainless Steels and Titanium Alloys | |
| Cutting Speed | 200-400 SFM | | 100-120 SFM | | 70-90 SFM | | 50-60 SFM | | 30-40 SFM | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/64 | 25,000 | 1.8 | 24,427 - 25,000 | 1.5 | 17,099 - 21,985 | 1.0 | 12,214 - 14,656 | 0.5 | 7,334 - 9,779 | 0.4 |
| 1/32 | 24,427 - 25,000 | 3.0 | 12,214 - 14,656 | 2.0 | 8,556 - 11,001 | 2.0 | 6,112 - 7,334 | 0.6 | 3,667 - 4,889 | 0.5 |
| 3/64 | 16,285 - 25000 | 3.1 | 8,150 - 9,780 | 2.5 | 5,704 - 7,334 | 3.0 | 4,075 - 4,889 | 0.8 | 2,445 - 3,260 | 0.6 |
| 1/16 | 12,214 - 24,427 | 5.1 | 6,112 - 7,333 | 3.1 | 4,280 - 5,502 | 4.0 | 3,057 - 3,668 | 1.3 | 1,834 - 2,445 | 0.8 |
| 5/64 | 9,771 - 19,542 | 5.1 | 4,889 - 5,867 | 3.1 | 3,423 - 4,400 | 4.0 | 2,445 - 2,934 | 1.3 | 1,467 - 1,956 | 0.8 |
| 3/32 | 8,142 - 16,285 | 5.1 | 4,075 - 4,890 | 3.1 | 2,853 - 3,667 | 4.0 | 2,038 - 2,446 | 1.3 | 1,222 - 1,426 | 0.8 |
| 7/64 | 6,979 - 13,959 | 5.3 | 3,492 - 4,191 | 3.1 | 2,445 - 3,143 | 4.0 | 1,746 - 2,095 | 1.3 | 1,048 - 1,397 | 0.8 |
| 1/8 | 6,107 - 12,214 | 5.5 | 3,056 - 3,667 | 3.5 | 2,139 - 2,750 | 4.0 | 1,528 - 1,834 | 1.3 | 917 - 1,222 | 0.8 |
| 9/64 | 5,433 - 10,865 | 5.6 | 2,716 - 4,191 | 3.5 | 1,901 - 2,445 | 4.2 | 1,358 - 1,630 | 1.3 | 815 - 1,087 | 0.9 |
| 5/32 | 4,889 - 9,779 | 5.6 | 2,448 - 2,934 | 3.6 | 1,711 - 2,200 | 4.4 | 1,222 - 1,467 | 1.4 | 733 - 978 | 1.0 |
| 11/64 | 4,445 - 8,890 | 5.8 | 2,222 - 2,667 | 3.8 | 1,556 - 2,000 | 4.6 | 1,111 - 1,333 | 1.5 | 667 - 889 | 1.1 |
| 3/16 | 4,074 - 8,148 | 5.9 | 2,037 - 2,445 | 4.0 | 1,426 - 1,834 | 4.8 | 1,019 - 1,222 | 1.6 | 611 - 815 | 1.3 |



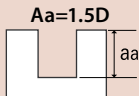
List 04V-SO

List 03V-SO

Side Milling

| Hardness | <25 HRC | | 25-30 HRC | | 30-35 HRC | | 35-45 HRC | | 45-50 HRC | | < 35 HRC | | < 35 HRC | |
|---------------|---|-------------|---|-------------|--|-------------|--|-------------|-----------------|-------------|-----------------|-------------|---|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | 400 Stainless Steels Alloy Steels Tool Steels | | 300 Stainless Steels Hardened Steels Pre-hardened Steels | | PH Stainless Steels Hardened Steels | | Hardened Steels | | Titanium Alloys | | High Temp. Alloys Inconel Hastelloy | |
| Cutting Speed | 295-655 SFM | | 165-330 SFM | | 195-375 SFM | | 145-280 SFM | | 260-460 SFM | | 165-195 SFM | | 80-165 SFM | |
| Depth of Cut | Aa=1.5D Ar=0.5D  | | | | | | | | | | | | Aa=1.5D Ar=0.3D | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 3/16 | 9,677 | 50.3 | 5,042 | 16.7 | 5,806 | 27.4 | 4,329 | 14.3 | 7,334 | 31.2 | 3,667 | 12.1 | 2,496 | 6.7 |
| 1/4 | 7,258 | 45.7 | 3,782 | 14.9 | 4,355 | 24.7 | 3,247 | 12.8 | 5,501 | 28.6 | 2,750 | 10.8 | 1,872 | 5.9 |
| 5/16 | 5,806 | 50.3 | 3,025 | 16.2 | 3,484 | 26.9 | 2,598 | 13.9 | 4,401 | 31.2 | 2,200 | 11.8 | 1,497 | 6.6 |
| 3/8 | 4,839 | 49.5 | 2,521 | 16.3 | 2,903 | 27.0 | 2,165 | 14.0 | 3,667 | 31.2 | 1,834 | 11.8 | 1,248 | 6.5 |
| 1/2 | 3,629 | 42.3 | 1,891 | 14.0 | 2,177 | 23.0 | 1,624 | 12.0 | 2,750 | 26.9 | 1,375 | 10.2 | 936 | 5.6 |
| 5/8 | 2,903 | 42.1 | 1,513 | 13.8 | 1,742 | 22.8 | 1,299 | 11.9 | 2,200 | 26.3 | 1,100 | 10.0 | 749 | 5.5 |
| 3/4 | 2,419 | 39.6 | 1,261 | 12.9 | 1,452 | 21.5 | 1,082 | 11.1 | 1,834 | 24.8 | 917 | 9.4 | 624 | 5.2 |
| 1 | 1,815 | 32.3 | 945 | 10.6 | 1,089 | 17.5 | 812 | 9.1 | 1,375 | 20.1 | 688 | 7.7 | 468 | 4.3 |

Slotting

| Hardness | <25 HRC | | 25-30 HRC | | 30-35 HRC | | 35-45 HRC | | 45-50 HRC | | < 35 HRC | | < 35 HRC | |
|---------------|--|-------------|---|-------------|--|-------------|--|-------------|-----------------|-------------|-----------------|-------------|---|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | 400 Stainless Steels Alloy Steels Tool Steels | | 300 Stainless Steels Hardened Steels Pre-hardened Steels | | PH Stainless Steels Hardened Steels | | Hardened Steels | | Titanium Alloys | | High Temp. Alloys Inconel Hastelloy | |
| Cutting Speed | 295-655 SFM | | 165-330 SFM | | 195-375 SFM | | 145-280 SFM | | 260-460 SFM | | 165-195 SFM | | 80-165 SFM | |
| Depth of Cut | Aa=1.5D  | | | | | | | | | | | | Aa=0.3D | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 3/16 | 9,677 | 45.3 | 5,042 | 15.0 | 5,806 | 24.7 | 4,329 | 12.9 | 7,334 | 28.1 | 3,667 | 10.9 | 2,496 | 6.0 |
| 1/4 | 7,258 | 41.1 | 3,782 | 13.4 | 4,355 | 22.2 | 3,247 | 11.5 | 5,501 | 25.7 | 2,750 | 9.7 | 1,872 | 5.3 |
| 5/16 | 5,806 | 45.3 | 3,025 | 14.6 | 3,484 | 24.2 | 2,598 | 12.5 | 4,401 | 28.1 | 2,200 | 10.6 | 1,497 | 5.9 |
| 3/8 | 4,839 | 44.6 | 2,521 | 14.7 | 2,903 | 24.3 | 2,165 | 12.6 | 3,667 | 28.1 | 1,834 | 10.7 | 1,248 | 5.8 |
| 1/2 | 3,629 | 38.1 | 1,891 | 12.6 | 2,177 | 20.7 | 1,624 | 10.8 | 2,750 | 24.2 | 1,375 | 9.2 | 936 | 5.0 |
| 5/8 | 2,903 | 37.9 | 1,513 | 12.4 | 1,742 | 20.5 | 1,299 | 10.7 | 2,200 | 23.7 | 1,100 | 9.0 | 749 | 5.0 |
| 3/4 | 2,419 | 35.7 | 1,261 | 11.6 | 1,452 | 19.3 | 1,082 | 10.0 | 1,834 | 22.3 | 917 | 8.4 | 624 | 4.7 |
| 1 | 1,815 | 29.1 | 945 | 9.5 | 1,089 | 15.7 | 812 | 8.2 | 1,375 | 18.1 | 688 | 6.9 | 468 | 3.8 |


continued on next page 



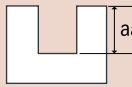
List 04V-SO (Continued)

List 03V-SO (Continued)

Side Milling


| Hardness | <25 HRC | | 25-30 HRC | | 30-35 HRC | | 35-45 HRC | | 45-50 HRC | | <35 HRC | | <35 HRC | |
|---------------|--|-------------|---|-------------|--|-------------|--|-------------|-----------------|-------------|-----------------|-------------|---|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | 400 Stainless Steels Alloy Steels Tool Steels | | 300 Stainless Steels Hardened Steels Pre-hardened Steels | | PH Stainless Steels Hardened Steels | | Hardened Steels | | Titanium Alloys | | High Temp. Alloys Inconel Hastelloy | |
| Cutting Speed | 295-655 SFM | | 165-330 SFM | | 195-375 SFM | | 145-280 SFM | | 260-460 SFM | | 165-195 SFM | | 80-165 SFM | |
| Depth of Cut | Aa=1.5D Ar=0.5D  | | | | | | | | | | | | Aa=1.5D Ar=0.3D | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 5 | 9,218 | 47.9 | 4,803 | 15.9 | 5,531 | 26.1 | 4,124 | 13.6 | 6,986 | 29.7 | 3,493 | 11.6 | 2,377 | 6.4 |
| 6 | 7,681 | 48.4 | 4,002 | 15.8 | 4,609 | 26.1 | 3,436 | 13.5 | 5,822 | 30.3 | 2,911 | 11.5 | 1,981 | 6.2 |
| 8 | 5,761 | 49.9 | 3,002 | 16.1 | 3,457 | 26.7 | 2,577 | 13.8 | 4,366 | 30.9 | 2,183 | 11.7 | 1,486 | 6.6 |
| 10 | 4,609 | 47.2 | 2,401 | 15.5 | 2,765 | 25.7 | 2,062 | 13.3 | 3,493 | 29.7 | 1,747 | 11.3 | 1,189 | 6.2 |
| 12 | 3,841 | 44.8 | 2,001 | 14.8 | 2,304 | 24.3 | 1,718 | 12.7 | 2,911 | 28.4 | 1,455 | 10.8 | 990 | 5.9 |
| 16 | 2,881 | 41.7 | 1,501 | 13.7 | 1,728 | 22.6 | 1,289 | 11.8 | 2,183 | 26.1 | 1,092 | 10.0 | 743 | 5.5 |
| 20 | 2,304 | 37.7 | 1,201 | 12.3 | 1,383 | 20.5 | 1,031 | 10.6 | 1,747 | 23.7 | 873 | 8.9 | 594 | 5.0 |

Slotting

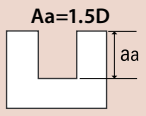
| Hardness | <25 HRC | | 25-30 HRC | | 30-35 HRC | | 35-45 HRC | | 45-50 HRC | | <35 HRC | | <35 HRC | |
|---------------|--|-------------|---|-------------|--|-------------|--|-------------|-----------------|-------------|-----------------|-------------|---|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | 400 Stainless Steels Alloy Steels Tool Steels | | 300 Stainless Steels Hardened Steels Pre-hardened Steels | | PH Stainless Steels Hardened Steels | | Hardened Steels | | Titanium Alloys | | High Temp. Alloys Inconel Hastelloy | |
| Cutting Speed | 295-655 SFM | | 165-330 SFM | | 195-375 SFM | | 145-280 SFM | | 260-460 SFM | | 165-195 SFM | | 80-165 SFM | |
| Depth of Cut | Aa=1.5D  | | Aa=0.75D-1D | | Aa=1.25D | | Aa=1D | | Aa=0.75D | | Aa=1D | | Aa=0.3D | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 5 | 9,218 | 43.1 | 4,803 | 14.3 | 5,531 | 23.5 | 4,124 | 12.3 | 6,986 | 26.7 | 3,493 | 10.4 | 2,377 | 5.7 |
| 6 | 7,681 | 43.5 | 4,002 | 14.2 | 4,609 | 23.5 | 3,436 | 12.2 | 5,822 | 27.2 | 2,911 | 10.3 | 1,981 | 5.6 |
| 8 | 5,761 | 44.9 | 3,002 | 14.5 | 3,457 | 24.0 | 2,577 | 12.4 | 4,366 | 27.8 | 2,183 | 10.5 | 1,486 | 5.9 |
| 10 | 4,609 | 42.5 | 2,401 | 14.0 | 2,765 | 23.1 | 2,062 | 12.0 | 3,493 | 26.7 | 1,747 | 10.1 | 1,189 | 5.6 |
| 12 | 3,841 | 40.3 | 2,001 | 13.3 | 2,304 | 21.9 | 1,718 | 11.4 | 2,911 | 25.6 | 1,455 | 9.7 | 990 | 5.3 |
| 16 | 2,881 | 37.6 | 1,501 | 12.3 | 1,728 | 20.3 | 1,289 | 10.6 | 2,183 | 23.5 | 1,092 | 9.0 | 743 | 4.9 |
| 20 | 2,304 | 34.0 | 1,201 | 11.1 | 1,383 | 18.4 | 1,031 | 9.5 | 1,747 | 21.3 | 873 | 8.0 | 594 | 4.5 |

05V-SO

Side Milling

| Hardness | <25 HRC | 25-30 HRC | 30-35 HRC | 35-45 HRC | 45-50 HRC | < 35 HRC | < 35 HRC | | | | | | | |
|---------------|---|---|--|--|-----------------|-----------------|---|-------------|-----------|-------------|-----------|-------------|-----------|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | 400 Stainless Steels Alloy Steels Tool Steels | 300 Stainless Steels Hardened Steels Pre-hardened Steels | PH Stainless Steels Hardened Steels | Hardened Steels | Titanium Alloys | High Temp. Alloys Inconel Hastelloy | | | | | | | |
| Cutting Speed | 295-655 SFM | 165-330 SFM | 195-375 SFM | 145-280 SFM | 260-460 SFM | 165-195 SFM | 80-165 SFM | | | | | | | |
| Depth of Cut |  Aa=1.5D Ar=0.5D | | | | | | Aa=1.5D Ar=0.3D | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 3/16 | 9,677 | 62.9 | 5,042 | 20.8 | 5,806 | 34.3 | 4,329 | 17.9 | 7,334 | 39.0 | 3,667 | 15.2 | 2,496 | 8.4 |
| 1/4 | 7,258 | 57.1 | 3,782 | 18.6 | 4,355 | 30.9 | 3,247 | 16.0 | 5,501 | 35.7 | 2,750 | 13.5 | 1,872 | 7.4 |
| 5/16 | 5,806 | 62.9 | 3,025 | 20.2 | 3,484 | 33.6 | 2,598 | 17.4 | 4,401 | 39.0 | 2,200 | 14.7 | 1,497 | 8.3 |
| 3/8 | 4,839 | 61.9 | 2,521 | 20.3 | 2,903 | 33.7 | 2,165 | 17.5 | 3,667 | 39.0 | 1,834 | 14.8 | 1,248 | 8.1 |
| 1/2 | 3,629 | 52.9 | 1,891 | 17.5 | 2,177 | 28.7 | 1,624 | 15.0 | 2,750 | 33.6 | 1,375 | 12.7 | 936 | 7.0 |
| 5/8 | 2,903 | 52.6 | 1,513 | 17.3 | 1,742 | 28.5 | 1,299 | 14.8 | 2,200 | 32.9 | 1,100 | 12.6 | 749 | 6.9 |
| 3/4 | 2,419 | 49.5 | 1,261 | 16.1 | 1,452 | 26.9 | 1,082 | 13.8 | 1,834 | 31.0 | 917 | 11.7 | 624 | 6.5 |
| 1 | 1,815 | 40.4 | 945 | 13.2 | 1,089 | 21.9 | 812 | 11.3 | 1,375 | 25.2 | 688 | 9.6 | 468 | 5.3 |

Slotting


| Hardness | <25 HRC | 25-30 HRC | 30-35 HRC | 35-45 HRC | 45-50 HRC | < 35 HRC | < 35 HRC | | | | | | | |
|---------------|--|---|--|--|-----------------|-----------------|---|-------------|-----------|-------------|-----------|-------------|-----------|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | 400 Stainless Steels Alloy Steels Tool Steels | 300 Stainless Steels Hardened Steels Pre-hardened Steels | PH Stainless Steels Hardened Steels | Hardened Steels | Titanium Alloys | High Temp. Alloys Inconel Hastelloy | | | | | | | |
| Cutting Speed | 295-655 SFM | 165-330 SFM | 195-375 SFM | 145-280 SFM | 260-460 SFM | 165-195 SFM | 80-165 SFM | | | | | | | |
| Depth of Cut |  Aa=1.5D | Aa=0.75D-1D | Aa=1.25D | Aa=1D | Aa=0.75D | Aa=1D | Aa=0.3D | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 3/16 | 9,677 | 56.6 | 5,042 | 18.8 | 5,806 | 30.9 | 4,329 | 16.1 | 7,334 | 35.1 | 3,667 | 13.6 | 2,496 | 7.5 |
| 1/4 | 7,258 | 51.4 | 3,782 | 16.8 | 4,355 | 27.8 | 3,247 | 14.4 | 5,501 | 32.2 | 2,750 | 12.2 | 1,872 | 6.6 |
| 5/16 | 5,806 | 56.6 | 3,025 | 18.2 | 3,484 | 30.2 | 2,598 | 15.6 | 4,401 | 35.1 | 2,200 | 13.3 | 1,497 | 7.4 |
| 3/8 | 4,839 | 55.7 | 2,521 | 18.3 | 2,903 | 30.3 | 2,165 | 15.7 | 3,667 | 35.1 | 1,834 | 13.3 | 1,248 | 7.3 |
| 1/2 | 3,629 | 47.6 | 1,891 | 15.7 | 2,177 | 25.8 | 1,624 | 13.5 | 2,750 | 30.2 | 1,375 | 11.5 | 936 | 6.3 |
| 5/8 | 2,903 | 47.3 | 1,513 | 15.5 | 1,742 | 25.6 | 1,299 | 13.3 | 2,200 | 29.6 | 1,100 | 11.3 | 749 | 6.2 |
| 3/4 | 2,419 | 44.6 | 1,261 | 14.5 | 1,452 | 24.2 | 1,082 | 12.5 | 1,834 | 27.9 | 917 | 10.6 | 624 | 5.9 |
| 1 | 1,815 | 36.3 | 945 | 11.9 | 1,089 | 19.7 | 812 | 10.2 | 1,375 | 22.7 | 688 | 8.6 | 468 | 4.8 |

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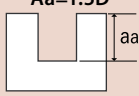


05V-SO (Continued)

Side Milling

| Hardness | <25 HRC | | 25-30 HRC | | 30-35 HRC | | 35-45 HRC | | 45-50 HRC | | < 35 HRC | | < 35 HRC | |
|---------------|--|-------------|---|-------------|--|-------------|--|-------------|-----------------|-------------|-----------------|-------------|---|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | 400 Stainless Steels Alloy Steels Tool Steels | | 300 Stainless Steels Hardened Steels Pre-hardened Steels | | PH Stainless Steels Hardened Steels | | Hardened Steels | | Titanium Alloys | | High Temp. Alloys Inconel Hastelloy | |
| Cutting Speed | 295-655 SFM | | 165-330 SFM | | 195-375 SFM | | 145-280 SFM | | 260-460 SFM | | 165-195 SFM | | 80-165 SFM | |
| Depth of Cut | $Aa=1.5D$ $Ar=0.5D$  | | | | | | | | | | | | $Aa=1.5D$ $Ar=0.3D$ | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 5 | 9,218 | 59.9 | 4,803 | 19.9 | 5,531 | 32.7 | 4,124 | 17.0 | 6,986 | 37.1 | 3,493 | 14.4 | 2,377 | 8.0 |
| 6 | 7,681 | 60.5 | 4,002 | 19.7 | 4,609 | 32.7 | 3,436 | 16.9 | 5,822 | 37.8 | 2,911 | 14.3 | 1,981 | 7.8 |
| 8 | 5,761 | 62.4 | 3,002 | 20.1 | 3,457 | 33.3 | 2,577 | 17.2 | 4,366 | 38.7 | 2,183 | 14.6 | 1,486 | 8.2 |
| 10 | 4,609 | 59.0 | 2,401 | 19.4 | 2,765 | 32.1 | 2,062 | 16.6 | 3,493 | 37.1 | 1,747 | 14.1 | 1,189 | 7.7 |
| 12 | 3,841 | 55.9 | 2,001 | 18.5 | 2,304 | 30.4 | 1,718 | 15.9 | 2,911 | 35.5 | 1,455 | 13.5 | 990 | 7.4 |
| 16 | 2,881 | 52.2 | 1,501 | 17.1 | 1,728 | 28.2 | 1,289 | 14.7 | 2,183 | 32.7 | 1,092 | 12.5 | 743 | 6.9 |
| 20 | 2,304 | 47.2 | 1,201 | 15.4 | 1,383 | 25.6 | 1,031 | 13.2 | 1,747 | 29.6 | 873 | 11.2 | 594 | 6.2 |


Slotting

| Hardness | <25 HRC | | 25-30 HRC | | 30-35 HRC | | 35-45 HRC | | 45-50 HRC | | < 35 HRC | | < 35 HRC | |
|---------------|---|-------------|---|-------------|--|-------------|--|-------------|-----------------|-------------|-----------------|-------------|---|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | 400 Stainless Steels Alloy Steels Tool Steels | | 300 Stainless Steels Hardened Steels Pre-hardened Steels | | PH Stainless Steels Hardened Steels | | Hardened Steels | | Titanium Alloys | | High Temp. Alloys Inconel Hastelloy | |
| Cutting Speed | 295-655 SFM | | 165-330 SFM | | 195-375 SFM | | 145-280 SFM | | 260-460 SFM | | 165-195 SFM | | 80-165 SFM | |
| Depth of Cut | $Aa=1.5D$  | | $Aa=0.75D-1D$ | | $Aa=1.25D$ | | $Aa=1D$ | | $Aa=0.75D$ | | $Aa=1D$ | | $Aa=0.3D$ | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 5 | 9,218 | 53.9 | 4,803 | 17.9 | 5,531 | 29.4 | 4,124 | 15.3 | 6,986 | 33.4 | 3,493 | 13.0 | 2,377 | 7.2 |
| 6 | 7,681 | 54.4 | 4,002 | 17.7 | 4,609 | 29.4 | 3,436 | 15.2 | 5,822 | 34.0 | 2,911 | 12.9 | 1,981 | 7.0 |
| 8 | 5,761 | 56.1 | 3,002 | 18.1 | 3,457 | 30.0 | 2,577 | 15.5 | 4,366 | 34.8 | 2,183 | 13.2 | 1,486 | 7.4 |
| 10 | 4,609 | 53.1 | 2,401 | 17.4 | 2,765 | 28.9 | 2,062 | 15.0 | 3,493 | 33.4 | 1,747 | 12.7 | 1,189 | 6.9 |
| 12 | 3,841 | 50.4 | 2,001 | 16.7 | 2,304 | 27.4 | 1,718 | 14.3 | 2,911 | 32.0 | 1,455 | 12.1 | 990 | 6.7 |
| 16 | 2,881 | 47.0 | 1,501 | 15.4 | 1,728 | 25.4 | 1,289 | 13.2 | 2,183 | 29.4 | 1,092 | 11.2 | 743 | 6.2 |
| 20 | 2,304 | 42.5 | 1,201 | 13.8 | 1,383 | 23.0 | 1,031 | 11.9 | 1,747 | 26.6 | 873 | 10.1 | 594 | 5.6 |

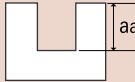
List 03A-SO

List 03M-SO

Side Milling

| Hardness | <25 HRC | 25-30 HRC | 30-35 HRC | 35-45 HRC | 45-50 HRC | < 35 HRC | < 35 HRC | | | | | | | |
|---------------|--|---|--|--|-----------------|-----------------|---|-------------|-----------|-------------|-----------|-------------|-----------|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | 400 Stainless Steels Alloy Steels Tool Steels | 300 Stainless Steels Hardened Steels Pre-hardened Steels | PH Stainless Steels Hardened Steels | Hardened Steels | Titanium Alloys | High Temp. Alloys Inconel Hastelloy | | | | | | | |
| Cutting Speed | 260-655 SFM | 115-195 SFM | 130-230 SFM | 95-170 SFM | 95-165 SFM | 80-130 SFM | 50-65 SFM | | | | | | | |
| Depth of Cut | $Aa=0.5D$ $Ar=1D$  | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1 | 44,390 | 104.9 | 15,039 | 4.7 | 17,465 | 82.5 | 12,856 | 4.0 | 12,614 | 39.7 | 10,188 | 32.1 | 5,579 | 6.6 |
| 2 | 22,195 | 87.4 | 7,520 | 3.6 | 8,733 | 55.0 | 6,428 | 3.0 | 6,307 | 24.8 | 5,094 | 20.1 | 2,790 | 4.4 |
| 4 | 11,098 | 43.7 | 3,760 | 2.1 | 4,366 | 3.4 | 3,214 | 1.8 | 3,153 | 12.4 | 2,547 | 10.0 | 1,395 | 2.2 |
| 6 | 7,398 | 35.0 | 2,507 | 2.0 | 2,911 | 3.4 | 2,143 | 1.7 | 2,102 | 8.3 | 1,698 | 6.7 | 930 | 2.2 |
| 8 | 5,549 | 35.0 | 1,880 | 2.2 | 2,183 | 3.4 | 1,607 | 1.9 | 1,577 | 6.2 | 1,273 | 5.0 | 697 | 1.6 |
| 10 | 4,439 | 28.0 | 1,504 | 2.4 | 1,747 | 4.1 | 1,286 | 2.0 | 1,261 | 6.0 | 1,019 | 4.8 | 558 | 1.8 |
| 12 | 3,699 | 29.1 | 1,253 | 3.0 | 1,455 | 4.6 | 1,071 | 2.5 | 1,051 | 5.0 | 849 | 4.0 | 465 | 1.8 |
| 16 | 2,774 | 21.8 | 940 | 3.0 | 1,092 | 4.3 | 804 | 2.5 | 788 | 4.3 | 637 | 3.5 | 349 | 1.4 |
| 18 | 2,466 | 19.4 | 836 | 3.0 | 970 | 4.6 | 714 | 2.5 | 701 | 4.4 | 566 | 3.6 | 310 | 1.5 |
| 20 | 2,220 | 17.5 | 752 | 3.0 | 873 | 4.8 | 643 | 2.5 | 631 | 4.0 | 509 | 3.2 | 279 | 1.3 |


Slotting

| Hardness | <25 HRC | 25-30 HRC | 30-35 HRC | 35-45 HRC | 45-50 HRC | < 35 HRC | < 35 HRC | | | | | | | |
|---------------|--|---|--|--|-----------------|-----------------|---|-------------|-----------|-------------|-----------|-------------|-----------|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | 400 Stainless Steels Alloy Steels Tool Steels | 300 Stainless Steels Hardened Steels Pre-hardened Steels | PH Stainless Steels Hardened Steels | Hardened Steels | Titanium Alloys | High Temp. Alloys Inconel Hastelloy | | | | | | | |
| Cutting Speed | 260-655 SFM | 115-195 SFM | 130-230 SFM | 95-170 SFM | 95-165 SFM | 80-130 SFM | 50-65 SFM | | | | | | | |
| Depth of Cut | $Aa=1.25D$  | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1 | 44,390 | 94.4 | 15,039 | 4.3 | 17,465 | 74.3 | 12,856 | 3.6 | 12,614 | 35.8 | 10,188 | 28.9 | 5,579 | 5.9 |
| 2 | 22,195 | 78.6 | 7,520 | 3.2 | 8,733 | 49.5 | 6,428 | 2.7 | 6,307 | 22.3 | 5,094 | 18.0 | 2,790 | 4.0 |
| 4 | 11,098 | 39.3 | 3,760 | 1.9 | 4,366 | 3.1 | 3,214 | 1.6 | 3,153 | 11.2 | 2,547 | 9.0 | 1,395 | 2.0 |
| 6 | 7,398 | 31.5 | 2,507 | 1.8 | 2,911 | 3.1 | 2,143 | 1.5 | 2,102 | 7.4 | 1,698 | 6.0 | 930 | 2.0 |
| 8 | 5,549 | 31.5 | 1,880 | 2.0 | 2,183 | 3.1 | 1,607 | 1.7 | 1,577 | 5.6 | 1,273 | 4.5 | 697 | 1.5 |
| 10 | 4,439 | 25.2 | 1,504 | 2.1 | 1,747 | 3.7 | 1,286 | 1.8 | 1,261 | 5.4 | 1,019 | 4.3 | 558 | 1.6 |
| 12 | 3,699 | 26.2 | 1,253 | 2.7 | 1,455 | 4.1 | 1,071 | 2.3 | 1,051 | 4.5 | 849 | 3.6 | 465 | 1.6 |
| 16 | 2,774 | 19.7 | 940 | 2.7 | 1,092 | 3.9 | 804 | 2.3 | 788 | 3.9 | 637 | 3.2 | 349 | 1.2 |
| 18 | 2,466 | 17.5 | 836 | 2.7 | 970 | 4.1 | 714 | 2.3 | 701 | 4.0 | 566 | 3.2 | 310 | 1.3 |
| 20 | 2,220 | 15.7 | 752 | 2.7 | 873 | 4.3 | 643 | 2.3 | 631 | 3.6 | 509 | 2.9 | 279 | 1.2 |

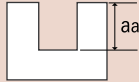
List 03K-SO

List 03P-SO

Side Milling

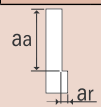
| Hardness | <25 HRC | 25-30 HRC | 30-35 HRC | 35-45 HRC | 45-50 HRC | < 35 HRC | < 35 HRC | | | | | | | |
|---------------|--|---|--|--|-----------------|-----------------|---|-------------|-----------|-------------|-----------|-------------|-----------|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | 400 Stainless Steels Alloy Steels Tool Steels | 300 Stainless Steels Hardened Steels Pre-hardened Steels | PH Stainless Steels Hardened Steels | Hardened Steels | Titanium Alloys | High Temp. Alloys Inconel Hastelloy | | | | | | | |
| Cutting Speed | 260-655 SFM | 115-195 SFM | 130-230 SFM | 95-170 SFM | 95-165 SFM | 80-130 SFM | 50-65 SFM | | | | | | | |
| Depth of Cut | $Aa=0.5D$ $Ar=1D$  | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1 | 44,390 | 209.7 | 15,039 | 9.5 | 17,465 | 165.0 | 12,856 | 8.1 | 12,614 | 79.5 | 10,188 | 64.2 | 5,579 | 13.2 |
| 2 | 22,195 | 174.8 | 7,520 | 7.1 | 8,733 | 110.0 | 6,428 | 6.1 | 6,307 | 49.7 | 5,094 | 40.1 | 2,790 | 8.8 |
| 4 | 11,098 | 87.4 | 3,760 | 4.1 | 4,366 | 6.9 | 3,214 | 3.5 | 3,153 | 24.8 | 2,547 | 20.1 | 1,395 | 4.4 |
| 6 | 7,398 | 69.9 | 2,507 | 3.9 | 2,911 | 6.9 | 2,143 | 3.4 | 2,102 | 16.6 | 1,698 | 13.4 | 930 | 4.4 |
| 8 | 5,549 | 69.9 | 1,880 | 4.4 | 2,183 | 6.9 | 1,607 | 3.8 | 1,577 | 12.4 | 1,273 | 10.0 | 697 | 3.3 |
| 10 | 4,439 | 55.9 | 1,504 | 4.7 | 1,747 | 8.3 | 1,286 | 4.0 | 1,261 | 11.9 | 1,019 | 9.6 | 558 | 3.5 |
| 12 | 3,699 | 58.3 | 1,253 | 5.9 | 1,455 | 9.2 | 1,071 | 5.1 | 1,051 | 9.9 | 849 | 8.0 | 465 | 3.7 |
| 16 | 2,774 | 43.7 | 940 | 5.9 | 1,092 | 8.6 | 804 | 5.1 | 788 | 8.7 | 637 | 7.0 | 349 | 2.7 |
| 18 | 2,466 | 38.8 | 836 | 5.9 | 970 | 9.2 | 714 | 5.1 | 701 | 8.8 | 566 | 7.1 | 310 | 2.9 |
| 20 | 2,220 | 35.0 | 752 | 5.9 | 873 | 9.6 | 643 | 5.1 | 631 | 7.9 | 509 | 6.4 | 279 | 2.6 |

Slotting

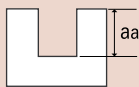
| Hardness | <25 HRC | 25-30 HRC | 30-35 HRC | 35-45 HRC | 45-50 HRC | < 35 HRC | < 35 HRC | | | | | | | |
|---------------|---|---|--|--|-----------------|-----------------|---|-------------|-----------|-------------|-----------|-------------|-----------|-------------|
| Work Material | Mild Steels Carbon Steels Cast Iron | 400 Stainless Steels Alloy Steels Tool Steels | 300 Stainless Steels Hardened Steels Pre-hardened Steels | PH Stainless Steels Hardened Steels | Hardened Steels | Titanium Alloys | High Temp. Alloys Inconel Hastelloy | | | | | | | |
| Cutting Speed | 260-655 SFM | 115-195 SFM | 130-230 SFM | 95-170 SFM | 95-165 SFM | 80-130 SFM | 50-65 SFM | | | | | | | |
| Depth of Cut | $Aa=0.5D$  | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1 | 44,390 | 188.7 | 15,039 | 8.5 | 17,465 | 148.5 | 12,856 | 7.3 | 12,614 | 71.5 | 10,188 | 57.8 | 5,579 | 11.9 |
| 2 | 22,195 | 157.3 | 7,520 | 6.4 | 8,733 | 99.0 | 6,428 | 5.5 | 6,307 | 44.7 | 5,094 | 36.1 | 2,790 | 7.9 |
| 4 | 11,098 | 78.6 | 3,760 | 3.7 | 4,366 | 6.2 | 3,214 | 3.2 | 3,153 | 22.3 | 2,547 | 18.0 | 1,395 | 4.0 |
| 6 | 7,398 | 62.9 | 2,507 | 3.6 | 2,911 | 6.2 | 2,143 | 3.0 | 2,102 | 14.9 | 1,698 | 12.0 | 930 | 4.0 |
| 8 | 5,549 | 62.9 | 1,880 | 4.0 | 2,183 | 6.2 | 1,607 | 3.4 | 1,577 | 11.2 | 1,273 | 9.0 | 697 | 3.0 |
| 10 | 4,439 | 50.3 | 1,504 | 4.3 | 1,747 | 7.4 | 1,286 | 3.6 | 1,261 | 10.7 | 1,019 | 8.7 | 558 | 3.2 |
| 12 | 3,699 | 52.4 | 1,253 | 5.3 | 1,455 | 8.3 | 1,071 | 4.6 | 1,051 | 8.9 | 849 | 7.2 | 465 | 3.3 |
| 16 | 2,774 | 39.3 | 940 | 5.3 | 1,092 | 7.7 | 804 | 4.6 | 788 | 7.8 | 637 | 6.3 | 349 | 2.5 |
| 18 | 2,466 | 35.0 | 836 | 5.3 | 970 | 8.3 | 714 | 4.6 | 701 | 7.9 | 566 | 6.4 | 310 | 2.6 |
| 20 | 2,220 | 31.5 | 752 | 5.3 | 873 | 8.7 | 643 | 4.6 | 631 | 7.2 | 509 | 5.8 | 279 | 2.4 |

List 03E-SO

Side Milling


| Hardness | <25 HRC | | 25-30 HRC | | 30-35 HRC | | 35-45 HRC | | 45-50 HRC | | < 35 HRC | | |
|---------------|--|-------------|---|-------------|--|-------------|--|-------------|-----------------|-------------|-----------------|-------------|------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | 400 Stainless Steels Alloy Steels Tool Steels | | 300 Stainless Steels Hardened Steels Pre-hardened Steels | | PH Stainless Steels Hardened Steels | | Hardened Steels | | Titanium Alloys | | |
| Cutting Speed | 390-655 SFM | | 195-330 SFM | | 260-330 SFM | | 195-250 SFM | | 260-460 SFM | | 145-215 SFM | | |
| Depth of Cut | $Aa=1D$ $Ar=0.5D$  | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | |
| - | 6 | 8,450 | 43.9 | 4,245 | 16.0 | 4,771 | 22.5 | 3,598 | 13.6 | 5,822 | 24.8 | 2,911 | 11.0 |
| 1/4 | - | 7,991 | 41.5 | 4,019 | 15.1 | 4,508 | 21.2 | 3,407 | 12.9 | 5,501 | 23.4 | 2,750 | 10.4 |
| 5/16 | - | 6,393 | 45.3 | 3,215 | 16.7 | 3,606 | 23.3 | 2,726 | 14.1 | 4,401 | 25.6 | 2,200 | 11.4 |
| - | 8 | 6,337 | 44.9 | 3,184 | 16.5 | 3,578 | 23.1 | 2,699 | 14.0 | 4,366 | 25.4 | 2,183 | 11.3 |
| 3/8 | - | 5,328 | 45.3 | 2,679 | 16.4 | 3,005 | 27.8 | 2,272 | 13.9 | 3,667 | 25.4 | 1,834 | 11.2 |
| - | 10 | 5,070 | 43.1 | 2,547 | 15.6 | 2,862 | 22.1 | 2,159 | 13.3 | 3,493 | 24.2 | 1,747 | 10.7 |
| - | 12 | 4,225 | 43.9 | 2,122 | 16.4 | 2,385 | 22.9 | 1,799 | 13.9 | 2,911 | 24.8 | 1,455 | 11.2 |
| 1/2 | - | 3,996 | 41.5 | 2,009 | 15.5 | 2,254 | 21.6 | 1,704 | 13.2 | 2,750 | 23.4 | 1,375 | 10.6 |
| - | 16 | 3,169 | 40.4 | 1,592 | 15.0 | 1,789 | 21.1 | 1,349 | 12.7 | 2,183 | 22.7 | 1,092 | 10.3 |
| 5/8 | - | 3,197 | 40.7 | 1,607 | 15.1 | 1,803 | 21.3 | 1,363 | 12.8 | 2,200 | 22.9 | 1,100 | 10.4 |
| 3/4 | - | 2,664 | 38.6 | 1,340 | 14.7 | 1,503 | 20.6 | 1,136 | 12.5 | 1,834 | 21.9 | 917 | 10.1 |
| - | 20 | 2,535 | 36.7 | 1,273 | 14.0 | 1,431 | 19.6 | 1,079 | 11.9 | 1,747 | 20.9 | 873 | 9.6 |
| 1 | - | 1,998 | 28.9 | 1,005 | 11.1 | 1,127 | 15.4 | 852 | 9.4 | 1,375 | 16.4 | 688 | 7.6 |

Slotting

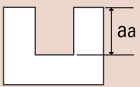
| Hardness | <25 HRC | | 25-30 HRC | | 30-35 HRC | | 35-45 HRC | | 45-50 HRC | | < 35 HRC | | |
|---------------|---|-------------|---|-------------|--|-------------|--|-------------|-----------------|-------------|-----------------|-------------|------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | 400 Stainless Steels Alloy Steels Tool Steels | | 300 Stainless Steels Hardened Steels Pre-hardened Steels | | PH Stainless Steels Hardened Steels | | Hardened Steels | | Titanium Alloys | | |
| Cutting Speed | 390-655 SFM | | 195-330 SFM | | 260-330 SFM | | 195-250 SFM | | 260-460 SFM | | 145-215 SFM | | |
| Depth of Cut | $Aa=0.75D$  | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | |
| - | 6 | 8,450 | 39.5 | 4,245 | 14.4 | 4,771 | 20.3 | 3,598 | 12.2 | 5,822 | 22.3 | 2,911 | 9.9 |
| 1/4 | - | 7,991 | 37.3 | 4,019 | 13.6 | 4,508 | 19.1 | 3,407 | 11.5 | 5,501 | 21.1 | 2,750 | 9.3 |
| 5/16 | - | 6,393 | 40.7 | 3,215 | 15.1 | 3,606 | 20.9 | 2,726 | 12.7 | 4,401 | 23.1 | 2,200 | 10.3 |
| - | 8 | 6,337 | 40.4 | 3,184 | 14.9 | 3,578 | 20.8 | 2,699 | 12.6 | 4,366 | 22.9 | 2,183 | 10.2 |
| 3/8 | - | 5,328 | 40.8 | 2,679 | 14.8 | 3,005 | 20.9 | 2,272 | 12.5 | 3,667 | 22.9 | 1,834 | 10.2 |
| - | 10 | 5,070 | 38.8 | 2,547 | 14.1 | 2,862 | 19.9 | 2,159 | 11.9 | 3,493 | 21.8 | 1,747 | 9.7 |
| - | 12 | 4,225 | 39.5 | 2,122 | 14.7 | 2,385 | 20.6 | 1,799 | 12.5 | 2,911 | 22.3 | 1,455 | 10.1 |
| 1/2 | - | 3,996 | 37.3 | 2,009 | 13.9 | 2,254 | 19.5 | 1,704 | 11.8 | 2,750 | 21.1 | 1,375 | 9.5 |
| - | 16 | 3,169 | 36.4 | 1,592 | 13.5 | 1,789 | 19.0 | 1,349 | 11.5 | 2,183 | 20.4 | 1,092 | 9.3 |
| 5/8 | - | 3,197 | 36.7 | 1,607 | 13.6 | 1,803 | 19.1 | 1,363 | 11.6 | 2,200 | 20.6 | 1,100 | 9.4 |
| 3/4 | - | 2,664 | 34.8 | 1,340 | 13.3 | 1,503 | 18.5 | 1,136 | 11.3 | 1,834 | 19.7 | 917 | 9.1 |
| - | 20 | 2,535 | 33.1 | 1,273 | 12.6 | 1,431 | 17.6 | 1,079 | 10.7 | 1,747 | 18.8 | 873 | 8.7 |
| 1 | - | 1,998 | 26.1 | 1,005 | 9.9 | 1,127 | 13.9 | 852 | 8.4 | 1,375 | 14.8 | 688 | 6.8 |

List 03C-SO

Side Milling


| Work Material | Aluminum Alloys | | Aluminum Alloy Casting | |
|---------------|------------------|-------------|--|-------------|
| Cutting Speed | 1640 - 6560 SFM | | 1640 - 4920 SFM | |
| Depth of Cut | Aa=1D Ar=0.5D | |  | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/4 | 62,650 | 488.4 | 50,100 | 349.1 |
| 5/16 | 50,100 | 520.7 | 40,100 | 379.1 |
| 3/8 | 41,700 | 541.8 | 33,400 | 390.5 |
| 1/2 | 31,300 | 487.9 | 25,000 | 351.4 |
| 5/8 | 25,000 | 519.7 | 20,000 | 373.2 |
| 3/4 | 20,900 | 543.0 | 16,700 | 390.5 |
| 1 | 15,600 | 405.3 | 12,500 | 292.3 |

Slotting

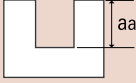
| Work Material | Aluminum Alloys | | Aluminum Alloy Casting | |
|---------------|-----------------|-------------|--|-------------|
| Cutting Speed | 1640 - 6560 SFM | | 1640 - 4920 SFM | |
| Depth of Cut | Aa=1D | |  | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/4 | 62,650 | 341.8 | 50,100 | 244.4 |
| 5/16 | 50,100 | 364.5 | 40,100 | 261.9 |
| 3/8 | 41,700 | 379.2 | 33,400 | 273.4 |
| 1/2 | 31,300 | 341.6 | 25,000 | 245.9 |
| 5/8 | 25,000 | 363.8 | 20,000 | 261.2 |
| 3/4 | 20,900 | 380.1 | 16,700 | 273.4 |
| 1 | 15,600 | 283.7 | 12,500 | 204.6 |

List 03F-SO

Side Milling

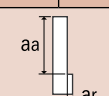
| Hardness | <25 HRC | | 25-30 HRC | | 30-35 HRC | | 35-45 HRC | | 45-50 HRC | | < 35 HRC | | < 35 HRC | | |
|---------------|--|-------------|---|-------------|--|-------------|--|-------------|-----------------|-------------|-----------------|-------------|---|-------------|-----|
| Work Material | Mild Steels Carbon Steels Cast Iron | | 400 Stainless Steels Alloy Steels Tool Steels | | 300 Stainless Steels Hardened Steels Pre-hardened Steels | | PH Stainless Steels Hardened Steels | | Hardened Steels | | Titanium Alloys | | High Temp. Alloys Inconel Hastelloy | | |
| Cutting Speed | 390-655 SFM | | 195-330 SFM | | 260-330 SFM | | 195-250 SFM | | 330-460 SFM | | 145-215 SFM | | 65-130 SFM | | |
| Depth of Cut | $Aa=1D$ $Ar=0.5D$  | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | |
| - | 6 | 8,450 | 53.2 | 4,245 | 19.4 | 4,771 | 27.0 | 3,598 | 16.4 | 6,388 | 33.2 | 2,911 | 11.9 | 1,577 | 4.7 |
| 1/4 | - | 7,991 | 50.3 | 4,019 | 18.4 | 4,508 | 25.5 | 3,407 | 15.5 | 6,035 | 31.3 | 2,750 | 11.2 | 1,482 | 4.4 |
| 5/16 | - | 6,393 | 55.4 | 3,215 | 20.3 | 3,606 | 28.4 | 2,726 | 17.2 | 4,828 | 34.3 | 2,200 | 12.8 | 1,185 | 4.8 |
| - | 8 | 6,337 | 54.9 | 3,184 | 20.1 | 3,578 | 28.2 | 2,699 | 17.0 | 4,791 | 34.0 | 2,183 | 12.7 | 1,183 | 4.8 |
| 3/8 | - | 5,328 | 55.4 | 2,679 | 20.3 | 3,005 | 28.9 | 2,272 | 17.1 | 4,023 | 34.2 | 1,834 | 13.1 | 988 | 5.1 |
| - | 10 | 5,070 | 52.7 | 2,547 | 19.3 | 2,862 | 27.5 | 2,159 | 16.3 | 3,833 | 32.6 | 1,747 | 12.4 | 946 | 4.8 |
| - | 12 | 4,225 | 51.2 | 2,122 | 18.7 | 2,385 | 26.3 | 1,799 | 15.9 | 3,194 | 31.2 | 1,455 | 11.9 | 788 | 4.6 |
| 1/2 | - | 3,996 | 48.4 | 2,009 | 17.7 | 2,254 | 24.8 | 1,704 | 15.1 | 3,017 | 29.5 | 1,375 | 11.2 | 741 | 4.3 |
| - | 16 | 3,169 | 46.9 | 1,592 | 17.5 | 1,789 | 24.5 | 1,349 | 14.9 | 2,395 | 29.0 | 1,092 | 11.0 | 591 | 4.3 |
| 5/8 | - | 3,197 | 47.3 | 1,607 | 17.7 | 1,803 | 24.7 | 1,363 | 15.1 | 2,414 | 29.2 | 1,100 | 11.1 | 592 | 4.3 |
| 3/4 | - | 2,664 | 45.3 | 1,340 | 17.1 | 1,503 | 23.9 | 1,136 | 14.5 | 2,011 | 27.9 | 917 | 10.7 | 494 | 4.2 |
| - | 20 | 2,535 | 43.1 | 1,273 | 16.2 | 1,431 | 22.8 | 1,079 | 13.8 | 1,916 | 26.6 | 873 | 10.2 | 473 | 4.0 |
| 1 | - | 1,998 | 33.9 | 1,005 | 12.8 | 1,127 | 17.9 | 852 | 10.9 | 1,508 | 20.9 | 688 | 8.1 | 370 | 3.1 |

Slotting

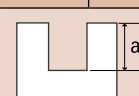
| Hardness | <25 HRC | | 25-30 HRC | | 30-35 HRC | | 35-45 HRC | | 45-50 HRC | | < 35 HRC | | < 35 HRC | | |
|---------------|--|-------------|---|-------------|--|-------------|--|-------------|-----------------|-------------|-----------------|-------------|---|-------------|-----|
| Work Material | Mild Steels Carbon Steels Cast Iron | | 400 Stainless Steels Alloy Steels Tool Steels | | 300 Stainless Steels Hardened Steels Pre-hardened Steels | | PH Stainless Steels Hardened Steels | | Hardened Steels | | Titanium Alloys | | High Temp. Alloys Inconel Hastelloy | | |
| Cutting Speed | 390-655 SFM | | 195-330 SFM | | 260-330 SFM | | 195-250 SFM | | 330-460 SFM | | 145-215 SFM | | 65-130 SFM | | |
| Depth of Cut | $Aa=0.75D$  | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | |
| - | 6 | 8,450 | 47.9 | 4,245 | 17.4 | 4,771 | 24.3 | 3,598 | 14.8 | 6,388 | 29.9 | 2,911 | 10.7 | 1,577 | 4.2 |
| 1/4 | - | 7,991 | 45.3 | 4,019 | 16.5 | 4,508 | 22.9 | 3,407 | 14.1 | 6,035 | 28.2 | 2,750 | 10.1 | 1,482 | 3.9 |
| 5/16 | - | 6,393 | 49.8 | 3,215 | 18.2 | 3,606 | 25.6 | 2,726 | 15.4 | 4,828 | 30.8 | 2,200 | 11.5 | 1,185 | 4.4 |
| - | 8 | 6,337 | 49.4 | 3,184 | 18.0 | 3,578 | 25.4 | 2,699 | 15.3 | 4,791 | 30.6 | 2,183 | 11.4 | 1,183 | 4.4 |
| 3/8 | - | 5,328 | 49.8 | 2,679 | 18.2 | 3,005 | 25.9 | 2,272 | 15.5 | 4,023 | 30.7 | 1,834 | 11.6 | 988 | 4.5 |
| - | 10 | 5,070 | 47.4 | 2,547 | 17.3 | 2,862 | 24.7 | 2,159 | 14.7 | 3,833 | 29.3 | 1,747 | 11.1 | 946 | 4.3 |
| - | 12 | 4,225 | 46.1 | 2,122 | 16.8 | 2,385 | 23.7 | 1,799 | 14.3 | 3,194 | 28.1 | 1,455 | 10.7 | 788 | 4.1 |
| 1/2 | - | 3,996 | 43.6 | 2,009 | 15.9 | 2,254 | 22.4 | 1,704 | 13.5 | 3,017 | 26.5 | 1,375 | 10.1 | 741 | 3.8 |
| - | 16 | 3,169 | 42.2 | 1,592 | 15.8 | 1,789 | 22.1 | 1,349 | 13.4 | 2,395 | 26.1 | 1,092 | 9.9 | 591 | 3.9 |
| 5/8 | - | 3,197 | 42.6 | 1,607 | 15.9 | 1,803 | 22.3 | 1,363 | 13.5 | 2,414 | 26.3 | 1,100 | 9.9 | 592 | 3.9 |
| 3/4 | - | 2,664 | 40.8 | 1,340 | 15.4 | 1,503 | 21.5 | 1,136 | 13.1 | 2,011 | 25.1 | 917 | 9.7 | 494 | 3.7 |
| - | 20 | 2,535 | 38.8 | 1,273 | 14.6 | 1,431 | 20.5 | 1,079 | 12.4 | 1,916 | 23.9 | 873 | 9.2 | 473 | 3.6 |
| 1 | - | 1,998 | 30.6 | 1,005 | 11.5 | 1,127 | 16.1 | 852 | 9.8 | 1,508 | 18.8 | 688 | 7.2 | 370 | 2.8 |

List 03D-SO

Side Milling

| Hardness | <25 HRC | | 25-35 HRC | | 30-35 HRC | | 35-45 SFM | | 45 to 50 HRC | | <35 HRC | | <35 HRC | | |
|---------------|--|-------------|---|-------------|--|-------------|--|-------------|-----------------|-------------|-----------------|-------------|---|-------------|-----|
| Work Material | Mild Steels Carbon Steels Cast Iron | | 400 Stainless Steels Alloy Steels Tool Steels | | 300 Stainless Steels Hardened Steels Pre-hardened Steels | | PH Stainless Steels Hardened Steels | | Hardened Steels | | Titanium Alloys | | High Temp. Alloys Inconel Hastelloy | | |
| Cutting Speed | 390-655 SFM | | 195-330 SFM | | 260-330 SFM | | 195-250 SFM | | 330-460 SFM | | 145-215 SFM | | 65-130 SFM | | |
| Depth of Cut | $Aa=1D$ $Ar=0.5D$  | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | |
| - | 6 | 8,450 | 53.2 | 4,245 | 19.4 | 4,771 | 27.0 | 3,598 | 16.4 | 6,388 | 33.2 | 2,911 | 11.9 | 1,577 | 4.7 |
| 1/4 | - | 7,991 | 50.3 | 4,019 | 18.4 | 4,508 | 25.5 | 3,407 | 15.5 | 6,035 | 31.3 | 2,750 | 11.2 | 1,482 | 4.4 |
| 5/16 | - | 6,393 | 55.4 | 3,215 | 20.3 | 3,606 | 28.4 | 2,726 | 17.2 | 4,828 | 34.3 | 2,200 | 12.8 | 1,185 | 4.8 |
| - | 8 | 6,337 | 54.9 | 3,184 | 20.1 | 3,578 | 28.2 | 2,699 | 17.0 | 4,791 | 34.0 | 2,183 | 12.7 | 1,183 | 4.8 |
| 3/8 | - | 5,328 | 55.4 | 2,679 | 20.3 | 3,005 | 28.9 | 2,272 | 17.1 | 4,023 | 34.2 | 1,834 | 13.1 | 988 | 5.1 |
| - | 10 | 5,070 | 52.7 | 2,547 | 19.3 | 2,862 | 27.5 | 2,159 | 16.3 | 3,833 | 32.6 | 1,747 | 12.4 | 946 | 4.8 |
| - | 12 | 4,225 | 51.2 | 2,122 | 18.7 | 2,385 | 26.3 | 1,799 | 15.9 | 3,194 | 31.2 | 1,455 | 11.9 | 788 | 4.6 |
| 1/2 | - | 3,996 | 48.4 | 2,009 | 17.7 | 2,254 | 24.8 | 1,704 | 15.1 | 3,017 | 29.5 | 1,375 | 11.2 | 741 | 4.3 |
| - | 16 | 3,169 | 46.9 | 1,592 | 17.5 | 1,789 | 24.5 | 1,349 | 14.9 | 2,395 | 29.0 | 1,092 | 11.0 | 591 | 4.3 |
| 5/8 | - | 3,197 | 47.3 | 1,607 | 17.7 | 1,803 | 24.7 | 1,363 | 15.1 | 2,414 | 29.2 | 1,100 | 11.1 | 592 | 4.3 |
| 3/4 | - | 2,664 | 45.3 | 1,340 | 17.1 | 1,503 | 23.9 | 1,136 | 14.5 | 2,011 | 27.9 | 917 | 10.7 | 494 | 4.2 |
| - | 20 | 2,535 | 43.1 | 1,273 | 16.2 | 1,431 | 22.8 | 1,079 | 13.8 | 1,916 | 26.6 | 873 | 10.2 | 473 | 4.0 |
| 1 | - | 1,998 | 33.9 | 1,005 | 12.8 | 1,127 | 17.9 | 852 | 10.9 | 1,508 | 20.9 | 688 | 8.1 | 370 | 3.1 |


Side Milling

| Hardness | <25 HRC | | 25-35 HRC | | 30-35 HRC | | 35-45 SFM | | 45 to 50 HRC | | <35 HRC | | <35 HRC | | |
|---------------|--|-------------|---|-------------|--|-------------|--|-------------|-----------------|-------------|-----------------|-------------|---|-------------|-----|
| Work Material | Mild Steels Carbon Steels Cast Iron | | 400 Stainless Steels Alloy Steels Tool Steels | | 300 Stainless Steels Hardened Steels Pre-hardened Steels | | PH Stainless Steels Hardened Steels | | Hardened Steels | | Titanium Alloys | | High Temp. Alloys Inconel Hastelloy | | |
| Cutting Speed | 390-655 SFM | | 195-330 SFM | | 260-330 SFM | | 195-250 SFM | | 330-460 SFM | | 145-215 SFM | | 65-130 SFM | | |
| Depth of Cut | $Aa=0.75D$  | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | |
| - | 6 | 8,450 | 53.2 | 4,245 | 19.4 | 4,771 | 27.0 | 3,598 | 16.4 | 6,388 | 33.2 | 2,911 | 11.9 | 1,577 | 4.7 |
| 1/4 | - | 7,991 | 50.3 | 4,019 | 18.4 | 4,508 | 25.5 | 3,407 | 15.5 | 6,035 | 31.3 | 2,750 | 11.2 | 1,482 | 4.4 |
| 5/16 | - | 6,393 | 55.4 | 3,215 | 20.3 | 3,606 | 28.4 | 2,726 | 17.2 | 4,828 | 34.3 | 2,200 | 12.8 | 1,185 | 4.8 |
| - | 8 | 6,337 | 54.9 | 3,184 | 20.1 | 3,578 | 28.2 | 2,699 | 17.0 | 4,791 | 34.0 | 2,183 | 12.7 | 1,183 | 4.8 |
| 3/8 | - | 5,328 | 55.4 | 2,679 | 20.3 | 3,005 | 28.9 | 2,272 | 17.1 | 4,023 | 34.2 | 1,834 | 13.1 | 988 | 5.1 |
| - | 10 | 5,070 | 52.7 | 2,547 | 19.3 | 2,862 | 27.5 | 2,159 | 16.3 | 3,833 | 32.6 | 1,747 | 12.4 | 946 | 4.8 |
| - | 12 | 4,225 | 51.2 | 2,122 | 18.7 | 2,385 | 26.3 | 1,799 | 15.9 | 3,194 | 31.2 | 1,455 | 11.9 | 788 | 4.6 |
| 1/2 | - | 3,996 | 48.4 | 2,009 | 17.7 | 2,254 | 24.8 | 1,704 | 15.1 | 3,017 | 29.5 | 1,375 | 11.2 | 741 | 4.3 |
| - | 16 | 3,169 | 46.9 | 1,592 | 17.5 | 1,789 | 24.5 | 1,349 | 14.9 | 2,395 | 29.0 | 1,092 | 11.0 | 591 | 4.3 |
| 5/8 | - | 3,197 | 47.3 | 1,607 | 17.7 | 1,803 | 24.7 | 1,363 | 15.1 | 2,414 | 29.2 | 1,100 | 11.1 | 592 | 4.3 |
| 3/4 | - | 2,664 | 45.3 | 1,340 | 17.1 | 1,503 | 23.9 | 1,136 | 14.5 | 2,011 | 27.9 | 917 | 10.7 | 494 | 4.2 |
| - | 20 | 2,535 | 43.1 | 1,273 | 16.2 | 1,431 | 22.8 | 1,079 | 13.8 | 1,916 | 26.6 | 873 | 10.2 | 473 | 4.0 |
| 1 | - | 1,998 | 33.9 | 1,005 | 12.8 | 1,127 | 17.9 | 852 | 10.9 | 1,508 | 20.9 | 688 | 8.1 | 370 | 3.1 |

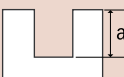
List 420: Stub Length - Multiple Flute - Fine Pitch

List 450: Multiple Flute - Fine Pitch - Center Hole

Side Milling

| Hardness | <20 HRC | | 20-30 HRC | | 30-40 HRC | | 40-50 HRC | |
|---------------|--|-------------|---|-------------|--|-------------|---|-------------|
| Work Material | Medium Tensile Steels Mild Steels | | High Tensile Steels Unalloyed Titanium Heat Resistant Ferritic Low Alloys | | High Tensile Steels Tool Steels Medium Strength Stainless Steels and Titanium Alloys | | Heat Resistant High Alloys High Strength and Titanium Alloys Stainless Steels | |
| Cutting Speed | 90-110 SFM | | 60-75 SFM | | 45-60 SFM | | 30-45 SFM | |
| Depth of Cut | $a_a = 1.5D$ $a_r = 0.5D$  | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/4 | 1,500 | 4.0 | 1,000 | 2.6 | 800 | 1.9 | 530 | 1.1 |
| 5/16 | 1,180 | 4.5 | 800 | 3.3 | 630 | 2.3 | 425 | 1.3 |
| 3/8 | 1,000 | 4.8 | 670 | 3.3 | 530 | 2.5 | 355 | 1.4 |
| 1/2 | 750 | 5.8 | 500 | 3.9 | 400 | 2.9 | 265 | 1.6 |
| 5/8 | 600 | 6.6 | 400 | 4.4 | 315 | 3.3 | 224 | 2.0 |
| 3/4 | 500 | 7.5 | 325 | 4.8 | 265 | 3.5 | 180 | 2.0 |
| 7/8 | 425 | 7.9 | 280 | 5.3 | 224 | 3.5 | 150 | 1.9 |
| 1 | 375 | 7.4 | 250 | 4.9 | 200 | 3.5 | 132 | 1.9 |
| 1-1/8 | 335 | 7.0 | 224 | 4.6 | 180 | 3.5 | 118 | 1.8 |
| 1-1/4 | 300 | 6.4 | 200 | 4.3 | 160 | 3.1 | 106 | 1.8 |
| 1-1/2 | 250 | 5.9 | 160 | 3.6 | 132 | 2.8 | 90 | 1.6 |
| 1-3/4 | 312 | 5.0 | 140 | 3.3 | 112 | 2.4 | 75 | 1.4 |
| 2 | 190 | 4.5 | 125 | 2.9 | 100 | 2.3 | 67 | 1.4 |


Slotting

| Hardness | <20 HRC | | 20-30 HRC | | 30-40 HRC | | 40-50 HRC | |
|---------------|--|-------------|---|-------------|--|-------------|---|-------------|
| Work Material | Medium Tensile Steels Mild Steels | | High Tensile Steels Unalloyed Titanium Heat Resistant Ferritic Low Alloys | | High Tensile Steels Tool Steels Medium Strength Stainless Steels and Titanium Alloys | | Heat Resistant High Alloys High Strength and Titanium Alloys Stainless Steels | |
| Cutting Speed | 90-110 SFM | | 60-75 SFM | | 45-60 SFM | | 30-45 SFM | |
| Depth of Cut | $a_a = 0.8D$  | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/4 | 1,500 | 4.1 | 1,000 | 2.5 | 800 | 1.5 | 530 | 0.9 |
| 3/8 | 1,000 | 4.6 | 670 | 3.0 | 530 | 1.9 | 355 | 1.0 |
| 1/2 | 750 | 5.0 | 500 | 3.0 | 400 | 2.0 | 265 | 1.3 |
| 5/8 | 600 | 5.1 | 400 | 3.8 | 315 | 2.3 | 224 | 1.4 |
| 3/4 | 500 | 6.1 | 325 | 4.0 | 265 | 2.9 | 180 | 1.5 |
| 7/8 | 425 | 6.1 | 280 | 4.0 | 224 | 2.9 | 150 | 1.6 |
| 1 | 375 | 5.8 | 250 | 3.9 | 200 | 2.8 | 132 | 1.6 |
| 1-1/4 | 300 | 5.4 | 200 | 3.6 | 160 | 2.5 | 106 | 1.5 |
| 1-1/2 | 200 | 5.0 | 160 | 3.3 | 132 | 2.4 | 90 | 1.4 |

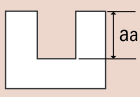


List 455: Multiple Flute - Fine Pitch - Center Hole

Side Milling

| Hardness | <145 Brinell | | <20 HRC | | 20-30 HRC | | 30-40 HRC | | <45 HRC | | | | | | | |
|---------------------|---|-------------|---|-------------|---|-------------|---------------------|-------------|--|-------------|-----|----|----|---------------------|------|------|
| Work Material | Cast Iron Mild Steel Forgings Brass | | Medium Carbon Steels Mild Steel Forgings | | High Tensile Steels 4140, 4340 304 Stainless Steels Ti-Alloy | | D2 H13 17-4PH | | Heat Resistant Alloys Inconel 718 Heat Treated Materials | | | | | | | |
| Cutting Speed | 150 SFM | | 120 SFM | | 90 SFM | | 65 SFM | | 50 SFM | | | | | | | |
| Depth of Cut | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>$1/4 \leq D \leq 2$</td> <td>1.5D</td> <td>0.5D</td> </tr> </tbody> </table>  | | | | | | | | | | Dia | aa | ar | $1/4 \leq D \leq 2$ | 1.5D | 0.5D |
| | | | | | | | | | | | Dia | aa | ar | | | |
| $1/4 \leq D \leq 2$ | 1.5D | 0.5D | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | |
| 1/4 | 2,300 | 4.6 | 1,800 | 3.4 | 1,400 | 2.6 | 1,000 | 1.7 | 750 | 1.5 | | | | | | |
| 5/16 | 1,800 | 5.7 | 1,500 | 4.7 | 1,100 | 3.4 | 800 | 2.5 | 600 | 1.6 | | | | | | |
| 3/8 | 1,500 | 6.6 | 1,200 | 5.4 | 900 | 4.0 | 650 | 2.8 | 500 | 1.7 | | | | | | |
| 1/2 | 1,150 | 6.3 | 950 | 5.1 | 700 | 3.6 | 500 | 2.6 | 400 | 1.5 | | | | | | |
| 5/8 | 900 | 7.9 | 750 | 5.9 | 550 | 4.3 | 400 | 3.1 | 300 | 1.7 | | | | | | |
| 3/4 | 750 | 8.7 | 600 | 6.6 | 450 | 5.0 | 350 | 3.9 | 250 | 1.9 | | | | | | |
| 7/8 | 650 | 8.4 | 525 | 6.5 | 400 | 4.9 | 300 | 3.5 | 210 | 1.8 | | | | | | |
| 1 | 575 | 8.4 | 450 | 5.6 | 350 | 4.3 | 250 | 3.1 | 190 | 1.7 | | | | | | |
| 1-1/8 | 500 | 8.3 | 400 | 6.0 | 300 | 4.4 | 220 | 3.2 | 160 | 1.7 | | | | | | |
| 1-1/4 | 450 | 8.3 | 375 | 7.1 | 250 | 4.6 | 200 | 3.5 | 150 | 1.9 | | | | | | |
| 1-1/2 | 375 | 7.1 | 300 | 5.5 | 200 | 3.7 | 160 | 2.5 | 120 | 1.5 | | | | | | |
| 2 | 285 | 7.2 | 230 | 5.6 | 170 | 4.2 | 125 | 2.6 | 95 | 1.6 | | | | | | |

Slotting

| Hardness | <145 Brinell | | <20 HRC | | 20-30 HRC | | 30-40 HRC | | <45 HRC | | | | | |
|---------------------|---|-------------|---|-------------|---|-------------|---------------------|-------------|--|-------------|-----|----|---------------------|------|
| Work Material | Cast Iron Mild Steel Forgings Brass | | Medium Carbon Steels Mild Steel Forgings | | High Tensile Steels 4140, 4340 304 Stainless Steels Ti-Alloy | | D2 H13 17-4PH | | Heat Resistant Alloys Inconel 718 Heat Treated Materials | | | | | |
| Cutting Speed | 150 SFM | | 120 SFM | | 90 SFM | | 65 SFM | | 50 SFM | | | | | |
| Depth of Cut | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> </tr> </thead> <tbody> <tr> <td>$1/4 \leq D \leq 2$</td> <td>0.8D</td> </tr> </tbody> </table>  | | | | | | | | | | Dia | aa | $1/4 \leq D \leq 2$ | 0.8D |
| | | | | | | | | | | | Dia | aa | | |
| $1/4 \leq D \leq 2$ | 0.8D | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | |
| 1/4 | 2,300 | 6.1 | 1,800 | 4.6 | 1,400 | 3.3 | 1,000 | 2.4 | 750 | 1.6 | | | | |
| 5/16 | 1,800 | 8.4 | 1,500 | 5.9 | 1,100 | 3.9 | 800 | 2.8 | 600 | 1.7 | | | | |
| 3/8 | 1,500 | 10.5 | 1,200 | 5.9 | 900 | 4.4 | 650 | 3.2 | 500 | 1.8 | | | | |
| 1/2 | 1,150 | 9.6 | 950 | 5.5 | 700 | 4.1 | 500 | 2.9 | 400 | 1.7 | | | | |
| 5/8 | 900 | 12.5 | 750 | 7.5 | 550 | 4.8 | 400 | 3.1 | 300 | 2.4 | | | | |
| 3/4 | 750 | 13.9 | 600 | 7.2 | 450 | 4.4 | 350 | 3.6 | 250 | 2.7 | | | | |
| 7/8 | 650 | 12.8 | 525 | 6.9 | 400 | 4.7 | 300 | 3.5 | 210 | 2.5 | | | | |
| 1 | 575 | 12.0 | 450 | 6.6 | 350 | 4.4 | 250 | 3.3 | 190 | 2.1 | | | | |
| 1-1/4 | 450 | 12.5 | 375 | 8.7 | 250 | 4.6 | 200 | 3.6 | 150 | 2.4 | | | | |
| 1-1/2 | 400 | 10.7 | 300 | 7.8 | 225 | 4.2 | 160 | 3.1 | 120 | 1.9 | | | | |
| 2 | 300 | 8.2 | 250 | 7.0 | 180 | 3.2 | 100 | 1.6 | 90 | 1.4 | | | | |



List 440: Ball End - Multiple Flute - General Purpose - Regular Pitch

Side Milling

| Hardness | <145 Brinell | | <20 HRC | | 20-30 HRC | | 30-40 HRC | | - | | | | | | | | | | |
|-----------------|---|-------------|--|-------------|--|-------------|---|-------------|-----------------------------|-------------|-----|----|----|-------------|------|------|-----------------|------|------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Medium Carbon Steels Hard Brass and Bronze Cast Iron | | High Carbon Steel Titanium Alloys Medium Strength Stainless Effects | | Heat Resistant High Alloys Austenitic Alloys Tool Steels | | Aluminum Aluminum Alloys | | | | | | | | | | |
| Cutting Speed | 100-130 SFM | | 60-75 SFM | | 40-55 SFM | | 26-40 SFM | | 190-330 SFM | | | | | | | | | | |
| Depth of Cut | <table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>1/2 ≤ D ≤ 1</td> <td>1.5D</td> <td>0.5D</td> </tr> <tr> <td>1 - 1/4 ≤ D ≤ 2</td> <td>1.0D</td> <td>0.5D</td> </tr> </tbody> </table> | | | | | | | | | | Dia | aa | ar | 1/2 ≤ D ≤ 1 | 1.5D | 0.5D | 1 - 1/4 ≤ D ≤ 2 | 1.0D | 0.5D |
| Dia | aa | ar | | | | | | | | | | | | | | | | | |
| 1/2 ≤ D ≤ 1 | 1.5D | 0.5D | | | | | | | | | | | | | | | | | |
| 1 - 1/4 ≤ D ≤ 2 | 1.0D | 0.5D | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | |
| 1/2 | 875 | 3.9 | 500 | 2.7 | 365 | 1.7 | 250 | 1.1 | 2,000 | 12.6 | | | | | | | | | |
| 5/8 | 700 | 4.4 | 420 | 3.1 | 300 | 1.9 | 200 | 1.3 | 1,600 | 14.1 | | | | | | | | | |
| 3/4 | 590 | 4.1 | 350 | 3.1 | 250 | 2.0 | 170 | 1.2 | 1,350 | 13.9 | | | | | | | | | |
| 1 | 500 | 5.0 | 250 | 2.9 | 180 | 1.8 | 125 | 1.3 | 1,000 | 14.2 | | | | | | | | | |
| 1-1/4 | 350 | 5.0 | 200 | 3.3 | 150 | 2.3 | 100 | 1.4 | 800 | 15.9 | | | | | | | | | |
| 1-1/2 | 300 | 5.0 | 175 | 3.3 | 120 | 1.9 | 80 | 1.3 | 650 | 14.3 | | | | | | | | | |
| 2 | 250 | 4.3 | 130 | 2.7 | 90 | 1.6 | 65 | 1.2 | 500 | 11.7 | | | | | | | | | |

Slotting

| Hardness | <145 Brinell | | <20 HRC | | 20-30 HRC | | 30-40 HRC | | - | | | | | | | | | |
|---------------|---|-------------|--|-------------|--|-------------|---|-------------|-----------------------------|-------------|-------------|----|-----|------|-----|------|-----|------|
| Work Material | Mild Steels Carbon Steels Cast Iron | | Medium Carbon Steels Hard Brass and Bronze Cast Iron | | High Carbon Steel Titanium Alloys Medium Strength Stainless Effects | | Heat Resistant High Alloys Austenitic Alloys Tool Steels | | Aluminum Aluminum Alloys | | | | | | | | | |
| Cutting Speed | 80-150 SFM | | 50-65 SFM | | 30-50 SFM | | 16-32 SFM | | 80-390 SFM | | | | | | | | | |
| Depth of Cut | <table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th># of Flutes</th> <th>aa</th> </tr> </thead> <tbody> <tr> <td>4FL</td> <td>1/4D</td> </tr> <tr> <td>6FL</td> <td>1/6D</td> </tr> <tr> <td>8FL</td> <td>1/8D</td> </tr> </tbody> </table> | | | | | | | | | | # of Flutes | aa | 4FL | 1/4D | 6FL | 1/6D | 8FL | 1/8D |
| # of Flutes | aa | | | | | | | | | | | | | | | | | |
| 4FL | 1/4D | | | | | | | | | | | | | | | | | |
| 6FL | 1/6D | | | | | | | | | | | | | | | | | |
| 8FL | 1/8D | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | |
| 1/2 | 1,000 | 10.5 | 450 | 3.3 | 315 | 2.1 | 200 | 1.1 | 2,500 | 21.0 | | | | | | | | |
| 5/8 | 800 | 8.5 | 355 | 3.0 | 250 | 2.0 | 160 | 0.9 | 2,000 | 16.7 | | | | | | | | |
| 3/4 | 710 | 8.5 | 315 | 2.8 | 225 | 2.0 | 140 | 0.9 | 1,800 | 16.9 | | | | | | | | |
| 1 | 500 | 7.0 | 224 | 2.2 | 160 | 1.6 | 100 | 0.9 | 1,250 | 14.1 | | | | | | | | |
| 1-1/4 | 400 | 5.3 | 180 | 1.7 | 125 | 1.1 | 80 | 0.7 | 1,000 | 10.5 | | | | | | | | |
| 1-1/2 | 315 | 4.0 | 140 | 1.1 | 100 | 0.8 | 63 | 0.5 | 800 | 8.0 | | | | | | | | |
| 2 | 250 | 3.9 | 112 | 1.1 | 80 | 0.8 | 50 | 0.5 | 630 | 7.8 | | | | | | | | |

In case of deeper operation, slow down feed by 20-50%.



List 430E: For Aluminum - 3 Flute

Side Milling

| Work Material | Aluminum Aluminum Alloys | | | | | | | | | |
|---------------------|---|-------------|----|-----|----|----|---------------------|------|-------|--|
| Cutting Speed | 195-330 SFM | | | | | | | | | |
| Depth of Cut | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>$3/8 \leq D \leq 2$</td> <td>1.5D</td> <td>0.15D</td> </tr> </tbody> </table> | | | Dia | aa | ar | $3/8 \leq D \leq 2$ | 1.5D | 0.15D | |
| | Dia | aa | ar | | | | | | | |
| $3/8 \leq D \leq 2$ | 1.5D | 0.15D | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | | | | | | | | |
| 3/8 | 2,700 | 11.4 | | | | | | | | |
| 1/2 | 2,000 | 12.0 | | | | | | | | |
| 5/8 | 1,600 | 10.7 | | | | | | | | |
| 3/4 | 1,350 | 10.1 | | | | | | | | |
| 7/8 | 1,200 | 10.2 | | | | | | | | |
| 1 | 1000 | 9.0 | | | | | | | | |
| 1-1/4 | 800 | 7.6 | | | | | | | | |
| 1-1/2 | 670 | 6.7 | | | | | | | | |
| 2 | 500 | 5.0 | | | | | | | | |

Slotting

| Work Material | Aluminum Aluminum Alloys | | | | | | |
|---------------------|--|-------------|-----|----|---------------------|------|--|
| Cutting Speed | 195-330 SFM | | | | | | |
| Depth of Cut | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> </tr> </thead> <tbody> <tr> <td>$3/8 \leq D \leq 2$</td> <td>1/3D</td> </tr> </tbody> </table> | | Dia | aa | $3/8 \leq D \leq 2$ | 1/3D | |
| | Dia | aa | | | | | |
| $3/8 \leq D \leq 2$ | 1/3D | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | | | | | |
| 3/8 | 2,700 | 22.9 | | | | | |
| 1/2 | 2,000 | 24.0 | | | | | |
| 5/8 | 1,600 | 21.5 | | | | | |
| 3/4 | 1,350 | 20.3 | | | | | |
| 7/8 | 1,200 | 20.4 | | | | | |
| 1 | 1,000 | 18.0 | | | | | |
| 1-1/4 | 800 | 15.2 | | | | | |
| 1-1/2 | 670 | 13.4 | | | | | |
| 2 | 500 | 15.0 | | | | | |



List 410: Stub Length - 3 Flute - Regular Pitch

List 490: Multiple Flute - Regular Pitch - General Purpose - Center Hole


Side Milling

| Hardness | <20 HRC | 20-30 HRC | 30-40 HRC | 40-50 HRC | - | | | | | | | | | |
|-------------------------|---|---|---|---|---|----------------|--------------|----------------|-------------------------|----------------|------|-----------------------|----|------|
| Work Material | Medium Tensile Steels (up to 115x103 Lb/in ²) Mild Steel Forgings Cast Iron Brass and Bronze Copper | High Tensile Steels (115x103~145x103 Lb/in ²) Unalloyed Titanium Heat Resistant Ferritic Low Alloys | High Tensile Steels (145x103~200x103 Lb/in ²) Tool Steels Medium Strength Stainless Steels Titanium Alloys | Heat Resistant High Alloys High Strength Stainless Steels Titanium Alloys | Aluminum Alloyed Aluminum Plastics Woods | | | | | | | | | |
| Cutting Speed | 80-100 SFM | 60-75 SFM | 40-55 SFM | 26-40 SFM | 195-330 SFM | | | | | | | | | |
| Depth of Cut | <table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th style="padding: 2px;">Dia</th> <th style="padding: 2px;">a_a</th> <th style="padding: 2px;">a_r</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">$1/2 \leq D \leq 1-1/8$</td> <td style="padding: 2px;">1.5D</td> <td style="padding: 2px;">0.5D</td> </tr> <tr> <td style="padding: 2px;">$1-1/4 \leq D \leq 2$</td> <td style="padding: 2px;">1D</td> <td style="padding: 2px;">0.5D</td> </tr> </tbody> </table> | | | | | Dia | a_a | a_r | $1/2 \leq D \leq 1-1/8$ | 1.5D | 0.5D | $1-1/4 \leq D \leq 2$ | 1D | 0.5D |
| Dia | a_a | a_r | | | | | | | | | | | | |
| $1/2 \leq D \leq 1-1/8$ | 1.5D | 0.5D | | | | | | | | | | | | |
| $1-1/4 \leq D \leq 2$ | 1D | 0.5D | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | |
| 1/4 | 1,320 | 2.6 | 1,000 | 1.6 | 750 | 1.0 | 500 | 0.6 | 4,000 | 11.1 | | | | |
| 5/16 | 1,060 | 3.0 | 800 | 1.9 | 600 | 1.1 | 400 | 0.8 | 3,150 | 12.4 | | | | |
| 3/8 | 950 | 3.1 | 710 | 2.0 | 530 | 1.0 | 355 | 0.8 | 2,800 | 13.0 | | | | |
| 1/2 | 670 | 3.8 | 500 | 2.4 | 375 | 1.5 | 250 | 0.9 | 2,000 | 15.8 | | | | |
| 5/8 | 600 | 4.8 | 400 | 2.6 | 300 | 1.6 | 200 | 1.0 | 1,600 | 17.6 | | | | |
| 3/4 | 475 | 4.5 | 355 | 2.8 | 265 | 1.8 | 180 | 1.0 | 1,400 | 18.5 | | | | |
| 7/8 | 375 | 4.5 | 280 | 2.8 | 212 | 1.8 | 140 | 1.0 | 1,120 | 18.8 | | | | |
| 1 | 335 | 4.1 | 250 | 2.6 | 190 | 1.6 | 125 | 1.0 | 1,000 | 17.8 | | | | |
| 1-1/8 | 300 | 4.0 | 224 | 2.5 | 170 | 1.6 | 112 | 0.9 | 900 | 16.9 | | | | |
| 1-1/4 | 265 | 4.6 | 200 | 3.0 | 150 | 1.9 | 100 | 1.0 | 800 | 19.9 | | | | |
| 1-1/2 | 212 | 4.1 | 160 | 2.6 | 118 | 1.6 | 80 | 1.0 | 630 | 17.6 | | | | |
| 1-3/4 | 190 | 4.0 | 140 | 2.5 | 106 | 1.5 | 71 | 1.0 | 560 | 16.5 | | | | |
| 2 | 170 | 3.5 | 125 | 2.3 | 95 | 1.4 | 63 | 0.9 | 500 | 14.8 | | | | |



List 470: Regular Length - Multiple Flute - Center Hole


Side Milling

| Hardness | <20 HRC | 20-30 HRC | 30-40 HRC | 40-50 HRC | - | | | | | | | | | |
|-----------------|--|---|--|---|---|-------------|-----------|-------------|-----------------|-------------|------|---------------|----|------|
| Work Material | Medium Tensile Steels (up to 115 x 103 Lb/in ²) Mild Steel Forgings Cast Iron Brass and Bronze Copper | High Tensile Steels (115 x 103~145 x 103 Lb/in ²) Unalloyed Titanium Heat Resistant Ferritic Low Alloys | High Tensile Steels (145 x 103 ~200 x 103 Lb/in ²) Tool Steels Medium Strength Stainless Steels and Titanium Alloys | Heat Resistant High Alloys High Strength Stainless Steels and Titanium Alloys | Aluminum Alloyed Aluminum Plastics Woods | | | | | | | | | |
| Cutting Speed | 80-100 SFM | 60-75 SFM | 40-55 SFM | 26-40 SFM | 195-330 SFM | | | | | | | | | |
| Depth of Cut | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>1/2 ≤ D ≤ 1-1/8</td> <td>1.5D</td> <td>0.3D</td> </tr> <tr> <td>1-1/4 ≤ D ≤ 2</td> <td>1D</td> <td>0.3D</td> </tr> </tbody> </table>  | | | | | Dia | aa | ar | 1/2 ≤ D ≤ 1-1/8 | 1.5D | 0.3D | 1-1/4 ≤ D ≤ 2 | 1D | 0.3D |
| Dia | aa | ar | | | | | | | | | | | | |
| 1/2 ≤ D ≤ 1-1/8 | 1.5D | 0.3D | | | | | | | | | | | | |
| 1-1/4 ≤ D ≤ 2 | 1D | 0.3D | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | |
| 1/4 | 1,320 | 2.1 | 1,000 | 1.3 | 750 | 0.9 | 500 | 0.5 | 4,000 | 8.9 | | | | |
| 5/16 | 1,060 | 2.4 | 800 | 1.5 | 600 | 1.0 | 400 | 0.5 | 3,150 | 9.9 | | | | |
| 3/8 | 950 | 2.3 | 710 | 1.5 | 530 | 1.0 | 355 | 0.6 | 2,800 | 10.5 | | | | |
| 1/2 | 670 | 3.0 | 500 | 1.9 | 375 | 1.1 | 250 | 0.8 | 2,000 | 12.4 | | | | |
| 5/8 | 600 | 3.4 | 400 | 2.1 | 300 | 1.4 | 200 | 0.8 | 1,600 | 14.0 | | | | |
| 3/4 | 475 | 3.5 | 355 | 2.3 | 265 | 1.4 | 180 | 0.9 | 1,400 | 14.8 | | | | |
| 7/8 | 375 | 3.5 | 280 | 2.3 | 212 | 1.4 | 140 | 0.9 | 1,120 | 14.8 | | | | |
| 1 | 335 | 3.4 | 250 | 2.1 | 190 | 1.4 | 125 | 0.8 | 1,000 | 14.0 | | | | |
| 1-1/8 | 300 | 3.1 | 224 | 2.0 | 170 | 1.3 | 112 | 0.8 | 900 | 13.3 | | | | |
| 1-1/4 | 265 | 3.8 | 200 | 2.4 | 150 | 1.5 | 100 | 1.0 | 800 | 15.8 | | | | |
| 1-1/2 | 212 | 3.4 | 160 | 2.1 | 118 | 1.4 | 80 | 0.9 | 630 | 14.0 | | | | |
| 1-3/4 | 190 | 3.1 | 140 | 2.0 | 106 | 1.3 | 71 | 0.8 | 560 | 13.3 | | | | |
| 2 | 170 | 2.9 | 125 | 1.8 | 95 | 1.1 | 63 | 0.8 | 500 | 11.8 | | | | |

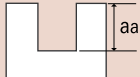
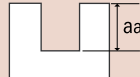


List 460: Multiple Flute - Fine Pitch

Side Milling

| Hardness | - | | <20 HRC | | 20-30 HRC | | 30-40 HRC | | 40-50 HRC | |
|---------------|--|-------------|-------------------------------------|-------------|---|-------------|---|-------------|-----------------|-------------|
| Work Material | Aluminum | | Medium Carbon Steels Mild Steels | | Pre-hardened Steels Stainless Steels Die & Alloy Steels | | Pre-hardened Steels Stainless Steels Die & Alloy Steels | | Hardened Steels | |
| Cutting Speed | 400-460 SFM | | 130-160 SFM | | 100 SFM | | 65 SFM | | 50 SFM | |
| Depth of Cut | $a_a = 1.5D$ $a_r = 0.1D$  | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 6 | 6,900 | 21.7 | 2,400 | 10.6 | 1,600 | 6.7 | 1,060 | 3.0 | 800 | 1.2 |
| 8 | 5,200 | 21.7 | 1,800 | 10.6 | 1,200 | 6.7 | 800 | 3.0 | 600 | 1.2 |
| 10 | 4,200 | 23.6 | 1,400 | 13.4 | 950 | 6.7 | 640 | 3.0 | 480 | 1.2 |
| 12 | 3,500 | 23.6 | 1,200 | 14.2 | 800 | 7.1 | 530 | 3.0 | 400 | 1.2 |
| 16 | 2,600 | 23.6 | 900 | 15.7 | 600 | 7.1 | 400 | 3.0 | 300 | 1.2 |
| 20 | 2,100 | 23.6 | 720 | 16.1 | 480 | 7.9 | 320 | 3.0 | 240 | 1.2 |
| 25 | 1,700 | 23.6 | 580 | 13.8 | 380 | 7.1 | 250 | 3.0 | 190 | 1.2 |

Slotting


| Hardness | <20 HRC | | 20-30 HRC | | 30-40 HRC | | 40-50 HRC | | | | | | | |
|---------------|---|-------------|---|-------------|---|----------------|-----------------|-------------|--------|------|--|--|--|--|
| Work Material | Medium Carbon Steels Mild Steels | | Pre-hardened Steels Stainless Steels Die & Alloy Steels | | Pre-hardened Steels Stainless Steels Die & Alloy Steels | | Hardened Steels | | | | | | | |
| Cutting Speed | 125 SFM | | 85 SFM | | 55 SFM | | 40 SFM | | | | | | | |
| Depth of Cut | <table border="1" style="display: inline-table;"> <tr><th>Dia</th><th>a_a</th></tr> <tr><td>D ≤ 12</td><td>1.0D</td></tr> <tr><td>12 < D</td><td>0.5D</td></tr> </table>  | | | | Dia | a _a | D ≤ 12 | 1.0D | 12 < D | 0.5D | $a_a = 0.5D$  | | | |
| Dia | a _a | | | | | | | | | | | | | |
| D ≤ 12 | 1.0D | | | | | | | | | | | | | |
| 12 < D | 0.5D | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | |
| 6 | 2,040 | 7.9 | 1,360 | 4.7 | 900 | 2.0 | 680 | 0.8 | | | | | | |
| 8 | 1,530 | 8.3 | 1,020 | 4.7 | 680 | 2.0 | 510 | 0.8 | | | | | | |
| 10 | 1,190 | 9.1 | 810 | 4.7 | 540 | 2.0 | 410 | 0.8 | | | | | | |
| 12 | 1,020 | 9.8 | 680 | 5.1 | 450 | 2.0 | 340 | 0.8 | | | | | | |
| 16 | 760 | 10.6 | 510 | 5.1 | 340 | 2.0 | 260 | 0.8 | | | | | | |
| 20 | 620 | 11.0 | 410 | 5.5 | 270 | 2.0 | 200 | 0.8 | | | | | | |
| 25 | 500 | 9.4 | 320 | 5.1 | 210 | 2.0 | 160 | 0.8 | | | | | | |

For 460 TIN Series, multiply cutting condition by 1.2 to 1.5

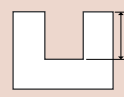
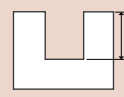
continued on next page

List 460: Multiple Flute - Fine Pitch (Continued)

Side Milling

| Hardness | - | | <20 HRC | | 20-30 HRC | | 30-40 HRC | | 40-50 HRC | |
|---------------|--|-------------|-------------------------------------|-------------|---|-------------|---|-------------|-----------------|-------------|
| Work Material | Aluminum | | Medium Carbon Steels Mild Steels | | Pre-hardened Steels Stainless Steels Die & Alloy Steels | | Pre-hardened Steels Stainless Steels Die & Alloy Steels | | Hardened Steels | |
| Cutting Speed | 390-460 SFM | | 130-164 SFM | | 100 SFM | | 66 SFM | | 50 SFM | |
| Depth of Cut | $a_a = 1.5D$ $a_r = 0.1D$  | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/4 | 6,900 | 21.7 | 2,400 | 10.6 | 1,600 | 6.7 | 1,060 | 3.0 | 800 | 1.2 |
| 5/16 | 5,200 | 21.7 | 1,800 | 10.6 | 1,200 | 6.7 | 800 | 3.0 | 600 | 1.2 |
| 3/8 | 4,200 | 23.6 | 1,400 | 13.4 | 950 | 6.7 | 640 | 3.0 | 480 | 1.2 |
| 1/2 | 3,500 | 23.6 | 1,200 | 14.2 | 800 | 7.1 | 530 | 3.0 | 400 | 1.2 |
| 5/8 | 2,600 | 23.6 | 900 | 15.7 | 600 | 7.1 | 400 | 3.0 | 300 | 1.2 |
| 3/4 | 2,100 | 23.6 | 720 | 16.1 | 480 | 7.9 | 320 | 3.0 | 240 | 1.2 |
| 1 | 1,700 | 23.6 | 580 | 13.8 | 380 | 7.1 | 250 | 3.0 | 190 | 1.2 |


Slotting

| Hardness | <20 HRC | | 20-30 HRC | | 30-40 HRC | | 40-50 HRC | | | | | | | |
|---------------|---|-------------|---|-------------|---|----------------|-----------------|-------------|---------|------|--|--|--|--|
| Work Material | Medium Carbon Steels Mild Steels | | Pre-hardened Steels Stainless Steels Die & Alloy Steels | | Pre-hardened Steels Stainless Steels Die & Alloy Steels | | Hardened Steels | | | | | | | |
| Cutting Speed | 110-140 SFM | | 85 SFM | | 56 SFM | | 43 SFM | | | | | | | |
| Depth of Cut | <table border="1"> <tr> <th>Dia</th> <th>a_a</th> </tr> <tr> <td>D ≤ 1/2</td> <td>1.0D</td> </tr> <tr> <td>1/2 < D</td> <td>0.5D</td> </tr> </table>  | | | | Dia | a _a | D ≤ 1/2 | 1.0D | 1/2 < D | 0.5D | $a_a = 0.5D$  | | | |
| Dia | a _a | | | | | | | | | | | | | |
| D ≤ 1/2 | 1.0D | | | | | | | | | | | | | |
| 1/2 < D | 0.5D | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | |
| 1/4 | 2,040 | 7.9 | 1,360 | 4.7 | 900 | 2.0 | 680 | 0.8 | | | | | | |
| 5/16 | 1,530 | 7.9 | 1,020 | 4.7 | 680 | 2.0 | 510 | 0.8 | | | | | | |
| 3/8 | 1,190 | 9.1 | 810 | 4.7 | 540 | 2.0 | 410 | 0.8 | | | | | | |
| 1/2 | 1,020 | 9.8 | 680 | 5.1 | 450 | 2.0 | 340 | 0.8 | | | | | | |
| 5/8 | 760 | 10.6 | 510 | 5.1 | 340 | 2.0 | 260 | 0.8 | | | | | | |
| 3/4 | 620 | 11.0 | 410 | 5.5 | 270 | 2.0 | 200 | 0.8 | | | | | | |
| 1 | 500 | 9.4 | 320 | 5.1 | 210 | 2.0 | 160 | 0.8 | | | | | | |



List 690: Regular Length - Multiple Flute - Center Hole

Side Milling

| Hardness | <20 HRC | | 20-30 HRC | | 30-40 HRC | | 40-45 HRC | | >50 HRC | | | | | | | | | | |
|-----------------|--|-------------|--|-------------|--|-------------|--|-------------|-----------------------------------|-------------|-----|----------------|----------------|-----------------|------|------|---------------|----|------|
| Work Material | Mild Steels (up to 70x103 lb/in.2) | | Medium Tensile Steels (70x103 to 115x103 lb/in.2) Mild Steel Forgings Cast Iron | | High Tensile Steels (115x103 to 142x103 lb/in.2) Heat Resistant Ferritic Low Alloys | | High Tensile Steels (142x103 to 200x103 lb/in.2) Tool Steels Medium Strength Stainless Steel | | High Strength Stainless Steels | | | | | | | | | | |
| Cutting Speed | 130-148 SFM | | 115-131 SFM | | 79-83 SFM | | 55-66 SFM | | 45-47 SFM | | | | | | | | | | |
| Depth of Cut | <table border="1" style="display: inline-table; margin-right: 20px;"> <thead> <tr> <th>Dia</th> <th>a_a</th> <th>a_r</th> </tr> </thead> <tbody> <tr> <td>1/2 ≤ D < 1-1/8</td> <td>1.5D</td> <td>0.5D</td> </tr> <tr> <td>1-1/4 ≤ D ≤ 2</td> <td>1D</td> <td>0.5D</td> </tr> </tbody> </table>  | | | | | | | | | | Dia | a _a | a _r | 1/2 ≤ D < 1-1/8 | 1.5D | 0.5D | 1-1/4 ≤ D ≤ 2 | 1D | 0.5D |
| | | | | | | | | | | | Dia | a _a | a _r | | | | | | |
| 1/2 ≤ D < 1-1/8 | 1.5D | 0.5D | | | | | | | | | | | | | | | | | |
| 1-1/4 ≤ D ≤ 2 | 1D | 0.5D | | | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | |
| 1/4 | 2,230 | 6.0 | 1,770 | 4.5 | 1,250 | 3.0 | 940 | 2.3 | 700 | 1.5 | | | | | | | | | |
| 5/16 | 1,700 | 7.9 | 1,600 | 6.3 | 1,000 | 3.5 | 800 | 2.8 | 560 | 1.5 | | | | | | | | | |
| 3/8 | 1,470 | 10.3 | 1,180 | 7.0 | 835 | 4.0 | 660 | 3.3 | 470 | 1.9 | | | | | | | | | |
| 1/2 | 1,100 | 9.3 | 900 | 6.4 | 630 | 4.1 | 425 | 3.1 | 355 | 1.9 | | | | | | | | | |
| 5/8 | 850 | 12.5 | 715 | 8.4 | 500 | 6.3 | 400 | 4.0 | 280 | 2.4 | | | | | | | | | |
| 3/4 | 725 | 14.8 | 590 | 8.4 | 420 | 6.0 | 325 | 4.3 | 235 | 2.4 | | | | | | | | | |
| 7/8 | 630 | 14.0 | 500 | 8.4 | 350 | 6.0 | 280 | 4.5 | 200 | 2.4 | | | | | | | | | |
| 1 | 560 | 14.0 | 450 | 7.9 | 310 | 6.0 | 250 | 4.5 | 175 | 2.3 | | | | | | | | | |
| 1-1/8 | 490 | 12.1 | 400 | 7.0 | 270 | 6.0 | 220 | 4.3 | 160 | 2.4 | | | | | | | | | |
| 1-1/4 | 450 | 11.8 | 355 | 7.0 | 250 | 5.5 | 200 | 4.0 | 140 | 2.3 | | | | | | | | | |
| 1-1/2 | 370 | 10.1 | 300 | 6.6 | 210 | 4.5 | 165 | 3.3 | 115 | 1.9 | | | | | | | | | |
| 1-3/4 | 315 | 8.8 | 250 | 6.0 | 180 | 4.0 | 140 | 2.8 | 100 | 1.5 | | | | | | | | | |
| 2 | 275 | 7.8 | 220 | 5.0 | 155 | 3.5 | 120 | 2.3 | 90 | 1.4 | | | | | | | | | |






EXOMILL VC-10


Powdered Metal High Speed Steel

List 660: Super High-Helix - Regular Length - Multiple Flute

Semi-Roughing Cut

| Hardness | <20 HRC | | 20-30 HRC | | 30-40 HRC | | 40-50 HRC | |
|---------------|--|-------------|---|-------------|---|-------------|---|-------------|
| Work Material | 1045 1055 Cast Steel Cast Iron | | 15-5 PH 4140, 4340, 304, 316, 410, 420, 430 A1 | | 6AL-4V 17-4 PH H13 (HRC38) P20, D2 Beryllium Copper | | H13 (HRC45) Inconel 718 Hastelloy Waspaloy | |
| Cutting Speed | 80-100 SFM | | 50-65 SFM | | 35-45 SFM | | 20-30 SFM | |
| Depth of Cut | $a_a=1.5D$ $a_r=0.3D$  | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/4 | 1,400 | 3.0 | 900 | 1.9 | 600 | 1.2 | 400 | 0.7 |
| 5/16 | 1,100 | 2.8 | 700 | 1.8 | 500 | 1.3 | 300 | 0.7 |
| 3/8 | 900 | 3.2 | 600 | 2.1 | 400 | 1.4 | 250 | 0.7 |
| 7/16 | 780 | 3.3 | 500 | 2.1 | 355 | 1.5 | 224 | 0.8 |
| 1/2 | 710 | 3.8 | 450 | 2.4 | 315 | 1.7 | 200 | 0.8 |
| 5/8 | 560 | 3.8 | 350 | 2.3 | 250 | 1.7 | 160 | 0.9 |
| 3/4 | 450 | 3.8 | 300 | 2.6 | 200 | 1.7 | 140 | 0.8 |
| 7/8 | 400 | 4.0 | 250 | 2.5 | 180 | 1.8 | 110 | 0.8 |
| 1 | 315 | 3.5 | 200 | 2.2 | 160 | 1.8 | 100 | 0.8 |

Finish Cut

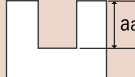
| Hardness | <20 HRC | | 20-30 HRC | | 30-40 HRC | | 40-50 HRC | |
|---------------|--|-------------|---|-------------|---|-------------|---|-------------|
| Work Material | 1045 1055 Cast Steel Cast Iron | | 15-5 PH 4140, 4340, 304, 316, 410, 420, 430 A1 | | 6AL-4V 17-4 PH H13 (HRC38) P20, D2 Beryllium Copper | | H13 (HRC45) Inconel 718 Hastelloy Waspaloy | |
| Cutting Speed | 80-100 SFM | | 50-65 SFM | | 35-45 SFM | | 20-30 SFM | |
| Depth of Cut | $a_a=1.5D$ $a_r=0.1D$  | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/4 | 1,400 | 5.9 | 900 | 3.1 | 600 | 2.0 | 400 | 1.1 |
| 5/16 | 1,100 | 6.6 | 700 | 3.3 | 500 | 2.4 | 315 | 1.2 |
| 3/8 | 900 | 6.3 | 600 | 3.5 | 400 | 2.3 | 250 | 1.2 |
| 7/16 | 780 | 7.0 | 500 | 3.7 | 355 | 2.7 | 224 | 1.4 |
| 1/2 | 710 | 6.7 | 450 | 3.6 | 315 | 2.5 | 200 | 1.4 |
| 5/8 | 560 | 6.3 | 350 | 3.5 | 250 | 2.5 | 160 | 1.5 |
| 3/4 | 450 | 5.1 | 300 | 3.2 | 200 | 2.1 | 140 | 1.5 |
| 7/8 | 400 | 6.0 | 250 | 3.7 | 180 | 2.7 | 110 | 1.6 |
| 1 | 350 | 5.3 | 200 | 3.0 | 160 | 2.4 | 100 | 1.4 |



List 573: Regular Length, 2 Flute

List 574: Regular Length, Multiple Flute

Slotting

| Hardness | – | | <145 Brinell | | <20 HRC | | 20-30 HRC | | 30-40 HRC | |
|---------------|--|-------------|-----------------------------|-------------|--|-------------|--|-------------|---|-------------|
| Work Material | Aluminum Alloyed Aluminum Plastics Woods | | Mild Steels Brass Bronze | | Medium Tensile Steels Mild Steel Forgings Cast Iron Hard Brass and Bronze Copper | | High Tensile Steels Unalloyed Titanium Heat Resistant Ferritic Low Alloys | | High Tensile Steels Tool Steels Medium Strength Stainless Steels and Titanium Alloys | |
| Cutting Speed | 250-350 SFM | | 80-100 SFM | | 50-65 SFM | | 35-45 SFM | | 20-30 SFM | |
| Depth of Cut | 2 Flute: $aa=0.5D$ 4 Flute: $aa=0.25D$  | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/8 | 9,170 | 9.2 | 2,750 | 3.1 | 1,760 | 4.2 | 1,220 | 1.0 | 765 | 0.6 |
| 5/32 | 7,335 | 10.4 | 2,200 | 3.5 | 1,400 | 4.8 | 980 | 1.1 | 610 | 0.6 |
| 3/16 | 6,110 | 11.6 | 1,830 | 4.0 | 1,170 | 5.5 | 815 | 1.3 | 510 | 0.7 |
| 1/4 | 4,585 | 12.1 | 1,375 | 4.4 | 880 | 5.9 | 610 | 1.4 | 380 | 0.8 |
| 5/16 | 3,670 | 14.0 | 1,100 | 4.9 | 700 | 6.7 | 490 | 1.5 | 300 | 0.8 |
| 3/8 | 3,055 | 12.9 | 915 | 4.8 | 585 | 6.5 | 410 | 1.5 | 255 | 0.8 |
| 7/16 | 2,620 | 13.9 | 785 | 5.3 | 500 | 7.1 | 350 | 1.7 | 220 | 0.9 |
| 1/2 | 2,290 | 13.8 | 690 | 5.2 | 440 | 6.7 | 305 | 1.6 | 190 | 0.9 |
| 9/16 | 2,040 | 12.8 | 610 | 4.9 | 390 | 6.6 | 270 | 1.6 | 170 | 1.0 |
| 5/8 | 1,835 | 12.3 | 550 | 4.6 | 350 | 6.2 | 245 | 1.6 | 150 | 1.0 |
| 11/16 | 1,670 | 12.5 | 500 | 4.8 | 320 | 5.7 | 220 | 1.6 | 140 | 1.0 |
| 3/4 | 1,530 | 11.5 | 460 | 4.4 | 295 | 5.2 | 200 | 1.5 | 130 | 0.9 |
| 13/16 | 1,410 | 11.2 | 425 | 4.2 | 270 | 4.8 | 190 | 1.5 | 120 | 1.0 |
| 7/8 | 1,310 | 11.1 | 395 | 4.1 | 250 | 4.4 | 175 | 1.4 | 110 | 0.9 |
| 15/16 | 1,220 | 11.0 | 365 | 4.1 | 235 | 4.2 | 165 | 1.3 | 100 | 0.8 |
| 1 | 1,150 | 10.3 | 345 | 3.9 | 220 | 4.0 | 155 | 1.2 | 95 | 0.7 |

1) Based on regular 4FL end mills cutting depth (1.5D) x cutting width (0.1D).
 2) For 2FL end mill, decrease feed 50%.
 3) For finish, increase RPM 1.3 to 1.5 times.


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List 574: Regular Length, Multiple Flute (Continued)

Side Milling

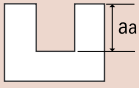
| Hardness | - | | <145 Brinell | | <20 HRC | | 20-30 HRC | | 30-40 HRC | |
|---------------|--|-------------|-----------------------------|-------------|--|-------------|--|-------------|---|-------------|
| Work Material | Aluminum Alloyed Aluminum Plastics Woods | | Mild Steels Brass Bronze | | Medium Tensile Steels Mild Steel Forgings Cast Iron Hard Brass and Bronze Copper | | High Tensile Steels Unalloyed Titanium Heat Resistant Ferritic Low Alloys | | High Tensile Steels Tool Steels Medium Strength Stainless Steels and Titanium Alloys | |
| Cutting Speed | 325-590 SFM | | 130-165 SFM | | 105-125 SFM | | 65-80 SFM | | 30-50 SFM | |
| Depth of Cut | $a_a = 1.5D$ $a_r = 0.1D$  | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/8 | 13,980 | 28.0 | 4,500 | 10.1 | 3,550 | 7.1 | 2,240 | 3.6 | 1,250 | 1.6 |
| 5/32 | 11,185 | 31.8 | 3,550 | 11.4 | 2,800 | 8.0 | 1,800 | 4.0 | 1,000 | 1.9 |
| 3/16 | 9,320 | 35.4 | 2,800 | 12.4 | 2,240 | 9.0 | 1,400 | 4.5 | 800 | 2.1 |
| 1/4 | 6,990 | 36.9 | 2,240 | 14.4 | 1,800 | 10.1 | 1,120 | 5.0 | 630 | 2.4 |
| 5/16 | 5,590 | 42.5 | 1,800 | 16.1 | 1,400 | 11.3 | 900 | 5.8 | 500 | 2.6 |
| 3/8 | 4,660 | 39.5 | 1,600 | 17.0 | 1,250 | 11.8 | 800 | 6.1 | 450 | 2.9 |
| 7/16 | 3,995 | 42.4 | 1,250 | 16.8 | 1,000 | 12.0 | 630 | 6.3 | 355 | 3.0 |
| 1/2 | 3,495 | 41.9 | 1,120 | 16.8 | 900 | 11.4 | 560 | 5.9 | 315 | 3.0 |
| 9/16 | 3,100 | 39.2 | 1,000 | 16.0 | 800 | 11.4 | 500 | 6.0 | 280 | 3.1 |
| 5/8 | 2,795 | 37.5 | 900 | 15.3 | 710 | 10.6 | 450 | 6.0 | 250 | 3.1 |
| 11/16 | 2,540 | 38.1 | 800 | 15.3 | 630 | 9.5 | 400 | 5.6 | 224 | 3.1 |
| 3/4 | 2,330 | 35.0 | 800 | 15.3 | 630 | 9.5 | 400 | 5.6 | 224 | 3.1 |
| 13/16 | 2,150 | 34.4 | 710 | 14.3 | 560 | 8.4 | 355 | 5.6 | 200 | 3.3 |
| 7/8 | 2,000 | 34.0 | 630 | 13.4 | 500 | 7.5 | 315 | 5.0 | 180 | 2.9 |
| 15/16 | 1,865 | 33.6 | 560 | 12.5 | 450 | 6.8 | 280 | 4.5 | 160 | 2.5 |
| 1 | 1,750 | 31.5 | 560 | 12.5 | 450 | 6.8 | 280 | 4.5 | 160 | 2.5 |

- 1) Based on regular 4FL end mills cutting depth (1.5D) x cutting width (0.1D).
- 2) For 2FL end mill, decrease feed 50%.
- 3) For finish, increase RPM 1.3 to 1.5 times.



Standard 2 Flute HSS-Co

Slotting

| Hardness | <145 Brinell | | | <20 HRC | | | 20-30 HRC | | |
|---------------|---|---------|-------------|--|---------|-------------|--|---------|-------------|
| Work Material | Mild Steels Brass Bronze | | | Medium Tensile Steels Mild Steel Forgings Cast Iron Hard Brass and Bronze Copper | | | High Tensile Steels Unalloyed Titanium Heat Resistant Ferritic Low Alloys | | |
| Cutting Speed | 80-150 SFM | | | 80-110 SFM | | | 50-65 SFM | | |
| Depth of Cut | $aa=0.5D$  | | | | | | | | |
| Mill Dia. | Speed RPM | IPT | Feed in/min | Speed RPM | IPT | Feed in/min | Speed RPM | IPT | Feed in/min |
| 1/64 | 25,000 | 0.00002 | 1.0 | 23,225 | 0.00002 | 0.9 | 14,000 | 0.00001 | 0.3 |
| 1/32 | 14,060 | 0.00007 | 2.0 | 11,610 | 0.00006 | 1.4 | 7,100 | 0.00005 | 0.7 |
| 3/64 | 9,370 | 0.00014 | 2.6 | 7,740 | 0.00012 | 1.9 | 4,500 | 0.00010 | 0.9 |
| 1/16 | 7,030 | 0.00020 | 2.8 | 5,800 | 0.00018 | 2.1 | 3,550 | 0.00014 | 1.0 |
| 5/64 | 5,625 | 0.00028 | 3.1 | 4,645 | 0.00025 | 2.3 | 2,800 | 0.00020 | 1.1 |
| 3/32 | 4,685 | 0.00040 | 3.7 | 3,870 | 0.00035 | 2.7 | 2,240 | 0.00028 | 1.3 |
| 7/64 | 4,015 | 0.00047 | 3.8 | 3,320 | 0.00042 | 2.8 | 2,000 | 0.00033 | 1.3 |
| 1/8 | 3,515 | 0.00056 | 3.9 | 2,900 | 0.00050 | 2.9 | 1,800 | 0.00040 | 1.4 |
| 9/64 | 3,125 | 0.00067 | 4.2 | 2,580 | 0.00060 | 3.1 | 1,600 | 0.00047 | 1.5 |
| 5/32 | 2,810 | 0.00080 | 4.5 | 2,320 | 0.00071 | 3.3 | 1,400 | 0.00056 | 1.6 |
| 11/64 | 2,555 | 0.00095 | 4.9 | 2,110 | 0.00085 | 3.6 | 1,250 | 0.00067 | 1.7 |
| 3/16 | 2,340 | 0.00110 | 5.2 | 1,935 | 0.00100 | 3.9 | 1,120 | 0.00080 | 1.8 |
| 1/4 | 1,760 | 0.00160 | 5.6 | 1,450 | 0.00140 | 4.1 | 900 | 0.00112 | 2.0 |
| 5/16 | 1,400 | 0.00224 | 6.3 | 1,160 | 0.00200 | 4.6 | 710 | 0.00160 | 2.3 |
| 3/8 | 1,170 | 0.00265 | 6.2 | 970 | 0.00236 | 4.6 | 630 | 0.00190 | 2.4 |
| 7/16 | 1,000 | 0.00335 | 6.7 | 830 | 0.00300 | 5.0 | 500 | 0.00250 | 2.5 |
| 1/2 | 880 | 0.00375 | 6.6 | 725 | 0.00315 | 4.6 | 450 | 0.00265 | 2.4 |
| 9/16 | 780 | 0.00400 | 6.2 | 645 | 0.00355 | 4.6 | 400 | 0.00300 | 2.4 |
| 5/8 | 700 | 0.00425 | 6.0 | 580 | 0.00375 | 4.4 | 355 | 0.00335 | 2.4 |
| 11/16 | 640 | 0.00475 | 6.1 | 530 | 0.00400 | 4.2 | 315 | 0.00355 | 2.2 |
| 3/4 | 585 | 0.00475 | 5.6 | 485 | 0.00400 | 3.9 | 315 | 0.00355 | 2.2 |
| 13/16 | 540 | 0.00500 | 5.4 | 445 | 0.00400 | 3.6 | 280 | 0.00400 | 2.2 |
| 7/8 | 500 | 0.00530 | 5.3 | 415 | 0.00400 | 3.3 | 250 | 0.00400 | 2.0 |
| 15/16 | 470 | 0.00560 | 5.2 | 390 | 0.00400 | 3.1 | 224 | 0.00400 | 1.8 |
| 1 | 440 | 0.00560 | 4.9 | 360 | 0.00400 | 2.9 | 224 | 0.00400 | 1.8 |
| 1-1/8 | 390 | 0.00560 | 4.4 | 320 | 0.00400 | 2.6 | 200 | 0.00400 | 1.6 |
| 1-1/4 | 350 | 0.00600 | 4.2 | 290 | 0.00400 | 2.3 | 180 | 0.00400 | 1.4 |
| 1-3/8 | 320 | 0.00600 | 3.8 | 265 | 0.00400 | 2.1 | 160 | 0.00400 | 1.3 |
| 1-1/2 | 295 | 0.00630 | 3.7 | 240 | 0.00400 | 1.9 | 140 | 0.00400 | 1.1 |
| 1-5/8 | 270 | 0.00630 | 3.4 | 225 | 0.00400 | 1.8 | 140 | 0.00400 | 1.1 |
| 1-3/4 | 250 | 0.00630 | 3.2 | 210 | 0.00400 | 1.7 | 125 | 0.00400 | 1.0 |
| 1-7/8 | 235 | 0.00630 | 3.0 | 195 | 0.00400 | 1.5 | 112 | 0.00400 | 0.9 |
| 2 | 220 | 0.00630 | 2.8 | 180 | 0.00400 | 1.5 | 112 | 0.00400 | 0.9 |

- 1) Speeds and Feeds for Lists 520, 522, 540, 541, 542, 543, 548, 620 and 641
- 2) Reduce Speeds and Feeds 5-10% for Lists 525, 527, 547
- 3) Reduce Speeds and Feeds 10-20% for Lists 545 and 557
- 4) Increase Speeds and Feeds 5-15% for Lists 530 and 535 (Aluminum only)
- 5) Increase Speeds and Feeds 10-20% for List 529
- 6) Speeds can be increased up to 20% for 520TiN, 522TiN, 540TiN, and 542TiN
- 7) Speeds can be increased up to 15% for Lists 541TiN/TiCN and 548 TiCN

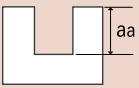
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Standard 2 Flute HSS-Co: (Continued)

Slotting

| Hardness | 30-40 HRC | | | 40-50 HRC | | | - | | |
|---------------|---|---------|-------------|---|---------|-------------|---|---------|-------------|
| Work Material | High Tensile Steels Tool Steels Medium Strength Stainless Steels and Titanium Alloys | | | Heat Resistant High Strength Stainless Steels and Titanium Alloys | | | Aluminum Alloy Aluminum Plastics Woods | | |
| Cutting Speed | 80-150 SFM | | | 16-32 SFM | | | 150-165 SFM | | |
| Depth of Cut | $aa=0.5D$  | | | | | | | | |
| Mill Dia. | Speed RPM | IPT | Feed in/min | Speed RPM | IPT | Feed in/min | Speed RPM | IPT | Feed in/min |
| 1/64 | 25,000 | 0.00002 | 0.8 | 6,300 | 0.00001 | 0.1 | 25,000 | 0.00003 | 1.5 |
| 1/32 | 14,060 | 0.00004 | 1.2 | 3,150 | 0.00003 | 0.2 | 19,250 | 0.00008 | 2.9 |
| 3/64 | 9,370 | 0.00009 | 1.6 | 2,000 | 0.00006 | 0.2 | 12,835 | 0.00014 | 3.6 |
| 1/16 | 7,030 | 0.00012 | 1.7 | 1,600 | 0.00008 | 0.3 | 9,625 | 0.00020 | 3.9 |
| 5/64 | 5,625 | 0.00017 | 1.9 | 1,250 | 0.00011 | 0.3 | 7,700 | 0.00028 | 4.3 |
| 3/32 | 4,685 | 0.00024 | 2.2 | 1,000 | 0.00016 | 0.3 | 6,420 | 0.00038 | 4.8 |
| 7/64 | 4,015 | 0.00028 | 2.2 | 900 | 0.00020 | 0.4 | 5,500 | 0.00043 | 4.7 |
| 1/8 | 3,515 | 0.00034 | 2.4 | 800 | 0.00024 | 0.4 | 4,815 | 0.00050 | 4.8 |
| 9/64 | 3,125 | 0.00040 | 2.5 | 710 | 0.00028 | 0.4 | 4,280 | 0.00060 | 5.1 |
| 5/32 | 2,810 | 0.00048 | 2.7 | 630 | 0.00034 | 0.4 | 3,850 | 0.00071 | 5.5 |
| 11/64 | 2,555 | 0.00056 | 2.9 | 560 | 0.00040 | 0.4 | 3,500 | 0.00080 | 5.6 |
| 3/16 | 2,345 | 0.00067 | 3.1 | 500 | 0.00048 | 0.5 | 3,210 | 0.00095 | 6.1 |
| 1/4 | 1,760 | 0.00095 | 3.3 | 400 | 0.00071 | 0.6 | 2,400 | 0.00132 | 6.4 |
| 5/16 | 1,400 | 0.00132 | 3.7 | 315 | 0.00100 | 0.6 | 1,925 | 0.00190 | 7.3 |
| 3/8 | 1,170 | 0.00160 | 3.7 | 280 | 0.00118 | 0.7 | 1,600 | 0.00212 | 6.8 |
| 7/16 | 1,000 | 0.00212 | 4.3 | 224 | 0.00140 | 0.6 | 1,375 | 0.00265 | 7.3 |
| 1/2 | 880 | 0.00236 | 4.1 | 200 | 0.00180 | 0.7 | 1,200 | 0.00300 | 7.2 |
| 9/16 | 780 | 0.00280 | 4.4 | 180 | 0.00200 | 0.7 | 1,070 | 0.00315 | 6.7 |
| 5/8 | 700 | 0.00315 | 4.4 | 160 | 0.00224 | 0.7 | 965 | 0.00335 | 6.4 |
| 11/16 | 640 | 0.00355 | 4.5 | 140 | 0.00250 | 0.7 | 875 | 0.00375 | 6.6 |
| 3/4 | 585 | 0.00355 | 4.2 | 140 | 0.00250 | 0.7 | 800 | 0.00375 | 6.0 |
| 13/16 | 540 | 0.00400 | 4.3 | 125 | 0.00280 | 0.7 | 740 | 0.00400 | 5.9 |
| 7/8 | 500 | 0.00400 | 4.0 | 112 | 0.00315 | 0.7 | 690 | 0.00425 | 5.8 |
| 15/16 | 470 | 0.00400 | 3.7 | 100 | 0.00355 | 0.7 | 640 | 0.00450 | 5.8 |
| 1 | 440 | 0.00400 | 3.5 | 100 | 0.00355 | 0.7 | 600 | 0.00450 | 5.4 |
| 1-1/8 | 390 | 0.00400 | 3.1 | 90 | 0.00400 | 0.7 | 535 | 0.00475 | 5.1 |
| 1-1/4 | 350 | 0.00400 | 2.8 | 80 | 0.00400 | 0.6 | 480 | 0.00475 | 4.6 |
| 1-3/8 | 320 | 0.00400 | 2.6 | 71 | 0.00400 | 0.6 | 440 | 0.00500 | 4.4 |
| 1-1/2 | 295 | 0.00400 | 2.3 | 63 | 0.00400 | 0.5 | 400 | 0.00500 | 4.0 |
| 1-5/8 | 270 | 0.00400 | 2.2 | 63 | 0.00400 | 0.5 | 370 | 0.00500 | 3.7 |
| 1-3/4 | 250 | 0.00400 | 2.0 | 56 | 0.00400 | 0.4 | 345 | 0.00500 | 3.4 |
| 1-7/8 | 235 | 0.00400 | 1.9 | 50 | 0.00400 | 0.4 | 320 | 0.00500 | 3.2 |
| 2 | 220 | 0.00400 | 1.8 | 50 | 0.00400 | 0.4 | 300 | 0.00500 | 3.0 |


1) Based on regular 2FL cutting depth (1/2D) 4FL depth (1/4D).

2) In case of deeper operation, slow down feed by 20-50%.



Standard 4 Flute and 6 Flute HSS-Co

Side Milling

| Hardness | <145 Brinell | | | <20 HRC | | | 20-30 HRC | | |
|---------------|--|---------|-------------|--|---------|-------------|--|---------|-------------|
| Work Material | Mild Steels Brass Bronze | | | Medium Tensile Steels Mild Steel Forgings Cast Iron Hard Brass and Bronze Copper | | | High Tensile Steels Unalloyed Titanium Heat Resistant Ferritic Low Alloys | | |
| Cutting Speed | 80-150 SFM | | | 80-110 SFM | | | 16-32 SFM | | |
| Depth of Cut | $a_a=1.5D$ $a_r=0.1D$  | | | | | | | | |
| Mill Dia. | Speed RPM | IPT | Feed in/min | Speed RPM | IPT | Feed in/min | Speed RPM | IPT | Feed in/min |
| 1/16 | 7,030 | 0.00020 | 5.6 | 5,800 | 0.00018 | 4.2 | 1,465 | 0.00014 | 0.8 |
| 5/64 | 5,625 | 0.00028 | 6.3 | 4,645 | 0.00025 | 4.6 | 1,175 | 0.00020 | 0.9 |
| 3/32 | 4,685 | 0.00040 | 7.5 | 3,870 | 0.00036 | 5.5 | 980 | 0.00028 | 1.1 |
| 7/64 | 4,015 | 0.00048 | 7.6 | 3,320 | 0.00043 | 5.6 | 840 | 0.00034 | 1.1 |
| 1/8 | 3,515 | 0.00056 | 7.9 | 2,900 | 0.00050 | 5.8 | 735 | 0.00040 | 1.2 |
| 9/64 | 3,125 | 0.00067 | 8.4 | 2,580 | 0.00060 | 6.2 | 650 | 0.00048 | 1.2 |
| 5/32 | 2,810 | 0.00080 | 9.0 | 2,320 | 0.00071 | 6.6 | 585 | 0.00056 | 1.3 |
| 11/64 | 2,555 | 0.00095 | 9.7 | 2,110 | 0.00085 | 7.2 | 530 | 0.00067 | 1.4 |
| 3/16 | 2,340 | 0.00110 | 10.3 | 1,935 | 0.00100 | 7.7 | 490 | 0.00080 | 1.6 |
| 1/4 | 1,760 | 0.00160 | 11.2 | 1,450 | 0.00140 | 8.1 | 365 | 0.00112 | 1.6 |
| 5/16 | 1,400 | 0.00224 | 12.6 | 1,160 | 0.00200 | 9.3 | 295 | 0.00160 | 1.9 |
| 3/8 | 1,170 | 0.00265 | 12.4 | 970 | 0.00236 | 9.1 | 245 | 0.00190 | 1.9 |
| 7/16 | 1,000 | 0.00335 | 13.5 | 830 | 0.00300 | 10.0 | 210 | 0.00250 | 2.1 |
| 1/2 | 880 | 0.00375 | 13.2 | 725 | 0.00315 | 9.1 | 185 | 0.00265 | 1.9 |
| 9/16 | 780 | 0.00400 | 12.5 | 645 | 0.00355 | 9.2 | 160 | 0.00300 | 2.0 |
| 5/8 | 700 | 0.00425 | 11.9 | 580 | 0.00375 | 8.7 | 145 | 0.00335 | 2.0 |
| 11/16 | 640 | 0.00475 | 12.1 | 530 | 0.00375 | 7.9 | 135 | 0.00355 | 1.9 |
| 3/4 | 585 | 0.00475 | 11.1 | 485 | 0.00375 | 7.3 | 120 | 0.00355 | 1.7 |
| 13/16 | 540 | 0.00500 | 10.8 | 445 | 0.00375 | 6.7 | 110 | 0.00400 | 1.8 |
| 7/8 | 500 | 0.00530 | 10.6 | 415 | 0.00375 | 6.2 | 105 | 0.00400 | 1.7 |
| 15/16 | 470 | 0.00560 | 10.5 | 390 | 0.00375 | 5.8 | 100 | 0.00400 | 1.6 |
| 1 | 440 | 0.00560 | 9.8 | 365 | 0.00375 | 5.4 | 90 | 0.00400 | 1.5 |
| 1-1/8 | 390 | 0.00560 | 8.7 | 320 | 0.00375 | 4.8 | 80 | 0.00400 | 1.3 |
| 1-1/4 | 350 | 0.00600 | 8.4 | 290 | 0.00375 | 4.4 | 75 | 0.00400 | 1.2 |
| 1-3/8 | 320 | 0.00600 | 7.7 | 265 | 0.00375 | 4.0 | 65 | 0.00400 | 1.1 |
| 1-1/2 | 295 | 0.00630 | 7.4 | 240 | 0.00375 | 3.6 | 60 | 0.00400 | 1.0 |
| 1-3/4 | 250 | 0.00630 | 9.5 | 210 | 0.00375 | 4.7 | 50 | 0.00400 | 1.3 |
| 2 | 220 | 0.00630 | 8.3 | 180 | 0.00375 | 4.1 | 45 | 0.00400 | 1.1 |

- 1) Speeds and Feeds for Lists 540, 541, 542, 543, 547, 548, 575, and 641
- 2) Reduce Speeds and Feeds 15-20% for Lists 557
- 3) Reduce Speeds and Feeds 10-15% for Lists 545, 546, 558 and 646
- 4) Increase Speeds and Feeds 5-15% for Lists 549


▶ continued on next page ▶





Standard 4 Flute and 6 Flute HSS-Co: (Continued)

Side Milling

| Hardness | 30-40 HRC | | | 40-50 HRC | | | - | | |
|---------------|--|---------|-------------|---|---------|-------------|---|---------|-------------|
| Work Material | High Tensile Steels Tool Steels Medium Strength Stainless Steels and Titanium Alloys | | | Heat Resistant High Strength Stainless Steels and Titanium Alloys | | | Aluminum Alloyed Aluminum Plastics Woods | | |
| Cutting Speed | 30-50 SFM | | | 16-32 SFM | | | 150-390 SFM | | |
| Depth of Cut | $a_a = 1.5D$ $a_r = 0.1D$  | | | | | | | | |
| Mill Dia. | Speed RPM | IPT | Feed in/min | Speed RPM | IPT | Feed in/min | Speed RPM | IPT | Feed in/min |
| 1/16 | 2,500 | 0.00012 | 1.2 | 1,600 | 0.00008 | 0.5 | 16,500 | 0.00020 | 13.2 |
| 5/64 | 2,000 | 0.00017 | 1.4 | 1,250 | 0.00011 | 0.6 | 13,200 | 0.00028 | 14.8 |
| 3/32 | 1,600 | 0.00024 | 1.5 | 1,000 | 0.00016 | 0.6 | 11,000 | 0.00038 | 16.5 |
| 7/64 | 1,400 | 0.00028 | 1.6 | 900 | 0.00020 | 0.7 | 9,430 | 0.00043 | 16.0 |
| 1/8 | 1,250 | 0.00034 | 1.7 | 800 | 0.00024 | 0.8 | 8,250 | 0.00050 | 16.5 |
| 9/64 | 1,120 | 0.00040 | 1.8 | 710 | 0.00028 | 0.8 | 7,335 | 0.00060 | 17.6 |
| 5/32 | 1,000 | 0.00048 | 1.9 | 630 | 0.00034 | 0.8 | 6,600 | 0.00071 | 18.7 |
| 11/64 | 900 | 0.00056 | 2.0 | 560 | 0.00040 | 0.9 | 6,000 | 0.00080 | 19.2 |
| 3/16 | 800 | 0.00067 | 2.1 | 500 | 0.00048 | 1.0 | 5,500 | 0.00095 | 20.9 |
| 1/4 | 630 | 0.00095 | 2.4 | 400 | 0.00071 | 1.1 | 4,125 | 0.00132 | 21.8 |
| 5/16 | 500 | 0.00132 | 2.6 | 315 | 0.00100 | 1.3 | 3,300 | 0.00190 | 25.1 |
| 3/8 | 450 | 0.00160 | 2.9 | 280 | 0.00118 | 1.3 | 2,750 | 0.00212 | 23.3 |
| 7/16 | 355 | 0.00212 | 3.0 | 224 | 0.00140 | 1.3 | 2,360 | 0.00265 | 25.0 |
| 1/2 | 315 | 0.00236 | 3.0 | 200 | 0.00180 | 1.4 | 2,060 | 0.00300 | 24.8 |
| 9/16 | 280 | 0.00280 | 3.1 | 180 | 0.00200 | 1.4 | 1,835 | 0.00315 | 23.1 |
| 5/8 | 250 | 0.00315 | 3.2 | 160 | 0.00224 | 1.4 | 1,650 | 0.00335 | 22.1 |
| 11/16 | 224 | 0.00355 | 3.2 | 140 | 0.00250 | 1.4 | 1,500 | 0.00375 | 22.5 |
| 3/4 | 224 | 0.00355 | 3.2 | 140 | 0.00250 | 1.4 | 1,375 | 0.00375 | 20.6 |
| 13/16 | 200 | 0.00400 | 3.2 | 125 | 0.00280 | 1.4 | 1,270 | 0.00400 | 20.3 |
| 7/8 | 180 | 0.00400 | 2.9 | 112 | 0.00315 | 1.4 | 1,180 | 0.00425 | 20.0 |
| 15/16 | 160 | 0.00400 | 2.6 | 100 | 0.00355 | 1.4 | 1,100 | 0.00450 | 19.8 |
| 1 | 160 | 0.00400 | 2.6 | 100 | 0.00355 | 1.4 | 1,030 | 0.00450 | 18.6 |
| 1-1/8 | 140 | 0.00400 | 2.2 | 90 | 0.00400 | 1.4 | 915 | 0.00475 | 17.4 |
| 1-1/4 | 125 | 0.00400 | 2.0 | 80 | 0.00400 | 1.3 | 825 | 0.00475 | 15.7 |
| 1-3/8 | 112 | 0.00400 | 1.8 | 71 | 0.00400 | 1.1 | 750 | 0.00500 | 15.0 |
| 1-1/2 | 100 | 0.00400 | 1.6 | 63 | 0.00400 | 1.0 | 690 | 0.00500 | 13.8 |
| 1-3/4 | 90 | 0.00400 | 2.2 | 56 | 0.00400 | 1.3 | 590 | 0.00500 | 17.7 |
| 2 | 80 | 0.00400 | 1.9 | 50 | 0.00400 | 1.2 | 515 | 0.00500 | 15.5 |

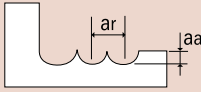
1) Based on regular 4FL end mills, cutting depth (1.5D) x cutting width (0.1D)

2) For finish cut, increase RPM 30-50%.



