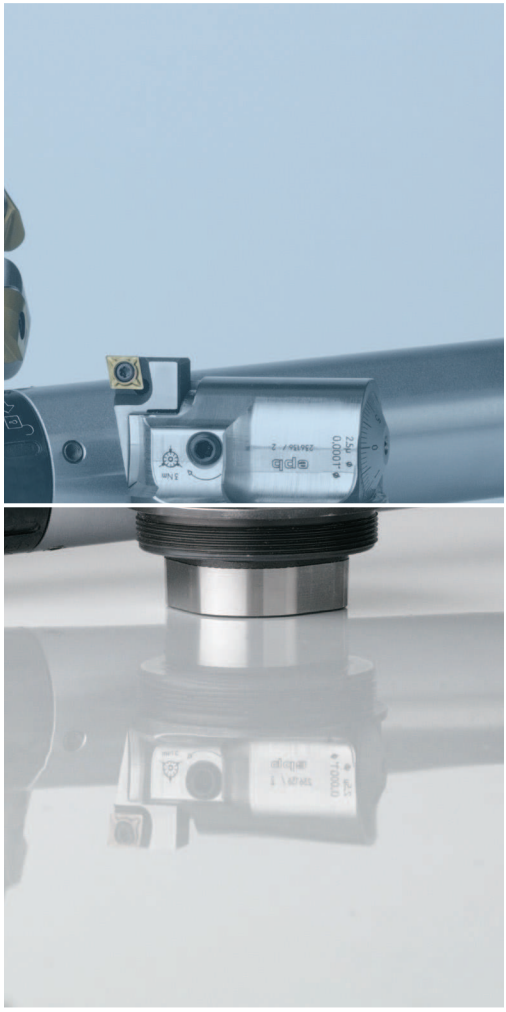
SECO NEWS SUMMARY 2015-2

PROVEN EXPERIENCE & TRUSTED RESULTS

SECO

SUCCESS STARTS HERE

Our significant investment in research and development enables us to monitor trends and identify challenges so that we can continuously offer you advanced products for today's materials and machining processes.



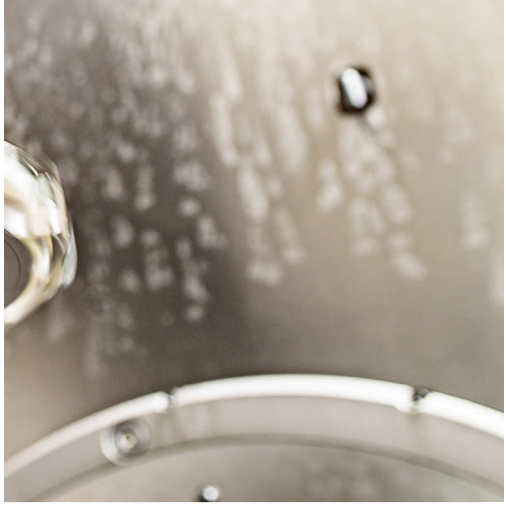
EXPAND YOUR POSSIBILITIES

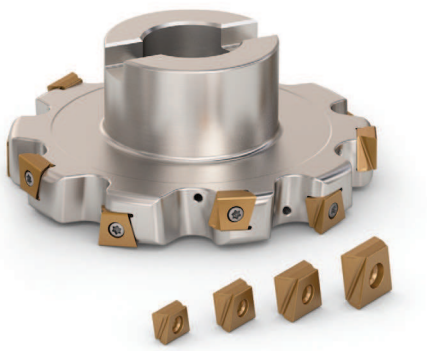
At Seco, there's no such thing as status quo. We believe in ongoing research and development to ensure that every product we bring to market solves a need and makes our customers more productive and profitable.

Consider the cutting tools in this Seco News Summary. We've expanded several of our popular product lines, including Combimaster, Jabro-Solid², Minimaster Plus, Steadyline heads, Threadmaster Tap and Precimaster Plus, so there's no limit as to what you can achieve with our tools.

We've also launched three TP grades, TP2501, TP1501, and TP0501 that cover every need in the application area. And because these grades are the first to feature our next-generation Duratomic® technology, they are the most reliable, predictable and productive of their kind.

For more than 80 years, we've continuously provided the tools, processes and services that shops rely on to stay ahead of the manufacturing curve and, as you will see inside this Seco News Summary, there's no stopping us.





INNOVATION & PERFORMANCE IN NEW CUTTING WIDTHS

335.25 DISC MILLING CUTTER

Seco continues to meet and exceed customer demand with the addition of two new insert sizes for its highly successful 335.25 Disc Milling Cutter. The cutter now provides a comprehensive range of cutting widths from 13.5 mm to 32 mm for a wide scope of applications.

The highly versatile 335.25 cutters perform slotting, back facing, helical and circular interpolation and even plunging operations. Seco offers the cutters in both fixed-pocket versions with centralised coolant and adjustable-width versions to accommodate all types of production environments.

All cutters incorporate a unique insert geometry that reduces cutting forces and noise levels, while maximising chip flow and productivity in even the most demanding applications. Whatever the corner radius selected, the inserts also feature four cutting edges for reduced tooling cost. Additionally, part quality is improved thanks to the insert wiper flat.

PRODUCT OVERVIEW:

- Optimum disc milling solution for all types of materials and applications
- Comprehensive range of standard stocked inserts with a large choice of corner radii, grades and cutting geometries
- Unique 4-cutting-edge insert geometry ensures reliable, smooth cutting processes
- Integrated insert wiper flats generate fine surface finish on the side of the slot
- Fixed-width cutter versions with central coolant
- Adjustable-width versions with enhanced chip space

RANGE OVERVIEW:

- Cutter diameters from 80 mm to 315 mm with 2 connection types
- 15-mm, 20-mm and 25-mm cutting widths for fixed-pocket cutter version
- Cutting widths from 13.5 mm to 32 mm for adjustable-pocket version
- 4 insert sizes with 4 cutting edges and corner radii from 0.4 to 6 mm
- Full range of insert geometries and grades for all applications

YOUR SECO BENEFIT:

- Maximum flexibility, reliability, precision and ease of use
- Elimination of secondary finishing operations
- Stable, high metal-removal capability
- Lower tooling costs and reduced tooling inventory
- Efficient chip evacuation for trouble-free operation

For further information please see catalogue / Machining Navigator Update 2015-2 pages 46-67.

NEW FOUR-FLUTE VERSION OPTIMISES CUTTING PARAMETERS

MINIMASTER®PLUS

Seco introduces a new four-flute version into its industry leading Minimaster Plus replaceable cutting head tool system. The four-flute version joins an existing three-flute head, and both handle higher cutting forces and, in turn, deliver increased metal removal rates in roughing and semi-finishing operations.

The four-flute head features larger helix angles, but incorporates all of the same design features and benefits as existing Minimaster Plus cutting heads. The shorter flute lengths measure 0.7xD, which significantly boosts their stability.

Added stability makes the shorter lengths especially well suited for aggressive material removal in demanding applications and 5-axis machining where cutter ends are used more frequently than the entire flute lengths. Ideal machining conditions for the shorter cutters are those where radial engagement is much greater than axial engagement, as compared with the opposite conditions where longer flutes would be used.

PRODUCT OVERVIEW:

- Shorter flute lengths for increased stability
- Ideal for large radial engagement and small axial engagement conditions
- Precise and secure cutter/shank interface
- Advanced coatings and grades
- Optimised cutting parameters with four-flute versions
- Three-flute versions feature internal coolant channels

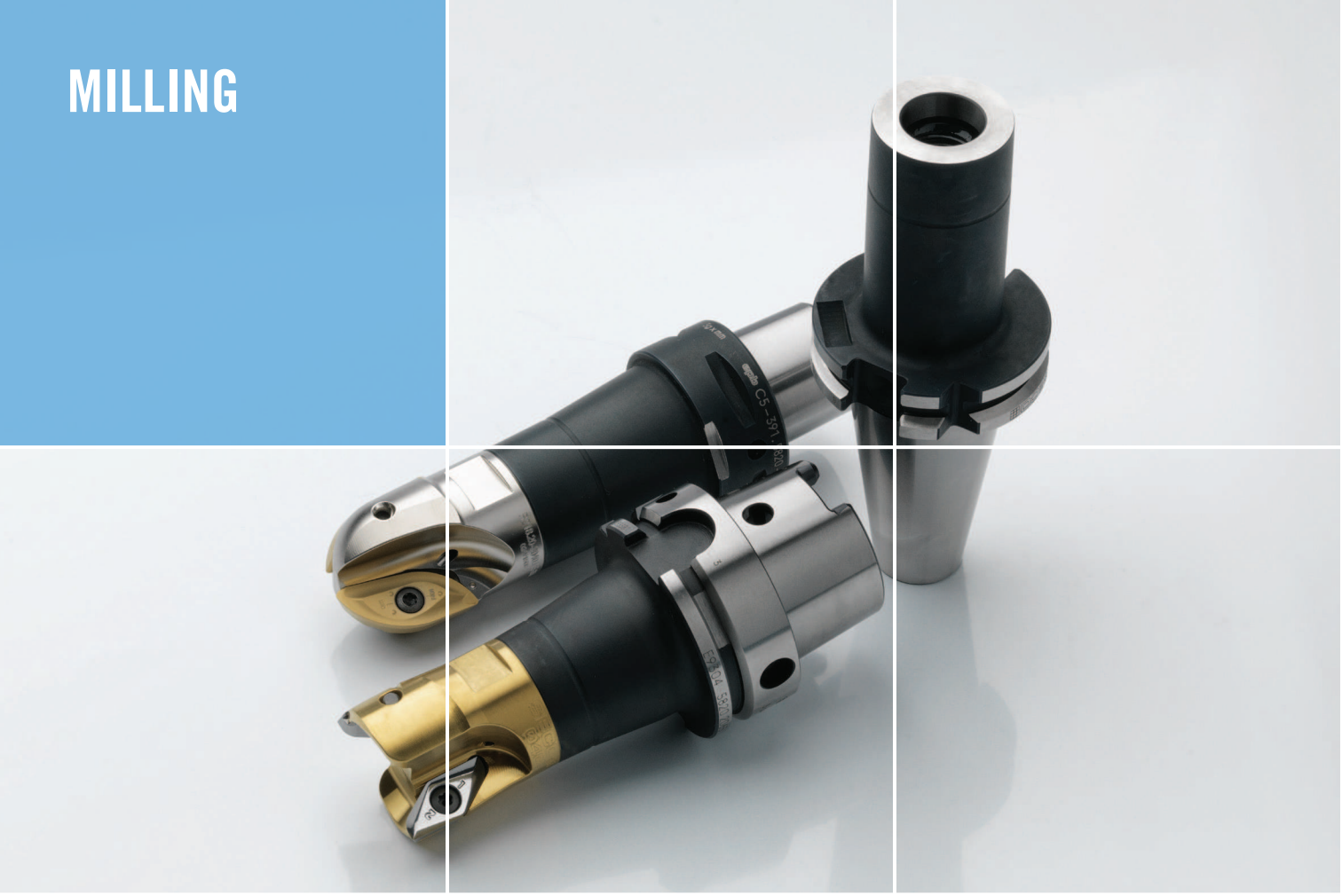
RANGE OVERVIEW:

