

END MILLS • MICRO END MILLS
THREAD MILLS • DRILL MILLS
DRILLS • CHAMFER MILLS
REAMERS • TAPS & DIES
BURS • COUNTERSINKS


2018
PRODUCT CATALOG

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PVD Coatings

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

Why coated tools?

A PVD coating is the best way to customize a cutting tool to the material it's machining. The right coating will let the tool run faster and extend its life. This combination of longer life and greater production will typically more than offset the cost of the coated tool and can contribute significant cost savings on the project at hand.



Physical Vapor Deposition - PVD

There are several methods of PVD, all the coated tools in this offering will achieve their coating by cathodic arc deposition or Arc-PVD. In this process, an electric arc is used to vaporize material from a solid cathode target. The vaporized material then condenses on the tools, forming the even, uniform coatings that you see in the following pages.



The microscopically precise control of the coating thickness on our cutting tools ensures the tools gain the properties of the coating material, without negatively impacting the cutting edge. PVD coatings are harder and more corrosion resistant than other coating and plating processes and also have higher heat tolerances and abrasion resistance.



ALCRO-MAX

ALCRO-MAX is a high performance Coating from the PLATIT coatings family. It is based on AlCrN with a titanium addition. Triple coatings are deposited with 3 sections freely programmed in one batch. ALCRO-MAX has been engineered to give an optimum balance between the toughness of the core layer and the abrasion resistance of the top nano-layer. Titanium's addition reduces the adhesive wear compared to conventional AlCrN coatings, also increasing the micro-hardness up to 3500Hv and stops the crack propagation through the coating. After the coating is applied, it receives a post-polish treatment to smooth out the coating to maximize chip evacuation at even higher speeds and feeds.

Our case histories have shown ALCRO-MAX out performs ALTIN in multiple applications. ALCRO-MAX is recommended for a wider range of materials and exotics including high temp alloys, stainless steels, alloy steels, cast iron, high temp nickel base alloys, titanium alloys, hardened tool steel up to 54 HRC, and inconel. This coating has an excellent thermal and chemical stability. Which means it keeps its mechanical properties at very high temperatures up to 950°C. ALCRO-MAX has the best overall properties of any coating we offer and outperforms all generic coatings available on the market.



Post Polish Treatment

We've adapted a post-coating polish system that buffs our premium ALCRO-MAX coating to a microscopically smooth finish to allow cooler temperatures at higher speeds with better chip evacuation. What does all this mean? A longer lasting, better cutting tool.



Applicable Materials

- Stainless Steels
- Hardened Tool Steels
- Alloyed Steels
- Superalloys
- High Temp Alloys
- Nickel Base Alloys
- Titanium Alloys
- Cast Iron
- Inconel



PVD Coatings

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

ALTIN

ALTIN is a high performance coating for milling, drilling, and tapping. This coating works well in a wide range of materials and exotics including high temp alloys, stainless steels, alloy steels, cast iron, high temp nickel base alloys, titanium alloys, and inconel. ALTIN is extremely heat resistant and can be used with or without coolant. It is exceptional in difficult to machine materials where adhesive wear is particularly high.

TICN

TICN is a general purpose coating used for milling, drilling and tapping in all stainless steels, and a wide variety of other materials. This would be an option when ALTIN cannot be used, as in applications that can't generate the speeds and feeds required for higher cutting temperatures.



Applicable Materials

- Stainless Steels
- Alloyed Steels
- Superalloys
- High Temp Alloys
- Nickel Base Alloys
- Titanium Alloys
- Cast Iron
- Inconel



Applicable Materials

- Steels
- Alloyed Steels
- Superalloys
- Cast Iron
- Aluminium
- Copper
- Bronze
- Brass
- Plastics



ZRN

ZRN is a high performance coating for milling tapping and drilling non-ferrous materials such as aluminum, brass and bronze applications. It prevents edge build up that is typical in soft and sticky materials. This coating allows for higher speed and feed rates as well as prolonged tool life. ZRN does not have an affinity for aluminum.

TIN

TIN is a general purpose coating for drilling and tapping in a wide variety of materials, and generally used in applications with lower cutting speeds.



Applicable Materials

- Aluminium
- Copper
- Bronze
- Brass
- Plastics



Applicable Materials

- Steels
- Cast Iron
- Copper
- Bronze
- Brass
- Plastics













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VI-PRO

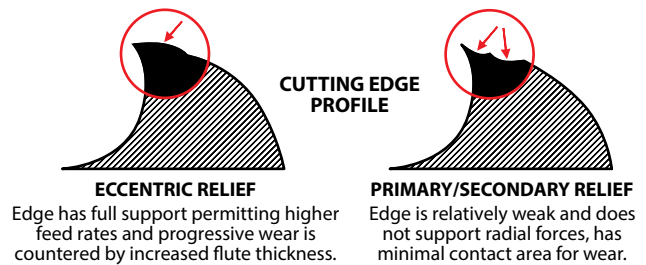
VARIABLE INDEX GEOMETRY

The **VI-PRO** is a High Performance, carbide end mill, that incorporates the ultimate in variable index geometry. Our flute configuration produces a harmonics shift, resulting in minimal chatter and an exceptional finish.

- Post polished ALCRO-MAX coating covers a wide range of materials
- Made in the USA from premium micrograin carbide
- Used in all slotting, roughing, profiling and finishing applications
- High Performance, chatter free machining provides versatility in use for all ferrous materials
- Designed for use in Alloy Steels, Inconel, Cast Iron, Titanium, Stainless Steel, High Temp and all other exotic materials up to 50HRC
- Enables higher SFM and heavier chip loads
- Eccentric Relief on the cutting edge provides enhanced edge strength
- Available in 4, 5 & 6 Flute - Stub, Regular, Long & Extra Long Lengths
- Available in Square End, Ball Nose and various  Corner Radius sizes
- Recommended for slotting up to 1 x Diameter

High-Performance VI-PRO carbide end mill utilizes an Eccentric Relief on the cutting edge that provides enhanced edge strength and a smoother cutting action.

Eccentric Relief vs Primary/Secondary Relief



Why use VI-PRO Corner Radius tools?

- The tools improve productivity and reduce costs.
- A sharp corner of an end mill is its weakest point. The corner radius design strengthens the end mill by reducing chipping and providing longer tool life.
- Extensive offering of Corner Radius tools: Stub, Regular, Long and Extra Long Lengths, with radius starting at 0.008 up to 0.250.

Benefits of Post polishing

ALCRO-MAX by nature of the coating process leaves tiny “droplets” of the coating on the surface of the tool. Proven results have shown that the removal of these droplets provide a smoother tool surface which results in a better cut. Perhaps the most important benefit, is that the tool is able to run at faster feed rates due to the smoothness of the flute area. This results in better chip evacuation and cooler temperatures resulting in longer tool life.



Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



VI-PRO

VARIABLE INDEX GEOMETRY

4 FLUTE - STUB LENGTH - SQUARE END



ALCRO-MAX COATED

VI-PRO DIAMETER	★★★ TOOL ATTRIBUTES ★★★				ROUND SHANK		WELDON FLAT	
	SHANK	LOC	OAL	# OF FLUTES	ITEM#	LIST PRICE	ITEM#	LIST PRICE
1/8	1/8	1/4	1-1/2	4	USA41018	27.01	-	-
3/16	3/16	3/8	2	4	USA41020	34.75	-	-
1/4	1/4	3/8	2	4	USA38924	39.32	-	-
5/16	5/16	7/16	2	4	USA38926	57.20	-	-
3/8	3/8	1/2	2	4	USA38928	63.41	-	-
7/16	7/16	5/8	2-1/2	4	USA41022	82.60	-	-
1/2	1/2	5/8	2-1/2	4	USA38930	94.81	USA38936	100.21
5/8	5/8	3/4	3	4	USA38932	186.66	USA38938	192.05
3/4	3/4	1	3	4	USA38934	246.18	USA38940	251.57

4 FLUTE - REGULAR LENGTH - SQUARE END



ALCRO-MAX COATED

VI-PRO DIAMETER	★★★ TOOL ATTRIBUTES ★★★				ROUND SHANK		WELDON FLAT	
	SHANK	LOC	OAL	# OF FLUTES	ITEM#	LIST PRICE	ITEM#	LIST PRICE
1/8	1/8	1/2	2	4	USA41034	32.27	-	-
3/16	3/16	9/16	2	4	USA41036	36.89	-	-
1/4	1/4	3/4	2-1/2	4	USA39012	46.82	-	-
5/16	5/16	13/16	2-1/2	4	USA39014	62.00	-	-
3/8	3/8	1	2-1/2	4	USA39016	72.63	-	-
7/16	7/16	1	2-3/4	4	USA41038	90.07	-	-
1/2	1/2	1	3	4	USA39018	108.95	USA39028	114.35
1/2	1/2	1-1/4	3	4	USA39020	108.95	USA39030	114.35
5/8	5/8	1-5/8	3-1/2	4	USA39022	197.23	USA39032	202.63
3/4	3/4	1-5/8	4	4	USA39024	272.51	USA39034	277.91
1	1	2	4	4	USA39026	508.70	USA39036	514.10

The VI-PRO performs very well in a wide range of materials including:

HIGH TEMP ALLOYS • STAINLESS STEELS • ALLOY STEELS • INCONEL
CAST IRON • HIGH TEMP NICKEL BASE ALLOYS • TITANIUM ALLOYS • EXOTICS

For coating information see page 5. For VI-PRO technical information, please see pages 215-217.

TOLERANCES	DIAMETER	SHANK
1/8" - 1/2"	+ .000, -.002	-.0001, -.0004 ISO H6
5/8" - 1"	+ .000, -.003	-.0001, -.0004 ISO H6

VI-PRO - 4 FLUTE

VI-PRO - 5 FLUTE

VI-PRO - 6 FLUTE

THREAD MILLS

Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



VI-PRO VARIABLE INDEX GEOMETRY

4 FLUTE - LONG LENGTH - SQUARE END



ALCRO-MAX COATED

VI-PRO DIAMETER	★★★ TOOL ATTRIBUTES ★★★				ROUND SHANK		WELDON FLAT	
	SHANK	LOC	OAL	# OF FLUTES	ITEM#	LIST PRICE	ITEM#	LIST PRICE
1/4	1/4	1-1/8	3	4	USA39288	53.32	-	-
5/16	5/16	1-1/8	3	4	USA39290	73.77	-	-
3/8	3/8	1-1/4	3	4	USA39292	99.08	-	-
7/16	7/16	2	4	4	USA41066	125.67	-	-
1/2	1/2	1-1/2	4	4	USA39294	136.80	USA39304	142.19
1/2	1/2	2	4	4	USA39296	151.69	USA39306	157.08
5/8	5/8	2-1/4	5	4	USA39298	282.12	USA39308	287.51
3/4	3/4	2-1/4	5	4	USA39300	341.37	USA39310	346.76
1	1	2-1/4	5	4	USA39302	562.61	USA39312	568.01

4 FLUTE - EXTRA LONG LENGTH - SQUARE END



ALCRO-MAX COATED

VI-PRO DIAMETER	★★★ TOOL ATTRIBUTES ★★★				ROUND SHANK		WELDON FLAT	
	SHANK	LOC	OAL	# OF FLUTES	ITEM#	LIST PRICE	ITEM#	LIST PRICE
1/4	1/4	1-1/2	4	4	USA39446	63.70	-	-
3/8	3/8	2	4	4	USA39448	111.65	-	-
7/16	7/16	3	6	4	USA41078	183.07	-	-
1/2	1/2	3	6	4	USA39450	213.91	USA39462	219.30
5/8	5/8	3	6	4	USA39452	304.24	USA39464	309.64
3/4	3/4	3	6	4	USA39454	401.59	USA39466	406.99
3/4	3/4	4	7	4	USA39456	659.48	USA39468	664.87
1	1	3	6	4	USA39458	654.73	USA39470	660.12
1	1	4-1/4	7	4	USA39460	966.51	USA39472	972.30

The VI-PRO performs very well in a wide range of materials including:

HIGH TEMP ALLOYS • STAINLESS STEELS • ALLOY STEELS • INCONEL
CAST IRON • HIGH TEMP NICKEL BASE ALLOYS • TITANIUM ALLOYS • EXOTICS

For coating information see page 5. For VI-PRO technical information, please see pages 215-217.

TOLERANCES	DIAMETER	SHANK
1/4" - 1/2"	+ .000, -.002	-.0001, -.0004 ISO H6
5/8" - 1"	+ .000, -.003	-.0001, -.0004 ISO H6

Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



VI-PRO

VARIABLE INDEX GEOMETRY

4 FLUTE - STUB LENGTH -  CORNER RADIUS



ALCRO-MAX COATED

VI-PRO DIAMETER	★★★ TOOL ATTRIBUTES ★★★					ROUND SHANK		WELDON FLAT	
	SHANK	LOC	OAL	# OF FLUTES	RAD	ITEM#	LIST PRICE	ITEM#	LIST PRICE
1/8	1/8	1/4	1-1/2	4	0.008	USA41026	31.13	-	-
3/16	3/16	3/8	2	4	0.008	USA41028	38.87	-	-
1/4	1/4	3/8	2	4	0.015	USA38964	45.82	-	-
5/16	5/16	7/16	2	4	0.015	USA38966	61.68	-	-
3/8	3/8	1/2	2	4	0.015	USA38968	67.88	-	-
7/16	7/16	5/8	2-1/2	4	0.030	USA41030	86.99	-	-
1/2	1/2	5/8	2-1/2	4	0.030	USA38970	103.77	USA38976	109.17
5/8	5/8	3/4	3	4	0.030	USA38972	195.61	USA38978	201.01
3/4	3/4	1	3	4	0.030	USA38974	255.13	USA38980	260.53



All our tools are 100% Made in the USA

The VI-PRO performs very well in a wide range of materials including:
 HIGH TEMP ALLOYS • STAINLESS STEELS • ALLOY STEELS • INCONEL
 CAST IRON • HIGH TEMP NICKEL BASE ALLOYS • TITANIUM ALLOYS • EXOTICS

For coating information see page 5. For VI-PRO technical information, please see pages 215-217.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+ .000, -.002	-.0001, -.0004 ISO H6	+ .001, -.001
5/8" - 3/4"	+ .000, -.003	-.0001, -.0004 ISO H6	+ .001, -.001

VI-PRO - 4 FLUTE

VI-PRO - 5 FLUTE

VI-PRO - 6 FLUTE

THREAD MILLS

Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



4 FLUTE - REGULAR LENGTH -  CORNER RADIUS



ALCRO-MAX COATED

VI-PRO DIAMETER	★★★ TOOL ATTRIBUTES ★★★					ROUND SHANK		WELDON FLAT	
	SHANK	LOC	OAL	# OF FLUTES	RAD	ITEM#	LIST PRICE	ITEM#	LIST PRICE
1/8	1/8	1/2	2	4	0.010	USA41046	36.39	-	-
1/8	1/8	1/2	2	4	0.020	USA41048	36.39	-	-
1/8	1/8	1/2	2	4	0.030	USA41050	36.39	-	-
3/16	3/16	9/16	2	4	0.010	USA41052	41.01	-	-
3/16	3/16	9/16	2	4	0.020	USA41054	41.01	-	-
3/16	3/16	9/16	2	4	0.030	USA41056	41.01	-	-
1/4	1/4	3/4	2-1/2	4	0.015	USA39156	50.94	-	-
1/4	1/4	3/4	2-1/2	4	0.030	USA39158	50.94	-	-
1/4	1/4	3/4	2-1/2	4	0.060	USA39160	50.94	-	-
5/16	5/16	13/16	2-1/2	4	0.015	USA39162	65.62	-	-
5/16	5/16	13/16	2-1/2	4	0.030	USA39164	65.62	-	-
5/16	5/16	13/16	2-1/2	4	0.060	USA39166	65.62	-	-
3/8	3/8	1	2-1/2	4	0.015	USA39168	76.63	-	-
3/8	3/8	1	2-1/2	4	0.030	USA39170	76.63	-	-
3/8	3/8	1	2-1/2	4	0.060	USA39172	76.63	-	-
7/16	7/16	1	2-3/4	4	0.015	USA41058	100.00	-	-
7/16	7/16	1	2-3/4	4	0.030	USA41060	100.00	-	-
7/16	7/16	1	2-3/4	4	0.060	USA41062	100.00	-	-
1/2	1/2	1	3	4	0.015	USA39174	122.42	USA39218	128.54
1/2	1/2	1	3	4	0.030	USA39176	122.42	USA39220	128.54
1/2	1/2	1	3	4	0.060	USA39178	122.42	USA39222	128.54
1/2	1/2	1	3	4	0.090	USA39180	122.42	USA39224	128.54
1/2	1/2	1	3	4	0.120	USA39182	122.42	USA39226	128.54
1/2	1/2	1-1/4	3	4	0.015	USA39184	122.42	USA39228	128.54
1/2	1/2	1-1/4	3	4	0.030	USA39186	122.42	USA39230	128.54
1/2	1/2	1-1/4	3	4	0.060	USA39188	122.42	USA39232	128.54
1/2	1/2	1-1/4	3	4	0.090	USA39190	122.42	USA39234	128.54
1/2	1/2	1-1/4	3	4	0.120	USA39192	122.42	USA39236	128.54
5/8	5/8	1-5/8	3-1/2	4	0.030	USA39194	206.24	USA39238	211.64
5/8	5/8	1-5/8	3-1/2	4	0.060	USA39196	206.24	USA39240	211.64
5/8	5/8	1-5/8	3-1/2	4	0.090	USA39198	206.24	USA39242	211.64
5/8	5/8	1-5/8	3-1/2	4	0.120	USA39200	206.24	USA39244	211.64
3/4	3/4	1-5/8	4	4	0.030	USA39202	286.00	USA39246	291.40
3/4	3/4	1-5/8	4	4	0.060	USA39204	286.00	USA39248	291.40
3/4	3/4	1-5/8	4	4	0.090	USA39206	286.00	USA39250	291.40
3/4	3/4	1-5/8	4	4	0.120	USA39208	286.00	USA39252	291.40
3/4	3/4	1-5/8	4	4	0.190	USA41782	286.00	USA41790	291.40
3/4	3/4	1-5/8	4	4	0.250	USA41784	286.00	USA41792	291.40
1	1	2	4	4	0.030	USA39210	522.20	USA39254	527.59
1	1	2	4	4	0.060	USA39212	522.20	USA39256	527.59
1	1	2	4	4	0.090	USA39214	522.20	USA39258	527.59
1	1	2	4	4	0.120	USA39216	522.20	USA39260	527.59
1	1	2	4	4	0.190	USA41786	522.20	USA41794	527.59
1	1	2	4	4	0.250	USA41788	522.20	USA41796	527.59

VI-PRO - 4 FLUTE

VI-PRO - 5 FLUTE

VI-PRO - 6 FLUTE

THREAD MILLS

For coating information see page 5. For VI-PRO technical information, please see pages 215-217.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.00, -.002	-.0001, -.0004 ISO H6	+0.001, -.001
5/8" - 3/4"	+0.00, -.003	-.0001, -.0004 ISO H6	+0.001, -.001



Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

VI-PRO VARIABLE INDEX GEOMETRY

4 FLUTE - LONG LENGTH - CORNER RADIUS



ALCRO-MAX COATED

VI-PRO DIAMETER	★★★ TOOL ATTRIBUTES ★★★					ROUND SHANK		WELDON FLAT	
	SHANK	LOC	OAL	# OF FLUTES	RAD	ITEM #	LIST PRICE	ITEM #	LIST PRICE
1/4	1/4	1-1/8	3	4	0.015	USA39366	57.44	-	-
1/4	1/4	1-1/8	3	4	0.030	USA39368	57.44	-	-
5/16	5/16	1-1/8	3	4	0.015	USA39370	78.25	-	-
5/16	5/16	1-1/8	3	4	0.030	USA39372	78.25	-	-
3/8	3/8	1-1/4	3	4	0.030	USA39374	103.55	-	-
3/8	3/8	1-1/4	3	4	0.060	USA39376	103.55	-	-
7/16	7/16	2	4	4	0.030	USA41072	133.00	-	-
7/16	7/16	2	4	4	0.060	USA41074	133.00	-	-
1/2	1/2	1-1/2	4	4	0.030	USA39378	145.75	USA39398	151.15
1/2	1/2	1-1/2	4	4	0.060	USA39380	145.75	USA39400	151.15
1/2	1/2	2	4	4	0.030	USA39382	160.65	USA39402	166.04
1/2	1/2	2	4	4	0.060	USA39384	160.65	USA39404	166.04
5/8	5/8	2-1/4	5	4	0.030	USA39386	291.07	USA39406	296.47
5/8	5/8	2-1/4	5	4	0.060	USA39388	291.07	USA39408	296.47
3/4	3/4	2-1/4	5	4	0.030	USA39390	366.54	USA39410	373.56
3/4	3/4	2-1/4	5	4	0.060	USA39392	366.54	USA39412	373.56
1	1	2-1/4	5	4	0.030	USA39394	571.57	USA39414	576.97
1	1	2-1/4	5	4	0.060	USA39396	571.57	USA39416	576.97



PVD coatings increase cutting tool performance

The VI-PRO performs very well in a wide range of materials including:
 HIGH TEMP ALLOYS • STAINLESS STEELS • ALLOY STEELS • INCONEL
 CAST IRON • HIGH TEMP NICKEL BASE ALLOYS • TITANIUM ALLOYS • EXOTICS

For coating information see page 5. For VI-PRO technical information, please see pages 215-217.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/4" - 1/2"	+0.00, -.002	-.0001, -.0004 ISO H6	+0.01, -.001
5/8" - 1"	+0.00, -.003	-.0001, -.0004 ISO H6	+0.01, -.001

VI-PRO - 4 FLUTE

VI-PRO - 5 FLUTE

VI-PRO - 6 FLUTE

THREAD MILLS


Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



VI-PRO

VARIABLE INDEX GEOMETRY

4 FLUTE - EXTRA LONG LENGTH -  CORNER RADIUS



ALCRO-MAX COATED

VI-PRO DIAMETER	★★★ TOOL ATTRIBUTES ★★★					ROUND SHANK		WELDON FLAT	
	SHANK	LOC	OAL	# OF FLUTES	RAD	ITEM #	LIST PRICE	ITEM #	LIST PRICE
1/4	1/4	1-1/2	4	4	0.015	USA39530	69.90	-	-
1/4	1/4	1-1/2	4	4	0.030	USA39532	69.90	-	-
3/8	3/8	2	4	4	0.030	USA39534	118.39	-	-
3/8	3/8	2	4	4	0.060	USA39536	118.39	-	-
7/16	7/16	3	6	4	0.030	USA41084	187.51	-	-
7/16	7/16	3	6	4	0.060	USA41086	187.51	-	-
1/2	1/2	3	6	4	0.030	USA39538	220.65	USA39562	226.05
1/2	1/2	3	6	4	0.060	USA39540	220.65	USA39564	226.05
5/8	5/8	3	6	4	0.030	USA39542	310.93	USA39566	316.33
5/8	5/8	3	6	4	0.060	USA39544	310.93	USA39568	316.33
3/4	3/4	3	6	4	0.030	USA39546	410.55	USA39570	415.94
3/4	3/4	3	6	4	0.060	USA39548	410.55	USA39572	415.94
3/4	3/4	4	7	4	0.030	USA39550	668.43	USA39574	673.83
3/4	3/4	4	7	4	0.060	USA39552	668.43	USA39576	673.83
1	1	3	6	4	0.030	USA39554	672.00	USA39578	677.39
1	1	3	6	4	0.060	USA39556	672.00	USA39580	677.39
1	1	4-1/4	7	4	0.030	USA39558	975.77	USA39582	981.56
1	1	4-1/4	7	4	0.060	USA39560	975.77	USA39584	981.56



Premium packaging for all our High Performance tools

The VI-PRO performs very well in a wide range of materials including:

HIGH TEMP ALLOYS • STAINLESS STEELS • ALLOY STEELS • INCONEL
CAST IRON • HIGH TEMP NICKEL BASE ALLOYS • TITANIUM ALLOYS • EXOTICS

For coating information see page 5. For VI-PRO technical information, please see pages 215-217.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/4" - 1/2"	+ .000, -.002	-.0001, -.0004 ISO H6	+ .001, -.001
5/8" - 1"	+ .000, -.003	-.0001, -.0004 ISO H6	+ .001, -.001



Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



4 FLUTE - STUB LENGTH - BALL NOSE



ALCRO-MAX COATED

VI-PRO DIAMETER	★★★ TOOL ATTRIBUTES ★★★				ROUND SHANK		WELDON FLAT	
	SHANK	LOC	OAL	# OF FLUTES	ITEM #	LIST PRICE	ITEM #	LIST PRICE
1/8	1/8	1/4	1-1/2	4	USA41090	31.16	-	-
3/16	3/16	3/8	2	4	USA41092	44.52	-	-
1/4	1/4	3/8	2	4	USA40822	50.60	-	-
5/16	5/16	7/16	2	4	USA40824	66.00	-	-
3/8	3/8	1/2	2	4	USA40826	73.16	-	-
7/16	7/16	5/8	2-1/2	4	USA41094	98.50	-	-
1/2	1/2	5/8	2-1/2	4	USA40828	109.40	USA40834	115.62
5/8	5/8	3/4	3	4	USA40830	215.37	USA40836	221.60
3/4	3/4	1	3	4	USA40832	284.05	USA40838	290.27

4 FLUTE - REGULAR LENGTH - BALL NOSE



ALCRO-MAX COATED

VI-PRO DIAMETER	★★★ TOOL ATTRIBUTES ★★★				ROUND SHANK		WELDON FLAT	
	SHANK	LOC	OAL	# OF FLUTES	ITEM #	LIST PRICE	ITEM #	LIST PRICE
1/8	1/8	1/2	2	4	USA41098	44.32	-	-
3/16	3/16	9/16	2	4	USA41100	48.99	-	-
1/4	1/4	3/4	2-1/2	4	USA40870	59.12	-	-
5/16	5/16	13/16	2-1/2	4	USA40872	71.55	-	-
3/8	3/8	1	2-1/2	4	USA40874	83.81	-	-
7/16	7/16	1	2-3/4	4	USA41102	114.64	-	-
1/2	1/2	1	3	4	USA40876	125.72	USA40886	131.94
1/2	1/2	1-1/4	3	4	USA40878	125.72	USA40888	131.94
5/8	5/8	1-5/8	3-1/2	4	USA40880	227.58	USA40890	233.81
3/4	3/4	1-5/8	4	4	USA40882	314.43	USA40892	320.66
1	1	2	4	4	USA40884	586.97	USA40894	593.19

The VI-PRO performs very well in a wide range of materials including:
 HIGH TEMP ALLOYS • STAINLESS STEELS • ALLOY STEELS • INCONEL
 CAST IRON • HIGH TEMP NICKEL BASE ALLOYS • TITANIUM ALLOYS • EXOTICS

For coating information see page 5. For VI-PRO technical information, please see pages 215-217.

TOLERANCES	DIAMETER	SHANK
1/8" - 1/2"	+ .000, -.002	-.0001, -.0004 ISO H6
5/8" - 1"	+ .000, -.003	-.0001, -.0004 ISO H6

VI-PRO - 4 FLUTE

VI-PRO - 5 FLUTE

VI-PRO - 6 FLUTE

THREAD MILLS

Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



VI-PRO

VARIABLE INDEX GEOMETRY

4 FLUTE - LONG LENGTH - BALL NOSE



ALCRO-MAX COATED

VI-PRO DIAMETER	★★★ TOOL ATTRIBUTES ★★★				ROUND SHANK		WELDON FLAT	
	SHANK	LOC	OAL	# OF FLUTES	ITEM#	LIST PRICE	ITEM#	LIST PRICE
1/4	1/4	1-1/8	3	4	USA40922	61.52	-	-
5/16	5/16	1-1/8	3	4	USA40924	85.12	-	-
3/8	3/8	1-1/4	3	4	USA40926	114.31	-	-
7/16	7/16	2	4	4	USA41106	142.46	-	-
1/2	1/2	1-1/2	4	4	USA40928	157.84	USA40938	164.06
1/2	1/2	2	4	4	USA40930	175.03	USA40940	181.25
5/8	5/8	2-1/4	5	4	USA40932	325.52	USA40942	331.74
3/4	3/4	2-1/4	5	4	USA40934	393.89	USA40944	400.11
1	1	2-1/4	5	4	USA40936	649.17	USA40946	655.39

4 FLUTE - EXTRA LONG LENGTH - BALL NOSE



ALCRO-MAX COATED

VI-PRO DIAMETER	★★★ TOOL ATTRIBUTES ★★★				ROUND SHANK		WELDON FLAT	
	SHANK	LOC	OAL	# OF FLUTES	ITEM#	LIST PRICE	ITEM#	LIST PRICE
1/4	1/4	1-1/2	4	4	USA40976	88.89	-	-
3/8	3/8	2	4	4	USA40978	128.83	-	-
7/16	7/16	3	6	4	USA41110	211.25	-	-
1/2	1/2	3	6	4	USA40980	246.81	USA40992	253.04
5/8	5/8	3	6	4	USA40982	351.04	USA40994	357.28
3/4	3/4	3	6	4	USA40984	463.38	USA40996	469.60
3/4	3/4	4	7	4	USA40986	760.93	USA40998	767.17
1	1	3	6	4	USA40988	755.45	USA41000	761.68
1	1	4-1/4	7	4	USA40990	1115.20	USA41002	1121.88

The VI-PRO performs very well in a wide range of materials including:

HIGH TEMP ALLOYS • STAINLESS STEELS • ALLOY STEELS • INCONEL
CAST IRON • HIGH TEMP NICKEL BASE ALLOYS • TITANIUM ALLOYS • EXOTICS

For coating information see page 5. For VI-PRO technical information, please see pages 215-217.

TOLERANCES	DIAMETER	SHANK
1/4" - 1/2"	+ .000, -.002	-.0001, -.0004 ISO H6
5/8" - 1"	+ .000, -.003	-.0001, -.0004 ISO H6



Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



5 FLUTE - STUB LENGTH - SQUARE END



ALCRO-MAX COATED

VI-PRO DIAMETER	★★★ TOOL ATTRIBUTES ★★★				ROUND SHANK		WELDON FLAT	
	SHANK	LOC	OAL	# OF FLUTES	ITEM #	LIST PRICE	ITEM #	LIST PRICE
1/8	1/8	1/4	1-1/2	5	USA41112	29.70	-	-
3/16	3/16	3/8	2	5	USA41114	38.22	-	-
1/4	1/4	3/8	2	5	USA40732	43.25	-	-
5/16	5/16	7/16	2	5	USA40734	62.92	-	-
3/8	3/8	1/2	2	5	USA40736	69.75	-	-
1/2	1/2	5/8	2-1/2	5	USA40738	104.29	USA40744	110.22
5/8	5/8	3/4	3	5	USA40740	205.32	USA40746	211.26
3/4	3/4	1	3	5	USA40742	270.79	USA40748	276.73

5 FLUTE - REGULAR LENGTH - SQUARE END



ALCRO-MAX COATED

VI-PRO DIAMETER	★★★ TOOL ATTRIBUTES ★★★				ROUND SHANK		WELDON FLAT	
	SHANK	LOC	OAL	# OF FLUTES	ITEM #	LIST PRICE	ITEM #	LIST PRICE
1/8	1/8	1/2	2	5	USA41116	35.50	-	-
3/16	3/16	9/16	2	5	USA41118	40.58	-	-
1/4	1/4	3/4	2-1/2	5	USA40576	51.51	-	-
5/16	5/16	13/16	2-1/2	5	USA40578	68.21	-	-
3/8	3/8	1	2-1/2	5	USA40580	79.90	-	-
1/2	1/2	1	3	5	USA40582	119.85	USA40592	125.79
1/2	1/2	1-1/4	3	5	USA40584	119.85	USA40594	125.79
5/8	5/8	1-5/8	3-1/2	5	USA40586	216.96	USA40596	222.90
3/4	3/4	1-5/8	4	5	USA40588	299.76	USA40598	305.69
1	1	2	4	5	USA40590	559.58	USA40600	565.52

The VI-PRO performs very well in a wide range of materials including:
 HIGH TEMP ALLOYS • STAINLESS STEELS • ALLOY STEELS • INCONEL
 CAST IRON • HIGH TEMP NICKEL BASE ALLOYS • TITANIUM ALLOYS • EXOTICS

For coating information see page 5. For VI-PRO technical information, please see pages 215, 218-219.

TOLERANCES	DIAMETER	SHANK
1/8" - 1/2"	+0.000, -0.002	-0.0001, -.0004 ISO H6
5/8" - 1"	+0.000, -.003	-0.0001, -.0004 ISO H6

VI-PRO - 4 FLUTE

VI-PRO - 5 FLUTE

VI-PRO - 6 FLUTE

THREAD MILLS

Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



VI-PRO

VARIABLE INDEX GEOMETRY

5 FLUTE - LONG LENGTH - SQUARE END



ALCRO-MAX COATED

VI-PRO DIAMETER	★★★ TOOL ATTRIBUTES ★★★				ROUND SHANK		WELDON FLAT	
	SHANK	LOC	OAL	# OF FLUTES	ITEM#	LIST PRICE	ITEM#	LIST PRICE
1/4	1/4	1-1/8	3	5	USA40628	58.65	-	-
5/16	5/16	1-1/8	3	5	USA40630	81.14	-	-
3/8	3/8	1-1/4	3	5	USA40632	108.98	-	-
1/2	1/2	1-1/2	4	5	USA40634	150.47	USA40644	156.40
1/2	1/2	2	4	5	USA40636	166.86	USA40646	172.79
5/8	5/8	2-1/4	5	5	USA40638	310.32	USA40648	316.26
3/4	3/4	2-1/4	5	5	USA40640	375.50	USA40650	381.44
1	1	2-1/4	5	5	USA40642	618.88	USA40652	624.80

5 FLUTE - EXTRA LONG LENGTH - SQUARE END



ALCRO-MAX COATED

VI-PRO DIAMETER	★★★ TOOL ATTRIBUTES ★★★				ROUND SHANK		WELDON FLAT	
	SHANK	LOC	OAL	# OF FLUTES	ITEM#	LIST PRICE	ITEM#	LIST PRICE
1/4	1/4	1-1/2	4	5	USA40682	70.06	-	-
3/8	3/8	2	4	5	USA40684	122.82	-	-
1/2	1/2	3	6	5	USA40686	235.30	USA40698	241.23
5/8	5/8	3	6	5	USA40688	334.66	USA40700	340.60
3/4	3/4	3	6	5	USA40690	441.76	USA40702	447.68
3/4	3/4	4	7	5	USA40692	725.41	USA40704	731.36
1	1	3	6	5	USA40694	720.19	USA40706	726.13
1	1	4-1/4	7	5	USA40696	1063.16	USA40708	1069.53

The VI-PRO performs very well in a wide range of materials including:
 HIGH TEMP ALLOYS • STAINLESS STEELS • ALLOY STEELS • INCONEL
 CAST IRON • HIGH TEMP NICKEL BASE ALLOYS • TITANIUM ALLOYS • EXOTICS

For coating information see page 5. For VI-PRO technical information, please see pages 215, 218-219.

TOLERANCES	DIAMETER	SHANK
1/4" - 1/2"	+0.000, -0.002	-0.0001, -.0004 ISO H6
5/8" - 1"	+0.000, -0.003	-0.0001, -.0004 ISO H6

VI-PRO - 4 FLUTE

VI-PRO - 5 FLUTE

VI-PRO - 6 FLUTE

THREAD MILLS



Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

VI-PRO

VARIABLE INDEX GEOMETRY

5 FLUTE - STUB LENGTH -  CORNER RADIUS



ALCRO-MAX COATED

VI-PRO DIAMETER	★★★ TOOL ATTRIBUTES ★★★					ROUND SHANK		WELDON FLAT	
	SHANK	LOC	OAL	# OF FLUTES	RAD	ITEM #	LIST PRICE	ITEM #	LIST PRICE
1/8	1/8	1/4	1-1/2	5	0.008	USA41120	34.24	-	-
3/16	3/16	3/8	2	5	0.008	USA41122	42.76	-	-
1/4	1/4	3/8	2	5	0.015	USA40772	50.41	-	-
5/16	5/16	7/16	2	5	0.015	USA40774	67.85	-	-
3/8	3/8	1/2	2	5	0.015	USA40776	74.68	-	-
1/2	1/2	5/8	2-1/2	5	0.030	USA40778	114.15	USA40784	120.08
5/8	5/8	3/4	3	5	0.030	USA40780	215.18	USA40786	221.11
3/4	3/4	1	3	5	0.030	USA40782	280.65	USA40788	286.58



The VI-PRO 5 Flute Stub Length comes in 3 radius sizes; 0.008, 0.015, 0.030

The VI-PRO performs very well in a wide range of materials including:
 HIGH TEMP ALLOYS • STAINLESS STEELS • ALLOY STEELS • INCONEL
 CAST IRON • HIGH TEMP NICKEL BASE ALLOYS • TITANIUM ALLOYS • EXOTICS

For coating information see page 5. For VI-PRO technical information, please see pages 215, 218-219.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.00, -.002	-.0001, -.0004 ISO H6	+0.01, -.001
5/8" - 3/4"	+0.00, -.003	-.0001, -.0004 ISO H6	+0.01, -.001

VI-PRO - 4 FLUTE

VI-PRO - 5 FLUTE

VI-PRO - 6 FLUTE

THREAD MILLS

Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



5 FLUTE - REGULAR LENGTH - CORNER RADIUS



ALCRO-MAX COATED

VI-PRO DIAMETER	★★★ TOOL ATTRIBUTES ★★★					ROUND SHANK		WELDON FLAT	
	SHANK	LOC	OAL	# OF FLUTES	RAD	ITEM #	LIST PRICE	ITEM #	LIST PRICE
1/4	1/4	3/4	2-1/2	5	0.015	USA39692	56.03	-	-
1/4	1/4	3/4	2-1/2	5	0.030	USA39694	56.03	-	-
1/4	1/4	3/4	2-1/2	5	0.060	USA39696	56.03	-	-
5/16	5/16	13/16	2-1/2	5	0.015	USA39698	72.18	-	-
5/16	5/16	13/16	2-1/2	5	0.030	USA39700	72.18	-	-
5/16	5/16	13/16	2-1/2	5	0.060	USA39702	72.18	-	-
3/8	3/8	1	2-1/2	5	0.015	USA39704	84.29	-	-
3/8	3/8	1	2-1/2	5	0.030	USA39706	84.29	-	-
3/8	3/8	1	2-1/2	5	0.060	USA39708	84.29	-	-
1/2	1/2	1	3	5	0.015	USA39710	134.66	USA39754	141.39
1/2	1/2	1	3	5	0.030	USA39712	134.66	USA39756	141.39
1/2	1/2	1	3	5	0.060	USA39714	134.66	USA39758	141.39
1/2	1/2	1	3	5	0.090	USA39716	134.66	USA39760	141.39
1/2	1/2	1	3	5	0.120	USA39718	134.66	USA39762	141.39
1/2	1/2	1-1/4	3	5	0.015	USA39720	134.66	USA39764	141.39
1/2	1/2	1-1/4	3	5	0.030	USA39722	134.66	USA39766	141.39
1/2	1/2	1-1/4	3	5	0.060	USA39724	134.66	USA39768	141.39
1/2	1/2	1-1/4	3	5	0.090	USA39726	134.66	USA39770	141.39
1/2	1/2	1-1/4	3	5	0.120	USA39728	134.66	USA39772	141.39
5/8	5/8	1-5/8	3-1/2	5	0.030	USA39730	226.87	USA39774	232.81
5/8	5/8	1-5/8	3-1/2	5	0.060	USA39732	226.87	USA39776	232.81
5/8	5/8	1-5/8	3-1/2	5	0.090	USA39734	226.87	USA39778	232.81
5/8	5/8	1-5/8	3-1/2	5	0.120	USA39736	226.87	USA39780	232.81
3/4	3/4	1-5/8	4	5	0.030	USA39738	314.60	USA39782	320.54
3/4	3/4	1-5/8	4	5	0.060	USA39740	314.60	USA39784	320.54
3/4	3/4	1-5/8	4	5	0.090	USA39742	314.60	USA39786	320.54
3/4	3/4	1-5/8	4	5	0.120	USA39744	314.60	USA39788	320.54
3/4	3/4	1-5/8	4	5	0.190	USA41814	314.60	USA41822	320.54
3/4	3/4	1-5/8	4	5	0.250	USA41816	314.60	USA41824	320.54
1	1	2	4	5	0.030	USA39746	574.41	USA39790	580.35
1	1	2	4	5	0.060	USA39748	574.41	USA39792	580.35
1	1	2	4	5	0.090	USA39750	574.41	USA39794	580.35
1	1	2	4	5	0.120	USA39752	574.41	USA39796	580.35
1	1	2	4	5	0.190	USA41818	574.41	USA41826	580.35
1	1	2	4	5	0.250	USA41820	574.41	USA41828	580.35

The VI-PRO performs very well in a wide range of materials including:

HIGH TEMP ALLOYS • STAINLESS STEELS • ALLOY STEELS • INCONEL
CAST IRON • HIGH TEMP NICKEL BASE ALLOYS • TITANIUM ALLOYS • EXOTICS

For coating information see page 5. For VI-PRO technical information, please see pages 215, 218-219.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/4" - 1/2"	+ .000, -.002	-.0001, -.0004 ISO H6	+ .001, -.001
5/8" - 1"	+ .000, -.003	-.0001, -.0004 ISO H6	+ .001, -.001



Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

VI-PRO

VARIABLE INDEX GEOMETRY

5 FLUTE - LONG LENGTH -  CORNER RADIUS



ALCRO-MAX COATED

VI-PRO DIAMETER	★★★ TOOL ATTRIBUTES ★★★					ROUND SHANK		WELDON FLAT	
	SHANK	LOC	OAL	# OF FLUTES	RAD	ITEM #	LIST PRICE	ITEM #	LIST PRICE
1/4	1/4	1-1/8	3	5	0.015	USA39842	63.18	-	-
1/4	1/4	1-1/8	3	5	0.030	USA39844	63.18	-	-
5/16	5/16	1-1/8	3	5	0.015	USA39846	86.07	-	-
5/16	5/16	1-1/8	3	5	0.030	USA39848	86.07	-	-
3/8	3/8	1-1/4	3	5	0.030	USA39850	113.91	-	-
3/8	3/8	1-1/4	3	5	0.060	USA39852	113.91	-	-
1/2	1/2	2	4	5	0.030	USA39854	176.71	USA39870	182.65
1/2	1/2	2	4	5	0.060	USA39856	176.71	USA39872	182.65
5/8	5/8	2-1/4	5	5	0.030	USA39858	320.18	USA39874	326.12
5/8	5/8	2-1/4	5	5	0.060	USA39860	320.18	USA39876	326.12
3/4	3/4	2-1/4	5	5	0.030	USA39862	403.19	USA39878	410.91
3/4	3/4	2-1/4	5	5	0.060	USA39864	403.19	USA39880	410.91
1	1	2-1/4	5	5	0.030	USA39866	628.73	USA39882	634.66
1	1	2-1/4	5	5	0.060	USA39868	628.73	USA39884	634.66



Prepared tools in the state-of-the-art PVD Coating Center

For coating information see page 5. For VI-PRO technical information, please see pages 215, 218-219.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/4" - 1/2"	+0.00, -.002	-.0001, -.0004 ISO H6	+0.01, -.001
5/8" - 1"	+0.00, -.003	-.0001, -.0004 ISO H6	+0.01, -.001

VI-PRO - 4 FLUTE

VI-PRO - 5 FLUTE

VI-PRO - 6 FLUTE

THREAD MILLS

Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



VI-PRO

VARIABLE INDEX GEOMETRY

5 FLUTE - EXTRA LONG LENGTH -  CORNER RADIUS



ALCRO-MAX COATED

VI-PRO DIAMETER	★★★ TOOL ATTRIBUTES ★★★					ROUND SHANK		WELDON FLAT	
	SHANK	LOC	OAL	# OF FLUTES	RAD	ITEM #	LIST PRICE	ITEM #	LIST PRICE
1/4	1/4	1-1/2	4	5	0.015	USA39942	76.89	-	-
1/4	1/4	1-1/2	4	5	0.030	USA39944	76.89	-	-
3/8	3/8	2	4	5	0.030	USA39946	130.23	-	-
3/8	3/8	2	4	5	0.060	USA39948	130.23	-	-
1/2	1/2	3	6	5	0.030	USA39950	242.72	USA39974	248.65
1/2	1/2	3	6	5	0.060	USA39952	242.72	USA39976	248.65
5/8	5/8	3	6	5	0.030	USA39954	342.03	USA39978	347.96
5/8	5/8	3	6	5	0.060	USA39956	342.03	USA39980	347.96
3/4	3/4	3	6	5	0.030	USA39958	451.60	USA39982	457.54
3/4	3/4	3	6	5	0.060	USA39960	451.60	USA39984	457.54
3/4	3/4	4	7	5	0.030	USA39962	735.28	USA39986	741.21
3/4	3/4	4	7	5	0.060	USA39964	735.28	USA39988	741.21
1	1	3	6	5	0.030	USA39966	739.19	USA39990	745.13
1	1	3	6	5	0.060	USA39968	739.19	USA39992	745.13
1	1	4-1/4	7	5	0.030	USA39970	1073.35	USA39994	1079.71
1	1	4-1/4	7	5	0.060	USA39972	1073.35	USA39996	1079.71

VI-PRO - 4 FLUTE

VI-PRO - 5 FLUTE



Over 13,000 items in stock and ready to ship

For coating information see page 5. For VI-PRO technical information, please see pages 215, 218-219.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/4" - 1/2"	+0.00, -.002	-.0001, -.0004 ISO H6	+0.01, -.001
5/8" - 1"	+0.00, -.003	-.0001, -.0004 ISO H6	+0.01, -.001

VI-PRO - 6 FLUTE

THREAD MILLS

Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



VI-PRO VARIABLE INDEX GEOMETRY

6 FLUTE - REGULAR LENGTH - SQUARE END



ALCRO-MAX COATED

VI-PRO DIAMETER	★★★ TOOL ATTRIBUTES ★★★				ROUND SHANK		WELDON FLAT	
	SHANK	LOC	OAL	# OF FLUTES	ITEM #	LIST PRICE	ITEM #	LIST PRICE
1/4	1/4	3/4	2-1/2	6	USA40490	91.54	-	-
5/16	5/16	13/16	2-1/2	6	USA40492	108.71	-	-
3/8	3/8	1	2-1/2	6	USA40494	117.15	-	-
1/2	1/2	1-1/4	3	6	USA40496	156.64	USA40504	164.47
5/8	5/8	1-5/8	3-1/2	6	USA40498	261.04	USA40506	268.86
3/4	3/4	1-5/8	4	6	USA40500	327.67	USA40508	337.48
1	1	2	4	6	USA40502	501.86	USA40510	511.89

6 FLUTE - REGULAR LENGTH -  CORNER RADIUS



ALCRO-MAX COATED

VI-PRO DIAMETER	★★★ TOOL ATTRIBUTES ★★★						ROUND SHANK		WELDON FLAT	
	SHANK	LOC	OAL	# OF FLUTES	RAD	ITEM #	LIST PRICE	ITEM #	LIST PRICE	
1/4	1/4	3/4	2-1/2	6	0.015	USA40512	102.17	-	-	
5/16	5/16	13/16	2-1/2	6	0.015	USA40514	121.39	-	-	
3/8	3/8	1	2-1/2	6	0.015	USA40516	130.84	-	-	
1/2	1/2	1-1/4	3	6	0.030	USA40518	174.90	USA40526	183.63	
5/8	5/8	1-5/8	3-1/2	6	0.030	USA40520	278.78	USA40528	287.13	
3/4	3/4	1-5/8	4	6	0.060	USA40522	349.94	USA40530	360.43	
1	1	2	4	6	0.060	USA40524	535.95	USA40532	552.03	

The VI-PRO performs very well in a wide range of materials including:

HIGH TEMP ALLOYS • STAINLESS STEELS • ALLOY STEELS • INCONEL
CAST IRON • HIGH TEMP NICKEL BASE ALLOYS • TITANIUM ALLOYS • EXOTICS

For coating information see page 5. For VI-PRO technical information, please see pages 215, 220-221.

TOLERANCES	DIAMETER	SHANK	RADIUS
ALL SIZES	+ .000, -.002	-.0001, -.0004 ISO H6	+ .001, -.001

VI-PRO - 4 FLUTE

VI-PRO - 5 FLUTE

VI-PRO - 6 FLUTE

THREAD MILLS

Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



VI-PRO VARIABLE INDEX GEOMETRY

6 FLUTE - LONG LENGTH - SQUARE END



ALCRO-MAX COATED

VI-PRO DIAMETER	★★★ TOOL ATTRIBUTES ★★★					ROUND SHANK		WELDON FLAT	
	SHANK	LOC	OAL	# OF FLUTES	ITEM #	LIST PRICE	ITEM #	LIST PRICE	
1/4	1/4	1-1/8	3	6	USA40468	100.91	-	-	
5/16	5/16	1-1/8	3	6	USA40470	117.75	-	-	
3/8	3/8	1-1/4	3	6	USA40472	133.81	-	-	
1/2	1/2	2	4	6	USA40474	208.13	USA40482	218.53	
5/8	5/8	2-1/4	5	6	USA40476	323.32	USA40484	333.03	
3/4	3/4	2-1/4	5	6	USA40478	403.78	USA40486	415.89	
1	1	3	6	6	USA40480	818.37	USA40488	834.73	

6 FLUTE - LONG LENGTH - CORNER RADIUS



ALCRO-MAX COATED

VI-PRO DIAMETER	★★★ TOOL ATTRIBUTES ★★★						ROUND SHANK		WELDON FLAT	
	SHANK	LOC	OAL	# OF FLUTES	RAD	ITEM #	LIST PRICE	ITEM #	LIST PRICE	
1/4	1/4	1-1/8	3	6	0.015	USA40446	112.69	-	-	
5/16	5/16	1-1/8	3	6	0.015	USA40448	131.47	-	-	
3/8	3/8	1-1/4	3	6	0.015	USA40450	149.43	-	-	
1/2	1/2	2	4	6	0.030	USA40452	232.38	USA40460	243.98	
5/8	5/8	2-1/4	5	6	0.030	USA40454	345.29	USA40462	355.67	
3/4	3/4	2-1/4	5	6	0.060	USA40456	431.22	USA40464	444.17	
1	1	3	6	6	0.060	USA40458	873.96	USA40466	891.45	

The VI-PRO performs very well in a wide range of materials including:

HIGH TEMP ALLOYS • STAINLESS STEELS • ALLOY STEELS • INCONEL
CAST IRON • HIGH TEMP NICKEL BASE ALLOYS • TITANIUM ALLOYS • EXOTICS

For coating information see page 5. For VI-PRO technical information, please see pages 215, 220-221.

TOLERANCES	DIAMETER	SHANK	RADIUS
ALL SIZES	+ .000, -.002	-.0001, -.0004 ISO H6	+ .001, -.001

Carbide Thread Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



VI-PRO - 4 FLUTE

VI-PRO - 5 FLUTE

VI-PRO - 6 FLUTE

THREAD MILLS

INTERNAL/EXTERNAL - UN THREADS



ALTiN COATED

DIAMETER	SHANK	CUTTING DIA	THREAD LENGTH	OAL	# OF FLUTES	ITEM#	LIST PRICE
2-56	1/8	0.065	0.125	2	3	USA44768	166.24
4-40	1/8	0.085	0.180	2	3	USA44770	166.24
6 - 32	1/8	0.100	0.218	2	3	USA21047	178.15
8 - 32	1/8	0.115	0.250	2	3	USA21049	178.15
8 - 36	1/8	0.115	0.250	2	3	USA21051	178.15
10 - 24	3/16	0.120	0.312	2	3	USA21053	178.15
10 - 32	3/16	0.120	0.312	2	3	USA21055	178.15
1/4 - 20	3/16	0.180	0.500	2-1/2	3	USA21057	201.50
1/4 - 28	3/16	0.180	0.500	2-1/2	3	USA21059	201.50
5/16 - 18	1/4	0.240	0.625	2-1/2	3	USA21061	237.13
5/16 - 24	1/4	0.240	0.625	2-1/2	3	USA21063	237.13
3/8 - 16	5/16	0.290	0.750	3	4	USA21065	282.55
3/8 - 24	5/16	0.290	0.750	3	4	USA21067	282.55
7/16 - 14	3/8	0.340	0.875	3	4	USA21069	304.69
7/16 - 20	3/8	0.340	0.875	3	4	USA21071	304.69
1/2 - 13	3/8	0.350	0.875	3-1/2	4	USA21073	304.69
1/2 - 20	3/8	0.350	0.875	3-1/2	4	USA21075	304.69
9/16 - 12	1/2	0.370	0.875	3-1/2	4	USA21077	304.69
9/16 - 18	1/2	0.370	0.875	3-1/2	4	USA21079	304.69
5/8 - 11	1/2	0.470	1.250	3-1/2	5	USA21081	380.86
5/8 - 18	1/2	0.470	1.250	3-1/2	5	USA21083	380.86
3/4 - 10	1/2	0.495	1.250	3-1/2	5	USA21085	380.86
3/4 - 16	1/2	0.495	1.250	3-1/2	5	USA21087	380.86
7/8 - 9	5/8	0.620	1.250	3-1/2	5	USA21089	476.69
7/8 - 14	5/8	0.620	1.250	3-1/2	5	USA21091	476.69
1 - 8	3/4	0.620	1.375	4	5	USA21093	476.69
1 - 12	3/4	0.620	1.375	4	5	USA21095	476.69



For coating information see page 6. For technical information please see page 222.