- List 521: Single End, Regular Length, 2 Flute**
- List 523: Double End, Regular Length, 2 Flute**
- List 526: Single End, Regular Length, 2 Flute, Extension Type**
- List 544: Single End, Regular Length, 4 Flute**
- List 621: Ball End, Regular Length, 2 Flute**
- List 644: Ball End, Regular Length, Multiple Flute**

Profiling

| Hardness | <145 Brinell | <20 HRC | | 20-30 HRC | | 30-40 HRC | | 40-50 HRC | | - | | |
|---------------|--|---|-----------|---|-----------|--|-----------|---|-----------|-----------------------------|-----------|-------------|
| Work Material | Mild Steels Hard Brass Bronze Cast Iron | Medium Carbon Steels Medium Strength Titanium Alloys Medium Strength Stainless Steels | | High Carbon Steel Titanium Alloys High Strength Stainless Steels | | Heat Resistant High Alloys Austenitic Alloys Nickel Base Alloys | | Heat Resistant High Alloys High Strength Stainless Steels Titanium Alloys | | Aluminum Aluminum Alloys | | |
| Cutting Speed | 80-150 SFM | 80-110 SFM | | 50-65 SFM | | 30-50 SFM | | 16-32 SFM | | 80-390 SFM | | |
| Depth of Cut | a_a $2FL = 1/2D$ $4FL = 1/4D$ $a_r = 0.1D$  | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/8 | 3,515 | 4.0 | 2,900 | 2.9 | 1,800 | 1.5 | 1,250 | 0.9 | 800 | 0.4 | 7,180 | 7.2 |
| 3/16 | 2,340 | 5.2 | 1,935 | 3.9 | 1,120 | 1.8 | 800 | 1.1 | 500 | 0.5 | 4,790 | 9.1 |
| 1/4 | 1,760 | 5.6 | 1,450 | 4.2 | 900 | 2.0 | 630 | 1.3 | 400 | 0.6 | 3,590 | 9.6 |
| 5/16 | 1,400 | 6.2 | 1,160 | 4.7 | 710 | 2.3 | 500 | 1.4 | 315 | 0.6 | 2,875 | 11.0 |
| 3/8 | 1,170 | 6.2 | 970 | 4.6 | 630 | 2.4 | 450 | 1.5 | 280 | 0.6 | 2,390 | 10.1 |
| 7/16 | 1,000 | 6.7 | 830 | 5.0 | 500 | 2.5 | 355 | 1.5 | 224 | 0.6 | 2,050 | 10.9 |
| 1/2 | 880 | 6.6 | 725 | 4.6 | 450 | 2.4 | 315 | 1.5 | 200 | 0.8 | 1,795 | 10.8 |
| 9/16 | 780 | 6.3 | 645 | 4.6 | 400 | 2.4 | 280 | 1.6 | 180 | 0.8 | 1,595 | 10.0 |
| 5/8 | 700 | 6.0 | 580 | 4.4 | 355 | 2.4 | 250 | 1.6 | 160 | 0.8 | 1,435 | 9.6 |
| 3/4 | 585 | 5.6 | 485 | 3.9 | 315 | 2.3 | 225 | 1.6 | 140 | 0.8 | 1,195 | 9.0 |
| 7/8 | 500 | 5.3 | 415 | 3.3 | 250 | 2.0 | 180 | 1.5 | 110 | 0.8 | 1,025 | 8.7 |
| 1 | 440 | 4.9 | 360 | 2.9 | 224 | 1.8 | 160 | 1.3 | 100 | 0.8 | 900 | 8.1 |
| 1-1/8 | 390 | 4.3 | 320 | 2.5 | 200 | 1.6 | 140 | 1.1 | 90 | 0.8 | 800 | 7.6 |
| 1-1/4 | 350 | 4.2 | 290 | 2.3 | 180 | 1.5 | 125 | 1.0 | 80 | 0.6 | 720 | 6.8 |
| 1-1/2 | 295 | 3.7 | 240 | 2.0 | 140 | 1.1 | 100 | 0.8 | 63 | 0.5 | 600 | 6.0 |

Reduce Speeds and Feeds by 10% for List 526
In case of deeper operation, slow down feed by 20-50%






Single/Double End

Cobalt High Speed Steel

List 580: Single End, Regular Length, 2 Flute

List 582: Double End, Regular Length, 2 Flute

Side Milling


| Hardness | <145 Brinell | | <20 HRC | | 20-30 HRC | | 30-40 HRC | | 40-50 HRC | | - | |
|---------------|--|-------------|---|-------------|---|-------------|--|-------------|---|-------------|-----------------------------|-------------|
| Work Material | Mild Steels Hard Brass Bronze Cast Iron | | Med. Carbon Steels Med. Strength Titanium Alloys Med. Strength Stainless Steels | | High Carbon Steel Titanium Alloys High Strength Stainless Steels | | Heat Resistant High Alloys Austenitic Alloys Nickel Base Alloys | | Heat Resistant High Alloys High Strength Stainless Steels Titanium Alloys | | Aluminum Aluminum Alloys | |
| Cutting Speed | 125-145 SFM | | 95-110 SFM | | 50-65 SFM | | 30-50 SFM | | 16-32 SFM | | 160-390 SFM | |
| Depth of Cut | $aa=1.5D$ $ar=0.1D$  | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 3 | 4,365 | 4.1 | 3,315 | 3.0 | 1,860 | 1.3 | 1,400 | 0.8 | 800 | 0.4 | 8,895 | 7.8 |
| 4 | 3,275 | 5.1 | 2,485 | 3.5 | 1,395 | 1.6 | 1,000 | 1.0 | 630 | 0.4 | 6,670 | 9.5 |
| 5 | 2,620 | 5.8 | 1,990 | 3.9 | 1,115 | 1.8 | 800 | 1.0 | 500 | 0.5 | 5,335 | 10.5 |
| 6 | 2,185 | 5.8 | 1,660 | 3.8 | 930 | 1.8 | 710 | 1.1 | 400 | 0.6 | 4,450 | 9.8 |
| 8 | 1,640 | 7.3 | 1,245 | 4.8 | 700 | 2.2 | 500 | 1.1 | 315 | 0.6 | 3,335 | 12.7 |
| 10 | 1,310 | 8.3 | 995 | 5.4 | 560 | 2.5 | 400 | 1.3 | 280 | 0.6 | 2,670 | 13.3 |
| 12 | 1,090 | 8.2 | 830 | 5.1 | 465 | 2.5 | 315 | 1.5 | 200 | 0.8 | 2,220 | 13.2 |
| 14 | 935 | 7.4 | 710 | 4.9 | 400 | 2.4 | 280 | 1.6 | 180 | 0.8 | 1,900 | 11.8 |
| 16 | 820 | 6.9 | 620 | 4.6 | 350 | 2.4 | 250 | 1.6 | 160 | 0.8 | 1,670 | 11.3 |
| 18 | 730 | 6.7 | 550 | 4.4 | 310 | 2.2 | 225 | 1.6 | 140 | 0.8 | 1,480 | 11.2 |
| 20 | 655 | 6.5 | 500 | 3.9 | 280 | 2.2 | 200 | 1.6 | 140 | 0.8 | 1,335 | 10.3 |
| 22 | 595 | 6.3 | 450 | 3.5 | 255 | 2.0 | 180 | 1.4 | 112 | 0.8 | 1,210 | 10.2 |
| 24 | 545 | 6.0 | 415 | 3.3 | 235 | 1.9 | 160 | 1.3 | 100 | 0.8 | 1,110 | 9.8 |
| 25 | 525 | 5.8 | 400 | 3.2 | 225 | 1.8 | 160 | 1.3 | 100 | 0.6 | 1,070 | 9.4 |
| 26 | 500 | 5.5 | 385 | 3.1 | 215 | 1.7 | 160 | 1.3 | 90 | 0.6 | 1,025 | 9.0 |
| 28 | 465 | 5.1 | 355 | 2.8 | 200 | 1.6 | 140 | 1.1 | 80 | 0.6 | 950 | 8.8 |
| 30 | 435 | 4.8 | 330 | 2.6 | 185 | 1.5 | 140 | 1.1 | 70 | 0.6 | 890 | 8.3 |
| 32 | 410 | 4.8 | 310 | 2.5 | 175 | 1.4 | 125 | 1.0 | 63 | 0.5 | 835 | 7.8 |
| 35 | 375 | 4.3 | 285 | 2.3 | 160 | 1.3 | 110 | 0.9 | 63 | 0.5 | 760 | 7.5 |
| 36 | 365 | 4.2 | 275 | 2.2 | 155 | 1.3 | 110 | 0.8 | 63 | 0.5 | 740 | 7.2 |
| 40 | 330 | 4.1 | 250 | 2.0 | 140 | 1.1 | 100 | 0.8 | 56 | 0.4 | 670 | 6.6 |
| 45 | 290 | 3.6 | 220 | 1.8 | 125 | 1.0 | 90 | 0.7 | 50 | 0.4 | 595 | 5.9 |
| 50 | 260 | 3.2 | 200 | 1.6 | 110 | 0.9 | 80 | 0.7 | 50 | 0.4 | 535 | 5.3 |

In case of deeper operation, slow down feed by 20-50%



List 581: Regular Length - Multiple Flute - Center Hole

Side Milling

| Hardness | <145 Brinell | | <20 HRC | | 20-30 HRC | | 30-40 HRC | | 40-50 HRC | | - | |
|---------------|--|-------------|---|-------------|---|-------------|--|-------------|---|-------------|-----------------------------|-------------|
| Work Material | Mild Steels Hard Brass Bronze Cast Iron | | Med. Carbon Steels Med. Strength Titanium Alloys Med. Strength Stainless Steels | | High Carbon Steel Titanium Alloys High Strength Stainless Steels | | Heat Resistant High Alloys Austenitic Alloys Nickel Base Alloys | | Heat Resistant High Alloys High Strength Stainless Steels Titanium Alloys | | Aluminum Aluminum Alloys | |
| Cutting Speed | 130-165 SFM | | 105-125 SFM | | 65-85 SFM | | 30-50 SFM | | 16-32 SFM | | 450-590 SFM | |
| Depth of Cut | $a_a=1.5D$ $a_r=0.1D$  | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 3 | 4,770 | 8.8 | 4,000 | 7.5 | 2,425 | 3.4 | 1,295 | 1.5 | 800 | 0.8 | 16,820 | 29.4 |
| 4 | 3,580 | 11.3 | 2,800 | 8.8 | 1,820 | 4.0 | 970 | 1.8 | 630 | 0.9 | 12,615 | 35.7 |
| 5 | 2,860 | 12.6 | 2,240 | 9.8 | 1,455 | 4.5 | 775 | 2.1 | 500 | 1.0 | 10,090 | 39.8 |
| 6 | 2,385 | 12.6 | 2,000 | 10.4 | 1,210 | 4.5 | 650 | 2.0 | 400 | 1.1 | 8,410 | 36.8 |
| 8 | 1,790 | 15.7 | 1,400 | 12.4 | 910 | 5.6 | 485 | 2.6 | 315 | 1.3 | 6,300 | 46.6 |
| 10 | 1,430 | 17.8 | 1,120 | 14.0 | 730 | 6.5 | 390 | 2.8 | 280 | 1.4 | 5,045 | 49.6 |
| 12 | 1,190 | 17.9 | 900 | 13.2 | 600 | 6.4 | 325 | 3.0 | 200 | 1.5 | 4,200 | 48.9 |
| 14 | 1,020 | 16.1 | 800 | 12.4 | 520 | 6.2 | 280 | 3.1 | 180 | 1.5 | 3,600 | 44.8 |
| 16 | 895 | 14.8 | 710 | 11.8 | 455 | 6.0 | 240 | 3.0 | 160 | 1.4 | 3,150 | 41.7 |
| 18 | 795 | 14.7 | 630 | 11.0 | 400 | 5.6 | 215 | 3.0 | 140 | 1.4 | 2,800 | 41.7 |
| 20 | 715 | 14.1 | 560 | 9.8 | 365 | 5.7 | 195 | 3.0 | 140 | 1.4 | 2,520 | 39.8 |
| 22 | 650 | 13.6 | 500 | 8.8 | 330 | 5.1 | 175 | 2.7 | 112 | 1.4 | 2,295 | 38.4 |
| 24 | 600 | 13.1 | 450 | 7.9 | 300 | 4.6 | 160 | 2.5 | 100 | 1.4 | 2,100 | 36.8 |
| 25 | 575 | 12.6 | 450 | 7.9 | 290 | 4.5 | 155 | 2.4 | 100 | 1.4 | 2,020 | 35.3 |
| 26 | 550 | 12.1 | 450 | 7.9 | 280 | 4.3 | 150 | 2.3 | 90 | 1.5 | 1,940 | 34.0 |
| 28 | 510 | 11.4 | 400 | 7.1 | 260 | 4.1 | 140 | 2.2 | 80 | 1.3 | 180 | 33.2 |
| 30 | 480 | 10.6 | 400 | 7.1 | 240 | 3.8 | 130 | 2.0 | 71 | 1.1 | 1,680 | 31.0 |
| 32 | 450 | 9.6 | 355 | 6.3 | 230 | 3.6 | 120 | 1.9 | 71 | 1.1 | 1,575 | 29.7 |
| 35 | 410 | 9.4 | 315 | 5.5 | 210 | 3.2 | 110 | 1.8 | 63 | 1.0 | 1,440 | 28.6 |
| 36 | 400 | 9.2 | 315 | 5.5 | 200 | 3.1 | 105 | 1.7 | 63 | 1.0 | 1,400 | 27.8 |
| 40 | 360 | 8.9 | 280 | 4.9 | 180 | 2.9 | 100 | 1.6 | 56 | 1.4 | 1,260 | 24.8 |
| 45 | 320 | 9.3 | 250 | 5.5 | 160 | 3.1 | 85 | 1.7 | 56 | 1.4 | 1,120 | 27.8 |
| 50 | 285 | 8.4 | 224 | 4.9 | 145 | 2.9 | 80 | 1.6 | 50 | 1.3 | 1,010 | 24.7 |




List 531: Single End - Regular Length - 3 Flute

List 532: Double End - Regular Length - 3 Flute

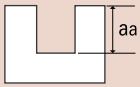
List 536: Single End - Long Length - 3 Flute

Side Milling

| Hardness | <145 Brinell | <20 HRC | | 20-30 HRC | | 30-40 HRC | | - | | |
|---------------|--|--|-----------|--|-----------|---|-----------|-----------------------------|-----------|-------------|
| Work Material | Mild Steels Hard Brass Bronze Cast Iron | Med. Carbon Steels Hard Brass and Bronze Mild Steel Forgings | | High Carbon Steel Unalloyed Titanium Ferritic Low Alloys | | High Alloys Titanium Alloys High Strength Stainless Steels | | Aluminum Aluminum Alloys | | |
| Cutting Speed | 155 SFM | 115 SFM | | 70 SFM | | 40 SFM | | 395 SFM | | |
| Depth of Cut | $a_a = 1.5D$ $a_r = 0.2D$  | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/8 | 4,700 | 5.7 | 3,516 | 4.1 | 2,140 | 2.0 | 1,223 | 0.9 | 12,076 | 13.4 |
| 3/16 | 3,200 | 9.1 | 2,344 | 6.0 | 1,427 | 3.1 | 815 | 1.4 | 8,051 | 20.1 |
| 1/4 | 2,350 | 8.3 | 1,758 | 5.4 | 1,070 | 2.7 | 611 | 1.2 | 6,038 | 16.9 |
| 5/16 | 1,896 | 11.0 | 1,406 | 7.0 | 856 | 3.6 | 489 | 1.8 | 4,831 | 25.2 |
| 3/8 | 1,580 | 12.9 | 1,172 | 8.3 | 713 | 3.9 | 408 | 2.0 | 4,025 | 25.2 |
| 1/2 | 1,185 | 11.6 | 879 | 6.9 | 535 | 3.7 | 306 | 1.9 | 3,019 | 21.4 |
| 5/8 | 948 | 10.4 | 703 | 6.9 | 428 | 3.7 | 245 | 2.1 | 2,415 | 21.4 |
| 3/4 | 790 | 10.4 | 586 | 6.0 | 357 | 3.6 | 204 | 2.1 | 2,013 | 19.8 |
| 1 | 592 | 8.4 | 439 | 4.6 | 268 | 2.9 | 153 | 1.6 | 1,510 | 17.9 |
| 1-1/4 | 474 | 6.6 | 352 | 3.7 | 214 | 2.2 | 122 | 1.3 | 1,208 | 15.1 |
| 1-1/2 | 395 | 6.1 | 293 | 3.1 | 178 | 1.9 | 102 | 1.1 | 1,006 | 13.2 |

When using List Number 536, reduce speeds and feeds by 10%.

Slotting

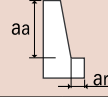
| Hardness | <145 Brinell | <20 HRC | | 20-30 HRC | | 30-40 HRC | | - | | |
|---------------|---|--|-----------|--|-----------|---|-----------|-----------------------------|-----------|-------------|
| Work Material | Mild Steels Brass Bronze Cast Iron | Med. Carbon Steels Hard Brass and Bronze Mild Steel Forgings | | High Carbon Steel Unalloyed Titanium Ferritic Low Alloys | | High Alloys Titanium Alloys High Strength Stainless Steels | | Aluminum Aluminum Alloys | | |
| Cutting Speed | 115-150 SFM | 90-110 SFM | | 50-65 SFM | | 15-35 SFM | | 325-375 SFM | | |
| Depth of Cut | $a_a = 1/3D$  | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 1/8 | 4,050 | 4.9 | 3,055 | 3.6 | 1,760 | 1.7 | 765 | 0.5 | 10,700 | 11.8 |
| 3/16 | 2,700 | 7.7 | 2,040 | 5.3 | 1,170 | 2.5 | 500 | 0.9 | 7,130 | 17.8 |
| 1/4 | 2,025 | 7.1 | 1,530 | 4.7 | 880 | 2.2 | 385 | 0.8 | 5,350 | 15.0 |
| 5/16 | 1,620 | 9.4 | 1,220 | 6.1 | 700 | 3.0 | 300 | 1.1 | 4,280 | 22.4 |
| 3/8 | 1,350 | 11.0 | 1,020 | 7.2 | 585 | 3.2 | 255 | 1.3 | 3,565 | 22.3 |
| 1/2 | 1,010 | 9.9 | 765 | 6.0 | 440 | 3.0 | 190 | 1.2 | 2,675 | 18.9 |
| 5/8 | 810 | 8.9 | 610 | 6.0 | 350 | 3.1 | 150 | 1.3 | 2,140 | 18.9 |
| 3/4 | 675 | 8.9 | 510 | 5.3 | 295 | 2.9 | 130 | 1.3 | 1,780 | 17.5 |
| 1 | 500 | 7.2 | 385 | 4.0 | 220 | 2.4 | 95 | 1.0 | 1,340 | 15.8 |
| 1-1/4 | 400 | 5.7 | 300 | 3.2 | 175 | 1.8 | 75 | 0.8 | 1,070 | 13.4 |
| 1-1/2 | 340 | 5.2 | 255 | 2.7 | 145 | 1.6 | 65 | 0.7 | 890 | 11.7 |

When using List Number 536, reduce speeds and feeds by 10%.

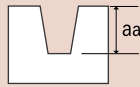


List 591: 1° Taper on Side - 3 Flute

Side Milling

| Hardness | <145 Brinell | | <20 HRC | | 20-30 HRC | | 30-40 HRC | | 40-50 HRC | | - | |
|---------------|--|-------------|---|-------------|---|-------------|---|-------------|--|-------------|-----------------------------|-------------|
| Work Material | Mild Steels Brass Bronze Cast Iron | | Med. Carbon Steels Hard Brass and Bronze Mild Steel Forgings | | High Carbon Steel Unalloyed Titanium Ferritic Low Alloys | | High Carbon Steel Unalloyed Titanium Ferritic Low Alloys | | Heat Resistant High Alloys Austenitic Alloys Nickel Base Alloys | | Aluminum Aluminum Alloys | |
| Cutting Speed | 80-120 SFM | | 60-80 SFM | | 45-60 SFM | | 25-45 SFM | | 16-32 SFM | | 150-400 SFM | |
| Depth of Cut | $a_a = 1.5D$ $a_r = 0.1D$  | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 5/64 | 4,890 | 6.9 | 3,425 | 4.8 | 2,570 | 3.6 | 1,710 | 2.4 | 1,175 | 1.6 | 13,445 | 19.0 |
| 3/32 | 4,075 | 5.7 | 2,850 | 4.0 | 2,140 | 3.0 | 1,425 | 1.9 | 980 | 1.2 | 11,200 | 15.8 |
| 1/8 | 3,055 | 7.2 | 2,140 | 5.1 | 1,600 | 3.8 | 1,070 | 2.6 | 735 | 1.6 | 8,400 | 19.9 |
| 3/16 | 2,040 | 6.7 | 1,425 | 4.7 | 1,070 | 3.4 | 715 | 2.3 | 490 | 1.5 | 5,600 | 18.5 |
| 1/4 | 1,530 | 5.5 | 1,070 | 3.8 | 800 | 2.7 | 535 | 2.0 | 365 | 1.2 | 4,200 | 14.9 |
| 3/8 | 1,020 | 9.6 | 715 | 6.4 | 535 | 4.9 | 355 | 3.4 | 245 | 2.2 | 2,800 | 26.4 |
| 1/2 | 765 | 8.2 | 535 | 5.9 | 400 | 4.3 | 270 | 3.0 | 185 | 1.9 | 2,100 | 23.6 |
| 5/8 | 610 | 7.3 | 430 | 5.1 | 320 | 3.9 | 215 | 2.6 | 145 | 1.6 | 1,680 | 20.8 |

Slotting

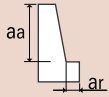
| Hardness | <145 Brinell | | <20 HRC | | 20-30 HRC | | 30-40 HRC | | 40-50 HRC | | - | |
|---------------|---|-------------|---|-------------|---|-------------|---|-------------|--|-------------|-----------------------------|-------------|
| Work Material | Mild Steels Brass Bronze Cast Iron | | Med. Carbon Steels Hard Brass and Bronze Mild Steel Forgings | | High Carbon Steel Unalloyed Titanium Ferritic Low Alloys | | High Carbon Steel Unalloyed Titanium Ferritic Low Alloys | | Heat Resistant High Alloys Austenitic Alloys Nickel Base Alloys | | Aluminum Aluminum Alloys | |
| Cutting Speed | 80-120 SFM | | 60-80 SFM | | 45-60 SFM | | 10 - 20 SFM | | 8-15 SFM | | 150-350 SFM | |
| Depth of Cut | $a_a = 1/3D$  | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 5/64 | 4,890 | 3.5 | 3,420 | 2.2 | 2,570 | 1.4 | 776 | 0.5 | 504 | 0.3 | 12,225 | 6.9 |
| 3/32 | 4,075 | 3.6 | 2,850 | 2.5 | 2,140 | 1.5 | 640 | 0.4 | 416 | 0.2 | 10,185 | 5.7 |
| 1/8 | 3,055 | 3.8 | 2,140 | 2.6 | 1,600 | 1.8 | 480 | 0.6 | 312 | 0.3 | 7,640 | 7.2 |
| 3/16 | 2,040 | 3.4 | 1,425 | 2.4 | 1,070 | 1.6 | 320 | 0.5 | 208 | 0.3 | 5,095 | 6.7 |
| 1/4 | 1,530 | 3.5 | 1,070 | 2.5 | 800 | 1.8 | 240 | 0.4 | 156 | 0.2 | 3,820 | 7.5 |
| 3/8 | 1,020 | 4.8 | 715 | 3.2 | 535 | 2.2 | 160 | 0.7 | 104 | 0.4 | 2,545 | 9.6 |
| 1/2 | 765 | 4.3 | 535 | 3.0 | 400 | 2.2 | 120 | 0.6 | 78 | 0.4 | 1,910 | 8.6 |
| 5/8 | 610 | 3.7 | 430 | 2.6 | 320 | 1.9 | 96 | 0.6 | 62 | 0.3 | 1,530 | 7.6 |



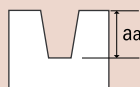
List 593: 2° Taper on Side - 3 Flute

List 594: 3° Taper on Side - 3 Flute

Side Milling

| Hardness | <145 Brinell | <20 HRC | 20-30 HRC | 30-40 HRC | 40-50 HRC | - | | | | | | |
|---------------|--|---|---|---|---|-----------------------------|-----------|-------------|-----------|-------------|-----------|-------------|
| Work Material | Mild Steels Hard Brass Bronze Cast Iron | Med. Carbon Steels Med. Strength Titanium Alloys Med. Strength Stainless Steels | High Carbon Steel Titanium Alloys High Strength Stainless Steels | High Carbon Steel Titanium Alloys High Strength Stainless Steels | High Carbon Steel Titanium Alloys High Strength Stainless Steels | Aluminum Aluminum Alloys | | | | | | |
| Cutting Speed | 130-150 SFM | 105-120 SFM | 65-80 SFM | 20-50 SFM | 15-20 SFM | 400-590 SFM | | | | | | |
| Depth of Cut | $aa=1.5D$ $ar=0.1D$  | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 5/64 | 6,845 | 9.7 | 5,500 | 7.8 | 3,545 | 5.0 | 1,710 | 2.4 | 855 | 1.1 | 24,200 | 33.3 |
| 3/32 | 5,700 | 8.1 | 4,585 | 6.4 | 2,955 | 4.1 | 1,425 | 2.1 | 715 | 0.9 | 20,170 | 28.5 |
| 1/8 | 4,280 | 10.1 | 3,440 | 8.0 | 2,215 | 5.2 | 1,070 | 2.4 | 535 | 1.1 | 15,130 | 35.6 |
| 3/16 | 2,850 | 9.4 | 2,295 | 7.5 | 1,480 | 4.8 | 715 | 2.3 | 355 | 1.1 | 10,085 | 33.3 |
| 1/4 | 2,140 | 7.5 | 1,720 | 6.0 | 1,110 | 3.9 | 525 | 1.8 | 270 | 0.8 | 7,560 | 26.7 |
| 3/8 | 1,425 | 13.5 | 1,145 | 10.7 | 740 | 6.9 | 355 | 3.3 | 180 | 1.5 | 5,040 | 47.6 |
| 1/2 | 1,070 | 12.0 | 860 | 9.6 | 550 | 6.2 | 270 | 3.0 | 135 | 1.4 | 3,780 | 42.3 |
| 5/8 | 855 | 10.6 | 690 | 8.5 | 440 | 5.5 | 215 | 2.6 | 105 | 1.2 | 3,025 | 37.5 |

Slotting

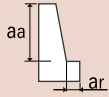
| Hardness | <145 Brinell | <20 HRC | 20-30 HRC | 30-40 HRC | 40-50 HRC | - | | | | | | |
|---------------|--|---|---|---|---|-----------------------------|-----------|-------------|-----------|-------------|-----------|-------------|
| Work Material | Mild Steels Hard Brass Bronze Cast Iron | Med. Carbon Steels Med. Strength Titanium Alloys Med. Strength Stainless Steels | High Carbon Steel Titanium Alloys High Strength Stainless Steels | High Carbon Steel Titanium Alloys High Strength Stainless Steels | High Carbon Steel Titanium Alloys High Strength Stainless Steels | Aluminum Aluminum Alloys | | | | | | |
| Cutting Speed | 80-120 SFM | 60-80 SFM | 45-60 SFM | 25-45 SFM | 8-20 SFM | 150-350 SFM | | | | | | |
| Depth of Cut | $aa=1/3D$  | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 5/64 | 4,890 | 3.2 | 3,420 | 2.4 | 2,670 | 1.5 | 1,710 | 1.2 | 685 | 0.3 | 12,225 | 7.0 |
| 3/32 | 4,075 | 3.1 | 2,850 | 2.4 | 2,140 | 1.5 | 1,425 | 0.9 | 570 | 0.3 | 10,190 | 7.2 |
| 1/8 | 3,055 | 3.2 | 2,140 | 2.5 | 1,600 | 1.9 | 1,070 | 1.2 | 430 | 0.3 | 7,640 | 7.3 |
| 3/16 | 2,040 | 3.1 | 1,425 | 2.7 | 1,070 | 1.8 | 715 | 1.2 | 285 | 0.3 | 5,095 | 7.5 |
| 1/4 | 1,530 | 3.6 | 1,070 | 3.2 | 800 | 2.2 | 535 | 0.9 | 215 | 0.3 | 3,820 | 7.9 |
| 3/8 | 1,020 | 4.4 | 715 | 3.3 | 535 | 2.6 | 355 | 1.5 | 140 | 0.5 | 2,545 | 9.7 |
| 1/2 | 765 | 4.1 | 535 | 2.8 | 400 | 2.2 | 270 | 1.5 | 105 | 0.5 | 1,910 | 8.7 |
| 5/8 | 610 | 3.4 | 430 | 2.6 | 320 | 2.0 | 215 | 1.2 | 85 | 0.3 | 1,530 | 7.9 |



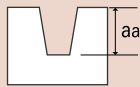
List 595: 5° Taper on Side - 3 Flute

List 596: 7° Taper on Side - 3 Flute

Side Milling

| Hardness | <145 Brinell | <20 HRC | 20-30 HRC | 30-40 HRC | 40-50 HRC | - | | | | | | |
|---------------|--|---|---|--|--|-----------------------------|-----------|-------------|-----------|-------------|-----------|-------------|
| Work Material | Mild Steels Hard Brass Bronze Cast Iron | Med. Carbon Steels Med. Strength Titanium Alloys Med. Strength Stainless Steels | High Carbon Steel Titanium Alloys High Strength Stainless Steels | Heat Resistant High Alloys Austenitic Alloys Nickel Base Alloys | Heat Resistant High Alloys Austenitic Alloys Nickel Base Alloys | Aluminum Aluminum Alloys | | | | | | |
| Cutting Speed | 130-165 SFM | 105-125 SFM | 65-80 SFM | 20-50 SFM | 15-20 SFM | 400-590 SFM | | | | | | |
| Depth of Cut | $a_a = 1.5D$ $a_r = 0.1D$  | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 5/64 | 7,210 | 10.9 | 5,625 | 8.0 | 3,545 | 5.0 | 1,710 | 2.4 | 855 | 1.1 | 24,200 | 36.4 |
| 3/32 | 6,010 | 8.4 | 4,685 | 6.5 | 2,955 | 4.2 | 1,425 | 2.1 | 715 | 0.9 | 20,170 | 28.4 |
| 1/8 | 4,510 | 10.6 | 3,515 | 8.3 | 2,215 | 5.2 | 1,070 | 2.5 | 535 | 1.1 | 15,130 | 35.5 |
| 3/16 | 3,000 | 9.9 | 2,345 | 7.5 | 1,470 | 4.8 | 715 | 2.3 | 355 | 1.1 | 10,085 | 33.1 |
| 1/4 | 2,250 | 8.5 | 1,760 | 5.8 | 1,110 | 3.9 | 535 | 2.0 | 270 | 0.9 | 7,565 | 28.5 |
| 3/8 | 1,500 | 14.1 | 1,170 | 10.8 | 740 | 6.9 | 355 | 3.2 | 180 | 1.5 | 5,040 | 47.5 |
| 1/2 | 1,125 | 13.2 | 880 | 9.4 | 555 | 6.2 | 270 | 2.9 | 135 | 1.3 | 3,780 | 44.3 |

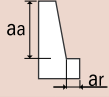
Slotting

| Hardness | <145 Brinell | <20 HRC | 20-30 HRC | 30-40 HRC | 40-50 HRC | - | | | | | | |
|---------------|---|---|---|--|--|-----------------------------|-----------|-------------|-----------|-------------|-----------|-------------|
| Work Material | Mild Steels Hard Brass Bronze Cast Iron | Med. Carbon Steels Med. Strength Titanium Alloys Med. Strength Stainless Steels | High Carbon Steel Titanium Alloys High Strength Stainless Steels | Heat Resistant High Alloys Austenitic Alloys Nickel Base Alloys | Heat Resistant High Alloys Austenitic Alloys Nickel Base Alloys | Aluminum Aluminum Alloys | | | | | | |
| Cutting Speed | 80-120 SFM | 60-80 SFM | 45-60 SFM | 8 - 15 SFM | 5 - 10 SFM | 150-350 SFM | | | | | | |
| Depth of Cut | $a_a = 1/3D$  | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 5/64 | 4,890 | 3.3 | 3,420 | 2.4 | 2,570 | 1.6 | 565 | 0.4 | 365 | 0.2 | 12,225 | 7.4 |
| 3/32 | 4,075 | 3.2 | 2,855 | 2.3 | 2,140 | 1.5 | 470 | 0.3 | 300 | 0.2 | 10,190 | 7.6 |
| 1/8 | 3,055 | 3.1 | 2,140 | 2.5 | 1,600 | 2.0 | 350 | 0.4 | 230 | 0.2 | 7,640 | 8.2 |
| 3/16 | 2,040 | 3.9 | 1,425 | 3.2 | 1,070 | 2.4 | 235 | 0.4 | 150 | 0.2 | 5,095 | 9.9 |
| 1/4 | 1,530 | 5.1 | 1,070 | 4.6 | 800 | 3.0 | 175 | 0.3 | 115 | 0.1 | 3,820 | 10.0 |
| 3/8 | 1,020 | 4.7 | 715 | 3.6 | 535 | 2.5 | 120 | 0.6 | 75 | 0.3 | 2,545 | 10.7 |
| 1/2 | 765 | 4.1 | 535 | 2.8 | 400 | 2.4 | 90 | 0.5 | 60 | 0.2 | 1,910 | 9.5 |

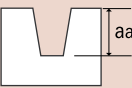


List 597: 10° Taper on Side - 3 Flute

Side Milling

| Hardness | <145 Brinell | | <20 HRC | | 20-30 HRC | | 30-40 HRC | | 40-50 HRC | | - | |
|---------------|--|-------------|---|-------------|---|-------------|--|-------------|--|-------------|-----------------------------|-------------|
| Work Material | Mild Steels Hard Brass Bronze Cast Iron | | Med. Carbon Steels Med. Strength Titanium Alloys Med. Strength Stainless Steels | | High Carbon Steel Titanium Alloys High Strength Stainless Steels | | Heat Resistant High Alloys Austenitic Alloys Nickel Base Alloys | | Heat Resistant High Alloys Austenitic Alloys Nickel Base Alloys | | Aluminum Aluminum Alloys | |
| Cutting Speed | 80-120 SFM | | 60-80 SFM | | 45-60 SFM | | 25-45 SFM | | 15-20 SFM | | 150-350 SFM | |
| Depth of Cut | $a_a = 1.5D$ $a_r = 0.1D$  | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 3/32 | 4,075 | 5.7 | 2,850 | 4.0 | 2,140 | 3.1 | 1,425 | 2.1 | 715 | 0.9 | 10,185 | 14.4 |
| 1/8 | 3,055 | 7.2 | 2,140 | 5.0 | 1,600 | 3.7 | 1,070 | 2.5 | 535 | 1.1 | 7,640 | 18.1 |
| 1/4 | 1,530 | 5.8 | 1,070 | 3.6 | 800 | 2.8 | 535 | 2.0 | 270 | 0.9 | 3,820 | 13.5 |

Slotting


| Hardness | <145 Brinell | | <20 HRC | | 20-30 HRC | | 30-40 HRC | | 40-50 HRC | | - | |
|---------------|---|-------------|---|-------------|---|-------------|--|-------------|--|-------------|-----------------------------|-------------|
| Work Material | Mild Steels Hard Brass Bronze Cast Iron | | Med. Carbon Steels Med. Strength Titanium Alloys Med. Strength Stainless Steels | | High Carbon Steel Titanium Alloys High Strength Stainless Steels | | Heat Resistant High Alloys Austenitic Alloys Nickel Base Alloys | | Heat Resistant High Alloys Austenitic Alloys Nickel Base Alloys | | Aluminum Aluminum Alloys | |
| Cutting Speed | 80-120 SFM | | 60-80 SFM | | 45-60 SFM | | 25-45 SFM | | 5 - 12 SFM | | 150-350 SFM | |
| Depth of Cut | $a_a = 1/3D$  | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 3/32 | 4,075 | 2.5 | 2,850 | 2.0 | 2,140 | 1.5 | 1,425 | 1.0 | 345 | 0.2 | 10,185 | 7.2 |
| 1/8 | 3,055 | 3.2 | 2,140 | 2.5 | 1,600 | 1.8 | 1,070 | 1.3 | 260 | 0.2 | 7,640 | 8.0 |
| 1/4 | 1,530 | 4.7 | 1,070 | 4.1 | 800 | 3.0 | 535 | 1.0 | 130 | 0.2 | 3,820 | 10.0 |



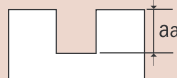
List 310-SO

List 312-SO

Side Milling


| Hardness | - | <25 HRC | 25-30 HRC | 30-35 HRC | 35-45 HRC | 45-50 HRC | < 35 HRC | | | | | | | |
|---------------|--|---|---|--|--|-----------------|-----------------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|
| Work Material | Aluminum | Mild Steels Carbon Steels Cast Iron | 400 Stainless Steels Alloy Steels Tool Steels | 300 Stainless Steels Hardened Steels Pre-hardened Steels | PH Stainless Steels Hardened Steels | Hardened Steels | Titanium Alloys | | | | | | | |
| Cutting Speed | 325-820 SFM | 50-130 SFM | 15-30 SFM | 15-30 SFM | 10-23 SFM | 50-80 SFM | 20-40 SFM | | | | | | | |
| Depth of Cut | $Aa=1D$ $Ar=0.5D$  | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 2 | 27,774 | 28.4 | 4,366 | 3.4 | 1,092 | 0.9 | 1,092 | 0.9 | 800 | 0.6 | 3,153 | 2.5 | 1,455 | 1.1 |
| 4 | 13,887 | 20.8 | 2,183 | 2.6 | 546 | 0.6 | 546 | 0.6 | 400 | 0.5 | 1,577 | 1.9 | 728 | 0.8 |
| 6 | 9,258 | 20.4 | 1,455 | 2.5 | 364 | 0.6 | 364 | 0.6 | 267 | 0.5 | 1,051 | 1.8 | 485 | 0.8 |
| 8 | 6,944 | 21.3 | 1,092 | 2.6 | 273 | 0.6 | 273 | 0.6 | 200 | 0.5 | 788 | 1.9 | 364 | 0.8 |
| 10 | 5,555 | 20.1 | 873 | 2.5 | 218 | 0.6 | 218 | 0.6 | 160 | 0.5 | 631 | 1.8 | 291 | 0.7 |
| 12 | 4,629 | 20.8 | 728 | 2.5 | 182 | 0.6 | 182 | 0.6 | 133 | 0.5 | 526 | 1.8 | 243 | 0.8 |
| 14 | 3,968 | 20.6 | 624 | 2.5 | 156 | 0.6 | 156 | 0.6 | 114 | 0.5 | 450 | 1.8 | 208 | 0.8 |
| 16 | 3,472 | 20.5 | 546 | 2.5 | 136 | 0.6 | 136 | 0.6 | 100 | 0.5 | 394 | 1.8 | 182 | 0.7 |
| 18 | 3,086 | 20.7 | 485 | 2.5 | 121 | 0.6 | 121 | 0.6 | 89 | 0.5 | 350 | 1.8 | 162 | 0.7 |
| 20 | 2,777 | 20.1 | 437 | 2.5 | 109 | 0.6 | 109 | 0.6 | 80 | 0.5 | 315 | 1.8 | 146 | 0.8 |
| 22 | 2,525 | 20.7 | 397 | 2.5 | 99 | 0.6 | 99 | 0.6 | 73 | 0.5 | 287 | 1.8 | 132 | 0.8 |
| 24 | 2,315 | 20.0 | 364 | 2.4 | 91 | 0.6 | 91 | 0.6 | 67 | 0.4 | 263 | 1.8 | 121 | 0.7 |
| 25 | 2,222 | 20.5 | 349 | 2.5 | 87 | 0.6 | 87 | 0.6 | 64 | 0.5 | 252 | 1.8 | 116 | 0.7 |

Slotting

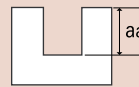
| Hardness | - | <25 HRC | 25-30 HRC | 30-35 HRC | 35-45 HRC | 45-50 HRC | < 35 HRC | | | | | | | |
|---------------|---|---|---|--|--|-----------------|-----------------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|
| Work Material | Aluminum | Mild Steels Carbon Steels Cast Iron | 400 Stainless Steels Alloy Steels Tool Steels | 300 Stainless Steels Hardened Steels Pre-hardened Steels | PH Stainless Steels Hardened Steels | Hardened Steels | Titanium Alloys | | | | | | | |
| Cutting Speed | 325-820 SFM | 390-655 SFM | 195-330 SFM | 260-330 SFM | 195-250 SFM | 260-460 SFM | 145-215 SFM | | | | | | | |
| Depth of Cut | $Aa=0.5D$  | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 2 | 27,774 | 25.6 | 4,366 | 3.1 | 1,092 | 0.8 | 1,092 | 0.8 | 800 | 0.6 | 3,153 | 2.2 | 1,455 | 1.0 |
| 4 | 13,887 | 18.7 | 2,183 | 2.3 | 546 | 0.6 | 546 | 0.6 | 400 | 0.4 | 1,577 | 1.7 | 728 | 0.7 |
| 6 | 9,258 | 18.4 | 1,455 | 2.3 | 364 | 0.6 | 364 | 0.6 | 267 | 0.4 | 1,051 | 1.6 | 485 | 0.7 |
| 8 | 6,944 | 19.2 | 1,092 | 2.3 | 273 | 0.6 | 273 | 0.6 | 200 | 0.4 | 788 | 1.7 | 364 | 0.7 |
| 10 | 5,555 | 18.1 | 873 | 2.2 | 218 | 0.6 | 218 | 0.6 | 160 | 0.4 | 631 | 1.6 | 291 | 0.7 |
| 12 | 4,629 | 18.7 | 728 | 2.3 | 182 | 0.6 | 182 | 0.6 | 133 | 0.4 | 526 | 1.6 | 243 | 0.7 |
| 14 | 3,968 | 18.6 | 624 | 2.3 | 156 | 0.6 | 156 | 0.6 | 114 | 0.4 | 450 | 1.6 | 208 | 0.7 |
| 16 | 3,472 | 18.5 | 546 | 2.2 | 136 | 0.6 | 136 | 0.6 | 100 | 0.4 | 394 | 1.6 | 182 | 0.7 |
| 18 | 3,086 | 18.6 | 485 | 2.2 | 121 | 0.6 | 121 | 0.6 | 89 | 0.4 | 350 | 1.6 | 162 | 0.7 |
| 20 | 2,777 | 18.1 | 437 | 2.3 | 109 | 0.6 | 109 | 0.6 | 80 | 0.4 | 315 | 1.6 | 146 | 0.7 |
| 22 | 2,525 | 18.6 | 397 | 2.3 | 99 | 0.6 | 99 | 0.6 | 73 | 0.4 | 287 | 1.6 | 132 | 0.7 |
| 24 | 2,315 | 18.0 | 364 | 2.2 | 91 | 0.5 | 91 | 0.5 | 67 | 0.4 | 263 | 1.6 | 121 | 0.6 |
| 25 | 2,222 | 18.4 | 349 | 2.2 | 87 | 0.6 | 87 | 0.6 | 64 | 0.4 | 252 | 1.6 | 116 | 0.7 |

List 314-SO

Side Milling

| Hardness | - | <25 HRC | 25-30 HRC | 30-35 HRC | 35-45 HRC | 45-50 HRC | < 35 HRC | | | | | | | |
|---------------|--|---|---|--|--|-----------------|-----------------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|
| Work Material | Aluminum | Mild Steels Carbon Steels Cast Iron | 400 Stainless Steels Alloy Steels Tool Steels | 300 Stainless Steels Hardened Steels Pre-hardened Steels | PH Stainless Steels Hardened Steels | Hardened Steels | Titanium Alloys | | | | | | | |
| Cutting Speed | 325-820 SFM | 50-130 SFM | 15-30 SFM | 15-30 SFM | 10-23 SFM | 50-80 SFM | 20-40 SFM | | | | | | | |
| Depth of Cut |  <p>Aa=1D Ar=0.5D</p> | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 2 | 27,774 | 56.9 | 4,366 | 6.9 | 1,092 | 1.7 | 1,092 | 1.7 | 800 | 1.3 | 3,153 | 5.0 | 1,455 | 2.3 |
| 4 | 13,887 | 41.6 | 2,183 | 5.2 | 546 | 1.3 | 546 | 1.3 | 400 | 0.9 | 1,577 | 3.7 | 728 | 1.5 |
| 6 | 9,258 | 40.8 | 1,455 | 5.0 | 364 | 1.3 | 364 | 1.3 | 267 | 0.9 | 1,051 | 3.6 | 485 | 1.5 |
| 8 | 6,944 | 42.6 | 1,092 | 5.2 | 273 | 1.3 | 273 | 1.3 | 200 | 0.9 | 788 | 3.7 | 364 | 1.5 |
| 10 | 5,555 | 40.2 | 873 | 5.0 | 218 | 1.2 | 218 | 1.2 | 160 | 0.9 | 631 | 3.6 | 291 | 1.5 |
| 12 | 4,629 | 41.6 | 728 | 5.0 | 182 | 1.3 | 182 | 1.3 | 133 | 0.9 | 526 | 3.6 | 243 | 1.5 |
| 14 | 3,968 | 41.2 | 624 | 5.0 | 156 | 1.3 | 156 | 1.3 | 114 | 0.9 | 450 | 3.6 | 208 | 1.5 |
| 16 | 3,472 | 41.0 | 546 | 5.0 | 136 | 1.2 | 136 | 1.2 | 100 | 0.9 | 394 | 3.6 | 182 | 1.5 |
| 18 | 3,086 | 41.3 | 485 | 5.0 | 121 | 1.2 | 121 | 1.2 | 89 | 0.9 | 350 | 3.6 | 162 | 1.5 |
| 20 | 2,777 | 40.2 | 437 | 5.0 | 109 | 1.3 | 109 | 1.3 | 80 | 0.9 | 315 | 3.6 | 146 | 1.5 |
| 22 | 2,525 | 62.0 | 397 | 7.5 | 99 | 1.9 | 99 | 1.9 | 73 | 1.4 | 287 | 5.4 | 132 | 2.3 |
| 24 | 2,315 | 60.1 | 364 | 7.3 | 91 | 1.8 | 91 | 1.8 | 67 | 1.3 | 263 | 5.3 | 121 | 2.2 |
| 25 | 2,222 | 61.4 | 349 | 7.4 | 87 | 1.9 | 87 | 1.9 | 64 | 1.4 | 252 | 5.4 | 116 | 2.2 |

Slotting

| Hardness | - | <25 HRC | 25-30 HRC | 30-35 HRC | 35-45 HRC | 45-50 HRC | < 35 HRC | | | | | | | |
|---------------|--|---|---|--|--|-----------------|-----------------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|
| Work Material | Aluminum | Mild Steels Carbon Steels Cast Iron | 400 Stainless Steels Alloy Steels Tool Steels | 300 Stainless Steels Hardened Steels Pre-hardened Steels | PH Stainless Steels Hardened Steels | Hardened Steels | Titanium Alloys | | | | | | | |
| Cutting Speed | 325-820 SFM | 390-655 SFM | 195-330 SFM | 260-330 SFM | 195-250 SFM | 260-460 SFM | 145-215 SFM | | | | | | | |
| Depth of Cut |  <p>Aa=0.5D</p> | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min |
| 2 | 27,774 | 51.2 | 4,366 | 6.2 | 1,092 | 1.5 | 1,092 | 1.5 | 800 | 1.1 | 3,153 | 4.5 | 1,455 | 2.0 |
| 4 | 13,887 | 37.4 | 2,183 | 4.6 | 546 | 1.2 | 546 | 1.2 | 400 | 0.9 | 1,577 | 3.4 | 728 | 1.4 |
| 6 | 9,258 | 36.7 | 1,455 | 4.5 | 364 | 1.1 | 364 | 1.1 | 267 | 0.8 | 1,051 | 3.3 | 485 | 1.3 |
| 8 | 6,944 | 38.4 | 1,092 | 4.6 | 273 | 1.2 | 273 | 1.2 | 200 | 0.9 | 788 | 3.4 | 364 | 1.4 |
| 10 | 5,555 | 36.2 | 873 | 4.5 | 218 | 1.1 | 218 | 1.1 | 160 | 0.8 | 631 | 3.2 | 291 | 1.3 |
| 12 | 4,629 | 37.4 | 728 | 4.5 | 182 | 1.1 | 182 | 1.1 | 133 | 0.8 | 526 | 3.3 | 243 | 1.3 |
| 14 | 3,968 | 37.1 | 624 | 4.5 | 156 | 1.1 | 156 | 1.1 | 114 | 0.8 | 450 | 3.3 | 208 | 1.3 |
| 16 | 3,472 | 36.9 | 546 | 4.5 | 136 | 1.1 | 136 | 1.1 | 100 | 0.8 | 394 | 3.2 | 182 | 1.3 |
| 18 | 3,086 | 37.2 | 485 | 4.5 | 121 | 1.1 | 121 | 1.1 | 89 | 0.8 | 350 | 3.2 | 162 | 1.3 |
| 20 | 2,777 | 36.2 | 437 | 4.5 | 109 | 1.1 | 109 | 1.1 | 80 | 0.8 | 315 | 3.3 | 146 | 1.3 |
| 22 | 2,525 | 55.8 | 397 | 6.8 | 99 | 1.7 | 99 | 1.7 | 73 | 1.2 | 287 | 4.9 | 132 | 2.0 |
| 24 | 2,315 | 54.1 | 364 | 6.6 | 91 | 1.6 | 91 | 1.6 | 67 | 1.2 | 263 | 4.7 | 121 | 1.9 |
| 25 | 2,222 | 55.3 | 349 | 6.7 | 87 | 1.7 | 87 | 1.7 | 64 | 1.2 | 252 | 4.8 | 116 | 2.0 |

End Mill

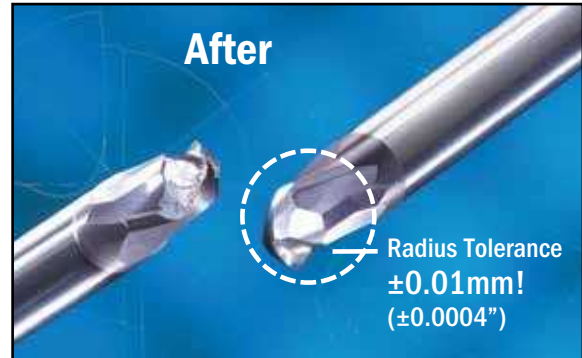
Reconditioning





OSG Tool Reconditioning

OSG's Bensenville facility is the special cutting tool and regrinding authority based in the Chicago area. Through accurate and expedient regrinds of high-end cutting tools, OSG helps customers extend tool life and save money by restoring their used cutting tools to their original condition. In addition to regrinding, the Bensenville facility also manufactures custom drills, reamers, and other special cutting tools, performs product modifications and provides premium coating services.



As part of the OSG Corporation (headquartered in Japan), the regrind facility is the only OSG authorized regrinding source in America. The regrinding program uses the same OSG manufacturing drawings, adheres to OSG's strict quality control standards and uses the same equipment for OSG manufacturing and inspection procedures. As one of the world's leading cutting tool manufacturers, OSG offers a global network of support to our customers.

Tool Reconditioning Lowers Costs

The primary benefit of tool reconditioning is clear: the reduction in overall tooling costs. As part of normal production, tool wear, chipping and breakage occurs often affecting tool performance and increasing manufacturing costs. By reconditioning high performance drills, end mills and taps, OSG helps manufacturers realize substantial cost savings through extended tool life without jeopardizing production quality or performance. Because OSG's reconditioned tools are manufactured to the same high level of quality and held to the same exacting standards that new tools are, customers of OSG's tool reconditioning services can expect the same high performance and quality they are accustomed with OSG's new tools even after regrinding multiple times.

Engineering & Sales Support

OSG reconditions OSG tools using the same prints as the original tools made in our plants around the world. By using original part drawings, tools are accurately reconditioned to the original specifications, so customers are assured that reconditioned tools realize the same high level of performance. Manufacturers can also work directly with OSG design engineers to customize tools for enhanced performance or to meet specific requirements.

OSG's national sales team provides tooling expertise in the field for onsite evaluations and recommendations for manufacturers to implement a customized reconditioning program. The goal is to help manufacturers reduce tool costs and inventory, optimize performance and enhance overall profits.



Contact your OSG representative or distributor to review your tool reconditioning program.





CNC Training

OSG CNC technicians are extensively trained on proper setup methodologies and reconditioning processes by an on-staff CNC trainer. Through their development, the CNC technician training program moves operators through three levels where they are diligently monitored and certified/reevaluated annually to maintain consistency and quality in our tools. Technicians are also trained and certified/reevaluated annually by Quality Assurance to perform inspections to print on first piece and in process tools.

Inspector Training

In order to guarantee that our tools are reconditioned to the highest standards, inspectors also undergo annual training and certifications which involve standardized procedures. These are the same methods that are used in the OSG manufacturing facilities in Japan and around the world. Inspectors are trained to inspect and measure tools completely to the original tool prints.

Throughout the reconditioning process, the tools are also continuously inspected until 100% visual inspection ensures that no chipped or defective tools are received by the customer. The high tech inspection equipment used at the reconditioning facility is the same equipment used at all OSG locations. This includes in-house developed tool analyzers and state-of-the-art equipment with up to 300x magnification capabilities. The key to inspecting high performance, accurate reconditioned tools is assuring that they are held to the same inspection standards through the use of the same inspection methods as new OSG tools.

The Bensenville plant is subject to OSG's stringent JQA regrinding standards and is certified regularly by OSG Japan.

Equipment and Facility

In 2015, OSG opened a reconditioning facility which is equipped with state-of-the-art production and inspection equipment. The facility uses high precision 5-Axis CNC grinders throughout the reconditioning process for improved repeatability and precision.

OSG's weekly equipment Preventive Maintenance (PM) program ensures consistency and accuracy throughout the reconditioning process. Through this PM program, OSG's tool reconditioning performance will be consistent year after year.



INDEXABLE

OSG **PHOENIX**[®]

OSG's high performance indexable tooling for rough and finish milling and drilling in a variety of applications.

EXOCARB[®] ***DISC CUTTER S***


OSG's patented face mill for high feed, roughing applications on low horsepower machine spindles.

EXOCARB[®] ***DISC CUTTER PRO***

OSG's patented face mill for high feed, finishing applications on low horsepower machine spindles.





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| OSG PHOENIX® | | | | | | |
| 52400 |  | OSG PHOENIX® PXD | Inch | 0.551-1.023" | Exchangeable Head Drill, 3D & 5D | 1328 |
| 78310 | | | Metric | 14.00-25.99mm | Exchangeable Head Drill, 3D & 5D | 1329 |
| 78PXD | | | - | - | PXD Exchangeable Heads | 1330-1334 |
| 7808H | | | - | - | PXD Accessories | 1335 |
| 52502 |  | OSG PHOENIX® PD | Inch | 0.484-2.500" | Indexable Drill, 2D | 1337-1338 |
| 78031 | | | Metric | 12.00-63.00mm | Indexable Drill, 2D | 1339-1340 |
| 52503 | | | Inch | 0.484-2.500" | Indexable Drill, 3D | 1341-1342 |
| 78032 | | | Metric | 12.00-63.00mm | Indexable Drill, 3D | 1343-1344 |
| 52504 | | | Inch | 0.484-2.500" | Indexable Drill, 4D | 1345-1346 |
| 78033 | | | Metric | 12.00-63.00mm | Indexable Drill, 4D | 1347-1348 |
| 52505 | | | Inch | 0.484-2.500" | Indexable Drill, 5D | 1349-1350 |
| 78027 | | | Metric | 12.00-63.00mm | Indexable Drill, 5D | 1351-1352 |
| 78P5D | | | - | - | PD Inserts | 1353 |
| 7808H | | | - | - | PD Accessories | 1354 |
| 78001 |  | OSG PHOENIX® PHP | Metric | 14.00-40.00mm | High Performance Drill, 3D | 1361 |
| 78PHP | | | - | - | PHP Inserts | 1362 |
| 7808H | | | - | - | PHP Accessories | 1362 |
| 52510 |  | OSG PHOENIX® PZAG | Inch | 0.531-1.813" | Counterbore Cutter, SA | 1364 |
| 78321 | | | Metric | 14-48mm | Counterbore Cutter, SS | 1365 |
| 52511 | | | Inch | 2.000-3.125" | Counterbore Cutter, Bore | 1366 |
| 78421 | | | Metric | 54-82mm | Counterbore Cutter, Bore | 1367 |
| 78PZAG | | | - | - | PZAG Inserts | 1368 |
| 7808H | | | - | - | PZAG Accessories | 1368 |

HOLEMAKING

NEW SIZES

NEW

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OSG PHOENIX® (Continued)

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| MILLING | 52700 |  | OSG PHOENIX® PAS | Inch | 2.000-6.000" | 45° Face Mill, 2-Sided Square Insert, Bore | 1370 |
| | 78020 | | | Metric | 50-125mm | 45° Face Mill, 2-Sided Square Insert, Bore | 1370 |
| | 78PAS | | | - | - | PAS Inserts | 1371 |
| | 7808H | | | - | - | PAS Accessories | 1371 |
| | 52800 |  | OSG PHOENIX® PAO | Inch | 2.000-8.000" | 45° Face Mill, 2-Sided Octagon Insert, Bore | 1373 |
| | 78120 | | | Metric | 50-200mm | 45° Face Mill, 2-Sided Octagon Insert, Bore | 1374 |
| | 78PAO | | | - | - | PAO Inserts | 1375 |
| | 7808H | | | - | - | PAO Accessories | 1376 |
| | 78013 |  | OSG PHOENIX® PSE | Inch | 0.625-1.500" | 90° Shoulder Cutter, SA/FA | 1378 |
| | 78011 | | | Metric | 16-36mm | 90° Shoulder Cutter, SS | 1379-1380 |
| | 78012 | | | Inch | 2.000-6.000" | 90° Shoulder Cutter, Bore | 1381 |
| | 78010 | | | Metric | 40-125mm | 90° Shoulder Cutter, Bore | 1382 |
| | 52601 | | | Inch | 0.625-1.500" | 90° Shoulder Cutter, ASF | 1383 |
| | 78016 | | | Metric | 16-40mm | 90° Shoulder Cutter, SF | 1384 |
| | 78PSE | | | - | - | PSE/PSEL Inserts | 1385 |
| | 7808H | | | - | - | PSE Accessories | 1386 |
| | 53000 |  | OSG PHOENIX® PSEL | Inch | 1.000-1.500" | 90° Roughing Cutter, SA/FA | 1389 |
| | 78029 | | | Metric | 25-50mm | 90° Roughing Cutter, SS | 1390 |
| | 53001 | | | Inch | 2.000-3.000" | 90° Roughing Cutter, Bore | 1391 |
| | 78028 | | | Metric | 50-80mm | 90° Roughing Cutter, Bore | 1391 |
| 78PSE | - | | | - | PSE/PSEL Inserts | 1392 | |
| 7808H | - | | | - | PSEL Accessories | 1393 | |
| 52900 |  | OSG PHOENIX® PSF | Inch | 1.000-1.500" | 90° Shoulder Cutter, Square Insert, SA/FA | 1396 | |
| 78030 | | | Metric | 25-40mm | 90° Shoulder Cutter, Square Insert, SS | 1396 | |
| 52901 | | | Inch | 2.000-3.000" | 90° Shoulder Cutter, Square Insert, Bore | 1397 | |
| 78130 | | | Metric | 50-80mm | 90° Shoulder Cutter, Square Insert, Bore | 1397 | |
| 78PSF | | | - | - | PSF/PSFL Inserts | 1398 | |
| 7808H | | | - | - | PSF Accessories | 1398 | |

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| 53200 |  | OSG PHOENIX® PSFL | Inch | 1.250-1.500" | 90° Roughing Cutter, Square Insert, SA/FA | 1400 |
| 78037 | | | Metric | 32-40mm | 90° Roughing Cutter, Square Insert, SS | 1400 |
| 53201 | | | Inch | 2.000-4.000" | 90° Roughing Cutter, Square Insert, Bore | 1401 |
| 78137 | | | Metric | 50-80mm | 90° Roughing Cutter, Square Insert, Bore | 1401 |
| 78PSF | | | - | - | PSF/PSFL Inserts | 1402 |
| 7808H | | | - | - | PSFL Accessories | 1402 |
| 53100 |  | OSG PHOENIX® PSTW | Inch | 2.000-6.000" | 90° Shoulder Cutter, 2-Sided Triangle Insert, Bore | 1404 |
| 78131 | | | Metric | 50-125mm | 90° Shoulder Cutter, 2-Sided Triangle Insert, Bore | 1405 |
| 78PSTW | | | - | - | PSTW Inserts | 1406 |
| 7808H | | | - | - | PSTW Accessories | 1406 |
| 78005 |  | OSG PHOENIX® PRC | Inch | 1.000-1.500" | Radius Cutter, SA | 1408 |
| 78003 | | | Metric | 20-63mm | Radius Cutter, SS | 1409 |
| 78004 | | | Inch | 2.000-6.000" | Radius Cutter, Bore | 1410 |
| 78002 | | | Metric | 50-100mm | Radius Cutter, Bore | 1411 |
| 52602 | | | Inch | 1.000-1.500" | Radius Cutter, ASF | 1412 |
| 78017 | | | Metric | 20-40mm | Radius Cutter, SF | 1412 |
| 78PRC | | | - | - | PRC Inserts | 1413 |
| 7808H | | | - | - | PRC Accessories | 1413 |
| 78009 |  | OSG PHOENIX® PHC | Inch | 0.625-1.500" | High Feed Radius Cutter, SA/FA | 1416-1417 |
| 78007 | | | Metric | 16-63mm | High Feed Radius Cutter, SS | 1418-1419 |
| 78008 | | | Inch | 2.000-6.000" | High Feed Radius Cutter, Bore | 1420 |
| 78006 | | | Metric | 40-100mm | High Feed Radius Cutter, Bore | 1421 |
| 52603 | | | Inch | 0.625-1.500" | High Feed Radius Cutter, ASF | 1422 |
| 78015 | | | Metric | 16-40mm | High Feed Radius Cutter, SF | 1423 |
| 78PHC | | | - | - | PHC Inserts | 1424 |
| 7808H | | | - | - | PHC Accessories | 1424 |


MILLING

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| MILLING | 6420 |  | OSG PHOENIX® PDR | Metric | 40-50mm | Deep Feed Radius Cutter, SS | 1427 |
| | 6450 | | | Metric | 63-125mm | Deep Feed Radius Cutter, Bore | 1427 |
| | 78PDR | | | - | - | PDR Inserts | 1428 |
| | 7808H | | | - | - | PDR Accessories | 1428 |
| | 78036 |  | OSG PHOENIX® PFAL | Metric | 50-160mm | Finishing Cutter for Aluminum, Bore | 1430 |
| | 78PFAL | | | - | - | PFAL Inserts | 1431 |
| | 7808H | | | - | - | PFAL Accessories | 1431 |
| | 52100 |  | OSG PHOENIX® PFB | Inch | 0.250-1.250" | Finishing Ball End Mill, SA | 1433-1434 |
| | 78014 | | | Metric | 6-32mm | Finishing Ball End Mill, SS | 1435 |
| | 52604 | | | Inch | 0.375-1.000" | Finishing Ball End Mill, ASF | 1436 |
| | 78114 | | | Metric | 10-32mm | Finishing Ball End Mill, SF | 1436 |
| | 78PFB | | | - | - | PFB Inserts | 1437-1438 |
| | 7808H | | | - | - | PFB Accessories | 1439 |
| | | | | NEW INSERT | | | |
| 52200 |  | OSG PHOENIX® PFR | Inch | 0.250-1.250" | Finishing Radius End Mill, SA | 1442 | |
| 78320 | | | Metric | 6-32mm | Finishing Radius End Mill, SS | 1443 | |
| 52605 | | | Inch | 0.375-1.000" | Finishing Radius End Mill, ASF | 1444 | |
| 78220 | | | Metric | 10-32mm | Finishing Radius End Mill, SF | 1444 | |
| 78PFR | | | - | - | PFR Inserts | 1445-1449 | |
| 7808H | | | - | - | PFR Accessories | 1450 | |

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| MILLING |  | OSG PHOENIX® SF | Inch | 0.625-1.500" | Screw Fit Cutter, PSE ASF | 1453 |
| | | | Metric | 16-40mm | Screw Fit Cutter, PSE SF | 1454 |
| | | | Inch | 1.000-1.500" | Screw Fit Cutter, PRC ASF | 1455 |
| | | | Metric | 20-40mm | Screw Fit Cutter, PRC SF | 1455 |
| | | | Inch | 0.625-1.500" | Screw Fit Cutter, PHC ASF | 1456 |
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| | | | Inch | 0.375-1.000" | Screw Fit Cutter, PFB ASF | 1458 |
| | | | Metric | 10-30mm | Screw Fit Cutter, PFB SF | 1459 |
| | | | Inch | 0.375-1.000" | Screw Fit Cutter, PFR ASF | 1460 |
| | | | Metric | 10-32mm | Screw Fit Cutter, PFR SF | 1460 |
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| | | | Metric | - | Screw Fit Cutter, SF Arbor SS | 1462 |
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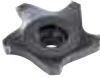

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| MILLING | 78PXSE |  | OSG PHOENIX® PXM | Inch/ Metric | 0.375-1.000" 10-25mm | PXSE, 4 Flute, Square & Corner Radius | 1465 |
| | 78PXSE-O | | | Inch/ Metric | 0.500-1.000" 12-25mm | PXSE, 4 Flute, Square & Corner Radius, Coolant-Through | 1466 |
| | 78PXVC | | | Inch/ Metric | 0.375-1.250" 10-32mm | PXVC, 4 Flute, Square & Corner Radius | 1467-1468 |
| | 78PXSM | | | Inch/ Metric | 0.375-1.000" 10-25mm | PXSM, Multiple Flute, Square & Corner Radius | 1469-1470 |
| | 78PXNL | | | Inch/ Metric | 0.375-1.000" 10-25mm | PXNL, 4 Flute, Roughing, Low Helix | 1471 |
| | 78PXNL-O | | | Inch/ Metric | 0.500-1.000" 12-25mm | PXNL, 4 Flute, Roughing, Low Helix, Coolant-Through | 1471 |
| | 78PXNH | | | Inch/ Metric | 0.375-1.000" 10-25mm | PXNH, 4 Flute, Roughing, High Helix | 1472 |
| | 78PXNH-O | | | Inch/ Metric | 0.500-1.000" 12-25mm | PXNH, 4 Flute, Roughing, High Helix, Coolant-Through | 1472 |
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| | 78PXBE | | | Inch/ Metric | 0.375-1.000" 10-25mm | PXBE, 3 Flute, Ball End | 1475-1476 |
| | 78PXBE-O | | | Inch/ Metric | 0.500-0.750" 12-20mm | PXBE, 3 Flute, Ball End, Coolant-Through | 1476-1477 |
| | 78PXB | | | Inch/ Metric | 0.375-1.000" 10-25mm | PXB, Multiple Flute, Ball End | 1477 |
| | 52300 | | | Inch | - | PXM SA/TPA | 1478-1479 |
| | 52319 | | | Inch | - | PXM SA/TPA, Coolant-Through | 1480-1481 |
| | 78018 | | | Metric | - | PXM SS/TP | 1482-1483 |
| | 78035 | | | Metric | - | PXM SS/TP, Coolant-Through | 1484-1485 |
| | 78340 | | | Metric | - | PXMC | 1486 |
| | - | | | Inch/ Metric | - | Base Holders for general purpose & coolant-Through operations - BT, CT and HSK. | 1487 |
| 7808H | - | - | PXM Accessories | 1488 | | | |

NEW SIZES

EXOCARB® DISC CUTTER®

| | | | | | | | |
|---------|------|---|------------------------------------|--------|----------|---|------|
| MILLING | 6440 |  | EXOCARB® DISC CUTTER® S | Metric | 80-125mm | Face Milling Cutter for Small Machines, Roughing | 1500 |
| | 6442 | | | | | | 1501 |
| | 6441 |  | EXOCARB® DISC CUTTER® PRO | Metric | 80-125mm | Face Milling Cutter for Small Machines, Finishing | 1502 |
| | 6541 | | | | | | 1503 |

EXOCARB® Arbor

| | | | | | | | |
|--------|------|---|-------------------|--------|---|--|------|
| ARBORS | 6640 |  | EXOCARB® Arbor | Metric | - | Face Mill Arbor for Small Machines, BT30, CAT40 & HSK40A | 1504 |
|--------|------|---|-------------------|--------|---|--|------|



| Material Class | Grade | Coating Method | Hardness (HRA) | Surface Treatment | | Features |
|----------------|--------|----------------|----------------|--|-------------------|---|
| | | | | Main Component | Coating Thickness | |
| P | XC3020 | CVD | 90.5 | TiCN + Al ₂ O ₃ | 10 µm | For Machining Steel and Cast Iron Composed of a tough, high-strength carbide material with a chipping-resistant and wear-resistance coating. |
| | XP3025 | PVD | 90.5 | TiAlN | 5 µm | For Machining Steel and Cast Iron Composed of a tough, high-strength carbide material with a chipping-resistant and wear-resistance coating. |
| | XC3025 | CVD | 90.8 | TiCN + TiN + Al ₂ O ₃ | 4 µm | For Machining Steel, Stainless Steel and Cast Iron Composed of a tough, high-strength carbide material with a chipping-resistant and wear-resistant coating. |
| | XC3030 | CVD | 89.5 | TiCN + Al ₂ O ₃ | 10 µm | For Machining Steel and Cast Iron Composed of a tough, high-strength carbide material with a chipping-resistant and wear-resistant coating. |
| | XP3035 | PVD | 89.5 | TiAlN | 5 µm | For Machining Steel, Stainless Steel and Cast Iron A grade for general purpose milling. Composed of a tough, high-strength carbide material with a chipping-resistant and wear-resistant coating. |
| | XP3930 | PVD | 90.8 | TiAlN | 3 µm | For Machining Steel, Stainless Steel and Cast Iron Excellent balance; can accommodate a wide range of workpiece materials. |
| | XP8030 | PVD | 91.9 | TiAlN | 3 µm | For Machining Steel & Stainless Steel Excellent balance of wear-resistance and chipping-resistance; can accommodate a wide range of workpiece materials. |
| | XC8035 | CVD | 89.6 | TiCN + Al ₂ O ₃ | 7 µm | For Machining Steel and Cast Iron Composed of a tough, high-strength carbide material with a chipping-resistant and wear-resistant coating. |
| | XP3225 | PVD | 91.5 | Cr | 3 µm | For Machining Steel, Stainless Steel and Cast Iron Composed of a tough carbide material with an excellent general purpose coating. |
| | XP3310 | PVD | 92.5 | SiC Silicon-based heat-resistant coating | 3 µm | For Machining Steel and Cast Iron Composed of a tough, high-strength carbide material with a chipping-resistant and wear-resistant coating. |
| | XP3320 | PVD | 91.5 | SiC Silicon-based heat-resistant coating | 3 µm | For Machining Steel, Stainless Steel and Cast Iron Composed of a tough carbide material with a heat-resistant and wear-resistant coating. |
| | XP3425 | PVD | 91.8 | Cr Composite multilayer | 7 µm | For Drilling Steel Composed of a tough, high strength carbide material with a wear-resistant thick film coating. |
| | XC9015 | CVD | 91.9 | TiCN + Al ₂ O ₃ | 7 µm | For Drilling Steel Composed of a tough carbide material with an anti-chipping and wear-resistant coating. |
| | XP9020 | PVD | 91.9 | TiAlN | 3 µm | For Drilling Steel, Stainless Steel, Cast Iron and Non-Ferrous Materials Composed of a tough carbide material with an anti-chipping and wear-resistant coating. |
| | XP9040 | PVD | 91.9 | TiAlN | 3 µm | For Drilling Steel and Stainless Steel Composed of a high-strength carbide material with an anti-chipping and wear-resistant coating. |

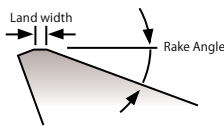
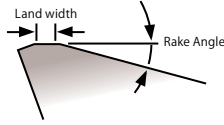
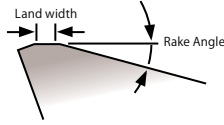
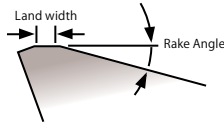
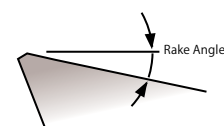
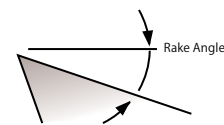
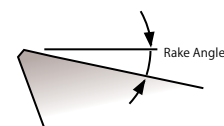
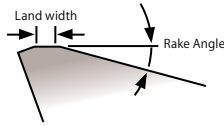
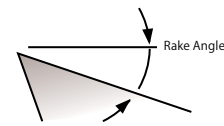




| Material Class | Grade | Coating Method | Hardness (HRA) | Surface Treatment | | Features |
|----------------|--------|----------------|----------------|--|-------------------|--|
| | | | | Main Component | Coating Thickness | |
| M | XP2025 | PVD | 91.0 | TiAlN | 5 μm | For Machining Stainless Steel and Steel Composed of a tough, high-strength carbide material with an anti-chipping and wear resistant coating. |
| | XP2040 | PVD | 89.6 | TiAlN | 5 μm | For Machining Stainless Steel and Steel Ideal for general-purpose milling. Composed of a tough, high-strength carbide with an anti-chipping and wear-resistant coating. |
| | XP2225 | PVD | 91.5 | Cr | 3 μm | For Machining Stainless Steel Composed of a heat-resistant carbide material with a heat-resistant and wear-resistant coating. |
| K | XC1015 | CVD | 91.5 | TiCN + Al ₂ O ₃ | 10 μm | For Machining Cast Iron Composed of a tough, high-strength carbide material with an anti-chipping and wear-resistant coating. |
| | XP1020 | PVD | 91.5 | TiAlN | 5 μm | For Machining Cast Iron Composed of a tough, high-strength carbide material with an anti-chipping and wear-resistant coating. |
| | XP1010 | PVD | 91.4 | TiAlN | 6 μm | For Drilling Cast Iron Composed of a tough, high-strength carbide material with highly rigid cutting edge and wear resistant coating. |
| | XP1425 | PVD | 91.8 | Cr Composite multilayer | 7 μm | For Drilling Cast Iron Composed of a tough, high strength carbide material with a wear-resistant thick film coating. |
| | XC9025 | CVD | 90.8 | TiCN + Al ₂ O ₃ | 6 μm | For Drilling Cast Iron Composed of a tough, high-strength carbide with an anti-chipping and wear-resistant coating. |
| N | CK010 | - | 92.0 | - | - | For Machining Non-Ferrous Materials Composed of a non-coated carbide material with an anti-chipping and wear-resistant properties. |
| | XC4505 | CVD | 93.0 | DIA | 12 μm | For Machining Non-Ferrous Materials Micro crystal diamond provides a coating layer with excellent strength. |
| | CK110 | - | 92.2 | - | - | For Drilling Aluminum Alloy and Non-Ferrous Materials Composed of a non-coated carbide material with a sharp cutting edge and polished surface. |
| | CF225 | - | 91.8 | - | - | For Drilling Non-Ferrous Materials Composed of a non-coated carbide material with an anti-chipping and wear-resistant properties. |
| S | XC5035 | CVD | 89.3 | TiN + Ti(CN) + Al ₂ O ₃ + Ti(BN) | 6 μm | For Machining Heat-Resistant Alloy and Stainless Steel Composed of a tough carbide material with an oxidation-resistant and high-lubricity coating. |
| | XC5040 | CVD | 89.3 | TiN + TiB ₂ | 4 μm | For Machining Heat-Resistant Alloy and Stainless Steel Can be used for wet machining. Composed of a tough carbide material with an oxidation-resistant and high-lubricity coating. |
| H | XP6015 | PVD | 92.2 | TiAlN | 4 μm | For Machining High Hardness Steel Composed of a tough, high-strength carbide material with a wear-resistant coating. |
| | XP6305 | PVD | 93.0 | SiC Silicon-based heat-resistant coating | 3 μm | For Machining High Hardness Steel Composed of a tough, high-strength carbide material with excellent thermal conductivity. |





| Machining Method | Chip Breaker | Cutting Edge Cross-Section (Approximate) | Application |
|------------------|--------------|---|--|
| Milling | GL |  | For milling stainless steel: a breaker with a large rake angle and a small flat land to reduce cutting force. |
| | GM |  | For milling various materials from steel to cast iron: a breaker with a superior balance of rake angle and flat land. |
| | GR |  | For milling various materials from steel to cast iron: a highly rigid breaker with large rake angle and flat and to provide a sharp cutting edge and enable efficient milling. |
| | HR |  | For milling high hardened steel: a breaker with sharpness and excellent rigidity. |
| | SM |  | For milling difficult materials: a breaker with a sharp cutting edge to reduce cutting force and provide smooth chip evacuation. |
| | NM |  | For milling non-ferrous materials: a breaker with a sharp cutting edge and a large rake angle to suppress welding, improve the milling surface and prevent burrs. |
| Holemaking | DM |  | For drilling various materials from steel to cast iron: a general purpose breaker with an ideal rake angle. |
| | DR |  | For drilling cast iron: a highly rigid breaker with an optimal land width and rake angle. |
| | DN |  | For drilling non-ferrous materials: a breaker with a sharp cutting edge and polish treatment for excellent chip evacuation. |





| | | | | | | | | |
|------------|-----------|----------|------------|-----------|------------|----------|----------|----------|
| PHC | 12 | R | 150 | SA | 125 | - | 3 | S |
| ① | ② | ③ | ④ | ⑤ | ⑥ | | ⑦ | ⑧ |

Abbreviation

Example:
PHC =
Phoenix High Feed Cutter

Cutting Direction

R = Right Hand
L = Left Hand

Mounting Diameter

Example:
125 = 1.25"
32 = 32 mm

Number of Flutes

Example:
3 = 3-Flute

Insert Size

Example:
12 = 12 mm

Cutter Diameter

Example:
150 = 1.50"
080 = 80 mm

Mounting Type









| | |
|-----|-------------------------|
| A | Bore Type (Inch) |
| M | Bore Type (Metric) |
| SA | Straight Shank (Inch) |
| FA | Weldon Shank (Inch) |
| SS | Straight Shank (Metric) |
| MT | Morse Taper Shank |
| ASF | Screw Fit Type (Inch) |
| SF | Screw Fit Type (Metric) |
| FS | Flat Shank |

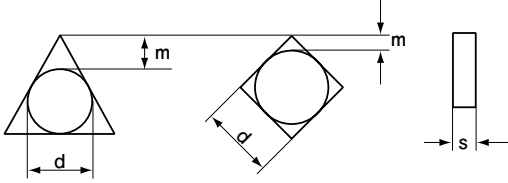
Shank Type

| | |
|----|------------|
| S | Short |
| L | Long |
| LL | Extra Long |

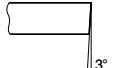
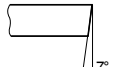


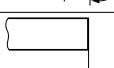



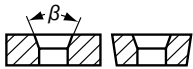


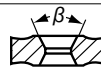
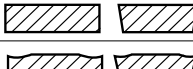
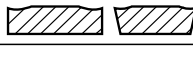
| | | | |
|----------|----------|----------|----------|
| Z | D | K | T |
| ① | ② | ③ | ④ |

| Shape of Insert | | |
|-----------------|------------------|---|
| C | Diamond Apex 80° |  |
| D | Diamond Apex 55° |  |
| O | Octagon |  |
| R | Round |  |
| S | Square |  |
| T | Triangle |  |
| V | Diamond Apex 35° |  |
| W | Axonomic Hexagon |  |
| Z | Other Shapes | - |

| Tolerance | | | |
|--|---------------------------------|------------------------------|--------------------------|
|  | | | |
| Symbol | Inscribed Circle Tolerance (mm) | Corner Height Tolerance (mm) | Thickness Tolerance (mm) |
| A | ±0.025 | ±0.005 | ±0.025 |
| C | ±0.025 | ±0.013 | ±0.025 |
| E | ±0.025 | ±0.025 | ±0.025 |
| H | ±0.013 | ±0.013 | ±0.025 |
| K* | ±0.05~±0.15 | ±0.013 | ±0.025 |
| M* | ±0.05~±0.15 | ±0.08~±0.18 | ±0.13 |
| N* | ±0.05~±0.15 | ±0.08~±0.18 | ±0.025 |

*Sintered insert shown on the side

| Clearance Angle | | |
|-----------------|-------------------|---|
| A | 3° |  |
| C | 7° |  |
| D | 15° |  |
| E | 20° |  |
| N | 0° |  |
| P | 11° |  |
| X | Special Dimension | |

| Special Cutting and Fastening Feature | | | |
|---------------------------------------|---------------------------------------|-------------------------|---|
| Symbol | Shape of Hole | With or Without Breaker | Insert Cross Section |
| W | (40°~60°) Partial cylindrical hole | No Breaker |  |
| T | | One Side |  |
| B | (70°~90°) Partial cylindrical hole | No Breaker |  |
| U | (40°~60°) Partial cylindrical hole | Both Sides |  |
| N | - | No Breaker |  |
| R | - | One Side |  |



| | | | | | | |
|-----------|-----------|-----------|----------|----------|----------|-----------|
| 15 | 05 | 08 | S | R | - | GM |
| ⑤ | ⑥ | ⑦ | ⑧ | ⑨ | - | ⑩ |

| Length of the Cutting Edge | |
|----------------------------|--|
| O | |
| R | |
| S | |
| T | |
| Z | |

| Corner Radius Symbol | |
|----------------------|--------------------|
| Symbol | Corner Radius (mm) |
| 02 | R0.2 |
| 04 | R0.4 |
| 08 | R0.8 |
| 12 | R1.2 |
| 16 | R1.6 |
| 24 | R2.4 |

| Cutting Direction | |
|-------------------|-------------------|
| Symbol | Cutting Direction |
| R | Right Hand |
| L | Left Hand |
| N | Neutral |

| Thickness of Insert | |
|---------------------|----------------|
| | |
| Symbol | Thickness (mm) |
| 02 | 2.38 |
| 03 | 3.18 |
| T3 | 3.97 |
| 04 | 4.76 |
| 05 | 5.56 |
| 06 | 6.35 |

| Type of Cutting Edge | |
|----------------------|------------------------|
| Symbol | Appearance |
| F | Sharp Edge |
| E | Round Honing |
| T | Chamfer Honing |
| S | Combination Honing |

| Type of Chip Breaker | |
|----------------------|------------|
| Symbol | Name |
| GL | GL Breaker |
| GM | GM Breaker |
| GR | GR Breaker |
| HR | HR Breaker |
| NM | NM Breaker |
| SM | SM Breaker |
| DM | DM Breaker |
| DR | DR Breaker |
| DN | DN Breaker |





List 52400

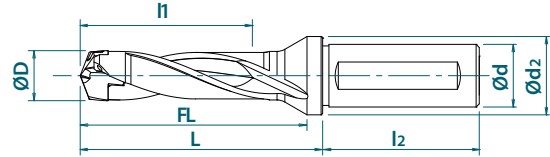
PXD 3D (Inch)



SPEED FEED
P1336



Recommended Materials: p1336
Accessories & Inserts: p1330-1335



| EDP No. | Body Type | Designation | Drill Dia. (inch) | | Drilling Depth (inch) | Flute Length (inch) | Gage Length (inch) | Shank Length (inch) | Shank Dia. (inch) | Flange Dia. (inch) | Appl. Head |
|----------|-------------------|------------------------|-------------------|-------|-----------------------|---------------------|--------------------|---------------------|-------------------|--------------------|------------|
| | | | D Min | D Max | l1 | FL | L | l2 | d | d2 | |
| 52400000 | Cylindrical Shank | PXDZ0551-3D-113.5-0625 | 0.551 | 0.570 | 1.693 | 2.496 | 2.752 | 1.890 | 0.625 | 0.787 | 1 |
| 52400001 | | PXDZ0571-3D-115.5-0625 | 0.571 | 0.590 | 1.752 | 2.579 | 2.835 | 1.890 | 0.625 | 0.787 | 2 |
| 52400002 | | PXDZ0591-3D-119.5-0750 | 0.591 | 0.629 | 1.831 | 2.642 | 2.898 | 1.969 | 0.750 | 0.984 | 3 |
| 52400003 | | PXDZ0630-3D-123.5-0750 | 0.630 | 0.668 | 1.949 | 2.823 | 3.079 | 1.969 | 0.750 | 0.984 | 4 |
| 52400004 | | PXDZ0669-3D-128.5-0750 | 0.669 | 0.708 | 2.067 | 3.024 | 3.280 | 1.969 | 0.750 | 0.984 | 5 |
| 52400005 | | PXDZ0709-3D-138.5-1000 | 0.709 | 0.747 | 2.185 | 3.205 | 3.461 | 2.205 | 1.000 | 1.260 | 6 |
| 52400006 | | PXDZ0748-3D-142.5-1000 | 0.748 | 0.786 | 2.303 | 3.362 | 3.618 | 2.205 | 1.000 | 1.260 | 7 |
| 52400007 | | PXDZ0787-3D-146.5-1000 | 0.787 | 0.826 | 2.421 | 3.547 | 3.803 | 2.205 | 1.000 | 1.260 | 8 |
| 52400008 | | PXDZ0827-3D-154.5-1250 | 0.827 | 0.865 | 2.539 | 3.728 | 3.984 | 2.362 | 1.250 | 1.654 | 9 |
| 52400009 | | PXDZ0866-3D-158.5-1250 | 0.866 | 0.905 | 2.657 | 3.890 | 4.146 | 2.362 | 1.250 | 1.654 | 10 |
| 52400010 | | PXDZ0906-3D-162.5-1250 | 0.906 | 0.944 | 2.775 | 4.071 | 4.327 | 2.362 | 1.250 | 1.654 | 11 |
| 52400011 | | PXDZ0945-3D-167.5-1250 | 0.945 | 0.983 | 2.894 | 4.268 | 4.524 | 2.362 | 1.250 | 1.654 | 12 |
| 52400012 | | PXDZ0984-3D-170.5-1250 | 0.984 | 1.023 | 3.012 | 4.409 | 4.665 | 2.362 | 1.250 | 1.654 | 13 |

Packed: 1 pc.
Note: Driver included with body.



List 52400

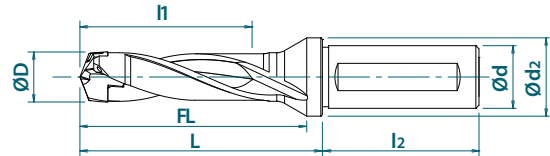
PXD 5D (Inch)



SPEED FEED
P1336



Recommended Materials: p1336
Accessories & Inserts: p1330-1335



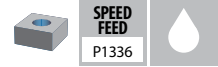
| EDP No. | Body Type | Designation | Drill Dia. (inch) | | Drilling Depth (inch) | Flute Length (inch) | Gage Length (inch) | Shank Length (inch) | Shank Dia. (inch) | Flange Dia. (inch) | Appl. Head |
|----------|-------------------|------------------------|-------------------|-------|-----------------------|---------------------|--------------------|---------------------|-------------------|--------------------|------------|
| | | | D Min | D Max | l1 | FL | L | l2 | d | d2 | |
| 52400100 | Cylindrical Shank | PXDZ0551-5D-141.5-0625 | 0.551 | 0.570 | 2.805 | 3.657 | 3.854 | 1.890 | 0.625 | 0.787 | 1 |
| 52400101 | | PXDZ0571-5D-144.5-0625 | 0.571 | 0.590 | 2.903 | 3.780 | 3.976 | 1.890 | 0.625 | 0.787 | 2 |
| 52400102 | | PXDZ0591-5D-149.5-0750 | 0.591 | 0.629 | 3.051 | 3.823 | 4.079 | 1.969 | 0.750 | 0.984 | 3 |
| 52400103 | | PXDZ0630-5D-155.5-0750 | 0.630 | 0.668 | 3.248 | 4.083 | 4.339 | 1.969 | 0.750 | 0.984 | 4 |
| 52400104 | | PXDZ0669-5D-162.5-0750 | 0.669 | 0.708 | 3.445 | 4.362 | 4.618 | 1.969 | 0.750 | 0.984 | 5 |
| 52400105 | | PXDZ0709-5D-174.5-1000 | 0.709 | 0.747 | 3.642 | 4.622 | 4.878 | 2.205 | 1.000 | 1.260 | 6 |
| 52400106 | | PXDZ0748-5D-180.5-1000 | 0.748 | 0.786 | 3.838 | 4.858 | 5.114 | 2.205 | 1.000 | 1.260 | 7 |
| 52400107 | | PXDZ0787-5D-186.5-1000 | 0.787 | 0.826 | 4.035 | 5.122 | 5.378 | 2.205 | 1.000 | 1.260 | 8 |
| 52400108 | | PXDZ0827-5D-196.5-1250 | 0.827 | 0.865 | 4.232 | 5.382 | 5.638 | 2.362 | 1.250 | 1.654 | 9 |
| 52400109 | | PXDZ0866-5D-202.5-1250 | 0.866 | 0.905 | 4.429 | 5.622 | 5.878 | 2.362 | 1.250 | 1.654 | 10 |
| 52400110 | | PXDZ0906-5D-208.5-1250 | 0.906 | 0.944 | 4.626 | 5.882 | 6.138 | 2.362 | 1.250 | 1.654 | 11 |
| 52400111 | | PXDZ0945-5D-215.5-1250 | 0.945 | 0.983 | 4.823 | 6.157 | 6.413 | 2.362 | 1.250 | 1.654 | 12 |
| 52400112 | | PXDZ0984-5D-220.5-1250 | 0.984 | 1.023 | 5.020 | 6.378 | 6.634 | 2.362 | 1.250 | 1.654 | 13 |

Packed: 1 pc.
Note: Driver included with body.

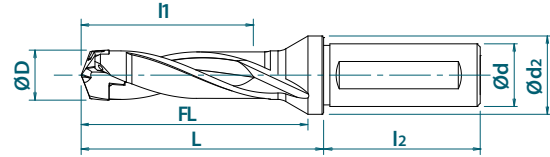


List 78310

PXD 3D (Metric)



Recommended Materials: p1336
Accessories & Inserts: p1330-1335



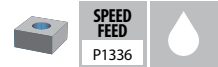
| EDP No. | Body Type | Designation | Drill Dia. (mm) | | Drilling Depth (mm) | Flute Length (mm) | Gage Length (mm) | Shank Length (mm) | Shank Dia. (mm) | Flange Dia. (mm) | Appl. Head |
|----------|-------------------|---------------------|-----------------|-------|---------------------|-------------------|------------------|-------------------|-----------------|------------------|------------|
| | | | D Min | D Max | | | | | | | |
| 48173001 | Cylindrical Shank | PXDZ140-3D-113.5-16 | 14.00 | 14.49 | 43.0 | 63.4 | 69.9 | 48 | 16 | 20 | 1 |
| 48173002 | | PXDZ145-3D-115.5-16 | 14.50 | 14.99 | 44.5 | 65.5 | 72.0 | 48 | 16 | 20 | 2 |
| 48173003 | | PXDZ150-3D-119.5-20 | 15.00 | 15.99 | 46.5 | 67.1 | 73.6 | 50 | 20 | 25 | 3 |
| 48173004 | | PXDZ160-3D-123.5-20 | 16.00 | 16.99 | 49.5 | 71.7 | 78.2 | 50 | 20 | 25 | 4 |
| 48173005 | | PXDZ170-3D-128.5-20 | 17.00 | 17.99 | 52.5 | 76.8 | 83.3 | 50 | 20 | 25 | 5 |
| 48173006 | | PXDZ180-3D-138.5-25 | 18.00 | 18.99 | 55.5 | 81.4 | 87.9 | 56 | 25 | 32 | 6 |
| 48173007 | | PXDZ190-3D-142.5-25 | 19.00 | 19.99 | 58.5 | 85.4 | 91.9 | 56 | 25 | 32 | 7 |
| 48173008 | | PXDZ200-3D-146.5-25 | 20.00 | 20.99 | 61.5 | 90.1 | 96.6 | 56 | 25 | 32 | 8 |
| 48173009 | | PXDZ210-3D-154.5-32 | 21.00 | 21.99 | 64.5 | 94.7 | 101.2 | 60 | 32 | 42 | 9 |
| 48173010 | | PXDZ220-3D-158.5-32 | 22.00 | 22.99 | 67.5 | 98.8 | 105.3 | 60 | 32 | 42 | 10 |
| 48173011 | | PXDZ230-3D-162.5-32 | 23.00 | 23.99 | 70.5 | 103.4 | 109.9 | 60 | 32 | 42 | 11 |
| 48173012 | | PXDZ240-3D-167.5-32 | 24.00 | 24.99 | 73.5 | 108.4 | 114.9 | 60 | 32 | 42 | 12 |
| 48173013 | | PXDZ250-3D-170.5-32 | 25.00 | 25.99 | 76.5 | 112.0 | 118.5 | 60 | 32 | 42 | 13 |

Packed: 1 pc.
Note: Driver included with body.

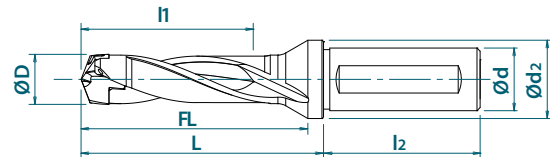


List 78310

PXD 5D (Metric)



Recommended Materials: p1336
Accessories & Inserts: p1330-1335



| EDP No. | Body Type | Designation | Drill Dia. (mm) | | Drilling Depth (mm) | Flute Length (mm) | Gage Length (mm) | Shank Length (mm) | Shank Dia. (mm) | Flange Dia. (mm) | Appl. Head |
|----------|-------------------|---------------------|-----------------|-------|---------------------|-------------------|------------------|-------------------|-----------------|------------------|------------|
| | | | D Min | D Max | | | | | | | |
| 48173014 | Cylindrical Shank | PXDZ140-5D-141.5-16 | 14.00 | 14.49 | 71.2 | 92.9 | 97.9 | 48 | 16 | 20 | 1 |
| 48173015 | | PXDZ145-5D-144.5-16 | 14.50 | 14.99 | 73.7 | 96.0 | 101.0 | 48 | 16 | 20 | 2 |
| 48173016 | | PXDZ150-5D-149.5-20 | 15.00 | 15.99 | 77.5 | 97.1 | 103.6 | 50 | 20 | 25 | 3 |
| 48173017 | | PXDZ160-5D-155.5-20 | 16.00 | 16.99 | 82.5 | 103.7 | 110.2 | 50 | 20 | 25 | 4 |
| 48173018 | | PXDZ170-5D-162.5-20 | 17.00 | 17.99 | 87.5 | 110.8 | 117.3 | 50 | 20 | 25 | 5 |
| 48173019 | | PXDZ180-5D-174.5-25 | 18.00 | 18.99 | 92.5 | 117.4 | 123.9 | 56 | 25 | 32 | 6 |
| 48173020 | | PXDZ190-5D-180.5-25 | 19.00 | 19.99 | 97.5 | 123.4 | 129.9 | 56 | 25 | 32 | 7 |
| 48173021 | | PXDZ200-5D-186.5-25 | 20.00 | 20.99 | 102.5 | 130.1 | 136.6 | 56 | 25 | 32 | 8 |
| 48173022 | | PXDZ210-5D-196.5-32 | 21.00 | 21.99 | 107.5 | 136.7 | 143.2 | 60 | 32 | 42 | 9 |
| 48173023 | | PXDZ220-5D-202.5-32 | 22.00 | 22.99 | 112.5 | 142.8 | 149.3 | 60 | 32 | 42 | 10 |
| 48173024 | | PXDZ230-5D-208.5-32 | 23.00 | 23.99 | 117.5 | 149.4 | 155.9 | 60 | 32 | 42 | 11 |
| 48173025 | | PXDZ240-5D-215.5-32 | 24.00 | 24.99 | 122.5 | 156.4 | 162.9 | 60 | 32 | 42 | 12 |
| 48173026 | | PXDZ250-5D-220.5-32 | 25.00 | 25.99 | 127.5 | 162.0 | 168.5 | 60 | 32 | 42 | 13 |

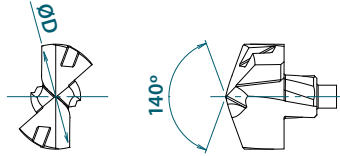
Packed: 1 pc.
Note: Driver included with body.





List 78PXD

PXD Exchangeable Heads (Inch & Metric)



| EDP No. | Type | Designation | Head Diameter (D) | | | Size | Grade |
|----------|-------------|-------------|-------------------|--------|--------|--------|--------|
| | | | Fractional | mm | inch | | |
| 7831140 | PC | PXDH1400-PC | - | 14.00 | 0.5512 | 1 | XP3425 |
| 52401000 | | PXDH5625-PC | 9/16 | 14.29 | 0.5625 | | XP3425 |
| 7831145 | | PXDH1450-PC | - | 14.50 | 0.5709 | 2 | XP3425 |
| 52401014 | | PXDH5781-PC | 37/64 | 14.68 | 0.5781 | | XP3425 |
| 7831351 | | PXDH1495-PC | - | 14.95 | 0.5886 | 3 | XP3425 |
| 7831150 | | PXDH1500-PC | - | 15.00 | 0.5906 | | XP3425 |
| 52401001 | | PXDH5938-PC | 19/32 | 15.08 | 0.5938 | 4 | XP3425 |
| 7831352 | | PXDH1525-PC | - | 15.25 | 0.6004 | | XP3425 |
| 52401015 | | PXDH6094-PC | 39/64 | 15.48 | 0.6094 | 5 | XP3425 |
| 7831155 | | PXDH1550-PC | - | 15.50 | 0.6102 | | XP3425 |
| 52401002 | | PXDH6250-PC | 5/8 | 15.88 | 0.6250 | 6 | XP3425 |
| 7831160 | | PXDH1600-PC | - | 16.00 | 0.6299 | | XP3425 |
| 52401016 | | PXDH6406-PC | 41/64 | 16.27 | 0.6406 | 7 | XP3425 |
| 7831165 | | PXDH1650-PC | - | 16.50 | 0.6496 | | XP3425 |
| 52401003 | | PXDH6563-PC | 21/32 | 16.67 | 0.6563 | 8 | XP3425 |
| 7831167 | | PXDH1670-PC | - | 16.70 | 0.6575 | | XP3425 |
| 7831170 | | PXDH1700-PC | - | 17.00 | 0.6693 | 9 | XP3425 |
| 52401017 | | PXDH6719-PC | 43/64 | 17.07 | 0.6719 | | XP3425 |
| 7831353 | | PXDH1725-PC | - | 17.25 | 0.6791 | 10 | XP3425 |
| 52401004 | | PXDH6875-PC | 11/16 | 17.46 | 0.6875 | | XP3425 |
| 7831175 | | PXDH1750-PC | - | 17.50 | 0.6890 | 11 | XP3425 |
| 52401018 | | PXDH7031-PC | 45/64 | 17.86 | 0.7031 | | XP3425 |
| 7831180 | | PXDH1800-PC | - | 18.00 | 0.7087 | 12 | XP3425 |
| 52401005 | | PXDH7188-PC | 23/32 | 18.26 | 0.7188 | | XP3425 |
| 7831185 | | PXDH1850-PC | - | 18.50 | 0.7283 | 13 | XP3425 |
| 52401019 | | PXDH7344-PC | 47/64 | 18.65 | 0.7344 | | XP3425 |
| 7831187 | | PXDH1870-PC | - | 18.70 | 0.7362 | 14 | XP3425 |
| 7831190 | | PXDH1900-PC | - | 19.00 | 0.7480 | | XP3425 |
| 52401006 | | PXDH7500-PC | 3/4 | 19.05 | 0.7500 | 15 | XP3425 |
| 7831354 | | PXDH1925-PC | - | 19.25 | 0.7579 | | XP3425 |
| 52401020 | | PXDH7656-PC | 49/64 | 19.45 | 0.7656 | 16 | XP3425 |
| 7831195 | | PXDH1950-PC | - | 19.50 | 0.7677 | | XP3425 |
| 52401007 | | PXDH7813-PC | 25/32 | 19.85 | 0.7813 | 17 | XP3425 |
| 7831200 | | PXDH2000-PC | - | 20.00 | 0.7874 | | XP3425 |
| 52401021 | | PXDH7969-PC | 51/64 | 20.24 | 0.7969 | 18 | XP3425 |
| 7831205 | | PXDH2050-PC | - | 20.50 | 0.8071 | | XP3425 |
| 52401008 | | PXDH8125-PC | 13/16 | 20.64 | 0.8125 | 19 | XP3425 |
| 7831207 | | PXDH2070-PC | - | 20.70 | 0.8150 | | XP3425 |
| 7831210 | | PXDH2100-PC | - | 21.00 | 0.8268 | 20 | XP3425 |
| 52401022 | | PXDH8281-PC | 53/64 | 21.03 | 0.8281 | | XP3425 |
| 7831355 | | PXDH2125-PC | - | 21.25 | 0.8366 | 21 | XP3425 |
| 52401009 | | PXDH8438-PC | 27/32 | 21.43 | 0.8438 | | XP3425 |
| 7831215 | PXDH2150-PC | - | 21.50 | 0.8465 | 22 | XP3425 | |
| 52401023 | PXDH8594-PC | 55/64 | 21.83 | 0.8594 | | XP3425 | |
| 7831220 | PXDH2200-PC | - | 22.00 | 0.8661 | 23 | XP3425 | |
| 52401010 | PXDH8750-PC | 7/8 | 22.23 | 0.8750 | | XP3425 | |
| 7831224 | PXDH2240-PC | - | 22.40 | 0.8819 | 24 | XP3425 | |
| 7831225 | PXDH2250-PC | - | 22.50 | 0.8858 | | XP3425 | |
| 52401024 | PXDH8906-PC | 57/64 | 22.62 | 0.8906 | 25 | XP3425 | |

Packed: 1 pc.



List 78PXD (Continued)

PXD Exchangeable Heads (Inch & Metric)

| EDP No. | Type | Designation | Head Diameter (D) | | | Size | Grade |
|----------|------|-------------|-------------------|-------|--------|------|--------|
| | | | Fractional | mm | inch | | |
| 7831230 | PC | PXDH2300-PC | - | 23.00 | 0.9055 | 11 | XP3425 |
| 52401011 | | PXDH9063-PC | 29/32 | 23.02 | 0.9063 | | XP3425 |
| 7831356 | | PXDH2325-PC | - | 23.25 | 0.9154 | | XP3425 |
| 52401025 | | PXDH9219-PC | 59/64 | 23.42 | 0.9219 | | XP3425 |
| 7831235 | | PXDH2350-PC | - | 23.50 | 0.9252 | | XP3425 |
| 52401012 | | PXDH9375-PC | 15/16 | 23.81 | 0.9375 | | XP3425 |
| 7831240 | | PXDH2400-PC | - | 24.00 | 0.9449 | 12 | XP3425 |
| 52401026 | | PXDH9531-PC | 61/64 | 24.21 | 0.9531 | | XP3425 |
| 7831245 | | PXDH2450-PC | - | 24.50 | 0.9646 | | XP3425 |
| 52401013 | | PXDH9688-PC | 31/32 | 24.61 | 0.9688 | | XP3425 |
| 7831250 | | PXDH2500-PC | - | 25.00 | 0.9843 | 13 | XP3425 |
| 52401027 | | PXDH9844-PC | 63/64 | 25.00 | 0.9844 | | XP3425 |
| 7831254 | | PXDH2540-PC | 1 | 25.40 | 1.0000 | | XP3425 |

Packed: 1 pc.



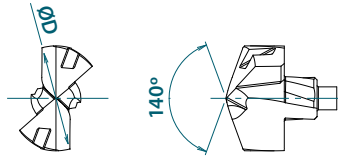
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List 78PXD (Continued)

PXD Exchangeable Heads (Inch & Metric)



| EDP No. | Type | Designation | Head Diameter (D) | | | Size | Grade |
|----------|-------------|-------------|-------------------|--------|--------|--------|--------|
| | | | Fractional | mm | inch | | |
| 7831440 | KC | PXDH1400-KC | - | 14.00 | 0.5512 | 1 | XP1425 |
| 52402000 | | PXDH5625-KC | 9/16 | 14.29 | 0.5625 | 2 | XP1425 |
| 7831445 | | PXDH1450-KC | - | 14.50 | 0.5709 | | XP1425 |
| 52402014 | | PXDH5781-KC | 37/64 | 14.68 | 0.5781 | 3 | XP1425 |
| 7831450 | | PXDH1500-KC | - | 15.00 | 0.5906 | | XP1425 |
| 52402001 | | PXDH5938-KC | 19/32 | 15.08 | 0.5938 | 4 | XP1425 |
| 52402015 | | PXDH6094-KC | 39/64 | 15.48 | 0.6094 | | XP1425 |
| 7831455 | | PXDH1550-KC | - | 15.50 | 0.6102 | 5 | XP1425 |
| 52402002 | | PXDH6250-KC | 5/8 | 15.88 | 0.6250 | | XP1425 |
| 7831460 | | PXDH1600-KC | - | 16.00 | 0.6299 | 6 | XP1425 |
| 52402016 | | PXDH6406-KC | 41/64 | 16.27 | 0.6406 | | XP1425 |
| 7831465 | | PXDH1650-KC | - | 16.50 | 0.6496 | 7 | XP1425 |
| 52402003 | | PXDH6563-KC | 21/32 | 16.67 | 0.6563 | | XP1425 |
| 7831467 | | PXDH1670-KC | - | 16.70 | 0.6575 | 8 | XP1425 |
| 7831470 | | PXDH1700-KC | - | 17.00 | 0.6693 | | XP1425 |
| 52402017 | | PXDH6719-KC | 43/64 | 17.07 | 0.6719 | 9 | XP1425 |
| 52402004 | | PXDH6875-KC | 11/16 | 17.46 | 0.6875 | | XP1425 |
| 7831475 | | PXDH1750-KC | - | 17.50 | 0.6890 | 10 | XP1425 |
| 52402018 | | PXDH7031-KC | 45/64 | 17.86 | 0.7031 | | XP1425 |
| 7831480 | | PXDH1800-KC | - | 18.00 | 0.7087 | 11 | XP1425 |
| 52402005 | | PXDH7188-KC | 23/32 | 18.26 | 0.7188 | | XP1425 |
| 7831485 | | PXDH1850-KC | - | 18.50 | 0.7283 | 12 | XP1425 |
| 52402019 | | PXDH7344-KC | 47/64 | 18.65 | 0.7344 | | XP1425 |
| 7831487 | | PXDH1870-KC | - | 18.70 | 0.7362 | 13 | XP1425 |
| 7831490 | | PXDH1900-KC | - | 19.00 | 0.7480 | | XP1425 |
| 52402006 | | PXDH7500-KC | 3/4 | 19.05 | 0.7500 | 14 | XP1425 |
| 52402020 | | PXDH7656-KC | 49/64 | 19.45 | 0.7656 | | XP1425 |
| 7831495 | | PXDH1950-KC | - | 19.50 | 0.7677 | 15 | XP1425 |
| 52402007 | | PXDH7813-KC | 25/32 | 19.85 | 0.7813 | | XP1425 |
| 7831500 | | PXDH2000-KC | - | 20.00 | 0.7874 | 16 | XP1425 |
| 52402021 | | PXDH7969-KC | 51/64 | 20.24 | 0.7969 | | XP1425 |
| 7831505 | | PXDH2050-KC | - | 20.50 | 0.8071 | 17 | XP1425 |
| 52402008 | | PXDH8125-KC | 13/16 | 20.64 | 0.8125 | | XP1425 |
| 7831507 | | PXDH2070-KC | - | 20.70 | 0.8150 | 18 | XP1425 |
| 7831510 | | PXDH2100-KC | - | 21.00 | 0.8268 | | XP1425 |
| 52402022 | | PXDH8281-KC | 53/64 | 21.03 | 0.8281 | 19 | XP1425 |
| 52402009 | | PXDH8438-KC | 27/32 | 21.43 | 0.8438 | | XP1425 |
| 7831515 | | PXDH2150-KC | - | 21.50 | 0.8465 | 20 | XP1425 |
| 52402023 | | PXDH8594-KC | 55/64 | 21.83 | 0.8594 | | XP1425 |
| 7831520 | | PXDH2200-KC | - | 22.00 | 0.8661 | 21 | XP1425 |
| 52402010 | | PXDH8750-KC | 7/8 | 22.23 | 0.8750 | | XP1425 |
| 7831524 | | PXDH2240-KC | - | 22.40 | 0.8819 | 22 | XP1425 |
| 7831525 | PXDH2250-KC | - | 22.50 | 0.8858 | XP1425 | | |
| 52402024 | PXDH8906-KC | 57/64 | 22.62 | 0.8906 | 23 | XP1425 | |
| 7831530 | PXDH2300-KC | - | 23.00 | 0.9055 | | XP1425 | |
| 52402011 | PXDH9063-KC | 29/32 | 23.02 | 0.9063 | 24 | XP1425 | |
| 52402025 | PXDH9219-KC | 59/64 | 23.42 | 0.9219 | | XP1425 | |
| 7831535 | PXDH2350-KC | - | 23.50 | 0.9252 | 25 | XP1425 | |
| 52402012 | PXDH9375-KC | 15/16 | 23.81 | 0.9375 | | XP1425 | |

Packed: 1 pc.



List 78PXD (Continued)

PXD Exchangeable Heads (Inch & Metric)

| EDP No. | Type | Designation | Head Diameter (D) | | | Size | Grade |
|----------|------|-------------|-------------------|-------|--------|------|--------|
| | | | Fractional | mm | inch | | |
| 7831540 | KC | PXDH2400-KC | - | 24.00 | 0.9449 | 12 | XP1425 |
| 52402026 | | PXDH9531-KC | 61/64 | 24.21 | 0.9531 | | XP1425 |
| 7831545 | | PXDH2450-KC | - | 24.50 | 0.9646 | | XP1425 |
| 52402013 | | PXDH9688-KC | 31/32 | 24.61 | 0.9688 | | XP1425 |
| 7831550 | | PXDH2500-KC | - | 25.00 | 0.9843 | 13 | XP1425 |
| 52402027 | | PXDH9844-KC | 63/64 | 25.00 | 0.9844 | | XP1425 |
| 7831554 | | PXDH2540-KC | 1 | 25.40 | 1.0000 | | XP1425 |

Packed: 1 pc.



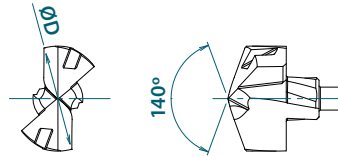
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List 78PXD (Continued)

PXD Exchangeable Heads (Inch & Metric)



| EDP No. | Type | Designation | Head Diameter (D) | | | Size | Grade |
|----------|-------------|-------------|-------------------|--------|--------|-------|-------|
| | | | Fractional | mm | inch | | |
| 7831740 | NC | PXDH1400-NC | - | 14.00 | 0.5512 | 1 | CF225 |
| 52403000 | | PXDH5625-NC | 9/16 | 14.29 | 0.5625 | | CF225 |
| 7831745 | | PXDH1450-NC | - | 14.50 | 0.5709 | 2 | CF225 |
| 52403014 | | PXDH5781-NC | 37/64 | 14.68 | 0.5781 | | CF225 |
| 7831750 | | PXDH1500-NC | - | 15.00 | 0.5906 | 3 | CF225 |
| 52403001 | | PXDH5938-NC | 19/32 | 15.08 | 0.5938 | | CF225 |
| 52403015 | | PXDH6094-NC | 39/64 | 15.48 | 0.6094 | | CF225 |
| 7831755 | | PXDH1550-NC | - | 15.50 | 0.6102 | 4 | CF225 |
| 52403002 | | PXDH6250-NC | 5/8 | 15.88 | 0.6250 | | CF225 |
| 7831760 | | PXDH1600-NC | - | 16.00 | 0.6299 | 5 | CF225 |
| 52403016 | | PXDH6406-NC | 41/64 | 16.27 | 0.6409 | | CF225 |
| 7831765 | | PXDH1650-NC | - | 16.50 | 0.6496 | | CF225 |
| 52403003 | | PXDH6563-NC | 21/32 | 16.67 | 0.6563 | 6 | CF225 |
| 7831767 | | PXDH1670-NC | - | 16.70 | 0.6575 | | CF225 |
| 7831770 | | PXDH1700-NC | - | 17.00 | 0.6693 | 7 | CF225 |
| 52403017 | | PXDH6719-NC | 43/64 | 17.07 | 0.6719 | | CF225 |
| 52403004 | | PXDH6875-NC | 11/16 | 17.46 | 0.6875 | | CF225 |
| 7831775 | | PXDH1750-NC | - | 17.50 | 0.6890 | 8 | CF225 |
| 52403018 | | PXDH7031-NC | 45/64 | 17.86 | 0.7031 | | CF225 |
| 7831780 | | PXDH1800-NC | - | 18.00 | 0.7087 | 9 | CF225 |
| 52403005 | | PXDH7188-NC | 23/32 | 18.26 | 0.7188 | | CF225 |
| 7831785 | | PXDH1850-NC | - | 18.50 | 0.7283 | | CF225 |
| 52403019 | | PXDH7344-NC | 47/64 | 18.65 | 0.7344 | 10 | CF225 |
| 7831787 | | PXDH1870-NC | - | 18.70 | 0.7362 | | CF225 |
| 7831790 | | PXDH1900-NC | - | 19.00 | 0.7480 | 11 | CF225 |
| 52403006 | | PXDH7500-NC | 3/4 | 19.05 | 0.7500 | | CF225 |
| 52403020 | | PXDH7656-NC | 49/64 | 19.45 | 0.7656 | | CF225 |
| 7831795 | | PXDH1950-NC | - | 19.50 | 0.7677 | 12 | CF225 |
| 52403007 | | PXDH7813-NC | 25/32 | 19.85 | 0.7813 | | CF225 |
| 7831800 | | PXDH2000-NC | - | 20.00 | 0.7874 | 13 | CF225 |
| 52403021 | | PXDH7969-NC | 51/64 | 20.24 | 0.7969 | | CF225 |
| 7831805 | | PXDH2050-NC | - | 20.50 | 0.8071 | | CF225 |
| 52403008 | | PXDH8125-NC | 13/16 | 20.64 | 0.8125 | 14 | CF225 |
| 7831807 | | PXDH2070-NC | - | 20.70 | 0.8150 | | CF225 |
| 7831810 | | PXDH2100-NC | - | 21.00 | 0.8268 | 15 | CF225 |
| 52403022 | | PXDH8281-NC | 53/64 | 21.03 | 0.8281 | | CF225 |
| 52403009 | | PXDH8438-NC | 27/32 | 21.43 | 0.8438 | | CF225 |
| 7831815 | | PXDH2150-NC | - | 21.50 | 0.8465 | 16 | CF225 |
| 52403023 | | PXDH8594-NC | 55/64 | 21.83 | 0.8594 | | CF225 |
| 7831820 | | PXDH2200-NC | - | 22.00 | 0.8661 | 17 | CF225 |
| 52403010 | PXDH8750-NC | 7/8 | 22.23 | 0.8750 | CF225 | | |
| 7831824 | PXDH2240-NC | - | 22.40 | 0.8819 | CF225 | | |
| 7831825 | PXDH2250-NC | - | 22.50 | 0.8858 | 18 | CF225 | |
| 52403024 | PXDH8906-NC | 57/64 | 22.62 | 0.8906 | | CF225 | |
| 7831830 | PXDH2300-NC | - | 23.00 | 0.9055 | 19 | CF225 | |
| 52403011 | PXDH9063-NC | 29/32 | 23.02 | 0.9063 | | CF225 | |
| 52403025 | PXDH9219-NC | 59/64 | 23.42 | 0.9219 | | CF225 | |
| 7831835 | PXDH2350-NC | - | 23.50 | 0.9252 | 20 | CF225 | |
| 52403012 | PXDH9375-NC | 15/16 | 23.81 | 0.9375 | | CF225 | |
| 7831840 | PXDH2400-NC | - | 24.00 | 0.9449 | 21 | CF225 | |
| 52403026 | PXDH9531-NC | 61/64 | 24.21 | 0.9531 | | CF225 | |
| 7831845 | PXDH2450-NC | - | 24.50 | 0.9646 | | CF225 | |
| 52403013 | PXDH9688-NC | 31/32 | 24.61 | 0.9688 | 22 | CF225 | |
| 7831850 | PXDH2500-NC | - | 25.00 | 0.9843 | | CF225 | |
| 52403027 | PXDH9844-NC | 63/64 | 25.00 | 0.9844 | 23 | CF225 | |
| 7831854 | PXDH2540-NC | 1 | 25.40 | 1.0000 | | CF225 | |


Packed: 1 pc.





List 7808H

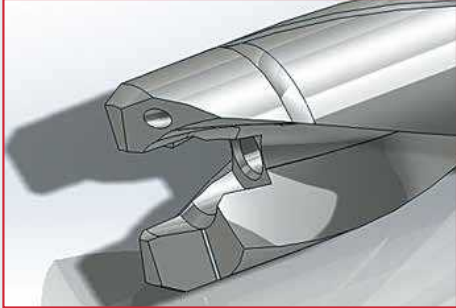
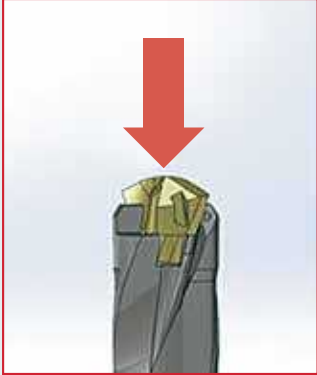


PXD Accessories

| Appearance | EDP No. | Designation | Sheet Thickness (mm) | Applicable Head | | |
|---|---------|---------------|----------------------|-----------------|--------------|------------|
| | | | | Size | (inch) | (mm) |
|  Driver | 7808282 | PXDP1400-1890 | 1.5 | 1-6 | Ø0.551-0.744 | Ø14.0-18.9 |
| | 7808283 | PXDP1900-2299 | 1.8 | 7-10 | Ø0.748-0.901 | Ø19.0-22.9 |
| | 7808284 | PXDP2300-2699 | 2 | 11-13 | Ø0.905-1.059 | Ø23.0-26.9 |

Packed: 1 pc.