- Shorter flute lengths of 0.7xD
- Four-flute and three-flute designs
- Wide variety of cutting heads for all material types
- Square shoulder (four-flute and three-flute) and ballnose (three-flute only) versions
- Full range of standard diameters

YOUR SECO BENEFIT:

- Higher cutting force capability
- Optimised cutting parameters
- Stability in demanding applications
- Increased metal removal rates
- Reduced cutting vibrations
- Cost-effective modularity

For further information please see catalogue / Machining Navigator Update 2015-2 pages 130-165.



YOUR SECO BENEFIT:

- Stability, increased reliability and longer tool life
- Higher achievable material removal rates
- Strength for larger depth-of-cut possibilities
- Increased speeds and feeds for a wider range of applications
- Easy transition from small to large size cutters
- Coolant-through incorporated into all holders and cutters
- Combimaster versatility and cost effectiveness

For further information please see catalogue / Machining Navigator Update 2015-2 pages 378-385.

CUTTER SYSTEM DELIVERS INTERCHANGEABILITY & VERSATILITY

COMBIMASTER™

Seco continues to enhance and expand its industry-leading Combimaster family with the addition of a larger connection size that brings the line's high stability and performance to diameter 40/42-mm milling cutters.

The Combimaster milling cutter system encompasses an array of shank types, lengths and interchangeable cutter heads that offers maximum flexibility over a wide range of applications. The extremely cost-effective system includes square shoulder and end mills, copy mills, face mills, plunge mills and disc mills.

NEW! COMBIMASTER M20

This new larger holder connection with the M20 thread advances Combimaster into the larger-diameter cutter arena. But most significantly, it delivers excellent stability and strength for high material removal rates. The M20 thread ensures the strongest connection possible between the shank and cutter body. In most instances, the Combimaster M20 allows users to increase both metal removal rates and depths of cut by as much as 15% to improve overall machining performance.

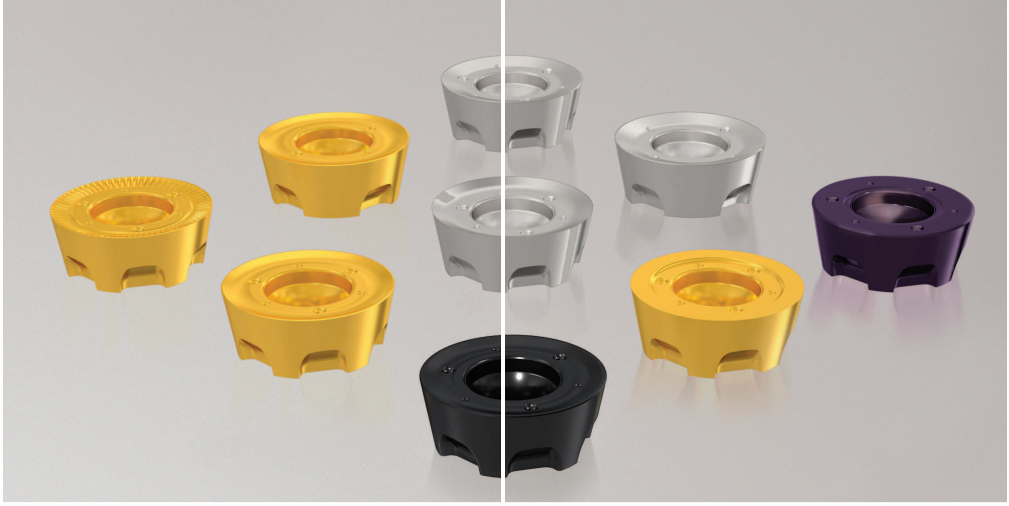
For the Combimaster range of products, Seco has adapted the M20 connection to over 30 new holder styles, as well as over 50 types of milling cutters. This includes the round and high-feed insert range of products. Other product areas also incorporate the new connection, such as the square shoulder, plunge, ballnose and aluminium milling cutter ranges.

PRODUCT OVERVIEW:

- Robust M20 connection easily transitions users from small to large diameter cutters
- M20 thread shank for maximum holding
- Greater assembly contact area for added strength
- Cutter body design eliminates large central holes, allowing use in a wider range of applications as compared with shell end cutters

RANGE OVERVIEW:

- M20 connection joins existing product range of M6, M8, M10, M12 and M16 thread sizes
- Initial M20 range applies to Seco Highfeed, plunge, square shoulder and copy milling cutters
- New 40-mm/M20 size available in conical reinforced shank designs 5820 and cylindrical/straight 5821
- M20 holders come in HSK A63/A100, BT40/50, ISO 40/50, CAT 40/50, and Seco-Capto C5/C6, as well as in Weldon, extensions and reductions
- All cutter styles have through-coolant capability (through centres and body flanges)
- Wide range of available standard lengths
- M20 Steadyline Combimaster range expansion available by end of 2015



INCREASED STABILITY & TOOL LIFE PREDICTABILITY

ROUND 12

Seco advances its range of Round 12 button inserts with the addition of indexing capabilities that provide fast and precise insert positioning. In testing, the new cutter body design and insert delivered increased reliability in tool life. Plus, the highly versatile system gives manufacturers the option to use, or not use, the indexing system.

The anti-rotation indexing system provides absolute insert security, especially during demanding material removal applications. Round 12 inserts have indexing notches that correspond with cutter body alignment marks, both of which ensure perfect insert positioning into cutter body pocket seats and make the system extremely easy to use.

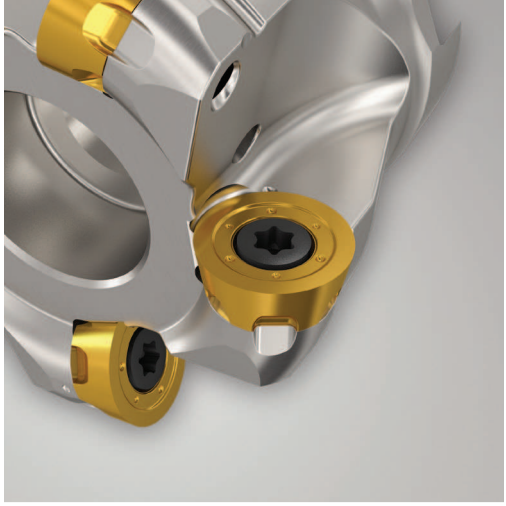
For the new system, Seco incorporated advanced geometries with the Round 12 inserts and designed all diameters of cutter bodies with new differential pitches to reduce vibration and chatter. Insert pocket positions differ from one to the next, which effectively interrupts any machine vibration frequencies. Most importantly, Seco's close-pitch Round 12 cutter body design allows for an increased number of cutting teeth/inserts on the same standard cutter diameters to further boost part machining productivity.

Plus, the new, notched Round 12 inserts work on existing Seco cutter bodies without indexing capabilities. Seco customers with cutter bodies newer than two years old gain the option to retrofit the new indexing system onto those bodies by mounting the indexing screw.

YOUR SECO BENEFIT:

- Simple, precise insert indexing and positioning
- Highly secure insert holding
- Maximum use of all insert cutting edges
- Aggressive machining capability
- Reduced vibration and chatter
- Option to use new or existing indexing systems
- Wide range of material applications
- Superior chip and heat control
- Predictable tool life

For further information please see catalogue / Machining Navigator Update 2015-2 pages 68-83.