THREAD MILL CUTTING DIAMETER TOLERANCE

+ .000, -.002

Carbide Thread Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



INTERNAL/EXTERNAL - UN THREADS
COOLANT END FED



END VIEW

ALTiN COATED

DIAMETER	SHANK	CUTTING DIA	THREAD LENGTH	OAL	# OF FLUTES	ITEM#	LIST PRICE
10 - 32	3/16	0.120	0.312	2	3	USA41898	206.76
1/4 - 20	3/16	0.180	0.500	2-1/2	3	USA41900	218.19
1/4 - 28	3/16	0.180	0.500	2-1/2	3	USA41902	218.19
5/16 - 18	1/4	0.240	0.625	2-1/2	3	USA41904	270.14
5/16 - 24	1/4	0.240	0.625	2-1/2	3	USA41906	270.14
3/8 - 16	5/16	0.290	0.750	3	4	USA41908	334.56
3/8 - 24	5/16	0.290	0.750	3	4	USA41910	334.56
7/16 - 14	3/8	0.340	0.875	3	4	USA41912	389.63
7/16 - 20	3/8	0.340	0.875	3	4	USA41914	389.63
1/2 - 13	3/8	0.350	0.875	3-1/2	4	USA41916	404.17
1/2 - 20	3/8	0.350	0.875	3-1/2	4	USA41918	404.17
3/4 - 10	1/2	0.495	1.250	3-1/2	4	USA41920	518.46
3/4 - 16	1/2	0.495	1.250	3-1/2	4	USA41922	518.46



VI-PRO - 4 FLUTE

VI-PRO - 5 FLUTE

VI-PRO - 6 FLUTE

THREAD MILLS

For coating information see page 6. For technical information please see page 222.

THREAD MILL CUTTING DIAMETER TOLERANCE	+ .000, -.002
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Carbide Thread Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

VI-PRO - 4 FLUTE

INTERNAL/EXTERNAL - NPT PIPE THREADS



ALTIN COATED

DIAMETER	SHANK	CUTTING DIA	THREAD LENGTH	OAL	# OF FLUTES	ITEM#	LIST PRICE
1/16 - 27	1/4	0.245	0.437	2-1/2	3	USA21097	237.13
1/8 - 27	5/16	0.310	0.437	2-1/2	4	USA21099	237.13
1/4 - 18	3/8	0.370	0.625	3	4	USA21101	270.27
3/8 - 18	3/8	0.370	0.625	3	4	USA21103	270.27
1/2 - 14	1/2	0.495	0.875	3-1/2	4	USA21105	380.86
3/4 - 14	1/2	0.495	0.875	3-1/2	4	USA21107	380.86
1 - 11-1/2	3/4	0.620	1.125	4	5	USA21109	476.69

VI-PRO - 5 FLUTE

INTERNAL/EXTERNAL - NPTF PIPE THREADS



ALTIN COATED

DIAMETER	SHANK	CUTTING DIA	THREAD LENGTH	OAL	# OF FLUTES	ITEM#	LIST PRICE
1/16 - 27	1/4	0.245	0.437	2-1/2	3	USA21111	237.13
1/8 - 27	5/16	0.310	0.437	2-1/2	4	USA21113	237.13
1/4 - 18	3/8	0.370	0.625	3	4	USA21115	270.27
3/8 - 18	3/8	0.370	0.625	3	4	USA21117	270.27
1/2 - 14	1/2	0.495	0.875	3-1/2	4	USA21119	380.86
3/4 - 14	1/2	0.495	0.875	3-1/2	4	USA21121	380.86
1 - 11-1/2	3/4	0.620	1.125	4	5	USA21123	476.69

VI-PRO - 6 FLUTE

THREAD MILLS

For coating information see page 6. For technical information please see page 222.

THREAD MILL CUTTING DIAMETER TOLERANCE

+.000, -.002

Carbide Thread Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



INTERNAL/EXTERNAL METRIC THREADS



ALTiN COATED

DIAMETER	SHANK	CUTTING DIA	THREAD LENGTH	OAL	# OF FLUTES	ITEM#	LIST PRICE
M4 x 0.70	1/8	0.115	0.250	2	3	USA21125	181.83
M4.5 x 0.75	1/8	0.120	0.250	2	3	USA21127	181.83
M5 x 0.80	3/16	0.120	0.312	2	3	USA21129	181.83
M6 x 1.00	3/16	0.170	0.500	2-1/2	3	USA21131	200.26
M8 x 0.75	1/4	0.235	0.625	2-1/2	3	USA21133	237.13
M8 x 1.00	1/4	0.235	0.625	2-1/2	3	USA21135	237.13
M8 x 1.25	1/4	0.235	0.625	2-1/2	3	USA21137	237.13
M10 x 1.25	5/16	0.300	0.750	3	4	USA21139	282.55
M10 x 1.50	5/16	0.300	0.750	3	4	USA21141	282.55
M12 x 1.00	3/8	0.360	0.875	3-1/2	4	USA21143	305.89
M12 x 1.25	3/8	0.360	0.875	3-1/2	4	USA21145	305.89
M12 x 1.75	3/8	0.360	0.875	3-1/2	4	USA21147	305.89
M14 x 1.50	3/8	0.360	0.875	3-1/2	4	USA21149	305.89
M16 x 2.00	1/2	0.470	1.250	3-1/2	5	USA21151	380.86
M18 x 2.50	1/2	0.470	1.250	3-1/2	5	USA21153	380.86
M20 x 3.00	5/8	0.470	1.250	3-1/2	5	USA21155	380.86



VI-PRO - 4 FLUTE

VI-PRO - 5 FLUTE

VI-PRO - 6 FLUTE

THREAD MILLS

For coating information see page 6. For technical information please see page 222.

THREAD MILL CUTTING DIAMETER TOLERANCE	+ .000, -.002
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Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

FOR ALUMINUM 2 FLUTE - REGULAR LENGTH - SQUARE END - 45° HELIX



UNCOATED



ZRN COATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	USA38254	21.68
3/16	3/16	5/8	2	USA38256	30.22
1/4	1/4	3/4	2-1/2	USA19831	43.60
5/16	5/16	13/16	2-1/2	USA19833	51.49
3/8	3/8	1	2-1/2	USA19835	54.53
1/2	1/2	1-1/4	3	USA19837	90.25
5/8	5/8	1-5/8	3-1/2	USA19839	172.61
3/4	3/4	1-3/4	4	USA19841	247.40
1	1	1-3/4	4	USA19843	407.91

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	USA38258	27.11
3/16	3/16	5/8	2	USA38260	37.79
1/4	1/4	3/4	2-1/2	USA19845	52.73
5/16	5/16	13/16	2-1/2	USA19847	62.27
3/8	3/8	1	2-1/2	USA19849	65.90
1/2	1/2	1-1/4	3	USA19851	104.67
5/8	5/8	1-5/8	3-1/2	USA19853	209.19
3/4	3/4	1-3/4	4	USA19855	300.44
1	1	1-3/4	4	USA19857	494.56

FOR ALUMINUM 2 FLUTE - REGULAR LENGTH - CORNER RADIUS - 45° HELIX



ZRN COATED

DIA	SHANK	LOC	OAL	RAD	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	0.010	USA38290	32.40
3/16	3/16	5/8	2	0.010	USA38292	44.43
1/4	1/4	3/4	2-1/2	0.020	USA19989	58.85
5/16	5/16	13/16	2-1/2	0.020	USA19991	69.54
3/8	3/8	1	2-1/2	0.020	USA19993	73.58
1/2	1/2	1-1/4	3	0.040	USA19995	116.84
5/8	5/8	1-5/8	3-1/2	0.040	USA19997	223.41
3/4	3/4	1-3/4	4	0.040	USA19999	320.88
1	1	1-3/4	4	0.040	USA20001	528.17

These 2 flute end mills are designed specifically for high speed machining in aluminum. This tool will plunge, slot and profile in all non-ferrous materials. Our ZRN coating allows for higher speed rates and prolonged tool life and does not have an affinity for aluminum.

Works well in all non-ferrous materials as well as brass and bronze applications

For coating information see page 6. For technical information, please see pages 226-227.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.00, -0.02	-0.001, -0.004 ISO H6	+0.01, -0.01
5/8" - 1"	+0.00, -0.03	-0.001, -0.004 ISO H6	+0.01, -0.01

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



FOR ALUMINUM 2 FLUTE - LONG LENGTH - SQUARE END - 45° HELIX



UNCOATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/8	1/8	3/4	2-1/4	USA38270	36.83
3/16	3/16	3/4	2-1/2	USA38272	42.46
1/4	1/4	1-1/4	3	USA19887	59.85
5/16	5/16	1-3/8	3	USA19889	77.49
3/8	3/8	1-1/2	4	USA19891	97.06
1/2	1/2	2	4	USA19893	135.99
5/8	5/8	2-3/8	5	USA19895	281.98
3/4	3/4	2-1/2	5	USA19897	309.85
1	1	2-1/4	5	USA19899	509.33



ZRN COATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/8	1/8	3/4	2-1/4	USA38274	46.02
3/16	3/16	3/4	2-1/2	USA38276	53.08
1/4	1/4	1-1/4	3	USA19901	72.34
5/16	5/16	1-3/8	3	USA19903	98.41
3/8	3/8	1-1/2	4	USA19905	117.39
1/2	1/2	2	4	USA19907	164.90
5/8	5/8	2-3/8	5	USA19909	358.88
3/4	3/4	2-1/2	5	USA19911	387.86
1	1	2-1/4	5	USA19913	610.74

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

FOR ALUMINUM 2 FLUTE - LONG LENGTH - CORNER RADIUS - 45° HELIX



ZRN COATED

DIA	SHANK	LOC	OAL	RAD	ITEM#	LIST PRICE
1/8	1/8	3/4	2-1/4	0.010	USA38298	55.22
3/16	3/16	3/4	2-1/2	0.010	USA38300	63.69
1/4	1/4	1-1/4	3	0.020	USA20021	80.77
5/16	5/16	1-3/8	3	0.020	USA20023	109.85
3/8	3/8	1-1/2	4	0.020	USA20025	131.08
1/2	1/2	2	4	0.040	USA20027	184.13
5/8	5/8	2-3/8	5	0.040	USA20028	383.26
3/4	3/4	2-1/2	5	0.040	USA20029	414.20
1	1	2-1/4	5	0.040	USA20030	652.27

These 2 flute end mills are designed specifically for high speed machining in aluminum. This tool will plunge, slot and profile in all non-ferrous materials. Our ZRN coating allows for higher speed rates and prolonged tool life and does not have an affinity for aluminum.

Works well in all non-ferrous materials as well as brass and bronze applications

For coating information see page 6. For technical information, please see pages 226-227.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.00, -.002	-.0001, -.0004 ISO H6	+0.01, -.001
5/8" - 1"	+0.00, -.003	-.0001, -.0004 ISO H6	+0.01, -.001

MADE IN THE USA



Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

FOR ALUMINUM
3 FLUTE - REGULAR LENGTH - SQUARE END - 45° HELIX



UNCOATED



ZRN COATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	USA38262	21.68
3/16	3/16	5/8	2	USA38264	30.22
1/4	1/4	3/4	2-1/2	USA19859	43.60
5/16	5/16	13/16	2-1/2	USA19861	51.49
3/8	3/8	1	2-1/2	USA19863	54.53
1/2	1/2	1-1/4	3	USA19865	90.25
5/8	5/8	1-5/8	3-1/2	USA19867	172.61
3/4	3/4	1-3/4	4	USA19869	247.40
1	1	1-3/4	4	USA19871	407.91

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	USA38266	27.11
3/16	3/16	5/8	2	USA38268	37.79
1/4	1/4	3/4	2-1/2	USA19873	52.73
5/16	5/16	13/16	2-1/2	USA19875	62.27
3/8	3/8	1	2-1/2	USA19877	65.90
1/2	1/2	1-1/4	3	USA19879	104.67
5/8	5/8	1-5/8	3-1/2	USA19881	209.19
3/4	3/4	1-3/4	4	USA19883	300.44
1	1	1-3/4	4	USA19885	494.56

FOR ALUMINUM
3 FLUTE - REGULAR LENGTH -  CORNER RADIUS - 45° HELIX



ZRN COATED

DIA	SHANK	LOC	OAL	RAD	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	0.010	USA38306	32.40
3/16	3/16	5/8	2	0.010	USA38308	44.43
1/4	1/4	3/4	2-1/2	0.020	USA20045	58.85
5/16	5/16	13/16	2-1/2	0.020	USA20047	69.54
3/8	3/8	1	2-1/2	0.020	USA20049	73.58
1/2	1/2	1-1/4	3	0.040	USA20051	116.84
5/8	5/8	1-5/8	3-1/2	0.040	USA20053	223.41
3/4	3/4	1-3/4	4	0.040	USA20055	320.88
1	1	1-3/4	4	0.040	USA20057	528.17

These 3 flute end mills are designed specifically for high speed machining in aluminum. This tool will plunge, slot and profile in all non-ferrous materials. Our ZRN coating allows for higher speed rates and prolonged tool life and does not have an affinity for aluminum.

Works well in all non-ferrous materials as well as brass and bronze applications

For coating information see page 6. For technical information, please see pages 226-227.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.00, -.002	-.0001, -.0004 ISO H6	+0.01, -.001
5/8" - 1"	+0.00, -.003	-.0001, -.0004 ISO H6	+0.01, -.001

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



FOR ALUMINUM 3 FLUTE - LONG LENGTH - SQUARE END - 45° HELIX



UNCOATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/8	1/8	3/4	2-1/4	USA38278	36.83
3/16	3/16	3/4	2-1/2	USA38280	42.46
1/4	1/4	1-1/4	3	USA19915	59.85
5/16	5/16	1-3/8	3	USA19917	77.49
3/8	3/8	1-1/2	4	USA19919	97.06
1/2	1/2	2	4	USA19921	135.99
5/8	5/8	2-3/8	5	USA19923	281.98
3/4	3/4	2-1/2	5	USA19925	309.85
1	1	2-1/4	5	USA19927	509.33



ZRN COATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/8	1/8	3/4	2-1/4	USA38282	45.92
3/16	3/16	3/4	2-1/2	USA38284	53.08
1/4	1/4	1-1/4	3	USA19929	72.34
5/16	5/16	1-3/8	3	USA19931	98.41
3/8	3/8	1-1/2	4	USA19933	117.39
1/2	1/2	2	4	USA19935	164.90
5/8	5/8	2-3/8	5	USA19937	358.88
3/4	3/4	2-1/2	5	USA19939	387.86
1	1	2-1/4	5	USA19941	610.74

FOR ALUMINUM 3 FLUTE - LONG LENGTH - CORNER RADIUS - 45° HELIX



ZRN COATED

DIA	SHANK	LOC	OAL	RAD	ITEM#	LIST PRICE
1/8	1/8	3/4	2-1/4	0.010	USA38314	55.22
3/16	3/16	3/4	2-1/2	0.010	USA38316	63.69
1/4	1/4	1-1/4	3	0.020	USA20073	80.77
5/16	5/16	1-3/8	3	0.020	USA20075	109.85
3/8	3/8	1-1/2	4	0.020	USA20077	131.08
1/2	1/2	2	4	0.040	USA20079	184.13
5/8	5/8	2-3/8	5	0.040	USA20081	383.26
3/4	3/4	2-1/2	5	0.040	USA20083	414.20
1	1	2-1/4	5	0.040	USA20085	652.27

These 3 flute end mills are designed specifically for high speed machining in aluminum. This tool will plunge, slot and profile in all non-ferrous materials. Our ZRN coating allows for higher speed rates and prolonged tool life and does not have an affinity for aluminum.

Works well in all non-ferrous materials as well as brass and bronze applications

For coating information see page 6. For technical information, please see pages 226-227.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.00, -.002	-.0001, -.0004 ISO H6	+0.01, -.001
5/8" - 1"	+0.00, -.003	-.0001, -.0004 ISO H6	+0.01, -.001

MADE IN THE USA

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS



Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

FINE PITCH ROUGHER 4 FLUTE - STUB LENGTH - 30° HELIX



UNCOATED

ALTIN COATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/4	1/4	3/8	2	USA41004	46.43
5/16	5/16	1/2	2	USA41006	63.95
3/8	3/8	9/16	2	USA41008	74.59
1/2	1/2	5/8	2-1/2	USA41010	95.04
5/8	5/8	3/4	3	USA41012	201.43
3/4	3/4	1	3	USA41014	246.36

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/4	1/4	3/8	2	USA41124	56.93
5/16	5/16	1/2	2	USA41126	79.95
3/8	3/8	9/16	2	USA41128	93.25
1/2	1/2	5/8	2-1/2	USA41130	116.54
5/8	5/8	3/4	3	USA41132	251.78
3/4	3/4	1	3	USA41134	302.17



Our fine pitch rougher is designed to remove maximum material with minimum vibration or chatter, while milling faster than conventional finishing end mills. Excellent for:

HARDENED STEELS • TITANIUM • INCONEL • SPACE AGE MATERIALS

For coating information see page 6. For technical information, please see page 225.

TOLERANCES	DIAMETER	SHANK
1/4" - 1/2"	+0.00, -0.02	-0.001, -.0004 ISO H6
5/8" - 3/4"	+0.00, -0.03	-0.001, -.0004 ISO H6

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



FINE PITCH ROUGHER 4 FLUTE - REGULAR LENGTH - 30° HELIX



UNCOATED



ALTiN COATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/4	1/4	3/4	2-1/2	USA18393	51.59
5/16	5/16	13/16	2-1/2	USA18395	71.05
3/8	3/8	7/8	2-1/2	USA18397	82.88
1/2	1/2	1-1/4	3	USA18399	105.60
5/8	5/8	1-5/8	3-1/2	USA18401	223.81
3/4	3/4	1-5/8	4	USA18403	273.74
1	1	2	4	USA18405	508.34

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/4	1/4	3/4	2-1/2	USA18607	63.86
5/16	5/16	13/16	2-1/2	USA18609	88.83
3/8	3/8	7/8	2-1/2	USA18611	103.61
1/2	1/2	1-1/4	3	USA18613	130.73
5/8	5/8	1-5/8	3-1/2	USA18615	279.74
3/4	3/4	1-5/8	4	USA18617	338.94
1	1	2	4	USA18619	623.41

FINE PITCH ROUGHER 4 FLUTE - LONG LENGTH - 30° HELIX



UNCOATED



ALTiN COATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/4	1/4	1-1/2	4	USA33318	73.14
5/16	5/16	1-1/2	4	USA33320	93.79
3/8	3/8	1-3/4	4	USA33322	117.25
1/2	1/2	2	4	USA33324	135.42
5/8	5/8	2-1/2	5	USA33326	317.33
3/4	3/4	2-1/2	5	USA33328	381.87
1	1	2-1/2	5	USA33330	652.36

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/4	1/4	1-1/2	4	USA33566	91.44
5/16	5/16	1-1/2	4	USA33568	117.25
3/8	3/8	1-3/4	4	USA33570	146.58
1/2	1/2	2	4	USA33572	169.40
5/8	5/8	2-1/2	5	USA33574	398.54
3/4	3/4	2-1/2	5	USA33576	478.69
1	1	2-1/2	5	USA33578	816.82

Our fine pitch rougher is designed to remove maximum material with minimum vibration or chatter, while milling faster than conventional finishing end mills. Excellent for:

HARDENED STEELS • TITANIUM • INCONEL • SPACE AGE MATERIALS

For coating information see page 6. For technical information, please see page 225.

TOLERANCES	DIAMETER	SHANK
1/4" - 1/2"	+.000, -.002	-.0001, -.0004 ISO H6
5/8" - 3/4"	+.000, -.003	-.0001, -.0004 ISO H6

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS



Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

FINE PITCH ROUGHER 4 FLUTE - REGULAR LENGTH - BALL NOSE - 30° HELIX



UNCOATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/4	1/4	3/4	2-1/2	USA41752	66.86
5/16	5/16	7/8	2-1/2	USA41754	85.72
3/8	3/8	1	2-1/2	USA41756	109.72
1/2	1/2	1-1/4	3	USA41758	150.86
5/8	5/8	1-5/8	3-1/2	USA41760	262.87
3/4	3/4	1-5/8	4	USA41762	366.87
1	1	2	4	USA41764	600.02



ALTIN COATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/4	1/4	3/4	2-1/2	USA41830	80.00
5/16	5/16	7/8	2-1/2	USA41832	102.86
3/8	3/8	1	2-1/2	USA41834	131.43
1/2	1/2	1-1/4	3	USA41836	180.58
5/8	5/8	1-5/8	3-1/2	USA41838	315.44
3/4	3/4	1-5/8	4	USA41840	440.02
1	1	2	4	USA41842	714.31

Our fine pitch rougher is designed to remove maximum material with minimum vibration or chatter, while milling faster than conventional finishing end mills. Excellent for:

HARDENED STEELS • TITANIUM • INCONEL • SPACE AGE MATERIALS

For coating information see page 6. For technical information, please see page 225.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/4" - 1/2"	+0.00, -0.002	-0.0001, -0.0004 ISO H6	+0.001, -0.001
5/8" - 3/4"	+0.00, -0.003	-0.0001, -0.0004 ISO H6	+0.001, -0.001

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



ROUGHER/FINISHER

4 FLUTE - REGULAR LENGTH -  CORNER RADIUS - 40° HELIX



UNCOATED

DIA	SHANK	LOC	OAL	RAD	ITEM#	LIST PRICE
1/4	1/4	3/4	2-1/2	0.020	USA18621	88.49
5/16	5/16	13/16	2-1/2	0.020	USA18623	95.84
3/8	3/8	7/8	2-1/2	0.020	USA18625	104.14
1/2	1/2	1-1/4	3	0.040	USA18627	120.36
* 5/8	5/8	1-5/8	3-1/2	0.040	USA18629	239.69
* 3/4	3/4	1-5/8	4	0.040	USA18631	320.21
* 1	1	1-5/8	4	0.040	USA18633	522.57

* WELDON FLATS



ALTIN COATED

DIA	SHANK	LOC	OAL	RAD	ITEM#	LIST PRICE
1/4	1/4	3/4	2-1/2	0.020	USA18635	110.62
5/16	5/16	13/16	2-1/2	0.020	USA18637	119.79
3/8	3/8	7/8	2-1/2	0.020	USA18639	130.17
1/2	1/2	1-1/4	3	0.040	USA18641	150.48
* 5/8	5/8	1-5/8	3-1/2	0.040	USA18643	299.60
* 3/4	3/4	1-5/8	4	0.040	USA18645	400.29
* 1	1	1-5/8	4	0.040	USA18647	653.24

* WELDON FLATS

The radius chipbreakers in this high performance tool allow for higher feed rates than a finishing end mill yet does not appreciably degrade the finish that the tool produces.

Works well in hard to machine materials such as stainless steel and titanium.

For coating information see page 6. For technical information, please see pages 228-229.

TOLERANCES	DIAMETER	SHANK	RADIUS
ALL SIZES	+0.000, -0.002	-0.0001, -0.0004 ISO H6	+0.001, -0.001

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS



Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

3 FLUTE - REGULAR LENGTH - SQUARE END - 45° HELIX



ALTIN COATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	USA18745	29.67
3/16	3/16	5/8	2	USA18747	35.54
1/4	1/4	3/4	2-1/2	USA18749	38.11
5/16	5/16	13/16	2-1/2	USA18751	46.10
3/8	3/8	1	2-1/2	USA18753	61.72
1/2	1/2	1-1/4	3	USA18755	105.29
5/8	5/8	1-5/8	3-1/2	USA18757	209.55
3/4	3/4	1-5/8	4	USA18759	294.06

3 FLUTE - REGULAR LENGTH - CORNER RADIUS - 45° HELIX



ALTIN COATED

DIA	SHANK	LOC	OAL	RAD	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	0.010	USA18761	33.13
3/16	3/16	5/8	2	0.010	USA18763	39.67
1/4	1/4	3/4	2-1/2	0.020	USA18765	42.53
5/16	5/16	13/16	2-1/2	0.020	USA18767	51.46
3/8	3/8	1	2-1/2	0.020	USA18769	68.93
1/2	1/2	1-1/4	3	0.040	USA18771	117.53
5/8	5/8	1-5/8	3-1/2	0.040	USA18773	223.79
3/4	3/4	1-5/8	4	0.040	USA18775	314.06

These 3 flute 45° tools are designed to slot and profile at higher speeds and feeds while providing a shearing action that produces excellent finishes.

Works well in stainless steel and other similar alloys

For coating information see page 6. For technical information, please see pages 226-227.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.000, -.002	-.0001, -.0004 ISO H6	+0.001, -.001
5/8" - 3/4"	+0.000, -.003	-.0001, -.0004 ISO H6	+0.001, -.001

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



3 FLUTE - REGULAR LENGTH - SQUARE END - 60° HELIX



ALTiN COATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	USA18681	29.67
3/16	3/16	5/8	2	USA18683	35.54
1/4	1/4	3/4	2-1/2	USA18685	38.11
5/16	5/16	13/16	2-1/2	USA18687	46.10
3/8	3/8	1	2-1/2	USA18689	61.72
1/2	1/2	1-1/4	3	USA18691	105.29
5/8	5/8	1-5/8	3-1/2	USA18693	209.55
3/4	3/4	1-5/8	4	USA18695	294.06

3 FLUTE - REGULAR LENGTH - CORNER RADIUS - 60° HELIX



ALTiN COATED

DIA	SHANK	LOC	OAL	RAD	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	0.010	USA18697	33.13
3/16	3/16	5/8	2	0.010	USA18699	39.67
1/4	1/4	3/4	2-1/2	0.020	USA18701	42.53
5/16	5/16	13/16	2-1/2	0.020	USA18703	51.46
3/8	3/8	1	2-1/2	0.020	USA18705	68.93
1/2	1/2	1-1/4	3	0.040	USA18707	117.53
5/8	5/8	1-5/8	3-1/2	0.040	USA18709	223.79
3/4	3/4	1-5/8	4	0.040	USA18711	314.06

These 60° tools are designed to machine all high temperature alloys. This 3 flute high shear design geometry will slot and profile while giving excellent surface finishes.

Works well in all high temperature alloys such as inconels, hastalloy, waspalloys and titanium.

For coating information see page 6. For technical information, please see pages 226-227.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.000, -0.002	-0.0001, -0.0004 ISO H6	+0.001, -0.001
5/8" - 3/4"	+0.000, -0.003	-0.0001, -0.0004 ISO H6	+0.001, -0.001

MADE IN THE USA

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS



Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

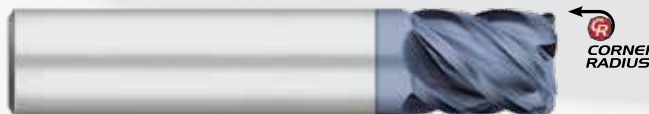
5 FLUTE - STUB LENGTH - SQUARE END - 45° HELIX



ALTIN COATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/8	1/8	1/4	1-1/2	USA19745	16.24
3/16	3/16	3/8	2	USA19747	24.39
1/4	1/4	1/2	2	USA19749	29.19
5/16	5/16	1/2	2	USA19751	36.88
3/8	3/8	5/8	2	USA19753	57.78
7/16	7/16	5/8	2-1/2	USA19755	66.07
1/2	1/2	5/8	2-1/2	USA19757	76.37
5/8	5/8	3/4	3	USA19759	137.83
3/4	3/4	1	3	USA19761	189.36

5 FLUTE - STUB LENGTH - CORNER RADIUS - 45° HELIX



ALTIN COATED

DIA	SHANK	LOC	OAL	RAD	ITEM#	LIST PRICE
1/8	1/8	1/4	1-1/2	0.010	USA19781	18.02
3/16	3/16	3/8	2	0.010	USA19783	27.25
1/4	1/4	1/2	2	0.020	USA19785	32.61
5/16	5/16	1/2	2	0.020	USA19787	41.16
3/8	3/8	5/8	2	0.020	USA19789	64.51
7/16	7/16	5/8	2-1/2	0.020	USA19791	73.80
1/2	1/2	5/8	2-1/2	0.040	USA19793	85.25
5/8	5/8	3/4	3	0.040	USA19795	147.16
3/4	3/4	1	3	0.040	USA19797	202.22

Designed for profiling and finishing, the 5 flute 45° geometry of this tool allows it to be run 20 - 40% faster than conventional end mills while providing an excellent finish.

Works well in all exotic materials, stainless steel, carbon steels and other similar materials.

For coating information see page 6. For technical information, please see pages 226-227.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.00, -.002	-.0001, -.0004 ISO H6	+0.001, -.001
5/8" - 3/4"	+0.00, -.003	-.0001, -.0004 ISO H6	+0.001, -.001

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



5 FLUTE - REGULAR LENGTH - SQUARE END - 45° HELIX



ALTIM COATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	USA19815	30.97
3/16	3/16	3/4	2	USA19817	37.14
1/4	1/4	3/4	2-1/2	USA19819	39.97
5/16	5/16	7/8	2-1/2	USA19821	48.11
3/8	3/8	1	2-1/2	USA19823	64.54
1/2	1/2	1-1/4	3	USA19825	125.82
5/8	5/8	1-5/8	3-1/2	USA19827	243.27
3/4	3/4	1-5/8	4	USA19829	330.75

5 FLUTE - REGULAR LENGTH - CORNER RADIUS - 45° HELIX



ALTIM COATED

DIA	SHANK	LOC	OAL	RAD	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	0.010	USA19959	34.58
3/16	3/16	3/4	2	0.010	USA19961	41.46
1/4	1/4	3/4	2-1/2	0.020	USA19963	44.58
5/16	5/16	7/8	2-1/2	0.020	USA19965	53.73
3/8	3/8	1	2-1/2	0.020	USA19967	72.06
1/2	1/2	1-1/4	3	0.040	USA19969	140.47
5/8	5/8	1-5/8	3-1/2	0.040	USA19971	259.82
3/4	3/4	1-5/8	4	0.040	USA19973	353.21

Designed for profiling and finishing, the 5 flute 45° geometry of this tool allows it to be run 20 - 40% faster than conventional end mills while providing an excellent finish.

Works well in all exotic materials, stainless steel, carbon steels and other similar materials.

For coating information see page 6. For technical information, please see pages 226-227.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.000, -0.002	-0.0001, -0.0004 ISO H6	+0.001, -0.001
5/8" - 3/4"	+0.000, -0.003	-0.0001, -0.0004 ISO H6	+0.001, -0.001

MADE IN THE USA

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS



Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

2 FLUTE - STUB LENGTH - SQUARE END - 30° HELIX



UNCOATED

ALTiN COATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/64	1/8	0.023	1-1/2	USA33282	24.34
1/32	1/8	1/16	1-1/2	USA16143	14.99
3/64	1/8	3/32	1-1/2	USA16145	14.99
1/16	1/8	1/8	1-1/2	USA16147	11.22
5/64	1/8	1/8	1-1/2	USA33284	18.97
3/32	1/8	3/16	1-1/2	USA16149	11.22
1/8	1/8	1/4	1-1/2	USA16151	10.71
5/32	3/16	5/16	2	USA16153	17.84
3/16	3/16	3/8	2	USA16155	16.75
7/32	1/4	7/16	2	USA16157	22.51
1/4	1/4	1/2	2	USA16159	19.75
5/16	5/16	1/2	2	USA16161	26.68
3/8	3/8	5/8	2	USA16163	34.43
7/16	7/16	5/8	2-1/2	USA16165	42.96
1/2	1/2	5/8	2-1/2	USA16167	54.25
5/8	5/8	3/4	3	USA16169	114.85
3/4	3/4	1	3	USA16171	160.77

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/64	1/8	0.023	1-1/2	USA33302	30.42
1/32	1/8	1/16	1-1/2	USA16519	19.43
3/64	1/8	3/32	1-1/2	USA16521	19.43
1/16	1/8	1/8	1-1/2	USA16523	14.64
5/64	1/8	1/8	1-1/2	USA33304	23.72
3/32	1/8	3/16	1-1/2	USA16525	14.64
1/8	1/8	1/4	1-1/2	USA16527	13.98
5/32	3/16	5/16	2	USA16529	22.04
3/16	3/16	3/8	2	USA16531	20.76
7/32	1/4	7/16	2	USA16533	27.93
1/4	1/4	1/2	2	USA16535	24.54
5/16	5/16	1/2	2	USA16537	34.70
3/8	3/8	5/8	2	USA16539	42.65
7/16	7/16	5/8	2-1/2	USA16541	53.32
1/2	1/2	5/8	2-1/2	USA16543	67.38
5/8	5/8	3/4	3	USA16545	135.69
3/4	3/4	1	3	USA16547	198.94

2 FLUTE - STUB LENGTH - BALL NOSE - 30° HELIX



UNCOATED

ALTiN COATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/64	1/8	0.023	1-1/2	USA33286	30.38
1/32	1/8	1/16	1-1/2	USA16173	19.51
3/64	1/8	3/32	1-1/2	USA16175	19.51
1/16	1/8	1/8	1-1/2	USA16177	14.68
5/64	1/8	1/8	1-1/2	USA33288	23.76
3/32	1/8	3/16	1-1/2	USA16179	14.68
1/8	1/8	1/4	1-1/2	USA16181	13.90
5/32	3/16	5/16	2	USA16183	23.17
3/16	3/16	3/8	2	USA16185	21.73
7/32	1/4	7/16	2	USA16187	29.21
1/4	1/4	1/2	2	USA16189	25.59
5/16	5/16	1/2	2	USA16191	34.62
3/8	3/8	5/8	2	USA16193	44.71
7/16	7/16	5/8	2-1/2	USA16195	55.93
1/2	1/2	5/8	2-1/2	USA16197	70.46
5/8	5/8	3/4	3	USA16199	134.56
3/4	3/4	1	3	USA16201	204.59

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/64	1/8	0.023	1-1/2	USA33306	37.97
1/32	1/8	1/16	1-1/2	USA16549	24.97
3/64	1/8	3/32	1-1/2	USA16551	24.97
1/16	1/8	1/8	1-1/2	USA16553	18.77
5/64	1/8	1/8	1-1/2	USA33308	29.68
3/32	1/8	3/16	1-1/2	USA16555	18.77
1/8	1/8	1/4	1-1/2	USA16557	17.84
5/32	3/16	5/16	2	USA16559	29.68
3/16	3/16	3/8	2	USA16561	27.81
7/32	1/4	7/16	2	USA16563	37.39
1/4	1/4	1/2	2	USA16565	32.75
5/16	5/16	1/2	2	USA16567	44.32
3/8	3/8	5/8	2	USA16569	54.53
7/16	7/16	5/8	2-1/2	USA16571	68.20
1/2	1/2	5/8	2-1/2	USA16573	90.16
5/8	5/8	3/4	3	USA16575	164.75
3/4	3/4	1	3	USA16577	261.88

For coating information see page 6. For technical information, please see pages 224, 228-229.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/64" - 1/2"	+0.00, -0.02	-0.0001, -0.0004 ISO H6	+0.01, -0.01
5/8" - 1"	+0.00, -0.03	-0.0001, -0.0004 ISO H6	+0.01, -0.01

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



4 FLUTE - STUB LENGTH - SQUARE END - 30° HELIX



UNCOATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/64	1/8	0.023	1-1/2	USA33290	24.34
1/32	1/8	1/16	1-1/2	USA16281	14.99
3/64	1/8	3/32	1-1/2	USA16283	14.99
1/16	1/8	1/8	1-1/2	USA16285	11.22
5/64	1/8	1/8	1-1/2	USA33292	18.97
3/32	1/8	3/16	1-1/2	USA16287	11.22
1/8	1/8	1/4	1-1/2	USA16289	10.71
5/32	3/16	5/16	2	USA16291	17.84
3/16	3/16	3/8	2	USA16293	16.75
7/32	1/4	7/16	2	USA16295	22.51
1/4	1/4	1/2	2	USA16297	19.75
5/16	5/16	1/2	2	USA16299	26.68
3/8	3/8	5/8	2	USA16301	34.43
7/16	7/16	5/8	2-1/2	USA16303	42.96
1/2	1/2	5/8	2-1/2	USA16305	54.25
5/8	5/8	3/4	3	USA16307	114.85
3/4	3/4	1	3	USA16309	160.77
1	1	1-1/4	3-1/2	USA42252	264.95

ALTiN COATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/64	1/8	0.023	1-1/2	USA33298	30.42
1/32	1/8	1/16	1-1/2	USA16341	19.43
3/64	1/8	3/32	1-1/2	USA16343	19.43
1/16	1/8	1/8	1-1/2	USA16345	14.64
5/64	1/8	1/8	1-1/2	USA33300	23.72
3/32	1/8	3/16	1-1/2	USA16347	14.64
1/8	1/8	1/4	1-1/2	USA16349	13.98
5/32	3/16	5/16	2	USA16351	22.04
3/16	3/16	3/8	2	USA16353	20.76
7/32	1/4	7/16	2	USA16355	27.93
1/4	1/4	1/2	2	USA16357	24.54
5/16	5/16	1/2	2	USA16359	34.70
3/8	3/8	5/8	2	USA16361	42.65
7/16	7/16	5/8	2-1/2	USA16363	53.32
1/2	1/2	5/8	2-1/2	USA16365	67.57
5/8	5/8	3/4	3	USA16367	135.73
3/4	3/4	1	3	USA16369	198.94
1	1	1-1/4	3-1/2	USA42256	330.40

4 FLUTE - STUB LENGTH - BALL NOSE - 30° HELIX



UNCOATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/64	1/8	0.023	1-1/2	USA33294	30.38
1/32	1/8	1/16	1-1/2	USA16311	19.51
3/64	1/8	3/32	1-1/2	USA16313	19.51
1/16	1/8	1/8	1-1/2	USA16315	14.68
5/64	1/8	1/8	1-1/2	USA33296	23.76
3/32	1/8	3/16	1-1/2	USA16317	14.68
1/8	1/8	1/4	1-1/2	USA16319	13.90
5/32	3/16	5/16	2	USA16321	23.17
3/16	3/16	3/8	2	USA16323	21.73
7/32	1/4	7/16	2	USA16325	29.21
1/4	1/4	1/2	2	USA16327	27.77
5/16	5/16	1/2	2	USA16329	34.62
3/8	3/8	5/8	2	USA16331	44.71
7/16	7/16	5/8	2-1/2	USA16333	55.93
1/2	1/2	5/8	2-1/2	USA16335	70.46
5/8	5/8	3/4	3	USA16337	134.56
3/4	3/4	1	3	USA16339	204.59
1	1	1-1/4	3-1/2	USA42254	316.90

ALTiN COATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/64	1/8	0.023	1-1/2	USA33310	37.97
1/32	1/8	1/16	1-1/2	USA16727	24.97
3/64	1/8	3/32	1-1/2	USA16729	24.97
1/16	1/8	1/8	1-1/2	USA16731	18.77
5/64	1/8	1/8	1-1/2	USA33312	29.68
3/32	1/8	3/16	1-1/2	USA16733	18.77
1/8	1/8	1/4	1-1/2	USA16735	17.84
5/32	3/16	5/16	2	USA16737	29.68
3/16	3/16	3/8	2	USA16739	27.81
7/32	1/4	7/16	2	USA16741	37.39
1/4	1/4	1/2	2	USA16743	36.03
5/16	5/16	1/2	2	USA16745	44.32
3/8	3/8	5/8	2	USA16747	54.53
7/16	7/16	5/8	2-1/2	USA16749	68.20
1/2	1/2	5/8	2-1/2	USA16751	90.16
5/8	5/8	3/4	3	USA16753	164.75
3/4	3/4	1	3	USA16755	261.88
1	1	1-1/4	3-1/2	USA42258	389.63

For coating information see page 6. For technical information, please see pages 224, 228-229.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/64" - 1/2"	+0.00, -0.02	-0.001, -0.004 ISO H6	+0.01, -0.01
5/8" - 1"	+0.00, -0.03	-0.001, -0.004 ISO H6	+0.01, -0.01

MADE IN THE USA

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS



Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

2 FLUTE - REGULAR LENGTH - SQUARE END - 30° HELIX

UNCOATED



ALTIN COATED



TICN COATED



END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

DIA	SHANK	LOC	OAL	UNCOATED	LIST PRICE	ALTIN	LIST PRICE	TICN	LIST PRICE
1/64	1/8	1/32	1-1/2	USA15995	26.11	USA16069	34.98	USA22355	34.98
1/32	1/8	1/8	1-1/2	USA15997	17.49	USA16071	23.64	USA22357	23.64
3/64	1/8	1/8	1-1/2	USA15999	14.95	USA16073	20.14	USA22359	20.14
1/16	1/8	1/4	1-1/2	USA16001	14.91	USA16075	17.12	USA22361	17.12
5/64	1/8	1/4	1-1/2	USA16003	15.39	USA16077	20.77	USA22363	20.77
3/32	1/8	3/8	1-1/2	USA16005	13.55	USA16079	17.12	USA22365	17.12
7/64	1/8	3/8	1-1/2	USA16007	14.14	USA16081	19.07	USA22367	19.07
1/8	1/8	1/2	1-1/2	USA16009	13.00	USA16083	15.91	USA22369	15.91
9/64	3/16	9/16	2	USA16011	19.04	USA16085	25.70	USA22371	25.70
5/32	3/16	9/16	2	USA16013	19.15	USA16087	22.20	USA22373	22.20
11/64	3/16	5/8	2	USA16015	18.19	USA16089	24.60	USA22375	24.60
3/16	3/16	5/8	2	USA16017	17.71	USA16091	22.20	USA22377	22.20
13/64	1/4	5/8	2-1/2	USA16019	25.85	USA16093	33.88	USA22379	33.88
7/32	1/4	5/8	2-1/2	USA16021	26.40	USA16095	30.67	USA22381	30.67
15/64	1/4	3/4	2-1/2	USA16023	29.83	USA16097	38.44	USA22383	38.44
1/4	1/4	3/4	2-1/2	USA16025	21.87	USA16099	30.67	USA22385	30.67
17/64	5/16	3/4	2-1/2	USA16027	39.44	USA16101	50.67	USA22387	50.67
9/32	5/16	3/4	2-1/2	USA16029	39.44	USA16103	50.67	USA22389	50.67
19/64	5/16	13/16	2-1/2	USA16031	39.44	USA16105	50.67	USA22391	50.67
5/16	5/16	13/16	2-1/2	USA16033	28.46	USA16107	36.71	USA22393	36.71
21/64	3/8	1	2-1/2	USA16035	44.22	USA16109	56.85	USA22395	56.85
11/32	3/8	1	2-1/2	USA16037	44.22	USA16111	56.85	USA22397	56.85
23/64	3/8	1	2-1/2	USA16039	44.22	USA16113	56.85	USA22399	56.85
3/8	3/8	1	2-1/2	USA16041	33.95	USA16115	41.98	USA22401	41.98
25/64	7/16	1	2-3/4	USA16043	57.89	USA16117	74.71	USA22403	74.71
13/32	7/16	1	2-3/4	USA16045	57.89	USA16119	74.71	USA22405	74.71
27/64	7/16	1	2-3/4	USA16047	59.76	USA16121	77.18	USA22407	77.18
7/16	7/16	1	2-3/4	USA16049	52.10	USA16123	64.15	USA22409	64.15
29/64	1/2	1	3	USA16051	86.02	USA16125	110.10	USA22411	110.10
15/32	1/2	1	3	USA16053	86.02	USA16127	110.10	USA22413	110.10
31/64	1/2	1	3	USA16055	86.02	USA16129	110.10	USA22415	110.10
1/2	1/2	1	3	USA16057	62.56	USA16131	78.06	USA22417	78.06
9/16	9/16	1-1/4	3-1/2	USA16059	118.24	USA16133	156.13	USA22419	156.13
5/8	5/8	1-1/4	3-1/2	USA16061	119.60	USA16135	152.48	USA22421	152.48
3/4	3/4	1-1/2	4	USA16063	167.99	USA16137	216.37	USA22423	216.37
7/8	7/8	1-1/2	4	USA16065	307.25	USA16139	388.88	USA22425	388.88
1	1	1-1/2	4	USA16067	274.81	USA16141	351.51	USA22427	351.51

For coating information see page 6. For technical information, please see pages 224, 228-229.

TOLERANCES	DIAMETER	SHANK
1/64" - 7/64"	+ .000, -.001	-.0001, -.0004 ISO H6
1/8" - 1/2"	+ .000, -.002	-.0001, -.0004 ISO H6
9/16" - 1"	+ .000, -.003	-.0001, -.0004 ISO H6

Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



2 FLUTE - LONG LENGTH - SQUARE END - 30° HELIX



UNCOATED



ALTiN COATED



TiCN COATED

DIA	SHANK	LOC	OAL	UNCOATED	LIST PRICE	ALTiN	LIST PRICE	TiCN	LIST PRICE
1/8	1/8	3/4	2-1/4	USA17189	20.99	USA17217	26.99	USA22655	26.99
3/16	3/16	3/4	2-1/2	USA17191	24.63	USA17219	31.67	USA22657	31.67
1/4	1/4	1-1/8	3	USA17193	35.28	USA17221	45.48	USA22659	45.48
1/4	1/4	1	4	USA17195	37.15	USA17223	47.91	USA22661	47.91
5/16	5/16	1-1/8	3	USA17197	39.81	USA17225	53.72	USA22663	53.72
3/8	3/8	1-1/8	3	USA17199	45.66	USA17227	61.64	USA22665	61.64
3/8	3/8	1	4	USA17201	53.32	USA17229	68.60	USA22667	68.60
7/16	7/16	2	4	USA17203	71.95	USA17231	93.57	USA22669	93.57
1/2	1/2	1	4	USA17205	77.92	USA17233	100.34	USA22671	100.34
1/2	1/2	2	4	USA17207	82.52	USA17235	105.90	USA22673	105.90
5/8	5/8	2-1/4	5	USA17209	184.44	USA17237	228.26	USA22675	228.26
3/4	3/4	2-1/4	5	USA17211	254.74	USA17239	328.68	USA22677	328.68
7/8	7/8	2-1/4	5	USA17213	482.82	USA17241	570.60	USA22679	570.60
1	1	2-1/4	5	USA17215	348.75	USA17243	450.12	USA22681	450.12

2 FLUTE - EXTRA LONG LENGTH - SQUARE END - 30° HELIX



UNCOATED



ALTiN COATED



TiCN COATED

DIA	SHANK	LOC	OAL	UNCOATED	LIST PRICE	ALTiN	LIST PRICE	TiCN	LIST PRICE
1/8	1/8	1	3	USA17413	23.46	USA17441	31.67	USA22767	31.67
3/16	3/16	1-1/8	3	USA17415	25.52	USA17443	32.77	USA22769	32.77
1/4	1/4	1-1/2	4	USA17417	38.21	USA17445	49.22	USA22771	49.22
1/4	1/4	1-1/2	6	USA17419	48.75	USA17447	62.71	USA22773	62.71
5/16	5/16	1-5/8	4	USA17421	49.20	USA17449	63.48	USA22775	63.48
3/8	3/8	1-3/4	4	USA17423	55.86	USA17451	71.55	USA22777	71.55
3/8	3/8	1-1/2	6	USA17425	84.58	USA17453	109.03	USA22779	109.03
7/16	7/16	3	6	USA17427	113.93	USA17455	146.08	USA22781	146.08
1/2	1/2	1-1/2	6	USA17429	128.73	USA17457	159.77	USA22783	159.77
1/2	1/2	3	6	USA17431	135.14	USA17459	166.18	USA22785	166.18
5/8	5/8	3	6	USA17433	199.03	USA17461	244.69	USA22787	244.69
3/4	3/4	3	6	USA17435	295.80	USA17463	363.37	USA22789	363.37
7/8	7/8	3	6	USA17437	526.71	USA17465	658.43	USA22791	658.43
1	1	3	6	USA17439	502.15	USA17467	617.07	USA22793	617.07

For coating information see page 6. For technical information, please see pages 224, 228-229.