» Mounting Procedure

| Step 1 | Step 2 |
|--|---|
|  <p>Clean attachment area with an air nozzle. Any leftover cutting chips may prevent the head from being mounted properly and may cause damage to the tool.</p> |  <p>Manually attach the head.</p> |
| Step 3 | Step 4 |
|  <p>Insert the flat metal portion of the designated driver into the groove of the head. Insert the driver firmly into the groove. If the insertion of the designated driver is too shallow, it could damage the flutes.</p> |  <p>Turn the driver clockwise and mount the head onto the body. Mount it firmly and make sure that there is no gap in the area between the head and the body.</p> |





Cutting Conditions

| Work Material | Mild Steel Low Carbon Steel | | Carbon Steel | | Alloy Steel | | Cast Iron | | Ductile Cast Iron | | Aluminum Alloy Casting | |
|--------------------|--------------------------------|------------------|----------------|------------------|----------------|------------------|----------------|------------------|-------------------|------------------|---------------------------|------------------|
| Speed | 265 - 395 SFM | | 265 - 395 SFM | | 195 - 395 SFM | | 265 - 395 SFM | | 195 - 325 SFM | | 265 - 590 SFM | |
| Drill Dia. (mm) | Speed (RPM) | Feed (in/rev) | Speed (RPM) | Feed (in/rev) | Speed (RPM) | Feed (in/rev) | Speed (RPM) | Feed (in/rev) | Speed (RPM) | Feed (in/rev) | Speed (RPM) | Feed (in/rev) |
| 14 | 2300 | 0.008 - 0.014 | 2300 | 0.008 - 0.014 | 2000 | 0.008 - 0.014 | 2300 | 0.008 - 0.014 | 1800 | 0.008 - 0.014 | 3000 | 0.011 - 0.016 |
| 15 | 2100 | 0.009 - 0.015 | 2100 | 0.009 - 0.015 | 1900 | 0.009 - 0.015 | 2100 | 0.009 - 0.015 | 1700 | 0.009 - 0.015 | 2800 | 0.012 - 0.018 |
| 16 | 2000 | 0.009 - 0.016 | 2000 | 0.009 - 0.016 | 1800 | 0.009 - 0.016 | 2000 | 0.009 - 0.016 | 1600 | 0.009 - 0.016 | 2600 | 0.012 - 0.019 |
| 17 | 1900 | 0.010 - 0.017 | 1900 | 0.010 - 0.017 | 1700 | 0.010 - 0.017 | 1900 | 0.010 - 0.017 | 1500 | 0.010 - 0.017 | 2400 | 0.013 - 0.020 |
| 18 | 1800 | 0.010 - 0.018 | 1800 | 0.010 - 0.018 | 1600 | 0.010 - 0.018 | 1800 | 0.010 - 0.018 | 1400 | 0.010 - 0.018 | 2300 | 0.014 - 0.021 |
| 19 | 1700 | 0.011 - 0.019 | 1700 | 0.011 - 0.019 | 1500 | 0.011 - 0.019 | 1700 | 0.011 - 0.019 | 1300 | 0.011 - 0.019 | 2200 | 0.015 - 0.022 |
| 20 | 1600 | 0.012 - 0.020 | 1600 | 0.012 - 0.020 | 1400 | 0.012 - 0.020 | 1600 | 0.012 - 0.020 | 1300 | 0.012 - 0.020 | 2100 | 0.016 - 0.024 |
| 21 | 1500 | 0.012 - 0.021 | 1500 | 0.012 - 0.021 | 1400 | 0.012 - 0.021 | 1500 | 0.012 - 0.021 | 1200 | 0.012 - 0.021 | 2000 | 0.016 - 0.025 |
| 22 | 1400 | 0.013 - 0.022 | 1400 | 0.013 - 0.022 | 1300 | 0.013 - 0.022 | 1400 | 0.013 - 0.022 | 1200 | 0.013 - 0.022 | 1900 | 0.017 - 0.026 |
| 23 | 1400 | 0.014 - 0.023 | 1400 | 0.014 - 0.023 | 1200 | 0.014 - 0.023 | 1400 | 0.014 - 0.023 | 1100 | 0.014 - 0.023 | 1800 | 0.018 - 0.027 |
| 24 | 1300 | 0.014 - 0.024 | 1300 | 0.014 - 0.024 | 1200 | 0.014 - 0.024 | 1300 | 0.014 - 0.024 | 1100 | 0.014 - 0.024 | 1700 | 0.019 - 0.028 |
| 25 | 1300 | 0.015 - 0.025 | 1300 | 0.015 - 0.025 | 1100 | 0.015 - 0.025 | 1300 | 0.015 - 0.025 | 1000 | 0.015 - 0.025 | 1700 | 0.020 - 0.029 |

Recommended Materials by Application

| Insert Grade | Type | Coolant | Carbon Steel | Alloy Steel | Hardened Steel (Up to 35 HRC) | Cast Iron Ductile Cast Iron | Aluminum Alloy Casting | Copper Alloy |
|--------------|------|---------|-------------------------------------|--------------------------|----------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| XP3425 | PC | Yes | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| XP1425 | KC | Yes | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| CF225 | NC | Yes | | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

good best





List 52502

P2D (Inch)

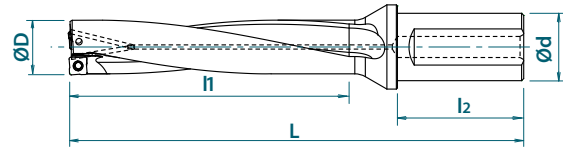
NEW SIZES



SPEED FEED
P1355



Recommended Materials: p1357
Accessories & Inserts: p1353-1354



| EDP No. | Body Type | Designation | Drill Dia. (inch) | Drilling Depth (inch) | Overall Length (inch) | Shank Dia. (inch) | Shank Length (inch) | Applicable Insert |
|----------|-----------------|-----------------|-------------------|-----------------------|-----------------------|-------------------|---------------------|-------------------|
| | | | D | l1 | L | d | l2 | |
| 52502063 | Flat Shank | P2D0484FS075A03 | 0.4844 | 0.969 | 3.844 | 0.750 | 1.969 | XCMT03... |
| 52502064 | | P2D0500FS075A03 | 0.5000 | 1.000 | 3.875 | 0.750 | 1.969 | |
| 52502065 | | P2D0516FS075A03 | 0.5156 | 1.031 | 3.906 | 0.750 | 1.969 | |
| 52502066 | | P2D0531FS075A03 | 0.5313 | 1.063 | 3.938 | 0.750 | 1.969 | |
| 52502067 | | P2D0547FS075A03 | 0.5469 | 1.094 | 3.969 | 0.750 | 1.969 | |
| 52502068 | | P2D0563FS075A03 | 0.5625 | 1.125 | 4.000 | 0.750 | 1.969 | |
| 52502069 | | P2D0578FS075A03 | 0.5781 | 1.156 | 4.031 | 0.750 | 1.969 | XCMT04... |
| 52502026 | | P2D0594FS075A04 | 0.5938 | 1.188 | 4.063 | 0.750 | 1.969 | |
| 52502027 | | P2D0609FS075A04 | 0.6094 | 1.219 | 4.094 | 0.750 | 1.969 | |
| 52502008 | | P2D0625FS075A04 | 0.6250 | 1.250 | 4.125 | 0.750 | 1.969 | |
| 52502028 | | P2D0641FS075A04 | 0.6406 | 1.281 | 4.156 | 0.750 | 1.969 | |
| 52502009 | | P2D0656FS075A04 | 0.6563 | 1.313 | 4.187 | 0.750 | 1.969 | |
| 52502029 | | P2D0672FS075A05 | 0.6719 | 1.344 | 4.219 | 0.750 | 1.969 | XCMT05... |
| 52502010 | | P2D0688FS075A05 | 0.6875 | 1.375 | 4.250 | 0.750 | 1.969 | |
| 52502030 | | P2D0703FS075A05 | 0.7031 | 1.406 | 4.281 | 0.750 | 1.969 | |
| 52502031 | | P2D0719FS100A05 | 0.7188 | 1.438 | 4.549 | 1.000 | 2.205 | |
| 52502032 | | P2D0734FS100A05 | 0.7344 | 1.469 | 4.580 | 1.000 | 2.205 | |
| 52502011 | | P2D0750FS100A06 | 0.7500 | 1.500 | 4.611 | 1.000 | 2.205 | |
| 52502033 | | P2D0766FS100A06 | 0.7656 | 1.531 | 4.642 | 1.000 | 2.205 | |
| 52502034 | | P2D0781FS100A06 | 0.7813 | 1.563 | 4.674 | 1.000 | 2.205 | |
| 52502035 | | P2D0797FS100A06 | 0.7969 | 1.594 | 4.705 | 1.000 | 2.205 | |
| 52502012 | | P2D0812FS100A06 | 0.8125 | 1.625 | 4.736 | 1.000 | 2.205 | |
| 52502036 | | P2D0828FS100A07 | 0.8281 | 1.656 | 4.767 | 1.000 | 2.205 | XCMT07... |
| 52502037 | | P2D0844FS100A07 | 0.8439 | 1.688 | 4.799 | 1.000 | 2.205 | |
| 52502038 | | P2D0859FS100A07 | 0.8594 | 1.719 | 4.830 | 1.000 | 2.205 | |
| 52502000 | | P2D0875FS100A07 | 0.8750 | 1.750 | 4.861 | 1.000 | 2.205 | |
| 52502039 | | P2D0891FS100A07 | 0.8906 | 1.781 | 4.892 | 1.000 | 2.205 | |
| 52502040 | | P2D0906FS100A07 | 0.9063 | 1.813 | 4.924 | 1.000 | 2.205 | |
| 52502041 | | P2D0922FS100A07 | 0.9219 | 1.844 | 4.955 | 1.000 | 2.205 | |
| 52502001 | | P2D0937FS125A07 | 0.9375 | 1.875 | 5.143 | 1.250 | 2.362 | |
| 52502042 | | P2D0953FS125A07 | 0.9531 | 1.906 | 5.174 | 1.250 | 2.362 | |
| 52502043 | | P2D0969FS125A07 | 0.9688 | 1.938 | 5.206 | 1.250 | 2.362 | |
| 52502044 | | P2D0984FS125A08 | 0.9844 | 1.969 | 5.237 | 1.250 | 2.362 | XCMT09... |
| 52502002 | | P2D1000FS125A08 | 1.0000 | 2.000 | 5.268 | 1.250 | 2.362 | |
| 52502045 | | P2D1031FS125A08 | 1.0313 | 2.063 | 5.331 | 1.250 | 2.362 | |
| 52502003 | | P2D1062FS125A08 | 1.0625 | 2.125 | 5.393 | 1.250 | 2.362 | |
| 52502046 | | P2D1094FS125A08 | 1.0938 | 2.188 | 5.456 | 1.250 | 2.362 | |
| 52502004 | | P2D1125FS125A08 | 1.1250 | 2.250 | 5.518 | 1.250 | 2.362 | |
| 52502047 | | P2D1156FS125A09 | 1.1563 | 2.313 | 5.581 | 1.250 | 2.362 | |
| 52502005 | | P2D1187FS125A09 | 1.1875 | 2.375 | 5.643 | 1.250 | 2.362 | |
| 52502048 | | P2D1219FS125A09 | 1.2188 | 2.438 | 5.706 | 1.250 | 2.362 | |
| 52502006 | | P2D1250FS125A09 | 1.2500 | 2.500 | 5.768 | 1.250 | 2.362 | |
| 52502049 | P2D1281FS150A09 | 1.2813 | 2.563 | 6.225 | 1.500 | 2.756 | | |
| 52502007 | P2D1312FS150A09 | 1.3125 | 2.625 | 6.287 | 1.500 | 2.756 | | |

Packed: 1 pc.

continued on next page



List 52502 (Continued)

P2D (Inch)

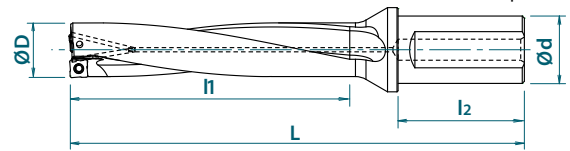
NEW SIZES



SPEED FEED
P1355



Recommended Materials: p1357
Accessories & Inserts: p1353-1354



| EDP No. | Body Type | Designation | Drill Dia. (inch) | Drilling Depth (inch) | Overall Length (inch) | Shank Dia. (inch) | Shank Length (Inch) | Applicable Insert |
|----------|------------|-----------------|-------------------|-----------------------|-----------------------|-------------------|---------------------|-------------------|
| | | | D | l1 | L | d | l2 | |
| 52502050 | Flat Shank | P2D1344FS150A10 | 1.3438 | 2.688 | 6.350 | 1.500 | 2.756 | XCMT10... |
| 52502013 | | P2D1375FS150A10 | 1.3750 | 2.750 | 6.412 | 1.500 | 2.756 | |
| 52502051 | | P2D1406FS150A10 | 1.4063 | 2.813 | 6.475 | 1.500 | 2.756 | |
| 52502014 | | P2D1437FS150A10 | 1.4375 | 2.875 | 6.537 | 1.500 | 2.756 | |
| 52502052 | | P2D1469FS150A10 | 1.4688 | 2.938 | 6.600 | 1.500 | 2.756 | |
| 52502015 | | P2D1500FS150A10 | 1.5000 | 3.000 | 6.662 | 1.500 | 2.756 | |
| 52502053 | | P2D1531FS150A10 | 1.5313 | 3.063 | 6.725 | 1.500 | 2.756 | |
| 52502016 | | P2D1563FS150A12 | 1.5625 | 3.125 | 6.787 | 1.500 | 2.756 | |
| 52502054 | | P2D1594FS150A12 | 1.5938 | 3.188 | 6.850 | 1.500 | 2.756 | |
| 52502017 | | P2D1625FS150A12 | 1.6250 | 3.250 | 6.912 | 1.500 | 2.756 | |
| 52502055 | | P2D1656FS150A12 | 1.6563 | 3.313 | 6.975 | 1.500 | 2.756 | |
| 52502018 | | P2D1688FS150A12 | 1.6875 | 3.375 | 7.037 | 1.500 | 2.756 | |
| 52502056 | | P2D1719FS150A12 | 1.7188 | 3.438 | 7.100 | 1.500 | 2.756 | |
| 52502019 | | P2D1750FS150A12 | 1.7500 | 3.500 | 7.162 | 1.500 | 2.756 | |
| 52502057 | | P2D1781FS150A13 | 1.7813 | 3.563 | 7.225 | 1.500 | 2.756 | |
| 52502058 | | P2D1813FS150A13 | 1.8125 | 3.625 | 7.287 | 1.500 | 2.756 | |
| 52502059 | | P2D1844FS150A13 | 1.8438 | 3.688 | 7.350 | 1.500 | 2.756 | |
| 52502020 | | P2D1875FS150A13 | 1.8750 | 3.750 | 7.412 | 1.500 | 2.756 | |
| 52502060 | | P2D1906FS150A13 | 1.9063 | 3.813 | 7.475 | 1.500 | 2.756 | |
| 52502061 | | P2D1938FS150A13 | 1.9375 | 3.875 | 7.537 | 1.500 | 2.756 | |
| 52502062 | | P2D1969FS150A14 | 1.9688 | 3.938 | 7.600 | 1.500 | 2.756 | |
| 52502021 | | P2D2000FS150A14 | 2.0000 | 4.000 | 7.664 | 1.500 | 2.756 | |
| 52502022 | | P2D2125FS150A14 | 2.1250 | 4.250 | 7.912 | 1.500 | 2.756 | |
| 52502023 | | P2D2250FS150A16 | 2.2500 | 4.500 | 8.162 | 1.500 | 2.756 | |
| 52502024 | | P2D2375FS150A16 | 2.3750 | 4.750 | 8.412 | 1.500 | 2.756 | |
| 52502025 | | P2D2500FS150A16 | 2.5000 | 5.000 | 8.662 | 1.500 | 2.756 | |

Packed: 1 pc.



List 78031

P2D (Metric)

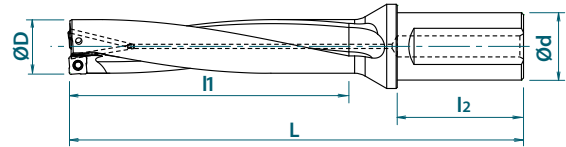
NEW SIZES



SPEED FEED
P1355



Recommended Materials: p1357
Accessories & Inserts: p1353-1354



| EDP No. | Body Type | Designation | Drill Dia. (mm) | Drilling Depth (mm) | Overall Length (mm) | Shank Dia. (mm) | Shank Length (mm) | Applicable Insert |
|---------|----------------|----------------|-----------------|---------------------|---------------------|-----------------|-------------------|-------------------|
| | | | D | l1 | L | d | l2 | |
| 7803180 | Flat Shank | P2D1200FS20M03 | 12.0 | 24 | 89 | 20 | 50 | XCMT03... |
| 7803181 | | P2D1250FS20M03 | 12.5 | 25 | 90 | 20 | 50 | |
| 7803182 | | P2D1300FS20M03 | 13.0 | 26 | 91 | 20 | 50 | |
| 7803183 | | P2D1350FS20M03 | 13.5 | 27 | 92 | 20 | 50 | |
| 7803184 | | P2D1400FS20M03 | 14.0 | 28 | 93 | 20 | 50 | |
| 7803185 | | P2D1450FS20M03 | 14.5 | 29 | 94 | 20 | 50 | |
| 7803117 | | P2D1500FS20M04 | 15.0 | 30 | 95 | 20 | 50 | XCMT04... |
| 7803118 | | P2D1550FS20M04 | 15.5 | 31 | 96 | 20 | 50 | |
| 7803119 | | P2D1600FS20M04 | 16.0 | 32 | 97 | 20 | 50 | |
| 7803120 | | P2D1650FS20M04 | 16.5 | 33 | 98 | 20 | 50 | |
| 7803121 | | P2D1700FS20M05 | 17.0 | 34 | 102 | 20 | 50 | |
| 7803122 | | P2D1750FS20M05 | 17.5 | 35 | 103 | 20 | 50 | |
| 7803190 | | P2D1750FS25M05 | 17.5 | 35 | 109 | 25 | 56 | XCMT05... |
| 7803123 | | P2D1800FS25M05 | 18.0 | 36 | 110 | 25 | 56 | |
| 7803124 | | P2D1850FS25M05 | 18.5 | 37 | 111 | 25 | 56 | |
| 7803125 | | P2D1900FS25M06 | 19.0 | 38 | 112 | 25 | 56 | |
| 7803126 | | P2D1950FS25M06 | 19.5 | 39 | 113 | 25 | 56 | |
| 7803127 | | P2D2000FS25M06 | 20.0 | 40 | 114 | 25 | 56 | |
| 7803128 | | P2D2050FS25M06 | 20.5 | 41 | 115 | 25 | 56 | XCMT06... |
| 7803129 | | P2D2100FS25M07 | 21.0 | 42 | 121 | 25 | 56 | |
| 7803130 | | P2D2150FS25M07 | 21.5 | 43 | 122 | 25 | 56 | |
| 7803131 | | P2D2200FS25M07 | 22.0 | 44 | 123 | 25 | 56 | |
| 7803132 | | P2D2250FS25M07 | 22.5 | 45 | 124 | 25 | 56 | |
| 7803133 | | P2D2300FS25M07 | 23.0 | 46 | 125 | 25 | 56 | |
| 7803191 | | P2D2350FS25M07 | 23.5 | 47 | 126 | 25 | 56 | XCMT07... |
| 7803134 | | P2D2350FS32M07 | 23.5 | 47 | 130 | 32 | 60 | |
| 7803192 | | P2D2400FS25M07 | 24.0 | 48 | 127 | 25 | 56 | |
| 7803135 | | P2D2400FS32M07 | 24.0 | 48 | 131 | 32 | 60 | |
| 7803193 | | P2D2450FS25M07 | 24.5 | 49 | 128 | 25 | 56 | |
| 7803136 | | P2D2450FS32M07 | 24.5 | 49 | 132 | 32 | 60 | |
| 7803194 | | P2D2500FS25M08 | 25.0 | 50 | 129 | 25 | 56 | XCMT08... |
| 7803137 | | P2D2500FS32M08 | 25.0 | 50 | 133 | 32 | 60 | |
| 7803195 | | P2D2550FS25M08 | 25.5 | 51 | 130 | 25 | 56 | |
| 7803138 | | P2D2550FS32M08 | 25.5 | 51 | 134 | 32 | 60 | |
| 7803139 | | P2D2600FS32M08 | 26.0 | 52 | 135 | 32 | 60 | |
| 7803140 | | P2D2650FS32M08 | 26.5 | 53 | 136 | 32 | 60 | |
| 7803141 | | P2D2700FS32M08 | 27.0 | 54 | 137 | 32 | 60 | XCMT09... |
| 7803142 | | P2D2800FS32M08 | 28.0 | 56 | 139 | 32 | 60 | |
| 7803143 | | P2D2850FS32M08 | 28.5 | 57 | 140 | 32 | 60 | |
| 7803144 | | P2D2900FS32M09 | 29.0 | 58 | 141 | 32 | 60 | |
| 7803145 | | P2D3000FS32M09 | 30.0 | 60 | 143 | 32 | 60 | |
| 7803146 | | P2D3100FS32M09 | 31.0 | 62 | 145 | 32 | 60 | |
| 7803196 | P2D3100FS40M09 | 31.0 | 62 | 155 | 40 | 70 | | |
| 7803147 | P2D3200FS32M09 | 32.0 | 64 | 147 | 32 | 60 | | |
| 7803197 | P2D3200FS40M09 | 32.0 | 64 | 157 | 40 | 70 | | |
| 7803148 | P2D3300FS40M09 | 33.0 | 66 | 159 | 40 | 70 | | |
| 7803149 | P2D3350FS40M09 | 33.5 | 67 | 160 | 40 | 70 | | |

Packed: 1 pc.

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List 78031 (Continued)

P2D (Metric)

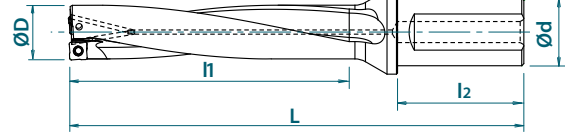
NEW SIZES



SPEED FEED
P1355



Recommended Materials: p1357
Accessories & Inserts: p1353-1354



| EDP No. | Body Type | Designation | Drill Dia. (mm) | Drilling Depth (mm) | Overall Length (mm) | Shank Dia. (mm) | Shank Length (mm) | Applicable Insert |
|---------|------------|----------------|--------------------|------------------------|------------------------|--------------------|----------------------|-------------------|
| | | | D | l1 | L | d | l2 | |
| 7803150 | Flat Shank | P2D3400FS40M10 | 34.0 | 68 | 161 | 40 | 70 | XCMT10... |
| 7803151 | | P2D3500FS40M10 | 35.0 | 70 | 163 | 40 | 70 | |
| 7803152 | | P2D3600FS40M10 | 36.0 | 72 | 165 | 40 | 70 | |
| 7803153 | | P2D3700FS40M10 | 37.0 | 74 | 167 | 40 | 70 | |
| 7803154 | | P2D3800FS40M10 | 38.0 | 76 | 169 | 40 | 70 | |
| 7803155 | | P2D3900FS40M12 | 39.0 | 78 | 178 | 40 | 70 | XCMT12... |
| 7803156 | | P2D4000FS40M12 | 40.0 | 80 | 180 | 40 | 70 | |
| 7803157 | | P2D4100FS40M12 | 41.0 | 82 | 182 | 40 | 70 | |
| 7803158 | | P2D4200FS40M12 | 42.0 | 84 | 184 | 40 | 70 | |
| 7803159 | | P2D4300FS40M12 | 43.0 | 86 | 186 | 40 | 70 | |
| 7803160 | | P2D4400FS40M12 | 44.0 | 88 | 188 | 40 | 70 | |
| 7803161 | | P2D4500FS40M13 | 45.0 | 90 | 190 | 40 | 70 | |
| 7803162 | | P2D4600FS40M13 | 46.0 | 92 | 192 | 40 | 70 | |
| 7803163 | | P2D4700FS40M13 | 47.0 | 94 | 194 | 40 | 70 | XCMT13... |
| 7803164 | | P2D4800FS40M13 | 48.0 | 96 | 196 | 40 | 70 | |
| 7803165 | | P2D4900FS40M13 | 49.0 | 98 | 198 | 40 | 70 | |
| 7803166 | | P2D5000FS40M14 | 50.0 | 100 | 200 | 40 | 70 | |
| 7803167 | | P2D5100FS40M14 | 51.0 | 102 | 202 | 40 | 70 | |
| 7803168 | | P2D5200FS40M14 | 52.0 | 104 | 204 | 40 | 70 | |
| 7803169 | | P2D5300FS40M14 | 53.0 | 106 | 206 | 40 | 70 | XCMT14... |
| 7803170 | | P2D5400FS40M14 | 54.0 | 108 | 208 | 40 | 70 | |
| 7803171 | | P2D5500FS40M14 | 55.0 | 110 | 210 | 40 | 70 | |
| 7803172 | | P2D5600FS40M14 | 56.0 | 112 | 212 | 40 | 70 | |
| 7803173 | | P2D5700FS40M16 | 57.0 | 114 | 214 | 40 | 70 | |
| 7803174 | | P2D5800FS40M16 | 58.0 | 116 | 216 | 40 | 70 | |
| 7803175 | | P2D5900FS40M16 | 59.0 | 118 | 218 | 40 | 70 | |
| 7803176 | | P2D6000FS40M16 | 60.0 | 120 | 220 | 40 | 70 | XCMT16... |
| 7803177 | | P2D6100FS40M16 | 61.0 | 122 | 222 | 40 | 70 | |
| 7803178 | | P2D6200FS40M16 | 62.0 | 124 | 224 | 40 | 70 | |
| 7803179 | | P2D6300FS40M16 | 63.0 | 126 | 226 | 40 | 70 | |

Packed: 1 pc.





List 52503

P3D (Inch)

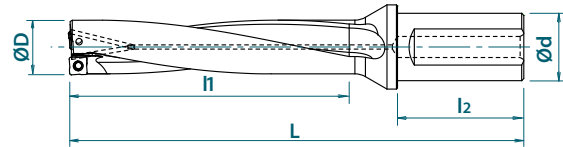
NEW SIZES



SPEED FEED
P1355



Recommended Materials: p1357
Accessories & Inserts: p1353-1354



| EDP No. | Body Type | Designation | Drill Dia. (inch) | Drilling Depth (inch) | Overall Length (inch) | Shank Dia. (inch) | Shank Length (inch) | Applicable Insert |
|----------|-----------------|-----------------|-------------------|-----------------------|-----------------------|-------------------|---------------------|-------------------|
| | | | D | l1 | L | d | l2 | |
| 52503063 | Flat Shank | P3D0484FS075A03 | 0.4844 | 1.453 | 4.328 | 0.750 | 1.969 | XCMT03... |
| 52503064 | | P3D0500FS075A03 | 0.5000 | 1.500 | 4.375 | 0.750 | 1.969 | |
| 52503065 | | P3D0516FS075A03 | 0.5156 | 1.547 | 4.422 | 0.750 | 1.969 | |
| 52503066 | | P3D0531FS075A03 | 0.5313 | 1.594 | 4.469 | 0.750 | 1.969 | |
| 52503067 | | P3D0547FS075A03 | 0.5469 | 1.641 | 4.516 | 0.750 | 1.969 | |
| 52503068 | | P3D0563FS075A03 | 0.5625 | 1.688 | 4.563 | 0.750 | 1.969 | |
| 52503069 | | P3D0578FS075A03 | 0.5781 | 1.734 | 4.609 | 0.750 | 1.969 | XCMT04... |
| 52503026 | | P3D0594FS075A04 | 0.5938 | 1.781 | 4.656 | 0.750 | 1.969 | |
| 52503027 | | P3D0609FS075A04 | 0.6094 | 1.828 | 4.703 | 0.750 | 1.969 | |
| 52503008 | | P3D0625FS075A04 | 0.6250 | 1.875 | 4.750 | 0.750 | 1.969 | |
| 52503028 | | P3D0641FS075A04 | 0.6406 | 1.922 | 4.797 | 0.750 | 1.969 | |
| 52503009 | | P3D0656FS075A04 | 0.6563 | 1.969 | 4.843 | 0.750 | 1.969 | |
| 52503029 | | P3D0672FS075A05 | 0.6719 | 2.016 | 4.891 | 0.750 | 1.969 | XCMT05... |
| 52503010 | | P3D0688FS075A05 | 0.6875 | 2.063 | 4.937 | 0.750 | 1.969 | |
| 52503030 | | P3D0703FS075A05 | 0.7031 | 2.109 | 4.984 | 0.750 | 1.969 | |
| 52503031 | | P3D0719FS100A05 | 0.7188 | 2.156 | 5.267 | 1.000 | 2.205 | |
| 52503032 | | P3D0734FS100A05 | 0.7344 | 2.203 | 5.314 | 1.000 | 2.205 | |
| 52503011 | | P3D0750FS100A06 | 0.7500 | 2.250 | 5.361 | 1.000 | 2.205 | |
| 52503033 | | P3D0766FS100A06 | 0.7656 | 2.297 | 5.408 | 1.000 | 2.205 | XCMT06... |
| 52503034 | | P3D0781FS100A06 | 0.7813 | 2.344 | 5.455 | 1.000 | 2.205 | |
| 52503035 | | P3D0797FS100A06 | 0.7969 | 2.391 | 5.502 | 1.000 | 2.205 | |
| 52503012 | | P3D0812FS100A06 | 0.8125 | 2.438 | 5.548 | 1.000 | 2.205 | |
| 52503036 | | P3D0828FS100A07 | 0.8281 | 2.484 | 5.595 | 1.000 | 2.205 | |
| 52503037 | | P3D0844FS100A07 | 0.8438 | 2.531 | 5.642 | 1.000 | 2.205 | |
| 52503038 | | P3D0859FS100A07 | 0.8594 | 2.578 | 5.689 | 1.000 | 2.205 | XCMT07... |
| 52503000 | | P3D0875FS100A07 | 0.8750 | 2.625 | 5.736 | 1.000 | 2.205 | |
| 52503039 | | P3D0891FS100A07 | 0.8906 | 2.672 | 5.783 | 1.000 | 2.205 | |
| 52503040 | | P3D0906FS100A07 | 0.9063 | 2.719 | 5.830 | 1.000 | 2.205 | |
| 52503041 | | P3D0922FS100A07 | 0.9219 | 2.766 | 5.877 | 1.000 | 2.205 | |
| 52503001 | | P3D0937FS125A07 | 0.9375 | 2.813 | 6.080 | 1.250 | 2.362 | |
| 52503042 | | P3D0953FS125A07 | 0.9531 | 2.859 | 6.127 | 1.250 | 2.362 | XCMT08... |
| 52503043 | | P3D0969FS125A07 | 0.9688 | 2.906 | 6.174 | 1.250 | 2.362 | |
| 52503044 | | P3D0984FS125A08 | 0.9844 | 2.953 | 6.221 | 1.250 | 2.362 | |
| 52503002 | | P3D1000FS125A08 | 1.0000 | 3.000 | 6.268 | 1.250 | 2.362 | |
| 52503045 | | P3D1031FS125A08 | 1.0313 | 3.094 | 6.362 | 1.250 | 2.362 | |
| 52503003 | | P3D1062FS125A08 | 1.0625 | 3.188 | 6.455 | 1.250 | 2.362 | |
| 52503046 | | P3D1094FS125A08 | 1.0938 | 3.281 | 6.549 | 1.250 | 2.362 | XCMT09... |
| 52503004 | | P3D1125FS125A08 | 1.1250 | 3.375 | 6.643 | 1.250 | 2.362 | |
| 52503047 | | P3D1156FS125A09 | 1.1563 | 3.469 | 6.737 | 1.250 | 2.362 | |
| 52503005 | | P3D1187FS125A09 | 1.1875 | 3.563 | 6.830 | 1.250 | 2.362 | |
| 52503048 | P3D1219FS125A09 | 1.2188 | 3.656 | 6.924 | 1.250 | 2.362 | | |
| 52503006 | P3D1250FS125A09 | 1.2500 | 3.750 | 7.018 | 1.250 | 2.362 | | |
| 52503049 | P3D1281FS150A09 | 1.2813 | 3.844 | 7.506 | 1.500 | 2.756 | XCMT09... | |
| 52503007 | P3D1312FS150A09 | 1.3125 | 3.938 | 7.599 | 1.500 | 2.756 | | |

Packed: 1 pc.

continued on next page



List 52503 (Continued)

P3D (Inch)

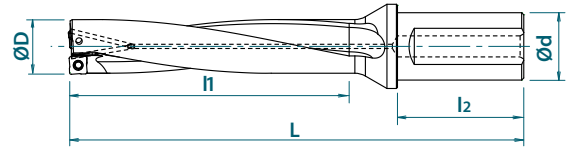
NEW SIZES



SPEED FEED
P1355



Recommended Materials: p1357
Accessories & Inserts: p1353-1354



| EDP No. | Body Type | Designation | Drill Dia. (inch) | Drilling Depth (inch) | Overall Length (inch) | Shank Dia. (inch) | Shank Length (inch) | Applicable Insert |
|----------|-----------------|-----------------|----------------------|--------------------------|--------------------------|----------------------|------------------------|-------------------|
| | | | D | l1 | L | d | l2 | |
| 52503050 | Flat Shank | P3D1344FS150A10 | 1.3438 | 4.031 | 7.693 | 1.500 | 2.756 | XCMT10... |
| 52503013 | | P3D1375FS150A10 | 1.3750 | 4.125 | 7.787 | 1.500 | 2.756 | |
| 52503051 | | P3D1406FS150A10 | 1.4063 | 4.219 | 7.881 | 1.500 | 2.756 | |
| 52503014 | | P3D1437FS150A10 | 1.4375 | 4.313 | 7.974 | 1.500 | 2.756 | |
| 52503052 | | P3D1469FS150A10 | 1.4688 | 4.406 | 8.068 | 1.500 | 2.756 | |
| 52503015 | | P3D1500FS150A10 | 1.5000 | 4.500 | 8.162 | 1.500 | 2.756 | XCMT12... |
| 52503053 | | P3D1531FS150A10 | 1.5313 | 4.594 | 8.256 | 1.500 | 2.756 | |
| 52503016 | | P3D1563FS150A12 | 1.5625 | 4.688 | 8.349 | 1.500 | 2.756 | |
| 52503054 | | P3D1594FS150A12 | 1.5938 | 4.781 | 8.443 | 1.500 | 2.756 | |
| 52503017 | | P3D1625FS150A12 | 1.6250 | 4.875 | 8.537 | 1.500 | 2.756 | |
| 52503055 | | P3D1656FS150A12 | 1.6563 | 4.969 | 8.631 | 1.500 | 2.756 | XCMT13... |
| 52503018 | | P3D1688FS150A12 | 1.6875 | 5.063 | 8.724 | 1.500 | 2.756 | |
| 52503056 | | P3D1719FS150A12 | 1.7188 | 5.156 | 8.818 | 1.500 | 2.756 | |
| 52503019 | | P3D1750FS150A12 | 1.7500 | 5.250 | 8.912 | 1.500 | 2.756 | |
| 52503057 | | P3D1781FS150A13 | 1.7813 | 5.344 | 9.006 | 1.500 | 2.756 | |
| 52503058 | | P3D1813FS150A13 | 1.8125 | 5.438 | 9.100 | 1.500 | 2.756 | XCMT14... |
| 52503059 | | P3D1844FS150A13 | 1.8438 | 5.531 | 9.193 | 1.500 | 2.756 | |
| 52503020 | | P3D1875FS150A13 | 1.8750 | 5.625 | 9.287 | 1.500 | 2.756 | |
| 52503060 | | P3D1906FS150A13 | 1.9063 | 5.719 | 9.381 | 1.500 | 2.756 | |
| 52503061 | | P3D1938FS150A13 | 1.9375 | 5.813 | 9.475 | 1.500 | 2.756 | |
| 52503062 | | P3D1969FS150A14 | 1.9688 | 5.906 | 9.568 | 1.500 | 2.756 | |
| 52503021 | | P3D2000FS150A14 | 2.0000 | 6.000 | 9.662 | 1.500 | 2.756 | |
| 52503022 | | P3D2125FS150A14 | 2.1250 | 6.375 | 10.037 | 1.500 | 2.756 | |
| 52503023 | | P3D2250FS150A16 | 2.2500 | 6.750 | 10.412 | 1.500 | 2.756 | |
| 52503024 | | P3D2375FS150A16 | 2.3750 | 7.125 | 10.787 | 1.500 | 2.756 | |
| 52503025 | P3D2500FS150A16 | 2.5000 | 7.500 | 11.162 | 1.500 | 2.756 | | |

Packed: 1 pc.





List 78032

P3D (Metric)

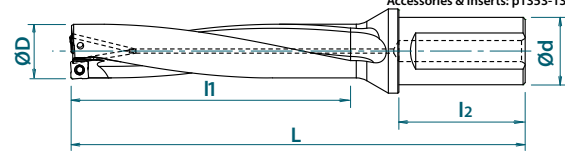
NEW SIZES



SPEED FEED
P1355



Recommended Materials: p1357
Accessories & Inserts: p1353-1354



| EDP No. | Body Type | Designation | Drill Dia. (mm) | Drilling Depth (mm) | Overall Length (mm) | Shank Dia. (mm) | Shank Length (mm) | Applicable Insert |
|---------|------------|----------------|-----------------|---------------------|---------------------|-----------------|-------------------|-------------------|
| | | | D | l1 | L | d | l2 | |
| 7803210 | Flat Shank | P3D1200FS20M03 | 12.0 | 36 | 101 | 20 | 50 | XCMT03... |
| 7803211 | | P3D1250FS20M03 | 12.5 | 37.5 | 102.5 | 20 | 50 | |
| 7803212 | | P3D1270FS20M03 | 12.7 | 38.1 | 103.1 | 20 | 50 | |
| 7803213 | | P3D1300FS20M03 | 13.0 | 39 | 104 | 20 | 50 | |
| 7803214 | | P3D1350FS20M03 | 13.5 | 40.5 | 105.5 | 20 | 50 | |
| 7803215 | | P3D1400FS20M03 | 14.0 | 42 | 107 | 20 | 50 | |
| 7803216 | | P3D1450FS20M03 | 14.5 | 43.5 | 108.5 | 20 | 50 | XCMT04... |
| 7803217 | | P3D1500FS20M04 | 15.0 | 45 | 110 | 20 | 50 | |
| 7803218 | | P3D1550FS20M04 | 15.5 | 47 | 112 | 20 | 50 | |
| 7803219 | | P3D1600FS20M04 | 16.0 | 48 | 113 | 20 | 50 | |
| 7803220 | | P3D1650FS20M04 | 16.5 | 50 | 115 | 20 | 50 | |
| 7803221 | | P3D1700FS20M05 | 17.0 | 51 | 119 | 20 | 50 | |
| 7803222 | | P3D1750FS20M05 | 17.5 | 53 | 121 | 20 | 50 | XCMT05... |
| 7803290 | | P3D1750FS25M05 | 17.5 | 53 | 127 | 25 | 56 | |
| 7803223 | | P3D1800FS25M05 | 18.0 | 54 | 128 | 25 | 56 | |
| 7803224 | | P3D1850FS25M05 | 18.5 | 56 | 130 | 25 | 56 | |
| 7803225 | | P3D1900FS25M06 | 19.0 | 57 | 131 | 25 | 56 | |
| 7803226 | | P3D1950FS25M06 | 19.5 | 59 | 133 | 25 | 56 | |
| 7803227 | | P3D2000FS25M06 | 20.0 | 60 | 134 | 25 | 56 | |
| 7803228 | | P3D2050FS25M06 | 20.5 | 62 | 136 | 25 | 56 | |
| 7803229 | | P3D2100FS25M07 | 21.0 | 63 | 142 | 25 | 56 | |
| 7803230 | | P3D2150FS25M07 | 21.5 | 65 | 144 | 25 | 56 | |
| 7803231 | | P3D2200FS25M07 | 22.0 | 66 | 145 | 25 | 56 | XCMT07... |
| 7803232 | | P3D2250FS25M07 | 22.5 | 68 | 147 | 25 | 56 | |
| 7803233 | | P3D2300FS25M07 | 23.0 | 69 | 148 | 25 | 56 | |
| 7803291 | | P3D2350FS25M07 | 23.5 | 71 | 150 | 25 | 56 | |
| 7803234 | | P3D2350FS32M07 | 23.5 | 71 | 154 | 32 | 60 | |
| 7803292 | | P3D2400FS25M07 | 24.0 | 72 | 151 | 25 | 56 | |
| 7803235 | | P3D2400FS32M07 | 24.0 | 72 | 155 | 32 | 60 | |
| 7803293 | | P3D2450FS25M07 | 24.5 | 74 | 153 | 25 | 56 | |
| 7803236 | | P3D2450FS32M07 | 24.5 | 74 | 157 | 32 | 60 | |
| 7803294 | | P3D2500FS25M08 | 25.0 | 75 | 154 | 25 | 56 | |
| 7803237 | | P3D2500FS32M08 | 25.0 | 75 | 158 | 32 | 60 | |
| 7803295 | | P3D2550FS25M08 | 25.5 | 77 | 156 | 25 | 56 | |
| 7803238 | | P3D2550FS32M08 | 25.5 | 77 | 160 | 32 | 60 | |
| 7803239 | | P3D2600FS32M08 | 26.0 | 78 | 161 | 32 | 60 | |
| 7803240 | | P3D2650FS32M08 | 26.5 | 80 | 163 | 32 | 60 | |
| 7803241 | | P3D2700FS32M08 | 27.0 | 81 | 164 | 32 | 60 | |
| 7803300 | | P3D2750FS32M08 | 27.5 | 83 | 166 | 32 | 60 | |
| 7803242 | | P3D2800FS32M08 | 28.0 | 84 | 167 | 32 | 60 | |
| 7803243 | | P3D2850FS32M08 | 28.5 | 86 | 169 | 32 | 60 | |

Packed: 1 pc.

continued on next page





List 78032 (Continued)

P3D (Metric)

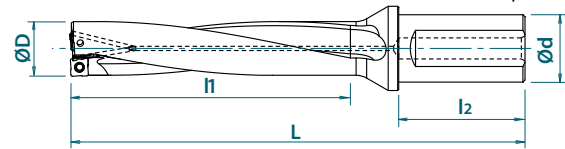
NEW SIZES



SPEED FEED
P1355



Recommended Materials: p1357
Accessories & Inserts: p1353-1354



| EDP No. | Body Type | Designation | Drill Dia. (mm) | Drilling Depth (mm) | Overall Length (mm) | Shank Dia. (mm) | Shank Length (mm) | Applicable Insert |
|---------|----------------|----------------|-----------------|---------------------|---------------------|-----------------|-------------------|-------------------|
| | | | D | l1 | L | d | l2 | |
| 7803244 | Flat Shank | P3D2900FS32M09 | 29.0 | 87 | 170 | 32 | 60 | XCMT09... |
| 7803301 | | P3D2950FS32M09 | 29.5 | 89 | 172 | 32 | 60 | |
| 7803245 | | P3D3000FS32M09 | 30.0 | 90 | 173 | 32 | 60 | |
| 7803302 | | P3D3050FS32M09 | 30.5 | 92 | 175 | 32 | 60 | |
| 7803246 | | P3D3100FS32M09 | 31.0 | 93 | 176 | 32 | 60 | |
| 7803296 | | P3D3100FS40M09 | 31.0 | 93 | 186 | 40 | 70 | |
| 7803303 | | P3D3150FS32M09 | 31.5 | 95 | 178 | 32 | 60 | |
| 7803247 | | P3D3200FS32M09 | 32.0 | 96 | 179 | 32 | 60 | |
| 7803297 | | P3D3200FS40M09 | 32.0 | 96 | 189 | 40 | 70 | |
| 7803304 | | P3D3250FS40M09 | 32.5 | 98 | 191 | 40 | 70 | |
| 7803248 | | P3D3300FS40M09 | 33.0 | 99 | 192 | 40 | 70 | |
| 7803249 | | P3D3350FS40M09 | 33.5 | 101 | 194 | 40 | 70 | |
| 7803250 | | P3D3400FS40M10 | 34.0 | 102 | 195 | 40 | 70 | |
| 7803305 | | P3D3450FS40M10 | 34.5 | 104 | 197 | 40 | 70 | |
| 7803251 | | P3D3500FS40M10 | 35.0 | 105 | 198 | 40 | 70 | |
| 7803306 | | P3D3550FS40M10 | 35.5 | 107 | 200 | 40 | 70 | |
| 7803252 | | P3D3600FS40M10 | 36.0 | 108 | 201 | 40 | 70 | |
| 7803253 | | P3D3700FS40M10 | 37.0 | 111 | 204 | 40 | 70 | |
| 7803307 | | P3D3750FS40M10 | 37.5 | 113 | 206 | 40 | 70 | |
| 7803254 | | P3D3800FS40M10 | 38.0 | 114 | 207 | 40 | 70 | |
| 7803255 | | P3D3900FS40M12 | 39.0 | 117 | 217 | 40 | 70 | |
| 7803256 | | P3D4000FS40M12 | 40.0 | 120 | 220 | 40 | 70 | |
| 7803308 | | P3D4050FS40M12 | 40.5 | 122 | 222 | 40 | 70 | |
| 7803257 | | P3D4100FS40M12 | 41.0 | 123 | 223 | 40 | 70 | |
| 7803258 | | P3D4200FS40M12 | 42.0 | 126 | 226 | 40 | 70 | |
| 7803259 | | P3D4300FS40M12 | 43.0 | 129 | 229 | 40 | 70 | |
| 7803260 | | P3D4400FS40M12 | 44.0 | 132 | 232 | 40 | 70 | |
| 7803261 | | P3D4500FS40M13 | 45.0 | 135 | 235 | 40 | 70 | |
| 7803262 | | P3D4600FS40M13 | 46.0 | 138 | 238 | 40 | 70 | |
| 7803263 | | P3D4700FS40M13 | 47.0 | 141 | 241 | 40 | 70 | |
| 7803264 | | P3D4800FS40M13 | 48.0 | 144 | 244 | 40 | 70 | |
| 7803265 | | P3D4900FS40M13 | 49.0 | 147 | 247 | 40 | 70 | |
| 7803266 | | P3D5000FS40M14 | 50.0 | 150 | 250 | 40 | 70 | |
| 7803309 | | P3D5050FS40M14 | 50.5 | 152 | 252 | 40 | 70 | |
| 7803267 | | P3D5100FS40M14 | 51.0 | 153 | 253 | 40 | 70 | |
| 7803268 | | P3D5200FS40M14 | 52.0 | 156 | 256 | 40 | 70 | |
| 7803269 | | P3D5300FS40M14 | 53.0 | 159 | 259 | 40 | 70 | |
| 7803270 | | P3D5400FS40M14 | 54.0 | 162 | 262 | 40 | 70 | |
| 7803271 | | P3D5500FS40M14 | 55.0 | 165 | 265 | 40 | 70 | |
| 7803272 | | P3D5600FS40M14 | 56.0 | 168 | 268 | 40 | 70 | |
| 7803273 | P3D5700FS40M16 | 57.0 | 171 | 271 | 40 | 70 | | |
| 7803274 | P3D5800FS40M16 | 58.0 | 174 | 274 | 40 | 70 | | |
| 7803275 | P3D5900FS40M16 | 59.0 | 177 | 277 | 40 | 70 | | |
| 7803276 | P3D6000FS40M16 | 60.0 | 180 | 280 | 40 | 70 | | |
| 7803277 | P3D6100FS40M16 | 61.0 | 183 | 283 | 40 | 70 | | |
| 7803278 | P3D6200FS40M16 | 62.0 | 186 | 286 | 40 | 70 | | |
| 7803279 | P3D6300FS40M16 | 63.0 | 189 | 289 | 40 | 70 | | |

Packed: 1 pc.





List 52504

P4D (Inch)

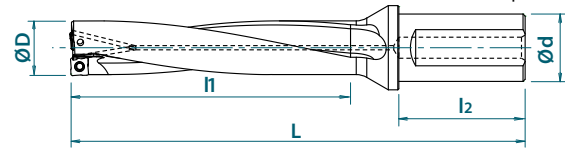
NEW SIZES



SPEED FEED
P1356



Recommended Materials: p1357
Accessories & Inserts: p1353-1354



| EDP No. | Body Type | Designation | Drill Dia. (inch) | Drilling Depth (inch) | Overall Length (inch) | Shank Dia. (inch) | Shank Length (inch) | Applicable Insert |
|----------|------------|-----------------|-------------------|-----------------------|-----------------------|-------------------|---------------------|-------------------|
| | | | D | l1 | L | d | l2 | |
| 52504063 | Flat Shank | P4D0484FS075A03 | 0.4844 | 1.938 | 4.813 | 0.750 | 1.969 | XCMT03... |
| 52504064 | | P4D0500FS075A03 | 0.5000 | 2.000 | 4.875 | 0.750 | 1.969 | |
| 52504065 | | P4D0516FS075A03 | 0.5156 | 2.063 | 4.938 | 0.750 | 1.969 | |
| 52504066 | | P4D0531FS075A03 | 0.5313 | 2.125 | 5.000 | 0.750 | 1.969 | |
| 52504067 | | P4D0547FS075A03 | 0.5469 | 2.188 | 5.063 | 0.750 | 1.969 | |
| 52504068 | | P4D0563FS075A03 | 0.5625 | 2.250 | 5.125 | 0.750 | 1.969 | |
| 52504069 | | P4D0578FS075A03 | 0.5781 | 2.313 | 5.188 | 0.750 | 1.969 | |
| 52504026 | | P4D0594FS075A04 | 0.5938 | 2.375 | 5.250 | 0.750 | 1.969 | XCMT04... |
| 52504027 | | P4D0609FS075A04 | 0.6094 | 2.438 | 5.313 | 0.750 | 1.969 | |
| 52504008 | | P4D0625FS075A04 | 0.6250 | 2.500 | 5.375 | 0.750 | 1.969 | |
| 52504028 | | P4D0641FS075A04 | 0.6406 | 2.563 | 5.438 | 0.750 | 1.969 | |
| 52504009 | | P4D0656FS075A04 | 0.6563 | 2.625 | 5.500 | 0.750 | 1.969 | |
| 52504029 | | P4D0672FS075A05 | 0.6719 | 2.688 | 5.563 | 0.750 | 1.969 | XCMT05... |
| 52504010 | | P4D0688FS075A05 | 0.6875 | 2.750 | 5.625 | 0.750 | 1.969 | |
| 52504030 | | P4D0703FS075A05 | 0.7031 | 2.813 | 5.688 | 0.750 | 1.969 | |
| 52504031 | | P4D0719FS100A05 | 0.7188 | 2.875 | 5.986 | 1.000 | 2.205 | XCMT06... |
| 52504032 | | P4D0734FS100A05 | 0.7344 | 2.938 | 6.049 | 1.000 | 2.205 | |
| 52504011 | | P4D0750FS100A06 | 0.7500 | 3.000 | 6.111 | 1.000 | 2.205 | |
| 52504033 | | P4D0766FS100A06 | 0.7656 | 3.063 | 6.174 | 1.000 | 2.205 | XCMT07... |
| 52504034 | | P4D0781FS100A06 | 0.7813 | 3.125 | 6.236 | 1.000 | 2.205 | |
| 52504035 | | P4D0797FS100A06 | 0.7969 | 3.188 | 6.299 | 1.000 | 2.205 | |
| 52504012 | | P4D0812FS100A06 | 0.8125 | 3.250 | 6.361 | 1.000 | 2.205 | |
| 52504036 | | P4D0828FS100A07 | 0.8281 | 3.313 | 6.424 | 1.000 | 2.205 | |
| 52504037 | | P4D0844FS100A07 | 0.8438 | 3.375 | 6.486 | 1.000 | 2.205 | |
| 52504038 | | P4D0859FS100A07 | 0.8594 | 3.438 | 6.549 | 1.000 | 2.205 | |
| 52504000 | | P4D0875FS100A07 | 0.8750 | 3.500 | 6.611 | 1.000 | 2.205 | XCMT08... |
| 52504039 | | P4D0891FS100A07 | 0.8906 | 3.563 | 6.674 | 1.000 | 2.205 | |
| 52504040 | | P4D0906FS100A07 | 0.9063 | 3.625 | 6.736 | 1.000 | 2.205 | |
| 52504041 | | P4D0922FS100A07 | 0.9219 | 3.688 | 6.799 | 1.000 | 2.205 | XCMT09... |
| 52504001 | | P4D0937FS125A07 | 0.9375 | 3.750 | 7.018 | 1.250 | 2.362 | |
| 52504042 | | P4D0953FS125A07 | 0.9531 | 3.813 | 7.081 | 1.250 | 2.362 | |
| 52504043 | | P4D0969FS125A07 | 0.9688 | 3.875 | 7.143 | 1.250 | 2.362 | |
| 52504044 | | P4D0984FS125A08 | 0.9844 | 3.938 | 7.206 | 1.250 | 2.362 | |
| 52504002 | | P4D1000FS125A08 | 1.0000 | 4.000 | 7.268 | 1.250 | 2.362 | |
| 52504045 | | P4D1031FS125A08 | 1.0313 | 4.125 | 7.393 | 1.250 | 2.362 | |
| 52504003 | | P4D1062FS125A08 | 1.0625 | 4.250 | 7.518 | 1.250 | 2.362 | XCMT09... |
| 52504046 | | P4D1094FS125A08 | 1.0938 | 4.375 | 7.643 | 1.250 | 2.362 | |
| 52504004 | | P4D1125FS125A08 | 1.1250 | 4.500 | 7.768 | 1.250 | 2.362 | |
| 52504047 | | P4D1156FS125A09 | 1.1563 | 4.625 | 7.893 | 1.250 | 2.362 | XCMT09... |
| 52504005 | | P4D1187FS125A09 | 1.1875 | 4.750 | 8.018 | 1.250 | 2.362 | |
| 52504048 | | P4D1219FS125A09 | 1.2188 | 4.875 | 8.143 | 1.250 | 2.362 | |
| 52504006 | | P4D1250FS125A09 | 1.2500 | 5.000 | 8.268 | 1.250 | 2.362 | |
| 52504049 | | P4D1281FS150A09 | 1.2813 | 5.125 | 8.787 | 1.500 | 2.756 | |
| 52504007 | | P4D1312FS150A09 | 1.3125 | 5.250 | 8.912 | 1.500 | 2.756 | |

Packed: 1 pc.

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List 52504 (Continued)

P4D (Inch)

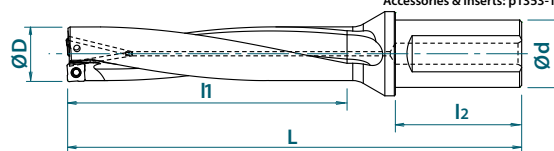
NEW SIZES



SPEED FEED
P1356



Recommended Materials: p1357
Accessories & Inserts: p1353-1354



| EDP No. | Body Type | Designation | Drill Dia. (inch) | Drilling Depth (inch) | Overall Length (inch) | Shank Dia. (inch) | Shank Length (inch) | Applicable Insert |
|----------|------------|-----------------|-------------------|-----------------------|-----------------------|-------------------|---------------------|-------------------|
| | | | D | l1 | L | d | l2 | |
| 52504050 | Flat Shank | P4D1344FS150A10 | 1.3438 | 5.375 | 9.037 | 1.500 | 2.756 | XCMT10... |
| 52504013 | | P4D1375FS150A10 | 1.3750 | 5.500 | 9.162 | 1.500 | 2.756 | |
| 52504051 | | P4D1406FS150A10 | 1.4063 | 5.625 | 9.287 | 1.500 | 2.756 | |
| 52504014 | | P4D1437FS150A10 | 1.4375 | 5.750 | 9.412 | 1.500 | 2.756 | |
| 52504052 | | P4D1469FS150A10 | 1.4688 | 5.875 | 9.537 | 1.500 | 2.756 | |
| 52504015 | | P4D1500FS150A10 | 1.5000 | 6.000 | 9.662 | 1.500 | 2.756 | |
| 52504053 | | P4D1531FS150A10 | 1.5313 | 6.125 | 9.787 | 1.500 | 2.756 | |
| 52504016 | | P4D1563FS150A12 | 1.5625 | 6.250 | 9.912 | 1.500 | 2.756 | XCMT12... |
| 52504054 | | P4D1594FS150A12 | 1.5938 | 6.375 | 10.037 | 1.500 | 2.756 | |
| 52504017 | | P4D1625FS150A12 | 1.6250 | 6.500 | 10.162 | 1.500 | 2.756 | |
| 52504055 | | P4D1656FS150A12 | 1.6563 | 6.625 | 10.287 | 1.500 | 2.756 | |
| 52504018 | | P4D1688FS150A12 | 1.6875 | 6.750 | 10.412 | 1.500 | 2.756 | |
| 52504056 | | P4D1719FS150A12 | 1.7188 | 6.875 | 10.537 | 1.500 | 2.756 | |
| 52504019 | | P4D1750FS150A12 | 1.7500 | 7.000 | 10.662 | 1.500 | 2.756 | |
| 52504057 | | P4D1781FS150A13 | 1.7813 | 7.125 | 10.787 | 1.500 | 2.756 | XCMT13... |
| 52504058 | | P4D1813FS150A13 | 1.8125 | 7.250 | 10.912 | 1.500 | 2.756 | |
| 52504059 | | P4D1844FS150A13 | 1.8438 | 7.375 | 11.037 | 1.500 | 2.756 | |
| 52504020 | | P4D1875FS150A13 | 1.8750 | 7.500 | 11.162 | 1.500 | 2.756 | |
| 52504060 | | P4D1906FS150A13 | 1.9063 | 7.625 | 11.287 | 1.500 | 2.756 | |
| 52504061 | | P4D1938FS150A13 | 1.9375 | 7.750 | 11.412 | 1.500 | 2.756 | |
| 52504062 | | P4D1969FS150A14 | 1.9688 | 7.875 | 11.537 | 1.500 | 2.756 | |
| 52504021 | | P4D2000FS150A14 | 2.0000 | 8.000 | 11.662 | 1.500 | 2.756 | |
| 52504022 | | P4D2125FS150A14 | 2.1250 | 8.500 | 12.162 | 1.500 | 2.756 | |
| 52504023 | | P4D2250FS150A16 | 2.2500 | 9.000 | 12.662 | 1.500 | 2.756 | XCMT16... |
| 52504024 | | P4D2375FS150A16 | 2.3750 | 9.500 | 13.162 | 1.500 | 2.756 | |
| 52504025 | | P4D2500FS150A16 | 2.5000 | 10.000 | 13.662 | 1.500 | 2.756 | |

Packed: 1 pc.





List 78033

P4D (Metric)

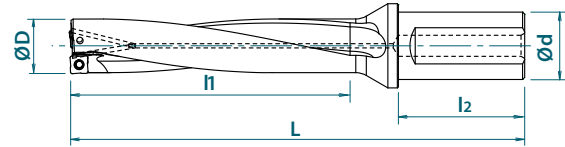
NEW SIZES



SPEED FEED
P1356



Recommended Materials: p1357
Accessories & Inserts: p1353-1354



| EDP No. | Body Type | Designation | Drill Dia. (mm) | Drilling Depth (mm) | Overall Length (mm) | Shank Dia. (mm) | Shank Length (mm) | Applicable Insert |
|---------|----------------|----------------|-----------------|---------------------|---------------------|-----------------|-------------------|-------------------|
| | | | D | l1 | L | d | l2 | |
| 7803311 | Flat Shank | P4D1200FS20M03 | 12.0 | 48 | 113 | 20 | 50 | XCMT03... |
| 7803312 | | P4D1250FS20M03 | 12.5 | 50 | 115 | 20 | 50 | |
| 7803313 | | P4D1300FS20M03 | 13.0 | 52 | 117 | 20 | 50 | |
| 7803314 | | P4D1350FS20M03 | 13.5 | 54 | 119 | 20 | 50 | |
| 7803315 | | P4D1400FS20M03 | 14.0 | 56 | 121 | 20 | 50 | |
| 7803316 | | P4D1450FS20M03 | 14.5 | 58 | 123 | 20 | 50 | |
| 7803317 | | P4D1500FS20M04 | 15.0 | 60 | 135 | 20 | 50 | XCMT04... |
| 7803318 | | P4D1550FS20M04 | 15.5 | 62 | 127 | 20 | 50 | |
| 7803319 | | P4D1600FS20M04 | 16.0 | 64 | 129 | 20 | 50 | |
| 7803320 | | P4D1650FS20M04 | 16.5 | 66 | 131 | 20 | 50 | |
| 7803321 | | P4D1700FS20M05 | 17.0 | 68 | 136 | 20 | 50 | |
| 7803322 | | P4D1750FS20M05 | 17.5 | 70 | 138 | 20 | 50 | |
| 7803390 | | P4D1750FS25M05 | 17.5 | 70 | 144 | 25 | 56 | XCMT05... |
| 7803323 | | P4D1800FS25M05 | 18.0 | 72 | 146 | 25 | 56 | |
| 7803324 | | P4D1850FS25M05 | 18.5 | 74 | 148 | 25 | 56 | |
| 7803325 | | P4D1900FS25M06 | 19.0 | 76 | 150 | 25 | 56 | |
| 7803326 | | P4D1950FS25M06 | 19.5 | 78 | 152 | 25 | 56 | |
| 7803327 | | P4D2000FS25M06 | 20.0 | 80 | 154 | 25 | 56 | |
| 7803328 | | P4D2050FS25M06 | 20.5 | 82 | 156 | 25 | 56 | XCMT06... |
| 7803329 | | P4D2100FS25M07 | 21.0 | 84 | 163 | 25 | 56 | |
| 7803330 | | P4D2150FS25M07 | 21.5 | 86 | 165 | 25 | 56 | |
| 7803331 | | P4D2200FS25M07 | 22.0 | 88 | 167 | 25 | 56 | |
| 7803332 | | P4D2250FS25M07 | 22.5 | 90 | 169 | 25 | 56 | |
| 7803333 | | P4D2300FS25M07 | 23.0 | 92 | 171 | 25 | 56 | |
| 7803391 | | P4D2350FS25M07 | 23.5 | 94 | 173 | 25 | 56 | XCMT07... |
| 7803334 | | P4D2350FS32M07 | 23.5 | 94 | 177 | 32 | 60 | |
| 7803392 | | P4D2400FS25M07 | 24.0 | 96 | 175 | 25 | 56 | |
| 7803335 | | P4D2400FS32M07 | 24.0 | 96 | 179 | 32 | 60 | |
| 7803393 | | P4D2450FS25M07 | 24.5 | 98 | 177 | 25 | 56 | |
| 7803336 | | P4D2450FS32M07 | 24.5 | 98 | 181 | 32 | 60 | |
| 7803394 | | P4D2500FS25M08 | 25.0 | 100 | 179 | 25 | 56 | XCMT08... |
| 7803337 | | P4D2500FS32M08 | 25.0 | 100 | 183 | 32 | 60 | |
| 7803395 | | P4D2550FS25M08 | 25.5 | 102 | 181 | 25 | 56 | |
| 7803338 | | P4D2550FS32M08 | 25.5 | 102 | 185 | 32 | 60 | |
| 7803339 | | P4D2600FS32M08 | 26.0 | 104 | 187 | 32 | 60 | |
| 7803340 | | P4D2650FS32M08 | 26.5 | 106 | 189 | 32 | 60 | |
| 7803341 | | P4D2700FS32M08 | 27.0 | 108 | 191 | 32 | 60 | XCMT09... |
| 7803342 | | P4D2800FS32M08 | 28.0 | 112 | 195 | 32 | 60 | |
| 7803343 | | P4D2850FS32M08 | 28.5 | 114 | 197 | 32 | 60 | |
| 7803344 | | P4D2900FS32M09 | 29.0 | 116 | 199 | 32 | 60 | |
| 7803345 | | P4D3000FS32M09 | 30.0 | 120 | 203 | 32 | 60 | |
| 7803346 | | P4D3100FS32M09 | 31.0 | 124 | 207 | 32 | 60 | |
| 7803396 | P4D3100FS40M09 | 31.0 | 124 | 217 | 40 | 70 | | |
| 7803347 | P4D3200FS32M09 | 32.0 | 128 | 211 | 32 | 60 | | |
| 7803397 | P4D3200FS40M09 | 32.0 | 128 | 221 | 40 | 70 | | |
| 7803348 | P4D3300FS40M09 | 33.0 | 132 | 225 | 40 | 70 | | |
| 7803349 | P4D3350FS40M09 | 33.5 | 134 | 227 | 40 | 70 | | |

Packed: 1 pc.

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List 78033 (Continued)

P4D (Metric)

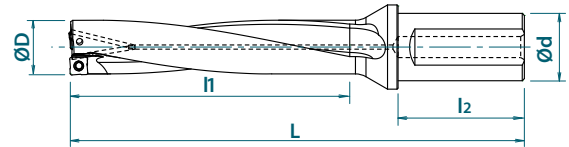
NEW SIZES



SPEED FEED
P1356



Recommended Materials: p1357
Accessories & Inserts: p1353-1354



| EDP No. | Body Type | Designation | Drill Dia. (mm) | Drilling Depth (mm) | Overall Length (mm) | Shank Dia. (mm) | Shank Length (mm) | Applicable Insert |
|---------|------------|----------------|-----------------|---------------------|---------------------|-----------------|-------------------|-------------------|
| | | | D | l1 | L | d | l2 | |
| 7803350 | Flat Shank | P4D3400FS40M10 | 34.0 | 136 | 229 | 40 | 70 | XCMT10... |
| 7803351 | | P4D3500FS40M10 | 35.0 | 140 | 233 | 40 | 70 | |
| 7803352 | | P4D3600FS40M10 | 36.0 | 144 | 237 | 40 | 70 | |
| 7803353 | | P4D3700FS40M10 | 37.0 | 148 | 241 | 40 | 70 | |
| 7803354 | | P4D3800FS40M10 | 38.0 | 152 | 245 | 40 | 70 | |
| 7803355 | | P4D3900FS40M12 | 39.0 | 156 | 256 | 40 | 70 | |
| 7803356 | | P4D4000FS40M12 | 40.0 | 160 | 260 | 40 | 70 | |
| 7803357 | | P4D4100FS40M12 | 41.0 | 164 | 264 | 40 | 70 | |
| 7803358 | | P4D4200FS40M12 | 42.0 | 168 | 268 | 40 | 70 | |
| 7803359 | | P4D4300FS40M12 | 43.0 | 172 | 272 | 40 | 70 | |
| 7803360 | | P4D4400FS40M12 | 44.0 | 176 | 276 | 40 | 70 | |
| 7803361 | | P4D4500FS40M13 | 45.0 | 180 | 280 | 40 | 70 | |
| 7803362 | | P4D4600FS40M13 | 46.0 | 184 | 284 | 40 | 70 | |
| 7803363 | | P4D4700FS40M13 | 47.0 | 188 | 288 | 40 | 70 | |
| 7803364 | | P4D4800FS40M13 | 48.0 | 192 | 292 | 40 | 70 | |
| 7803365 | | P4D4900FS40M13 | 49.0 | 196 | 296 | 40 | 70 | |
| 7803366 | | P4D5000FS40M14 | 50.0 | 200 | 300 | 40 | 70 | |
| 7803367 | | P4D5100FS40M14 | 51.0 | 204 | 304 | 40 | 70 | |
| 7803368 | | P4D5200FS40M14 | 52.0 | 208 | 308 | 40 | 70 | |
| 7803369 | | P4D5300FS40M14 | 53.0 | 212 | 312 | 40 | 70 | |
| 7803370 | | P4D5400FS40M14 | 54.0 | 216 | 316 | 40 | 70 | |
| 7803371 | | P4D5500FS40M14 | 55.0 | 220 | 320 | 40 | 70 | |
| 7803372 | | P4D5600FS40M14 | 56.0 | 224 | 324 | 40 | 70 | |
| 7803373 | | P4D5700FS40M16 | 57.0 | 228 | 328 | 40 | 70 | |
| 7803374 | | P4D5800FS40M16 | 58.0 | 232 | 332 | 40 | 70 | |
| 7803375 | | P4D5900FS40M16 | 59.0 | 236 | 336 | 40 | 70 | |
| 7803376 | | P4D6000FS40M16 | 60.0 | 240 | 340 | 40 | 70 | |
| 7803377 | | P4D6100FS40M16 | 61.0 | 244 | 344 | 40 | 70 | |
| 7803378 | | P4D6200FS40M16 | 62.0 | 248 | 348 | 40 | 70 | |
| 7803379 | | P4D6300FS40M16 | 63.0 | 252 | 352 | 40 | 70 | |

Packed: 1 pc.





List 52505

P5D (Inch)

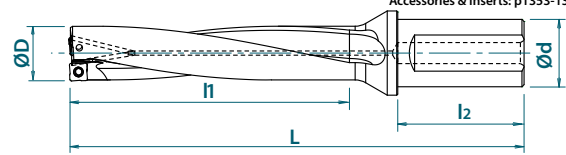
NEW SIZES



SPEED FEED
P1357



Recommended Materials: p1357
Accessories & Inserts: p1353-1354



| EDP No. | Body Type | Designation | Drill Dia. | Drilling Depth | Overall Length | Shank Dia. | Shank Length | Applicable Insert | |
|----------|-----------------|-----------------|------------|----------------|----------------|------------|--------------|-------------------|--|
| | | | (inch) | (inch) | (inch) | (inch) | (inch) | | |
| | | | D | l1 | L | d | l2 | | |
| 52505063 | Flat Shank | P5D0484FS075A03 | 0.4844 | 2.422 | 5.297 | 0.750 | 1.969 | XCMT03... | |
| 52505064 | | P5D0500FS075A03 | 0.5000 | 2.500 | 5.375 | 0.750 | 1.969 | | |
| 52505065 | | P5D0516FS075A03 | 0.5156 | 2.578 | 5.453 | 0.750 | 1.969 | | |
| 52505066 | | P5D0531FS075A03 | 0.5313 | 2.656 | 5.531 | 0.750 | 1.969 | | |
| 52505067 | | P5D0547FS075A03 | 0.5469 | 2.734 | 5.609 | 0.750 | 1.969 | | |
| 52505068 | | P5D0563FS075A03 | 0.5625 | 2.813 | 5.688 | 0.750 | 1.969 | | |
| 52505069 | | P5D0578FS075A03 | 0.5781 | 2.891 | 5.766 | 0.750 | 1.969 | | |
| 52505026 | | P5D0594FS075A04 | 0.5938 | 2.969 | 5.844 | 0.750 | 1.969 | | |
| 52505027 | | P5D0609FS075A04 | 0.6094 | 3.047 | 5.922 | 0.750 | 1.969 | | |
| 52505008 | | P5D0625FS075A04 | 0.6250 | 3.125 | 6.000 | 0.750 | 1.969 | | |
| 52505028 | | P5D0641FS075A04 | 0.6406 | 3.203 | 6.078 | 0.750 | 1.969 | | |
| 52505009 | | P5D0656FS075A04 | 0.6563 | 3.281 | 6.156 | 0.750 | 1.969 | | |
| 52505029 | | P5D0672FS075A05 | 0.6719 | 3.359 | 6.234 | 0.750 | 1.969 | | |
| 52505010 | | P5D0688FS075A05 | 0.6875 | 3.438 | 6.312 | 0.750 | 1.969 | | |
| 52505030 | | P5D0703FS075A05 | 0.7031 | 3.516 | 6.391 | 0.750 | 1.969 | | |
| 52505031 | | P5D0719FS100A05 | 0.7188 | 3.594 | 6.705 | 1.000 | 2.205 | | |
| 52505032 | | P5D0734FS100A05 | 0.7344 | 3.672 | 6.783 | 1.000 | 2.205 | | |
| 52505011 | | P5D0750FS100A06 | 0.7500 | 3.750 | 6.861 | 1.000 | 2.205 | | |
| 52505033 | | P5D0766FS100A06 | 0.7656 | 3.828 | 6.939 | 1.000 | 2.205 | | |
| 52505034 | | P5D0781FS100A06 | 0.7813 | 3.906 | 7.017 | 1.000 | 2.205 | | |
| 52505035 | | P5D0797FS100A06 | 0.7969 | 3.984 | 7.095 | 1.000 | 2.205 | | |
| 52505012 | | P5D0812FS100A06 | 0.8125 | 4.063 | 7.173 | 1.000 | 2.205 | | |
| 52505036 | | P5D0828FS100A07 | 0.8281 | 4.141 | 7.252 | 1.000 | 2.205 | | |
| 52505037 | | P5D0844FS100A07 | 0.8438 | 4.219 | 7.330 | 1.000 | 2.205 | | |
| 52505038 | | P5D0859FS100A07 | 0.8594 | 4.297 | 7.408 | 1.000 | 2.205 | | |
| 52505000 | | P5D0875FS100A07 | 0.8750 | 4.375 | 7.485 | 1.000 | 2.205 | | |
| 52505039 | | P5D0891FS100A07 | 0.8906 | 4.453 | 7.564 | 1.000 | 2.205 | | |
| 52505040 | | P5D0906FS100A07 | 0.9063 | 4.531 | 7.642 | 1.000 | 2.205 | | |
| 52505041 | | P5D0922FS100A07 | 0.9219 | 4.609 | 7.720 | 1.000 | 2.205 | | |
| 52505001 | | P5D0937FS125A07 | 0.9375 | 4.688 | 7.955 | 1.250 | 2.362 | | |
| 52505042 | | P5D0953FS125A07 | 0.9531 | 4.766 | 8.034 | 1.250 | 2.362 | | |
| 52505043 | | P5D0969FS125A07 | 0.9688 | 4.844 | 8.112 | 1.250 | 2.362 | | |
| 52505044 | | P5D0984FS125A08 | 0.9844 | 4.922 | 8.190 | 1.250 | 2.362 | | |
| 52505002 | | P5D1000FS125A08 | 1.0000 | 5.000 | 8.268 | 1.250 | 2.362 | | |
| 52505045 | | P5D1031FS125A08 | 1.0313 | 5.156 | 8.424 | 1.250 | 2.362 | | |
| 52505003 | | P5D1062FS125A08 | 1.0625 | 5.313 | 8.580 | 1.250 | 2.362 | | |
| 52505046 | | P5D1094FS125A08 | 1.0938 | 5.469 | 8.737 | 1.250 | 2.362 | | |
| 52505004 | | P5D1125FS125A08 | 1.1250 | 5.625 | 8.893 | 1.250 | 2.362 | | |
| 52505047 | | P5D1156FS125A09 | 1.1563 | 5.781 | 9.049 | 1.250 | 2.362 | | |
| 52505005 | | P5D1187FS125A09 | 1.1875 | 5.938 | 9.205 | 1.250 | 2.362 | | |
| 52505048 | P5D1219FS125A09 | 1.2188 | 6.094 | 9.362 | 1.250 | 2.362 | | | |
| 52505006 | P5D1250FS125A09 | 1.2500 | 6.250 | 9.518 | 1.250 | 2.362 | | | |
| 52505049 | P5D1281FS150A09 | 1.2813 | 6.406 | 10.068 | 1.500 | 2.756 | | | |
| 52505007 | P5D1312FS150A09 | 1.3125 | 6.563 | 10.224 | 1.500 | 2.756 | | | |

Packed: 1 pc.

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List 52505 (Continued)

P5D (Inch)

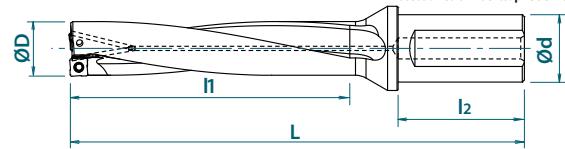
NEW SIZES



SPEED FEED
P1357



Recommended Materials: p1357
Accessories & Inserts: p1353-1354



| EDP No. | Body Type | Designation | Drill Dia. (inch) | Drilling Depth (inch) | Overall Length (inch) | Shank Dia. (inch) | Shank Length (inch) | Applicable Insert |
|----------|-----------------|-----------------|----------------------|--------------------------|--------------------------|----------------------|------------------------|-------------------|
| | | | D | l1 | L | d | l2 | |
| 52505050 | Flat Shank | P5D1344FS150A10 | 1.3438 | 6.719 | 10.381 | 1.500 | 2.756 | XCMT10... |
| 52505013 | | P5D1375FS150A10 | 1.3750 | 6.875 | 10.537 | 1.500 | 2.756 | |
| 52505051 | | P5D1406FS150A10 | 1.4063 | 7.031 | 10.693 | 1.500 | 2.756 | |
| 52505014 | | P5D1437FS150A10 | 1.4375 | 7.188 | 10.849 | 1.500 | 2.756 | |
| 52505052 | | P5D1469FS150A10 | 1.4688 | 7.344 | 11.006 | 1.500 | 2.756 | |
| 52505015 | | P5D1500FS150A10 | 1.5000 | 7.500 | 11.162 | 1.500 | 2.756 | |
| 52505053 | | P5D1531FS150A10 | 1.5313 | 7.656 | 11.318 | 1.500 | 2.756 | |
| 52505016 | | P5D1563FS150A12 | 1.5625 | 7.813 | 11.474 | 1.500 | 2.756 | |
| 52505054 | | P5D1594FS150A12 | 1.5938 | 7.969 | 11.631 | 1.500 | 2.756 | |
| 52505017 | | P5D1625FS150A12 | 1.6250 | 8.125 | 11.787 | 1.500 | 2.756 | |
| 52505055 | | P5D1656FS150A12 | 1.6563 | 8.281 | 11.943 | 1.500 | 2.756 | |
| 52505018 | | P5D1688FS150A12 | 1.6875 | 8.438 | 12.099 | 1.500 | 2.756 | |
| 52505056 | | P5D1719FS150A12 | 1.7188 | 8.594 | 12.256 | 1.500 | 2.756 | |
| 52505019 | | P5D1750FS150A12 | 1.7500 | 8.750 | 12.412 | 1.500 | 2.756 | |
| 52505057 | | P5D1781FS150A13 | 1.7813 | 8.906 | 12.568 | 1.500 | 2.756 | |
| 52505058 | | P5D1813FS150A13 | 1.8125 | 9.063 | 12.725 | 1.500 | 2.756 | |
| 52505059 | | P5D1844FS150A13 | 1.8438 | 9.219 | 12.881 | 1.500 | 2.756 | |
| 52505020 | | P5D1875FS150A13 | 1.8750 | 9.375 | 13.037 | 1.500 | 2.756 | |
| 52505060 | | P5D1906FS150A13 | 1.9063 | 9.531 | 13.193 | 1.500 | 2.756 | |
| 52505061 | | P5D1938FS150A13 | 1.9375 | 9.688 | 13.350 | 1.500 | 2.756 | |
| 52505062 | | P5D1969FS150A14 | 1.9688 | 9.844 | 13.506 | 1.500 | 2.756 | |
| 52505021 | | P5D2000FS150A14 | 2.0000 | 10.000 | 13.662 | 1.500 | 2.756 | |
| 52505022 | | P5D2125FS150A14 | 2.1250 | 10.625 | 14.287 | 1.500 | 2.756 | |
| 52505023 | | P5D2250FS150A16 | 2.2500 | 11.250 | 14.912 | 1.500 | 2.756 | |
| 52505024 | | P5D2375FS150A16 | 2.3750 | 11.875 | 15.537 | 1.500 | 2.756 | |
| 52505025 | P5D2500FS150A16 | 2.5000 | 12.500 | 16.162 | 1.500 | 2.756 | | |

Packed: 1 pc.





List 78027

P5D (Metric)

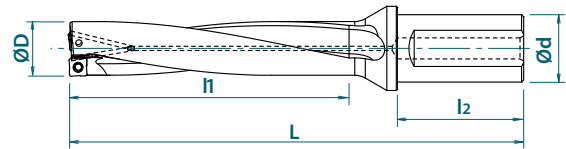
NEW SIZES



SPEED FEED
P1357



Recommended Materials: p1357
Accessories & Inserts: p1353-1354



| EDP No. | Body Type | Designation | Drill Dia. (mm) | Drilling Depth (mm) | Overall Length (mm) | Shank Dia. (mm) | Shank Length (mm) | Applicable Insert |
|---------|------------|----------------|--------------------|------------------------|------------------------|--------------------|----------------------|-------------------|
| | | | D | l1 | L | d | l2 | |
| 7802780 | Flat Shank | P5D1200FS20M03 | 12.0 | 60 | 125 | 20 | 50 | XCMT03... |
| 7802781 | | P5D1250FS20M03 | 12.5 | 62.5 | 127.5 | 20 | 50 | |
| 7802782 | | P5D1300FS20M03 | 13.0 | 65 | 130 | 20 | 50 | |
| 7802783 | | P5D1350FS20M03 | 13.5 | 67.5 | 132.5 | 20 | 50 | |
| 7802784 | | P5D1400FS20M03 | 14.0 | 70 | 135 | 20 | 50 | |
| 7802785 | | P5D1450FS20M03 | 14.5 | 72.5 | 137.5 | 20 | 50 | |
| 7802717 | | P5D1500FS20M04 | 15.0 | 75 | 140 | 20 | 50 | |
| 7802718 | | P5D1550FS20M04 | 15.5 | 78 | 143 | 20 | 50 | XCMT04... |
| 7802719 | | P5D1600FS20M04 | 16.0 | 80 | 145 | 20 | 50 | |
| 7802720 | | P5D1650FS20M04 | 16.5 | 83 | 148 | 20 | 50 | |
| 7802721 | | P5D1700FS20M05 | 17.0 | 85 | 153 | 20 | 50 | XCMT05... |
| 7802722 | | P5D1750FS20M05 | 17.5 | 88 | 156 | 20 | 50 | |
| 7802790 | | P5D1750FS25M05 | 17.5 | 88 | 162 | 25 | 56 | |
| 7802723 | | P5D1800FS25M05 | 18.0 | 90 | 164 | 25 | 56 | XCMT06... |
| 7802724 | | P5D1850FS25M05 | 18.5 | 93 | 167 | 25 | 56 | |
| 7802725 | | P5D1900FS25M06 | 19.0 | 95 | 169 | 25 | 56 | |
| 7802726 | | P5D1950FS25M06 | 19.5 | 98 | 172 | 25 | 56 | XCMT07... |
| 7802727 | | P5D2000FS25M06 | 20.0 | 100 | 174 | 25 | 56 | |
| 7802728 | | P5D2050FS25M06 | 20.5 | 103 | 177 | 25 | 56 | |
| 7802729 | | P5D2100FS25M07 | 21.0 | 105 | 184 | 25 | 56 | XCMT08... |
| 7802730 | | P5D2150FS25M07 | 21.5 | 108 | 187 | 25 | 56 | |
| 7802731 | | P5D2200FS25M07 | 22.0 | 110 | 189 | 25 | 56 | |
| 7802732 | | P5D2250FS25M07 | 22.5 | 113 | 192 | 25 | 56 | XCMT09... |
| 7802733 | | P5D2300FS25M07 | 23.0 | 115 | 194 | 25 | 56 | |
| 7802791 | | P5D2350FS25M07 | 23.5 | 118 | 197 | 25 | 56 | |
| 7802734 | | P5D2350FS32M07 | 23.5 | 118 | 201 | 32 | 60 | XCMT09... |
| 7802792 | | P5D2400FS25M07 | 24.0 | 120 | 199 | 25 | 56 | |
| 7802735 | | P5D2400FS32M07 | 24.0 | 120 | 203 | 32 | 60 | |
| 7802793 | | P5D2450FS25M07 | 24.5 | 123 | 202 | 25 | 56 | XCMT09... |
| 7802736 | | P5D2450FS32M07 | 24.5 | 123 | 206 | 32 | 60 | |
| 7802794 | | P5D2500FS25M08 | 25.0 | 125 | 204 | 25 | 56 | |
| 7802737 | | P5D2500FS32M08 | 25.0 | 125 | 208 | 32 | 60 | XCMT09... |
| 7802795 | | P5D2550FS25M08 | 25.5 | 128 | 207 | 25 | 56 | |
| 7802738 | | P5D2550FS32M08 | 25.5 | 128 | 211 | 32 | 60 | |
| 7802739 | | P5D2600FS32M08 | 26.0 | 130 | 213 | 32 | 60 | XCMT09... |
| 7802740 | | P5D2650FS32M08 | 26.5 | 133 | 216 | 32 | 60 | |
| 7802741 | | P5D2700FS32M08 | 27.0 | 135 | 218 | 32 | 60 | |
| 7802742 | | P5D2800FS32M08 | 28.0 | 140 | 223 | 32 | 60 | XCMT09... |
| 7802743 | | P5D2850FS32M08 | 28.5 | 143 | 226 | 32 | 60 | |
| 7802744 | | P5D2900FS32M09 | 29.0 | 145 | 228 | 32 | 60 | |
| 7802745 | | P5D3000FS32M09 | 30.0 | 150 | 233 | 32 | 60 | XCMT09... |
| 7802746 | | P5D3100FS32M09 | 31.0 | 155 | 238 | 32 | 60 | |
| 7802796 | | P5D3100FS40M09 | 31.0 | 155 | 248 | 40 | 70 | |
| 7802747 | | P5D3200FS32M09 | 32.0 | 160 | 243 | 32 | 60 | XCMT09... |
| 7802797 | | P5D3200FS40M09 | 32.0 | 160 | 253 | 40 | 70 | |
| 7802748 | | P5D3300FS40M09 | 33.0 | 165 | 258 | 40 | 70 | |
| 7802749 | | P5D3350FS40M09 | 33.5 | 168 | 261 | 40 | 70 | |

Packed: 1 pc.

continued on next page PXT





List 78027 (Continued)

P5D (Metric)

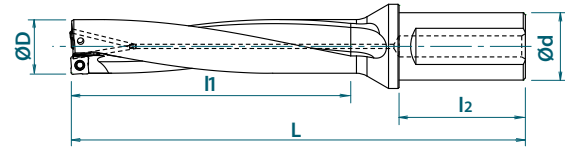
NEW SIZES



SPEED FEED
P1357



Recommended Materials: p1357
Accessories & Inserts: p1353-1354



| EDP No. | Body Type | Designation | Drill Dia. (mm) | Drilling Depth (mm) | Overall Length (mm) | Shank Dia. (mm) | Shank Length (mm) | Applicable Insert |
|---------|----------------|----------------|--------------------|------------------------|------------------------|--------------------|----------------------|-------------------|
| | | | D | l1 | L | d | l2 | |
| 7802750 | Flat Shank | P5D3400FS40M10 | 34.0 | 170 | 263 | 40 | 70 | XCMT10... |
| 7802751 | | P5D3500FS40M10 | 35.0 | 175 | 268 | 40 | 70 | |
| 7802752 | | P5D3600FS40M10 | 36.0 | 180 | 273 | 40 | 70 | |
| 7802753 | | P5D3700FS40M10 | 37.0 | 185 | 278 | 40 | 70 | |
| 7802754 | | P5D3800FS40M10 | 38.0 | 190 | 283 | 40 | 70 | |
| 7802755 | | P5D3900FS40M12 | 39.0 | 195 | 295 | 40 | 70 | XCMT12... |
| 7802756 | | P5D4000FS40M12 | 40.0 | 200 | 300 | 40 | 70 | |
| 7802757 | | P5D4100FS40M12 | 41.0 | 205 | 305 | 40 | 70 | |
| 7802758 | | P5D4200FS40M12 | 42.0 | 210 | 310 | 40 | 70 | |
| 7802759 | | P5D4300FS40M12 | 43.0 | 215 | 315 | 40 | 70 | |
| 7802760 | | P5D4400FS40M12 | 44.0 | 220 | 320 | 40 | 70 | XCMT13... |
| 7802761 | | P5D4500FS40M13 | 45.0 | 225 | 325 | 40 | 70 | |
| 7802762 | | P5D4600FS40M13 | 46.0 | 230 | 330 | 40 | 70 | |
| 7802763 | | P5D4700FS40M13 | 47.0 | 235 | 335 | 40 | 70 | |
| 7802764 | | P5D4800FS40M13 | 48.0 | 240 | 340 | 40 | 70 | |
| 7802765 | | P5D4900FS40M13 | 49.0 | 245 | 345 | 40 | 70 | XCMT14... |
| 7802766 | | P5D5000FS40M14 | 50.0 | 250 | 350 | 40 | 70 | |
| 7802767 | | P5D5100FS40M14 | 51.0 | 255 | 355 | 40 | 70 | |
| 7802768 | | P5D5200FS40M14 | 52.0 | 260 | 360 | 40 | 70 | |
| 7802769 | | P5D5300FS40M14 | 53.0 | 265 | 365 | 40 | 70 | |
| 7802770 | | P5D5400FS40M14 | 54.0 | 270 | 370 | 40 | 70 | XCMT16... |
| 7802771 | | P5D5500FS40M14 | 55.0 | 275 | 375 | 40 | 70 | |
| 7802772 | | P5D5600FS40M14 | 56.0 | 280 | 380 | 40 | 70 | |
| 7802773 | | P5D5700FS40M16 | 57.0 | 285 | 385 | 40 | 70 | |
| 7802774 | | P5D5800FS40M16 | 58.0 | 290 | 390 | 40 | 70 | |
| 7802775 | | P5D5900FS40M16 | 59.0 | 295 | 395 | 40 | 70 | |
| 7802776 | | P5D6000FS40M16 | 60.0 | 300 | 400 | 40 | 70 | |
| 7802777 | | P5D6100FS40M16 | 61.0 | 305 | 405 | 40 | 70 | |
| 7802778 | | P5D6200FS40M16 | 62.0 | 310 | 410 | 40 | 70 | |
| 7802779 | P5D6300FS40M16 | 63.0 | 315 | 415 | 40 | 70 | | |

Packed: 1 pc.

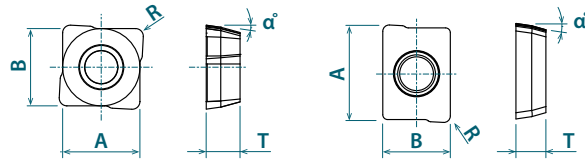




NEW SIZES

List 78P5D

PD Inserts



| Designation | No. of Cutting Edges | Insert Size | | | | EDP Number | | | | | | | | |
|-----------------|----------------------|-------------|---------------|----------|-------------|-------------|---------|-------------|---------|---------|---------|---------|---------|---|
| | | A x B (mm) | T (mm) | α | R (mm) | XP9020 | XC9015 | XP1010 | CK110 | | | | | |
| XCMT031904ER-DM | 2 | 6.1 x 4.5 | 1.9 | 8° | 0.4 | 7823098 | 7829098 | - | - | | | | | |
| XCMT031904ER-DR | | | | | | - | - | 7823163 | - | | | | | |
| XCMT031904ER-DN | | | | | | - | - | - | 7823263 | - | | | | |
| XCMT042204ER-DM | 4 | 5 x 5 | 2.2 | | | 7823064 | 7829064 | - | - | - | | | | |
| XCMT042204ER-DR | | | | | | - | - | 7823164 | - | | | | | |
| XCMT042204ER-DN | | | | | | - | - | - | 7823264 | - | | | | |
| XCMT052404ER-DM | | | | | | 5.83 x 5.83 | 2.4 | 7823065 | 7829065 | - | - | - | | |
| XCMT052404ER-DR | | | | | | | | - | - | 7823165 | - | | | |
| XCMT052404ER-DN | | | | | | | | - | - | - | 7823265 | - | | |
| XCMT062706ER-DM | | | | | | | | 6.46 x 6.46 | 2.7 | 7823066 | 7829066 | - | - | - |
| XCMT062706ER-DR | | | | | | | | | | - | - | 7823166 | - | |
| XCMT062706ER-DN | | | | | | | | | | - | - | - | 7823266 | - |
| XCMT073106ER-DM | | | | | 7.42 x 7.42 | 3.1 | 7823067 | | | 7829067 | - | - | - | |
| XCMT073106ER-DR | | | | | | | - | | | - | 7823167 | - | | |
| XCMT073106ER-DN | | | | | | | - | | | - | - | 7823267 | - | |
| XCMT083508ER-DM | 8.71 x 8.71 | 3.5 | 7823068 | | | | 7829068 | - | - | - | | | | |
| XCMT083508ER-DR | | | - | | | | - | 7823168 | - | | | | | |
| XCMT083508ER-DN | | | - | | | | - | - | 7823268 | - | | | | |
| XCMT094008ER-DM | | | 10.04 x 10.04 | | 4.0 | 7823069 | 7829069 | - | - | - | | | | |
| XCMT094008ER-DR | | | | | | - | - | 7823169 | - | | | | | |
| XCMT094008ER-DN | | | | | | - | - | - | 7823269 | - | | | | |
| XCMT104608ER-DM | 10.89 x 10.89 | 4.6 | | | | 7823097 | 7829097 | - | - | - | | | | |
| XCMT104608ER-DR | | | | | | - | - | 7823197 | - | | | | | |
| XCMT104608ER-DN | | | | | | - | - | - | 7823297 | - | | | | |
| XCMT125010ER-DM | | | 12.57 x 12.57 | | 5.0 | 7823071 | 7829071 | - | - | - | | | | |
| XCMT125010ER-DR | | | | | | - | - | 7823171 | - | | | | | |
| XCMT125010ER-DN | | | | | | - | - | - | 7823271 | - | | | | |
| XCMT135212ER-DM | 14.05 x 14.05 | 5.2 | | | | 7823072 | 7829072 | - | - | - | | | | |
| XCMT135212ER-DR | | | | | | - | - | 7823172 | - | | | | | |
| XCMT135212ER-DN | | | | | | - | - | - | 7823272 | - | | | | |
| XCMT145612ER-DM | | | 15.58 x 15.58 | | 5.6 | 7823073 | 7829073 | - | - | - | | | | |
| XCMT145612ER-DR | | | | | | - | - | 7823173 | - | | | | | |
| XCMT145612ER-DN | | | | - | | - | - | 7823273 | - | | | | | |
| XCMT165912ER-DM | 17.28 x 17.28 | 5.8 | | 7823075 | | 7829075 | - | - | - | | | | | |
| XCMT165912ER-DR | | | | - | | - | 7823175 | - | | | | | | |
| XCMT165912ER-DN | | | | - | | - | - | 7823275 | - | | | | | |

Packed: 10 pcs.


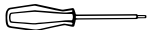
Note: Grade XC9015 recommended for peripheral cutting edge only.





List 7808H

PD Accessories

| Appearance | EDP Number | Designation | Applicable Insert | Recommended Tightening Torque |
|---|--------------------|-----------------------------------|-------------------|-------------------------------|
|  Clamping Screw | 7808096 | FS18536P (M1.8 x 3.6, Torx 6IP) | XCMT03... | 0.7 Nm |
| | 7808139 | FS20543P (M2 x 4.3, Torx 6IP) | XCMT04... | 0.7 Nm |
| | | | XCMT05... | |
| | 7808138 | FS22550P (M2.2 x 5, Torx 7IP) | XCMT06... | 1.0 Nm |
| | 7808136 | FS25560P (M2.5 x 6, Torx 8IP) | XCMT07... | 1.6 Nm |
| | 7808135 | FS30570P (M3 x 7, Torx 9IP) | XCMT08... | 2.2 Nm |
| | | | XCMT09... | |
| | 7808137 | FS35586P (M3.5 x 8.6, Torx 15IP) | XCMT10... | 3.2 Nm |
| | | | XCMT12... | |
| | 7808114 | FS45510P (M4.5 x 10.5, Torx 20IP) | XCMT13... | 5.0 Nm |
| XCMT14... | | | | |
| XCMT16... | | | | |
|  Wrench | 7808223 | 6IP-D (Torx 6IP) | XCMT03... | |
| | | | XCMT05... | |
| | 7808224 | 7IP-D (Torx 7IP) | XCMT06... | |
| | 7808225 | 8IP-D (Torx 8IP) | XCMT07... | |
| | 7808226 | 9IP-D (Torx 9IP) | XCMT08... | |
| | | | XCMT09... | |
| | 7808228 | 15IP-D (Torx 15IP) | XCMT10... | |
| | | | XCMT12... | |
| 7808229 | 20IP-D (Torx 20IP) | XCMT13... | | |
| | | XCMT14... | | |
| | | XCMT16... | | |

Packed: Clamping Screws = 10 pcs.; Wrench = 1 pc.
Note: Wrench sold separately.





Cutting Conditions (2D & 3D)

| Work Material | Tensile Strength – Hardness | Drilling Speed Vc (SFM) | Feed Rate, f (in/rev) | | | | | | | | |
|---------------|--|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------------------|----------------------|
| | | | Drilling Depth 2D, 3D | | | | | | | | |
| | | | Ø0.472-0.571 (12-14.5mm) | Ø0.591-0.650 (15-16.5mm) | Ø0.669-0.728 (17-18.5mm) | Ø0.748-0.807 (19-20.5mm) | Ø0.827-0.965 (21-24.5mm) | Ø0.984-1.122 (25-28.5mm) | Ø1.142-1.319 (29-33.5mm) | Ø1.339-2.500 (34-63mm) | |
| P | Mild Steels, Carbon Steels (1010, 1018) | ~180 HB | 650 (500 - 800) | .0024 (.0015 - .003) | .0024 (.0015 - .004) | .0024 (.0015 - .004) | .0027 (.0015 - .004) | .003 (.0015 - .0047) | .003 (.0015 - .0047) | .004 (.002 - .006) | .004 (.002 - .007) |
| | Carbon Steels, Alloy Steels (1050, 4140) | ~280 HB | 500 (330 - 720) | .003 (.0015 - .0047) | .003 (.0015 - .0055) | .0035 (.0015 - .0063) | .004 (.0015 - .007) | .0055 (.0015 - .008) | .007 (.0024 - .010) | .008 (.003 - .012) | .008 (.003 - .014) |
| | Die Steels (H13, D2) | ~280 HB | 330 (260 - 500) | .0024 (.0015 - .004) | .0024 (.0015 - .004) | .0027 (.0015 - .004) | .003 (.0015 - .0047) | .0047 (.0015 - .006) | .0055 (.0024 - .008) | .007 (.003 - .010) | .007 (.003 - .010) |
| M | Stainless Steels (304, 420) | ~250 HB | 430 (260 - 600) | .0027 (.0015 - .004) | .0027 (.0015 - .004) | .003 (.0015 - .004) | .0035 (.0015 - .0047) | .004 (.0015 - .006) | .005 (.0024 - .008) | .006 (.003 - .010) | .006 (.003 - .010) |
| K | Cast Iron (No. 35 B) | ~350 N/mm ² | 650 (500 - 920) | .003 (.0015 - .0055) | .003 (.0015 - .0055) | .004 (.0015 - .0063) | .0047 (.0015 - .008) | .0063 (.003 - .010) | .008 (.0024 - .012) | .008 (.003 - .012) | .008 (.003 - .014) |
| | Ductile Cast Iron (60-40-18) | ~800 N/mm ² | 530 (330 - 720) | .003 (.0015 - .004) | .003 (.0015 - .0047) | .0035 (.0015 - .0055) | .004 (.0015 - .007) | .0055 (.0015 - .008) | .007 (.0024 - .010) | .007 (.003 - .010) | .007 (.003 - .010) |
| N | Aluminum Alloys (6061, 7075) | ~13% Si | 650 (330 - 2600) | .003 (.0015 - .0047) | .003 (.0015 - .0047) | .004 (.0015 - .0063) | .0047 (.0015 - .008) | .0063 (.0015 - .010) | .008 (.0024 - .012) | .008 (.003 - .012) | .008 (.003 - .012) |
| S | Heat Resistant Alloys (Inconel 718) | - | 100 (50 - 160) | .0015 (.0008 - .0024) | .0015 (.0008 - .0024) | .002 (.0012 - .0024) | .002 (.0012 - .0024) | .0024 (.0015 - .003) | .003 (.0024 - .004) | .004 (.0024 - .0047) | .004 (.0024 - .0047) |
| | Titanium Alloy (Ti-6Al-4V) | - | 200 (100 - 330) | .002 (.0015 - .003) | .002 (.0015 - .003) | .0024 (.0015 - .003) | .0024 (.0015 - .003) | .003 (.0015 - .006) | .004 (.0024 - .008) | .0055 (.003 - .008) | .0055 (.003 - .008) |
| H | Pre-hardened Steel (P20, Stavax) | 40 - 43 HrC | 330 (200 - 400) | .0024 (.0015 - .004) | .0024 (.0015 - .004) | .0024 (.0015 - .0047) | .0027 (.0015 - .0047) | .003 (.0015 - .0047) | .004 (.0024 - .006) | .004 (.0024 - .006) | .004 (.0024 - .006) |
| | Die Cast Steels (A2, S7) | 43 - 48 HrC | 260 (165 - 330) | .002 (.0015 - .003) | .002 (.0015 - .003) | .002 (.0015 - .003) | .0024 (.0015 - .003) | .0024 (.0015 - .003) | .003 (.0015 - .004) | .003 (.0015 - .004) | .003 (.0015 - .004) |
| | Hardened Steels (D2) | 50 - 55 HrC | 200 (130 - 260) | .002 (.0015 - .003) | .002 (.0015 - .003) | .002 (.0015 - .003) | .0024 (.0015 - .003) | .0024 (.0015 - .003) | .003 (.0015 - .004) | .003 (.0015 - .004) | .003 (.0015 - .004) |





Cutting Conditions (4D)

| Work Material | Tensile Strength - Hardness | Drilling Speed Vc (SFM) | Feed Rate, f (in/rev) | | | | | | | | |
|---------------|--|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------------------|----------------------|
| | | | Drilling Depth 4D | | | | | | | | |
| | | | Ø0.472-0.571 (12-14.5mm) | Ø0.591-0.650 (15-16.5mm) | Ø0.669-0.728 (17-18.5mm) | Ø0.748-0.807 (19-20.5mm) | Ø0.827-0.965 (21-24.5mm) | Ø0.984-1.122 (25-28.5mm) | Ø1.142-1.319 (29-33.5mm) | Ø1.339-2.500 (34-63mm) | |
| P | Mild Steels, Carbon Steels (1010, 1018) | ~180 HB | 650 (500 - 800) | .0024 (.0015 - .003) | .0024 (.0015 - .003) | .0024 (.0015 - .003) | .0027 (.0015 - .004) | .003 (.0015 - .0047) | .003 (.0015 - .0047) | .004 (.002 - .006) | .004 (.002 - .007) |
| | Carbon Steels, Alloy Steels (1050, 4140) | ~280 HB | 500 (330 - 720) | .0027 (.0015 - .004) | .003 (.0015 - .0055) | .003 (.0015 - .0063) | .0035 (.0015 - .007) | .0047 (.0015 - .006) | 0.007 (.0024 - .010) | .008 (.003 - .010) | .008 (.003 - .012) |
| | Die Steels (H13, D2) | ~280 HB | 330 (260 - 500) | .0024 (.0015 - .003) | .0024 (.0015 - .004) | .0027 (.0015 - .004) | .003 (.0015 - .0047) | .004 (.0015 - .0051) | .0055 (.0024 - .008) | .007 (.003 - .010) | .007 (.003 - .010) |
| M | Stainless Steels (304, 420) | ~250 HB | 430 (260 - 600) | .0024 (.0015 - .003) | .0024 (.0015 - .003) | .0027 (.0015 - .004) | .003 (.0015 - .004) | .003 (.0015 - .004) | .0051 (.0024 - .008) | .0063 (.003 - .008) | .0063 (.003 - .008) |
| K | Cast Iron (No. 35 B) | ~350 N/mm ² | 650 (500 - 920) | .003 (.0015 - .0047) | .003 (.0015 - .0055) | .0035 (.0015 - .0063) | .004 (.0015 - .008) | .0047 (.0015 - .006) | .008 (.0024 - .012) | .008 (.003 - .012) | .008 (.003 - .012) |
| | Ductile Cast Iron (60-40-18) | ~800 N/mm ² | 530 (330 - 720) | .003 (.0015 - .003) | .003 (.0015 - .004) | .003 (.0015 - .0047) | .0035 (.0015 - .006) | .0047 (.0015 - .006) | .006 (.0024 - .010) | .007 (.003 - .010) | .007 (.003 - .010) |
| N | Aluminum Alloys (6061, 7075) | ~13% Si | 650 (330 - 2600) | .0027 (.0015 - .0047) | .0027 (.0015 - .0047) | .0035 (.0015 - .0047) | .0047 (.0015 - .008) | .0055 (.0015 - .008) | .008 (.0024 - .012) | .008 (.003 - .012) | .008 (.003 - .012) |
| S | Heat Resistant Alloys (Inconel 718) | - | 100 (50 - 160) | .0015 (.0008 - .0024) | .0015 (.0008 - .0024) | .0015 (.0008 - .0024) | .0015 (.0008 - .0024) | .002 (.0015 - .003) | .0027 (.0024 - .004) | .003 (.0024 - .0047) | .003 (.0024 - .0047) |
| | Titanium Alloy (Ti-6Al-4V) | - | 200 (100 - 330) | .002 (.0015 - .003) | .002 (.0015 - .003) | .0024 (.0015 - .003) | .0024 (.0015 - .003) | .003 (.0015 - .004) | .004 (.0024 - .008) | .0055 (.003 - .008) | .0055 (.003 - .008) |
| H | Pre-hardened Steel (P20, Stavax) | 40 - 43 Hrc | 330 (200 - 400) | .0024 (.0015 - .004) | .0024 (.0015 - .004) | .0024 (.0015 - .004) | .0024 (.0015 - .004) | .003 (.0015 - .0047) | .003 (.0024 - .0047) | .004 (.0024 - .0051) | .004 (.0024 - .0051) |
| | Die Cast Steels (A2, S7) | 43 - 48 Hrc | 260 (165 - 330) | .002 (.0015 - .003) | .002 (.0015 - .003) | .002 (.0015 - .003) | .0024 (.0015 - .003) | .0024 (.0015 - .003) | .003 (.0015 - .004) | .003 (.0015 - .004) | .003 (.0015 - .004) |
| | Hardened Steels (D2) | 50 - 55 Hrc | 200 (130 - 260) | .002 (.0015 - .003) | .002 (.0015 - .003) | .002 (.0015 - .003) | .0024 (.0015 - .003) | .0024 (.0015 - .003) | .003 (.0015 - .004) | .003 (.0015 - .004) | .003 (.0015 - .004) |





Cutting Conditions (5D)

| Work Material | Tensile Strength – Hardness | Drilling Speed Vc (SFM) | Feed Rate, f (in/rev) | | | | | | | | |
|---------------|--|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------------------|----------------------|
| | | | Drilling Depth 5D | | | | | | | | |
| | | | Ø0.472-0.571 (12-14.5mm) | Ø0.591-0.650 (15-16.5mm) | Ø0.669-0.728 (17-18.5mm) | Ø0.748-0.807 (19-20.5mm) | Ø0.827-0.965 (21-24.5mm) | Ø0.984-1.122 (25-28.5mm) | Ø1.142-1.319 (29-33.5mm) | Ø1.339-2.500 (34-63mm) | |
| P | Mild Steels, Carbon Steels (1010, 1018) | ~180 HB | 650 (500 - 800) | .002 (.0015 - .003) | .002 (.0015 - .003) | .0024 (.0015 - .003) | .0027 (.0015 - .004) | .003 (.0015 - .0047) | .003 (.0015 - .0047) | .004 (.002 - .006) | .004 (.002 - .007) |
| | Carbon Steels, Alloy Steels (1050, 4140) | ~280 HB | 500 (330 - 720) | .0024 (.0015 - .0035) | .0024 (.0015 - .0035) | .003 (.0015 - .0047) | .003 (.0015 - .0055) | .0047 (.0015 - .006) | .006 (.0024 - .008) | .007 (.003 - .008) | .007 (.003 - .010) |
| | Die Steels (H13, D2) | ~280 HB | 330 (260 - 500) | .0024 (.0015 - .003) | .0024 (.0015 - .003) | .0024 (.0015 - .003) | .0027 (.0015 - .004) | .004 (.0015 - .0051) | .0047 (.0024 - .006) | .006 (.003 - .007) | .0063 (.003 - .0087) |
| M | Stainless Steels (304, 420) | ~250 HB | 430 (260 - 600) | .0024 (.0015 - .003) | .0024 (.0015 - .003) | .0024 (.0015 - .003) | .0027 (.0015 - .0035) | .003 (.0015 - .004) | .004 (.0024 - .006) | .0047 (.0024 - .007) | .0047 (.0024 - .008) |
| K | Cast Iron (No. 35 B) | ~350 N/mm ² | 650 (500 - 920) | .0024 (.0015 - .004) | .0024 (.0015 - .004) | .003 (.0015 - .0047) | .003 (.0015 - .0051) | .0047 (.0015 - .006) | .006 (.0024 - .008) | .007 (.003 - .008) | .007 (.003 - .010) |
| | Ductile Cast Iron (60-40-18) | ~800 N/mm ² | 530 (330 - 720) | .0024 (.0015 - .0035) | .0024 (.0015 - .0035) | .003 (.0015 - .0047) | .003 (.0015 - .0047) | .004 (.0015 - .0051) | .0047 (.0024 - .006) | .006 (.003 - .007) | .007 (.003 - .010) |
| N | Aluminum Alloys (6061, 7075) | ~13% Si | 650 (330 - 2600) | .0024 (.0015 - .004) | .0024 (.0015 - .004) | .0035 (.0015 - .0047) | .004 (.0015 - .006) | .0047 (.0015 - .006) | .006 (.0024 - .010) | .008 (.003 - .012) | .008 (.003 - .012) |
| S | Heat Resistant Alloys (Inconel 718) | - | 100 (50 - 160) | .0015 (.0008 - .0024) | .0015 (.0008 - .0024) | .0015 (.0008 - .0024) | .0015 (.0008 - .0024) | .0015 (.0008 - .0024) | .0027 (.0024 - .003) | .0027 (.0024 - .003) | .0027 (.0024 - .003) |
| | Titanium Alloy (Ti-6Al-4V) | - | 200 (100 - 330) | .002 (.0015 - .003) | .002 (.0015 - .003) | .0024 (.0015 - .003) | .0024 (.0015 - .003) | .0024 (.0015 - .004) | .004 (.0024 - .006) | .004 (.003 - .006) | .004 (.003 - .006) |
| H | Pre-hardened Steel (P20, Stavax) | 40 - 43 HrC | 330 (200 - 400) | .0024 (.0015 - .003) | .0024 (.0015 - .003) | .0024 (.0015 - .003) | .0024 (.0015 - .003) | .003 (.0015 - .004) | .003 (.0024 - .0047) | .004 (.0024 - .0047) | .004 (.0024 - .0047) |
| | Die Cast Steels (A2, S7) | 43 - 48 HrC | 260 (165 - 330) | .002 (.0015 - .0027) | .002 (.0015 - .0027) | .002 (.0015 - .0027) | .0024 (.0015 - .0027) | .0024 (.0015 - .003) | .0027 (.0015 - .004) | .003 (.0015 - .004) | .003 (.0015 - .004) |
| | Hardened Steels (D2) | 50 - 55 HrC | 200 (130 - 260) | .002 (.0015 - .0027) | .002 (.0015 - .0027) | .002 (.0015 - .0027) | .0024 (.0015 - .0027) | .0024 (.0015 - .003) | .0027 (.0015 - .004) | .003 (.0015 - .004) | .003 (.0015 - .004) |

Recommended Materials by Application

| Insert Grade | Chip Breaker | Coolant | P | M | K | N | S | H |
|--------------|--------------|---------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|
| XP9020 | DM | Yes | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| XC9015 | DM | Yes | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| XP1010 | DR | Yes | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| CK110 | DN | Yes | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

DM: Steel & Stainless Steel DR: Cast Iron DN: Non-Ferrous

good best

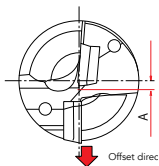




Maximum Offset for Drilling on Lathe

| Drill Diameter (Inch) | Maximum Offset (Inch) | Max Diameter (Inch) |
|-----------------------|-----------------------|---------------------|
| 0.4844 | 0.0157 | 0.5158 |
| 0.5000 | 0.0118 | 0.5236 |
| 0.5156 | 0.0078 | 0.5312 |
| 0.5313 | 0.0078 | 0.5469 |
| 0.5469 | 0.0078 | 0.5625 |
| 0.5625 | 0.0039 | 0.5703 |
| 0.5781 | 0.0039 | 0.5859 |
| 0.5938 | 0.0157 | 0.6252 |
| 0.6094 | 0.0118 | 0.6330 |
| 0.6250 | 0.0078 | 0.6406 |
| 0.6406 | 0.0078 | 0.6562 |
| 0.6563 | 0.0078 | 0.6719 |
| 0.6719 | 0.0196 | 0.7111 |
| 0.6875 | 0.0157 | 0.7189 |
| 0.7031 | 0.0157 | 0.7345 |
| 0.7188 | 0.0157 | 0.7502 |
| 0.7344 | 0.0118 | 0.7580 |
| 0.7500 | 0.0196 | 0.7892 |
| 0.7656 | 0.0157 | 0.7970 |
| 0.7813 | 0.0157 | 0.8127 |
| 0.7969 | 0.0118 | 0.8205 |
| 0.8125 | 0.0118 | 0.8361 |
| 0.8281 | 0.0269 | 0.8819 |
| 0.8438 | 0.0230 | 0.8898 |
| 0.8594 | 0.0210 | 0.9014 |
| 0.8750 | 0.0200 | 0.9150 |
| 0.8906 | 0.0190 | 0.9286 |
| 0.9063 | 0.0173 | 0.9409 |
| 0.9219 | 0.0133 | 0.9485 |
| 0.9375 | 0.0124 | 0.9623 |
| 0.9531 | 0.0078 | 0.9687 |
| 0.9688 | 0.0039 | 0.9766 |
| 0.9844 | 0.0287 | 1.0418 |
| 1.0000 | 0.0248 | 1.0496 |
| 1.0313 | 0.0220 | 1.0753 |
| 1.0625 | 0.0173 | 1.0971 |
| 1.0938 | 0.0141 | 1.1220 |
| 1.1250 | 0.0039 | 1.1328 |
| 1.1563 | 0.0295 | 1.2153 |
| 1.1875 | 0.0277 | 1.2429 |
| 1.2188 | 0.0218 | 1.2624 |
| 1.2500 | 0.0188 | 1.2876 |
| 1.2813 | 0.0169 | 1.3151 |
| 1.3125 | 0.0078 | 1.3281 |
| 1.3438 | 0.0393 | 1.4224 |
| 1.3750 | 0.0315 | 1.4380 |
| 1.4063 | 0.0236 | 1.4535 |
| 1.4375 | 0.0275 | 1.4925 |
| 1.4688 | 0.0196 | 1.5080 |
| 1.5000 | 0.0118 | 1.5236 |
| 1.5313 | 0.0039 | 1.5391 |
| 1.5625 | 0.0315 | 1.6255 |
| 1.5938 | 0.0275 | 1.6488 |
| 1.6250 | 0.0275 | 1.6800 |
| 1.6563 | 0.0236 | 1.7035 |
| 1.6875 | 0.0157 | 1.7189 |
| 1.7188 | 0.0118 | 1.7424 |
| 1.7500 | 0.0078 | 1.7656 |
| 1.7813 | 0.0314 | 1.8441 |
| 1.8125 | 0.0275 | 1.8675 |
| 1.8438 | 0.0196 | 1.8830 |
| 1.8750 | 0.0196 | 1.9142 |
| 1.9063 | 0.0157 | 1.9377 |
| 1.9375 | 0.0078 | 1.9531 |
| 1.9688 | 0.0433 | 2.0554 |
| 2.0000 | 0.0354 | 2.0708 |
| 2.1250 | 0.0157 | 2.1564 |
| 2.2500 | 0.0433 | 2.3366 |
| 2.3750 | 0.0275 | 2.4300 |
| 2.5000 | 0 | 2.5000 |

| Drill Diameter (mm) | Maximum Offset (mm) | Max Diameter (mm) |
|---------------------|---------------------|-------------------|
| 12.0 | 0.4 | 12.8 |
| 12.5 | 0.4 | 13.3 |
| 12.7 | 0.3 | 13.3 |
| 13.0 | 0.3 | 13.6 |
| 13.5 | 0.2 | 13.9 |
| 14.0 | 0.2 | 14.4 |
| 14.5 | 0.1 | 14.7 |
| 15.0 | 0.4 | 15.8 |
| 15.5 | 0.3 | 16.1 |
| 16.0 | 0.3 | 16.6 |
| 16.5 | 0.3 | 17.1 |
| 17.0 | 0.6 | 18.2 |
| 17.5 | 0.5 | 18.5 |
| 18.0 | 0.5 | 19.0 |
| 18.5 | 0.4 | 19.3 |
| 19.0 | 0.6 | 20.2 |
| 19.5 | 0.5 | 20.5 |
| 20.0 | 0.4 | 20.8 |
| 20.5 | 0.4 | 21.3 |
| 21.0 | 0.6 | 22.2 |
| 21.5 | 0.6 | 22.7 |
| 22.0 | 0.5 | 23.0 |
| 22.5 | 0.5 | 23.5 |
| 23.0 | 0.4 | 23.8 |
| 23.5 | 0.3 | 24.1 |
| 24.0 | 0.3 | 24.6 |
| 24.5 | 0.2 | 24.9 |
| 25.0 | 0.7 | 26.4 |
| 25.5 | 0.6 | 26.7 |
| 26.0 | 0.5 | 27.0 |
| 26.5 | 0.5 | 27.5 |
| 27.0 | 0.4 | 27.8 |
| 27.5 | 0.4 | 28.3 |
| 28.0 | 0.3 | 28.6 |
| 28.5 | 0.2 | 28.9 |
| 29.0 | 0.8 | 30.6 |
| 29.5 | 0.8 | 31.1 |
| 30.0 | 0.7 | 31.4 |
| 30.5 | 0.7 | 31.9 |
| 31.0 | 0.6 | 32.2 |
| 31.5 | 0.5 | 32.5 |
| 32.0 | 0.5 | 33.0 |
| 32.5 | 0.4 | 33.3 |
| 33.0 | 0.4 | 33.8 |
| 33.5 | 0.2 | 33.9 |
| 34.0 | 1.1 | 36.2 |
| 34.5 | 0.9 | 36.3 |
| 35.0 | 0.8 | 36.6 |
| 35.5 | 0.7 | 36.9 |
| 36.0 | 0.8 | 37.6 |
| 37.0 | 0.6 | 38.2 |
| 37.5 | 0.4 | 38.3 |
| 38.0 | 0.3 | 38.6 |
| 39.0 | 1.0 | 41.0 |
| 40.0 | 0.9 | 41.8 |
| 40.5 | 0.8 | 42.1 |
| 41.0 | 0.8 | 42.6 |
| 42.0 | 0.6 | 43.2 |
| 43.0 | 0.5 | 44.0 |
| 44.0 | 0.3 | 44.6 |
| 45.0 | 0.9 | 46.8 |
| 46.0 | 0.8 | 47.6 |
| 47.0 | 0.7 | 48.4 |
| 48.0 | 0.5 | 49.0 |
| 49.0 | 0.3 | 49.6 |
| 50.0 | 1.1 | 52.2 |
| 50.5 | 1.0 | 52.5 |
| 51.0 | 1.0 | 53.0 |
| 52.0 | 0.8 | 53.6 |
| 53.0 | 0.7 | 54.4 |
| 54.0 | 0.6 | 55.2 |
| 55.0 | 0.4 | 55.8 |
| 56.0 | 0.1 | 56.2 |
| 57.0 | 1.1 | 59.2 |
| 58.0 | 1.0 | 60.0 |
| 59.0 | 0.9 | 60.8 |
| 60.0 | 0.8 | 61.6 |
| 61.0 | 0.6 | 62.2 |
| 62.0 | 0.4 | 62.8 |
| 63.0 | 0.2 | 63.4 |



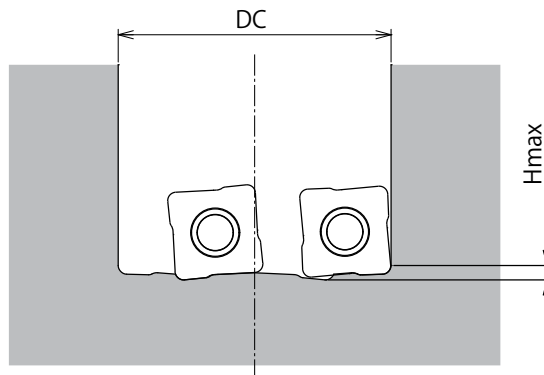
Maximum Offset Amount, A, for Drilling on a lathe.





Reference Value of PD Hmax

| Drill Diameter (Inch) | Hmax (Inch) | Drill Diameter (mm) | Hmax (mm) |
|-----------------------|-------------|---------------------|-----------|
| 0.472 - 0.571 | 0.024 | 12 - 14.5 | 0.6 |
| 0.591 - 0.650 | 0.031 | 15 - 16.5 | 0.8 |
| 0.669 - 0.728 | 0.035 | 17 - 18.5 | 0.9 |
| 0.748 - 0.807 | 0.043 | 19 - 20.5 | 1.1 |
| 0.827 - 0.965 | 0.047 | 21 - 24.5 | 1.2 |
| 0.984 - 1.122 | 0.059 | 22 - 28.5 | 1.5 |
| 1.142 - 1.319 | 0.063 | 29 - 33.5 | 1.6 |
| 1.339 - 2.500 | 0.067 | 34 - 38 | 1.7 |
| 1.535 - 1.732 | 0.079 | 39 - 44 | 2 |
| 1.772 - 1.929 | 0.091 | 45 - 49 | 2.3 |
| 1.968 - 2.205 | 0.098 | 50 - 56 | 2.5 |
| 2.244 - 2.500 | 0.102 | 57 - 63 | 2.6 |





PD Hole Diameter Tolerance

| Diameter (Inch) | P2D (Inch) | P3D (Inch) | P4D (Inch) | P5D (Inch) |
|-----------------|--------------|--------------|--------------|--------------|
| 0.4724 - 0.8071 | +0.0098 / -0 | +0.0098 / -0 | +0.0118 / -0 | +0.0118 / -0 |
| 0.8268 - 1.9291 | +0.0118 / -0 | +0.0118 / -0 | +0.0157 / -0 | +0.0157 / -0 |
| 1.9685 - 2.5000 | +0.0138 / -0 | +0.0138 / -0 | +0.0197 / -0 | +0.0197 / -0 |

The above values are general values and may differ based on actual machining conditons.

| Diameter (mm) | P2D (mm) | P3D (mm) | P4D (mm) | P5D (mm) |
|---------------|------------|------------|------------|------------|
| 12 - 20.5 | +0.25 / -0 | +0.25 / -0 | +0.30 / -0 | +0.30 / -0 |
| 21 - 49 | +0.30 / -0 | +0.30 / -0 | +0.40 / -0 | +0.40 / -0 |
| 50 - 63 | +0.35 / -0 | +0.35 / -0 | +0.50 / -0 | +0.50 / -0 |

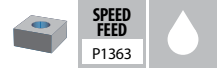
The above values are general values and may differ based on actual machining conditons.



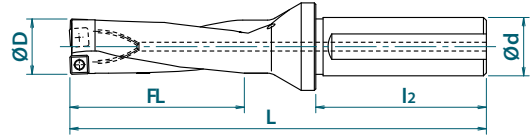


List 78001

PHP (Metric)



Recommended Materials: p1363
Accessories & Inserts: p1362



| EDP No. | Body Type | Designation | Drill Dia. (mm) | Flute Length (mm) | Overall Length (mm) | Shank Dia. (mm) | Shank Length (mm) | Applicable Insert |
|---------|------------|------------------|-----------------|-------------------|---------------------|-----------------|-------------------|-------------------|
| | | | D | FL | L | d | l2 | |
| 7800100 | Flat Shank | PHP140FS20M04-3D | 14.0 | 42 | 116 | 20 | 50 | SCMT04... |
| 7800101 | | PHP145FS20M04-3D | 14.5 | 45 | 119 | 20 | 50 | |
| 7800102 | | PHP150FS20M04-3D | 15.0 | 45 | 119 | 20 | 50 | |
| 7800103 | | PHP155FS20M04-3D | 15.5 | 48 | 122 | 20 | 50 | |
| 7800104 | | PHP160FS20M04-3D | 16.0 | 48 | 122 | 20 | 50 | |
| 7800105 | | PHP165FS20M05-3D | 16.5 | 51 | 125 | 20 | 50 | SCMT05... |
| 7800106 | | PHP170FS20M05-3D | 17.0 | 51 | 125 | 20 | 50 | |
| 7800107 | | PHP175FS25M05-3D | 17.5 | 54 | 134 | 25 | 56 | |
| 7800108 | | PHP180FS25M05-3D | 18.0 | 54 | 134 | 25 | 56 | |
| 7800109 | | PHP185FS25M06-3D | 18.5 | 57 | 137 | 25 | 56 | SCMT06... |
| 7800110 | | PHP190FS25M06-3D | 19.0 | 57 | 137 | 25 | 56 | |
| 7800111 | | PHP195FS25M06-3D | 19.5 | 60 | 140 | 25 | 56 | |
| 7800112 | | PHP200FS25M06-3D | 20.0 | 60 | 140 | 25 | 56 | |
| 7800113 | | PHP205FS25M06-3D | 20.5 | 63 | 143 | 25 | 56 | SCMT07... |
| 7800114 | | PHP210FS25M06-3D | 21.0 | 63 | 143 | 25 | 56 | |
| 7800115 | | PHP215FS25M07-3D | 21.5 | 66 | 146 | 25 | 56 | |
| 7800116 | | PHP220FS25M07-3D | 22.0 | 66 | 146 | 25 | 56 | |
| 7800117 | | PHP225FS25M07-3D | 22.5 | 69 | 149 | 25 | 56 | SCMT08... |
| 7800118 | | PHP230FS25M07-3D | 23.0 | 69 | 149 | 25 | 56 | |
| 7800119 | | PHP235FS32M07-3D | 23.5 | 72 | 156 | 32 | 60 | |
| 7800120 | | PHP240FS32M07-3D | 24.0 | 72 | 156 | 32 | 60 | |
| 7800121 | | PHP245FS32M08-3D | 24.5 | 75 | 159 | 32 | 60 | SCMT10... |
| 7800122 | | PHP250FS32M08-3D | 25.0 | 75 | 159 | 32 | 60 | |
| 7800123 | | PHP255FS32M08-3D | 25.5 | 78 | 162 | 32 | 60 | |
| 7800124 | | PHP260FS32M08-3D | 26.0 | 78 | 162 | 32 | 60 | |
| 7800125 | | PHP265FS32M08-3D | 26.5 | 81 | 165 | 32 | 60 | SCMT12... |
| 7800126 | | PHP270FS32M08-3D | 27.0 | 81 | 165 | 32 | 60 | |
| 7800127 | | PHP280FS32M08-3D | 28.0 | 84 | 168 | 32 | 60 | |
| 7800128 | | PHP290FS32M10-3D | 29.0 | 87 | 171 | 32 | 60 | |
| 7800130 | | PHP300FS32M10-3D | 30.0 | 90 | 179 | 32 | 60 | SCMT12... |
| 7800131 | | PHP310FS32M10-3D | 31.0 | 93 | 182 | 32 | 60 | |
| 7800132 | | PHP320FS32M10-3D | 32.0 | 96 | 185 | 32 | 60 | |
| 7800133 | | PHP330FS40M10-3D | 33.0 | 99 | 196 | 40 | 68 | |
| 7800134 | | PHP340FS40M12-3D | 34.0 | 102 | 199 | 40 | 68 | SCMT12... |
| 7800135 | | PHP350FS40M12-3D | 35.0 | 105 | 202 | 40 | 68 | |
| 7800136 | | PHP360FS40M12-3D | 36.0 | 108 | 205 | 40 | 68 | |
| 7800137 | | PHP370FS40M12-3D | 37.0 | 111 | 218 | 40 | 68 | |
| 7800138 | | PHP380FS40M12-3D | 38.0 | 114 | 221 | 40 | 68 | |
| 7800139 | | PHP390FS40M12-3D | 39.0 | 117 | 224 | 40 | 68 | |
| 7800140 | | PHP400FS40M12-3D | 40.0 | 120 | 227 | 40 | 68 | |

Packed: 1 pc.

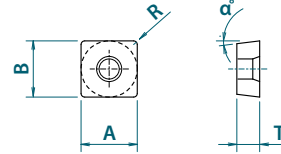
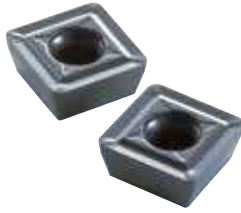
Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**





List 78PHP

PHP Inserts



| Designation | No. of Cutting Edges | Insert Size | | | | EDP Number | |
|---------------|----------------------|-------------|--------|----------|--------|------------|---------|
| | | A x B (mm) | T (mm) | α | R (mm) | XP9040 | XC9025 |
| SCMT042204-DM | 4 | 4.8 x 4.8 | 2.2 | 7° | 0.4 | 7818001 | 7817001 |
| SCMT052404-DM | | 5.4 x 5.4 | 2.4 | | | 7818002 | 7817002 |
| SCMT062806-DM | | 6.2 x 6.2 | 2.8 | | 0.6 | 7818003 | 7817003 |
| SCMT073206-DM | | 7.2 x 7.2 | 3.2 | | | 7818004 | 7817004 |
| SCMT083608-DM | | 8.6 x 8.6 | 3.6 | | 0.8 | 7818005 | 7817005 |
| SCMT104208-DM | | 10.0 x 10.0 | 4.2 | | | 7818006 | 7817006 |
| SCMT125008-DM | | 12.3 x 12.3 | 5.0 | | | 7818007 | 7817007 |

Packed: 10 pcs.

Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**



List 7808H

PHP Accessories

| Appearance | EDP No. | Designation | Applicable Insert | Recommended Tightening Torque |
|------------|-----------------|--------------------------------|-------------------|-------------------------------|
| | 7808100 | FS18538 (M1.8 x 3.8, Torx 6) | SCMT04... | 0.7 Nm |
| | 7808102 | FS20540 (M2 x 4, Torx 6) | SCMT05... | 0.7 Nm |
| | 7808104 | FS22550 (M2.2 x 5, Torx 7) | SCMT06... | 1.0 Nm |
| | 7808108 | FS25560 (M2.5 x 6, Torx 8) | SCMT07... | 1.6 Nm |
| | 7808110 | FS30573 (M3 x 7.3, Torx 8) | SCMT08... | 1.6 Nm |
| | 7808111 | FS35572 (M3.5 x 7.2, Torx 15) | SCMT10... | 3.2 Nm |
| | 7808113 | FS45510 (M4.5 x 10.5, Torx 20) | SCMT12... | 5.0 Nm |
| | 7808203 | T6-D (Torx 6) | SCMT04... | |
| | | | SCMT05... | |
| | 7808204 | T7-D (Torx 7) | SCMT06... | |
| | 7808205 | T8-D (Torx 8) | SCMT07... | |
| | | | SCMT08... | |
| | 7808208 | T15-D (Torx 15) | SCMT10... | |
| 7808209 | T20-D (Torx 20) | SCMT12... | | |

Packed: Clamping Screws = 10 pcs; Wrench = 1 pc.

Note: Wrench sold separately.

This item is stocked overseas. Please contact OSG for availability and delivery.