PRODUCT OVERVIEW:

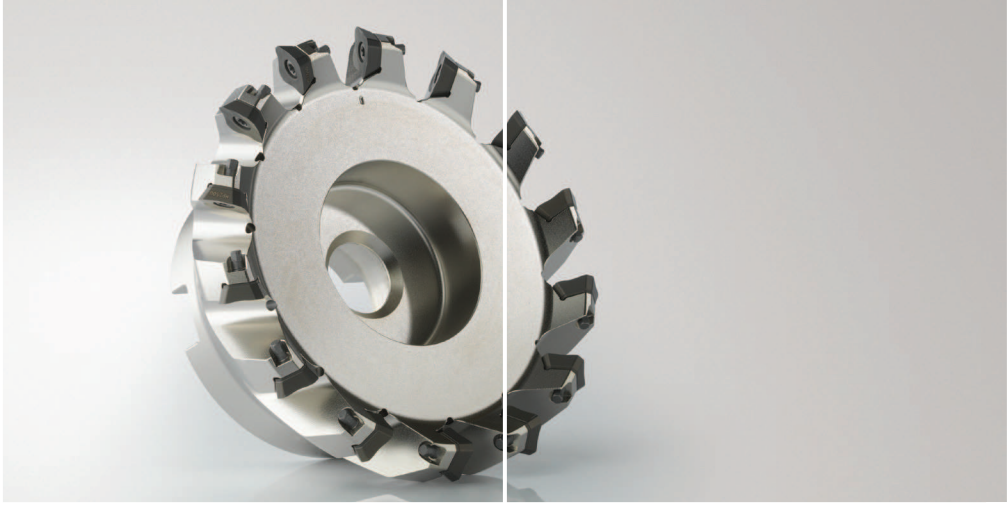
- Removable indexing screws in insert pocket seats
- Indexing notches and cutter body alignment marks for precise insert positioning
- Indicator dots on inserts ensure consistent indexing amount
- New notched inserts compatible with previous cutter body versions
- New differential pitches reduce vibrations
- Close-pitch cutter bodies designed for titanium machining
- Greater chip spacing on larger diameter cutter bodies

RANGE OVERVIEW:

- 12-mm inserts available with either 4 or 6 indexing position indicators
- New MD12 and M13 insert geometries (M13 replaces existing M10 geometry)
- Differential insert pocket pitches for all diameters
- Coarse, normal and close-pitch cutter body versions
- Expanded chip spacing on 40 mm (1 1/2"), 50 mm (2") and 63-mm-diameter (2 1/2") cutter bodies
- Indexing capability also available on disc milling cutters R335.29

CASE STUDY:

Material:	Titanium Ti6A14V (SMG S12)				
Inserts:	RPHT1204M0T-4 M13, MS2050				
Cutter:	R220.29I-0092-06.7A				
Cutting Data:	**FACE MILLING**		Cutting Data:	**CONTOURING**	
	Metric	Inch		Metric	Inch
v_c	55 m/min	180 sfm	v_c	55 m/mm	180 sfm
f_z	0.25 mm/tooth	.01"/tooth	f_z	0.25 mm/tooth	.01"/tooth
N	190 rpm	190 rpm	N	190 rpm	190 rpm
h_m	0.08 mm	.003"	h_m	0.08 mm	.003"
a_p	2.5 mm	.098"	a_p	2.5 mm	.098"
v_f	320 mm/min	12.598 ipm	v_f	320 mm/min	12.598 ipm
a_e	63 mm	2.48"	a_e	20 to 80 mm	.787" to 3.149"
TOOL LIFE:	**60 MIN**		**TOOL LIFE:**	**120 MIN**	



CLOSE-PITCH VERSION LOCKS IN FACE MILLING PERFORMANCE & STRENGTH

QUATTROMILL®

Thanks to a special patented centre-locking insert screw design, Seco now offers its popular general-purpose Quattromill face milling cutters in a new close-pitch version. The new face mills put more teeth/inserts in the cut for higher feed rates, improved surface finishes and increased productivity.

Instead of locking from the front, Seco's innovative insert screw locks/operates from the back of the insert pocket, eliminating the need for wedges or other extra parts and accommodating more inserts per cutter diameter. Seco was also able to significantly increase the density and strength of the Quattromill close-pitch cutter bodies.

Quattromill face mills are free cutting, feature positive cutting rake/negative radial rake geometries and accommodate a wide range of standard inserts for all workpiece materials. And due to their cutter geometries, the face mills excel in both stable and unstable machining conditions.

PRODUCT OVERVIEW:

- Close-pitch design
- Patented centre-locking-from-behind insert screws
- Additional inserts per cutter diameter
- High density cutter bodies
- Elimination of wedges or extra parts
- Comprehensive range of inserts
- General purpose

RANGE OVERVIEW:

- Diameters from 63 mm to 200 mm
- Available in inch range from 3" to 8" (as standard)
- Two or three additional inserts per cutter (depending on diameter)
- Positive cutting rakes/negative radial rakes for stable and unstable conditions
- Roughing and finishing for all material types

YOUR SECO BENEFIT:

- Increased productivity
- High performance, strength and reliability
- Ease of use
- Faster feed rates and superior surface finishes
- Wide range of material applicability
- Quick, precise and secure insert mounting

For further information please see the catalogue / Machining Navigator Update 2015-2 pages 40-42.

CASSETTE VERSION FOR HIGH VALUE & NEARLY ZERO AXIAL RUNOUT

DOUBLE OCTOMILL™ 05 CASSETTE

Seco expands the benefits of its recently developed Double Octomill 09 cassette technology into the Double Octomill 05 family of smaller diameter inserted face milling cutters.

Using Seco's advanced pin-locating technology, the new cassettes ensure fast, easy and precise insert positioning. But equally important, the patented design of the cassette pockets allows adjustability to practically eliminate axial runout, while optimising feed rates, surface finishes and tool life.

Cassettes are paired with cutter bodies that accommodate Seco's cost-effective Double Octomill inserts with 16 cutting edges. And because the cassettes are modular and removable, they can be quickly and inexpensively replaced if damaged, avoiding the cost of replacing an entire cutter body.

PRODUCT OVERVIEW:

- Removable cassettes
- High-speed steel pins for precise insert locating
- Strong centre insert-mounting screws
- Unique pocket design with bottom insert support
- Z-axis adjustable insert pockets

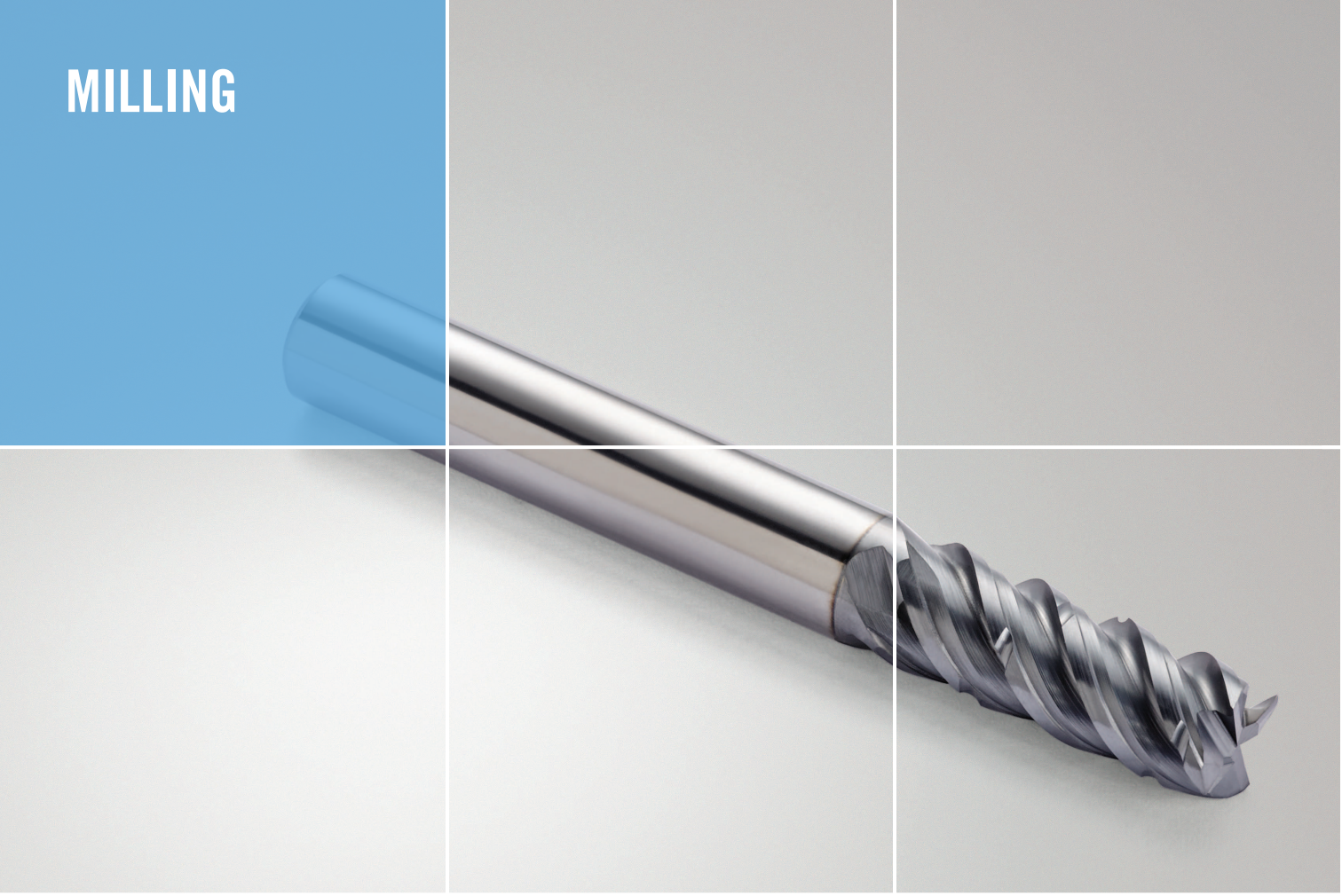
RANGE OVERVIEW:

- Diameters from 80 mm to 200 mm
- Available in inch range from 3" to 8" (as standard)
- 16-cutting-edge inserts
- Both roughing and finishing for all workpiece material types

YOUR SECO BENEFIT:

- Economical, high-performance cutting system
- Low cost per edge and low cost per part
- Easy, precise and foolproof insert mounting, locating and adjusting
- Near zero axial runout
- Reduced maintenance and repair costs
- Superior surface finishes
- Extended tool life

For further information please see catalogue / Machining Navigator Update 2015-2 pages 43-45.