TOLERANCES	DIAMETER	SHANK
1/8" - 1/2"	+.000, -.002	-.0001, -.0004 ISO H6
5/8" - 1"	+.000, -.003	-.0001, -.0004 ISO H6

MADE IN THE USA

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

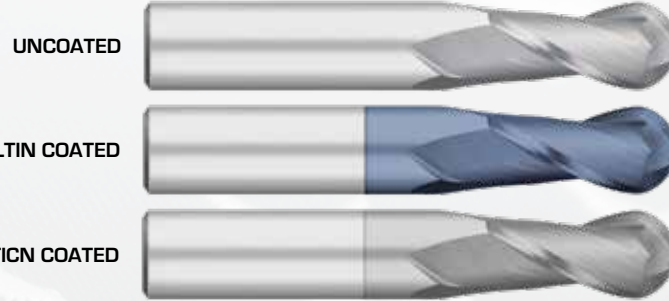
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Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

2 FLUTE - REGULAR LENGTH - BALL NOSE - 30° HELIX



END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

DIA	SHANK	LOC	OAL	UNCOATED	LIST PRICE	ALTiN	LIST PRICE	TiCN	LIST PRICE
1/64	1/8	1/32	1-1/2	USA16371	29.24	USA16445	39.18	USA22507	39.18
1/32	1/8	1/8	1-1/2	USA16373	18.71	USA16447	24.30	USA22509	24.30
3/64	1/8	1/8	1-1/2	USA16375	18.71	USA16449	24.30	USA22511	24.30
1/16	1/8	1/4	1-1/2	USA16377	17.34	USA16451	23.42	USA22513	23.42
5/64	1/8	1/4	1-1/2	USA16379	17.34	USA16453	23.42	USA22515	23.42
3/32	1/8	3/8	1-1/2	USA16381	18.19	USA16455	24.60	USA22517	24.60
7/64	1/8	3/8	1-1/2	USA16383	18.19	USA16457	24.60	USA22519	24.60
1/8	1/8	1/2	1-1/2	USA16385	16.68	USA16459	22.54	USA22521	22.54
9/64	3/16	9/16	2	USA16387	24.45	USA16461	33.03	USA22523	33.03
5/32	3/16	9/16	2	USA16389	24.45	USA16463	33.03	USA22525	33.03
11/64	3/16	5/8	2	USA16391	24.45	USA16465	33.03	USA22527	33.03
3/16	3/16	5/8	2	USA16393	21.98	USA16467	29.68	USA22529	29.68
13/64	1/4	5/8	2-1/2	USA16395	32.00	USA16469	40.39	USA22531	40.39
7/32	1/4	5/8	2-1/2	USA16397	32.00	USA16471	40.39	USA22533	40.39
15/64	1/4	3/4	2-1/2	USA16399	32.00	USA16473	40.39	USA22535	40.39
1/4	1/4	3/4	2-1/2	USA16401	30.92	USA16475	38.48	USA22537	38.48
17/64	5/16	3/4	2-1/2	USA16403	40.39	USA16477	51.96	USA22539	51.96
9/32	5/16	3/4	2-1/2	USA16405	40.47	USA16479	52.03	USA22541	52.03
19/64	5/16	13/16	2-1/2	USA16407	43.97	USA16481	57.70	USA22543	57.70
5/16	5/16	13/16	2-1/2	USA16409	37.23	USA16483	47.87	USA22545	47.87
21/64	3/8	1	2-1/2	USA16411	51.15	USA16485	69.04	USA22547	69.04
11/32	3/8	1	2-1/2	USA16413	53.69	USA16487	69.04	USA22549	69.04
23/64	3/8	1	2-1/2	USA16415	51.15	USA16489	69.04	USA22551	69.04
3/8	3/8	1	2-1/2	USA16417	39.84	USA16491	56.30	USA22553	56.30
25/64	7/16	1	2-3/4	USA16419	69.26	USA16493	89.26	USA22555	89.26
13/32	7/16	1	2-3/4	USA16421	69.26	USA16495	89.26	USA22557	89.26
27/64	7/16	1	2-3/4	USA16423	69.26	USA16497	89.26	USA22559	89.26
7/16	7/16	1	2-3/4	USA16425	58.95	USA16499	76.00	USA22561	76.00
29/64	1/2	1	3	USA16427	91.32	USA16501	117.76	USA22563	117.76
15/32	1/2	1	3	USA16429	91.32	USA16503	117.76	USA22565	117.76
31/64	1/2	1	3	USA16431	91.32	USA16505	117.76	USA22567	117.76
1/2	1/2	1	3	USA16433	80.86	USA16507	104.21	USA22569	104.21
9/16	9/16	1-1/4	3-1/2	USA16435	123.25	USA16509	151.67	USA22571	151.67
5/8	5/8	1-1/4	3-1/2	USA16437	130.76	USA16511	168.54	USA22573	168.54
3/4	3/4	1-1/2	4	USA16439	192.66	USA16513	251.06	USA22575	251.06
7/8	7/8	1-1/2	4	USA16441	373.09	USA16515	474.06	USA22577	474.06
1	1	1-1/2	4	USA16443	344.11	USA16517	443.42	USA22579	443.42

For coating information see page 6. For technical information, please see pages 224, 228-229.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/64" - 7/64"	+ .000, -.001	-.0001, -.0004 ISO H6	+ .001, -.001
1/8" - 1/2"	+ .000, -.002	-.0001, -.0004 ISO H6	+ .001, -.001
9/16" - 1"	+ .000, -.003	-.0001, -.0004 ISO H6	+ .001, -.001

Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



2 FLUTE - LONG LENGTH - BALL NOSE - 30° HELIX



UNCOATED



ALTiN COATED



TiCN COATED

DIA	SHANK	LOC	OAL	UNCOATED	LIST PRICE	ALTiN	LIST PRICE	TiCN	LIST PRICE
1/8	1/8	3/4	2-1/4	USA17301	24.97	USA17329	32.11	USA22711	32.11
3/16	3/16	3/4	2-1/2	USA17303	28.72	USA17331	36.90	USA22713	36.90
1/4	1/4	1-1/8	3	USA17305	40.39	USA17333	51.99	USA22715	51.99
1/4	1/4	1	4	USA17307	44.59	USA17335	57.48	USA22717	57.48
5/16	5/16	1-1/8	3	USA17309	47.50	USA17337	64.11	USA22719	64.11
3/8	3/8	1-1/8	3	USA17311	54.83	USA17339	74.05	USA22721	74.05
3/8	3/8	1	4	USA17313	67.16	USA17341	87.27	USA22723	87.27
7/16	7/16	2	4	USA17315	91.84	USA17343	119.42	USA22725	119.42
1/2	1/2	1	4	USA17317	94.05	USA17345	119.60	USA22727	119.60
1/2	1/2	2	4	USA17319	94.97	USA17347	120.52	USA22729	120.52
5/8	5/8	2-1/4	5	USA17321	216.37	USA17349	274.81	USA22731	274.81
3/4	3/4	2-1/4	5	USA17323	301.28	USA17351	381.63	USA22733	381.63
7/8	7/8	2-1/4	5	USA17325	517.95	USA17353	636.48	USA22735	636.48
1	1	2-1/4	5	USA17327	596.16	USA17355	733.14	USA22737	733.14

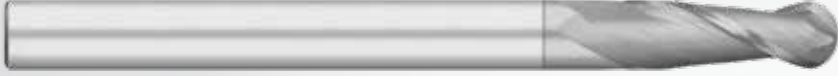
2 FLUTE - EXTRA LONG LENGTH - BALL NOSE - 30° HELIX



UNCOATED



ALTiN COATED



TiCN COATED

DIA	SHANK	LOC	OAL	UNCOATED	LIST PRICE	ALTiN	LIST PRICE	TiCN	LIST PRICE
1/8	1/8	1	3	USA17533	27.95	USA17561	37.71	USA22823	37.71
3/16	3/16	1-1/8	3	USA17535	33.50	USA17563	39.36	USA22825	39.36
1/4	1/4	1-1/2	4	USA17537	49.11	USA17565	54.64	USA22827	54.64
1/4	1/4	1-1/2	6	USA17539	56.44	USA17567	64.18	USA22829	64.18
5/16	5/16	1-5/8	4	USA17541	59.36	USA17569	76.63	USA22831	76.63
3/8	3/8	1-3/4	4	USA17543	63.89	USA17571	81.67	USA22833	81.67
3/8	3/8	1-1/2	6	USA17545	90.03	USA17573	110.50	USA22835	110.50
7/16	7/16	3	6	USA17547	135.14	USA17575	173.47	USA22837	173.47
1/2	1/2	1-1/2	6	USA17549	143.35	USA17577	183.52	USA22839	183.52
1/2	1/2	3	6	USA17551	144.23	USA17579	184.44	USA22841	184.44
5/8	5/8	3	6	USA17553	227.34	USA17581	279.37	USA22843	279.37
3/4	3/4	3	6	USA17555	322.38	USA17583	435.21	USA22845	435.21
7/8	7/8	3	6	USA17557	570.60	USA17585	711.08	USA22847	711.08
1	1	3	6	USA17559	575.17	USA17587	740.50	USA22849	740.50

For coating information see page 6. For technical information, please see pages 224, 228-229.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.00, -0.002	-0.0001, -0.0004 ISO H6	+0.001, -0.001
5/8" - 1"	+0.00, -0.003	-0.0001, -0.0004 ISO H6	+0.001, -0.001

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS



Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

4 FLUTE - REGULAR LENGTH - SQUARE END - 30° HELIX

UNCOATED



ALTIN COATED



TICN COATED



END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

DIA	SHANK	LOC	OAL	UNCOATED	LIST PRICE	ALTIN	LIST PRICE	TICN	LIST PRICE
1/64	1/8	1/32	1-1/2	USA16203	26.11	USA22879	34.98	USA22429	34.98
1/32	1/8	1/8	1-1/2	USA16205	17.49	USA22881	23.64	USA22431	23.64
3/64	1/8	1/8	1-1/2	USA16207	14.95	USA22883	20.14	USA22433	20.14
1/16	1/8	1/4	1-1/2	USA16209	14.91	USA22885	17.12	USA22435	17.12
5/64	1/8	1/4	1-1/2	USA16211	15.39	USA22887	20.77	USA22437	20.77
3/32	1/8	3/8	1-1/2	USA16213	13.55	USA22889	17.12	USA22439	17.12
7/64	1/8	3/8	1-1/2	USA16215	14.14	USA22891	19.07	USA22441	19.07
1/8	1/8	1/2	1-1/2	USA16217	13.00	USA22893	15.91	USA22443	15.91
9/64	3/16	9/16	2	USA16219	19.04	USA22895	25.70	USA22445	25.70
5/32	3/16	9/16	2	USA16221	19.15	USA22897	22.20	USA22447	22.20
11/64	3/16	5/8	2	USA16223	18.19	USA22899	24.60	USA22449	24.60
3/16	3/16	5/8	2	USA16225	17.71	USA22901	22.20	USA22451	22.20
13/64	1/4	5/8	2-1/2	USA16227	25.85	USA22903	33.88	USA22453	33.88
7/32	1/4	5/8	2-1/2	USA16229	26.40	USA22905	30.67	USA22455	30.67
15/64	1/4	3/4	2-1/2	USA16231	29.83	USA22907	38.44	USA22457	38.44
1/4	1/4	3/4	2-1/2	USA16233	21.87	USA22909	30.67	USA22459	30.67
17/64	5/16	3/4	2-1/2	USA16235	39.44	USA22911	50.67	USA22461	50.67
9/32	5/16	3/4	2-1/2	USA16237	39.44	USA22913	50.67	USA22463	50.67
19/64	5/16	13/16	2-1/2	USA16239	39.44	USA22915	50.67	USA22465	50.67
5/16	5/16	13/16	2-1/2	USA16241	28.46	USA22917	36.71	USA22467	36.71
21/64	3/8	1	2-1/2	USA16243	44.22	USA22919	56.85	USA22469	56.85
11/32	3/8	1	2-1/2	USA16245	44.22	USA22921	56.85	USA22471	56.85
23/64	3/8	1	2-1/2	USA16247	44.22	USA22923	56.85	USA22473	56.85
3/8	3/8	1	2-1/2	USA16249	33.95	USA22925	41.98	USA22475	41.98
25/64	7/16	1	2-3/4	USA16251	57.89	USA22927	74.71	USA22477	74.71
13/32	7/16	1	2-3/4	USA16253	57.89	USA22929	74.71	USA22479	74.71
27/64	7/16	1	2-3/4	USA16255	59.76	USA22931	77.18	USA22481	77.18
7/16	7/16	1	2-3/4	USA16257	52.10	USA22933	64.15	USA22483	64.15
29/64	1/2	1	3	USA16259	86.02	USA22935	110.10	USA22485	110.10
15/32	1/2	1	3	USA16261	86.02	USA22937	110.10	USA22487	110.10
31/64	1/2	1	3	USA16263	86.02	USA22939	110.10	USA22489	110.10
1/2	1/2	1	3	USA16265	62.56	USA22941	78.06	USA22491	78.06
1/2	1/2	1-1/4	3	USA16267	62.56	USA22943	78.06	USA22493	78.06
9/16	9/16	1-1/4	3-1/2	USA16269	118.24	USA22945	156.13	USA22495	156.13
5/8	5/8	1-1/4	3-1/2	USA16271	119.60	USA22947	152.48	USA22497	152.48
3/4	3/4	1-1/2	4	USA16273	167.99	USA22949	216.37	USA22499	216.37
7/8	7/8	1-1/2	4	USA16275	307.25	USA22951	388.88	USA22501	388.88
1	1	1-1/2	4	USA16277	282.81	USA22953	361.75	USA22503	361.75
1-1/4	1-1/4	2	4-1/2	USA16279	965.67	USA22955	1097.35	USA22505	1097.35

For coating information see page 6. For technical information, please see pages 224, 228-229.

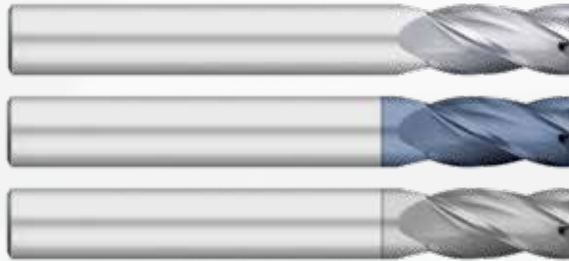
TOLERANCES	DIAMETER	SHANK
1/64" - 7/64"	+0.00, -0.01	-.0001, -.0004 ISO H6
1/8" - 1/2"	+0.00, -0.02	-.0001, -.0004 ISO H6
9/16" - 1-1/4"	+0.00, -0.03	-.0001, -.0004 ISO H6

Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



4 FLUTE - LONG LENGTH - SQUARE END - 30° HELIX



UNCOATED

ALTIM COATED

TICN COATED

DIA	SHANK	LOC	OAL	UNCOATED	LIST PRICE	ALTIM	LIST PRICE	TICN	LIST PRICE
1/8	1/8	3/4	2-1/4	USA17245	20.99	USA17273	26.99	USA22683	26.99
3/16	3/16	3/4	2-1/2	USA17247	26.34	USA17275	31.67	USA22685	31.67
1/4	1/4	1-1/8	3	USA17249	35.28	USA17277	45.48	USA22687	45.48
1/4	1/4	1	4	USA17251	37.15	USA17279	47.91	USA22689	47.91
5/16	5/16	1-1/8	3	USA17253	39.81	USA17281	53.72	USA22691	53.72
3/8	3/8	1-1/8	3	USA17255	45.66	USA17283	61.64	USA22693	61.64
3/8	3/8	1	4	USA17257	53.32	USA17285	68.60	USA22695	68.60
7/16	7/16	2	4	USA17259	71.95	USA17287	93.57	USA22697	93.57
1/2	1/2	1	4	USA17261	80.19	USA17289	103.26	USA22699	103.26
1/2	1/2	2	4	USA17263	84.92	USA17291	108.99	USA22701	108.99
5/8	5/8	2-1/4	5	USA17265	184.44	USA17293	228.26	USA22703	228.26
3/4	3/4	2-1/4	5	USA17267	254.74	USA17295	308.37	USA22705	308.37
7/8	7/8	2-1/4	5	USA17269	482.82	USA17297	570.60	USA22707	570.60
1	1	2-1/4	5	USA17271	348.75	USA17299	450.12	USA22709	450.12

4 FLUTE - EXTRA LONG LENGTH - SQUARE END - 30° HELIX



UNCOATED

ALTIM COATED

TICN COATED

DIA	SHANK	LOC	OAL	UNCOATED	LIST PRICE	ALTIM	LIST PRICE	TICN	LIST PRICE
1/8	1/8	1	3	USA17469	23.46	USA17501	31.67	USA22795	31.67
3/16	3/16	1-1/8	3	USA17471	25.52	USA17503	32.77	USA22797	32.77
1/4	1/4	1-1/2	4	USA17473	36.05	USA17505	46.43	USA22799	46.43
1/4	1/4	1-1/2	6	USA17475	48.75	USA17507	62.71	USA22801	62.71
5/16	5/16	1-5/8	4	USA17477	49.20	USA17509	63.48	USA22803	63.48
3/8	3/8	1-3/4	4	USA17479	55.86	USA17511	71.55	USA22805	71.55
3/8	3/8	1-1/2	6	USA17481	84.58	USA17513	109.03	USA22807	109.03
7/16	7/16	3	6	USA17483	113.93	USA17515	146.08	USA22809	146.08
1/2	1/2	1-1/2	6	USA17485	128.73	USA17517	159.77	USA22811	159.77
1/2	1/2	3	6	USA17487	135.14	USA17519	166.18	USA22813	166.18
5/8	5/8	3	6	USA17489	199.03	USA17521	244.69	USA22815	244.69
3/4	3/4	3	6	USA17491	295.80	USA17523	347.35	USA22817	347.35
3/4	3/4	4	7	USA17493	507.64	USA17525	575.48	USA38318	575.48
7/8	7/8	3	6	USA17495	526.71	USA17527	658.43	USA22819	658.43
1	1	3	6	USA17497	502.15	USA17529	560.57	USA22821	560.57
1	1	4	7	USA17499	658.28	USA17531	808.00	USA38320	808.00

For coating information see page 6. For technical information, please see pages 224, 228-229.

TOLERANCES	DIAMETER	SHANK
1/8" - 1/2"	+0.00, -0.002	-0.0001, -0.0004 ISO H6
5/8" - 1"	+0.00, -0.003	-0.0001, -0.0004 ISO H6

MADE IN THE USA

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS



Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

4 FLUTE - REGULAR LENGTH - BALL NOSE - 30° HELIX

UNCOATED



ALTIN COATED



TICN COATED



DIA	SHANK	LOC	OAL	UNCOATED	LIST PRICE	ALTIN	LIST PRICE	TICN	LIST PRICE
1/64	1/8	1/32	1-1/2	USA16579	29.24	USA16653	39.18	USA22581	39.18
1/32	1/8	1/8	1-1/2	USA16581	18.71	USA16655	24.30	USA22583	24.30
3/64	1/8	1/8	1-1/2	USA16583	18.71	USA16657	24.30	USA22585	24.30
1/16	1/8	1/4	1-1/2	USA16585	17.34	USA16659	23.42	USA22587	23.42
5/64	1/8	1/4	1-1/2	USA16587	17.34	USA16661	23.42	USA22589	23.42
3/32	1/8	3/8	1-1/2	USA16589	18.19	USA16663	24.60	USA22591	24.60
7/64	1/8	3/8	1-1/2	USA16591	18.19	USA16665	24.60	USA22593	24.60
1/8	1/8	1/2	1-1/2	USA16593	16.68	USA16667	22.54	USA22595	22.54
9/64	3/16	9/16	2	USA16595	24.45	USA16669	33.03	USA22597	33.03
5/32	3/16	9/16	2	USA16597	24.45	USA16671	33.03	USA22599	33.03
11/64	3/16	5/8	2	USA16599	24.45	USA16673	33.03	USA22601	33.03
3/16	3/16	5/8	2	USA16601	21.98	USA16675	29.68	USA22603	29.68
13/64	1/4	5/8	2-1/2	USA16603	31.71	USA16677	40.39	USA22605	40.39
7/32	1/4	5/8	2-1/2	USA16605	31.71	USA16679	40.39	USA22607	40.39
15/64	1/4	3/4	2-1/2	USA16607	31.71	USA16681	40.39	USA22609	40.39
1/4	1/4	3/4	2-1/2	USA16609	29.86	USA16683	38.48	USA22611	38.48
17/64	5/16	3/4	2-1/2	USA16611	40.39	USA16685	51.96	USA22613	51.96
9/32	5/16	3/4	2-1/2	USA16613	40.47	USA16687	52.03	USA22615	52.03
19/64	5/16	13/16	2-1/2	USA16615	43.97	USA16689	57.70	USA22617	57.70
5/16	5/16	13/16	2-1/2	USA16617	37.23	USA16691	47.87	USA22619	47.87
21/64	3/8	1	2-1/2	USA16619	51.15	USA16693	69.04	USA22621	69.04
11/32	3/8	1	2-1/2	USA16621	53.69	USA16695	69.04	USA22623	69.04
23/64	3/8	1	2-1/2	USA16623	51.15	USA16697	69.04	USA22625	69.04
3/8	3/8	1	2-1/2	USA16625	39.84	USA16699	56.30	USA22627	56.30
25/64	7/16	1	2-3/4	USA16627	69.26	USA16701	89.26	USA22629	89.26
13/32	7/16	1	2-3/4	USA16629	69.26	USA16703	89.26	USA22631	89.26
27/64	7/16	1	2-3/4	USA16631	69.26	USA16705	89.26	USA22633	89.26
7/16	7/16	1	2-3/4	USA16633	58.95	USA16707	76.00	USA22635	76.00
29/64	1/2	1	3	USA16635	91.32	USA16709	117.76	USA22637	117.76
15/32	1/2	1	3	USA16637	91.32	USA16711	117.76	USA22639	117.76
31/64	1/2	1	3	USA16639	91.32	USA16713	117.76	USA22641	117.76
1/2	1/2	1	3	USA16641	80.86	USA16715	104.21	USA22643	104.21
9/16	9/16	1-1/4	3-1/2	USA16643	123.25	USA16717	151.67	USA22645	151.67
5/8	5/8	1-1/4	3-1/2	USA16645	130.76	USA16719	168.54	USA22647	168.54
3/4	3/4	1-1/2	4	USA16647	192.66	USA16721	251.06	USA22649	251.06
7/8	7/8	1-1/2	4	USA16649	373.09	USA16723	474.06	USA22651	474.06
1	1	1-1/2	4	USA16651	344.11	USA16725	443.42	USA22653	443.42

For coating information see page 6. For technical information, please see pages 224, 228-229.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/64" - 7/64"	+ .000, -.001	-.0001, -.0004 ISO H6	+ .001, -.001
1/8" - 1/2"	+ .000, -.002	-.0001, -.0004 ISO H6	+ .001, -.001
9/16" - 1"	+ .000, -.003	-.0001, -.0004 ISO H6	+ .001, -.001

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



4 FLUTE - LONG LENGTH - BALL NOSE - 30° HELIX



UNCOATED



ALTiN COATED



TiCN COATED

DIA	SHANK	LOC	OAL	UNCOATED	LIST PRICE	ALTiN	LIST PRICE	TiCN	LIST PRICE
1/8	1/8	3/4	2-1/4	USA17357	24.97	USA17385	32.11	USA22739	32.11
3/16	3/16	3/4	2-1/2	USA17359	28.72	USA17387	36.90	USA22741	36.90
1/4	1/4	1-1/8	3	USA17361	40.39	USA17389	51.99	USA22743	51.99
1/4	1/4	1	4	USA17363	44.59	USA17391	57.48	USA22745	57.48
5/16	5/16	1-1/8	3	USA17365	47.50	USA17393	64.11	USA22747	64.11
3/8	3/8	1-1/8	3	USA17367	54.83	USA17395	74.05	USA22749	74.05
3/8	3/8	1	4	USA17369	67.16	USA17397	87.27	USA22751	87.27
7/16	7/16	2	4	USA17371	91.84	USA17399	119.42	USA22753	119.42
1/2	1/2	1	4	USA17373	94.05	USA17401	119.60	USA22755	119.60
1/2	1/2	2	4	USA17375	94.97	USA17403	120.52	USA22757	120.52
5/8	5/8	2-1/4	5	USA17377	216.37	USA17405	274.81	USA22759	274.81
3/4	3/4	2-1/4	5	USA17379	301.28	USA17407	381.63	USA22761	381.63
7/8	7/8	2-1/4	5	USA17381	517.95	USA17409	636.48	USA22763	636.48
1	1	2-1/4	5	USA17383	596.16	USA17411	733.14	USA22765	733.14

4 FLUTE - EXTRA LONG LENGTH - BALL NOSE - 30° HELIX



UNCOATED



ALTiN COATED



TiCN COATED

DIA	SHANK	LOC	OAL	UNCOATED	LIST PRICE	ALTiN	LIST PRICE	TiCN	LIST PRICE
1/8	1/8	1	3	USA17589	27.95	USA17621	37.71	USA22851	37.71
3/16	3/16	1-1/8	3	USA17591	33.66	USA17623	39.36	USA22853	39.36
1/4	1/4	1-1/2	4	USA17593	49.09	USA17625	54.64	USA22855	54.64
1/4	1/4	1-1/2	6	USA17595	57.73	USA17627	67.95	USA22857	67.95
5/16	5/16	1-5/8	4	USA17597	59.36	USA17629	76.63	USA22859	76.63
3/8	3/8	1-3/4	4	USA17599	63.89	USA17631	81.67	USA22861	81.67
3/8	3/8	1-1/2	6	USA17601	90.03	USA17633	112.31	USA22863	112.31
7/16	7/16	3	6	USA17603	135.14	USA17635	173.47	USA22865	173.47
1/2	1/2	1-1/2	6	USA17605	143.35	USA17637	183.52	USA22867	183.52
1/2	1/2	3	6	USA17607	144.23	USA17639	186.25	USA22869	186.25
5/8	5/8	3	6	USA17609	227.34	USA17641	279.37	USA22871	279.37
3/4	3/4	3	6	USA17611	322.38	USA17643	435.21	USA22873	435.21
3/4	3/4	4	7	USA17613	530.84	USA17645	671.35	USA38322	671.35
7/8	7/8	3	6	USA17615	570.60	USA17647	711.08	USA22875	711.08
1	1	3	6	USA17617	575.17	USA17649	740.50	USA22877	740.50
1	1	4	7	USA17619	695.69	USA17651	828.55	USA38324	828.55

For coating information see page 6. For technical information, please see pages 224, 228-229.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+ .000, -.002	-.0001, -.0004 ISO H6	+ .001, -.001
5/8" - 1"	+ .000, -.003	-.0001, -.0004 ISO H6	+ .001, -.001

MADE IN THE USA

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS



Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

4 FLUTE - REGULAR LENGTH - SQUARE END - 30° HELIX - METRIC



UNCOATED

ALTiN COATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1.0	3	3	38	USA33314	21.55
1.5	3	4.5	38	USA16757	21.55
2.0	3	6.3	38	USA16759	21.55
2.5	3	9.5	38	USA16761	21.55
3.0	3	12	38	USA16763	21.55
3.5	4	12	50	USA16765	26.55
4.0	4	14	50	USA16767	26.55
4.5	6	16	50	USA16769	32.46
5.0	6	16	50	USA16771	32.46
5.5	6	16	50	USA42260	32.46
6.0	6	19	50	USA16773	33.93
6.5	8	19	63	USA42262	36.91
7.0	8	19	63	USA16775	36.90
7.5	8	19	63	USA42264	38.37
8.0	8	20	63	USA16777	38.37
9.0	10	22	75	USA16779	56.07
10.0	10	22	75	USA16781	70.83
11.0	12	25	75	USA16783	78.21
12.0	12	25	75	USA16785	81.15
14.0	14	32	89	USA16787	137.26
16.0	16	32	89	USA16789	156.43
18.0	18	38	100	USA16791	214.00
20.0	20	38	100	USA16793	339.44
25.0	25	38	100	USA16795	442.73

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1.0	3	3	38	USA33316	26.90
1.5	3	4.5	38	USA16797	26.90
2.0	3	6.3	38	USA16799	26.90
2.5	3	9.5	38	USA16801	26.90
3.0	3	12	38	USA16803	26.90
3.5	4	12	50	USA16805	33.21
4.0	4	14	50	USA16807	33.21
4.5	6	16	50	USA16809	40.59
5.0	6	16	50	USA16811	40.59
5.5	6	16	50	USA42266	40.59
6.0	6	19	50	USA16813	42.42
6.5	8	19	63	USA42268	46.11
7.0	8	19	63	USA16815	46.11
7.5	8	19	63	USA42270	47.97
8.0	8	20	63	USA16817	47.98
9.0	10	22	75	USA16819	70.08
10.0	10	22	75	USA16821	88.53
11.0	12	25	75	USA16823	97.78
12.0	12	25	75	USA16825	101.47
14.0	14	32	89	USA16827	171.58
16.0	16	32	89	USA16829	195.55
18.0	18	38	100	USA16831	267.50
20.0	20	38	100	USA16833	424.28
25.0	25	38	100	USA16835	553.44

4 FLUTE - REGULAR LENGTH - BALL NOSE - 30° HELIX - METRIC



ALTiN COATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1.0	3	3	38	USA42320	31.75
1.5	3	4.5	38	USA42322	31.75
2.0	3	6.3	38	USA42324	31.75
2.5	3	9.5	38	USA42326	31.75
3.0	3	12	38	USA42328	31.75
3.5	4	12	50	USA42330	39.19
4.0	4	14	50	USA42332	39.19
4.5	6	16	50	USA42334	47.90
5.0	6	16	50	USA42336	47.90
5.5	6	16	50	USA42338	47.90
6.0	6	19	50	USA42340	50.06
6.5	8	19	63	USA42342	54.41

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
7.0	8	19	63	USA42344	54.41
7.5	8	19	63	USA42346	56.61
8.0	8	20	63	USA42348	56.61
9.0	10	22	75	USA42350	82.69
10.0	10	22	75	USA42352	104.47
11.0	12	25	75	USA42354	115.38
12.0	12	25	75	USA42356	119.73
14.0	14	32	89	USA42358	202.47
16.0	16	32	89	USA42360	230.75
18.0	18	38	100	USA42362	315.65
20.0	20	38	100	USA42364	500.65
25.0	25	38	100	USA42366	653.06

For coating information see page 6. For technical information, please see pages 224, 228-229.

TOLERANCES	DIAMETER	SHANK	RADIUS
ALL SIZES	+0.0mm, -.05mm	-.0025, -.01mm	+.025, -.025mm

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



4 FLUTE - REGULAR LENGTH -  CORNER RADIUS - 30° HELIX



ALTiN COATED

DIA	SHANK	LOC	OAL	RAD	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	0.015	USA20375	29.52
1/8	1/8	1/2	1-1/2	0.020	USA20377	29.52
1/8	1/8	1/2	1-1/2	0.030	USA20379	29.52
3/16	3/16	5/8	2	0.015	USA20381	29.52
3/16	3/16	5/8	2	0.020	USA20383	29.52
3/16	3/16	5/8	2	0.030	USA20385	29.52
1/4	1/4	3/4	2-1/2	0.015	USA20387	40.56
1/4	1/4	3/4	2-1/2	0.020	USA20389	40.56
1/4	1/4	3/4	2-1/2	0.030	USA20391	40.56
1/4	1/4	3/4	2-1/2	0.045	USA20393	40.56
1/4	1/4	3/4	2-1/2	0.060	USA20395	40.56
5/16	5/16	13/16	2-1/2	0.015	USA20397	54.40
5/16	5/16	13/16	2-1/2	0.020	USA20399	54.40
5/16	5/16	13/16	2-1/2	0.030	USA20401	54.40
5/16	5/16	13/16	2-1/2	0.045	USA20403	54.40
5/16	5/16	13/16	2-1/2	0.060	USA20405	54.40
3/8	3/8	1	2-1/2	0.015	USA20407	68.29
3/8	3/8	1	2-1/2	0.020	USA20409	68.29
3/8	3/8	1	2-1/2	0.030	USA20411	68.29
3/8	3/8	1	2-1/2	0.045	USA20413	68.29
3/8	3/8	1	2-1/2	0.060	USA20415	68.29
1/2	1/2	1	3	0.015	USA20417	103.02
1/2	1/2	1	3	0.020	USA20419	103.02
1/2	1/2	1	3	0.030	USA20421	103.02

DIA	SHANK	LOC	OAL	RAD	ITEM#	LIST PRICE
1/2	1/2	1	3	0.045	USA20423	103.02
1/2	1/2	1	3	0.060	USA20425	103.02
1/2	1/2	1	3	0.090	USA20427	103.02
1/2	1/2	1	3	0.125	USA20429	103.02
5/8	5/8	1-1/4	3-1/2	0.015	USA20431	167.84
5/8	5/8	1-1/4	3-1/2	0.020	USA20433	167.84
5/8	5/8	1-1/4	3-1/2	0.030	USA20435	167.84
5/8	5/8	1-1/4	3-1/2	0.045	USA20437	167.84
5/8	5/8	1-1/4	3-1/2	0.060	USA20439	167.84
5/8	5/8	1-1/4	3-1/2	0.090	USA20441	167.84
3/4	3/4	1-1/2	4	0.015	USA20443	230.34
3/4	3/4	1-1/2	4	0.020	USA20445	230.34
3/4	3/4	1-1/2	4	0.030	USA20447	230.34
3/4	3/4	1-1/2	4	0.045	USA20449	230.34
3/4	3/4	1-1/2	4	0.060	USA20451	230.34
3/4	3/4	1-1/2	4	0.090	USA20453	230.34
3/4	3/4	1-1/2	4	0.125	USA20455	230.34
1	1	1-1/2	4	0.015	USA20457	446.42
1	1	1-1/2	4	0.020	USA20459	446.42
1	1	1-1/2	4	0.030	USA20461	446.42
1	1	1-1/2	4	0.045	USA20463	446.42
1	1	1-1/2	4	0.060	USA20465	446.42
1	1	1-1/2	4	0.090	USA20467	446.42
1	1	1-1/2	4	0.125	USA20469	446.42



For coating information see page 6. For technical information, please see pages 224, 228-229.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+ .000, -.002	-.0001, -.0004 ISO H6	+ .001, -.001
5/8" - 1"	+ .000, -.003	-.0001, -.0004 ISO H6	+ .001, -.001

MADE IN THE USA

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS



Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

4 FLUTE - LONG LENGTH -  CORNER RADIUS - 30° HELIX



ALTiN COATED

DIA	SHANK	LOC	OAL	RAD	ITEM#	LIST PRICE
1/8	1/8	3/4	2-1/4	0.015	USA20601	32.45
1/8	1/8	3/4	2-1/4	0.020	USA20603	32.45
1/8	1/8	3/4	2-1/4	0.030	USA20605	32.45
3/16	3/16	3/4	2-1/2	0.015	USA20607	37.71
3/16	3/16	3/4	2-1/2	0.020	USA20609	37.71
3/16	3/16	3/4	2-1/2	0.030	USA20611	37.71
1/4	1/4	1-1/8	3	0.015	USA20613	52.61
1/4	1/4	1-1/8	3	0.020	USA20615	52.61
1/4	1/4	1-1/8	3	0.030	USA20617	52.61
1/4	1/4	1-1/8	3	0.045	USA20619	52.61
1/4	1/4	1-1/8	3	0.060	USA20621	52.61
1/4	1/4	1	4	0.015	USA20623	55.24
1/4	1/4	1	4	0.020	USA20625	55.24
1/4	1/4	1	4	0.030	USA20627	55.24
1/4	1/4	1	4	0.045	USA20629	55.24
1/4	1/4	1	4	0.060	USA20631	55.24
5/16	5/16	1-1/8	3	0.015	USA20633	59.63
5/16	5/16	1-1/8	3	0.020	USA20635	59.63
5/16	5/16	1-1/8	3	0.030	USA20637	59.63
5/16	5/16	1-1/8	3	0.045	USA20639	59.63
5/16	5/16	1-1/8	3	0.060	USA20641	59.63
3/8	3/8	1-1/8	3	0.015	USA20643	75.24
3/8	3/8	1-1/8	3	0.020	USA20645	75.24
3/8	3/8	1-1/8	3	0.030	USA20647	75.24
3/8	3/8	1-1/8	3	0.045	USA20649	75.24
3/8	3/8	1-1/8	3	0.060	USA20651	75.24
3/8	3/8	1	4	0.015	USA20653	93.76
3/8	3/8	1	4	0.020	USA20655	93.76
3/8	3/8	1	4	0.030	USA20657	93.76
3/8	3/8	1	4	0.045	USA20659	93.76
3/8	3/8	1	4	0.060	USA20661	93.76
1/2	1/2	1	4	0.015	USA20663	129.64
1/2	1/2	1	4	0.020	USA20665	129.64

DIA	SHANK	LOC	OAL	RAD	ITEM#	LIST PRICE
1/2	1/2	1	4	0.030	USA20667	129.64
1/2	1/2	1	4	0.045	USA20669	129.64
1/2	1/2	1	4	0.060	USA20671	129.64
1/2	1/2	1	4	0.090	USA20673	129.64
1/2	1/2	1	4	0.125	USA20675	129.64
1/2	1/2	2	4	0.015	USA20677	137.74
1/2	1/2	2	4	0.020	USA20679	137.74
1/2	1/2	2	4	0.030	USA20681	137.74
1/2	1/2	2	4	0.045	USA20683	137.74
1/2	1/2	2	4	0.060	USA20685	137.74
1/2	1/2	2	4	0.090	USA20687	137.74
1/2	1/2	2	4	0.125	USA20689	137.74
5/8	5/8	2-1/4	5	0.015	USA20691	249.04
5/8	5/8	2-1/4	5	0.020	USA20693	249.04
5/8	5/8	2-1/4	5	0.030	USA20695	249.04
5/8	5/8	2-1/4	5	0.045	USA20697	249.04
5/8	5/8	2-1/4	5	0.060	USA20699	249.04
5/8	5/8	2-1/4	5	0.090	USA20701	249.04
3/4	3/4	2-1/4	5	0.015	USA20703	324.10
3/4	3/4	2-1/4	5	0.020	USA20705	324.10
3/4	3/4	2-1/4	5	0.030	USA20707	324.10
3/4	3/4	2-1/4	5	0.045	USA20709	324.10
3/4	3/4	2-1/4	5	0.060	USA20711	324.10
3/4	3/4	2-1/4	5	0.090	USA20713	324.10
3/4	3/4	2-1/4	5	0.125	USA20715	324.10
1	1	2-1/4	5	0.015	USA20717	509.30
1	1	2-1/4	5	0.020	USA20719	509.30
1	1	2-1/4	5	0.030	USA20721	509.30
1	1	2-1/4	5	0.045	USA20723	509.30
1	1	2-1/4	5	0.060	USA20725	509.30
1	1	2-1/4	5	0.090	USA20727	509.30
1	1	2-1/4	5	0.125	USA20729	509.30

For coating information see page 6. For technical information, please see pages 224, 228-229.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+ .000, -.002	-.0001, -.0004 ISO H6	+ .001, -.001
5/8" - 1"	+ .000, -.003	-.0001, -.0004 ISO H6	+ .001, -.001

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



4 FLUTE - EXTRA LONG LENGTH -  CORNER RADIUS - 30° HELIX



ALTiN COATED

DIA	SHANK	LOC	OAL	RAD	ITEM#	LIST PRICE
1/8	1/8	1	3	0.015	USA20889	36.83
1/8	1/8	1	3	0.020	USA20891	36.83
1/8	1/8	1	3	0.030	USA20893	36.83
3/16	3/16	1-1/8	3	0.015	USA20895	40.34
3/16	3/16	1-1/8	3	0.020	USA20897	40.34
3/16	3/16	1-1/8	3	0.030	USA20899	40.34
1/4	1/4	1-1/2	4	0.015	USA20901	56.12
1/4	1/4	1-1/2	4	0.020	USA20903	56.12
1/4	1/4	1-1/2	4	0.030	USA20905	56.12
1/4	1/4	1-1/2	4	0.045	USA20907	56.12
1/4	1/4	1-1/2	4	0.060	USA20909	56.12
1/4	1/4	1-1/2	6	0.015	USA20911	75.41
1/4	1/4	1-1/2	6	0.020	USA20913	75.41
1/4	1/4	1-1/2	6	0.030	USA20915	75.41
1/4	1/4	1-1/2	6	0.045	USA20917	75.41
1/4	1/4	1-1/2	6	0.060	USA20919	75.41
5/16	5/16	1-5/8	4	0.015	USA20921	77.17
5/16	5/16	1-5/8	4	0.020	USA20923	77.17
5/16	5/16	1-5/8	4	0.030	USA20925	77.17
5/16	5/16	1-5/8	4	0.045	USA20927	77.17
5/16	5/16	1-5/8	4	0.060	USA20929	77.17
3/8	3/8	1-3/4	4	0.015	USA20931	84.18
3/8	3/8	1-3/4	4	0.020	USA20933	84.18
3/8	3/8	1-3/4	4	0.030	USA20935	84.18
3/8	3/8	1-3/4	4	0.045	USA20937	84.18
3/8	3/8	1-3/4	4	0.060	USA20939	84.18
3/8	3/8	1-1/2	6	0.015	USA20941	119.26
3/8	3/8	1-1/2	6	0.020	USA20943	119.26
3/8	3/8	1-1/2	6	0.030	USA20945	119.26
3/8	3/8	1-1/2	6	0.045	USA20947	119.26
3/8	3/8	1-1/2	6	0.060	USA20949	119.26
1/2	1/2	1-1/2	6	0.015	USA20951	180.64
1/2	1/2	1-1/2	6	0.020	USA20953	180.64
1/2	1/2	1-1/2	6	0.030	USA20955	180.64
1/2	1/2	1-1/2	6	0.045	USA20957	180.64
1/2	1/2	1-1/2	6	0.060	USA20959	180.64
1/2	1/2	1-1/2	6	0.090	USA20961	180.64
1/2	1/2	1-1/2	6	0.125	USA20963	180.64
1/2	1/2	3	6	0.015	USA20965	189.41
1/2	1/2	3	6	0.020	USA20967	189.41

DIA	SHANK	LOC	OAL	RAD	ITEM#	LIST PRICE
1/2	1/2	3	6	0.030	USA20969	189.41
1/2	1/2	3	6	0.045	USA20971	189.41
1/2	1/2	3	6	0.060	USA20973	189.41
1/2	1/2	3	6	0.090	USA20975	189.41
1/2	1/2	3	6	0.125	USA20977	189.41
5/8	5/8	3	6	0.015	USA20979	266.57
5/8	5/8	3	6	0.020	USA20981	266.57
5/8	5/8	3	6	0.030	USA20983	266.57
5/8	5/8	3	6	0.045	USA20985	266.57
5/8	5/8	3	6	0.060	USA20987	266.57
5/8	5/8	3	6	0.090	USA20989	266.57
3/4	3/4	3	6	0.015	USA20991	365.77
3/4	3/4	3	6	0.020	USA20993	365.77
3/4	3/4	3	6	0.030	USA20995	365.77
3/4	3/4	3	6	0.045	USA20997	365.77
3/4	3/4	3	6	0.060	USA20999	365.77
3/4	3/4	3	6	0.090	USA21001	365.77
3/4	3/4	3	6	0.125	USA21003	365.77
3/4	3/4	4	7	0.015	USA21005	600.74
3/4	3/4	4	7	0.020	USA21007	600.74
3/4	3/4	4	7	0.030	USA21009	600.74
3/4	3/4	4	7	0.045	USA21011	600.74
3/4	3/4	4	7	0.060	USA21013	600.74
3/4	3/4	4	7	0.090	USA21015	600.74
3/4	3/4	4	7	0.125	USA21017	600.74
1	1	3	6	0.015	USA21019	596.11
1	1	3	6	0.020	USA21021	596.11
1	1	3	6	0.030	USA21023	596.11
1	1	3	6	0.045	USA21025	596.11
1	1	3	6	0.060	USA21027	596.11
1	1	3	6	0.090	USA21029	596.11
1	1	3	6	0.125	USA21031	596.11
1	1	4	7	0.015	USA21033	859.35
1	1	4	7	0.020	USA21035	859.35
1	1	4	7	0.030	USA21037	859.35
1	1	4	7	0.045	USA21039	859.35
1	1	4	7	0.060	USA21041	859.35
1	1	4	7	0.090	USA21043	859.35
1	1	4	7	0.125	USA21045	859.35

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

For coating information see page 6. For technical information, please see pages 224, 228-229.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.00, -0.02	-0.0001, -0.0004 ISO H6	+0.001, -0.001
5/8" - 1"	+0.00, -0.03	-0.0001, -0.0004 ISO H6	+0.001, -0.001

MADE IN THE USA



Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

4 FLUTE - STUB LENGTH - DOUBLE END - SQUARE END - 30° HELIX



UNCOATED

ALTiN COATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/16	1/8	1/8	1-1/2	USA17079	22.90
3/32	1/8	3/16	1-1/2	USA17081	23.58
1/8	1/8	1/4	1-1/2	USA17083	19.04
5/32	3/16	5/16	2	USA17085	26.76
3/16	3/16	3/8	2	USA17087	26.76
7/32	1/4	1/2	2-1/2	USA17089	36.71
1/4	1/4	1/2	2-1/2	USA17091	36.71
5/16	5/16	1/2	2-1/2	USA17093	47.47
3/8	3/8	9/16	2-1/2	USA17095	52.40
7/16	7/16	9/16	2-3/4	USA17097	74.01
1/2	1/2	5/8	3	USA17099	90.60

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/16	1/8	1/8	1-1/2	USA17167	30.92
3/32	1/8	3/16	1-1/2	USA17169	31.86
1/8	1/8	1/4	1-1/2	USA17171	25.68
5/32	3/16	5/16	2	USA17173	34.56
3/16	3/16	3/8	2	USA17175	34.56
7/32	1/4	1/2	2-1/2	USA17177	47.42
1/4	1/4	1/2	2-1/2	USA17179	47.42
5/16	5/16	1/2	2-1/2	USA17181	58.27
3/8	3/8	9/16	2-1/2	USA17183	64.28
7/16	7/16	9/16	2-3/4	USA17185	90.86
1/2	1/2	5/8	3	USA17187	122.29

4 FLUTE - STUB LENGTH - DOUBLE END - BALL NOSE - 30° HELIX



UNCOATED

ALTiN COATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/16	1/8	1/8	1-1/2	USA17101	28.64
3/32	1/8	3/16	1-1/2	USA17103	29.46
1/8	1/8	1/4	1-1/2	USA17105	23.80
5/32	3/16	5/16	2	USA17107	33.44
3/16	3/16	3/8	2	USA17109	33.44
7/32	1/4	1/2	2-1/2	USA17111	43.91
1/4	1/4	1/2	2-1/2	USA17113	43.91
5/16	5/16	1/2	2-1/2	USA17115	59.35
3/8	3/8	9/16	2-1/2	USA17117	65.48
7/16	7/16	9/16	2-3/4	USA17119	92.53
1/2	1/2	5/8	3	USA17121	113.24

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/16	1/8	1/8	1-1/2	USA17123	38.68
3/32	1/8	3/16	1-1/2	USA17125	39.79
1/8	1/8	1/4	1-1/2	USA17127	32.12
5/32	3/16	5/16	2	USA17129	43.18
3/16	3/16	3/8	2	USA17131	43.18
7/32	1/4	1/2	2-1/2	USA17133	59.26
1/4	1/4	1/2	2-1/2	USA17135	59.26
5/16	5/16	1/2	2-1/2	USA17137	72.81
3/8	3/8	9/16	2-1/2	USA17139	80.36
7/16	7/16	9/16	2-3/4	USA17141	113.59
1/2	1/2	5/8	3	USA17143	152.91

For coating information see page 6. For technical information, please see pages 224, 228-229.

TOLERANCES	DIAMETER	SHANK	RADIUS
ALL SIZES	+0.000, -.002	-.0001, -.0004 ISO H6	+0.001, -.001

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

Carbide End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



4 FLUTE - REGULAR LENGTH - DOUBLE END - SQUARE END - 30° HELIX



UNCOATED



ALTiN COATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/8	3/8	3/8	3-1/8	USA16881	85.35
5/32	3/8	7/16	3-1/4	USA16883	85.35
3/16	3/8	1/2	3-1/4	USA16885	85.35
7/32	3/8	9/16	3-1/2	USA16887	86.71
1/4	3/8	5/8	3-1/2	USA16889	86.71
9/32	3/8	11/16	3-1/2	USA16891	88.91
5/16	3/8	3/4	3-1/2	USA16893	88.91
11/32	3/8	3/4	3-1/2	USA16895	88.91
3/8	3/8	3/4	3-1/2	USA16897	88.91
7/16	1/2	7/8	4	USA16899	128.89
1/2	1/2	1	4	USA16901	144.80

NOTE: ALL TOOLS WITH WELDON FLATS

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/8	3/8	3/8	3-1/8	USA16903	106.55
5/32	3/8	7/16	3-1/4	USA16905	106.55
3/16	3/8	1/2	3-1/4	USA16907	106.55
7/32	3/8	9/16	3-1/2	USA16909	109.00
1/4	3/8	5/8	3-1/2	USA16911	109.00
9/32	3/8	11/16	3-1/2	USA16913	116.98
5/16	3/8	3/4	3-1/2	USA16915	116.98
11/32	3/8	3/4	3-1/2	USA16917	116.98
3/8	3/8	3/4	3-1/2	USA16919	116.98
7/16	1/2	7/8	4	USA16921	174.04
1/2	1/2	1	4	USA16923	195.52

NOTE: ALL TOOLS WITH WELDON FLATS

4 FLUTE - REGULAR LENGTH - DOUBLE END - BALL NOSE - 30° HELIX



UNCOATED



ALTiN COATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/8	3/8	3/8	3-1/8	USA16969	97.06
5/32	3/8	7/16	3-1/4	USA16971	97.06
3/16	3/8	1/2	3-1/4	USA16973	97.06
7/32	3/8	9/16	3-1/2	USA16975	98.37
1/4	3/8	5/8	3-1/2	USA16977	98.37
9/32	3/8	11/16	3-1/2	USA16979	107.78
5/16	3/8	3/4	3-1/2	USA16981	107.78
11/32	3/8	3/4	3-1/2	USA16983	107.78
3/8	3/8	3/4	3-1/2	USA16985	107.78
7/16	1/2	7/8	4	USA16987	156.00
1/2	1/2	1	4	USA16989	159.49

NOTE: ALL TOOLS WITH WELDON FLATS

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/8	3/8	3/8	3-1/8	USA16991	126.72
5/32	3/8	7/16	3-1/4	USA16993	126.72
3/16	3/8	1/2	3-1/4	USA16995	126.72
7/32	3/8	9/16	3-1/2	USA16997	130.91
1/4	3/8	5/8	3-1/2	USA16999	130.91
9/32	3/8	11/16	3-1/2	USA17001	145.53
5/16	3/8	3/4	3-1/2	USA17003	145.53
11/32	3/8	3/4	3-1/2	USA17005	145.53
3/8	3/8	3/4	3-1/2	USA17007	145.53
7/16	1/2	7/8	4	USA17009	198.06
1/2	1/2	1	4	USA17011	215.28

NOTE: ALL TOOLS WITH WELDON FLATS

For coating information see page 6. For technical information, please see pages 224, 228-229.

TOLERANCES	DIAMETER	SHANK	RADIUS
ALL SIZES	+ .000, -.002	-.0001, -.0004 ISO H6	+ .001, -.001

MADE IN THE USA

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS



Carbide Drill Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

2 FLUTE - 60° POINT - 30° HELIX



UNCOATED

ALTiN COATED

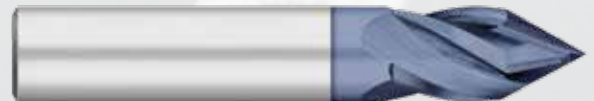
DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/32	1/8	1/8	1-1/2	USA38002	24.22
1/16	1/8	3/16	1-1/2	USA38004	24.22
3/32	1/8	3/8	1-1/2	USA38006	24.22
1/8	1/8	1/2	1-1/2	USA38008	23.23
3/16	3/16	5/8	2	USA38010	32.70
1/4	1/4	3/4	2-1/2	USA38012	40.93
5/16	5/16	13/16	2-1/2	USA38014	50.82
3/8	3/8	1	2-1/2	USA38016	63.85
7/16	7/16	1	2-3/4	USA38018	86.33
1/2	1/2	1	3	USA38020	105.84
5/8	5/8	1-1/4	3-1/2	USA38022	202.10
3/4	3/4	1-1/2	4	USA38024	297.67

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/32	1/8	1/8	1-1/2	USA38158	30.28
1/16	1/8	3/16	1-1/2	USA38160	30.28
3/32	1/8	3/8	1-1/2	USA38162	30.28
1/8	1/8	1/2	1-1/2	USA38164	29.07
3/16	3/16	5/8	2	USA38166	40.89
1/4	1/4	3/4	2-1/2	USA38168	51.16
5/16	5/16	13/16	2-1/2	USA38170	63.51
3/8	3/8	1	2-1/2	USA38172	79.85
7/16	7/16	1	2-3/4	USA38174	107.93
1/2	1/2	1	3	USA38176	132.33
5/8	5/8	1-1/4	3-1/2	USA38178	252.65
3/4	3/4	1-1/2	4	USA38180	372.09

END MILLS

DRILL MILLS

4 FLUTE - 60° POINT - 30° HELIX



UNCOATED

ALTiN COATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/32	1/8	1/8	1-1/2	USA38026	24.22
1/16	1/8	3/16	1-1/2	USA38028	24.22
3/32	1/8	3/8	1-1/2	USA38030	24.22
1/8	1/8	1/2	1-1/2	USA38032	23.23
3/16	3/16	5/8	2	USA38034	32.70
1/4	1/4	3/4	2-1/2	USA38036	40.93
5/16	5/16	13/16	2-1/2	USA38038	50.82
3/8	3/8	1	2-1/2	USA38040	63.85
7/16	7/16	1	2-3/4	USA38042	86.33
1/2	1/2	1	3	USA38044	105.84
5/8	5/8	1-1/4	3-1/2	USA38046	202.10
3/4	3/4	1-1/2	4	USA38048	297.67

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/32	1/8	1/8	1-1/2	USA38230	30.28
1/16	1/8	3/16	1-1/2	USA38232	30.28
3/32	1/8	3/8	1-1/2	USA38234	30.28
1/8	1/8	1/2	1-1/2	USA38236	29.07
3/16	3/16	5/8	2	USA38238	40.89
1/4	1/4	3/4	2-1/2	USA38240	51.16
5/16	5/16	13/16	2-1/2	USA38242	63.51
3/8	3/8	1	2-1/2	USA38244	79.85
7/16	7/16	1	2-3/4	USA38246	107.93
1/2	1/2	1	3	USA38248	132.33
5/8	5/8	1-1/4	3-1/2	USA38250	252.65
3/4	3/4	1-1/2	4	USA38252	372.09

CHAMFER MILLS

DRILLS

REAMERS

BURS

Drill mills are very popular in job shop environments because of their versatility in performing a wide range of applications:

The following applications can be performed with drill mills:
 Drilling • Chamfering • Countersinking • Spotting • Profile Milling

For coating information see page 6. For technical information, please see pages 224, 228-229.

TOLERANCES	DIAMETER	SHANK
1/32" - 3/32"	+0.000, -0.001	-0.0001, -.0004 ISO H6
1/8" - 1/2"	+0.000, -0.002	-0.0001, -.0004 ISO H6
5/8" - 3/4"	+0.000, -0.003	-0.0001, -.0004 ISO H6

Carbide Drill Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



2 FLUTE - 90° POINT - 30° HELIX



UNCOATED



ALTiN COATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/32	1/8	1/8	1-1/2	USA38050	24.22
1/16	1/8	3/16	1-1/2	USA38052	24.22
3/32	1/8	3/8	1-1/2	USA38054	24.22
1/8	1/8	1/2	1-1/2	USA38056	23.23
3/16	3/16	5/8	2	USA38058	32.70
1/4	1/4	3/4	2-1/2	USA38060	40.93
5/16	5/16	13/16	2-1/2	USA38062	50.82
3/8	3/8	1	2-1/2	USA38064	63.85
7/16	7/16	1	2-3/4	USA38066	86.33
1/2	1/2	1	3	USA38068	105.84
5/8	5/8	1-1/4	3-1/2	USA38070	202.10
3/4	3/4	1-1/2	4	USA38072	297.67

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/32	1/8	1/8	1-1/2	USA38182	30.28
1/16	1/8	3/16	1-1/2	USA38184	30.28
3/32	1/8	3/8	1-1/2	USA38186	30.28
1/8	1/8	1/2	1-1/2	USA38188	29.07
3/16	3/16	5/8	2	USA38190	40.89
1/4	1/4	3/4	2-1/2	USA38192	51.16
5/16	5/16	13/16	2-1/2	USA38194	63.51
3/8	3/8	1	2-1/2	USA38196	79.85
7/16	7/16	1	2-3/4	USA38198	107.93
1/2	1/2	1	3	USA38200	132.33
5/8	5/8	1-1/4	3-1/2	USA38202	252.65
3/4	3/4	1-1/2	4	USA38204	372.09

4 FLUTE - 90° POINT - 30° HELIX



UNCOATED



ALTiN COATED

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/32	1/8	1/8	1-1/2	USA38074	24.22
1/16	1/8	3/16	1-1/2	USA38076	24.22
3/32	1/8	3/8	1-1/2	USA38078	24.22
1/8	1/8	1/2	1-1/2	USA38080	23.23
3/16	3/16	5/8	2	USA38082	32.70
1/4	1/4	3/4	2-1/2	USA38084	40.93
5/16	5/16	13/16	2-1/2	USA38086	50.82
3/8	3/8	1	2-1/2	USA38088	63.85
7/16	7/16	1	2-3/4	USA38090	86.33
1/2	1/2	1	3	USA38092	105.84
5/8	5/8	1-1/4	3-1/2	USA38094	202.10
3/4	3/4	1-1/2	4	USA38096	297.67

DIA	SHANK	LOC	OAL	ITEM#	LIST PRICE
1/32	1/8	1/8	1-1/2	USA38206	30.28
1/16	1/8	3/16	1-1/2	USA38208	30.28
3/32	1/8	3/8	1-1/2	USA38210	30.28
1/8	1/8	1/2	1-1/2	USA38212	29.07
3/16	3/16	5/8	2	USA38214	40.89
1/4	1/4	3/4	2-1/2	USA38216	51.16
5/16	5/16	13/16	2-1/2	USA38218	63.51
3/8	3/8	1	2-1/2	USA38220	79.85
7/16	7/16	1	2-3/4	USA38222	107.93
1/2	1/2	1	3	USA38224	132.33
5/8	5/8	1-1/4	3-1/2	USA38226	252.65
3/4	3/4	1-1/2	4	USA38228	372.09

Drill mills are very popular in job shop environments because of their versatility in performing a wide range of applications:

The following applications can be performed with drill mills:
 Drilling • Chamfering • Countersinking • Spotting • Profile Milling

For coating information see page 6. For technical information, please see pages 224, 228-229.