Cutting Conditions

| Work Material | Tensile Strength - Hardness | Drilling Speed Vc (SFM) | Feed Rate f (in/rev) | | | |
|--|-----------------------------|-------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | | | Ø14-20.5mm | Ø21-28mm | Ø29-34mm | Ø35-40mm |
| P Mild Steels, Carbon Steels (1010, 1018) Carbon Steels, Alloy Steels (1050, 4140) Die Steels (H13, D2) | ~180 HB | 655 (495 - 820) | 0.004 (0.002 - 0.005) | 0.005 (0.004 - 0.007) | 0.007 (0.005 - 0.008) | 0.010 (0.008 - 0.011) |
| | ~280 HB | 525 (330 - 720) | 0.004 (0.002 - 0.005) | 0.005 (0.004 - 0.007) | 0.007 (0.005 - 0.008) | 0.010 (0.008 - 0.011) |
| | ~280 HB | 460 (265 - 590) | 0.003 (0.002 - 0.005) | 0.005 (0.002 - 0.006) | 0.006 (0.004 - 0.007) | 0.006 (0.004 - 0.008) |
| M Stainless Steels (304, 420) | ~250 HB | 495 (330 - 590) | 0.003 (0.002 - 0.005) | 0.004 (0.002 - 0.005) | 0.006 (0.004 - 0.007) | 0.007 (0.006 - 0.008) |
| K Cast Iron (No. 35 B) Ductile Cast Iron (60-40-18) | ~350 N/mm ² | 495 (330 - 590) | 0.004 (0.002 - 0.005) | 0.005 (0.004 - 0.007) | 0.007 (0.005 - 0.008) | 0.010 (0.008 - 0.011) |
| | ~800 N/mm ² | 425 (265 - 495) | 0.004 (0.002 - 0.005) | 0.005 (0.003 - 0.006) | 0.006 (0.004 - 0.008) | 0.008 (0.006 - 0.010) |
| N Aluminum Alloys (6061, 7075) | ~13% Si | 720 (330 - 2625) | 0.004 (0.002 - 0.008) | 0.005 (0.004 - 0.010) | 0.007 (0.005 - 0.012) | 0.010 (0.008 - 0.014) |
| S Heat Resistant Alloys (Inconel 718) Titanium Alloy (Ti-6Al-4V) | - | 100 (50 - 165) | 0.002 (0.001 - 0.003) | 0.002 (0.001 - 0.004) | 0.003 (0.002 - 0.005) | 0.004 (0.002 - 0.006) |
| | - | 195 (100 - 330) | 0.002 (0.002 - 0.003) | 0.003 (0.002 - 0.005) | 0.004 (0.003 - 0.006) | 0.005 (0.004 - 0.006) |

Recommended Materials by Application

| Insert Grade | Chip Breaker | Coolant | P | M | K | N | S | H |
|--------------|--------------|---------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|---|
| XP9040 | DM | Yes | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| XC9025 | DM | Yes | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |

DM: Center Cutting Drill

good best



List 52510

PZAG SA (Inch)

NEW



SPEED
FEED
P1369

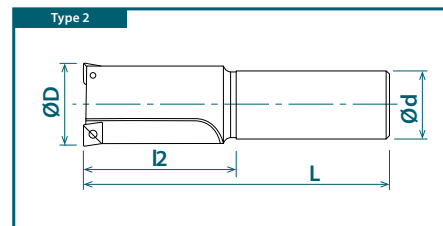
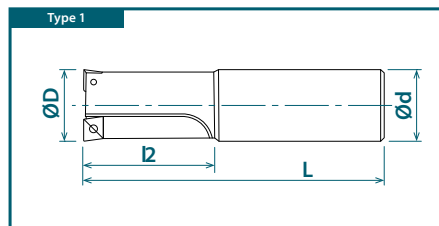


Recommended Materials: p1369
Accessories & Inserts: p1368



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (inch) | No. of Teeth | Shank Dia. (inch) | Overall Length (inch) | Neck Length (inch) | Min. Pre-Drilled Hole Dia. | Ar Max for Plunging | Applicable Insert |
|----------|----------------------|------------|-------------------|------|---------------------|-----------------|-------------------------|-----------------------------|--------------------------|----------------------------------|---------------------------|----------------------|
| | | | | | D | | d | L | l2 | | | |
| 52510000 | Cylindrical Shank | Normal | PZAG04R053SA075-2 | 1 | 0.5313 | 2 | 0.750 | 3.813 | 1.063 | 0.216 | 0.157 | ZPNT04 |
| 52510001 | | | PZAG04R063SA075-2 | 1 | 0.6250 | 2 | 0.750 | 4.000 | 1.250 | 0.310 | 0.157 | |
| 52510002 | | | PZAG06R072SA075-2 | 1 | 0.7188 | 2 | 0.750 | 4.188 | 1.438 | 0.246 | 0.236 | ZPNT06 |
| 52510003 | | | PZAG06R075SA075-2 | 1 | 0.7500 | 2 | 0.750 | 4.250 | 1.500 | 0.278 | 0.236 | |
| 52510004 | | | PZAG06R081SA100-2 | 1 | 0.8125 | 2 | 1.000 | 4.625 | 1.625 | 0.340 | 0.236 | |
| 52510005 | | | PZAG06R091SA100-2 | 1 | 0.9063 | 2 | 1.000 | 4.813 | 1.813 | 0.434 | 0.236 | |
| 52510006 | | | PZAG09R100SA100-2 | 1 | 1.0000 | 2 | 1.000 | 5.000 | 2.000 | 0.291 | 0.354 | ZPNT09 |
| 52510007 | | | PZAG09R119SA125-2 | 1 | 1.1875 | 2 | 1.250 | 5.525 | 2.375 | 0.479 | 0.354 | |
| 52510008 | | | PZAG09R125SA125-2 | 1 | 1.2500 | 2 | 1.250 | 5.650 | 2.500 | 0.541 | 0.354 | |
| 52510009 | | | PZAG09R138SA125-2 | 2 | 1.3750 | 2 | 1.250 | 5.900 | 2.750 | 0.666 | 0.354 | |
| 52510010 | | | PZAG09R150SA125-2 | 2 | 1.5000 | 2 | 1.250 | 6.150 | 3.000 | 0.791 | 0.354 | |
| 52510011 | | | PZAG09R163SA125-2 | 2 | 1.6250 | 2 | 1.250 | 6.400 | 3.250 | 0.916 | 0.354 | |
| 52510012 | PZAG09R181SA125-2 | 2 | 1.8125 | 2 | 1.250 | 6.775 | 3.625 | 1.104 | 0.354 | | | |

Packed: 1 pc.





List 78321

PZAG SS (Metric)

NEW



SPEED FEED
P1369



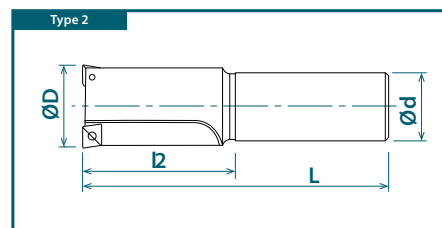
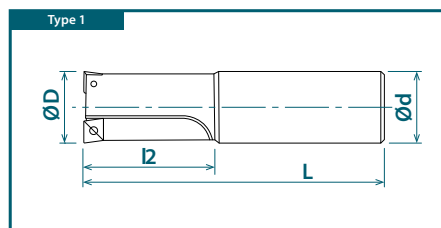
Recommended Materials: p1369
Accessories & Inserts: p1368



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (mm) | No. of Teeth | Shank Dia. (mm) | Overall Length (mm) | Neck Length (mm) | Min. Pre-Drilled Hole Dia. | Ar Max for Plunging | Applicable Insert |
|---------|-------------------|------------|-------------------|------|----------------|--------------|-----------------|---------------------|------------------|----------------------------|---------------------|-------------------|
| | | | | | D | | d | L | l2 | | | |
| 7832100 | Cylindrical Shank | Normal | PZAG04R014SS20-2 | 1 | 14 | 2 | 20 | 100 | 30 | 6 | 4 | ZPNT04 |
| 7832101 | | | PZAG06R0175SS20-2 | 1 | 17.5 | 2 | 20 | 105 | 35 | 5.5 | 6 | ZPNT06 |
| 7832102 | | | PZAG06R020SS20-2 | 1 | 20 | 2 | 20 | 110 | 40 | 8 | 6 | |
| 7832103 | | | PZAG06R023SS25-2 | 1 | 23 | 2 | 25 | 125 | 50 | 11 | 6 | |
| 7832104 | | | PZAG09R026SS25-2 | 2 | 26 | 2 | 25 | 130 | 55 | 8 | 9 | |
| 7832105 | | | PZAG09R029SS32-2 | 1 | 29 | 2 | 32 | 140 | 60 | 11 | 9 | |
| 7832106 | | | PZAG09R032SS32-2 | 1 | 32 | 2 | 32 | 145 | 65 | 14 | 9 | |
| 7832107 | | | PZAG09R035SS32-2 | 2 | 35 | 2 | 32 | 150 | 70 | 17 | 9 | |
| 7832108 | | | PZAG09R039SS32-2 | 2 | 39 | 2 | 32 | 160 | 80 | 21 | 9 | |
| 7832109 | | | PZAG09R043SS32-2 | 2 | 43 | 2 | 32 | 170 | 90 | 25 | 9 | |
| 7832110 | PZAG09R048SS32-2 | 2 | 48 | 2 | 32 | 180 | 100 | 30 | 9 | ZPNT09 | | |

Packed: 1 pc.

Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**



List 52511

PZAG Bore (Inch)

NEW



SPEED FEED
P1369

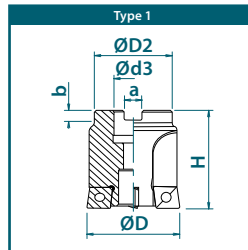


Recommended Materials: p1369
Accessories & Inserts: p1368



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (inch) | No. of Teeth | Tool Height (inch) | Flange Dia. (inch) | Bore Dia. (inch) | Keyway Width (inch) | Keyway Depth (inch) | Min. Pre-Drilled Hole Dia. | Ar Max for Plunging | Applicable Insert |
|----------|------------------|------------|------------------|------|------------------|--------------|--------------------|--------------------|------------------|---------------------|---------------------|----------------------------|---------------------|-------------------|
| | | | | | D | | H | D2 | d3 | a | b | | | |
| 52511000 | Bore | Normal | PZAG13R200A075-4 | 1 | 2.000 | 4 | 2.480 | 1.772 | 0.750 | 0.315 | 0.197 | 1.016 | 0.492 | ZPNT13 |
| 52511001 | | | PZAG13R238A075-4 | 1 | 2.375 | 4 | 2.480 | 1.772 | 0.750 | 0.315 | 0.197 | 1.391 | 0.492 | |
| 52511002 | | | PZAG13R250A075-4 | 1 | 2.500 | 4 | 2.480 | 1.772 | 0.750 | 0.315 | 0.197 | 1.516 | 0.492 | |
| 52511003 | | | PZAG13R275A100-4 | 1 | 2.750 | 4 | 2.480 | 2.362 | 1.000 | 0.375 | 0.236 | 1.766 | 0.492 | ZPNT17 |
| 52511004 | | | PZAG17R300A100-4 | 1 | 3.000 | 4 | 2.480 | 2.362 | 1.000 | 0.375 | 0.236 | 1.740 | 0.630 | |
| 52511005 | PZAG17R313A100-4 | 1 | 3.125 | 4 | 2.480 | 2.362 | 1.000 | 0.375 | 0.236 | 1.866 | 0.630 | | | |

Packed: 1 pc.





List 78421

PZAG Bore (Metric)

NEW



SPEED FEED
P1369



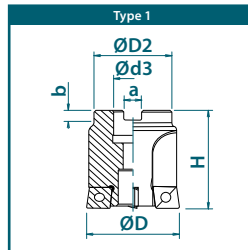
Recommended Materials: p1369
Accessories & Inserts: p1368



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (mm) | No. of Teeth | Tool Height (mm) | Flange Dia. (mm) | Bore Dia. (mm) | Keyway Width (mm) | Keyway Depth (mm) | Min. Pre-Drilled Hole Dia. | Ar Max for Plunging | Applicable Insert |
|---------|-----------|------------|-----------------|------|----------------|--------------|------------------|------------------|----------------|-------------------|-------------------|----------------------------|---------------------|-------------------|
| | | | | | D | | H | D2 | d3 | a | b | | | |
| 7832111 | Bore | Normal | PZAG13R054M22-4 | 1 | 54 | 4 | 63 | 45 | 22 | 10.4 | 6.3 | 29 | 12.5 | ZPNT13 |
| 7832112 | | | PZAG13R058M22-4 | 1 | 58 | 4 | 63 | 45 | 22 | 10.4 | 6.3 | 33 | 12.5 | |
| 7832113 | | | PZAG13R062M22-4 | 1 | 62 | 4 | 63 | 45 | 22 | 10.4 | 6.3 | 37 | 12.5 | |
| 7832114 | | | PZAG13R067M22-4 | 1 | 67 | 4 | 63 | 45 | 22 | 10.4 | 6.3 | 42 | 12.5 | |
| 7832115 | | | PZAG13R072M22-4 | 1 | 72 | 4 | 63 | 45 | 22 | 10.4 | 6.3 | 47 | 12.5 | |
| 7832116 | | | PZAG17R076M22-4 | 1 | 76 | 4 | 63 | 45 | 22 | 10.4 | 6.3 | 44 | 16 | |
| 7832117 | | | PZAG17R082M22-4 | 1 | 82 | 4 | 63 | 45 | 22 | 10.4 | 6.3 | 50 | 16 | ZPNT17 |

Packed: 1 pc.

Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**

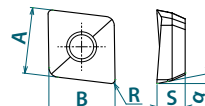
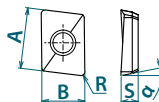




List 78PZAG

NEW

PZAG Inserts



| Designation | No. of Cutting Edges | Insert Size | | | | | EDP Number | |
|--------------|----------------------|---------------|--------|----------|--------|------|------------|---------|
| | | A x B (mm) | S (mm) | α | R (mm) | Type | XP8030 | XC8035 |
| ZPNT040204ER | 2 | 6.35 x 4.45 | 1.76 | 11° | 0.4 | 1 | 7814101 | 7815101 |
| ZPNT060204EN | | 6.95 x 6.95 | 2.93 | | 0.4 | 2 | 7814103 | 7815103 |
| ZPNT090404EN | | 9.94 x 9.94 | 4.65 | | 0.4 | 2 | 7814106 | 7815106 |
| ZPNT130504EN | | 13.92 x 13.92 | 5.46 | | 0.4 | 2 | 7814109 | 7815109 |
| ZPNT170608EN | | 17.85 x 17.85 | 6.31 | | 0.8 | 2 | 7814111 | 7815111 |

Packed: 10 pcs.



List 7808H

PZAG Accessories

| Appearance | EDP No. | Designation | Applicable Insert | Recommended Tightening Torque |
|--------------------|---------|---------------------------------|------------------------|-------------------------------|
| Clamping Screw | 7808096 | FS18536P (M1.8 x 3.6, Torx 6IP) | ZPNT04... | 0.7 Nm |
| | 7808138 | FS22550P (M2.2 x 5, Torx 7IP) | ZPNT06... | 1.0 Nm |
| | 7808135 | FS30570P (M3 x 7, Torx 9IP) | ZPNT09... | 2.2 Nm |
| | 7808137 | FS35586P (Torx 15IP) Screw | ZPNT10... | 3.2 Nm |
| | 7808114 | FS45510P (M4.5 x 10, Torx 20IP) | ZPNT13... ZPNT17... | 5.0 Nm |
| Wrench | 7808223 | 6IP-D (Torx 6IP) Wrench | ZPNT04... | |
| | 7808224 | 7IP-D (Torx 7IP) Wrench | ZPNT06... | |
| | 7808226 | 9IP-D (Torx 9IP) Wrench | ZPNT09... | |
| | 7808229 | 20IP-D (Torx 20IP) Wrench | ZPNT13... ZPNT17... | |

Packed: Clamping Screws = 10 pcs.; Wrench = 1 pc.
Note: Wrench sold separately.





Cutting Conditions

| Work Material | Tensile Strength - Hardness | Drilling Speed Vc (SFM) | Feed Rate f (in/rev) | | | | |
|--|-----------------------------|-------------------------|--------------------------|------------------------|------------------------|------------------------|------------------------|
| | | | Ø0.531-0.625 (14-17.5mm) | Ø0.719-0.906 (20-23mm) | Ø1.000-1.813 (26-48mm) | Ø2.000-2.750 (54-72mm) | Ø3.000-0.313 (76-82mm) |
| P Mild Steels, Carbon Steels (1010, 1018) Carbon Steels, Alloy Steels (1050, 4140) Die Steels (H13, D2) | ~180 HB | 525 (330 - 655) | 0.0055 (0.003-0.008) | 0.007 (0.004-0.010) | 0.008 (0.005-0.012) | 0.016 (0.008-0.024) | 0.016 (0.008-0.024) |
| | ~280 HB | 495 (330 - 655) | 0.0055 (0.003-0.008) | 0.007 (0.004-0.010) | 0.008 (0.005-0.012) | 0.016 (0.008-0.024) | 0.016 (0.008-0.024) |
| | ~280 HB | 395 (265 - 590) | 0.005 (0.003-0.006) | 0.0055 (0.004-0.008) | 0.007 (0.005-0.010) | 0.016 (0.008-0.020) | 0.016 (0.008-0.020) |
| M Stainless Steels (304, 420) | ~250 HB | 425 (265 - 590) | 0.004 (0.003-0.006) | 0.005 (0.004-0.008) | 0.006 (0.005-0.010) | 0.014 (0.008-0.020) | 0.014 (0.008-0.020) |
| K Cast Iron (No. 35 B) Ductile Cast Iron (60-40-18) | ~350 N/mm ² | 655 (495 - 915) | 0.006 (0.003-0.010) | 0.008 (0.004-0.012) | 0.012 (0.006-0.016) | 0.024 (0.012-0.032) | 0.024 (0.012-0.032) |
| | ~800 N/mm ² | 525 (330 - 720) | 0.0055 (0.003-0.008) | 0.007 (0.004-0.010) | 0.008 (0.006-0.012) | 0.016 (0.012-0.032) | 0.016 (0.012-0.032) |
| N Aluminum Alloys (6061, 7075) | ~13% Si | 650 (330 - 2625) | 0.006 (0.003-0.010) | 0.008 (0.004-0.012) | 0.012 (0.006-0.016) | 0.024 (0.012-0.031) | 0.024 (0.012-0.031) |
| S Heat Resistant Alloys (Inconel 718) Titanium Alloy (Ti-6Al-4V) | - | 165 (100 - 200) | 0.003 (0.002-0.0055) | 0.003 (0.0024-0.0055) | 0.005 (0.003-0.008) | 0.010 (0.006-0.016) | 0.010 (0.006-0.016) |
| | - | 200 (100 - 330) | 0.003 (0.002-0.0055) | 0.004 (0.0024-0.006) | 0.0055 (0.003-0.008) | 0.012 (0.006-0.020) | 0.012 (0.006-0.020) |
| H Pre-hardened Steel (P20, Stavax) Die Cast Steels (A2, S7) Hardened Steels (D2) | 40 - 43 Hrc | 330 (200 - 400) | 0.003 (0.002-0.0055) | 0.004 (0.0024-0.006) | 0.0055 (0.003-0.008) | 0.012 (0.006-0.020) | 0.012 (0.006-0.020) |
| | 43 - 48 Hrc | 260 (165 - 330) | 0.003 (0.002-0.0055) | 0.003 (0.0024-0.0055) | 0.005 (0.003-0.008) | 0.010 (0.006-0.016) | 0.010 (0.006-0.016) |
| | 50 - 55 Hrc | 200 (130 - 260) | 0.003 (0.002-0.0055) | 0.003 (0.002-0.0055) | 0.005 (0.003-0.008) | 0.010 (0.006-0.016) | 0.010 (0.006-0.016) |

Recommended Materials by Application

| Insert Grade | Chip Breaker | Coolant | P | M | K | N | S | H |
|--------------|--------------|---------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| XP8030 | - | Yes | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| XC8035 | - | No | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| | | Yes | <input type="checkbox"/> | <input type="checkbox"/> | | | | |

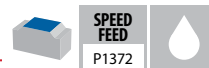
good best





List 52700

PAS Bore (Inch)



Recommended Materials: p1372
Accessories & Inserts: p1371



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (inch) | Effective Dia. (inch) | No. of Teeth | Tool Height (inch) | Flange Dia. (inch) | Bore Dia. (inch) | Keyway Width (inch) | Keyway Depth (inch) | Applicable Insert |
|----------|-----------|------------|-----------------|------|------------------|-----------------------|--------------|--------------------|--------------------|------------------|---------------------|---------------------|-------------------|
| | | | | | D | D1 | | H | D2 | d3 | a | b | |
| 52700000 | Bore | Normal | PAS15R200A075-4 | 1 | 2.590 | 2.000 | 4 | 1.772 | 1.772 | 0.750 | 0.315 | 0.197 | SNKU15... |
| 52700001 | | | PAS15R250A075-5 | 1 | 3.090 | 2.500 | 5 | 1.772 | 1.968 | 0.750 | 0.315 | 0.197 | |
| 52700002 | | | PAS15R300A100-6 | 1 | 3.590 | 3.000 | 6 | 1.968 | 2.362 | 1.000 | 0.375 | 0.236 | |
| 52700003 | | | PAS15R400A125-7 | 2 | 4.590 | 4.000 | 7 | 1.968 | 2.756 | 1.250 | 0.500 | 0.315 | |
| 52700004 | | | PAS15R500A150-8 | 2 | 5.590 | 5.000 | 8 | 2.480 | 3.543 | 1.500 | 0.625 | 0.394 | |
| 52700005 | | | PAS15R600A150-9 | 2 | 6.590 | 6.000 | 9 | 2.480 | 3.740 | 1.500 | 0.625 | 0.394 | |

Packed: 1 pc.



List 78020

PAS Bore (Metric)



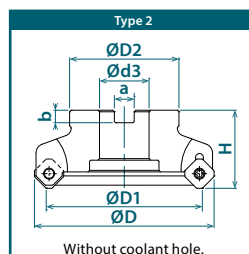
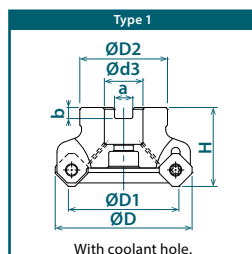
Recommended Materials: p1372
Accessories & Inserts: p1371



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (mm) | Effective Dia. (mm) | No. of Teeth | Tool Height (mm) | Flange Dia. (mm) | Bore Dia. (mm) | Keyway Width (mm) | Keyway Depth (mm) | Applicable Insert |
|---------|-----------|------------|------------------|------|----------------|---------------------|--------------|------------------|------------------|----------------|-------------------|-------------------|-------------------|
| | | | | | D | D1 | | H | D2 | d3 | a | b | |
| 7802000 | Bore | Normal | PAS15R050M22-4 | 1 | 65 | 50 | 4 | 45 | 45 | 22 | 10.4 | 6.3 | SNKU15... |
| 7802001 | | | PAS15R063M22-5 | 1 | 78 | 63 | 5 | 45 | 50 | 22 | 10.4 | 6.3 | |
| 7802002 | | | PAS15R080M25.4-6 | 1 | 95 | 80 | 6 | 50 | 60 | 25.4 | 9.5 | 6 | |
| 7802003 | | | PAS15R100M31.7-7 | 2 | 115 | 100 | 7 | 50 | 70 | 31.75 | 12.7 | 8 | |
| 7802004 | | | PAS15R125M38.1-8 | 2 | 140 | 125 | 8 | 63 | 90 | 38.1 | 15.9 | 10 | |

Packed: 1 pc.

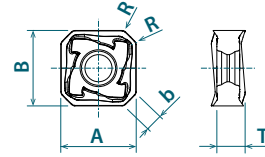
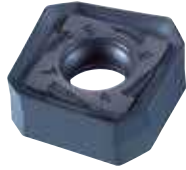
Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**





List 78PAS

PAS Inserts



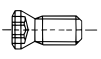
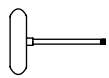
| Designation | No. of Cutting Edges | Insert Size | | | | | EDP Number | | | | |
|-----------------|----------------------|---------------|--------|--------|--------|-------------|------------|---------|---------|---------|----------|
| | | AxB (mm) | T (mm) | R (mm) | b (mm) | Aa Max (mm) | XC3025 | XP3035 | XP2040 | XC1015 | XC5040 |
| SNKU1505AZER-GM | 8 | 15.88 x 15.88 | 7.18 | 1.0 | 3.65 | 6.5 | 7819061 | 7814061 | 7813061 | - | - |
| SNKU1505AZER-GR | | | | | | | - | - | - | 7812060 | - |
| SNKU1505AZER-SM | | | | | | | - | - | - | - | 52700006 |

Packed: 10 pcs.



List 7808H

PAS Accessories

| Appearance | EDP No. | Designation | Applicable Cutter | | Recommended Tightening Torque |
|---|---------|------------------------------------|-------------------|----------------|-------------------------------|
| | | | (mm) | (inch) | |
|  Clamping Screw | 7808131 | FS45513P (M4.5 x 13, Torx 20IP) | PAS BORE Ø50-125 | PAS BORE Ø2-6" | 5.0 Nm |
|  Wrench | 7808000 | 20IP-T (Torx 20IP) | PAS BORE Ø50-125 | PAS BORE Ø2-6" | |

Packed: Clamping Screws = 10 pcs.; Wrench = 1 pc.
Note: Wrench sold separately.





Cutting Conditions

| Work Material | | Tensile Strength - Hardness | Insert Size | | |
|---------------|---|-----------------------------|---------------------------|----------------------------|-------------------------|
| | | | SNKU15... | | |
| | | | Face Milling | | |
| | | | Milling Speed Vc (SFM) | Feed Per Tooth fz(in/t) | Depth of Cut Aa (in) |
| P | Mild Steels, Carbon Steels (1010, 1018) | ~180 HB | 590 (330 - 820) | 0.007 (0.006 - 0.014) | 0.120 |
| | Carbon Steels, Alloy Steels (1050, 4140) | ~280 HB | 590 (330 - 820) | 0.007 (0.006 - 0.014) | 0.120 |
| | Die Steels (H13, D2) | ~280 HB | 495 (260 - 655) | 0.006 (0.004 - 0.012) | 0.120 |
| M | Stainless Steels (304, 420) | ~250 HB | 395 (260 - 590) | 0.005 (0.003 - 0.010) | 0.120 |
| K | Cast Iron (No. 35 B) | ~300 N/mm ² | 590 (330 - 1150) | 0.008 (0.006 - 0.014) | 0.160 |
| | Ductile Cast Iron (60-40-18) | ~600 N/mm ² | 590 (330 - 885) | 0.008 (0.004 - 0.012) | 0.120 |
| S | Heat Resistant Alloys (Inconel 718) | - | 115 (85 - 200) | 0.004 (0.002 - 0.006) | 0.040 |
| | Titanium Alloy (Ti-6Al-4V) | - | 130 (100 - 400) | 0.005 (0.003 - 0.008) | 0.060 |
| H | Pre-hardened Steel (P20, Stavax) | 40 - 43 HRC | 330 (195 - 495) | 0.005 (0.003 - 0.008) | 0.060 |
| | Die Cast Steels (A2, S7) | 43 - 48 HRC | 260 (130 - 395) | 0.004 (0.002 - 0.006) | 0.020 |
| | Hardened Steels (D2) | 50 - 55 HRC | 195 (130 - 295) | 0.003 (0.002 - 0.006) | 0.020 |

Recommended Materials by Application

| Insert Grade | Chip Breaker | Coolant | P | M | K | N | S | H |
|--------------|--------------|---------|-------------------------------------|-------------------------------------|-------------------------------------|---|-------------------------------------|--------------------------|
| XC3025 | GM | - | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | | |
| XP3035 | GM | - | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| XP2040 | GM | - | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> |
| | | Yes | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | |
| XC1015 | GR | - | | | <input checked="" type="checkbox"/> | | | |
| XC5040 | SM | Yes | | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | |

GM: Medium Cutting GR: Rough Cutting SM: Heat Resistant Alloy

good best





List 52800

PAO Bore (Inch)



SPEED
FEED
P1377

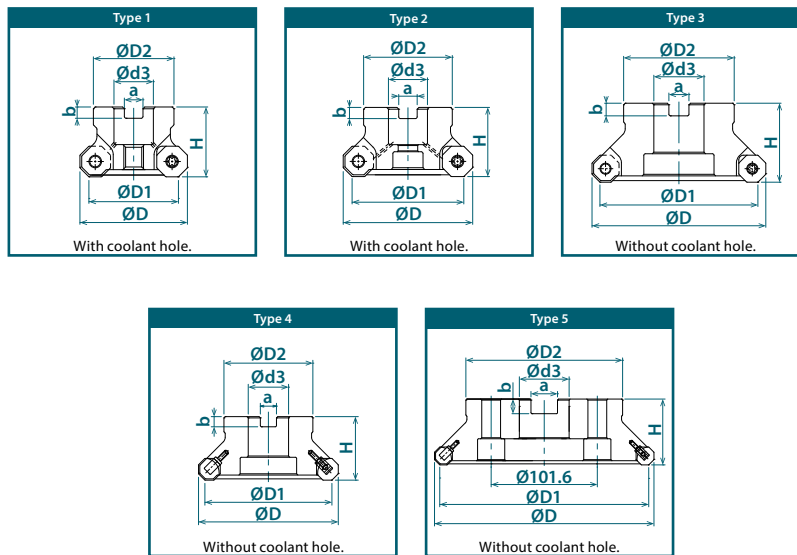


Recommended Materials: p1377
Accessories & Inserts: p1375-1376



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (inch) | Effective Dia. (inch) | No. of Teeth | Tool Height (inch) | Flange Dia. (inch) | Bore Dia. (inch) | Keyway Width (inch) | Keyway Depth (inch) | Applicable Insert |
|----------|-------------------|-------------------|------------------|-------|------------------|-----------------------|--------------|--------------------|--------------------|------------------|---------------------|---------------------|--------------------------|
| | | | | | D | D1 | | H | D2 | d3 | a | b | |
| 52800000 | Bore | Normal | PAO06R200A075-5 | 1 | 2.401 | 2.000 | 5 | 1.575 | 1.772 | 0.750 | 0.315 | 0.197 | OZKU06... / XAHT06... |
| 52800001 | | | PAO06R250A075-7 | 2 | 2.901 | 2.500 | 7 | 1.575 | 1.968 | 0.750 | 0.315 | 0.197 | |
| 52800002 | | | PAO06R300A100-8 | 2 | 3.401 | 3.000 | 8 | 1.968 | 2.362 | 1.000 | 0.375 | 0.236 | |
| 52800003 | | | PAO06R400A125-10 | 3 | 4.401 | 4.000 | 10 | 1.968 | 2.756 | 1.250 | 0.500 | 0.315 | |
| 52800004 | | | PAO06R500A150-12 | 3 | 5.401 | 5.000 | 12 | 2.480 | 3.543 | 1.500 | 0.625 | 0.394 | |
| 52800005 | | PAO06R600A150-13 | 3 | 6.401 | 6.000 | 13 | 2.480 | 3.740 | 1.500 | 0.625 | 0.394 | | |
| 52800006 | | PAO06R400A125W-14 | Close | 4 | 4.401 | 4.000 | 14 | 1.968 | 2.756 | 1.250 | 0.500 | 0.315 | |
| 52800007 | | PAO06R500A150W-17 | | 4 | 5.401 | 5.000 | 17 | 2.480 | 3.543 | 1.500 | 0.625 | 0.394 | |
| 52800008 | | PAO06R600A150W-20 | | 4 | 6.401 | 6.000 | 20 | 2.480 | 3.740 | 1.500 | 0.625 | 0.394 | |
| 52800009 | PAO06R800A250W-25 | 5 | | 8.401 | 8.000 | 25 | 2.480 | 5.118 | 2.500 | 1.000 | 0.551 | | |

Packed: 1pc.



List 78120

PAO Bore (Metric)

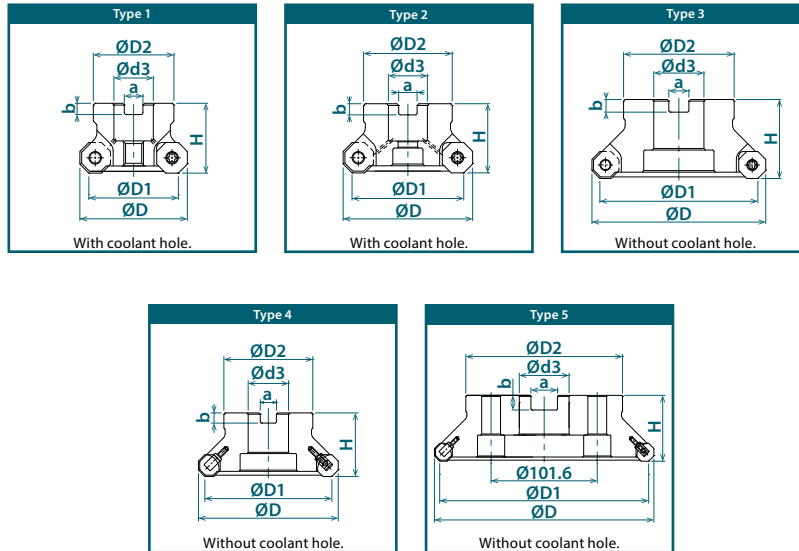
Recommended Materials: p1377
Accessories & Inserts: p1375-1376



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (mm) | Effective Dia. (mm) | No. of Teeth | Tool Height (mm) | Flange Dia. (mm) | Bore Dia. (mm) | Keyway Width (mm) | Keyway Depth (mm) | Applicable Insert |
|---------|-----------|--------------------|-------------------|-------|----------------|---------------------|--------------|------------------|------------------|----------------|-------------------|-------------------|--------------------------|
| | | | | | D | D1 | | H | D2 | d3 | a | b | |
| 7802020 | Bore | Normal | PAO06R050M22-5 | 1 | 60.2 | 50 | 5 | 40 | 45 | 22 | 10.4 | 6.3 | OZKU06... / XAHT06... |
| 7802021 | | | PAO06R063M22-7 | 2 | 73.2 | 63 | 7 | 40 | 50 | 22 | 10.4 | 6.3 | |
| 7802022 | | | PAO06R080M25.4-8 | 2 | 90.2 | 80 | 8 | 50 | 60 | 25.4 | 9.5 | 6 | |
| 7802023 | | | PAO06R100M31.7-10 | 3 | 110.2 | 100 | 10 | 50 | 70 | 31.75 | 12.7 | 8 | |
| 7802024 | | | PAO06R125M38.1-12 | 3 | 135.2 | 125 | 12 | 63 | 90 | 38.1 | 15.9 | 10 | |
| 7802089 | | PAO06R100M31.7W-14 | 4 | 110.2 | 100 | 14 | 50 | 70 | 31.75 | 12.7 | 8 | | |
| 7802091 | | PAO06R125M38.1W-17 | 4 | 135.2 | 125 | 17 | 63 | 90 | 38.1 | 15.9 | 10 | | |
| 7802093 | | PAO06R160M50.8W-20 | 4 | 170.2 | 160 | 20 | 63 | 100 | 50.8 | 19.0 | 11 | | |
| 7802095 | | PAO06R200M47.6W-25 | 5 | 210.2 | 200 | 25 | 63 | 150 | 47.625 | 25.4 | 14 | | |

Packed: 1 pc.

Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**





List 78PAO

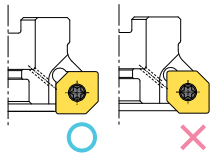
PAO Inserts



| Designation | No. of Cutting Edges | Insert Size | | | | | | | EDP Number | | | | | | | | | |
|-----------------|----------------------|-------------|--------|--------|----------|--------|--------|-------------|------------|---------|---------|---------|---------|---------|---------|---------|--------|---------|
| | | B (mm) | T (mm) | l (mm) | α | R (mm) | b (mm) | Aa Max (mm) | XC3020 | XP3025 | XC3030 | XP3035 | XP2025 | XP2040 | XC1015 | XP1020 | XC5040 | |
| OZKU060508SR-GL | 16 | 17.1 | 5.66 | 6 | 3° | 0.8 | 2 | 3.5 | 7827063 | 7828063 | 7825063 | 7814063 | 7826063 | 7813063 | - | - | - | |
| OZKU060508SR-GM | | | | | | | | | 7827062 | 7828062 | 7825062 | 7814062 | 7826062 | 7813062 | 7812062 | 7821062 | - | - |
| OZKU060508SR-GR | | | | | | | | | - | - | - | - | - | - | 7812086 | 7821086 | - | - |
| OZKU060508ER-SM | | | | | | | | | - | - | - | - | - | - | - | - | - | 7816085 |
| XAHT060525SR-GM | 2 | 5.56 | 10 | - | 2.5 | - | - | - | - | - | 7814064 | - | - | 7812064 | - | - | | |

Packed: 10 pcs.




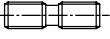
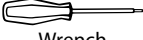
Correct orientation of wiper insert:





List 7808H

PAO Accessories

| Appearance | EDP No. | Designation | Applicable Cutter | | Recommended Tightening Torque |
|---|---------|-------------------------------|----------------------|-------------------|-------------------------------|
| | | | (mm) | (inch) | |
|  Clamping Screw | 7808130 | FS50614 (M5 x 14, Torx 20) | PAO BORE Ø50-125 | PAO BORE Ø2-6" | 5.0 Nm |
|  Power Screw | 7808151 | PS1031 (M10x31) | PAO BORE Ø50 | PAO BORE Ø2" | 20.0 Nm |
|  Wedge | 7808141 | W12F-06N (M6) | PAO BORE(W) Ø100-200 | PAO BORE(W) Ø4-8" | |
|  Wedge Clamping Screw | 7808140 | WS0621T (M6x21) | PAO BORE(W) Ø100-200 | PAO BORE(W) Ø4-8" | 4.0 Nm |
|  Wrench | 7808208 | T15-D (Torx 15) | PAO BORE(W) Ø100-200 | PAO BORE(W) Ø4-8" | |
| | 7808209 | T20-D (Torx 20) | PAO BORE Ø50-125 | PAO BORE Ø2-6" | |

Packed: Clamping Screws = 10 pcs.; Power Screw = 1 pc.; Wedge = 10 pcs.;
Wedge Clamping Screw = 10 pcs.; Wrench = 1 pc.
Note: Wrench sold separately.



Cutting Conditions

| Work Material | Tensile Strength - Hardness | Insert Size | | | |
|---------------------------|--|------------------------|---------------------|--------------------------|-------------------------|
| | | OZKU06... / XAHT06... | | | |
| | | Face Milling | | | Depth of Cut Aa (in) |
| Milling Speed Vc (SFM) | Feed Per Tooth fz (in/t) | | | | |
| P | Mild Steels, Carbon Steels (1010, 1018) | ~180 HB | 590 (330 - 820) | 0.010 (0.008 - 0.020) | 0.080 |
| | Carbon Steels, Alloy Steels (1050, 4140) | ~280 HB | 590 (330 - 820) | 0.010 (0.008 - 0.020) | 0.080 |
| | Die Steels (H13, D2) | ~280 HB | 495 (260 - 655) | 0.010 (0.006 - 0.016) | 0.080 |
| M | Stainless Steels (304, 420) | ~250 HB | 395 (260 - 590) | 0.008 (0.006 - 0.016) | 0.080 |
| K | Cast Iron (No. 35 B) | ~300 N/mm ² | 655 (330 - 1150) | 0.012 (0.008 - 0.020) | 0.080 |
| | Ductile Cast Iron (60-40-18) | ~600 N/mm ² | 590 (330 - 885) | 0.011 (0.006 - 0.016) | 0.080 |
| S | Heat Resistant Alloys (718 Inconel) | - | 115 (85 - 200) | 0.005 (0.002 - 0.008) | 0.040 |
| | Titanium Alloy (Ti-6Al-4V) | - | 130 (100 - 400) | 0.006 (0.004 - 0.010) | 0.060 |
| H | Pre-hardened Steel (P20, Stavax) | 40 - 43 HRC | 330 (195 - 495) | 0.006 (0.004 - 0.010) | 0.060 |
| | Die Cast Steels (A2, S7) | 43 - 48 HRC | 260 (130 - 395) | 0.005 (0.002 - 0.008) | 0.020 |
| | Hardened Steels (D2) | 50 - 55 HRC | 195 (130 - 295) | 0.004 (0.002 - 0.008) | 0.020 |

Recommended Materials by Application

| Insert Grade | Chip Breaker | Coolant | P | M | K | N | S | H |
|--------------|--------------|---------|-------------------------------------|-------------------------------------|--|---|-------------------------------------|--------------------------|
| XC3020 | GL / GM | - | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | | |
| XP3025 | GL / GM | Yes | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | | |
| XC3030 | GL / GM | - | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | | |
| XP3035 | GL / GM | - | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| XP2025 | GL / GM | Yes | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | |
| XP2040 | GL / GM | - | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> |
| | | Yes | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | |
| XC1015 | GM / GR | - | | | <input checked="" type="checkbox"/> * | | | |
| XP1020 | GM / GR | - | | | <input checked="" type="checkbox"/> ** | | | |
| XC5040 | SM | Yes | | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | |

GM: Medium Cutting GR: Rough Cutting SM: Heat Resistant Alloy

*: XC1015 best recommended for grey cast iron

** : XP1020 best recommended for ductile cast iron

good best



List 78013

PSE SA/FA (Inch)



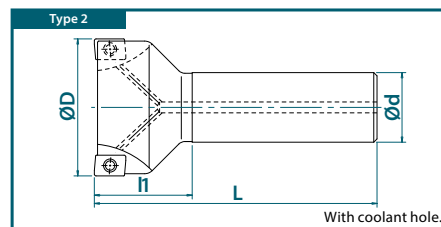
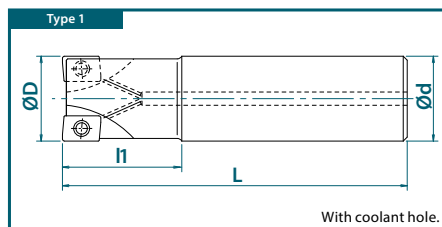
Recommended Materials: p1387
Accessories & Inserts: p1385-1386
Maximum Ramping Angle: p1388



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. | No. of Teeth | Shank Dia. | Overall Length | Neck Length | Applicable Insert |
|---------|-------------------------|------------------------|-------------------|-------------------|-----------|--------------|------------|----------------|-------------|-------------------|
| | | | | | (inch) | | (inch) | (inch) | (inch) | |
| | | | | | D | | | | | |
| | | | | | d | | | | | |
| | | | | | | | L | L1 | | |
| 7801300 | Cylindrical Shank Short | Normal | PSE11R063SA063-2S | 1 | 0.625 | 2 | 0.625 | 3.543 | 0.984 | ZD_T11... |
| 7801301 | | | PSE11R075SA075-3S | 1 | 0.750 | 3 | 0.750 | 3.937 | 1.181 | |
| 7801302 | | | PSE11R100SA100-3S | 1 | 1.000 | 3 | 1.000 | 4.724 | 1.378 | |
| 7801303 | | | PSE11R125SA125-3S | 1 | 1.250 | 3 | 1.250 | 5.118 | 1.772 | |
| 7801304 | | | PSE11R100SA100-4S | 1 | 1.000 | 4 | 1.000 | 4.724 | 1.378 | |
| 7801305 | | Close | PSE11R125SA125-5S | 1 | 1.250 | 5 | 1.250 | 5.118 | 1.772 | |
| 7801306 | | | PSE15R100SA100-2S | 1 | 1.000 | 2 | 1.000 | 4.724 | 1.378 | |
| 7801307 | | | Normal | PSE15R125SA125-2S | 1 | 1.250 | 2 | 1.250 | 5.118 | 1.772 |
| 7801308 | | | | PSE15R150SA125-3S | 2 | 1.500 | 3 | 1.250 | 5.512 | 1.969 |
| 7801309 | | | | PSE15R125SA125-3S | 1 | 1.250 | 3 | 1.250 | 5.118 | 1.772 |
| 7801310 | Close | PSE15R150SA125-4S | 2 | 1.500 | 4 | 1.250 | 5.512 | 1.969 | | |
| 7801336 | | Cylindrical Shank Long | Normal | PSE11R063SA063-2L | 1 | 0.625 | 2 | 0.625 | 5.906 | 1.969 |
| 7801337 | PSE11R075SA075-3L | | | 1 | 0.750 | 3 | 0.750 | 6.299 | 2.362 | |
| 7801338 | PSE11R100SA100-3L | | | 1 | 1.000 | 3 | 1.000 | 6.693 | 2.756 | |
| 7801339 | Close | | PSE11R125SA125-3L | 1 | 1.250 | 3 | 1.250 | 7.480 | 3.543 | |
| 7801340 | | | PSE11R100SA100-4L | 1 | 1.000 | 4 | 1.000 | 6.693 | 2.756 | |
| 7801341 | | | PSE11R125SA125-5L | 1 | 1.250 | 5 | 1.250 | 7.480 | 3.543 | |
| 7801342 | Normal | | PSE15R100SA100-2L | 1 | 1.000 | 2 | 1.000 | 6.693 | 2.756 | |
| 7801343 | | | PSE15R125SA125-2L | 1 | 1.250 | 2 | 1.250 | 7.480 | 3.543 | |
| 7801344 | | | PSE15R150SA125-3L | 2 | 1.500 | 3 | 1.250 | 7.480 | 1.969 | |
| 7801345 | Close | PSE15R125SA125-3L | 1 | 1.250 | 3 | 1.250 | 7.480 | 3.543 | | |
| 7801346 | | PSE15R150SA125-4L | 2 | 1.500 | 4 | 1.250 | 7.480 | 1.969 | | |
| 7801320 | | Weldon Shank Short | Normal | PSE11R063FA063-2S | 1 | 0.625 | 2 | 0.625 | 3.205 | 1.299 |
| 7801321 | PSE11R075FA075-3S | | | 1 | 0.750 | 3 | 0.750 | 3.583 | 1.551 | |
| 7801323 | PSE11R100FA100-3S | | | 1 | 1.000 | 3 | 1.000 | 3.831 | 1.551 | |
| 7801324 | Close | | PSE11R100FA100-4S | 1 | 1.000 | 4 | 1.000 | 3.831 | 1.551 | |
| 7801325 | | | PSE11R125FA125-5S | 1 | 1.250 | 5 | 1.250 | 4.378 | 2.098 | |
| 7801330 | Normal | | PSE15R100FA100-2S | 1 | 1.000 | 2 | 1.000 | 3.830 | 1.550 | |
| 7801332 | | | PSE15R125FA125-2S | 1 | 1.250 | 2 | 1.250 | 4.380 | 2.100 | |
| 7801333 | Close | | PSE15R125FA125-3S | 1 | 1.250 | 3 | 1.250 | 4.380 | 2.100 | |
| 7801334 | | | PSE15R150FA125-3S | 2 | 1.500 | 3 | 1.250 | 4.380 | 2.100 | |
| 7801335 | Close | | PSE15R150FA125-4S | 2 | 1.500 | 4 | 1.250 | 4.380 | 2.100 | |
| 7801347 | | Weldon Shank Long | Normal | PSE11R063FA063-2L | 1 | 0.625 | 2 | 0.625 | 3.874 | 1.969 |
| 7801348 | PSE11R075FA075-3L | | | 1 | 0.750 | 3 | 0.750 | 4.394 | 2.362 | |
| 7801349 | PSE11R100FA100-3L | | | 1 | 1.000 | 3 | 1.000 | 5.035 | 2.756 | |
| 7801350 | Close | | PSE11R100FA100-4L | 1 | 1.000 | 4 | 1.000 | 5.035 | 2.756 | |
| 7801351 | | | PSE11R125FA125-5L | 1 | 1.250 | 5 | 1.250 | 5.823 | 3.543 | |
| 7801352 | Normal | | PSE15R100FA100-2L | 1 | 1.000 | 2 | 1.000 | 5.035 | 2.756 | |
| 7801353 | | | PSE15R125FA125-2L | 1 | 1.250 | 2 | 1.250 | 5.823 | 3.543 | |
| 7801354 | Close | | PSE15R125FA125-3L | 1 | 1.250 | 3 | 1.250 | 5.823 | 3.543 | |
| 7801355 | | | PSE15R150FA125-3L | 2 | 1.500 | 3 | 1.250 | 5.823 | 2.100 | |
| 7801356 | Close | PSE15R150FA125-4L | 2 | 1.500 | 4 | 1.250 | 5.823 | 2.100 | | |

Packed: 1 pc.

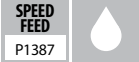
Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected. The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).





List 78011

PSE SS (Metric)



Recommended Materials: p1387
Accessories & Inserts: p1385-1386
Maximum Ramping Angle: p1388



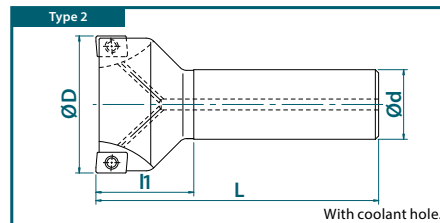
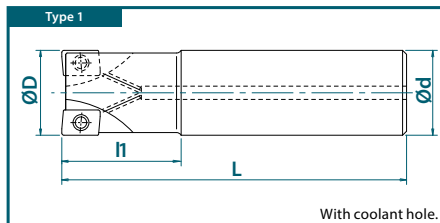
| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (mm) | No. of Teeth | Shank Dia. (mm) | Overall Length (mm) | Neck Length (mm) | Applicable Insert |
|---------|-------------------------|------------------|------------------|------|----------------|--------------|-----------------|---------------------|------------------|-------------------|
| | | | | | D | | d | L | L1 | |
| 7801101 | Cylindrical Shank Short | Normal | PSE11R020SS20-2S | 1 | 20 | 2 | 20 | 100 | 30 | ZD_T11... |
| 7801102 | | | PSE11R025SS25-3S | 1 | 25 | 3 | 25 | 120 | 35 | |
| 7801103 | | | PSE11R032SS32-3S | 1 | 32 | 3 | 32 | 130 | 45 | |
| 7801100 | | | PSE11R016SS16-2S | 1 | 16 | 2 | 16 | 90 | 25 | |
| 7801116 | | | PSE11R018SS16-2S | 2 | 18 | 2 | 16 | 90 | 25 | |
| 7801115 | | | PSE11R020SS20-3S | 1 | 20 | 3 | 20 | 100 | 30 | |
| 7801117 | | PSE11R022SS20-3S | 2 | 22 | 3 | 20 | 110 | 30 | | |
| 7801104 | | PSE11R025SS25-4S | 1 | 25 | 4 | 25 | 120 | 35 | | |
| 7801118 | | PSE11R028SS25-4S | 2 | 28 | 4 | 25 | 120 | 35 | | |
| 7801119 | | PSE11R030SS32-4S | 1 | 30 | 4 | 32 | 130 | 45 | | |
| 7801105 | | PSE11R032SS32-5S | 1 | 32 | 5 | 32 | 125 | 40 | | |
| 7801120 | | PSE11R035SS32-5S | 2 | 35 | 5 | 32 | 130 | 35 | | |
| 7801121 | Cylindrical Shank Long | Close | PSE11R016SS16-2L | 1 | 16 | 2 | 16 | 150 | 50 | |
| 7801139 | | | PSE11R017SS16-2L | 2 | 17 | 2 | 16 | 150 | 25 | |
| 7801122 | | | PSE11R018SS16-2L | 2 | 18 | 2 | 16 | 150 | 25 | |
| 7801123 | | | PSE11R020SS20-3L | 1 | 20 | 3 | 20 | 160 | 60 | |
| 7801140 | | | PSE11R021SS20-3L | 2 | 21 | 3 | 20 | 160 | 30 | |
| 7801124 | | | PSE11R022SS20-3L | 2 | 22 | 3 | 20 | 160 | 30 | |
| 7801125 | | PSE11R025SS25-3L | 1 | 25 | 3 | 25 | 170 | 70 | | |
| 7801141 | | PSE11R026SS25-3L | 2 | 26 | 3 | 25 | 170 | 35 | | |
| 7801126 | | PSE11R028SS25-3L | 2 | 28 | 3 | 25 | 170 | 35 | | |
| 7801127 | | PSE11R030SS32-3L | 1 | 30 | 3 | 32 | 190 | 90 | | |
| 7801128 | | PSE11R032SS32-3L | 1 | 32 | 3 | 32 | 190 | 90 | | |
| 7801142 | | PSE11R033SS32-3L | 2 | 33 | 3 | 32 | 190 | 35 | | |
| 7801129 | PSE11R035SS32-3L | 2 | 35 | 3 | 32 | 190 | 35 | | | |
| 7801107 | Cylindrical Shank Short | Normal | PSE15R032SS32-2S | 1 | 32 | 2 | 32 | 130 | 45 | |
| 7801108 | | | PSE15R040SS32-3S | 2 | 40 | 3 | 32 | 140 | 50 | |
| 7801109 | | | PSE15R050SS32-3S | 2 | 50 | 3 | 32 | 130 | 45 | |
| 7801110 | | | PSE15R063SS32-4S | 2 | 63 | 4 | 32 | 130 | 45 | |
| 7801106 | | | PSE15R025SS25-2S | 1 | 25 | 2 | 25 | 120 | 35 | |
| 7801130 | | | PSE15R028SS25-2S | 2 | 28 | 2 | 25 | 120 | 35 | |
| 7801131 | | PSE15R030SS32-3S | 1 | 30 | 3 | 32 | 130 | 45 | | |
| 7801111 | | PSE15R032SS32-3S | 1 | 32 | 3 | 32 | 130 | 45 | | |
| 7801132 | | PSE15R035SS32-3S | 2 | 35 | 3 | 32 | 130 | 35 | | |
| 7801112 | | PSE15R040SS32-4S | 2 | 40 | 4 | 32 | 140 | 50 | | |
| 7801113 | | PSE15R050SS32-5S | 2 | 50 | 5 | 32 | 130 | 45 | | |
| 7801114 | | PSE15R063SS32-6S | 2 | 63 | 6 | 32 | 130 | 45 | | |

Packed: 1 pc.

Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected. The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).

continued on next page

This item is stocked overseas. Please contact OSG for availability and delivery.



List 78011 (Continued)

PSE SS (Metric)



Recommended Materials: p1387
Accessories & Inserts: p1385-1386
Maximum Ramping Angle: p1388



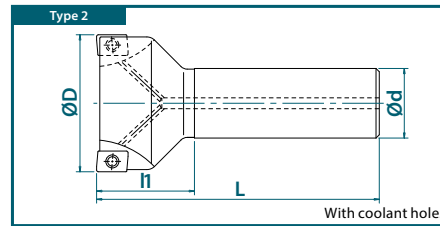
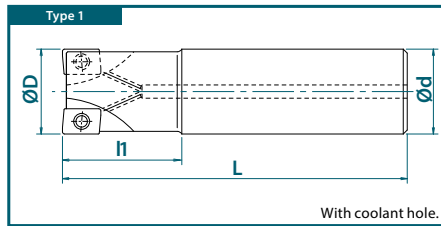
| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (mm) | No. of Teeth | Shank Dia. (mm) | Overall Length (mm) | Neck Length (mm) | Applicable Insert |
|---------|------------------------|------------|------------------|------|----------------|--------------|-----------------|---------------------|------------------|-------------------|
| | | | | | D | | d | L | L1 | |
| 7801133 | Cylindrical Shank Long | Close | PSE15R025SS25-2L | 1 | 25 | 2 | 25 | 170 | 70 | ZDKT15... |
| 7801143 | | | PSE15R026SS25-2L | 2 | 26 | 2 | 25 | 170 | 35 | |
| 7801134 | | | PSE15R028SS25-2L | 2 | 28 | 2 | 25 | 170 | 35 | |
| 7801135 | | | PSE15R030SS32-3L | 1 | 30 | 3 | 32 | 190 | 90 | |
| 7801136 | | | PSE15R032SS32-3L | 1 | 32 | 3 | 32 | 190 | 90 | |
| 7801144 | | | PSE15R033SS32-3L | 2 | 33 | 3 | 32 | 190 | 45 | |
| 7801137 | | | PSE15R035SS32-3L | 2 | 35 | 3 | 32 | 190 | 45 | |
| 7801138 | | Normal | PSE15R040SS32-3L | 2 | 40 | 3 | 32 | 190 | 45 | |

Packed: 1 pc.

Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected. The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).



This item is stocked overseas. Please contact OSG for availability and delivery.





List 78012

PSE Bore (Inch)



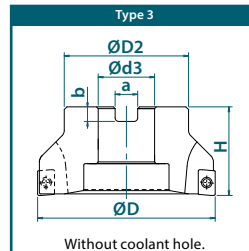
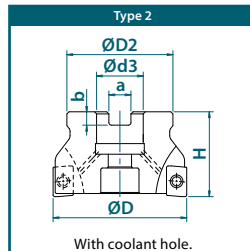
Recommended Materials: p1387
Accessories & Inserts: p1385-1386
Maximum Ramping Angle: p1388



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (inch) | No. of Teeth | Tool Height (inch) | Flange Dia. (inch) | Bore Hole Dia. (inch) | Keyway Width (inch) | Keyway Depth (inch) | Applicable Insert | |
|---------|-----------|------------------|------------------|------------------|------------------|--------------|--------------------|--------------------|-----------------------|---------------------|---------------------|-------------------|-------|
| | | | | | D | | H | D2 | d3 | a | b | | |
| 7801200 | Bore | Normal | PSE11R200A075-5 | 2 | 2.000 | 5 | 1.575 | 1.772 | 0.750 | 0.315 | 0.197 | ZD_T11... | |
| 7801201 | | | PSE11R250A075-6 | 2 | 2.500 | 6 | 1.575 | 1.968 | 0.750 | 0.315 | 0.197 | | |
| 7801202 | | | PSE11R300A100-7 | 2 | 3.000 | 7 | 1.968 | 2.362 | 1.000 | 0.375 | 0.236 | | |
| 7801203 | | | PSE11R200A075-7 | 2 | 2.000 | 7 | 1.575 | 1.772 | 0.750 | 0.315 | 0.197 | | |
| 7801204 | | | Close | PSE11R250A075-8 | 2 | 2.500 | 8 | 1.575 | 1.968 | 0.750 | 0.315 | | 0.197 |
| 7801205 | | | | PSE11R300A100-10 | 2 | 3.000 | 10 | 1.968 | 2.362 | 1.000 | 0.375 | | 0.236 |
| 7801206 | | Normal | PSE15R200A075-3 | 2 | 2.000 | 3 | 1.575 | 1.772 | 0.750 | 0.315 | 0.197 | ZDKT15... | |
| 7801207 | | | PSE15R250A075-4 | 2 | 2.500 | 4 | 1.575 | 1.968 | 0.750 | 0.315 | 0.197 | | |
| 7801208 | | | PSE15R300A100-5 | 2 | 3.000 | 5 | 1.968 | 2.362 | 1.000 | 0.375 | 0.236 | | |
| 7801209 | | | PSE15R400A150-7 | 3 | 4.000 | 7 | 1.968 | 2.756 | 1.500 | 0.625 | 0.394 | | |
| 7801210 | | | PSE15R500A150-8 | 3 | 5.000 | 8 | 2.480 | 3.543 | 1.500 | 0.625 | 0.394 | | |
| 7801216 | | | PSE15R600A150-10 | 3 | 6.000 | 10 | 2.480 | 3.740 | 1.500 | 0.625 | 0.394 | | |
| 7801211 | Close | PSE15R200A075-5 | 2 | 2.000 | 5 | 1.575 | 1.772 | 0.750 | 0.315 | 0.197 | ZDKT15... | | |
| 7801212 | | PSE15R250A075-6 | 2 | 2.500 | 6 | 1.575 | 1.968 | 0.750 | 0.315 | 0.197 | | | |
| 7801213 | | PSE15R300A100-8 | 2 | 3.000 | 8 | 1.968 | 2.362 | 1.000 | 0.375 | 0.236 | | | |
| 7801214 | | PSE15R400A150-10 | 3 | 4.000 | 10 | 1.968 | 2.756 | 1.500 | 0.625 | 0.394 | | | |
| 7801215 | | PSE15R500A150-11 | 3 | 5.000 | 11 | 2.480 | 3.543 | 1.500 | 0.625 | 0.394 | | | |
| 7801217 | | PSE15R600A150-12 | 3 | 6.000 | 12 | 2.480 | 3.740 | 1.500 | 0.625 | 0.394 | | | |

Packed: 1 pc.

Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected. The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).





List 78010

PSE Bore (Metric)



SPEED FEED
P1387



Recommended Materials: p1387
Accessories & Inserts: p1385-1386
Maximum Ramping Angle: p1388

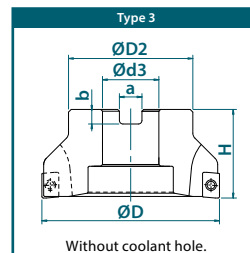
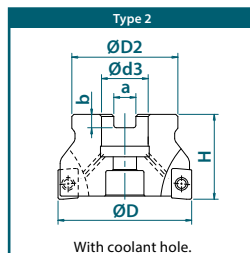
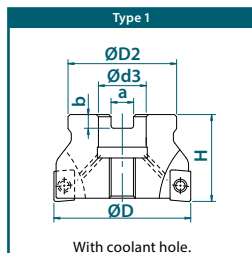


| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (mm) | No. of Teeth | Tool Height (mm) | Flange Dia. (mm) | Bore Hole Dia. (mm) | Keyway Width (mm) | Keyway Depth (mm) | Applicable Insert | | |
|---------|-------------------|-------------------|-------------------|----------------|----------------|--------------|------------------|------------------|---------------------|-------------------|-------------------|-------------------|-----|-----------|
| | | | | | D | | H | D2 | d3 | a | b | | | |
| 7801000 | Bore | Normal | PSE11R040M16-4 | 1 | 40 | 4 | 40 | 38 | 16 | 8.4 | 5.6 | ZD_T11... | | |
| 7801001 | | | PSE11R050M22-5 | 1 | 50 | 5 | 40 | 45 | 22 | 10.4 | 6.3 | | | |
| 7801002 | | | PSE11R063M22-6 | 2 | 63 | 6 | 40 | 50 | 22 | 10.4 | 6.3 | | | |
| 7801003 | | | PSE11R080M27-7 | 2 | 80 | 7 | 50 | 60 | 27 | 12.4 | 7 | | | |
| 7801020 | | | PSE11R080M25.4-7 | 2 | 80 | 7 | 50 | 60 | 25.4 | 9.5 | 6 | | | |
| 7801004 | | | PSE11R040M16-6 | 1 | 40 | 6 | 40 | 38 | 16 | 8.4 | 5.6 | | | |
| 7801005 | | | PSE11R050M22-7 | 1 | 50 | 7 | 40 | 45 | 22 | 10.4 | 6.3 | | | |
| 7801006 | | | PSE11R063M22-8 | 2 | 63 | 8 | 40 | 50 | 22 | 10.4 | 6.3 | | | |
| 7801007 | | | PSE11R080M27-10 | 2 | 80 | 10 | 50 | 60 | 27 | 12.4 | 7 | | | |
| 7801021 | | | PSE11R080M25.4-10 | 2 | 80 | 10 | 50 | 60 | 25.4 | 9.5 | 6 | | | |
| 7801008 | | Close | PSE15R040M16-3 | 1 | 40 | 3 | 40 | 38 | 16 | 8.4 | 5.6 | ZDKT15... | | |
| 7801009 | | | PSE15R050M22-3 | 1 | 50 | 3 | 40 | 45 | 22 | 10.4 | 6.3 | | | |
| 7801010 | | | PSE15R063M22-4 | 2 | 63 | 4 | 40 | 50 | 22 | 10.4 | 6.3 | | | |
| 7801011 | | | PSE15R080M27-5 | 2 | 80 | 5 | 50 | 60 | 27 | 12.4 | 7 | | | |
| 7801022 | | | PSE15R080M25.4-5 | 2 | 80 | 5 | 50 | 60 | 25.4 | 9.5 | 6 | | | |
| 7801012 | | | PSE15R100M32-7 | 2 | 100 | 7 | 50 | 70 | 32 | 14.4 | 8 | | | |
| 7801023 | | | PSE15R100M31.7-7 | 3 | 100 | 7 | 50 | 70 | 31.75 | 12.7 | 8 | | | |
| 7801024 | | | PSE15R125M38.1-8 | 3 | 125 | 8 | 63 | 90 | 38.1 | 15.9 | 10 | | | |
| 7801014 | | | Normal | PSE15R040M16-4 | 1 | 40 | 4 | 40 | 38 | 16 | 8.4 | | 5.6 | ZDKT15... |
| 7801015 | | | | PSE15R050M22-5 | 1 | 50 | 5 | 40 | 45 | 22 | 10.4 | | 6.3 | |
| 7801016 | | PSE15R063M22-6 | | 2 | 63 | 6 | 40 | 50 | 22 | 10.4 | 6.3 | | | |
| 7801017 | | PSE15R080M27-8 | | 2 | 80 | 8 | 50 | 60 | 27 | 12.4 | 7 | | | |
| 7801025 | | PSE15R080M25.4-8 | | 2 | 80 | 8 | 50 | 60 | 25.4 | 9.5 | 6 | | | |
| 7801018 | | PSE15R100M32-10 | | 2 | 100 | 10 | 50 | 70 | 32 | 14.4 | 8 | | | |
| 7801026 | | PSE15R100M31.7-10 | | 3 | 100 | 10 | 50 | 70 | 31.75 | 12.7 | 8 | | | |
| 7801027 | | PSE15R125M38.1-11 | | 3 | 125 | 11 | 63 | 90 | 38.1 | 15.9 | 10 | | | |
| 7801015 | | Close | PSE15R040M16-4 | 1 | 40 | 4 | 40 | 38 | 16 | 8.4 | 5.6 | ZDKT15... | | |
| 7801016 | | | PSE15R050M22-5 | 1 | 50 | 5 | 40 | 45 | 22 | 10.4 | 6.3 | | | |
| 7801017 | PSE15R063M22-6 | | 2 | 63 | 6 | 40 | 50 | 22 | 10.4 | 6.3 | | | | |
| 7801018 | PSE15R080M27-8 | | 2 | 80 | 8 | 50 | 60 | 27 | 12.4 | 7 | | | | |
| 7801025 | PSE15R080M25.4-8 | | 2 | 80 | 8 | 50 | 60 | 25.4 | 9.5 | 6 | | | | |
| 7801019 | PSE15R100M32-10 | | 2 | 100 | 10 | 50 | 70 | 32 | 14.4 | 8 | | | | |
| 7801020 | PSE15R100M31.7-10 | | 3 | 100 | 10 | 50 | 70 | 31.75 | 12.7 | 8 | | | | |
| 7801021 | PSE15R125M38.1-11 | | 3 | 125 | 11 | 63 | 90 | 38.1 | 15.9 | 10 | | | | |

Packed: 1 pc.

Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected. The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).

This item is stocked overseas. Please contact OSG for availability and delivery.



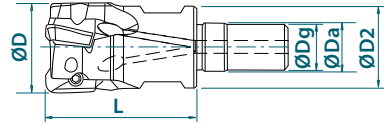


List 52601

PSE ASF (Inch)



Recommended Materials: p1387
 Accessories & Inserts: p1385-1386
 Maximum Ramping Angle: p1388
 SF Arbors: p1461



| EDP No. | Body Type | Designation | Tool Dia. (inch) | No. of Teeth | Pilot Dia. (inch) | Thread Dia. (mm) | Overall Length (inch) | Flange Dia. (inch) | Wrench Size | Applicable Insert |
|----------|------------------|------------------|------------------|--------------|-------------------|------------------|-----------------------|--------------------|-------------|-------------------|
| | | | D | | Da | Dg | L | D2 | | |
| 52601000 | Screw Fit Head | PSE11R063ASF8-2 | 0.625 | 2 | 0.335 | M8 | 1.063 | 0.571 | 10 | ZD_T11... |
| 52601001 | | PSE11R075ASF10-3 | 0.750 | 3 | 0.413 | M10 | 1.299 | 0.709 | 14 | |
| 52601002 | | PSE11R100ASF12-3 | 1.000 | 3 | 0.492 | M12 | 1.378 | 0.905 | 17 | |
| 52601003 | | PSE11R125ASF16-3 | 1.250 | 3 | 0.669 | M16 | 1.575 | 1.102 | 22 | ZDKT15... |
| 52601004 | | PSE15R100ASF12-2 | 1.000 | 2 | 0.492 | M12 | 1.378 | 0.905 | 17 | |
| 52601005 | | PSE15R125ASF16-3 | 1.250 | 3 | 0.669 | M16 | 1.575 | 1.102 | 22 | |
| 52601006 | PSE15R150ASF16-4 | 1.500 | 4 | 0.669 | M16 | 1.575 | 1.102 | 22 | | |

Packed: 1 pc.

Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected.

The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).



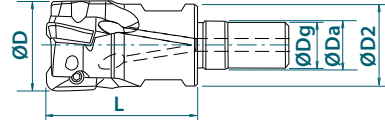


List 78016

PSE SF (Metric)



Recommended Materials: p1387
Accessories & Inserts: p1385-1386
Maximum Ramping Angle: p1388
SF Arbors: p1462-1464



| EDP No. | Body Type | Designation | Tool Dia. (mm) | No. of Teeth | Pilot Dia. (mm) | Thread Dia. (mm) | Overall Length (mm) | Flange Dia. (mm) | Wrench Size | Applicable Insert |
|---------|-----------------|-----------------|----------------|--------------|-----------------|------------------|---------------------|------------------|-------------|-------------------|
| | | | D | | Da | Dg | L | D2 | | |
| 7801600 | Screw Fit Head | PSE11R016SF8-2 | 16 | 2 | 8.5 | M8 | 27 | 14.5 | 10 | ZD_T11... |
| 7801612 | | PSE11R017SF8-2 | 17 | 2 | 8.5 | M8 | 27 | 14.5 | 10 | |
| 7801613 | | PSE11R018SF8-2 | 18 | 2 | 8.5 | M8 | 27 | 14.5 | 10 | |
| 7801601 | | PSE11R020SF10-3 | 20 | 3 | 10.5 | M10 | 33 | 18 | 14 | |
| 7801614 | | PSE11R021SF10-3 | 21 | 3 | 10.5 | M10 | 33 | 18 | 14 | |
| 7801615 | | PSE11R022SF10-3 | 22 | 3 | 10.5 | M10 | 33 | 18 | 14 | |
| 7801602 | | PSE11R025SF12-4 | 25 | 4 | 12.5 | M12 | 35 | 23 | 17 | |
| 7801616 | | PSE11R026SF12-3 | 26 | 3 | 12.5 | M12 | 35 | 23 | 17 | |
| 7801603 | | PSE11R028SF12-4 | 28 | 4 | 12.5 | M12 | 35 | 23 | 17 | |
| 7801604 | | PSE11R032SF16-5 | 32 | 5 | 17 | M16 | 40 | 28 | 22 | |
| 7801617 | | PSE11R033SF16-3 | 33 | 3 | 17 | M16 | 40 | 28 | 22 | |
| 7801605 | | PSE11R035SF16-5 | 35 | 5 | 17 | M16 | 40 | 28 | 22 | |
| 7801606 | | PSE11R040SF16-6 | 40 | 6 | 17 | M16 | 40 | 28 | 22 | |
| 7801607 | | PSE15R025SF12-2 | 25 | 2 | 12.5 | M12 | 35 | 23 | 17 | |
| 7801618 | | PSE15R026SF12-2 | 26 | 2 | 12.5 | M12 | 35 | 23 | 17 | |
| 7801608 | | PSE15R028SF12-2 | 28 | 2 | 12.5 | M12 | 35 | 23 | 17 | |
| 7801609 | | PSE15R032SF16-3 | 32 | 3 | 17 | M16 | 40 | 28 | 22 | |
| 7801619 | | PSE15R033SF16-3 | 33 | 3 | 17 | M16 | 40 | 28 | 22 | |
| 7801610 | PSE15R035SF16-3 | 35 | 3 | 17 | M16 | 40 | 28 | 22 | | |
| 7801611 | PSE15R040SF16-4 | 40 | 4 | 17 | M16 | 40 | 28 | 22 | | |
| | | | | | | | | | | ZDKT15... |

Packed: 1 pc.

Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected.

The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).

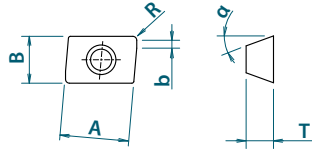
This item is stocked overseas. Please contact OSG for availability and delivery.





List 78PSE

PSE/PSEL Inserts



| Designation | No. of Cutting Edges | Insert Size | | | | | | EDP Number | | | | | | | | | | | | | | | |
|-----------------|----------------------|-------------|--------|----------|---------|--------|-------------|------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|---------|---|
| | | AxB (mm) | T (mm) | α | R (mm) | b (mm) | Aa Max (mm) | CK010 | XC3020 | XP3025 | XC3030 | XP3035 | XP2025 | XP2040 | XC1015 | XC5035 | XC5040 | XP6015 | | | | | |
| ZDKT11T302FR-NM | 2 | 11x6.8 | 3.8 | 15° | 0.2 | 2.0 | 10 | 7811048 | - | - | - | - | - | - | - | - | - | - | - | | | | |
| ZDKT11T304FR-NM | | | | | 0.4 | 1.8 | | 7811049 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| ZDKT11T308FR-NM | | | | | 0.8 | 1.4 | | 7811023 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZDHT11T302FR-NM | | | | | 0.2 | 2.0 | | 7811010 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZDHT11T304FR-NM | | | | | 0.4 | 1.8 | | 7811024 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZDHT11T308FR-NM | | | | | 0.8 | 1.4 | | 7811014 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZDHT11T312FR-NM | | | | | 1.2 | 1.4 | | 7811015 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZDHT11T316FR-NM | | | | | 1.6 | 1.4 | | 7811017 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZDHT11T320FR-NM | | | | | 2.0 | 1.4 | | 7811018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZDHT11T325FR-NM | | | | | 2.5 | 1.4 | | 7811019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZDHT11T332FR-NM | | | | | 3.2 | 0.8 | | 7811020 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZDHT11T340FR-NM | | | | | 4.0 | - | | 7811021 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZDHT11T350FR-NM | | | 5.0 | - | 7811022 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| ZDKT11T304SR-GL | | | 0.4 | 1.8 | - | - | - | 7825024 | 7814024 | - | - | - | - | - | - | - | - | - | - | - | | | |
| ZDKT11T308SR-GL | | | 0.8 | 1.4 | - | - | - | 7827026 | 7828026 | 7825026 | 7814026 | 7826026 | 7813026 | - | - | - | - | - | - | - | | | |
| ZDKT11T312SR-GL | | | 1.2 | 1.0 | - | - | - | - | - | - | - | - | 7813034 | - | - | - | - | - | - | - | | | |
| ZDKT11T320SR-GL | | | 2.0 | 2.1 | - | - | - | 7825035 | 7814035 | - | - | - | 7813035 | - | - | - | - | - | - | - | | | |
| ZDKT11T332SR-GL | | | 3.2 | 1.5 | - | - | - | - | - | - | - | - | 7813036 | - | - | - | - | - | - | - | | | |
| ZDKT11T304SR-GM | | | 0.4 | 1.8 | - | - | - | 7827025 | 7828025 | 7825025 | 7814025 | 7826025 | 7813025 | 7812025 | - | - | - | - | - | - | | | |
| ZDKT11T308SR-GM | | | 0.8 | 1.4 | - | - | - | 7827032 | 7828032 | 7825032 | 7814032 | 7826032 | 7813032 | - | - | - | - | - | - | - | | | |
| ZDKT11T312SR-GM | | | 1.2 | 1.0 | - | - | - | - | - | - | 7814053 | - | 7813053 | - | - | - | - | - | - | - | | | |
| ZDKT11T320SR-GM | | | 2.0 | 2.1 | - | - | - | - | - | 7814038 | - | 7813038 | - | - | - | - | - | - | - | - | | | |
| ZDKT11T325SR-GM | | | 2.5 | 1.6 | - | - | - | 7825039 | 7814039 | - | - | - | - | - | - | - | - | - | - | - | | | |
| ZDKT11T330SR-GM | | | 3.0 | 1.5 | - | - | - | - | - | 7814054 | - | 7813054 | - | - | - | - | - | - | - | - | | | |
| ZDKT11T340SR-GM | | | 4.0 | - | - | - | - | - | - | 7814055 | - | 7813055 | - | - | - | - | - | - | - | - | | | |
| ZDKT11T308SR-GR | | | 0.8 | 1.4 | - | - | - | 7827033 | 7828033 | 7825033 | 7814033 | - | 7813033 | 7812033 | - | - | - | - | - | - | | | |
| ZDKT11T308SR-HR | | | 0.8 | 1.4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 7824035 | | | |
| ZDKT11T304ER-SM | | | 0.4 | 1.8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 7816034 | - | | | |
| ZDKT11T308ER-SM | | | 0.8 | 1.4 | - | - | - | - | - | - | - | - | - | - | 7815031 | 7816031 | - | - | - | - | | | |
| ZDKT11T312ER-SM | | | 1.2 | 1.1 | - | - | - | - | - | - | - | - | - | - | - | 7816040 | - | - | - | - | | | |
| ZDKT11T316ER-SM | | | 1.6 | 0.8 | - | - | - | - | - | - | - | - | - | - | 7815027 | 7816027 | - | - | - | - | | | |
| ZDKT11T320ER-SM | | | 2.0 | 0.3 | - | - | - | - | - | - | - | - | - | - | - | - | 7816041 | - | - | - | | | |
| ZDKT11T325ER-SM | | | 2.5 | - | - | - | - | - | - | - | - | - | - | - | - | - | 7816042 | - | - | - | | | |
| ZDKT11T332ER-SM | | | 3.2 | - | - | - | - | - | - | - | - | - | - | - | - | - | 7816043 | - | - | - | | | |
| ZDKT11T340ER-SM | | | 4.0 | - | - | - | - | - | - | - | - | - | - | - | - | - | 7816044 | - | - | - | | | |
| ZDKT150508FR-NM | | | 2 | 15x9.3 | 5.56 | 14 | 0.8 | 1.6 | 7811046 | - | - | - | - | - | - | - | - | - | - | - | - | | |
| ZDKT150508SR-GL | 0.8 | 1.6 | | | | | - | 7827057 | 7828057 | 7825057 | 7814057 | 7826057 | 7813057 | - | - | - | - | - | - | - | - | | |
| ZDKT150508SR-GM | 0.8 | 1.6 | | | | | - | 7827028 | 7828028 | 7825029 | 7814029 | 7826029 | 7813028 | 7812029 | - | - | - | - | - | - | - | | |
| ZDKT150512SR-GM | 1.2 | 1.2 | | | | | - | - | - | - | 7814077 | - | 7813077 | - | - | - | - | - | - | - | - | - | |
| ZDKT150516SR-GM | 1.6 | 0.8 | | | | | - | - | - | - | 7814078 | - | 7813078 | - | - | - | - | - | - | - | - | - | |
| ZDKT150520SR-GM | 2.0 | 2.1 | | | | | - | - | - | - | 7814079 | - | 7813079 | - | - | - | - | - | - | - | - | - | |
| ZDKT150530SR-GM | 3.0 | 1.9 | | | | | - | - | - | - | 7814080 | - | 7813080 | - | - | - | - | - | - | - | - | - | |
| ZDKT150540SR-GM | 4.0 | 1.1 | | | | | - | - | - | - | 7814081 | - | 7813081 | - | - | - | - | - | - | - | - | - | |
| ZDKT150550SR-GM | 5.0 | 0.7 | | | | | - | - | - | - | 7814082 | - | 7813082 | - | - | - | - | - | - | - | - | - | |
| ZDKT150508SR-GR | 0.8 | 1.6 | | | | | - | - | - | 7827058 | 7828058 | 7825058 | 7814058 | - | 7813058 | 7812058 | - | - | - | - | - | - | |
| ZDKT150508SR-HR | 0.8 | 1.6 | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 7824036 | |
| ZDKT150508ER-SM | 0.8 | 1.6 | | | | | - | - | - | - | - | - | - | - | - | - | 7815056 | 7816056 | - | - | - | - | |


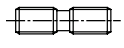

Packed: 10 pcs.





List 7808H

PSE Accessories

| Appearance | EDP No. | Designation | Applicable Insert | Applicable Cutter | | Recommended Tightening Torque |
|---|---------|-------------------------------------|------------------------|--------------------------------------|---|-------------------------------|
| | | | | (mm) | (inch) | |
|  | 7808107 | FS25656P (M2.5 x 5.6, Torx 8IP) | ZD_T11... | PSE SS/SF Ø16-35 | PSE11 SA/FA/ASF Ø.625-1.25" | 1.6 Nm |
| | 7808109 | FS25673P (M2.5 x 7.3, Torx 8IP) | | PSE BORE Ø40-80 | PSE11 BORE Ø2-3" | 1.6 Nm |
| | 7808115 | FS35686P (M3.5 x 8.6, Torx 15IP) | ZDKT15... | PSE SS/SF Ø25-63 PSE BORE Ø40-125 | PSE SA/FA/ASF Ø1-1.5" PSE15 BORE Ø2-6" | 3.2 Nm |
|  | 7808150 | PS0830 (M8x30) | ZD_T11... ZDKT15... | PSE BORE Ø40 | n/a | 15.0 Nm |
| | 7808151 | PS1031 (M10x31) | ZD_T11... ZDKT15... | PSE BORE Ø50 | n/a | 20.0 Nm |
| | | | | | | |
|  | 7808225 | 8IP-D (Torx 8IP) | ZD_T11... | PSE SS/SF Ø16-35 PSE BORE Ø40-80 | PSE11 SA/FA/ASF Ø.625-1.25" PSE11 BORE Ø2-3" | |
| | 7808228 | 15IP-D (Torx 15IP) | ZDKT15... | PSE SS/SF Ø25-63 PSE BORE Ø40-125 | PSE15 SA/FA/ASF Ø1-1.5" PSE15 BORE Ø2-6" | |

Packed: Clamping Screws = 10 pcs.; Power Screw = 1 pc.; Wrench = 1 pc.
Note: Wrench sold separately.



Cutting Conditions

| Work Material | | Tensile Strength - Hardness | Insert Size | | | | | | | |
|---------------|---|-----------------------------------|---------------------------------------|-----------------------------|---------------------------------------|-----------------------------|---------------------------------------|-----------------------------|---------------------------------------|-----------------------------|
| | | | ZD T11... | | | | ZDKT15... | | | |
| | | | Side Milling Aa: 0.394" • Ar: 0.2D | | Face Milling Aa: 0.118" • Ar: 1.0D | | Side Milling Aa: 0.551" • Ar: 0.2D | | Face Milling Aa: 0.197" • Ar: 1.0D | |
| | | | Milling Speed Vc (SFM) | Feed Per Tooth fz (in/t) | Milling Speed Vc (SFM) | Feed Per Tooth fz (in/t) | Milling Speed Vc (SFM) | Feed Per Tooth fz (in/t) | Milling Speed Vc (SFM) | Feed Per Tooth fz (in/t) |
| P | Mild Steels, Carbon Steels (1010, 1018) | ~180 HB | 590 (330 - 820) | 0.010 (0.008 - 0.020) | 590 (330 - 820) | 0.005 (0.002 - 0.008) | 590 (330 - 820) | 0.012 (0.008 - 0.024) | 590 (330 - 820) | 0.006 (0.002 - 0.010) |
| | Carbon Steels, Alloy Steels (1050, 4140) | ~280 HB | 590 (330 - 820) | 0.008 (0.006 - 0.016) | 590 (330 - 820) | 0.004 (0.002 - 0.008) | 590 (330 - 820) | 0.010 (0.006 - 0.020) | 590 (330 - 820) | 0.005 (0.002 - 0.008) |
| | Die Steels (H13, D2) | ~280 HB | 495 (260 - 655) | 0.008 (0.006 - 0.016) | 495 (260 - 655) | 0.004 (0.002 - 0.007) | 495 (260 - 655) | 0.010 (0.006 - 0.020) | 495 (260 - 655) | 0.005 (0.002 - 0.008) |
| M | Stainless Steels (Dry) (304SS, 420SS) | ~250 HB | 495 (260 - 655) | 0.007 (0.006 - 0.016) | 495 (260 - 655) | 0.004 (0.004 - 0.007) | 495 (260 - 655) | 0.008 (0.006 - 0.018) | 495 (260 - 655) | 0.005 (0.004 - 0.008) |
| | Stainless Steels (Wet) (304SS, 420SS) | ~250 HB | 260 (195 - 395) | 0.007 (0.006 - 0.016) | 260 (195 - 395) | 0.004 (0.004 - 0.007) | 260 (195 - 395) | 0.008 (0.006 - 0.018) | 260 (195 - 395) | 0.005 (0.004 - 0.008) |
| K | Cast Iron (FC250) | ~350 N/mm ² | 590 (330 - 985) | 0.010 (0.006 - 0.020) | 590 (330 - 985) | 0.005 (0.002 - 0.008) | 590 (330 - 985) | 0.012 (0.008 - 0.024) | 590 (330 - 985) | 0.006 (0.002 - 0.010) |
| | Ductile Cast Iron (60-40-18) | ~800 N/mm ² | 590 (330 - 820) | 0.006 (0.004 - 0.016) | 590 (330 - 820) | 0.005 (0.002 - 0.008) | 590 (330 - 820) | 0.008 (0.006 - 0.020) | 590 (330 - 820) | 0.006 (0.002 - 0.010) |
| N | Aluminum Alloys (6061, 7075) | ~13% Si | 985 (655 - 4920) | 0.012 (0.008 - 0.020) | 985 (655 - 4920) | 0.006 (0.004 - 0.010) | 985 (655 - 4920) | 0.014 (0.008 - 0.024) | 985 (655 - 4920) | 0.007 (0.004 - 0.012) |
| S | Heat Resistant Alloys (Inconel 718) | - | 115 (85 - 195) | 0.006 (0.004 - 0.012) | 115 (85 - 195) | 0.004 (0.002 - 0.006) | 115 (85 - 195) | 0.008 (0.004 - 0.012) | 115 (85 - 195) | 0.004 (0.002 - 0.006) |
| | Titanium Alloy (Ti-6Al-4V) | - | 130 (100 - 395) | 0.007 (0.004 - 0.014) | 130 (100 - 395) | 0.004 (0.004 - 0.010) | 130 (100 - 395) | 0.009 (0.004 - 0.014) | 130 (100 - 395) | 0.004 (0.004 - 0.010) |
| H | Pre-hardened Steel (P20, Stavax) | 40 - 43 HRC | 330 (130 - 495) | 0.007 (0.004 - 0.012) | 330 (130 - 495) | 0.004 (0.003 - 0.008) | 330 (130 - 495) | 0.008 (0.004 - 0.014) | 330 (130 - 495) | 0.005 (0.003 - 0.010) |
| | Die Cast Steels (A2, S7) | 43 - 48 HRC | 260 (130 - 395) | 0.005 (0.003 - 0.008) | 260 (130 - 395) | 0.003 (0.002 - 0.006) | 260 (130 - 395) | 0.006 (0.003 - 0.010) | 260 (130 - 395) | 0.004 (0.002 - 0.008) |
| | Hardened Steels (D2) | 50 - 55 HRC | 195 (130 - 295) | 0.004 (0.002 - 0.008) | 195 (130 - 295) | 0.002 (0.002 - 0.004) | 195 (130 - 295) | 0.005 (0.002 - 0.008) | 195 (130 - 295) | 0.003 (0.002 - 0.005) |

Recommended Materials by Application

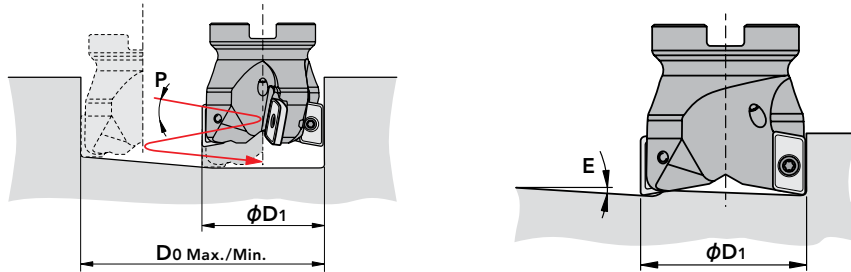
| Insert Grade | Chip Breaker | Coolant | P | M | K | N | S | H |
|--------------|--------------|---------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| CK010 | NM | Yes | | | | <input checked="" type="checkbox"/> | | |
| XC3020 | GL / GM / GR | - | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | | |
| XP3025 | GL / GM / GR | Yes | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | | |
| XC3030 | GL / GM / GR | - | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | | |
| XP3035 | GL / GM / GR | - | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| XP2025 | GL / GM | Yes | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | |
| XP2040 | GL / GM / GR | - | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> |
| | | Yes | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | |
| XC1015 | GM / GR | - | | | <input checked="" type="checkbox"/> | | | |
| XC5035 | SM | - | | <input checked="" type="checkbox"/> | | | | |
| | | Yes | | <input type="checkbox"/> | | | <input type="checkbox"/> | |
| XC5040 | SM | Yes | | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | |
| XP6015 | HR | - | <input type="checkbox"/> | | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> |

GL:Light Cutting GM:Medium Cutting GR:Rough Cutting NM:Aluminum SM:Heat Resistant Alloy HR: Hardened Steel

good best



Maximum Ramping Angle (E) & Helical Angle (P)



| Insert Size | ZD_T11... | | | | ZDKT15... | | | |
|-----------------|---------------|------------------------|---------------------|---------------|---------------|------------------------|---------------------|---------------|
| Diameter (inch) | Ramping Angle | Helical Milling (inch) | | Helical Angle | Ramping Angle | Helical Milling (inch) | | Helical Angle |
| D1 | E | D ₀ Min. | D ₀ Max. | P | E | D ₀ Min. | D ₀ Max. | P |
| 0.625 | 10.8° | 0.935 | 1.187 | 9.5° | - | - | - | - |
| 0.750 | 9.8° | 1.185 | 1.437 | 7.0° | - | - | - | - |
| 1.000 | 7.4° | 1.685 | 1.927 | 4.4° | 9.5° | 1.488 | 1.921 | 7.4° |
| 1.250 | 4.8° | 2.158 | 2.437 | 3.2° | 6.8° | 1.988 | 2.421 | 5.0° |
| 1.500 | 2.9° | 2.685 | 2.937 | 2.2° | 5.1° | 2.488 | 2.921 | 3.2° |
| 2.000 | 2.1° | 3.685 | 3.937 | 1.6° | 2.4° | 3.488 | 3.921 | 2.4° |
| 2.500 | 1.8° | 4.685 | 4.937 | 1.4° | 2.3° | 4.488 | 4.921 | 1.4° |
| 3.000 | 1.4° | 5.685 | 5.937 | 1.0° | 2.0° | 5.488 | 5.921 | 1.3° |
| 4.000 | - | - | - | - | 1.4° | 7.488 | 7.921 | 1.0° |
| 5.000 | - | - | - | - | 0.8° | 9.488 | 9.921 | 0.8° |
| 6.000 | - | - | - | - | 0.7° | 11.488 | 11.921 | 0.6° |





List 53000

PSEL SA/FA (Inch)



Recommended Materials: p1395
Accessories & Inserts: p1392-1393

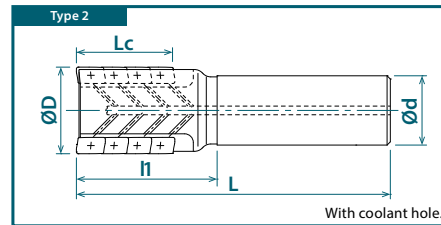
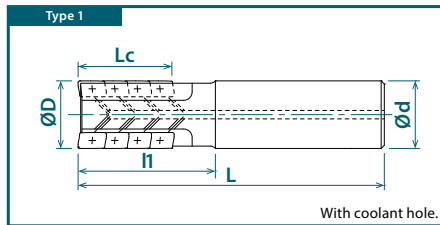


| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. | No. of Teeth | No. of Inserts per Tooth | Total No. of Inserts | Length of Cut | Shank Dia. | Overall Length | Neck Length | Applicable Insert |
|----------|-------------------------|------------|----------------------|------|-----------|--------------|--------------------------|----------------------|---------------|------------|----------------|-------------|-------------------|
| | | | | | (inch) | | | | (inch) | (inch) | (inch) | D | |
| 53000000 | Cylindrical Shank Short | Normal | PSEL11R100SA100-2-27 | 1 | 1.000 | 2 | 3 | 6 | 1.063 | 1.000 | 4.921 | 1.968 | ZD_T11... |
| 53000001 | | | PSEL11R125SA125-2-37 | 1 | 1.250 | 2 | 4 | 8 | 1.457 | 1.250 | 5.512 | 2.362 | |
| 53000002 | | | PSEL11R125SA125-3-45 | 1 | 1.250 | 3 | 5 | 15 | 1.791 | 1.250 | 5.512 | 2.362 | |
| 53000003 | | | PSEL11R150SA125-3-37 | 2 | 1.500 | 3 | 4 | 12 | 1.457 | 1.250 | 5.512 | 2.362 | |
| 53000004 | | | PSEL11R150SA125-4-45 | 2 | 1.500 | 4 | 5 | 20 | 1.791 | 1.250 | 5.512 | 2.362 | |
| 53000005 | | | PSEL15R150SA125-2-38 | 2 | 1.500 | 2 | 3 | 6 | 1.496 | 1.250 | 5.512 | 2.362 | |
| 53000006 | Weldon Shank Short | Normal | PSEL11R100FA100-2-27 | 1 | 1.000 | 2 | 3 | 6 | 1.063 | 1.000 | 4.248 | 1.968 | ZD_T11... |
| 53000007 | | | PSEL11R125FA125-2-37 | 1 | 1.250 | 2 | 4 | 8 | 1.457 | 1.250 | 4.642 | 2.362 | |
| 53000008 | | | PSEL11R125FA125-3-45 | 1 | 1.250 | 3 | 5 | 15 | 1.791 | 1.250 | 4.642 | 2.362 | |
| 53000009 | | | PSEL11R150FA125-3-37 | 2 | 1.500 | 3 | 4 | 12 | 1.457 | 1.250 | 4.642 | 2.362 | |
| 53000010 | | | PSEL11R150FA125-4-45 | 2 | 1.500 | 4 | 5 | 20 | 1.791 | 1.250 | 4.642 | 2.362 | |
| 53000011 | | | PSEL15R150FA125-2-38 | 2 | 1.500 | 2 | 3 | 6 | 1.496 | 1.250 | 4.642 | 2.362 | |

Packed: 1 pc.

Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected.

The body corner should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).





List 78029

PSEL SS (Metric)



Recommended Materials: p1395
Accessories & Inserts: p1392-1393

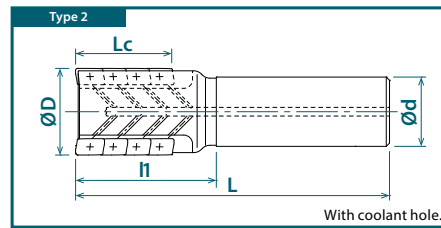
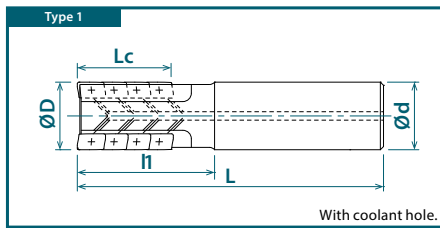


| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (mm) | No. of Teeth | No. of Inserts per Tooth | Total No. of Inserts | Length of Cut (mm) | Shank Dia. (mm) | Overall Length (mm) | Neck Length (mm) | Applicable Insert |
|---------|-------------------|------------|---------------------|------|----------------|--------------|--------------------------|----------------------|--------------------|-----------------|---------------------|------------------|-------------------|
| | | | | | D | | | | Lc | d | L | L1 | |
| 7802900 | Cylindrical Shank | Normal | PSEL11R025SS25-2-27 | 1 | 25 | 2 | 3 | 6 | 27.0 | 25 | 125 | 50 | ZD_T11... |
| 7802901 | | | PSEL11R032SS32-2-37 | 1 | 32 | 2 | 4 | 8 | 37.0 | 32 | 140 | 60 | |
| 7802902 | | | PSEL11R032SS32-3-45 | 1 | 32 | 3 | 5 | 15 | 45.5 | 32 | 140 | 60 | |
| 7802903 | | | PSEL11R040SS42-3-37 | 1 | 40 | 3 | 4 | 12 | 37.0 | 42 | 140 | 60 | |
| 7802904 | | | PSEL11R040SS42-4-45 | 1 | 40 | 4 | 5 | 20 | 45.5 | 42 | 140 | 60 | ZDKT15... |
| 7802905 | | | PSEL15R040SS42-2-38 | 1 | 40 | 2 | 3 | 6 | 38.0 | 42 | 140 | 60 | |
| 7802906 | | | PSEL15R050SS42-3-50 | 2 | 50 | 3 | 4 | 12 | 50.5 | 42 | 144 | 64 | |

Packed: 1 pc.

Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected. The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).

This item is stocked overseas. Please contact OSG for availability and delivery.





List 53001

PSEL Bore (Inch)



Recommended Materials: p1395
Accessories & Inserts: p1392-1393



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (inch) | No. of Teeth | No. of Inserts per Tooth | Total No. of Inserts | Length of Cut (inch) | Tool Height (inch) | Flange Dia. (inch) | Bore Hole Dia. (inch) | Keyway Width (inch) | Keyway Depth (inch) | Applicable Insert |
|----------|-----------|------------|---------------------|------|------------------|--------------|--------------------------|----------------------|----------------------|--------------------|--------------------|-----------------------|---------------------|---------------------|-------------------|
| | | | | | D | | | | Lc | H | D2 | d3 | a | b | |
| 53001000 | Bore | Normal | PSEL15R200A075-3-50 | 1 | 2.000 | 3 | 4 | 12 | 1.988 | 2.913 | 1.772 | 0.750 | 0.315 | 0.197 | ZDKT15... |
| 53001001 | | | PSEL15R250A100-4-50 | 1 | 2.500 | 4 | 4 | 16 | 1.988 | 2.913 | 2.362 | 1.000 | 0.375 | 0.236 | |
| 53001002 | | | PSEL15R300A100-4-63 | 1 | 3.000 | 4 | 5 | 20 | 2.480 | 3.464 | 2.362 | 1.000 | 0.375 | 0.236 | |

Packed: 1 pc.

Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected. The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).



List 78028

PSEL Bore (Metric)



Recommended Materials: p1395
Accessories & Inserts: p1392-1393

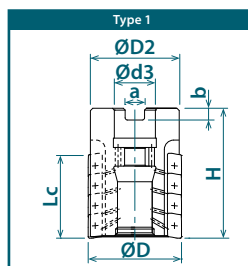


| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (mm) | No. of Teeth | No. of Inserts per Tooth | Total No. of Inserts | Length of Cut (mm) | Tool Height (mm) | Flange Dia. (mm) | Bore Hole Dia. (mm) | Keyway Width (mm) | Keyway Depth (mm) | Applicable Insert |
|---------|-----------|------------|--------------------|------|----------------|--------------|--------------------------|----------------------|--------------------|------------------|------------------|---------------------|-------------------|-------------------|-------------------|
| | | | | | D | | | | Lc | H | D2 | d3 | a | b | |
| 7802850 | Bore | Normal | PSEL15R050M22-3-50 | 1 | 50 | 3 | 4 | 12 | 50.5 | 74 | 45 | 22 | 10.4 | 6.3 | ZDKT15... |
| 7802851 | | | PSEL15R063M27-3-50 | 1 | 63 | 3 | 4 | 12 | 50.5 | 74 | 60 | 27 | 12.4 | 7 | |
| 7802852 | | | PSEL15R080M32-4-63 | 1 | 80 | 4 | 5 | 20 | 63 | 88 | 76 | 32 | 14.4 | 8 | |

Packed: 1 pc.

Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected. The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).

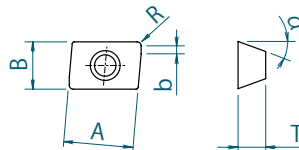
This item is stocked overseas. Please contact OSG for availability and delivery.





List 78PSE

PSE/PSEL Inserts



| Designation | No. of Cutting Edges | Insert Size | | | | | | EDP Number | | | | | | | | | | | | | | | |
|-----------------|----------------------|-------------|---------|---------|---------|---------|-------------|------------|---------|---------|---------|---------|---------|---------|--------|--------|---------|---------|---|---|---|---|---|
| | | AxB (mm) | T (mm) | α | R (mm) | b (mm) | Aa Max (mm) | CK010 | XC3020 | XP3025 | XC3030 | XP3035 | XP2025 | XP2040 | XC1015 | XC5035 | XC5040 | XP6015 | | | | | |
| ZDKT11T302FR-NM | 2 | 11x6.8 | 3.8 | 15° | 0.2 | 2.0 | 10 | 7811048 | - | - | - | - | - | - | - | - | - | - | - | | | | |
| ZDKT11T304FR-NM | | | | | 0.4 | 1.8 | | 7811049 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZDKT11T308FR-NM | | | | | 0.8 | 1.4 | | 7811023 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZDHT11T302FR-NM | | | | | 0.2 | 2.0 | | 7811010 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZDHT11T304FR-NM | | | | | 0.4 | 1.8 | | 7811024 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZDHT11T308FR-NM | | | | | 0.8 | 1.4 | | 7811014 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZDHT11T312FR-NM | | | | | 1.2 | 1.4 | | 7811015 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZDHT11T316FR-NM | | | | | 1.6 | 1.4 | | 7811017 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZDHT11T320FR-NM | | | | | 2.0 | 1.4 | | 7811018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZDHT11T325FR-NM | | | | | 2.5 | 1.4 | | 7811019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZDHT11T332FR-NM | 3.2 | 0.8 | 7811020 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| ZDHT11T340FR-NM | 4.0 | - | 7811021 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| ZDHT11T350FR-NM | 5.0 | - | 7811022 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| ZDKT11T304SR-GL | 0.4 | 1.8 | - | - | - | 7825024 | 7814024 | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| ZDKT11T308SR-GL | 0.8 | 1.4 | - | 7827026 | 7828026 | 7825026 | 7814026 | 7826026 | 7813026 | - | - | - | - | - | - | - | - | - | | | | | |
| ZDKT11T312SR-GL | 1.2 | 1.0 | - | - | - | - | - | - | 7813034 | - | - | - | - | - | - | - | - | - | | | | | |
| ZDKT11T320SR-GL | 2.0 | 2.1 | - | - | - | 7825035 | 7814035 | - | 7813035 | - | - | - | - | - | - | - | - | - | | | | | |
| ZDKT11T332SR-GL | 3.2 | 1.5 | - | - | - | - | - | - | 7813036 | - | - | - | - | - | - | - | - | - | | | | | |
| ZDKT11T304SR-GM | 0.4 | 1.8 | - | - | - | 7827025 | 7828025 | 7825025 | 7814025 | 7826025 | 7813025 | 7812025 | - | - | - | - | - | | | | | | |
| ZDKT11T308SR-GM | 0.8 | 1.4 | - | 7827032 | 7828032 | 7825032 | 7814032 | 7826032 | 7813032 | - | - | - | - | - | - | - | - | | | | | | |
| ZDKT11T312SR-GM | 1.2 | 1.0 | - | - | - | - | 7814053 | - | 7813053 | - | - | - | - | - | - | - | - | - | | | | | |
| ZDKT11T320SR-GM | 2.0 | 2.1 | - | - | - | - | 7814038 | - | 7813038 | - | - | - | - | - | - | - | - | - | | | | | |
| ZDKT11T325SR-GM | 2.5 | 1.6 | - | - | - | 7825039 | 7814039 | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| ZDKT11T330SR-GM | 3.0 | 1.5 | - | - | - | - | 7814054 | - | 7813054 | - | - | - | - | - | - | - | - | - | | | | | |
| ZDKT11T340SR-GM | 4.0 | - | - | - | - | - | 7814055 | - | 7813055 | - | - | - | - | - | - | - | - | - | | | | | |
| ZDKT11T308SR-GR | 0.8 | 1.4 | - | 7827033 | 7828033 | 7825033 | 7814033 | - | 7813033 | 7812033 | - | - | - | - | - | - | - | - | | | | | |
| ZDKT11T308SR-HR | 0.8 | 1.4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 7824035 | | | | | |
| ZDKT11T304ER-SM | 0.4 | 1.8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 7816034 | - | | | | | |
| ZDKT11T308ER-SM | 0.8 | 1.4 | - | - | - | - | - | - | - | - | - | - | 7815031 | - | - | - | 7816031 | - | | | | | |
| ZDKT11T312ER-SM | 1.2 | 1.1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 7816040 | - | | | | | |
| ZDKT11T316ER-SM | 1.6 | 0.8 | - | - | - | - | - | - | - | - | - | - | 7815027 | - | - | - | 7816027 | - | | | | | |
| ZDKT11T320ER-SM | 2.0 | 0.3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 7816041 | - | | | | | |
| ZDKT11T325ER-SM | 2.5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 7816042 | - | | | | | |
| ZDKT11T332ER-SM | 3.2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 7816043 | - | | | | | |
| ZDKT11T340ER-SM | 4.0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 7816044 | - | | | | | |
| ZDKT150508FR-NM | 0.8 | 1.6 | - | - | - | 7811046 | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| ZDKT150508SR-GL | 0.8 | 1.6 | - | - | - | 7827057 | 7828057 | 7825057 | 7814057 | 7826057 | 7813057 | - | - | - | - | - | - | - | | | | | |
| ZDKT150508SR-GM | 0.8 | 1.6 | - | - | - | 7827028 | 7828028 | 7825029 | 7814029 | 7826029 | 7813028 | 7812029 | - | - | - | - | - | - | | | | | |
| ZDKT150512SR-GM | 1.2 | 1.2 | - | - | - | - | - | - | 7814077 | - | 7813077 | - | - | - | - | - | - | - | | | | | |
| ZDKT150516SR-GM | 1.6 | 0.8 | - | - | - | - | - | - | 7814078 | - | 7813078 | - | - | - | - | - | - | - | | | | | |
| ZDKT150520SR-GM | 2.0 | 2.1 | - | - | - | - | - | - | 7814079 | - | 7813079 | - | - | - | - | - | - | - | | | | | |
| ZDKT150530SR-GM | 3.0 | 1.9 | - | - | - | - | - | - | 7814080 | - | 7813080 | - | - | - | - | - | - | - | | | | | |
| ZDKT150540SR-GM | 4.0 | 1.1 | - | - | - | - | - | - | 7814081 | - | 7813081 | - | - | - | - | - | - | - | | | | | |
| ZDKT150550SR-GM | 5.0 | 0.7 | - | - | - | - | - | - | 7814082 | - | 7813082 | - | - | - | - | - | - | - | | | | | |
| ZDKT150508SR-GR | 0.8 | 1.6 | - | 7827058 | 7828058 | 7825058 | 7814058 | - | 7813058 | 7812058 | - | - | - | - | - | - | - | - | | | | | |
| ZDKT150508SR-HR | 0.8 | 1.6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 7824036 | | | | | |
| ZDKT150508ER-SM | 0.8 | 1.6 | - | - | - | - | - | - | - | - | - | - | 7815056 | 7816056 | - | - | - | - | | | | | |

Packed: 10 pcs.



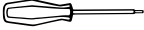
Note: For the 2nd and subsequent steps, use an insert with R0.8 or smaller.





List 7808H

PSEL Accessories

| Appearance | EDP No. | Designation | Applicable Insert | Applicable Cutter | | Recommended Tightening Torque |
|---|---------|-------------------------------------|-------------------|------------------------------------|---------------------------------------|-------------------------------|
| | | | | (mm) | (inch) | |
|  Clamping Screw | 7808107 | FS25656P (M2.5 x 5.6, Torx 8IP) | ZD_T11... | PSEL SS Ø25 | PSEL11 SA/FA Ø1" | 1.6 Nm |
| | 7808109 | FS25673P (M2.5 x 7.3, Torx 8IP) | | PSEL SS Ø32-40 | PSEL11 SA/FA Ø1.25-1.5" | 1.6 Nm |
| | 7808115 | FS35686P (M3.5 x 8.6, Torx 15IP) | ZDKT15... | PSEL SS Ø40-50 PSEL BORE Ø50-80 | PSEL15 SA/FA Ø1.5" PSEL BORE Ø2-3" | 3.2 Nm |
|  Coolant Cap Bolt | 7808132 | OCB-M20-08 | | PSEL BORE Ø50 | PSEL BORE Ø2" | |
| | 7808133 | OCB-M24-10 | | PSEL BORE Ø63 | PSEL BORE Ø2.5" | |
| | 7808134 | OCB-M30-14 | | PSEL BORE Ø80 | PSEL BORE Ø3" | |
|  Wrench | 7808225 | 8IP-D (Torx 8IP) | ZD_T11... | PSEL SS Ø25-40 | PSEL11 SA/FA Ø1-1.5" | |
| | 7808228 | 15IP-D (Torx 15IP) | ZDKT15... | PSEL SS Ø40-50 PSEL BORE Ø50-80 | PSEL15 SA/FA Ø1.5" PSEL BORE Ø2-3" | |

Packed: Clamping Screws = 10 pcs.; Coolant Cap Bolt = 1 pc.; Wrench = 1 pc.
Note: Wrench sold separately.





Cutting Conditions

| Work Material | | Tensile Strength - Hardness | Insert Size | | | |
|---------------|---|-----------------------------|---|---|---|---|
| | | | ZD T11... | | ZDKT15... | |
| | | | Side Milling Aa: 1.1-1.5D • Ar: 0.1D Max | | Side Milling Aa: 1.1-1.5D • Ar: 0.1D Max | |
| | | | Milling Speed V _c (SFM) | Feed Per Tooth f _z (in/t) | Milling Speed V _c (SFM) | Feed Per Tooth f _z (in/t) |
| P | Mild Steels, Carbon Steels (1010, 1018) | ~180 HB | 525 (330 - 655) | 0.010 (0.008 - 0.016) | 525 (330 - 655) | 0.012 (0.008 - 0.016) |
| | Carbon Steels, Alloy Steels (1050, 4140) | ~280 HB | 495 (330 - 655) | 0.008 (0.006 - 0.012) | 495 (330 - 655) | 0.010 (0.006 - 0.012) |
| | Die Steels (H13, D2) | ~280 HB | 425 (260 - 590) | 0.008 (0.006 - 0.012) | 425 (260 - 590) | 0.010 (0.006 - 0.012) |
| M | Stainless Steels(Dry) (304SS, 420SS) | ~250 HB | 495 (330 - 655) | 0.005 (0.004 - 0.012) | 495 (330 - 655) | 0.006 (0.004 - 0.012) |
| | Stainless Steels(Wet) (304SS, 420SS) | ~250 HB | 260 (195 - 395) | 0.005 (0.004 - 0.012) | 260 (195 - 395) | 0.006 (0.004 - 0.012) |
| K | Cast Iron (FC250) | ~350 N/mm ² | 525 (330 - 985) | 0.008 (0.008 - 0.014) | 525 (330 - 985) | 0.010 (0.008 - 0.014) |
| | Ductile Cast Iron (60-40-18) | ~800 N/mm ² | 525 (330 - 820) | 0.006 (0.008 - 0.012) | 525 (330 - 820) | 0.008 (0.008 - 0.012) |
| N | Aluminum Alloys (6061, 7075) | ~13% Si | 985 (655 - 3280) | 0.010 (0.004 - 0.016) | 985 (655 - 3280) | 0.012 (0.004 - 0.016) |
| S | Heat Resistant Alloys (Inconel 718) | - | 115 (85 - 195) | 0.006 (0.004 - 0.012) | 115 (85 - 195) | 0.007 (0.004 - 0.012) |
| | Titanium Alloy (Ti-6Al-4V) | - | 130 (100 - 395) | 0.006 (0.004 - 0.012) | 130 (100 - 395) | 0.007 (0.004 - 0.012) |
| H | Pre-hardened Steel (P20, Stavax) | 40 - 43 HRC | 330 (130 - 495) | 0.006 (0.004 - 0.012) | 330 (130 - 495) | 0.007 (0.004 - 0.012) |
| | Die Cast Steels (A2, S7) | 43 - 48 HRC | 195 (130 - 395) | 0.005 (0.002 - 0.008) | 195 (130 - 395) | 0.006 (0.002 - 0.008) |



Recommended Materials by Application

| Insert Grade | Chip Breaker | Coolant | P | M | K | N | S | H |
|--------------|--------------|---------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| CK010 | NM | Yes | | | | <input type="checkbox"/> | | |
| XC3020 | GL / GM / GR | - | <input type="checkbox"/> | | <input type="checkbox"/> | | | |
| XP3025 | GL / GM / GR | Yes | <input type="checkbox"/> | | <input type="checkbox"/> | | | |
| XC3030 | GL / GM / GR | - | <input type="checkbox"/> | | <input type="checkbox"/> | | | |
| XP3035 | GL / GM / GR | - | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| XP2025 | GL / GM | Yes | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | |
| XP2040 | GL / GM / GR | - | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> |
| | | Yes | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | |
| XC1015 | GM / GR | - | | | <input type="checkbox"/> | | | |
| XC5035 | SM | - | | <input type="checkbox"/> | | | | |
| | | Yes | | <input type="checkbox"/> | | | <input type="checkbox"/> | |
| XC5040 | SM | Yes | | <input type="checkbox"/> | | | <input type="checkbox"/> | |
| XP6015 | HR | - | <input type="checkbox"/> | | <input type="checkbox"/> | | | <input type="checkbox"/> |

GL:Light Cutting GM:Medium Cutting
GR: Rough Cutting NM:Aluminum
SM: Heat Resistant Alloy HR: Hardened Steel

good best

Cutting Conditions Adjustment Ratio

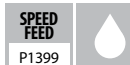
| Depth of Cut Aa | Width of Cut Ar Max | Milling Speed Ratio | Feed Rate Ratio |
|--------------------|------------------------|---------------------|-----------------|
| < 0.2D | 1D | 0.8 | 0.5 |
| 0.25-0.3D | 0.7D | 0.8 | 0.6 |
| 0.4-0.5D | 0.5D | 0.9 | 0.7 |
| 0.6-0.7D | 0.3D | 0.9 | 0.8 |
| 0.8-1.0D | 0.2D | 1.0 | 0.9 |
| 1.1-1.5D | 0.1D | 1.0 | 1.0 |

Ex: For Ø1.250" PSEL with ZDKT11 inserts, Aa = 1.150",
side milling in 1050 carbon steel:
Vc = 492 SFM x 1.0 = 492 SFM
fz = 0.008 in/t x 0.9 = 0.007 in/t
Ar = 0.2 x 1.250" = 0.250" Max



List 52900

PSF SA/FA (Inch)



Recommended Materials: p1399
Accessories & Inserts: p1398



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (inch) | No. of Teeth | Shank Dia. (inch) | Overall Length (inch) | Neck Length (inch) | Applicable Insert |
|----------|-------------------------|------------|-------------------|------|------------------|--------------|-------------------|-----------------------|--------------------|-------------------|
| | | | | | D | | d | L | L1 | |
| 52900000 | Cylindrical Shank Short | Normal | PSF09R100SA100-3S | 1 | 1.000 | 3 | 1.000 | 4.724 | 1.378 | SD_T09... |
| 52900001 | | | PSF09R125SA125-4S | 1 | 1.250 | 4 | 1.250 | 5.118 | 1.772 | |
| 52900002 | | | PSF09R150SA125-5S | 2 | 1.500 | 5 | 1.250 | 5.512 | 1.969 | |
| 52900004 | Weldon Shank Short | Normal | PSF09R100FA100-3S | 1 | 1.000 | 3 | 1.000 | 3.831 | 1.551 | |
| 52900005 | | | PSF09R125FA125-4S | 1 | 1.250 | 4 | 1.250 | 4.378 | 2.098 | |
| 52900006 | | | PSF09R150FA125-5S | 2 | 1.500 | 5 | 1.250 | 4.378 | 2.098 | |

Packed: 1 pc.



List 78030

PSF SS (Metric)



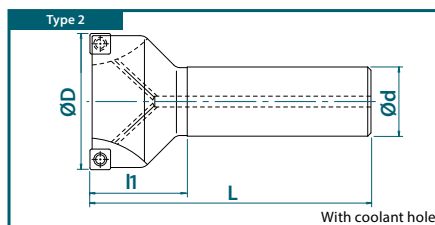
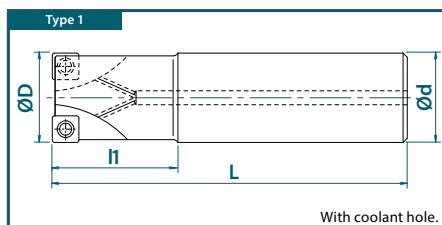
Recommended Materials: p1399
Accessories & Inserts: p1398



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (mm) | No. of Teeth | Shank Dia. (mm) | Overall Length (mm) | Neck Length (mm) | Applicable Insert |
|---------|-------------------------|------------|------------------|------|----------------|--------------|-----------------|---------------------|------------------|-------------------|
| | | | | | D | | d | L | L1 | |
| 7803001 | Cylindrical Shank Short | Normal | PSF09R025SS25-3S | 1 | 25 | 3 | 25 | 120 | 35 | SD_T09... |
| 7803002 | | | PSF09R032SS32-4S | 1 | 32 | 4 | 32 | 130 | 45 | |
| 7803003 | | | PSF09R040SS32-5S | 2 | 40 | 5 | 32 | 140 | 50 | |

Packed: 1 pc.

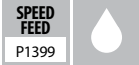
Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**





List 52901

PSF Bore (Inch)



Recommended Materials: p1399
Accessories & Inserts: p1398



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (inch) | No. of Teeth | Tool Height (inch) | Flange Dia. (inch) | Bore Hole Dia. (inch) | Keyway Width (inch) | Keyway Depth (inch) | Applicable Insert |
|----------|-----------|------------|-----------------|------|------------------|--------------|--------------------|--------------------|-----------------------|---------------------|---------------------|-------------------|
| | | | | | D | | H | D2 | d3 | a | b | |
| 52901000 | Bore | Normal | PSF09R200A075-6 | 1 | 2.000 | 6 | 1.575 | 1.772 | 0.750 | 0.315 | 0.197 | SD_T09... |
| 52901001 | | | PSF09R250A075-7 | 1 | 2.500 | 7 | 1.575 | 1.968 | 0.750 | 0.315 | 0.197 | |
| 52901002 | | | PSF09R300A100-9 | 1 | 3.000 | 9 | 1.968 | 2.362 | 1.000 | 0.375 | 0.236 | |

Packed: 1 pc.



List 78130

PSF Bore (Metric)



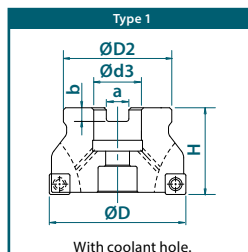
Recommended Materials: p1399
Accessories & Inserts: p1398



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (mm) | No. of Teeth | Tool Height (mm) | Flange Dia. (mm) | Bore Hole Dia. (mm) | Keyway Width (mm) | Keyway Depth (mm) | Applicable Insert |
|---------|-----------|------------|------------------|------|----------------|--------------|------------------|------------------|---------------------|-------------------|-------------------|-------------------|
| | | | | | D | | H | D2 | d3 | a | b | |
| 7803011 | Bore | Normal | PSF09R050M22-6 | 1 | 50 | 6 | 40 | 45 | 22 | 10.4 | 6.3 | SD_T09... |
| 7803012 | | | PSF09R063M22-7 | 1 | 63 | 7 | 40 | 50 | 22 | 10.4 | 6.3 | |
| 7803013 | | | PSF09R080M25.4-9 | 1 | 80 | 9 | 50 | 60 | 25.4 | 9.5 | 6 | |

Packed: 1 pc.

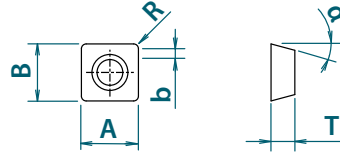
Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**





List 78PSF

PSF/PSFL Inserts



| Designation | No. of Cutting Edges | Insert Size | | | | | EDP Number | | | | | |
|-----------------|----------------------|---------------|--------|----------|---------|---------|------------|---------|---------|---------|---------|--------|
| | | AxB (mm) | T (mm) | α | R (mm) | b (mm) | CK010 | XC3030 | XP3035 | XP2040 | XC1015 | XC5040 |
| SDHT09T308FR-NM | 4 | 9.07 x 9.07 | 3.97 | 15° | 0.8 | 2.5 | 7811076 | - | - | - | - | - |
| SDKT09T308SR-GL | | | | | | | 7825073 | 7814073 | 7813073 | - | 7816073 | |
| SDKT09T308SR-GM | | | | | | | 7825074 | 7814074 | 7813074 | - | - | |
| SDKT09T308SR-GR | | | | | | | - | - | - | 7812075 | - | |
| SDHT120508FR-NM | | | | | | | - | - | - | - | - | |
| SDKT120508SR-GL | | 12.38 x 12.38 | 5 | 1.2 | 7811625 | - | - | 7813623 | - | 7816620 | | |
| SDKT120508SR-GM | | | | | - | 7825622 | 7814621 | - | - | | | |
| SDKT120508SR-GR | | | | | - | - | - | - | 7812624 | - | | |
| - | | | | | - | - | - | - | - | - | | |
| - | | | | | - | - | - | - | - | - | | |

Packed: 10 pcs.



List 7808H

PSF Accessories

| Appearance | EDP No. | Designation | Applicable Cutter | | Recommended Tightening Torque |
|----------------|---------|-------------------------------|----------------------------------|-------------------------------------|-------------------------------|
| | | | (mm) | (inch) | |
| Clamping Screw | 7808110 | FS30573 (M3 x 7.3, Torx 8) | PSF SS Ø25-40 PSF BORE Ø50-80 | PSF SA/FA Ø1-1.5" PSF BORE Ø2-3" | 1.6 Nm |
| Wrench | 7808205 | T8-D (Torx 8) | PSF SS Ø25-40 PSF BORE Ø50-80 | PSF SA/FA Ø1-1.5" PSF BORE Ø2-3" | |

Packed: Clamping Screws = 10 pcs.; Wrench = 1 pc.
Note: Wrench sold separately.



Cutting Conditions

| Work Material | | Tensile Strength – Hardness | Insert Size | | |
|---------------|---|--------------------------------|-----------------------------|----------------------------|-------------------------|
| | | | SD T09... | | |
| | | | Face Milling • Side Milling | | |
| | | | Milling Speed Vc (SFM) | Feed Per Tooth fz(in/t) | Depth of Cut Aa (in) |
| P | Mild Steels, Carbon Steels (1010, 1018) | ~180 HB | 590 (330 - 820) | 0.005 (0.002 - 0.008) | 0.120 |
| | Carbon Steels, Alloy Steels (1050, 4140) | ~280 HB | 590 (330 - 820) | 0.005 (0.002 - 0.008) | 0.120 |
| | Die Steels (H13, D2) | ~280 HB | 495 (260 - 655) | 0.004 (0.002 - 0.007) | 0.120 |
| M | Stainless Steels(Dry) (304SS, 420SS) | ~250 HB | 495 (260 - 655) | 0.004 (0.002 - 0.007) | 0.080 |
| | Stainless Steels(Wet) (304SS, 420SS) | ~250 HB | 260 (195 - 395) | 0.004 (0.002 - 0.007) | 0.080 |
| K | Cast Iron (FC250) | ~350 N/mm ² | 590 (330 - 1150) | 0.005 (0.002 - 0.008) | 0.120 |
| | Ductile Cast Iron (60-40-18) | ~800 N/mm ² | 590 (330 - 885) | 0.005 (0.002 - 0.008) | 0.120 |
| N | Aluminum Alloys (6061, 7075) | ~13% Si | 985 (655 - 4920) | 0.006 (0.004 - 0.010) | 0.120 |
| S | Heat Resistant Alloys (Inconel 718) | - | 115 (85 - 195) | 0.004 (0.002 - 0.006) | 0.060 |
| | Titanium Alloy (Ti-6Al-4V) | - | 130 (100 - 395) | 0.004 (0.002 - 0.007) | 0.060 |
| H | Pre-hardened Steel (P20, Stavax) | 40 - 43 HRC | 295 (130 - 495) | 0.004 (0.003 - 0.008) | 0.060 |
| | Die Cast Steels (A2, S7) | 43 - 48 HRC | 230 (130 - 395) | 0.003 (0.002 - 0.006) | 0.020 |
| | Hardened Steels (D2) | 50 - 55 HRC | 165 (130 - 295) | 0.002 (0.002 - 0.004) | 0.020 |

Recommended Materials by Application

| Insert Grade | Chip Breaker | Coolant | P | M | K | N | S | H |
|--------------|--------------|---------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| CK010 | NM | Yes | | | | <input type="checkbox"/> | | |
| XC3030 | GL/GM | - | <input type="checkbox"/> | | <input type="checkbox"/> | | | |
| XP3035 | GL/GM | - | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| XP2040 | GL/GM | - | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> |
| | | Yes | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | |
| XC1015 | GR | - | | | <input type="checkbox"/> | | | |
| XC5040 | GL | Yes | | <input type="checkbox"/> | | | <input type="checkbox"/> | |

GL:Light Cutting GM:Medium Cutting GR: Rough Cutting NM:Aluminum

good best



List 53200

PSFL SA/FA (Inch)



SPEED FEED
P1403



Recommended Materials: p1403
Accessories & Inserts: p1402



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (inch) | No. of Teeth | No. of Inserts Per Tooth | Total No. of Inserts | Length of Cut (inch) | Shank Dia. (inch) | Overall Length (inch) | Neck Length (inch) | Applicable Insert |
|----------|-------------------|------------|----------------------|------|------------------|--------------|--------------------------|----------------------|----------------------|-------------------|-----------------------|--------------------|-------------------|
| | | | | | D | | | | Lc | d | L | L1 | |
| 53200000 | Cylindrical Shank | Normal | PSFL09R125SA125-2-36 | 1 | 1.250 | 2 | 5 | 10 | 1.417 | 1.250 | 5.512 | 2.362 | SD_T09... |
| 53200001 | | | PSFL09R150SA125-3-43 | 2 | 1.500 | 3 | 6 | 18 | 1.693 | 1.250 | 5.512 | 2.362 | |
| 53200002 | Weldon Shank | Normal | PSFL09R125FA125-2-36 | 1 | 1.250 | 2 | 5 | 10 | 1.417 | 1.250 | 4.642 | 2.362 | |
| 53200003 | | | PSFL09R150FA125-3-43 | 2 | 1.500 | 3 | 6 | 18 | 1.693 | 1.250 | 4.642 | 2.362 | |

Packed: 1 pc.