YOUR SECO BENEFIT:

- Consistent feed rates/chip formation
- Full CAM system utilisation
- High roughing reliability and stability
- Versatility
- Less required tools
- Shorter cycle times
- Increased material removal rate
- Extended tool life

For further information please see catalogue / Machining Navigator Update 2015-2 pages 190-192.

NEW SOLID END MILL DELIVERS ADVANCED ROUGHING CAPABILITY

JABRO®-SOLID² JS554-2C

The latest addition to the Jabro JS554 line of solid-carbide end mills, the JS554-2C features new capabilities for significantly higher feed rates and increased levels of metal removal in advanced roughing applications. The new tool is designed to run at an optimised arc of contact or angle of engagement during milling operations, allowing users to take full advantage of modern machine tool responsiveness and aggressive CAM software toolpath strategies. The JS554-2C's advanced roughing also maximises tool life and part surface finish quality.

The JS554-2C can perform rough side-milling passes using the entire cutting length of the tool (a_p). The chip splitters generate manageable-sized chips and prevent any recutting of long chips that can quickly dull or damage a roughing end mill. The possibility to apply high-radial engagement reduces the number of required roughing passes and helps shorten overall part processing cycle times. Plus, the shorter chips prevent clogs in machine tool chip conveyor systems that could hinder unmanned operations.

The tool features a tapered-core design that increases stability and overall strength, and allows for an increase in the arc of contact on the complete cutting length available. This is in contrast to a double-core design where core thickness or flute depth varies or tapers along the length of a tool.

Seco categorises the JS554-2C as a high-end universal milling cutter for all materials and one that eliminates the need for "material-specific" cutters typically used to gain comparable advanced roughing results. The ability to perform in basically all CAM modules makes the tool truly versatile and easy to use.

A combination of factors give the JS554-2C its versatility, including a more positive frontal teeth geometry for trochoidal or axial operations when compared with other tools in the JS554 family. The JS554-2C also has increased chip room at its frontal teeth, making it well suited for helical interpolation.

While other roughing cutters typically incorporate as many as five or six flutes, Seco achieves the same levels of performance (feed rates) with only four flutes on the JS554-2C. Having only four flutes also contributes to the tool's versatility in various machining conditions and workpiece materials.

PRODUCT OVERVIEW:

- High-end and universal applicability
- Advanced SIRA coating
- Tapered-core design
- Positive frontal tooth geometries
- Robust and strong

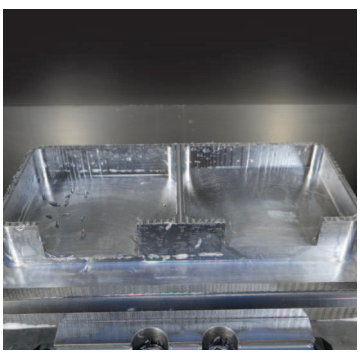
RANGE OVERVIEW:

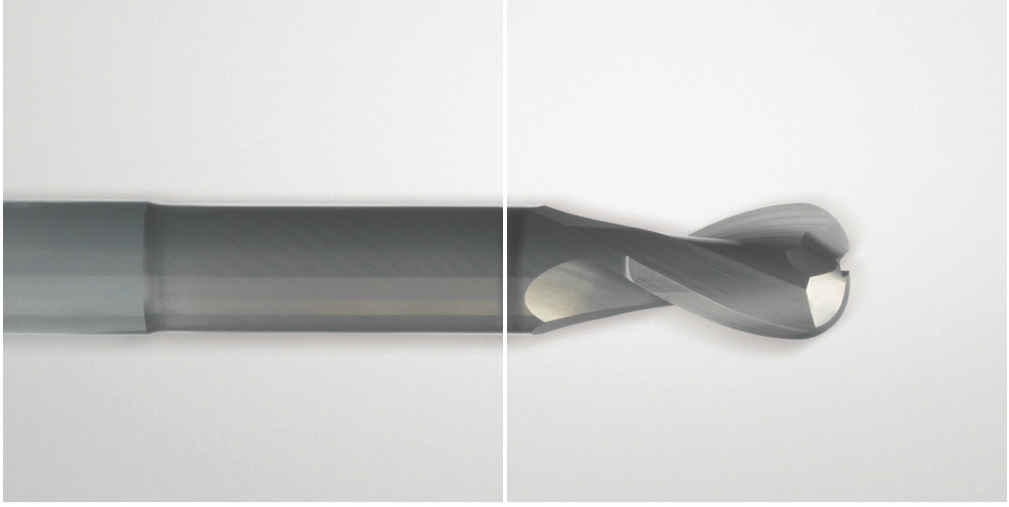
- Cutting lengths up to 2.5xD
- Straight shank diameters from 4 mm to 20 mm
- Weldon shanks in diameters from 6 mm to 20 mm

CASE STUDY:
JS554-2C LAB TEST ø8 MM

Tool:	JS554080D2C.0Z4C-SIRA	
Machine:	Mori Seiki SVD/503	
Material:	S12: Ti6Al4V	
Cutting Data:	Metric	Inch
v_c	150 m/min	490 sfm
N	5,970 rpm	5,970 rpm
f_z	0.08 mm/tooth	.003"/tooth
v_f	1,910 mm/min	75''/min
a_p	16 mm	.63"
a_e	0.8 and 1.2 mm	.03 and .047"
-> a_e = 10% of dc and a_e = 15% of dc.		

RESULT: VERY GOOD CHIP FLOW AND CUTTING ACTION





CUTTERS STABILISE THIN-WALL, LONG-OVERHANG ALUMINIUM MACHINING

JABRO®-SOLID² JS452-L

The high-performance Jabro JS452-L (long overhang, length index 3) solid-carbide end mills further expand Seco's Jabro JS² product range for aluminium machining applications. Encompassing 54 new long-length tools with corner radii from .2 mm to 6 mm, the additions fulfill the needs of manufacturers in the aerospace, medical and other industry segments.

JS452-L end mills excel in thin-wall, unstable applications where up to 95 percent of the part material is machined away. When applied to a wide range of cutting speeds and a_p-a_e ratios, the cutters significantly minimise chatter and vibration in those unstable conditions and allow for even higher material-removal rates. The JS452-L end mills feature a polished HEMI Titanium DiBoride (TiB2) aluminium-inert coating. This coating – with a low friction coefficient – reduces material adhesion/buildup as well as provides smooth chip and heat evacuation from the cutting zone while minimising wear and increasing tool life.

The JS452-L allows faster spindle and cutting speeds, resulting in shorter machining cycle times and thus higher overall production output, while also reducing tooling costs as well as scrap rates. When machining aircraft structural components for instance, increased radii size in the corners where pocket walls meet pocket bottoms adds strength even though the walls are quite thin. The extra gash on the cutter geometry helps maintain the best possible radius form as well as contributes to optimised chip flow.

PRODUCT OVERVIEW:

- Length index 3
- HEMI coating
- 1-degree land support to prevent chatter

RANGE OVERVIEW:

- Weldon and cylindrical shank styles
- Diameters from 8 mm to 20 mm
- Corner radii from 0.2 mm to 6 mm

YOUR SECO BENEFIT:

- Stability and performance
- Reduced vibration and chatter
- Increased material removal
- Longer tool life
- Faster, deeper depths of cut
- Stable cutting operations at high spindle speeds v_c = 400 to 650 m/min (1,300 to 2,100 sf/min)

For further information please see catalogue / Machining Navigator Update 2015-2 pages 187-189.

TOOLHOLDERS PACK STRENGTH FOR BIG INSERTS & TOUGH CUTS

SECO-CAPTO™ P-LEVER HOLDERS

The Seco-Capto line of external turning toolholders continues to expand in size and application scope with the addition of new bigger P-clamp versions that accommodate CN and SN inserts. With the new additions, the range of applications for the holders now covers heavy-duty, rough-turning operations in long-chipping steels and superalloys.

P-lever clamping systems work from the back of inserts, with the screw of the clamp pulling the insert into its seat. This leaves the front insert area open for completely unrestricted chip flow/evacuation, which is ideal for taking heavy depths of cut at high feed rates. Additionally, the P-lever components are located away from the cutting zone, which prevents damage and premature wear.

Unlike other P-lever type tools on the market, Seco's P-lever-style holder provides high-pressure coolant capabilities of 5 bar (72.5 psi) to 100 bar (1,450 psi). The holders also have room for adjustable nozzles that help ensure longer tool life and better surface finishes.