TOLERANCES	DIAMETER	SHANK
1/32" - 3/32"	+0.000, -0.001	-0.0001, -.0004 ISO H6
1/8" - 1/2"	+0.000, -0.002	-0.0001, -.0004 ISO H6
5/8" - 3/4"	+0.000, -0.003	-0.0001, -.0004 ISO H6

MADE IN THE USA

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS



Carbide Chamfer Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

END MILLS



2 FLUTE - SINGLE END

60° • 82° • 90° • 100° • 120°

UNCOATED

DIA	SHANK	OAL	PKG. QTY.	60°- ITEM#	82°- ITEM#	90°- ITEM#	100°- ITEM#	120°- ITEM#	LIST PRICE
1/8	1/8	1-1/2	1	USA39998	USA40006	USA40014	USA40022	USA40030	20.74
1/4	1/4	2-1/2	1	USA40000	USA40008	USA40016	USA40024	USA40032	36.51
3/8	3/8	2-1/2	1	USA40002	USA40010	USA40018	USA40026	USA40034	56.96
1/2	1/2	3	1	USA40004	USA40012	USA40020	USA40028	USA40036	94.29

DRILL MILLS



2 FLUTE - SINGLE END

60° • 82° • 90° • 100° • 120°

ALTIN COATED

DIA	SHANK	OAL	PKG. QTY.	60°- ITEM#	82°- ITEM#	90°- ITEM#	100°- ITEM#	120°- ITEM#	LIST PRICE
1/8	1/8	1-1/2	1	USA40038	USA40046	USA40054	USA40062	USA40070	25.94
1/4	1/4	2-1/2	1	USA40040	USA40048	USA40056	USA40064	USA40072	45.57
3/8	3/8	2-1/2	1	USA40042	USA40050	USA40058	USA40066	USA40074	71.21
1/2	1/2	3	1	USA40044	USA40052	USA40060	USA40068	USA40076	117.95

CHAMFER MILLS



4 FLUTE - SINGLE END

60° • 82° • 90° • 100° • 120°

UNCOATED

DIA	SHANK	OAL	PKG. QTY.	60°- ITEM#	82°- ITEM#	90°- ITEM#	100°- ITEM#	120°- ITEM#	LIST PRICE
1/8	1/8	1-1/2	1	USA40078	USA40086	USA40094	USA40102	USA40110	20.74
1/4	1/4	2-1/2	1	USA40080	USA40088	USA40096	USA40104	USA40112	36.51
3/8	3/8	2-1/2	1	USA40082	USA40090	USA40098	USA40106	USA40114	56.96
1/2	1/2	3	1	USA40084	USA40092	USA40100	USA40108	USA40116	94.29

DRILLS



4 FLUTE - SINGLE END

60° • 82° • 90° • 100° • 120°

ALTIN COATED

DIA	SHANK	OAL	PKG. QTY.	60°- ITEM#	82°- ITEM#	90°- ITEM#	100°- ITEM#	120°- ITEM#	LIST PRICE
1/8	1/8	1-1/2	1	USA40118	USA40126	USA40134	USA40142	USA40150	25.94
1/4	1/4	2-1/2	1	USA40120	USA40128	USA40136	USA40144	USA40152	45.57
3/8	3/8	2-1/2	1	USA40122	USA40130	USA40138	USA40146	USA40154	71.21
1/2	1/2	3	1	USA40124	USA40132	USA40140	USA40148	USA40156	117.95

REAMERS

BURS

For coating information see page 6. For technical information, please see pages 224, 230.

Carbide Chamfer Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



2 FLUTE - DOUBLE END
60° • 82° • 90° • 100° • 120°
UNCOATED

DIA	SHANK	OAL	PKG. QTY.	60°- ITEM#	82°- ITEM#	90°- ITEM#	100°- ITEM#	120°- ITEM#	LIST PRICE
1/8	1/8	2	1	USA40158	USA40170	USA40182	USA40194	USA40206	37.33
3/16	3/16	2-1/2	1	USA40160	USA40172	USA40184	USA40196	USA40208	51.41
1/4	1/4	2-1/2	1	USA40162	USA40174	USA40186	USA40198	USA40210	65.72
5/16	5/16	2-1/2	1	USA40164	USA40176	USA40188	USA40200	USA40212	84.13
3/8	3/8	2-1/2	1	USA40166	USA40178	USA40190	USA40202	USA40214	102.53
1/2	1/2	3	1	USA40168	USA40180	USA40192	USA40204	USA40216	169.72



2 FLUTE - DOUBLE END
60° • 82° • 90° • 100° • 120°
ALTIN COATED

DIA	SHANK	OAL	PKG. QTY.	60°- ITEM#	82°- ITEM#	90°- ITEM#	100°- ITEM#	120°- ITEM#	LIST PRICE
1/8	1/8	2	1	USA40218	USA40230	USA40242	USA40254	USA40266	46.69
3/16	3/16	2-1/2	1	USA40220	USA40232	USA40244	USA40256	USA40268	64.26
1/4	1/4	2-1/2	1	USA40222	USA40234	USA40246	USA40258	USA40270	82.02
5/16	5/16	2-1/2	1	USA40224	USA40236	USA40248	USA40260	USA40272	105.10
3/8	3/8	2-1/2	1	USA40226	USA40238	USA40250	USA40262	USA40274	128.29
1/2	1/2	3	1	USA40228	USA40240	USA40252	USA40264	USA40276	212.36



4 FLUTE - DOUBLE END
60° • 82° • 90° • 100° • 120°
UNCOATED

DIA	SHANK	OAL	PKG. QTY.	60°- ITEM#	82°- ITEM#	90°- ITEM#	100°- ITEM#	120°- ITEM#	LIST PRICE
1/8	1/8	2	1	USA40278	USA40290	USA40302	USA40314	USA40326	37.33
3/16	3/16	2-1/2	1	USA40280	USA40292	USA40304	USA40316	USA40328	51.41
1/4	1/4	2-1/2	1	USA40282	USA40294	USA40306	USA40318	USA40330	65.72
5/16	5/16	2-1/2	1	USA40284	USA40296	USA40308	USA40320	USA40332	84.13
3/8	3/8	2-1/2	1	USA40286	USA40298	USA40310	USA40322	USA40334	102.53
1/2	1/2	3	1	USA40288	USA40300	USA40312	USA40324	USA40336	169.72



4 FLUTE - DOUBLE END
60° • 82° • 90° • 100° • 120°
ALTIN COATED

DIA	SHANK	OAL	PKG. QTY.	60°- ITEM#	82°- ITEM#	90°- ITEM#	100°- ITEM#	120°- ITEM#	LIST PRICE
1/8	1/8	2	1	USA40338	USA40350	USA40362	USA40374	USA40386	46.69
3/16	3/16	2-1/2	1	USA40340	USA40352	USA40364	USA40376	USA40388	64.26
1/4	1/4	2-1/2	1	USA40342	USA40354	USA40366	USA40378	USA40390	82.02
5/16	5/16	2-1/2	1	USA40344	USA40356	USA40368	USA40380	USA40392	105.10
3/8	3/8	2-1/2	1	USA40346	USA40358	USA40370	USA40382	USA40394	128.29
1/2	1/2	3	1	USA40348	USA40360	USA40372	USA40384	USA40396	212.36

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

For coating information see page 6. For technical information, please see pages 224, 230.

MADE IN THE USA



Carbide Spot Drills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS



90° POINT
UNCOATED

DIA	SHANK	FL LENGTH	OAL	ITEM#	LIST PRICE
1/8	1/8	1/4	2	USA17653	29.05
3/16	3/16	3/8	2	USA17655	34.57
1/4	1/4	3/8	3	USA17657	41.98
3/8	3/8	1/2	4	USA17659	68.70
1/2	1/2	3/4	4	USA17661	111.55
5/8	5/8	1	4	USA17663	198.57
3/4	3/4	1	4	USA17665	266.62



120° POINT
UNCOATED

DIA	SHANK	FL LENGTH	OAL	ITEM#	LIST PRICE
1/8	1/8	1/4	2	USA17667	29.05
3/16	3/16	3/8	2	USA17669	34.57
1/4	1/4	3/8	3	USA17671	41.98
3/8	3/8	1/2	4	USA17673	68.70
1/2	1/2	3/4	4	USA17675	111.55
5/8	5/8	1	4	USA17677	198.57
3/4	3/4	1	4	USA17679	266.62



140° POINT
UNCOATED

DIA	SHANK	FL LENGTH	OAL	ITEM#	LIST PRICE
1/8	1/8	1/4	2	USA17681	29.05
3/16	3/16	3/8	2	USA17683	34.57
1/4	1/4	3/8	3	USA17685	41.98
3/8	3/8	1/2	4	USA17687	68.70
1/2	1/2	3/4	4	USA17689	111.55
5/8	5/8	1	4	USA17691	198.57
3/4	3/4	1	4	USA17693	266.62

For technical information, please see page 231.

MADE IN THE USA

Carbide Spot Drills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



90° POINT
ALTiN COATED

DIA	SHANK	FL LENGTH	OAL	ITEM#	LIST PRICE
1/8	1/8	1/4	2	USA38116	36.31
3/16	3/16	3/8	2	USA38118	43.22
1/4	1/4	3/8	3	USA38120	52.72
3/8	3/8	1/2	4	USA38122	83.43
1/2	1/2	3/4	4	USA38124	145.23
5/8	5/8	1	4	USA38126	253.88
3/4	3/4	1	4	USA38128	333.29



120° POINT
ALTiN COATED

DIA	SHANK	FL LENGTH	OAL	ITEM#	LIST PRICE
1/8	1/8	1/4	2	USA38130	36.31
3/16	3/16	3/8	2	USA38132	43.22
1/4	1/4	3/8	3	USA38134	52.72
3/8	3/8	1/2	4	USA38136	83.43
1/2	1/2	3/4	4	USA38138	145.23
5/8	5/8	1	4	USA38140	253.88
3/4	3/4	1	4	USA38142	333.29



140° POINT
ALTiN COATED

DIA	SHANK	FL LENGTH	OAL	ITEM#	LIST PRICE
1/8	1/8	1/4	2	USA38144	36.31
3/16	3/16	3/8	2	USA38146	43.22
1/4	1/4	3/8	3	USA38148	52.72
3/8	3/8	1/2	4	USA38150	83.43
1/2	1/2	3/4	4	USA38152	145.23
5/8	5/8	1	4	USA38154	253.88
3/4	3/4	1	4	USA38156	333.29

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

For coating information see page 6. For technical information, please see page 231.

MADE IN THE USA



Carbide Drills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

STUB LENGTH - 135° SPLIT POINT - 15° HELIX

UNCOATED



ALTIN COATED



FRACTIONAL SIZES

SIZE	FLUTE LENGTH	OAL	UNCOATED	LIST PRICE	ALTIN	LIST PRICE
1/32	3/8	1-1/2	USA18159	17.40	USA33332	21.76
3/64	3/8	1-1/2	USA18161	17.40	USA33334	21.76
1/16	13/32	1-1/2	USA18163	16.44	USA33336	20.53
5/64	7/16	1-1/2	USA18165	17.40	USA33338	21.76
3/32	1/2	1-1/2	USA18167	19.18	USA33340	23.96
7/64	5/8	2	USA18169	21.76	USA33342	27.20
1/8	3/4	2	USA18171	23.23	USA33344	29.01
9/64	3/4	2	USA18173	25.74	USA33346	32.14
5/32	7/8	2	USA18175	28.82	USA33348	36.00
11/64	7/8	2	USA18177	34.03	USA33350	42.56
3/16	7/8	2	USA18179	34.99	USA33352	43.75
13/64	1-1/8	2-1/2	USA18181	40.44	USA33354	50.54
7/32	1-1/8	2-1/2	USA18183	44.87	USA33356	56.10
15/64	1-1/4	2-1/2	USA18185	50.78	USA33358	63.47
1/4	1-1/4	2-1/2	USA18187	53.36	USA33360	66.71
17/64	1-1/4	2-1/2	USA18189	60.15	USA33362	75.16

FRACTIONAL SIZES

SIZE	FLUTE LENGTH	OAL	UNCOATED	LIST PRICE	ALTIN	LIST PRICE
9/32	1-1/4	2-1/2	USA18191	62.66	USA33364	78.32
19/64	1-1/4	2-1/2	USA18193	70.38	USA33366	88.01
5/16	1-1/4	2-1/2	USA18195	74.12	USA33368	92.60
21/64	1-3/8	3	USA18197	80.83	USA33370	101.05
11/32	1-3/8	3	USA18199	88.39	USA33372	110.46
23/64	1-3/8	3	USA18201	98.81	USA33374	123.50
3/8	1-3/8	3	USA18203	104.79	USA33376	130.99
25/64	1-3/8	3	USA18205	122.73	USA33378	153.41
13/32	1-3/8	3	USA18207	134.42	USA33380	168.03
27/64	1-3/8	3	USA18209	146.23	USA33382	182.77
7/16	1-3/8	3	USA18211	152.94	USA33384	191.18
29/64	1-3/8	3	USA18213	177.44	USA33386	221.81
15/32	1-3/8	3	USA18215	184.89	USA33388	231.11
31/64	1-3/8	3	USA18217	190.10	USA33390	237.63
1/2	1-3/8	3	USA18219	190.52	USA33392	238.14

NOTE: SIZES 7/64" AND UNDER ARE NOT SPLIT.

LETTER SIZES

SIZE	FLUTE LENGTH	OAL	UNCOATED	LIST PRICE	ALTIN	LIST PRICE
A	1-1/4	2-1/2	USA18221	51.24	USA33394	64.05
B	1-1/4	2-1/2	USA18223	53.36	USA33396	66.71
C	1-1/4	2-1/2	USA18225	53.75	USA33398	67.21
D	1-1/4	2-1/2	USA18227	54.44	USA33400	68.02
E	1-1/4	2-1/2	USA18229	53.36	USA33402	66.71
F	1-1/4	2-1/2	USA18231	59.38	USA33404	74.20
G	1-1/4	2-1/2	USA18233	62.93	USA33406	78.67
H	1-1/4	2-1/2	USA18235	64.28	USA33408	80.37
I	1-1/4	2-1/2	USA18237	65.36	USA33410	81.72
J	1-1/4	2-1/2	USA18239	67.10	USA33412	83.88
K	1-1/4	2-1/2	USA18241	67.71	USA33414	84.61
L	1-1/4	2-1/2	USA18243	71.57	USA33416	89.44
M	1-1/4	2-1/2	USA18245	73.00	USA33418	91.29

LETTER SIZES

SIZE	FLUTE LENGTH	OAL	UNCOATED	LIST PRICE	ALTIN	LIST PRICE
N	1-1/4	2-1/2	USA18247	77.59	USA33420	96.96
O	1-3/8	3	USA18249	81.80	USA33422	102.25
P	1-3/8	3	USA18251	84.92	USA33424	106.14
Q	1-3/8	3	USA18253	88.01	USA33426	110.00
R	1-3/8	3	USA18255	91.87	USA33428	114.82
S	1-3/8	3	USA18257	97.85	USA33430	122.35
T	1-3/8	3	USA18259	101.36	USA33432	126.71
U	1-3/8	3	USA18261	106.37	USA33434	132.96
V	1-3/8	3	USA18263	117.79	USA33436	147.23
W	1-3/8	3	USA18265	126.86	USA33438	158.58
X	1-3/8	3	USA18267	138.48	USA33440	173.08
Y	1-3/8	3	USA18269	143.11	USA33442	178.87
Z	1-3/8	3	USA18271	155.10	USA33444	193.84

For coating information see page 6. For technical information, please see page 231.

DIAMETER TOLERANCE +.0000, -.0005

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

Carbide Drills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



STUB LENGTH - 135° SPLIT POINT - 15° HELIX

UNCOATED



ALTIM COATED



WIRE SIZES					WIRE SIZES								
SIZE	FLUTE LENGTH	OAL	UNCOATED	LIST PRICE	ALTIM	LIST PRICE	SIZE	FLUTE LENGTH	OAL	UNCOATED	LIST PRICE	ALTIM	LIST PRICE
1	1-1/4	2-1/2	USA18273	46.42	USA33446	58.03	31	3/4	2	USA18333	22.65	USA33506	28.28
2	1-1/4	2-1/2	USA18275	46.42	USA33448	58.03	32	3/4	2	USA18335	22.65	USA33508	28.28
3	1-1/8	2-1/2	USA18277	46.42	USA33450	58.03	33	3/4	2	USA18337	22.42	USA33510	28.05
4	1-1/8	2-1/2	USA18279	45.91	USA33452	57.41	34	3/4	2	USA18339	22.22	USA33512	27.78
5	1-1/8	2-1/2	USA18281	41.01	USA33454	51.24	35	3/4	2	USA18341	22.22	USA33514	27.78
6	1-1/8	2-1/2	USA18283	41.01	USA33456	51.24	36	5/8	2	USA18343	22.22	USA33516	27.78
7	1-1/8	2-1/2	USA18285	39.82	USA33458	49.77	37	5/8	2	USA18345	21.07	USA33518	26.35
8	1-1/8	2-1/2	USA18287	39.66	USA33460	49.58	38	5/8	2	USA18347	20.68	USA33520	25.85
9	1-1/8	2-1/2	USA18289	39.66	USA33462	49.58	39	5/8	2	USA18349	20.68	USA33522	25.85
10	1-1/8	2-1/2	USA18291	39.66	USA33464	49.58	40	5/8	2	USA18351	19.91	USA33524	24.92
11	1-1/8	2-1/2	USA18293	38.66	USA33466	48.34	41	5/8	2	USA18353	19.91	USA33526	24.92
12	1-1/8	2-1/2	USA18295	38.66	USA33468	48.34	42	1/2	1-1/2	USA18355	19.37	USA33528	24.19
13	7/8	2	USA18297	37.31	USA33470	46.65	43	1/2	1-1/2	USA18357	19.37	USA33530	24.19
14	7/8	2	USA18299	36.38	USA33472	45.49	44	1/2	1-1/2	USA18359	18.37	USA33532	22.96
15	7/8	2	USA18301	35.81	USA33474	44.72	45	1/2	1-1/2	USA18361	17.79	USA33534	22.22
16	7/8	2	USA18303	35.81	USA33476	44.72	46	1/2	1-1/2	USA18363	17.79	USA33536	22.22
17	7/8	2	USA18305	34.03	USA33478	42.56	47	1/2	1-1/2	USA18365	17.79	USA33538	22.22
18	7/8	2	USA18307	31.99	USA33480	40.01	48	7/16	1-1/2	USA18367	17.79	USA33540	22.22
19	7/8	2	USA18309	31.33	USA33482	39.16	49	7/16	1-1/2	USA18369	17.02	USA33542	21.26
20	7/8	2	USA18311	29.98	USA33484	37.50	50	7/16	1-1/2	USA18371	17.02	USA33544	21.26
21	7/8	2	USA18313	29.98	USA33486	37.50	51	7/16	1-1/2	USA18373	16.44	USA33546	20.53
22	7/8	2	USA18315	28.82	USA33488	36.00	52	7/16	1-1/2	USA18375	16.44	USA33548	20.53
23	7/8	2	USA18317	28.82	USA33490	36.00	53	13/32	1-1/2	USA18377	17.40	USA33550	21.76
24	7/8	2	USA18319	28.63	USA33492	35.81	54	13/32	1-1/2	USA18379	17.40	USA33552	21.76
25	7/8	2	USA18321	27.09	USA33494	33.84	55	13/32	1-1/2	USA18381	17.40	USA33554	21.76
26	7/8	2	USA18323	27.09	USA33496	33.84	56	3/8	1-1/2	USA18383	17.40	USA33556	21.76
27	7/8	2	USA18325	27.09	USA33498	33.84	57	3/8	1-1/2	USA18385	17.40	USA33558	21.76
28	3/4	2	USA18327	25.74	USA33500	32.14	58	3/8	1-1/2	USA18387	17.40	USA33560	21.76
29	3/4	2	USA18329	25.74	USA33502	32.14	59	3/8	1-1/2	USA18389	17.40	USA33562	21.76
30	3/4	2	USA18331	24.35	USA33504	30.44	60	3/8	1-1/2	USA18391	17.40	USA33564	21.76

NOTE: SIZES 31 - 60 ARE NOT SPLIT.

For coating information see page 6. For technical information, please see page 231.

DIAMETER TOLERANCE +.0000, -.0005

MADE IN THE USA

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS



Carbide Drills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

JOBBER LENGTH - 118° SPLIT POINT - 25° HELIX

UNCOATED



ALTiN COATED



END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

FRACTIONAL SIZES						FRACTIONAL SIZES							
SIZE	FLUTE LENGTH	OAL	UNCOATED	LIST PRICE	ALTiN	LIST PRICE	SIZE	FLUTE LENGTH	OAL	UNCOATED	LIST PRICE	ALTiN	LIST PRICE
1/32	5/16	1-1/4	USA17695	16.36	USA35144	20.45	9/32	2-1/8	3-1/2	USA17727	58.99	USA35176	73.77
3/64	3/4	1-1/2	USA17697	16.36	USA35146	20.45	19/64	2-3/8	3-3/4	USA17729	66.29	USA35178	82.84
1/16	3/4	1-1/2	USA17699	15.47	USA35148	19.33	5/16	2-3/8	3-3/4	USA17731	69.72	USA35180	87.12
5/64	7/8	1-3/4	USA17701	16.36	USA35150	20.45	21/64	2-1/2	4	USA17733	76.09	USA35182	95.11
3/32	1	2	USA17703	18.02	USA35152	22.53	11/32	2-1/2	4	USA17735	83.19	USA35184	103.98
7/64	1-1/4	2-1/4	USA17705	20.49	USA35154	25.62	23/64	2-3/4	4-1/4	USA17737	93.02	USA35186	116.29
1/8	1-1/4	2-1/4	USA17707	21.84	USA35156	27.32	3/8	2-3/4	4-1/4	USA17739	98.66	USA35188	123.31
9/64	1-3/8	2-1/2	USA17709	24.19	USA35158	30.25	25/64	2-7/8	4-1/2	USA17741	115.52	USA35190	144.38
5/32	1-3/8	2-1/2	USA17711	27.12	USA35160	33.91	13/32	2-7/8	4-1/2	USA17743	126.51	USA35192	158.15
11/64	1-5/8	2-3/4	USA17713	32.02	USA35162	40.05	27/64	2-7/8	4-1/2	USA17745	137.59	USA35194	171.97
3/16	1-5/8	2-3/4	USA17715	32.95	USA35164	41.17	7/16	2-7/8	4-1/2	USA17747	143.95	USA35196	179.99
13/64	1-3/4	3	USA17717	38.04	USA35166	47.57	29/64	3	4-3/4	USA17749	167.03	USA35198	208.77
7/32	1-3/4	3	USA17719	42.21	USA35168	52.78	15/32	3	4-3/4	USA17751	174.01	USA35200	217.49
15/64	2	3-1/4	USA17721	47.80	USA35170	59.73	31/64	3	4-3/4	USA17753	178.91	USA35202	223.67
1/4	2	3-1/4	USA17723	50.24	USA35172	62.77	1/2	3	4-3/4	USA17755	179.30	USA35204	224.13
17/64	2-1/8	3-1/2	USA17725	56.56	USA35174	70.72							

NOTE: SIZES 7/64" AND UNDER ARE NOT SPLIT.

METRIC SIZES						METRIC SIZES							
SIZE	FLUTE LENGTH	OAL	UNCOATED	LIST PRICE	ALTiN	LIST PRICE	SIZE	FLUTE LENGTH	OAL	UNCOATED	LIST PRICE	ALTiN	LIST PRICE
0.7	12	31	USA32501	20.33	USA35378	25.43	3.0	32	57	USA32524	28.01	USA35424	34.99
0.8	12	31	USA32502	20.33	USA35380	25.43	3.1	32	57	USA32525	28.01	USA35426	34.99
0.9	16	38	USA32503	20.33	USA35382	25.43	3.2	32	57	USA32526	28.01	USA35428	34.99
1.0	16	38	USA32504	20.33	USA35384	25.43	3.3	32	57	USA32527	28.01	USA35430	34.99
1.1	19	38	USA32505	20.33	USA35386	25.43	3.4	35	63	USA32528	30.40	USA35432	38.04
1.2	19	38	USA32506	20.33	USA35388	25.43	3.5	35	63	USA32529	30.40	USA35434	38.04
1.3	19	38	USA32507	20.33	USA35390	25.43	4.0	35	63	USA32530	37.43	USA35436	46.76
1.4	19	38	USA32508	20.33	USA35392	25.43	4.5	41	70	USA32531	40.09	USA35438	50.12
1.5	19	38	USA32509	20.49	USA35394	25.62	5.0	44	75	USA32532	44.33	USA35440	55.44
1.6	19	38	USA32510	20.49	USA35396	25.62	5.5	44	75	USA32533	52.51	USA35442	65.63
1.7	19	38	USA32511	20.49	USA35398	25.62	6.0	50	82	USA32534	55.52	USA35444	69.37
1.8	22	38	USA32512	20.49	USA35400	25.62	6.5	50	82	USA32535	88.43	USA35446	110.54
1.9	22	38	USA32513	20.49	USA35402	25.62	7.0	54	89	USA32536	96.84	USA35448	121.07
2.0	22	44	USA32514	21.76	USA35404	27.20	7.5	60	95	USA32537	100.01	USA35450	125.01
2.1	22	44	USA32515	21.76	USA35406	27.20	8.0	60	95	USA32538	105.80	USA35452	132.22
2.2	25	50	USA32516	21.76	USA35408	27.20	8.5	63	100	USA32539	130.60	USA35454	163.25
2.3	25	50	USA32517	21.76	USA35410	27.20	9.0	70	100	USA32540	148.28	USA35456	185.35
2.4	25	50	USA32518	21.76	USA35412	27.20	9.5	70	108	USA32541	169.19	USA35458	211.51
2.5	25	50	USA32519	25.00	USA35414	31.25	10.0	73	114	USA32542	194.30	USA35460	242.88
2.6	32	57	USA32520	25.00	USA35416	31.25	10.5	73	114	USA32543	217.30	USA35462	271.63
2.7	32	57	USA32521	25.00	USA35418	31.25	11.0	73	114	USA32544	258.55	USA35464	323.21
2.8	32	57	USA32522	25.00	USA35420	31.25	11.5	76	120	USA32545	266.30	USA35466	332.90
2.9	32	57	USA32523	25.00	USA35422	31.25	12.0	76	120	USA32546	295.55	USA35468	369.47

NOTE: ALL DIMENSIONS IN TABLE ARE METRIC (mm)

NOTE: SIZES 3.1mm AND UNDER ARE NOT SPLIT.

For coating information see page 6. For technical information, please see page 231.

DIAMETER TOLERANCE +.0000, -.0005

Carbide Drills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



JOBBER LENGTH - 118° SPLIT POINT - 25° HELIX

UNCOATED



ALTiN COATED



LETTER SIZES						LETTER SIZES							
SIZE	FLUTE LENGTH	OAL	UNCOATED	LIST PRICE	ALTiN	LIST PRICE	SIZE	FLUTE LENGTH	OAL	UNCOATED	LIST PRICE	ALTiN	LIST PRICE
A	2	3-1/4	USA17757	48.23	USA35206	60.27	N	2-3/8	3-3/4	USA17783	79.71	USA35232	91.29
B	2	3-1/4	USA17759	50.24	USA35208	62.77	O	2-3/8	3-3/4	USA17785	84.30	USA35234	96.23
C	2	3-1/4	USA17761	50.62	USA35210	63.28	P	2-3/8	3-3/4	USA17787	87.12	USA35236	99.89
D	2	3-1/4	USA17763	51.24	USA35212	64.05	Q	2-1/2	4	USA17789	92.52	USA35238	103.52
E	2	3-1/4	USA17765	50.24	USA35214	62.77	R	2-1/2	4	USA17791	95.36	USA35240	108.07
F	2	3-1/4	USA17767	59.64	USA35216	69.84	S	2-1/2	4	USA17793	101.79	USA35242	115.13
G	2-1/8	3-1/2	USA17769	64.50	USA35218	74.04	T	2-3/4	4-1/4	USA17795	105.35	USA35244	119.22
H	2-1/8	3-1/2	USA17771	66.21	USA35220	75.66	U	2-3/4	4-1/4	USA17797	110.45	USA35246	125.13
I	2-1/8	3-1/2	USA17773	67.48	USA35222	76.90	V	2-3/4	4-1/4	USA17799	119.69	USA35248	138.59
J	2-1/8	3-1/2	USA17775	71.73	USA35224	78.98	W	2-7/8	4-1/2	USA17801	125.72	USA35250	149.28
K	2-1/8	3-1/2	USA17777	71.90	USA35226	79.64	X	2-7/8	4-1/2	USA17803	137.36	USA35252	162.90
L	2-1/8	3-1/2	USA17779	72.21	USA35228	84.19	Y	2-7/8	4-1/2	USA17805	141.82	USA35254	168.38
M	2-3/8	3-3/4	USA17781	72.64	USA35230	85.89	Z	2-7/8	4-1/2	USA17807	176.01	USA35256	182.46

WIRE SIZES						WIRE SIZES							
SIZE	FLUTE LENGTH	OAL	UNCOATED	LIST PRICE	ALTiN	LIST PRICE	SIZE	FLUTE LENGTH	OAL	UNCOATED	LIST PRICE	ALTiN	LIST PRICE
1	1-3/4	3	USA17809	43.71	USA35258	54.63	31	1-1/4	2-1/4	USA17869	21.30	USA35318	26.62
2	1-3/4	3	USA17811	43.71	USA35260	54.63	32	1-1/4	2-1/4	USA17871	21.30	USA35320	26.62
3	1-3/4	3	USA17813	43.71	USA35262	54.63	33	1-1/4	2-1/4	USA17873	21.11	USA35322	26.39
4	1-3/4	3	USA17815	43.25	USA35264	54.06	34	1-1/4	2-1/4	USA17875	20.95	USA35324	26.16
5	1-3/4	3	USA17817	38.58	USA35266	48.27	35	1-1/4	2-1/4	USA17877	20.95	USA35326	26.16
6	1-3/4	3	USA17819	38.58	USA35268	48.27	36	1-1/4	2-1/4	USA17879	20.95	USA35328	26.16
7	1-3/4	3	USA17821	37.50	USA35270	46.88	37	1-1/4	2-1/4	USA17881	19.83	USA35330	24.81
8	1-3/4	3	USA17823	37.31	USA35272	46.65	38	1-1/4	2-1/4	USA17883	19.48	USA35332	24.35
9	1-3/4	3	USA17825	37.31	USA35274	46.65	39	1-1/4	2-1/4	USA17885	19.48	USA35334	24.35
10	1-5/8	2-3/4	USA17827	37.31	USA35276	46.65	40	1	2	USA17887	18.75	USA35336	23.42
11	1-5/8	2-3/4	USA17829	36.42	USA35278	45.49	41	1	2	USA17889	18.75	USA35338	23.42
12	1-5/8	2-3/4	USA17831	36.42	USA35280	45.49	42	1	2	USA17891	18.21	USA35340	22.76
13	1-5/8	2-3/4	USA17833	35.11	USA35282	43.91	43	1	2	USA17893	18.21	USA35342	22.76
14	1-5/8	2-3/4	USA17835	34.22	USA35284	42.79	44	1	2	USA17895	17.29	USA35344	21.61
15	1-5/8	2-3/4	USA17837	33.68	USA35286	42.09	45	7/8	1-3/4	USA17897	16.78	USA35346	20.95
16	1-5/8	2-3/4	USA17839	33.68	USA35288	42.09	46	7/8	1-3/4	USA17899	16.78	USA35348	20.95
17	1-5/8	2-3/4	USA17841	32.02	USA35290	40.05	47	7/8	1-3/4	USA17901	16.78	USA35350	20.95
18	1-5/8	2-3/4	USA17843	30.13	USA35292	37.66	48	7/8	1-3/4	USA17903	16.78	USA35352	20.95
19	1-5/8	2-3/4	USA17845	29.48	USA35294	36.85	49	7/8	1-3/4	USA17905	16.01	USA35354	20.02
20	1-3/8	2-1/2	USA17847	28.20	USA35296	35.27	50	7/8	1-3/4	USA17907	16.01	USA35356	20.02
21	1-3/8	2-1/2	USA17849	28.20	USA35298	35.27	51	3/4	1-1/2	USA17909	15.47	USA35358	19.33
22	1-3/8	2-1/2	USA17851	27.12	USA35300	33.91	52	3/4	1-1/2	USA17911	15.47	USA35360	19.33
23	1-3/8	2-1/2	USA17853	27.12	USA35302	33.91	53	3/4	1-1/2	USA17913	16.36	USA35362	20.45
24	1-3/8	2-1/2	USA17855	26.93	USA35304	33.68	54	3/4	1-1/2	USA17915	16.36	USA35364	20.45
25	1-3/8	2-1/2	USA17857	25.47	USA35306	31.87	55	3/4	1-1/2	USA17917	16.36	USA35366	20.45
26	1-3/8	2-1/2	USA17859	25.47	USA35308	31.87	56	3/4	1-1/2	USA17919	16.36	USA35368	20.45
27	1-3/8	2-1/2	USA17861	25.47	USA35310	31.87	57	3/4	1-1/2	USA17921	16.36	USA35370	20.45
28	1-3/8	2-1/2	USA17863	24.19	USA35312	30.25	58	3/4	1-1/2	USA17923	16.36	USA35372	20.45
29	1-3/8	2-1/2	USA17865	24.19	USA35314	30.25	59	3/4	1-1/2	USA17925	16.36	USA35374	20.45
30	1-1/4	2-1/4	USA17867	22.92	USA35316	28.67	60	3/4	1-1/2	USA17927	16.36	USA35376	20.45

NOTE: SIZES 31-60 ARE NOT SPLIT.

For coating information see page 6. For technical information, please see page 231.

DIAMETER TOLERANCE +.0000, -.0005

MADE IN THE USA

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS



Carbide Drills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

STRAIGHT FLUTE - 140° SPLIT POINT

UNCOATED



ALTIN COATED



FRACTIONAL SIZES

SIZE	FLUTE LENGTH	OAL	UNCOATED	LIST PRICE	ALTIN	LIST PRICE
1/8	3/4	2	USA17941	25.47	USA35482	31.83
9/64	3/4	2	USA17943	29.13	USA35484	36.38
5/32	7/8	2	USA17945	32.60	USA35486	40.78
11/64	7/8	2	USA17947	36.19	USA35488	45.22
3/16	7/8	2	USA17949	33.41	USA35490	41.75
13/64	1-1/8	2-1/2	USA17951	43.44	USA35492	54.36
7/32	1-1/8	2-1/2	USA17953	48.81	USA35494	61.04
15/64	1-1/4	2-1/2	USA17955	51.51	USA35496	64.40
1/4	1-1/4	2-1/2	USA17957	48.73	USA35498	60.92
17/64	1-1/4	2-1/2	USA17959	67.75	USA35500	84.65
9/32	1-1/4	2-1/2	USA17961	70.41	USA35502	88.05
19/64	1-1/4	2-1/2	USA17963	74.54	USA35504	93.18

FRACTIONAL SIZES

SIZE	FLUTE LENGTH	OAL	UNCOATED	LIST PRICE	ALTIN	LIST PRICE
5/16	1-1/4	2-1/2	USA17965	77.21	USA35506	96.50
21/64	1-3/8	3	USA17967	82.99	USA35508	103.71
11/32	1-3/8	3	USA17969	92.06	USA35510	115.06
23/64	1-3/8	3	USA17971	100.70	USA35512	125.90
3/8	1-3/8	3	USA17973	99.85	USA35514	124.82
25/64	1-3/8	3	USA17975	123.50	USA35516	154.37
13/32	1-3/8	3	USA17977	118.18	USA35518	147.74
27/64	1-3/8	3	USA17979	149.86	USA35520	187.28
7/16	1-3/8	3	USA17981	146.15	USA35522	182.69
15/32	1-3/8	3	USA17983	162.63	USA35524	203.29
1/2	1-3/8	3	USA17985	176.21	USA35526	220.27

LETTER SIZES

SIZE	FLUTE LENGTH	OAL	UNCOATED	LIST PRICE	ALTIN	LIST PRICE
A	1-1/4	2-1/2	USA17987	51.51	USA35528	64.40
B	1-1/4	2-1/2	USA17989	51.51	USA35530	64.40
C	1-1/4	2-1/2	USA17991	51.51	USA35532	64.40
D	1-1/4	2-1/2	USA17993	51.51	USA35534	64.40
E	1-1/4	2-1/2	USA17995	48.73	USA35536	60.92
F	1-1/4	2-1/2	USA17997	67.75	USA35538	84.65
G	1-1/4	2-1/2	USA17999	67.75	USA35540	84.65
H	1-1/4	2-1/2	USA18001	67.75	USA35542	84.65
I	1-1/4	2-1/2	USA18003	70.41	USA35544	88.05
J	1-1/4	2-1/2	USA18005	70.41	USA35546	88.05
K	1-1/4	2-1/2	USA18007	70.41	USA35548	88.05
L	1-1/4	2-1/2	USA18009	74.54	USA35550	93.18
M	1-1/4	2-1/2	USA18011	74.54	USA35552	93.18

LETTER SIZES

SIZE	FLUTE LENGTH	OAL	UNCOATED	LIST PRICE	ALTIN	LIST PRICE
N	1-1/4	2-1/2	USA18013	77.21	USA35554	96.50
O	1-3/8	3	USA18015	77.21	USA35556	96.50
P	1-3/8	3	USA18017	82.99	USA35558	103.75
Q	1-3/8	3	USA18019	92.06	USA35560	115.06
R	1-3/8	3	USA18021	92.06	USA35562	115.06
S	1-3/8	3	USA18023	100.70	USA35564	125.90
T	1-3/8	3	USA18025	100.70	USA35566	125.90
U	1-3/8	3	USA18027	111.70	USA35568	139.59
V	1-3/8	3	USA18029	111.70	USA35570	139.59
W	1-3/8	3	USA18031	123.50	USA35572	154.37
X	1-3/8	3	USA18033	136.66	USA35574	170.85
Y	1-3/8	3	USA18035	143.26	USA35576	179.06
Z	1-3/8	3	USA18037	149.86	USA35578	187.28

For coating information see page 6. For technical information, please see page 231.

DIAMETER TOLERANCE +.0000, -.0005

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

Carbide Drills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



STRAIGHT FLUTE - 140° SPLIT POINT

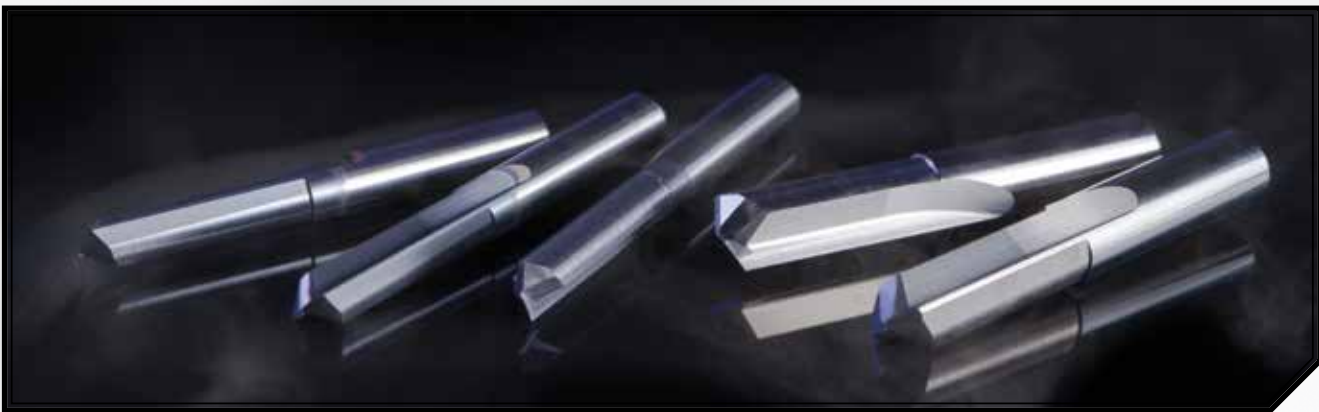
UNCOATED



ALTiN COATED



WIRE SIZES						WIRE SIZES							
SIZE	FLUTE LENGTH	OAL	UNCOATED	LIST PRICE	ALTiN	LIST PRICE	SIZE	FLUTE LENGTH	OAL	UNCOATED	LIST PRICE	ALTiN	LIST PRICE
1	1-1/4	2-1/2	USA18039	50.12	USA35580	62.66	16	7/8	2	USA18069	37.46	USA35610	46.84
2	1-1/4	2-1/2	USA18041	49.23	USA35582	61.54	17	7/8	2	USA18071	36.58	USA35612	45.72
3	1-1/8	2-1/2	USA18043	47.26	USA35584	59.07	18	7/8	2	USA18073	35.54	USA35614	44.41
4	1-1/8	2-1/2	USA18045	44.64	USA35586	55.79	19	7/8	2	USA18075	35.30	USA35616	44.14
5	1-1/8	2-1/2	USA18047	45.14	USA35588	56.41	20	7/8	2	USA18077	34.11	USA35618	42.63
6	1-1/8	2-1/2	USA18049	44.49	USA35590	55.60	21	7/8	2	USA18079	33.88	USA35620	42.36
7	1-1/8	2-1/2	USA18051	42.83	USA35592	53.55	22	7/8	2	USA18081	33.22	USA35622	41.55
8	1-1/8	2-1/2	USA18053	42.21	USA35594	52.74	23	7/8	2	USA18083	31.83	USA35624	39.78
9	1-1/8	2-1/2	USA18055	40.94	USA35596	51.16	24	7/8	2	USA18085	30.94	USA35626	38.70
10	1-1/8	2-1/2	USA18057	40.32	USA35598	50.43	25	7/8	2	USA18087	30.02	USA35628	37.54
11	1-1/8	2-1/2	USA18059	39.63	USA35600	49.50	26	7/8	2	USA18089	29.67	USA35630	37.08
12	1-1/8	2-1/2	USA18061	38.89	USA35602	48.61	27	7/8	2	USA18091	29.09	USA35632	36.38
13	7/8	2	USA18063	38.24	USA35604	47.77	28	3/4	2	USA18093	28.13	USA35634	35.11
14	7/8	2	USA18065	37.97	USA35606	47.50	29	3/4	2	USA18095	27.51	USA35636	34.38
15	7/8	2	USA18067	37.62	USA35608	46.99	30	3/4	2	USA18097	27.09	USA35638	33.88



For coating information see page 6. For technical information, please see page 231.

DIAMETER TOLERANCE	+.0000, -.0005
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MADE IN THE USA

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS



Carbide Reamers

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

DEC. EQUIV.	SIZE	SHANK DIA.	OVERALL LENGTH	FLUTE LENGTH	# OF FLUTES	ITEM#	LIST PRICE
.0400	N60	.0400	1-1/2	1/4	4	USA21247	42.60
.0410	N59	.0410	1-1/2	3/8	4	USA21249	42.60
.0420	N58	.0420	1-1/2	3/8	4	USA21251	42.60
.0430	N57	.0430	1-1/2	3/8	4	USA21253	42.60
.0440	-	.0440	1-1/2	3/8	4	USA21255	45.01
.0450	-	.0450	1-1/2	3/8	4	USA21257	45.01
.0460	-	.0460	1-1/2	3/8	4	USA21259	45.01
.0465	N56	.0465	1-1/2	3/8	4	USA21261	42.60
.0469	3/64	.0469	1-1/2	3/8	4	USA21263	40.48
.0470	-	.0470	1-1/2	3/8	4	USA21265	45.01
.0480	-	.0480	1-1/2	3/8	4	USA21267	45.01
.0490	-	.0490	1-1/2	3/8	4	USA21269	45.01
.0500	-	.0500	1-1/2	3/8	4	USA21271	45.01
.0510	-	.0510	1-1/2	3/8	4	USA21273	45.01
.0520	N55	.0520	1-1/2	3/8	4	USA21275	42.60
.0530	-	.0530	1-1/2	3/8	4	USA21277	45.01
.0540	-	.0540	1-1/2	3/8	4	USA21279	45.01
.0550	N54	.0550	1-1/2	3/8	4	USA21281	42.60
.0560	-	.0560	1-1/2	3/8	4	USA21283	45.01
.0570	-	.0570	1-1/2	3/8	4	USA21285	45.01
.0580	-	.0580	1-1/2	3/8	4	USA21287	45.01
.0590	-	.0590	1-1/2	3/8	4	USA21289	45.01
.0591	1.5MM	.0591	1-1/2	3/8	4	USA21291	45.01
.0595	N53	.0595	1-1/2	3/8	4	USA21293	42.60
.0600	-	.0600	1-1/2	3/8	4	USA21295	45.01
.0605	-	.0605	1-1/2	3/8	4	USA21297	59.85
.0610	-	.0610	1-1/2	3/8	4	USA21299	45.01
.0615	-	.0615	1-1/2	3/8	4	USA21301	49.78
.0620	-	.0620	1-1/2	3/8	4	USA21303	45.01
.0625	1/16	.0625	1-1/2	3/8	4	USA21305	40.48
.0630	-	.0630	1-1/2	3/8	4	USA21307	45.01
.0635	N52	.0635	1-1/2	3/8	4	USA21309	42.60
.0640	-	.0640	1-1/2	3/8	4	USA21311	45.01
.0645	-	.0645	1-1/2	3/8	4	USA21313	59.85
.0650	-	.0650	1-1/2	3/8	4	USA21315	45.01
.0660	-	.0660	1-3/4	1/2	4	USA21317	45.01
.0670	N51	.0670	1-3/4	1/2	4	USA21319	42.60
.0680	-	.0680	1-3/4	1/2	4	USA21321	45.01
.0690	-	.0690	1-3/4	1/2	4	USA21323	45.01
.0700	N50	.0700	1-3/4	1/2	4	USA21325	42.60

DEC. EQUIV.	SIZE	SHANK DIA.	OVERALL LENGTH	FLUTE LENGTH	# OF FLUTES	ITEM #	LIST PRICE
.0710	-	.0710	1-3/4	1/2	4	USA21327	45.01
.0720	-	.0720	1-3/4	1/2	4	USA21329	45.01
.0730	N49	.0730	1-3/4	1/2	4	USA21331	42.60
.0740	-	.0740	1-3/4	1/2	4	USA21333	45.01
.0750	-	.0750	1-3/4	1/2	4	USA21335	45.01
.0760	N48	.0760	1-3/4	1/2	4	USA21337	42.60
.0770	-	.0770	1-3/4	1/2	4	USA21339	45.01
.0780	-	.0780	1-3/4	1/2	4	USA21341	45.01
.0781	5/64	.0781	1-3/4	1/2	4	USA21343	40.48
.0785	N47	.0785	1-3/4	1/2	4	USA21345	42.60
.0787	2MM	.0787	1-3/4	1/2	4	USA21347	45.01
.0790	-	.0790	1-3/4	1/2	4	USA21349	45.01
.0800	-	.0800	1-3/4	1/2	4	USA21351	45.01
.0810	N46	.0810	2	1/2	4	USA21353	42.60
.0820	N45	.0820	2	1/2	4	USA21355	42.60
.0830	-	.0830	2	1/2	4	USA21357	45.01
.0840	-	.0840	2	1/2	4	USA21359	45.01
.0850	-	.0850	2	1/2	4	USA21361	45.01
.0860	N44	.0860	2	1/2	4	USA21363	42.60
.0870	-	.0870	2	1/2	4	USA21365	45.01
.0880	-	.0880	2	1/2	4	USA21367	45.01
.0890	N43	.0890	2	1/2	4	USA21369	42.60
.0900	-	.0900	2	1/2	4	USA21371	45.01
.0910	-	.0910	2	1/2	4	USA21373	45.01
.0915	-	.0915	2	1/2	4	USA21375	59.37
.0920	-	.0920	2	1/2	4	USA21377	45.01
.0925	-	.0925	2	1/2	4	USA21379	49.78
.0930	-	.0930	2	1/2	4	USA21381	45.01
.0935	N42	.0935	2	1/2	4	USA21383	42.60
.0938	3/32	.0938	2	1/2	4	USA21385	40.48
.0940	-	.0940	2	1/2	4	USA21387	45.01
.0945	-	.0945	2	1/2	4	USA21389	49.78
.0950	-	.0950	2	1/2	4	USA21391	45.01
.0960	N41	.0960	2	5/8	4	USA21393	42.60
.0970	-	.0970	2	5/8	4	USA21395	45.01
.0980	N40	.0980	2	5/8	4	USA21397	42.60
.0984	2.5MM	.0984	2	5/8	4	USA21399	45.01
.0990	-	.0990	2-1/4	5/8	4	USA21401	45.01
.0995	N39	.0995	2-1/4	5/8	4	USA21403	42.60
.1000	-	.1000	2-1/4	5/8	4	USA21405	45.01

For technical information, please see page 240.