List 78037

PSFL SS (Metric)



SPEED FEED
P1403



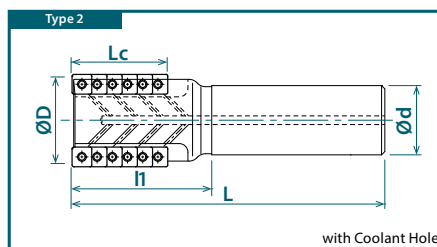
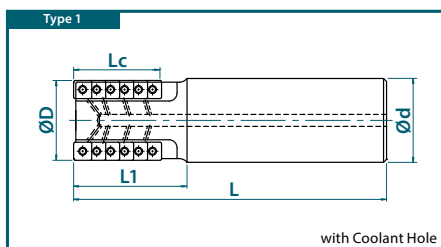
Recommended Materials: p1403
Accessories & Inserts: p1402



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (mm) | No. of Teeth | No. of Inserts Per Tooth | Total No. of Inserts | Length of Cut (mm) | Shank Dia. (mm) | Overall Length (mm) | Neck Length (mm) | Applicable Insert |
|---------|-------------------|------------|---------------------|------|----------------|--------------|--------------------------|----------------------|--------------------|-----------------|---------------------|------------------|-------------------|
| | | | | | D | | | | Lc | d | L | L1 | |
| 7803700 | Cylindrical Shank | Normal | PSFL09R032SS32-2-36 | 1 | 32 | 2 | 5 | 10 | 36 | 32 | 140 | 60 | SD_T09... |
| 7803701 | | | PSFL09R040SS42-3-43 | 1 | 40 | 3 | 6 | 18 | 43 | 42 | 140 | 60 | |

Packed: 1 pc.

Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**





List 53201

PSFL Bore (Inch)



SPEED FEED
P1403



Recommended Materials: p1403
Accessories & Inserts: p1402



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (inch) | No. of Teeth | No. of Inserts Per Tooth | Total No. of Inserts | Length of Cut (inch) | Tool Height (inch) | Flange Dia. (Inch) | Bore Dia. (Inch) | Keyway Width (Inch) | Keyway Depth (Inch) | Applicable Insert |
|----------|-----------|------------|----------------------|------|------------------|--------------|--------------------------|----------------------|----------------------|--------------------|--------------------|------------------|---------------------|---------------------|-------------------|
| | | | | | D | | | | Lc | H | D2 | d3 | a | b | |
| 53201000 | Bore | Normal | PSFL09R200A075-4-57 | 1 | 2.000 | 4 | 8 | 32 | 2.244 | 3.000 | 1.941 | 0.750 | 0.315 | 0.197 | SD_T09... |
| 53201001 | | | PSFL09R200A075-4-78 | 1 | 2.000 | 4 | 11 | 44 | 3.071 | 4.000 | 1.941 | 0.750 | 0.315 | 0.197 | |
| 53201002 | | | PSFL12R250A100-4-70 | 1 | 2.500 | 4 | 7 | 28 | 2.756 | 3.500 | 2.402 | 1.000 | 0.375 | 0.236 | SD_T12... |
| 53201003 | | | PSFL12R250A100-4-110 | 1 | 2.500 | 4 | 11 | 44 | 4.331 | 5.000 | 2.402 | 1.000 | 0.375 | 0.236 | |
| 53201004 | | | PSFL12R300A125-5-80 | 1 | 3.000 | 5 | 8 | 40 | 3.150 | 4.000 | 2.890 | 1.250 | 0.500 | 0.315 | |
| 53201005 | | | PSFL12R300A125-5-120 | 1 | 3.000 | 5 | 12 | 60 | 4.724 | 5.500 | 2.890 | 1.250 | 0.500 | 0.315 | |
| 53201006 | | | PSFL12R400A125-6-130 | 1 | 4.000 | 6 | 13 | 78 | 5.118 | 6.000 | 3.882 | 1.250 | 0.500 | 0.315 | |

Packed: 1 pc.



List 78137

PSFL Bore (Metric)



SPEED FEED
P1403



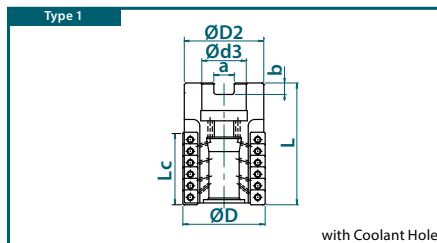
Recommended Materials: p1403
Accessories & Inserts: p1402



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (mm) | No. of Teeth | No. of Inserts Per Tooth | Total No. of Inserts | Length of Cut (mm) | Tool Height (mm) | Flange Dia. (mm) | Bore Dia. (mm) | Keyway Width (mm) | Keyway Depth (mm) | Applicable Insert |
|---------|-----------|------------|---------------------|------|----------------|--------------|--------------------------|----------------------|--------------------|------------------|------------------|----------------|-------------------|-------------------|-------------------|
| | | | | | D | | | | Lc | H | D2 | d3 | a | b | |
| 7803702 | Bore | Normal | PSFL09R050M22-4-50 | 1 | 50 | 4 | 7 | 28 | 50 | 75 | 48.5 | 22 | 10.4 | 6.3 | SD_T09... |
| 7803703 | | | PSFL09R050M22-4-78 | 1 | 50 | 4 | 11 | 44 | 78 | 100 | 48.5 | 22 | 10.4 | 6.3 | |
| 7803706 | | | PSFL12R063M27-4-60 | 1 | 63 | 4 | 6 | 24 | 60 | 85 | 60.5 | 27 | 12.4 | 7 | SD_T12... |
| 7803707 | | | PSFL12R063M27-4-100 | 1 | 63 | 4 | 10 | 40 | 100 | 125 | 60.5 | 27 | 12.4 | 7 | |
| 7803708 | | | PSFL12R080M32-5-70 | 1 | 80 | 5 | 7 | 35 | 70 | 95 | 77.3 | 32 | 14.4 | 8 | |
| 7803709 | | | PSFL12R080M32-5-110 | 1 | 80 | 5 | 11 | 55 | 110 | 143 | 77.3 | 32 | 14.4 | 8 | |

Packed: 1 pc.

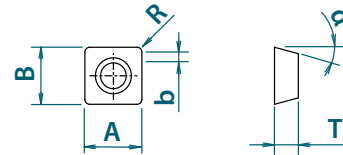
Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**





List 78PSF

PSF/PSFL Inserts



| Designation | No. of Cutting Edges | Insert Size | | | | | EDP Number | | | | | | |
|-----------------|----------------------|---------------|--------|----------|--------|--------|------------|---------|---------|---------|---------|---------|---|
| | | AxB (mm) | T (mm) | α | R (mm) | b (mm) | CK010 | XC3030 | XP3035 | XP2040 | XC1015 | XC5040 | |
| SDHT09T308FR-NM | 4 | 9.07 x 9.07 | 3.97 | 15° | 0.8 | 2.5 | 7811076 | - | - | - | - | - | |
| SDKT09T308SR-GL | | | | | | | - | 7825073 | 7814073 | 7813073 | - | 7816073 | |
| SDKT09T308SR-GM | | | | | | | - | 7825074 | 7814074 | 7813074 | - | - | |
| SDKT09T308SR-GR | | | | | | | - | - | - | - | 7812075 | - | |
| SDHT120508FR-NM | | 12.38 x 12.38 | 5 | | | 1.2 | 7811625 | - | - | - | - | - | - |
| SDKT120508SR-GL | | | | | | | - | - | 7813623 | - | 7816620 | | |
| SDKT120508SR-GM | | | | | | | - | 7825622 | 7814621 | - | - | | |
| SDKT120508SR-GR | | | | | | | - | - | - | - | 7812624 | - | |

Packed: 10 pcs.



List 7808H

PSFL Accessories

| Appearance | EDP No. | Designation | Applicable Insert | Applicable Cutter | | Recommended Tightening Torque |
|----------------------|---------|-------------------------------|-------------------|---------------------------------|--|-------------------------------|
| | | | | (mm) | (inch) | |
| Clamping Screw | 7808110 | FS30573 (M3 x 7.3, Torx 8) | SD_T09... | PSFL SS Ø32-40 PSFL BORE Ø50 | PSFL SA/FA Ø1.25-1.5" PSFL BORE Ø2" | 1.6 Nm |
| | 7808129 | FS40511 (M4 x 11, Torx 15) | SD_T12... | PSFL BORE Ø63-80 | PSFL BORE Ø2.5-4" | 5.0 Nm |
| Coolant Cap Bolt | 7808132 | OCB-M20-08 | | PSFL BORE Ø50 | PSFL BORE Ø2" | |
| | 7808133 | OCB-M24-10 | | PSFL BORE Ø63 | PSFL BORE Ø2.5" | |
| | 7808134 | OCB-M30-14 | | PSFL BORE Ø80 | PSFL BORE Ø3-4" | |
| Wrench | 7808205 | T8-D (Torx 8) | SD_T09... | PSFL SS Ø32-40 PSFL BORE Ø50 | PSFL SA/FA Ø1.25-1.5" PSFL BORE Ø2" | |
| | 7808208 | T15-D (Torx 15) | SD_T12... | PSFL BORE Ø63-80 | PSFL BORE Ø2.5-4" | |

Packed: Clamping Screws = 10 pcs.; Coolant Cap Bolt = 1 pc.; Wrench = 1 pc.
Note: Wrench sold separately.



Cutting Conditions

| Work Material | | Tensile Strength – Hardness | Insert Size | | Insert Size | |
|---------------|---|--------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| | | | SD_T09... | | SD_T12... | |
| | | | Face Milling • Side Milling | | Face Milling • Side Milling | |
| | | | Milling Speed Vc (SFM) | Feed Per Tooth fz (in/t) | Milling Speed Vc (SFM) | Feed Per Tooth fz (in/t) |
| P | Mild Steels, Carbon Steels (1010, 1018) | ~180 HB | 525 (330 - 655) | 0.010 (0.008 - 0.016) | 525 (330 - 655) | 0.012 (0.008 - 0.016) |
| | Carbon Steels, Alloy Steels (1050, 4140) | ~280 HB | 495 (330 - 655) | 0.008 (0.006 - 0.012) | 495 (330 - 655) | 0.010 (0.006 - 0.012) |
| | Die Steels (H13, D2) | ~280 HB | 425 (265 - 590) | 0.008 (0.006 - 0.012) | 425 (265 - 590) | 0.010 (0.006 - 0.012) |
| M | Stainless Steels(Dry) (304SS, 420SS) | ~250 HB | 495 (330 - 655) | 0.005 (0.004 - 0.012) | 495 (330 - 655) | 0.006 (0.004 - 0.012) |
| | Stainless Steels(Wet) (304SS, 420SS) | ~250 HB | 265 (200 - 395) | 0.005 (0.004 - 0.012) | 265 (200 - 395) | 0.006 (0.004 - 0.012) |
| K | Cast Iron (FC250) | ~350 N/mm ² | 525 (330 - 985) | 0.008 (0.006 - 0.014) | 525 (330 - 985) | 0.010 (0.008 - 0.016) |
| | Ductile Cast Iron (60-40-18) | ~800 N/mm ² | 525 (330 - 820) | 0.008 (0.006 - 0.012) | 525 (330 - 820) | 0.008 (0.006 - 0.014) |
| N | Aluminum Alloys (6061, 7075) | ~13% Si | 985 (655 - 3280) | 0.010 (0.004 - 0.016) | 985 (655 - 3280) | 0.012 (0.004 - 0.016) |
| S | Heat Resistant Alloys (Inconel 718) | - | 115 (85 - 195) | 0.006 (0.003 - 0.012) | 115 (85 - 195) | 0.007 (0.004 - 0.012) |
| | Titanium Alloy (Ti-6Al-4V) | - | 130 (100 - 395) | 0.006 (0.003 - 0.012) | 130 (100 - 395) | 0.007 (0.004 - 0.012) |
| H | Pre-hardened Steel (P20, Stavax) | 40 - 43 HRC | 330 (130 - 490) | 0.006 (0.003 - 0.012) | 330 (130 - 490) | 0.007 (0.004 - 0.012) |
| | Die Cast Steels (A2, S7) | 43 - 48 HRC | 200 (130 - 395) | 0.005 (0.002 - 0.008) | 200 (130 - 395) | 0.006 (0.002 - 0.012) |
| | Hardened Steels (D2) | 50 - 55 HRC | 165 (130 - 295) | 0.004 (0.002 - 0.006) | 165 (130 - 295) | 0.004 (0.002 - 0.006) |

Recommended Materials by Application

| Insert Grade | Chip Breaker | Coolant | P | M | K | N | S | H |
|--------------|--------------|---------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| CK010 | NM | Yes | | | | <input checked="" type="checkbox"/> | | |
| XC3030 | GL/GM | - | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | | |
| XP3035 | GL/GM | - | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| XP2040 | GL/GM | - | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> |
| | | Yes | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | |
| XC1015 | GR | - | | | <input checked="" type="checkbox"/> | | | |
| XC5040 | GL | Yes | | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | |

GL:Light Cutting GM:Medium Cutting GR: Rough Cutting NM:Aluminum

good best

Cutting Conditions Adjustment Ratio

| Depth of Cut | Width of Cut | Milling Speed Ratio | Feed Rate Ratio |
|--------------|--------------|---------------------|-----------------|
| Aa | Ar Max | | |
| < 0.2D | 1D | 0.8 | 0.5 |
| 0.25-0.3D | 0.7D | 0.8 | 0.6 |
| 0.4-0.5D | 0.5D | 0.9 | 0.7 |
| 0.6-0.7D | 0.3D | 0.9 | 0.8 |
| 0.8-1.0D | 0.2D | 1.0 | 0.9 |
| 1.1-1.5D | 0.1D | 1.0 | 1.0 |

Ex: For Ø1.250" PSFL with SDMT09 inserts, Aa = 1.150", side milling in 1050 carbon steel:
Vc = 495 SFM x 1.0 = 495 SFM
fz = 0.008 in/t x 0.9 = 0.007 in/t
Ar = 0.2 x 1.250" = 0.250" Max



List 53100

PSTW Bore (Inch)

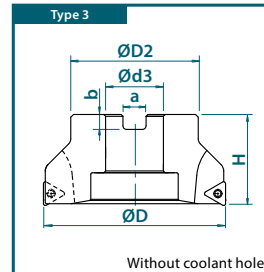
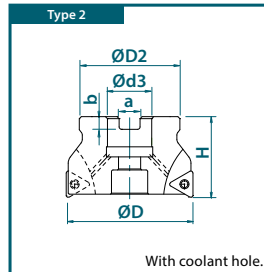
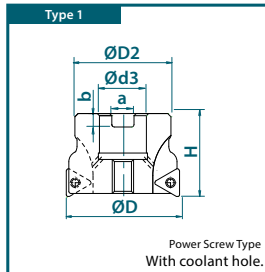


Recommended Materials: p1407
Accessories & Inserts: p1406



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (inch) | No. of Teeth | Tool Height (inch) | Flange Dia. (inch) | Bore Dia. (inch) | Keyway Width (inch) | Keyway Depth (inch) | Applicable Insert |
|----------|-----------|------------|-------------------|------|------------------|--------------|--------------------|--------------------|------------------|---------------------|---------------------|-------------------|
| | | | | | D | | H | D2 | d3 | a | b | |
| 53100000 | Bore | Normal | PSTW12R200A075-3 | 1 | 2.000 | 3 | 1.575 | 1.772 | 0.750 | 0.315 | 0.197 | TNKU12... |
| 53100001 | | | PSTW12R250A075-3 | 2 | 2.500 | 3 | 1.575 | 1.968 | 0.750 | 0.315 | 0.197 | |
| 53100002 | | | PSTW12R300A100-5 | 2 | 3.000 | 5 | 1.968 | 2.362 | 1.000 | 0.375 | 0.236 | |
| 53100003 | | | PSTW12R400A125-5 | 3 | 4.000 | 5 | 1.968 | 2.756 | 1.250 | 0.500 | 0.315 | |
| 53100004 | | | PSTW12R500A150-7 | 3 | 5.000 | 7 | 2.480 | 3.543 | 1.500 | 0.625 | 0.394 | |
| 53100010 | | | PSTW12R600A150-8 | 3 | 6.000 | 8 | 2.480 | 3.740 | 1.500 | 0.625 | 0.394 | |
| 53100005 | | Close | PSTW12R200A075-4 | 1 | 2.000 | 4 | 1.575 | 1.772 | 0.750 | 0.315 | 0.197 | |
| 53100006 | | | PSTW12R250A075-5 | 2 | 2.500 | 5 | 1.575 | 1.968 | 0.750 | 0.315 | 0.197 | |
| 53100007 | | | PSTW12R300A100-6 | 2 | 3.000 | 6 | 1.968 | 2.362 | 1.000 | 0.375 | 0.236 | |
| 53100008 | | | PSTW12R400A125-7 | 3 | 4.000 | 7 | 1.968 | 2.756 | 1.250 | 0.500 | 0.315 | |
| 53100009 | | | PSTW12R500A150-9 | 3 | 5.000 | 9 | 2.480 | 3.543 | 1.500 | 0.625 | 0.394 | |
| 53100011 | | | PSTW12R600A150-10 | 3 | 6.000 | 10 | 2.480 | 3.740 | 1.500 | 0.625 | 0.394 | |

Packed: 1 pc.





List 78131

PSTW Bore (Metric)



SPEED
FEED
P1407

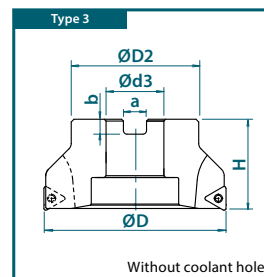
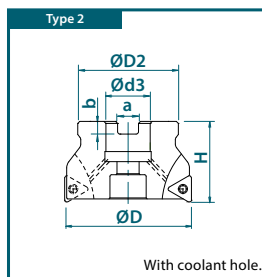
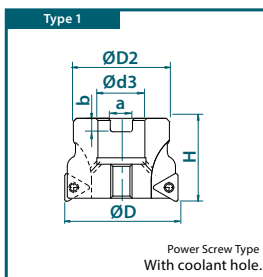


Recommended Materials: p1407
Accessories & Inserts: p1406



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (mm) | No. of Teeth | Tool Height (mm) | Flange Dia. (mm) | Bore Dia. (mm) | Keyway Width (mm) | Keyway Depth (mm) | Applicable Insert |
|---------|-----------|-------------------|-------------------|------|----------------|--------------|------------------|------------------|----------------|-------------------|-------------------|-------------------|
| | | | | | D | | H | D2 | d3 | a | b | |
| 7803100 | Bore | Normal | PSTW12R050M22-3 | 1 | 50 | 3 | 40 | 45 | 22 | 10.4 | 6.3 | TNKU12... |
| 7803102 | | | PSTW12R063M22-3 | 2 | 63 | 3 | 40 | 50 | 22 | 10.4 | 6.3 | |
| 7803110 | | | PSTW12R080M27-5 | 2 | 80 | 5 | 50 | 60 | 27 | 12.4 | 7 | |
| 7803104 | | | PSTW12R080M25.4-5 | 2 | 80 | 5 | 50 | 60 | 25.4 | 9.5 | 6 | |
| 7803112 | | | PSTW12R100M32-5 | 2 | 100 | 5 | 50 | 70 | 32 | 14.4 | 8 | |
| 7803106 | | | PSTW12R100M31.7-5 | 3 | 100 | 5 | 50 | 70 | 32 | 12.7 | 8 | |
| 7803114 | | | PSTW12R125M40-7 | 2 | 125 | 7 | 63 | 90 | 40 | 16.4 | 9 | |
| 7803108 | | | PSTW12R125M38.1-7 | 3 | 125 | 7 | 63 | 90 | 38.1 | 15.9 | 10 | |
| 7803101 | | | PSTW12R050M22-4 | 1 | 50 | 4 | 40 | 45 | 22 | 10.4 | 6.3 | |
| 7803103 | | PSTW12R063M22-5 | 2 | 63 | 5 | 40 | 50 | 22 | 10.4 | 6.3 | | |
| 7803111 | | PSTW12R080M27-6 | 2 | 80 | 6 | 50 | 60 | 27 | 12.4 | 7 | | |
| 7803105 | | PSTW12R080M25.4-6 | 2 | 80 | 6 | 50 | 60 | 25.4 | 9.5 | 6 | | |
| 7803113 | | PSTW12R100M32-7 | 2 | 100 | 7 | 50 | 70 | 32 | 14.4 | 8 | | |
| 7803107 | | PSTW12R100M31.7-7 | 3 | 100 | 7 | 50 | 70 | 31.8 | 12.7 | 8 | | |
| 7803115 | | PSTW12R125M40-9 | 2 | 125 | 9 | 63 | 90 | 40 | 16.4 | 9 | | |
| 7803109 | | PSTW12R125M38.1-9 | 3 | 125 | 9 | 63 | 90 | 38.1 | 15.9 | 10 | | |

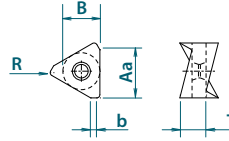
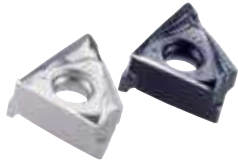
Packed: 1 pc.





List 78PSTW

PSTW Inserts




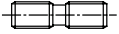
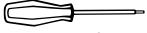
| Designation | No. of Cutting Edges | Insert Size | | | | | EDP Number | | | | | | | | | |
|------------------|----------------------|-------------|--------|--------|--------|-------------|------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| | | B (mm) | T (mm) | R (mm) | b (mm) | Aa Max (mm) | CK010 | XC3020 | XP3025 | XC3030 | XP3035 | XP2040 | XC1015 | XP1020 | XC5040 | |
| TN KU120608ER-NM | 6 | 10.8 | 6.55 | 0.8 | 1.25 | 12 | 7811087 | - | - | - | - | - | - | - | - | |
| TN KU120608ER-GL | | | | 0.8 | 1.5 | | - | - | - | 7825089 | 7814089 | 7813089 | - | - | - | |
| TN KU120608ER-GM | | | | 0.8 | 1.5 | | - | 7827088 | 7828088 | 7825088 | 7814088 | 7813088 | 7812088 | 7821088 | - | |
| TN KU120612ER-GM | | | | 1.2 | 1.0 | | - | - | - | - | 7814094 | 7813094 | - | - | - | |
| TN KU120616ER-GM | | | | 1.6 | 0.75 | | - | - | - | - | 7814095 | 7813095 | - | - | - | |
| TN KU120620ER-GM | | | | 2.0 | 0.6 | | - | - | - | - | 7814096 | 7813096 | - | - | - | |
| TN KU120608ER-GR | | | | 0.8 | 1.5 | | - | - | - | - | - | - | - | 7812090 | 7821090 | - |
| TN KU120608ER-SM | | | | 0.8 | 1.5 | | - | - | - | - | - | - | - | - | - | 7816091 |

Packed: 10 pcs.



List 7808H

PSTW Accessories

| Appearance | EDP No. | Designation | Applicable Cutter | | Recommended Tightening Torque |
|---|---------|-------------------------------|-------------------|-----------------|-------------------------------|
| | | | (mm) | (inch) | |
|  Clamping Screw | 7808129 | FS40511 (M4 x 11, Torx 15) | PSTW BORE Ø50-125 | PSTW BORE Ø2-5" | 3.2 Nm |
|  Power Screw | 7808151 | PS1031 (M10x31) | PSTW BORE Ø50 | PSTW BORE Ø2" | 20.0 Nm |
|  Wrench | 7808208 | T15-D (Torx 15) | PSTW BORE Ø50-125 | PSTW BORE Ø2-5" | |

Packed: Clamping Screws = 10 pcs.; Power Screw = 1 pc.; Wrench = 1 pc.
Note: Wrench sold separately.





Cutting Conditions

| Work Material | | Tensile Strength – Hardness | Insert Size | | |
|---------------|---|--------------------------------|---------------------------|----------------------------|-------------------------|
| | | | TNKU12... | | |
| | | | Face Milling | | |
| | | | Milling Speed Vc (SFM) | Feed Per Tooth fz(in/t) | Depth of Cut Aa (in) |
| P | Mild Steels, Carbon Steels (1010, 1018) | ~180 HB | 590 (330 - 820) | 0.006 (.002 - .010) | 0.120 |
| | Carbon Steels, Alloy Steels (1050, 4140) | ~280 HB | 590 (330 - 820) | 0.006 (.002 - .010) | 0.120 |
| | Die Steels (H13, D2) | ~280 HB | 495 (260 - 655) | 0.005 (.002 - .008) | 0.120 |
| M | Stainless Steels(Dry) (304SS, 420SS) | ~250 HB | 495 (260 - 655) | 0.004 (.002 - .007) | 0.080 |
| | Stainless Steels(Wet) (304SS, 420SS) | ~250 HB | 260 (195 - 395) | 0.004 (.002 - .007) | 0.080 |
| K | Cast Iron (FC250) | ~350 N/mm ² | 650 (330 - 1150) | 0.008 (.004 - .012) | 0.120 |
| | Ductile Cast Iron (60-40-18) | ~800 N/mm ² | 590 (330 - 885) | 0.006 (.002 - .010) | 0.120 |
| N | Aluminum Alloys (6061, 7075) | ~13% Si | 985 (655 - 4920) | 0.006 (.004 - .012) | 0.120 |
| S | Heat Resistant Alloys (Inconel 718) | - | 115 (85 - 195) | 0.003 (.002 - .006) | 0.040 |
| | Titanium Alloy (Ti-6Al-4V) | - | 130 (100 - 395) | 0.003 (.002 - .006) | 0.060 |
| H | Pre-hardened Steel (P20, Stavax) | 40 - 43 Hrc | 330 (165 - 495) | 0.004 (.003 - .008) | 0.060 |
| | Die Cast Steels (A2, S7) | 43 - 48 Hrc | 265 (130 - 395) | 0.003 (.002 - .006) | 0.040 |
| | Hardened Steels (D2) | 50 - 55 Hrc | 195 (130 - 295) | 0.002 (.002 - .004) | 0.020 |

Recommended Materials by Application

| Insert Grade | Chip Breaker | Coolant | P | M | K | N | S | H |
|--------------|--------------|---------|---|---|-----|---|---|---|
| CK010 | NM | Yes | | | | ☐ | | |
| XC3020 | GM | - | ☐ | | ☐ | | | |
| XP3025 | GM | Yes | ☐ | | ☐ | | | |
| XC3030 | GL / GM | - | ☐ | | ☐ | | | |
| XP3035 | GL / GM | - | ☐ | ☐ | ☐ | | | |
| XP2040 | GL/GM | - | ☐ | ☐ | | | | ☐ |
| | | Yes | ☐ | ☐ | | | ☐ | |
| XC1015 | GM/GR | - | | | ☐* | | | |
| XP1020 | GM/GR | - | | | ☐** | | | |
| XC5040 | SM | Yes | | ☐ | | | ☐ | |

GL: Light Cutting GM: Medium Cutting GR: Rough Cutting SM: Heat Resistant Alloy
 *: XC1015 best recommended for grey cast iron
 **: XP1020 best recommended for ductile cast iron

☐ good ☐ best





List 78005

PRC SA (Inch)

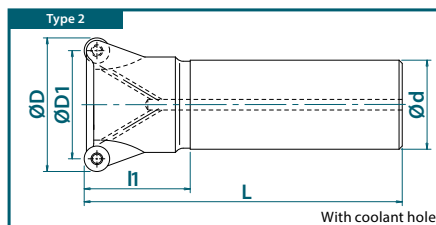
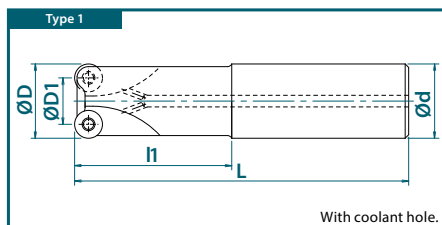


Recommended Materials: p1414
Accessories & Inserts: p1413
Maximum Ramping Angle: p1415



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. | Effective Dia. | No. of Teeth | Shank Dia. | Overall Length | Neck Length | Applicable Insert |
|---------|-------------------------|------------|-------------------|------|-----------|----------------|--------------|------------|----------------|-------------|-------------------|
| | | | | | D | D1 | | d | L | L1 | |
| 7800500 | Cylindrical Shank Short | Normal | PRC10R100SA100-3S | 1 | 1.000 | 0.606 | 3 | 1.000 | 5.512 | 2.362 | RPH_10... |
| 7800501 | | | PRC10R125SA125-4S | 1 | 1.250 | 0.856 | 4 | 1.250 | 5.905 | 2.756 | RPH_12... |
| 7800502 | | | PRC12R125SA125-2S | 1 | 1.250 | 0.778 | 2 | 1.250 | 5.905 | 2.756 | |
| 7800503 | | | PRC12R150SA125-3S | 2 | 1.500 | 1.028 | 3 | 1.250 | 5.905 | 1.968 | |
| 7800504 | | | PRC16R150SA125-2S | 2 | 1.500 | 0.870 | 2 | 1.250 | 5.905 | 1.968 | RPH_16... |
| 7800505 | Cylindrical Shank Long | | PRC10R100SA100-3L | 1 | 1.000 | 0.606 | 3 | 1.000 | 7.874 | 4.724 | RPH_10... |
| 7800506 | | | PRC10R125SA125-4L | 1 | 1.250 | 0.856 | 4 | 1.250 | 7.874 | 4.724 | RPH_12... |
| 7800507 | | | PRC12R125SA125-2L | 1 | 1.250 | 0.778 | 2 | 1.250 | 7.874 | 4.724 | |
| 7800508 | | | PRC12R150SA125-3L | 2 | 1.500 | 1.028 | 3 | 1.250 | 9.842 | 1.968 | |
| 7800509 | | | PRC16R150SA125-2L | 2 | 1.500 | 0.870 | 2 | 1.250 | 9.842 | 1.968 | RPH_16... |

Packed: 1 pc.





List 78003

PRC SS (Metric)



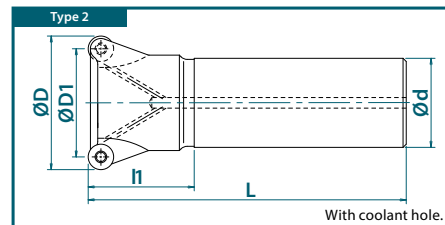
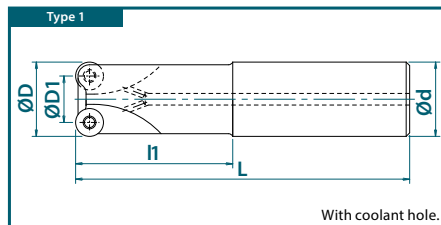
Recommended Materials: p1414
Accessories & Inserts: p1413
Maximum Ramping Angle: p1415



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (mm) | Effective Dia. (mm) | No. of Teeth | Shank Dia. (mm) | Overall Length (mm) | Neck Length (mm) | Applicable Insert |
|---------|-------------------------|-------------------|------------------------|------------------|----------------|---------------------|--------------|-----------------|---------------------|------------------|-------------------|
| | | | | | D | D1 | | d | L | L1 | |
| 7800300 | Cylindrical Shank Short | Normal | PRC10R020SS20-2S | 1 | 20 | 10 | 2 | 20 | 130 | 50 | RPH_10... |
| 7800301 | | | PRC10R025SS25-3S | 1 | 25 | 15 | 3 | 25 | 140 | 60 | |
| 7800302 | | | PRC10R032SS32-4S | 1 | 32 | 22 | 4 | 32 | 150 | 70 | |
| 7800303 | Cylindrical Shank Long | | PRC10R020SS20-2L | 1 | 20 | 10 | 2 | 20 | 180 | 80 | |
| 7800304 | | | PRC10R025SS25-3L | 1 | 25 | 15 | 3 | 25 | 200 | 120 | |
| 7800305 | | | PRC10R032SS32-4L | 1 | 32 | 22 | 4 | 32 | 200 | 120 | |
| 7800322 | Cylindrical Shank Short | | PRC12R024SS25-2S | 1 | 24 | 12 | 2 | 25 | 140 | 60 | RPH_12... |
| 7800318 | | | PRC12R030SS32-2S | 1 | 30 | 18 | 2 | 32 | 150 | 70 | |
| 7800306 | | | PRC12R032S032-2S | 1 | 32 | 20 | 2 | 32 | 150 | 70 | |
| 7800320 | | | PRC12R032SS32-3S | 1 | 32 | 20 | 3 | 32 | 150 | 70 | |
| 7800307 | | | PRC12R040SS32-3S | 2 | 40 | 28 | 3 | 32 | 150 | 50 | |
| 7800308 | | | PRC12R050SS42-4S | 2 | 50 | 38 | 4 | 42 | 150 | 50 | |
| 7800323 | Cylindrical Shank Long | | PRC12R024SS25-2L | 1 | 24 | 12 | 2 | 25 | 180 | 100 | RPH_16... |
| 7800319 | | | PRC12R030SS32-2L | 1 | 30 | 18 | 2 | 32 | 200 | 120 | |
| 7800309 | | | Cylindrical Shank Long | PRC12R032SS32-2L | 1 | 32 | 20 | 2 | 32 | 200 | |
| 7800321 | PRC12R032SS32-3L | | | 1 | 32 | 20 | 3 | 32 | 200 | 120 | |
| 7800310 | PRC12R040SS32-3L | | | 2 | 40 | 28 | 3 | 32 | 250 | 50 | |
| 7800311 | Cylindrical Shank Short | | PRC12R050SS42-4L | 2 | 50 | 38 | 4 | 42 | 250 | 50 | RPH_16... |
| 7800324 | | PRC16R033SS32-2S | 1 | 32 | 16 | 2 | 32 | 150 | 70 | | |
| 7800312 | | PRC16R040SS32-2S | 2 | 40 | 24 | 2 | 32 | 150 | 50 | | |
| 7800313 | Cylindrical Shank Short | PRC16R050SS42-3S | 2 | 50 | 34 | 3 | 42 | 150 | 50 | RPH_16... | |
| 7800314 | | PRC16R063SS042-4S | 2 | 63 | 47 | 4 | 42 | 150 | 50 | | |
| 7800325 | Cylindrical Shank Long | PRC16R033SS32-2L | 1 | 32 | 16 | 2 | 32 | 200 | 120 | RPH_16... | |
| 7800315 | | PRC16R040SS32-2L | 2 | 40 | 24 | 2 | 32 | 250 | 50 | | |
| 7800316 | | PRC16R050SS42-3L | 2 | 50 | 34 | 3 | 42 | 250 | 50 | | |
| 7800317 | | PRC16R063SS42-4L | 2 | 63 | 47 | 4 | 42 | 250 | 50 | | |

Packed: 1 pc.

Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**





List 78004

PRC Bore (Inch)



SPEED FEED
P1414

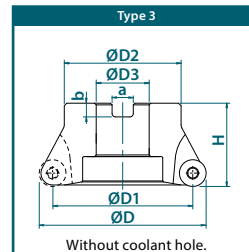
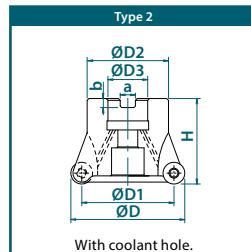


Recommended Materials: p1414
Accessories & Inserts: p1413
Maximum Ramping Angle: p1415



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. | Effective Dia. | No. of Teeth | Tool Height | Flange Dia. | Bore Dia. | Keyway Width | Keyway Depth | Applicable Insert |
|---------|-----------|------------------|------------------|-----------------|-----------|----------------|--------------|-------------|-------------|-----------|--------------|--------------|-------------------|
| | | | | | D | D1 | | H | D2 | d3 | a | b | |
| 7800412 | Bore | Normal | PRC10R200A075-5 | 2 | 2.000 | 1.606 | 5 | 1.575 | 1.772 | 0.750 | 0.315 | 0.197 | RPH_10... |
| 7800413 | | | PRC10R250A075-6 | 2 | 2.500 | 2.106 | 6 | 1.575 | 1.968 | 0.750 | 0.315 | 0.197 | |
| 7800400 | | | PRC12R200A075-4 | 2 | 2.000 | 1.528 | 4 | 1.575 | 1.772 | 0.750 | 0.315 | 0.197 | |
| 7800401 | | | PRC12R250A075-4 | 2 | 2.500 | 2.028 | 4 | 1.575 | 1.968 | 0.750 | 0.315 | 0.197 | |
| 7800402 | | | PRC12R300A100-5 | 2 | 3.000 | 2.528 | 5 | 1.968 | 2.362 | 1.000 | 0.375 | 0.236 | |
| 7800403 | | | PRC12R400A150-6 | 3 | 4.000 | 3.528 | 6 | 1.968 | 2.756 | 1.500 | 0.625 | 0.394 | |
| 7800404 | | Close | PRC12R200A075-5 | 2 | 2.000 | 1.528 | 5 | 1.575 | 1.772 | 0.750 | 0.315 | 0.197 | RPH_12... |
| 7800405 | | | PRC12R250A075-6 | 2 | 2.500 | 2.028 | 6 | 1.575 | 1.968 | 0.750 | 0.315 | 0.197 | |
| 7800406 | | | PRC12R300A100-8 | 2 | 3.000 | 2.528 | 8 | 1.968 | 2.362 | 1.000 | 0.375 | 0.236 | |
| 7800407 | | | PRC12R400A150-10 | 3 | 4.000 | 3.528 | 10 | 1.968 | 2.756 | 1.500 | 0.625 | 0.394 | |
| 7800414 | | | PRC12R500A150-12 | 3 | 5.000 | 4.528 | 12 | 2.480 | 3.543 | 1.500 | 0.625 | 0.394 | |
| 7800408 | | | Normal | PRC16R200A075-3 | 2 | 2.000 | 1.370 | 3 | 1.575 | 1.772 | 0.750 | 0.315 | |
| 7800409 | | PRC16R250A075-5 | | 2 | 2.500 | 1.870 | 5 | 1.575 | 1.968 | 0.750 | 0.315 | 0.197 | |
| 7800410 | | PRC16R300A100-6 | | 2 | 3.000 | 2.370 | 6 | 1.968 | 2.362 | 1.000 | 0.375 | 0.236 | |
| 7800411 | | PRC16R400A150-7 | | 3 | 4.000 | 3.370 | 7 | 1.968 | 2.756 | 1.500 | 0.625 | 0.394 | |
| 7800415 | | PRC16R500A150-8 | | 3 | 5.000 | 4.370 | 8 | 2.480 | 3.543 | 1.500 | 0.625 | 0.394 | |
| 7800416 | | PRC16R600A150-10 | | 3 | 6.000 | 5.370 | 10 | 2.480 | 3.740 | 1.500 | 0.625 | 0.394 | |

Packed: 1 pc.





List 78002

PRC Bore (Metric)



SPEED FEED
P1414



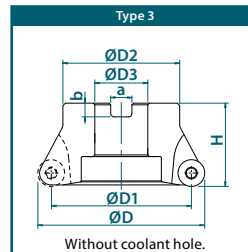
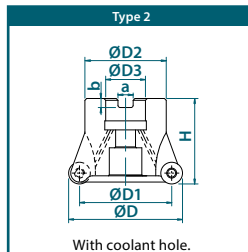
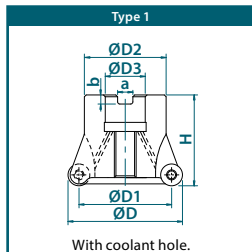
Recommended Materials: p1414
Accessories & Inserts: p1413
Maximum Ramping Angle: p1415



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. | Effective Dia. | No. of Teeth | Tool Height | Flange Dia. | Bore Dia. | Keyway Width | Keyway Depth | Applicable Insert | |
|---------|-----------|------------|-------------------|------|-----------|----------------|--------------|-------------|-------------|-----------|--------------|--------------|-------------------|-----------|
| | | | | | D | D1 | | H | D2 | d3 | a | b | | |
| 7800200 | Bore | Normal | PRC12R050M22-4 | 2 | 50 | 38 | 4 | 40 | 45 | 22 | 10.4 | 6.3 | RPH_12... | |
| 7800201 | | | PRC12R063M22-4 | 2 | 63 | 51 | 4 | 40 | 50 | 22 | 10.4 | 6.3 | | |
| 7800202 | | | PRC12R080M27-5 | 2 | 80 | 68 | 5 | 50 | 60 | 27 | 12.4 | 7 | | |
| 7800209 | | | PRC12R080M25.4-5 | 2 | 80 | 68 | 5 | 50 | 60 | 25.4 | 9.5 | 6 | | |
| 7800203 | | | PRC12R100M32-6 | 2 | 100 | 88 | 6 | 50 | 70 | 32 | 14.4 | 8 | | |
| 7800210 | | | PRC12R100M31.7-6 | 3 | 100 | 88 | 6 | 50 | 70 | 31.75 | 12.7 | 8 | | |
| 7800204 | | Close | PRC12R050M22-5 | 2 | 50 | 38 | 5 | 40 | 45 | 22 | 10.4 | 6.3 | | |
| 7800206 | | | PRC12R063M22-6 | 2 | 63 | 51 | 6 | 40 | 50 | 22 | 10.4 | 6.3 | | |
| 7800207 | | | PRC12R080M27-8 | 2 | 80 | 38 | 8 | 50 | 60 | 27 | 12.4 | 7 | | |
| 7800211 | | | PRC12R080M25.4-8 | 2 | 80 | 38 | 8 | 50 | 60 | 25.4 | 9.5 | 6 | | |
| 7800208 | | | PRC12R100M32-10 | 2 | 100 | 88 | 10 | 50 | 70 | 32 | 14.4 | 8 | | |
| 7800212 | | | PRC12R100M31.7-10 | 3 | 100 | 88 | 10 | 50 | 70 | 31.75 | 12.7 | 8 | | |
| 7800213 | | Normal | PRC16R050M22-3 | 1 | 50 | 34 | 3 | 40 | 45 | 22 | 10.4 | 6.3 | | RPH_16... |
| 7800214 | | | PRC16R063M22-5 | 2 | 63 | 47 | 5 | 40 | 50 | 22 | 10.4 | 6.3 | | |
| 7800216 | | | PRC16R080M27-6 | 2 | 80 | 64 | 6 | 50 | 60 | 27 | 12.4 | 7 | | |
| 7800218 | | | PRC16R080M25.4-6 | 2 | 80 | 64 | 6 | 50 | 60 | 25.4 | 9.5 | 6 | | |
| 7800217 | | | PRC16R100M32-7 | 2 | 100 | 84 | 7 | 50 | 70 | 32 | 14.4 | 8 | | |
| 7800219 | | | PRC16R100M31.7-7 | 3 | 100 | 84 | 7 | 50 | 70 | 31.75 | 12.7 | 8 | | |

Packed: 1 pc.

Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**



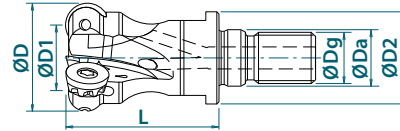


List 52602

PRC ASF (Inch)



Recommended Materials: p1414
Accessories & Inserts: p1413
Maximum Ramping Angle: p1415
SF Arbors: p1461



| EDP No. | Body Type | Designation | Tool Dia. (inch) | Effective Dia. (inch) | No. of Teeth | Pilot Dia. (inch) | Thread Dia. (mm) | Overall Length (inch) | Flange Dia. (inch) | Wrench Size | Applicable Insert |
|----------|----------------|------------------|------------------|-----------------------|--------------|-------------------|------------------|-----------------------|--------------------|-------------|-------------------|
| | | | D | D1 | | Da | Dg | L | D2 | | |
| 52602000 | Screw Fit Head | PRC10R100ASF12-3 | 1.000 | 0.606 | 3 | 0.492 | M12 | 1.378 | 0.905 | 17 | RPH_10... |
| 52602001 | | PRC10R125ASF16-4 | 1.250 | 0.856 | 4 | 0.669 | M16 | 1.575 | 1.102 | 22 | RPH_12... |
| 52602002 | | PRC12R125ASF16-2 | 1.250 | 0.778 | 2 | 0.669 | M16 | 1.575 | 1.102 | 22 | |
| 52602003 | | PRC12R150ASF16-3 | 1.500 | 1.028 | 3 | 0.669 | M16 | 1.575 | 1.102 | 22 | |
| 52602004 | | PRC16R150ASF16-2 | 1.500 | 0.870 | 2 | 0.669 | M16 | 1.575 | 1.102 | 22 | RPH_16... |

Packed: 1 pc.

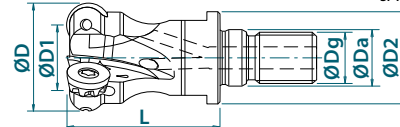


List 78017

PRC SF (Metric)



Recommended Materials: p1414
Accessories & Inserts: p1413
Maximum Ramping Angle: p1415
SF Arbors: p1462-1464



| EDP No. | Body Type | Designation | Tool Dia. (mm) | Effective Dia. (mm) | No. of Teeth | Pilot Dia. (mm) | Thread Dia. (mm) | Overall Length (mm) | Flange Dia. (mm) | Wrench Size | Applicable Insert |
|---------|----------------|-----------------|----------------|---------------------|--------------|-----------------|------------------|---------------------|------------------|-------------|-------------------|
| | | | D | D1 | | Da | Dg | L | D2 | | |
| 7801700 | Screw Fit Head | PRC10R020SF10-2 | 20 | 10 | 2 | 10.5 | M10 | 33 | 18 | 14 | RPH_10... |
| 7801701 | | PRC10R025SF12-3 | 25 | 15 | 3 | 12.5 | M12 | 35 | 23 | 17 | |
| 7801702 | | PRC10R030SF16-3 | 30 | 20 | 3 | 17 | M16 | 40 | 28 | 22 | |
| 7801703 | | PRC10R032SF16-4 | 32 | 22 | 4 | 17 | M16 | 40 | 28 | 22 | |
| 7801704 | | PRC10R040SF16-4 | 40 | 30 | 4 | 17 | M16 | 40 | 28 | 22 | RPH_12... |
| 7801705 | | PRC12R030SF16-2 | 30 | 18 | 2 | 17 | M16 | 40 | 28 | 22 | |
| 7801706 | | PRC12R032SF16-3 | 32 | 20 | 3 | 17 | M16 | 40 | 28 | 22 | |
| 7801707 | | PRC12R040SF16-3 | 40 | 28 | 3 | 17 | M16 | 40 | 28 | 22 | |

Packed: 1 pc.

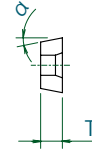
Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**





List 78PRC

PRC Inserts



| Designation | No. of Cutting Edges | Insert Size | | | EDP Number | | | | | | | | | | | | |
|-----------------|----------------------|-------------|---------|---------|------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|---|
| | | B (mm) | T (mm) | α | CK010 | XC3030 | XP3035 | XP2025 | XP2040 | XC1015 | XC5035 | XC5040 | XP6015 | | | | |
| RPHT10T3MOFN-NM | 8 | 10 | 3.97 | 11° | 7811009 | - | - | - | - | - | - | - | - | - | | | |
| RPHW10T3MOSN | 8 | | | | - | 7825017 | 7814030 | - | - | - | - | - | - | - | - | | |
| RPHW10T3MOEN | 8 | | | | - | - | - | - | - | - | - | 7812017 | - | - | - | | |
| RPHT10T3MOEN-GL | 8 | | | | - | 7825008 | 7814008 | 7826008 | 7813008 | - | - | - | - | - | - | | |
| RPHT10T3MOEN-GM | 8 | | | | - | 7825009 | 7814009 | - | - | - | - | - | - | - | - | | |
| RPHT10T3MOEN-SM | 4 | | | | - | - | - | - | - | - | - | - | 7815010 | - | - | | |
| RPHT10T3M8EN-SM | 8 | | | | - | - | - | - | - | - | - | - | 7815050 | 7816050 | - | | |
| RPMT10T3M8EN-HR | 8 | | | | - | - | - | - | - | - | - | - | - | - | 7824083 | | |
| RPHT1204MOFN-NM | 8 | | | | 12 | 4.76 | 11° | 7811013 | - | - | - | - | - | - | - | - | |
| RPHW1204MOSN | 8 | | | | | | | - | 7825018 | 7814018 | - | - | - | 7812018 | - | - | - |
| RPHT1204MOEN-GL | 8 | - | - | - | | | | 7826011 | 7813011 | - | - | - | - | - | | | |
| RPHT1204MOEN-GM | 8 | - | 7825011 | 7814011 | | | | - | - | - | - | - | - | - | | | |
| RPHT1204MOEN-SM | 4 | - | - | - | | | | - | - | - | - | - | 7815012 | - | | | |
| RPHT1204M8EN-SM | 8 | - | - | - | | | | - | - | - | - | - | 7815051 | 7816051 | | | |
| RPMT1204M8EN-HR | 8 | - | - | - | | | | - | - | - | - | - | - | - | 7824084 | | |
| RPHT1605MOFN-NM | 8 | 16 | 5.56 | 11° | | | | 7811016 | - | - | - | - | - | - | - | - | |
| RPHW1605MOSN | 8 | | | | | | | - | 7825019 | 7814019 | - | - | - | 7812019 | - | - | - |
| RPHT1605MOEN-GL | 8 | | | | | | | - | - | - | 7826014 | 7813014 | - | - | - | - | - |
| RPHT1605MOEN-SM | 4 | | | | - | - | - | - | - | - | - | - | 7815015 | - | | | |
| RPHT1605M8EN-SM | 8 | | | | - | - | - | - | - | - | - | - | 7815052 | 7816052 | | | |
| RPHT1605M8EN-SM | 8 | | | | - | - | - | - | - | - | - | - | - | - | | | |

Packed: 10 pcs.



List 7808H

PRC Accessories

| Appearance | EDP No. | Designation | Applicable Insert | Applicable Cutter | | Recommended Tightening Torque |
|--------------------|---------|-----------------------------------|-------------------|--------------------------------------|---|-------------------------------|
| | | | | (mm) | (inch) | |
| Clamping Screw | 7808116 | FS30573A (M3 x 7.3, Torx 10) | RPH_10... | PRC SS/SF Ø20-32 | PRC10 SA/ASF Ø1-1.25" PRC10 BORE Ø2-2.5" | 2.0 Nm |
| | 7808112 | FS35586 (M3.5 x 8.6, Torx 15) | RPH_12... | PRC SS/SF Ø32-50 PRC BORE Ø32-63 | PRC12 SA/ASF Ø1.25-1.5" PRC12 BORE Ø2-4" | 3.2 Nm |
| | 7808113 | FS45510 (M4.5 x 10.5, Torx 20) | RPH_16... | PRC SS/SF Ø40-63 PRC BORE Ø50-100 | PRC16 SA/ASF Ø1.5" PRC16 BORE Ø2-6" | 5.0 Nm |
| Power Screw | 7808151 | PS1031 (M10x31) | RPH_16... | PRC BORE Ø50 | n/a | 20.0 Nm |
| Wrench | 7808207 | T10-D (Torx 10) | RPH_10... | PRC SS/SF Ø20-32 | PRC10 SA/ASF Ø1-1.25" PRC10 BORE Ø2-2.5" | |
| | 7808208 | T15-D (Torx 15) | RPH_12... | PRC SS/SF Ø32-50 PRC BORE Ø32-63 | PRC12 SA/ASF Ø1.25-1.5" PRC12 BORE Ø2-4" | |
| | 7808209 | T20-D (Torx 20) | RPH_16... | PRC SS/SF Ø40-63 PRC BORE Ø50-100 | PRC16 SA/ASF Ø1.5" PRC16 BORE Ø2-6" | |

Packed: Clamping Screws = 10 pcs.; Power Screw = 1 pc.; Wrench = 1 pc.
Note: Wrench sold separately.





Cutting Conditions

| Work Material | Tensile Strength - Hardness | Milling Speed Vc (SFM) | Insert Size | | | | | |
|--|-----------------------------|------------------------|--------------------------|----------------------|--------------------------|----------------------|--------------------------|----------------------|
| | | | RPH_10... | | RPH_12... | | RPH_16... | |
| | | | Face Milling | | Face Milling | | Face Milling | |
| | | | Feed Per Tooth fz (in/t) | Depth of Cut Aa (in) | Feed Per Tooth fz (in/t) | Depth of Cut Aa (in) | Feed Per Tooth fz (in/t) | Depth of Cut Aa (in) |
| P Mild Steels, Carbon Steels (1010, 1018) Carbon Steels, Alloy Steels (1050, 4140) Die Steels (H13, D2) | ~180HB | 655 (330-985) | 0.010 (0.004 - 0.014) | 0.078 | 0.012 (0.004 - 0.016) | 0.093 | 0.014 (0.004 - 0.020) | 0.125 |
| | ~280HB | 590 (330-820) | 0.008 (0.004 - 0.012) | 0.078 | 0.010 (0.004 - 0.014) | 0.093 | 0.012 (0.004 - 0.018) | 0.125 |
| | ~280HB | 495 (260-655) | 0.008 (0.004 - 0.012) | 0.078 | 0.010 (0.004 - 0.014) | 0.093 | 0.012 (0.004 - 0.018) | 0.125 |
| M Stainless Steels (Dry) (304SS, 420SS) Stainless Steels (Wet) (304SS, 420SS) | ~250HB | 525 (265 - 655) | 0.010 (0.004 - 0.014) | 0.078 | 0.012 (0.004 - 0.016) | 0.093 | 0.014 (0.004 - 0.020) | 0.125 |
| | ~250HB | 395 (200 - 590) | 0.010 (0.004 - 0.014) | 0.078 | 0.012 (0.004 - 0.016) | 0.093 | 0.014 (0.004 - 0.020) | 0.125 |
| K Cast Iron (FC250) Ductile Cast Iron (60-40-18) | ~350N/mm ² | 720 (330-1150) | 0.010 (0.002 - 0.016) | 0.078 | 0.012 (0.004 - 0.020) | 0.093 | 0.014 (0.004 - 0.023) | 0.125 |
| | ~800N/mm ² | 495 (330-720) | 0.008 (0.004 - 0.012) | 0.078 | 0.010 (0.004 - 0.014) | 0.093 | 0.012 (0.004 - 0.018) | 0.125 |
| N Aluminum Alloys (6061, 7075) | ~13%Si | 1970 (985-4920) | 0.016 (0.008 - 0.031) | 0.078 | 0.023 (0.008 - 0.039) | 0.093 | 0.031 (0.012 - 0.059) | 0.125 |
| S Heat Resistant Alloys (Inconel 718) Titanium Alloy (Ti-6Al-4V) | - | 130 (85-195) | 0.006 (0.002 - 0.010) | 0.078 | 0.010 (0.002 - 0.012) | 0.093 | 0.010 (0.002 - 0.016) | 0.125 |
| | - | 260 (165-395) | 0.008 (0.004 - 0.012) | 0.078 | 0.010 (0.004 - 0.014) | 0.093 | 0.012 (0.004 - 0.018) | 0.125 |
| H Pre-hardened Steel (P20, Stavax) Die Cast Steels (A2, S7) Hardened Steels (D2) | 40-43 HRC | 395 (130-495) | 0.006 (0.002 - 0.010) | 0.059 | 0.010 (0.002 - 0.012) | 0.059 | 0.010 (0.002 - 0.016) | 0.059 |
| | 43-48HRC | 260 (130-395) | 0.006 (0.002 - 0.010) | 0.039 | 0.010 (0.002 - 0.012) | 0.039 | 0.010 (0.002 - 0.016) | 0.039 |
| | 50-55HRC | 195 (100-295) | 0.006 (0.002 - 0.010) | 0.020 | 0.010 (0.002 - 0.012) | 0.020 | 0.010 (0.002 - 0.016) | 0.020 |

Recommended Materials by Application

| Insert Grade | Chip Breaker | Coolant | P | M | K | N | S | H |
|--------------|--------------|---------|---|---|---|---|---|---|
| CK010 | NM | Yes | | | | ☐ | | |
| XC3030 | - / GL / GM | - | ☐ | | ☐ | | | |
| XP3035 | - / GL / GM | - | ☐ | ☐ | ☐ | | | |
| XP2025 | GL | Yes | ☐ | ☐ | | | ☐ | |
| XP2040 | GL | - | ☐ | ☐ | | | | ☐ |
| | | Yes | ☐ | ☐ | | | ☐ | |
| XC1015 | - | - | | | ☐ | | | |
| XC5035 | SM | - | | ☐ | | | | |
| | | Yes | | ☐ | | | ☐ | |
| XC5040 | SM | Yes | | ☐ | | | ☐ | |
| XP6015 | HR | - | ☐ | | ☐ | | | ☐ |

GL:Light Cutting NM:Aluminum SM: Heat Resistant Alloy HR: Hardened Steel

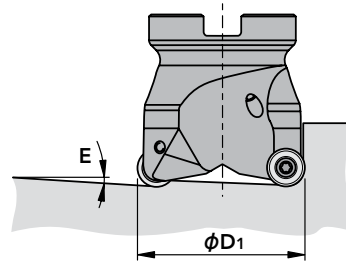
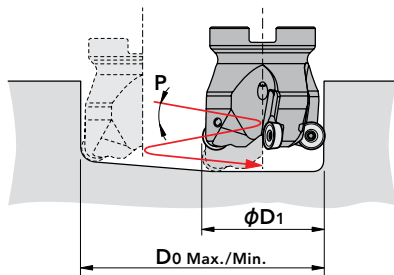
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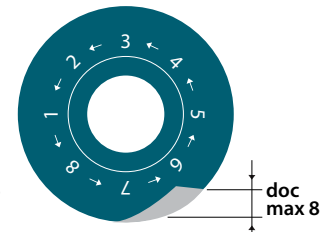
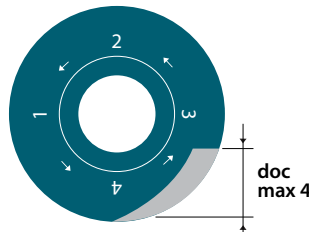
Maximum Ramping Angle (E) & Helical Angle (P)

| Insert Size | RPH_10... | | | | RPH_12... | | | | RPH_16... | | | |
|-------------|---------------|------------------------|--------|---------------|---------------|------------------------|--------|---------------|---------------|------------------------|--------|---------------|
| | Ramping Angle | Helical Milling (inch) | | Helical Angle | Ramping Angle | Helical Milling (inch) | | Helical Angle | Ramping Angle | Helical Milling (inch) | | Helical Angle |
| D1 | E | D0 Min | D0 Max | P | E | D0 Min | D0 Max | P | E | D0 Min | D0 Max | P |
| 1.000 | 2.0° | 1.488 | 1.606 | 1.8° | - | - | - | - | - | - | - | - |
| 1.250 | 3.0° | 1.988 | 2.106 | 1.5° | 4.0° | 1.752 | 2.028 | 1.7° | - | - | - | - |
| 1.500 | 3.3° | 2.488 | 2.606 | 1.1° | 2.8° | 2.252 | 2.528 | 1.4° | 3.0° | 2.016 | 2.370 | 2.0° |
| 2.000 | 2.3° | 3.488 | 3.606 | 0.9° | 2.5° | 3.252 | 3.528 | 1.1° | 4.0° | 3.016 | 3.370 | 1.5° |
| 2.500 | 2.2° | 4.488 | 4.606 | 0.7° | 1.8° | 4.252 | 4.528 | 0.9° | 2.8° | 4.016 | 4.370 | 1.1° |
| 3.000 | - | - | - | - | 1.3° | 5.252 | 5.528 | 0.7° | 2.0° | 5.016 | 5.370 | 0.9° |
| 4.000 | - | - | - | - | 0.9° | 7.252 | 7.528 | 0.5° | 1.5° | 7.016 | 7.370 | 0.7° |
| 5.000 | - | - | - | - | 1.0° | 9.252 | 9.528 | 0.4° | 1.1° | 9.016 | 9.370 | 0.45° |
| 6.000 | - | - | - | - | - | - | - | - | 1.0° | 11.016 | 11.370 | 0.4° |



Maximum Depth of Cut (Aa)

| Insert Size | Maximum Depth of Cut (Aa) | |
|-------------|---------------------------|----------------------|
| | 4 Indexes Per Insert | 8 Indexes Per Insert |
| | (in) | (in) |
| RPH_10... | 0.177 | 0.055 |
| RPH_12... | 0.217 | 0.067 |
| RPH_16... | 0.295 | 0.091 |





List 78009

PHC SA/FA (Inch)

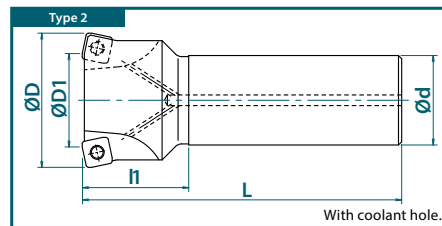
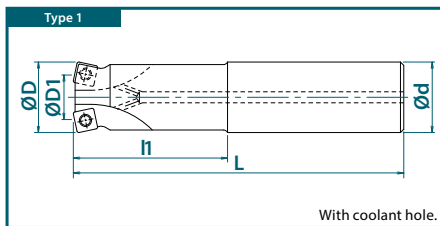


Recommended Materials: p1425
Accessories & Inserts: p1424
Maximum Ramping Angle: p1426



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. | Effective Dia. | No. of Teeth | Shank Dia. | Overall Length | Neck Length | Applicable Insert | |
|---------|-------------------------|------------------------------|------------------------|-------------------|--------------------|----------------|--------------|------------|----------------|-------------|-------------------|-----------|
| | | | | | (inch) | (inch) | | (inch) | (inch) | (inch) | | |
| | | | | | D | D1 | | | | | | |
| | | | | | | | | d | L | L1 | | |
| 7800905 | Cylindrical Shank Short | Normal | PHC07R063SA063-2S | 1 | 0.625 | 0.286 | 2 | 0.625 | 3.937 | 1.181 | SPMT07... | |
| 7800906 | | | PHC07R075SA075-3S | 1 | 0.750 | 0.411 | 3 | 0.750 | 5.118 | 1.968 | | |
| 7800907 | | | PHC07R100SA100-4S | 1 | 1.000 | 0.661 | 4 | 1.000 | 5.512 | 2.362 | | |
| 7800908 | | | PHC07R125SA125-5S | 1 | 1.250 | 0.911 | 5 | 1.250 | 5.905 | 2.756 | | |
| 7800909 | | | PHC09R100SA100-2S | 1 | 1.000 | 0.535 | 2 | 1.000 | 5.512 | 2.362 | | |
| 7800901 | | Close | PHC09R100SA100-3S | 1 | 1.000 | 0.535 | 3 | 1.000 | 5.512 | 2.362 | SDMT09... | |
| 7800902 | | | PHC09R125SA125-3S | 1 | 1.250 | 0.785 | 3 | 1.250 | 5.906 | 2.756 | | |
| 7800903 | | Normal | PHC12R125SA125-2S | 1 | 1.250 | 0.596 | 2 | 1.250 | 5.906 | 2.756 | SXMT12... | |
| 7800904 | | | PHC12R150SA125-3S | 2 | 1.500 | 0.846 | 3 | 1.250 | 5.906 | 1.969 | | |
| 7800909 | | | Cylindrical Shank Long | Normal | PHC07R063SA063-2L | 1 | 0.625 | 0.286 | 2 | 0.625 | | 5.905 |
| 7800913 | PHC07R075SA075-3L | 1 | | | 0.750 | 0.411 | 3 | 0.750 | 6.299 | 3.150 | | |
| 7800914 | PHC07R100SA100-4L | 1 | | | 1.000 | 0.661 | 4 | 1.000 | 7.874 | 3.937 | | |
| 7800915 | PHC07R125SA125-5L | 1 | | | 1.250 | 0.911 | 5 | 1.250 | 7.874 | 4.724 | | |
| 7800922 | Close | PHC09R100SA100-2L | | | 1 | 1.000 | 0.535 | 2 | 1.000 | 7.874 | 4.724 | SDMT09... |
| 7800923 | | PHC09R100SA100-3L | | 1 | 1.000 | 0.535 | 3 | 1.000 | 7.874 | 4.724 | | |
| 7800924 | Normal | PHC09R125SA125-3L | | 1 | 1.250 | 0.785 | 3 | 1.250 | 7.874 | 4.724 | SXMT12... | |
| 7800925 | | PHC12R125SA125-2L | | 1 | 1.250 | 0.596 | 2 | 1.250 | 7.874 | 4.724 | | |
| 7800926 | | PHC12R150SA125-3L | | 2 | 1.500 | 0.846 | 3 | 1.250 | 9.843 | 2.756 | | |
| 7800927 | | Cylindrical Shank Extra-Long | | Normal | PHC09R100SA100-2LL | 1 | 1.000 | 0.535 | 2 | 1.000 | | 11.811 |
| 7800928 | PHC09R100SA100-3LL | | 1 | | 1.000 | 0.535 | 3 | 1.000 | 11.811 | 7.087 | | |
| 7800929 | Normal | | PHC09R125SA125-3LL | 1 | 1.250 | 0.785 | 3 | 1.250 | 11.811 | 7.087 | SXMT12... | |
| 7800930 | | | PHC12R125SA125-2LL | 1 | 1.250 | 0.596 | 2 | 1.250 | 11.811 | 7.087 | | |
| 7800931 | | | PHC12R150SA125-3LL | 2 | 1.500 | 0.846 | 3 | 1.250 | 11.811 | 2.756 | | |
| 7800916 | Weldon Shank Short | Normal | PHC07R063FA063-2S | 1 | 0.625 | 0.286 | 2 | 0.625 | 3.937 | 1.181 | SPMT07... | |
| 7800917 | | | PHC07R075FA075-3S | 1 | 0.750 | 0.411 | 3 | 0.750 | 5.118 | 1.968 | | |
| 7800918 | | | PHC07R100FA100-4S | 1 | 1.000 | 0.661 | 4 | 1.000 | 5.512 | 2.362 | | |
| 7800919 | | | PHC07R125FA125-5S | 1 | 1.250 | 0.911 | 5 | 1.250 | 5.905 | 2.756 | | |
| 7800910 | | | Close | PHC09R100FA100-2S | 1 | 1.000 | 0.535 | 2 | 1.000 | 3.831 | | 1.551 |
| 7800911 | | PHC09R100FA100-3S | | 1 | 1.000 | 0.535 | 3 | 1.000 | 3.831 | 1.551 | | |
| 7800912 | | Normal | PHC09R125FA125-3S | 1 | 1.250 | 0.785 | 3 | 1.250 | 4.378 | 2.098 | SXMT12... | |
| 7800920 | | | PHC12R125FA125-2S | 1 | 1.250 | 0.596 | 2 | 1.250 | 4.378 | 2.098 | | |
| 7800921 | | | PHC12R150FA125-3S | 2 | 1.500 | 0.846 | 3 | 1.250 | 4.378 | 2.098 | | |

Packed: 1 pc.





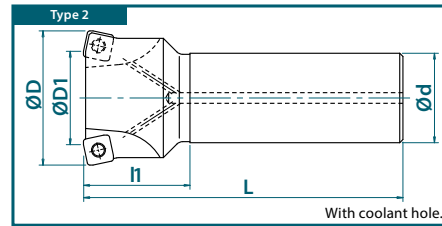
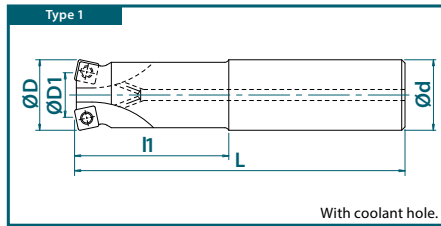
List 78009 (Continued)



Recommended Materials: p1425
Accessories & Inserts: p1424
Maximum Ramping Angle: p1426

| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. | Effective Dia. | No. of Teeth | Shank Dia. | Overall Length | Neck Length | Applicable Insert | |
|---------|-------------------------|-------------------|--------------------|--------------------|-----------|----------------|--------------|------------|----------------|-------------|-------------------|-----------|
| | | | | | (inch) | (inch) | | (inch) | (inch) | (inch) | | |
| | | | | | D | D1 | | | | d | L | L1 |
| 7800942 | Weldon Shank Long | Normal | PHC07R063FA063-2L | 1 | 0.625 | 0.286 | 2 | 0.625 | 5.905 | 1.968 | SPMT07... | |
| 7800943 | | | PHC07R075FA075-3L | 1 | 0.750 | 0.411 | 3 | 0.750 | 6.299 | 3.150 | | |
| 7800944 | | | PHC07R100FA100-4L | 1 | 1.000 | 0.661 | 4 | 1.000 | 7.874 | 3.937 | | |
| 7800945 | | | PHC07R125FA125-5L | 1 | 1.250 | 0.911 | 5 | 1.250 | 7.874 | 4.724 | | |
| 7800932 | | Weldon Shank Long | Normal | PHC09R100FA100-2L | 1 | 1.000 | 0.535 | 2 | 1.000 | 7.004 | 4.724 | SDMT09... |
| 7800933 | | | | PHC09R100FA100-3L | 1 | 1.000 | 0.535 | 3 | 1.000 | 7.004 | 4.724 | |
| 7800934 | | | Close | PHC09R125FA125-3L | 1 | 1.250 | 0.785 | 3 | 1.250 | 7.004 | 4.724 | |
| 7800935 | | | | PHC12R125FA125-2L | 1 | 1.250 | 0.596 | 2 | 1.250 | 7.004 | 4.724 | |
| 7800936 | Normal | | | PHC12R150FA125-3L | 2 | 1.500 | 0.846 | 3 | 1.250 | 7.004 | 4.724 | |
| 7800937 | | | | PHC09R100FA100-2LL | 1 | 1.000 | 0.535 | 2 | 1.000 | 9.366 | 7.087 | |
| 7800938 | Weldon Shank Extra-Long | Close | PHC09R100FA100-3LL | 1 | 1.000 | 0.535 | 3 | 1.000 | 9.366 | 7.087 | SDMT09... | |
| 7800939 | | | PHC09R125FA125-3LL | 1 | 1.250 | 0.785 | 3 | 1.250 | 9.366 | 7.087 | | |
| 7800940 | | Normal | PHC12R125FA125-2LL | 1 | 1.250 | 0.596 | 2 | 1.250 | 9.366 | 7.087 | | |
| 7800941 | | | PHC12R150FA125-3LL | 2 | 1.500 | 0.846 | 3 | 1.250 | 9.366 | 7.087 | | |

Packed: 1 pc.



List 78007

PHC SS (Metric)



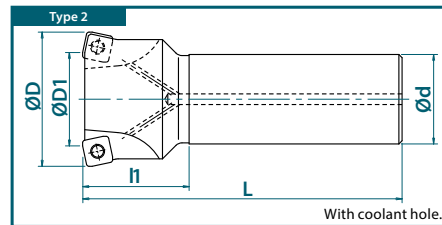
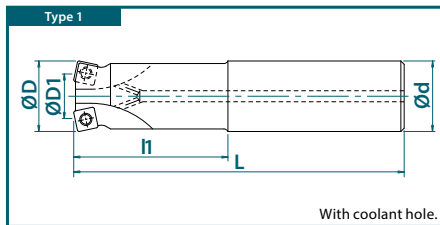
Recommended Materials: p1425
Accessories & Inserts: p1424
Maximum Ramping Angle: p1426



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (mm) | Effective Dia. (mm) | No. of Teeth | Shank Dia. (mm) | Overall Length (mm) | Neck Length (mm) | Applicable Insert |
|---------|-------------------------|------------------------|------------------|------------------|----------------|---------------------|--------------|-----------------|---------------------|------------------|-------------------|
| | | | | | D | D1 | | d | L | L1 | |
| 7800750 | Cylindrical Shank Short | Normal | PHC07R016SS16-2S | 1 | 16 | 7.4 | 2 | 16 | 100 | 30 | SPMT07... |
| 7800751 | | | PHC07R020SS20-3S | 1 | 20 | 11.4 | 3 | 20 | 130 | 50 | |
| 7800752 | | | PHC07R025SS25-4S | 1 | 25 | 16.4 | 4 | 25 | 140 | 60 | |
| 7800753 | | | PHC07R030SS32-4S | 1 | 30 | 21.4 | 4 | 32 | 150 | 70 | |
| 7800754 | | | PHC07R032SS32-5S | 1 | 32 | 23.4 | 5 | 32 | 150 | 70 | |
| 7800755 | Cylindrical Shank Long | Normal | PHC07R016SS16-2L | 1 | 16 | 7.4 | 2 | 16 | 150 | 50 | SPMT07... |
| 7800756 | | | PHC07R017SS16-2L | 2 | 17 | 8.4 | 2 | 16 | 150 | 25 | |
| 7800757 | | | PHC07R018SS16-2L | 2 | 18 | 9.4 | 2 | 16 | 150 | 25 | |
| 7800758 | | | PHC07R020SS20-3L | 1 | 20 | 11.4 | 3 | 20 | 160 | 80 | |
| 7800759 | | | PHC07R021SS20-3L | 2 | 21 | 12.4 | 3 | 20 | 160 | 30 | |
| 7800760 | | | PHC07R022SS20-3L | 2 | 22 | 13.4 | 3 | 20 | 160 | 30 | |
| 7800761 | | | PHC07R025SS25-4L | 1 | 25 | 16.4 | 4 | 25 | 200 | 100 | |
| 7800762 | | | PHC07R026SS25-4L | 2 | 26 | 17.4 | 4 | 25 | 200 | 40 | |
| 7800763 | | | PHC07R028SS25-4L | 2 | 28 | 19.4 | 4 | 25 | 200 | 40 | |
| 7800764 | | | PHC07R030SS32-4L | 1 | 30 | 21.4 | 4 | 32 | 200 | 120 | |
| 7800765 | | | PHC07R032SS32-5L | 1 | 32 | 23.4 | 5 | 32 | 200 | 120 | |
| 7800766 | | | PHC07R033SS32-5L | 2 | 33 | 24.4 | 5 | 32 | 200 | 50 | |
| 7800767 | | | PHC07R035SS32-5L | 2 | 35 | 26.0 | 5 | 32 | 200 | 50 | |
| 7800700 | Cylindrical Shank Short | Normal | PHC09R025SS25-2S | 1 | 25 | 13.2 | 2 | 25 | 140 | 60 | SDMT09... |
| 7800701 | | Close | PHC09R025SS25-3S | 1 | 25 | 13.2 | 3 | 25 | 140 | 60 | |
| 7800716 | | Normal | PHC09R028SS25-3S | 2 | 28 | 16.2 | 3 | 25 | 140 | 40 | |
| 7800717 | | | PHC09R030SS32-3S | 1 | 30 | 18.2 | 3 | 32 | 150 | 70 | |
| 7800702 | | | PHC09R032SS32-3S | 1 | 32 | 20.2 | 3 | 32 | 150 | 70 | |
| 7800718 | | Normal | PHC09R035SS32-3S | 2 | 35 | 23.2 | 3 | 32 | 150 | 50 | |
| 7800703 | | | PHC09R040SS32-4S | 2 | 40 | 28.2 | 4 | 32 | 150 | 50 | |
| 7800719 | | | PHC09R040SS42-4S | 1 | 40 | 28.2 | 4 | 42 | 150 | 50 | |
| 7800704 | | Cylindrical Shank Long | Normal | PHC09R025SS25-2L | 1 | 25 | 13.2 | 2 | 25 | 200 | |
| 7800705 | Close | | PHC09R025SS25-3L | 1 | 25 | 13.2 | 3 | 25 | 200 | 120 | |
| 7800740 | Normal | | PHC09R026SS25-3L | 2 | 26 | 14.2 | 3 | 25 | 200 | 40 | |
| 7800720 | | | PHC09R028SS25-3L | 2 | 28 | 16.2 | 3 | 25 | 200 | 40 | |
| 7800721 | | | PHC09R030SS32-3L | 1 | 30 | 18.2 | 3 | 32 | 200 | 120 | |
| 7800706 | Normal | | PHC09R032SS32-3L | 1 | 32 | 20.2 | 3 | 32 | 200 | 120 | |
| 7800741 | | | PHC09R033SS32-3L | 2 | 33 | 21.2 | 3 | 32 | 200 | 50 | |
| 7800722 | | | PHC09R035SS32-3L | 2 | 35 | 23.2 | 3 | 32 | 200 | 50 | |
| 7800707 | Close | | PHC09R040SS32-4L | 2 | 40 | 28.2 | 4 | 32 | 250 | 50 | |
| 7800723 | Normal | | PHC09R040SS42-3L | 1 | 40 | 28.2 | 3 | 42 | 250 | 70 | |

Packed: 1 pc.

This item is stocked overseas. Please contact OSG for availability and delivery.





List 78007 (Continued)

PHC SS (Metric)

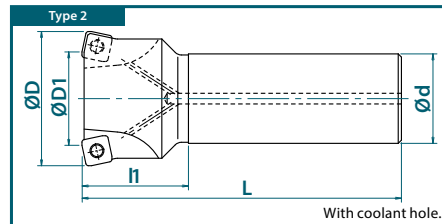
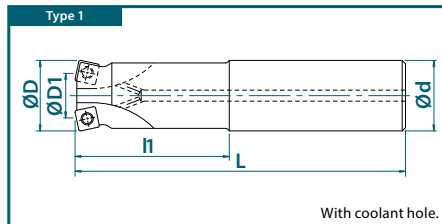


Recommended Materials: p1425
Accessories & Inserts: p1424
Maximum Ramping Angle: p1426

| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (mm) | Effective Dia. (mm) | No. of Teeth | Shank Dia. (mm) | Overall Length (mm) | Neck Length (mm) | Applicable Insert | | |
|---------|------------------------------|------------|------------------------------|--------|-------------------|---------------------|--------------|-----------------|---------------------|------------------|-------------------|-----|----|
| | | | | | D | D1 | | d | L | L1 | | | |
| 7800724 | Cylindrical Shank Extra-Long | Normal | PHC09R025SS25-2LL | 1 | 25 | 13.2 | 2 | 25 | 300 | 180 | SDMT09... | | |
| 7800742 | | | PHC09R026SS25-2LL | 2 | 26 | 14.2 | 2 | 25 | 300 | 40 | | | |
| 7800725 | | | PHC09R028SS25-2LL | 2 | 28 | 16.2 | 2 | 25 | 300 | 40 | | | |
| 7800726 | | | PHC09R030SS32-2LL | 1 | 30 | 18.2 | 2 | 32 | 300 | 180 | | | |
| 7800727 | | | PHC09R032SS32-2LL | 1 | 32 | 20.2 | 2 | 32 | 300 | 180 | | | |
| 7800743 | | | PHC09R033SS32-2LL | 2 | 33 | 21.2 | 2 | 32 | 300 | 50 | | | |
| 7800728 | | | PHC09R035SS32-2LL | 2 | 35 | 23.2 | 2 | 32 | 300 | 50 | | | |
| 7800729 | | | PHC09R040SS42-2LL | 1 | 40 | 28.2 | 2 | 42 | 300 | 70 | | | |
| 7800730 | | | Cylindrical Shank Short | Normal | PHC12R030SS32-2S | 1 | 30 | 13.4 | 2 | 32 | | 150 | 70 |
| 7800708 | PHC12R032SS32-2S | 1 | | | 32 | 15.4 | 2 | 32 | 150 | 70 | | | |
| 7800731 | PHC12R035SS32-3S | 2 | | | 35 | 18.4 | 3 | 32 | 150 | 50 | | | |
| 7800709 | PHC12R040SS32-3S | 2 | | | 40 | 23.4 | 3 | 32 | 150 | 50 | | | |
| 7800732 | PHC12R040SS42-3S | 1 | | | 40 | 23.4 | 3 | 42 | 150 | 50 | | | |
| 7800710 | PHC12R050SS42-4S | 2 | | | 50 | 33.4 | 4 | 42 | 150 | 50 | | | |
| 7800711 | PHC12R063SS42-5S | 2 | | | 63 | 46.4 | 5 | 42 | 150 | 50 | | | |
| 7800733 | Cylindrical Shank Long | Normal | | | PHC12R030SS32-2L | 1 | 30 | 13.4 | 2 | 32 | 200 | 120 | |
| 7800712 | | | | | PHC12R032SS32-2L | 1 | 32 | 15.4 | 2 | 32 | 200 | 120 | |
| 7800744 | | | PHC12R033SS32-2L | 2 | 33 | 16.4 | 2 | 32 | 200 | 50 | | | |
| 7800734 | | | PHC12R035SS32-3L | 2 | 35 | 18.4 | 3 | 32 | 200 | 50 | | | |
| 7800713 | | | PHC12R040SS32-3L | 2 | 40 | 23.4 | 3 | 32 | 250 | 50 | | | |
| 7800735 | | | PHC12R040SS42-3L | 1 | 40 | 23.4 | 3 | 42 | 250 | 70 | | | |
| 7800714 | | | PHC12R050SS42-4L | 2 | 50 | 33.4 | 4 | 42 | 250 | 50 | | | |
| 7800715 | | | PHC12R063SS42-5L | 2 | 63 | 46.4 | 5 | 42 | 250 | 50 | | | |
| 7800736 | | | Cylindrical Shank Extra-Long | Normal | PHC12R030SS32-2LL | 1 | 30 | 13.4 | 2 | 32 | 300 | 180 | |
| 7800737 | PHC12R032SS32-2LL | 1 | | | 32 | 15.4 | 2 | 32 | 300 | 180 | | | |
| 7800745 | PHC12R033SS32-2LL | 2 | | | 33 | 16.4 | 2 | 32 | 300 | 50 | | | |
| 7800738 | PHC12R035SS32-2LL | 2 | | | 35 | 18.4 | 2 | 32 | 300 | 50 | | | |
| 7800739 | PHC12R040SS42-2LL | 1 | | | 40 | 23.4 | 2 | 42 | 300 | 70 | | | |

Packed: 1 pc.

This item is stocked overseas. Please contact OSG for availability and delivery.



List 78008

PHC Bore (Inch)

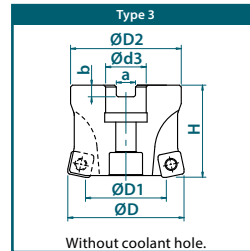
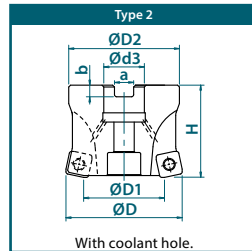


Recommended Materials: p1425
Accessories & Inserts: p1424
Maximum Ramping Angle: p1426



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (inch) | | No. of Teeth | Tool Height (inch) | | Bore Dia. (inch) | Keyway Width (inch) | Keyway Depth (inch) | Applicable Insert |
|---------|-----------|------------|------------------|------|------------------|-------|--------------|--------------------|-------|------------------|---------------------|---------------------|-------------------|
| | | | | | D | D1 | | H | D2 | | | | |
| 7800800 | Bore | Close | PHC09R200A075-5 | 2 | 2.000 | 1.535 | 5 | 1.968 | 1.850 | 0.750 | 0.315 | 0.197 | SDMT09... |
| 7800801 | | | PHC09R250A075-6 | 2 | 2.500 | 2.035 | 6 | 1.968 | 2.362 | 0.750 | 0.315 | 0.197 | |
| 7800806 | | Normal | PHC09R300A100-8 | 2 | 3.000 | 2.535 | 8 | 2.480 | 2.835 | 1.000 | 0.375 | 0.236 | SXMT12... |
| 7800807 | | | PHC12R250A075-4 | 2 | 2.500 | 1.846 | 4 | 1.968 | 2.362 | 0.750 | 0.315 | 0.197 | |
| 7800808 | | Normal | PHC12R300A100-5 | 2 | 3.000 | 2.346 | 5 | 2.480 | 2.835 | 1.000 | 0.375 | 0.236 | SXMT12... |
| 7800809 | | | PHC12R400A150-6 | 3 | 4.000 | 3.346 | 6 | 2.480 | 3.779 | 1.500 | 0.625 | 0.394 | |
| 7800802 | | Close | PHC12R200A075-4 | 2 | 2.000 | 1.346 | 4 | 1.968 | 1.850 | 0.750 | 0.315 | 0.197 | SXMT12... |
| 7800803 | | | PHC12R250A075-5 | 2 | 2.500 | 1.846 | 5 | 1.968 | 2.362 | 0.750 | 0.315 | 0.197 | |
| 7800804 | | Close | PHC12R300A100-7 | 2 | 3.000 | 2.346 | 7 | 2.480 | 2.835 | 1.000 | 0.375 | 0.236 | SXMT12... |
| 7800805 | | | PHC12R400A150-8 | 3 | 4.000 | 3.346 | 8 | 2.480 | 3.779 | 1.500 | 0.625 | 0.394 | |
| 7800810 | | Close | PHC12R500A150-10 | 3 | 5.000 | 4.346 | 10 | 2.480 | 3.779 | 1.500 | 0.625 | 0.394 | SXMT12... |
| 7800811 | | | PHC12R600A150-12 | 3 | 6.000 | 5.346 | 12 | 2.480 | 3.779 | 1.500 | 0.625 | 0.394 | |

Packed: 1 pc.





List 78006

PHC Bore (Metric)



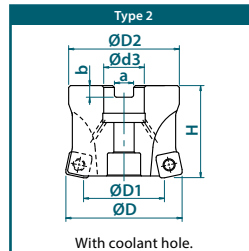
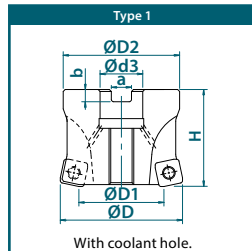
Recommended Materials: p1425
Accessories & Inserts: p1424
Maximum Ramping Angle: p1426



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (mm) | | No. of Teeth | Tool Height (mm) | | Flange Dia. (mm) | | Bore Dia. (mm) | | Keyway Width (mm) | | Keyway Depth (mm) | | Applicable Insert |
|---------|-----------|------------|------------------|------|----------------|------|--------------|------------------|----|------------------|------|----------------|-----------|-------------------|--|-------------------|--|-------------------|
| | | | | | D | D1 | | H | D2 | d3 | a | b | | | | | | |
| 7800600 | Bore | Close | PHC09R040M16-4 | 1 | 40 | 28.2 | 4 | 40 | 38 | 16 | 8.4 | 5.6 | SDMT09... | | | | | |
| 7800601 | | | PHC09R050M22-5 | 2 | 50 | 38.2 | 5 | 50 | 47 | 22 | 10.4 | 6.3 | | | | | | |
| 7800605 | | | PHC09R050M22.2-5 | 2 | 50 | 38.2 | 5 | 50 | 47 | 22.225 | 8.4 | 5 | | | | | | |
| 7800603 | | | PHC09R063M22-6 | 2 | 63 | 51.2 | 6 | 50 | 60 | 22 | 10.4 | 6.3 | | | | | | |
| 7800606 | | | PHC09R063M22.2-6 | 2 | 63 | 51.2 | 6 | 50 | 60 | 22.225 | 8.4 | 5 | | | | | | |
| 7800607 | | | PHC12R040M16-3 | 1 | 40 | 23.4 | 3 | 40 | 38 | 16 | 8.4 | 5.6 | | | | | | |
| 7800608 | | | PHC12R050M22-4 | 2 | 50 | 33.4 | 4 | 50 | 47 | 22 | 10.4 | 6.3 | | | | | | |
| 7800614 | | | PHC12R050M22.2-4 | 2 | 50 | 33.4 | 4 | 50 | 47 | 22.225 | 8.4 | 5 | | | | | | |
| 7800610 | | | PHC12R063M22-5 | 2 | 63 | 46.4 | 5 | 50 | 60 | 22 | 10.4 | 6.3 | | | | | | |
| 7800615 | | | PHC12R063M22.2-5 | 2 | 63 | 46.4 | 5 | 50 | 60 | 22.225 | 8.4 | 5 | | | | | | |
| 7800612 | | | PHC12R080M27-7 | 2 | 80 | 63.4 | 7 | 50 | 76 | 27 | 12.4 | 7 | SXMT12... | | | | | |
| 7800618 | | | PHC12R080M31.7-5 | 2 | 80 | 63.4 | 5 | 63 | 76 | 31.75 | 12.7 | 8 | | | | | | |
| 7800616 | | | PHC12R080M31.7-7 | 2 | 80 | 63.4 | 7 | 63 | 76 | 31.75 | 12.7 | 8 | | | | | | |
| 7800613 | | | PHC12R100M32-8 | 2 | 100 | 83.4 | 8 | 63 | 96 | 32 | 14.4 | 8 | | | | | | |
| 7800617 | | | PHC12R100M31.7-8 | 2 | 100 | 83.4 | 8 | 63 | 96 | 31.75 | 12.7 | 8 | | | | | | |

Packed: 1 pc.

Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**

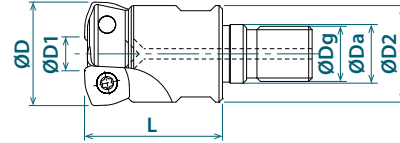


List 52603

PHC ASF (Inch)



Recommended Materials: p1425
Accessories & Inserts: p1424
Maximum Ramping Angle: p1426
SF Arbors: p1461



| EDP No. | Body Type | Designation | Tool Dia. (inch) | Effective Dia. (inch) | No. of Teeth | Pilot Dia. (inch) | Thread Dia. (mm) | Overall Length (inch) | Flange Dia. (inch) | Wrench Size | Applicable Insert |
|----------|----------------|------------------|------------------|-----------------------|--------------|-------------------|------------------|-----------------------|--------------------|-------------|-------------------|
| | | | D | D1 | | Da | Dg | L | D2 | | |
| 52603004 | Screw Fit Head | PHC07R063ASF8-2 | 0.625 | 0.286 | 2 | 0.334 | M8 | 1.063 | 0.571 | 10 | SPMT07... |
| 52603005 | | PHC07R075ASF10-3 | 0.750 | 0.411 | 3 | 0.413 | M10 | 1.300 | 0.709 | 14 | |
| 52603006 | | PHC07R100ASF12-4 | 1.000 | 0.661 | 4 | 0.492 | M12 | 1.378 | 0.905 | 17 | |
| 52603007 | | PHC07R125ASF16-5 | 1.250 | 0.911 | 5 | 0.669 | M16 | 1.575 | 1.102 | 22 | SDMT09... |
| 52603000 | | PHC09R100ASF12-2 | 1.000 | 0.535 | 2 | 0.492 | M12 | 1.378 | 0.905 | 17 | |
| 52603001 | | PHC09R125ASF16-3 | 1.250 | 0.785 | 3 | 0.669 | M16 | 1.575 | 1.102 | 22 | |
| 52603002 | | PHC12R125ASF16-2 | 1.250 | 0.596 | 2 | 0.669 | M16 | 1.575 | 1.102 | 22 | SXMT12... |
| 52603003 | | PHC12R150ASF16-3 | 1.500 | 0.846 | 3 | 0.669 | M16 | 1.575 | 1.102 | 22 | |

Packed: 1 pc.



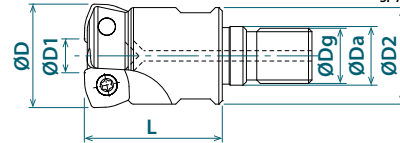


List 78015

PHC SF (Metric)



Recommended Materials: p1425
Accessories & Inserts: p1424
Maximum Ramping Angle: p1426
SF Arbors: p1462-1464



| EDP No. | Body Type | Designation | Tool Dia. (mm) | Effective Dia. (mm) | No. of Teeth | Pilot Dia. (mm) | Thread Dia. (mm) | Overall Length (mm) | Flange Dia. (mm) | Wrench Size | Applicable Insert |
|---------|-----------------|-----------------|----------------|---------------------|--------------|-----------------|------------------|---------------------|------------------|-------------|-------------------|
| | | | D | D1 | | Da | Dg | L | D2 | | |
| 7801520 | Screw Fit Head | PHC07R016SF8-2 | 16 | 7.4 | 2 | 8.5 | M8 | 27 | 14.5 | 10 | SPMT07... |
| 7801521 | | PHC07R017SF8-2 | 17 | 8.4 | 2 | 8.5 | M8 | 27 | 14.5 | 10 | |
| 7801522 | | PHC07R018SF8-2 | 18 | 9.4 | 2 | 8.5 | M8 | 27 | 14.5 | 10 | |
| 7801523 | | PHC07R020SF10-3 | 20 | 11.4 | 3 | 10.5 | M10 | 33 | 18 | 14 | |
| 7801524 | | PHC07R021SF10-3 | 21 | 12.4 | 3 | 10.5 | M10 | 33 | 18 | 14 | |
| 7801525 | | PHC07R022SF10-3 | 22 | 13.4 | 3 | 10.5 | M10 | 33 | 18 | 14 | |
| 7801526 | | PHC07R025SF12-4 | 25 | 16.4 | 4 | 12.5 | M12 | 35 | 23 | 17 | |
| 7801527 | | PHC07R026SF12-4 | 26 | 17.4 | 4 | 12.5 | M12 | 35 | 23 | 17 | |
| 7801528 | | PHC07R028SF12-4 | 28 | 19.4 | 4 | 12.5 | M12 | 35 | 23 | 17 | |
| 7801529 | | PHC07R030SF16-4 | 30 | 21.4 | 4 | 17 | M16 | 40 | 28 | 22 | |
| 7801530 | | PHC07R032SF16-5 | 32 | 23.4 | 5 | 17 | M16 | 40 | 28 | 22 | |
| 7801531 | | PHC07R033SF16-5 | 33 | 24.4 | 5 | 17 | M16 | 40 | 28 | 22 | |
| 7801532 | | PHC07R035SF16-5 | 35 | 26.4 | 5 | 17 | M16 | 40 | 28 | 22 | |
| 7801500 | | PHC09R025SF12-3 | 25 | 13.2 | 3 | 12.5 | M12 | 35 | 23 | 17 | SDMT09... |
| 7801510 | | PHC09R026SF12-3 | 26 | 14.2 | 3 | 12.5 | M12 | 35 | 23 | 17 | |
| 7801501 | | PHC09R028SF12-3 | 28 | 16.2 | 3 | 12.5 | M12 | 35 | 23 | 17 | |
| 7801502 | | PHC09R030SF16-3 | 30 | 18.2 | 3 | 17 | M16 | 40 | 28 | 22 | |
| 7801503 | | PHC09R032SF16-3 | 32 | 20.2 | 3 | 17 | M16 | 40 | 28 | 22 | |
| 7801511 | | PHC09R033SF16-3 | 33 | 21.2 | 3 | 17 | M16 | 40 | 28 | 22 | |
| 7801504 | | PHC09R035SF16-3 | 35 | 23.2 | 3 | 17 | M16 | 40 | 28 | 22 | |
| 7801505 | | PHC09R040SF16-4 | 40 | 28.2 | 4 | 17 | M16 | 40 | 28 | 22 | SXMT12... |
| 7801506 | | PHC12R030SF16-2 | 30 | 13.4 | 2 | 17 | M16 | 40 | 28 | 22 | |
| 7801507 | | PHC12R032SF16-2 | 32 | 15.4 | 2 | 17 | M16 | 40 | 28 | 22 | |
| 7801512 | | PCH12R033SF16-2 | 33 | 16.4 | 2 | 17 | M16 | 40 | 28 | 22 | |
| 7801508 | | PHC12R035SF16-3 | 35 | 18.4 | 3 | 17 | M16 | 40 | 28 | 22 | |
| 7801509 | PHC12R040SF16-3 | 40 | 23.4 | 3 | 17 | M16 | 40 | 28 | 22 | | |

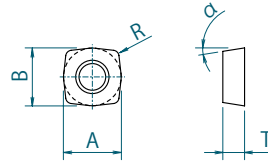
Packed: 1 pc.

This item is stocked overseas. Please contact OSG for availability and delivery.



List 78PHC

PHC Inserts



| Designation | No. of Cutting Edges | Insert Size | | | | | EDP Number | | | | | | | | |
|-----------------|----------------------|-------------|--------|----------|--------|-------------|------------|---------|---------|---------|---------|---------|---------|--------|--------|
| | | A x B (mm) | T (mm) | α | R (mm) | Aa Max (mm) | XC3020 | XP3025 | XC3030 | XP3035 | XP2025 | XP2040 | XC1015 | XC5035 | XC5040 |
| SPMT070305SR-GM | 4 | 7.0 x 7.0 | 2.75 | 11° | 0.5 | 0.8 | 7827092 | 7828092 | 7825092 | 7814092 | 7826092 | 7813092 | 7812092 | - | - |
| SPMT070305ER-SM | | | | | | | - | - | - | - | - | - | - | - | - |
| SDMT09T308SR-GM | | 9.52 x 9.52 | 3.97 | 15° | 0.8 | 1.0 | 7827020 | 7828020 | 7825020 | 7814020 | 7826020 | 7813020 | 7812020 | - | - |
| SDMT09T308ER-SM | | | | | | | - | - | - | - | - | - | - | - | - |
| SXMT120410SR-GM | | 12.7 x 12.7 | 4.76 | 9° | 1.0 | 2.0 | 7827022 | 7828022 | 7825022 | 7814022 | 7826022 | 7813022 | 7812022 | - | - |
| SXMT120410ER-SM | - | | | | | | - | - | - | - | - | - | - | - | - |

Packed: 10 pcs.



List 7808H

PHC Accessories

| Appearance | EDP No. | Designation | Applicable Insert | Applicable Cutter | | Recommended Tightening Torque |
|--------------------|---------|--------------------------------|------------------------|--|--|-------------------------------|
| | | | | (mm) | (inch) | |
| Clamping Screw | 7808105 | FS25550 (M2.5 x 5, Torx 8) | SPMT07... | PHC SS/SF \varnothing 16-35 | PHC07 SA/FA/ASF \varnothing 0.625-1.25" | 1.6 Nm |
| | 7808111 | FS35572 (M3.5 x 7.2, Torx 15) | SDMT09... | PHC SS/SF \varnothing 25-35 | PHC09 SA/FA/ASF \varnothing 1-1.25" | 3.2 Nm |
| | 7808112 | FS35586 (M3.5 x 8.6, Torx 15) | | PHC SS/SF \varnothing 40 PHC BORE \varnothing 40-63 | PHC09 SA/FA/ASF \varnothing 1.5" PHC09 BORE \varnothing 2-3" | 3.2 Nm |
| | 7808113 | FS45510 (M4.5 x 10.5, Torx 20) | SXMT12... | PHC SS/SF \varnothing 32-63 PHC BORE \varnothing 40-100 | PHC12 SA/FA/ASF \varnothing 1.25-1.5" PHC12 BORE \varnothing 2-6" | 5.0 Nm |
| Power Screw | 7808150 | PS0830 (M8x30) | SDMT09... SXMT12... | PHC BORE \varnothing 40 | n/a | 20.0 Nm |
| Wrench | 7808205 | T8-D (Torx 8) | SPMT07... | PHC SS/SF \varnothing 16-35 | PHC07 SA/FA/ASF \varnothing 0.625-1.25" | |
| | 7808208 | T15-D (Torx 15) | SDMT09... | PHC SS/SF \varnothing 25-40 PHC BORE \varnothing 40-63 | PHC09 SA/FA/ASF \varnothing 1-1.5" PHC09 BORE \varnothing 2-3" | |
| | 7808209 | T20-D (Torx 20) | SXMT12... | PHC SS/SF \varnothing 32-63 PHC BORE \varnothing 40-100 | PHC12 SA/FA/ASF \varnothing 1.25-1.5" PHC12 BORE \varnothing 2-6" | |

Packed: Clamping Screws = 10 pcs.; Power Screw = 1 pc.; Wrench = 1 pc.
Note: Wrench sold separately.





Cutting Conditions

| Work Material | Tensile Strength - Hardness | Milling Speed Vc (SFM) | Insert Size | | | | | | | | | | | |
|--|-----------------------------|------------------------|--------------------------|----------------------|-------|--------------|--------------------------|----------------------|--------------|-------|--------------------------|----------------------|-------|-------|
| | | | SPMT07... | | | SDMT09... | | | SXMT12... | | | | | |
| | | | Face Milling | | | Face Milling | | | Face Milling | | | | | |
| | | | Feed Per Tooth fz (in/t) | Depth of Cut Aa (in) | | | Feed Per Tooth fz (in/t) | Depth of Cut Aa (in) | | | Feed Per Tooth fz (in/t) | Depth of Cut Aa (in) | | |
| L/D=2 | L/D=3 | L/D=4 | | L/D=2 | L/D=3 | L/D=4 | | L/D=2 | L/D=3 | L/D=4 | | | | |
| P Mild Steels, Carbon Steels (1010, 1018) Carbon Steels, Alloy Steels (1050, 4140) Die Steels (H13, D2) | ~180 HB | 590 (195 - 820) | 0.028 (0.012 - 0.060) | 0.032 | 0.024 | 0.016 | 0.032 (0.012 - 0.071) | 0.040 | 0.032 | 0.020 | 0.050 (0.020 - 0.126) | 0.047 | 0.047 | 0.040 |
| | ~280 HB | 590 (195 - 820) | 0.028 (0.012 - 0.051) | 0.032 | 0.024 | 0.016 | 0.032 (0.012 - 0.060) | 0.040 | 0.032 | 0.020 | 0.050 (0.020 - 0.118) | 0.047 | 0.047 | 0.040 |
| | ~280 HB | 590 (195 - 820) | 0.028 (0.012 - 0.051) | 0.024 | 0.020 | 0.012 | 0.032 (0.012 - 0.060) | 0.032 | 0.024 | 0.016 | 0.050 (0.020 - 0.118) | 0.047 | 0.047 | 0.040 |
| M Stainless Steels (Dry) (304, 420) Stainless Steels (Wet) (304, 420) | ~250 HB | 525 (265 - 655) | 0.016 (0.012 - 0.047) | 0.024 | 0.020 | 0.012 | 0.020 (0.012 - 0.060) | 0.032 | 0.024 | 0.016 | 0.040 (0.020 - 0.098) | 0.047 | 0.040 | 0.040 |
| | ~250 HB | 395 (200 - 590) | 0.016 (0.012 - 0.047) | 0.024 | 0.020 | 0.012 | 0.020 (0.012 - 0.060) | 0.032 | 0.024 | 0.016 | 0.040 (0.020 - 0.098) | 0.047 | 0.040 | 0.040 |
| K Cast Iron (FC250) Ductile Cast Iron (60-40-18) | ~350 N/mm ² | 655 (330 - 985) | 0.032 (0.016 - 0.060) | 0.032 | 0.024 | 0.016 | 0.040 (0.020 - 0.071) | 0.040 | 0.032 | 0.020 | 0.060 (0.020 - 0.138) | 0.060 | 0.060 | 0.040 |
| | ~800 N/mm ² | 590 (330 - 820) | 0.028 (0.012 - 0.051) | 0.032 | 0.024 | 0.016 | 0.035 (0.020 - 0.060) | 0.040 | 0.032 | 0.020 | 0.053 (0.020 - 0.118) | 0.047 | 0.047 | 0.035 |
| S Heat Resistant Alloys (Inconel 718) Titanium Alloy (Ti-6Al-4V) | - | 100 (85 - 195) | 0.012 (0.008 - 0.028) | 0.016 | 0.016 | 0.012 | 0.016 (0.008 - 0.032) | 0.020 | 0.020 | 0.016 | 0.020 (0.008 - 0.040) | 0.040 | 0.040 | 0.032 |
| | - | 260 (165 - 395) | 0.016 (0.012 - 0.032) | 0.016 | 0.016 | 0.012 | 0.020 (0.012 - 0.040) | 0.020 | 0.020 | 0.012 | 0.028 (0.012 - 0.047) | 0.032 | 0.032 | 0.016 |
| H Pre-hardened Steel (P20, Stavax) Die Cast Steels (A2, S7) Hardened Steels (D2) | 40 - 43 HRC | 395 (130 - 495) | 0.016 (0.008 - 0.032) | 0.016 | 0.016 | 0.012 | 0.020 (0.008 - 0.040) | 0.020 | 0.020 | 0.012 | 0.032 (0.012 - 0.060) | 0.040 | 0.040 | 0.020 |
| | 43 - 48 HRC | 295 (130 - 395) | 0.012 (0.008 - 0.024) | 0.016 | 0.016 | 0.012 | 0.016 (0.008 - 0.032) | 0.020 | 0.020 | 0.016 | 0.028 (0.012 - 0.047) | 0.028 | 0.028 | 0.024 |
| | 50 - 55 HRC | 195 (130 - 295) | 0.008 (0.008 - 0.020) | 0.012 | 0.012 | 0.008 | 0.012 (0.008 - 0.028) | 0.012 | 0.012 | 0.008 | 0.020 (0.012 - 0.032) | 0.020 | 0.020 | 0.016 |

Recommended Materials by Application

| Insert Grade | Chip Breaker | Coolant | P | M | K | N | S | H |
|--------------|--------------|---------|-------------------------------------|-------------------------------------|-------------------------------------|---|-------------------------------------|--------------------------|
| XC3020 | GM | - | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | | |
| XP3025 | GM | Yes | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | | |
| XC3030 | GM | - | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | | |
| XP3035 | GM | - | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| XP2025 | GM | Yes | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | |
| XP2040 | GM | - | <input type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> |
| | | Yes | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | |
| XC1015 | GM | - | | | <input checked="" type="checkbox"/> | | | |
| XC5035 | SM | - | | <input checked="" type="checkbox"/> | | | | |
| | | Yes | | <input type="checkbox"/> | | | <input type="checkbox"/> | |
| XC5040 | SM | Yes | | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | |

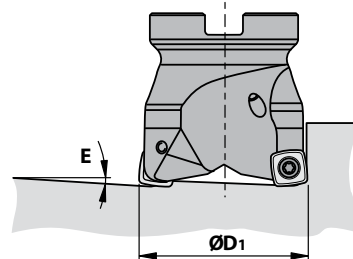
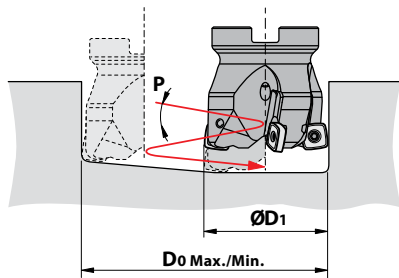
GM: Medium Cutting SM: Heat Resistant Alloy

good best



Maximum Ramping Angle (E) & Helical Angle (P)

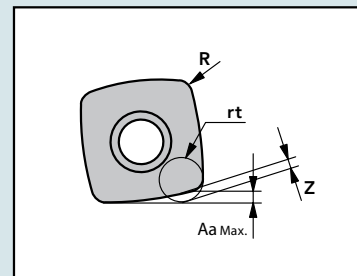
| Insert Size | SPMT07... | | | | SDMT09... | | | | SXMT12... | | | |
|-------------|-----------------|---------------|------------------------|------|---------------|---------------|------------------------|------|---------------|---------------|------------------------|-------|
| | Diameter (inch) | Ramping Angle | Helical Milling (inch) | | Helical Angle | Ramping Angle | Helical Milling (inch) | | Helical Angle | Ramping Angle | Helical Milling (inch) | |
| D1 | E | D0 Min | D0 Max | P | E | D0 Min | D0 Max | P | E | D0 Min | D0 Max | P |
| 0.625 | 5.9° | 0.857 | 1.211 | 4.5° | - | - | - | - | - | - | - | - |
| 0.750 | 3.2° | 1.107 | 1.461 | 2.3° | - | - | - | - | - | - | - | - |
| 1.000 | 2.0° | 1.607 | 1.961 | 1.2° | 3.5° | 1.409 | 1.921 | 3.0° | - | - | - | - |
| 1.250 | 1.3° | 2.107 | 2.461 | 0.9° | 1.9° | 1.909 | 2.421 | 1.7° | 7.2° | 1.713 | 2.421 | 6.1° |
| 1.500 | - | - | - | - | 1.2° | 2.409 | 2.921 | 1.0° | 2.9° | 2.213 | 2.921 | 2.5° |
| 2.000 | - | - | - | - | 0.8° | 3.409 | 3.921 | 0.7° | 1.4° | 3.213 | 3.921 | 1.2° |
| 2.500 | - | - | - | - | 0.7° | 4.409 | 4.921 | 0.7° | 1.1° | 4.213 | 4.921 | 0.9° |
| 3.000 | - | - | - | - | 0.45° | 5.409 | 5.921 | 0.4° | 1.0° | 5.213 | 5.921 | 0.8° |
| 4.000 | - | - | - | - | - | - | - | - | 0.7° | 7.213 | 7.921 | 0.6° |
| 5.000 | - | - | - | - | - | - | - | - | 0.5° | 9.213 | 9.921 | 0.35° |
| 6.000 | - | - | - | - | - | - | - | - | 0.4° | 11.213 | 11.921 | 0.3° |



Flute shape definitions for the purpose of creating a program

| Insert Size | R (mm) | Aa Max (mm) | rt (mm) | z (mm) |
|-------------|--------|-------------|---------|--------|
| SPMT07... | 0.5 | 0.8 | 1.2 | 0.35 |
| SDMT09... | 0.8 | 1 | 2 | 0.7 |
| SXMT12... | 1 | 2 | 3 | 1.15 |

For machining purposes, create machining programs for the respective simulated R radius cutters.





List 6420

PDR SS (Metric)



SPEED FEED
P1429

Recommended Materials: p1429
Accessories & Inserts: p1428
Maximum Ramping Angle: p1429



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (mm) | Effective Dia. (mm) | No. of Teeth | Shank Dia. (mm) | Overall Length (mm) | Neck Length (mm) | Neck Dia. (mm) | Applicable Insert |
|---------|-------------------------|------------|------------------|------|----------------|---------------------|--------------|-----------------|---------------------|------------------|----------------|-------------------|
| | | | | | D | D1 | | d | L | L1 | d1 | |
| 7800000 | Cylindrical Shank Short | Normal | PDR20R040SS42-2S | 1 | 40 | 20 | 2 | 42 | 150 | 50 | 38.9 | ADMT20... |
| 7800004 | | | PDR20R050SS42-3S | 1 | 50 | 30 | 3 | 42 | 150 | 50 | 48.5 | |
| 7800009 | | | PDR20R040SS42-2L | 1 | 40 | 20 | 2 | 42 | 250 | 150 | 38.9 | |
| 7800013 | | | PDR20R050SS42-3L | 1 | 50 | 30 | 3 | 42 | 250 | 150 | 48.5 | |

Packed: 1 pc.



List 6450

PDR Bore (Metric)



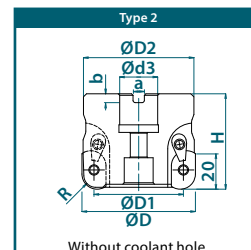
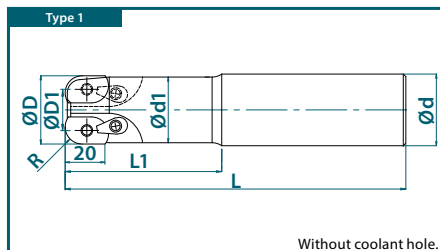
SPEED FEED
P1429

Recommended Materials: p1429
Accessories & Inserts: p1428
Maximum Ramping Angle: p1429



| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (mm) | Effective Dia. (mm) | No. of Teeth | Tool Height (mm) | Flange Dia. (mm) | Bore Dia. (mm) | Keyway Width (mm) | Keyway Depth (mm) | Applicable Insert |
|---------|-----------|------------|------------------|------|----------------|---------------------|--------------|------------------|------------------|----------------|-------------------|-------------------|-------------------|
| | | | | | D | D1 | | H | D2 | d3 | a | b | |
| 6450001 | Bore | Normal | PDR20R063M25.4-3 | 2 | 63 | 43 | 3 | 70 | 60 | 25.4 | 8 | 5 | ADMT20... |
| 6450002 | | | PDR20R063M25.4-4 | 2 | 63 | 43 | 4 | 70 | 60 | 25.4 | 8 | 5 | |
| 7800052 | | | PDR20R080M31.7-4 | 2 | 80 | 60 | 4 | 63 | 76 | 31.75 | 12.7 | 8 | |
| 7800053 | | | PDR20R080M31.7-5 | 2 | 80 | 60 | 5 | 63 | 76 | 31.75 | 12.7 | 8 | |
| 7800054 | | | PDR20R100M31.7-5 | 2 | 100 | 80 | 5 | 63 | 90 | 31.75 | 12.7 | 8 | |
| 7800055 | | | PDR20R100M31.7-6 | 2 | 100 | 80 | 6 | 63 | 90 | 31.75 | 12.7 | 8 | |
| 7800056 | | | PDR20R125M31.7-6 | 2 | 125 | 105 | 6 | 63 | 100 | 31.75 | 12.7 | 8 | |
| 7800057 | | | PDR20R063M22-3 | 2 | 63 | 43 | 3 | 63 | 60 | 22 | 10.4 | 6.3 | |
| 7800058 | | | PDR20R063M22-4 | 2 | 63 | 43 | 4 | 63 | 60 | 22 | 10.4 | 6.3 | |
| 7800059 | | | PDR20R080M27-4 | 2 | 80 | 60 | 4 | 63 | 76 | 27 | 12.4 | 7 | |
| 7800060 | | | PDR20R080M27-5 | 2 | 80 | 60 | 5 | 63 | 76 | 27 | 12.4 | 7 | |
| 7800061 | | | PDR20R100M32-5 | 2 | 100 | 80 | 5 | 63 | 96 | 32 | 14.4 | 8 | |
| 7800062 | | | PDR20R100M32-6 | 2 | 100 | 80 | 6 | 63 | 96 | 32 | 14.4 | 8 | |
| 7800063 | | | PDR20R125M40-6 | 2 | 125 | 105 | 6 | 63 | 100 | 40 | 16.4 | 9 | |

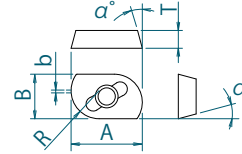
Packed: 1 pc.





List 78PDR

PDR Inserts





| Designation | No. of Cutting Edges | Insert Size | | | | | EDP Number |
|-------------------|----------------------|-------------|--------|-----|--------|--------|------------|
| | | A x B (mm) | T (mm) | α | R (mm) | b (mm) | |
| ADMT2006100PDR-GM | 2 | 24.18 x 16 | 6.35 | 15° | 10 | 1 | 7810000 |

Packed: 10 pcs.



List 7808H

PDR Accessories

| Appearance | EDP No. | Designation | Recommended Tightening Torque |
|---|---------|--------------------|-------------------------------|
|  Clamping Screw | 7808001 | CSPB-5 (Torx 20IP) | 5.0 Nm |
|  Wrench | 7808000 | 20IP-T (Torx 20IP) | |
| Metal Weight Set Washer | 7808002 | CSY-20 | |

Packed: Clamping Screws = 10 pcs.; Wrench = 1 pc.; Weight Set = 1 pc.
Note: Wrench sold separately.



Cutting Conditions

| Work Material | | Tensile Strength - Hardness | Milling Speed Vc (SFM) | Insert Size | | | | | | | |
|---------------|--|-----------------------------|------------------------|--------------------------|----------------------|---------|--------------------------|----------------------|-------|-------|-------|
| | | | | PDR SS | | | | PDR BORE | | | |
| | | | | Face Milling | | | | Face Milling | | | |
| | | | | Feed Per Tooth fz (in/t) | Depth of Cut aa (in) | | Feed Per Tooth fz (in/t) | Depth of Cut aa (in) | | | |
| OAL=120 | OAL=170 | OAL=100 | OAL=200 | | OAL=300 | OAL=400 | | | | | |
| P | Mild Steels, Carbon Steels (1010, 1018) | ~180 HB | 590 (295 - 720) | 0.027 (0.012 - 0.040) | 0.118 | 0.079 | 0.024 (0.012 - 0.040) | 0.118 | 0.118 | 0.079 | 0.079 |
| | Carbon Steels, Alloy Steels (1050, 4140) | ~280 HB | 590 (295 - 720) | 0.027 (0.012 - 0.040) | 0.118 | 0.079 | 0.024 (0.012 - 0.040) | 0.118 | 0.118 | 0.079 | 0.079 |
| | Die Steels (H13, D2) | ~280 HB | 495 (295 - 590) | 0.024 (0.012 - 0.040) | 0.118 | 0.079 | 0.020 (0.012 - 0.040) | 0.118 | 0.079 | 0.079 | 0.079 |
| K | Cast Iron (FC250) | ~350 N/mm ² | 590 (330 - 820) | 0.031 (0.012 - 0.059) | 0.118 | 0.118 | 0.027 (0.012 - 0.059) | 0.118 | 0.118 | 0.079 | 0.079 |
| | Ductile Cast Iron (60-40-18) | ~800 N/mm ² | 495 (330 - 820) | 0.027 (0.012 - 0.047) | 0.118 | 0.118 | 0.024 (0.012 - 0.047) | 0.118 | 0.118 | 0.079 | 0.079 |

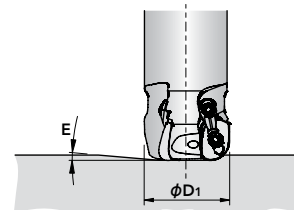
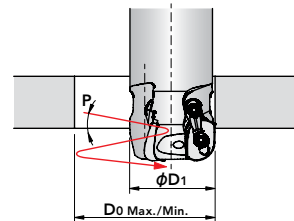
Recommended Materials by Application

| Insert Grade | Chip Breaker | Coolant | P | M | K | N | S | H |
|--------------|--------------|---------|---|---|---|---|---|---|
| XP3930 | GM | - | ☐ | | ☐ | | | |

GM: Medium Cutting

Maximum Ramping Angle (E)

| Insert Size | ADMT20... | | | |
|---------------|---------------|----------------------|--------|---------------|
| Diameter (mm) | Ramping Angle | Helical Milling (mm) | | Plunging (mm) |
| D1 | E | D0 Min | D0 Max | Z |
| 40 | 5° | 50 | 78 | 3 |
| 50 | 3° | 70 | 98 | 3 |
| 63 | 2° | 96 | 124 | 3 |
| 80 | 1° | 130 | 158 | 3 |
| 100 | 0.5° | 170 | 198 | 3 |
| 125 | 0.5° | 220 | 248 | 3 |





List 78036

PFAL Bore (Metric)

SPEED FEED
P1432

Recommended Materials: p1432
Accessories & Inserts: p1431

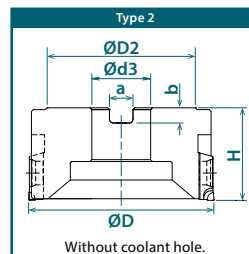
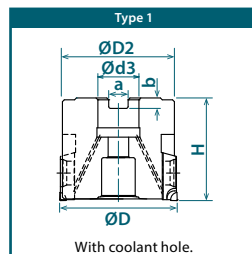


| EDP No. | Body Type | Teeth Type | Designation | Type | Tool Dia. (mm) | No. of Teeth | Tool Height (mm) | Flange Dia. (mm) | Bore Dia. (mm) | Keyway Width (mm) | Keyway Depth (mm) | Applicable Insert | | | |
|---------|-----------|--------------------|--------------------|--------------------|----------------|--------------------|------------------|------------------|----------------|-------------------|-------------------|-------------------|------|------|---|
| | | | | | D | | H | D2 | d3 | a | b | | | | |
| 7803600 | Bore | Normal | PFAL04R050M16-5 | 1 | 50 | 5 | 55 | 40 | 16 | 8.4 | 5.6 | FR1204 / FR1206 | | | |
| 7803601 | | | PFAL04R063M22-6 | 1 | 63 | 6 | 55 | 45 | 22 | 10.4 | 6.3 | | | | |
| 7803602 | | Close | PFAL04R063M22-8 | 1 | 63 | 8 | 55 | 45 | 22 | 10.4 | 6.3 | | | | |
| 7803603 | | | Normal | PFAL04R080M25.4-8 | 2 | 80 | 8 | 50 | 70 | 25.4 | 9.5 | | 6 | | |
| 7803604 | | PFAL04R080M27-8 | | 2 | 80 | 8 | 50 | 70 | 27 | 12.4 | 7 | | | | |
| 7803605 | | Close | PFAL04R080M25.4-10 | 2 | 80 | 10 | 50 | 70 | 25.4 | 9.5 | 6 | | | | |
| 7803606 | | | PFAL04R080M27-10 | 2 | 80 | 10 | 50 | 70 | 27 | 12.4 | 7 | | | | |
| 7803607 | | Normal | Normal | PFAL04R100M25.4-8 | 2 | 100 | 8 | 50 | 80 | 25.4 | 9.5 | | 6 | | |
| 7803608 | | | | PFAL04R100M27-8 | 2 | 100 | 8 | 50 | 80 | 27 | 12.4 | | 7 | | |
| 7803609 | | | | PFAL04R100M31.7-8 | 2 | 100 | 8 | 50 | 72 | 31.75 | 12.7 | | 8 | | |
| 7803610 | | | | PFAL04R100M32-8 | 2 | 100 | 8 | 50 | 80 | 32 | 14.4 | | 8.2 | | |
| 7803611 | | | | Close | Close | PFAL04R100M25.4-12 | 2 | 100 | 12 | 50 | 80 | | 25.4 | 9.5 | 6 |
| 7803612 | | | | | | PFAL04R100M27-12 | 2 | 100 | 12 | 50 | 80 | | 27 | 12.4 | 7 |
| 7803613 | | PFAL04R100M31.7-12 | 2 | | | 100 | 12 | 50 | 80 | 31.75 | 12.7 | | 8 | | |
| 7803614 | | PFAL04R100M32-12 | 2 | | | 100 | 12 | 50 | 80 | 32 | 14.4 | | 8.2 | | |
| 7803615 | | Normal | Normal | PFAL04R125M25.4-10 | 2 | 125 | 10 | 50 | 80 | 25.4 | 9.5 | | 6 | | |
| 7803616 | | | | PFAL04R125M27-10 | 2 | 125 | 10 | 50 | 80 | 27 | 12.4 | | 7 | | |
| 7803617 | | | | PFAL04R125M38.1-10 | 2 | 125 | 10 | 63 | 80 | 38.1 | 15.9 | | 10 | | |
| 7803618 | | | | PFAL04R125M40-10 | 2 | 125 | 10 | 63 | 85 | 40 | 16.4 | | 9.2 | | |
| 7803619 | | | | Close | Close | PFAL04R125M25.4-16 | 2 | 125 | 16 | 50 | 80 | | 25.4 | 9.5 | 6 |
| 7803620 | | | | | | PFAL04R125M27-16 | 2 | 125 | 16 | 50 | 80 | | 27 | 12.4 | 7 |
| 7803621 | | PFAL04R125M38.1-16 | 2 | | | 125 | 16 | 63 | 80 | 38.1 | 15.9 | | 10 | | |
| 7803622 | | Normal | Normal | PFAL04R125M40-16 | 2 | 125 | 16 | 63 | 85 | 40 | 16.4 | | 9.2 | | |
| 7803623 | | | | PFAL04R160M25.4-12 | 2 | 160 | 12 | 50 | 80 | 25.4 | 9.5 | | 6 | | |
| 7803624 | | | | PFAL04R160M27-12 | 2 | 160 | 12 | 50 | 80 | 27 | 12.4 | | 7 | | |
| 7803625 | | Close | Close | PFAL04R160M40-12 | 2 | 160 | 12 | 63 | 85 | 40 | 16.4 | | 9.2 | | |
| 7803626 | | | | PFAL04R160M50.8-12 | 2 | 160 | 12 | 63 | 100 | 50.8 | 19.1 | | 11 | | |
| 7803629 | | Normal | Normal | PFAL04R160M25.4-20 | 2 | 160 | 20 | 50 | 80 | 40 | 16.4 | | 9.2 | | |
| 7803630 | | | | PFAL04R160M27-20 | 2 | 160 | 20 | 50 | 80 | 50.8 | 19.1 | | 11 | | |
| 7803627 | | | | Close | Close | PFAL04R160M40-20 | 2 | 160 | 20 | 63 | 85 | | 25.4 | 9.5 | 6 |
| 7803628 | | | | | | PFAL04R160M50.8-20 | 2 | 160 | 20 | 63 | 100 | | 27 | 12.4 | 7 |

Packed: 1 pc.

Note: All accessories included with body.

Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**



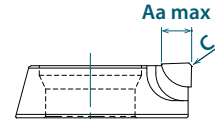
For the use of internal coolant, please use a clamping bolt with coolant holes sold in the market.





List 78PFAL

PFAL Inserts



| Designation | No. of Cutting Edges | Insert Size | | EDP Number |
|-------------|----------------------|-------------|-------------|------------|
| | | c (mm) | Aa max (mm) | DP010 |
| FR1204 | 1 | 0.4 x 45° | 4 | 7820500 |
| FR1206 | 1 | 0.4 x 45° | 6 | 7820502 |
| FR1204-W | 1 | 0.4 x 45° | - | 7820501 |

Packed: 1 pc.

Note: One wiper blade is required per cutter body and should be mounted in the designated position.

Note: The FR1204-W wiper blade can be used with both FR1204 & FR1206 normal blades.



List 7808H

PFAL Accessories

| Appearance | EDP No. | Designation | Applicable Cutter | | Recommended Tightening Torque |
|--------------------------|---------|-------------------------------|-------------------|--------|-------------------------------|
| | | | (mm) | (inch) | |
| Blade Clamping Screw | 7808125 | FS60620 (M6 x 17, Torx 25) | PFAL Ø50-160 | - | 10.0 Nm |
| Wedge | 7808143 | W12-06 | PFAL Ø50-160 | - | |
| Wedge Clamping Screw | 7808142 | WS0617 | PFAL Ø50-160 | - | |
| Wrench for Blade | 7808211 | T25-T (Torx 25) | PFAL Ø50-160 | - | |
| Wrench for Wedge | 7808231 | 3MM-L | PFAL Ø50-160 | - | |

Packed: Clamping Screws = 10 pcs.; Wedge = 10 pcs.; Wedge Clamping Screw = 10 pcs.; Wrench for Blade = 1 pc.; Wrench for Wedge = 1 pc.