PRODUCT OVERVIEW:

- P-lever clamping styles for larger inserts
- Secure and precise insert locating/holding
- Robust overall design
- ISO S and ISO P material applications
- Heavy-duty roughing operations
- High-pressure adjustable coolant nozzles

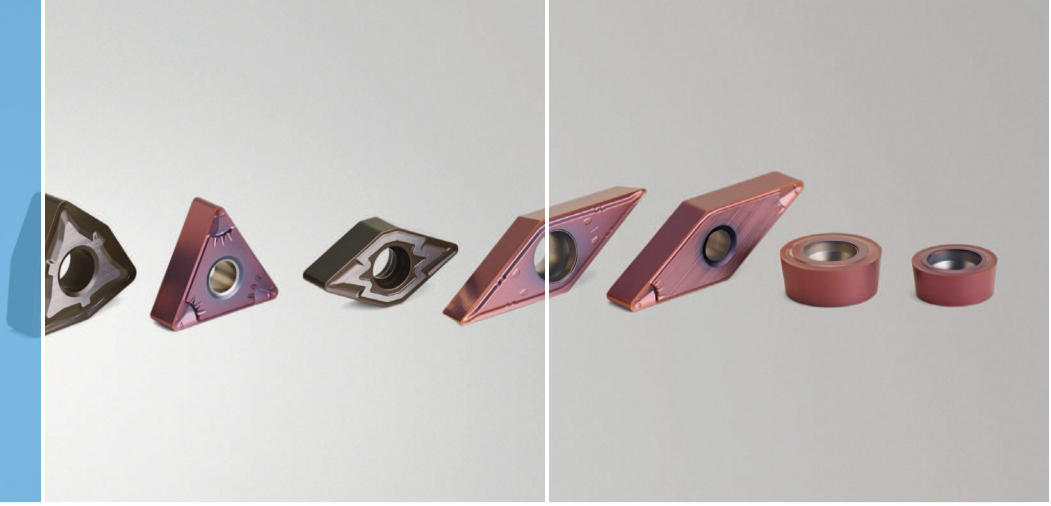
RANGE OVERVIEW:

- Available Seco-Capto sizes – C5, C6, C8 and C10
- Applicable insert sizes – CNxx16, CNxx19, CNxx25, SNxx19 and SNxx25
- 32 total Seco-Capto external holders offered
- Right and left approach angles

YOUR SECO BENEFIT:

- Wide scope of holder styles
- Strength and durability
- Heavy-duty, aggressive material removal capability
- Expanded range of material applications
- Longer holder and insert life

For further information please see catalogue / Machining Navigator Update 2015-2 pages 196-204.



NEW TURNING INSERT GEOMETRIES EXTEND TIME IN THE CUT

TH1000 & TH1500

Seco continues to build upon its top performing TH line of turning inserts with the addition of further insert styles within the TH1000 and TH1500 grades. The new styles simultaneously deliver significantly increased tool life and favourable chip control.

As a TiSiN-TiAlN nanolaminate PVD-coated grade, TH1000 inserts excel in operations involving finishing or interrupted cuts when turning hardened steel parts between 50-62 HRC. Conversely, the TH1500 inserts feature Seco's exclusive Duratomic coating and excel in high-cutting-data applications as well as continuous-cut operations involving hardened steel components of 40-55 HRC. With excellent chip resistance and maximum chip control, the TH grades complement Seco's PCBN grades in hard-steel turning.

Besides hard steels, the TH1500 grade provides superior finish turning of grey and ductile cast irons in low-to-moderate cutting-speed conditions. The grade complements Seco's TK1001 and TK2001 grades for cast irons with maximum toughness and chip resistance.

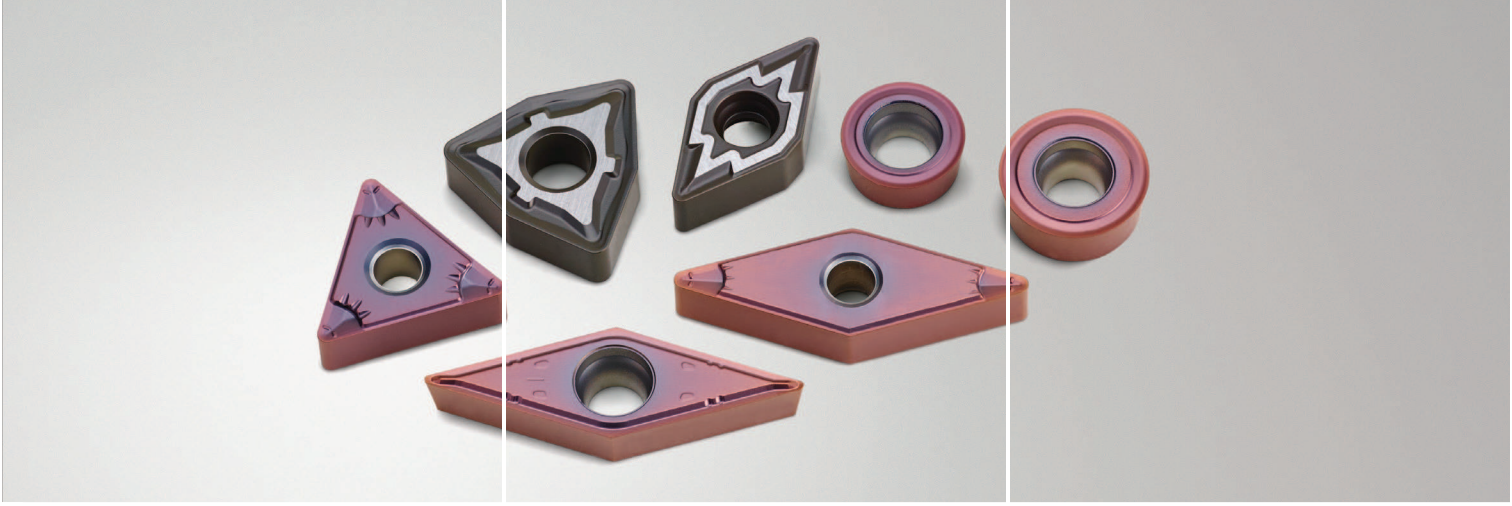
TH1000 inserts apply to long, continuous finishing and semi-finishing operations of superalloys, such as Inconel 718, Waspaloy and Nimonic C263. The TH1000 inserts allow for faster cutting speeds and join Seco's carbide grades TS2000 and CP200 and its CBN grade CBN170 to offer a complete finishing package for superalloys.

Seco essentially extends the TH product line's range of insert choices with the new styles of TH1000 and TH1500 inserts. Along with a wide range of insert shapes, chipbreakers and nose radii sizes, the new styles fulfill the needs of key industries such as aerospace, energy and automotive. The TH1000 grade proves especially valuable to aerospace applications with heat resistant superalloys. Extensive and critical cuts are typical to large parts made of these materials, and they can be optimised by TH1000's ability to provide long, predictable tool life with high cutting speed.

YOUR SECO BENEFIT:

- Long, predictable tool life
- Maximum chip control
- Improved surface finish quality
- Less insert indexing for reduced tooling costs
- Multipurpose

For further information please see catalogue / Machining Navigator Update 2015-2 pages 209-221.



PRODUCT OVERVIEW:

- Highly chip resistant in hard and demanding materials
- Advanced coatings
- Built for unstable cutting conditions in hardened steels
- Chipbreakers with broad working range
- Excels in long, extensive cuts with high surface quality requirements

RANGE OVERVIEW:

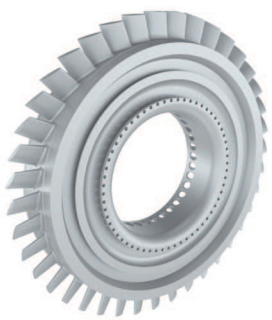
- TH1000 PVD coated
- TH1500 Duratomic coated
- Positive and negative inserts in a variety of styles, chipbreakers and nose radii
- Intended for hardened steels, superalloys and cast irons