DIAMETER TOLERANCE +.0003, -.0000

Carbide Reamers

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



DEC. EQUIV.	SIZE	SHANK DIA.	OVERALL LENGTH	FLUTE LENGTH	# OF FLUTES	ITEM #	LIST PRICE
.1010	-	.1010	2-1/4	5/8	4	USA21407	45.01
.1015	N38	.1015	2-1/4	5/8	4	USA21409	42.60
.1020	-	.1020	2-1/4	5/8	4	USA21411	45.01
.1030	-	.1030	2-1/4	5/8	4	USA21413	45.01
.1040	N37	.1040	2-1/4	5/8	4	USA21415	42.60
.1050	-	.1050	2-1/4	5/8	4	USA21417	45.01
.1060	-	.1060	2-1/4	5/8	4	USA21419	45.01
.1065	N36	.1065	2-1/4	5/8	4	USA21421	42.60
.1070	-	.1070	2-1/4	5/8	4	USA21423	45.01
.1080	-	.1080	2-1/4	5/8	4	USA21425	45.01
.1090	-	.1090	2-1/4	5/8	4	USA21427	46.90
.1094	7/64	.1094	2-1/4	5/8	4	USA21429	40.48
.1100	N35	.1100	2-1/4	5/8	4	USA21431	42.60
.1110	N34	.1110	2-1/4	5/8	4	USA21433	42.60
.1120	-	.1120	2-1/4	5/8	4	USA21435	45.01
.1130	N33	.1130	2-1/4	5/8	4	USA21437	42.60
.1140	-	.1140	2-1/4	5/8	4	USA21439	45.01
.1150	-	.1150	2-1/4	5/8	4	USA21441	45.01
.1160	N32	.1160	2-1/4	5/8	4	USA21443	44.81
.1170	-	.1170	2-1/4	5/8	4	USA21445	47.66
.1180	-	.1180	2-1/4	5/8	4	USA21447	47.66
.1181	3MM	.1181	2-1/4	5/8	4	USA21449	43.81
.1190	-	.1190	2-1/4	5/8	4	USA21451	47.66
.1200	N31	.1200	2-1/4	5/8	4	USA21453	44.81
.1210	-	.1210	2-1/4	5/8	4	USA21455	47.66
.1220	-	.1220	2-1/4	5/8	4	USA21457	47.66
.1230	-	.1230	2-1/4	5/8	4	USA21459	47.66
.1235	-	.1235	2-1/4	5/8	4	USA21461	63.46
.1240	-	.1240	2-1/4	5/8	4	USA21463	47.66
.1245	-	.1245	2-1/4	5/8	4	USA21465	52.67
.1250	1/8	.1250	2-1/4	5/8	4	USA21467	43.09
.1255	-	.1255	2-1/4	5/8	4	USA21469	52.67
.1260	-	.1260	2-1/4	5/8	4	USA21471	47.66
.1265	-	.1265	2-1/4	5/8	4	USA21473	63.46
.1270	-	.1270	2-1/4	5/8	4	USA21475	47.66
.1275	-	.1275	2-1/4	5/8	4	USA21477	63.46
.1280	-	.1280	2-1/4	5/8	4	USA21479	47.66
.1285	N30	.1285	2-1/4	5/8	4	USA21481	47.66
.1290	-	.1290	2-1/4	5/8	4	USA21483	47.66
.1300	-	.1300	2-1/2	5/8	4	USA21485	47.66

DEC. EQUIV.	SIZE	SHANK DIA.	OVERALL LENGTH	FLUTE LENGTH	# OF FLUTES	ITEM #	LIST PRICE
.1310	-	.1310	2-1/2	3/4	4	USA21487	54.56
.1320	-	.1320	2-1/2	3/4	4	USA21489	54.56
.1330	-	.1330	2-1/2	3/4	4	USA21491	54.56
.1340	-	.1340	2-1/2	3/4	4	USA21493	54.56
.1350	-	.1350	2-1/2	3/4	4	USA21495	54.56
.1360	N29	.1360	2-1/2	3/4	4	USA21497	51.03
.1370	-	.1370	2-1/2	3/4	4	USA21499	54.56
.1378	3.5MM	.1378	2-1/2	3/4	4	USA21501	54.56
.1380	-	.1380	2-1/2	3/4	4	USA21503	54.56
.1390	-	.1390	2-1/2	3/4	4	USA21505	54.56
.1400	-	.1400	2-1/2	3/4	4	USA21507	54.56
.1405	N28	.1405	2-1/2	3/4	4	USA21509	51.03
.1406	9/64	.1406	2-1/2	3/4	4	USA21511	49.10
.1410	-	.1410	2-1/2	3/4	4	USA21513	54.56
.1420	-	.1420	2-1/2	3/4	4	USA21515	54.56
.1430	-	.1430	2-1/2	3/4	4	USA21517	54.56
.1440	N27	.1440	2-1/2	3/4	4	USA21519	51.03
.1450	-	.1450	2-1/2	3/4	4	USA21521	54.56
.1460	-	.1460	2-1/2	3/4	4	USA21523	56.97
.1470	N26	.1470	2-1/2	3/4	4	USA21525	53.15
.1480	-	.1480	2-1/2	3/4	4	USA21527	56.97
.1490	-	.1490	2-1/2	3/4	4	USA21529	56.97
.1495	N25	.1495	2-1/2	3/4	4	USA21531	53.15
.1500	-	.1500	2-1/2	3/4	4	USA21533	56.97
.1510	-	.1510	2-1/2	3/4	4	USA21535	56.97
.1520	N24	.1520	2-1/2	3/4	4	USA21537	53.15
.1530	-	.1530	2-1/2	3/4	4	USA21539	56.97
.1540	N23	.1540	2-1/2	3/4	4	USA21541	53.15
.1545	-	.1545	2-1/2	3/4	4	USA21543	65.87
.1550	-	.1550	2-1/2	3/4	4	USA21545	56.97
.1555	-	.1555	2-1/2	3/4	4	USA21547	65.87
.1560	-	.1560	2-1/2	3/4	4	USA21549	56.97
.1562	5/32	.1562	2-1/2	3/4	4	USA21551	51.51
.1565	-	.1565	2-1/2	3/4	4	USA21553	65.87
.1570	N22	.1570	2-1/2	3/4	4	USA21555	53.15
.1575	4MM	.1575	2-1/2	3/4	4	USA21557	56.97
.1580	-	.1580	2-1/2	3/4	4	USA21559	56.97
.1590	N21	.1590	2-1/2	3/4	4	USA21561	53.15
.1600	-	.1600	2-1/2	3/4	4	USA21563	56.97
.1610	N20	.1610	2-1/2	7/8	4	USA21565	59.85

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

For technical information, please see page 240.

DIAMETER TOLERANCE +.0003, -.0000

MADE IN THE USA



Carbide Reamers

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

DEC. EQUIV.	SIZE	SHANK DIA.	OVERALL LENGTH	FLUTE LENGTH	# OF FLUTES	ITEM#	LIST PRICE
.1620	-	.1620	2-3/4	7/8	4	USA21567	64.15
.1630	-	.1630	2-3/4	7/8	4	USA21569	64.15
.1640	-	.1640	2-3/4	7/8	4	USA21571	64.15
.1650	-	.1650	2-3/4	7/8	4	USA21573	59.85
.1660	N19	.1660	2-3/4	7/8	4	USA21575	59.85
.1670	-	.1670	2-3/4	7/8	4	USA21577	64.15
.1680	-	.1680	2-3/4	7/8	4	USA21579	64.15
.1690	-	.1690	2-3/4	7/8	4	USA21581	64.15
.1695	N18	.1695	2-3/4	7/8	4	USA21583	59.85
.1700	-	.1700	2-3/4	7/8	4	USA21585	64.15
.1710	-	.1710	2-3/4	7/8	4	USA21587	64.15
.1719	11/64	.1719	2-3/4	7/8	4	USA21589	57.69
.1720	-	.1720	2-3/4	7/8	4	USA21591	64.15
.1730	N17	.1730	2-3/4	7/8	4	USA21593	59.85
.1740	-	.1740	2-3/4	7/8	4	USA21595	64.15
.1750	-	.1750	2-3/4	7/8	4	USA21597	64.15
.1760	-	.1760	2-3/4	7/8	4	USA21599	64.15
.1770	N16	.1770	2-3/4	7/8	4	USA21601	59.85
.1772	4.5MM	.1772	2-3/4	7/8	4	USA21603	66.79
.1780	-	.1780	2-3/4	7/8	4	USA21605	64.15
.1790	-	.1790	2-3/4	7/8	4	USA21607	64.15
.1800	N15	.1800	2-3/4	7/8	4	USA21609	59.85
.1810	-	.1810	2-3/4	7/8	4	USA21611	64.15
.1820	N14	.1820	2-3/4	7/8	4	USA21613	59.85
.1830	-	.1830	2-3/4	7/8	4	USA21615	64.15
.1840	-	.1840	2-3/4	7/8	4	USA21617	64.15
.1850	N13	.1850	2-3/4	7/8	4	USA21619	59.85
.1855	-	.1855	2-3/4	7/8	4	USA21621	77.10
.1860	-	.1860	2-3/4	7/8	4	USA21623	64.15
.1865	-	.1865	2-3/4	7/8	4	USA21625	68.96
.1870	-	.1870	2-3/4	7/8	4	USA21627	64.15
.1875	3/16	.1875	2-3/4	7/8	4	USA21629	57.69
.1880	-	.1880	2-3/4	7/8	4	USA21631	64.15
.1885	-	.1885	2-3/4	7/8	4	USA21633	68.96
.1890	N12	.1890	2-3/4	7/8	4	USA21635	59.85
.1900	-	.1900	2-3/4	7/8	4	USA21637	64.15
.1910	N11	.1910	2-3/4	7/8	4	USA21639	72.77
.1920	-	.1920	2-3/4	7/8	4	USA21641	77.83
.1930	-	.1930	2-3/4	7/8	4	USA21643	77.83
.1935	N10	.1935	2-3/4	7/8	4	USA21645	72.77

DEC. EQUIV.	SIZE	SHANK DIA.	OVERALL LENGTH	FLUTE LENGTH	# OF FLUTES	ITEM#	LIST PRICE
.1940	-	.1940	2-3/4	7/8	4	USA21647	77.83
.1950	-	.1950	2-3/4	7/8	4	USA21649	77.83
.1960	N9	.1960	3	1	4	USA21651	72.77
.1969	5MM	.1969	3	1	4	USA21653	77.83
.1970	-	.1970	3	1	4	USA21655	77.83
.1980	-	.1980	3	1	4	USA21657	77.83
.1990	N8	.1990	3	1	4	USA21659	72.77
.2000	-	.2000	3	1	4	USA21661	77.83
.2010	N7	.2010	3	1	4	USA21663	72.77
.2020	-	.2020	3	1	4	USA21665	77.83
.2030	-	.2030	3	1	4	USA21667	77.83
.2031	13/64	.2031	3	1	4	USA21669	69.88
.2040	N6	.2040	3	1	4	USA21671	72.77
.2050	-	.2050	3	1	4	USA21673	77.83
.2055	N5	.2055	3	1	4	USA21675	72.77
.2060	-	.2060	3	1	4	USA21677	77.83
.2070	-	.2070	3	1	4	USA21679	77.83
.2080	-	.2080	3	1	4	USA21681	77.83
.2090	N4	.2090	3	1	4	USA21683	72.77
.2100	-	.2100	3	1	4	USA21685	77.83
.2110	-	.2110	3	1	4	USA21687	77.83
.2120	-	.2120	3	1	4	USA21689	77.83
.2130	N3	.2130	3	1	4	USA21691	72.77
.2140	-	.2140	3	1	4	USA21693	77.83
.2150	-	.2150	3	1	4	USA21695	77.83
.2160	-	.2160	3	1	4	USA21697	77.83
.2165	5.5MM	.2165	3	1	4	USA21699	82.12
.2170	-	.2170	3	1	4	USA21701	77.83
.2180	-	.2180	3	1	4	USA21703	77.83
.2188	7/32	.2188	3	1	4	USA21705	69.88
.2190	-	.2190	3	1	4	USA21707	77.83
.2200	-	.2200	3	1	4	USA21709	77.83
.2210	N2	.2210	3	1	4	USA21711	72.77
.2220	-	.2220	3	1	4	USA21713	77.83
.2230	-	.2230	3	1	4	USA21715	77.83
.2240	-	.2240	3	1	4	USA21717	77.83
.2250	-	.2250	3	1	4	USA21719	77.83
.2260	-	.2260	3	1	4	USA21721	85.49
.2270	-	.2270	3	1	4	USA21723	85.49
.2280	N1	.2280	3	1	4	USA21725	79.75

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DEC. EQUIV.	SIZE	SHANK DIA.	OVERALL LENGTH	FLUTE LENGTH	# OF FLUTES	ITEM #	LIST PRICE
.2290	-	.2290	3	1	4	USA21727	79.75
.2300	-	.2300	3	1	4	USA21729	85.49
.2310	-	.2310	3	1	4	USA21731	85.49
.2320	-	.2320	3	1	4	USA21733	85.49
.2330	-	.2330	3	1	4	USA21735	85.49
.2340	A	.2340	3	1	4	USA21737	85.49
.2344	15/64	.2344	3	1	4	USA21739	76.86
.2350	-	.2350	3	1	4	USA21741	85.49
.2360	-	.2360	3	1	4	USA21743	85.49
.2362	6MM	.2362	3	1	4	USA21745	81.40
.2370	-	.2370	3	1	4	USA21747	85.49
.2380	B	.2380	3	1	4	USA21749	85.49
.2390	-	.2390	3	1	4	USA21751	85.49
.2400	-	.2400	3	1	4	USA21753	85.49
.2410	-	.2410	3	1	4	USA21755	85.49
.2420	C	.2420	3	1	4	USA21757	85.49
.2430	-	.2430	3	1	4	USA21759	85.49
.2440	-	.2440	3	1	4	USA21761	85.49
.2450	-	.2450	3	1	4	USA21763	85.49
.2460	D	.2460	3	1	4	USA21765	85.49
.2470	-	.2470	3	1	4	USA21767	85.49
.2480	-	.2480	3	1	4	USA21769	85.49
.2485	-	.2485	3	1	4	USA21771	95.52
.2490	-	.2490	3	1	4	USA21773	85.49
.2495	-	.2495	3	1	4	USA21775	90.74
.2500	1/4	.2500	3	1	4	USA21777	76.86
.2505	-	.2505	3	1	4	USA21779	90.74
.2510	-	.2510	3	1	4	USA21781	85.49
.2515	-	.2515	3	1	4	USA21783	106.31
.2520	-	.2520	3	1	4	USA21785	85.49
.2530	-	.2530	3	1	4	USA21787	85.49
.2540	-	.2540	3	1	4	USA21789	85.49
.2550	-	.2550	3	1	6	USA21791	85.49
.2559	6.5MM	.2559	3-1/4	1-1/8	6	USA21793	90.50
.2560	-	.2560	3-1/4	1-1/8	6	USA21795	103.42
.2570	F	.2570	3-1/4	1-1/8	6	USA21797	103.42
.2580	-	.2580	3-1/4	1-1/8	6	USA21799	103.42
.2590	-	.2590	3-1/4	1-1/8	6	USA21801	103.42
.2600	-	.2600	3-1/4	1-1/8	6	USA21803	103.42
.2610	G	.2610	3-1/4	1-1/8	6	USA21805	103.42

DEC. EQUIV.	SIZE	SHANK DIA.	OVERALL LENGTH	FLUTE LENGTH	# OF FLUTES	ITEM #	LIST PRICE
.2620	-	.2620	3-1/4	1-1/8	6	USA21807	103.42
.2630	-	.2630	3-1/4	1-1/8	6	USA21809	103.42
.2640	-	.2640	3-1/4	1-1/8	6	USA21811	103.42
.2650	-	.2650	3-1/4	1-1/8	6	USA21813	103.42
.2656	17/64	.2656	3-1/4	1-1/8	6	USA21815	93.15
.2660	H	.2660	3-1/4	1-1/8	6	USA21817	103.42
.2670	-	.2670	3-1/4	1-1/8	6	USA21819	103.42
.2680	-	.2680	3-1/4	1-1/8	6	USA21821	103.42
.2690	-	.2690	3-1/4	1-1/8	6	USA21823	103.42
.2700	-	.2700	3-1/4	1-1/8	6	USA21825	103.42
.2710	-	.2710	3-1/4	1-1/8	6	USA21827	103.42
.2720	I	.2720	3-1/4	1-1/8	6	USA21829	103.42
.2730	-	.2730	3-1/4	1-1/8	6	USA21831	103.42
.2740	-	.2740	3-1/4	1-1/8	6	USA21833	103.42
.2750	-	.2750	3-1/4	1-1/8	6	USA21835	103.42
.2756	7MM	.2756	3-1/4	1-1/8	6	USA21837	112.97
.2760	-	.2760	3-1/4	1-1/8	6	USA21839	103.42
.2770	J	.2770	3-1/4	1-1/8	6	USA21841	103.42
.2780	-	.2780	3-1/4	1-1/8	6	USA21843	103.42
.2790	-	.2790	3-1/4	1-1/8	6	USA21845	103.42
.2800	-	.2800	3-1/4	1-1/8	6	USA21847	103.42
.2810	K	.2810	3-1/4	1-1/8	6	USA21849	103.42
.2812	9/32	.2812	3-1/4	1-1/8	6	USA21851	93.15
.2820	-	.2820	3-1/4	1-1/8	6	USA21853	103.42
.2830	-	.2830	3-1/4	1-1/8	6	USA21855	103.42
.2840	-	.2840	3-1/4	1-1/8	6	USA21857	103.42
.2850	-	.2850	3-1/4	1-1/8	6	USA21859	103.42
.2860	-	.2860	3-1/4	1-1/8	6	USA21861	103.42
.2870	-	.2870	3-1/4	1-1/8	6	USA21863	103.42
.2880	-	.2880	3-1/4	1-1/8	6	USA21865	103.42
.2890	-	.2890	3-1/4	1-1/8	6	USA21867	103.42
.2900	L	.2900	3-1/4	1-1/8	6	USA21869	103.42
.2910	-	.2910	3-1/4	1-1/8	6	USA21871	103.42
.2920	-	.2920	3-1/4	1-1/8	6	USA21873	103.42
.2930	-	.2930	3-1/4	1-1/8	6	USA21875	103.42
.2940	-	.2940	3-1/4	1-1/8	6	USA21877	103.42
.2950	M	.2950	3-1/4	1-1/8	6	USA21879	103.42
.2953	-	.2953	3-1/4	1-1/8	6	USA21881	112.97
.2960	-	.2960	3-1/4	1-1/8	6	USA21883	103.42
.2969	19/64	.2969	3-1/4	1-1/8	6	USA21885	103.42

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

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MADE IN THE USA



Carbide Reamers

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

DEC. EQUIV.	SIZE	SHANK DIA.	OVERALL LENGTH	FLUTE LENGTH	# OF FLUTES	ITEM#	LIST PRICE
.2970	-	.2970	3-1/4	1-1/8	6	USA21887	103.42
.2980	-	.2980	3-1/4	1-1/8	6	USA21889	103.42
.2990	-	.2990	3-1/4	1-1/8	6	USA21891	103.42
.3000	-	.3000	3-1/4	1-1/8	6	USA21893	103.42
.3010	-	.3010	3-1/4	1-1/8	6	USA21895	103.42
.3020	N	.3020	3-1/4	1-1/8	6	USA21897	103.42
.3030	-	.3030	3-1/4	1-1/8	6	USA21899	103.42
.3040	-	.3040	3-1/4	1-1/8	6	USA21901	103.42
.3050	-	.3050	3-1/4	1-1/8	6	USA21903	103.42
.3060	-	.3060	3-1/4	1-1/8	6	USA21905	103.42
.3070	-	.3070	3-1/4	1-1/8	6	USA21907	103.42
.3080	-	.3080	3-1/4	1-1/8	6	USA21909	103.42
.3090	-	.3090	3-1/4	1-1/8	6	USA21911	103.42
.3100	-	.3100	3-1/4	1-1/8	6	USA21913	103.42
.3110	-	.3110	3-1/4	1-1/8	6	USA21915	103.42
.3115	-	.3115	3-1/4	1-1/8	6	USA21917	118.75
.3120	-	.3120	3-1/4	1-1/8	6	USA21919	103.42
.3125	5/16	.3125	3-1/4	1-1/8	6	USA21921	103.42
.3130	-	.3130	3-1/4	1-1/8	6	USA21923	103.42
.3135	-	.3135	3-1/4	1-1/8	6	USA21925	118.75
.3140	-	.3140	3-1/4	1-1/8	6	USA21927	103.42
.3150	8MM	.3150	3-1/4	1-1/8	6	USA21929	103.42
.3160	O	.3160	3-1/4	1-1/8	6	USA21931	115.66
.3170	-	.3170	3-1/4	1-1/8	6	USA21933	115.66
.3180	-	.3180	3-1/4	1-1/8	6	USA21935	115.66
.3190	-	.3190	3-1/4	1-1/8	6	USA21937	115.66
.3200	-	.3200	3-1/4	1-1/8	6	USA21939	115.66
.3210	-	.3210	3-1/2	1-1/4	6	USA21941	115.66
.3220	-	.3220	3-1/2	1-1/4	6	USA21943	115.66
.3230	P	.3230	3-1/2	1-1/4	6	USA21945	115.66
.3240	-	.3240	3-1/2	1-1/4	6	USA21947	115.66
.3250	-	.3250	3-1/2	1-1/4	6	USA21949	115.66
.3260	-	.3260	3-1/2	1-1/4	6	USA21951	115.66
.3270	-	.3270	3-1/2	1-1/4	6	USA21953	115.66
.3280	-	.3280	3-1/2	1-1/4	6	USA21955	115.66
.3281	21/64	.3281	3-1/2	1-1/4	6	USA21957	116.82
.3290	-	.3290	3-1/2	1-1/4	6	USA21959	115.66
.3300	-	.3300	3-1/2	1-1/4	6	USA21961	115.66
.3310	-	.3310	3-1/2	1-1/4	6	USA21963	115.66
.3320	Q	.3320	3-1/2	1-1/4	6	USA21965	115.66

DEC. EQUIV.	SIZE	SHANK DIA.	OVERALL LENGTH	FLUTE LENGTH	# OF FLUTES	ITEM#	LIST PRICE
.3330	-	.3330	3-1/2	1-1/4	6	USA21967	115.66
.3340	-	.3340	3-1/2	1-1/4	6	USA21969	115.66
.3346	8.5MM	.3346	3-1/2	1-1/4	6	USA21971	115.66
.3350	-	.3350	3-1/2	1-1/4	6	USA21973	115.66
.3360	-	.3360	3-1/2	1-1/4	6	USA21975	115.66
.3370	-	.3370	3-1/2	1-1/4	6	USA21977	115.66
.3380	-	.3380	3-1/2	1-1/4	6	USA21979	115.66
.3390	R	.3390	3-1/2	1-1/4	6	USA21981	116.42
.3400	-	.3400	3-1/2	1-1/4	6	USA21983	115.66
.3410	-	.3410	3-1/2	1-1/4	6	USA21985	115.66
.3420	-	.3420	3-1/2	1-1/4	6	USA21987	115.66
.3430	-	.3430	3-1/2	1-1/4	6	USA21989	115.66
.3438	11/32	.3438	3-1/2	1-1/4	6	USA21991	116.82
.3440	-	.3440	3-1/2	1-1/4	6	USA21993	115.66
.3450	-	.3450	3-1/2	1-1/4	6	USA21995	115.66
.3460	-	.3460	3-1/2	1-1/4	6	USA21997	115.66
.3470	-	.3470	3-1/2	1-1/4	6	USA21999	115.66
.3480	S	.3480	3-1/2	1-1/4	6	USA22001	115.66
.3490	-	.3490	3-1/2	1-1/4	6	USA22003	115.66
.3500	-	.3500	3-1/2	1-1/4	6	USA22005	115.66
.3510	-	.3510	3-1/2	1-1/4	6	USA22007	126.17
.3520	-	.3520	3-1/2	1-1/4	6	USA22009	126.17
.3530	-	.3530	3-1/2	1-1/4	6	USA22011	126.17
.3540	-	.3540	3-1/2	1-1/4	6	USA22013	126.17
.3543	9MM	.3543	3-1/2	1-1/4	6	USA22015	131.66
.3550	-	.3550	3-1/2	1-1/4	6	USA22017	126.17
.3560	-	.3560	3-1/2	1-1/4	6	USA22019	126.17
.3570	-	.3570	3-1/2	1-1/4	6	USA22021	126.17
.3580	T	.3580	3-1/2	1-1/4	6	USA22023	126.17
.3590	-	.3590	3-1/2	1-1/4	6	USA22025	128.33
.3594	23/64	.3594	3-1/2	1-1/4	6	USA22027	124.48
.3600	-	.3600	3-1/2	1-1/4	6	USA22029	126.17
.3610	-	.3610	3-1/2	1-1/4	6	USA22031	126.17
.3620	-	.3620	3-1/2	1-1/4	6	USA22033	126.17
.3630	-	.3630	3-1/2	1-1/4	6	USA22035	126.17
.3640	-	.3640	3-1/2	1-1/4	6	USA22037	126.17
.3650	-	.3650	3-1/2	1-1/4	6	USA22039	126.17
.3660	-	.3660	3-1/2	1-1/4	6	USA22041	126.17
.3670	-	.3670	3-1/2	1-1/4	6	USA22043	126.17
.3680	U	.3680	3-1/2	1-1/4	6	USA22045	126.17

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DEC. EQUIV.	SIZE	SHANK DIA.	OVERALL LENGTH	FLUTE LENGTH	# OF FLUTES	ITEM #	LIST PRICE
.3690	-	.3690	3-1/2	1-1/4	6	USA22047	126.17
.3700	-	.3700	3-1/2	1-1/4	6	USA22049	126.17
.3710	-	.3710	3-1/2	1-1/4	6	USA22051	126.17
.3720	-	.3720	3-1/2	1-1/4	6	USA22053	126.17
.3730	-	.3730	3-1/2	1-1/4	6	USA22055	126.17
.3740	9.5MM	.3740	3-1/2	1-1/4	6	USA22057	126.17
.3745	-	.3745	3-1/2	1-1/4	6	USA22059	153.21
.3750	3/8	.3750	3-1/2	1-1/4	6	USA22061	124.48
.3755	-	.3755	3-1/2	1-1/4	6	USA22063	153.21
.3760	-	.3760	3-1/2	1-1/4	6	USA22065	158.46
.3765	-	.3765	3-1/2	1-1/4	6	USA22067	166.24
.3770	V	.3770	3-1/2	1-1/4	6	USA22069	158.46
.3780	-	.3780	3-1/2	1-1/4	6	USA22071	158.46
.3790	-	.3790	3-1/2	1-1/4	6	USA22073	158.46
.3800	-	.3800	3-1/2	1-1/4	6	USA22075	158.46
.3810	-	.3810	3-1/2	1-1/4	6	USA22077	158.46
.3820	-	.3820	3-1/2	1-1/4	6	USA22079	158.46
.3830	-	.3830	3-1/2	1-1/4	6	USA22081	158.46
.3840	-	.3840	3-1/2	1-1/4	6	USA22083	158.46
.3850	-	.3850	3-1/2	1-1/4	6	USA22085	158.46
.3860	W	.3860	3-1/2	1-1/4	6	USA22087	158.46
.3870	-	.3870	3-1/2	1-1/4	6	USA22089	196.57
.3880	-	.3880	3-1/2	1-1/4	6	USA22091	196.57
.3890	-	.3890	3-1/2	1-1/4	6	USA22093	196.57
.3900	-	.3900	3-1/2	1-1/4	6	USA22095	196.57
.3906	25/64	.3906	3-1/2	1-1/4	6	USA22097	196.57
.3910	-	.3910	3-1/2	1-1/4	6	USA22099	196.57
.3920	-	.3920	3-1/2	1-1/4	6	USA22101	196.57
.3930	-	.3930	3-1/2	1-1/4	6	USA22103	196.57
.3937	10MM	.3937	3-1/2	1-1/4	6	USA22105	148.91
.3940	-	.3940	3-1/2	1-1/4	6	USA22107	196.57
.3950	-	.3950	3-1/2	1-1/4	6	USA22109	196.57
.3960	-	.3960	3-1/2	1-1/4	6	USA22111	196.57
.3970	X	.3970	3-1/2	1-1/4	6	USA22113	196.57
.3980	-	.3980	3-1/2	1-1/4	6	USA22115	196.57
.3990	-	.3990	3-1/2	1-1/4	6	USA22117	196.57
.4000	-	.4000	3-1/2	1-1/4	6	USA22119	196.57
.4010	-	.4010	3-1/2	1-1/4	6	USA22121	196.57
.4020	-	.4020	3-1/2	1-1/4	6	USA22123	196.57
.4030	-	.4030	3-1/2	1-1/4	6	USA22125	196.57

DEC. EQUIV.	SIZE	SHANK DIA.	OVERALL LENGTH	FLUTE LENGTH	# OF FLUTES	ITEM #	LIST PRICE
.4040	Y	.4040	3-1/2	1-1/4	6	USA22127	196.57
.4050	-	.4050	3-1/2	1-1/4	6	USA22129	196.57
.4060	-	.4060	3-1/2	1-1/4	6	USA22131	196.57
.4062	13/32	.4062	3-1/2	1-1/4	6	USA22133	142.70
.4070	-	.4070	3-1/2	1-1/4	6	USA22135	196.57
.4080	-	.4080	3-1/2	1-1/4	6	USA22137	196.57
.4090	-	.4090	3-1/2	1-1/4	6	USA22139	196.57
.4100	-	.4100	3-1/2	1-1/4	6	USA22141	196.57
.4110	-	.4110	3-1/2	1-1/4	6	USA22143	196.57
.4120	-	.4120	3-1/2	1-1/4	6	USA22145	196.57
.4130	Z	.4130	3-1/2	1-1/4	6	USA22147	196.57
.4134	10.5MM	.4134	3-1/2	1-1/4	6	USA22149	179.04
.4140	-	.4140	3-1/2	1-1/4	6	USA22151	196.57
.4150	-	.4150	3-1/2	1-1/4	6	USA22153	196.57
.4160	-	.4160	4	1-3/8	6	USA22155	196.57
.4170	-	.4170	4	1-3/8	6	USA22157	196.57
.4180	-	.4180	4	1-3/8	6	USA22159	196.57
.4190	-	.4190	4	1-3/8	6	USA22161	196.57
.4200	-	.4200	4	1-3/8	6	USA22163	196.57
.4210	-	.4210	4	1-3/8	6	USA22165	196.57
.4219	27/64	.4219	4	1-3/8	6	USA22167	161.79
.4220	-	.4220	4	1-3/8	6	USA22169	196.57
.4230	-	.4230	4	1-3/8	6	USA22171	196.57
.4240	-	.4240	4	1-3/8	6	USA22173	196.57
.4250	-	.4250	4	1-3/8	6	USA22175	196.57
.4260	-	.4260	4	1-3/8	6	USA22177	196.57
.4270	-	.4270	4	1-3/8	6	USA22179	196.57
.4280	-	.4280	4	1-3/8	6	USA22181	196.57
.4290	-	.4290	4	1-3/8	6	USA22183	196.57
.4300	-	.4300	4	1-3/8	6	USA22185	196.57
.4310	-	.4310	4	1-3/8	6	USA22187	196.57
.4320	-	.4320	4	1-3/8	6	USA22189	196.57
.4330	-	.4330	4	1-3/8	6	USA22191	196.57
.4331	11.0MM	.4331	4	1-3/8	6	USA22193	179.04
.4340	-	.4340	4	1-3/8	6	USA22195	196.57
.4350	-	.4350	4	1-3/8	6	USA22197	196.57
.4360	-	.4360	4	1-3/8	6	USA22199	196.57
.4365	-	.4365	4	1-3/8	6	USA22201	196.57
.4370	-	.4370	4	1-3/8	6	USA22203	196.57
.4375	7/16	.4375	4	1-3/8	6	USA22205	161.79

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

For technical information, please see page 240.

DIAMETER TOLERANCE +.0003, -.0000

MADE IN THE USA



Carbide Reamers

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



END MILLS

DRILL MILLS

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BURS

DEC. EQUIV.	SIZE	SHANK DIA.	OVERALL LENGTH	FLUTE LENGTH	# OF FLUTES	ITEM#	LIST PRICE
.4380	-	.4380	4	1-3/8	6	USA22207	196.57
.4385	-	.4385	4	1-3/8	6	USA22209	234.88
.4390	-	.4390	4	1-3/8	6	USA22211	196.57
.4400	-	.4400	4	1-3/8	6	USA22213	196.57
.4410	-	.4410	4	1-3/8	6	USA22215	223.05
.4420	-	.4420	4	1-3/8	6	USA22217	223.05
.4430	-	.4430	4	1-3/8	6	USA22219	223.05
.4440	-	.4440	4	1-3/8	6	USA22221	223.05
.4450	-	.4450	4	1-3/8	6	USA22223	223.05
.4460	-	.4460	4	1-3/8	6	USA22225	223.05
.4470	-	.4470	4	1-3/8	6	USA22227	223.05
.4480	-	.4480	4	1-3/8	6	USA22229	223.05
.4490	-	.4490	4	1-3/8	6	USA22231	223.05
.4500	-	.4500	4	1-3/8	6	USA22233	223.05
.4510	-	.4510	4	1-3/8	6	USA22235	223.05
.4520	-	.4520	4	1-3/8	6	USA22237	223.05
.4528	11.5MM	.4528	4	1-3/8	6	USA22239	223.05
.4530	-	.4530	4	1-3/8	6	USA22241	204.44
.4531	29/64	.4531	4	1-3/8	6	USA22243	178.36
.4540	-	.4540	4	1-3/8	6	USA22245	223.05
.4550	-	.4550	4	1-3/8	6	USA22247	223.05
.4560	-	.4560	4	1-3/8	6	USA22249	223.05
.4570	-	.4570	4	1-3/8	6	USA22251	223.05
.4580	-	.4580	4	1-3/8	6	USA22253	223.05
.4590	-	.4590	4	1-3/8	6	USA22255	223.05
.4600	-	.4600	4	1-3/8	6	USA22257	223.05
.4610	-	.4610	4	1-3/8	6	USA22259	223.05
.4620	-	.4620	4	1-3/8	6	USA22261	223.05
.4630	-	.4630	4	1-3/8	6	USA22263	223.05
.4640	-	.4640	4	1-3/8	6	USA22265	223.05
.4650	-	.4650	4	1-3/8	6	USA22267	223.05
.4660	-	.4660	4	1-3/8	6	USA22269	223.05
.4670	-	.4670	4	1-3/8	6	USA22271	223.05
.4680	-	.4680	4	1-3/8	6	USA22273	223.05
.4688	15/32	.4688	4	1-3/8	6	USA22275	178.36
.4690	-	.4690	4	1-3/8	6	USA22277	235.04
.4700	-	.4700	4	1-3/8	6	USA22279	235.04

DEC. EQUIV.	SIZE	SHANK DIA.	OVERALL LENGTH	FLUTE LENGTH	# OF FLUTES	ITEM#	LIST PRICE
.4710	-	.4710	4	1-3/8	6	USA22281	235.04
.4720	-	.4720	4	1-3/8	6	USA22283	235.04
.4724	12MM	.4724	4	1-3/8	6	USA22285	226.46
.4730	-	.4730	4	1-3/8	6	USA22287	235.04
.4740	-	.4740	4	1-3/8	6	USA22289	235.04
.4750	-	.4750	4	1-3/8	6	USA22291	235.04
.4760	-	.4760	4	1-1/2	6	USA22293	235.04
.4770	-	.4770	4	1-1/2	6	USA22295	235.04
.4780	-	.4780	4	1-1/2	6	USA22297	235.04
.4790	-	.4790	4	1-1/2	6	USA22299	235.04
.4800	-	.4800	4	1-1/2	6	USA22301	235.04
.4810	-	.4810	4	1-1/2	6	USA22303	235.04
.4820	-	.4820	4	1-1/2	6	USA22305	235.04
.4830	-	.4830	4	1-1/2	6	USA22307	235.04
.4840	-	.4840	4	1-1/2	6	USA22309	235.04
.4844	31/64	.4844	4	1-1/2	6	USA22311	202.07
.4850	-	.4850	4	1-1/2	6	USA22313	235.04
.4860	-	.4860	4	1-1/2	6	USA22315	235.04
.4870	-	.4870	4	1-1/2	6	USA22317	283.43
.4880	-	.4880	4	1-1/2	6	USA22319	283.43
.4890	-	.4890	4	1-1/2	6	USA22321	283.43
.4900	-	.4900	4	1-1/2	6	USA22323	283.43
.4910	-	.4910	4	1-1/2	6	USA22325	283.43
.4920	-	.4920	4	1-1/2	6	USA22327	283.43
.4921	12.5MM	.4921	4	1-1/2	6	USA22329	283.43
.4930	-	.4930	4	1-1/2	6	USA22331	283.43
.4940	-	.4940	4	1-1/2	6	USA22333	283.43
.4950	-	.4950	4	1-1/2	6	USA22335	283.43
.4960	-	.4960	4	1-1/2	6	USA22337	283.43
.4970	-	.4970	4	1-1/2	6	USA22339	283.43
.4980	-	.4980	4	1-1/2	6	USA22341	283.43
.4990	-	.4990	4	1-1/2	6	USA22343	283.43
.4995	-	.4995	4	1-1/2	6	USA22345	283.43
.5000	1/2	.5000	4	1-1/2	6	USA22347	202.07
.5005	-	.5005	4	1-1/2	6	USA22349	283.43
.5010	-	.5010	4	1-1/2	6	USA22351	283.43
.5020	-	.5020	4	1-1/2	6	USA22353	283.43

For technical information, please see page 240.

DIAMETER TOLERANCE +.0003, -.0000

Carbide Reamers

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



SPECIAL SIZES PRICES INCLUDE THE FOLLOWING STYLES:

STRAIGHT FLUTE - RIGHT HAND CUT • RIGHT HAND SPIRAL - RIGHT HAND CUT • LEFT HAND SPIRAL - RIGHT HAND CUT

SIZE RANGE	SHANK	FL LGTH	OAL	1 pc	2 pcs	3-5 pcs	6-11 pcs	12-17 pcs	18-23 pcs	24-35 pcs	36-49 pcs	50-74 pcs
.0401 - .0450	0.037	3/8	1-1/2	272.58	180.34	157.26	100.65	79.68	71.30	67.10	62.89	58.71
.0451 - .0500	0.042	3/8	1-1/2	272.58	180.34	157.26	100.65	79.68	71.30	67.10	62.89	58.71
.0501 - .0570	0.046	3/8	1-1/2	274.67	182.41	159.35	102.74	81.78	73.38	69.19	65.00	60.82
.0571 - .0650	0.053	3/8	1-1/2	272.58	180.34	157.26	100.65	79.68	71.30	67.10	62.89	58.71
.0651 - .0800	0.060	1/2	1-3/4	274.67	182.41	159.35	102.74	81.78	73.38	69.19	65.00	60.82
.0801 - .0950	0.075	1/2	2	276.79	184.52	161.45	104.85	83.87	75.49	71.30	67.10	62.89
.0951 - .1150	0.090	5/8	2-1/4	280.97	188.70	165.64	109.03	88.06	79.68	75.49	71.30	67.10
.1151 - .1300	0.110	5/8	2-1/4	283.07	190.79	167.74	111.13	90.16	81.78	77.57	73.38	69.19
.1301 - .1450	0.125	3/4	2-1/2	289.34	197.09	174.04	117.42	96.47	88.06	83.87	79.68	75.49
.1451 - .1600	0.140	3/4	2-1/2	295.66	203.38	180.34	123.71	102.74	94.35	90.16	85.97	81.78
.1601 - .1750	0.155	7/8	2-3/4	301.93	209.68	186.59	129.99	109.03	100.65	96.47	92.26	88.06
.1751 - .1950	0.170	7/8	2-3/4	310.33	218.05	195.01	138.38	117.42	109.03	104.85	100.65	96.47
.1951 - .2100	0.188	1	3	327.09	234.83	211.79	155.16	134.20	125.81	121.61	117.42	113.22
.2101 - .2250	0.205	1	3	333.39	241.13	218.05	161.45	140.49	132.09	127.91	123.71	119.50
.2251 - .2400	0.220	1	3	343.87	251.63	228.56	171.93	150.98	142.57	138.38	134.20	129.99
.2401 - .2550	0.235	1	3	352.25	259.99	236.93	180.34	159.35	150.98	146.76	142.57	138.38
.2551 - .2750	0.250	1	3-1/4	373.24	280.97	257.89	201.30	180.34	171.93	167.74	163.56	159.35
.2751 - .2950	0.270	1-1/8	3-1/4	375.31	283.07	259.99	203.38	182.41	174.04	169.83	165.64	161.45
.2951 - .3150	0.290	1-1/8	3-1/4	396.27	304.01	280.97	224.35	203.38	195.01	190.79	186.59	182.41
.3151 - .3350	0.313	1-1/4	3-1/2	425.64	333.39	310.33	253.71	232.75	224.35	220.16	215.97	211.79
.3351 - .3550	0.330	1-1/4	3-1/2	429.82	341.77	314.53	257.89	236.93	228.56	224.35	220.16	215.97
.3551 - .3800	0.350	1-1/4	3-1/2	438.22	350.16	322.90	266.31	245.32	236.93	232.75	228.56	224.35
.3801 - .4100	0.375	1-1/4	4	469.67	377.43	354.35	297.75	276.79	268.37	264.20	259.99	255.80
.4101 - .4400	0.405	1-3/8	4	486.44	394.21	371.13	314.53	293.55	285.16	280.97	276.79	272.58
.4401 - .4700	0.438	1-3/8	4	511.60	419.36	396.27	339.68	318.70	310.33	306.13	301.93	297.75
.4701 - .5050	0.465	1-1/2	4	553.55	461.30	438.22	381.60	360.64	352.25	348.08	343.87	339.68
.5051 - .5400	0.500	1-1/2	4-1/2	608.06	515.81	492.75	436.14	415.16	406.77	402.58	398.39	394.21
.5401 - .5800	0.535	1-1/2	4-1/2	691.93	599.66	576.62	520.00	499.03	490.66	486.44	482.25	478.06
.5801 - .6260	0.575	1-3/4	4-1/2	759.04	666.78	643.70	587.10	566.13	557.75	553.55	549.35	545.16
.6261 - .6600	0.615	1-3/4	4-1/2	859.68	767.42	744.36	687.75	666.78	658.37	654.19	650.01	645.81
.6601 - .7050	0.655	2	5	985.49	893.24	870.16	813.55	792.59	784.19	780.00	775.82	771.61
.7051 - .7550	0.700	2	5	1069.34	977.11	954.02	897.42	876.45	868.04	863.87	859.68	855.49
.7551 - .7950	0.750	2	5	1153.21	1060.97	1037.89	981.28	960.32	951.94	947.73	943.55	939.35
.7951 - .8450	0.750	2-1/4	5	1237.10	1144.84	1121.78	1065.16	1044.21	1035.80	1031.60	1027.43	1023.23
.8451 - .9000	0.750	2-1/4	5	1404.84	1312.60	1289.52	1232.91	1211.95	1203.54	1199.35	1195.17	1190.97
.9001 - .9600	0.875	2-1/4	5	1614.52	1522.26	1499.20	1442.58	1421.60	1413.22	1409.03	1404.84	1400.64
.9601 - 1.025	0.875	2-1/4	5	1782.25	1690.01	1666.94	1610.33	1589.35	1580.97	1576.78	1572.57	1568.38

FOR .0001" TOLERANCE, ALL SIZES ADD 20% TO ABOVE PRICING
FOR .0002" TOLERANCE FROM .5001" - 1.025", ADD 10% TO ABOVE PRICING

For technical information, please see page 240.

DIAMETER TOLERANCE +.0003, -.0000

MADE IN THE USA

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS



Carbide Burs

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

SA - CYLINDRICAL



TOOL #	SIZE	SHANK	LOC	OAL	SINGLE CUT	LIST PRICE	DOUBLE CUT	LIST PRICE
* SA-61	1/16	3/32	1/4	1-1/2	USA41512	10.53	USA41542	10.53
* SA-41	1/16	1/8	1/4	1-1/2	USA14643	9.97	USA14703	9.97
* SA-41L2	1/16	1/8	1/4	2	USA41514	14.94	USA41544	14.94
* SA-41L3	1/16	1/8	1/4	3	USA41516	16.54	USA41546	16.54
* SA-63	3/32	3/32	3/8	1-1/2	USA41518	10.53	USA41548	10.53
* SA-42	3/32	1/8	7/16	1-1/2	USA14647	9.97	USA14707	9.97
* SA-42L2	3/32	1/8	7/16	2	USA41520	14.94	USA41550	14.94
* SA-42L3	3/32	1/8	7/16	3	USA41522	16.54	USA41552	16.54
* SA-43	1/8	1/8	9/16	1-1/2	USA14651	9.97	USA14711	9.97
* SA-43L2	1/8	1/8	9/16	2	USA41524	14.94	USA41554	14.94
* SA-43L3	1/8	1/8	9/16	3	USA41526	16.54	USA41556	16.54
* SA-11	1/8	1/4	1/2	2	USA14667	19.80	USA14727	19.80
* SA-12	1/8	1/4	5/8	2	USA41528	19.90	USA41558	19.90
SA-52	5/32	1/8	1/2	2	USA14655	21.94	USA14715	21.94
* SA-13	5/32	1/4	5/8	2	USA15887	27.44	USA15923	27.44
SA-53	3/16	1/8	1/2	2	USA14659	21.94	USA14719	21.94
* SA-81	3/16	3/16	1/2	2	USA41530	24.09	USA41560	24.09
* SA-14	3/16	1/4	5/8	2	USA14671	23.69	USA14731	23.69
SA-51	1/4	1/8	1/2	2	USA14663	14.80	USA14723	14.80
* SA-1	1/4	1/4	5/8	2	USA14675	16.78	USA14735	16.78
SA-1L6	1/4	1/4	1/2	6-1/2	USA15667	34.01	USA15679	34.01
* SA-1L	1/4	1/4	1	2	USA41532	25.91	USA41562	25.91
SA-2	5/16	1/4	3/4	2-1/2	USA14679	30.99	USA14739	30.99
SA-3	3/8	1/4	3/4	2-1/2	USA14683	20.77	USA14743	20.77
SA-3L6	3/8	1/4	3/4	6-3/4	USA15671	47.90	USA15683	47.90
SA-3L	3/8	1/4	1	2-3/4	USA41534	31.98	USA41564	31.98
SA-3X	3/8	1/4	1-1/2	3-1/4	USA41536	45.48	USA41566	45.48
SA-4	7/16	1/4	1	2-3/4	USA14687	48.15	USA14747	48.15
SA-5	1/2	1/4	1	2-3/4	USA14691	33.14	USA14751	33.14
SA-5L6	1/2	1/4	1	7	USA15675	74.86	USA15687	74.86
SA-6	5/8	1/4	1	2-3/4	USA14695	47.78	USA14755	47.78
SA-15	3/4	1/4	1/2	2-1/4	USA41538	72.77	USA41568	72.77
SA-16	3/4	1/4	3/4	2-1/2	USA41540	72.77	USA41570	72.77
SA-7	3/4	1/4	1	2-3/4	USA14699	74.51	USA14759	74.51
SA-9	1	1/4	1	2-3/4	USA15891	117.65	USA15927	117.65

* One Piece

SA - CYLINDRICAL - FOR ALUMINUM



TOOL #	SIZE	SHANK	LOC	OAL	ALUMA CUT	LIST PRICE
* SA-1NF	1/4	1/4	5/8	2	USA15787	24.28
SA-3NF	3/8	1/4	3/4	2-1/2	USA15791	33.94
SA-5NF	1/2	1/4	1	2-3/4	USA15795	56.69
SA-6NF	5/8	1/4	1	2-3/4	USA15799	84.25
SA-7NF	3/4	1/4	1	2-3/4	USA15803	110.70

* One Piece

For technical information, please see page 224.

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

Carbide Burs

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



SB - CYLINDRICAL END CUT



TOOL #	SIZE	SHANK	LOC	OAL	SINGLE CUT	LIST PRICE	DOUBLE CUT	LIST PRICE
* SB-41	1/16	1/8	1/4	1-1/2	USA14763	13.44	USA15939	13.44
* SB-41L2	1/16	1/8	1/4	2	USA41612	16.43	USA41638	16.43
* SB-41L3	1/16	1/8	1/4	3	USA41614	18.19	USA41640	18.19
* SB-42	3/32	1/8	7/16	1-1/2	USA14767	10.63	USA15935	10.63
* SB-42L2	3/32	1/8	7/16	2	USA41616	16.43	USA41642	16.43
* SB-42L3	3/32	1/8	7/16	3	USA41618	18.19	USA41644	18.19
† SB-ECO	1/8	1/8	-	1-1/2	USA41620	7.72	-	-
* SB-43	1/8	1/8	9/16	1-1/2	USA14771	9.73	USA15931	9.73
* SB-43L2	1/8	1/8	9/16	2	USA41622	16.43	USA41648	16.43
* SB-43L3	1/8	1/8	9/16	3	USA41624	18.19	USA41650	18.19
* SB-11	1/8	1/4	1/2	2	USA14783	25.64	USA14815	25.64
* SB-12	1/8	1/4	5/8	2	USA41626	21.83	USA41652	21.83
* SB-13	5/32	1/4	5/8	2	USA15895	30.95	USA15943	30.95
* SB-14	3/16	1/4	5/8	2	USA14787	25.64	USA14819	25.64
SB-51	1/4	1/8	3/16	1-11/16	USA14775	14.83	USA14807	14.83
SB-51	1/4	1/8	1/2	2	USA14779	16.15	USA14811	16.15
* SB-1	1/4	1/4	5/8	2	USA14791	19.91	USA14823	19.91
* SB-1L	1/4	1/4	1	2	USA41628	28.50	USA41654	28.50
SB-2	5/16	1/4	3/4	2-1/2	USA14795	34.08	USA14827	34.08
SB-3	3/8	1/4	3/4	2-1/2	USA14799	23.76	USA14831	23.76
SB-3L	3/8	1/4	1	2-3/4	USA41630	35.12	USA41656	35.12
SB-3X	3/8	1/4	1-1/2	3-1/4	USA41632	46.42	USA41658	46.42
SB-4	7/16	1/4	1	2-3/4	USA15899	54.71	USA14835	54.71
SB-5	1/2	1/4	1	2-3/4	USA14803	36.48	USA14839	36.48
SB-6	5/8	1/4	1	2-3/4	USA15959	53.45	USA14843	53.45
SB-15	3/4	1/4	1/2	2-1/4	USA41634	79.73	USA41660	79.73
SB-16	3/4	1/4	3/4	2-1/2	USA41636	79.73	USA41662	79.73
SB-7	3/4	1/4	1	2-3/4	USA15903	82.10	USA14847	82.10
SB-9	1	1/4	1	2-3/4	USA15907	128.40	USA15947	128.40

* One Piece † SB-ECO = End Cut Only

SB - CYLINDRICAL END CUT - FOR ALUMINUM



TOOL #	SIZE	SHANK	LOC	OAL	ALUMA CUT	LIST PRICE
SB-3NF	3/8	1/4	3/4	2-1/2	USA41664	38.37
SB-5NF	1/2	1/4	1	2-3/4	USA41666	58.86
SB-6NF	5/8	1/4	1	2-3/4	USA41668	81.33
SB-7NF	3/4	1/4	1	2-3/4	USA41670	119.08

For technical information, please see page 224.

MADE IN THE USA

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS



Carbide Burs

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

SC - CYLINDRICAL BALL NOSE



TOOL #	SIZE	SHANK	LOC	OAL	SINGLE CUT	LIST PRICE	DOUBLE CUT	LIST PRICE
* SC-61	3/32	3/32	3/8	1-1/2	USA41572	10.53	USA41592	10.53
* SC-41	3/32	1/8	7/16	1-1/2	USA14851	9.97	USA14907	9.97
* SC-42	1/8	1/8	9/16	1-1/2	USA14855	9.97	USA14911	9.97
* SC-42L2	1/8	1/8	9/16	2	USA41574	14.94	USA41594	14.94
* SC-42L3	1/8	1/8	9/16	3	USA41576	16.54	USA41596	16.54
* SC-11	1/8	1/4	1/2	2	USA14871	27.55	USA14927	27.55
* SC-12	1/8	1/4	5/8	2	USA41578	21.11	USA41598	21.11
SC-52	5/32	1/8	1/2	2	USA14859	21.94	USA14915	21.94
* SC-13	5/32	1/4	5/8	2	USA15911	31.51	USA15951	31.51
* SC-53	3/16	1/8	1/2	2	USA14863	21.94	USA14919	21.94
* SC-81	3/16	3/16	1/2	2	USA41580	24.09	USA41600	24.09
* SC-14	3/16	1/4	5/8	2	USA14875	27.55	USA14931	27.55
SC-51	1/4	1/8	1/2	2	USA14867	14.83	USA14923	14.83
* SC-1	1/4	1/4	5/8	2	USA14879	19.94	USA14935	19.94
* SC-1L	1/4	1/4	1	2	USA41582	25.91	USA41602	25.91
SC-1L6	1/4	1/4	1/2	6-1/2	USA15691	39.60	USA15703	39.60
SC-2	5/16	1/4	3/4	2-1/2	USA14883	33.49	USA14939	33.49
SC-3	3/8	1/4	3/4	2-1/2	USA14887	24.11	USA14943	24.11
SC-3L	3/8	1/4	1	2-3/4	USA41584	35.01	USA41604	35.01
SC-3L6	3/8	1/4	3/4	6-3/4	USA15695	53.36	USA15707	53.36
SC-3X	3/8	1/4	1-1/2	3-1/4	USA41586	41.13	USA41606	41.13
SC-4	7/16	1/4	1	2-3/4	USA14891	52.91	USA14947	52.91
SC-5	1/2	1/4	1	2-3/4	USA14895	37.38	USA14951	37.38
SC-5L6	1/2	1/4	1	7	USA15699	83.96	USA15711	83.96
SC-6	5/8	1/4	1	2-3/4	USA14899	55.69	USA14955	55.69
SC-15	3/4	1/4	1/2	2-1/4	USA41588	78.12	USA41608	78.12
SC-16	3/4	1/4	3/4	2-1/2	USA41590	78.12	USA41610	78.12
SC-7	3/4	1/4	1	2-3/4	USA14903	80.26	USA14959	80.26
SC-9	1	1/4	1	2-3/4	USA15971	121.37	USA15975	121.37

* One Piece

SC - CYLINDRICAL BALL NOSE FOR ALUMINUM



TOOL #	SIZE	SHANK	LOC	OAL	ALUMA CUT	LIST PRICE
* SC-1NF	1/4	1/4	5/8	2	USA15807	23.90
SC-3NF	3/8	1/4	3/4	2-1/2	USA15811	31.86
SC-5NF	1/2	1/4	1	2-3/4	USA15815	45.16
SC-7NF	3/4	1/4	1	2-3/4	USA15819	109.46

* One Piece

For technical information, please see page 224.