Cutting Conditions (Semi-Finishing)

| Work Material | | Tensile Strength – Hardness | Insert Size | | | |
|---------------|--|--------------------------------|---------------------------|----------------------|-----------------------------|-------------------------|
| | | | FR12... | | | |
| | | | Face Milling | | | |
| | | | Milling Speed Vc (SFM) | | Feed Per Tooth fz (in/t) | Depth of Cut Aa (in) |
| CAT30 | CAT40, CAT50 HSK-63 | | | | | |
| N | Aluminum Alloys (7075, 5052, 2017, ADC12) | ~12% Si | 3300 (2600-6500) | 6500 (3300-16400) | 0.003 (0.002-0.004) | 0.060 (0.040-0.080) |
| | Aluminum Alloys (AC9A, AC9B) | ~13% Si | 2000 (1300-2600) | 2000 (1300-2600) | 0.0025 (0.002-0.003) | 0.060 (0.040-0.080) |

Cutting Conditions (Finishing)

| Work Material | | Tensile Strength – Hardness | Insert Size | | | |
|---------------|--|--------------------------------|---------------------------|----------------------|-----------------------------|-------------------------|
| | | | FR12... | | | |
| | | | Face Milling | | | |
| | | | Milling Speed Vc (SFM) | | Feed Per Tooth fz (in/t) | Depth of Cut Aa (in) |
| CAT30 | CAT40, CAT50 HSK-63 | | | | | |
| N | Aluminum Alloys (7075, 5052, 2017, ADC12) | ~12% Si | 3300 (2600-6500) | 6500 (3300-16400) | 0.003 (0.002-0.004) | 0.020 (0.012-0.040) |
| | Aluminum Alloys (AC9A, AC9B) | ~13% Si | 2000 (1300-2600) | 2000 (1300-2600) | 0.0025 (0.002-0.003) | 0.020 (0.012-0.040) |

Recommended Materials by Application

| Insert Grade | Chip Breaker | Coolant | P | M | K | N | S | H |
|--------------|--------------|---------|---|---|---|-------------------------------------|---|---|
| DP010 | – | Yes | | | | <input checked="" type="checkbox"/> | | |

good best





List 52100

PFB SA (Inch)



SPEED FEED
P1441

Recommended Materials: p1441
Accessories & Inserts: p1437-1439
Effective Cutting Diameter & Recommended Width of Cut: p1440



Steel Shank

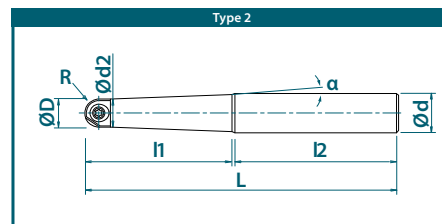
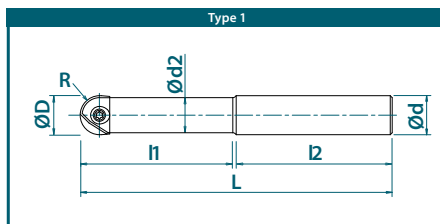


Carbide Shank

| EDP No. | Body Type | Designation | Type | Tool Dia. (inch) | | Overall Length (inch) | Neck Length (inch) | | Taper | L/D Ratio | No. of Teeth | Shank Dia. (inch) | | Neck Dia. (inch) | |
|----------|-------------------------|---------------------------------|------------------------|------------------|--------|-----------------------|--------------------|-------|-------|-----------|--------------|-------------------|-------|------------------|-------|
| | | | | D | R | | l1 | l2 | | | | d | l2 | | d2 |
| 52100000 | Cylindrical Shank Steel | PFB-R0250SA0250-S325 | 1 | 0.250 | 0.1250 | 3.250 | 0.625 | 0 | 2.5 | 2 | 2 | 0.250 | 2.625 | 0.226 | |
| 52100026 | | PFB-R0250SA0250-S375 | 1 | 0.250 | 0.1250 | 3.750 | 1.125 | 0 | 4.5 | 2 | 2 | 0.250 | 2.625 | 0.226 | |
| 52100027 | | PFB-R0250TPA0375-S375 | 2 | 0.250 | 0.1250 | 3.750 | 1.125 | 2 | 4.5 | 2 | 2 | 0.375 | 2.581 | 0.226 | |
| 52100028 | | PFB-R0250TPA0375-S425 | 2 | 0.250 | 0.1250 | 4.250 | 1.500 | 1 | 6 | 2 | 2 | 0.375 | 2.697 | 0.226 | |
| 52100029 | | PFB-R0375SA0375-S400 | 1 | 0.375 | 0.1875 | 4.000 | 0.937 | 0 | 2.5 | 2 | 2 | 0.375 | 3.063 | 0.336 | |
| 52100001 | | PFB-R0375SA0375-S550 | 1 | 0.375 | 0.1875 | 5.500 | 1.687 | 0 | 4.5 | 2 | 2 | 0.375 | 3.813 | 0.336 | |
| 52100030 | | PFB-R0375TPA0500-S500 | 2 | 0.375 | 0.1875 | 5.000 | 1.687 | 2 | 4.5 | 2 | 2 | 0.500 | 3.276 | 0.336 | |
| 52100031 | | PFB-R0375TPA0500-S550 | 2 | 0.375 | 0.1875 | 5.500 | 2.250 | 1 | 6 | 2 | 2 | 0.500 | 3.200 | 0.336 | |
| 52100032 | | PFB-R0500SA0500-S450 | 1 | 0.500 | 0.2500 | 4.500 | 1.250 | 0 | 2.5 | 2 | 2 | 0.500 | 3.250 | 0.461 | |
| 52100002 | | PFB-R0500SA0500-S550 | 1 | 0.500 | 0.2500 | 5.500 | 2.250 | 0 | 4.5 | 2 | 2 | 0.500 | 3.250 | 0.461 | |
| 52100033 | | PFB-R0500TPA0625-S550 | 2 | 0.500 | 0.2500 | 5.500 | 2.250 | 2 | 4.5 | 2 | 2 | 0.625 | 3.229 | 0.461 | |
| 52100034 | | PFB-R0500TPA0625-S650 | 2 | 0.500 | 0.2500 | 6.500 | 3.000 | 1 | 6 | 2 | 2 | 0.625 | 3.461 | 0.461 | |
| 52100035 | | PFB-R0625SA0625-S500 | 1 | 0.625 | 0.3125 | 5.000 | 1.562 | 0 | 2.5 | 2 | 2 | 0.625 | 3.438 | 0.546 | |
| 52100003 | | PFB-R0625SA0625-S550 | 1 | 0.625 | 0.3125 | 5.500 | 2.500 | 0 | 4 | 2 | 2 | 0.625 | 3.000 | 0.546 | |
| 52100036 | | PFB-R0625TPA0750-S600 | 2 | 0.625 | 0.3125 | 6.000 | 2.812 | 2 | 4.5 | 2 | 2 | 0.750 | 3.181 | 0.546 | |
| 52100037 | | PFB-R0625TPA0750-S700 | 2 | 0.625 | 0.3125 | 7.000 | 3.750 | 1 | 6 | 2 | 2 | 0.750 | 3.222 | 0.546 | |
| 52100038 | | PFB-R0750SA0750-S550 | 1 | 0.750 | 0.3750 | 5.500 | 1.875 | 0 | 2.5 | 2 | 2 | 0.750 | 3.625 | 0.671 | |
| 52100004 | | PFB-R0750SA0750-S600 | 1 | 0.750 | 0.3750 | 6.000 | 3.000 | 0 | 4 | 2 | 2 | 0.750 | 3.000 | 0.671 | |
| 52100039 | | PFB-R0750TPA1000-S650 | 2 | 0.750 | 0.3750 | 6.500 | 3.375 | 2 | 4.5 | 2 | 2 | 1.000 | 3.072 | 0.671 | |
| 52100040 | | PFB-R0750TPA1000-S800 | 2 | 0.750 | 0.3750 | 8.000 | 4.500 | 1 | 6 | 2 | 2 | 1.000 | 3.420 | 0.671 | |
| 52100005 | | PFB-R1000SA1000-S650 | 1 | 1.000 | 0.5000 | 6.500 | 3.000 | 0 | 3 | 2 | 2 | 1.000 | 3.500 | 0.882 | |
| 52100041 | | PFB-R1000SA1000-S750 | 1 | 1.000 | 0.5000 | 7.500 | 4.000 | 0 | 4 | 2 | 2 | 1.000 | 3.500 | 0.882 | |
| 52100042 | | PFB-R1000TPA1250-S800 | 2 | 1.000 | 0.5000 | 8.000 | 4.500 | 2 | 4.5 | 2 | 2 | 1.250 | 3.477 | 0.882 | |
| 52100043 | | PFB-R1000TPA1250-S950 | 2 | 1.000 | 0.5000 | 9.500 | 6.000 | 1 | 6 | 2 | 2 | 1.250 | 3.442 | 0.882 | |
| 52100016 | | PFB-R1250SA1250-S700 | 1 | 1.250 | 0.6250 | 7.000 | 3.750 | 0 | 3 | 2 | 2 | 1.250 | 3.250 | 1.132 | |
| 52100044 | | PFB-R1250SA1250-S850 | 1 | 1.250 | 0.6250 | 8.500 | 5.000 | 0 | 4 | 2 | 2 | 1.250 | 3.500 | 1.132 | |
| 52100045 | | PFB-R1250TPA1500-S900 | 2 | 1.250 | 0.6250 | 9.000 | 5.625 | 2 | 4.5 | 2 | 2 | 1.500 | 3.344 | 1.132 | |
| 52100046 | | PFB-R1250TPA1500-S1100 | 2 | 1.250 | 0.6250 | 11.000 | 7.500 | 1 | 6 | 2 | 2 | 1.500 | 3.425 | 1.132 | |
| 52100020 | | Cylindrical Shank Short Carbide | PFB-R0250SA0250-S325CS | 1 | 0.250 | 0.1250 | 3.250 | 0.625 | 0 | 2.5 | 2 | 2 | 0.250 | 2.625 | 0.226 |
| 52100021 | | | PFB-R0375SA0375-S400CS | 1 | 0.375 | 0.1875 | 4.000 | 0.937 | 0 | 2.5 | 2 | 2 | 0.375 | 3.063 | 0.336 |
| 52100022 | | | PFB-R0500SA0500-S450CS | 1 | 0.500 | 0.2500 | 4.500 | 1.250 | 0 | 2.5 | 2 | 2 | 0.500 | 3.250 | 0.461 |
| 52100023 | | | PFB-R0625SA0625-S550CS | 1 | 0.625 | 0.3125 | 5.500 | 1.562 | 0 | 2.5 | 2 | 2 | 0.625 | 3.938 | 0.546 |
| 52100024 | PFB-R0750SA0750-S600CS | | 1 | 0.750 | 0.3750 | 6.000 | 1.875 | 0 | 2.5 | 2 | 2 | 0.750 | 4.125 | 0.671 | |
| 52100025 | PFB-R1000SA1000-S650CS | | 1 | 1.000 | 0.5000 | 6.500 | 2.500 | 0 | 2.5 | 2 | 2 | 1.000 | 4.000 | 0.882 | |
| 52100017 | PFB-R1250SA1250-S700CS | | 1 | 1.250 | 0.6250 | 7.000 | 3.125 | 0 | 2.5 | 2 | 2 | 1.250 | 3.875 | 1.132 | |

Packed: 1 pc.

continued on next page





List 52100 (Continued)

PFB SA (Inch)

Recommended Materials: p1441
Accessories & Inserts: p1437-1439
Effective Cutting Diameter & Recommended Width of Cut: p1440



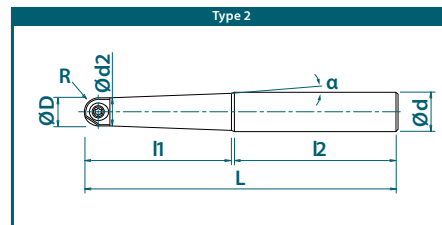
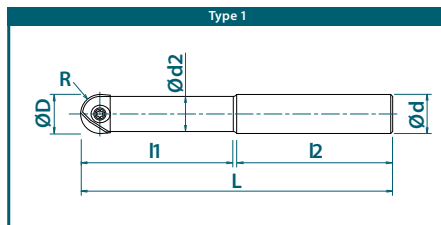
Steel Shank



Carbide Shank

| EDP No. | Body Type | Designation | Type | Tool Dia. | Tool Radius | Overall Length | Neck Length | Taper | L/D Ratio | No. of Teeth | Shank Dia. | Shank Length | Neck Dia. |
|----------|--------------------------------|--------------------------------------|-------------------------|-----------|-------------|----------------|-------------|----------------|-----------|--------------|------------|--------------|-----------|
| | | | | (inch) | (inch) | (inch) | (inch) | α° | (inch) | | (inch) | (inch) | |
| | | | | D | R | L | l1 | | | | | | |
| | | | | d | | | | | | | | | |
| 52100047 | Cylindrical Shank Long Carbide | PFB-R0250SA0250-L400CS | 1 | 0.250 | 0.1250 | 4.000 | 1.250 | 0 | 5 | 2 | 0.250 | 2.750 | 0.226 |
| 52100048 | | PFB-R0250TPA0375-L425CS | 2 | 0.250 | 0.1250 | 4.250 | 1.500 | 1 | 6 | 2 | 0.375 | 2.697 | 0.226 |
| 52100006 | | PFB-R0375SA0375-L550CS | 1 | 0.375 | 0.1875 | 5.500 | 1.875 | 0 | 5 | 2 | 0.375 | 3.625 | 0.336 |
| 52100049 | | PFB-R0375TPA0500-L550CS | 2 | 0.375 | 0.1875 | 5.500 | 2.250 | 1 | 6 | 2 | 0.500 | 3.200 | 0.336 |
| 52100007 | | PFB-R0500SA0500-L550CS | 1 | 0.500 | 0.2500 | 5.500 | 2.500 | 0 | 5 | 2 | 0.500 | 3.000 | 0.461 |
| 52100050 | | PFB-R0500TPA0625-L650CS | 2 | 0.500 | 0.2500 | 6.500 | 3.000 | 1 | 6 | 2 | 0.625 | 3.461 | 0.461 |
| 52100008 | | PFB-R0625SA0625-L650CS | 1 | 0.625 | 0.3125 | 6.500 | 3.125 | 0 | 5 | 2 | 0.625 | 3.375 | 0.546 |
| 52100051 | | PFB-R0625TPA0750-L700CS | 2 | 0.625 | 0.3125 | 7.000 | 3.750 | 1 | 6 | 2 | 0.750 | 3.222 | 0.546 |
| 52100009 | | PFB-R0750SA0750-L700CS | 1 | 0.750 | 0.3750 | 7.000 | 3.750 | 0 | 5 | 2 | 0.750 | 3.250 | 0.671 |
| 52100052 | | PFB-R0750TPA1000-L800CS | 2 | 0.750 | 0.3750 | 8.000 | 4.500 | 1 | 6 | 2 | 1.000 | 3.420 | 0.671 |
| 52100010 | | PFB-R1000SA1000-L800CS | 1 | 1.000 | 0.5000 | 8.000 | 4.500 | 0 | 4.5 | 2 | 1.000 | 3.500 | 0.882 |
| 52100053 | | PFB-R1000TPA1250-L950CS | 2 | 1.000 | 0.5000 | 9.500 | 6.000 | 1 | 6 | 2 | 1.250 | 3.442 | 0.882 |
| 52100018 | | PFB-R1250SA1250-L900CS | 1 | 1.250 | 0.6250 | 9.000 | 5.625 | 0 | 4.5 | 2 | 1.250 | 3.375 | 1.132 |
| 52100054 | | PFB-R1250TPA1500-L1100CS | 2 | 1.250 | 0.6250 | 11.000 | 7.500 | 1 | 6 | 2 | 1.500 | 3.425 | 1.132 |
| 52100055 | | Cylindrical Shank Extra-Long Carbide | PFB-R0250SA0250-LL450CS | 1 | 0.250 | 0.1250 | 4.500 | 1.750 | 0 | 7 | 2 | 0.250 | 2.750 |
| 52100056 | PFB-R0250TPA0375-LL475CS | | 2 | 0.250 | 0.1250 | 4.750 | 2.000 | 0.5 | 8 | 2 | 0.375 | 2.690 | 0.226 |
| 52100011 | PFB-R0375SA0375-LL650CS | | 1 | 0.375 | 0.1875 | 6.500 | 2.625 | 0 | 7 | 2 | 0.375 | 3.875 | 0.336 |
| 52100057 | PFB-R0375TPA0500-LL650CS | | 2 | 0.375 | 0.1875 | 6.500 | 3.000 | 0.5 | 8 | 2 | 0.500 | 3.440 | 0.336 |
| 52100012 | PFB-R0500SA0500-LL700CS | | 1 | 0.500 | 0.2500 | 7.000 | 3.500 | 0 | 7 | 2 | 0.500 | 3.500 | 0.461 |
| 52100058 | PFB-R0500TPA0625-LL750CS | | 2 | 0.500 | 0.2500 | 7.500 | 4.000 | 0.5 | 8 | 2 | 0.625 | 3.448 | 0.461 |
| 52100013 | PFB-R0625SA0625-LL750CS | | 1 | 0.625 | 0.3125 | 7.500 | 3.750 | 0 | 6 | 2 | 0.625 | 3.750 | 0.546 |
| 52100059 | PFB-R0625TPA0750-LL825CS | | 2 | 0.625 | 0.3125 | 8.250 | 5.000 | 0.5 | 8 | 2 | 0.750 | 3.206 | 0.546 |
| 52100014 | PFB-R0750SA0750-LL900CS | | 1 | 0.750 | 0.3750 | 9.000 | 4.500 | 0 | 6 | 2 | 0.750 | 4.500 | 0.671 |
| 52100060 | PFB-R0750TPA1000-LL950CS | | 2 | 0.750 | 0.3750 | 9.500 | 6.000 | 0.5 | 8 | 2 | 1.000 | 3.401 | 0.671 |
| 52100015 | PFB-R1000SA1000-LL1050CS | | 1 | 1.000 | 0.5000 | 10.500 | 5.500 | 0 | 5.5 | 2 | 1.000 | 5.000 | 0.882 |
| 52100061 | PFB-R1000TPA1250-LL1150CS | 2 | 1.000 | 0.5000 | 11.500 | 8.000 | 0.5 | 8 | 2 | 1.250 | 3.416 | 0.882 | |
| 52100019 | PFB-R1250SA1250-LL1200CS | 1 | 1.250 | 0.6250 | 12.000 | 6.875 | 0 | 5.5 | 2 | 1.250 | 5.125 | 1.132 | |
| 52100062 | PFB-R1250TPA1500-LL1350CS | 2 | 1.250 | 0.6250 | 13.500 | 10.000 | 0.5 | 8 | 2 | 1.500 | 3.392 | 1.132 | |

Packed: 1 pc.



List 78014

PFB SS (Metric)



SPEED FEED
P1441

Recommended Materials: p1441
Accessories & Inserts: p1437-1439
Effective Cutting Diameter & Recommended Width of Cut: p1440



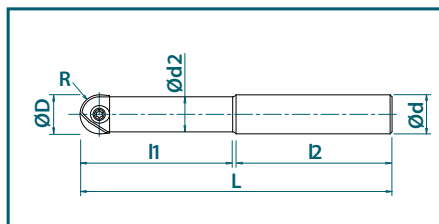
Steel Shank



Carbide Shank

| EDP No. | Body Type | Designation | Tool Dia. (mm) | Tool Radius (mm) | Overall Length (mm) | Neck Length (mm) | L/D Ratio | No. of Teeth | Shank Dia. (mm) | Shank Length (mm) | Neck Dia. (mm) |
|---------|--------------------------------------|----------------------|----------------|------------------|---------------------|------------------|-----------|--------------|-----------------|-------------------|----------------|
| | | | D | R | L | l1 | | | d | l2 | d2 |
| 7801400 | Cylindrical Shank Steel | PFB-R080SS08-S120 | 8 | 4 | 120 | 36 | 4.5 | 2 | 8 | 84 | 7 |
| 7801401 | | PFB-R100SS10-S130 | 10 | 5 | 130 | 45 | 4.5 | 2 | 10 | 85 | 9 |
| 7801402 | | PFB-R120SS12-S130 | 12 | 6 | 130 | 54 | 4.5 | 2 | 12 | 76 | 11 |
| 7801403 | | PFB-R160SS16-S140 | 16 | 8 | 140 | 65 | 4 | 2 | 16 | 76 | 14 |
| 7801404 | | PFB-R200SS20-S160 | 20 | 10 | 160 | 80 | 4 | 2 | 20 | 80 | 18 |
| 7801405 | | PFB-R250SS25-S160 | 25 | 12.5 | 160 | 75 | 3 | 2 | 25 | 85 | 22 |
| 7801406 | | PFB-R300SS32-S170 | 30 | 15 | 170 | 90 | 3 | 2 | 32 | 80 | 27 |
| 7801407 | | PFB-R320SS32-S180 | 32 | 16 | 180 | 96 | 3 | 2 | 32 | 84 | 29 |
| 7801429 | Cylindrical Shank Short Carbide | PFB-R060SS06-S80CS | 6 | 3 | 80 | 15 | 2.5 | 2 | 6 | 65 | 5.4 |
| 7801430 | | PFB-R080SS08-S100CS | 8 | 4 | 100 | 20 | 2.5 | 2 | 8 | 80 | 7 |
| 7801431 | | PFB-R100SS10-S100CS | 10 | 5 | 100 | 25 | 2.5 | 2 | 10 | 75 | 9 |
| 7801432 | | PFB-R120SS12-S110CS | 12 | 6 | 110 | 30 | 2.5 | 2 | 12 | 80 | 11 |
| 7801433 | | PFB-R160SS16-S140CS | 16 | 8 | 140 | 40 | 2.5 | 2 | 16 | 100 | 14 |
| 7801434 | | PFB-R200SS20-S160CS | 20 | 10 | 160 | 50 | 2.5 | 2 | 20 | 110 | 18 |
| 7801435 | | PFB-R250SS25-S160CS | 25 | 12.5 | 160 | 62.5 | 2.5 | 2 | 25 | 97.5 | 22 |
| 7801436 | | PFB-R300SS32-S170CS | 30 | 15 | 170 | 75 | 2.5 | 2 | 32 | 95 | 27 |
| 7801437 | PFB-R320SS32-S180CS | 32 | 16 | 180 | 80 | 2.5 | 2 | 32 | 100 | 29 | |
| 7801439 | Cylindrical Shank Long Carbide | PFB-R060SS06-L100CS | 6 | 3 | 100 | 30 | 5.0 | 2 | 6 | 70 | 5.4 |
| 7801440 | | PFB-R080SS08-L120CS | 8 | 4 | 120 | 40 | 5.0 | 2 | 8 | 80 | 7 |
| 7801441 | | PFB-R100SS10-L130CS | 10 | 5 | 130 | 50 | 5.0 | 2 | 10 | 80 | 9 |
| 7801442 | | PFB-R120SS12-L140CS | 12 | 6 | 140 | 60 | 5.0 | 2 | 12 | 80 | 11 |
| 7801443 | | PFB-R160SS16-L160CS | 16 | 8 | 160 | 72 | 4.5 | 2 | 16 | 88 | 14 |
| 7801444 | | PFB-R200SS20-L180CS | 20 | 10 | 180 | 90 | 4.5 | 2 | 20 | 90 | 18 |
| 7801445 | | PFB-R250SS25-L200CS | 25 | 12.5 | 200 | 100 | 4 | 2 | 25 | 100 | 22 |
| 7801446 | | PFB-R300SS32-L220CS | 30 | 15 | 220 | 120 | 4 | 2 | 32 | 100 | 27 |
| 7801447 | PFB-R320SS32-L230CS | 32 | 16 | 230 | 128 | 4 | 2 | 32 | 102 | 29 | |
| 7801419 | Cylindrical Shank Extra-Long Carbide | PFB-R060SS06-LL120CS | 6 | 3 | 120 | 42 | 7 | 2 | 6 | 78 | 5.4 |
| 7801420 | | PFB-R080SS08-LL140CS | 8 | 4 | 140 | 56 | 7 | 2 | 8 | 84 | 7 |
| 7801421 | | PFB-R100SS10-LL150CS | 10 | 5 | 150 | 70 | 7 | 2 | 10 | 80 | 9 |
| 7801422 | | PFB-R120SS12-LL160CS | 12 | 6 | 160 | 84 | 7 | 2 | 12 | 76 | 11 |
| 7801423 | | PFB-R160SS16-LL200CS | 16 | 8 | 200 | 96 | 6 | 2 | 16 | 104 | 14 |
| 7801424 | | PFB-R200SS20-LL240CS | 20 | 10 | 240 | 120 | 6 | 2 | 20 | 120 | 18 |
| 7801425 | | PFB-R250SS25-LL260CS | 25 | 12.5 | 260 | 137.5 | 5.5 | 2 | 25 | 122.5 | 22 |
| 7801426 | | PFB-R300SS32-LL290CS | 30 | 15 | 290 | 165 | 5.5 | 2 | 32 | 125 | 27 |
| 7801427 | PFB-R320SS32-LL300CS | 32 | 16 | 300 | 176 | 5.5 | 2 | 32 | 124 | 29 | |

Packed: 1 pc.



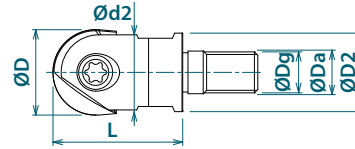
List 52604

PFB ASF (Inch)



SPEED FEED
P1441

Recommended Materials: p1441
Accessories & Inserts: p1437-1439
Effective Cutting Diameter & Recommended Width of Cut: p1440
SF Arbors: p1461



| EDP No. | Body Type | Designation | Tool Dia. (inch) | No. of Teeth | Pilot Dia. (inch) | Thread Dia. (mm) | Overall Length (inch) | Head Dia. (inch) | Flange Dia. (inch) | Wrench Size | Applicable Insert |
|----------|----------------|----------------|------------------|--------------|-------------------|------------------|-----------------------|------------------|--------------------|-------------|-------------------|
| | | | D | | Da | Dg | L | d2 | D2 | | |
| 52604000 | Screw Fit Head | PFB-R0375ASF6 | 0.375 | 2 | 0.256 | M6 | 1.024 | 0.354 | 0.354 | 7 | PFB... |
| 52604001 | | PFB-R0500ASF6 | 0.500 | 2 | 0.256 | M6 | 1.024 | 0.433 | 0.433 | 7 | |
| 52604002 | | PFB-R0625ASF8 | 0.625 | 2 | 0.335 | M8 | 1.260 | 0.551 | 0.571 | 10 | |
| 52604003 | | PFB-R0750ASF10 | 0.750 | 2 | 0.413 | M10 | 1.496 | 0.709 | 0.709 | 14 | |
| 52604004 | | PFB-R1000ASF12 | 1.000 | 2 | 0.492 | M12 | 1.496 | 0.866 | 0.906 | 17 | |

Packed: 1 pc.



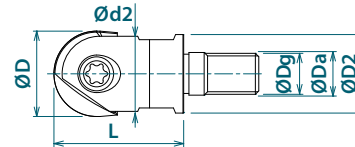
List 78114

PFB SF (Metric)



SPEED FEED
P1441

Recommended Materials: p1441
Accessories & Inserts: p1437-1439
Effective Cutting Diameter & Recommended Width of Cut: p1440
SF Arbors: p1462-1464



| EDP No. | Body Type | Designation | Tool Dia. (mm) | No. of Teeth | Pilot Dia. (mm) | Thread Dia. (mm) | Overall Length (mm) | Head Dia. (mm) | Flange Dia. (mm) | Wrench Size | Applicable Insert |
|---------|----------------|--------------|----------------|--------------|-----------------|------------------|---------------------|----------------|------------------|-------------|-------------------|
| | | | D | | Da | Dg | L | d2 | D2 | | |
| 7801490 | Screw Fit Head | PFB-R100SF6 | 10 | 2 | 6.5 | M6 | 26 | 9 | 9 | 7 | PFB... |
| 7801491 | | PFB-R120SF6 | 12 | 2 | 6.5 | M6 | 26 | 11 | 11 | 7 | |
| 7801492 | | PFB-R160SF8 | 16 | 2 | 8.5 | M8 | 32 | 14 | 14.5 | 10 | |
| 7801493 | | PFB-R200SF10 | 20 | 2 | 10.5 | M10 | 38 | 18 | 18 | 14 | |
| 7801494 | | PFB-R250SF12 | 25 | 2 | 12.5 | M12 | 38 | 22 | 23 | 17 | |
| 7801495 | | PFB-R300SF16 | 30 | 2 | 17 | M16 | 43 | 27 | 28 | 22 | |

Packed: 1 pc.

Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**





List 78PFB

NEW SIZES

PFB Inserts (Inch)



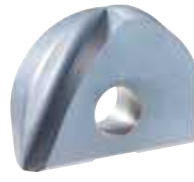
Spiral



Spiral (Full Radius)



Straight (Full Radius)



Spiral (Strengthened Edge)

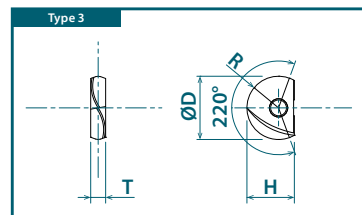
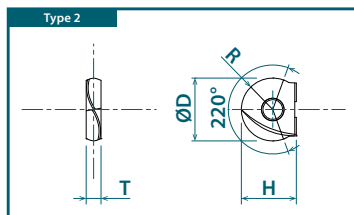
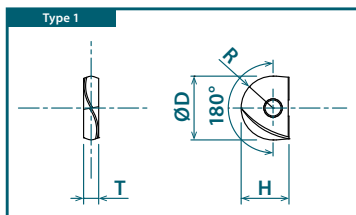


Spiral (Diamond Coated)

| Designation | Type | Specification | No. of Cutting Edges | Range | Insert Size | | | | EDP Number | | | | |
|---------------|------|----------------------------|----------------------|-------|-------------|--------|------|-------|------------|----------|----------|----------|----------|
| | | | | | D | R | T | H | XP3225 | XP3310 | XP3320 | XP2225 | XC4505 |
| | | | | | (inch) | (inch) | (mm) | (mm) | | | | | |
| PFB0250A-SP | 1 | Spiral | 2 | 180° | 0.250 | 0.1250 | 2 | 5.175 | 52101020 | - | 52101010 | - | - |
| PFB0375A-SP | | | | | 0.375 | 0.1875 | 2.6 | 8.5 | 52101021 | - | 52101011 | - | - |
| PFB0500A-SP | | | | | 0.500 | 0.2500 | 3 | 10 | 52101022 | - | 52101012 | - | - |
| PFB0625A-SP | | | | | 0.625 | 0.3125 | 4 | 12 | 52101023 | - | 52101013 | - | - |
| PFB0750A-SP | | | | | 0.750 | 0.3750 | 5 | 15 | 52101024 | - | 52101014 | - | - |
| PFB1000A-SP | | | | | 1.000 | 0.5000 | 6 | 18.5 | 52101025 | - | 52101015 | - | - |
| PFB1250A-SP | | | | | 1.250 | 0.6250 | 7 | 23.5 | 52101026 | - | 52101016 | - | - |
| PFB0250A-Q | 2 | Spiral (Full Radius) | 2 | 220° | 0.250 | 0.1250 | 2 | 5.175 | 52101040 | - | - | - | - |
| PFB0375A-Q | | | | | 0.375 | 0.1875 | 2.6 | 8.5 | 52101041 | - | - | - | - |
| PFB0500A-Q | | | | | 0.500 | 0.2500 | 3 | 10 | 52101042 | - | - | - | - |
| PFB0625A-Q | | | | | 0.625 | 0.3125 | 4 | 12 | 52101043 | - | - | - | - |
| PFB0750A-Q | | | | | 0.750 | 0.3750 | 5 | 15 | 52101044 | - | - | - | - |
| PFB1000A-Q | | | | | 1.000 | 0.5000 | 6 | 18.5 | 52101045 | - | - | - | - |
| PFB1250A-Q | | | | | 1.250 | 0.6250 | 7 | 23.5 | 52101046 | - | - | - | |
| PFB0375A-Q-ST | 3 | Straight (Full Radius) | 2 | 200° | 0.375 | 0.1875 | 2.6 | 8.5 | - | - | - | 52101051 | - |
| PFB0500A-Q-ST | | | | 0.500 | 0.2500 | 3 | 10 | - | - | - | 52101052 | - | |
| PFB0625A-Q-ST | | | | 0.625 | 0.3125 | 4 | 12 | - | - | - | 52101053 | - | |
| PFB0750A-Q-ST | | | | 0.750 | 0.3750 | 5 | 15 | - | - | - | 52101054 | - | |
| PFB1000A-Q-ST | | | | 1.000 | 0.5000 | 6 | 18.5 | - | - | - | 52101055 | - | |
| PFB1250A-Q-ST | | | | 1.250 | 0.6250 | 7 | 23.5 | - | - | - | 52101056 | - | |
| PFB0250A-SH | 1 | Spiral (Strengthened Edge) | 2 | 180° | 0.250 | 0.1250 | 2 | 5.175 | - | 52101030 | - | - | - |
| PFB0375A-SH | | | | | 0.375 | 0.1875 | 2.6 | 8.5 | - | 52101031 | - | - | - |
| PFB0500A-SH | | | | | 0.500 | 0.2500 | 3 | 10 | - | 52101032 | - | - | - |
| PFB0625A-SH | | | | | 0.625 | 0.3125 | 4 | 12 | - | 52101033 | - | - | - |
| PFB0750A-SH | | | | | 0.750 | 0.3750 | 5 | 15 | - | 52101034 | - | - | - |
| PFB1000A-SH | | | | | 1.000 | 0.5000 | 6 | 18.5 | - | 52101035 | - | - | - |
| PFB1250A-SH | | | | | 1.250 | 0.6250 | 7 | 23.5 | - | 52101036 | - | - | |
| PFB0250A-D | 1 | Spiral (Diamond Coated) | 2 | 180° | 0.250 | 0.1250 | 2 | 5.175 | - | - | - | - | 52101000 |
| PFB0375A-D | | | | | 0.375 | 0.1875 | 2.6 | 8.5 | - | - | - | - | 52101001 |
| PFB0500A-D | | | | | 0.500 | 0.2500 | 3 | 10 | - | - | - | - | 52101002 |
| PFB0625A-D | | | | | 0.625 | 0.3125 | 4 | 12 | - | - | - | - | 52101003 |
| PFB0750A-D | | | | | 0.750 | 0.3750 | 5 | 15 | - | - | - | - | 52101004 |
| PFB1000A-D | | | | | 1.000 | 0.5000 | 6 | 18.5 | - | - | - | - | 52101005 |
| PFB1250A-D | | | | | 1.250 | 0.6250 | 7 | 23.5 | - | - | - | 52101006 | |

Packed: 1 pc.

continued on next page





NEW SIZES

List 78PFB (Continued)

PFB Inserts (Metric)



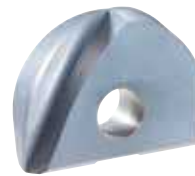
Spiral



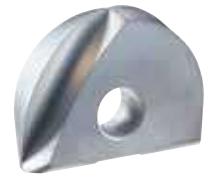
Spiral (Full Radius)



Straight (Full Radius)



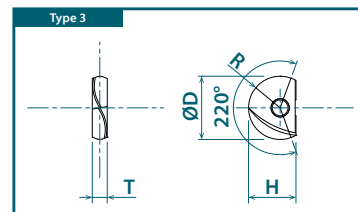
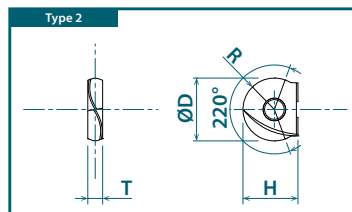
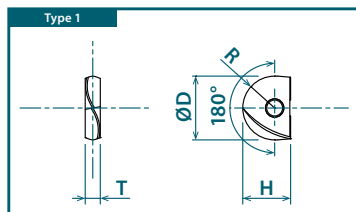
Spiral (Strengthened Edge)



Spiral (Diamond Coated)

| Designation | Type | Specification | No. of Cutting Edges | Range | Insert Size | | | | EDP Number | | | | | | | | |
|-------------|------|----------------------------|----------------------|-------|-------------------------|----------------------|--------|---------|------------|---------|---------|---------|---------|---------|---|---------|---|
| | | | | | D (mm) | R (mm) | T (mm) | H (mm) | XP3225 | XP3310 | XP3320 | XP2225 | XC4505 | | | | |
| PFB080-SP | 1 | Spiral | 2 | 180° | 8 | 4 | 2.4 | 7 | 7820030 | - | 7820010 | - | - | | | | |
| PFB100-SP | | | | | 10 | 5 | 2.6 | 8.5 | 7820031 | - | 7820011 | - | - | | | | |
| PFB120-SP | | | | | 12 | 6 | 3 | 10 | 7820032 | - | 7820012 | - | - | | | | |
| PFB160-SP | | | | | 16 | 8 | 4 | 12 | 7820033 | - | 7820013 | - | - | | | | |
| PFB200-SP | | | | | 20 | 10 | 5 | 15 | 7820034 | - | 7820014 | - | - | | | | |
| PFB250-SP | | | | | 25 | 12.5 | 6 | 18.5 | 7820035 | - | 7820015 | - | - | | | | |
| PFB300-SP | | | | | 30 | 15 | 7 | 22.5 | 7820036 | - | 7820016 | - | - | | | | |
| PFB060-Q | | | | | 2 | Spiral (Full Radius) | 2 | 220° | 6 | 3 | 2 | 5 | 7820048 | - | - | - | - |
| PFB070-Q | | | | | | | | | 7 | 3.5 | 2 | 5.5 | 7820049 | - | - | - | - |
| PFB080-Q | | | | | | | | | 8 | 4 | 2.4 | 7 | 7820050 | - | - | - | - |
| PFB100-Q | 10 | 5 | 2.6 | 8.5 | | | | | 7820051 | - | - | - | - | | | | |
| PFB120-Q | 12 | 6 | 3 | 10 | | | | | 7820052 | - | - | - | - | | | | |
| PFB160-Q | 16 | 8 | 4 | 12 | | | | | 7820053 | - | - | - | - | | | | |
| PFB200-Q | 20 | 10 | 5 | 15 | | | | | 7820054 | - | - | - | - | | | | |
| PFB250-Q | 25 | 12.5 | 6 | 18.5 | | | | | 7820055 | - | - | - | - | | | | |
| PFB300-Q | 30 | 15 | 7 | 22.5 | | | | | 7820056 | - | - | - | - | | | | |
| PFB080-Q-ST | 2 | Straight (Full Radius) | 2 | 200° | | | | | 8 | 4 | 2.4 | 7 | - | - | - | 7820060 | - |
| PFB100-Q-ST | | | | | 10 | 5 | 2.6 | 8.5 | - | - | - | 7820061 | - | | | | |
| PFB120-Q-ST | | | | | 12 | 6 | 3 | 10 | - | - | - | 7820062 | - | | | | |
| PFB160-Q-ST | | | | 3 | 220° | 16 | 8 | 4 | 12 | - | - | - | 7820063 | - | | | |
| PFB200-Q-ST | | | | | | 20 | 10 | 5 | 15 | - | - | - | 7820064 | - | | | |
| PFB250-Q-ST | | | | | | 25 | 12.5 | 6 | 18.5 | - | - | - | 7820065 | - | | | |
| PFB300-Q-ST | 30 | 15 | 7 | 22.5 | - | - | - | 7820066 | - | | | | | | | | |
| PFB060-SH | 2 | Spiral (Strengthened Edge) | 2 | 180° | 6 | 3 | 2 | 5 | - | 7820039 | - | - | - | | | | |
| PFB080-SH | 8 | | | | 4 | 2.4 | 7 | - | 7820040 | - | - | - | - | | | | |
| PFB100-SH | 10 | | | | 5 | 2.6 | 8.5 | - | 7820041 | - | - | - | - | | | | |
| PFB120-SH | 12 | | | | 6 | 3 | 10 | - | 7820042 | - | - | - | - | | | | |
| PFB160-SH | 16 | | | | 8 | 4 | 12 | - | 7820043 | - | - | - | - | | | | |
| PFB200-SH | 20 | | | | 10 | 5 | 15 | - | 7820044 | - | - | - | - | | | | |
| PFB250-SH | 25 | | | | 12.5 | 6 | 18.5 | - | 7820045 | - | - | - | - | | | | |
| PFB300-SH | 30 | | | | 15 | 7 | 22.5 | - | 7820046 | - | - | - | - | | | | |
| PFB320-SH | 32 | | | | 16 | 7 | 23.5 | - | 7820047 | - | - | - | - | | | | |
| PFB060-D | 1 | | | | Spiral (Diamond Coated) | 2 | 220° | 6 | 3 | 2 | 5 | - | - | - | - | 7820018 | |
| PFB070-D | | 7 | 3.5 | 2 | | | | 5.5 | - | - | - | - | 7820019 | | | | |
| PFB080-D | | 8 | 4 | 2.4 | | | | 7 | - | - | - | - | 7820020 | | | | |
| PFB100-D | | 10 | 5 | 2.6 | | | | 8.5 | - | - | - | - | 7820021 | | | | |
| PFB120-D | | 12 | 6 | 3 | | | | 10 | - | - | - | - | 7820022 | | | | |
| PFB160-D | | 1 | 180° | 16 | | | 8 | 4 | 12 | - | - | - | 7820023 | | | | |
| PFB200-D | | | | 20 | | | 10 | 5 | 15 | - | - | - | - | 7820024 | | | |
| PFB250-D | | | | 25 | | | 12.5 | 6 | 18.5 | - | - | - | - | 7820025 | | | |
| PFB300-D | | | | 30 | | | 15 | 7 | 22.5 | - | - | - | - | 7820026 | | | |

Packed: 1 pc.


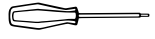


PXI



List 7808H

PFB Accessories

| Appearance | EDP No. | Designation | Applicable Insert | | Recommended Tightening Torque |
|---|---------|---------------------|-------------------|-------|-------------------------------|
| | | | (inch) | (mm) | |
|  Clamping Screw | 7808124 | FS20652RB (Torx 6) | 0.250 | 6-7 | 0.8 Nm |
| | 7808123 | FS25669RB (Torx 7) | - | 8 | 1.0 Nm |
| | 7808117 | FS30686RB (Torx 8) | 0.375 | 10 | 1.2 Nm |
| | 7808118 | FS35610RB (Torx 10) | 0.500 | 12 | 2.0 Nm |
| | 7808119 | FS40613RB (Torx 15) | 0.625 | 16 | 3.0 Nm |
| | 7808120 | FS50615RB (Torx 20) | 0.750 | 20 | 5.0 Nm |
| | 7808121 | FS60620RB (Torx 20) | 1.000 | 25 | 5.0 Nm |
| | 7808122 | FS80624RB (Torx 30) | 1.250 | 30-32 | 6.0 Nm |
|  Wrench | 7808203 | T6-D (Torx 6) | 0.250 | 6-7 | |
| | 7808204 | T7-D (Torx 7) | - | 8 | |
| | 7808205 | T8-D (Torx 8) | 0.375 | 10 | |
| | 7808207 | T10-D (Torx 10) | 0.500 | 12 | |
| | 7808208 | T15-D (Torx 15) | 0.625 | 16 | |
| | 7808209 | T20-D (Torx 20) | 0.750-1.000 | 20-25 | |
| | 7808212 | T30-T (Torx 30) | 1.250 | 30-32 | |

Packed: Clamping Screw = 1 pc.; Wrench = 1 pc.
Note: Wrench sold separately.





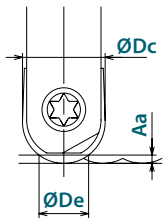
Effective Cutting Diameter

| Depth of Cut Aa | | Effective Cutting Diameter (ØDe) | | | | | | | | | | | | | | | | | | | |
|--------------------|------|----------------------------------|-----|--------|-----|--------|------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|
| | | ØDc | | ØDc | | ØDc | | ØDc | | ØDc | | ØDc | | ØDc | | ØDc | | ØDc | | | |
| (inch) | (mm) | 0.250" | 6mm | 0.275" | 7mm | 0.315" | 8 mm | 0.375" | 10 mm | 0.500" | 12 mm | 0.625" | 16 mm | 0.750" | 20 mm | 1.000" | 25 mm | 1.181" | 30 mm | 1.250" | 32mm |
| 0.004 | 0.1 | 0.063 | 1.5 | 0.063 | 1.6 | 0.071 | 1.8 | 0.077 | 2.0 | 0.089 | 2.2 | 0.100 | 2.5 | 0.109 | 2.8 | 0.126 | 3.2 | 0.137 | 3.5 | 0.142 | 3.6 |
| 0.008 | 0.2 | 0.088 | 2.2 | 0.091 | 2.3 | 0.099 | 2.5 | 0.108 | 2.8 | 0.125 | 3.1 | 0.141 | 3.6 | 0.154 | 4.0 | 0.178 | 4.5 | 0.194 | 4.9 | 0.197 | 5.0 |
| 0.012 | 0.3 | 0.107 | 2.6 | 0.110 | 2.8 | 0.121 | 3.0 | 0.132 | 3.4 | 0.153 | 3.7 | 0.172 | 4.3 | 0.188 | 4.9 | 0.218 | 5.4 | 0.237 | 6.0 | 0.244 | 6.2 |
| 0.016 | 0.4 | 0.122 | 3.0 | 0.130 | 3.3 | 0.138 | 3.5 | 0.152 | 3.9 | 0.176 | 4.3 | 0.197 | 5.0 | 0.217 | 5.6 | 0.251 | 6.3 | 0.273 | 6.9 | 0.280 | 7.1 |
| 0.020 | 0.5 | 0.136 | 3.3 | 0.142 | 3.6 | 0.154 | 3.9 | 0.169 | 4.4 | 0.196 | 4.8 | 0.220 | 5.6 | 0.242 | 6.2 | 0.280 | 7.0 | 0.305 | 7.7 | 0.311 | 7.9 |
| 0.031 | 0.8 | 0.165 | 4.1 | 0.177 | 4.5 | 0.188 | 4.8 | 0.207 | 5.4 | 0.241 | 6.0 | 0.271 | 7.0 | 0.299 | 7.8 | 0.347 | 8.8 | 0.378 | 9.7 | 0.394 | 10.0 |
| 0.039 | 1.0 | - | - | - | - | - | - | 0.229 | 6.0 | 0.268 | 6.6 | 0.302 | 7.7 | 0.333 | 8.7 | 0.387 | 9.8 | 0.422 | 10.8 | 0.437 | 11.1 |
| 0.059 | 1.5 | - | - | - | - | - | - | 0.273 | 7.1 | 0.323 | 7.9 | 0.365 | 9.3 | 0.404 | 10.5 | 0.471 | 11.9 | 0.515 | 13.1 | 0.531 | 13.5 |
| 0.079 | 2.0 | - | - | - | - | - | - | - | - | 0.365 | 8.9 | 0.415 | 10.6 | 0.460 | 12.0 | 0.539 | 13.6 | 0.590 | 15.0 | 0.610 | 15.5 |
| 0.098 | 2.5 | - | - | - | - | - | - | - | - | - | - | 0.455 | 11.6 | 0.506 | 13.2 | 0.595 | 15.0 | 0.652 | 16.6 | 0.677 | 17.2 |
| 0.118 | 3.0 | - | - | - | - | - | - | - | - | - | - | - | - | 0.546 | 14.3 | 0.645 | 16.2 | 0.708 | 18.0 | 0.736 | 18.7 |
| 0.138 | 3.5 | - | - | - | - | - | - | - | - | - | - | - | - | 0.581 | 15.2 | 0.690 | 17.3 | 0.759 | 19.3 | 0.787 | 20.0 |
| 0.157 | 4.0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.728 | 18.3 | 0.802 | 20.4 | 0.835 | 21.2 |
| 0.117 | 4.5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.706 | 21.4 | 0.874 | 22.2 |
| 0.197 | 5.0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.881 | 22.3 | 0.913 | 23.2 |

Note: Effective cutting diameter is based on cutting depth (Aa)

How to determine effective cutting diameter:

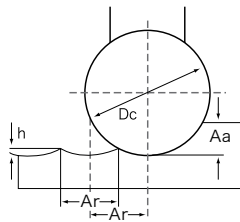
Ex: Dc = 0.500"
Aa = 0.020"
De = 2√(0.020(0.500-0.020))
De = 0.196"



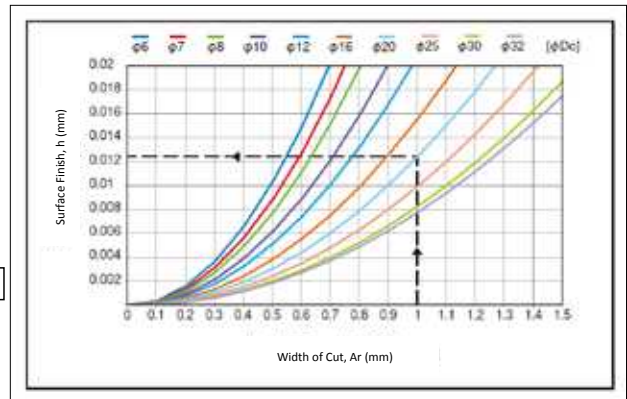
$$De = 2 \sqrt{a_a(D_c - a_a)}$$

Recommended Width of Cut & Surface Roughness

| Tool Dia ØDc | | Width of Cut Ar | | Surface Finish h | |
|-----------------|------|--------------------|------|---------------------|-------|
| (inch) | (mm) | (inch) | (mm) | (inch) | (mm) |
| 0.250 | 6 | 0.0157 | 0.4 | 0.00027 | 0.007 |
| 0.275 | 7 | 0.0177 | 0.45 | 0.00027 | 0.007 |
| 0.315 | 8 | 0.0197 | 0.5 | 0.00031 | 0.008 |
| 0.375 | 10 | 0.0236 | 0.6 | 0.00037 | 0.009 |
| 0.500 | 12 | 0.0275 | 0.7 | 0.00038 | 0.010 |
| 0.625 | 16 | 0.0315 | 0.8 | 0.00040 | 0.010 |
| 0.750 | 20 | 0.0394 | 1.0 | 0.00052 | 0.012 |
| 1.000 | 25 | 0.0472 | 1.2 | 0.00055 | 0.014 |
| 1.181 | 30 | 0.0512 | 1.3 | 0.00055 | 0.014 |
| 1.250 | 32 | 0.0551 | 1.4 | 0.00059 | 0.015 |



$h = 0.5 (D_c - \sqrt{D_c^2 - A_r^2})$
Dc=20mm
Ar=1mm
->h=0.0125mm



Cutting Conditions

| Work Material | Tensile Strength – Hardness | Milling Speed Vc (SFM) | Depth of Cut Aa (in) | Feed Per Tooth fz (in/t) | | | |
|--|-----------------------------|------------------------|----------------------|--------------------------|------------------------|------------------------|------------------------|
| | | | | Ø0.236-0.312 (6-8mm) | Ø0.375-0.500 (10-12mm) | Ø0.625-0.750 (16-20mm) | Ø1.000-1.250 (25-32mm) |
| P Mild Steels, Carbon Steels (1010, 1018) Carbon Steels, Alloy Steels (1050, 4140) Die Steels (H13, D2) | ~180 HB | 985 (655-1310) | 0.02Dc | 0.0040 | 0.0047 | 0.0055 | 0.0071 |
| | ~280 HB | 985 (655-1310) | 0.02Dc | 0.0028 | 0.0040 | 0.0047 | 0.0055 |
| | ~280 HB | 820 (495-1150) | 0.02Dc | 0.0028 | 0.0040 | 0.0047 | 0.0055 |
| M Stainless Steels (304SS, 420SS) | ~250 HB | 820 (495-1150) | 0.02Dc | 0.0028 | 0.0047 | 0.0055 | 0.0067 |
| K Cast Iron (FC250) Ductile Cast Iron (60-40-18) | ~350 N/mm ² | 1310 (985-1640) | 0.02Dc | 0.0047 | 0.0055 | 0.0071 | 0.0086 |
| | ~600 N/mm ² | 985 (655-1310) | 0.02Dc | 0.0040 | 0.0047 | 0.0055 | 0.0071 |
| N Aluminum Alloys (6061, 7075) Copper Alloys (C1100) Graphite CFRP | ~13% Si | 1640 (1310-1970) | 0.03Dc | 0.0047 | 0.0055 | 0.0071 | 0.0086 |
| | - | 985 (655-1310) | 0.03Dc | 0.0043 | 0.0051 | 0.0067 | 0.0079 |
| | - | 1640 (1310-1970) | 0.03Dc | 0.0055 | 0.0067 | 0.0083 | 0.0098 |
| | - | 1310 (985-1640) | 0.03Dc | 0.0043 | 0.0051 | 0.0067 | 0.0079 |
| S Heat Resistant Alloys (Inconel 718) Titanium Alloy (Ti-6Al-4V) | - | 165 (65-260) | 0.015Dc | 0.0016 | 0.0020 | 0.0024 | 0.0024 |
| | - | 295 (130-395) | 0.02Dc | 0.0024 | 0.0031 | 0.0043 | 0.0051 |
| H Pre-hardened Steel (P20, Stavax) Die Cast Steels (A2, S7) Hardened Steels (D2) | 40 - 43 HRC | 655 (330-985) | 0.015Dc | 0.0024 | 0.0028 | 0.0031 | 0.0040 |
| | 43 - 48 HRC | 590 (295-655) | 0.015Dc | 0.0020 | 0.0024 | 0.0028 | 0.0028 |
| | 50 - 55 HRC | 490 (330-820) | 0.01Dc | 0.0020 | 0.0024 | 0.0028 | 0.0028 |

Recommended Materials by Application

| Insert Grade | P | M | K | N | S | H |
|--------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| XP3225 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| XP3310 | | | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> |
| XP3320 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> |
| XP2225 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| XC4505 | | | | <input checked="" type="checkbox"/> | | |

*: Best recommended for aluminum & copper alloy applications.
 **: Best recommended for graphite & CFRP applications.

good best



List 52200



SPEED FEED
P1451-1452

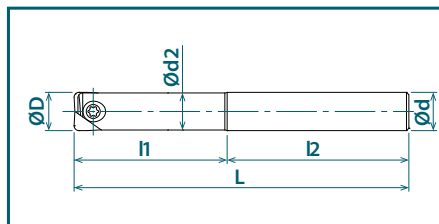
Recommended Materials: p1451-1452
Accessories & Inserts: p1445-1450

PFR SA (Inch)



| EDP No. | Body Type | Designation | Tool Dia. | Overall Length | Neck Length | L/D Ratio | No. of Teeth | Shank Dia. | Shank Length | Neck Dia. | |
|----------|--------------------------|------------------------|-----------|----------------|-------------|-----------|--------------|------------|--------------|-----------|--------|
| | | | (inch) | (inch) | (inch) | | | (inch) | (inch) | (inch) | (inch) |
| | | | D | L | l1 | | | | d | l2 | d2 |
| 52200024 | Cylindrical Shank Steel | PFR-R0250SA0250-S325 | 0.250 | 3.250 | 0.625 | 2.5 | 2 | 0.250 | 2.625 | 0.225 | |
| 52200025 | | PFR-R0250SA0250-S375 | 0.250 | 3.750 | 1.125 | 4.5 | 2 | 0.250 | 2.625 | 0.225 | |
| 52200026 | | PFR-R0375SA0375-S400 | 0.375 | 4.000 | 0.937 | 2.5 | 2 | 0.375 | 3.063 | 0.335 | |
| 52200000 | | PFR-R0375SA0375-S550 | 0.375 | 5.500 | 1.687 | 4.5 | 2 | 0.375 | 3.813 | 0.355 | |
| 52200027 | | PFR-R0500SA0500-S450 | 0.500 | 4.500 | 1.250 | 2.5 | 2 | 0.500 | 3.250 | 0.480 | |
| 52200001 | | PFR-R0500SA0500-S550 | 0.500 | 5.500 | 2.250 | 4.5 | 2 | 0.500 | 3.250 | 0.480 | |
| 52200028 | | PFR-R0625SA0625-S500 | 0.625 | 5.000 | 1.562 | 2.5 | 2 | 0.625 | 3.438 | 0.605 | |
| 52200002 | | PFR-R0625SA0625-S550 | 0.625 | 5.500 | 2.500 | 4 | 2 | 0.625 | 3.000 | 0.605 | |
| 52200029 | | PFR-R0750SA0750-S550 | 0.750 | 5.500 | 1.875 | 2.5 | 2 | 0.750 | 3.625 | 0.730 | |
| 52200003 | | PFR-R0750SA0750-S600 | 0.750 | 6.000 | 3.000 | 4 | 2 | 0.750 | 3.000 | 0.730 | |
| 52200004 | | PFR-R1000SA1000-S650 | 1.000 | 6.500 | 3.000 | 3 | 2 | 1.000 | 3.500 | 0.980 | |
| 52200030 | | PFR-R1000SA1000-S750 | 1.000 | 7.500 | 4.000 | 4 | 2 | 1.000 | 3.500 | 0.980 | |
| 52200015 | | PFR-R1250SA1250-S700 | 1.250 | 7.000 | 3.750 | 3 | 2 | 1.250 | 3.250 | 1.230 | |
| 52200031 | | PFR-R1250SA1250-S850 | 1.250 | 8.500 | 5.000 | 4 | 2 | 1.250 | 3.500 | 1.230 | |
| 52200032 | | PFR-R0250SA0250-S325CS | 0.250 | 3.250 | 0.625 | 2.5 | 2 | 0.250 | 2.625 | 0.225 | |
| 52200005 | | PFR-R0375SA0375-S400CS | 0.375 | 4.000 | 0.937 | 2.5 | 2 | 0.375 | 3.063 | 0.355 | |
| 52200006 | PFR-R0500SA0500-S450CS | 0.500 | 4.500 | 1.250 | 2.5 | 2 | 0.500 | 3.250 | 0.480 | | |
| 52200007 | PFR-R0625SA0625-S550CS | 0.625 | 5.500 | 1.562 | 2.5 | 2 | 0.625 | 3.938 | 0.605 | | |
| 52200008 | PFR-R0750SA0750-S600CS | 0.750 | 6.000 | 1.875 | 2.5 | 2 | 0.750 | 4.125 | 0.730 | | |
| 52200009 | PFR-R1000SA1000-S650CS | 1.000 | 6.500 | 2.500 | 2.5 | 2 | 1.000 | 4.000 | 0.980 | | |
| 52200016 | PFR-R1250SA1250-S700CS | 1.250 | 7.000 | 3.125 | 2.5 | 2 | 1.250 | 3.875 | 1.230 | | |
| 52200033 | PFR-R0250SA0250-L400CS | 0.250 | 4.000 | 1.250 | 5 | 2 | 0.250 | 2.750 | 0.225 | | |
| 52200018 | PFR-R0375SA0375-L550CS | 0.375 | 5.500 | 1.875 | 5 | 2 | 0.375 | 3.625 | 0.355 | | |
| 52200019 | PFR-R0500SA0500-L550CS | 0.500 | 5.500 | 2.500 | 5 | 2 | 0.500 | 3.000 | 0.480 | | |
| 52200020 | PFR-R0625SA0625-L650CS | 0.625 | 6.500 | 3.125 | 5 | 2 | 0.625 | 3.375 | 0.605 | | |
| 52200021 | PFR-R0750SA0750-L700CS | 0.750 | 7.000 | 3.750 | 5 | 2 | 0.750 | 3.250 | 0.730 | | |
| 52200022 | PFR-R1000SA1000-L800CS | 1.000 | 8.000 | 4.500 | 4.5 | 2 | 1.000 | 3.500 | 0.980 | | |
| 52200023 | PFR-R1250SA1250-L900CS | 1.250 | 9.000 | 5.625 | 4.5 | 2 | 1.250 | 3.375 | 1.230 | | |
| 52200034 | PFR-R0250SA0250-LL450CS | 0.250 | 4.500 | 1.750 | 7 | 2 | 0.250 | 2.750 | 0.225 | | |
| 52200010 | PFR-R0375SA0375-LL650CS | 0.375 | 6.500 | 2.625 | 7 | 2 | 0.375 | 3.875 | 0.355 | | |
| 52200011 | PFR-R0500SA0500-LL700CS | 0.500 | 7.000 | 3.500 | 7 | 2 | 0.500 | 3.500 | 0.480 | | |
| 52200012 | PFR-R0625SA0625-LL750CS | 0.625 | 7.500 | 3.750 | 6 | 2 | 0.625 | 3.750 | 0.605 | | |
| 52200013 | PFR-R0750SA0750-LL900CS | 0.750 | 9.000 | 4.500 | 6 | 2 | 0.750 | 4.500 | 0.730 | | |
| 52200014 | PFR-R1000SA1000-LL1050CS | 1.000 | 10.500 | 5.500 | 5.5 | 2 | 1.000 | 5.000 | 0.980 | | |
| 52200017 | PFR-R1250SA1250-LL1200CS | 1.250 | 12.000 | 6.875 | 5.5 | 2 | 1.250 | 5.125 | 1.230 | | |

Packed: 1 pc.





List 78320

PFR SS (Metric)



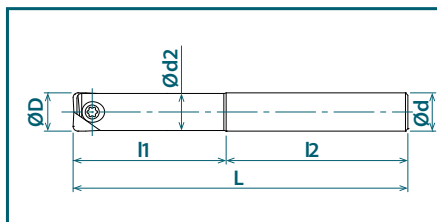
SPEED FEED
P1451-1452

Recommended Materials: p1451-1452
Accessories & Inserts: p1445-1450



| EDP No. | Body Type | Designation | Tool Dia. | Overall Length | Neck Length | L/D Ratio | No. of Teeth | Shank Dia. | Shank Length | Neck Dia. | |
|---------|--------------------------------------|----------------------|-----------|----------------|-------------|-----------|--------------|------------|--------------|-----------|------|
| | | | (mm) | (mm) | (mm) | | | (mm) | (mm) | (mm) | (mm) |
| | | | D | L | l1 | | | | d | l2 | d2 |
| 7832000 | Cylindrical Shank Steel | PFR-R080SS08-S120 | 8 | 120 | 36 | 4.5 | 2 | 8 | 84 | 7.5 | |
| 7832001 | | PFR-R100SS10-S130 | 10 | 130 | 45 | 4.5 | 2 | 10 | 85 | 9.5 | |
| 7832002 | | PFR-R120SS12-S130 | 12 | 130 | 54 | 4.5 | 2 | 12 | 76 | 11.5 | |
| 7832003 | | PFR-R160SS16-S140 | 16 | 140 | 64 | 4 | 2 | 16 | 76 | 15.5 | |
| 7832004 | | PFR-R200SS20-S160 | 20 | 160 | 80 | 4 | 2 | 20 | 80 | 19.5 | |
| 7832005 | | PFR-R250SS25-S160 | 25 | 160 | 75 | 3 | 2 | 25 | 85 | 24.5 | |
| 7832006 | | PFR-R300SS32-S170 | 30 | 170 | 90 | 3 | 2 | 32 | 80 | 29.5 | |
| 7832007 | PFR-R320SS32-S180 | 32 | 180 | 96 | 3 | 2 | 32 | 84 | 31.5 | | |
| 7832029 | Cylindrical Shank Short Carbide | PFR-R060SS06-S80CS | 6 | 80 | 15 | 2.5 | 2 | 6 | 65 | 5.5 | |
| 7832030 | | PFR-R080SS08-S100CS | 8 | 100 | 20 | 2.5 | 2 | 8 | 80 | 7.5 | |
| 7832031 | | PFR-R100SS10-S100CS | 10 | 100 | 25 | 2.5 | 2 | 10 | 75 | 9.5 | |
| 7832032 | | PFR-R120SS12-S110CS | 12 | 110 | 30 | 2.5 | 2 | 12 | 80 | 11.5 | |
| 7832033 | | PFR-R160SS16-S140CS | 16 | 140 | 40 | 2.5 | 2 | 16 | 100 | 15.5 | |
| 7832034 | | PFR-R200SS20-S160CS | 20 | 160 | 50 | 2.5 | 2 | 20 | 110 | 19.5 | |
| 7832035 | | PFR-R250SS25-S160CS | 25 | 160 | 62.5 | 2.5 | 2 | 25 | 97.5 | 24.5 | |
| 7832036 | PFR-R300SS32-S170CS | 30 | 170 | 75 | 2.5 | 2 | 32 | 95 | 29.5 | | |
| 7832037 | PFR-R320SS32-S180CS | 32 | 180 | 80 | 2.5 | 2 | 32 | 100 | 31.5 | | |
| 7832039 | Cylindrical Shank Long Carbide | PFR-R060SS06-L100CS | 6 | 100 | 30 | 5 | 2 | 6 | 70 | 5.5 | |
| 7832040 | | PFR-R080SS08-L120CS | 8 | 120 | 40 | 5 | 2 | 8 | 80 | 7.5 | |
| 7832041 | | PFR-R100SS10-L130CS | 10 | 130 | 50 | 5 | 2 | 10 | 80 | 9.5 | |
| 7832042 | | PFR-R120SS12-L140CS | 12 | 140 | 60 | 5 | 2 | 12 | 80 | 11.5 | |
| 7832043 | | PFR-R160SS16-L160CS | 16 | 160 | 72 | 4.5 | 2 | 16 | 88 | 15.5 | |
| 7832044 | | PFR-R200SS20-L180CS | 20 | 180 | 90 | 4.5 | 2 | 20 | 90 | 19.5 | |
| 7832045 | | PFR-R250SS25-L200CS | 25 | 200 | 100 | 4 | 2 | 25 | 100 | 24.5 | |
| 7832046 | PFR-R300SS32-L220CS | 30 | 220 | 120 | 4 | 2 | 32 | 100 | 29.5 | | |
| 7832047 | PFR-R320SS32-L230CS | 32 | 230 | 128 | 4 | 2 | 32 | 102 | 31.5 | | |
| 7832019 | Cylindrical Shank Extra-Long Carbide | PFR-R060SS06-LL120CS | 6 | 120 | 42 | 7 | 2 | 6 | 78 | 5.5 | |
| 7832020 | | PFR-R080SS08-LL140CS | 8 | 140 | 56 | 7 | 2 | 8 | 84 | 7.5 | |
| 7832021 | | PFR-R100SS10-LL150CS | 10 | 150 | 70 | 7 | 2 | 10 | 80 | 9.5 | |
| 7832022 | | PFR-R120SS12-LL160CS | 12 | 160 | 84 | 7 | 2 | 12 | 76 | 11.5 | |
| 7832023 | | PFR-R160SS16-LL200CS | 16 | 200 | 96 | 6 | 2 | 16 | 104 | 15.5 | |
| 7832024 | | PFR-R200SS20-LL240CS | 20 | 240 | 120 | 6 | 2 | 20 | 120 | 19.5 | |
| 7832025 | | PFR-R250SS25-LL260CS | 25 | 260 | 137.5 | 5.5 | 2 | 25 | 122.5 | 24.5 | |
| 7832026 | | PFR-R300SS32-LL290CS | 30 | 290 | 165 | 5.5 | 2 | 32 | 125 | 29.5 | |
| 7832027 | | PFR-R320SS32-LL300CS | 32 | 300 | 176 | 5.5 | 2 | 32 | 124 | 31.5 | |

Packed: 1 pc.



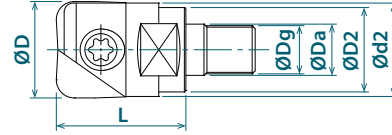
List 52605

PFR ASF (Inch)



SPEED FEED
P1451-1452

Recommended Materials: p1451-1452
Accessories & Inserts: p1445-1450
SF Arbors: p1461



| EDP No. | Body Type | Designation | Tool Dia. (inch) | No. of Teeth | Pilot Dia. (inch) | Thread Dia. (mm) | Overall Length (inch) | Head Dia. (inch) | Flange Dia. (inch) | Wrench Size | Applicable Insert |
|----------|----------------|----------------|------------------|--------------|-------------------|------------------|-----------------------|------------------|--------------------|-------------|-------------------|
| | | | D | | Da | Dg | L | d2 | D2 | | |
| 52605000 | Screw Fit Head | PFR-R0375ASF6 | 0.375 | 2 | 0.256 | M6 | 1.024 | 0.374 | 0.354 | 7 | PFR... |
| 52605001 | | PFR-R0500ASF6 | 0.500 | 2 | 0.256 | M6 | 1.024 | 0.453 | 0.433 | 7 | |
| 52605002 | | PFR-R0625ASF8 | 0.625 | 2 | 0.335 | M8 | 1.260 | 0.610 | 0.571 | 10 | |
| 52605003 | | PFR-R0750ASF10 | 0.750 | 2 | 0.413 | M10 | 1.496 | 0.768 | 0.709 | 14 | |
| 52605004 | | PFR-R1000ASF12 | 1.000 | 2 | 0.492 | M12 | 1.496 | 0.965 | 0.906 | 17 | |

Packed: 1 pc.



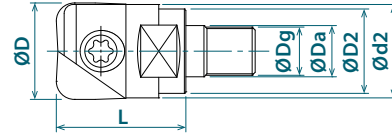
List 78220

PFR SF (Metric)



SPEED FEED
P1451-1452

Recommended Materials: p1451-1452
Accessories & Inserts: p1445-1450
SF Arbors: p1462-1464



| EDP No. | Body Type | Designation | Tool Dia. (mm) | No. of Teeth | Pilot Dia. (mm) | Thread Dia. (mm) | Overall Length (mm) | Head Dia. (mm) | Flange Dia. (mm) | Wrench Size | Applicable Insert |
|---------|----------------|--------------|----------------|--------------|-----------------|------------------|---------------------|----------------|------------------|-------------|-------------------|
| | | | D | | Da | Dg | L | d2 | D2 | | |
| 7832090 | Screw Fit Head | PFR-R100SF6 | 10 | 2 | 6.5 | M6 | 26 | 9.5 | 9 | 7 | PFR... |
| 7832091 | | PFR-R120SF6 | 12 | 2 | 6.5 | M6 | 26 | 11.5 | 11 | 7 | |
| 7832092 | | PFR-R160SF8 | 16 | 2 | 8.5 | M8 | 32 | 15.5 | 14.5 | 10 | |
| 7832093 | | PFR-R200SF10 | 20 | 2 | 10.5 | M10 | 38 | 19.5 | 18 | 14 | |
| 7832094 | | PFR-R250SF12 | 25 | 2 | 12.5 | M12 | 38 | 24.5 | 23 | 17 | |
| 7832095 | | PFR-R300SF16 | 30 | 2 | 17 | M16 | 43 | 29.5 | 28 | 22 | |
| 7832096 | | PFR-R320SF16 | 32 | 2 | 17 | M16 | 43 | 31.5 | 28 | 22 | |

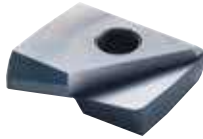
Packed: 1 pc.

Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**

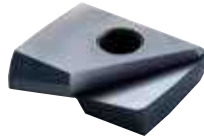


List 78PFR

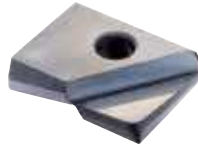
PFR Inserts (Inch)



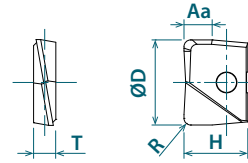
Multi-Purpose



Strengthened Edge



Diamond Coated



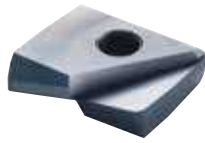
| Designation | Specification | No. of Cutting Edges | Insert Size | | | | | EDP Number | | |
|-----------------|-------------------|----------------------|-------------|----------|--------|------|------|------------|----------|--------|
| | | | D | R | Aa | T | H | XP3225 | XP3310 | XC4505 |
| | | | (inch) | (inch) | (inch) | (mm) | (mm) | | | |
| PFR0250R015A-ST | Multi-Purpose | 2 | 0.250 | 0.015 | 0.078 | 2 | 5 | 52201029 | - | - |
| PFR0250R030A-ST | | | | 0.030 | | | | 52201030 | - | - |
| PFR0250R060A-ST | | | | 0.060 | | | | 52201031 | - | - |
| PFR0375R015A-ST | | | | 0.015 | | | | 52201000 | - | - |
| PFR0375R030A-ST | | | 0.030 | 52201001 | - | - | | | | |
| PFR0375R060A-ST | | | 0.060 | 52201002 | - | - | | | | |
| PFR0375R090A-ST | | | 0.090 | 52201003 | - | - | | | | |
| PFR0500R015A-ST | | | 0.015 | 52201004 | - | - | | | | |
| PFR0500R030A-ST | | | 0.030 | 52201005 | - | - | | | | |
| PFR0500R060A-ST | | | 0.060 | 52201006 | - | - | | | | |
| PFR0500R090A-ST | | | 0.090 | 52201007 | - | - | | | | |
| PFR0500R120A-ST | | | 0.120 | 52201008 | - | - | | | | |
| PFR0625R015A-ST | | | 0.015 | 52201009 | - | - | | | | |
| PFR0625R030A-ST | | | 0.030 | 52201010 | - | - | | | | |
| PFR0625R060A-ST | | | 0.060 | 52201011 | - | - | | | | |
| PFR0625R090A-ST | | | 0.090 | 52201012 | - | - | | | | |
| PFR0625R120A-ST | | | 0.120 | 52201013 | - | - | | | | |
| PFR0750R015A-ST | | | 0.015 | 52201014 | - | - | | | | |
| PFR0750R030A-ST | | | 0.030 | 52201015 | - | - | | | | |
| PFR0750R060A-ST | | | 0.060 | 52201016 | - | - | | | | |
| PFR0750R090A-ST | | | 0.090 | 52201017 | - | - | | | | |
| PFR0750R120A-ST | | | 0.120 | 52201018 | - | - | | | | |
| PFR1000R015A-ST | | | 0.015 | 52201019 | - | - | | | | |
| PFR1000R030A-ST | | | 0.030 | 52201020 | - | - | | | | |
| PFR1000R060A-ST | | | 0.060 | 52201021 | - | - | | | | |
| PFR1000R090A-ST | | | 0.090 | 52201022 | - | - | | | | |
| PFR1000R120A-ST | | | 0.120 | 52201023 | - | - | | | | |
| PFR1250R015A-ST | | | 0.015 | 52201024 | - | - | | | | |
| PFR1250R030A-ST | 0.030 | 52201025 | - | - | | | | | | |
| PFR1250R060A-ST | 0.060 | 52201026 | - | - | | | | | | |
| PFR1250R090A-ST | 0.090 | 52201027 | - | - | | | | | | |
| PFR1250R120A-ST | 0.120 | 52201028 | - | - | | | | | | |
| PFR0250R015A-SH | Strengthened Edge | 2 | 0.250 | 0.015 | 0.078 | 2 | 5 | - | 52201079 | - |
| PFR0250R030A-SH | | | | 0.030 | | | | - | 52201080 | - |
| PFR0250R060A-SH | | | | 0.060 | | | | - | 52201081 | - |
| PFR0375R015A-SH | | | | 0.015 | | | | - | 52201050 | - |
| PFR0375R030A-SH | | | 0.030 | 0.130 | 2.6 | 8.5 | - | 52201051 | - | |
| PFR0375R060A-SH | | | 0.060 | | | | - | 52201052 | - | |
| PFR0375R090A-SH | | | 0.090 | | | | - | 52201053 | - | |
| PFR0500R015A-SH | | | 0.015 | | | | - | 52201054 | - | |
| PFR0500R030A-SH | | | 0.030 | 0.157 | 3 | 10 | - | 52201055 | - | |
| PFR0500R060A-SH | | | 0.060 | | | | - | 52201056 | - | |
| PFR0500R090A-SH | | | 0.090 | | | | - | 52201057 | - | |
| PFR0500R120A-SH | | | 0.120 | | | | - | 52201058 | - | |

Packed: 1 pc.

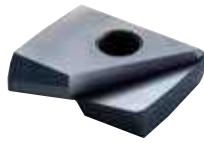
continued on next page  **PXI**

List 78PFR (Continued)

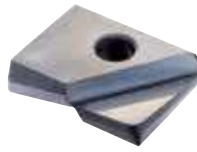
PFR Inserts (Inch)



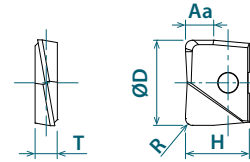
Multi-Purpose



Strengthened Edge



Diamond Coated



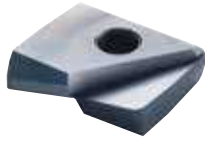
| Designation | Specification | No. of Cutting Edges | Insert Size | | | | | EDP Number | | | |
|-----------------|-------------------|----------------------|-------------|--------|--------|------|------|------------|----------|----------|---|
| | | | D | R | Aa | T | H | XP3225 | XP3310 | XC4505 | |
| | | | (inch) | (inch) | (inch) | (mm) | (mm) | | | | |
| PFR0625R015A-SH | Strengthened Edge | 2 | 0.625 | 0.015 | 0.208 | 4 | 12 | - | 52201059 | - | |
| PFR0625R030A-SH | | | | 0.030 | | | | - | 52201060 | - | |
| PFR0625R060A-SH | | | | 0.060 | | | | - | 52201061 | - | |
| PFR0625R090A-SH | | | | 0.090 | | | | - | 52201062 | - | |
| PFR0625R120A-SH | | | | 0.120 | | | | - | 52201063 | - | |
| PFR0750R015A-SH | | | 0.750 | 0.015 | 0.264 | 5 | 15 | - | 52201064 | - | |
| PFR0750R030A-SH | | | | 0.030 | | | | - | 52201065 | - | |
| PFR0750R060A-SH | | | | 0.060 | | | | - | 52201066 | - | |
| PFR0750R090A-SH | | | | 0.090 | | | | - | 52201067 | - | |
| PFR0750R120A-SH | | | | 0.120 | | | | - | 52201068 | - | |
| PFR1000R015A-SH | | | 1.000 | 0.015 | 0.327 | 6 | 18.5 | - | 52201069 | - | |
| PFR1000R030A-SH | | | | 0.030 | | | | - | 52201070 | - | |
| PFR1000R060A-SH | | | | 0.060 | | | | - | 52201071 | - | |
| PFR1000R090A-SH | | | | 0.090 | | | | - | 52201072 | - | |
| PFR1000R120A-SH | | | | 0.120 | | | | - | 52201073 | - | |
| PFR1250R015A-SH | | | 1.250 | 0.015 | 0.405 | 7 | 23.5 | - | 52201074 | - | |
| PFR1250R030A-SH | | | | 0.030 | | | | - | 52201075 | - | |
| PFR1250R060A-SH | | | | 0.060 | | | | - | 52201076 | - | |
| PFR1250R090A-SH | | | | 0.090 | | | | - | 52201077 | - | |
| PFR1250R120A-SH | | | | 0.120 | | | | - | 52201078 | - | |
| PFR0250R015A-D | Diamond Coated | 2 | 0.250 | 0.015 | 0.078 | 2 | 5 | - | - | 52201114 | |
| PFR0250R030A-D | | | | 0.030 | | | | - | 52201115 | - | |
| PFR0250R060A-D | | | | 0.060 | | | | - | 52201116 | - | |
| PFR0375R015A-D | | | 0.375 | 0.015 | 0.130 | 2.6 | 8.5 | - | - | 52201100 | - |
| PFR0375R030A-D | | | | 0.030 | | | | - | 52201101 | - | |
| PFR0375R060A-D | | | | 0.060 | | | | - | 52201102 | - | |
| PFR0500R015A-D | | | 0.500 | 0.015 | 0.157 | 3 | 10 | - | - | 52201103 | - |
| PFR0500R030A-D | | | | 0.030 | | | | - | 52201104 | - | |
| PFR0500R060A-D | | | | 0.060 | | | | - | 52201105 | - | |
| PFR0625R015A-D | | | 0.625 | 0.015 | 0.208 | 4 | 12 | - | - | 52201106 | - |
| PFR0625R030A-D | | | | 0.030 | | | | - | 52201107 | - | |
| PFR0625R060A-D | | | | 0.060 | | | | - | 52201108 | - | |
| PFR0750R015A-D | | | 0.750 | 0.015 | 0.264 | 5 | 15 | - | - | 52201109 | - |
| PFR0750R030A-D | | | | 0.030 | | | | - | 52201110 | - | |
| PFR0750R060A-D | | | | 0.060 | | | | - | 52201111 | - | |
| PFR1000R060A-D | | | 1.000 | 0.060 | 0.327 | 6 | 18.5 | - | - | 52201112 | - |
| PFR1250R060A-D | | | 1.250 | 0.060 | 0.405 | 7 | 23.5 | - | - | 52201113 | - |

Packed: 1 pc.

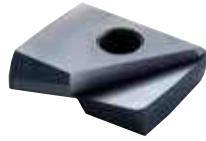


List 78PFR (Continued)

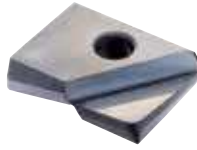
PFR Inserts (Metric)



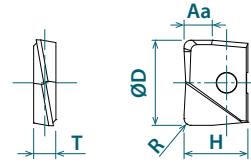
Multi-Purpose



Strengthened Edge



Diamond Coated



| Designation | Specification | No. of Cutting Edges | Insert Size | | | | | EDP Number | | |
|--------------|---------------|----------------------|-------------|------|------|---------|------|------------|--------|--------|
| | | | D | R | Aa | T | H | XP3225 | XP3310 | XC4505 |
| | | | (mm) | (mm) | (mm) | (mm) | (mm) | | | |
| PFR060R03-ST | Multi-Purpose | 2 | 6 | 0.3 | 2 | 2 | 5 | 7820350 | - | - |
| PFR060R05-ST | | | | 0.5 | | | | 7820351 | - | - |
| PFR060R10-ST | | | 1 | 7 | 5.5 | 7820352 | - | - | | |
| PFR070R03-ST | | | 0.3 | | | 7820353 | - | - | | |
| PFR070R05-ST | | | 0.5 | | | 7820354 | - | - | | |
| PFR070R10-ST | | | 1 | 8 | 7 | 7820355 | - | - | | |
| PFR080R03-ST | | | 0.3 | | | 7820200 | - | - | | |
| PFR080R05-ST | | | 0.5 | | | 7820201 | - | - | | |
| PFR080R10-ST | | | 1 | 10 | 8.5 | 7820202 | - | - | | |
| PFR080R20-ST | | | 2 | | | 7820203 | - | - | | |
| PFR100R03-ST | | | 0.3 | | | 7820204 | - | - | | |
| PFR100R05-ST | | | 0.5 | 11 | 8.5 | 7820205 | - | - | | |
| PFR100R10-ST | | | 1 | | | 7820206 | - | - | | |
| PFR100R20-ST | | | 2 | | | 7820207 | - | - | | |
| PFR110R03-ST | | | 0.3 | 12 | 10 | 7820208 | - | - | | |
| PFR110R05-ST | | | 0.5 | | | 7820209 | - | - | | |
| PFR110R10-ST | | | 1 | | | 7820210 | - | - | | |
| PFR110R20-ST | | | 2 | 13 | 10 | 7820211 | - | - | | |
| PFR120R03-ST | | | 0.3 | | | 7820212 | - | - | | |
| PFR120R05-ST | | | 0.5 | | | 7820213 | - | - | | |
| PFR120R10-ST | | | 1 | 16 | 12 | 7820214 | - | - | | |
| PFR120R20-ST | | | 2 | | | 7820215 | - | - | | |
| PFR120R30-ST | | | 3 | | | 7820216 | - | - | | |
| PFR130R03-ST | | | 0.3 | 17 | 12 | 7820217 | - | - | | |
| PFR130R05-ST | | | 0.5 | | | 7820218 | - | - | | |
| PFR130R10-ST | | | 1 | | | 7820219 | - | - | | |
| PFR130R20-ST | | | 2 | 20 | 15 | 7820220 | - | - | | |
| PFR160R03-ST | | | 0.3 | | | 7820221 | - | - | | |
| PFR160R05-ST | | | 0.5 | | | 7820222 | - | - | | |
| PFR160R10-ST | | | 1 | 21 | 15 | 7820223 | - | - | | |
| PFR160R20-ST | | | 2 | | | 7820368 | - | - | | |
| PFR160R30-ST | | | 3 | | | 7820369 | - | - | | |
| PFR170R03-ST | | | 0.3 | 21 | 15 | 7820370 | - | - | | |
| PFR170R05-ST | | | 0.5 | | | 7820371 | - | - | | |
| PFR170R10-ST | | | 1 | | | | | | | |
| PFR170R20-ST | | | 2 | | | | | | | |
| PFR200R03-ST | | | 0.3 | | | | | | | |
| PFR200R05-ST | | | 0.5 | | | | | | | |
| PFR200R10-ST | | | 1 | | | | | | | |
| PFR200R20-ST | | | 2 | | | | | | | |
| PFR200R30-ST | | | 3 | | | | | | | |
| PFR210R03-ST | | | 0.3 | | | | | | | |
| PFR210R05-ST | | | 0.5 | | | | | | | |
| PFR210R10-ST | | | 1 | | | | | | | |
| PFR210R20-ST | | | 2 | | | | | | | |

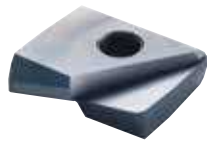
Packed: 1 pc.

continued on next page  **PXI**

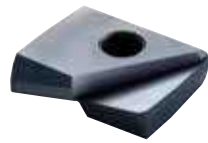


List 78PFR (Continued)

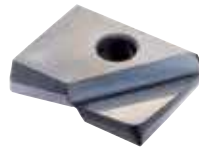
PFR Inserts (Metric)



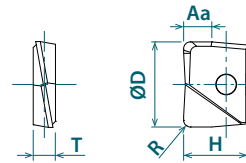
Multi-Purpose



Strengthened Edge



Diamond Coated



| Designation | Specification | No. of Cutting Edges | Insert Size | | | | | EDP Number | | |
|--------------|---------------|----------------------|-------------------|---------|---------|---------|--------|------------|---------|--------|
| | | | D (mm) | R (mm) | Aa (mm) | T (mm) | H (mm) | XP3225 | XP3310 | XC4505 |
| PFR250R03-ST | Multi-Purpose | 2 | 25 | 0.3 | 8.3 | 6 | 18.5 | 7820223 | - | - |
| PFR250R05-ST | | | | 0.5 | | | | 7820224 | - | - |
| PFR250R10-ST | | | | 1 | | | | 7820225 | - | - |
| PFR250R20-ST | | | | 2 | | | | 7820226 | - | - |
| PFR250R30-ST | | | | 3 | | | | 7820227 | - | - |
| PFR260R03-ST | | | 26 | 0.3 | 8.3 | 6 | 18.5 | 7820372 | - | - |
| PFR260R05-ST | | | | 0.5 | | | | 7820373 | - | - |
| PFR260R10-ST | | | | 1 | | | | 7820374 | - | - |
| PFR260R20-ST | | | | 2 | | | | 7820375 | - | - |
| PFR300R03-ST | | | | 0.3 | | | | 10 | 7 | 22.5 |
| PFR300R05-ST | | | 0.5 | 7820229 | - | - | | | | |
| PFR300R10-ST | | | 1 | 7820230 | - | - | | | | |
| PFR300R20-ST | | | 2 | 7820231 | - | - | | | | |
| PFR300R30-ST | | | 3 | 7820232 | - | - | | | | |
| PFR320R03-ST | | | 32 | 0.3 | 10.3 | 7 | 23.5 | 7820233 | - | - |
| PFR320R05-ST | | | | 0.5 | | | | 7820234 | - | - |
| PFR320R10-ST | | | | 1 | | | | 7820235 | - | - |
| PFR320R20-ST | | | | 2 | | | | 7820236 | - | - |
| PFR320R30-ST | | | | 3 | | | | 7820237 | - | - |
| PFR060R03-SH | | | Strengthened Edge | 2 | 6 | 0.3 | 2 | 2 | 5 | - |
| PFR060R05-SH | 0.5 | - | | | | 7820401 | | | | - |
| PFR060R10-SH | 1 | - | | | | 7820402 | | | | - |
| PFR070R03-SH | 7 | 0.3 | | | 2.7 | 2.4 | 7 | - | 7820403 | - |
| PFR070R05-SH | | 0.5 | | | | | | - | 7820404 | - |
| PFR070R10-SH | | 1 | | | | | | - | 7820405 | - |
| PFR080R03-SH | 8 | 0.3 | | | 3.3 | 2.6 | 8.5 | - | 7820250 | - |
| PFR080R05-SH | | 0.5 | | | | | | - | 7820251 | - |
| PFR080R10-SH | | 1 | | | | | | - | 7820252 | - |
| PFR080R20-SH | 2 | - | | | 7820253 | - | | | | |
| PFR100R03-SH | 10 | 0.3 | | | 4 | 3 | 10 | - | 7820254 | - |
| PFR100R05-SH | | 0.5 | | | | | | - | 7820255 | - |
| PFR100R10-SH | | 1 | | | | | | - | 7820256 | - |
| PFR100R20-SH | 2 | - | | | 7820257 | - | | | | |
| PFR110R03-SH | 11 | 0.3 | | | 4 | 3 | 10 | - | 7820406 | - |
| PFR110R05-SH | | 0.5 | | | | | | - | 7820407 | - |
| PFR110R10-SH | | 1 | | | | | | - | 7820408 | - |
| PFR110R20-SH | 2 | - | | | 7820409 | - | | | | |
| PFR120R03-SH | 12 | 0.3 | | | 4 | 3 | 10 | - | 7820258 | - |
| PFR120R05-SH | | 0.5 | | | | | | - | 7820259 | - |
| PFR120R10-SH | | 1 | | | | | | - | 7820260 | - |
| PFR120R20-SH | 2 | - | | | 7820261 | - | | | | |
| PFR120R30-SH | 3 | - | | | 7820262 | - | | | | |
| PFR130R03-SH | 13 | 0.3 | | | 4 | 3 | 10 | - | 7820410 | - |
| PFR130R05-SH | | 0.5 | | | | | | - | 7820411 | - |
| PFR130R10-SH | | 1 | | | | | | - | 7820412 | - |
| PFR130R20-SH | 2 | - | | | 7820413 | - | | | | |

Packed: 1 pc.



List 78PFR (Continued)

PFR Inserts (Metric)

| Designation | Specification | No. of Cutting Edges | Insert Size | | | | | EDP Number | | |
|--------------|-------------------|----------------------|-------------|---------|---------|---------|---------|------------|---------|---------|
| | | | D (mm) | R (mm) | Aa (mm) | T (mm) | H (mm) | XP3225 | XP3310 | XC4505 |
| PFR160R03-SH | Strengthened Edge | 2 | 16 | 0.3 | 5.3 | 4 | 12 | - | 7820263 | - |
| PFR160R05-SH | | | | 0.5 | | | | - | 7820264 | - |
| PFR160R10-SH | | | | 1 | | | | - | 7820265 | - |
| PFR160R20-SH | | | | 2 | | | | - | 7820266 | - |
| PFR160R30-SH | | | | 3 | | | | - | 7820267 | - |
| PFR170R03-SH | | | | 17 | | | | 0.3 | - | 7820414 |
| PFR170R05-SH | | | 0.5 | | - | 7820415 | - | | | |
| PFR170R10-SH | | | 1 | | - | 7820416 | - | | | |
| PFR170R20-SH | | | 2 | | - | 7820417 | - | | | |
| PFR200R03-SH | | | 20 | | 0.3 | - | 7820268 | - | | |
| PFR200R05-SH | | | | | 0.5 | - | 7820269 | - | | |
| PFR200R10-SH | | | | 1 | - | 7820270 | - | | | |
| PFR200R20-SH | | | | 2 | - | 7820271 | - | | | |
| PFR200R30-SH | | | | 3 | - | 7820272 | - | | | |
| PFR210R03-SH | | | | 21 | 0.3 | - | 7820418 | - | | |
| PFR210R05-SH | | | 0.5 | | - | 7820419 | - | | | |
| PFR210R10-SH | | | 1 | | - | 7820420 | - | | | |
| PFR210R20-SH | | | 2 | | - | 7820421 | - | | | |
| PFR250R03-SH | | | 25 | | 0.3 | - | 7820273 | - | | |
| PFR250R05-SH | | | | | 0.5 | - | 7820274 | - | | |
| PFR250R10-SH | | | | 1 | - | 7820275 | - | | | |
| PFR250R20-SH | | | | 2 | - | 7820276 | - | | | |
| PFR250R30-SH | | | | 3 | - | 7820277 | - | | | |
| PFR260R03-SH | | | | 26 | 0.3 | - | 7820422 | - | | |
| PFR260R05-SH | | | 0.5 | | - | 7820423 | - | | | |
| PFR260R10-SH | | | 1 | | - | 7820424 | - | | | |
| PFR260R20-SH | | | 2 | | - | 7820425 | - | | | |
| PFR300R03-SH | | | 30 | | 0.3 | - | 7820278 | - | | |
| PFR300R05-SH | | | | | 0.5 | - | 7820279 | - | | |
| PFR300R10-SH | | | | 1 | 10 | 7 | 22.5 | - | 7820280 | - |
| PFR300R20-SH | | | | 2 | - | - | - | - | 7820281 | - |
| PFR300R30-SH | | | | 3 | - | - | - | - | 7820282 | - |
| PFR320R03-SH | 32 | 0.3 | | - | 7820283 | - | | | | |
| PFR320R05-SH | | 0.5 | - | 7820284 | - | | | | | |
| PFR320R10-SH | | 1 | 10.3 | 7 | 23.5 | - | 7820285 | - | | |
| PFR320R20-SH | | 2 | - | - | - | - | 7820286 | - | | |
| PFR320R30-SH | | 3 | - | - | - | - | 7820287 | - | | |
| PFR060R03-D | | Diamond Coated | 2 | 6 | 0.3 | 2 | 2 | 5 | - | - |
| PFR060R05-D | 0.5 | | | | - | | | | - | 7820451 |
| PFR060R10-D | 1 | | | | - | | | | - | 7820452 |
| PFR080R03-D | 0.3 | | | | - | | | | - | 7820300 |
| PFR080R05-D | 0.5 | | | 2.7 | 2.4 | 7 | - | - | 7820301 | |
| PFR080R10-D | 1 | | | - | - | - | - | - | 7820302 | |
| PFR100R03-D | 10 | | | 0.3 | - | - | - | - | 7820303 | |
| PFR100R05-D | | | | 0.5 | 3.3 | 2.6 | 8.5 | - | - | 7820304 |
| PFR100R10-D | | | | 1 | - | - | - | - | - | 7820305 |
| PFR120R03-D | | | | 0.3 | - | - | - | - | - | 7820306 |
| PFR120R05-D | 0.5 | | | 4 | 3 | 10 | - | - | 7820307 | |
| PFR120R10-D | 1 | | | - | - | - | - | - | 7820308 | |
| PFR160R03-D | 16 | | | 0.3 | - | - | - | - | 7820309 | |
| PFR160R05-D | | | | 0.5 | 5.3 | 4 | 12 | - | - | 7820310 |
| PFR160R10-D | | | | 1 | - | - | - | - | - | 7820311 |
| PFR200R03-D | | | | 0.3 | - | - | - | - | - | 7820312 |
| PFR200R05-D | 20 | | | 0.5 | 6.7 | 5 | 15 | - | - | 7820313 |
| PFR200R10-D | | | | 1 | - | - | - | - | - | 7820314 |


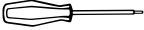
Packed: 1 pc.





List 7808H

PFR Accessories

| Appearance | EDP No. | Designation | Applicable Insert | | Recommended Tightening Torque |
|---|---------|---------------------|-------------------|-------|-------------------------------|
| | | | (inch) | (mm) | |
|  Clamping Screw | 7808124 | FS20652RB (Torx 6) | 0.250 | 6-7 | 0.8 Nm |
| | 7808123 | FS25669RB (Torx 7) | - | 8 | 1.0 Nm |
| | 7808117 | FS30686RB (Torx 8) | 0.375 | 10 | 1.2 Nm |
| | 7808118 | FS35610RB (Torx 10) | 0.500 | 12 | 2.0 Nm |
| | 7808119 | FS40613RB (Torx 15) | 0.625 | 16 | 3.0 Nm |
| | 7808120 | FS50615RB (Torx 20) | 0.750 | 20 | 5.0 Nm |
| | 7808121 | FS60620RB (Torx 20) | 1.000 | 25 | 5.0 Nm |
| | 7808122 | FS80624RB (Torx 30) | 1.250 | 30-32 | 6.0 Nm |
|  Wrench | 7808203 | T6-D (Torx 6) | 0.250 | 6-7 | |
| | 7808204 | T7-D (Torx 7) | - | 8 | |
| | 7808205 | T8-D (Torx 8) | 0.375 | 10 | |
| | 7808207 | T10-D (Torx 10) | 0.500 | 12 | |
| | 7808208 | T15-D (Torx 15) | 0.625 | 16 | |
| | 7808209 | T20-D (Torx 20) | 0.750-1.000 | 20-25 | |
| | 7808212 | T30-T (Torx 30) | 1.250 | 30-32 | |

Packed: Clamping Screw = 1 pc.; Wrench = 1 pc.
Note: Wrench sold separately.



Cutting Conditions (Standard Milling)

| Work Material | Tensile Strength - Hardness | Milling Speed Vc (SFM) | | | Depth of Cut Aa (in) | Feed Per Tooth fz (in/t) | | | |
|--|-----------------------------|------------------------|---------|---------|----------------------|--------------------------|-----------------------|------------------------|------------------------|
| | | L/D = 2.5 | L/D = 5 | L/D = 8 | | Ø0.236-0.275 [6-7mm] | Ø0.312-0.375 [8-10mm] | Ø0.500-0.625 [12-16mm] | Ø0.750-1.250 [20-32mm] |
| P Mild Steels, Carbon Steels (1010, 1018) Carbon Steels, Alloy Steels (1050, 4140) Die Steels (H13, D2) | ~180 HB | 655 (490-820) | 80% | 60% | 0.05Dc | 0.0047 | 0.0079 | 0.0087 | 0.0098 |
| | ~280 HB | 590 (495-820) | | | 0.05Dc | 0.0059 | 0.0071 | 0.0087 | 0.0098 |
| | ~280 HB | 495 (395-655) | | | 0.05Dc | 0.0040 | 0.0059 | 0.0071 | 0.0079 |
| M Stainless Steels (304SS, 420SS) | ~250 HB | 495 (330-655) | | | 0.03Dc | 0.0031 | 0.0047 | 0.0059 | 0.0071 |
| K Cast Iron (FC250) Ductile Cast Iron (60-40-18) | ~350 N/mm ² | 655 (495-820) | | | 0.05Dc | 0.0059 | 0.0079 | 0.0098 | 0.0118 |
| | ~600 N/mm ² | 495 (330-655) | | | 0.05Dc | 0.0047 | 0.0059 | 0.0079 | 0.0098 |
| N Aluminum Alloys (6061, 7075) Graphite CFRP | ~13% Si | 985 (655-1310) | | | 0.05Dc | 0.0079 | 0.0098 | 0.0118 | 0.0138 |
| | - | 825 (500-1150) | | | 0.10Dc | 0.0098 | 0.0157 | 0.0197 | 0.0197 |
| | - | 650 (500-825) | | | 0.50Dc | 0.0020 | 0.0040 | 0.0059 | 0.0079 |
| S Heat Resistant Alloys (Inconel 718) Titanium Alloy (Ti-6Al-4V) | - | 100 (65-130) | | | 0.02Dc | 0.0016 | 0.0020 | 0.0031 | 0.0047 |
| | - | 165 (130-195) | | | 0.02Dc | 0.0020 | 0.0031 | 0.0040 | 0.0059 |
| H Pre-hardened Steel (P20, Stavax) Die Cast Steels (A2, S7) Hardened Steels (D2) | 40 - 43 HRC | 395 (330-495) | | | 0.03Dc | 0.0031 | 0.0040 | 0.0047 | 0.0071 |
| | 43 - 48 HRC | 260 (165-330) | 0.025Dc | 0.0020 | 0.0031 | 0.0040 | 0.0059 | | |
| | 50 - 55 HRC | 195 (130-260) | 0.02Dc | 0.0016 | 0.0020 | 0.0031 | 0.0040 | | |

Recommended Materials by Application

| Insert Grade | P | M | K | N | S | H |
|--------------|-------------------------------------|-------------------------------------|-------------------------------------|--|-------------------------------------|-------------------------------------|
| XP3225 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> * | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| XP3310 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> |
| XP4505 | | | | <input checked="" type="checkbox"/> ** | | |

XP3225: recommended when L/D ≥ 5.

XP3310: recommended for interrupted cutting.

*: Best recommended for aluminum applications.

** : Best recommended for graphite & CFRP applications.

good best



Cutting Conditions (High Speed Light Milling)

| Work Material | Tensile Strength - Hardness | Milling Speed Vc (SFM) | | | Depth of Cut Aa (in) | Feed Per Tooth fz (in/t) | | | | |
|---------------|--|------------------------|---------------------|--------------------|----------------------|--------------------------|------------------------|------------------------|------------------------|--------|
| | | Steel Shank | Carbide Shank Short | Carbide Shank Long | | Ø0.236-0.312 [6-8mm] | Ø0.375-0.500 [10-12mm] | Ø0.625-0.750 [16-20mm] | Ø1.000-1.250 [25-32mm] | |
| P | Mild Steels, Carbon Steels (1010, 1018) | ~180 HB | 1475 | 1575 | 1180 | 0.02Dc | 0.0040 | 0.0047 | 0.0055 | 0.0071 |
| | Carbon Steels, Alloy Steels (1050, 4140) | ~280 HB | 1475 | 1575 | 1180 | 0.02Dc | 0.0027 | 0.0040 | 0.0047 | 0.0055 |
| | Die Steels (H13, D2) | ~280 HB | 1230 | 1310 | 985 | 0.02Dc | 0.0027 | 0.0040 | 0.0047 | 0.0055 |
| M | Stainless Steels (304SS, 420SS) | ~250 HB | 1230 | 1310 | 985 | 0.02Dc | 0.0027 | 0.0047 | 0.0055 | 0.0067 |
| K | Cast Iron (FC250) | ~350 N/mm ² | 1970 | 2100 | 1575 | 0.02Dc | 0.0047 | 0.0055 | 0.0071 | 0.0087 |
| | Ductile Cast Iron (60-40-18) | ~600 N/mm ² | 1475 | 1575 | 1180 | 0.02Dc | 0.0040 | 0.0047 | 0.0055 | 0.0071 |
| N | Aluminum Alloys (6061, 7075) | ~13% Si | 2460 | 2625 | 1970 | 0.03Dc | 0.0047 | 0.0055 | 0.0071 | 0.0087 |
| S | Heat Resistant Alloys (Inconel 718) | - | 230 | 260 | 195 | 0.015Dc | 0.0016 | 0.0020 | 0.0024 | 0.0051 |
| | Titanium Alloy (Ti-6Al-4V) | - | 395 | 470 | 360 | 0.02Dc | 0.0024 | 0.0031 | 0.0043 | 0.0040 |
| H | Pre-hardened Steel (P20, Stavax) | 40 - 43 HRC | 985 | 1050 | 790 | 0.015Dc | 0.0024 | 0.0027 | 0.0031 | 0.0040 |
| | Die Cast Steels (A2, S7) | 43 - 48 HRC | 885 | 940 | 720 | 0.015Dc | 0.0020 | 0.0024 | 0.0027 | 0.0027 |
| | Hardened Steels (D2) | 50 - 55 HRC | 720 | 790 | 590 | 0.01Dc | 0.0020 | 0.0024 | 0.0027 | 0.0027 |

Recommended Materials by Application

| Insert Grade | P | M | K | N | S | H |
|--------------|---|---|---|-----|---|---|
| XP3225 | ☐ | ☐ | ○ | ☐* | ☐ | ○ |
| XP3310 | ○ | ○ | ☐ | | | ☐ |
| XP4505 | | | | ☐** | | |

XP3225: recommended when L/D ≥ 5.

XP3310: recommended for interrupted cutting.

*: Best recommended for aluminum applications.

** : Best recommended for graphite & CFRP applications.

○ good ☐ best



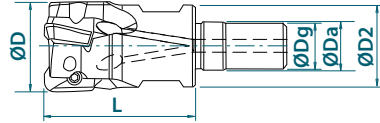


List 52601

PSE ASF (Inch)



Recommended Materials: p1387
 Accessories & Inserts: p1385-1386
 Maximum Ramping Angle: p1388
 SF Arbors: p1461



| EDP No. | Body Type | Designation | Tool Dia. (inch) | No. of Teeth | Pilot Dia. (inch) | Thread Dia. (mm) | Overall Length (inch) | Flange Dia. (inch) | Wrench Size | Applicable Insert |
|----------|------------------|------------------|------------------|--------------|-------------------|------------------|-----------------------|--------------------|-------------|-------------------|
| | | | D | | Da | Dg | L | D2 | | |
| 52601000 | Screw Fit Head | PSE11R063ASF8-2 | 0.625 | 2 | 0.335 | M8 | 1.063 | 0.571 | 10 | ZD_T11... |
| 52601001 | | PSE11R075ASF10-3 | 0.750 | 3 | 0.413 | M10 | 1.299 | 0.709 | 14 | |
| 52601002 | | PSE11R100ASF12-3 | 1.000 | 3 | 0.492 | M12 | 1.378 | 0.905 | 17 | |
| 52601003 | | PSE11R125ASF16-3 | 1.250 | 3 | 0.669 | M16 | 1.575 | 1.102 | 22 | ZDKT15... |
| 52601004 | | PSE15R100ASF12-2 | 1.000 | 2 | 0.492 | M12 | 1.378 | 0.905 | 17 | |
| 52601005 | | PSE15R125ASF16-3 | 1.250 | 3 | 0.669 | M16 | 1.575 | 1.102 | 22 | |
| 52601006 | PSE15R150ASF16-4 | 1.500 | 4 | 0.669 | M16 | 1.575 | 1.102 | 22 | | |

Packed: 1 pc.

Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected. The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).



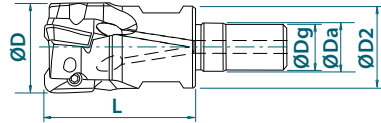


List 78016

PSE SF (Metric)



Recommended Materials: p1387
Accessories & Inserts: p1385-1386
Maximum Ramping Angle: p1388
SF Arbors: p1462-1464



| EDP No. | Body Type | Designation | Tool Dia. (mm) | No. of Teeth | Pilot Dia. (mm) | Thread Dia. (mm) | Overall Length (mm) | Flange Dia. (mm) | Wrench Size | Applicable Insert |
|---------|-----------------|-----------------|----------------|--------------|-----------------|------------------|---------------------|------------------|-------------|-------------------|
| | | | D | | Da | Dg | L | D2 | | |
| 7801600 | Screw Fit Head | PSE11R016SF8-2 | 16 | 2 | 8.5 | M8 | 27 | 14.5 | 10 | ZD_T11... |
| 7801612 | | PSE11R017SF8-2 | 17 | 2 | 8.5 | M8 | 27 | 14.5 | 10 | |
| 7801613 | | PSE11R018SF8-2 | 18 | 2 | 8.5 | M8 | 27 | 14.5 | 10 | |
| 7801601 | | PSE11R020SF10-3 | 20 | 3 | 10.5 | M10 | 33 | 18 | 14 | |
| 7801614 | | PSE11R021SF10-3 | 21 | 3 | 10.5 | M10 | 33 | 18 | 14 | |
| 7801615 | | PSE11R022SF10-3 | 22 | 3 | 10.5 | M10 | 33 | 18 | 14 | |
| 7801602 | | PSE11R025SF12-4 | 25 | 4 | 12.5 | M12 | 35 | 23 | 17 | |
| 7801616 | | PSE11R026SF12-3 | 26 | 3 | 12.5 | M12 | 35 | 23 | 17 | |
| 7801603 | | PSE11R028SF12-4 | 28 | 4 | 12.5 | M12 | 35 | 23 | 17 | |
| 7801604 | | PSE11R032SF16-5 | 32 | 5 | 17.0 | M16 | 40 | 28 | 22 | |
| 7801617 | | PSE11R033SF16-3 | 33 | 3 | 17.0 | M16 | 40 | 28 | 22 | |
| 7801605 | | PSE11R035SF16-5 | 35 | 5 | 17.0 | M16 | 40 | 28 | 22 | |
| 7801606 | | PSE11R040SF16-6 | 40 | 6 | 17.0 | M16 | 40 | 28 | 22 | |
| 7801607 | | PSE15R025SF12-2 | 25 | 2 | 12.5 | M12 | 35 | 23 | 17 | |
| 7801618 | | PSE15R026SF12-2 | 26 | 2 | 12.5 | M12 | 35 | 23 | 17 | |
| 7801608 | | PSE15R028SF12-2 | 28 | 2 | 12.5 | M12 | 35 | 23 | 17 | |
| 7801609 | | PSE15R032SF16-3 | 32 | 3 | 17 | M16 | 40 | 28 | 22 | |
| 7801619 | | PSE15R033SF16-3 | 33 | 3 | 17 | M16 | 40 | 28 | 22 | |
| 7801610 | PSE15R035SF16-3 | 35 | 3 | 17 | M16 | 40 | 28 | 22 | | |
| 7801611 | PSE15R040SF16-4 | 40 | 4 | 17 | M16 | 40 | 28 | 22 | | |
| | | | | | | | | | | ZDKT15... |

Packed: 1 pc.

Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected. The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).

This item is stocked overseas. Please contact OSG for availability and delivery.



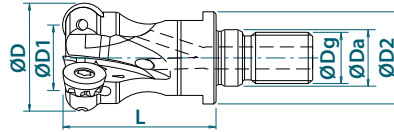


List 52602

PRC ASF (Inch)



Recommended Materials: p1414
Accessories & Inserts: p1413
Maximum Ramping Angle: p1415
SF Arbors: p1461



| EDP No. | Body Type | Designation | Tool Dia. (inch) | Effective Dia. (inch) | No. of Teeth | Pilot Dia. (inch) | Thread Dia. (mm) | Overall Length (inch) | Flange Dia. (inch) | Wrench Size | Applicable Insert |
|----------|----------------|------------------|------------------|-----------------------|--------------|-------------------|------------------|-----------------------|--------------------|-------------|-------------------|
| | | | D | D1 | | Da | Dg | L | D2 | | |
| 52602000 | Screw Fit Head | PRC10R100ASF12-3 | 1.000 | 0.606 | 3 | 0.492 | M12 | 1.378 | 0.905 | 17 | RPH_10... |
| 52602001 | | PRC10R125ASF16-4 | 1.250 | 0.856 | 4 | 0.669 | M16 | 1.575 | 1.102 | 22 | RPH_12... |
| 52602002 | | PRC12R125ASF16-2 | 1.250 | 0.778 | 2 | 0.669 | M16 | 1.575 | 1.102 | 22 | |
| 52602003 | | PRC12R150ASF16-3 | 1.500 | 1.028 | 3 | 0.669 | M16 | 1.575 | 1.102 | 22 | |
| 52602004 | | PRC16R150ASF16-2 | 1.500 | 0.870 | 2 | 0.669 | M16 | 1.575 | 1.102 | 22 | RPH_16... |

Packed: 1 pc.

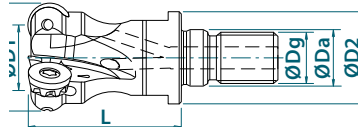


List 78017

PRC SF (Metric)



Recommended Materials: p1414
Accessories & Inserts: p1413
Maximum Ramping Angle: p1415
SF Arbors: p1462-1464



| EDP No. | Body Type | Designation | Tool Dia. (mm) | Effective Dia. (mm) | No. of Teeth | Pilot Dia. (mm) | Thread Dia. (mm) | Overall Length (mm) | Flange Dia. (mm) | Wrench Size | Applicable Insert |
|---------|----------------|-----------------|----------------|---------------------|--------------|-----------------|------------------|---------------------|------------------|-------------|-------------------|
| | | | D | D1 | | Da | Dg | L | D2 | | |
| 7801700 | Screw Fit Head | PRC10R020SF10-2 | 20 | 10 | 2 | 10.5 | M10 | 33 | 18 | 14 | RPH_10... |
| 7801701 | | PRC10R025SF12-3 | 25 | 15 | 3 | 12.5 | M12 | 35 | 23 | 17 | |
| 7801702 | | PRC10R030SF16-3 | 30 | 20 | 3 | 17 | M16 | 40 | 28 | 22 | |
| 7801703 | | PRC10R032SF16-4 | 32 | 22 | 4 | 17 | M16 | 40 | 28 | 22 | |
| 7801704 | | PRC10R040SF16-4 | 40 | 30 | 4 | 17 | M16 | 40 | 28 | 22 | RPH_12... |
| 7801705 | | PRC12R030SF16-2 | 30 | 18 | 2 | 17 | M16 | 40 | 28 | 22 | |
| 7801706 | | PRC12R032SF16-3 | 32 | 20 | 3 | 17 | M16 | 40 | 28 | 22 | |
| 7801707 | | PRC12R040SF16-3 | 40 | 28 | 3 | 17 | M16 | 40 | 28 | 22 | |

Packed: 1 pc.

This item is stocked overseas. Please contact OSG for availability and delivery.





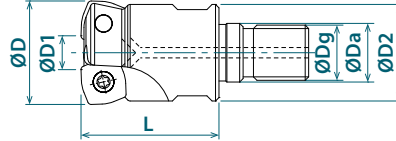
List 52603

PHC ASF (Inch)



SPEED FEED
P1425

Recommended Materials: p1425
Accessories & Inserts: p1424
Maximum Ramping Angle: p1426
SF Arbors: p1461



| EDP No. | Body Type | Designation | Tool Dia. (inch) | Effective Dia. (inch) | No. of Teeth | Pilot Dia. (inch) | Thread Dia. (mm) | Overall Length (inch) | Flange Dia. (inch) | Wrench Size | Applicable Insert |
|----------|----------------|------------------|------------------|-----------------------|--------------|-------------------|------------------|-----------------------|--------------------|-------------|-------------------|
| | | | D | D1 | | Da | Dg | L | D2 | | |
| 52603004 | Screw Fit Head | PHC07R063ASF8-2 | 0.625 | 0.286 | 2 | 0.334 | M8 | 1.063 | 0.571 | 10 | SPMT07... |
| 52603005 | | PHC07R075ASF10-3 | 0.750 | 0.411 | 3 | 0.413 | M10 | 1.300 | 0.709 | 14 | |
| 52603006 | | PHC07R100ASF12-4 | 1.000 | 0.661 | 4 | 0.492 | M12 | 1.378 | 0.905 | 17 | |
| 52603007 | | PHC07R125ASF16-5 | 1.250 | 0.911 | 5 | 0.669 | M16 | 1.575 | 1.102 | 22 | SDMT09... |
| 52603000 | | PHC09R100ASF12-2 | 1.000 | 0.535 | 2 | 0.492 | M12 | 1.378 | 0.905 | 17 | |
| 52603001 | | PHC09R125ASF16-3 | 1.250 | 0.785 | 3 | 0.669 | M16 | 1.575 | 1.102 | 22 | |
| 52603002 | | PHC12R125ASF16-2 | 1.250 | 0.596 | 2 | 0.669 | M16 | 1.575 | 1.102 | 22 | SXMT12... |
| 52603003 | | PHC12R150ASF16-3 | 1.500 | 0.846 | 3 | 0.669 | M16 | 1.575 | 1.102 | 22 | |

Packed: 1 pc.





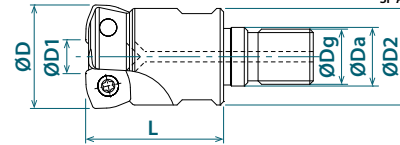
List 78015

PHC SF (Metric)



SPEED FEED
P1425

Recommended Materials: p1425
Accessories & Inserts: p1424
Maximum Ramping Angle: p1426
SF Arbors: p1462-1464



| EDP No. | Body Type | Designation | Tool Dia. (mm) | Effective Dia. (mm) | No. of Teeth | Pilot Dia. (mm) | Thread Dia. (mm) | Overall Length (mm) | Flange Dia. (mm) | Wrench Size | Applicable Insert | |
|---------|-----------------|-----------------|-----------------|---------------------|--------------|-----------------|------------------|---------------------|------------------|-------------|-------------------|-----------|
| | | | D | D1 | | Da | Dg | L | D2 | | | |
| 7801520 | Screw Fit Head | PHC07R016SF8-2 | 16 | 7.4 | 2 | 8.5 | M8 | 27 | 14.5 | 10 | SPMT07... | |
| 7801521 | | PHC07R017SF8-2 | 17 | 8.4 | 2 | 8.5 | M8 | 27 | 14.5 | 10 | | |
| 7801522 | | PHC07R018SF8-2 | 18 | 9.4 | 2 | 8.5 | M8 | 27 | 14.5 | 10 | | |
| 7801523 | | PHC07R020SF10-3 | 20 | 11.4 | 3 | 10.5 | M10 | 33 | 18 | 14 | | |
| 7801524 | | PHC07R021SF10-3 | 21 | 12.4 | 3 | 10.5 | M10 | 33 | 18 | 14 | | |
| 7801525 | | PHC07R022SF10-3 | 22 | 13.4 | 3 | 10.5 | M10 | 33 | 18 | 14 | | |
| 7801526 | | PHC07R025SF12-4 | 25 | 16.4 | 4 | 12.5 | M12 | 35 | 23 | 17 | | |
| 7801527 | | PHC07R026SF12-4 | 26 | 17.4 | 4 | 12.5 | M12 | 35 | 23 | 17 | | |
| 7801528 | | PHC07R028SF12-4 | 28 | 19.4 | 4 | 12.5 | M12 | 35 | 23 | 17 | | |
| 7801529 | | PHC07R030SF16-4 | 30 | 21.4 | 4 | 17 | M16 | 40 | 28 | 22 | | |
| 7801530 | | PHC07R032SF16-5 | 32 | 23.4 | 5 | 17 | M16 | 40 | 28 | 22 | | |
| 7801531 | | PHC07R033SF16-5 | 33 | 24.4 | 5 | 17 | M16 | 40 | 28 | 22 | | |
| 7801532 | | PHC07R035SF16-5 | 35 | 26.4 | 5 | 17 | M16 | 40 | 28 | 22 | | |
| 7801500 | | Screw Fit Head | PHC09R025SF12-3 | 25 | 13.2 | 3 | 12.5 | M12 | 35 | 23 | 17 | SDMT09... |
| 7801510 | | | PHC09R026SF12-3 | 26 | 14.2 | 3 | 12.5 | M12 | 35 | 23 | 17 | |
| 7801501 | | | PHC09R028SF12-3 | 28 | 16.2 | 3 | 12.5 | M12 | 35 | 23 | 17 | |
| 7801502 | | | PHC09R030SF16-3 | 30 | 18.2 | 3 | 17 | M16 | 40 | 28 | 22 | |
| 7801503 | | | PHC09R032SF16-3 | 32 | 20.2 | 3 | 17 | M16 | 40 | 28 | 22 | |
| 7801511 | | | PHC09R033SF16-3 | 33 | 21.2 | 3 | 17 | M16 | 40 | 28 | 22 | |
| 7801504 | | | PHC09R035SF16-3 | 35 | 23.2 | 3 | 17 | M16 | 40 | 28 | 22 | |
| 7801505 | PHC09R040SF16-4 | | 40 | 28.2 | 4 | 17 | M16 | 40 | 28 | 22 | | |
| 7801506 | PHC12R030SF16-2 | | 30 | 13.4 | 2 | 17 | M16 | 40 | 28 | 22 | | |
| 7801507 | PHC12R032SF16-2 | | 32 | 15.4 | 2 | 17 | M16 | 40 | 28 | 22 | | |
| 7801512 | Screw Fit Head | PCH12R033SF16-2 | 33 | 16.4 | 2 | 17 | M16 | 40 | 28 | 22 | SDXMT12... | |
| 7801508 | | PHC12R035SF16-3 | 35 | 18.4 | 3 | 17 | M16 | 40 | 28 | 22 | | |
| 7801509 | | PHC12R040SF16-3 | 40 | 23.4 | 3 | 17 | M16 | 40 | 28 | 22 | | |

Packed: 1 pc.

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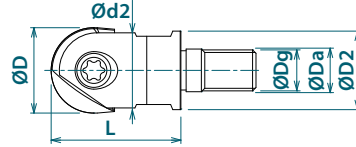
List 52604

PFB ASF (Inch)



**SPEED
FEED**
P1441

Recommended Materials: p1441
Accessories & Inserts: p1437-1439
Effective Cutting Diameter & Recommended Width of Cut: p1440
SF Arbors: p1461



| EDP No. | Body Type | Designation | Tool Dia. (inch) | No. of Teeth | Pilot Dia. (inch) | Thread Dia. (mm) | Overall Length (inch) | Head Dia. (inch) | Flange Dia. (inch) | Wrench Size | Applicable Insert |
|----------|----------------|----------------|------------------|--------------|-------------------|------------------|-----------------------|------------------|--------------------|-------------|-------------------|
| | | | D | | Da | Dg | L | d2 | D2 | | |
| 52604000 | Screw Fit Head | PFB-R0375ASF6 | 0.375 | 2 | 0.256 | M6 | 1.024 | 0.354 | 0.354 | 7 | PFB... |
| 52604001 | | PFB-R0500ASF6 | 0.500 | 2 | 0.256 | M6 | 1.024 | 0.433 | 0.433 | 7 | |
| 52604002 | | PFB-R0625ASF8 | 0.625 | 2 | 0.335 | M8 | 1.260 | 0.551 | 0.571 | 10 | |
| 52604003 | | PFB-R0750ASF10 | 0.750 | 2 | 0.413 | M10 | 1.496 | 0.709 | 0.709 | 14 | |
| 52604004 | | PFB-R1000ASF12 | 1.000 | 2 | 0.492 | M12 | 1.496 | 0.866 | 0.906 | 17 | |

Packed: 1 pc.





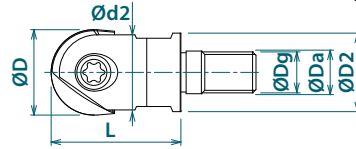
List 78114

PFB SF (Metric)



SPEED
FEED
P1441

Recommended Materials: p1441
Accessories & Inserts: p1437-1439
Effective Cutting Diameter & Recommended Width of Cut: p1440
SF Arbors: p1462-1464



| EDP No. | Body Type | Designation | Tool Dia. (mm) | No. of Teeth | Pilot Dia. (mm) | Thread Dia. (mm) | Overall Length (mm) | Head Dia. (mm) | Flange Dia. (mm) | Wrench Size | Applicable Insert |
|---------|----------------|--------------|----------------|--------------|-----------------|------------------|---------------------|----------------|------------------|-------------|-------------------|
| | | | D | | Da | Dg | L | d2 | D2 | | |
| 7801490 | Screw Fit Head | PFB-R100SF6 | 10 | 2 | 6.5 | M6 | 26 | 9 | 9 | 7 | PFB... |
| 7801491 | | PFB-R120SF6 | 12 | 2 | 6.5 | M6 | 26 | 11 | 11 | 7 | |
| 7801492 | | PFB-R160SF8 | 16 | 2 | 8.5 | M8 | 32 | 14 | 14.5 | 10 | |
| 7801493 | | PFB-R200SF10 | 20 | 2 | 10.5 | M10 | 38 | 18 | 18 | 14 | |
| 7801494 | | PFB-R250SF12 | 25 | 2 | 12.5 | M12 | 38 | 22 | 23 | 17 | |
| 7801495 | | PFB-R300SF16 | 30 | 2 | 17 | M16 | 43 | 27 | 28 | 22 | |

Packed: 1 pc.

This item is stocked overseas. Please contact OSG for availability and delivery.





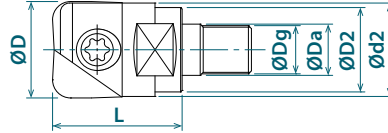
List 52605

PFR ASF (Inch)



SPEED FEED
P1451-1452

Recommended Materials: p1451-1452
Accessories & Inserts: p1445-1450
SF Arbors: p1461



| EDP No. | Body Type | Designation | Tool Dia. (inch) | No. of Teeth | Pilot Dia. (inch) | Thread Dia. (mm) | Overall Length (inch) | Head Dia. (inch) | Flange Dia. (inch) | Wrench Size | Applicable Insert |
|----------|----------------|----------------|------------------|--------------|-------------------|------------------|-----------------------|------------------|--------------------|-------------|-------------------|
| | | | D | | Da | Dg | L | d2 | D2 | | |
| 52605000 | Screw Fit Head | PFR-R0375ASF6 | 0.375 | 2 | 0.256 | M6 | 1.024 | 0.374 | 0.354 | 7 | PFR... |
| 52605001 | | PFR-R0500ASF6 | 0.500 | 2 | 0.256 | M6 | 1.024 | 0.453 | 0.433 | 7 | |
| 52605002 | | PFR-R0625ASF8 | 0.625 | 2 | 0.335 | M8 | 1.260 | 0.610 | 0.571 | 10 | |
| 52605003 | | PFR-R0750ASF10 | 0.750 | 2 | 0.413 | M10 | 1.496 | 0.768 | 0.709 | 14 | |
| 52605004 | | PFR-R1000ASF12 | 1.000 | 2 | 0.492 | M12 | 1.496 | 0.965 | 0.906 | 17 | |

Packed: 1 pc.



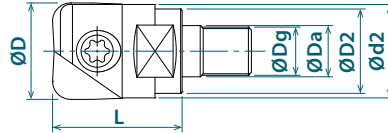
List 78220

PFR SF (Metric)



SPEED FEED
P1451-1452

Recommended Materials: p1451-1452
Accessories & Inserts: p1445-1450
SF Arbors: p1462-1464



| EDP No. | Body Type | Designation | Tool Dia. (mm) | No. of Teeth | Pilot Dia. (mm) | Thread Dia. (mm) | Overall Length (mm) | Head Dia. (mm) | Flange Dia. (mm) | Wrench Size | Applicable Insert |
|---------|----------------|--------------|----------------|--------------|-----------------|------------------|---------------------|----------------|------------------|-------------|-------------------|
| | | | D | | Da | Dg | L | d2 | D2 | | |
| 7832090 | Screw Fit Head | PFR-R100SF6 | 10 | 2 | 6.5 | M6 | 26 | 9.5 | 9 | 7 | PFR... |
| 7832091 | | PFR-R120SF6 | 12 | 2 | 6.5 | M6 | 26 | 11.5 | 11 | 7 | |
| 7832092 | | PFR-R160SF8 | 16 | 2 | 8.5 | M8 | 32 | 15.5 | 14.5 | 10 | |
| 7832093 | | PFR-R200SF10 | 20 | 2 | 10.5 | M10 | 38 | 19.5 | 18 | 14 | |
| 7832094 | | PFR-R250SF12 | 25 | 2 | 12.5 | M12 | 38 | 24.5 | 23 | 17 | |
| 7832095 | | PFR-R300SF16 | 30 | 2 | 17 | M16 | 43 | 29.5 | 28 | 22 | |
| 7832096 | | PFR-R320SF16 | 32 | 2 | 17 | M16 | 43 | 31.5 | 28 | 22 | |

Packed: 1 pc.

This item is stocked overseas. Please contact OSG for availability and delivery.





List 52600

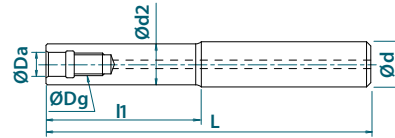
SF Arbor SA (Inch)



Carbide



Steel



| EDP No. | Body Type | Designation | Shank Dia. (inch) | Neck Dia. (inch) | Thread Dia. (mm) | Pilot Dia. (inch) | Overall Length (inch) | Neck Length (inch) |
|----------|------------------------------|---------------------|----------------------|---------------------|---------------------|----------------------|--------------------------|-----------------------|
| | | | d | d2 | Dg | Da | L | l1 |
| 52600000 | Cylindrical Shank Steel | SF-M06SA0375-0250 | 0.375 | 0.354 | M6 | 0.256 | 4.000 | 0.250 |
| 52600001 | | SF-M06SA0500-0500 | 0.500 | 0.433 | M6 | 0.256 | 4.000 | 0.500 |
| 52600002 | | SF-M08SA0625-0500 | 0.625 | 0.571 | M8 | 0.335 | 4.000 | 0.500 |
| 52600003 | | SF-M10SA0750-1000 | 0.750 | 0.709 | M10 | 0.413 | 5.000 | 1.000 |
| 52600004 | | SF-M12SA1000-1250 | 1.000 | 0.905 | M12 | 0.492 | 5.500 | 1.250 |
| 52600005 | SF-M16SA1250-1500 | 1.250 | 1.102 | M16 | 0.669 | 6.000 | 1.500 | |
| 52600010 | Cylindrical Shank Carbide | SF-M06SA0375-1500CS | 0.375 | 0.354 | M6 | 0.256 | 5.000 | 1.500 |
| 52600011 | | SF-M06SA0500-2500CS | 0.500 | 0.433 | M6 | 0.256 | 5.500 | 2.500 |
| 52600012 | | SF-M08SA0625-2000CS | 0.625 | 0.571 | M8 | 0.335 | 5.000 | 2.000 |
| 52600013 | | SF-M08SA0625-3000CS | 0.625 | 0.571 | M8 | 0.335 | 6.000 | 3.000 |
| 52600014 | | SF-M10SA0750-3000CS | 0.750 | 0.709 | M10 | 0.413 | 6.000 | 3.000 |
| 52600015 | | SF-M10SA0750-4000CS | 0.750 | 0.709 | M10 | 0.413 | 7.000 | 4.000 |
| 52600016 | | SF-M12SA1000-4000CS | 1.000 | 0.905 | M12 | 0.492 | 7.000 | 4.000 |
| 52600017 | | SF-M12SA1000-5500CS | 1.000 | 0.905 | M12 | 0.492 | 9.000 | 5.500 |
| 52600018 | | SF-M16SA1250-5500CS | 1.250 | 1.102 | M16 | 0.669 | 9.000 | 5.500 |
| 52600019 | | SF-M16SA1250-8500CS | 1.250 | 1.102 | M16 | 0.669 | 12.000 | 8.500 |

Packed: 1 pc.