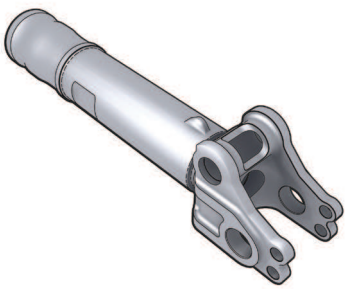
CASE STUDY: TH1000 IN SUPERALLOYS

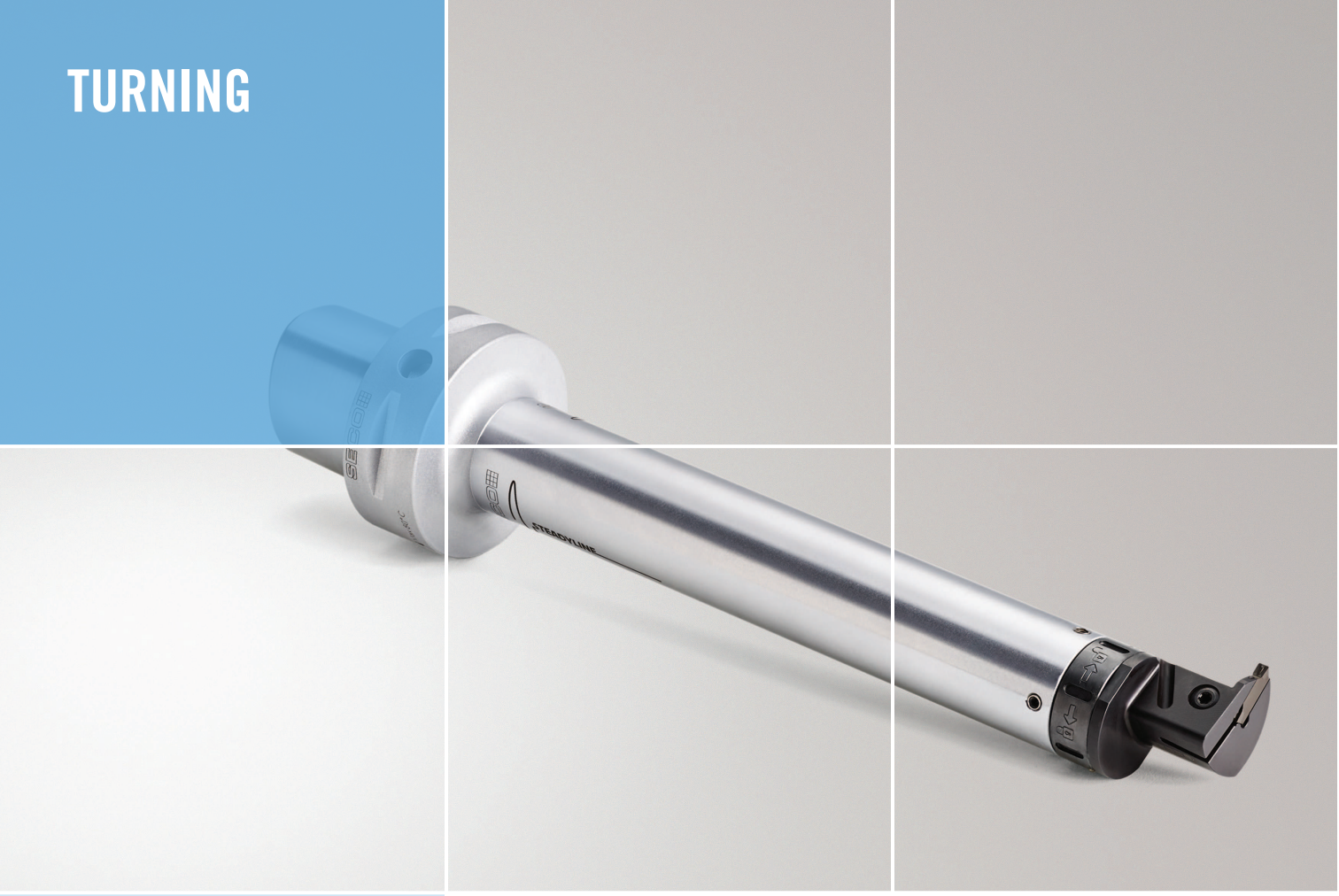
Component:	Blisk (aero engine part), ø630 mm	
Material:	Inconel 718	
Hardness:	42 HRC	
Operation:	4OD finish-turning	
Coolant:	Flood	
Reference:	Competitor DNMG150608, S10-grade	
Seco:	DNMG150608-MF2, TH1000	
Cutting Data:	Metric	Inch
v_c	70 m/min	229 sfm
a_p	0.5 mm	.02"
f	0.15 mm/rev	.006 ipr
RESULT:	**COMPETITOR:**	**SECO:**
Cycle time	80 min	36 min
TH1000 REDUCES CYCLE TIME BY 55%		

CASE STUDY: TH1500 IN HARDENED STEELS

Component:	Landing gear	
Material:	Hardened steel AISI 300M	
Hardness:	54 HRC	
Operation:	OD turning	
Coolant:	Emulsion	
Reference:	Competitor K05-grade	
Seco:	DNMG150612-MF5, TH1500	
Cutting Data:	Metric	Inch
v_c	100 m/min	330 sfm
a_p	1 mm	.04"
f	0.3 mm/rev	.012 ipr
RESULT:	**COMPETITOR:**	**SECO:**
Tool life	20 min	50 min
TH1500 INCREASES TOOL LIFE BY 150%		







YOUR SECO BENEFIT:

- Significantly reduced cutting vibrations
- Increased cutting parameters
- Superior surface finishes
- Longer tool life
- Versatility of interchangeable heads
- Reduced tooling inventory and cost
- High precision and repeatability
- Simplicity and ease of use

For further information please see catalogue / Machining Navigator Update 2015-2 pages 226-228.

NEW HEADS GAIN INTERCHANGEABILITY & VIBRATION CONTROL

MDT HEADS WITH GL CONNECTION FOR STEADYLINE®

Seco now incorporates its recently developed GL Connection with new Multi-Directional Turning (MDT) interchangeable heads for use with the Seco Steadyline modular vibration-damping tool bar system. Together, the GL Connection and Steadyline bars ensure precision and superior surface finishes for grooving and turning with the new MDT heads in long-reach applications as well as those with high risk of cutting vibrations.

With the extremely high-precision GL Connection, users can quickly, easily and accurately exchange MDT heads and other types on the Steadyline bars. Once the bar is set, tool heads can be mounted and remounted without having to reset the system. The polylobe tapered interface of the patented GL Connection features two positions so that MDT insert cutting edges can be oriented to face either up or down for effective chip control.

Seco's Steadyline is a passive/dynamic vibration-damping system that provides effective vibration control. Passive means no energy transfers into the holder, while dynamic refers to the fact that tool vibrations trigger the system's internal workings into action. As such, these products can perform typical long-overhang operations faster than traditional tools, reduce spindle stress and offer high metal-removal rates, smooth part surface finishes and long tool life.

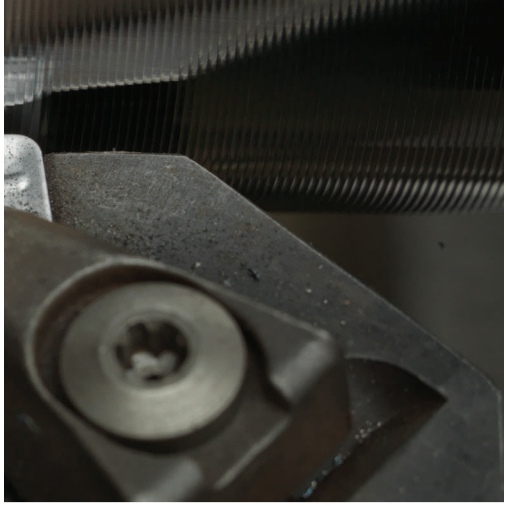
The MDT heads will also offer Seco's Jetstream Tooling® coolant technology. Jetstream Tooling is a high-pressure coolant delivery system that efficiently removes heat from the cutting zone to improve tool life, part quality and productivity. Coolant is channeled through tooling to outlets in very close proximity to the cutting zone.

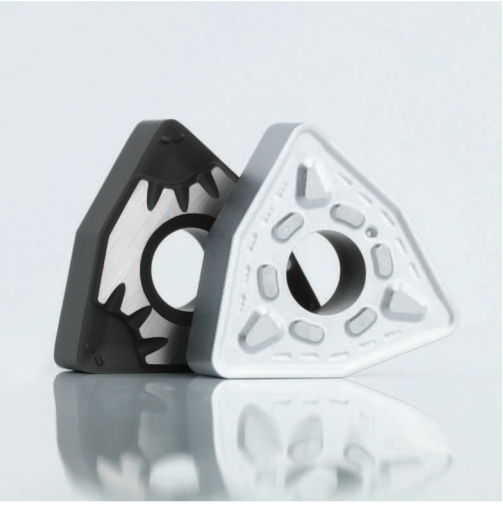
PRODUCT OVERVIEW:

- Long-reach applications
- Multi-Directional Turning and grooving
- Steadyline vibration damping
- High-precision GL Connection
- Applicable to all materials
- Jetstream Tooling coolant capability

RANGE OVERVIEW:

- GL couplings: GL32, GL40, GL50
- Insert sizes: 2 mm, 3 mm and 4 mm





EDGE INTELLIGENCE DELIVERS REVOLUTIONARY USED-EDGE-DETECTION CAPABILITY

TP2501, TP1501 & TP0501 STEEL TURNING GRADES

Seco has worked since 2007 to refine its industry-leading **DURATOMIC TECHNOLOGY**, now providing the new TP2501, TP1501 and TP0501 turning grade inserts with innovative **USED-EDGE DETECTION**, without sacrificing tool performance. The new grades and their unique detection capabilities are a direct result of Seco's **EDGE INTELLIGENCE** concept - an integration of the company's extensive high-performance insert experience and knowledge.

The TP2501, TP1501 and TP0501 inserts offer an expanded choice of solutions for workpieces in the ISO P materials category of steel as well as additional applicability in stainless steel and cast iron. The used-edge detection capability is a direct response to customer feedback, as operators often experience difficulty when trying to identify used cutting edges. These grades allow users to quickly spot cutting edges that have made any contact with a workpiece, even in very light finish-machining passes.

NEW! TP2501: VERSATILE PRODUCTIVITY

With its broad working range, the TP2501 grade makes it easy to achieve dependable productivity and reliable part production in most steel-turning applications. It also serves as a superb starting point to further optimise specific operations.

With increased wear resistance and better toughness behaviour, the TP2501 grade reduces variations in tool life and delivers predictable and consistent performance. Ideal applications include those from general-purpose continuous-machining operations to more demanding ones such as those involving high surface finish requirements or heavy interrupted cuts. For even more versatility, this grade is capable of handling several coolant conditions.