MADE IN THE USA

Carbide Burs

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



SD - BALL SHAPE



TOOL #	SIZE	SHANK	LOC	OAL	SINGLE CUT	LIST PRICE	DOUBLE CUT	LIST PRICE
* SD-40	1/16	1/8	1/16	1-1/2	USA15395	10.53	USA41452	10.53
* SD-61	3/32	3/32	3/32	1-1/2	USA41440	10.53	USA41454	10.53
* SD-41	3/32	1/8	3/32	1-1/2	USA15399	9.97	USA15443	9.97
* SD-42	1/8	1/8	1/8	1-1/2	USA15915	9.97	USA15447	9.97
* SD-42L2	1/8	1/8	1/8	2	USA41442	14.94	USA41456	14.94
SD-42L3	1/8	1/8	1/8	3	USA41444	16.54	USA41458	16.54
SD-11	1/8	1/4	1/8	2	USA15407	25.29	USA15459	25.29
* SD-52	5/32	1/8	5/32	1-21/32	USA41446	20.33	USA41460	20.33
* SD-53	3/16	1/8	3/16	1-11/16	USA41448	21.94	USA15451	21.94
SD-81	3/16	3/16	5/32	2	USA41450	24.09	USA41462	24.09
* SD-14	3/16	1/4	3/16	2	USA15411	25.29	USA15463	25.29
SD-51	1/4	1/8	1/4	1-3/4	USA15403	14.80	USA15455	14.80
SD-1	1/4	1/4	1/4	2	USA15415	19.38	USA15467	19.38
SD-1L6	1/4	1/4	1/4	6-1/4	USA15715	36.51	USA15727	36.51
SD-2	5/16	1/4	5/16	2-1/16	USA15419	27.23	USA15471	27.23
SD-3	3/8	1/4	3/8	2-1/8	USA15423	20.77	USA15475	20.77
SD-3L6	3/8	1/4	3/8	6-3/8	USA15719	43.91	USA15731	43.91
SD-4	7/16	1/4	7/16	2-3/16	USA15427	35.16	USA15479	35.16
SD-5	1/2	1/4	1/2	2-1/2	USA15431	28.17	USA15483	28.17
SD-5L6	1/2	1/4	1/2	6-1/2	USA15723	59.16	USA15735	59.16
SD-6	5/8	1/4	5/8	2-3/8	USA15435	43.86	USA15487	43.86
SD-7	3/4	1/4	3/4	2-1/2	USA15439	60.52	USA15491	60.52
SD-9	1	1/4	1	2-3/4	USA15919	128.40	USA15955	128.40

* One Piece

SD - BALL SHAPE FOR ALUMINUM



TOOL #	SIZE	SHANK	LOC	OAL	ALUMA CUT	LIST PRICE
* SD-1NF	1/4	1/4	1/4	2	USA15871	23.55
SD-3NF	3/8	1/4	3/8	2-1/8	USA15875	29.77
SD-5NF	1/2	1/4	1/2	2-13/64	USA15879	48.84
SD-6NF	5/8	1/4	5/8	2-5/16	USA15883	73.55

* One Piece

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

For technical information, please see page 224.

MADE IN THE USA



Carbide Burs

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

SE - EGG SHAPE



TOOL #	SIZE	SHANK	LOC	OAL	SINGLE CUT	LIST PRICE	DOUBLE CUT	LIST PRICE
* SE-61	3/32	3/32	1/8	1-1/2	USA41464	10.53	USA41480	10.53
* SE-41	1/8	1/8	7/32	1-1/2	USA15259	9.97	USA15291	9.97
* SE-41L2	1/8	1/8	7/32	2	USA41466	14.94	USA41482	14.94
* SE-41L3	1/8	1/8	7/32	3	USA41468	16.54	USA41484	16.54
SE-53	3/16	1/8	9/32	1-25/32	USA15263	21.94	USA15295	21.94
* SE-81	3/16	3/16	9/32	2	USA41470	24.09	USA41486	24.09
* SE-11	3/16	1/4	5/16	2	USA41472	21.67	USA41488	21.67
SE-51	1/4	1/8	3/8	1-7/8	USA15267	14.80	USA15299	14.80
* SE-1	1/4	1/4	3/8	2	USA15271	23.69	USA15303	23.69
SE-1L6	1/4	1/4	3/8	6-3/8	USA41474	31.98	USA41490	31.98
SE-3	3/8	1/4	5/8	2-3/8	USA15275	24.94	USA15307	24.94
SE-3L6	3/8	1/4	5/8	6-5/8	USA41476	35.83	USA41492	35.83
SE-5	1/2	1/4	7/8	2-5/8	USA15279	34.88	USA15311	34.88
SE-5L6	1/2	1/4	7/8	6-7/8	USA41478	53.75	USA41494	53.75
SE-6	5/8	1/4	1	2-3/4	USA15283	55.09	USA15315	55.09
SE-7	3/4	1/4	1	2-3/4	USA15287	77.06	USA15319	77.06

* One Piece

SE - EGG SHAPE FOR ALUMINUM



TOOL #	SIZE	SHANK	LOC	OAL	ALUMA CUT	LIST PRICE
SE-3NF	3/8	1/4	5/8	2-3/8	USA15843	33.07
SE-5NF	1/2	1/4	7/8	2-5/8	USA15847	57.56
SE-6NF	5/8	1/4	1	2-3/4	USA15851	81.54
SE-7NF	3/4	1/4	1	2-3/4	USA15855	116.69

For technical information, please see page 224.

MADE IN THE USA

Carbide Burs

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



SF - ROUND NOSE TREE



TOOL #	SIZE	SHANK	LOC	OAL	SINGLE CUT	LIST PRICE	DOUBLE CUT	LIST PRICE
* SF-61	3/32	3/32	1/4	1-1/2	USA41496	10.53	USA41504	10.53
* SF-41	1/8	1/8	1/4	1-1/2	USA14963	9.97	USA15015	9.97
* SF-42	1/8	1/8	1/2	1-1/2	USA14967	9.97	USA15019	9.97
* SF-42L2	1/8	1/8	1/2	2	USA41498	14.94	USA41506	14.94
* SF-42L3	1/8	1/8	1/2	3	USA41500	16.54	USA41508	16.54
SF-53	3/16	1/8	1/2	2	USA14971	21.94	USA15023	21.94
* SF-81	3/16	3/16	1/2	2	USA41502	24.09	USA41510	24.09
SF-51	1/4	1/8	1/2	2	USA14975	14.80	USA15027	14.80
* SF-1	1/4	1/4	3/4	2	USA14979	21.61	USA15031	21.61
SF-1L6	1/4	1/4	1/2	6-1/2	USA15739	41.30	USA15751	41.30
SF-3	3/8	1/4	3/4	2-1/2	USA14983	24.11	USA15035	24.11
SF-3L6	3/8	1/4	3/4	6-3/4	USA15743	52.32	USA15755	52.32
SF-4	7/16	1/4	1	2-3/4	USA14987	50.41	USA15039	50.41
SF-13	1/2	1/4	3/4	2-1/2	USA14991	53.67	USA15043	53.67
SF-5	1/2	1/4	1	2-3/4	USA14995	36.20	USA15047	36.20
SF-5L6	1/2	1/4	1	7	USA15747	77.15	USA15759	77.15
SF-6	5/8	1/4	1	2-3/4	USA14999	55.41	USA15051	55.41
SF-7	3/4	1/4	1	2-3/4	USA15003	77.42	USA15055	77.42
SF-14	3/4	1/4	1-1/4	3	USA15007	140.98	USA15059	140.98
SF-15	3/4	1/4	1-1/2	3-1/4	USA15011	165.55	USA15063	165.55

* One Piece

SF - ROUND NOSE TREE FOR ALUMINUM



TOOL #	SIZE	SHANK	LOC	OAL	ALUMA CUT	LIST PRICE
* SF-1NF	1/4	1/4	3/4	2	USA15823	24.35
SF-3NF	3/8	1/4	3/4	2-1/2	USA15827	32.20
SF-5NF	1/2	1/4	1	2-3/4	USA15831	56.97
SF-6NF	5/8	1/4	1	2-3/4	USA15835	86.93
SF-14NF	3/4	1/4	1-1/4	3	USA15839	105.75

* One Piece

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

For technical information, please see page 224.

MADE IN THE USA



Carbide Burs

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

SG - POINTED TREE



TOOL #	SIZE	SHANK	LOC	OAL	SINGLE CUT	LIST PRICE	DOUBLE CUT	LIST PRICE
* SG-61	3/32	3/32	1/4	1-1/2	USA41672	10.53	USA41688	10.53
* SG-41	1/8	1/8	1/4	1-1/2	USA15067	9.94	USA15119	9.94
* SG-42	1/8	1/8	5/16	1-1/2	USA15071	9.94	USA15123	9.94
* SG-43	1/8	1/8	3/8	1-1/2	USA15075	9.94	USA15127	9.94
* SG-44	1/8	1/8	1/2	1-1/2	USA15079	13.83	USA15131	13.83
* SG-44L2	1/8	1/8	1/2	2	USA41674	14.94	USA41690	14.94
* SG-44L3	1/8	1/8	1/2	3	USA41676	16.54	USA41692	16.54
SG-53	3/16	1/8	1/2	2	USA15083	21.94	USA15135	21.94
* SG-81	3/16	3/16	1/2	2	USA41678	24.09	USA41694	24.09
SG-51	1/4	1/8	1/2	2	USA15087	14.80	USA15139	14.80
* SG-1	1/4	1/4	5/8	2	USA15091	22.02	USA15143	22.02
SG-1L6	1/4	1/4	1/2	6-1/2	USA41680	30.21	USA41696	30.21
SG-2	5/16	1/4	3/4	2-1/2	USA15095	34.91	USA15147	34.91
SG-3	3/8	1/4	3/4	2-1/2	USA15099	24.84	USA15151	24.84
SG-3L6	3/8	1/4	3/4	6-3/4	USA41682	38.04	USA41698	38.04
SG-13	1/2	1/4	3/4	2-1/2	USA15103	52.66	USA15155	52.66
SG-5	1/2	1/4	1	2-3/4	USA15107	36.48	USA15159	36.48
SG-5L6	1/2	1/4	1	7	USA41684	49.62	USA41700	49.62
SG-6	5/8	1/4	1	2-3/4	USA15111	56.57	USA15163	56.57
SG-7	3/4	1/4	1	2-3/4	USA15115	75.70	USA15167	75.70
SG-15	3/4	1/4	1-1/2	3-1/4	USA41686	90.96	USA41702	90.96

* One Piece

SH - FLAME SHAPE



TOOL #	SIZE	SHANK	LOC	OAL	SINGLE CUT	LIST PRICE	DOUBLE CUT	LIST PRICE
SH-41	1/8	1/8	1/4	1-1/2	USA15495	9.97	USA15519	9.97
SH41L2	1/8	1/8	1/4	2	USA41704	14.94	USA41712	14.94
* SH41L3	1/8	1/8	1/4	3	USA41706	16.54	USA41714	16.54
* SH-53	3/16	1/8	3/8	1-7/8	USA15499	21.94	USA15523	21.94
* SH-1	1/4	1/4	5/8	2	USA15983	23.41	USA15987	23.41
SH-2	5/16	1/4	3/4	2-1/2	USA15503	26.99	USA15527	26.99
* SH-2L6	5/16	1/4	3/4	6-3/4	USA41708	35.83	USA41716	35.83
SH-5	1/2	1/4	1-1/4	3	USA15507	52.32	USA15531	52.32
SH-5L6	1/2	1/4	1-1/4	7-1/4	USA41710	57.89	USA41718	57.89
SH-6	5/8	1/4	1-7/16	3-3/16	USA15511	123.32	USA15535	123.32
SH-7	3/4	1/4	1-5/8	3-3/8	USA15515	156.68	USA15539	156.68

* One Piece

For technical information, please see page 224.

MADE IN THE USA

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

Carbide Burs

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



SJ - 60° INCLUDED ANGLE



TOOL #	SIZE	SHANK	LOC	OAL	SINGLE CUT	LIST PRICE	DOUBLE CUT	LIST PRICE
* SJ-42	1/8	1/8	3/32	1-1/2	USA15635	9.97	USA15651	9.97
* SJ-1	1/4	1/4	3/16	2	USA15639	19.38	USA15655	19.38
SJ-3	3/8	1/4	5/16	2-3/16	USA15643	23.76	USA15659	23.76
SJ-5	1/2	1/4	7/16	2-19/64	USA15647	32.58	USA15663	32.58
SJ-6	5/8	1/4	9/16	2-5/16	USA41720	39.31	USA41726	39.31
SJ-7	3/4	1/4	11/16	2-7/16	USA41722	51.55	USA41728	51.55
SJ-9	1	1/4	15/16	2-11/16	USA41724	103.70	USA41730	103.70

* One Piece

SK - 90° INCLUDED ANGLE



TOOL #	SIZE	SHANK	LOC	OAL	SINGLE CUT	LIST PRICE	DOUBLE CUT	LIST PRICE
* SK-42	1/8	1/8	1/16	1-1/2	USA15603	9.97	USA15619	9.97
* SK-1	1/4	1/4	1/8	2	USA15607	19.38	USA15623	19.38
SK-3	3/8	1/4	3/16	2-1/16	USA15611	20.04	USA15627	20.04
SK-5	1/2	1/4	1/4	2-1/8	USA15615	31.40	USA15631	31.40
SK-6	5/8	1/4	5/16	2-3/16	USA41732	39.31	USA41736	39.31
SK-7	3/4	1/4	3/8	2-1/4	USA15963	63.96	USA15967	63.96
SK-9	1	1/4	1/2	2-1/4	USA41734	97.41	USA41738	97.41

* One Piece



END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

For technical information, please see page 224.

MADE IN THE USA



Carbide Burs

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

SL - INCLUDED ANGLE WITH RADIUS END



TOOL #	SIZE	SHANK	LOC	OAL	SINGLE CUT	LIST PRICE	DOUBLE CUT	LIST PRICE
* SL-41	1/8	1/8	3/8	1-1/2	USA15323	9.94	USA15359	9.94
* SL-42	1/8	1/8	1/2	1-1/2	USA15327	9.94	USA15363	9.94
* SL-42L2	1/8	1/8	1/2	2	USA41740	14.94	USA41746	14.94
* SL-42L3	1/8	1/8	1/2	3	USA41742	16.54	USA41748	16.54
SL-53	3/16	1/8	1/2	2	USA15331	21.94	USA15367	21.94
* SL-81	3/16	3/16	7/16	2	USA41744	24.09	USA41750	24.09
* SL-1	1/4	1/4	5/8	2	USA15335	20.18	USA15371	20.18
SL-1L6	1/4	1/4	5/8	6-5/8	USA15763	42.31	USA15775	42.31
SL-2	5/16	1/4	7/8	2-3/4	USA15339	38.59	USA15375	38.59
SL-3	3/8	1/4	1-1/16	2-15/16	USA15343	27.93	USA15379	27.93
SL-3L6	3/8	1/4	1-1/16	7-1/16	USA15767	66.66	USA15779	66.66
SL-4	1/2	1/4	1-1/8	3	USA15347	56.59	USA15383	56.59
SL-4L6	1/2	1/4	1-1/4	7-1/4	USA15771	81.67	USA15783	81.67
SL-6	5/8	1/4	1-5/16	3-3/16	USA15351	90.76	USA15387	90.76
SL-7	3/4	1/4	1-1/2	3-3/8	USA15355	124.20	USA15391	124.20

* One Piece

SL - INCLUDED ANGLE WITH RADIUS END - FOR ALUMINUM



TOOL #	SIZE	SHANK	LOC	OAL	ALUMA CUT	LIST PRICE
SL-3NF	3/8	1/4	1-1/16	2-15/16	USA42248	49.87
SL-4NF	1/2	1/4	1-1/4	3	USA15859	57.11
SL-5NF	5/8	1/4	1-3/16	3-5/16	USA42250	103.90
SL-6NF	5/8	1/4	1-5/16	3-3/16	USA15863	115.01
SL-7NF	3/4	1/4	1-1/2	3-3/8	USA15867	142.86

SM - POINTED CONE



TOOL #	SIZE	SHANK	LOC	OAL	SINGLE CUT	LIST PRICE	DOUBLE CUT	LIST PRICE
* SM-61	3/32	3/32	1/4	1-1/2	USA41406	10.53	USA41412	10.53
* SM-41	1/8	1/8	11/32	1-1/2	USA15171	9.97	USA15215	9.97
* SM-42	1/8	1/8	7/16	1-1/2	USA15175	9.97	USA15219	9.97
* SM-42L2	1/8	1/8	7/16	2	USA41408	14.94	USA41414	14.94
* SM-42L3	1/8	1/8	7/16	3	USA41410	16.54	USA41416	16.54
* SM-43	1/8	1/8	5/8	1-1/2	USA15179	9.97	USA15223	9.97
SM-53	3/16	1/8	1/2	2	USA15183	21.94	USA15227	21.94
SM-51	1/4	1/8	1/2	2-1/8	USA15187	14.80	USA15231	14.80
* SM-1	1/4	1/4	1/2	2	USA15191	18.97	USA15235	18.97
* SM-2	1/4	1/4	3/4	2	USA15195	29.39	USA15239	29.39
* SM-3	1/4	1/4	1	2	USA15199	21.19	USA15243	21.19
SM-4	3/8	1/4	5/8	2-1/2	USA15203	28.24	USA15247	28.24
SM-5	1/2	1/4	7/8	2-3/4	USA15207	39.53	USA15251	39.53
SM-6	5/8	1/4	1	2-7/8	USA15211	89.29	USA15255	89.29

* One Piece

For technical information, please see page 224.

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

Carbide Burs

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



SN - INVERTED TAPER



TOOL #	SIZE	SHANK	LOC	OAL	SINGLE CUT	LIST PRICE	DOUBLE CUT	LIST PRICE
* SN-61	3/32	3/32	1/8	1-1/2	USA41418	10.53	USA41428	10.53
* SN-41	3/32	1/8	1/8	1-1/2	USA15543	9.97	USA41430	9.97
* SN-42	1/8	1/8	3/16	1-1/2	USA15547	9.97	USA15567	9.97
SN-53	3/16	1/8	1/4	1-3/4	USA15551	21.94	USA15571	21.94
* SN-81	3/16	3/16	1/4	2	USA41420	24.09	USA41432	24.09
SN-51	1/4	1/8	1/4	1-3/4	USA15555	14.80	USA15575	14.80
* SN-1	1/4	1/4	5/16	2	USA15559	19.28	USA15579	19.28
SN-2	3/8	1/4	3/8	2-1/8	USA41422	27.12	USA41434	27.12
SN-4	1/2	1/4	1/2	2-1/4	USA15563	56.28	USA15583	56.28
SN-6	5/8	1/4	3/4	2-1/2	USA41424	49.78	USA41436	49.78
SN-7	3/4	1/4	5/8	2-3/8	USA41426	60.09	USA41438	60.09

* One Piece

CARBIDE BUR SETS



ITEM# USA15587



ITEM# USA15991

SET SIZES	# OF PCS. IN SET	DIA.	SHANK DIAMETER	CASE TYPE	TYPE	ITEM#	LIST PRICE
SA-42, SA-43, SC-41, SC-42, SD-42, SE-41, SF-42, SG-42, SM-43	9 PCS.	1/8	1/8	WOOD	DOUBLE CUT	USA15587	146.87
SA-1, SC-1, SD-3, SH-1, SF-3, SA-3, SC-3, SC-5, SF-5, SA-5	10 PCS.	-	1/4	METAL	DOUBLE CUT	USA15991	276.55

For technical information, please see page 224.

MADE IN THE USA

END MILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS



Carbide Micro End Mills

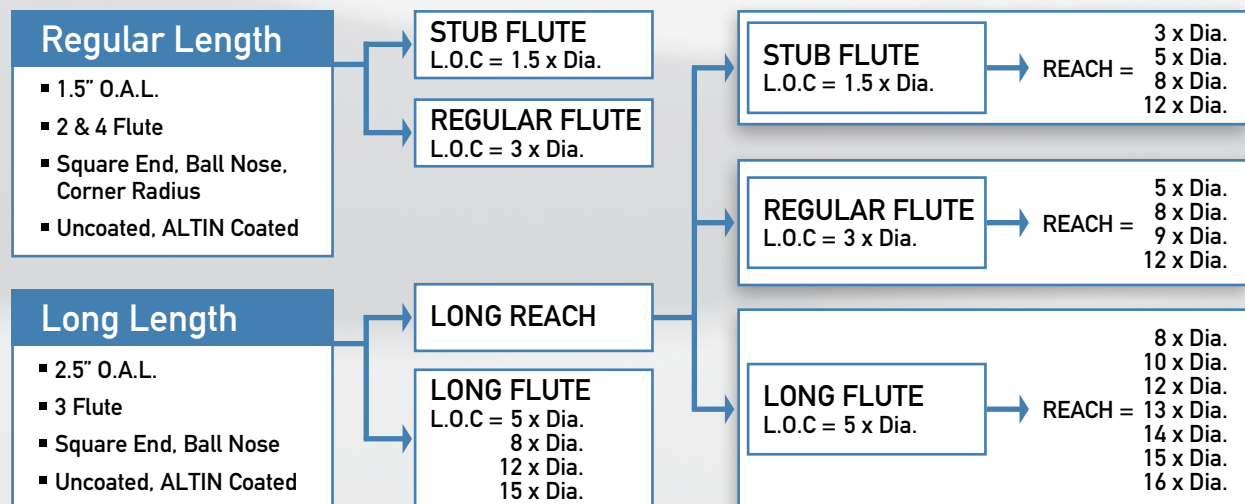
PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

**Top quality
Carbide Micro End Mills
Made in the USA**

Expanded selection of Micro End Mills covering a wide range of profiles. Choose from 2, 3 and 4 Flute, Square, Ball, Corner Radius, and Stub, Regular, Long Flute lengths and Long Reaches. All our micro tools available uncoated, or Altin coated for optimum tool performance. All our tools are stocked and ready to ship. Order today, and we'll ship today!

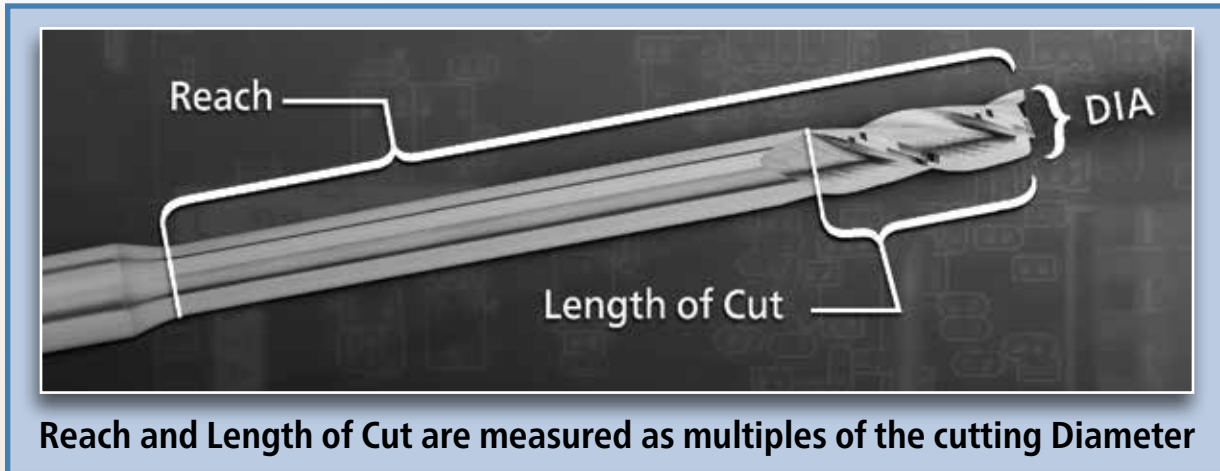
Available in sizes starting at 0.005"

Our Micro End Mills are available in the following:




Carbide Micro End Mills


PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



Long Reaches of 3x, 5x, 8x, 9x, 10x, 12x, 13x, 14x, 15x and 16x Dia. available
Lengths of Cut of 1.5x, 3x, 5x, 8x, 12x and 15x Dia. available

- REGULAR LENGTH - STUB FLUTE
2FL & 4FL • Square End, Ball Nose &  Corner Radius



- REGULAR LENGTH - REGULAR FLUTE
2FL & 4FL • Square End, Ball Nose &  Corner Radius



- LONG REACH - STUB FLUTE
3FL • Square End & Ball Nose



- LONG REACH - REGULAR FLUTE
3FL • Square End & Ball Nose



- LONG REACH - LONG FLUTE
3FL • Square End & Ball Nose



- LONG LENGTH - LONG FLUTE
3FL • Square End & Ball Nose



With over 2400 carbide Micro End Mills in stock and ready to ship, we are committed to providing you with the highest quality, American-made Micro End Mills for all your micro machining needs.

Also available with ALTIN coating





Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

2 FLUTE - STUB FLUTE - SQUARE END - 30° HELIX
LOC = 1.5 X DIA



UNCOATED

DIA	LOC	ITEM#	LIST PRICE
0.005	0.008	USA33908	59.96
0.010	0.015	USA33910	53.74
0.015	0.023	USA33912	33.63
0.020	0.030	USA33914	30.57
0.025	0.038	USA33916	30.57
0.030	0.045	USA33918	28.69
0.031	0.047	USA33920	26.89
0.035	0.053	USA33922	26.89
0.040	0.060	USA33924	26.89
0.045	0.068	USA33926	26.23
0.047	0.071	USA33928	26.23
0.050	0.075	USA33930	26.23
0.055	0.083	USA33932	26.23

DIA	LOC	ITEM#	LIST PRICE
0.060	0.090	USA33934	26.23
0.062	0.093	USA33936	26.23
0.065	0.098	USA33938	26.23
0.070	0.105	USA33940	26.23
0.075	0.113	USA33942	26.23
0.078	0.117	USA33944	26.23
0.080	0.120	USA33946	26.23
0.085	0.128	USA33948	26.23
0.090	0.135	USA33950	26.23
0.093	0.140	USA33952	26.23
0.095	0.143	USA33954	26.23
0.100	0.150	USA33956	26.23



ALTIN COATED

DIA	LOC	ITEM#	LIST PRICE
0.005	0.008	USA33958	71.94
0.010	0.015	USA33960	64.47
0.015	0.023	USA33962	40.37
0.020	0.030	USA33964	36.68
0.025	0.038	USA33966	36.68
0.030	0.045	USA33968	34.43
0.031	0.047	USA33970	32.24
0.035	0.053	USA33972	32.24
0.040	0.060	USA33974	32.24
0.045	0.068	USA33976	31.47
0.047	0.071	USA33978	31.47
0.050	0.075	USA33980	31.47
0.055	0.083	USA33982	31.47

DIA	LOC	ITEM#	LIST PRICE
0.060	0.090	USA33984	31.47
0.062	0.093	USA33986	31.47
0.065	0.098	USA33988	31.47
0.070	0.105	USA33990	31.47
0.075	0.113	USA33992	31.47
0.078	0.117	USA33994	31.47
0.080	0.120	USA33996	31.47
0.085	0.128	USA33998	31.47
0.090	0.135	USA34000	31.47
0.093	0.140	USA34002	31.47
0.095	0.143	USA34004	31.47
0.100	0.150	USA34006	31.47

All regular length Micro End Mills are 1/8" shank, 1-1/2" OAL.
For coating information see page 6. For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+0.005, -0.005	-0.001, -0.003 ISO H6

REGULAR LENGTH

LONG REACH STUB FL

LONG REACH REG FL

LONG REACH LONG FL

LONG LENGTH LONG FL

Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



2 FLUTE - STUB FLUTE - BALL NOSE - 30° HELIX
LOC = 1.5 X DIA



UNCOATED

DIA	LOC	ITEM#	LIST PRICE
0.005	0.008	USA34008	74.93
0.010	0.015	USA34010	67.18
0.015	0.023	USA34012	42.03
0.020	0.030	USA34014	38.21
0.025	0.038	USA34016	38.21
0.030	0.045	USA34018	35.85
0.031	0.047	USA34020	33.63
0.035	0.053	USA34022	33.63
0.040	0.060	USA34024	33.63
0.045	0.068	USA34026	32.79
0.047	0.071	USA34028	32.79
0.050	0.075	USA34030	32.79
0.055	0.083	USA34032	32.79

DIA	LOC	ITEM#	LIST PRICE
0.060	0.090	USA34034	32.79
0.062	0.093	USA34036	32.79
0.065	0.098	USA34038	32.79
0.070	0.105	USA34040	32.79
0.075	0.113	USA34042	32.79
0.078	0.117	USA34044	32.79
0.080	0.120	USA34046	32.79
0.085	0.128	USA34048	32.79
0.090	0.135	USA34050	32.79
0.093	0.140	USA34052	32.79
0.095	0.143	USA34054	32.79
0.100	0.150	USA34056	32.79



ALTIN COATED

DIA	LOC	ITEM#	LIST PRICE
0.005	0.008	USA34058	89.94
0.010	0.015	USA34060	80.59
0.015	0.023	USA34062	50.44
0.020	0.030	USA34064	45.85
0.025	0.038	USA34066	45.85
0.030	0.045	USA34068	43.01
0.031	0.047	USA34070	40.37
0.035	0.053	USA34072	40.37
0.040	0.060	USA34074	40.37
0.045	0.068	USA34076	39.39
0.047	0.071	USA34078	39.39
0.050	0.075	USA34080	39.39
0.055	0.083	USA34082	39.39

DIA	LOC	ITEM#	LIST PRICE
0.060	0.090	USA34084	39.39
0.062	0.093	USA34086	39.39
0.065	0.098	USA34088	39.39
0.070	0.105	USA34090	39.39
0.075	0.113	USA34092	39.39
0.078	0.117	USA34094	39.39
0.080	0.120	USA34096	39.39
0.085	0.128	USA34098	39.39
0.090	0.135	USA34100	39.39
0.093	0.140	USA34102	39.39
0.095	0.143	USA34104	39.39
0.100	0.150	USA34106	39.39

All regular length Micro End Mills are 1/8" shank, 1-1/2" OAL.
For coating information see page 6. For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK	RADIUS
ALL SIZES	+.0005, -.0005	-.0001, -.0003 ISO H6	+.0002, -.0002

MADE IN THE USA

REGULAR LENGTH

LONG REACH STUB FL

LONG REACH REG FL

LONG REACH LONG FL

LONG LENGTH LONG FL



Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

2 FLUTE - REGULAR FLUTE - SQUARE END - 30° HELIX
LOC = 3 X DIA



UNCOATED

REGULAR LENGTH

LONG REACH STUB FL

LONG REACH REG FL

LONG REACH LONG FL

LONG LENGTH LONG FL

DIA	LOC	ITEM#	LIST PRICE
0.005	0.015	USA18777	52.14
0.006	0.018	USA18779	52.14
0.007	0.021	USA18781	52.14
0.008	0.024	USA18783	52.14
0.009	0.027	USA18785	46.72
0.010	0.030	USA18787	46.72
0.011	0.033	USA18789	41.83
0.012	0.036	USA18791	41.83
0.013	0.039	USA18793	34.60
0.014	0.042	USA18795	34.60
0.015	0.045	USA18797	29.25
0.016	0.048	USA18799	29.25
0.017	0.051	USA18801	29.25
0.018	0.054	USA18803	29.25
0.019	0.057	USA18805	29.25
0.020	0.060	USA18807	26.57
0.021	0.063	USA18809	26.57
0.022	0.066	USA18811	26.57
0.023	0.069	USA18813	26.57
0.024	0.072	USA18815	26.57
0.025	0.075	USA18817	26.57
0.026	0.078	USA18819	24.94
0.027	0.081	USA18821	24.94
0.028	0.084	USA18823	24.94
0.029	0.087	USA18825	24.94
0.030	0.090	USA18827	24.94
0.031	0.093	USA18829	23.38
0.032	0.096	USA18831	23.38
0.033	0.099	USA18833	23.38
0.034	0.102	USA18835	23.38
0.035	0.105	USA18837	23.38
0.036	0.108	USA18839	23.38
0.037	0.111	USA18841	23.38
0.038	0.114	USA18843	23.38
0.039	0.117	USA18845	23.38
0.040	0.120	USA18847	23.38

DIA	LOC	ITEM#	LIST PRICE
0.041	0.123	USA18849	23.38
0.042	0.126	USA18851	23.38
0.043	0.129	USA18853	23.38
0.044	0.132	USA18855	22.79
0.045	0.135	USA18857	22.79
0.046	0.138	USA18859	22.79
0.047	0.141	USA18861	22.79
0.048	0.144	USA18863	22.79
0.049	0.147	USA18865	22.79
0.050	0.150	USA18867	22.79
0.051	0.153	USA18869	22.79
0.052	0.156	USA18871	22.79
0.053	0.159	USA18873	22.79
0.054	0.162	USA18875	22.79
0.055	0.165	USA18877	22.79
0.056	0.168	USA18879	22.79
0.057	0.171	USA18881	22.79
0.058	0.174	USA18883	22.79
0.059	0.177	USA18885	22.79
0.060	0.180	USA18887	22.79
0.061	0.183	USA18889	22.79
0.062	0.186	USA18891	22.79
0.063	0.189	USA18893	22.79
0.064	0.192	USA18895	22.79
0.065	0.195	USA18897	22.79
0.066	0.198	USA18899	22.79
0.067	0.201	USA18901	22.79
0.068	0.204	USA18903	22.79
0.069	0.207	USA18905	22.79
0.070	0.210	USA18907	22.79
0.071	0.213	USA18909	22.79
0.072	0.216	USA18911	22.79
0.073	0.219	USA18913	22.79
0.074	0.222	USA18915	22.79
0.075	0.225	USA18917	22.79
0.076	0.228	USA18919	22.79

DIA	LOC	ITEM#	LIST PRICE
0.077	0.231	USA18921	22.79
0.078	0.234	USA18923	22.79
0.079	0.237	USA18925	22.79
0.080	0.240	USA18927	22.79
0.081	0.243	USA18929	22.79
0.082	0.246	USA18931	22.79
0.083	0.249	USA18933	22.79
0.084	0.252	USA18935	22.79
0.085	0.255	USA18937	22.79
0.086	0.258	USA18939	22.79
0.087	0.261	USA18941	22.79
0.088	0.264	USA18943	22.79
0.089	0.267	USA18945	22.79
0.090	0.270	USA18947	22.79
0.091	0.273	USA18949	22.79
0.092	0.276	USA18951	22.79
0.093	0.279	USA18953	22.79
0.094	0.282	USA18955	22.79
0.095	0.285	USA18957	22.79
0.096	0.288	USA18959	22.79
0.097	0.291	USA18961	22.79
0.098	0.294	USA18963	22.79
0.099	0.297	USA18965	22.79
0.100	0.300	USA18967	22.79
0.101	0.303	USA18969	22.79
0.102	0.306	USA18971	22.79
0.103	0.309	USA18973	22.79
0.104	0.312	USA18975	22.79
0.105	0.315	USA18977	22.79
0.106	0.318	USA18979	22.79
0.107	0.321	USA18981	22.79
0.108	0.324	USA18983	22.79
0.109	0.327	USA18985	22.79
0.110	0.330	USA18987	22.79
0.115	0.345	USA18989	22.79
0.120	0.360	USA18991	22.79

All regular length Micro End Mills are 1/8" shank, 1-1/2" OAL.
For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+.0005, -.0005	-.0001, -.0003 ISO H6

MADE IN THE USA

Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



2 FLUTE - REGULAR FLUTE - SQUARE END - 30° HELIX
LOC = 3 X DIA



ALTiN COATED

DIA	LOC	ITEM#	LIST PRICE
0.005	0.015	USA34300	62.56
0.006	0.018	USA34302	62.56
0.007	0.021	USA34304	62.56
0.008	0.024	USA34306	62.56
0.009	0.027	USA34308	56.07
0.010	0.030	USA34310	56.07
0.011	0.033	USA34312	50.20
0.012	0.036	USA34314	50.20
0.013	0.039	USA34316	41.51
0.014	0.042	USA34318	41.51
0.015	0.045	USA34320	35.09
0.016	0.048	USA34322	35.09
0.017	0.051	USA34324	35.09
0.018	0.054	USA34326	35.09
0.019	0.057	USA34328	35.09
0.020	0.060	USA34330	31.89
0.021	0.063	USA34332	31.89
0.022	0.066	USA34334	31.89
0.023	0.069	USA34336	31.89
0.024	0.072	USA34338	31.89
0.025	0.075	USA34340	31.89
0.026	0.078	USA34342	29.94
0.027	0.081	USA34344	29.94
0.028	0.084	USA34346	29.94
0.029	0.087	USA34348	29.94
0.030	0.090	USA34350	29.94
0.031	0.093	USA34352	28.03
0.032	0.096	USA34354	28.03
0.033	0.099	USA34356	28.03
0.034	0.102	USA34358	28.03
0.035	0.105	USA34360	28.03
0.036	0.108	USA34362	28.03
0.037	0.111	USA34364	28.03
0.038	0.114	USA34366	28.03
0.039	0.117	USA34368	28.03
0.040	0.120	USA34370	28.03

DIA	LOC	ITEM#	LIST PRICE
0.041	0.123	USA34372	28.03
0.042	0.126	USA34374	28.03
0.043	0.129	USA34376	28.03
0.044	0.132	USA34378	27.37
0.045	0.135	USA34380	27.37
0.046	0.138	USA34382	27.37
0.047	0.141	USA34384	27.37
0.048	0.144	USA34386	27.37
0.049	0.147	USA34388	27.37
0.050	0.150	USA34390	27.37
0.051	0.153	USA34392	27.37
0.052	0.156	USA34394	27.37
0.053	0.159	USA34396	27.37
0.054	0.162	USA34398	27.37
0.055	0.165	USA34400	27.37
0.056	0.168	USA34402	27.37
0.057	0.171	USA34404	27.37
0.058	0.174	USA34406	27.37
0.059	0.177	USA34408	27.37
0.060	0.180	USA34410	27.37
0.061	0.183	USA34412	27.37
0.062	0.186	USA34414	27.37
0.063	0.189	USA34416	27.37
0.064	0.192	USA34418	27.37
0.065	0.195	USA34420	27.37
0.066	0.198	USA34422	27.37
0.067	0.201	USA34424	27.37
0.068	0.204	USA34426	27.37
0.069	0.207	USA34428	27.37
0.070	0.210	USA34430	27.37
0.071	0.213	USA34432	27.37
0.072	0.216	USA34434	27.37
0.073	0.219	USA34436	27.37
0.074	0.222	USA34438	27.37
0.075	0.225	USA34440	27.37
0.076	0.228	USA34442	27.37

DIA	LOC	ITEM#	LIST PRICE
0.077	0.231	USA34444	27.37
0.078	0.234	USA34446	27.37
0.079	0.237	USA34448	27.37
0.080	0.240	USA34450	27.37
0.081	0.243	USA34452	27.37
0.082	0.246	USA34454	27.37
0.083	0.249	USA34456	27.37
0.084	0.252	USA34458	27.37
0.085	0.255	USA34460	27.37
0.086	0.258	USA34462	27.37
0.087	0.261	USA34464	27.37
0.088	0.264	USA34466	27.37
0.089	0.267	USA34468	27.37
0.090	0.270	USA34470	27.37
0.091	0.273	USA34472	27.37
0.092	0.276	USA34474	27.37
0.093	0.279	USA34476	27.37
0.094	0.282	USA34478	27.37
0.095	0.285	USA34480	27.37
0.096	0.288	USA34482	27.37
0.097	0.291	USA34484	27.37
0.098	0.294	USA34486	27.37
0.099	0.297	USA34488	27.37
0.100	0.300	USA34490	27.37
0.101	0.303	USA34492	27.37
0.102	0.306	USA34494	27.37
0.103	0.309	USA34496	27.37
0.104	0.312	USA34498	27.37
0.105	0.315	USA34500	27.37
0.106	0.318	USA34502	27.37
0.107	0.321	USA34504	27.37
0.108	0.324	USA34506	27.37
0.109	0.327	USA34508	27.37
0.110	0.330	USA34510	27.37
0.115	0.345	USA34512	27.37
0.120	0.360	USA34514	27.37

REGULAR LENGTH

LONG REACH STUB FL

LONG REACH REG FL

LONG REACH LONG FL

LONG LENGTH LONG FL

All regular length Micro End Mills are 1/8" shank, 1-1/2" OAL.
For coating information see page 6. For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+.0005, -.0005	-.0001, -.0003 ISO H6

MADE IN THE USA



Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

2 FLUTE - REGULAR FLUTE - BALL NOSE - 30° HELIX
LOC = 3 X DIA



UNCOATED

REGULAR LENGTH

LONG REACH STUB FL

LONG REACH REG FL

LONG REACH LONG FL

LONG LENGTH LONG FL

DIA	LOC	ITEM#	LIST PRICE
0.005	0.015	USA18993	65.17
0.006	0.018	USA18995	65.17
0.007	0.021	USA18997	65.17
0.008	0.024	USA18999	65.17
0.009	0.027	USA19001	58.43
0.010	0.030	USA19003	58.43
0.011	0.033	USA19005	52.28
0.012	0.036	USA19007	52.28
0.013	0.039	USA19009	43.32
0.014	0.042	USA19011	43.32
0.015	0.045	USA19013	36.54
0.016	0.048	USA19015	36.54
0.017	0.051	USA19017	36.54
0.018	0.054	USA19019	36.54
0.019	0.057	USA19021	36.54
0.020	0.060	USA19023	33.24
0.021	0.063	USA19025	33.24
0.022	0.066	USA19027	33.24
0.023	0.069	USA19029	33.24
0.024	0.072	USA19031	33.24
0.025	0.075	USA19033	33.24
0.026	0.078	USA19035	31.20
0.027	0.081	USA19037	31.20
0.028	0.084	USA19039	31.20
0.029	0.087	USA19041	31.20
0.030	0.090	USA19043	31.20
0.031	0.093	USA19045	29.25
0.032	0.096	USA19047	29.25
0.033	0.099	USA19049	29.25
0.034	0.102	USA19051	29.25
0.035	0.105	USA19053	29.25
0.036	0.108	USA19055	29.25
0.037	0.111	USA19057	29.25
0.038	0.114	USA19059	29.25
0.039	0.117	USA19061	29.25
0.040	0.120	USA19063	29.25

DIA	LOC	ITEM#	LIST PRICE
0.041	0.123	USA19065	29.25
0.042	0.126	USA19067	29.25
0.043	0.129	USA19069	29.25
0.044	0.132	USA19071	28.52
0.045	0.135	USA19073	28.52
0.046	0.138	USA19075	28.52
0.047	0.141	USA19077	28.52
0.048	0.144	USA19079	28.52
0.049	0.147	USA19081	28.52
0.050	0.150	USA19083	28.52
0.051	0.153	USA19085	28.52
0.052	0.156	USA19087	28.52
0.053	0.159	USA19089	28.52
0.054	0.162	USA19091	28.52
0.055	0.165	USA19093	28.52
0.056	0.168	USA19095	28.52
0.057	0.171	USA19097	28.52
0.058	0.174	USA19099	28.52
0.059	0.177	USA19101	28.52
0.060	0.180	USA19103	28.52
0.061	0.183	USA19105	28.52
0.062	0.186	USA19107	28.52
0.063	0.189	USA19109	28.52
0.064	0.192	USA19111	28.52
0.065	0.195	USA19113	28.52
0.066	0.198	USA19115	28.52
0.067	0.201	USA19117	28.52
0.068	0.204	USA19119	28.52
0.069	0.207	USA19121	28.52
0.070	0.210	USA19123	28.52
0.071	0.213	USA19125	28.52
0.072	0.216	USA19127	28.52
0.073	0.219	USA19129	28.52
0.074	0.222	USA19131	28.52
0.075	0.225	USA19133	28.52
0.076	0.228	USA19135	28.52

DIA	LOC	ITEM#	LIST PRICE
0.077	0.231	USA19137	28.52
0.078	0.234	USA19139	28.52
0.079	0.237	USA19141	28.52
0.080	0.240	USA19143	28.52
0.081	0.243	USA19145	28.52
0.082	0.246	USA19147	28.52
0.083	0.249	USA19149	28.52
0.084	0.252	USA19151	28.52
0.085	0.255	USA19153	28.52
0.086	0.258	USA19155	28.52
0.087	0.261	USA19157	28.52
0.088	0.264	USA19159	28.52
0.089	0.267	USA19161	28.52
0.090	0.270	USA19163	28.52
0.091	0.273	USA19165	28.52
0.092	0.276	USA19167	28.52
0.093	0.279	USA19169	28.52
0.094	0.282	USA19171	28.52
0.095	0.285	USA19173	28.52
0.096	0.288	USA19175	28.52
0.097	0.291	USA19177	28.52
0.098	0.294	USA19179	28.52
0.099	0.297	USA19181	28.52
0.100	0.300	USA19183	28.52
0.101	0.303	USA19185	28.52
0.102	0.306	USA19187	28.52
0.103	0.309	USA19189	28.52
0.104	0.312	USA19191	28.52
0.105	0.315	USA19193	28.52
0.106	0.318	USA19195	28.52
0.107	0.321	USA19197	28.52
0.108	0.324	USA19199	28.52
0.109	0.327	USA19201	28.52
0.110	0.330	USA19203	28.52
0.115	0.345	USA19205	28.52
0.120	0.360	USA19207	28.52

All regular length Micro End Mills are 1/8" shank, 1-1/2" OAL.
For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK	RADIUS
ALL SIZES	+.0005, -.0005	-.0001, -.0003 ISO H6	+.0002, -.0002

Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



2 FLUTE - REGULAR FLUTE - BALL NOSE - 30° HELIX
LOC = 3 X DIA



ALTiN COATED

DIA	LOC	ITEM#	LIST PRICE
0.005	0.015	USA34516	78.20
0.006	0.018	USA34518	78.20
0.007	0.021	USA34520	78.20
0.008	0.024	USA34522	78.20
0.009	0.027	USA34524	70.10
0.010	0.030	USA34526	70.10
0.011	0.033	USA34528	62.77
0.012	0.036	USA34530	62.77
0.013	0.039	USA34532	51.97
0.014	0.042	USA34534	51.97
0.015	0.045	USA34536	43.84
0.016	0.048	USA34538	43.84
0.017	0.051	USA34540	43.84
0.018	0.054	USA34542	43.84
0.019	0.057	USA34544	43.84
0.020	0.060	USA34546	39.88
0.021	0.063	USA34548	39.88
0.022	0.066	USA34550	39.88
0.023	0.069	USA34552	39.88
0.024	0.072	USA34554	39.88
0.025	0.075	USA34556	39.88
0.026	0.078	USA34558	37.41
0.027	0.081	USA34560	37.41
0.028	0.084	USA34562	37.41
0.029	0.087	USA34564	37.41
0.030	0.090	USA34566	37.41
0.031	0.093	USA34568	35.09
0.032	0.096	USA34570	35.09
0.033	0.099	USA34572	35.09
0.034	0.102	USA34574	35.09
0.035	0.105	USA34576	35.09
0.036	0.108	USA34578	35.09
0.037	0.111	USA34580	35.09
0.038	0.114	USA34582	35.09
0.039	0.117	USA34584	35.09
0.040	0.120	USA34586	35.09

DIA	LOC	ITEM#	LIST PRICE
0.041	0.123	USA34588	35.09
0.042	0.126	USA34590	35.09
0.043	0.129	USA34592	35.09
0.044	0.132	USA34594	34.25
0.045	0.135	USA34596	34.25
0.046	0.138	USA34598	34.25
0.047	0.141	USA34600	34.25
0.048	0.144	USA34602	34.25
0.049	0.147	USA34604	34.25
0.050	0.150	USA34606	34.25
0.051	0.153	USA34608	34.25
0.052	0.156	USA34610	34.25
0.053	0.159	USA34612	34.25
0.054	0.162	USA34614	34.25
0.055	0.165	USA34616	34.25
0.056	0.168	USA34618	34.25
0.057	0.171	USA34620	34.25
0.058	0.174	USA34622	34.25
0.059	0.177	USA34624	34.25
0.060	0.180	USA34626	34.25
0.061	0.183	USA34628	34.25
0.062	0.186	USA34630	34.25
0.063	0.189	USA34632	34.25
0.064	0.192	USA34634	34.25
0.065	0.195	USA34636	34.25
0.066	0.198	USA34638	34.25
0.067	0.201	USA34640	34.25
0.068	0.204	USA34642	34.25
0.069	0.207	USA34644	34.25
0.070	0.210	USA34646	34.25
0.071	0.213	USA34648	34.25
0.072	0.216	USA34650	34.25
0.073	0.219	USA34652	34.25
0.074	0.222	USA34654	34.25
0.075	0.225	USA34656	34.25
0.076	0.228	USA34658	34.25

DIA	LOC	ITEM#	LIST PRICE
0.077	0.231	USA34660	34.25
0.078	0.234	USA34662	34.25
0.079	0.237	USA34664	34.25
0.080	0.240	USA34666	34.25
0.081	0.243	USA34668	34.25
0.082	0.246	USA34670	34.25
0.083	0.249	USA34672	34.25
0.084	0.252	USA34674	34.25
0.085	0.255	USA34676	34.25
0.086	0.258	USA34678	34.25
0.087	0.261	USA34680	34.25
0.088	0.264	USA34682	34.25
0.089	0.267	USA34684	34.25
0.090	0.270	USA34686	34.25
0.091	0.273	USA34688	34.25
0.092	0.276	USA34690	34.25
0.093	0.279	USA34692	34.25
0.094	0.282	USA34694	34.25
0.095	0.285	USA34696	34.25
0.096	0.288	USA34698	34.25
0.097	0.291	USA34700	34.25
0.098	0.294	USA34702	34.25
0.099	0.297	USA34704	34.25
0.100	0.300	USA34706	34.25
0.101	0.303	USA34708	34.25
0.102	0.306	USA34710	34.25
0.103	0.309	USA34712	34.25
0.104	0.312	USA34714	34.25
0.105	0.315	USA34716	34.25
0.106	0.318	USA34718	34.25
0.107	0.321	USA34720	34.25
0.108	0.324	USA34722	34.25
0.109	0.327	USA34724	34.25
0.110	0.330	USA34726	34.25
0.115	0.345	USA34728	34.25
0.120	0.360	USA34730	34.25

REGULAR LENGTH

LONG REACH STUB FL

LONG REACH REG FL

LONG REACH LONG FL

LONG LENGTH LONG FL

All regular length Micro End Mills are 1/8" shank, 1-1/2" OAL.
For coating information see page 6. For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK	RADIUS
ALL SIZES	+.0005, -.0005	-.0001, -.0003 ISO H6	+.0002, -.0002

MADE IN THE USA



Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

4 FLUTE - STUB FLUTE - SQUARE END - 30° HELIX
LOC = 1.5 X DIA



UNCOATED

DIA	LOC	ITEM#	LIST PRICE
0.010	0.015	USA34108	53.74
0.015	0.023	USA34110	33.63
0.020	0.030	USA34112	30.57
0.025	0.038	USA34114	30.57
0.030	0.045	USA34116	28.69
0.031	0.047	USA34118	26.89
0.035	0.053	USA34120	26.89
0.040	0.060	USA34122	26.89
0.045	0.068	USA34124	26.23
0.047	0.071	USA34126	26.23
0.050	0.075	USA34128	26.23
0.055	0.083	USA34130	26.23

DIA	LOC	ITEM#	LIST PRICE
0.060	0.090	USA34132	26.23
0.062	0.093	USA34134	26.23
0.065	0.098	USA34136	26.23
0.070	0.105	USA34138	26.23
0.075	0.113	USA34140	26.23
0.078	0.117	USA34142	26.23
0.080	0.120	USA34144	26.23
0.085	0.128	USA34146	26.23
0.090	0.135	USA34148	26.23
0.093	0.140	USA34150	26.23
0.095	0.143	USA34152	26.23
0.100	0.150	USA34154	26.23



ALTIN COATED

DIA	LOC	ITEM#	LIST PRICE
0.010	0.015	USA34156	64.47
0.015	0.023	USA34158	40.37
0.020	0.030	USA34160	36.68
0.025	0.038	USA34162	36.68
0.030	0.045	USA34164	34.43
0.031	0.047	USA34166	32.24
0.035	0.053	USA34168	32.24
0.040	0.060	USA34170	32.24
0.045	0.068	USA34172	31.47
0.047	0.071	USA34174	31.47
0.050	0.075	USA34176	31.47
0.055	0.083	USA34178	31.47

DIA	LOC	ITEM#	LIST PRICE
0.060	0.090	USA34180	31.47
0.062	0.093	USA34182	31.47
0.065	0.098	USA34184	31.47
0.070	0.105	USA34186	31.47
0.075	0.113	USA34188	31.47
0.078	0.117	USA34190	31.47
0.080	0.120	USA34192	31.47
0.085	0.128	USA34194	31.47
0.090	0.135	USA34196	31.47
0.093	0.140	USA34198	31.47
0.095	0.143	USA34200	31.47
0.100	0.150	USA34202	31.47

All regular length Micro End Mills are 1/8" shank, 1-1/2" OAL.
For coating information see page 6. For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+.0005, -.0005	-.0001, -.0003 ISO H6

REGULAR LENGTH

LONG REACH STUB FL

LONG REACH REG FL

LONG REACH LONG FL

LONG LENGTH LONG FL

Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



4 FLUTE - STUB FLUTE - BALL NOSE - 30° HELIX
LOC = 1.5 X DIA



UNCOATED

DIA	LOC	ITEM#	LIST PRICE
0.010	0.015	USA34204	58.43
0.015	0.023	USA34206	36.54
0.020	0.030	USA34208	33.24
0.025	0.038	USA34210	33.24
0.030	0.045	USA34212	31.20
0.031	0.047	USA34214	29.25
0.035	0.053	USA34216	29.25
0.040	0.060	USA34218	29.25
0.045	0.068	USA34220	28.52
0.047	0.071	USA34222	28.52
0.050	0.075	USA34224	28.52
0.055	0.083	USA34226	28.52