List 78019

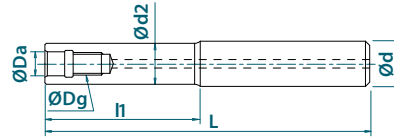
SF Arbor SS (Metric)



Carbide



Steel



| EDP No. | Body Type | Designation | Shank Dia. (mm) | Neck Dia. (mm) | Thread Dia. (mm) | Pilot Dia. (mm) | Overall Length (mm) | Neck Length (mm) |
|---------|---------------------------|------------------|-----------------|----------------|------------------|-----------------|---------------------|------------------|
| | | | d | d2 | Dg | Da | L | l1 |
| 7801904 | Cylindrical Shank Steel | SF-M06SS10-4 | 10 | 9 | M6 | 6.5 | 104 | 4 |
| 7801905 | | SF-M06SS12-10 | 12 | 11 | M6 | 6.5 | 104 | 10 |
| 7801900 | | SF-M08SS16-15 | 16 | 14.5 | M8 | 8.5 | 95 | 15 |
| 7801901 | | SF-M10SS20-20 | 20 | 18 | M10 | 10.5 | 120 | 20 |
| 7801902 | | SF-M12SS25-35 | 25 | 23 | M12 | 12.5 | 135 | 35 |
| 7801903 | | SF-M16SS32-35 | 32 | 28 | M16 | 17 | 155 | 35 |
| 7801918 | Cylindrical Shank Carbide | SF-M06SS10-24CS | 10 | 9 | M6 | 6.5 | 124 | 24 |
| 7801919 | | SF-M06SS12-34CS | 12 | 11 | M6 | 6.5 | 134 | 34 |
| 7801910 | | SF-M08SS16-55CS | 16 | 14.5 | M8 | 8.5 | 115 | 55 |
| 7801911 | | SF-M08SS16-85CS | 16 | 14.5 | M8 | 8.5 | 145 | 85 |
| 7801912 | | SF-M10SS20-70CS | 20 | 18 | M10 | 10.5 | 140 | 70 |
| 7801913 | | SF-M10SS20-110CS | 20 | 18 | M10 | 10.5 | 180 | 110 |
| 7801914 | | SF-M12SS25-90CS | 25 | 23 | M12 | 12.5 | 170 | 90 |
| 7801915 | | SF-M12SS25-140CS | 25 | 23 | M12 | 12.5 | 220 | 140 |
| 7801916 | | SF-M16SS32-120CS | 32 | 28 | M16 | 17 | 220 | 120 |
| 7801917 | | SF-M16SS32-190CS | 32 | 28 | M16 | 17 | 290 | 190 |

Packed: 1 pc.

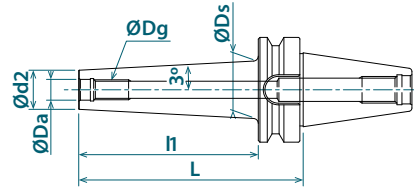
Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**





List 78025

SF Arbor BT



| EDP No. | Body Type | Designation | Neck Dia. (mm) | Thread Dia. (mm) | Bore Dia. (mm) | Overall Length (mm) | Neck Length (mm) | Taper Dia. (mm) |
|---------|----------------|----------------|----------------|------------------|----------------|---------------------|------------------|-----------------|
| | | | d2 | Dg | Da | L | l1 | Ds |
| 7802500 | BT30 Taper | BT30-SFA8-45 | 14.5 | M8 | 8.5 | 45 | 23 | 16.0 |
| 7802501 | | BT30-SFA8-85 | 14.5 | M8 | 8.5 | 85 | 63 | 21.1 |
| 7802502 | | BT30-SFA10-45 | 18.5 | M10 | 10.5 | 45 | 23 | 20.0 |
| 7802503 | | BT30-SFA10-85 | 18.5 | M10 | 10.5 | 85 | 63 | 25.1 |
| 7802504 | | BT30-SFA12-45 | 23.5 | M12 | 12.5 | 45 | 23 | 25.0 |
| 7802505 | | BT30-SFA12-85 | 23.5 | M12 | 12.5 | 85 | 63 | 30.1 |
| 7802506 | | BT30-SFA16-45 | 29 | M16 | 17 | 45 | 23 | 32.0 |
| 7802507 | | BT30-SFA16-85 | 29 | M16 | 17 | 85 | 63 | 32.0 |
| 7802508 | BT40 Taper | BT40-SFA8-45 | 14.5 | M8 | 8.5 | 45 | 18 | 16.0 |
| 7802509 | | BT40-SFA8-85 | 14.5 | M8 | 8.5 | 85 | 58 | 20.5 |
| 7802510 | | BT40-SFA10-45 | 18.5 | M10 | 10.5 | 45 | 18 | 20.0 |
| 7802511 | | BT40-SFA10-85 | 18.5 | M10 | 10.5 | 85 | 58 | 24.5 |
| 7802512 | | BT40-SFA12-45 | 23.5 | M12 | 12.5 | 45 | 18 | 25.0 |
| 7802513 | | BT40-SFA12-85 | 23.5 | M12 | 12.5 | 85 | 58 | 29.5 |
| 7802514 | | BT40-SFA12-135 | 23.5 | M12 | 12.5 | 135 | 108 | 34.8 |
| 7802515 | | BT40-SFA16-45 | 29 | M16 | 17 | 45 | 18 | 32.0 |
| 7802516 | BT40-SFA16-85 | 29 | M16 | 17 | 85 | 58 | 35.0 | |
| 7802517 | BT40-SFA16-135 | 29 | M16 | 17 | 135 | 108 | 40.3 | |
| 7802518 | BT50 Taper | BT50-SFA8-85 | 14.5 | M8 | 8.5 | 85 | 47 | 19.4 |
| 7802519 | | BT50-SFA8-135 | 14.5 | M8 | 8.5 | 135 | 97 | 23.6 |
| 7802520 | | BT50-SFA10-85 | 18.5 | M10 | 10.5 | 85 | 47 | 20.0 |
| 7802521 | | BT50-SFA10-135 | 18.5 | M10 | 10.5 | 135 | 97 | 28.6 |
| 7802522 | | BT50-SFA12-85 | 23.5 | M12 | 12.5 | 85 | 47 | 25.0 |
| 7802523 | | BT50-SFA12-135 | 23.5 | M12 | 12.5 | 135 | 97 | 33.6 |
| 7802524 | | BT50-SFA12-185 | 23.5 | M12 | 12.5 | 185 | 147 | 38.9 |
| 7802525 | | BT50-SFA12-250 | 23.5 | M12 | 12.5 | 250 | 212 | 45.7 |
| 7802526 | | BT50-SFA12-300 | 23.5 | M12 | 12.5 | 300 | 262 | 50.9 |
| 7802527 | | BT50-SFA16-800 | 29 | M16 | 17 | 85 | 47 | 32.0 |
| 7802528 | | BT50-SFA16-135 | 29 | M16 | 17 | 135 | 97 | 39.1 |
| 7802529 | | BT50-SFA16-185 | 29 | M16 | 17 | 185 | 147 | 44.4 |
| 7802530 | BT50-SFA16-250 | 29 | M16 | 17 | 250 | 212 | 51.2 | |
| 7802531 | BT50-SFA16-300 | 29 | M16 | 17 | 300 | 262 | 56.4 | |

Packed: 1 pc.

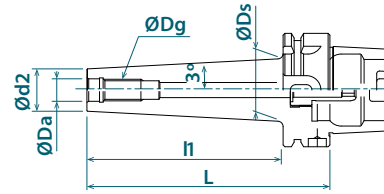
Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**





List 78125

SF Arbor HSK



| EDP No. | Body Type | Designation | Neck Dia. (mm) | Thread Dia. (mm) | Bore Dia. (mm) | Overall Length (mm) | Neck Length (mm) | Taper Dia. (mm) |
|---------|-----------|----------------|----------------|------------------|----------------|---------------------|------------------|-----------------|
| | | | d2 | Dg | Da | L | l1 | Ds |
| 7802550 | HSK-A63 | A63-SFA8-45 | 14.5 | M8 | 8.5 | 45 | 19 | 16.0 |
| 7802551 | | A63-SFA8-85 | 14.5 | M8 | 8.5 | 85 | 59 | 20.6 |
| 7802552 | | A63-SFA10-60 | 18.5 | M10 | 10.5 | 60 | 34 | 20.0 |
| 7802553 | | A63-SFA10-85 | 18.5 | M10 | 10.5 | 85 | 59 | 24.6 |
| 7802554 | | A63-SFA12-60 | 23.5 | M12 | 12.5 | 60 | 34 | 25.0 |
| 7802555 | | A63-SFA12-85 | 23.5 | M12 | 12.5 | 85 | 59 | 39.6 |
| 7802556 | | A63-SFA12-135 | 23.5 | M12 | 12.5 | 135 | 109 | 34.9 |
| 7802557 | | A63-SFA16-60 | 29 | M16 | 17 | 60 | 34 | 32.0 |
| 7802558 | | A63-SFA16-85 | 29 | M16 | 17 | 85 | 59 | 32.0 |
| 7802559 | | A63-SFA16-135 | 29 | M16 | 17 | 135 | 109 | 40.4 |
| 7802560 | HSK-A100 | A100-SFA8-85 | 14.5 | M8 | 8.5 | 85 | 50 | 19.7 |
| 7802561 | | A100-SFA8-135 | 14.5 | M8 | 8.5 | 135 | 100 | 23.9 |
| 7802562 | | A100-SFA10-85 | 18.5 | M10 | 10.5 | 85 | 50 | 23.7 |
| 7802563 | | A100-SFA10-135 | 18.5 | M10 | 10.5 | 135 | 100 | 28.9 |
| 7802564 | | A100-SFA12-85 | 23.5 | M12 | 12.5 | 85 | 50 | 28.7 |
| 7802565 | | A100-SFA12-135 | 23.5 | M12 | 12.5 | 135 | 100 | 33.9 |
| 7802566 | | A100-SFA12-185 | 23.5 | M12 | 12.5 | 185 | 150 | 39.2 |
| 7802567 | | A100-SFA12-250 | 23.5 | M12 | 12.5 | 250 | 221 | 46.6 |
| 7802568 | | A100-SFA12-300 | 23.5 | M12 | 12.5 | 300 | 271 | 51.9 |
| 7802569 | | A100-SFA16-85 | 29 | M16 | 17 | 85 | 50 | 34.2 |
| 7802570 | | A100-SFA16-135 | 29 | M16 | 17 | 135 | 106 | 40.1 |
| 7802571 | | A100-SFA16-185 | 29 | M16 | 17 | 185 | 156 | 45.3 |
| 7802572 | | A100-SFA16-250 | 29 | M16 | 17 | 250 | 221 | 52.1 |
| 7802573 | | A100-SFA16-300 | 29 | M16 | 17 | 300 | 271 | 57.4 |

Packed: 1 pc.

Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**





List 78PXSE

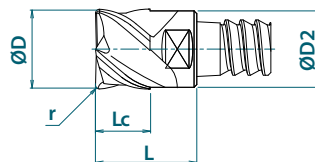
PXSE Exchangeable Heads (Inch & Metric) - 4 Flute, Square & Corner Radius

NEW SIZES



SPEED FEED
P1489

Accessories: p1488
PXM Arbors: p1478-1487



| EDP No. | Type | Designation | Head Dia. | | Corner Radius | | Length of Cut | | Overall Length | | Flange Dia. | | Helix Angle | Grade |
|----------|------|---------------------|-----------|--------|---------------|--------|---------------|--------|----------------|--------|-------------|--------|-------------|--------|
| | | | D | | r | | Lc | | L | | D2 | | | |
| | | | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | | |
| 52301020 | PXSE | PXSE0375AC10-04R000 | - | 0.375 | - | 0.000 | - | 0.263 | - | 0.488 | - | 0.366 | 38° | XP3225 |
| 52301021 | | PXSE0375AC10-04R015 | - | 0.375 | - | 0.015 | - | 0.263 | - | 0.488 | - | 0.366 | 38° | XP3225 |
| 52301022 | | PXSE0375AC10-04R030 | - | 0.375 | - | 0.030 | - | 0.263 | - | 0.488 | - | 0.366 | 38° | XP3225 |
| 52301023 | | PXSE0375AC10-04R060 | - | 0.375 | - | 0.060 | - | 0.263 | - | 0.488 | - | 0.366 | 38° | XP3225 |
| 52301024 | | PXSE0375AC10-04R090 | - | 0.375 | - | 0.090 | - | 0.263 | - | 0.488 | - | 0.366 | 38° | XP3225 |
| 52301000 | | PXSE0500AC12-04R000 | - | 0.500 | - | 0.000 | - | 0.350 | - | 0.598 | - | 0.488 | 38° | XP3225 |
| 52301001 | | PXSE0500AC12-04R015 | - | 0.500 | - | 0.015 | - | 0.350 | - | 0.598 | - | 0.488 | 38° | XP3225 |
| 52301002 | | PXSE0500AC12-04R030 | - | 0.500 | - | 0.030 | - | 0.350 | - | 0.598 | - | 0.488 | 38° | XP3225 |
| 52301003 | | PXSE0500AC12-04R060 | - | 0.500 | - | 0.060 | - | 0.350 | - | 0.598 | - | 0.488 | 38° | XP3225 |
| 52301004 | | PXSE0500AC12-04R090 | - | 0.500 | - | 0.090 | - | 0.350 | - | 0.598 | - | 0.488 | 38° | XP3225 |
| 52301005 | | PXSE0625AC16-04R000 | - | 0.625 | - | 0.000 | - | 0.438 | - | 0.732 | - | 0.613 | 38° | XP3225 |
| 52301006 | | PXSE0625AC16-04R030 | - | 0.625 | - | 0.030 | - | 0.438 | - | 0.732 | - | 0.613 | 38° | XP3225 |
| 52301007 | | PXSE0625AC16-04R060 | - | 0.625 | - | 0.060 | - | 0.438 | - | 0.732 | - | 0.613 | 38° | XP3225 |
| 52301008 | | PXSE0625AC16-04R090 | - | 0.625 | - | 0.090 | - | 0.438 | - | 0.732 | - | 0.613 | 38° | XP3225 |
| 52301009 | | PXSE0625AC16-04R120 | - | 0.625 | - | 0.120 | - | 0.438 | - | 0.732 | - | 0.613 | 38° | XP3225 |
| 52301010 | | PXSE0750AC20-04R000 | - | 0.750 | - | 0.000 | - | 0.525 | - | 0.807 | - | 0.736 | 38° | XP3225 |
| 52301011 | | PXSE0750AC20-04R030 | - | 0.750 | - | 0.030 | - | 0.525 | - | 0.807 | - | 0.736 | 38° | XP3225 |
| 52301012 | | PXSE0750AC20-04R060 | - | 0.750 | - | 0.060 | - | 0.525 | - | 0.807 | - | 0.736 | 38° | XP3225 |
| 52301013 | | PXSE0750AC20-04R090 | - | 0.750 | - | 0.090 | - | 0.525 | - | 0.807 | - | 0.736 | 38° | XP3225 |
| 52301014 | | PXSE0750AC20-04R120 | - | 0.750 | - | 0.120 | - | 0.525 | - | 0.807 | - | 0.736 | 38° | XP3225 |
| 52301015 | | PXSE1000AC25-04R000 | - | 1.000 | - | 0.000 | - | 0.700 | - | 1.098 | - | 0.960 | 38° | XP3225 |
| 52301016 | | PXSE1000AC25-04R030 | - | 1.000 | - | 0.030 | - | 0.700 | - | 1.098 | - | 0.960 | 38° | XP3225 |
| 52301017 | | PXSE1000AC25-04R060 | - | 1.000 | - | 0.060 | - | 0.700 | - | 1.098 | - | 0.960 | 38° | XP3225 |
| 52301018 | | PXSE1000AC25-04R090 | - | 1.000 | - | 0.090 | - | 0.700 | - | 1.098 | - | 0.960 | 38° | XP3225 |
| 52301019 | | PXSE1000AC25-04R120 | - | 1.000 | - | 0.120 | - | 0.700 | - | 1.098 | - | 0.960 | 38° | XP3225 |
| 7829994 | | PXSE100C10-04R000 | 10 | - | 0 | - | 7 | - | 13 | - | 9.7 | - | 38° | XP3225 |
| 7829995 | | PXSE100C10-04R005 | 10 | - | 0.5 | - | 7 | - | 13 | - | 9.7 | - | 38° | XP3225 |
| 7829996 | | PXSE100C10-04R010 | 10 | - | 1 | - | 7 | - | 13 | - | 9.7 | - | 38° | XP3225 |
| 7829997 | | PXSE100C10-04R020 | 10 | - | 2 | - | 7 | - | 13 | - | 9.7 | - | 38° | XP3225 |
| 7829998 | | PXSE100C10-04R030 | 10 | - | 3 | - | 7 | - | 13 | - | 9.7 | - | 38° | XP3225 |
| 7830004 | | PXSE120C12-04R000 | 12 | - | 0 | - | 8.4 | - | 14.4 | - | 11.7 | - | 38° | XP3225 |
| 7830005 | | PXSE120C12-04R005 | 12 | - | 0.5 | - | 8.4 | - | 14.4 | - | 11.7 | - | 38° | XP3225 |
| 7830006 | | PXSE120C12-04R010 | 12 | - | 1 | - | 8.4 | - | 14.4 | - | 11.7 | - | 38° | XP3225 |
| 7830007 | | PXSE120C12-04R020 | 12 | - | 2 | - | 8.4 | - | 14.4 | - | 11.7 | - | 38° | XP3225 |
| 7830008 | | PXSE120C12-04R030 | 12 | - | 3 | - | 8.4 | - | 14.4 | - | 11.7 | - | 38° | XP3225 |
| 7830009 | | PXSE160C16-04R000 | 16 | - | 0 | - | 11.2 | - | 18.7 | - | 15.7 | - | 38° | XP3225 |
| 7830010 | | PXSE160C16-04R005 | 16 | - | 0.5 | - | 11.2 | - | 18.7 | - | 15.7 | - | 38° | XP3225 |
| 7830011 | | PXSE160C16-04R010 | 16 | - | 1 | - | 11.2 | - | 18.7 | - | 15.7 | - | 38° | XP3225 |
| 7830012 | | PXSE160C16-04R015 | 16 | - | 1.5 | - | 11.2 | - | 18.7 | - | 15.7 | - | 38° | XP3225 |
| 7830013 | | PXSE160C16-04R020 | 16 | - | 2 | - | 11.2 | - | 18.7 | - | 15.7 | - | 38° | XP3225 |
| 7830014 | | PXSE160C16-04R030 | 16 | - | 3 | - | 11.2 | - | 18.7 | - | 15.7 | - | 38° | XP3225 |
| 7830015 | | PXSE200C20-04R000 | 20 | - | 0 | - | 14 | - | 21.5 | - | 19.6 | - | 38° | XP3225 |
| 7830016 | | PXSE200C20-04R005 | 20 | - | 0.5 | - | 14 | - | 21.5 | - | 19.6 | - | 38° | XP3225 |
| 7830017 | | PXSE200C20-04R010 | 20 | - | 1 | - | 14 | - | 21.5 | - | 19.6 | - | 38° | XP3225 |
| 7830018 | | PXSE200C20-04R020 | 20 | - | 2 | - | 14 | - | 21.5 | - | 19.6 | - | 38° | XP3225 |
| 7830019 | | PXSE200C20-04R030 | 20 | - | 3 | - | 14 | - | 21.5 | - | 19.6 | - | 38° | XP3225 |
| 7830020 | | PXSE250C25-04R000 | 25 | - | 0 | - | 17.5 | - | 27.5 | - | 24 | - | 38° | XP3225 |
| 7830021 | | PXSE250C25-04R010 | 25 | - | 1 | - | 17.5 | - | 27.5 | - | 24 | - | 38° | XP3225 |
| 7830022 | | PXSE250C25-04R020 | 25 | - | 2 | - | 17.5 | - | 27.5 | - | 24 | - | 38° | XP3225 |
| 7830023 | | PXSE250C25-04R030 | 25 | - | 3 | - | 17.5 | - | 27.5 | - | 24 | - | 38° | XP3225 |

Packed: 1 pc.

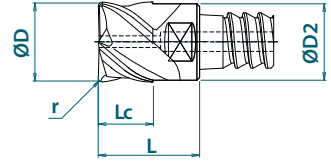


List 78PXSE-O



SPEED FEED
P1489
Accessories: p1488
PXM Arbors: p1478-1487

PXSE Exchangeable Heads (Inch & Metric) - 4 Flute, Square & Corner Radius, Coolant-Through



| EDP No. | Type | Designation | Head Dia. | | Corner Radius | | Length of Cut | | Overall Length | | Flange Dia. | | Helix Angle | Grade | |
|----------|---------------------|-----------------------|-----------|--------|---------------|--------|---------------|--------|----------------|--------|-------------|--------|-------------|--------|--------|
| | | | D | | r | | Lc | | L | | D2 | | | | |
| | | | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | | | |
| 52314000 | PXSE | PXSE0500AC12-04R000-O | - | 0.500 | - | 0.000 | - | 0.350 | - | 0.598 | - | 0.488 | 38° | XP3225 | |
| 52314001 | | PXSE0500AC12-04R030-O | - | 0.500 | - | 0.030 | - | 0.350 | - | 0.598 | - | 0.488 | 38° | XP3225 | |
| 52314002 | | PXSE0500AC12-04R120-O | - | 0.500 | - | 0.120 | - | 0.350 | - | 0.598 | - | 0.488 | 38° | XP3225 | |
| 52314005 | | PXSE0625AC16-04R000-O | - | 0.625 | - | 0.000 | - | 0.438 | - | 0.732 | - | 0.613 | 38° | XP3225 | |
| 52314006 | | PXSE0625AC16-04R030-O | - | 0.625 | - | 0.030 | - | 0.438 | - | 0.732 | - | 0.613 | 38° | XP3225 | |
| 52314007 | | PXSE0625AC16-04R120-O | - | 0.625 | - | 0.120 | - | 0.438 | - | 0.732 | - | 0.613 | 38° | XP3225 | |
| 52314010 | | PXSE0750AC20-04R000-O | - | 0.750 | - | 0.000 | - | 0.525 | - | 0.807 | - | 0.736 | 38° | XP3225 | |
| 52314011 | | PXSE0750AC20-04R030-O | - | 0.750 | - | 0.030 | - | 0.525 | - | 0.807 | - | 0.736 | 38° | XP3225 | |
| 52314012 | | PXSE0750AC20-04R120-O | - | 0.750 | - | 0.120 | - | 0.525 | - | 0.807 | - | 0.736 | 38° | XP3225 | |
| 52314015 | | PXSE1000AC25-04R000-O | - | 1.000 | - | 0.000 | - | 0.700 | - | 1.098 | - | 0.960 | 38° | XP3225 | |
| 52314016 | | PXSE1000AC25-04R030-O | - | 1.000 | - | 0.030 | - | 0.700 | - | 1.098 | - | 0.960 | 38° | XP3225 | |
| 52314017 | | PXSE1000AC25-04R120-O | - | 1.000 | - | 0.120 | - | 0.700 | - | 1.098 | - | 0.960 | 38° | XP3225 | |
| 7830054 | | PXSE120C12-04R000-O | 12 | - | 0 | - | 8.4 | - | 14.4 | - | 11.7 | - | 11.7 | 38° | XP3225 |
| 7830056 | | PXSE120C12-04R010-O | 12 | - | 1 | - | 8.4 | - | 14.4 | - | 11.7 | - | 11.7 | 38° | XP3225 |
| 7830058 | | PXSE120C12-04R030-O | 12 | - | 3 | - | 8.4 | - | 14.4 | - | 11.7 | - | 11.7 | 38° | XP3225 |
| 7830059 | | PXSE160C16-04R000-O | 16 | - | 0 | - | 11.2 | - | 18.7 | - | 15.7 | - | 15.7 | 38° | XP3225 |
| 7830061 | | PXSE160C16-04R010-O | 16 | - | 1 | - | 11.2 | - | 18.7 | - | 15.7 | - | 15.7 | 38° | XP3225 |
| 7830064 | | PXSE160C16-04R030-O | 16 | - | 3 | - | 11.2 | - | 18.7 | - | 15.7 | - | 15.7 | 38° | XP3225 |
| 7830065 | | PXSE200C20-04R000-O | 20 | - | 0 | - | 14 | - | 21.5 | - | 19.6 | - | 19.6 | 38° | XP3225 |
| 7830067 | | PXSE200C20-04R010-O | 20 | - | 1 | - | 14 | - | 21.5 | - | 19.6 | - | 19.6 | 38° | XP3225 |
| 7830069 | PXSE200C20-04R030-O | 20 | - | 3 | - | 14 | - | 21.5 | - | 19.6 | - | 19.6 | 38° | XP3225 | |
| 7830070 | PXSE250C25-04R000-O | 25 | - | 0 | - | 17.5 | - | 27.5 | - | 24 | - | 24 | 38° | XP3225 | |
| 7830071 | PXSE250C25-04R010-O | 25 | - | 1 | - | 17.5 | - | 27.5 | - | 24 | - | 24 | 38° | XP3225 | |
| 7830074 | PXSE250C25-04R030-O | 25 | - | 3 | - | 17.5 | - | 27.5 | - | 24 | - | 24 | 38° | XP3225 | |

Packed: 1 pc.





List 78PXVC

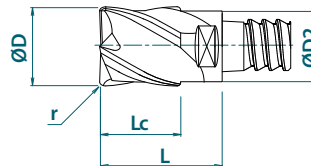
PXVC Exchangeable Heads (inch & metric) - 4, 5 or 8 Flutes, Square & Corner Radius

NEW SIZES



SPEED FEED
P1490

Accessories: p1488
PXM Arbors: p1478-1487



| EDP No. | Type | Designation | Head Dia. | | Corner Radius | | No. of Flutes | Length of Cut | | Overall Length | | Flange Dia. | | Helix Angle | Grade | |
|----------|-------------------|---------------------|-----------|--------|---------------|--------|---------------|---------------|--------|----------------|--------|-------------|--------|-------------|-----------|--------|
| | | | D | | r | | | Lc | | L | | D2 | | | | |
| | | | (mm) | (inch) | (mm) | (inch) | | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | | | |
| 52308020 | PXVC | PXVC0375AC10-04R000 | - | 0.375 | - | 0.000 | 4 | - | 0.375 | - | 0.598 | - | 0.366 | 45° / 48° | XP3225 | |
| 52308021 | | PXVC0375AC10-04R015 | - | 0.375 | - | 0.015 | 4 | - | 0.375 | - | 0.598 | - | 0.366 | 45° / 48° | XP3225 | |
| 52308022 | | PXVC0375AC10-04R030 | - | 0.375 | - | 0.030 | 4 | - | 0.375 | - | 0.598 | - | 0.366 | 45° / 48° | XP3225 | |
| 52308023 | | PXVC0375AC10-04R060 | - | 0.375 | - | 0.060 | 4 | - | 0.375 | - | 0.598 | - | 0.366 | 45° / 48° | XP3225 | |
| 52308024 | | PXVC0375AC10-04R090 | - | 0.375 | - | 0.090 | 4 | - | 0.375 | - | 0.598 | - | 0.366 | 45° / 48° | XP3225 | |
| 52308000 | | PXVC0500AC12-04R000 | - | 0.500 | - | 0.000 | 4 | - | 0.500 | - | 0.748 | - | 0.488 | 45° / 48° | XP3225 | |
| 52308001 | | PXVC0500AC12-04R015 | - | 0.500 | - | 0.015 | 4 | - | 0.500 | - | 0.748 | - | 0.488 | 45° / 48° | XP3225 | |
| 52308002 | | PXVC0500AC12-04R030 | - | 0.500 | - | 0.030 | 4 | - | 0.500 | - | 0.748 | - | 0.488 | 45° / 48° | XP3225 | |
| 52308003 | | PXVC0500AC12-04R060 | - | 0.500 | - | 0.060 | 4 | - | 0.500 | - | 0.748 | - | 0.488 | 45° / 48° | XP3225 | |
| 52308004 | | PXVC0500AC12-04R090 | - | 0.500 | - | 0.090 | 4 | - | 0.500 | - | 0.748 | - | 0.488 | 45° / 48° | XP3225 | |
| 52308005 | | PXVC0625AC16-04R000 | - | 0.625 | - | 0.000 | 4 | - | 0.625 | - | 0.921 | - | 0.614 | 45° / 48° | XP3225 | |
| 52308006 | | PXVC0625AC16-04R030 | - | 0.625 | - | 0.030 | 4 | - | 0.625 | - | 0.921 | - | 0.614 | 45° / 48° | XP3225 | |
| 52308007 | | PXVC0625AC16-04R060 | - | 0.625 | - | 0.060 | 4 | - | 0.625 | - | 0.921 | - | 0.614 | 45° / 48° | XP3225 | |
| 52308008 | | PXVC0625AC16-04R090 | - | 0.625 | - | 0.090 | 4 | - | 0.625 | - | 0.921 | - | 0.614 | 45° / 48° | XP3225 | |
| 52308009 | | PXVC0625AC16-04R120 | - | 0.625 | - | 0.120 | 4 | - | 0.625 | - | 0.921 | - | 0.614 | 45° / 48° | XP3225 | |
| 52308010 | | PXVC0750AC20-04R000 | - | 0.750 | - | 0.000 | 4 | - | 0.750 | - | 1.035 | - | 0.736 | 45° / 48° | XP3225 | |
| 52308011 | | PXVC0750AC20-04R030 | - | 0.750 | - | 0.030 | 4 | - | 0.750 | - | 1.035 | - | 0.736 | 45° / 48° | XP3225 | |
| 52308012 | | PXVC0750AC20-04R060 | - | 0.750 | - | 0.060 | 4 | - | 0.750 | - | 1.035 | - | 0.736 | 45° / 48° | XP3225 | |
| 52308013 | | PXVC0750AC20-04R090 | - | 0.750 | - | 0.090 | 4 | - | 0.750 | - | 1.035 | - | 0.736 | 45° / 48° | XP3225 | |
| 52308014 | | PXVC0750AC20-04R120 | - | 0.750 | - | 0.120 | 4 | - | 0.750 | - | 1.035 | - | 0.736 | 45° / 48° | XP3225 | |
| 52308015 | | PXVC1000AC25-04R000 | - | 1.000 | - | 0.000 | 4 | - | 1.000 | - | 1.398 | - | 0.961 | 45° / 48° | XP3225 | |
| 52308016 | | PXVC1000AC25-04R030 | - | 1.000 | - | 0.030 | 4 | - | 1.000 | - | 1.398 | - | 0.961 | 45° / 48° | XP3225 | |
| 52308017 | | PXVC1000AC25-04R060 | - | 1.000 | - | 0.060 | 4 | - | 1.000 | - | 1.398 | - | 0.961 | 45° / 48° | XP3225 | |
| 52308018 | | PXVC1000AC25-04R090 | - | 1.000 | - | 0.090 | 4 | - | 1.000 | - | 1.398 | - | 0.961 | 45° / 48° | XP3225 | |
| 52308019 | | PXVC1000AC25-04R120 | - | 1.000 | - | 0.120 | 4 | - | 1.000 | - | 1.398 | - | 0.961 | 45° / 48° | XP3225 | |
| 52308025 | | PXVC1250AC32-05R030 | - | 1.250 | - | 0.030 | 5 | - | 1.250 | - | 1.748 | - | 1.094 | 45° | XP3225 | |
| 52308026 | | PXVC1250AC32-08R030 | - | 1.250 | - | 0.030 | 8 | - | 1.250 | - | 1.748 | - | 1.094 | 38° | XP3225 | |
| 7834994 | | PXVC100C10-04R000 | 10 | - | 0 | - | 4 | 10 | 10 | - | 16 | - | 9.8 | - | 45° / 48° | XP3225 |
| 7834995 | | PXVC100C10-04R005 | 10 | - | 0.5 | - | 4 | 10 | 10 | - | 16 | - | 9.8 | - | 45° / 48° | XP3225 |
| 7834996 | | PXVC100C10-04R010 | 10 | - | 1 | - | 4 | 10 | 10 | - | 16 | - | 9.8 | - | 45° / 48° | XP3225 |
| 7834997 | | PXVC100C10-04R020 | 10 | - | 2 | - | 4 | 10 | 10 | - | 16 | - | 9.8 | - | 45° / 48° | XP3225 |
| 7834998 | | PXVC100C10-04R030 | 10 | - | 3 | - | 4 | 10 | 10 | - | 16 | - | 9.8 | - | 45° / 48° | XP3225 |
| 7834999 | | PXVC120C10-04R000 | 12 | - | 0 | - | 4 | 12 | 12 | - | 18 | - | 9.8 | - | 45° / 48° | XP3225 |
| 7835000 | | PXVC120C10-04R005 | 12 | - | 0.5 | - | 4 | 12 | 12 | - | 18 | - | 9.8 | - | 45° / 48° | XP3225 |
| 7835001 | | PXVC120C10-04R010 | 12 | - | 1 | - | 4 | 12 | 12 | - | 18 | - | 9.8 | - | 45° / 48° | XP3225 |
| 7835002 | | PXVC120C10-04R020 | 12 | - | 2 | - | 4 | 12 | 12 | - | 18 | - | 9.8 | - | 45° / 48° | XP3225 |
| 7835003 | | PXVC120C10-04R030 | 12 | - | 3 | - | 4 | 12 | 12 | - | 18 | - | 9.8 | - | 45° / 48° | XP3225 |
| 7835004 | | PXVC120C12-04R000 | 12 | - | 0 | - | 4 | 12 | 12 | - | 18 | - | 11.7 | - | 45° / 48° | XP3225 |
| 7835005 | | PXVC120C12-04R005 | 12 | - | 0.5 | - | 4 | 12 | 12 | - | 18 | - | 11.7 | - | 45° / 48° | XP3225 |
| 7835006 | | PXVC120C12-04R010 | 12 | - | 1 | - | 4 | 12 | 12 | - | 18 | - | 11.7 | - | 45° / 48° | XP3225 |
| 7835007 | | PXVC120C12-04R020 | 12 | - | 2 | - | 4 | 12 | 12 | - | 18 | - | 11.7 | - | 45° / 48° | XP3225 |
| 7835008 | | PXVC120C12-04R030 | 12 | - | 3 | - | 4 | 12 | 12 | - | 18 | - | 11.7 | - | 45° / 48° | XP3225 |
| 7835009 | | PXVC140C12-04R000 | 14 | - | 0 | - | 4 | 14 | 14 | - | 20 | - | 11.7 | - | 45° / 48° | XP3225 |
| 7835010 | | PXVC140C12-04R005 | 14 | - | 0.5 | - | 4 | 14 | 14 | - | 20 | - | 11.7 | - | 45° / 48° | XP3225 |
| 7835011 | | PXVC140C12-04R010 | 14 | - | 1 | - | 4 | 14 | 14 | - | 20 | - | 11.7 | - | 45° / 48° | XP3225 |
| 7835012 | PXVC140C12-04R020 | 14 | - | 2 | - | 4 | 14 | 14 | - | 20 | - | 11.7 | - | 45° / 48° | XP3225 | |
| 7835013 | PXVC140C12-04R030 | 14 | - | 3 | - | 4 | 14 | 14 | - | 20 | - | 11.7 | - | 45° / 48° | XP3225 | |

Packed: 1 pc.

continued on next page





List 78PXVC (Continued)

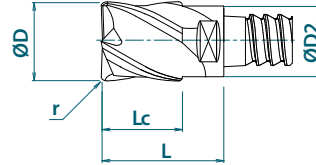
PXVC Exchangeable Heads (inch & metric) - 4, 5 or 8 Flutes, Square & Corner Radius

NEW SIZES



SPEED FEED
P1490

Accessories: p1488
PXM Arbors: p1478-1487



| EDP No. | Type | Designation | Head Dia. | | Corner Radius | | No. of Flutes | Length of Cut | | Overall Length | | Flange Dia. | | Helix Angle | Grade |
|---------|------|-------------------|-----------|--------|---------------|--------|---------------|---------------|--------|----------------|--------|-------------|--------|-------------|--------|
| | | | D | | r | | | Lc | | L | | D2 | | | |
| | | | (mm) | (inch) | (mm) | (inch) | | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | | |
| 7835014 | PXVC | PXVC160C16-04R000 | 16 | - | 0 | - | 4 | 16 | - | 23.5 | - | 15.7 | - | 45° / 48° | XP3225 |
| 7835015 | | PXVC160C16-04R005 | 16 | - | 0.5 | - | 4 | 16 | - | 23.5 | - | 15.7 | - | 45° / 48° | XP3225 |
| 7835016 | | PXVC160C16-04R010 | 16 | - | 1 | - | 4 | 16 | - | 23.5 | - | 15.7 | - | 45° / 48° | XP3225 |
| 7835017 | | PXVC160C16-04R015 | 16 | - | 1.5 | - | 4 | 16 | - | 23.5 | - | 15.7 | - | 45° / 48° | XP3225 |
| 7835018 | | PXVC160C16-04R020 | 16 | - | 2 | - | 4 | 16 | - | 23.5 | - | 15.7 | - | 45° / 48° | XP3225 |
| 7835019 | | PXVC160C16-04R030 | 16 | - | 3 | - | 4 | 16 | - | 23.5 | - | 15.7 | - | 45° / 48° | XP3225 |
| 7835020 | | PXVC180C16-04R000 | 18 | - | 0 | - | 4 | 18 | - | 25.5 | - | 15.7 | - | 45° / 48° | XP3225 |
| 7835021 | | PXVC180C16-04R005 | 18 | - | 0.5 | - | 4 | 18 | - | 25.5 | - | 15.7 | - | 45° / 48° | XP3225 |
| 7835022 | | PXVC180C16-04R010 | 18 | - | 1 | - | 4 | 18 | - | 25.5 | - | 15.7 | - | 45° / 48° | XP3225 |
| 7835023 | | PXVC180C16-04R020 | 18 | - | 2 | - | 4 | 18 | - | 25.5 | - | 15.7 | - | 45° / 48° | XP3225 |
| 7835024 | | PXVC180C16-04R030 | 18 | - | 3 | - | 4 | 18 | - | 25.5 | - | 15.7 | - | 45° / 48° | XP3225 |
| 7835025 | | PXVC200C20-04R000 | 20 | - | 0 | - | 4 | 20 | - | 27.5 | - | 19.6 | - | 45° / 48° | XP3225 |
| 7835026 | | PXVC200C20-04R005 | 20 | - | 0.5 | - | 4 | 20 | - | 27.5 | - | 19.6 | - | 45° / 48° | XP3225 |
| 7835027 | | PXVC200C20-04R010 | 20 | - | 1 | - | 4 | 20 | - | 27.5 | - | 19.6 | - | 45° / 48° | XP3225 |
| 7835028 | | PXVC200C20-04R020 | 20 | - | 2 | - | 4 | 20 | - | 27.5 | - | 19.6 | - | 45° / 48° | XP3225 |
| 7835029 | | PXVC200C20-04R030 | 20 | - | 3 | - | 4 | 20 | - | 27.5 | - | 19.6 | - | 45° / 48° | XP3225 |
| 7835030 | | PXVC220C20-04R000 | 22 | - | 0 | - | 4 | 22 | - | 29.5 | - | 19.6 | - | 45° / 48° | XP3225 |
| 7835038 | | PXVC220C20-04R005 | 22 | - | 0.5 | - | 4 | 22 | - | 29.5 | - | 19.6 | - | 45° / 48° | XP3225 |
| 7835031 | | PXVC220C20-04R010 | 22 | - | 1 | - | 4 | 22 | - | 29.5 | - | 19.6 | - | 45° / 48° | XP3225 |
| 7835032 | | PXVC220C20-04R020 | 22 | - | 2 | - | 4 | 22 | - | 29.5 | - | 19.6 | - | 45° / 48° | XP3225 |
| 7835033 | | PXVC220C20-04R030 | 22 | - | 3 | - | 4 | 22 | - | 29.5 | - | 19.6 | - | 45° / 48° | XP3225 |
| 7835034 | | PXVC250C25-04R000 | 25 | - | 0 | - | 4 | 25 | - | 35 | - | 24 | - | 45° / 48° | XP3225 |
| 7835035 | | PXVC250C25-04R010 | 25 | - | 1 | - | 4 | 25 | - | 35 | - | 24 | - | 45° / 48° | XP3225 |
| 7835036 | | PXVC250C25-04R020 | 25 | - | 2 | - | 4 | 25 | - | 35 | - | 24 | - | 45° / 48° | XP3225 |
| 7835037 | | PXVC250C25-04R030 | 25 | - | 3 | - | 4 | 25 | - | 35 | - | 24 | - | 45° / 48° | XP3225 |
| 7835039 | | PXVC320C32-05R010 | 32 | - | 1 | - | 5 | 32 | - | 44.7 | - | 28 | - | 45° | XP3225 |
| 7835040 | | PXVC320C32-08R010 | 32 | - | 1 | - | 8 | 32 | - | 44.7 | - | 28 | - | 38° | XP3225 |

Packed: 1 pc.





List 78PXSM

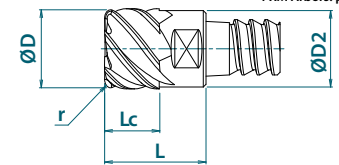
PXSM Exchangeable Heads (Inch & Metric) - Multiple Flute, Square & Corner Radius

NEW SIZES



SPEED FEED
P1491

Accessories: p1488
PXM Arbors: p1478-1487



| EDP No. | Type | Designation | Head Dia. | | Corner Radius | | No. of Flutes | Length of Cut | | Overall Length | | Flange Dia. | | Helix Angle | Grade |
|----------|-------------------|---------------------|-----------|--------|---------------|--------|---------------|---------------|--------|----------------|--------|-------------|--------|-------------|--------|
| | | | D | | r | | | Lc | | L | | D2 | | | |
| | | | (mm) | (inch) | (mm) | (inch) | | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | | |
| 52302025 | PXSM | PXSM0375AC10-06R000 | - | 0.375 | - | 0.000 | 6 | - | 0.263 | - | 0.488 | - | 0.366 | 38° | XP3225 |
| 52302026 | | PXSM0375AC10-06R015 | - | 0.375 | - | 0.015 | 6 | - | 0.263 | - | 0.488 | - | 0.366 | 38° | XP3225 |
| 52302027 | | PXSM0375AC10-06R030 | - | 0.375 | - | 0.030 | 6 | - | 0.263 | - | 0.488 | - | 0.366 | 38° | XP3225 |
| 52302028 | | PXSM0375AC10-06R060 | - | 0.375 | - | 0.060 | 6 | - | 0.263 | - | 0.488 | - | 0.366 | 38° | XP3225 |
| 52302000 | | PXSM0500AC12-06R000 | - | 0.500 | - | 0.000 | 6 | - | 0.350 | - | 0.598 | - | 0.488 | 38° | XP3225 |
| 52302001 | | PXSM0500AC12-06R015 | - | 0.500 | - | 0.015 | 6 | - | 0.350 | - | 0.598 | - | 0.488 | 38° | XP3225 |
| 52302002 | | PXSM0500AC12-06R030 | - | 0.500 | - | 0.030 | 6 | - | 0.350 | - | 0.598 | - | 0.488 | 38° | XP3225 |
| 52302003 | | PXSM0500AC12-06R060 | - | 0.500 | - | 0.060 | 6 | - | 0.350 | - | 0.598 | - | 0.488 | 38° | XP3225 |
| 52302004 | | PXSM0500AC12-06R090 | - | 0.500 | - | 0.090 | 6 | - | 0.350 | - | 0.598 | - | 0.488 | 38° | XP3225 |
| 52302005 | | PXSM0625AC16-06R000 | - | 0.625 | - | 0.000 | 6 | - | 0.438 | - | 0.732 | - | 0.613 | 38° | XP3225 |
| 52302006 | | PXSM0625AC16-06R030 | - | 0.625 | - | 0.030 | 6 | - | 0.438 | - | 0.732 | - | 0.613 | 38° | XP3225 |
| 52302007 | | PXSM0625AC16-06R060 | - | 0.625 | - | 0.060 | 6 | - | 0.438 | - | 0.732 | - | 0.613 | 38° | XP3225 |
| 52302008 | | PXSM0625AC16-06R090 | - | 0.625 | - | 0.090 | 6 | - | 0.438 | - | 0.732 | - | 0.613 | 38° | XP3225 |
| 52302009 | | PXSM0625AC16-06R120 | - | 0.625 | - | 0.120 | 6 | - | 0.438 | - | 0.732 | - | 0.613 | 38° | XP3225 |
| 52302010 | | PXSM0625AC16-08R000 | - | 0.625 | - | 0.000 | 8 | - | 0.438 | - | 0.732 | - | 0.613 | 42° | XP3225 |
| 52302011 | | PXSM0625AC16-08R030 | - | 0.625 | - | 0.030 | 8 | - | 0.438 | - | 0.732 | - | 0.613 | 42° | XP3225 |
| 52302012 | | PXSM0625AC16-08R060 | - | 0.625 | - | 0.060 | 8 | - | 0.438 | - | 0.732 | - | 0.613 | 42° | XP3225 |
| 52302013 | | PXSM0625AC16-08R090 | - | 0.625 | - | 0.090 | 8 | - | 0.438 | - | 0.732 | - | 0.613 | 42° | XP3225 |
| 52302014 | | PXSM0625AC16-08R120 | - | 0.625 | - | 0.120 | 8 | - | 0.438 | - | 0.732 | - | 0.613 | 42° | XP3225 |
| 52302015 | | PXSM0750AC20-10R000 | - | 0.750 | - | 0.000 | 10 | - | 0.525 | - | 0.807 | - | 0.736 | 42° | XP3225 |
| 52302016 | | PXSM0750AC20-10R030 | - | 0.750 | - | 0.030 | 10 | - | 0.525 | - | 0.807 | - | 0.736 | 42° | XP3225 |
| 52302017 | | PXSM0750AC20-10R060 | - | 0.750 | - | 0.060 | 10 | - | 0.525 | - | 0.807 | - | 0.736 | 42° | XP3225 |
| 52302018 | | PXSM0750AC20-10R090 | - | 0.750 | - | 0.090 | 10 | - | 0.525 | - | 0.807 | - | 0.736 | 42° | XP3225 |
| 52302019 | | PXSM0750AC20-10R120 | - | 0.750 | - | 0.120 | 10 | - | 0.525 | - | 0.807 | - | 0.736 | 42° | XP3225 |
| 52302020 | | PXSM1000AC25-10R000 | - | 1.000 | - | 0.000 | 10 | - | 0.700 | - | 1.098 | - | 0.960 | 42° | XP3225 |
| 52302021 | | PXSM1000AC25-10R030 | - | 1.000 | - | 0.030 | 10 | - | 0.700 | - | 1.098 | - | 0.960 | 42° | XP3225 |
| 52302022 | | PXSM1000AC25-10R060 | - | 1.000 | - | 0.060 | 10 | - | 0.700 | - | 1.098 | - | 0.960 | 42° | XP3225 |
| 52302023 | | PXSM1000AC25-10R090 | - | 1.000 | - | 0.090 | 10 | - | 0.700 | - | 1.098 | - | 0.960 | 42° | XP3225 |
| 52302024 | | PXSM1000AC25-10R120 | - | 1.000 | - | 0.120 | 10 | - | 0.700 | - | 1.098 | - | 0.960 | 42° | XP3225 |
| 7830094 | | PXSM100C10-06R000 | 10 | - | 0 | - | 6 | 7 | - | 13 | - | 9.7 | - | 38° | XP3225 |
| 7830095 | | PXSM100C10-06R005 | 10 | - | 0.5 | - | 6 | 7 | - | 13 | - | 9.7 | - | 38° | XP3225 |
| 7830096 | | PXSM100C10-06R010 | 10 | - | 1 | - | 6 | 7 | - | 13 | - | 9.7 | - | 38° | XP3225 |
| 7830097 | | PXSM100C10-06R020 | 10 | - | 2 | - | 6 | 7 | - | 13 | - | 9.7 | - | 38° | XP3225 |
| 7830104 | | PXSM120C12-06R000 | 12 | - | 0 | - | 6 | 8.4 | - | 14.4 | - | 11.7 | - | 38° | XP3225 |
| 7830105 | | PXSM120C12-06R005 | 12 | - | 0.5 | - | 6 | 8.4 | - | 14.4 | - | 11.7 | - | 38° | XP3225 |
| 7830106 | | PXSM120C12-06R010 | 12 | - | 1 | - | 6 | 8.4 | - | 14.4 | - | 11.7 | - | 38° | XP3225 |
| 7830107 | | PXSM120C12-06R020 | 12 | - | 2 | - | 6 | 8.4 | - | 14.4 | - | 11.7 | - | 38° | XP3225 |
| 7830108 | | PXSM120C12-06R030 | 12 | - | 3 | - | 6 | 8.4 | - | 14.4 | - | 11.7 | - | 38° | XP3225 |
| 7830109 | | PXSM160C16-06R000 | 16 | - | 0 | - | 6 | 11.2 | - | 18.7 | - | 15.7 | - | 38° | XP3225 |
| 7830110 | | PXSM160C16-06R005 | 16 | - | 0.5 | - | 6 | 11.2 | - | 18.7 | - | 15.7 | - | 38° | XP3225 |
| 7830111 | PXSM160C16-06R010 | 16 | - | 1 | - | 6 | 11.2 | - | 18.7 | - | 15.7 | - | 38° | XP3225 | |
| 7830112 | PXSM160C16-06R015 | 16 | - | 1.5 | - | 6 | 11.2 | - | 18.7 | - | 15.7 | - | 38° | XP3225 | |
| 7830113 | PXSM160C16-06R020 | 16 | - | 2 | - | 6 | 11.2 | - | 18.7 | - | 15.7 | - | 38° | XP3225 | |
| 7830114 | PXSM160C16-06R030 | 16 | - | 3 | - | 6 | 11.2 | - | 18.7 | - | 15.7 | - | 38° | XP3225 | |
| 7830115 | PXSM160C16-08R000 | 16 | - | 0 | - | 8 | 11.2 | - | 18.7 | - | 15.7 | - | 42° | XP3225 | |
| 7830116 | PXSM160C16-08R005 | 16 | - | 0.5 | - | 8 | 11.2 | - | 18.7 | - | 15.7 | - | 42° | XP3225 | |
| 7830117 | PXSM160C16-08R010 | 16 | - | 1 | - | 8 | 11.2 | - | 18.7 | - | 15.7 | - | 42° | XP3225 | |
| 7830118 | PXSM160C16-08R015 | 16 | - | 1.5 | - | 8 | 11.2 | - | 18.7 | - | 15.7 | - | 42° | XP3225 | |
| 7830119 | PXSM160C16-08R020 | 16 | - | 2 | - | 8 | 11.2 | - | 18.7 | - | 15.7 | - | 42° | XP3225 | |
| 7830120 | PXSM160C16-08R030 | 16 | - | 3 | - | 8 | 11.2 | - | 18.7 | - | 15.7 | - | 42° | XP3225 | |

Packed: 1 pc.

continued on next page





List 78PXS (Continued)

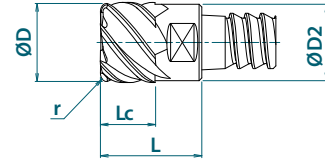
PXS Exchangeable Heads (Inch & Metric) - Multiple Flute, Square & Corner Radius

NEW SIZES



SPEED FEED
P1491

Accessories: p1488
PXM Arbors: p1478-1487



| EDP No. | Type | Designation | Head Dia. | | Corner Radius | | No. of Flutes | Length of Cut | | Overall Length | | Flange Dia. | | Helix Angle | Grade |
|---------|------|-------------------|-----------|--------|---------------|--------|---------------|---------------|--------|----------------|--------|-------------|--------|-------------|--------|
| | | | D | | r | | | Lc | | L | | D2 | | | |
| | | | (mm) | (inch) | (mm) | (inch) | | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | | |
| 7830121 | PXSM | PXSM200C20-10R000 | 20 | - | 0 | - | 10 | 14 | - | 21.5 | - | 19.6 | - | 42° | XP3225 |
| 7830122 | | PXSM200C20-10R005 | 20 | - | 0.5 | - | 10 | 14 | - | 21.5 | - | 19.6 | - | 42° | XP3225 |
| 7830123 | | PXSM200C20-10R010 | 20 | - | 1 | - | 10 | 14 | - | 21.5 | - | 19.6 | - | 42° | XP3225 |
| 7830124 | | PXSM200C20-10R020 | 20 | - | 2 | - | 10 | 14 | - | 21.5 | - | 19.6 | - | 42° | XP3225 |
| 7830125 | | PXSM200C20-10R030 | 20 | - | 3 | - | 10 | 14 | - | 21.5 | - | 19.6 | - | 42° | XP3225 |
| 7830126 | | PXSM250C25-10R000 | 25 | - | 0 | - | 10 | 17.5 | - | 27.5 | - | 24 | - | 42° | XP3225 |
| 7830127 | | PXSM250C25-10R010 | 25 | - | 1 | - | 10 | 17.5 | - | 27.5 | - | 24 | - | 42° | XP3225 |
| 7830128 | | PXSM250C25-10R020 | 25 | - | 2 | - | 10 | 17.5 | - | 27.5 | - | 24 | - | 42° | XP3225 |
| 7830129 | | PXSM250C25-10R030 | 25 | - | 3 | - | 10 | 17.5 | - | 27.5 | - | 24 | - | 42° | XP3225 |

Packed: 1 pc.





List 78PXNL

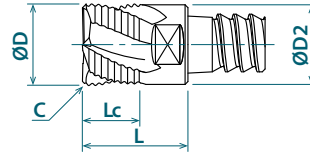
PXNL Exchangeable Heads (inch & metric) - 4 Flute, Roughing, Low Helix

NEW SIZES



SPEED FEED
P1492

Accessories: p1488
PXM Arbors: p1478-1487



| EDP No. | Type | Designation | Head Dia. | | Corner Chamfer | | Length of Cut | | Overall Length | | Flange Dia. | | Helix Angle | Grade |
|----------|------|---------------------|-----------|--------|----------------|--------|---------------|--------|----------------|--------|-------------|--------|-------------|--------|
| | | | D | | C | | Lc | | L | | D2 | | | |
| | | | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | | |
| 52303004 | PXNL | PXNL0375AC10-04C020 | - | 0.375 | - | 0.020 | - | 0.263 | - | 0.488 | - | 0.366 | 19° / 21° | XP3225 |
| 52303000 | | PXNL0500AC12-04C020 | - | 0.500 | - | 0.020 | - | 0.350 | - | 0.598 | - | 0.488 | 19° / 21° | XP3225 |
| 52303001 | | PXNL0625AC16-04C025 | - | 0.625 | - | 0.025 | - | 0.438 | - | 0.732 | - | 0.613 | 19° / 21° | XP3225 |
| 52303002 | | PXNL0750AC20-04C025 | - | 0.750 | - | 0.025 | - | 0.525 | - | 0.807 | - | 0.736 | 19° / 21° | XP3225 |
| 52303003 | | PXNL1000AC25-04C025 | - | 1.000 | - | 0.025 | - | 0.700 | - | 1.098 | - | 0.960 | 19° / 21° | XP3225 |
| 7830400 | | PXNL100C10-04C005 | 10 | - | 0.5 | - | 7 | - | 13 | - | 9.7 | - | 19° / 21° | XP3225 |
| 7830401 | | PXNL120C12-04C005 | 12 | - | 0.5 | - | 8.4 | - | 14.4 | - | 11.7 | - | 19° / 21° | XP3225 |
| 7830402 | | PXNL160C16-04C006 | 16 | - | 0.6 | - | 11.2 | - | 18.7 | - | 15.7 | - | 19° / 21° | XP3225 |
| 7830403 | | PXNL200C20-04C006 | 20 | - | 0.6 | - | 14 | - | 21.5 | - | 19.6 | - | 19° / 21° | XP3225 |
| 7830404 | | PXNL250C25-04C006 | 25 | - | 0.6 | - | 17.5 | - | 27.5 | - | 24 | - | 19° / 21° | XP3225 |

Packed: 1 pc.



List 78PXNL-O

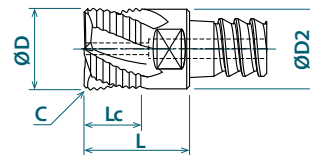
PXNL Exchangeable Heads (inch & metric) - 4 Flute, Roughing, Low Helix, Coolant-Through

NEW



SPEED FEED
P1492

Accessories: p1488
PXM Arbors: p1478-1487



| EDP No. | Type | Designation | Head Dia. | | Corner Chamfer | | Length of Cut | | Overall Length | | Flange Dia. | | Helix Angle | Grade |
|----------|------|-----------------------|-----------|--------|----------------|--------|---------------|--------|----------------|--------|-------------|--------|-------------|--------|
| | | | D | | C | | Lc | | L | | D2 | | | |
| | | | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | | |
| 52315000 | PXNL | PXNL0500AC12-04C020-O | - | 0.500 | - | 0.020 | - | 0.350 | - | 0.598 | - | 0.488 | 19° / 21° | XP3225 |
| 52315001 | | PXNL0625AC16-04C025-O | - | 0.625 | - | 0.025 | - | 0.438 | - | 0.732 | - | 0.613 | 19° / 21° | XP3225 |
| 52315002 | | PXNL0750AC20-04C025-O | - | 0.750 | - | 0.025 | - | 0.525 | - | 0.807 | - | 0.736 | 19° / 21° | XP3225 |
| 52315003 | | PXNL1000AC25-04C025-O | - | 1.000 | - | 0.025 | - | 0.700 | - | 1.098 | - | 0.960 | 19° / 21° | XP3225 |
| 7830411 | | PXNL120C12-04C005-O | 12 | - | 0.5 | - | 8.4 | - | 14.4 | - | 11.7 | - | 19° / 21° | XP3225 |
| 7830412 | | PXNL160C16-04C006-O | 16 | - | 0.6 | - | 11.2 | - | 18.7 | - | 15.7 | - | 19° / 21° | XP3225 |
| 7830413 | | PXNL200C20-04C006-O | 20 | - | 0.6 | - | 14 | - | 21.5 | - | 19.6 | - | 19° / 21° | XP3225 |
| 7830414 | | PXNL250C25-04C006-O | 25 | - | 0.6 | - | 17.5 | - | 27.5 | - | 24 | - | 19° / 21° | XP3225 |

Packed: 1 pc.

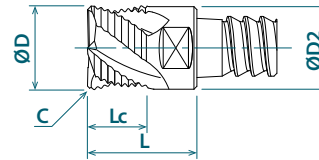


List 78PXNH

PXNH Exchangeable Heads (inch & metric) - 4 Flute, Roughing, High Helix



Accessories: p1488
PXM Arbors: p1478-1487



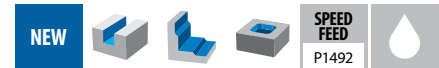
| EDP No. | Type | Designation | Head Dia. | | Corner Chamfer | | Length of Cut | | Overall Length | | Flange Dia. | | Helix Angle | Grade | |
|----------|------|---------------------|-----------|--------|----------------|--------|---------------|--------|----------------|--------|-------------|--------|-------------|-----------|--------|
| | | | D | | C | | Lc | | L | | D2 | | | | |
| | | | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | | | |
| 52304004 | PXNH | PXNH0375AC10-04C020 | - | 0.375 | - | 0.020 | - | 0.263 | - | 0.488 | - | 0.366 | 40° / 42° | XP3225 | |
| 52304000 | | PXNH0500AC12-04C020 | - | 0.500 | - | 0.020 | - | 0.350 | - | 0.598 | - | 0.488 | 40° / 42° | XP3225 | |
| 52304001 | | PXNH0625AC16-04C025 | - | 0.625 | - | 0.025 | - | 0.438 | - | 0.732 | - | 0.613 | 40° / 42° | XP3225 | |
| 52304002 | | PXNH0750AC20-04C025 | - | 0.750 | - | 0.025 | - | 0.525 | - | 0.807 | - | 0.736 | 40° / 42° | XP3225 | |
| 52304003 | | PXNH1000AC25-04C025 | - | 1.000 | - | 0.025 | - | 0.700 | - | 1.098 | - | 0.960 | 40° / 42° | XP3225 | |
| 7830450 | | PXNH100C10-04C005 | 10 | - | 0.5 | - | 7 | - | 13 | - | 9.7 | - | - | 40° / 42° | XP3225 |
| 7830451 | | PXNH120C12-04C005 | 12 | - | 0.5 | - | 8.4 | - | 14.4 | - | 11.7 | - | - | 40° / 42° | XP3225 |
| 7830452 | | PXNH160C16-04C006 | 16 | - | 0.6 | - | 11.2 | - | 18.7 | - | 15.7 | - | - | 40° / 42° | XP3225 |
| 7830453 | | PXNH200C20-04C006 | 20 | - | 0.6 | - | 14 | - | 21.5 | - | 19.6 | - | - | 40° / 42° | XP3225 |
| 7830454 | | PXNH250C25-04C006 | 25 | - | 0.6 | - | 17.5 | - | 27.5 | - | 24 | - | - | 40° / 42° | XP3225 |

Packed: 1 pc.

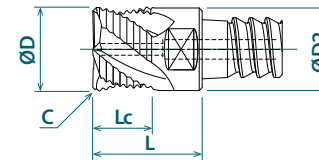


List 78PXNH-O

PXNH Exchangeable Heads (inch & metric) - 4 Flute, Roughing, High Helix, Coolant-Through



Accessories: p1488
PXM Arbors: p1478-1487



| EDP No. | Type | Designation | Head Dia. | | Corner Chamfer | | Length of Cut | | Overall Length | | Flange Dia. | | Helix Angle | Grade | |
|----------|------|-----------------------|-----------|--------|----------------|--------|---------------|--------|----------------|--------|-------------|--------|-------------|-----------|--------|
| | | | D | | C | | Lc | | L | | D2 | | | | |
| | | | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | | | |
| 52316000 | PXNH | PXNH0500AC12-04C020-O | - | 0.500 | - | 0.020 | - | 0.350 | - | 0.598 | - | 0.488 | 40° / 42° | XP3225 | |
| 52316001 | | PXNH0625AC16-04C025-O | - | 0.625 | - | 0.025 | - | 0.438 | - | 0.732 | - | 0.613 | 40° / 42° | XP3225 | |
| 52316002 | | PXNH0750AC20-04C025-O | - | 0.750 | - | 0.025 | - | 0.525 | - | 0.807 | - | 0.736 | 40° / 42° | XP3225 | |
| 52316003 | | PXNH1000AC25-04C025-O | - | 1.000 | - | 0.025 | - | 0.700 | - | 1.098 | - | 0.960 | 40° / 42° | XP3225 | |
| 7830461 | | PXNH120C12-04C005-O | 12 | - | 0.5 | - | 8.4 | - | 14.4 | - | 11.7 | - | - | 40° / 42° | XP3225 |
| 7830462 | | PXNH160C16-04C006-O | 16 | - | 0.6 | - | 11.2 | - | 18.7 | - | 15.7 | - | - | 40° / 42° | XP3225 |
| 7830463 | | PXNH200C20-04C006-O | 20 | - | 0.6 | - | 14 | - | 21.5 | - | 19.6 | - | - | 40° / 42° | XP3225 |
| 7830464 | | PXNH250C25-04C006-O | 25 | - | 0.6 | - | 17.5 | - | 27.5 | - | 24 | - | - | 40° / 42° | XP3225 |

Packed: 1 pc.

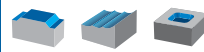




List 78PXRE

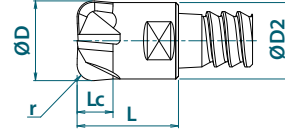
PXRE Exchangeable Heads (inch & metric) - Multiple Flute, Straight Flute, Corner Radius

NEW SIZES



SPEED FEED
P1493

Accessories: p1488
PXM Arbors: p1478-1487



| EDP No. | Type | Designation | Head Dia. | | Corner Radius | | No. of Flutes | Length of Cut | | Overall Length | | Flange Dia. | | Helix Angle | Grade |
|----------|------|---------------------|-----------|--------|---------------|--------|---------------|---------------|--------|----------------|--------|-------------|--------|-------------|--------|
| | | | D | | r | | | Lc | | L | | D2 | | | |
| | | | (mm) | (inch) | (mm) | (inch) | | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | | |
| 52305004 | PXRE | PXRE0375AC10-04R090 | - | 0.375 | - | 0.090 | 4 | - | 0.169 | - | 0.488 | - | 0.366 | - | XP6305 |
| 52305000 | | PXRE0500AC12-04R090 | - | 0.500 | - | 0.090 | 4 | - | 0.197 | - | 0.598 | - | 0.488 | - | XP6305 |
| 52305001 | | PXRE0625AC16-06R120 | - | 0.625 | - | 0.120 | 6 | - | 0.276 | - | 0.732 | - | 0.613 | - | XP6305 |
| 52305002 | | PXRE0750AC20-06R120 | - | 0.750 | - | 0.120 | 6 | - | 0.394 | - | 0.807 | - | 0.736 | - | XP6305 |
| 52305003 | | PXRE1000AC25-06R120 | - | 1.000 | - | 0.120 | 6 | - | 0.500 | - | 1.098 | - | 0.960 | - | XP6305 |
| 7830200 | | PXRE100C10-04R020 | 10 | - | 2 | - | 4 | 4.5 | - | 13 | - | 9.7 | - | - | XP6305 |
| 7830201 | | PXRE120C12-04R020 | 12 | - | 2 | - | 4 | 5 | - | 14.4 | - | 11.7 | - | - | XP6305 |
| 7830202 | | PXRE160C16-06R030 | 16 | - | 3 | - | 6 | 7 | - | 18.7 | - | 15.7 | - | - | XP6305 |
| 7830203 | | PXRE200C20-06R030 | 20 | - | 3 | - | 6 | 10 | - | 21.5 | - | 19.6 | - | - | XP6305 |

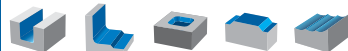
Packed: 1 pc.



List 78PXDR

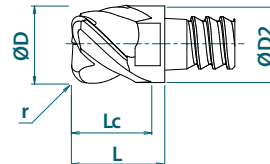
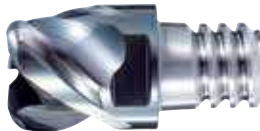
PXDR-P Exchangeable Heads (inch & metric) - 3 Flute, Helical Flute, Corner Radius

NEW SIZES



SPEED FEED
P1493

Accessories: p1488
PXM Arbors: p1478-1487



| EDP No. | Type | Designation | Head Dia. | | Corner Radius | | Length of Cut | | Overall Length | | Flange Dia. | | Helix Angle | Grade |
|----------|--------|-----------------------|-----------|--------|---------------|--------|---------------|--------|----------------|--------|-------------|--------|-------------|--------|
| | | | D | | r | | Lc | | L | | D2 | | | |
| | | | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | | |
| 52309008 | PXDR-P | PXDR0375AC10-03R060-P | - | 0.375 | - | 0.060 | - | 0.264 | - | 0.488 | - | 0.366 | 45° | XP3225 |
| 52309009 | | PXDR0375AC10-03R090-P | - | 0.375 | - | 0.090 | - | 0.264 | - | 0.488 | - | 0.366 | 45° | XP3225 |
| 52309000 | | PXDR0500AC12-03R060-P | - | 0.500 | - | 0.060 | - | 0.350 | - | 0.598 | - | 0.488 | 45° | XP3225 |
| 52309001 | | PXDR0500AC12-03R090-P | - | 0.500 | - | 0.090 | - | 0.350 | - | 0.598 | - | 0.488 | 45° | XP3225 |
| 52309002 | | PXDR0625AC16-03R090-P | - | 0.625 | - | 0.090 | - | 0.438 | - | 0.732 | - | 0.614 | 45° | XP3225 |
| 52309003 | | PXDR0625AC16-03R120-P | - | 0.625 | - | 0.120 | - | 0.438 | - | 0.732 | - | 0.614 | 45° | XP3225 |
| 52309004 | | PXDR0750AC20-03R090-P | - | 0.750 | - | 0.090 | - | 0.525 | - | 0.807 | - | 0.736 | 45° | XP3225 |
| 52309005 | | PXDR0750AC20-03R120-P | - | 0.750 | - | 0.120 | - | 0.525 | - | 0.807 | - | 0.736 | 45° | XP3225 |
| 52309006 | | PXDR1000AC25-03R090-P | - | 1.000 | - | 0.090 | - | 0.700 | - | 1.098 | - | 0.960 | 45° | XP3225 |
| 52309007 | | PXDR1000AC25-03R120-P | - | 1.000 | - | 0.120 | - | 0.700 | - | 1.098 | - | 0.960 | 45° | XP3225 |
| 7830349 | | PXDR100C10-03R015-P | 10 | - | 1.5 | - | 7 | - | 13 | - | 9.7 | - | 45° | XP3225 |
| 7830350 | | PXDR100C10-03R020-P | 10 | - | 2 | - | 7 | - | 13 | - | 9.7 | - | 45° | XP3225 |
| 7830351 | | PXDR120C12-03R015-P | 12 | - | 1.5 | - | 8.4 | - | 14.4 | - | 11.7 | - | 45° | XP3225 |
| 7830352 | | PXDR120C12-03R020-P | 12 | - | 2 | - | 8.4 | - | 14.4 | - | 11.7 | - | 45° | XP3225 |
| 7830353 | | PXDR160C16-03R020-P | 16 | - | 2 | - | 11.2 | - | 18.7 | - | 15.7 | - | 45° | XP3225 |
| 7830354 | | PXDR160C16-03R030-P | 16 | - | 3 | - | 11.2 | - | 18.7 | - | 15.7 | - | 45° | XP3225 |
| 7830355 | | PXDR200C20-03R020-P | 20 | - | 2 | - | 14 | - | 21.5 | - | 19.6 | - | 45° | XP3225 |
| 7830356 | | PXDR200C20-03R030-P | 20 | - | 3 | - | 14 | - | 21.5 | - | 19.6 | - | 45° | XP3225 |

Packed: 1 pc.

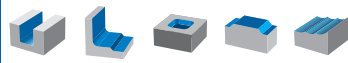
continued on next page



List 78PXDR (Continued)

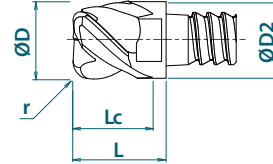
PXDR-N Exchangeable Heads (inch & metric) - 3 Flute, Helical Flute, Corner Radius

NEW SIZES



SPEED FEED
P1494

Accessories: p1488
PXM Arbors: p1478-1487



| EDP No. | Type | Designation | Head Dia. | | Corner Radius | | Length of Cut | | Overall Length | | Flange Dia. | | Helix Angle | Grade | |
|----------|--------|-----------------------|-----------|--------|---------------|--------|---------------|--------|----------------|--------|-------------|--------|-------------|--------|--------|
| | | | D | | r | | Lc | | L | | D2 | | | | |
| | | | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | | | |
| 52310008 | PXDR-N | PXDR0375AC10-03R060-N | - | 0.375 | - | 0.060 | - | 0.264 | - | 0.488 | - | 0.366 | 45° | XP6305 | |
| 52310009 | | PXDR0375AC10-03R090-N | - | 0.375 | - | 0.090 | - | 0.264 | - | 0.488 | - | 0.366 | 45° | XP6305 | |
| 52310000 | | PXDR0500AC12-03R060-N | - | 0.500 | - | 0.060 | - | 0.350 | - | 0.598 | - | 0.488 | 45° | XP6305 | |
| 52310001 | | PXDR0500AC12-03R090-N | - | 0.500 | - | 0.090 | - | 0.350 | - | 0.598 | - | 0.488 | 45° | XP6305 | |
| 52310002 | | PXDR0625AC16-03R090-N | - | 0.625 | - | 0.090 | - | 0.438 | - | 0.732 | - | 0.614 | 45° | XP6305 | |
| 52310003 | | PXDR0625AC16-03R120-N | - | 0.625 | - | 0.120 | - | 0.438 | - | 0.732 | - | 0.614 | 45° | XP6305 | |
| 52310004 | | PXDR0750AC20-03R090-N | - | 0.750 | - | 0.090 | - | 0.525 | - | 0.807 | - | 0.736 | 45° | XP6305 | |
| 52310005 | | PXDR0750AC20-03R120-N | - | 0.750 | - | 0.120 | - | 0.525 | - | 0.807 | - | 0.736 | 45° | XP6305 | |
| 52310006 | | PXDR1000AC25-03R090-N | - | 1.000 | - | 0.090 | - | 0.700 | - | 1.098 | - | 0.960 | 45° | XP6305 | |
| 52310007 | | PXDR1000AC25-03R120-N | - | 1.000 | - | 0.120 | - | 0.700 | - | 1.098 | - | 0.960 | 45° | XP6305 | |
| 7830369 | | PXDR100C10-03R015-N | 10 | - | 1.5 | - | 7 | - | 13 | - | 9.7 | - | 9.7 | 45° | XP6305 |
| 7830370 | | PXDR100C10-03R020-N | 10 | - | 2 | - | 7 | - | 13 | - | 9.7 | - | 9.7 | 45° | XP6305 |
| 7830371 | | PXDR120C12-03R015-N | 12 | - | 1.5 | - | 8.4 | - | 14.4 | - | 11.7 | - | 11.7 | 45° | XP6305 |
| 7830372 | | PXDR120C12-03R020-N | 12 | - | 2 | - | 8.4 | - | 14.4 | - | 11.7 | - | 11.7 | 45° | XP6305 |
| 7830373 | | PXDR160C16-03R020-N | 16 | - | 2 | - | 11.2 | - | 18.7 | - | 15.7 | - | 15.7 | 45° | XP6305 |
| 7830374 | | PXDR160C16-03R030-N | 16 | - | 3 | - | 11.2 | - | 18.7 | - | 15.7 | - | 15.7 | 45° | XP6305 |
| 7830375 | | PXDR200C20-03R020-N | 20 | - | 2 | - | 14 | - | 21.5 | - | 19.6 | - | 19.6 | 45° | XP6305 |
| 7830376 | | PXDR200C20-03R030-N | 20 | - | 3 | - | 14 | - | 21.5 | - | 19.6 | - | 19.6 | 45° | XP6305 |

Packed: 1 pc.

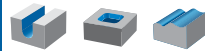




List 78PXBE

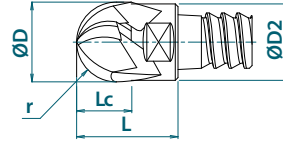
PXBE-P Exchangeable Heads (inch & metric) - 3 Flute, Ball End

NEW SIZES



SPEED FEED
P1494

Accessories: p1488
PXM Arbors: p1478-1487



| EDP No. | Type | Designation | Head Dia. | | Head Radius | | Length of Cut | | Overall Length | | Flange Dia. | | Helix Angle | Grade | |
|----------|---------------------|-----------------------|-----------|--------|-------------|--------|---------------|--------|----------------|--------|-------------|--------|-------------|--------|--------|
| | | | D | | r | | Lc | | L | | D2 | | | | |
| | | | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | | | |
| 52311004 | PXBE-P | PXBE0375AC10-03R187-P | - | 0.375 | - | 0.1875 | - | 0.264 | - | 0.488 | - | 0.366 | 45° | XP3320 | |
| 52311000 | | PXBE0500AC12-03R250-P | - | 0.500 | - | 0.250 | - | 0.350 | - | 0.598 | - | 0.488 | 45° | XP3320 | |
| 52311001 | | PXBE0625AC16-03R313-P | - | 0.625 | - | 0.3125 | - | 0.438 | - | 0.732 | - | 0.614 | 45° | XP3320 | |
| 52311002 | | PXBE0750AC20-03R375-P | - | 0.750 | - | 0.375 | - | 0.525 | - | 0.807 | - | 0.736 | 45° | XP3320 | |
| 52311003 | | PXBE1000AC25-03R500-P | - | 1.000 | - | 0.500 | - | 0.700 | - | 1.098 | - | 0.960 | 45° | XP3320 | |
| 7830270 | | PXBE100C10-03R050-P | 10 | - | 5 | - | 7 | - | 13 | - | 9.7 | - | - | 45° | XP3320 |
| 7830271 | | PXBE120C12-03R060-P | 12 | - | 6 | - | 8.4 | - | 14.4 | - | 11.7 | - | - | 45° | XP3320 |
| 7830272 | | PXBE160C16-03R080-P | 16 | - | 8 | - | 11.2 | - | 18.7 | - | 15.7 | - | - | 45° | XP3320 |
| 7830273 | PXBE200C20-03R100-P | 20 | - | 10 | - | 14 | - | 21.5 | - | 19.6 | - | - | 45° | XP3320 | |

Packed: 1 pc.

continued on next page

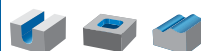




List 78PXBE (Continued)

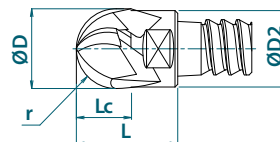
PXBE-N Exchangeable Heads (inch & metric) - 3 Flute, Ball End

NEW SIZES



SPEED FEED
P1495

Accessories: p1488
PXM Arbors: p1478-1487



| EDP No. | Type | Designation | Head Dia. | | Head Radius | | Length of Cut | | Overall Length | | Flange Dia. | | Helix Angle | Grade |
|----------|--------|-----------------------|-----------|--------|-------------|--------|---------------|--------|----------------|--------|-------------|--------|-------------|--------|
| | | | D | | R | | Lc | | L | | D2 | | | |
| | | | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | | |
| 52306004 | PXBE-N | PXBE0375AC10-03R187-N | - | 0.375 | - | 0.1875 | - | 0.264 | - | 0.488 | - | 0.366 | 45° | XP3320 |
| 52306000 | | PXBE0500AC12-03R250-N | - | 0.500 | - | 0.500 | - | 0.350 | - | 0.598 | - | 0.488 | 45° | XP3320 |
| 52306001 | | PXBE0625AC16-03R313-N | - | 0.625 | - | 0.3125 | - | 0.438 | - | 0.732 | - | 0.613 | 45° | XP3320 |
| 52306002 | | PXBE0750AC20-03R375-N | - | 0.750 | - | 0.375 | - | 0.525 | - | 0.807 | - | 0.736 | 45° | XP3320 |
| 52306003 | | PXBE1000AC25-03R500-N | - | 1.000 | - | 0.500 | - | 0.700 | - | 1.098 | - | 0.960 | 45° | XP3320 |
| 7830250 | | PXBE100C10-03R050-N | 10 | - | 5 | - | 7 | - | 13 | - | 9.7 | - | 45° | XP3320 |
| 7830251 | | PXBE120C12-03R060-N | 12 | - | 6 | - | 8.4 | - | 14.4 | - | 11.7 | - | 45° | XP3320 |
| 7830252 | | PXBE160C16-03R080-N | 16 | - | 8 | - | 11.2 | - | 18.7 | - | 15.7 | - | 45° | XP3320 |
| 7830253 | | PXBE200C20-03R100-N | 20 | - | 10 | - | 14 | - | 21.5 | - | 19.6 | - | 45° | XP3320 |

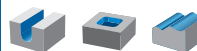
Packed: 1 pc.



List 78PXBE-O

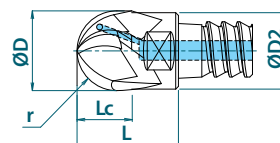
PXBE-P Exchangeable Heads (inch & metric) - 3 Flute, Ball End, Coolant-Through

NEW



SPEED FEED
P1494

Accessories: p1488
PXM Arbors: p1478-1487



| EDP No. | Type | Designation | Head Dia. | | Head Radius | | Length of Cut | | Overall Length | | Flange Dia. | | Helix Angle | Grade |
|----------|--------|-------------------------|-----------|--------|-------------|--------|---------------|--------|----------------|--------|-------------|--------|-------------|--------|
| | | | D | | R | | Lc | | L | | D2 | | | |
| | | | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | | |
| 52317000 | PXBE-P | PXBE0500AC12-03R250-P-O | - | 0.500 | - | 0.250 | - | 0.350 | - | 0.598 | - | 0.488 | 45° | XP3320 |
| 52317001 | | PXBE0625AC16-03R313-P-O | - | 0.625 | - | 0.3125 | - | 0.438 | - | 0.732 | - | 0.614 | 45° | XP3320 |
| 52317002 | | PXBE0750AC20-03R375-P-O | - | 0.750 | - | 0.375 | - | 0.525 | - | 0.807 | - | 0.736 | 45° | XP3320 |
| 7830281 | | PXBE120C12-03R060-P-O | 12 | - | 6 | - | 8.4 | - | 14.4 | - | 11.7 | - | 45° | XP3320 |
| 7830282 | | PXBE160C16-03R080-P-O | 16 | - | 8 | - | 11.2 | - | 18.7 | - | 15.7 | - | 45° | XP3320 |
| 7830283 | | PXBE200C20-03R100-P-O | 20 | - | 10 | - | 14 | - | 21.5 | - | 19.6 | - | 45° | XP3320 |

Packed: 1 pc.

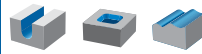




List 78PXBE-O (Continued)

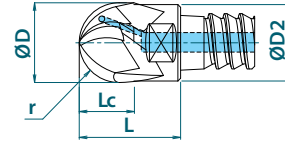
PXBE-N Exchangeable Heads (inch & metric) - 3 Flute, Ball End, Coolant-Through

NEW



SPEED FEED
P1495

Accessories: p1488
PXM Arbors: p1478-1487



| EDP No. | Type | Designation | Head Dia. | | Head Radius | | Length of Cut | | Overall Length | | Flange Dia. | | Helix Angle | Grade |
|----------|--------|-------------------------|-----------|--------|-------------|--------|---------------|--------|----------------|--------|-------------|--------|-------------|--------|
| | | | D | | R | | Lc | | L | | D2 | | | |
| | | | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | | |
| 52318000 | PXBE-N | PXBE0500AC12-03R250-N-O | - | 0.500 | - | 0.500 | - | 0.350 | - | 0.598 | - | 0.488 | 45° | XP3320 |
| 52318001 | | PXBE0625AC16-03R313-N-O | - | 0.625 | - | 0.3125 | - | 0.438 | - | 0.732 | - | 0.613 | 45° | XP3320 |
| 52318002 | | PXBE0750AC20-03R375-N-O | - | 0.750 | - | 0.375 | - | 0.525 | - | 0.807 | - | 0.736 | 45° | XP3320 |
| 7830261 | | PXBE120C12-03R060-N-O | 12 | - | 6 | - | 8.4 | - | 14.4 | - | 11.7 | - | 45° | XP3320 |
| 7830262 | | PXBE160C16-03R080-N-O | 16 | - | 8 | - | 11.2 | - | 18.7 | - | 15.7 | - | 45° | XP3320 |
| 7830263 | | PXBE200C20-03R100-N-O | 20 | - | 10 | - | 14 | - | 21.5 | - | 19.6 | - | 45° | XP3320 |

Packed: 1 pc.



List 78PXBM

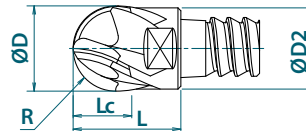
PXBM Exchangeable Heads (inch & metric) - Multiple Flute, Ball End

NEW SIZES



SPEED FEED
P1495

Accessories: p1488
PXM Arbors: p1478-1487



| EDP No. | Type | Designation | Head Dia. | | Head Radius | | No. of Flutes | Length of Cut | | Overall Length | | Flange Dia. | | Helix Angle | Grade |
|----------|------|---------------------|-----------|--------|-------------|--------|---------------|---------------|--------|----------------|--------|-------------|--------|-------------|--------|
| | | | D | | R | | | Lc | | L | | D2 | | | |
| | | | (mm) | (inch) | (mm) | (inch) | | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | | |
| 52307004 | PXBM | PXBM0375AC10-04R187 | - | 0.375 | - | 0.1875 | 4 | - | 0.264 | - | 0.488 | - | 0.366 | 45° | XP3320 |
| 52307000 | | PXBM0500AC12-04R250 | - | 0.500 | - | 0.250 | 4 | - | 0.350 | - | 0.598 | - | 0.488 | 45° | XP3320 |
| 52307001 | | PXBM0625AC16-06R313 | - | 0.625 | - | 0.3125 | 6 | - | 0.438 | - | 0.732 | - | 0.613 | 45° | XP3320 |
| 52307002 | | PXBM0750AC20-06R375 | - | 0.750 | - | 0.375 | 6 | - | 0.525 | - | 0.807 | - | 0.736 | 45° | XP3320 |
| 52307003 | | PXBM1000AC25-06R500 | - | 1.000 | - | 0.500 | 6 | - | 0.700 | - | 1.098 | - | 0.960 | 45° | XP3320 |
| 7830300 | | PXBM100C10-04R050 | 10 | - | 5 | - | 4 | 7 | - | 13 | - | 9.7 | - | 45° | XP3320 |
| 7830301 | | PXBM120C12-04R060 | 12 | - | 6 | - | 4 | 8.4 | - | 14.4 | - | 11.7 | - | 45° | XP3320 |
| 7830302 | | PXBM160C16-06R080 | 16 | - | 8 | - | 6 | 11.2 | - | 18.7 | - | 15.7 | - | 45° | XP3320 |
| 7830303 | | PXBM200C20-06R100 | 20 | - | 10 | - | 6 | 14 | - | 21.5 | - | 19.6 | - | 45° | XP3320 |

Packed: 1 pc.



NEW SIZES

List 52300

PXM SA/TPA (inch)



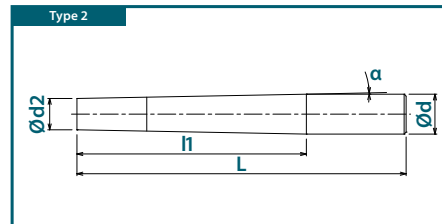
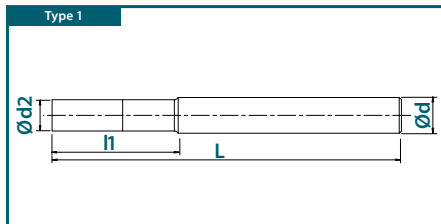
Straight Shank



Tapered Shank

| EDP No. | Body Type | Designation | Type | Neck Dia. (inch) | Shank Dia. (inch) | Taper | Overall Length (inch) | Neck Length (inch) | Applicable Head (Inch) |
|----------|-------------------------|---------------------------|-----------------------|------------------|-------------------|----------------|-----------------------|--------------------|------------------------|
| | | | | d2 | d | α° | L | l1 | |
| 52300024 | Cylindrical Shank Steel | PXMZ-C10SA0375-S300 | 1 | 0.366 | 0.375 | - | 3.000 | 1.000 | 0.375 |
| 52300000 | | PXMZ-C12SA0500-S400 | 1 | 0.488 | 0.500 | - | 4.000 | 0.750 | 0.500 |
| 52300001 | | PXMZ-C12TPA0750-S600 | 2 | 0.488 | 0.750 | 5° | 6.000 | 2.000 | 0.625 |
| 52300002 | | PXMZ-C16SA0625-S400 | 1 | 0.613 | 0.625 | - | 4.000 | 1.000 | 0.750 |
| 52300003 | | PXMZ-C16TPA1000-S650 | 2 | 0.613 | 1.000 | 5° | 6.500 | 2.000 | 1.000 |
| 52300004 | | PXMZ-C20SA0750-S500 | 1 | 0.736 | 0.750 | - | 5.000 | 1.250 | 1.250 |
| 52300005 | | PXMZ-C20TPA1250-S700 | 2 | 0.736 | 1.250 | 5° | 7.000 | 2.750 | 1.000 |
| 52300006 | | PXMZ-C25SA1000-S550 | 1 | 0.960 | 1.000 | - | 5.500 | 1.500 | 1.250 |
| 52300025 | | PXMZ-C32SA1250-S600 | 1 | 1.094 | 1.250 | - | 6.000 | 2.500 | 0.375 |
| 52300026 | | Cylindrical Shank Carbide | PXMZ-C10SA0375-S300CS | 1 | 0.366 | 0.375 | - | 3.000 | 1.000 |
| 52300027 | PXMZ-C10SA0375-L400CS | | 1 | 0.366 | 0.375 | - | 4.000 | 1.750 | 0.500 |
| 52300028 | PXMZ-C10TPA0500-LL500CS | | 2 | 0.366 | 0.375 | 1.4° | 5.000 | 2.750 | 0.625 |
| 52300007 | PXMZ-C12SA0500-S300CS | | 1 | 0.488 | 0.500 | - | 3.000 | 1.000 | 0.750 |
| 52300008 | PXMZ-C12SA0500-L400CS | | 1 | 0.488 | 0.500 | - | 4.000 | 1.750 | 0.625 |
| 52300009 | PXMZ-C12SA0500-L450CS | | 1 | 0.488 | 0.500 | - | 4.500 | 2.500 | 0.750 |
| 52300010 | PXMZ-C12TPA0625-LL550CS | | 2 | 0.488 | 0.625 | 1.5° | 5.500 | 3.250 | 1.000 |
| 52300011 | PXMZ-C16SA0625-S350CS | | 1 | 0.613 | 0.625 | - | 3.500 | 1.500 | 1.250 |
| 52300012 | PXMZ-C16SA0625-L550CS | | 1 | 0.613 | 0.625 | - | 5.500 | 2.500 | 0.750 |
| 52300013 | PXMZ-C16SA0625-L600CS | | 1 | 0.613 | 0.625 | - | 6.000 | 3.250 | 0.750 |
| 52300014 | PXMZ-C16TPA0750-LL650CS | | 2 | 0.613 | 0.750 | 1.5° | 6.500 | 4.500 | 1.000 |
| 52300015 | PXMZ-C20SA0750-S350CS | | 1 | 0.736 | 0.750 | - | 3.500 | 1.500 | 1.250 |
| 52300016 | PXMZ-C20SA0750-L600CS | | 1 | 0.736 | 0.750 | - | 6.000 | 3.000 | 1.250 |
| 52300017 | PXMZ-C20SA0750-L700CS | | 1 | 0.736 | 0.750 | - | 7.000 | 4.250 | 1.000 |
| 52300018 | PXMZ-C20TPA1000-LL800CS | | 2 | 0.736 | 1.000 | 1.5° | 8.000 | 5.500 | 1.250 |
| 52300019 | PXMZ-C25SA1000-L800CS | | 1 | 0.960 | 1.000 | - | 8.000 | 3.750 | 1.250 |
| 52300029 | PXMZ-C32SA1250-L1000CS | | 1 | 1.094 | 1.250 | - | 10.000 | 6.500 | 1.250 |

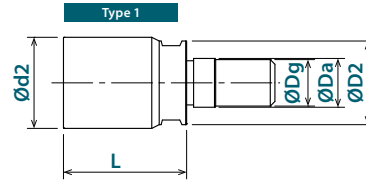
Packed: 1 pc.
Note: Wrench included with body.





List 52300 (Continued)

PXM SF Joint (Inch)

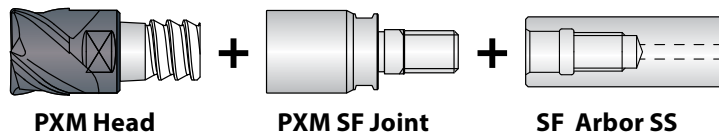


| EDP No. | Body Type | Designation | Type | Neck Dia. (Inch) | Pilot Dia. (Inch) | Thread Dia. (mm) | Flange Dia. (Inch) | Overall Length (Inch) | Spanner Wrench | Applicable Head (inch) |
|----------|--------------|---------------|------|------------------|-------------------|------------------|--------------------|-----------------------|----------------|------------------------|
| | | | | d2 | Da | Dg | D2 | L | | |
| 52300020 | PXMJ (Joint) | PXMJ-AC12SF06 | 1 | 0.488 | 0.256 | M6 | 0.433 | 0.709 | PXMP8-10 | 0.500 |
| 52300021 | | PXMJ-AC16SF08 | | 0.613 | 0.335 | M8 | 0.571 | 0.858 | PXMP13-16 | 0.625 |
| 52300022 | | PXMJ-AC20SF10 | | 0.736 | 0.413 | M10 | 0.707 | 1.043 | PXMP13-16 | 0.750 |
| 52300023 | | PXMJ-AC25SF12 | | 0.960 | 0.492 | M12 | 0.905 | 1.338 | PXMP21 | 1.000 |

Packed: 1 pc.

Note: Wrench included with body.

Note: PXM heads can be mounted to PHOENIX® SF Arbors by attaching the PXM SF Joint.



List 52319



PXM SA/TPA (inch) - Coolant-Through



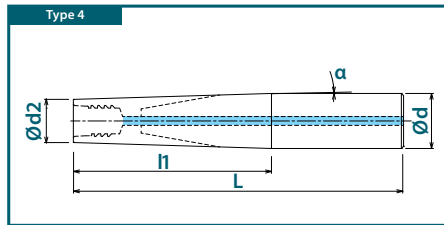
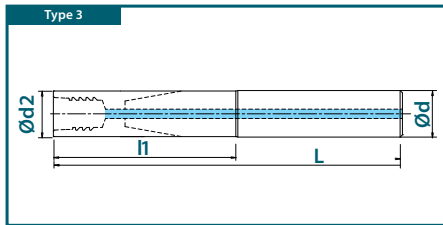
Straight Shank



Tapered Shank

| EDP No. | Body Type | Designation | Type | Neck Dia. (inch) | Shank Dia. (inch) | Taper | Overall Length (inch) | Neck Length (inch) | Applicable Head (Inch) |
|----------|---------------------------|---------------------------|-------|------------------|-------------------|----------------|-----------------------|--------------------|------------------------|
| | | | | d2 | d | α° | L | l1 | |
| 52319000 | Cylindrical Shank Steel | PXMZ-C12SA0500-S400-O | 3 | 0.488 | 0.500 | - | 4.000 | 0.750 | 0.500 |
| 52319001 | | PXMZ-C16SA0625-S400-O | 3 | 0.613 | 0.625 | - | 4.000 | 1.000 | 0.625 |
| 52319002 | | PXMZ-C20SA0750-S500-O | 3 | 0.736 | 0.750 | - | 5.000 | 1.250 | 0.750 |
| 52319003 | | PXMZ-C25SA1000-S550-O | 3 | 0.960 | 1.000 | - | 5.500 | 1.500 | 1.000 |
| 52319004 | Cylindrical Shank Carbide | PXMZ-C12SA0500-S300CS-O | 3 | 0.488 | 0.500 | - | 3.000 | 1.000 | 0.500 |
| 52319005 | | PXMZ-C12SA0500-L400CS-O | 3 | 0.488 | 0.500 | - | 4.000 | 1.750 | 0.500 |
| 52319006 | | PXMZ-C12SA0500-L450CS-O | 3 | 0.488 | 0.500 | - | 4.500 | 2.500 | 0.500 |
| 52319007 | | PXMZ-C12TPA0625-LL550CS-O | 4 | 0.488 | 0.625 | 1.2° | 5.500 | 3.250 | 0.500 |
| 52319008 | | PXMZ-C12TPA0625-LL600CS-O | 4 | 0.488 | 0.625 | 1° | 6.000 | 3.750 | 0.500 |
| 52319009 | | PXMZ-C16SA0625-S350CS-O | 3 | 0.613 | 0.625 | - | 3.500 | 1.500 | 0.625 |
| 52319010 | | PXMZ-C16SA0625-L550CS-O | 3 | 0.613 | 0.625 | - | 5.500 | 2.500 | 0.625 |
| 52319011 | | PXMZ-C16SA0625-L600CS-O | 3 | 0.613 | 0.625 | - | 6.000 | 3.250 | 0.625 |
| 52319012 | | PXMZ-C16TPA0750-LL650CS-O | 4 | 0.613 | 0.750 | 1° | 6.500 | 4.500 | 0.625 |
| 52319013 | | PXMZ-C16TPA0750-LL700CS-O | 4 | 0.613 | 0.750 | 1° | 7.000 | 5.000 | 0.625 |
| 52319014 | | PXMZ-C20SA0750-S350CS-O | 3 | 0.736 | 0.750 | - | 3.500 | 1.500 | 0.750 |
| 52319015 | | PXMZ-C20SA0750-L600CS-O | 3 | 0.736 | 0.750 | - | 6.000 | 3.000 | 0.750 |
| 52319016 | | PXMZ-C20SA0750-L700CS-O | 3 | 0.736 | 0.750 | - | 7.000 | 4.250 | 0.750 |
| 52319017 | | PXMZ-C20TPA1000-LL800CS-O | 4 | 0.736 | 1.000 | 1.5° | 8.000 | 5.500 | 0.750 |
| 52319018 | | PXMZ-C20TPA1000-LL850CS-O | 4 | 0.736 | 1.000 | 1.2° | 8.500 | 6.000 | 0.750 |
| 52319019 | PXMZ-C25SA1000-L800CS-O | 3 | 0.960 | 1.000 | - | 8.000 | 3.750 | 1.000 | |

Packed: 1 pc.
Note: Wrench included with body.

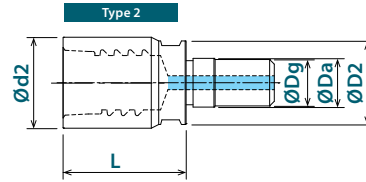




List 52319 (Continued)

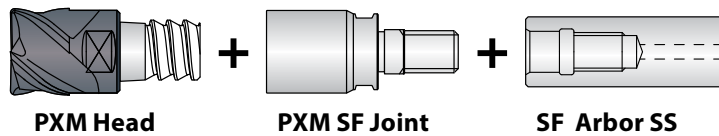
NEW

PXM SF Joint (Inch) - Coolant-Through



| EDP No. | Body Type | Designation | Type | Neck Dia. (Inch) | Pilot Dia. (Inch) | Thread Dia. (mm) | Flange Dia. (Inch) | Overall Length (Inch) | Spanner Wrench | Applicable Head (inch) |
|----------|------------|-----------------|------|------------------|-------------------|------------------|--------------------|-----------------------|----------------|------------------------|
| | | | | d2 | Da | Dg | D2 | L | | |
| 52319020 | PXMJ Joint | PXMJ-AC12SF06-O | 2 | 0.488 | 0.256 | M6 | 0.433 | 0.709 | PXMP8-10 | 0.500 |
| 52319021 | | PXMJ-AC16SF08-O | | 0.613 | 0.335 | M8 | 0.571 | 0.858 | PXMP13-16 | 0.625 |
| 52319022 | | PXMJ-AC20SF10-O | | 0.736 | 0.413 | M10 | 0.707 | 1.043 | PXMP13-16 | 0.750 |
| 52319023 | | PXMJ-AC25SF12-O | | 0.960 | 0.492 | M12 | 0.905 | 1.338 | PXMP21 | 1.000 |

Packed: 1 pc.
Note: Wrench included with body.
Note: PXM heads can be mounted to PHOENIX® SF Arbors by attaching the PXM SF Joint.





NEW SIZES

List 78018

PXM SS/TP (Metric)



Straight Shank

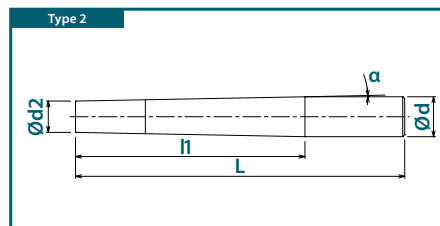
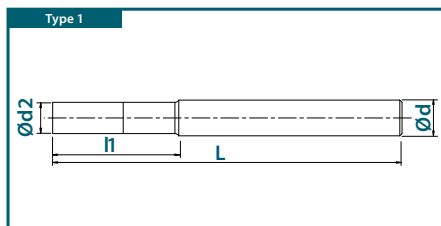


Tapered Shank

| EDP No. | Body Type | Designation | Type | Neck Dia. (mm) | Shank Dia. (mm) | Taper | Overall Length (mm) | Neck Length (mm) | Applicable Head (mm) |
|----------|-------------------------|---------------------------|---------------------|----------------|-----------------|-------|---------------------|------------------|----------------------|
| | | | | d2 | d | α° | L | l1 | |
| 48174021 | Cylindrical Shank Steel | PXMZ-C10SS10-S075 | 1 | 9.8 | 10 | - | 75 | 12 | 10 |
| 48174001 | | PXMZ-C12SS12-S100 | 1 | 11.7 | 12 | - | 100 | 19 | 12 |
| 48174002 | | PXMZ-C12TP20-S145 | 2 | 11.7 | 20 | 5° | 145 | 47.4 | 16 |
| 48174003 | | PXMZ-C16SS16-S100 | 1 | 15.7 | 16 | - | 100 | 23.4 | |
| 48174004 | | PXMZ-C16TP25-S155 | 2 | 15.7 | 25 | 5° | 155 | 53.1 | 20 |
| 48174005 | | PXMZ-C20SS20-S120 | 1 | 19.6 | 20 | - | 120 | 28.8 | |
| 48174006 | | PXMZ-C20TP32-S170 | 2 | 19.6 | 32 | 5° | 170 | 70.8 | 25 |
| 48174007 | | PXMZ-C25SS25-S140 | 1 | 24 | 25 | - | 140 | 36 | |
| 48174022 | | PXMZ-C32SS32-S160 | 1 | 28 | 32 | - | 160 | 33 | 32 |
| 48174025 | | Cylindrical Shank Carbide | PXMZ-C10SS10-S075CS | 1 | 9.8 | 10 | - | 75 | 17.3 |
| 48174023 | PXMZ-C10SS10-L100CS | | 1 | 9.8 | 10 | - | 100 | 37.3 | |
| 48174026 | PXMZ-C10TP12-LL130CS | | 2 | 9.8 | 10 | 0.9° | 130 | 67 | |
| 48174008 | PXMZ-C12SS12-S075CS | | 1 | 11.7 | 12 | - | 75 | 25 | 12 |
| 48174009 | PXMZ-C12SS12-L100CS | | 1 | 11.7 | 12 | - | 100 | 46.3 | |
| 48174010 | PXMZ-C12SS12-L115CS | | 1 | 11.7 | 12 | - | 115 | 65 | |
| 48174011 | PXMZ-C12TP16-LL135CS | | 2 | 11.7 | 16 | 1.5° | 135 | 85 | 16 |
| 48174012 | PXMZ-C16SS16-S090CS | | 1 | 15.7 | 16 | - | 90 | 40 | |
| 48174013 | PXMZ-C16SS16-L130CS | | 1 | 15.7 | 16 | - | 130 | 62 | |
| 48174014 | PXMZ-C16SS16-L135CS | | 1 | 15.7 | 16 | - | 135 | 85 | 20 |
| 48174015 | PXMZ-C16TP20-LL165CS | | 2 | 15.7 | 20 | 1.5° | 165 | 115 | |
| 48174016 | PXMZ-C20SS20-S090CS | | 1 | 19.6 | 20 | - | 90 | 40 | |
| 48174017 | PXMZ-C20SS20-L150CS | | 1 | 19.6 | 20 | - | 150 | 79.3 | 25 |
| 48174018 | PXMZ-C20SS20-L180CS | | 1 | 19.6 | 20 | - | 180 | 110 | |
| 48174019 | PXMZ-C20TP25-LL200CS | | 2 | 19.6 | 25 | 1.5° | 200 | 140 | |
| 48174020 | PXMZ-C25SS25-L200CS | | 1 | 24 | 25 | - | 200 | 98 | 25 |
| 48174024 | PXMZ-C32SS32-L250CS | | 1 | 28 | 32 | - | 250 | 115.2 | 32 |

Packed: 1 pc.

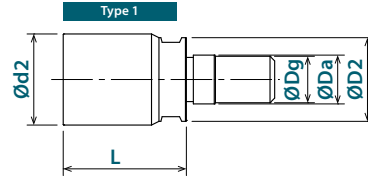
Note: Wrench included with body.





List 78018 (Continued)

PXM SF Joint (Metric)

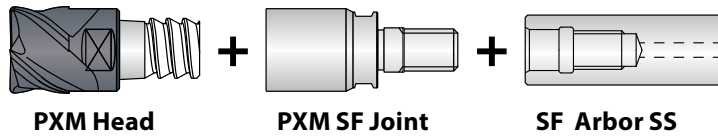


| EDP No. | Body Type | Designation | Type | Neck Dia. (mm) | Pilot Dia. (mm) | Thread Dia. (mm) | Flange Dia. (mm) | Overall Length (mm) | Spanner Wrench | Applicable Head (mm) |
|---------|--------------|--------------|------|----------------|-----------------|------------------|------------------|---------------------|----------------|----------------------|
| | | | | d2 | Da | Dg | D2 | L | | |
| 7801893 | PXMJ (Joint) | PXMJ-C12SF06 | 1 | 11.7 | 6.5 | M6 | 11.0 | 18 | PXMP8-10 | 12 |
| 7801894 | | PXMJ-C16SF08 | | 15.7 | 8.5 | M8 | 14.5 | 21.8 | PXMP13-16 | 16 |
| 7801895 | | PXMJ-C20SF10 | | 19.6 | 10.5 | M10 | 18 | 26.5 | PXMP13-16 | 20 |
| 7801896 | | PXMJ-C25SF12 | | 24 | 12.5 | M12 | 23 | 34 | PXMP21 | 25 |

Packed: 1 pc.

Note: Wrench included with body.

Note: PXM heads can be mounted to PHOENIX® SF Arbors by attaching the PXM SF Joint.





List 78035

PXM SS/TP (metric) - Coolant-Through



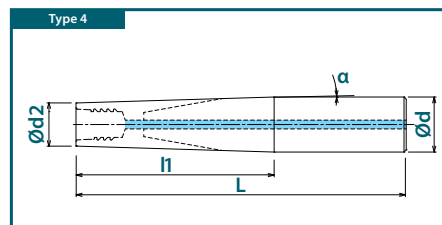
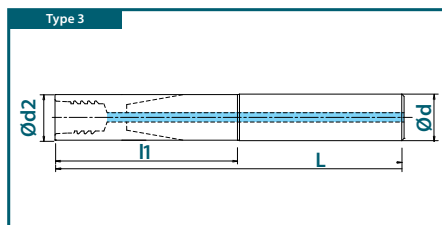
Straight Shank



Tapered Shank

| EDP No. | Body Type | Designation | Type | Neck Dia. (mm) | Shank Dia. (mm) | Taper | Overall Length (mm) | Neck Length (mm) | Applicable Head (mm) |
|----------|---------------------------|------------------------|------|----------------|-----------------|----------------|---------------------|------------------|----------------------|
| | | | | d2 | d | α° | L | l1 | |
| 48309001 | Cylindrical Shank Steel | PXMZ-C12SS12-S100-O | 3 | 11.7 | 12 | - | 100 | 18 | 12 |
| 48309002 | | PXMZ-C16SS16-S100-O | 3 | 15.7 | 16 | - | 100 | 23 | 16 |
| 48309003 | | PXMZ-C20SS20-S120-O | 3 | 19.6 | 20 | - | 120 | 28 | 20 |
| 48309004 | | PXMZ-C25SS25-S140-O | 3 | 24 | 25 | - | 140 | 34.5 | 25 |
| 48309005 | Cylindrical Shank Carbide | PXMZ-C12SS12-S075CS-O | 3 | 11.7 | 12 | - | 75 | 25 | 12 |
| 48309006 | | PXMZ-C12SS12-L100CS-O | 3 | 11.7 | 12 | - | 100 | 46.3 | 12 |
| 48309007 | | PXMZ-C12SS12-L115CS-O | 3 | 11.7 | 12 | - | 115 | 65 | 12 |
| 48309008 | | PXMZ-C12TP16-LL135CS-O | 4 | 11.7 | 16 | 1.3° | 135 | 85 | 12 |
| 48309009 | | PXMZ-C12TP16-LL150CS-O | 4 | 11.7 | 16 | 1° | 150 | 85.6 | 12 |
| 48309010 | | PXMZ-C16SS16-S090CS-O | 3 | 15.7 | 16 | - | 90 | 40 | 16 |
| 48309011 | | PXMZ-C16SS16-L130CS-O | 3 | 15.7 | 16 | - | 130 | 62 | 16 |
| 48309012 | | PXMZ-C16SS16-L135CS-O | 3 | 15.7 | 16 | - | 135 | 85 | 16 |
| 48309013 | | PXMZ-C16TP20-LL165CS-O | 4 | 15.7 | 20 | 1° | 165 | 115 | 16 |
| 48309014 | | PXMZ-C16TP20-LL180CS-O | 4 | 15.7 | 20 | 1° | 180 | 116.6 | 16 |
| 48309015 | | PXMZ-C20SS20-S090CS-O | 3 | 19.6 | 20 | - | 90 | 40 | 20 |
| 48309016 | | PXMZ-C20SS20-L150CS-O | 3 | 19.6 | 20 | - | 150 | 79.3 | 20 |
| 48309017 | | PXMZ-C20SS20-L180CS-O | 3 | 19.6 | 20 | - | 180 | 110 | 20 |
| 48309018 | | PXMZ-C20TP25-LL200CS-O | 4 | 19.6 | 25 | 1° | 200 | 140 | 20 |
| 48309019 | | PXMZ-C20TP25-LL210CS-O | 4 | 19.6 | 25 | 1° | 210 | 145 | 20 |
| 48309020 | | PXMZ-C25SS25-L200CS-O | 3 | 24 | 25 | - | 200 | 98 | 25 |

Packed: 1 pc.
Note: Wrench included with body.

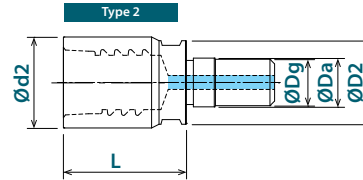




List 78035 (Continued)

NEW

PXM SF Joint (metric) - Coolant-Through

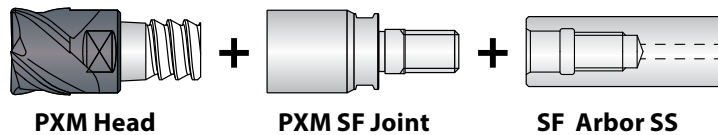


| EDP No. | Body Type | Designation | Type | Neck Dia. (mm) | Pilot Dia. (mm) | Thread Dia. (mm) | Flange Dia. (mm) | Overall Length (mm) | Spanner Wrench | Applicable Head (mm) |
|---------|------------|----------------|------|----------------|-----------------|------------------|------------------|---------------------|----------------|----------------------|
| | | | | d2 | Da | Dg | D2 | L | | |
| 7803551 | PXMJ Joint | PXMJ-C12SF06-O | 2 | 11.7 | 6.5 | M6 | 11 | 18 | PXMP8-10 | 12 |
| 7803552 | | PXMJ-C16SF08-O | | 15.7 | 8.5 | M8 | 14.5 | 21.8 | PXMP13-16 | 16 |
| 7803553 | | PXMJ-C20SF10-O | | 19.6 | 10.5 | M10 | 18 | 26.5 | PXMP13-16 | 20 |
| 7803554 | | PXMJ-C25SF12-O | | 24 | 12.5 | M12 | 23 | 34 | PXMP21 | 25 |

Packed: 1 pc.

Note: Wrench included with body.

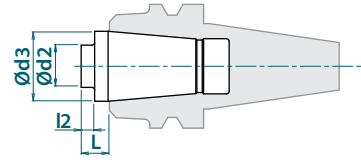
Note: PXM heads can be mounted to PHOENIX[®] SF Arbors by attaching the PXM SF Joint.



List 78340



PXMC (Metric)



| EDP No. | Body Type | Designation | Neck Dia. (mm) | Body Dia. (mm) | Projection Length (mm) | Neck Length (mm) | Applicable Head (mm) |
|---------|-------------|-------------|----------------|----------------|------------------------|------------------|----------------------|
| | | | d2 | d3 | L | l2 | |
| 7834001 | Extra-Short | PXMC-C1205 | 11.7 | 26 | 10.5 | 5 | 12 |
| 7834002 | | PXMC-C1605 | 15.7 | 26 | 10.5 | 5 | 16 |
| 7834003 | | PXMC-C2005 | 19.6 | 26 | 10.5 | 5 | 20 |
| 7834004 | | PXMC-C2505 | 24 | 26 | 10.5 | 5 | 25 |
| 7834011 | Short | PXMC-C1230 | 11.7 | 26 | 35.5 | 30 | 12 |
| 7834012 | | PXMC-C1630 | 15.7 | 26 | 35.5 | 30 | 16 |
| 7834013 | | PXMC-C2030 | 19.6 | 26 | 35.5 | 30 | 20 |
| 7834014 | | PXMC-C2530 | 24 | 26 | 35.5 | 30 | 25 |

Packed: 1 pc.

Note: The PXMC collet is compatible with the HYPRO Shrink Collet System.

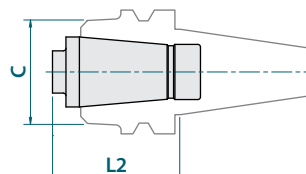
Note: Wrench sold separately.





HY-PRO[®] Shrink

2 Piece Base Holders



| EDP No. | Body Type | Designation | Nose Diameter (mm) | Gage Length (mm) | |
|---------|-----------|-------------------------|--------------------|------------------|-------|
| | | | C | L2 | |
| | | | | Extra-Short | Short |
| 9910002 | CAT40 | CT40-SLK12-45 | 40.9 | 45.5 | 70.5 |
| 8910000 | BT30 | BT30-SLK12-35 - 45 Deg. | 38 | 45.5 | 70.5 |
| 8910001 | | BT30-SLK12-35 - 60 Deg. | 38 | 45.5 | 70.5 |
| 8910002 | BT40 | BT40-SLK12-45 | 38 | 55.5 | 80.5 |
| 8910003 | | BT40-SLK12-75 | 38 | 85.5 | 110.5 |
| 9910005 | HSK-E50 | HSK-E50-SLK12-75 | 38 | 85.5 | 110.5 |
| 8910005 | HSK-A63 | HSK-A63-SLK12-75 | 38 | 85.5 | 110.5 |
| 8910006 | | HSK-A63-SLK12-135 | 38 | 145.5 | 170.5 |


Packed: 1 pc.

Note: For more information, see p1523.



List 7808H

PXM Accessories

| Appearance | EDP No. | Designation | Applicable Head | | Recommended Tightening |
|---|---------|-------------|-----------------|---------|------------------------|
| | | | (inch) | (mm) | |
|  Spanner Wrench | 7801890 | PXMP8-10 | 0.375 | 10-12 | 10.0 Nm |
| | | | 0.500 | 12-14 | 12.0 Nm |
| | 7801891 | PXMP13-16 | 0.625 | 16-18 | 30.0 Nm |
| | | | 0.750 | 20-22 | 50.0 Nm |
| | 7801892 | PXMP21 | 1.000 | 25 | 60.0 Nm |
| 7801897 | PXMP24 | 1.250 | 32 | 60.0 Nm | |

Packed: Wrench = 1 pc.





Cutting Conditions (PXSE & PXSE-O)

Side milling

| Hardness | | Up to 30 HRC | | | | 30-45 HRC | | 45-55 HRC | | | |
|---------------|------|---|------------------|-----------------------------|------------------|-------------------------------------|------------------|------------------------------------|------------------|----------------------------------|------------------|
| Work Material | | Mild Steels Carbon Steels Cast Iron | | Alloy Steels Tool Steels | | Stainless Steels Hardened Steels | | Hardened Steels Titanium Alloys | | Heat Resistant Alloys Inconel | |
| Depth of Cut | | Aa=0.5Dc • Ar=0.15Dc | | | | Aa=0.5Dc • Ar=0.1Dc | | Aa=0.5Dc • Ar=0.05Dc | | | |
| Mill Dia. | | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) |
| (in) | (mm) | | | | | | | | | | |
| 3/8 | - | 4000 | 38.00 | 3350 | 31.83 | 2175 | 20.70 | 2175 | 17.38 | 840 | 5.38 |
| - | 10 | 3810 | 36.22 | 3190 | 30.31 | 2070 | 19.70 | 2070 | 16.54 | 800 | 5.12 |
| - | 12 | 3180 | 29.92 | 2650 | 25.20 | 1700 | 15.75 | 1700 | 13.78 | 650 | 3.94 |
| 1/2 | - | 3010 | 28.29 | 2450 | 23.28 | 1590 | 14.95 | 1590 | 12.72 | 620 | 3.78 |
| 5/8 | - | 2410 | 22.65 | 1955 | 18.57 | 1270 | 11.94 | 1270 | 10.16 | 495 | 3.07 |
| - | 16 | 2390 | 22.44 | 1950 | 18.50 | 1250 | 11.81 | 1250 | 9.84 | 500 | 3.15 |
| 3/4 | - | 2000 | 18.80 | 1630 | 15.49 | 1060 | 10.39 | 1060 | 8.48 | 410 | 2.62 |
| - | 20 | 1910 | 18.11 | 1550 | 14.57 | 1000 | 9.84 | 1000 | 7.87 | 400 | 2.56 |
| - | 25 | 1530 | 14.57 | 1240 | 11.81 | 800 | 7.87 | 800 | 6.30 | 320 | 1.97 |
| 1 | - | 1500 | 14.10 | 1225 | 11.64 | 790 | 7.74 | 790 | 6.25 | 310 | 1.89 |

1. Cutting conditions shown above are for side milling with L/D ≤ 3.5xD.
2. Adjust/reduce the cutting conditions when the overhang length is longer than 3.5xD.

Slotting

| Hardness | | Up to 30 HRC | | | | 30-45 HRC | | 45-55 HRC | | | |
|---------------|------|---|------------------|-----------------------------|------------------|-------------------------------------|------------------|------------------------------------|------------------|----------------------------------|------------------|
| Work Material | | Mild Steels Carbon Steels Cast Iron | | Alloy Steels Tool Steels | | Stainless Steels Hardened Steels | | Hardened Steels Titanium Alloys | | Heat Resistant Alloys Inconel | |
| Depth of Cut | | Aa≤0.35Dc | | | | Aa≤0.3Dc | | Aa≤0.2Dc | | Aa≤0.1Dc | |
| Mill Dia. | | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) |
| (in) | (mm) | | | | | | | | | | |
| 3/8 | - | 3185 | 25.23 | 3185 | 25.23 | 1680 | 13.23 | 1680 | 10.75 | 840 | 5.38 |
| - | 10 | 3030 | 24.00 | 3030 | 24.00 | 1600 | 12.60 | 1600 | 10.24 | 800 | 5.12 |
| - | 12 | 2500 | 19.69 | 1550 | 11.81 | 1300 | 9.84 | 1300 | 9.84 | 650 | 3.94 |
| 1/2 | - | 2350 | 18.49 | 1450 | 11.02 | 1240 | 9.42 | 1240 | 9.42 | 620 | 3.78 |
| 5/8 | - | 1875 | 14.76 | 1160 | 9.98 | 1010 | 7.88 | 1010 | 7.88 | 495 | 3.07 |
| - | 16 | 1850 | 13.78 | 1150 | 9.84 | 1000 | 7.87 | 1000 | 7.87 | 500 | 3.15 |
| 3/4 | - | 1565 | 12.32 | 990 | 8.22 | 790 | 6.64 | 790 | 6.64 | 410 | 2.62 |
| - | 20 | 1500 | 11.81 | 950 | 7.87 | 750 | 6.30 | 750 | 6.30 | 400 | 2.56 |
| - | 25 | 1200 | 9.45 | 760 | 6.30 | 600 | 5.12 | 600 | 5.12 | 320 | 1.97 |
| 1 | - | 1170 | 9.21 | 745 | 6.18 | 590 | 5.02 | 590 | 5.02 | 310 | 1.89 |

1. Cutting conditions shown above are for slotting with L/D ≤ 3.5xD.
2. Adjust/reduce the cutting conditions when the overhang length is longer than 3.5xD.





Cutting Conditions (PXVC)

Side milling

| Hardness | | Up to 30 HRC | | | | 30-45 HRC | | 45-55 HRC | |
|---------------|---------|---|------------------|-----------------------------|------------------|-------------------------------------|------------------|------------------------------------|------------------|
| Work Material | | Mild Steels Carbon Steels Cast Iron | | Alloy Steels Tool Steels | | Stainless Steels Hardened Steels | | Hardened Steels Titanium Alloys | |
| Depth of Cut | | Aa=0.5Dc • Ar=0.2Dc | | | | Aa=0.5Dc • Ar=0.1Dc | | Aa=0.5Dc • Ar=0.05Dc | |
| Mill Dia. | | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) |
| (in) | (mm) | | | | | | | | |
| 3/8 | - | 5020 | 47.50 | 4010 | 38.00 | 3350 | 31.80 | 2680 | 25.65 |
| - | 10 | 4780 | 45.28 | 3820 | 36.22 | 3190 | 30.31 | 2550 | 24.41 |
| - | 12 | 3980 | 37.80 | 3190 | 30.31 | 2660 | 25.20 | 2130 | 20.47 |
| 1/2 | - | 3780 | 35.83 | 3020 | 28.63 | 2520 | 23.90 | 2010 | 19.30 |
| - | 14 | 3420 | 32.68 | 2730 | 25.98 | 2280 | 21.65 | 1820 | 17.32 |
| 5/8 | - | 3025 | 28.67 | 2410 | 22.85 | 2015 | 19.10 | 1610 | 15.46 |
| - | 16 | 2990 | 28.35 | 2390 | 22.83 | 1990 | 18.90 | 1600 | 15.35 |
| - | 18 | 2660 | 25.20 | 2130 | 20.47 | 1770 | 16.93 | 1420 | 13.78 |
| 3/4 | - | 2520 | 23.90 | 2010 | 19.05 | 1680 | 15.93 | 1340 | 12.86 |
| - | 20 | 2390 | 22.83 | 1910 | 18.11 | 1600 | 15.35 | 1280 | 12.20 |
| - | 22 | 2180 | 20.87 | 1740 | 16.54 | 1450 | 13.78 | 1160 | 11.00 |
| - | 25 | 1910 | 18.11 | 1530 | 14.57 | 1280 | 12.20 | 1020 | 9.84 |
| 1 | - | 1890 | 17.92 | 1510 | 14.31 | 1260 | 11.95 | 1000 | 9.60 |
| 1 1/4 (5F) | - | 1515 | 15.10 | 1210 | 9.53 | 1010 | 9.94 | 805 | 6.34 |
| 1 1/4 (8F) | - | 1515 | 19.09 | 1210 | 15.48 | 1010 | 12.73 | 805 | 10.30 |
| - | 32 (5F) | 1500 | 14.96 | 1200 | 9.45 | 1000 | 9.84 | 800 | 6.30 |
| - | 32 (8F) | 1500 | 18.90 | 1200 | 15.35 | 1000 | 12.60 | 800 | 10.24 |

1. Cutting conditions shown above are for side milling with $L/D \leq 5xD$
2. For side milling with $5xD < L/D \leq 6xD$, reduce Speed and Feed by 10%
3. For side milling with $6xD < L/D \leq 7xD$, reduce Speed & Feed by 20%
4. For side milling with PXM Extra-Short Collet, increase Speed by 30-40% and Feed by 40-80%
5. For side milling with PXM Short Collet, increase Speed by 10-20% and Feed by 20-30%

Slotting

| Hardness | | Up to 30 HRC | | | | 30-45 HRC | | 45-55 HRC | |
|---------------|------|---|------------------|-----------------------------|------------------|-------------------------------------|------------------|------------------------------------|------------------|
| Work Material | | Mild Steels Carbon Steels Cast Iron | | Alloy Steels Tool Steels | | Stainless Steels Hardened Steels | | Hardened Steels Titanium Alloys | |
| Depth of Cut | | Aa≤0.5Dc | | Aa≤0.4Dc | | Aa≤0.3Dc | | | |
| Mill Dia. | | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) |
| (in) | (mm) | | | | | | | | |
| 3/8 | - | 5020 | 39.70 | 4010 | 31.82 | 3340 | 26.47 | 2510 | 19.85 |
| - | 10 | 4780 | 37.80 | 3820 | 30.31 | 3180 | 25.20 | 2390 | 18.90 |
| - | 12 | 3980 | 31.50 | 3180 | 25.20 | 2650 | 20.87 | 1990 | 15.75 |
| 1/2 | - | 3760 | 29.61 | 3010 | 23.70 | 2505 | 19.72 | 1870 | 14.72 |
| - | 14 | 3410 | 26.77 | 2730 | 21.65 | 2270 | 17.72 | 1710 | 13.38 |
| 5/8 | - | 3010 | 23.70 | 2410 | 18.98 | 2005 | 15.79 | 1500 | 11.81 |
| - | 16 | 2980 | 23.62 | 2390 | 18.90 | 1990 | 15.75 | 1490 | 11.81 |
| - | 18 | 2650 | 20.87 | 2120 | 16.53 | 1770 | 13.78 | 1330 | 10.63 |
| 3/4 | - | 2505 | 19.72 | 2010 | 15.83 | 1670 | 13.15 | 1250 | 9.84 |
| - | 20 | 2390 | 18.90 | 1910 | 14.96 | 1590 | 12.60 | 1190 | 9.45 |
| - | 22 | 2170 | 16.93 | 1740 | 13.78 | 1450 | 11.42 | 1090 | 8.66 |
| - | 25 | 1910 | 14.96 | 1530 | 12.20 | 1270 | 9.84 | 950 | 7.48 |
| 1 | - | 1880 | 14.80 | 1505 | 11.85 | 1250 | 9.70 | 935 | 7.36 |

1. Cutting conditions shown above are for slotting with $L/D \leq 5xD$.
2. For slotting with $5xD < L/D \leq 6xD$, reduce Speed and Feed by 20%.
3. For slotting with $6xD < L/D \leq 7xD$, reduce Speed & Feed by 35%.
4. For slotting with PXM Extra-Short Collet, increase Speed by 10-20% and Feed by 10-50%.
5. For slotting with PXM Short Collet, increase Feed by 15-30%.
6. Slotting with $\varnothing 1\ 1/4"$ or $\varnothing 32\text{mm}$ PXVC is not recommended due to the large number of flutes.