YOUR SECO BENEFIT:

- Edge Intelligence - Seco's insert experience and knowledge
- Enhanced performance and reliability
- Less wasted tooling (resulting from detection capability)
- Increased wear resistance and toughness
- Versatility for both stable and high-heat conditions
- Wider range of applications with longer tool life
- Higher material removal rates and smoother surface finishes

For further information please see catalogue / Machining Navigator Turning pages 343-399 and Update 2015-2 pages 209-221.

NEW! TP1501: BALANCED PRODUCTIVITY

TP1501 is a general grade with well-balanced properties for applications that require high wear resistance and excellent surface finish in low-alloy carbon steel workpieces. As a higher hardness grade with high edge-toughness, the inserts feature enhanced wear and deformation resistance for low to medium temperature semi-interrupted cutting conditions with and without coolant.

TP1501 also offers properties that make it highly effective in the machining of cast irons. In toughness demanding applications, TP1501 complements the existing Seco TK grades dedicated to that particular material.

Used-Edge Detection

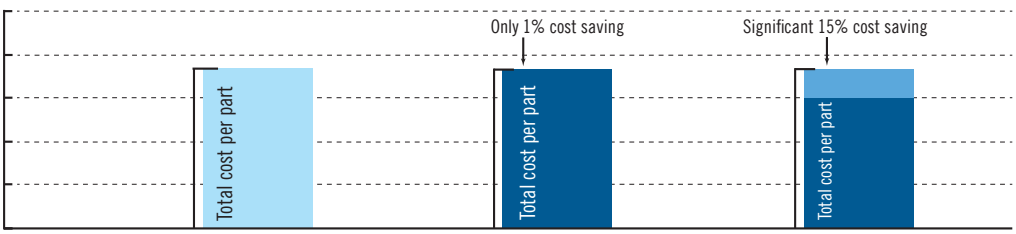
NEW! TP0501: HIGH-SPEED PRODUCTIVITY

Of the new grades, TP0501 provides the highest possible wear resistance and/or cutting speeds in relation to all steels, especially high-alloy and abrasive steels.

The grade's balance of high edge-hardness and toughness provides unmatched tool life, especially in stable high-temperature, long continuous cutting conditions along with those involving some interrupted cuts. The extreme heat resistance of TP0501 also makes it easy to achieve the highest possible metal removal rates in steel turning - and without the need for coolant.

CASE STUDY: IMPORTANCE OF COST PER PART FOCUS

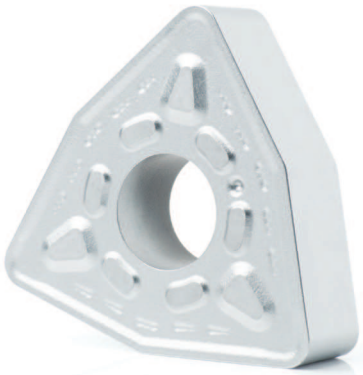
Component:	Shaft		Shaft		Shaft	
Material:	SMG P4		SMG P4		SMG P4	
Insert:	DNMG110408-…, … (reference)		DNMU110408-M3, TP2501 (new)		DNMU110408-M3, TP2501 (new)	
Cutting Data:	Metric	Inch	Metric	Inch	Metric	Inch
v_c	145 m/min	476 sfm	145 m/min	476 sfm	165 m/min	543 sfm
f	0.2 mm/rev	.005 ipr	0.2 mm/rev	.005 ipr	0.2 mm/rev	.005 ipr
a_p	2 mm	.079''	2 mm	.079''	2 mm	.079''
RESULT:	**TOOL LIFE: 450 PCS**		**TOOL LIFE: 530 PCS (+18% IN THE SAME AMOUNT OF TIME)**		**TOOL LIFE: 450 PCS (AS REFERENCE, BUT -12% LESS TIME)**	



CONCLUSION: NEGLECTING TOTAL COST PER PART/UNIT IS NEGLETING SIGNIFICANT COST SAVING

- Total cost before
- Total cost saving
- Total cost after

TURNING



TP2501, TP1501 and TP0501 grades provide a balance between properties such as wear resistance, speed capabilities and toughness behaviours. They feature design improvements that make them applicable to both roughing and finishing operations while significantly boosting lowest-level peak-performance ratings.

PRODUCT OVERVIEW:

- Used-edge detection capability
- Innovative Duratomic coating technology
- Broad working ranges and cutting conditions
- Three grades cover most steel-turning needs

RANGE OVERVIEW:

- TP2501 grade - approx. 500 insert geometries
- TP1501 - approx. 300 items
- TP0501 grade - approx. 150 items
- ISO P steel turning or mixed steels and cast irons
- From finishing to roughing applications
- Continuous and interrupted cutting
- Coolant and non-coolant machining

NEW REAMING SHANKS OFFER BUILT-IN FLOATING & ADJUSTABILITY

PRECIMASTER™ PLUS

Two new tool shank designs from Seco offer floating and adjustability for fully optimised, high-precision reaming operations. As an extension of the Precimaster Plus indexable-head reaming system, the new PMX-FL and PMX-AD shanks greatly improve hole surface finishes, eliminate runout and correct for misalignment without the need for special toolholders.

Seco's new shanks incorporate compact internal systems for such functionalities, eliminating the need for special toolholders for floating and adjustability functions. Compared to special toolholders, the new shanks also situate reamers closer to machine spindle noses for less tool overhang.

Seco's built-in floating system for static and turning-machine reaming applications is purely mechanical and much more stable than the common rubber or elastomere-type technology used on other similar tools. Also, the internal adjustment on Seco's new shank for rotating applications is mechanical in design and uses six screws to provide precise settings and effectively correct for spindle runout down to less than 0.005 mm.

PRODUCT OVERVIEW:

- Compact design, less tool overhang
- Economical
- Accurate internal floating and adjusting systems
- High precision

RANGE OVERVIEW:

- PMX-FL floating shanks (static applications)
- PMX-AD adjustable shanks (rotating applications)
- Four sizes in each style for 10 mm to 60.5 mm diameters
- Runout compensation to less than 0.005 mm (5 microns)
- Applicable to all materials

YOUR SECO BENEFIT:

- Optimised, stable, high-precision reaming
- Compact tool setup
- Reduced tooling inventory and cost
- Versatility and reliability
- Superior surface finishes
- Ease of use
- Longer tool life

For further information please see catalogue / Machining Navigator Milling pages 348-360.

NEW ROUGH & FINE BORING HEADS FOR VIBRATION DAMPING BARS

BORING HEADS FOR STEADYLINE BARS

New EPB® 610 rough boring heads and EPB 620 radial type fine boring heads with GL Connection take Seco's boring bar system to extended depths while providing benefits of the Steadyline vibration damping technology already available for milling and turning applications.

With its innovative Seco GL Connection, one Steadyline turning/boring bar can run all types of Seco GL heads for static internal turning operations and now also for rotating boring operations. The Steadyline bars eliminate the difficulties of deep boring applications (up to 10xD), while the user-friendly heads provide fast and simple mounting and setting to reduce preparation times.

The EPB 610 rough boring heads feature robust designs and withstand the rigors of heavy, roughing operations. The EPB 620 radial, fine boring heads are light and compact in size and generate superior surface finishes (Ra <1).

Precision head adjustability is via 2.5-micron diameter dial settings, and the GL Connection provides head changing repeatability within 5-micron.

PRODUCT OVERVIEW:

- User-friendly, easy setting EPB 610 rough boring head
- Fine-pitch micro-adjusting spindle screws with EPB 620 fine boring head
- Compact and lightweight boring heads
- Hardened stainless steel bodies
- GL Connection with excellent repeatability
- Through-coolant capability

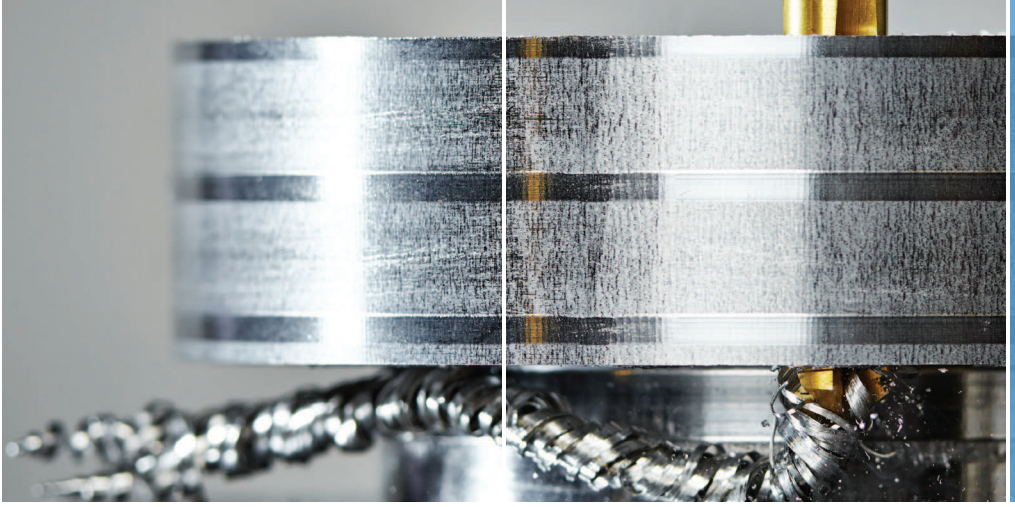
RANGE OVERVIEW:

- EPB 610 rough boring heads that cover diameter ranges from 36 mm to 69 mm
- EPB 620 fine boring heads that cover diameter ranges from 34 mm to 69 mm

YOUR SECO BENEFIT:

- Vibration damping technology for problem-free deep boring operations
- Expanded rough and fine boring capabilities
- Versatility of static and rotating processes
- Reduced tooling inventory and cost
- Superior surface finishes
- High precision and repeatability
- Longer tool life

For further information please see catalogue / Machining Navigator Update 2015-2 pages 361-377.