DIA	LOC	ITEM#	LIST PRICE
0.060	0.090	USA34228	28.52
0.062	0.093	USA34230	28.52
0.065	0.098	USA34232	28.52
0.070	0.105	USA34234	28.52
0.075	0.113	USA34236	28.52
0.078	0.117	USA34238	28.52
0.080	0.120	USA34240	28.52
0.085	0.128	USA34242	28.52
0.090	0.135	USA34244	28.52
0.093	0.140	USA34246	28.52
0.095	0.143	USA34248	28.52
0.100	0.150	USA34250	28.52



ALTIN COATED

DIA	LOC	ITEM#	LIST PRICE
0.010	0.015	USA34252	80.59
0.015	0.023	USA34254	50.44
0.020	0.030	USA34256	45.85
0.025	0.038	USA34258	45.85
0.030	0.045	USA34260	43.01
0.031	0.047	USA34262	40.37
0.035	0.053	USA34264	40.37
0.040	0.060	USA34266	40.37
0.045	0.068	USA34268	39.39
0.047	0.071	USA34270	39.39
0.050	0.075	USA34272	39.39
0.055	0.083	USA34274	39.39

DIA	LOC	ITEM#	LIST PRICE
0.060	0.090	USA34276	39.39
0.062	0.093	USA34278	39.39
0.065	0.098	USA34280	39.39
0.070	0.105	USA34282	39.39
0.075	0.113	USA34284	39.39
0.078	0.117	USA34286	39.39
0.080	0.120	USA34288	39.39
0.085	0.128	USA34290	39.39
0.090	0.135	USA34292	39.39
0.093	0.140	USA34294	39.39
0.095	0.143	USA34296	39.39
0.100	0.150	USA34298	39.39

All regular length Micro End Mills are 1/8" shank, 1-1/2" OAL.
For coating information see page 6. For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK	RADIUS
ALL SIZES	+.0005, -.0005	-.0001, -.0003 ISO H6	+.0002, -.0002

REGULAR LENGTH

LONG REACH STUB FL

LONG REACH REG FL

LONG REACH LONG FL

LONG LENGTH LONG FL



Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

4 FLUTE - STUB FLUTE -  CORNER RADIUS - 30° HELIX
LOC = 1.5 X DIA



UNCOATED

DIA	LOC	RAD	ITEM#	LIST PRICE
0.015	0.023	0.003	USA33580	71.11
0.020	0.030	0.005	USA33582	66.39
0.025	0.038	0.005	USA33584	66.39
0.030	0.045	0.005	USA33586	47.42
0.030	0.045	0.010	USA33588	47.42
0.031	0.047	0.005	USA33590	47.42
0.031	0.047	0.010	USA33592	47.42
0.035	0.053	0.005	USA33594	47.42
0.035	0.053	0.010	USA33596	47.42
0.040	0.060	0.005	USA33598	47.42
0.040	0.060	0.010	USA33600	47.42
0.045	0.068	0.005	USA33602	47.42
0.045	0.068	0.010	USA33604	47.42
0.045	0.068	0.015	USA33606	47.42

DIA	LOC	RAD	ITEM#	LIST PRICE
0.047	0.071	0.005	USA33608	47.42
0.047	0.071	0.010	USA33610	47.42
0.047	0.071	0.015	USA33612	47.42
0.050	0.075	0.005	USA33614	47.42
0.050	0.075	0.010	USA33616	47.42
0.050	0.075	0.015	USA33618	47.42
0.060	0.090	0.005	USA33620	47.42
0.060	0.090	0.010	USA33622	47.42
0.060	0.090	0.015	USA33624	47.42
0.062	0.093	0.005	USA33626	47.42
0.062	0.093	0.010	USA33628	47.42
0.062	0.093	0.015	USA33630	47.42
0.075	0.113	0.005	USA33632	47.42
0.075	0.113	0.010	USA33634	47.42

DIA	LOC	RAD	ITEM#	LIST PRICE
0.075	0.113	0.015	USA33636	47.42
0.078	0.117	0.005	USA33638	47.42
0.078	0.117	0.010	USA33640	47.42
0.078	0.117	0.015	USA33642	47.42
0.090	0.135	0.005	USA33644	47.42
0.090	0.135	0.010	USA33646	47.42
0.090	0.135	0.015	USA33648	47.42
0.093	0.140	0.005	USA33650	47.42
0.093	0.140	0.010	USA33652	47.42
0.093	0.140	0.015	USA33654	47.42
0.100	0.150	0.005	USA33656	47.42
0.100	0.150	0.010	USA33658	47.42
0.100	0.150	0.015	USA33660	47.42



ALTIN COATED

DIA	LOC	RAD	ITEM#	LIST PRICE
0.015	0.023	0.003	USA33662	88.17
0.020	0.030	0.005	USA33664	82.30
0.025	0.038	0.005	USA33666	82.30
0.030	0.045	0.005	USA33668	58.78
0.030	0.045	0.010	USA33670	58.78
0.031	0.047	0.005	USA33672	58.78
0.031	0.047	0.010	USA33674	58.78
0.035	0.053	0.005	USA33676	58.78
0.035	0.053	0.010	USA33678	58.78
0.040	0.060	0.005	USA33680	58.78
0.040	0.060	0.010	USA33682	58.78
0.045	0.068	0.005	USA33684	58.78
0.045	0.068	0.010	USA33686	58.78
0.045	0.068	0.015	USA33688	58.78

DIA	LOC	RAD	ITEM#	LIST PRICE
0.047	0.071	0.005	USA33690	58.78
0.047	0.071	0.010	USA33692	58.78
0.047	0.071	0.015	USA33694	58.78
0.050	0.075	0.005	USA33696	58.78
0.050	0.075	0.010	USA33698	58.78
0.050	0.075	0.015	USA33700	58.78
0.060	0.090	0.005	USA33702	58.78
0.060	0.090	0.010	USA33704	58.78
0.060	0.090	0.015	USA33706	58.78
0.062	0.093	0.005	USA33708	58.78
0.062	0.093	0.010	USA33710	58.78
0.062	0.093	0.015	USA33712	58.78
0.075	0.113	0.005	USA33714	58.78
0.075	0.113	0.010	USA33716	58.78

DIA	LOC	RAD	ITEM#	LIST PRICE
0.075	0.113	0.015	USA33718	58.78
0.078	0.117	0.005	USA33720	58.78
0.078	0.117	0.010	USA33722	58.78
0.078	0.117	0.015	USA33724	58.78
0.090	0.135	0.005	USA33726	58.78
0.090	0.135	0.010	USA33728	58.78
0.090	0.135	0.015	USA33730	58.78
0.093	0.140	0.005	USA33732	58.78
0.093	0.140	0.010	USA33734	58.78
0.093	0.140	0.015	USA33736	58.78
0.100	0.150	0.005	USA33738	58.78
0.100	0.150	0.010	USA33740	58.78
0.100	0.150	0.015	USA33742	58.78

All regular length Micro End Mills are 1/8" shank, 1-1/2" OAL.
For coating information see page 6. For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK	RADIUS
ALL SIZES	+.0005, -.0005	-.0001, -.0003 ISO H6	+.0002, -.0002

REGULAR LENGTH

LONG REACH STUB FL

LONG REACH REG FL


LONG REACH LONG FL

LONG LENGTH LONG FL

Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



4 FLUTE - REGULAR FLUTE -  CORNER RADIUS - 30° HELIX
LOC = 3 X DIA



UNCOATED

DIA	LOC	RAD	ITEM#	LIST PRICE
0.015	0.045	0.003	USA33744	71.11
0.020	0.060	0.005	USA33746	66.39
0.025	0.075	0.005	USA33748	66.39
0.030	0.090	0.005	USA33750	47.42
0.030	0.090	0.010	USA33752	47.42
0.031	0.093	0.005	USA33754	47.42
0.031	0.093	0.010	USA33756	47.42
0.035	0.105	0.005	USA33758	47.42
0.035	0.105	0.010	USA33760	47.42
0.040	0.120	0.005	USA33762	47.42
0.040	0.120	0.010	USA33764	47.42
0.045	0.135	0.005	USA33766	47.42
0.045	0.135	0.010	USA33768	47.42
0.045	0.135	0.015	USA33770	47.42

DIA	LOC	RAD	ITEM#	LIST PRICE
0.047	0.141	0.005	USA33772	47.42
0.047	0.141	0.010	USA33774	47.42
0.047	0.141	0.015	USA33776	47.42
0.050	0.150	0.005	USA33778	47.42
0.050	0.150	0.010	USA33780	47.42
0.050	0.150	0.015	USA33782	47.42
0.060	0.180	0.005	USA33784	47.42
0.060	0.180	0.010	USA33786	47.42
0.060	0.180	0.015	USA33788	47.42
0.062	0.186	0.005	USA33790	47.42
0.062	0.186	0.010	USA33792	47.42
0.062	0.186	0.015	USA33794	47.42
0.075	0.225	0.005	USA33796	47.42
0.075	0.225	0.010	USA33798	47.42

DIA	LOC	RAD	ITEM#	LIST PRICE
0.075	0.225	0.015	USA33800	47.42
0.078	0.234	0.005	USA33802	47.42
0.078	0.234	0.010	USA33804	47.42
0.078	0.234	0.015	USA33806	47.42
0.090	0.270	0.005	USA33808	47.42
0.090	0.270	0.010	USA33810	47.42
0.090	0.270	0.015	USA33812	47.42
0.093	0.279	0.005	USA33814	47.42
0.093	0.279	0.010	USA33816	47.42
0.093	0.279	0.015	USA33818	47.42
0.100	0.300	0.005	USA33820	47.42
0.100	0.300	0.010	USA33822	47.42
0.100	0.300	0.015	USA33824	47.42



ALTIN COATED

DIA	LOC	RAD	ITEM#	LIST PRICE
0.015	0.045	0.003	USA33826	88.17
0.020	0.060	0.005	USA33828	82.30
0.025	0.075	0.005	USA33830	82.30
0.030	0.090	0.005	USA33832	58.78
0.030	0.090	0.010	USA33834	58.78
0.031	0.093	0.005	USA33836	58.78
0.031	0.093	0.010	USA33838	58.78
0.035	0.105	0.005	USA33840	58.78
0.035	0.105	0.010	USA33842	58.78
0.040	0.120	0.005	USA33844	58.78
0.040	0.120	0.010	USA33846	58.78
0.045	0.135	0.005	USA33848	58.78
0.045	0.135	0.010	USA33850	58.78
0.045	0.135	0.015	USA33852	58.78

DIA	LOC	RAD	ITEM#	LIST PRICE
0.047	0.141	0.005	USA33854	58.78
0.047	0.141	0.010	USA33856	58.78
0.047	0.141	0.015	USA33858	58.78
0.050	0.150	0.005	USA33860	58.78
0.050	0.150	0.010	USA33862	58.78
0.050	0.150	0.015	USA33864	58.78
0.060	0.180	0.005	USA33866	58.78
0.060	0.180	0.010	USA33868	58.78
0.060	0.180	0.015	USA33870	58.78
0.062	0.186	0.005	USA33872	58.78
0.062	0.186	0.010	USA33874	58.78
0.062	0.186	0.015	USA33876	58.78
0.075	0.225	0.005	USA33878	58.78
0.075	0.225	0.010	USA33880	58.78

DIA	LOC	RAD	ITEM#	LIST PRICE
0.075	0.225	0.015	USA33882	58.78
0.078	0.234	0.005	USA33884	58.78
0.078	0.234	0.010	USA33886	58.78
0.078	0.234	0.015	USA33888	58.78
0.090	0.270	0.005	USA33890	58.78
0.090	0.270	0.010	USA33892	58.78
0.090	0.270	0.015	USA33894	58.78
0.093	0.279	0.005	USA33896	58.78
0.093	0.279	0.010	USA33898	58.78
0.093	0.279	0.015	USA33900	58.78
0.100	0.300	0.005	USA33902	58.78
0.100	0.300	0.010	USA33904	58.78
0.100	0.300	0.015	USA33906	58.78

All regular length Micro End Mills are 1/8" shank, 1-1/2" OAL.
For coating information see page 6. For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK	RADIUS
ALL SIZES	+.0005, -.0005	-.0001, -.0003 ISO H6	+.0002, -.0002

MADE IN THE USA

REGULAR LENGTH

LONG REACH STUB FL

LONG REACH REG FL

LONG REACH LONG FL

LONG LENGTH LONG FL



Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

4 FLUTE - REGULAR FLUTE - SQUARE END - 30° HELIX
LOC = 3 X DIA



UNCOATED

REGULAR
LENGTH

LONG REACH
STUB FL

LONG REACH
REG FL

LONG REACH
LONG FL

LONG LENGTH
LONG FL

DIA	LOC	ITEM#	LIST PRICE
0.010	0.030	USA19209	46.72
0.011	0.033	USA19211	41.83
0.012	0.036	USA19213	41.83
0.013	0.039	USA19215	34.60
0.014	0.042	USA19217	34.60
0.015	0.045	USA19219	29.25
0.016	0.048	USA19221	29.25
0.017	0.051	USA19223	29.25
0.018	0.054	USA19225	29.25
0.019	0.057	USA19227	29.25
0.020	0.060	USA19229	26.57
0.021	0.063	USA19231	26.57
0.022	0.066	USA19233	26.57
0.023	0.069	USA19235	26.57
0.024	0.072	USA19237	26.57
0.025	0.075	USA19239	26.57
0.026	0.078	USA19241	24.94
0.027	0.081	USA19243	24.94
0.028	0.084	USA19245	24.94
0.029	0.087	USA19247	24.94
0.030	0.090	USA19249	24.94
0.031	0.093	USA19251	23.38
0.032	0.096	USA19253	23.38
0.033	0.099	USA19255	23.38
0.034	0.102	USA19257	23.38
0.035	0.105	USA19259	23.38
0.036	0.108	USA19261	23.38
0.037	0.111	USA19263	23.38
0.038	0.114	USA19265	23.38
0.039	0.117	USA19267	23.38
0.040	0.120	USA19269	23.38
0.041	0.123	USA19271	23.38
0.042	0.126	USA19273	23.38
0.043	0.129	USA19275	23.38
0.044	0.132	USA19277	22.79

DIA	LOC	ITEM#	LIST PRICE
0.045	0.135	USA19279	22.79
0.046	0.138	USA19281	22.79
0.047	0.141	USA19283	22.79
0.048	0.144	USA19285	22.79
0.049	0.147	USA19287	22.79
0.050	0.150	USA19289	22.79
0.051	0.153	USA19291	22.79
0.052	0.156	USA19293	22.79
0.053	0.159	USA19295	22.79
0.054	0.162	USA19297	22.79
0.055	0.165	USA19299	22.79
0.056	0.168	USA19301	22.79
0.057	0.171	USA19303	22.79
0.058	0.174	USA19305	22.79
0.059	0.177	USA19307	22.79
0.060	0.180	USA19309	22.79
0.061	0.183	USA19311	22.79
0.062	0.186	USA19313	22.79
0.063	0.189	USA19315	22.79
0.064	0.192	USA19317	22.79
0.065	0.195	USA19319	22.79
0.066	0.198	USA19321	22.79
0.067	0.201	USA19323	22.79
0.068	0.204	USA19325	22.79
0.069	0.207	USA19327	22.79
0.070	0.210	USA19329	22.79
0.071	0.213	USA19331	22.79
0.072	0.216	USA19333	22.79
0.073	0.219	USA19335	22.79
0.074	0.222	USA19337	22.79
0.075	0.225	USA19339	22.79
0.076	0.228	USA19341	22.79
0.077	0.231	USA19343	22.79
0.078	0.234	USA19345	22.79
0.079	0.237	USA19347	22.79

DIA	LOC	ITEM#	LIST PRICE
0.080	0.240	USA19349	22.79
0.081	0.243	USA19351	22.79
0.082	0.246	USA19353	22.79
0.083	0.249	USA19355	22.79
0.084	0.252	USA19357	22.79
0.085	0.255	USA19359	22.79
0.086	0.258	USA19361	22.79
0.087	0.261	USA19363	22.79
0.088	0.264	USA19365	22.79
0.089	0.267	USA19367	22.79
0.090	0.270	USA19369	22.79
0.091	0.273	USA19371	22.79
0.092	0.276	USA19373	22.79
0.093	0.279	USA19375	22.79
0.094	0.282	USA19377	22.79
0.095	0.285	USA19379	22.79
0.096	0.288	USA19381	22.79
0.097	0.291	USA19383	22.79
0.098	0.294	USA19385	22.79
0.099	0.297	USA19387	22.79
0.100	0.300	USA19389	22.79
0.101	0.303	USA19391	22.79
0.102	0.306	USA19393	22.79
0.103	0.309	USA19395	22.79
0.104	0.312	USA19397	22.79
0.105	0.315	USA19399	22.79
0.106	0.318	USA19401	22.79
0.107	0.321	USA19403	22.79
0.108	0.324	USA19405	22.79
0.109	0.327	USA19407	22.79
0.110	0.330	USA19409	22.79
0.115	0.345	USA19411	22.79
0.120	0.360	USA19413	22.79

All regular length Micro End Mills are 1/8" shank, 1-1/2" OAL.
For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+.0005, -.0005	-.0001, -.0003 ISO H6

Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



4 FLUTE - REGULAR FLUTE - SQUARE END - 30° HELIX
LOC = 3 X DIA



ALTiN COATED

DIA	LOC	ITEM#	LIST PRICE
0.010	0.030	USA34732	56.07
0.011	0.033	USA34734	50.20
0.012	0.036	USA34736	50.20
0.013	0.039	USA34738	41.51
0.014	0.042	USA34740	41.51
0.015	0.045	USA34742	35.09
0.016	0.048	USA34744	35.09
0.017	0.051	USA34746	35.09
0.018	0.054	USA34748	35.09
0.019	0.057	USA34750	35.09
0.020	0.060	USA34752	31.89
0.021	0.063	USA34754	31.89
0.022	0.066	USA34756	31.89
0.023	0.069	USA34758	31.89
0.024	0.072	USA34760	31.89
0.025	0.075	USA34762	31.89
0.026	0.078	USA34764	29.94
0.027	0.081	USA34766	29.94
0.028	0.084	USA34768	29.94
0.029	0.087	USA34770	29.94
0.030	0.090	USA34772	29.94
0.031	0.093	USA34774	28.03
0.032	0.096	USA34776	28.03
0.033	0.099	USA34778	28.03
0.034	0.102	USA34780	28.03
0.035	0.105	USA34782	28.03
0.036	0.108	USA34784	28.03
0.037	0.111	USA34786	28.03
0.038	0.114	USA34788	28.03
0.039	0.117	USA34790	28.03
0.040	0.120	USA34792	28.03
0.041	0.123	USA34794	28.03
0.042	0.126	USA34796	28.03
0.043	0.129	USA34798	28.03
0.044	0.132	USA34800	27.37

DIA	LOC	ITEM#	LIST PRICE
0.045	0.135	USA34802	27.37
0.046	0.138	USA34804	27.37
0.047	0.141	USA34806	27.37
0.048	0.144	USA34808	27.37
0.049	0.147	USA34810	27.37
0.050	0.150	USA34812	27.37
0.051	0.153	USA34814	27.37
0.052	0.156	USA34816	27.37
0.053	0.159	USA34818	27.37
0.054	0.162	USA34820	27.37
0.055	0.165	USA34822	27.37
0.056	0.168	USA34824	27.37
0.057	0.171	USA34826	27.37
0.058	0.174	USA34828	27.37
0.059	0.177	USA34830	27.37
0.060	0.180	USA34832	27.37
0.061	0.183	USA34834	27.37
0.062	0.186	USA34836	27.37
0.063	0.189	USA34838	27.37
0.064	0.192	USA34840	27.37
0.065	0.195	USA34842	27.37
0.066	0.198	USA34844	27.37
0.067	0.201	USA34846	27.37
0.068	0.204	USA34848	27.37
0.069	0.207	USA34850	27.37
0.070	0.210	USA34852	27.37
0.071	0.213	USA34854	27.37
0.072	0.216	USA34856	27.37
0.073	0.219	USA34858	27.37
0.074	0.222	USA34860	27.37
0.075	0.225	USA34862	27.37
0.076	0.228	USA34864	27.37
0.077	0.231	USA34866	27.37
0.078	0.234	USA34868	27.37
0.079	0.237	USA34870	27.37

DIA	LOC	ITEM#	LIST PRICE
0.080	0.240	USA34872	27.37
0.081	0.243	USA34874	27.37
0.082	0.246	USA34876	27.37
0.083	0.249	USA34878	27.37
0.084	0.252	USA34880	27.37
0.085	0.255	USA34882	27.37
0.086	0.258	USA34884	27.37
0.087	0.261	USA34886	27.37
0.088	0.264	USA34888	27.37
0.089	0.267	USA34890	27.37
0.090	0.270	USA34892	27.37
0.091	0.273	USA34894	27.37
0.092	0.276	USA34896	27.37
0.093	0.279	USA34898	27.37
0.094	0.282	USA34900	27.37
0.095	0.285	USA34902	27.37
0.096	0.288	USA34904	27.37
0.097	0.291	USA34906	27.37
0.098	0.294	USA34908	27.37
0.099	0.297	USA34910	27.37
0.100	0.300	USA34912	27.37
0.101	0.303	USA34914	27.37
0.102	0.306	USA34916	27.37
0.103	0.309	USA34918	27.37
0.104	0.312	USA34920	27.37
0.105	0.315	USA34922	27.37
0.106	0.318	USA34924	27.37
0.107	0.321	USA34926	27.37
0.108	0.324	USA34928	27.37
0.109	0.327	USA34930	27.37
0.110	0.330	USA34932	27.37
0.115	0.345	USA34934	27.37
0.120	0.360	USA34936	27.37

REGULAR LENGTH

LONG REACH STUB FL

LONG REACH REG FL

LONG REACH LONG FL

LONG LENGTH LONG FL

All regular length Micro End Mills are 1/8" shank, 1-1/2" OAL.
For coating information see page 6. For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+.0005, -.0005	-.0001, -.0003 ISO H6

MADE IN THE USA



Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

4 FLUTE - REGULAR FLUTE - BALL NOSE - 30° HELIX
LOC = 3 X DIA



UNCOATED

REGULAR LENGTH

LONG REACH STUB FL

LONG REACH REG FL

LONG REACH LONG FL

LONG LENGTH LONG FL

DIA	LOC	ITEM#	LIST PRICE
0.010	0.030	USA19415	58.43
0.011	0.033	USA19417	52.28
0.012	0.036	USA19419	52.28
0.013	0.039	USA19421	43.32
0.014	0.042	USA19423	43.32
0.015	0.045	USA19425	36.54
0.016	0.048	USA19427	36.54
0.017	0.051	USA19429	36.54
0.018	0.054	USA19431	36.54
0.019	0.057	USA19433	36.54
0.020	0.060	USA19435	33.24
0.021	0.063	USA19437	33.24
0.022	0.066	USA19439	33.24
0.023	0.069	USA19441	33.24
0.024	0.072	USA19443	33.24
0.025	0.075	USA19445	33.24
0.026	0.078	USA19447	31.20
0.027	0.081	USA19449	31.20
0.028	0.084	USA19451	31.20
0.029	0.087	USA19453	31.20
0.030	0.090	USA19455	31.20
0.031	0.093	USA19457	29.25
0.032	0.096	USA19459	29.25
0.033	0.099	USA19461	29.25
0.034	0.102	USA19463	29.25
0.035	0.105	USA19465	29.25
0.036	0.108	USA19467	29.25
0.037	0.111	USA19469	29.25
0.038	0.114	USA19471	29.25
0.039	0.117	USA19473	29.25
0.040	0.120	USA19475	29.25
0.041	0.123	USA19477	29.25
0.042	0.126	USA19479	29.25
0.043	0.129	USA19481	29.25
0.044	0.132	USA19483	28.52

DIA	LOC	ITEM#	LIST PRICE
0.045	0.135	USA19485	28.52
0.046	0.138	USA19487	28.52
0.047	0.141	USA19489	28.52
0.048	0.144	USA19491	28.52
0.049	0.147	USA19493	28.52
0.050	0.150	USA19495	28.52
0.051	0.153	USA19497	28.52
0.052	0.156	USA19499	28.52
0.053	0.159	USA19501	28.52
0.054	0.162	USA19503	28.52
0.055	0.165	USA19505	28.52
0.056	0.168	USA19507	28.52
0.057	0.171	USA19509	28.52
0.058	0.174	USA19511	28.52
0.059	0.177	USA19513	28.52
0.060	0.180	USA19515	28.52
0.061	0.183	USA19517	28.52
0.062	0.186	USA19519	28.52
0.063	0.189	USA19521	28.52
0.064	0.192	USA19523	28.52
0.065	0.195	USA19525	28.52
0.066	0.198	USA19527	28.52
0.067	0.201	USA19529	28.52
0.068	0.204	USA19531	28.52
0.069	0.207	USA19533	28.52
0.070	0.210	USA19535	28.52
0.071	0.213	USA19537	28.52
0.072	0.216	USA19539	28.52
0.073	0.219	USA19541	28.52
0.074	0.222	USA19543	28.52
0.075	0.225	USA19545	28.52
0.076	0.228	USA19547	28.52
0.077	0.231	USA19549	28.52
0.078	0.234	USA19551	28.52
0.079	0.237	USA19553	28.52

DIA	LOC	ITEM#	LIST PRICE
0.080	0.240	USA19555	28.52
0.081	0.243	USA19557	28.52
0.082	0.246	USA19559	28.52
0.083	0.249	USA19561	28.52
0.084	0.252	USA19563	28.52
0.085	0.255	USA19565	28.52
0.086	0.258	USA19567	28.52
0.087	0.261	USA19569	28.52
0.088	0.264	USA19571	28.52
0.089	0.267	USA19573	28.52
0.090	0.270	USA19575	28.52
0.091	0.273	USA19577	28.52
0.092	0.276	USA19579	28.52
0.093	0.279	USA19581	28.52
0.094	0.282	USA19583	28.52
0.095	0.285	USA19585	28.52
0.096	0.288	USA19587	28.52
0.097	0.291	USA19589	28.52
0.098	0.294	USA19591	28.52
0.099	0.297	USA19593	28.52
0.100	0.300	USA19595	28.52
0.101	0.303	USA19597	28.52
0.102	0.306	USA19599	28.52
0.103	0.309	USA19601	28.52
0.104	0.312	USA19603	28.52
0.105	0.315	USA19605	28.52
0.106	0.318	USA19607	28.52
0.107	0.321	USA19609	28.52
0.108	0.324	USA19611	28.52
0.109	0.327	USA19613	28.52
0.110	0.330	USA19615	28.52
0.115	0.345	USA19617	28.52
0.120	0.360	USA19619	28.52

All regular length Micro End Mills are 1/8" shank, 1-1/2" OAL.
For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK	RADIUS
ALL SIZES	+.0005, -.0005	-.0001, -.0003 ISO H6	+.0002, -.0002

Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



4 FLUTE - REGULAR FLUTE - BALL NOSE - 30° HELIX
LOC = 3 X DIA



ALTIN COATED

DIA	LOC	ITEM#	LIST PRICE
0.010	0.030	USA34938	70.10
0.011	0.033	USA34940	62.77
0.012	0.036	USA34942	62.77
0.013	0.039	USA34944	51.97
0.014	0.042	USA34946	51.97
0.015	0.045	USA34948	43.84
0.016	0.048	USA34950	43.84
0.017	0.051	USA34952	43.84
0.018	0.054	USA34954	43.84
0.019	0.057	USA34956	43.84
0.020	0.060	USA34958	39.88
0.021	0.063	USA34960	39.88
0.022	0.066	USA34962	39.88
0.023	0.069	USA34964	39.88
0.024	0.072	USA34966	39.88
0.025	0.075	USA34968	39.88
0.026	0.078	USA34970	37.41
0.027	0.081	USA34972	37.41
0.028	0.084	USA34974	37.41
0.029	0.087	USA34976	37.41
0.030	0.090	USA34978	37.41
0.031	0.093	USA34980	35.09
0.032	0.096	USA34982	35.09
0.033	0.099	USA34984	35.09
0.034	0.102	USA34986	35.09
0.035	0.105	USA34988	35.09
0.036	0.108	USA34990	35.09
0.037	0.111	USA34992	35.09
0.038	0.114	USA34994	35.09
0.039	0.117	USA34996	35.09
0.040	0.120	USA34998	35.09
0.041	0.123	USA35000	35.09
0.042	0.126	USA35002	35.09
0.043	0.129	USA35004	35.09
0.044	0.132	USA35006	34.25

DIA	LOC	ITEM#	LIST PRICE
0.045	0.135	USA35008	34.25
0.046	0.138	USA35010	34.25
0.047	0.141	USA35012	34.25
0.048	0.144	USA35014	34.25
0.049	0.147	USA35016	34.25
0.050	0.150	USA35018	34.25
0.051	0.153	USA35020	34.25
0.052	0.156	USA35022	34.25
0.053	0.159	USA35024	34.25
0.054	0.162	USA35026	34.25
0.055	0.165	USA35028	34.25
0.056	0.168	USA35030	34.25
0.057	0.171	USA35032	34.25
0.058	0.174	USA35034	34.25
0.059	0.177	USA35036	34.25
0.060	0.180	USA35038	34.25
0.061	0.183	USA35040	34.25
0.062	0.186	USA35042	34.25
0.063	0.189	USA35044	34.25
0.064	0.192	USA35046	34.25
0.065	0.195	USA35048	34.25
0.066	0.198	USA35050	34.25
0.067	0.201	USA35052	34.25
0.068	0.204	USA35054	34.25
0.069	0.207	USA35056	34.25
0.070	0.210	USA35058	34.25
0.071	0.213	USA35060	34.25
0.072	0.216	USA35062	34.25
0.073	0.219	USA35064	34.25
0.074	0.222	USA35066	34.25
0.075	0.225	USA35068	34.25
0.076	0.228	USA35070	34.25
0.077	0.231	USA35072	34.25
0.078	0.234	USA35074	34.25
0.079	0.237	USA35076	34.25

DIA	LOC	ITEM#	LIST PRICE
0.080	0.240	USA35078	34.25
0.081	0.243	USA35080	34.25
0.082	0.246	USA35082	34.25
0.083	0.249	USA35084	34.25
0.084	0.252	USA35086	34.25
0.085	0.255	USA35088	34.25
0.086	0.258	USA35090	34.25
0.087	0.261	USA35092	34.25
0.088	0.264	USA35094	34.25
0.089	0.267	USA35096	34.25
0.090	0.270	USA35098	34.25
0.091	0.273	USA35100	34.25
0.092	0.276	USA35102	34.25
0.093	0.279	USA35104	34.25
0.094	0.282	USA35106	34.25
0.095	0.285	USA35108	34.25
0.096	0.288	USA35110	34.25
0.097	0.291	USA35112	34.25
0.098	0.294	USA35114	34.25
0.099	0.297	USA35116	34.25
0.100	0.300	USA35118	34.25
0.101	0.303	USA35120	34.25
0.102	0.306	USA35122	34.25
0.103	0.309	USA35124	34.25
0.104	0.312	USA35126	34.25
0.105	0.315	USA35128	34.25
0.106	0.318	USA35130	34.25
0.107	0.321	USA35132	34.25
0.108	0.324	USA35134	34.25
0.109	0.327	USA35136	34.25
0.110	0.330	USA35138	34.25
0.115	0.345	USA35140	34.25
0.120	0.360	USA35142	34.25

REGULAR LENGTH

LONG REACH STUB FL

LONG REACH REG FL

LONG REACH LONG FL

LONG LENGTH LONG FL

All regular length Micro End Mills are 1/8" shank, 1-1/2" OAL.
For coating information see page 6. For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK	RADIUS
ALL SIZES	+.0005, -.0005	-.0001, -.0003 ISO H6	+.0002, -.0002

MADE IN THE USA



Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

3 FLUTE - LONG REACH - STUB FLUTE - SQUARE END - 30° HELIX
LOC = 1.5 X DIA



UNCOATED

REGULAR LENGTH

LONG REACH STUB FL

LONG REACH REG FL

LONG REACH LONG FL

LONG LENGTH LONG FL

DIA	LOC	xDIA	REACH	ITEM#	LIST PRICE
0.010	0.015	3	0.030	USA43232	75.57
0.010	0.015	5	0.050	USA43234	75.57
0.010	0.015	8	0.080	USA43236	75.57
0.010	0.015	12	0.125	USA43238	79.74
0.015	0.022	3	0.045	USA43240	62.68
0.015	0.022	5	0.078	USA43242	62.68
0.015	0.022	8	0.125	USA43244	62.68
0.015	0.022	12	0.187	USA43246	64.86
0.020	0.030	3	0.060	USA43248	60.10
0.020	0.030	5	0.100	USA43250	60.10
0.020	0.030	8	0.160	USA43252	60.10
0.020	0.030	12	0.250	USA43254	62.48
0.025	0.037	3	0.075	USA43256	57.72
0.025	0.037	5	0.125	USA43258	57.72
0.025	0.037	8	0.203	USA43260	57.72
0.025	0.037	12	0.312	USA43262	59.70
0.030	0.045	3	0.090	USA43264	57.72
0.030	0.045	5	0.156	USA43266	57.72
0.030	0.045	8	0.250	USA43268	57.72
0.030	0.045	12	0.375	USA43270	59.70
0.031	0.046	3	0.093	USA43272	57.72
0.031	0.046	5	0.156	USA43274	57.72
0.031	0.046	8	0.250	USA43276	57.72
0.031	0.046	12	0.375	USA43278	59.70
0.035	0.052	3	0.105	USA43280	57.72
0.035	0.052	5	0.187	USA43282	57.72
0.035	0.052	8	0.281	USA43284	57.72
0.035	0.052	12	0.425	USA43286	59.70
0.040	0.060	3	0.120	USA43288	57.72
0.040	0.060	5	0.203	USA43290	57.72
0.040	0.060	8	0.325	USA43292	57.72
0.040	0.060	12	0.480	USA43294	59.70

DIA	LOC	xDIA	REACH	ITEM#	LIST PRICE
0.045	0.067	3	0.135	USA43296	56.53
0.045	0.067	5	0.225	USA43298	56.53
0.045	0.067	8	0.375	USA43300	56.53
0.045	0.067	12	0.550	USA43302	58.32
0.047	0.070	3	0.141	USA43304	56.53
0.047	0.070	5	0.250	USA43306	56.53
0.047	0.070	8	0.375	USA43308	56.53
0.047	0.070	12	0.570	USA43310	58.32
0.050	0.075	3	0.150	USA43312	56.53
0.050	0.075	5	0.250	USA43314	56.53
0.050	0.075	8	0.400	USA43316	56.53
0.050	0.075	12	0.600	USA43318	58.32
0.055	0.082	3	0.165	USA43320	56.53
0.055	0.082	5	0.275	USA43322	56.53
0.055	0.082	8	0.450	USA43324	56.53
0.055	0.082	12	0.660	USA43326	58.32
0.060	0.090	3	0.180	USA43328	56.53
0.060	0.090	5	0.312	USA43330	56.53
0.060	0.090	8	0.500	USA43332	56.53
0.060	0.090	12	0.720	USA43334	58.32
0.062	0.093	3	0.186	USA43336	56.53
0.062	0.093	5	0.312	USA43338	56.53
0.062	0.093	8	0.500	USA43340	56.53
0.062	0.093	12	0.750	USA43342	58.32
0.065	0.097	3	0.195	USA43344	56.53
0.065	0.097	5	0.325	USA43346	56.53
0.065	0.097	8	0.530	USA43348	56.53
0.065	0.097	12	0.800	USA43350	58.32
0.070	0.105	3	0.210	USA43352	56.53
0.070	0.105	5	0.375	USA43354	56.53
0.070	0.105	8	0.570	USA43356	56.53
0.070	0.105	12	0.850	USA43358	58.32

DIA	LOC	xDIA	REACH	ITEM#	LIST PRICE
0.075	0.112	3	0.225	USA43360	56.53
0.075	0.112	5	0.375	USA43362	56.53
0.075	0.112	8	0.625	USA43364	56.53
0.075	0.112	12	0.900	USA43366	58.32
0.078	0.117	3	0.234	USA43368	56.53
0.078	0.117	5	0.406	USA43370	56.53
0.078	0.117	8	0.625	USA43372	56.53
0.078	0.117	12	0.940	USA43374	58.32
0.080	0.120	3	0.240	USA43376	56.53
0.080	0.120	5	0.406	USA43378	56.53
0.080	0.120	8	0.650	USA43380	56.53
0.080	0.120	12	0.960	USA43382	58.32
0.085	0.127	3	0.255	USA43384	56.53
0.085	0.127	5	0.425	USA43386	56.53
0.085	0.127	8	0.700	USA43388	56.53
0.085	0.127	12	1.020	USA43390	58.32
0.090	0.135	3	0.270	USA43392	56.53
0.090	0.135	5	0.450	USA43394	56.53
0.090	0.135	8	0.750	USA43396	56.53
0.090	0.135	12	1.080	USA43398	58.32
0.093	0.139	3	0.279	USA43400	56.53
0.093	0.139	5	0.500	USA43402	56.53
0.093	0.139	8	0.750	USA43404	56.53
0.093	0.139	12	1.125	USA43406	58.32
0.095	0.142	3	0.285	USA43408	56.53
0.095	0.142	5	0.500	USA43410	56.53
0.095	0.142	8	0.750	USA43412	56.53
0.095	0.142	12	1.150	USA43414	58.32
0.100	0.150	3	0.300	USA43416	56.53
0.100	0.150	5	0.500	USA43418	56.53
0.100	0.150	8	0.800	USA43420	56.53
0.100	0.150	12	1.200	USA43422	58.32

All long reach Micro End Mills are 1/8" shank, 2-1/2" OAL.
For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK	REACH
ALL SIZES	+0.005, -0.005	-0.001, -0.003 ISO H6	+0.010, -0.000

Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



3 FLUTE - LONG REACH - STUB FLUTE - SQUARE END - 30° HELIX
LOC = 1.5 X DIA



ALTIN COATED

DIA	LOC	xDIA	REACH	ITEM#	LIST PRICE
0.010	0.015	3	0.030	USA44576	90.69
0.010	0.015	5	0.050	USA44578	90.69
0.010	0.015	8	0.080	USA44580	90.69
0.010	0.015	12	0.125	USA44582	95.69
0.015	0.022	3	0.045	USA44584	75.22
0.015	0.022	5	0.078	USA44586	75.22
0.015	0.022	8	0.125	USA44588	75.22
0.015	0.022	12	0.187	USA44590	77.83
0.020	0.030	3	0.060	USA44592	72.12
0.020	0.030	5	0.100	USA44594	72.12
0.020	0.030	8	0.160	USA44596	72.12
0.020	0.030	12	0.250	USA44598	74.98
0.025	0.037	3	0.075	USA44600	69.27
0.025	0.037	5	0.125	USA44602	69.27
0.025	0.037	8	0.203	USA44604	69.27
0.025	0.037	12	0.312	USA44606	71.65
0.030	0.045	3	0.090	USA44608	69.27
0.030	0.045	5	0.156	USA44610	69.27
0.030	0.045	8	0.250	USA44612	69.27
0.030	0.045	12	0.375	USA44614	71.65
0.031	0.046	3	0.093	USA44616	69.27
0.031	0.046	5	0.156	USA44618	69.27
0.031	0.046	8	0.250	USA44620	69.27
0.031	0.046	12	0.375	USA44622	71.65
0.035	0.052	3	0.105	USA44624	69.27
0.035	0.052	5	0.187	USA44626	69.27
0.035	0.052	8	0.281	USA44628	69.27
0.035	0.052	12	0.425	USA44630	71.65
0.040	0.060	3	0.120	USA44632	69.27
0.040	0.060	5	0.203	USA44634	69.27
0.040	0.060	8	0.325	USA44636	69.27
0.040	0.060	12	0.480	USA44638	71.65

DIA	LOC	xDIA	REACH	ITEM#	LIST PRICE
0.045	0.067	3	0.135	USA44640	67.84
0.045	0.067	5	0.225	USA44642	67.84
0.045	0.067	8	0.375	USA44644	67.84
0.045	0.067	12	0.550	USA44646	69.98
0.047	0.070	3	0.141	USA44648	67.84
0.047	0.070	5	0.250	USA44650	67.84
0.047	0.070	8	0.375	USA44652	67.84
0.047	0.070	12	0.570	USA44654	69.98
0.050	0.075	3	0.150	USA44656	67.84
0.050	0.075	5	0.250	USA44658	67.84
0.050	0.075	8	0.400	USA44660	67.84
0.050	0.075	12	0.600	USA44662	69.98
0.055	0.082	3	0.165	USA44664	67.84
0.055	0.082	5	0.275	USA44666	67.84
0.055	0.082	8	0.450	USA44668	67.84
0.055	0.082	12	0.660	USA44670	69.98
0.060	0.090	3	0.180	USA44672	67.84
0.060	0.090	5	0.312	USA44674	67.84
0.060	0.090	8	0.500	USA44676	67.84
0.060	0.090	12	0.720	USA44678	69.98
0.062	0.093	3	0.186	USA44680	67.84
0.062	0.093	5	0.312	USA44682	67.84
0.062	0.093	8	0.500	USA44684	67.84
0.062	0.093	12	0.750	USA44686	69.98
0.065	0.097	3	0.195	USA44688	67.84
0.065	0.097	5	0.325	USA44690	67.84
0.065	0.097	8	0.530	USA44692	67.84
0.065	0.097	12	0.800	USA44694	69.98
0.070	0.105	3	0.210	USA44696	67.84
0.070	0.105	5	0.375	USA44698	67.84
0.070	0.105	8	0.570	USA44700	67.84
0.070	0.105	12	0.850	USA44702	69.98

DIA	LOC	xDIA	REACH	ITEM#	LIST PRICE
0.075	0.112	3	0.225	USA44704	67.84
0.075	0.112	5	0.375	USA44706	67.84
0.075	0.112	8	0.625	USA44708	67.84
0.075	0.112	12	0.900	USA44710	69.98
0.078	0.117	3	0.234	USA44712	67.84
0.078	0.117	5	0.406	USA44714	67.84
0.078	0.117	8	0.625	USA44716	67.84
0.078	0.117	12	0.940	USA44718	69.98
0.080	0.120	3	0.240	USA44720	67.84
0.080	0.120	5	0.406	USA44722	67.84
0.080	0.120	8	0.650	USA44724	67.84
0.080	0.120	12	0.960	USA44726	69.98
0.085	0.127	3	0.255	USA44728	67.84
0.085	0.127	5	0.425	USA44730	67.84
0.085	0.127	8	0.700	USA44732	67.84
0.085	0.127	12	1.020	USA44734	69.98
0.090	0.135	3	0.270	USA44736	67.84
0.090	0.135	5	0.450	USA44738	67.84
0.090	0.135	8	0.750	USA44740	67.84
0.090	0.135	12	1.080	USA44742	69.98
0.093	0.139	3	0.279	USA44744	67.84
0.093	0.139	5	0.500	USA44746	67.84
0.093	0.139	8	0.750	USA44748	67.84
0.093	0.139	12	1.125	USA44750	69.98
0.095	0.142	3	0.285	USA44752	67.84
0.095	0.142	5	0.500	USA44754	67.84
0.095	0.142	8	0.750	USA44756	67.84
0.095	0.142	12	1.150	USA44758	69.98
0.100	0.150	3	0.300	USA44760	67.84
0.100	0.150	5	0.500	USA44762	67.84
0.100	0.150	8	0.800	USA44764	67.84
0.100	0.150	12	1.200	USA44766	69.98

REGULAR LENGTH

LONG REACH STUB FL

LONG REACH REG FL

LONG REACH LONG FL

LONG LENGTH LONG FL

All long reach Micro End Mills are 1/8" shank, 2-1/2" OAL.
For coating information see page 6. For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK	REACH
ALL SIZES	+0.005, -0.005	-0.001, -0.003 ISO H6	+0.010, -0.000

MADE IN THE USA



Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

3 FLUTE - LONG REACH - STUB FLUTE - BALL NOSE - 30° HELIX
LOC = 1.5 X DIA



UNCOATED

REGULAR LENGTH

LONG REACH STUB FL

LONG REACH REG FL

LONG REACH LONG FL

LONG LENGTH LONG FL

DIA	LOC	xDIA	REACH	ITEM#	LIST PRICE
0.010	0.015	3	0.030	USA43616	94.81
0.010	0.015	5	0.050	USA43618	94.81
0.010	0.015	8	0.080	USA43620	98.98
0.010	0.015	12	0.125	USA43622	111.28
0.015	0.022	3	0.045	USA43624	81.13
0.015	0.022	5	0.078	USA43626	81.13
0.015	0.022	8	0.125	USA43628	81.13
0.015	0.022	12	0.187	USA43630	83.11
0.020	0.030	3	0.060	USA43632	78.55
0.020	0.030	5	0.100	USA43634	78.55
0.020	0.030	8	0.160	USA43636	78.55
0.020	0.030	12	0.250	USA43638	80.73
0.025	0.037	3	0.075	USA43640	67.84
0.025	0.037	5	0.125	USA43642	67.84
0.025	0.037	8	0.203	USA43644	67.84
0.025	0.037	12	0.312	USA43646	69.82
0.030	0.045	3	0.090	USA43648	67.84
0.030	0.045	5	0.156	USA43650	67.84
0.030	0.045	8	0.250	USA43652	67.84
0.030	0.045	12	0.375	USA43654	69.82
0.031	0.046	3	0.093	USA43656	67.84
0.031	0.046	5	0.156	USA43658	67.84
0.031	0.046	8	0.250	USA43660	67.84
0.031	0.046	12	0.375	USA43662	69.82
0.035	0.052	3	0.105	USA43664	67.84
0.035	0.052	5	0.187	USA43666	67.84
0.035	0.052	8	0.281	USA43668	67.84
0.035	0.052	12	0.425	USA43670	69.82
0.040	0.060	3	0.120	USA43672	67.84
0.040	0.060	5	0.203	USA43674	67.84
0.040	0.060	8	0.325	USA43676	67.84
0.040	0.060	12	0.480	USA43678	69.82

DIA	LOC	xDIA	REACH	ITEM#	LIST PRICE
0.045	0.067	3	0.135	USA43680	66.25
0.045	0.067	5	0.225	USA43682	66.25
0.045	0.067	8	0.375	USA43684	66.25
0.045	0.067	12	0.550	USA43686	68.04
0.047	0.070	3	0.141	USA43688	66.25
0.047	0.070	5	0.250	USA43690	66.25
0.047	0.070	8	0.375	USA43692	66.25
0.047	0.070	12	0.570	USA43694	68.04
0.050	0.075	3	0.150	USA43696	66.25
0.050	0.075	5	0.250	USA43698	66.25
0.050	0.075	8	0.400	USA43700	66.25
0.050	0.075	12	0.600	USA43702	68.04
0.055	0.082	3	0.165	USA43704	66.25
0.055	0.082	5	0.275	USA43706	66.25
0.055	0.082	8	0.450	USA43708	66.25
0.055	0.082	12	0.660	USA43710	68.04
0.060	0.090	3	0.180	USA43712	66.25
0.060	0.090	5	0.312	USA43714	66.25
0.060	0.090	8	0.500	USA43716	66.25
0.060	0.090	12	0.720	USA43718	68.04
0.062	0.093	3	0.186	USA43720	66.25
0.062	0.093	5	0.312	USA43722	66.25
0.062	0.093	8	0.500	USA43724	66.25
0.062	0.093	12	0.750	USA43726	68.04
0.065	0.097	3	0.195	USA43728	66.25
0.065	0.097	5	0.325	USA43730	66.25
0.065	0.097	8	0.530	USA43732	66.25
0.065	0.097	12	0.780	USA43734	68.04
0.070	0.105	3	0.210	USA43736	66.25
0.070	0.105	5	0.375	USA43738	66.25
0.070	0.105	8	0.570	USA43740	66.25
0.070	0.105	12	0.840	USA43742	68.04

DIA	LOC	xDIA	REACH	ITEM#	LIST PRICE
0.075	0.112	3	0.225	USA43744	66.25
0.075	0.112	5	0.375	USA43746	66.25
0.075	0.112	8	0.625	USA43748	66.25
0.075	0.112	12	0.900	USA43750	68.04
0.078	0.117	3	0.234	USA43752	66.25
0.078	0.117	5	0.406	USA43754	66.25
0.078	0.117	8	0.625	USA43756	66.25
0.078	0.117	12	0.940	USA43758	68.04
0.080	0.120	3	0.240	USA43760	66.25
0.080	0.120	5	0.406	USA43762	66.25
0.080	0.120	8	0.650	USA43764	66.25
0.080	0.120	12	0.960	USA43766	68.04
0.085	0.127	3	0.255	USA43768	66.25
0.085	0.127	5	0.425	USA43770	66.25
0.085	0.127	8	0.700	USA43772	66.25
0.085	0.127	12	1.020	USA43774	68.04
0.090	0.135	3	0.270	USA43776	66.25
0.090	0.135	5	0.450	USA43778	66.25
0.090	0.135	8	0.750	USA43780	66.25
0.090	0.135	12	1.080	USA43782	68.04
0.093	0.139	3	0.279	USA43784	66.25
0.093	0.139	5	0.500	USA43786	66.25
0.093	0.139	8	0.750	USA43788	66.25
0.093	0.139	12	1.125	USA43790	68.04
0.095	0.142	3	0.285	USA43792	66.25
0.095	0.142	5	0.500	USA43794	66.25
0.095	0.142	8	0.750	USA43796	66.25
0.095	0.142	12	1.150	USA43798	68.04
0.100	0.150	3	0.300	USA43800	66.25
0.100	0.150	5	0.500	USA43802	66.25
0.100	0.150	8	0.800	USA43804	66.25
0.100	0.150	12	1.200	USA43806	68.04

All long reach Micro End Mills are 1/8" shank, 2-1/2" OAL.
For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK	REACH	RADIUS
ALL SIZES	+0.005, -0.005	-0.001, -0.003 ISO H6	+0.010, -0.000	+0.0002, -0.0002

Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



3 FLUTE - LONG REACH - STUB FLUTE - BALL NOSE - 30° HELIX
LOC = 1.5 X DIA



ALTIN COATED

DIA	LOC	xDIA	REACH	ITEM#	LIST PRICE
0.010	0.015	3	0.030	USA43808	113.78
0.010	0.015	5	0.050	USA43810	113.78
0.010	0.015	8	0.080	USA43812	118.77
0.010	0.015	12	0.125	USA43814	133.53
0.015	0.022	3	0.045	USA43816	97.35
0.015	0.022	5	0.078	USA43818	97.35
0.015	0.022	8	0.125	USA43820	97.35
0.015	0.022	12	0.187	USA43822	99.73
0.020	0.030	3	0.060	USA43824	94.26
0.020	0.030	5	0.100	USA43826	94.26
0.020	0.030	8	0.160	USA43828	94.26
0.020	0.030	12	0.250	USA43830	96.88
0.025	0.037	3	0.075	USA43832	81.40
0.025	0.037	5	0.125	USA43834	81.40
0.025	0.037	8	0.203	USA43836	81.40
0.025	0.037	12	0.312	USA43838	83.79
0.030	0.045	3	0.090	USA43840	81.40
0.030	0.045	5	0.156	USA43842	81.40
0.030	0.045	8	0.250	USA43844	81.40
0.030	0.045	12	0.375	USA43846	83.79
0.031	0.046	3	0.093	USA43848	81.40
0.031	0.046	5	0.156	USA43850	81.40
0.031	0.046	8	0.250	USA43852	81.40
0.031	0.046	12	0.375	USA43854	83.79
0.035	0.052	3	0.105	USA43856	81.40
0.035	0.052	5	0.187	USA43858	81.40
0.035	0.052	8	0.281	USA43860	81.40
0.035	0.052	12	0.425	USA43862	83.79
0.040	0.060	3	0.120	USA43864	81.40
0.040	0.060	5	0.203	USA43866	81.40
0.040	0.060	8	0.325	USA43868	81.40
0.040	0.060	12	0.480	USA43870	83.79

DIA	LOC	xDIA	REACH	ITEM#	LIST PRICE
0.045	0.067	3	0.135	USA43872	79.50
0.045	0.067	5	0.225	USA43874	79.50
0.045	0.067	8	0.375	USA43876	79.50
0.045	0.067	12	0.550	USA43878	81.64
0.047	0.070	3	0.141	USA43880	79.50
0.047	0.070	5	0.250	USA43882	79.50
0.047	0.070	8	0.375	USA43884	79.50
0.047	0.070	12	0.570	USA43886	81.64
0.050	0.075	3	0.150	USA43888	79.50
0.050	0.075	5	0.250	USA43890	79.50
0.050	0.075	8	0.400	USA43892	79.50
0.050	0.075	12	0.600	USA43894	81.64
0.055	0.082	3	0.165	USA43896	79.50
0.055	0.082	5	0.275	USA43898	79.50
0.055	0.082	8	0.450	USA43900	79.50
0.055	0.082	12	0.660	USA43902	81.64
0.060	0.090	3	0.180	USA43904	79.50
0.060	0.090	5	0.312	USA43906	79.50
0.060	0.090	8	0.500	USA43908	79.50
0.060	0.090	12	0.720	USA43910	81.64
0.062	0.093	3	0.186	USA43912	79.50
0.062	0.093	5	0.312	USA43914	79.50
0.062	0.093	8	0.500	USA43916	79.50
0.062	0.093	12	0.750	USA43918	81.64
0.065	0.097	3	0.195	USA43920	79.50
0.065	0.097	5	0.325	USA43922	79.50
0.065	0.097	8	0.530	USA43924	79.50
0.065	0.097	12	0.780	USA43926	81.64
0.070	0.105	3	0.210	USA43928	79.50
0.070	0.105	5	0.375	USA43930	79.50
0.070	0.105	8	0.570	USA43932	79.50
0.070	0.105	12	0.840	USA43934	81.64