Cutting Conditions (PXSM)

Side milling

| Hardness | | Up to 30 HRC | | | | 30-45 HRC | | 45-55 HRC | | | |
|---------------|---------|---|------------------|-----------------------------|------------------|-------------------------------------|------------------|------------------------------------|------------------|----------------------------------|------------------|
| Work Material | | Mild Steels Carbon Steels Cast Iron | | Alloy Steels Tool Steels | | Stainless Steels Hardened Steels | | Hardened Steels Titanium Alloys | | Heat Resistant Alloys Inconel | |
| Depth of Cut | | Aa≤0.5Dc • Ar≤0.05Dc | | | | Aa≤0.5Dc • Ar≤0.02Dc | | Aa≤0.3Dc • Ar≤0.02Dc | | | |
| Mill Dia. | | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) |
| (in) | (mm) | | | | | | | | | | |
| 3/8 | - | 6020 | 91.36 | 5020 | 59.55 | 4010 | 47.53 | 3350 | 39.70 | 2000 | 17.32 |
| - | 10 | 5730 | 81.50 | 4780 | 56.70 | 3820 | 45.28 | 3190 | 37.80 | 1910 | 16.54 |
| - | 12 | 4750 | 68.90 | 3950 | 45.28 | 3150 | 37.40 | 2650 | 31.50 | 1550 | 13.78 |
| 1/2 | - | 4485 | 65.03 | 3725 | 42.84 | 2980 | 35.16 | 2500 | 29.75 | 1450 | 12.91 |
| 5/8 (6F) | - | 3590 | 52.06 | 2970 | 34.16 | 2385 | 28.38 | 1955 | 23.66 | 1160 | 10.32 |
| 5/8 (8F) | - | 3590 | 69.65 | 2970 | 45.44 | 2385 | 37.92 | 1955 | 31.67 | 1160 | 13.92 |
| - | 16 (6F) | 3550 | 51.57 | 2950 | 33.86 | 2350 | 27.95 | 1950 | 23.62 | 1150 | 10.24 |
| - | 16 (8F) | 3550 | 68.90 | 2950 | 45.28 | 2350 | 37.40 | 1950 | 31.50 | 1150 | 13.78 |
| 3/4 | - | 2990 | 71.76 | 2475 | 47.52 | 1985 | 39.10 | 1630 | 33.09 | 995 | 14.43 |
| - | 20 | 2850 | 68.90 | 2350 | 45.28 | 1900 | 37.40 | 1550 | 31.50 | 950 | 13.78 |
| - | 25 | 2280 | 55.12 | 1880 | 36.22 | 1520 | 29.92 | 1240 | 25.20 | 760 | 11.02 |
| 1 | - | 2240 | 54.21 | 1855 | 35.80 | 1490 | 29.35 | 1220 | 24.77 | 745 | 10.80 |

1. Cutting conditions shown above are for side milling with $L/D \leq 3.5xD$.
2. Adjust/reduce the cutting conditions when the overhang length is longer than $3.5xD$.





Cutting Conditions (PXNL, PXNL-O, PXNH & PXNH-O)

Side milling

| Work Material | | Cast Iron | | Carbon Steels | | Alloy Steels | | Hardened Steels Pre-hardened Steels | | Stainless Steels | |
|---------------|------|---------------------|------------------|----------------|------------------|---------------------|------------------|--|------------------|------------------|------------------|
| Depth of Cut | | Aa=0.5Dc • Ar=0.3Dc | | | | Aa=0.5Dc • Ar=0.2Dc | | | | | |
| Mill Dia. | | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) |
| (in) | (mm) | | | | | | | | | | |
| 3/8 | - | 3000 | 29.74 | 4010 | 34.71 | 3340 | 21.50 | 3000 | 14.45 | 2680 | 11.56 |
| - | 10 | 2860 | 28.35 | 3820 | 33.07 | 3180 | 20.47 | 2860 | 13.78 | 2550 | 11.00 |
| - | 12 | 2390 | 23.62 | 3180 | 27.56 | 2650 | 17.32 | 2390 | 11.42 | 2120 | 9.06 |
| 1/2 | - | 2255 | 22.32 | 3000 | 26.10 | 2500 | 16.25 | 2255 | 10.82 | 2000 | 8.60 |
| 5/8 | - | 1800 | 24.48 | 2400 | 28.56 | 2000 | 17.80 | 1800 | 11.88 | 1600 | 9.44 |
| - | 16 | 1790 | 24.41 | 2390 | 28.35 | 1990 | 17.72 | 1790 | 11.81 | 1590 | 9.45 |
| 3/4 | - | 1500 | 27.30 | 2000 | 31.40 | 1670 | 19.87 | 1500 | 12.75 | 1335 | 10.28 |
| - | 20 | 1430 | 25.98 | 1910 | 29.92 | 1590 | 18.90 | 1430 | 12.20 | 1270 | 9.84 |
| - | 25 | 890 | 17.72 | 1270 | 22.05 | 1020 | 13.38 | 890 | 8.66 | 760 | 6.69 |
| 1 | - | 875 | 17.41 | 1250 | 21.75 | 1000 | 13.10 | 875 | 8.49 | 745 | 6.56 |

1. Cutting conditions shown above are for side milling with $L/D \leq 3.5xD$.
2. Adjust/reduce the cutting conditions when the overhang length is longer than $3.5xD$.
3. For side milling with PXM Extra-Short Collet, increase Speed by 20-80% and Feed by 20-100%.
4. For side milling with PXM Short Collet, increase Speed by 30-50% and Feed by 10-80%.

Slotting

| Work Material | | Cast Iron | | Carbon Steels | | Alloy Steels | | Hardened Steels Pre-hardened Steels | | Stainless Steels | |
|---------------|------|----------------|------------------|----------------|------------------|----------------|------------------|--|------------------|------------------|------------------|
| Depth of Cut | | Aa=0.5Dc | | | | | | | | | |
| Mill Dia. | | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) |
| (in) | (mm) | | | | | | | | | | |
| 3/8 | - | 2345 | 14.90 | 3340 | 18.61 | 2680 | 11.17 | 2345 | 7.05 | 2000 | 5.36 |
| - | 10 | 2230 | 14.17 | 3180 | 17.72 | 2550 | 10.63 | 2230 | 6.70 | 1910 | 5.12 |
| - | 12 | 1860 | 11.81 | 2650 | 14.57 | 2120 | 8.66 | 1860 | 5.51 | 1590 | 4.33 |
| 1/2 | - | 1750 | 11.03 | 2505 | 13.78 | 2000 | 8.20 | 1750 | 5.08 | 1500 | 4.05 |
| 5/8 | - | 1400 | 12.74 | 2005 | 15.84 | 1600 | 9.44 | 1400 | 5.88 | 1200 | 4.80 |
| - | 16 | 1390 | 12.60 | 1990 | 15.75 | 1590 | 9.45 | 1390 | 5.91 | 1190 | 4.72 |
| 3/4 | - | 1165 | 14.91 | 1670 | 18.54 | 1335 | 11.21 | 1165 | 6.99 | 1000 | 5.40 |
| - | 20 | 1110 | 14.17 | 1590 | 17.72 | 1270 | 10.63 | 1110 | 6.69 | 950 | 5.12 |
| - | 25 | 760 | 11.02 | 1150 | 14.57 | 890 | 8.27 | 760 | 5.12 | 640 | 3.94 |
| 1 | - | 745 | 10.80 | 1130 | 14.35 | 875 | 8.14 | 745 | 4.99 | 630 | 3.84 |

1. Cutting conditions shown above are for slotting with $L/D \leq 3.5xD$.
2. Adjust/reduce the cutting conditions when the overhang length is longer than $3.5xD$.
4. For slotting with PXM Extra-Short Collet, increase Speed by 20-80% and Feed by 50-250%.
5. For slotting with PXM Short Collet, increase Speed by 20-50% and Feed by 30-200%.





Cutting Conditions (PXRE)

Contouring

| Hardness | | - | | Up to 30 HRC | | 30-45 HRC | | 45-55 HRC | | 55-60 HRC | |
|---------------|------|---|------------------|-----------------------------|------------------|--|------------------|-----------------|------------------|-----------------|------------------|
| Work Material | | Mild Steels Carbon Steels Cast Iron | | Alloy Steels Tool Steels | | Hardened Steels Pre-hardened Steels | | Hardened Steels | | Hardened Steels | |
| Depth of Cut | | Aa=0.1r • Ar=0.3Dc | | | | | | | | | |
| Mill Dia. | | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) |
| (in) | (mm) | | | | | | | | | | |
| 3/8 | - | 6695 | 529.65 | 5045 | 322.77 | 4100 | 248.33 | 3465 | 169.49 | 2940 | 111.61 |
| - | 10 | 6370 | 503.94 | 4800 | 307.10 | 3900 | 236.22 | 3300 | 161.42 | 2800 | 106.30 |
| - | 12 | 5800 | 417.32 | 4000 | 255.91 | 3200 | 192.91 | 2700 | 129.92 | 2300 | 86.61 |
| 1/2 | - | 5475 | 393.65 | 3780 | 241.92 | 3020 | 182.11 | 2535 | 121.93 | 2170 | 81.59 |
| 5/8 | - | 4035 | 472.50 | 3025 | 305.53 | 2415 | 233.77 | 2030 | 155.90 | 1735 | 108.44 |
| - | 16 | 4000 | 468.50 | 3000 | 303.15 | 2400 | 232.28 | 2000 | 153.54 | 1700 | 106.30 |
| 3/4 | - | 3360 | 394.80 | 2520 | 268.63 | 2010 | 204.02 | 1690 | 137.23 | 1445 | 89.45 |
| - | 20 | 3200 | 375.98 | 2400 | 255.91 | 1900 | 192.91 | 1600 | 129.92 | 1400 | 86.61 |
| - | 25 | 2560 | 294.40 | 1920 | 192.00 | 1535 | 145.80 | 1280 | 102.40 | 1100 | 68.75 |
| 1 | - | 2520 | 289.80 | 1890 | 189.00 | 1510 | 143.45 | 1260 | 100.80 | 1090 | 67.50 |

1. Cutting conditions shown above are for contouring with $L/D \leq 3.5xD$.
2. Adjust/reduce the cutting conditions when the overhang length is longer than $3.5xD$.

Cutting Conditions (PXDR-P)

Contouring

| Hardness | | - | | Up to 30 HRC | | 30-45 HRC | | 45-55 HRC | |
|---------------|------|---|------------------|-----------------------------|------------------|-------------------------------------|------------------|----------------------|------------------|
| Work Material | | Mild Steels Carbon Steels Cast Iron | | Alloy Steels Tool Steels | | Stainless Steels Hardened Steels | | Hardened Steels | |
| Depth of Cut | | Aa=0.05r • Ar=0.25Dc | | | | | | Aa=0.03r • Ar=0.25Dc | |
| Mill Dia. | | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) |
| (in) | (mm) | | | | | | | | |
| 3/8 | - | 5010 | 148.00 | 5010 | 118.26 | 5010 | 88.90 | 5010 | 59.13 |
| - | 10 | 4770 | 140.95 | 4770 | 112.60 | 4770 | 84.65 | 4770 | 56.30 |
| - | 12 | 3980 | 117.32 | 3980 | 94.10 | 3980 | 70.47 | 3980 | 46.85 |
| 1/2 | - | 3780 | 111.60 | 3780 | 89.30 | 3780 | 66.97 | 3780 | 44.65 |
| 5/8 | - | 3025 | 89.32 | 3025 | 74.45 | 3025 | 53.59 | 3025 | 35.73 |
| - | 16 | 2980 | 88.19 | 2980 | 70.47 | 2980 | 52.75 | 2980 | 35.43 |
| 3/4 | - | 2520 | 74.40 | 2520 | 59.53 | 2520 | 44.65 | 2520 | 29.76 |
| - | 20 | 2390 | 70.47 | 2390 | 56.30 | 2390 | 42.12 | 2390 | 28.35 |
| - | 25 | 1920 | 56.64 | 1920 | 45.12 | 1920 | 33.98 | 1920 | 22.46 |
| 1 | - | 1890 | 55.75 | 1890 | 44.41 | 1890 | 33.45 | 1890 | 22.11 |

1. Cutting conditions shown above are for contouring with $L/D \leq 5xD$.
2. Adjust/reduce the cutting conditions when the overhang length is longer than $5xD$.





Cutting Conditions (PXDR-N)

Contouring

| Hardness | | Up to 30 HRC | | 30-45 HRC | | 45-55 HRC | | 55-60 HRC | |
|---------------|------|-----------------------------|------------------|-------------------------------------|------------------|-----------------|------------------|---------------------|------------------|
| Work Material | | Alloy Steels Tool Steels | | Stainless Steels Hardened Steels | | Hardened Steels | | Hardened Steels | |
| Depth of Cut | | Aa=0.03r • Ar=0.25Dc | | | | | | Aa=0.02r • Ar=0.2Dc | |
| Mill Dia. | | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) |
| (in) | (mm) | | | | | | | | |
| 3/8 | - | 5010 | 148.00 | 4010 | 94.64 | 3340 | 47.56 | 3340 | 39.28 |
| - | 10 | 4770 | 140.95 | 3820 | 90.16 | 3180 | 45.28 | 3180 | 37.40 |
| - | 12 | 3980 | 117.32 | 3180 | 75.20 | 2650 | 37.40 | 2650 | 31.50 |
| 1/2 | - | 3780 | 111.60 | 3020 | 71.34 | 2520 | 34.72 | 2520 | 29.76 |
| 5/8 | - | 3025 | 89.32 | 2415 | 57.05 | 2015 | 28.56 | 2015 | 23.80 |
| - | 16 | 2980 | 88.19 | 2390 | 56.30 | 1990 | 28.35 | 1990 | 23.62 |
| 3/4 | - | 2520 | 74.40 | 2010 | 47.48 | 1680 | 23.15 | 1680 | 19.84 |
| - | 20 | 2390 | 70.47 | 1910 | 45.27 | 1590 | 22.44 | 1590 | 18.90 |
| - | 25 | 1920 | 56.64 | 1535 | 36.07 | 1275 | 17.85 | 1275 | 15.05 |
| 1 | - | 1890 | 55.75 | 1500 | 35.25 | 1250 | 17.50 | 1250 | 14.75 |

1. Cutting conditions shown above are for contouring with $L/D \leq 5xD$.
2. Adjust/reduce the cutting conditions when the overhang length is longer than $5xD$.

Cutting Conditions (PXBE-P & PXBE-P-O)

Contouring

| Hardness | | | | Up to 30 HRC | | 30-45 HRC | | 45-55 HRC | |
|---------------|------|--|------------------|-----------------------------|------------------|-------------------------------------|------------------|--|------------------|
| Work Material | | Mild Steels Carbon Steels Cast Iron | | Alloy Steels Tool Steels | | Stainless Steels Hardened Steels | | Hardened Steels Titanium Alloys | |
| Depth of Cut | | $\leq \varnothing 0.500$: Aa=0.07Dc • Ar=0.15Dc $\geq \varnothing 0.625$: Aa=0.10Dc • Ar=0.15Dc | | | | | | $\leq \varnothing 0.500$: Aa=0.05Dc • Ar=0.1Dc $\geq \varnothing 0.625$: Aa=0.03Dc • Ar=0.1Dc | |
| Mill Dia. | | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) |
| (in) | (mm) | | | | | | | | |
| 3/8 | - | 5010 | 88.90 | 4010 | 71.10 | 3340 | 59.13 | 3340 | 39.28 |
| - | 10 | 4770 | 84.65 | 3820 | 67.72 | 3180 | 56.30 | 3180 | 37.40 |
| - | 12 | 3980 | 70.47 | 3180 | 56.30 | 2650 | 46.85 | 2650 | 31.50 |
| 1/2 | - | 3780 | 66.97 | 3020 | 53.50 | 2520 | 44.65 | 2520 | 29.76 |
| 5/8 | - | 3025 | 53.60 | 2415 | 42.78 | 2015 | 35.70 | 2015 | 23.80 |
| - | 16 | 2980 | 52.75 | 2390 | 42.12 | 1990 | 35.43 | 1990 | 23.62 |
| 3/4 | - | 2520 | 44.65 | 2010 | 35.61 | 1680 | 29.76 | 1680 | 19.84 |
| - | 20 | 2390 | 42.12 | 1910 | 33.86 | 1590 | 28.35 | 1590 | 18.90 |
| - | 25 | 1920 | 33.98 | 1535 | 27.17 | 1275 | 22.57 | 1275 | 15.05 |
| 1 | - | 1890 | 33.45 | 1500 | 26.55 | 1250 | 22.12 | 1250 | 14.75 |

1. Cutting conditions shown above are for contouring with $L/D \leq 5xD$.
2. Adjust/reduce the cutting conditions when the overhang length is longer than $5xD$.





Cutting Conditions (PXBE-N & PXBE-N-0)

Contouring

| Hardness | | | | Up to 30 HRC | | 30-45 HRC | | 45-55 HRC | | 55-60 HRC | |
|---------------|------|--|------------------|-----------------------------|------------------|--|------------------|--|------------------|-----------------------|------------------|
| Work Material | | Mild Steels Carbon Steels Cast Iron | | Alloy Steels Tool Steels | | Hardened Steels Pre-hardened Steels | | Hardened Steels | | Hardened Steels | |
| Depth of Cut | | ≤Ø0.500: Aa=0.07Dc • Ar=0.15Dc ≥Ø0.625: Aa=0.05Dc • Ar=0.15Dc | | | | | | ≤Ø0.500: Aa=0.05Dc • Ar=0.1Dc ≥Ø0.625: Aa=0.03Dc • Ar=0.1Dc | | Aa=0.03Dc • Ar=0.05Dc | |
| Mill Dia. | | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) |
| (in) | (mm) | | | | | | | | | | |
| 3/8 | - | 8360 | 148.00 | 8360 | 148.00 | 6695 | 94.76 | 5010 | 59.13 | 3340 | 19.85 |
| - | 10 | 7960 | 140.95 | 7960 | 140.95 | 6370 | 90.16 | 4770 | 56.30 | 3180 | 18.90 |
| - | 12 | 6600 | 116.14 | 6600 | 116.14 | 5300 | 74.80 | 3950 | 45.27 | 2600 | 15.75 |
| 1/2 | - | 6235 | 109.74 | 6235 | 109.74 | 4970 | 70.08 | 3715 | 42.72 | 2230 | 13.38 |
| 5/8 | - | 4990 | 89.32 | 4990 | 89.32 | 3975 | 57.24 | 2970 | 35.64 | 1925 | 11.94 |
| - | 16 | 4950 | 88.58 | 4950 | 88.58 | 3950 | 57.09 | 2950 | 35.43 | 1900 | 11.81 |
| 3/4 | - | 4155 | 72.30 | 4155 | 72.30 | 3310 | 47.66 | 2475 | 31.19 | 1680 | 10.25 |
| - | 20 | 3950 | 68.90 | 3950 | 68.90 | 3150 | 45.27 | 2350 | 29.53 | 1600 | 9.84 |
| - | 25 | 3160 | 55.30 | 3160 | 55.30 | 2520 | 36.29 | 1880 | 23.50 | 1280 | 7.68 |
| 1 | - | 3110 | 54.42 | 3110 | 54.42 | 2485 | 35.78 | 1850 | 23.12 | 1260 | 7.56 |

1. Cutting conditions shown above are for contouring with L/D ≤ 3.5xD.
2. Adjust/reduce the cutting conditions when the overhang length is longer than 3.5xD.

Cutting Conditions (PXBM)

Contouring

| Hardness | | | | Up to 30 HRC | | 30-45 HRC | | 45-55 HRC | | 55-60 HRC | |
|---------------|------|---|------------------|-----------------------------|------------------|--|------------------|-----------------|------------------|-----------------|------------------|
| Work Material | | Mild Steels Carbon Steels Cast Iron | | Alloy Steels Tool Steels | | Hardened Steels Pre-hardened Steels | | Hardened Steels | | Hardened Steels | |
| Depth of Cut | | Aa=0.02Dc • Ar=0.05Dc | | | | | | | | | |
| Mill Dia. | | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) | Speed (RPM) | Feed (in/min) |
| (in) | (mm) | | | | | | | | | | |
| 3/8 | - | 8360 | 197.24 | 8360 | 197.24 | 6695 | 126.40 | 5010 | 78.98 | 3340 | 26.47 |
| - | 10 | 7960 | 187.80 | 7960 | 187.80 | 6360 | 120.08 | 4770 | 75.20 | 3180 | 25.20 |
| - | 12 | 6600 | 153.54 | 6600 | 153.54 | 5300 | 98.42 | 3950 | 59.05 | 2600 | 21.65 |
| 1/2 | - | 6235 | 145.28 | 6235 | 145.28 | 4970 | 92.44 | 3715 | 55.35 | 2230 | 18.51 |
| 5/8 | - | 4990 | 178.64 | 4990 | 178.64 | 3975 | 114.88 | 2970 | 71.28 | 1925 | 23.87 |
| - | 16 | 4950 | 177.16 | 4950 | 177.16 | 3950 | 114.17 | 2950 | 70.87 | 1900 | 23.62 |
| 3/4 | - | 4155 | 145.01 | 4155 | 145.01 | 3310 | 95.00 | 2475 | 62.12 | 1680 | 20.66 |
| - | 20 | 3950 | 137.79 | 3950 | 137.79 | 3150 | 90.55 | 2350 | 59.05 | 1600 | 19.68 |
| - | 25 | 3160 | 110.60 | 3160 | 110.60 | 2520 | 71.82 | 1880 | 47.00 | 1280 | 15.75 |
| 1 | - | 3110 | 108.85 | 3110 | 108.85 | 2485 | 70.82 | 1850 | 46.25 | 1260 | 15.50 |

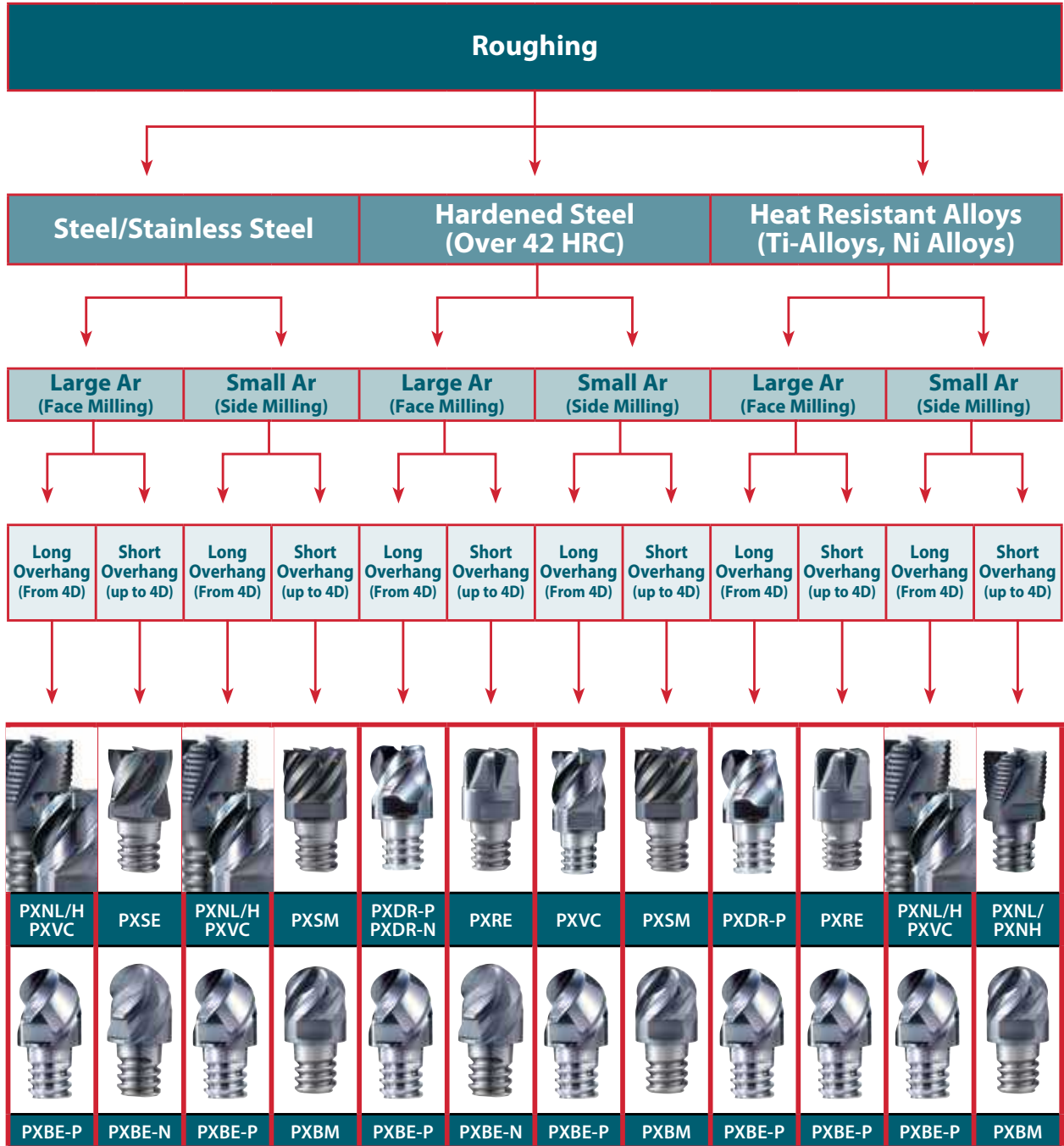
1. Cutting conditions shown above are for contouring with L/D ≤ 3.5xD.
2. Adjust/reduce the cutting conditions when the overhang length is longer than 3.5xD.



PXM Head Selector

» Roughing Operations

A guide for selecting head type based on application.

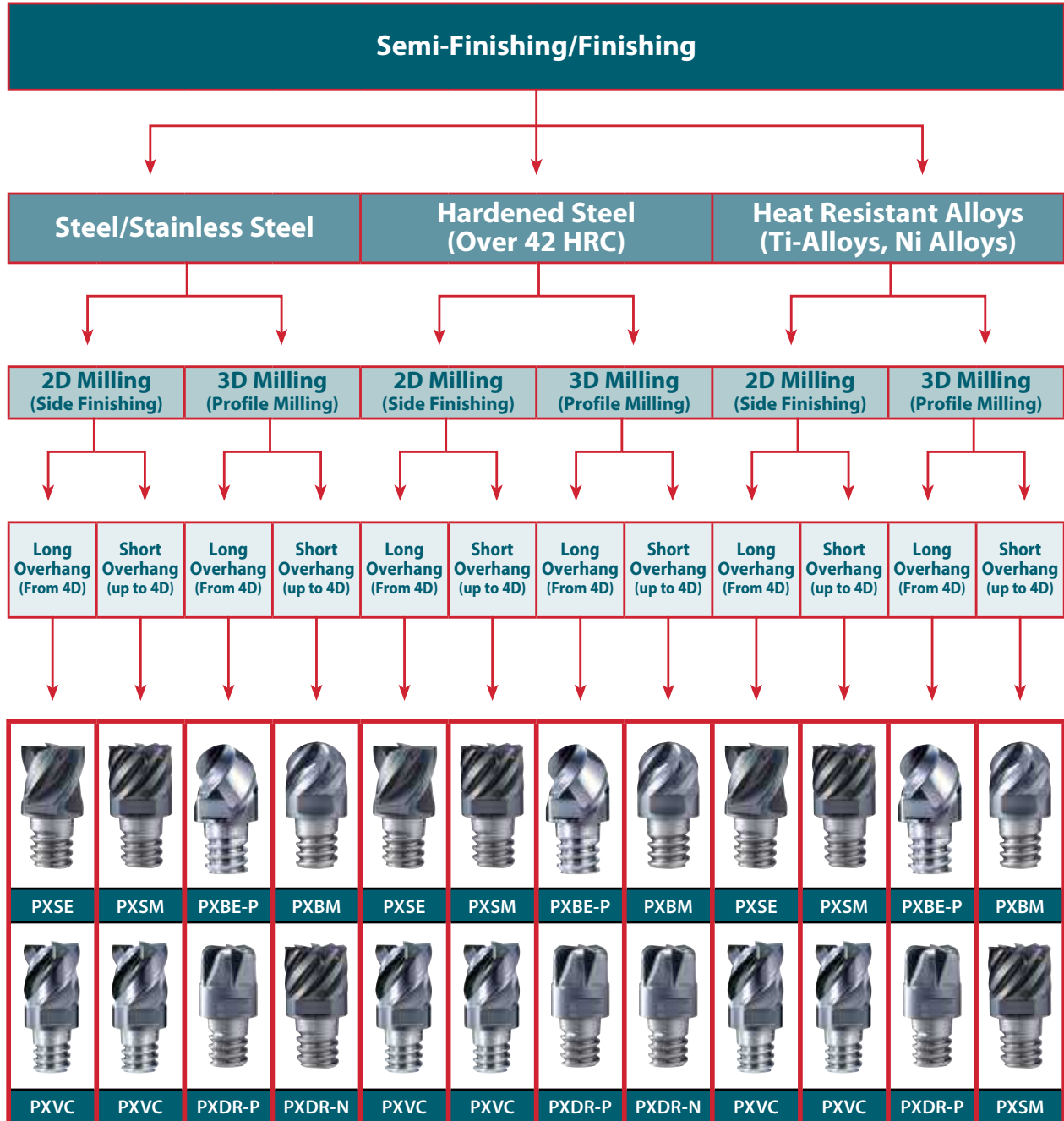




PXM Head Selector

» Semi-Finishing/Finishing Operations

A guide for selecting head type based on application.





EXOCARB® DISC CUTTER®

Face Mill Cutter for Small Machines

DISC CUTTER^{PRO}

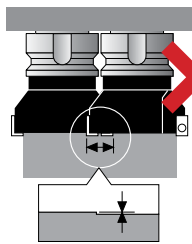
DISC CUTTER^S



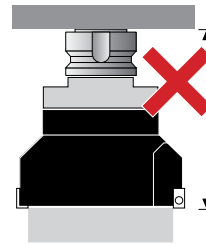
Revolutionary Face Milling Cutter for Small Machines

| | |
|-----------|------------------|
| Roughing | DISC CUTTER® S |
| Finishing | DISC CUTTER® Pro |

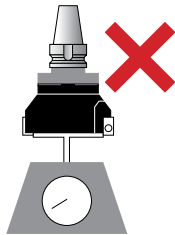
Why do we need the DISC CUTTER®?



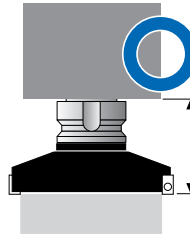
Multiple passes on large, wide work pieces are required for small diameter cutter bodies which result in blend lines on the finished part.



Larger cutter bodies remove material in fewer passes, but are typically heavier, requiring more weight and protrusion from the arbor.



On smaller machines, the total tool weight allowance including the arbor is 3kg (6.6lbs). A conventional 125mm cutter is too heavy for these machines.



OSG's Solution

EXOCARB® DISC CUTTER® solves these issues by designing a lighter, large diameter cutter without sacrificing rigidity.

Thin, Light and Steel Body

DISC CUTTER® S, $\phi 125\text{mm}$ = 1.0kg (2.2lbs)
DISC CUTTER® PRO, $\phi 125\text{mm}$ = 1.3kg (2.86lbs)

Arbor = 0.6kg (1.32lbs)



Less than 1/2 of the weight compared to competitors.

Short reach results in high rigidity.

High rigidity allows High-Speed & Feed milling.





DISC CUTTER® S

- Roughing
- Carbide Insert
- No Height Adjustment



DISC CUTTER® PRO

- Finishing
- PCD Brazed Insert
- Height Adjustment

Arbors



3 pin technology securely supports the cutter body while minimizing gage length.



Optional Internal Coolant Supply Clamping Bolt

The internal coolant supply improves surface finish and tool life by cooling the cutting edge & evacuating the chips.

Performance

| DISC CUTTER® S | |
|----------------|--------------------------------------|
| Tool | DC-S 125 x SL x 5J (125mm) |
| Insert | Carbide |
| Work Material | A7075 |
| Speed | 8,000 RPM |
| Feed | 158 IPM (0.004 inch/t) |
| Depth of Cut | 3mm (0.120 in) |
| Width of Cut | 100mm (4.000 in) |
| Machine | Vertical Machining Center BT30 5.5kw |

MRR : 1,200cm³/Min

| DISC CUTTER® PRO | |
|------------------|--------------------------------------|
| Tool | DC-P 125 x SL x 5J (125mm) |
| Insert | PCD |
| Work Material | A7075 |
| Speed | 5,000 RPM |
| Feed | 100 IPM (0.004 inch/t) |
| Depth of Cut | 0.5mm (0.02 in) |
| Width of Cut | 100mm (4.000 in) |
| Machine | Vertical Machining Center BT30 5.5kw |

Surface Roughness : Ra 0.171um



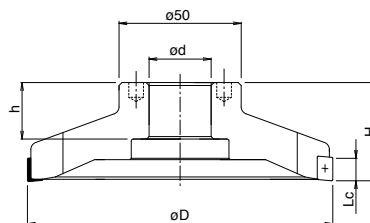


List 6440

DISC CUTTER® S for Roughing



SPEED
FEED
P1505



| EDP No. | Designation | Cutter Diameter | | No. of Teeth | Height | | Length of Cut | | Bore Diameter | | Weight | | Max. RPM |
|---------|-------------|-----------------|--------|--------------|--------|--------|---------------|--------|---------------|--------|--------|------|----------|
| | | D | | | H | | Lc | | d | | | | |
| | | (mm) | (inch) | | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (kg) | (lb) | |
| 8070255 | 80xSLx4J | 80 | 3.150 | 4 | 40 | 1.575 | 9 | 0.354 | 25.4 | 1.000 | 0.44 | 0.97 | 15,000 |
| 8070256 | 100xSLx4J | 100 | 3.937 | 4 | 40 | 1.575 | 9 | 0.354 | 25.4 | 1.000 | 0.60 | 1.32 | 13,400 |
| 8070257 | 125xSLx5J | 125 | 4.921 | 5 | 40 | 1.575 | 9 | 0.354 | 25.4 | 1.000 | 1.00 | 2.20 | 12,000 |

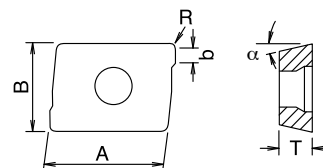
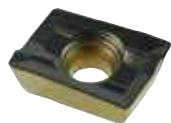
Accessories are included.
Packed: 1 pc.





List 6442

DISC CUTTER® S Inserts



| EDP No. | Description | No. of Cutting Edges | Insert Size | | | | | Grade |
|---------|-----------------|----------------------|-------------|--------|----------|--------|--------|-------|
| | | | AxB (mm) | T (mm) | α | R (mm) | b (mm) | |
| 8033300 | APHT0903PPR-73 | 2 | 9.52 x 6.75 | 3.18 | 11° | 0.4 | 1.5 | K10T |
| 8059301 | APKT0903PPR-52 | 2 | 9.52 x 6.75 | 3.18 | 11° | 0.4 | 1.2 | K15CA |
| 8091278 | APMT0903PPR-F56 | 2 | 9.52 x 6.75 | 3.18 | 11° | 0.4 | 1.2 | WQM25 |

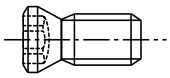
Packed: 10 pcs.



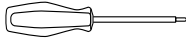
Accessories

DISC CUTTER® S Accessories



| | EDP No. | Description |
|---|---------|-------------|
|  | 8009023 | FS923 |
| Clamping Screw | | |

Packed: 10 pcs.

| | EDP No. | Description |
|---|---------|-------------|
|  | 7808205 | FS230 |
| Screwdriver | | |

Packed: 1 pc.



Recommended Materials by Application

| Insert Grade | Chip Breaker | P | M | K | N | S |
|--------------|--------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| K10T | 25° | | | | <input type="checkbox"/> | |
| K15CA | 16° | | | <input type="checkbox"/> | | |
| WQM25 | 16° | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> |

good best



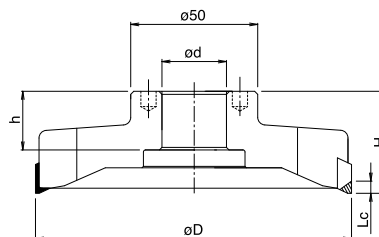


List 6441

DISC CUTTER® PRO for Finishing

DISC CUTTER PRO

SPEED FEED
P1506



| EDP No. | Designation | Cutter Diameter | | No. of Teeth | Height | | Length of Cut | | Bore Diameter | | Weight | | Max. RPM |
|---------|-------------|-----------------|--------|--------------|--------|--------|---------------|--------|---------------|--------|--------|------|----------|
| | | D | | | H | | Lc | | d | | | | |
| | | (mm) | (inch) | | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (kg) | (lb) | |
| 8070265 | 80xSLx3J | 80 | 3.150 | 3 | 40 | 1.575 | 4 | 0.157 | 25.4 | 1.000 | 0.48 | 1.06 | 15,500 |
| 8070266 | 100xSLx4J | 100 | 3.937 | 4 | 40 | 1.575 | 4 | 0.157 | 25.4 | 1.000 | 0.70 | 1.54 | 13,800 |
| 8070267 | 125xSLx5J | 125 | 4.921 | 5 | 40 | 1.575 | 4 | 0.157 | 25.4 | 1.000 | 1.30 | 2.87 | 12,400 |

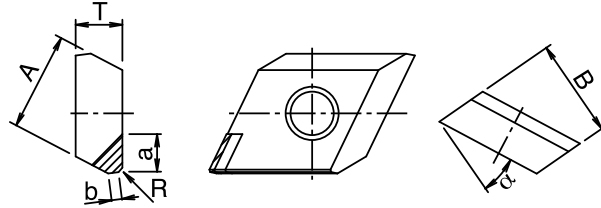
Accessories are included.
Packed: 1 pc.





List 6541

DISC CUTTER® PRO Inserts



| EDP No. | Description | No. of Cutting Edges | Insert Size | | | | | | Grade |
|---------|-------------|----------------------|-------------|--------|----------|---------|--------|--------|-------|
| | | | AxB (mm) | T (mm) | α | R (mm) | b (mm) | a (mm) | |
| 8080801 | XOHW1104PDR | 1 | 9.52x9.52 | 4.76 | 30° | 0.4x45° | 4 | 1.1 | PCD |

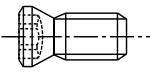
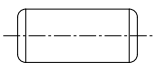


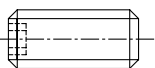
Packed: 1 pc.



Accessories

DISC CUTTER® PRO Accessories



| EDP No. | Description | EDP No. | Description |
|--|----------------|--|-------------|
|  8008626 | Clamping Screw |  8008748 | Pad |
|  8008747 | Adjusting Bolt |  7808208 | Wrench |
|  8009063 | Set Screw | | |

Packed: Clamping Screws = 10 pcs.; Adjusting Bolts = 10 pcs.; Set Screws = 10 pcs.; Pads = 10 pcs.; Screwdriver = 1 pc.



Recommended Materials by Application

| Insert Grade | Chip Breaker | P | M | K | N | S |
|--------------|--------------|---|---|---|-------------------------------------|---|
| PCD | - | | | | <input checked="" type="checkbox"/> | |

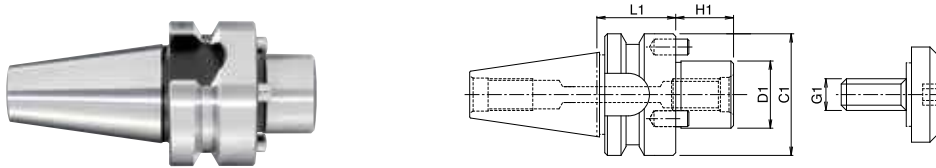
good best





List 6640

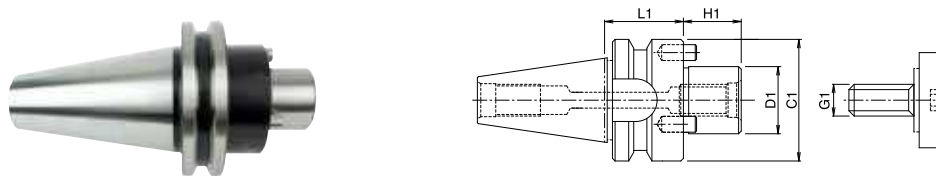
DISC CUTTER® Arbor



BT30

| EDP No. | Description | D1 | | L1 | | C1 | | H1 | | G1 | Weight | |
|---------|------------------|------|--------|------|--------|------|--------|------|--------|-----|--------|------|
| | | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | | (kg) | (lb) |
| 99640 | BT30-FMOA25.4-29 | 25.4 | 1.000 | 29 | 1.142 | 46 | 1.811 | 19 | 0.748 | M12 | 0.60 | 1.32 |

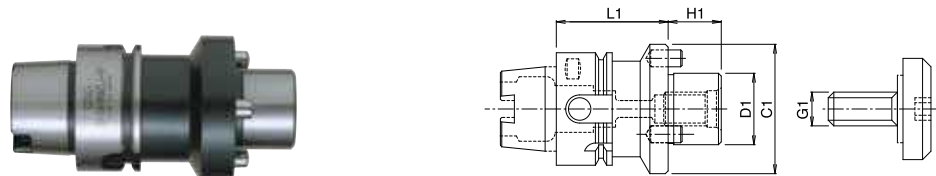
Packed: 1 pc.



CAT 40

| EDP No. | Description | D1 | | L1 | | C1 | | H1 | | G1 | Weight | |
|---------|-------------------|------|--------|------|--------|-------|--------|------|--------|-----|--------|------|
| | | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | | (kg) | (lb) |
| 664001 | CAT40-FMOA25.4-49 | 25.4 | 1.000 | 35 | 1.378 | 44.45 | 1.750 | 19 | 0.748 | M12 | 1.10 | 2.43 |

Packed: 1 pc.



HSK40A

| EDP No. | Description | D1 | | L1 | | C1 | | H1 | | G1 | Weight | |
|---------|--------------------|------|--------|------|--------|------|--------|------|--------|-----|--------|------|
| | | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | | (kg) | (lb) |
| 99634 | HSK40A-FMOA25.4-49 | 25.4 | 1.000 | 49 | 1.929 | 46 | 1.811 | 19 | 0.748 | M12 | 0.60 | 1.32 |

Packed: 1 pc.



Accessories

Clamping Bolt for Coolant-Through Spindles (Optional)



| EDP No. | Description | G1 |
|---------|--|-----|
| 99632 | Coolant-Through Clamping Bolt (MBAH-M12) | M12 |

Packed: 1 pc.





Cutting Conditions (Roughing)

DISC CUTTER® S

DISC CUTTER® S

Roughing

| Work Material | Cutting Speed (RPM) | Feed Rate (Inch/Tooth) |
|------------------------------------|---------------------|------------------------|
| Carbon Steel 1018, 1050 | 325 - 1,050 | 0.0021 - 0.0060 |
| Stainless Steel 300, 400 | 300 - 865 | 0.0018 - 0.0042 |
| Cast Iron | 450 - 5,100 | 0.0027 - 0.0098 |
| Ductile Cast Iron | 375 - 4,100 | 0.0027 - 0.0098 |
| Aluminum A5052, A7075 | 3,280 - 10,000 | 0.0027 - 0.0098 |
| Aluminum Alloy Casting ~ 13% Si | 3,280 - 10,000 | 0.0027 - 0.0098 |
| Aluminum Alloy Casting 13% Si ~ | 300 - 2,500 | 0.0027 - 0.0098 |
| Copper | 800 - 6,800 | 0.0027 - 0.0098 |





Cutting Conditions (Finishing)

DISC CUTTER® PRO

DISC CUTTER® PRO

Finishing

| Work Material | Cutting Speed (RPM) | Feed Rate (Inch/Tooth) |
|------------------------------------|---------------------|------------------------|
| Aluminum A5052, A7075 | 3,280 - 13,120 | 0.0027 - 0.0059 |
| Aluminum Alloy Casting ~ 13% Si | 3,280 - 13,120 | 0.0027 - 0.0059 |
| Aluminum Alloy Casting 13% Si ~ | 300 - 2,500 | 0.0027 - 0.0059 |
| Copper | 800 - 6,800 | 0.0027 - 0.0059 |

**DISC
CUTTER** **PRO**





OSG  **PHOENIX**®








HOLDERS











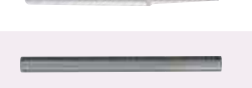




| List | Product | Page | Inch/Metric | Tool Features |
|------|---------|------|-------------|---------------|
|------|---------|------|-------------|---------------|

SynchroMaster

| | | | | | |
|------|---------------------------|---|------|-------------|---|
| 9950 | SynchroMaster Tap Holders |  NEW | 1511 | Inch/Metric | BT30, BT40, HSK40A, HSK63A, ST20D*, ST25D*, and CAT40 Micro Float Tap Holders for rigid tapping (*Straight Shank) |
| 9953 | SynchroMaster Collet |  NEW | 1511 | Inch/Metric | ER16 Sealed Collets for coolant-through without sealing disc |
| 9955 | SynchroMaster Accessories |  NEW | 1512 | - | |

HY-PRO® SHRINK

| | | | | | |
|---|----------------------------------|---|-----------|-------------|---|
| - | HR-B Handy Unit |  | 1513-1515 | - | General Purpose Shrink Device - By Hot Air & Accessories |
| - | HSK Mono Series Holders |  | 1521-1522 | Metric | HSK-E25, HSK-E32, and HSK-E40 Holders for standard coolant-through the tool operations. |
| - | Base Holders: 2pc Series |  | 1523 | Inch/Metric | Base Holders for general purpose & coolant-through the tool operations - BT, CT, and HSK. |
| - | Nozzle Holders |  | 1524 | Inch/Metric | Nozzle Type Holders for coolant-through the holder operations - BT, CT, and HSK. |
| - | Regular Extensions |  | 1525 | Inch/Metric | Regular Type Shrink Extensions for general purpose & coolant-through the tool operations. |
| - | Flush Type Extensions |  | 1526 | Inch/Metric | Flush Type Shrink Extensions for coolant-through the collet operations. |
| - | Slim Type Extensions |  | 1527-1528 | Inch/Metric | Slim Type Shrink Extensions for long reach & coolant-through the tool operations. |
| - | Straight Regular Extensions |  | 1529 | Inch/Metric | Straight Regular Type Shrink Extensions for standard milling / end mill chucks. |
| - | Straight Slim Extensions |  | 1530-1531 | Inch/Metric | Straight Slim Type Shrink Extensions for standard milling / end mill chucks. |
| - | Carbide Straight Extensions |  | 1532 | Metric | Straight Type Shrink Extensions for increased rigidity and reach. |
| - | Carbide Straight Slim Extensions |  | 1532 | Metric | Taper Type Shrink Extensions for increased rigidity and reach. |

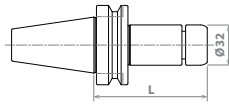




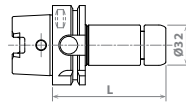
List 9950

NEW

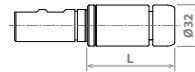
SynchroMaster Tap Holders



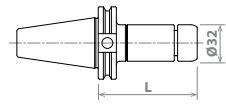
BT Shank Holder



HSK Shank Holder



ST Shank Holder



CAT40 Shank Holder

| EDP Number | Designation | L (mm) | ANSI Tap Size | JIS Tap Size |
|------------|-----------------|--------|--------------------|---------------------|
| 79910 | BT30-SMH16-90 | 90 | M4~M8 No.8~5/16 | M3~M12 No.5~7/16 |
| 79911 | BT40-SMH16-90 | 90 | | |
| 79912* | HSK40A-SMH16-85 | 85 | | |
| 79913 | HSK63A-SMH16-90 | 90 | | |
| 79924 | ST20D-SMH16-68 | 68 | | |
| 79925 | ST25D-SMH16-68 | 68 | | |
| 79926 | CAT40-SMH16-90 | 90 | | |

Packed: 1 pc.

1. The collet and spanner are sold separately.
2. Please use a machine with synchronous feed capability.

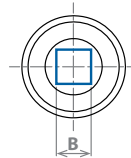
* The HSK40A is without manual clamping hole.



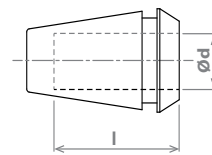
List 9953

NEW

SynchroMaster Collet, Internal and External Coolant



Square Hole Design
Prevents Tap Slippage



| EDP Number | Designation | d | B | I | ANSI | Old JIS | End Mill Shank | Standard Tightening Torque |
|------------|----------------|--------|--------|------|--------------|---------|----------------|----------------------------|
| 79960 | ER16GH-0.255 | 0.255" | 0.191" | 18mm | 1/4, M6 | - | - | 30~35Nm |
| 79961 | ER16GH-0.318 | 0.318" | 0.238" | 22mm | 5/16, M7, M8 | - | - | 45~50Nm |
| 79917 | ER16GH-6-4.5 | 6mm | 4.5mm | 18mm | - | M6 | M4, M5, M6 | 30~35Nm |
| 79918 | ER16GH-6.2-5 | 6.2mm | 5mm | 18mm | - | M8 | - | |
| 79919 | ER16GH-7-5.5 | 7mm | 5.5mm | 18mm | - | M10 | - | |
| 79920 | ER16GH-8-6 | 8mm | 6mm | 22mm | - | - | M8, M10 | 45~50Nm |
| 79921 | ER16GH-8.5-6.5 | 8.5mm | 6.5mm | 22mm | - | M12 | - | |

Packed: 1 pc.

1. For center-through coolant system, please insert tool all the way to the back of the collet.

Coolant leakage may occur if the tool insertion length is too short.

2. Select the appropriate collet after confirming the dimensions of the tap to be used.
3. Confirm the tightening torque with a torque spanner wrench or similar tool.






List 9955


NEW

SynchroMaster Accessories

| Appearance | EDP Number | Designation |
|---|------------|-------------|
|  Spanner Wrench | 79923 | FKT-32L |

Packed: 1 pc.



| Appearance | EDP Number | Designation |
|--|------------|-------------|
|  Nut | 79922 | ERP-16T |

Packed: 1 pc.



HR-B Handy Unit



Features

- Small Foot Print
- Light Weight
- 120 V AC Current
- Easy-adjust slide

Benefits

- Fits on a table top
- Portable
- Works with any standard wall outlet
- Fast and simple height adjustments
- Cost effective!

Machine Specifications


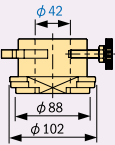

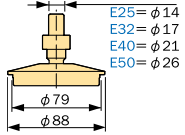

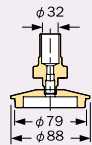

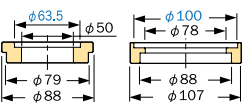
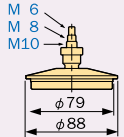
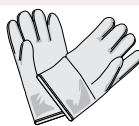
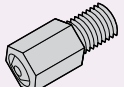
| | |
|-------------------------|--|
| EDP Number | 68802B |
| Name | HRB-025-120NA SHRINK UNIT |
| Voltage required | 120V |
| Power rating | 1200W |
| Dimensions | 362mm x 105mm x 570mm |
| Shrink fit capabilities | All OSG HY-PRO® Shrink holders |
| Heating cycle time | 120 seconds |
| Included Accessories | Heat resistant gloves, timer, tool tweezer |
| Weight | 16.5 lbs. |

Safe Use of Shrink Devices

- 1** DO NOT allow contact between hot air from the system and the body as there is a possibility of burns.
- 2** DO NOT use this system near flammable gases and substances.
- 3** DO NOT apply water to the system.
- 4** Recommended cool-down time is five minutes.



HR-B Handy Unit Accessories

| | Item Name | EDP No. | Size | Specification |
|--|-------------------------|---------|-----------|---|
|   | Base | 9910232 | BAA-01 | To hold the appropriate adapter for positioning a shrink fit holder or extension during assembly and disassembly. |
|   | Adjustable Base Adapter | 9910222 | BAS-02 | To position 10-40mm straight type shrink extensions during assembly and disassembly. Can be used in conjunction with the BAA-01 base. |
|   | Adapter | 9910224 | ADH-HSK25 | Used with HSK25 series tool holders. It fits into the top of the BAA-01 Base and accepts the tool holder. |
| | Adapter | 9910225 | ADH-HSK32 | Used with HSK32 series tool holders. It fits into the top of the BAA-01 Base and accepts the tool holder. |
| | Adapter | 9910226 | ADH-HSK40 | Used with HSK40 series tool holders. It fits into the top of the BAA-01 Base and accepts the tool holder. |
| | Adapter | 9910227 | ADH-HSK50 | Used with HSK50 series tool holders. It fits into the top of the BAA-01 Base and accepts the tool holder. |
|   | Adapter | 9910228 | ADH-BT30 | Used with BT30 series tool holders. It fits into the top of the BAA-01 Base and accepts the tool holder. |
|   | Adapter | 9910229 | ADH-40 | Used with BT40 and CT40 series tool holders. It fits into the top of the BA-01 Base and accepts the tool holder. |
| | Adapter | 9910230 | ADH-50 | Used with BT50 and CT50 series tool holders. It fits into the top of the BA-01 Base and accepts the tool holder. |
|  | Base Adapter | 9910220 | ADH-SLK | Used with regular, flush and slim type shrink extensions. It fits into the top of the BAA-01 Base. |
|  | Heat Resistant Gloves | 8910171 | HBT-01 | |
|  | F Type Nozzle | 9910205 | NOZ-M4-12 | Optional nozzles for BT and HSK Flush Type Holders |



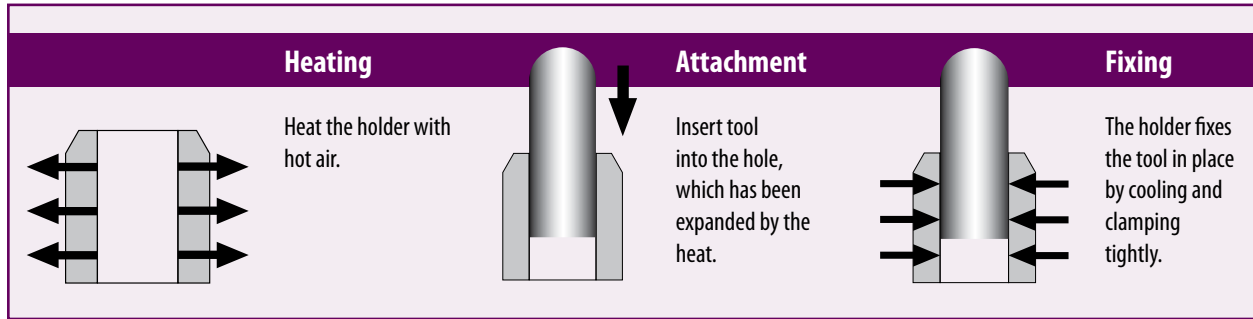


HR-B Handy Unit Accessories

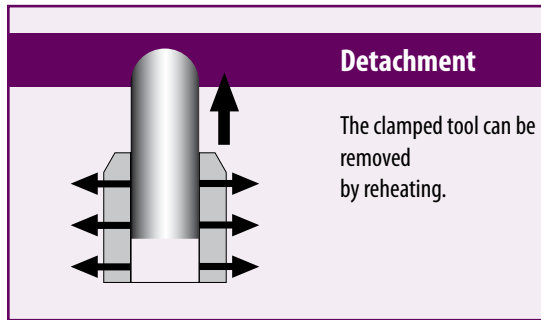
| | Item Name | EDP No. | Size | Specification |
|---|--------------------------------|----------------------|-----------------|---|
| <p>Insertion</p> <p>Set either the overhang length or insertion length of the cutting tool.</p> <p>Removing</p> <p>Leave some clearance, and attach the stopper</p> | Coil spring (type depth stops) | 8910172 | HSA-3 | 3mm shanks, 10 pcs. |
| | | 8910174 | HSA-4 | 4mm shanks, 10 pcs. |
| | | 9910213 | HSA-5 | 5mm shanks, 10 pcs. |
| | | 8910176 | HSA-6 | 6mm shanks, 10 pcs. |
| | | 9910215 | HSA-7 | 7mm shanks, 10 pcs. |
| | | 8910178 | HSA-8 | 8mm shanks, 10 pcs. |
| | | 9910217 | HSA-9 | 9mm shanks, 10 pcs. |
| | | 8910180 | HSA-10 | 10mm shanks, 10 pcs. |
| | | 9910219 | HSA-11 | 11mm shanks, 10 pcs. |
| | | 8910182 | HSA-12 | 12mm shanks, 10 pcs. |
| | | 8910183 | HST-F | Set 3-12mm, 10 pcs. |
| | | 9910170 | HSA-1/8 | 1/8" shanks, 10 pcs. |
| | | 9910173 | HSA-3/16 | 3/16" shanks, 10 pcs. |
| | | 9910176 | HSA-1/4 | 1/4" shanks, 10 pcs. |
| | | 9910177 | HSA-5/16 | 5/16" shanks, 10 pcs. |
| | | 9910179 | HSA-3/8 | 3/8" shanks, 10 pcs. |
| 9910182 | HSA-1/2 | 1/2" shanks, 10 pcs. | | |
| | Shrink Extension Stand | 9910201 | SDKT-RE (Red) | Vertical stand holds up to 25 extensions. |
| | | 9910202 | SDKT-BL (Blue) | |
| | | 9910203 | SDKT-GR (Green) | |
| | | 9910204 | SDKT-GD (Gold) | |
| | Wrench | 8910020 | W-135 | Used for the assembly and disassembly of the HY-PRO® Shrink two piece tooling system extensions and base holders. |



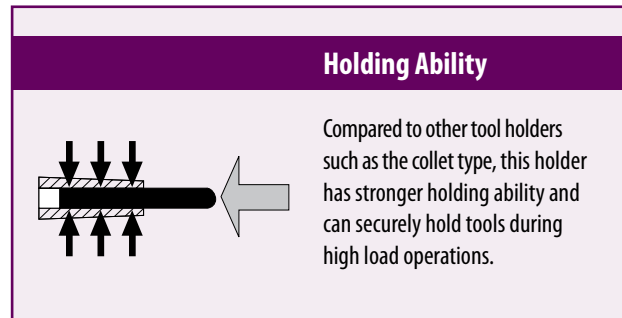
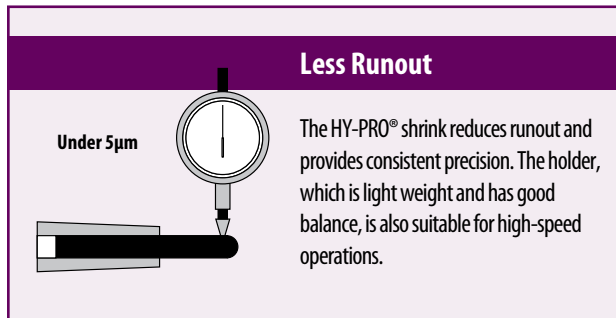
Tool Insertion



Tool Removal

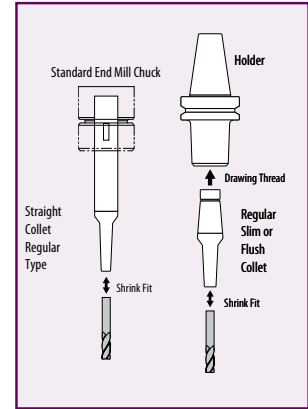


Features





| Holders | | Shrink Extensions | Cutting Tools |
|---|--|---|---|
| Basic BT30 BT40 BT50 CT-40 CT-50 HSK-A63 HSK-A100 HSK-F63M | Nozzle BT40 BT50 CT-40 CT-50 HSK-A63 HSK-A100 | Slim Regular Flush } \varnothing 3-12 \varnothing 1/4-1/2 in. | Carbide End Mills Carbide Drills Other Carbide Tools |



Holders

| Type | Specifications | BT, CT Holders | HSK Holders |
|----------------|---|-----------------------------------|-----------------------|
| Basic Holders | Holder for Shrink Extension (without nozzle) | BT-30, -40, -50 CT-40, -50 | A63, A100 F63M |
| Nozzel Holders | Holder for Shrink Extention (Coolant Supply Nozzle is Optional) | BT-40, -50 CT-40, -50 | A63, A100 |

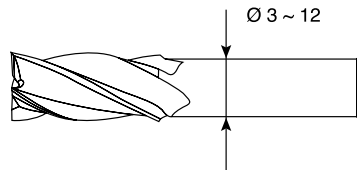
Extensions

| Type | Application | Dimension/Size |
|--------------|--|-----------------|
| Regular Type | For General Operations and Coolant-Through Tool | inch/metric |
| Slim Type | Use this type when a slim holder is needed to avoid interference between the tool and the work piece | inch/metric |
| Flush Type | Use this type when you want coolant supplied from the end face of the extension | inch/metric |

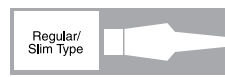
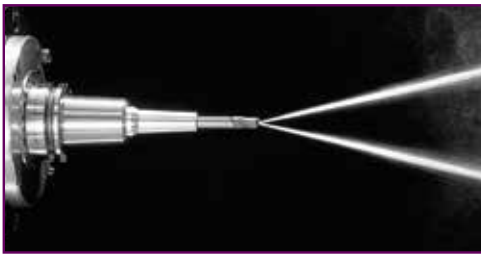


For Small Shank Diameter use h6 Shanks

The HY-PRO® Shrink System can be used for tools with a minimum shank diameter of 3mm. If the shank diameter is between 6mm and 12mm, the system requires at least an h7 shank tolerance. For Ø3-Ø5, use h6 shank tolerance. A wide variety of tools are applicable.



Various Coolant Supply Devices



Through the Tool

Suitable when using a tool with internal coolant to supply the point of the cutting edge. This is especially effective for drilling because the coolant is guaranteed to reach the cutting area.



Through the Holder

Supplies coolant from the front face of the holder. This is used for tools without internal coolant supply and regular or slim type extensions.



Through the Collet

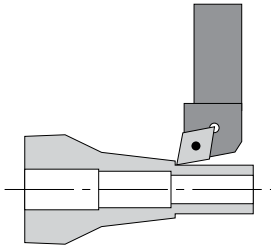
Supplies coolant from the front face of the shrink extensions. Although the diameter of the collet end face increases, coolant supply becomes even more effective.



Do-It-Yourself Extensions

Notes

If necessary, the shape of the shrink extension can be easily modified. This design provides the best holder shape for operations that have major interference with work materials.



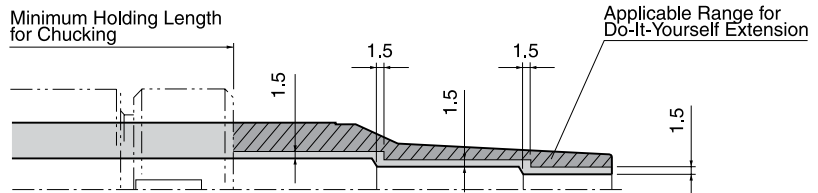
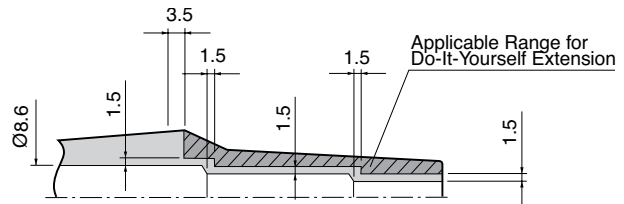
1. The shape of the flush collet cannot be adjusted.
2. Other adjustments should be based on the ranges described below. (Wall thickness should be at least 1.5mm)
3. DO NOT change the overall length.
4. For details, please refer to the instruction manual attached to the product package.

Recommended Cutting Conditions for Extension Modification

Notes

1. The cutting depth should be kept small.
2. Use water soluble coolant.
3. Use positive-rake inserts for stainless steel.

| Cutting Speed (m/min) | Cutting Speed (m/min) | Feed (mm/rev) | Cutting Depth (min) |
|-----------------------|-----------------------|---------------|---------------------|
| Roughing | 30 - 50 | 0.1 | 0.2 |
| Finishing | 30 - 50 | 0.05 | 0.1 |





HY-PRO® Shrink - Proper Care Information

Please follow these guidelines to ensure your HY-PRO® Shrink extensions stay looking and performing like new for years to come:

- When not in use, remove tool and clean/dry the inside & outside of holder as thoroughly as possible. Apply rust-proofing oil (WD-40® for example) to help inhibit oxidation. Excessive internal rusting will lead to hairline fractures in the steel.
- Be sure to use cutters with shank diameters that adhere to ISO tolerance requirements. Remember, HY-PRO® Shrink holders are made to accommodate the following:

| | | |
|---------|---|--------------------|
| ø3~5mm | → | h6 tolerance ONLY! |
| ø6~25mm | → | h7 tolerance ONLY! |

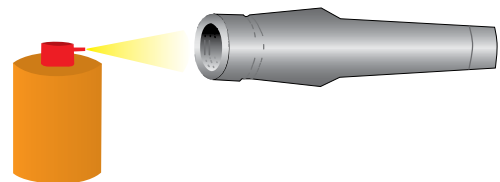
- Failure to use tools that adhere to these standards may result in complications with respect to inserting and removing tools.
- Be sure to observe minimum chucking lengths on extensions. Failure to do so can result in poor accuracy, deformation, or cracking of tool or extension.

Care Tips:

- Simple household bleach will remove oxidation from the outside of extensions. Use it to clean metal powder and debris from the insides as well to help prevent scratching & abrasions.



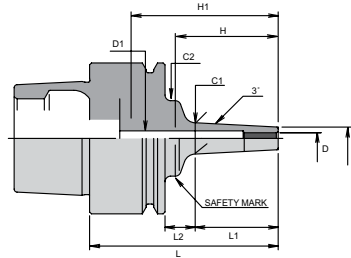
- Be sure to keep threads on the end of the extensions well oiled to allow for easy installation and removal from the holders.





HSK-E25 Mono Series

For Standard & Coolant-Through the Tool Operations



Units: mm

| Type | EDP No. | Description | D | L | C | D1 | L1 | L2 | C1 | C2 | H | H1 |
|---------|---------|------------------|-------|----|--------|-----|----|----|------|----|----|----|
| Regular | 9911101 | E25-SLRA3-35 | 3.000 | 35 | 7.500 | 4.0 | 17 | 8 | 9.3 | 18 | 9 | 29 |
| | 9911102 | E25-SLRA4-35 | 4.000 | 35 | 10.000 | 4.3 | 17 | 8 | 11.8 | 18 | 12 | 29 |
| | 9911103 | E25-SLRA6-35 | 6.000 | 35 | 12.000 | 6.6 | 17 | 8 | 13.8 | 18 | 18 | 26 |
| Slim | 9911104 | E25-SLSA3-35 | 3.000 | 35 | 6.000 | 4.0 | 17 | 8 | 7.8 | 18 | 9 | 29 |
| | 9911105 | E25-SLSA3-50 | 3.000 | 50 | 6.000 | 4.0 | 32 | 8 | 9.4 | 18 | 9 | 44 |
| | 9911106 | E25-SLSA3.175-35 | 3.175 | 35 | 6.175 | 4.0 | 17 | 8 | 8.0 | 18 | 9 | 29 |
| | 9911107 | E25-SLSA3.175-50 | 3.175 | 50 | 6.175 | 4.0 | 32 | 8 | 9.6 | 18 | 9 | 44 |
| | 9911108 | E25-SLSA4-35 | 4.000 | 35 | 7.000 | 4.3 | 17 | 8 | 8.8 | 18 | 12 | 29 |
| | 9911109 | E25-SLSA4-50 | 4.000 | 50 | 7.000 | 4.3 | 32 | 8 | 10.4 | 18 | 12 | 44 |
| | 9911110 | E25-SLSA5-35 | 5.000 | 35 | 8.000 | 5.6 | 17 | 8 | 9.8 | 18 | 15 | 26 |
| | 9911111 | E25-SLSA6-35 | 6.000 | 35 | 9.000 | 6.6 | 17 | 8 | 10.8 | 18 | 18 | 26 |
| | 9911112 | E25-SLSA6-50 | 6.000 | 50 | 9.000 | 6.6 | 32 | 8 | 12.4 | 18 | 18 | 39 |



HSK-E32 Mono Series

For Standard & Coolant-Through the Tool Operations

Units: mm

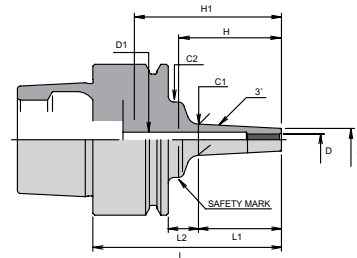
| Type | EDP No. | Description | D | L | C | D1 | L1 | L2 | C1 | C2 | H | H1 |
|---------|--------------|------------------|--------|-------|--------|------|----|------|------|----|----|----|
| Regular | 9911001 | E32-SLRA3-50 | 3.000 | 50 | 7.500 | 4.0 | 22 | 8 | 9.9 | 20 | 9 | 42 |
| | 9911017 | E32-SLRA3-70 | 3.000 | 70 | 7.500 | 4.0 | 42 | 8 | 11.9 | 20 | 9 | 62 |
| | 9911002 | E32-SLRA4-50 | 4.000 | 50 | 10.000 | 5.0 | 22 | 8 | 12.4 | 20 | 12 | 35 |
| | 9911018 | E32-SLRA4-70 | 4.000 | 70 | 10.000 | 5.0 | 42 | 8 | 14.4 | 20 | 12 | 54 |
| | 9911003 | E32-SLRA6-50 | 6.000 | 50 | 12.000 | 6.6 | 22 | 8 | 14.4 | 26 | 18 | 39 |
| | 9911019 | E32-SLRA6-70 | 6.000 | 70 | 12.000 | 7.0 | 42 | 8 | 16.4 | 26 | 18 | 54 |
| | 9911004 | E32-SLRA8-50 | 8.000 | 50 | 14.000 | 8.6 | 22 | 8 | 16.4 | 26 | 24 | 39 |
| | 9911005 | E32-SLRA10-55 | 10.000 | 55 | 16.000 | 10.6 | 22 | 13 | 18.4 | 26 | 30 | 44 |
| | 9911006 | E32-SLRA12-55 | 12.000 | 55 | 20.000 | 12.6 | 22 | 13 | 22.4 | 26 | 30 | 44 |
| Slim | 9911008 | E32-SLSA3-50 | 3.000 | 50 | 6.000 | 4.0 | 22 | 8 | 8.4 | 20 | 9 | 42 |
| | 9911009 | E32-SLSA3-70 | 3.000 | 70 | 6.000 | 4.0 | 42 | 8 | 10.5 | 20 | 9 | 62 |
| | 9911010 | E32-SLSA3.175-50 | 3.175 | 50 | 6.175 | 4.0 | 22 | 8 | 8.5 | 20 | 9 | 42 |
| | 9911011 | E32-SLSA3.175-70 | 3.175 | 70 | 6.175 | 4.0 | 42 | 8 | 10.6 | 20 | 9 | 62 |
| | 9911012 | E32-SLSA4-50 | 4.000 | 50 | 7.000 | 5.0 | 22 | 8 | 9.4 | 20 | 12 | 34 |
| | 9911013 | E32-SLSA4-70 | 4.000 | 70 | 7.000 | 5.0 | 42 | 8 | 11.5 | 20 | 12 | 54 |
| | 9911014 | E32-SLSA5-50 | 5.000 | 50 | 8.000 | 6.0 | 22 | 8 | 10.4 | 20 | 15 | 34 |
| | 9911015 | E32-SLSA5-70 | 5.000 | 70 | 8.000 | 6.0 | 42 | 8 | 12.5 | 20 | 15 | 54 |
| 9911016 | E32-SLSA6-70 | 6.000 | 70 | 9.000 | 7.0 | 42 | 8 | 13.5 | 20 | 18 | 54 | |





HSK-E40 Mono Series

For Standard & Coolant-Through the Tool Operations



Units: mm

| Type | EDP No. | Description | D | L | C | D1 | L1 | L2 | C1 | C2 | H | H1 |
|---------|---------------|------------------|--------------|--------|--------|-------|-----|------|------|-----|----|----|
| Regular | 9911040 | E40-SLRA3-50 | 3.000 | 50 | 7.500 | 4.0 | 22 | 8 | 9.8 | 20 | 9 | 42 |
| | 9911041 | E40-SLRA3-70 | 3.000 | 70 | 7.500 | 4.0 | 42 | 8 | 11.9 | 20 | 9 | 62 |
| | 9911042 | E40-SLRA4-50 | 4.000 | 50 | 10.000 | 5.0 | 22 | 8 | 12.3 | 20 | 12 | 42 |
| | 9911043 | E40-SLRA4-70 | 4.000 | 70 | 10.000 | 5.0 | 42 | 8 | 14.4 | 20 | 12 | 62 |
| | 9911020 | E40-SLRA6-50 | 6.000 | 50 | 12.000 | 6.6 | 22 | 8 | 14.4 | 26 | 18 | 39 |
| | 9911044 | E40-SLRA6-70 | 6.000 | 70 | 12.000 | 6.6 | 42 | 8 | 16.4 | 26 | 18 | 54 |
| | 9911021 | E40-SLRA8-50 | 8.000 | 50 | 14.000 | 8.6 | 22 | 8 | 16.4 | 26 | 24 | 39 |
| | 9911045 | E40-SLRA8-85 | 8.000 | 85 | 14.000 | 9.0 | 42 | 23 | 18.4 | 25 | 24 | 69 |
| | 9911022 | E40-SLRA10-55 | 10.000 | 55 | 16.000 | 10.6 | 22 | 13 | 18.4 | 26 | 30 | 44 |
| | 9911046 | E40-SLRA10-85 | 10.000 | 85 | 16.000 | 11.0 | 42 | 23 | 20.4 | 25 | 30 | 64 |
| | 9911023 | E40-SLRA12-55 | 12.000 | 55 | 20.000 | 12.6 | 22 | 13 | 22.4 | 30 | 30 | 44 |
| | 9911047 | E40-SLRA12-85 | 12.000 | 85 | 20.000 | 13.0 | 42 | 23 | 24.4 | 32 | 30 | 74 |
| | Slim | 9911026 | E40-SLSA3-50 | 3.000 | 50 | 6.000 | 4.0 | 22 | 8 | 8.4 | 20 | 9 |
| 9911027 | | E40-SLSA3-70 | 3.000 | 70 | 6.000 | 4.0 | 42 | 8 | 10.5 | 20 | 9 | 62 |
| 9911028 | | E40-SLSA3.175-50 | 3.175 | 50 | 6.175 | 4.0 | 22 | 8 | 8.5 | 20 | 9 | 42 |
| 9911029 | | E40-SLSA3.176-70 | 3.175 | 70 | 6.175 | 4.0 | 42 | 8 | 10.6 | 20 | 9 | 62 |
| 9911030 | | E40-SLSA4-50 | 4.000 | 50 | 7.000 | 5.0 | 22 | 8 | 9.4 | 20 | 12 | 42 |
| 9911031 | | E40-SLSA4-70 | 4.000 | 70 | 7.000 | 5.0 | 42 | 8 | 11.5 | 20 | 12 | 62 |
| 9911032 | | E40-SLSA5-50 | 5.000 | 50 | 8.000 | 6.0 | 22 | 8 | 10.4 | 20 | 15 | 34 |
| 9911033 | | E40-SLSA5-70 | 5.000 | 70 | 8.000 | 6.0 | 42 | 8 | 12.5 | 20 | 15 | 54 |
| 9911034 | | E40-SLSA6-50 | 6.000 | 50 | 9.000 | 6.6 | 22 | 8 | 11.4 | 20 | 18 | 39 |
| 9911035 | | E40-SLSA6-70 | 6.000 | 70 | 9.000 | 7.0 | 42 | 8 | 13.5 | 20 | 18 | 54 |
| 9911036 | | E40-SLSA8-60 | 8.000 | 60 | 11.000 | 8.6 | 22 | 18 | 13.4 | 26 | 24 | 49 |
| 9911037 | | E40-SLSA8-80 | 8.000 | 80 | 11.000 | 8.6 | 42 | 18 | 15.5 | 26 | 24 | 64 |
| 9911038 | | E40-SLSA10-60 | 10.000 | 60 | 13.000 | 10.6 | 22 | 18 | 15.4 | 26 | 30 | 49 |
| 9911039 | E40-SLSA10-80 | 10.000 | 80 | 13.000 | 10.6 | 42 | 18 | 17.5 | 26 | 30 | 64 | |



Applicable Machine Tools:

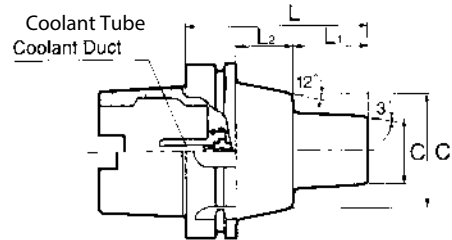
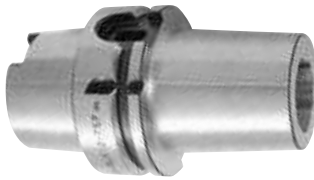
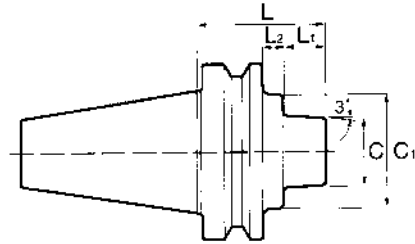
| HSK-E25 | HSK-E32 | HSK-E40 |
|--|--|--|
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Base Holders: BT, CT and HSK 2PC Series

For Standard & Coolant-Through the Tool Operations



CAT Holders

Units: Inch

| EDP No. | Description | L | L1 | C | C1 |
|---------|---------------|------|------|------|------|
| 9910002 | CT40-SLK12-45 | 1.77 | 1.02 | 1.61 | 1.75 |
| 9910004 | CT50-SLK12-75 | 2.95 | 1.57 | 1.50 | 2.75 |



BT Holders

Units: mm

| EDP No. | Description | L | L1 | L2 | C | C1 |
|---------|-------------------------|----|----|----|----|----|
| 8910000 | BT30-SLK12-35 - 45 Deg. | 35 | 13 | - | 38 | - |
| 8910001 | BT30-SLK12-35 - 60 Deg. | 35 | 13 | - | 38 | - |
| 8910002 | BT40-SLK12-45 | 45 | 18 | - | 38 | - |
| 8910003 | BT40-SLK12-75 | 75 | 48 | - | 38 | - |
| 8910004 | BT50-SLK12-75 | 75 | 25 | 12 | 38 | 65 |



HSK Holders

Units: mm

| EDP No. | Description | L | L1 | L2 | C | C1 |
|---------|--------------------|-----|-----|----|----|----|
| 9910005 | HSK-E50-SLK12-75 | 75 | 49 | - | 38 | - |
| 8910005 | HSK-A63-SLK12-75 | 75 | 49 | - | 38 | - |
| 8910006 | HSK-A63-SLK12-135 | 135 | 109 | - | 38 | - |
| 9910006 | HSK-F63M-SLK12-75 | 75 | 49 | - | 38 | - |
| 8910007 | HSK-A100-SLK12-105 | 105 | 43 | 33 | 38 | 65 |

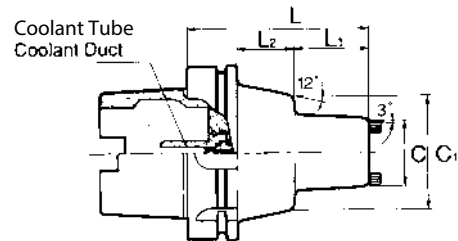
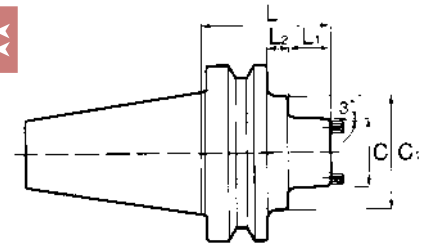
For extended gage lengths, please contact OSG's technical department for application advice.





Nozzle Type Holders: BT, CT and HSK 2PC Series

For Coolant-Through the Holder Operations



CAT Holders

Units: Inch

| EDP No. | Description | L | L1 | C | C1 |
|---------|----------------|------|------|------|------|
| 9910008 | CT40-SLK12-45F | 1.77 | 1.02 | 1.61 | 1.75 |
| 9910011 | CT50-SLK12-75F | 2.95 | 1.57 | 1.61 | 2.75 |



BT Holders

Units: mm

| EDP No. | Description | L | L1 | L2 | C | C1 |
|---------|-----------------|-----|-----|----|----|----|
| 8910008 | BT40-SLK12-45F | 45 | 18 | - | 41 | - |
| 8910009 | BT40-SLK12-75F | 75 | 48 | - | 41 | - |
| 8910010 | BT40-SLK12-135F | 135 | 108 | - | 41 | - |
| 8910011 | BT50-SLK12-75F | 75 | 25 | 12 | 41 | 65 |
| 8910012 | BT50-SLK12-105F | 105 | 55 | 12 | 41 | 65 |
| 8910013 | BT50-SLK12-135F | 135 | 85 | 12 | 41 | 65 |



HSK Holders

Units: mm

| EDP No. | Description | L | L1 | L2 | C | C1 |
|---------|---------------------|-----|-----|----|----|----|
| 8910014 | HSK-A63-SLK12-75F | 75 | 49 | - | 41 | - |
| 8910015 | HSK-A63-SLK12-135F | 135 | 109 | - | 41 | - |
| 8910016 | HSK-A100-SLK12-105F | 105 | 43 | 33 | 41 | 65 |
| 8910017 | HSK-A100-SLK12-135F | 135 | 73 | 33 | 41 | 65 |

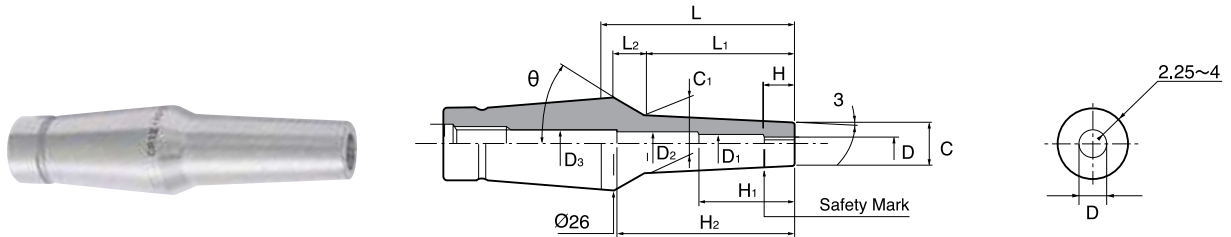
For lubricating through the oil holes of tools, replace the nozzle with a coolant stop screw. The pressure limit of the coolant stop screw is 3 MPa.





Regular Type Shrink Extensions

For Standard & Coolant-Through the Tool Operations



Units: Inch

| EDP No. | Description | D | D1 | D2 | D3 | L | L1 | L2 | H | H1 | H2 | C | C1 | θ° | Insertion Limit |
|---------|--------------|------|----|----|----|------|------|------|------|----|----|------|------|----------------|-----------------|
| 9910031 | CR12-1/8-55 | 1/8 | - | - | - | 2.17 | 1.65 | 0.37 | 0.39 | - | - | 0.36 | 0.53 | 33.5 | 3.35 |
| 9910034 | CR12-3/16-55 | 3/16 | - | - | - | 2.17 | 1.65 | 0.37 | 0.39 | - | - | 0.42 | 0.60 | 29.6 | 3.35 |
| 9910037 | CR12-1/4-55 | 1/4 | - | - | - | 2.17 | 1.65 | 0.37 | 0.71 | - | - | 0.49 | 0.66 | 25.9 | 3.35 |
| 9910040 | CR12-5/16-55 | 5/16 | - | - | - | 2.17 | 1.65 | 0.37 | 0.98 | - | - | 0.55 | 0.72 | 22.1 | 3.35 |
| 9910043 | CR12-3/8-55 | 3/8 | - | - | - | 2.17 | 1.65 | 0.37 | 1.18 | - | - | 0.61 | 0.78 | 18.0 | 2.36 |
| 9910048 | CR12-7/16-55 | 7/16 | - | - | - | 2.17 | 1.65 | 0.37 | 1.18 | - | - | 0.67 | 0.85 | 12.9 | 2.36 |
| 9910046 | CR12-1/2-55 | 1/2 | - | - | - | 2.17 | 1.99 | 0.17 | 1.18 | - | - | 0.81 | - | - | 2.36 |

The tool should be inserted deeper than the safety mark.
Do not exceed the insertion limit.



Units: mm

| EDP No. | Description | D | D1 | D2 | D3 | L | L1 | L2 | H | H1 | H2 | C | C1 | θ° | Insertion Limit |
|---------|-------------|----|----|----|------|----|----|-----|------|------|------|-----|------|----------------|-----------------|
| 8910030 | CR12-3-35 | 3 | - | - | 4.0 | 35 | 22 | 9.5 | 9.7 | - | - | 7.5 | 9.8 | 49.3 | 65 |
| 8910031 | CR12-3-55 | 3 | - | - | 4.0 | 55 | 42 | 9.5 | 9.7 | - | - | 7.5 | 11.9 | 44.2 | 85 |
| 8910032 | CR12-3-80 | 3 | 4 | 6 | 8.6 | 80 | 67 | 9.5 | 9.7 | 39.4 | 74.2 | 7.5 | 14.6 | 36.9 | 110 |
| 8910033 | CR12-4-35 | 4 | - | - | 5.0 | 35 | 22 | 9.5 | 11.7 | - | - | 10 | 12.3 | 43.1 | 65 |
| 8910034 | CR12-4-55 | 4 | - | - | 5.0 | 55 | 42 | 9.5 | 11.7 | - | - | 10 | 14.4 | 37.2 | 85 |
| 8910035 | CR12-4-80 | 4 | 5 | 7 | 8.6 | 80 | 67 | 9.5 | 11.7 | 39.7 | 74.5 | 10 | 17.1 | 29.1 | 110 |
| 8910036 | CR12-6-35 | 6 | - | - | 7.0 | 35 | 22 | 9.5 | 17.7 | - | - | 12 | 14.3 | 37.5 | 65 |
| 8910037 | CR12-6-55 | 6 | 7 | - | 8.6 | 55 | 42 | 9.5 | 17.7 | 49.5 | - | 12 | 16.4 | 31.1 | 85 |
| 8910038 | CR12-6-80 | 6 | 7 | - | 8.6 | 80 | 67 | 9.5 | 17.7 | 49.5 | - | 12 | 19.1 | 22.6 | 110 |
| 8910039 | CR12-8-35 | 8 | - | - | 8.6 | 35 | 22 | 9.5 | 24.8 | - | - | 14 | 16.3 | 31.4 | 65 |
| 8910040 | CR12-8-55 | 8 | - | - | 8.6 | 55 | 42 | 9.5 | 24.8 | - | - | 14 | 18.4 | 24.6 | 85 |
| 8910041 | CR12-8-80 | 8 | - | - | 8.6 | 80 | 67 | 9.5 | 24.8 | - | - | 14 | 21.1 | 16.0 | 110 |
| 8910042 | CR12-10-35 | 10 | - | - | 11.0 | 35 | 22 | 9.5 | 30.0 | - | - | 16 | 18.3 | 25.0 | 60 |
| 8910043 | CR12-10-55 | 10 | - | - | 11.0 | 55 | 42 | 9.5 | 30.0 | - | - | 16 | 20.4 | 18.0 | 60 |
| 8910044 | CR12-10-80 | 10 | - | - | 11.0 | 80 | 67 | 9.5 | 30.0 | - | - | 16 | 23.1 | 9.4 | 60 |
| 8910045 | CR12-12-35 | 12 | - | - | 13.0 | 35 | 22 | 9.5 | 30.0 | - | - | 20 | 22.3 | 11.7 | 60 |
| 8910046 | CR12-12-55 | 12 | - | - | 13.0 | 55 | 42 | 9.5 | 30.0 | - | - | 20 | 24.4 | 5.0 | 60 |
| 8910047 | CR12-12-80 | 12 | - | - | 13.0 | 80 | - | - | 30.0 | - | - | 20 | 25.5 | - | 60 |

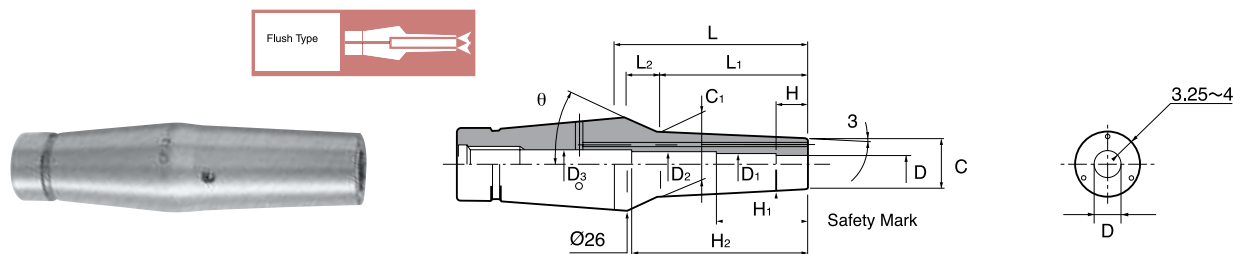
The tool should be inserted deeper than the safety mark.
Do not exceed the insertion limit.





Flush Type Shrink Extensions

For Coolant-Through the Collet Operations



Units: Inch

| EDP No. | Description | D | D1 | D2 | D3 | L | L1 | L2 | H | H1 | H2 | C | C1 | θ° | Insertion Limit |
|---------|--------------|------|----|----|----|------|------|------|------|----|----|------|------|------|-----------------|
| 9910051 | CF12-1/8-55 | 1/8 | - | - | - | 2.17 | 1.65 | 0.37 | 0.39 | - | - | 0.38 | 0.55 | 32.4 | 3.35 |
| 9910054 | CF12-3/16-55 | 3/16 | - | - | - | 2.17 | 1.65 | 0.37 | 0.59 | - | - | 0.50 | 0.68 | 24.7 | 3.35 |
| 9910057 | CF12-1/4-55 | 1/4 | - | - | - | 2.17 | 1.65 | 0.37 | 0.71 | - | - | 0.56 | 0.74 | 20.7 | 3.35 |
| 9910060 | CF12-5/16-55 | 5/16 | - | - | - | 2.17 | 1.65 | 0.37 | 0.98 | - | - | 0.63 | 0.80 | 16.6 | 3.35 |
| 9910063 | CF12-3/8-55 | 3/8 | - | - | - | 2.17 | 1.65 | 0.37 | 1.18 | - | - | 0.69 | 0.86 | 12.2 | 2.36 |
| 9910068 | CF12-7/16-55 | 7/16 | - | - | - | 2.17 | 1.65 | 0.37 | 1.18 | - | - | 0.75 | 0.93 | 6.9 | 2.36 |
| 9910066 | CF12-1/2-55 | 1/2 | - | - | - | 2.17 | 1.99 | 0.17 | 1.18 | - | - | 0.81 | - | - | 2.36 |

The tool should be inserted deeper than the safety mark.

The collet cannot be customized.

Do not exceed the insertion limit.



Units: mm

| EDP No. | Description | D | D1 | D2 | D3 | L | L1 | L2 | H | H1 | H2 | C | C1 | θ° | Insertion Limit |
|---------|-------------|----|----|----|------|----|----|-----|------|------|------|------|------|------|-----------------|
| 8910050 | CF12-3-35 | 3 | - | - | 4.0 | 35 | 22 | 9.5 | 9.7 | - | - | 9.5 | 11.8 | 44.4 | 65 |
| 8910051 | CF12-3-55 | 3 | - | - | 4.0 | 55 | 42 | 9.5 | 9.7 | - | - | 9.5 | 13.9 | 38.7 | 85 |
| 8910052 | CF12-3-80 | 3 | 4 | 6 | 8.6 | 80 | 67 | 9.5 | 9.7 | 39.4 | 74.2 | 9.5 | 16.5 | 30.7 | 110 |
| 8910053 | CF12-4-35 | 4 | - | - | 5.0 | 35 | 22 | 9.5 | 11.7 | - | - | 12.0 | 14.3 | 37.5 | 65 |
| 8910054 | CF12-4-55 | 4 | - | - | 5.0 | 55 | 42 | 9.5 | 11.7 | - | - | 12.0 | 16.4 | 31.1 | 85 |
| 8910055 | CF12-4-80 | 4 | 5 | 7 | 8.6 | 80 | 67 | 9.5 | 11.7 | 39.7 | 74.5 | 12.0 | 19.0 | 22.6 | 110 |
| 8910056 | CF12-6-35 | 6 | - | - | 7.0 | 35 | 22 | 9.5 | 17.7 | - | - | 14.0 | 16.3 | 31.4 | 65 |
| 8910057 | CF12-6-55 | 6 | 7 | - | 8.6 | 55 | 42 | 9.5 | 17.7 | 49.5 | - | 14.0 | 18.4 | 24.6 | 85 |
| 8910058 | CF12-6-80 | 6 | 7 | - | 8.6 | 80 | 67 | 9.5 | 17.7 | 49.5 | - | 14.0 | 21.0 | 16.0 | 110 |
| 8910059 | CF12-8-35 | 8 | - | - | 8.6 | 35 | 22 | 9.5 | 24.8 | - | - | 16.0 | 18.3 | 25.0 | 65 |
| 8910060 | CF12-8-55 | 8 | - | - | 8.6 | 55 | 42 | 9.5 | 24.8 | - | - | 16.0 | 20.4 | 18.0 | 85 |
| 8910061 | CF12-8-80 | 8 | - | - | 8.6 | 80 | 67 | 9.5 | 24.8 | - | - | 16.0 | 23.0 | 9.4 | 110 |
| 8910062 | CF12-10-35 | 10 | - | - | 11.0 | 35 | 22 | 9.5 | 30.0 | - | - | 18.0 | 20.3 | 18.3 | 60 |
| 8910063 | CF12-10-55 | 10 | - | - | 11.0 | 55 | 42 | 9.5 | 30.0 | - | - | 18.0 | 22.4 | 11.4 | 60 |
| 8910064 | CF12-10-80 | 10 | - | - | 11.0 | 80 | - | - | 30.0 | - | - | 18.0 | - | - | 60 |
| 8910065 | CF12-12-35 | 12 | - | - | 13.0 | 35 | 22 | 9.5 | 30.0 | - | - | 20.0 | 22.3 | 11.7 | 60 |
| 8910066 | CF12-12-55 | 12 | - | - | 13.0 | 55 | 42 | 9.5 | 30.0 | - | - | 20.0 | 22.4 | 5.0 | 60 |
| 8910067 | CF12-12-80 | 12 | - | - | 13.0 | 80 | - | - | 30.0 | - | - | 20.0 | - | - | 60 |

The tool should be inserted deeper than the safety mark.

The collet cannot be customized.

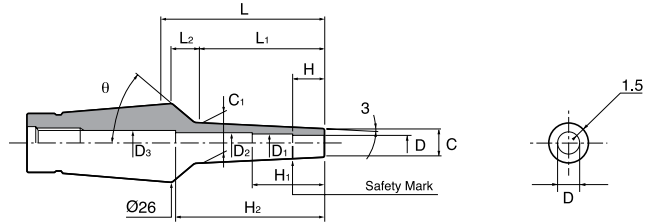
Do not exceed the insertion limit.





Slim Type Shrink Extensions

For Long Reach & Coolant-Through the Tool Operations



Units: Inch

| EDP No. | Description | D | D1 | D2 | D3 | L | L1 | L2 | H | H1 | H2 | C | C1 | θ° | Insertion Limit |
|---------|---------------|------|----|----|----|------|------|------|------|----|----|------|------|----------------|-----------------|
| 9910076 | CS12-1/8-80 | 1/8 | - | - | - | 3.15 | 2.64 | 0.37 | 0.39 | - | - | 0.24 | 0.52 | 34.0 | 4.33 |
| 9910077 | CS12-1/8-110 | 1/8 | - | - | - | 4.33 | 3.82 | 0.37 | 0.39 | - | - | 0.24 | 0.64 | 27.2 | 5.51 |
| 9910084 | CS12-3/16-80 | 3/16 | - | - | - | 3.15 | 2.64 | 0.37 | 0.59 | - | - | 0.42 | 0.58 | 30.7 | 4.33 |
| 9910085 | CS12-3/16-110 | 3/16 | - | - | - | 4.33 | 3.82 | 0.37 | 0.59 | - | - | 0.42 | 0.71 | 22.7 | 5.51 |
| 9910088 | CS12-1/4-80 | 1/4 | - | - | - | 3.15 | 2.64 | 0.37 | 0.71 | - | - | 0.37 | 0.64 | 27.2 | 4.33 |
| 9910089 | CS12-1/4-110 | 1/4 | - | - | - | 4.33 | 3.82 | 0.37 | 0.71 | - | - | 0.37 | 0.77 | 18.7 | 5.51 |
| 9910096 | CS12-5/16-80 | 5/16 | - | - | - | 3.15 | 2.64 | 0.37 | 0.98 | - | - | 0.43 | 0.71 | 22.7 | 4.33 |
| 9910097 | CS12-5/16-110 | 5/16 | - | - | - | 4.33 | 3.82 | 0.37 | 0.98 | - | - | 0.43 | 0.83 | 14.4 | 5.51 |
| 9910104 | CS12-3/8-80 | 3/8 | - | - | - | 3.15 | 2.64 | 0.37 | 1.18 | - | - | 0.49 | 0.77 | 18.7 | 2.36 |
| 9910105 | CS12-3/8-110 | 3/8 | - | - | - | 4.33 | 3.82 | 0.37 | 1.18 | - | - | 0.49 | 0.89 | 10.0 | 2.36 |
| 9910108 | CS12-7/16-80 | 7/16 | - | - | - | 3.15 | 2.64 | 0.37 | 1.18 | - | - | 0.67 | 0.95 | 5.40 | 2.36 |
| 9910109 | CS12-7/16-110 | 7/16 | - | - | - | 4.33 | - | - | 1.18 | - | - | 0.67 | - | - | 2.36 |
| 9910112 | CS12-1/2-80 | 1/2 | - | - | - | 3.15 | 2.64 | 0.37 | 1.18 | - | - | 0.62 | 0.89 | 10.0 | 2.36 |
| 9910113 | CS12-1/2-110 | 1/2 | - | - | - | 4.33 | - | - | 1.18 | - | - | 0.62 | - | - | 2.36 |

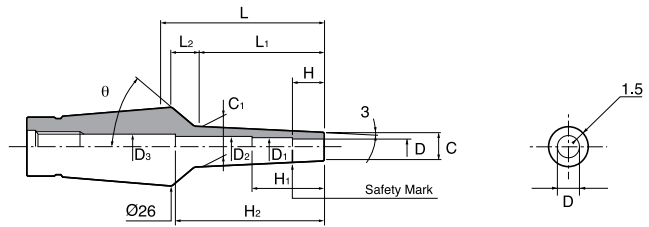
This slim collet successfully avoids interference with the work material.





Slim Type Shrink Extensions

For Long Reach & Coolant-Through the Tool Operations



Units: mm

| EDP No. | Description | D | D1 | D2 | D3 | L | L1 | L2 | H | H1 | H2 | C | C1 | θ ° | Insertion Limit |
|---------|----------------|--------|----|----|------|-----|----|-----|------|------|-------|----|------|------|-----------------|
| 8910070 | CS12-3-35 | 3.000 | - | - | 4.0 | 35 | 22 | 9.5 | 9.7 | - | - | 6 | 8.3 | 52.7 | 65 |
| 8910071 | CS12-3-55 | 3.000 | - | - | 4.0 | 55 | 42 | 9.5 | 9.7 | - | - | 6 | 10.4 | 47.9 | 85 |
| 8910072 | CS12-3-80 | 3.000 | 4 | 6 | 8.6 | 80 | 67 | 9.5 | 9.7 | 39.4 | 74.2 | 6 | 13.0 | 41.2 | 110 |
| 8910073 | CS12-3-110 | 3.000 | 4 | 6 | 8.6 | 110 | 97 | 9.5 | 9.7 | 39.4 | 104.2 | 6 | 16.2 | 31.8 | 140 |
| 8910074 | CS12-3.175-35 | 3.175 | - | - | 4.0 | 35 | 22 | 9.5 | 9.7 | - | - | 6 | 8.3 | 52.6 | 65 |
| 8910075 | CS12-3.175-55 | 3.175 | - | - | 4.0 | 55 | 42 | 9.5 | 9.7 | - | - | 6 | 10.4 | 47.9 | 85 |
| 8910076 | CS12-3.175-80 | 3.175 | 4 | 6 | 8.6 | 80 | 67 | 9.5 | 9.7 | 39.4 | 74.2 | 6 | 13.0 | 41.2 | 110 |
| 8910077 | CS12-3.175-110 | 3.175 | 4 | 6 | 8.6 | 110 | 97 | 9.5 | 9.7 | 39.4 | 104.2 | 6 | 16.2 | 31.8 | 140 |
| 8910078 | CS12-4-35 | 4.000 | - | - | 5.0 | 35 | 22 | 9.5 | 11.7 | - | - | 7 | 9.3 | 50.4 | 65 |
| 8910079 | CS12-4-55 | 4.000 | - | - | 5.0 | 55 | 42 | 9.5 | 11.7 | - | - | 7 | 11.4 | 45.5 | 85 |
| 8910080 | CS12-4-80 | 4.000 | 5 | 7 | 8.6 | 80 | 67 | 9.5 | 11.7 | 39.7 | 74.5 | 7 | 14.0 | 38.3 | 110 |
| 8910081 | CS12-4-110 | 4.000 | 5 | 7 | 8.6 | 110 | 97 | 9.5 | 11.7 | 39.7 | 104.5 | 7 | 17.2 | 28.7 | 140 |
| 8910082 | CS12-5-35 | 5.000 | - | - | 6.0 | 35 | 22 | 9.5 | 14.7 | - | - | 8 | 10.3 | 48.1 | 65 |
| 8910083 | CS12-5-55 | 5.000 | 6 | - | 8.6 | 55 | 42 | 9.5 | 14.7 | 49.2 | - | 8 | 12.4 | 42.8 | 85 |
| 8910084 | CS12-5-80 | 5.000 | 6 | - | 8.6 | 80 | 67 | 9.5 | 14.7 | 49.2 | - | 8 | 15.0 | 35.4 | 110 |
| 8910085 | CS12-5-110 | 5.000 | 6 | - | 8.6 | 110 | 97 | 9.5 | 14.7 | 69.2 | - | 8 | 18.2 | 25.4 | 140 |
| 8910086 | CS12-6-35 | 6.000 | - | - | 7.0 | 35 | 22 | 9.5 | 17.7 | - | - | 9 | 11.3 | 45.7 | 65 |
| 8910087 | CS12-6-55 | 6.000 | 7 | - | 8.6 | 55 | 42 | 9.5 | 17.7 | 49.5 | - | 9 | 13.4 | 40.1 | 85 |
| 8910088 | CS12-6-80 | 6.000 | 7 | - | 8.6 | 80 | 67 | 9.5 | 17.7 | 49.5 | - | 9 | 16.0 | 32.3 | 110 |
| 8910089 | CS12-6-110 | 6.000 | 7 | - | 8.6 | 110 | 97 | 9.5 | 17.7 | 69.5 | - | 9 | 19.2 | 22.1 | 140 |
| 8910090 | CS12-7-35 | 7.000 | - | - | 8.6 | 35 | 22 | 9.5 | 19.5 | - | - | 10 | 12.3 | 43.1 | 65 |
| 8910091 | CS12-7-55 | 7.000 | - | - | 8.6 | 55 | 42 | 9.5 | 19.5 | - | - | 10 | 14.4 | 37.2 | 85 |
| 8910092 | CS12-7-80 | 7.000 | - | - | 8.6 | 80 | 67 | 9.5 | 19.5 | - | - | 10 | 17.0 | 29.1 | 110 |
| 8910093 | CS12-7-110 | 7.000 | - | - | 8.6 | 110 | 97 | 9.5 | 19.5 | - | - | 10 | 20.2 | 18.8 | 140 |
| 8910094 | CS12-8-35 | 8.000 | - | - | 8.8 | 35 | 22 | 9.5 | 24.8 | - | - | 11 | 13.3 | 40.4 | 65 |
| 8910095 | CS12-8-55 | 8.000 | - | - | 8.8 | 55 | 42 | 9.5 | 24.8 | - | - | 11 | 15.4 | 34.2 | 85 |
| 8910096 | CS12-8-80 | 8.000 | - | - | 8.8 | 80 | 67 | 9.5 | 24.8 | - | - | 11 | 18.0 | 25.9 | 110 |
| 8910097 | CS12-8-110 | 8.000 | - | - | 8.8 | 110 | 97 | 9.5 | 24.8 | - | - | 11 | 21.2 | 15.5 | 140 |
| 8910098 | CS12-9-35 | 9.000 | - | - | 10.0 | 35 | 22 | 9.5 | 30.0 | - | - | 12 | 14.3 | 37.5 | 60 |
| 8910099 | CS12-9-55 | 9.000 | - | - | 10.0 | 55 | 42 | 9.5 | 30.0 | - | - | 12 | 16.4 | 31.1 | 60 |
| 8910100 | CS12-9-80 | 9.000 | - | - | 10.0 | 80 | 67 | 9.5 | 30.0 | - | - | 12 | 19.0 | 22.6 | 60 |
| 8910101 | CS12-9-110 | 9.000 | - | - | 10.0 | 110 | 97 | 9.5 | 30.0 | - | - | 12 | 22.2 | 12.2 | 60 |
| 8910102 | CS12-10-35 | 10.000 | - | - | 11.0 | 35 | 22 | 9.5 | 30.0 | - | - | 13 | 15.3 | 34.5 | 60 |
| 8910103 | CS12-10-55 | 10.000 | - | - | 11.0 | 55 | 42 | 9.5 | 30.0 | - | - | 13 | 17.4 | 27.9 | 60 |
| 8910104 | CS12-10-80 | 10.000 | - | - | 11.0 | 80 | 67 | 9.5 | 30.0 | - | - | 13 | 20.0 | 19.3 | 60 |
| 8910105 | CS12-10-110 | 10.000 | - | - | 11.0 | 110 | 97 | 9.5 | 30.0 | - | - | 13 | 23.2 | 8.9 | 60 |
| 8910106 | CS12-11-35 | 11.000 | - | - | 12.0 | 35 | 22 | 9.5 | 30.0 | - | - | 14 | 16.3 | 31.4 | 60 |
| 8910107 | CS12-11-55 | 11.000 | - | - | 12.0 | 55 | 42 | 9.5 | 30.0 | - | - | 14 | 18.4 | 24.6 | 60 |
| 8910108 | CS12-11-80 | 11.000 | - | - | 12.0 | 80 | 67 | 9.5 | 30.0 | - | - | 14 | 21.0 | 16.0 | 60 |
| 8910109 | CS12-11-110 | 11.000 | - | - | 12.0 | 110 | 97 | 9.5 | 30.0 | - | - | 14 | 24.2 | 5.7 | 60 |
| 8910110 | CS12-12-35 | 12.000 | - | - | 13.0 | 35 | 22 | 9.5 | 30.0 | - | - | 15 | 17.3 | 28.2 | 60 |
| 8910111 | CS12-12-55 | 12.000 | - | - | 13.0 | 55 | 42 | 9.5 | 30.0 | - | - | 15 | 19.4 | 21.3 | 60 |
| 8910112 | CS12-12-80 | 12.000 | - | - | 13.0 | 80 | 67 | 9.5 | 30.0 | - | - | 15 | 22.0 | 12.7 | 60 |
| 8910113 | CS12-12-110 | 12.000 | - | - | 13.0 | 110 | - | - | 30.0 | - | - | 15 | - | - | 60 |

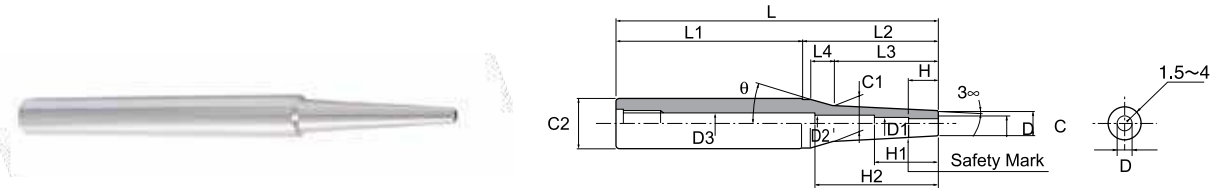
This slim collet successfully avoids interference with the work material. The tool should be inserted deeper than the safety mark. Do not exceed the insertion limit.





Straight Regular Type Shrink Extensions

For Standard Milling/End Mill Chucks



Units: Inch

| EDP No. | Description | L | L1 | L2 | L3 | L4 | D | C | C1 | C2 | H | Insertion Limit |
|---------|---------------------|------|------|------|------|-------|--------|------|------|------|------|-----------------|
| 9910136 | ST19.05-SLR1/4-110 | 4.33 | 2.95 | 1.38 | 0.87 | 0.374 | 0.2500 | 0.49 | 0.58 | 0.75 | 0.71 | 3.66 |
| 9910142 | ST19.05-SLR5/16-110 | 4.33 | 2.95 | 1.38 | 0.87 | 0.374 | 0.3125 | 0.55 | 0.64 | 0.75 | 0.98 | 3.66 |
| 9910147 | ST19.05-SLR3/8-110 | 4.33 | 2.95 | 1.38 | - | - | 0.3750 | 0.61 | - | 0.75 | 1.18 | 2.36 |
| 9910139 | ST25.4-SLR 1/4-203 | 8.00 | 5.90 | 2.17 | 1.65 | 0.510 | 0.2500 | 0.49 | 1.00 | 1.00 | 0.71 | 7.36 |
| 9910144 | ST25.4-SLR 5/16-203 | 8.00 | 5.90 | 2.17 | 1.65 | 0.510 | 0.3125 | 0.55 | 1.00 | 1.00 | 0.98 | 7.36 |
| 9910149 | ST25.4-SLR 3/8-127 | 5.00 | 3.50 | 1.38 | 0.87 | 0.510 | 0.3750 | 0.61 | 1.00 | 1.00 | 1.18 | 2.36 |
| 9910151 | ST25.4-SLR 3/8-190 | 7.50 | 5.30 | 2.17 | 1.65 | 0.510 | 0.3750 | 0.61 | 1.00 | 1.00 | 1.18 | 2.36 |
| 9910156 | ST25.4-SLR 1/2-114 | 4.50 | 3.00 | 1.38 | 0.87 | 0.510 | 0.5000 | 0.81 | 1.00 | 1.00 | 1.18 | 2.36 |
| 9910158 | ST25.4-SLR 1/2-178 | 7.00 | 4.70 | 2.17 | 1.43 | 0.740 | 0.5000 | 0.81 | 1.00 | 1.00 | 1.18 | 2.36 |

Shrink holder with straight shank for ordinary milling chucks.
Provides high performance of shrink fit without holder.
The tool should be inserted deeper than the safety mark.
Do not exceed the insertion limit.



Units: mm

| EDP No. | Description | D | D1 | D2 | L | L1 | L2 | L3 | H | H1 | H2 | C | C1 | C2 | Insertion Limit |
|---------|----------------------|----|------|-----|-----|-----|-----|----|----|------|-------|----|------|----|-----------------|
| 8910401 | ST16-SLRA 3-140-M 67 | 3 | 4.0 | 6.0 | 140 | 60 | 80 | 67 | 9 | 52.5 | 82.5 | 6 | 13.0 | 16 | 112 |
| 8910413 | ST16-SLRA 4-140-M 60 | 4 | 5.0 | 8.6 | 140 | 80 | 60 | 60 | 12 | 62.5 | 85.0 | 10 | - | 16 | 112 |
| 8910424 | ST20-SLRB 6-120-M 42 | 6 | 7.0 | 8.6 | 120 | 70 | 50 | 42 | 18 | 52.5 | 60.0 | 14 | 18.4 | 20 | 92 |
| 8910435 | ST20-SLRB 8-100-M 30 | 8 | 8.6 | - | 100 | 70 | 30 | 30 | 24 | 40.0 | - | 18 | - | 20 | 72 |
| 8910406 | ST25-SLRA 3-245-M 97 | 3 | 4.0 | 5.0 | 245 | 120 | 125 | 97 | 9 | 47.5 | 99.5 | 6 | 16.2 | 25 | 217 |
| 8910415 | ST25-SLRA 4-245-M 97 | 4 | 5.0 | 6.0 | 245 | 120 | 125 | 97 | 12 | 50.5 | 110.5 | 7 | 17.2 | 25 | 287 |
| 8910428 | ST25-SLRB 6-240-M 42 | 6 | 7.0 | 8.6 | 240 | 170 | 70 | 42 | 18 | 45.5 | 50.0 | 14 | 18.4 | 25 | 212 |
| 8910440 | ST25-SLRB 8-210-M 90 | 8 | 8.6 | - | 210 | 120 | 90 | 90 | 24 | 70.0 | - | 18 | - | 25 | 182 |
| 8910449 | ST25-SLRB10-120-M 35 | 10 | 10.6 | - | 120 | 85 | 35 | 35 | 30 | 50.0 | - | 22 | - | 25 | 60 |
| 8910450 | ST25-SLRB10-210-M 90 | 10 | 10.6 | - | 210 | 120 | 90 | 90 | 30 | 70.0 | - | 22 | - | 25 | 60 |
| 8910457 | ST25-SLSB12-120-M 42 | 12 | 12.6 | - | 120 | 42 | 50 | 42 | 30 | 50.0 | - | 19 | 23.4 | 25 | 60 |
| 8910458 | ST25-SLSB12-150-M 80 | 12 | 12.6 | - | 150 | 80 | 80 | 80 | 30 | 60.0 | - | 19 | - | 25 | 60 |

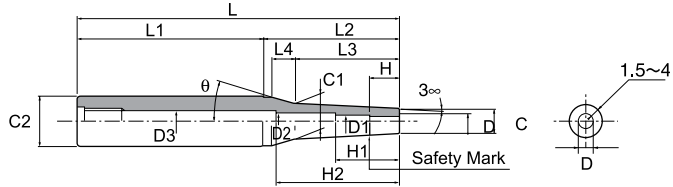
Shrink holder with straight shank for ordinary milling chucks.
Provides high performance of shrink fit without holder.
The tool should be inserted deeper than the safety mark.
Do not exceed the insertion limit.





Straight Slim Type Shrink Extensions

For Standard Milling/End Mill Chucks



Units: Inch

| EDP No. | Description | L | L1 | L2 | L3 | L4 | D | C | C1 | C2 | H | Insertion Limit |
|---------|----------------------|------|------|------|------|-------|--------|-------|------|-------|------|-----------------|
| 9910120 | ST9.525-SLS1/8-80 | 3.15 | 1.75 | 1.40 | - | - | 0.1250 | 0.240 | - | 0.375 | 0.39 | 2.72 |
| 9910123 | ST9.525-SLS3/16-80 | 3.15 | 1.75 | 1.40 | - | - | 0.1875 | 0.306 | - | 0.375 | 0.59 | 2.71 |
| 9910137 | ST12.7-SLS1/4-80 | 3.15 | 1.75 | 1.40 | - | - | 0.2500 | 0.368 | - | 0.500 | 0.71 | 2.72 |
| 9910121 | ST15.875-SLS1/8-110 | 4.33 | 2.19 | 2.14 | 1.63 | 0.374 | 0.1250 | 0.240 | 0.41 | 0.625 | 0.39 | 3.66 |
| 9910124 | ST15.875-SLS3/16-110 | 4.33 | 2.19 | 2.14 | 1.63 | 0.374 | 0.1875 | 0.306 | 0.48 | 0.625 | 0.59 | 3.66 |
| 9910122 | ST19.05-SLS1/8-205 | 8.07 | 3.61 | 4.46 | 3.95 | 0.374 | 0.1250 | 0.240 | 0.66 | 0.750 | 0.39 | 7.40 |
| 9910125 | ST19.05-SLS3/16-205 | 8.07 | 3.61 | 4.46 | - | - | 0.1875 | 0.306 | - | 0.750 | 0.59 | 7.40 |
| 9910138 | ST19.05-SLS1/4-110 | 4.33 | 2.95 | 1.38 | 0.87 | 0.374 | 0.2500 | 0.368 | 0.46 | 0.750 | 0.71 | 3.66 |
| 9910143 | ST19.05-SLS5/16-110 | 4.33 | 2.95 | 1.38 | 0.87 | 0.374 | 0.3125 | 0.430 | 0.52 | 0.750 | 0.98 | 3.66 |
| 9910148 | ST19.05-SLS3/8-110 | 4.33 | 2.95 | 1.38 | 0.87 | 0.374 | 0.3750 | 0.490 | 0.58 | 0.750 | 1.18 | 2.36 |
| 9910140 | ST25.4-SLS 1/4-228 | 9.00 | 4.70 | 4.33 | 3.82 | 0.510 | 0.2500 | 0.370 | 1.00 | 1.000 | 0.71 | 8.34 |
| 9910145 | ST25.4-SLS 5/16-228 | 9.00 | 4.70 | 4.33 | 3.82 | 0.510 | 0.3125 | 0.430 | 1.00 | 1.000 | 0.98 | 8.34 |
| 9910150 | ST25.4-SLS3/8-155 | 6.10 | 3.60 | 2.50 | 1.99 | 0.374 | 0.3750 | 0.490 | 0.70 | 1.000 | 1.18 | 2.36 |
| 9910152 | ST25.4-SLS 3/8-228 | 9.00 | 4.70 | 4.33 | 3.82 | 0.510 | 0.3750 | 0.490 | 1.00 | 1.000 | 1.18 | 2.36 |
| 9910157 | ST25.4-SLS1/2-155 | 6.10 | 4.10 | 2.00 | 1.49 | 0.374 | 0.5000 | 0.620 | 0.77 | 1.000 | 1.18 | 2.36 |
| 9910159 | ST25.4-SLS 1/2-228 | 9.00 | 4.70 | 4.33 | 3.82 | 0.510 | 0.5000 | 0.620 | 1.00 | 1.000 | 1.18 | 2.36 |

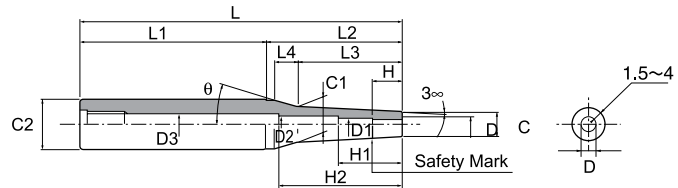
This slim collet successfully avoids interference with the work material. The tool should be inserted deeper than the safety mark. Do not exceed the insertion limit.





Straight Slim Type Shrink Extensions

For Standard Milling/End Mill Chucks



Units: mm

| EDP No. | Description | D | D1 | D2 | L | L1 | L2 | L3 | H | H1 | H2 | C | C1 | C2 | Insertion Limit |
|---------|------------------------|--------|------|------|-----|-----|-----|-----|-----|-------|-------|----|------|----|-----------------|
| 8910120 | ST10-SLS3-80 | 3.000 | 4.0 | - | 80 | 45 | 35 | 35 | 9 | 40.0 | - | 6 | - | 10 | 64 |
| 8910121 | ST10-SLS3.175-80 | 3.175 | 4.0 | - | 80 | 45 | 35 | 35 | 9.7 | 40.0 | - | 6 | - | 10 | 64 |
| 8910122 | ST10-SLS4-80 | 4.000 | 5.0 | - | 80 | 45 | 35 | 35 | 12 | 40.0 | - | 7 | - | 10 | 64 |
| 8910123 | ST10-SLS5-80 | 5.000 | 6.0 | - | 80 | 45 | 35 | 35 | 15 | 61.5 | - | 8 | - | 10 | 70 |
| 8910124 | ST12-SLS6-80 | 6.000 | 7.0 | - | 80 | 45 | 35 | 35 | 15 | 40.0 | - | 9 | - | 12 | 52 |
| 8910125 | ST16-SLS3-115 | 3.000 | 4.0 | - | 115 | 60 | 55 | 42 | 9 | 51.5 | - | 6 | 10.4 | 16 | 87 |
| 8910126 | ST16-SLS4-115 | 4.000 | 5.0 | - | 115 | 60 | 55 | 42 | 12 | 60.0 | - | 7 | 11.4 | 16 | 87 |
| 8910127 | ST16-SLS6-115 | 6.000 | 7.0 | - | 115 | 60 | 55 | 42 | 18 | 60.0 | - | 9 | 13.4 | 16 | 87 |
| 8910129 | ST20-SLS3-200 | 3.000 | 4.0 | 6.0 | 200 | 90 | 110 | 97 | 9 | 52.5 | 102.5 | 6 | 16.2 | 20 | 172 |
| 8910131 | ST20-SLS4-200 | 4.000 | 5.0 | 7.0 | 200 | 90 | 110 | 97 | 12 | 37.5 | 102.5 | 7 | 17.2 | 20 | 172 |
| 8910132 | ST20-SLS5-200 | 5.000 | 6.0 | 8.6 | 200 | 90 | 110 | 110 | 15 | 69.2 | 161.5 | 8 | - | 20 | 182 |
| 8910434 | ST20-SLSB 8-145-M 70 | 8.000 | 8.6 | - | 145 | 75 | 70 | 70 | 24 | 85.0 | - | - | 19.5 | 20 | 117 |
| 8910138 | ST25-SLS5-290 | 5.000 | 6.0 | 8.6 | 290 | 180 | 97 | 97 | 15 | 69.2 | 241.5 | 8 | 18.2 | 25 | 272 |
| 8910140 | ST25-SLS6-230 | 6.000 | 7.0 | 8.6 | 230 | 120 | 110 | 97 | 18 | 92.5 | 160.0 | 9 | 19.2 | 25 | 202 |
| 8910426 | ST25-SLSA 6-305-M 185 | 6.000 | 7.0 | 8.0 | 305 | 120 | 185 | 185 | 18 | 75.5 | 160.5 | 9 | - | 25 | 277 |
| 8910142 | ST25-SLS7-230 | 7.000 | 8.0 | 8.6 | 230 | 120 | 110 | 97 | 20 | 69.8 | 181.5 | 10 | 20.2 | 25 | 212 |
| 8910143 | ST25-SLS7-320 | 7.000 | 8.0 | 8.6 | 320 | 210 | 110 | 97 | 20 | 69.8 | 271.5 | 10 | 20.2 | 25 | 302 |
| 8910145 | ST25-SLS8-230 | 8.000 | 8.6 | - | 230 | 120 | 110 | 97 | 24 | 160.0 | - | 11 | 21.2 | 25 | 202 |
| 8910436 | ST25-SLSA 8-280-M 160 | 8.000 | 8.6 | - | 280 | 120 | 160 | 160 | 24 | 140.0 | - | 11 | - | 25 | 252 |
| 8910147 | ST25-SLS9-230 | 9.000 | 9.6 | - | 230 | 120 | 110 | 97 | 30 | 181.5 | - | 12 | 22.2 | 25 | 60 |
| 8910148 | ST25-SLS9-320 | 9.000 | 9.6 | - | 320 | 210 | 110 | 97 | 30 | 271.5 | - | 12 | 22.2 | 25 | 60 |
| 8910443 | ST20-SLSA10-145-M 70 | 10.000 | 10.6 | - | 145 | 75 | 70 | 70 | 30 | 85.0 | - | 13 | - | 20 | 60 |
| 8910445 | ST25-SLSA 10-255-M 135 | 10.000 | 10.6 | - | 255 | 120 | 135 | 135 | 30 | 115.0 | - | 13 | - | 25 | 60 |
| 8910451 | ST32-SLSA10-340-M210 | 10.000 | 10.6 | 12.0 | 340 | 130 | 210 | 210 | 30 | 59.5 | 167.5 | 13 | - | 32 | 312 |
| 8910154 | ST25-SLS11-230 | 11.000 | 11.6 | - | 230 | 120 | 110 | 110 | 30 | 181.5 | - | 14 | - | 25 | 60 |
| 8910155 | ST25-SLS11-320 | 11.000 | 11.6 | - | 320 | 210 | 110 | 110 | 30 | 271.5 | - | 14 | - | 25 | 60 |
| 8910456 | ST20-SLSA12-120-M 50 | 12.000 | 12.6 | - | 120 | 70 | 50 | 50 | 30 | 60.0 | - | 15 | - | 20 | 60 |
| 8910159 | ST25-SLS12-230 | 12.000 | 12.6 | - | 230 | 120 | 110 | 110 | 30 | 160.0 | - | 15 | - | 25 | 60 |
| 8910460 | ST32-SLSA12-315-M185 | 12.000 | 13.0 | - | 315 | 130 | 185 | 185 | 30 | 165.0 | - | 15 | - | 32 | 287 |

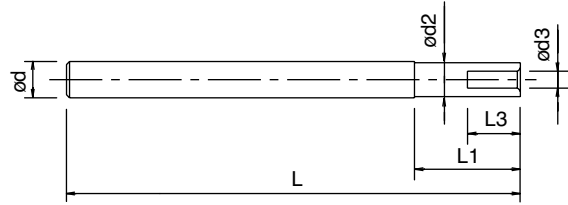
Shrink holder with straight shank for ordinary milling and end mill chucks.
Provides high performance of shrink fit without holder.





Carbide Straight Type Shrink Extensions

For Increased Rigidity and Reach



Units: mm

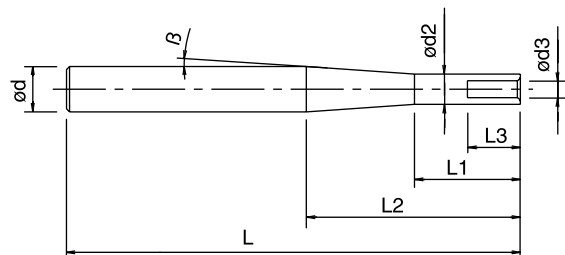
| EDP No. | Description | L | d3 | d2 | d | L1 | L3 |
|---------|---------------|-----|----|------|----|----|----|
| 8910244 | ST10-6-200CS | 200 | 6 | 9.9 | 10 | 40 | 22 |
| 8910245 | ST12-6-200CS | 200 | 6 | 11.9 | 12 | 42 | 22 |
| 8910240 | ST16-10-250CS | 250 | 10 | 15.9 | 16 | 60 | 33 |
| 8910241 | ST20-12-250CS | 250 | 12 | 19.9 | 20 | 70 | 38 |

Packed: 1 pc.



Carbide Straight Slim Type Shrink Extensions

For Increased Rigidity and Reach



Units: mm

| EDP No. | Description | L | d3 | d2 | d | L1 | L2 | β | L3 |
|---------|-------------------|-----|----|------|----|----|-----|---------|----|
| 8910246 | PC16-6-9.9-250CS | 250 | 6 | 9.9 | 16 | 40 | 124 | 2° | 22 |
| 8910247 | PC16-6-11.9-250CS | 250 | 6 | 11.9 | 16 | 42 | 80 | 3° | 22 |
| 8910242 | PC20-10-300CS | 300 | 10 | 15.9 | 20 | 60 | 98 | 3° | 33 |
| 8910243 | PC25-12-300CS | 300 | 12 | 19.9 | 25 | 70 | 118 | 3° | 38 |

Packed: 1 pc.



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