NEW SPECIAL PURPOSE & LARGER DIAMETER TAPS OPTIMISE THREADING

THREADMASTER™ TAP

Seco continues to grow its Threadmaster Tap line with the addition of new material-specific taps as well as larger thread-size versions. Seco now offers 330 special ISO materials-specific taps and over 200 new items/sizes within its existing universal or general-purpose tap product range, and many of the new taps come with internal coolant capabilities.

Designed specifically for ISO P, M, N and K materials, new Seco straight-flute, spiral helix, helix point and form-type taps provide optimum performance and affective chip control. Straight flute tap sizes range from M4 up to M42 with or without internal coolant; spiral helix types span from M1 up to M30 in size; helix point taps – for ISO P – are in sizes from M1 up to M30; and forming taps range in size from M1 to M48. Tap sizes of M4 and M5 are the smallest with internal-coolant capability, and all Seco's taps (specialty and general purpose) feature engineered coatings that enhance performance and extend tool life.

PRODUCT OVERVIEW:

- Spiral helix taps for blind holes and spiral points for through holes
- Straight flute styles for short chipping materials (cast iron and brass)
- Form taps for ductile materials
- Wide range of common thread sizes and maximum diameters
- Advanced coatings and geometries for application versatility
- Combined drilling and tapping functionality

RANGE OVERVIEW:

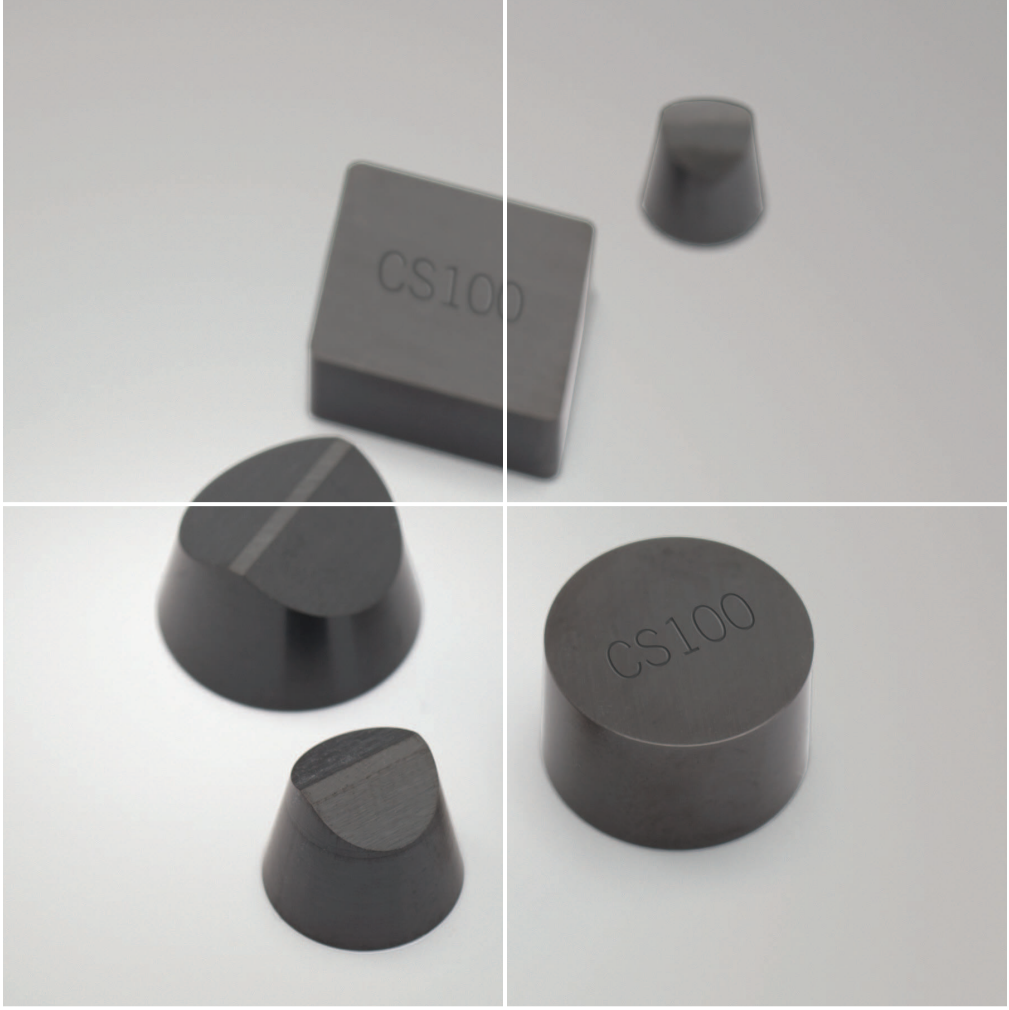
- Universal type maximum diameters of M36, M48 and M64
- Special ISO P, N, M and K material taps: straight flute M4-M42, spiral helix M1-M30, helix point M1-M30 and forming M1-M48
- Internal and non-internal coolant versions
- Small M4 and M5 sizes with internal coolant
- Work with Seco's EPB 5867 synchronised tapping chucks

YOUR SECO BENEFIT:

- Optimised threading operations
- Versatility of combined processes
- Reduced tooling inventory and cost
- Superior thread surfaces
- High efficiency chip evacuation
- Longer tool life

For further information please see catalogue / Machining Navigator Update 2015-2 pages 246-347.

ADVANCED MATERIALS



YOUR SECO BENEFIT:

- Strength for unstable conditions
- Reduced cutting vibration
- Less generated cutting forces
- Increased cutting parameters
- Longer tool life

For further information please see catalogue / Machining Navigator Update 2015-2 pages 222-223 and 229.

T-STYLE EDGE PREPARATION INSERTS EXCEL IN UNSTABLE CONDITIONS

SECOMAX™ CS100 INSERTS (T-PREP) & CERAMIC-INSERT TOOLHOLDERS

Seco's CS100 line of sialon ceramic grade inserts now covers a wider range of applications with the introduction of a T-prep style insert. While existing CS100 inserts have S-style edge preparations (edge hone and chamfer), the newly added T-prep applies only a chamfer. This gives the insert a much sharper cutting edge and makes it well suited for unstable applications.

Seco initially developed its CS100 line of inserts to rough and semi-finish machine nickel-based superalloys in aerospace applications. That industry, as well as power generation and others, continues to drive the use of sialon ceramics. S-prep inserts provide the strength to machine these materials but tend to generate somewhat high cutting forces. So, machining setups and workpieces must be rigid and stable to prevent deformation, as well as the potential for excessive vibration that can shorten tool life and lead to poor surface finishes.

When conditions are unstable, the CS100 with T-prep provides a much more free-cutting, sharper geometry that places less cutting forces/ pressure on setups and workpieces. The inserts perform at the same cutting data as that of the S-prep inserts but without the risk of deforming workpieces such as thin-walled aerospace components.

PRODUCT OVERVIEW:

- Sialon ceramic grade inserts
- Special free-cutting edge preparation
- Used for roughing and semi-finishing operations
- Nickel-based superalloys

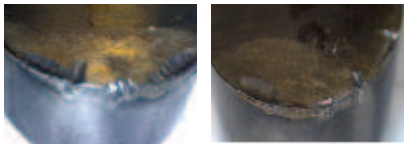
RANGE OVERVIEW:

- T-prep edge preparation style
- 20-degree chamfers 0.05 mm to 0.1 mm wide

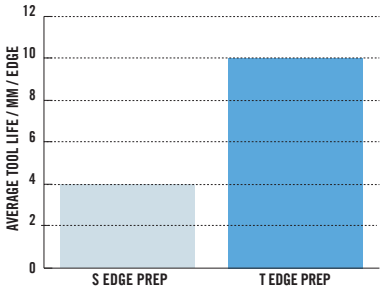
CASE STUDY:

Component:	Spool
Material:	Inconel 718
Surface:	Pre-machined
Operation:	OD Turning, Ramping
Dimension:	ø240 mm, l=600 mm
Insert:	RCGX120700

	TEST 1		TEST 2	
Cutting edge condition:	S01020		T01020	
	Metric	Inch	Metric	Inch
v_c	250 m/min	817 sfm	250 m/min	817 sfm
f	0.24 mm/rev	.009 ipr	0.24 mm/rev	.009 ipr
a_p	0-2.5 mm	0-.098"	0-2.5 mm	0-.098"
Coolant:	170 bar			
RESULT:	**INSERT AFTER TIC 4 MIN**		**INSERT AFTER TIC 10 MIN**	



Note: Pre-machined surface a_p = 0-2.5 mm require a sharp cutting edge (T).



CERAMIC INSERT HOLDERS

Along with the CS100 T-prep inserts, Seco has added N-class holders specifically for ceramic inserts to its product offerings. Compared to carbide or CBN, most ceramic inserts have a different thickness and lack standard mounting holes through their centres. Because of this, the new Seco holders feature special pocket designs and clamping systems to handle ceramics. With almost 50 items in the product line, the holders are available in standard shaft and Seco-Capto styles.

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