DIA	LOC	xDIA	REACH	ITEM#	LIST PRICE
0.075	0.112	3	0.225	USA43936	79.50
0.075	0.112	5	0.375	USA43938	79.50
0.075	0.112	8	0.625	USA43940	79.50
0.075	0.112	12	0.900	USA43942	81.64
0.078	0.117	3	0.234	USA43944	79.50
0.078	0.117	5	0.406	USA43946	79.50
0.078	0.117	8	0.625	USA43948	79.50
0.078	0.117	12	0.940	USA43950	81.64
0.080	0.120	3	0.240	USA43952	79.50
0.080	0.120	5	0.406	USA43954	79.50
0.080	0.120	8	0.650	USA43956	79.50
0.080	0.120	12	0.960	USA43958	81.64
0.085	0.127	3	0.255	USA43960	79.50
0.085	0.127	5	0.425	USA43962	79.50
0.085	0.127	8	0.700	USA43964	79.50
0.085	0.127	12	1.020	USA43966	81.64
0.090	0.135	3	0.270	USA43968	79.50
0.090	0.135	5	0.450	USA43970	79.50
0.090	0.135	8	0.750	USA43972	79.50
0.090	0.135	12	1.080	USA43974	81.64
0.093	0.139	3	0.279	USA43976	79.50
0.093	0.139	5	0.500	USA43978	79.50
0.093	0.139	8	0.750	USA43980	79.50
0.093	0.139	12	1.125	USA43982	81.64
0.095	0.142	3	0.285	USA43984	79.50
0.095	0.142	5	0.500	USA43986	79.50
0.095	0.142	8	0.750	USA43988	79.50
0.095	0.142	12	1.150	USA43990	81.64
0.100	0.150	3	0.300	USA43992	79.50
0.100	0.150	5	0.500	USA43994	79.50
0.100	0.150	8	0.800	USA43996	79.50
0.100	0.150	12	1.200	USA43998	81.64

REGULAR LENGTH

LONG REACH STUB FL

LONG REACH REG FL

LONG REACH LONG FL

LONG LENGTH LONG FL

All long reach Micro End Mills are 1/8" shank, 2-1/2" OAL.
For coating information see page 6. For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK	REACH	RADIUS
ALL SIZES	+0.005, -0.005	-0.001, -0.003 ISO H6	+0.010, -0.000	+0.0002, -0.0002

MADE IN THE USA



Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

3 FLUTE - LONG REACH - REGULAR FLUTE - SQUARE END - 30° HELIX
LOC = 3 X DIA



UNCOATED

DIA	LOC	xDIA	REACH	ITEM#	LIST PRICE
0.010	0.030	5	0.050	USA44000	75.57
0.010	0.030	8	0.080	USA44002	75.57
0.010	0.030	12	0.125	USA44004	79.74
0.015	0.045	5	0.078	USA44006	62.68
0.015	0.045	8	0.128	USA44008	62.68
0.015	0.045	12	0.187	USA44010	64.86
0.020	0.060	5	0.100	USA44012	60.10
0.020	0.060	8	0.170	USA44014	60.10
0.020	0.060	12	0.250	USA44016	62.48
0.025	0.075	5	0.125	USA44018	57.72
0.025	0.075	8	0.213	USA44020	57.72
0.025	0.075	12	0.312	USA44022	59.90
0.030	0.090	5	0.156	USA44024	57.72
0.030	0.090	9	0.270	USA44026	57.72
0.030	0.090	12	0.375	USA44028	59.70
0.031	0.093	5	0.156	USA44030	57.72
0.031	0.093	9	0.279	USA44032	57.72
0.031	0.093	12	0.375	USA44034	59.70
0.035	0.105	5	0.175	USA44036	57.72
0.035	0.105	9	0.315	USA44038	57.72
0.035	0.105	12	0.420	USA44040	59.70
0.040	0.120	5	0.203	USA44042	57.72
0.040	0.120	9	0.360	USA44044	57.72
0.040	0.120	12	0.480	USA44046	59.70
0.045	0.135	5	0.225	USA44048	56.53
0.045	0.135	9	0.405	USA44050	56.53
0.045	0.135	12	0.540	USA44052	59.70
0.047	0.141	5	0.250	USA44054	56.53
0.047	0.141	9	0.423	USA44056	56.53
0.047	0.141	12	0.570	USA44058	58.32
0.050	0.150	5	0.250	USA44060	56.53
0.050	0.150	8	0.400	USA44062	56.53
0.050	0.150	12	0.600	USA44064	58.32
0.055	0.165	5	0.275	USA44066	56.53
0.055	0.165	8	0.440	USA44068	56.53
0.055	0.165	12	0.660	USA44070	58.32

DIA	LOC	xDIA	REACH	ITEM#	LIST PRICE
0.060	0.180	5	0.312	USA44072	56.53
0.060	0.180	8	0.500	USA44074	56.53
0.060	0.180	12	0.720	USA44076	58.32
0.062	0.186	5	0.312	USA44078	56.53
0.062	0.186	8	0.500	USA44080	56.53
0.062	0.186	12	0.750	USA44082	58.32
0.065	0.195	5	0.325	USA44084	56.53
0.065	0.195	8	0.500	USA44086	56.53
0.065	0.195	12	0.780	USA44088	58.32
0.070	0.210	5	0.350	USA44090	56.53
0.070	0.210	8	0.560	USA44092	56.53
0.070	0.210	12	0.850	USA44094	58.32
0.075	0.225	5	0.375	USA44096	56.53
0.075	0.225	8	0.600	USA44098	56.53
0.075	0.225	12	0.900	USA44100	58.32
0.078	0.234	5	0.390	USA44102	56.53
0.078	0.234	8	0.624	USA44104	56.53
0.078	0.234	12	0.940	USA44106	58.32
0.080	0.240	5	0.400	USA44108	56.53
0.080	0.240	8	0.640	USA44110	56.53
0.080	0.240	12	0.960	USA44112	58.32
0.085	0.255	5	0.425	USA44114	56.53
0.085	0.255	8	0.680	USA44116	56.53
0.085	0.255	12	1.020	USA44118	58.32
0.090	0.270	5	0.450	USA44120	56.53
0.090	0.270	8	0.720	USA44122	56.53
0.090	0.270	12	1.080	USA44124	58.32
0.093	0.279	5	0.500	USA44126	56.53
0.093	0.279	8	0.744	USA44128	56.53
0.093	0.279	12	1.125	USA44130	58.32
0.095	0.285	5	0.475	USA44132	56.53
0.095	0.285	8	0.760	USA44134	56.53
0.095	0.285	12	1.140	USA44136	58.32
0.100	0.300	5	0.500	USA44138	56.53
0.100	0.300	8	0.800	USA44140	56.53
0.100	0.300	12	1.200	USA44142	58.32

All long reach Micro End Mills are 1/8" shank, 2-1/2" OAL.
 For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK	REACH
ALL SIZES	+ .0005, -.0005	-.0001, -.0003 ISO H6	+ .010, -.000

REGULAR LENGTH

LONG REACH STUB FL

LONG REACH REG FL

LONG REACH LONG FL

LONG LENGTH LONG FL

Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



3 FLUTE - LONG REACH - REGULAR FLUTE - SQUARE END - 30° HELIX
LOC = 3 X DIA



ALTIN COATED

DIA	LOC	xDIA	REACH	ITEM#	LIST PRICE
0.010	0.030	5	0.050	USA44144	90.69
0.010	0.030	8	0.080	USA44146	90.69
0.010	0.030	12	0.125	USA44148	95.69
0.015	0.045	5	0.078	USA44150	75.22
0.015	0.045	8	0.128	USA44152	75.22
0.015	0.045	12	0.187	USA44154	77.83
0.020	0.060	5	0.100	USA44156	72.12
0.020	0.060	8	0.170	USA44158	72.12
0.020	0.060	12	0.250	USA44160	74.98
0.025	0.075	5	0.125	USA44162	69.27
0.025	0.075	8	0.213	USA44164	69.27
0.025	0.075	12	0.312	USA44166	71.88
0.030	0.090	5	0.156	USA44168	69.27
0.030	0.090	9	0.270	USA44170	69.27
0.030	0.090	12	0.375	USA44172	71.65
0.031	0.093	5	0.156	USA44174	69.27
0.031	0.093	9	0.279	USA44176	69.27
0.031	0.093	12	0.375	USA44178	71.65
0.035	0.105	5	0.175	USA44180	69.27
0.035	0.105	9	0.315	USA44182	69.27
0.035	0.105	12	0.420	USA44184	71.65
0.040	0.120	5	0.203	USA44186	69.27
0.040	0.120	9	0.360	USA44188	69.27
0.040	0.120	12	0.480	USA44190	71.65
0.045	0.135	5	0.225	USA44192	67.84
0.045	0.135	9	0.405	USA44194	67.84
0.045	0.135	12	0.540	USA44196	71.65
0.047	0.141	5	0.250	USA44198	67.84
0.047	0.141	9	0.423	USA44200	67.84
0.047	0.141	12	0.570	USA44202	69.98
0.050	0.150	5	0.250	USA44204	67.84
0.050	0.150	8	0.400	USA44206	67.84
0.050	0.150	12	0.600	USA44208	69.98
0.055	0.165	5	0.275	USA44210	67.84
0.055	0.165	8	0.440	USA44212	67.84
0.055	0.165	12	0.660	USA44214	69.98

DIA	LOC	xDIA	REACH	ITEM#	LIST PRICE
0.060	0.180	5	0.312	USA44216	67.84
0.060	0.180	8	0.500	USA44218	67.84
0.060	0.180	12	0.720	USA44220	69.98
0.062	0.186	5	0.312	USA44222	67.84
0.062	0.186	8	0.500	USA44224	67.84
0.062	0.186	12	0.750	USA44226	69.98
0.065	0.195	5	0.325	USA44228	67.84
0.065	0.195	8	0.500	USA44230	67.84
0.065	0.195	12	0.780	USA44232	69.98
0.070	0.210	5	0.350	USA44234	67.84
0.070	0.210	8	0.560	USA44236	67.84
0.070	0.210	12	0.850	USA44238	69.98
0.075	0.225	5	0.375	USA44240	67.84
0.075	0.225	8	0.600	USA44242	67.84
0.075	0.225	12	0.900	USA44244	69.98
0.078	0.234	5	0.390	USA44246	67.84
0.078	0.234	8	0.624	USA44248	67.84
0.078	0.234	12	0.940	USA44250	69.98
0.080	0.240	5	0.400	USA44252	67.84
0.080	0.240	8	0.640	USA44254	67.84
0.080	0.240	12	0.960	USA44256	69.98
0.085	0.255	5	0.425	USA44258	67.84
0.085	0.255	8	0.680	USA44260	67.84
0.085	0.255	12	1.020	USA44262	69.98
0.090	0.270	5	0.450	USA44264	67.84
0.090	0.270	8	0.720	USA44266	67.84
0.090	0.270	12	1.080	USA44268	69.98
0.093	0.279	5	0.500	USA44270	67.84
0.093	0.279	8	0.744	USA44272	67.84
0.093	0.279	12	1.125	USA44274	69.98
0.095	0.285	5	0.475	USA44276	67.84
0.095	0.285	8	0.760	USA44278	67.84
0.095	0.285	12	1.140	USA44280	69.98
0.100	0.300	5	0.500	USA44282	67.84
0.100	0.300	8	0.800	USA44284	67.84
0.100	0.300	12	1.200	USA44286	69.98

REGULAR LENGTH

LONG REACH STUB FL

LONG REACH REG FL

LONG REACH LONG FL

LONG LENGTH LONG FL

All long reach Micro End Mills are 1/8" shank, 2-1/2" OAL.
For coating information see page 6. For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK	REACH
ALL SIZES	+ .0005, -.0005	-.0001, -.0003 ISO H6	+ .010, -.000

MADE IN THE USA



Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

3 FLUTE - LONG REACH - REGULAR FLUTE - BALL NOSE - 30° HELIX
LOC = 3 X DIA



UNCOATED

DIA	LOC	xDIA	REACH	ITEM#	LIST PRICE
0.010	0.030	5	0.050	USA44288	102.35
0.010	0.030	8	0.080	USA44290	102.35
0.010	0.030	12	0.125	USA44292	104.14
0.015	0.045	5	0.078	USA44294	82.12
0.015	0.045	8	0.128	USA44296	82.12
0.015	0.045	12	0.187	USA44298	83.90
0.020	0.060	5	0.100	USA44300	78.95
0.020	0.060	8	0.170	USA44302	78.95
0.020	0.060	12	0.250	USA44304	80.73
0.025	0.075	5	0.125	USA44306	72.20
0.025	0.075	8	0.213	USA44308	72.20
0.025	0.075	12	0.312	USA44310	73.99
0.030	0.090	5	0.156	USA44312	72.20
0.030	0.090	9	0.270	USA44314	72.20
0.030	0.090	12	0.375	USA44316	73.99
0.031	0.093	5	0.156	USA44318	72.20
0.031	0.093	9	0.279	USA44320	72.20
0.031	0.093	12	0.375	USA44322	73.99
0.035	0.105	5	0.175	USA44324	72.20
0.035	0.105	8	0.280	USA44326	72.20
0.035	0.105	12	0.420	USA44328	73.99
0.040	0.120	5	0.200	USA44330	72.20
0.040	0.120	8	0.320	USA44332	72.20
0.040	0.120	12	0.480	USA44334	73.99
0.045	0.135	5	0.225	USA44336	69.82
0.045	0.135	8	0.360	USA44338	69.82
0.045	0.135	12	0.540	USA44340	71.61
0.047	0.141	5	0.250	USA44342	69.82
0.047	0.141	8	0.376	USA44344	69.82
0.047	0.141	12	0.570	USA44346	71.61
0.050	0.150	5	0.250	USA44348	69.82
0.050	0.150	8	0.400	USA44350	69.82
0.050	0.150	12	0.600	USA44352	71.61
0.055	0.165	5	0.275	USA44354	69.82
0.055	0.165	8	0.440	USA44356	69.82
0.055	0.165	12	0.660	USA44358	71.61

DIA	LOC	xDIA	REACH	ITEM#	LIST PRICE
0.060	0.180	5	0.300	USA44360	69.82
0.060	0.180	8	0.500	USA44362	69.82
0.060	0.180	12	0.720	USA44364	71.61
0.062	0.186	5	0.312	USA44366	69.82
0.062	0.186	8	0.500	USA44368	69.82
0.062	0.186	12	0.750	USA44370	71.61
0.065	0.195	5	0.325	USA44372	69.82
0.065	0.195	8	0.500	USA44374	69.82
0.065	0.195	12	0.780	USA44376	71.61
0.070	0.210	5	0.350	USA44378	69.82
0.070	0.210	8	0.560	USA44380	69.82
0.070	0.210	12	0.840	USA44382	71.61
0.075	0.225	5	0.375	USA44384	69.82
0.075	0.225	8	0.600	USA44386	69.82
0.075	0.225	12	0.900	USA44388	71.61
0.078	0.234	5	0.390	USA44390	69.82
0.078	0.234	8	0.624	USA44392	69.82
0.078	0.234	12	0.940	USA44394	71.61
0.080	0.240	5	0.400	USA44396	69.82
0.080	0.240	8	0.640	USA44398	69.82
0.080	0.240	12	0.960	USA44400	71.61
0.085	0.255	5	0.425	USA44402	69.82
0.085	0.255	8	0.680	USA44404	69.82
0.085	0.255	12	1.020	USA44406	71.61
0.090	0.270	5	0.450	USA44408	69.82
0.090	0.270	8	0.720	USA44410	69.82
0.090	0.270	12	1.080	USA44412	71.61
0.093	0.279	5	0.500	USA44414	69.82
0.093	0.279	8	0.744	USA44416	69.82
0.093	0.279	12	1.125	USA44418	71.61
0.095	0.285	5	0.475	USA44420	69.82
0.095	0.285	8	0.760	USA44422	69.82
0.095	0.285	12	1.140	USA44424	71.61
0.100	0.300	5	0.500	USA44426	69.82
0.100	0.300	8	0.800	USA44428	69.82
0.100	0.300	12	1.200	USA44430	71.61

All long reach Micro End Mills are 1/8" shank, 2-1/2" OAL.
 For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK	REACH	RADIUS
ALL SIZES	+0.005, -0.005	-0.001, -0.003 ISO H6	+0.010, -0.000	+0.0002, -0.0002

REGULAR LENGTH

LONG REACH STUB FL

LONG REACH REG FL

LONG REACH LONG FL

LONG LENGTH LONG FL

Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



3 FLUTE - LONG REACH - REGULAR FLUTE - BALL NOSE - 30° HELIX
LOC = 3 X DIA



ALTIN COATED

DIA	LOC	xDIA	REACH	ITEM#	LIST PRICE
0.010	0.030	5	0.050	USA44432	122.82
0.010	0.030	8	0.080	USA44434	122.82
0.010	0.030	12	0.125	USA44436	124.96
0.015	0.045	5	0.078	USA44438	98.54
0.015	0.045	8	0.128	USA44440	98.54
0.015	0.045	12	0.187	USA44442	100.68
0.020	0.060	5	0.100	USA44444	94.73
0.020	0.060	8	0.170	USA44446	94.73
0.020	0.060	12	0.250	USA44448	96.88
0.025	0.075	5	0.125	USA44450	86.64
0.025	0.075	8	0.213	USA44452	86.64
0.025	0.075	12	0.312	USA44454	88.78
0.030	0.090	5	0.156	USA44456	86.64
0.030	0.090	9	0.270	USA44458	86.64
0.030	0.090	12	0.375	USA44460	88.78
0.031	0.093	5	0.156	USA44462	86.64
0.031	0.093	9	0.279	USA44464	86.64
0.031	0.093	12	0.375	USA44466	88.78
0.035	0.105	5	0.175	USA44468	86.64
0.035	0.105	8	0.280	USA44470	86.64
0.035	0.105	12	0.420	USA44472	88.78
0.040	0.120	5	0.200	USA44474	86.64
0.040	0.120	8	0.320	USA44476	86.64
0.040	0.120	12	0.480	USA44478	88.78
0.045	0.135	5	0.225	USA44480	83.79
0.045	0.135	8	0.360	USA44482	83.79
0.045	0.135	12	0.540	USA44484	85.93
0.047	0.141	5	0.250	USA44486	83.79
0.047	0.141	8	0.376	USA44488	83.79
0.047	0.141	12	0.570	USA44490	85.93
0.050	0.150	5	0.250	USA44492	83.79
0.050	0.150	8	0.400	USA44494	83.79
0.050	0.150	12	0.600	USA44496	85.93
0.055	0.165	5	0.275	USA44498	83.79
0.055	0.165	8	0.440	USA44500	83.79
0.055	0.165	12	0.660	USA44502	85.93

DIA	LOC	xDIA	REACH	ITEM#	LIST PRICE
0.060	0.180	5	0.300	USA44504	83.79
0.060	0.180	8	0.500	USA44506	83.79
0.060	0.180	12	0.720	USA44508	85.93
0.062	0.186	5	0.312	USA44510	83.79
0.062	0.186	8	0.500	USA44512	83.79
0.062	0.186	12	0.750	USA44514	85.93
0.065	0.195	5	0.325	USA44516	83.79
0.065	0.195	8	0.500	USA44518	83.79
0.065	0.195	12	0.780	USA44520	85.93
0.070	0.210	5	0.350	USA44522	83.79
0.070	0.210	8	0.560	USA44524	83.79
0.070	0.210	12	0.840	USA44526	85.93
0.075	0.225	5	0.375	USA44528	83.79
0.075	0.225	8	0.600	USA44530	83.79
0.075	0.225	12	0.900	USA44532	85.93
0.078	0.234	5	0.390	USA44534	83.79
0.078	0.234	8	0.624	USA44536	83.79
0.078	0.234	12	0.940	USA44538	85.93
0.080	0.240	5	0.400	USA44540	83.79
0.080	0.240	8	0.640	USA44542	83.79
0.080	0.240	12	0.960	USA44544	85.93
0.085	0.255	5	0.425	USA44546	83.79
0.085	0.255	8	0.680	USA44548	83.79
0.085	0.255	12	1.020	USA44550	85.93
0.090	0.270	5	0.450	USA44552	83.79
0.090	0.270	8	0.720	USA44554	83.79
0.090	0.270	12	1.080	USA44556	85.93
0.093	0.279	5	0.500	USA44558	83.79
0.093	0.279	8	0.744	USA44560	83.79
0.093	0.279	12	1.125	USA44562	85.93
0.095	0.285	5	0.475	USA44564	83.79
0.095	0.285	8	0.760	USA44566	83.79
0.095	0.285	12	1.140	USA44568	85.93
0.100	0.300	5	0.500	USA44570	83.79
0.100	0.300	8	0.800	USA44572	83.79
0.100	0.300	12	1.200	USA44574	85.93

REGULAR LENGTH

LONG REACH STUB FL

LONG REACH REG FL

LONG REACH LONG FL

LONG LENGTH LONG FL

All long reach Micro End Mills are 1/8" shank, 2-1/2" OAL.
 For coating information see page 6. For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK	REACH	RADIUS
ALL SIZES	+0.005, -0.005	-0.001, -0.003 ISO H6	+0.010, -0.000	+0.0002, -0.0002

MADE IN THE USA



Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

3 FLUTE - LONG REACH - LONG FLUTE - SQUARE END - 30° HELIX
LOC = 5 X DIA



UNCOATED

REGULAR LENGTH

DIA	LOC	xDIA	REACH	ITEM#	LIST PRICE
0.010	0.050	10	0.100	USA43424	76.76
0.010	0.050	15	0.150	USA43426	94.81
0.015	0.075	10	0.150	USA43428	64.07
0.015	0.075	15	0.225	USA43430	81.52
0.020	0.100	10	0.200	USA43432	61.69
0.020	0.100	15	0.300	USA43434	78.55
0.025	0.125	10	0.250	USA43436	59.11
0.025	0.125	15	0.375	USA43438	76.17
0.030	0.150	10	0.300	USA43440	59.11
0.030	0.150	15	0.450	USA43442	76.17
0.031	0.155	10	0.310	USA43444	59.11
0.031	0.155	15	0.470	USA43446	76.17
0.035	0.175	10	0.350	USA43448	59.11
0.035	0.175	15	0.525	USA43450	76.17
0.040	0.200	10	0.400	USA43452	59.11
0.040	0.200	15	0.600	USA43454	76.17
0.045	0.225	10	0.450	USA43456	57.92
0.045	0.225	15	0.675	USA43458	72.40
0.047	0.250	10	0.500	USA43460	57.92
0.047	0.250	15	0.710	USA43462	72.40
0.050	0.300	10	0.500	USA43464	57.92
0.050	0.300	15	0.750	USA43466	72.40
0.055	0.385	10	0.550	USA43468	57.92
0.055	0.385	15	0.825	USA43470	72.40

LONG REACH STUB FL

DIA	LOC	xDIA	REACH	ITEM#	LIST PRICE
0.060	0.312	10	0.625	USA43472	57.92
0.060	0.500	16	1.000	USA43474	57.92
0.062	0.312	10	0.625	USA43476	57.92
0.062	0.500	16	1.000	USA43478	57.92
0.065	0.325	10	0.650	USA43480	57.92
0.065	0.500	15	1.000	USA43482	57.92
0.070	0.350	10	0.700	USA43484	57.92
0.070	0.500	14	1.000	USA43486	57.92
0.075	0.375	10	0.750	USA43488	57.92
0.075	0.500	13	1.000	USA43490	57.92
0.078	0.406	10	0.800	USA43492	57.92
0.078	0.406	15	1.187	USA43494	57.92
0.080	0.400	10	0.800	USA43496	57.92
0.080	0.750	15	1.250	USA43498	57.92
0.085	0.425	10	0.850	USA43500	57.92
0.085	0.750	14	1.250	USA43502	57.92
0.090	0.450	10	0.900	USA43504	57.92
0.090	0.750	13	1.250	USA43506	57.92
0.093	0.500	10	0.950	USA43508	57.92
0.093	0.500	15	1.400	USA43510	57.92
0.095	0.500	10	0.950	USA43512	57.92
0.095	0.750	13	1.250	USA43514	57.92
0.100	0.500	10	1.000	USA43516	57.92
0.100	0.750	12	1.250	USA43518	57.92

LONG REACH REG FL

LONG REACH LONG FL

LONG LENGTH LONG FL



All long reach Micro End Mills are 1/8" shank, 2-1/2" OAL.
For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK	REACH
ALL SIZES	+0.005, -0.005	-0.001, -0.003 ISO H6	+0.010, -0.000

Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



3 FLUTE - LONG REACH - LONG FLUTE - SQUARE END - 30° HELIX
LOC = 5 X DIA



ALTiN COATED

DIA	LOC	xDIA	REACH	ITEM#	LIST PRICE
0.010	0.050	10	0.100	USA43520	92.12
0.010	0.050	15	0.150	USA43522	113.78
0.015	0.075	10	0.150	USA43524	76.88
0.015	0.075	15	0.225	USA43526	97.83
0.020	0.100	10	0.200	USA43528	74.03
0.020	0.100	15	0.300	USA43530	94.26
0.025	0.125	10	0.250	USA43532	70.93
0.025	0.125	15	0.375	USA43534	91.40
0.030	0.150	10	0.300	USA43536	70.93
0.030	0.150	15	0.450	USA43538	91.40
0.031	0.155	10	0.310	USA43540	70.93
0.031	0.155	15	0.470	USA43542	91.40
0.035	0.175	10	0.350	USA43544	70.93
0.035	0.175	15	0.525	USA43546	91.40
0.040	0.200	10	0.400	USA43548	70.93
0.040	0.200	15	0.600	USA43550	91.40
0.045	0.225	10	0.450	USA43552	69.50
0.045	0.225	15	0.675	USA43554	86.88
0.047	0.250	10	0.500	USA43556	69.50
0.047	0.250	15	0.710	USA43558	86.88
0.050	0.300	10	0.500	USA43560	69.50
0.050	0.300	15	0.750	USA43562	86.88
0.055	0.385	10	0.550	USA43564	69.50
0.055	0.385	15	0.825	USA43566	86.88

DIA	LOC	xDIA	REACH	ITEM#	LIST PRICE
0.060	0.312	10	0.625	USA43568	69.50
0.060	0.500	16	1.000	USA43570	69.50
0.062	0.312	10	0.625	USA43572	69.50
0.062	0.500	16	1.000	USA43574	69.50
0.065	0.325	10	0.650	USA43576	69.50
0.065	0.500	15	1.000	USA43578	69.50
0.070	0.350	10	0.700	USA43580	69.50
0.070	0.500	14	1.000	USA43582	69.50
0.075	0.375	10	0.750	USA43584	69.50
0.075	0.500	13	1.000	USA43586	69.50
0.078	0.406	10	0.800	USA43588	69.50
0.078	0.406	15	1.187	USA43590	69.50
0.080	0.400	10	0.800	USA43592	69.50
0.080	0.750	15	1.250	USA43594	69.50
0.085	0.425	10	0.850	USA43596	69.50
0.085	0.750	14	1.250	USA43598	69.50
0.090	0.450	10	0.900	USA43600	69.50
0.090	0.750	13	1.250	USA43602	69.50
0.093	0.500	10	0.950	USA43604	69.50
0.093	0.500	15	1.400	USA43606	69.50
0.095	0.500	10	0.950	USA43608	69.50
0.095	0.750	13	1.250	USA43610	69.50
0.100	0.500	10	1.000	USA43612	69.50
0.100	0.750	12	1.250	USA43614	69.50



All long reach Micro End Mills are 1/8" shank, 2-1/2" OAL.
 For coating information see page 6. For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK	REACH
ALL SIZES	+ .0005, -.0005	-.0001, -.0003 ISO H6	+ .010, -.000

MADE IN THE USA

REGULAR LENGTH

LONG REACH STUB FL

LONG REACH REG FL

LONG REACH LONG FL

LONG LENGTH LONG FL



Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

3 FLUTE - LONG REACH - LONG FLUTE - BALL NOSE - 30° HELIX
LOC = 5 X DIA



UNCOATED

REGULAR LENGTH

DIA	LOC	xDIA	REACH	ITEM#	LIST PRICE
0.010	0.050	10	0.100	USA42368	96.00
0.010	0.050	15	0.150	USA42370	96.00
0.015	0.075	10	0.150	USA42372	82.32
0.015	0.075	15	0.225	USA42374	82.32
0.020	0.100	10	0.200	USA42376	79.74
0.020	0.100	15	0.300	USA42378	79.74
0.025	0.125	10	0.250	USA42380	69.03
0.025	0.125	15	0.375	USA42382	69.03
0.030	0.150	10	0.300	USA42384	69.03
0.030	0.150	15	0.450	USA42386	69.03
0.031	0.155	10	0.310	USA42388	69.03
0.031	0.155	15	0.470	USA42390	69.03
0.035	0.175	10	0.350	USA42392	69.03
0.035	0.175	15	0.525	USA42394	69.03
0.040	0.200	10	0.400	USA42396	69.03
0.040	0.200	15	0.600	USA42398	69.03
0.045	0.225	10	0.450	USA42400	67.24
0.045	0.225	15	0.675	USA42402	67.24
0.047	0.250	10	0.500	USA42404	67.24
0.047	0.250	15	0.710	USA42406	67.24
0.050	0.300	10	0.500	USA42408	67.24
0.050	0.300	15	0.750	USA42410	67.24
0.055	0.385	10	0.550	USA42412	67.24
0.055	0.385	15	0.825	USA42414	67.24

LONG REACH STUB FL

DIA	LOC	xDIA	REACH	ITEM#	LIST PRICE
0.060	0.312	10	0.625	USA42416	67.24
0.060	0.500	16	1.000	USA42418	67.24
0.062	0.312	10	0.625	USA42420	67.24
0.062	0.500	16	1.000	USA42422	67.24
0.065	0.325	10	0.650	USA42424	67.24
0.065	0.500	15	1.000	USA42426	67.24
0.070	0.350	10	0.700	USA42428	67.24
0.070	0.500	14	1.000	USA42430	67.24
0.075	0.375	10	0.750	USA42432	67.24
0.075	0.500	13	1.000	USA42434	67.24
0.078	0.406	10	0.800	USA42436	67.24
0.078	0.406	15	1.187	USA42438	67.24
0.080	0.400	10	0.800	USA42440	67.24
0.080	0.750	15	1.250	USA42442	67.24
0.085	0.425	10	0.850	USA42444	67.24
0.085	0.750	14	1.250	USA42446	67.24
0.090	0.450	10	0.900	USA42448	67.24
0.090	0.750	13	1.250	USA42450	67.24
0.093	0.500	10	0.950	USA42452	67.24
0.093	0.500	15	1.400	USA42454	67.24
0.095	0.500	10	0.950	USA42456	67.24
0.095	0.750	13	1.250	USA42458	67.24
0.100	0.500	10	1.000	USA42460	67.24
0.100	0.750	12	1.250	USA42462	67.24

LONG REACH REG FL

LONG REACH LONG FL

LONG LENGTH LONG FL



All long reach Micro End Mills are 1/8" shank, 2-1/2" OAL.
For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK	REACH	RADIUS
ALL SIZES	+0.005, -0.005	-0.001, -0.003 ISO H6	+0.010, -0.000	+0.0002, -0.0002

Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



3 FLUTE - LONG REACH - LONG FLUTE - BALL NOSE - 30° HELIX
LOC = 5 X DIA



ALTIN COATED

DIA	LOC	xDIA	REACH	ITEM#	LIST PRICE
0.010	0.050	10	0.100	USA42464	115.20
0.010	0.050	15	0.150	USA42466	115.20
0.015	0.075	10	0.150	USA42468	98.78
0.015	0.075	15	0.225	USA42470	98.78
0.020	0.100	10	0.200	USA42472	95.69
0.020	0.100	15	0.300	USA42474	95.69
0.025	0.125	10	0.250	USA42476	82.83
0.025	0.125	15	0.375	USA42478	82.83
0.030	0.150	10	0.300	USA42480	82.83
0.030	0.150	15	0.450	USA42482	82.83
0.031	0.155	10	0.310	USA42484	82.83
0.031	0.155	15	0.470	USA42486	82.83
0.035	0.175	10	0.350	USA42488	82.83
0.035	0.175	15	0.525	USA42490	82.83
0.040	0.200	10	0.400	USA42492	82.83
0.040	0.200	15	0.600	USA42494	82.83
0.045	0.225	10	0.450	USA42496	80.69
0.045	0.225	15	0.675	USA42498	80.69
0.047	0.250	10	0.500	USA42500	80.69
0.047	0.250	15	0.710	USA42502	80.69
0.050	0.300	10	0.500	USA42504	80.69
0.050	0.300	15	0.750	USA42506	80.69
0.055	0.385	10	0.550	USA42508	80.69
0.055	0.385	15	0.825	USA42510	80.69

DIA	LOC	xDIA	REACH	ITEM#	LIST PRICE
0.060	0.312	10	0.625	USA42512	80.69
0.060	0.500	16	1.000	USA42514	80.69
0.062	0.312	10	0.625	USA42516	80.69
0.062	0.500	16	1.000	USA42518	80.69
0.065	0.325	10	0.650	USA42520	80.69
0.065	0.500	15	1.000	USA42522	80.69
0.070	0.350	10	0.700	USA42524	80.69
0.070	0.500	14	1.000	USA42526	80.69
0.075	0.375	10	0.750	USA42528	80.69
0.075	0.500	13	1.000	USA42530	80.69
0.078	0.406	10	0.800	USA42532	80.69
0.078	0.406	15	1.187	USA42534	80.69
0.080	0.400	10	0.800	USA42536	80.69
0.080	0.750	15	1.250	USA42538	80.69
0.085	0.425	10	0.850	USA42540	80.69
0.085	0.750	14	1.250	USA42542	80.69
0.090	0.450	10	0.900	USA42544	80.69
0.090	0.750	13	1.250	USA42546	80.69
0.093	0.500	10	0.950	USA42548	80.69
0.093	0.500	15	1.400	USA42550	80.69
0.095	0.500	10	0.950	USA42552	80.69
0.095	0.750	13	1.250	USA42554	80.69
0.100	0.500	10	1.000	USA42556	80.69
0.100	0.750	12	1.250	USA42558	80.69



All long reach Micro End Mills are 1/8" shank, 2-1/2" OAL.
 For coating information see page 6. For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK	REACH	RADIUS
ALL SIZES	+0.005, -0.005	-0.001, -0.003 ISO H6	+0.010, -0.000	+0.0002, -0.0002

MADE IN THE USA

REGULAR LENGTH

LONG REACH STUB FL

LONG REACH REG FL

LONG REACH LONG FL

LONG LENGTH LONG FL



Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

3 FLUTE - LONG LENGTH - LONG FLUTE - SQUARE END - 30° HELIX



UNCOATED

DIA	xDIA	LOC	ITEM#	LIST PRICE
0.010	5	0.050	USA42560	61.69
0.010	8	0.080	USA42562	103.54
0.010	12	0.120	USA42564	122.98
0.015	5	0.078	USA42566	57.32
0.015	8	0.125	USA42568	98.98
0.015	12	0.187	USA42570	121.79
0.020	5	0.100	USA42572	49.19
0.020	8	0.160	USA42574	88.91
0.020	12	0.250	USA42576	116.83
0.025	5	0.125	USA42578	47.01
0.025	8	0.203	USA42580	88.91
0.025	12	0.312	USA42582	103.34
0.030	5	0.150	USA42584	45.22
0.030	8	0.250	USA42586	76.19
0.030	12	0.375	USA42588	98.19
0.031	5	0.156	USA42590	45.22
0.031	8	0.250	USA42592	72.73
0.031	12	0.375	USA42594	98.19
0.035	5	0.175	USA42596	45.22
0.035	8	0.280	USA42598	72.73
0.035	12	0.425	USA42600	98.19
0.040	5	0.200	USA42602	45.22
0.040	8	0.325	USA42604	72.73
0.040	12	0.480	USA42606	98.19
0.045	5	0.225	USA42608	45.22
0.045	8	0.375	USA42610	72.73
0.045	12	0.550	USA42612	97.59
0.047	5	0.250	USA42614	45.22
0.047	8	0.375	USA42616	72.73
0.047	12	0.570	USA42618	97.59
0.050	5	0.250	USA42620	45.22
0.050	8	0.400	USA42622	72.73
0.050	12	0.600	USA42624	98.19
0.055	5	0.275	USA42626	45.22
0.055	8	0.440	USA42628	72.73
0.055	12	0.660	USA42630	98.19
0.060	5	0.312	USA42632	40.27
0.060	8	0.500	USA42634	45.22
0.060	12	0.720	USA42636	98.19
0.062	5	0.312	USA42638	40.27
0.062	8	0.500	USA42640	45.03
0.062	12	0.750	USA42642	76.96

DIA	xDIA	LOC	ITEM#	LIST PRICE
0.062	15	0.950	USA42644	105.33
0.065	5	0.325	USA42646	40.27
0.065	8	0.500	USA42648	45.03
0.065	12	0.780	USA42650	76.96
0.070	5	0.375	USA42652	40.27
0.070	8	0.560	USA42654	45.03
0.070	12	0.850	USA42656	76.96
0.075	5	0.375	USA42658	40.27
0.075	8	0.625	USA42660	45.03
0.075	12	0.900	USA42662	76.96
0.078	5	0.406	USA42664	40.27
0.078	8	0.625	USA42666	45.03
0.078	12	0.940	USA42668	76.96
0.078	15	1.187	USA42670	105.33
0.080	5	0.406	USA42672	40.27
0.080	8	0.750	USA42674	45.03
0.080	12	0.960	USA42676	76.96
0.085	5	0.425	USA42678	40.27
0.085	8	0.750	USA42680	45.03
0.085	12	1.020	USA42682	76.96
0.090	5	0.450	USA42684	40.27
0.090	8	0.750	USA42686	45.03
0.090	12	1.080	USA42688	76.96
0.093	5	0.500	USA42690	40.27
0.093	8	0.750	USA42692	45.03
0.093	12	1.125	USA42694	76.96
0.093	15	1.400	USA42696	109.49
0.095	5	0.500	USA42698	40.27
0.095	8	0.750	USA42700	45.03
0.095	12	1.140	USA42702	76.96
0.100	5	0.500	USA42704	40.27
0.100	8	0.800	USA42706	45.03
0.100	12	1.200	USA42708	76.96
0.109	5	0.570	USA42710	40.27
0.109	8	0.900	USA42712	45.03
0.109	12	1.320	USA42714	76.96
0.118	5	0.625	USA42716	40.27
0.118	8	0.950	USA42718	45.03
0.118	12	1.375	USA42720	76.96
0.120	5	0.600	USA42722	40.27
0.120	8	1.000	USA42724	45.03
0.120	12	1.500	USA42726	76.96

All long length Micro End Mills are 1/8" shank, 2-1/2" OAL.
For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+.0005, -.0005	-.0001, -.0003 ISO H6

REGULAR LENGTH

LONG REACH STUB FL

LONG REACH REG FL

LONG REACH LONG FL

LONG LENGTH LONG FL

Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



3 FLUTE - LONG LENGTH - LONG FLUTE - SQUARE END - 30° HELIX



ALTIM COATED

DIA	xDIA	LOC	ITEM#	LIST PRICE
0.010	5	0.050	USA42728	74.03
0.010	8	0.080	USA42730	124.25
0.010	12	0.120	USA42732	147.58
0.015	5	0.078	USA42734	68.79
0.015	8	0.125	USA42736	118.77
0.015	12	0.187	USA42738	146.15
0.020	5	0.100	USA42740	59.03
0.020	8	0.160	USA42742	106.70
0.020	12	0.250	USA42744	140.20
0.025	5	0.125	USA42746	56.41
0.025	8	0.203	USA42748	106.70
0.025	12	0.312	USA42750	124.01
0.030	5	0.150	USA42752	54.27
0.030	8	0.250	USA42754	91.43
0.030	12	0.375	USA42756	117.82
0.031	5	0.156	USA42758	54.27
0.031	8	0.250	USA42760	87.28
0.031	12	0.375	USA42762	117.82
0.035	5	0.175	USA42764	54.27
0.035	8	0.280	USA42766	87.28
0.035	12	0.425	USA42768	117.82
0.040	5	0.200	USA42770	54.27
0.040	8	0.325	USA42772	87.28
0.040	12	0.480	USA42774	117.82
0.045	5	0.225	USA42776	54.27
0.045	8	0.375	USA42778	87.28
0.045	12	0.550	USA42780	117.11
0.047	5	0.250	USA42782	54.27
0.047	8	0.375	USA42784	87.28
0.047	12	0.570	USA42786	117.11
0.050	5	0.250	USA42788	54.27
0.050	8	0.400	USA42790	87.28
0.050	12	0.600	USA42792	117.82
0.055	5	0.275	USA42794	54.27
0.055	8	0.440	USA42796	87.28
0.055	12	0.660	USA42798	117.82
0.060	5	0.312	USA42800	48.32
0.060	8	0.500	USA42802	54.27
0.060	12	0.720	USA42804	117.82
0.062	5	0.312	USA42806	48.32
0.062	8	0.500	USA42808	54.03
0.062	12	0.750	USA42810	92.35

DIA	xDIA	LOC	ITEM#	LIST PRICE
0.062	15	0.950	USA42812	126.39
0.065	5	0.325	USA42814	48.32
0.065	8	0.500	USA42816	54.03
0.065	12	0.780	USA42818	92.35
0.070	5	0.375	USA42820	48.32
0.070	8	0.560	USA42822	54.03
0.070	12	0.850	USA42824	92.35
0.075	5	0.375	USA42826	48.32
0.075	8	0.625	USA42828	54.03
0.075	12	0.900	USA42830	92.35
0.078	5	0.406	USA42832	48.32
0.078	8	0.625	USA42834	54.03
0.078	12	0.940	USA42836	92.35
0.078	15	1.187	USA42838	126.39
0.080	5	0.406	USA42840	48.32
0.080	8	0.750	USA42842	54.03
0.080	12	0.960	USA42844	92.35
0.085	5	0.425	USA42846	48.32
0.085	8	0.750	USA42848	54.03
0.085	12	1.020	USA42850	92.35
0.090	5	0.450	USA42852	48.32
0.090	8	0.750	USA42854	54.03
0.090	12	1.080	USA42856	92.35
0.093	5	0.500	USA42858	48.32
0.093	8	0.750	USA42860	54.03
0.093	12	1.125	USA42862	92.35
0.093	15	1.400	USA42864	131.39
0.095	5	0.500	USA42866	48.32
0.095	8	0.750	USA42868	54.03
0.095	12	1.140	USA42870	92.35
0.100	5	0.500	USA42872	48.32
0.100	8	0.800	USA42874	54.03
0.100	12	1.200	USA42876	92.35
0.109	5	0.570	USA42878	48.32
0.109	8	0.900	USA42880	54.03
0.109	12	1.320	USA42882	92.35
0.118	5	0.625	USA42884	48.32
0.118	8	0.950	USA42886	54.03
0.118	12	1.375	USA42888	92.35
0.120	5	0.600	USA42890	48.32
0.120	8	1.000	USA42892	54.03
0.120	12	1.500	USA42894	92.35

REGULAR LENGTH

LONG REACH STUB FL

LONG REACH REG FL

LONG REACH LONG FL

LONG LENGTH LONG FL

All long length Micro End Mills are 1/8" shank, 2-1/2" OAL.
For coating information see page 6. For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+.0005, -.0005	-.0001, -.0003 ISO H6

MADE IN THE USA



Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

3 FLUTE - LONG LENGTH - LONG FLUTE - BALL NOSE - 30° HELIX



UNCOATED

DIA	xDIA	LOC	ITEM#	LIST PRICE
0.010	5	0.050	USA42896	70.61
0.010	8	0.080	USA42898	118.62
0.010	12	0.120	USA42900	138.85
0.015	5	0.078	USA42902	65.66
0.015	8	0.125	USA42904	113.66
0.015	12	0.187	USA42906	140.44
0.020	5	0.100	USA42908	56.53
0.020	8	0.160	USA42910	105.52
0.020	12	0.250	USA42912	131.91
0.025	5	0.125	USA42914	53.75
0.025	8	0.203	USA42916	102.75
0.025	12	0.312	USA42918	126.95
0.030	5	0.150	USA42920	51.97
0.030	8	0.250	USA42922	85.01
0.030	12	0.375	USA42924	124.96
0.031	5	0.156	USA42926	51.97
0.031	8	0.250	USA42928	81.86
0.031	12	0.375	USA42930	112.67
0.035	5	0.175	USA42932	51.97
0.035	8	0.281	USA42934	85.01
0.035	12	0.425	USA42936	112.67
0.040	5	0.200	USA42938	51.97
0.040	8	0.325	USA42940	85.01
0.040	12	0.480	USA42942	112.67
0.045	5	0.225	USA42944	51.97
0.045	8	0.375	USA42946	85.01
0.045	12	0.550	USA42948	112.67
0.047	5	0.250	USA42950	51.97
0.047	8	0.375	USA42952	85.01
0.047	12	0.570	USA42954	112.67
0.050	5	0.250	USA42956	51.97
0.050	8	0.400	USA42958	85.01
0.050	12	0.600	USA42960	112.67
0.055	5	0.275	USA42962	46.02
0.055	8	0.440	USA42964	55.54
0.055	12	0.660	USA42966	105.13
0.060	5	0.312	USA42968	46.02
0.060	8	0.500	USA42970	51.97
0.060	12	0.720	USA42972	95.61
0.062	5	0.312	USA42974	46.02
0.062	8	0.500	USA42976	51.37
0.062	12	0.750	USA42978	88.27

DIA	xDIA	LOC	ITEM#	LIST PRICE
0.062	15	0.950	USA42980	120.80
0.065	5	0.325	USA42982	46.02
0.065	8	0.500	USA42984	51.37
0.065	12	0.780	USA42986	88.27
0.070	5	0.375	USA42988	46.02
0.070	8	0.560	USA42990	51.37
0.070	12	0.900	USA42992	88.27
0.075	5	0.375	USA42994	46.02
0.075	8	0.625	USA42996	51.37
0.075	12	0.900	USA42998	88.27
0.078	5	0.406	USA43000	46.02
0.078	8	0.625	USA43002	51.37
0.078	12	0.940	USA43004	88.27
0.078	15	1.187	USA43006	120.80
0.080	5	0.406	USA43008	46.02
0.080	8	0.750	USA43010	51.37
0.080	12	0.960	USA43012	88.27
0.085	5	0.425	USA43014	46.02
0.085	8	0.750	USA43016	51.37
0.085	12	1.020	USA43018	88.27
0.090	5	0.450	USA43020	46.02
0.090	8	0.750	USA43022	51.37
0.090	12	1.080	USA43024	88.27
0.093	5	0.500	USA43026	46.02
0.093	8	0.750	USA43028	51.37
0.093	12	1.125	USA43030	88.27
0.093	15	1.400	USA43032	123.38
0.095	5	0.500	USA43034	46.02
0.095	8	0.750	USA43036	51.37
0.095	12	1.140	USA43038	88.27
0.100	5	0.500	USA43040	46.02
0.100	8	0.800	USA43042	51.37
0.100	12	1.200	USA43044	88.27
0.109	5	0.570	USA43046	46.02
0.109	8	0.900	USA43048	51.37
0.109	12	1.320	USA43050	88.27
0.118	5	0.625	USA43052	46.02
0.118	8	0.950	USA43054	51.37
0.118	12	1.375	USA43056	88.27
0.120	5	0.600	USA43058	46.02
0.120	8	1.000	USA43060	51.37
0.120	12	1.500	USA43062	88.27

All long reach Micro End Mills are 1/8" shank, 2-1/2" OAL.
For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK	REACH	RADIUS
ALL SIZES	+0.005, -0.005	-0.001, -0.003 ISO H6	+0.010, -0.000	+0.0002, -0.0002

REGULAR LENGTH

LONG REACH STUB FL

LONG REACH REG FL

LONG REACH LONG FL

LONG LENGTH LONG FL

Carbide Micro End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



3 FLUTE - LONG LENGTH - LONG FLUTE - BALL NOSE - 30° HELIX



ALTIM COATED

DIA	xDIA	LOC	ITEM#	LIST PRICE
0.010	5	0.050	USA43064	84.74
0.010	8	0.080	USA43066	142.34
0.010	12	0.120	USA43068	166.62
0.015	5	0.078	USA43070	78.79
0.015	8	0.125	USA43072	136.39
0.015	12	0.187	USA43074	168.52
0.020	5	0.100	USA43076	67.84
0.020	8	0.160	USA43078	126.63
0.020	12	0.250	USA43080	158.29
0.025	5	0.125	USA43082	64.50
0.025	8	0.203	USA43084	123.30
0.025	12	0.312	USA43086	152.34
0.030	5	0.150	USA43088	62.36
0.030	8	0.250	USA43090	102.01
0.030	12	0.375	USA43092	149.96
0.031	5	0.156	USA43094	62.36
0.031	8	0.250	USA43096	98.23
0.031	12	0.375	USA43098	135.20
0.035	5	0.175	USA43100	62.36
0.035	8	0.281	USA43102	102.01
0.035	12	0.425	USA43104	135.20
0.040	5	0.200	USA43106	62.36
0.040	8	0.325	USA43108	102.01
0.040	12	0.480	USA43110	135.20
0.045	5	0.225	USA43112	62.36
0.045	8	0.375	USA43114	102.01
0.045	12	0.550	USA43116	135.20
0.047	5	0.250	USA43118	62.36
0.047	8	0.375	USA43120	102.01
0.047	12	0.570	USA43122	135.20
0.050	5	0.250	USA43124	62.36
0.050	8	0.400	USA43126	102.01
0.050	12	0.600	USA43128	135.20
0.055	5	0.275	USA43130	55.22
0.055	8	0.440	USA43132	66.65
0.055	12	0.660	USA43134	126.15
0.060	5	0.312	USA43136	55.22
0.060	8	0.500	USA43138	62.36
0.060	12	0.720	USA43140	114.73
0.062	5	0.312	USA43142	55.22
0.062	8	0.500	USA43144	61.65
0.062	12	0.750	USA43146	105.92

DIA	xDIA	LOC	ITEM#	LIST PRICE
0.062	15	0.950	USA43148	144.96
0.065	5	0.325	USA43150	55.22
0.065	8	0.500	USA43152	61.65
0.065	12	0.780	USA43154	105.92
0.070	5	0.375	USA43156	55.22
0.070	8	0.560	USA43158	61.65
0.070	12	0.900	USA43160	105.92
0.075	5	0.375	USA43162	55.22
0.075	8	0.625	USA43164	61.65
0.075	12	0.900	USA43166	105.92
0.078	5	0.406	USA43168	55.22
0.078	8	0.625	USA43170	61.65
0.078	12	0.940	USA43172	105.92
0.078	15	1.187	USA43174	144.96
0.080	5	0.406	USA43176	55.22
0.080	8	0.750	USA43178	61.65
0.080	12	0.960	USA43180	105.92
0.085	5	0.425	USA43182	55.22
0.085	8	0.750	USA43184	61.65
0.085	12	1.020	USA43186	105.92
0.090	5	0.450	USA43188	55.22
0.090	8	0.750	USA43190	61.65
0.090	12	1.080	USA43192	105.92
0.093	5	0.500	USA43194	55.22
0.093	8	0.750	USA43196	61.65
0.093	12	1.125	USA43198	105.92
0.093	15	1.400	USA43200	148.05
0.095	5	0.500	USA43202	55.22
0.095	8	0.750	USA43204	61.65
0.095	12	1.140	USA43206	105.92
0.100	5	0.500	USA43208	55.22
0.100	8	0.800	USA43210	61.65
0.100	12	1.200	USA43212	105.92
0.109	5	0.570	USA43214	55.22
0.109	8	0.900	USA43216	61.65
0.109	12	1.320	USA43218	105.92
0.118	5	0.625	USA43220	55.22
0.118	8	0.950	USA43222	61.65
0.118	12	1.375	USA43224	105.92
0.120	5	0.600	USA43226	55.22
0.120	8	1.000	USA43228	61.65
0.120	12	1.500	USA43230	105.92

REGULAR LENGTH

LONG REACH STUB FL

LONG REACH REG FL

LONG REACH LONG FL

LONG LENGTH LONG FL

All long reach Micro End Mills are 1/8" shank, 2-1/2" OAL.
For coating information see page 6. For technical information, please see pages 233.

TOLERANCES	DIAMETER	SHANK	REACH	RADIUS
ALL SIZES	+0.005, -0.005	-0.001, -0.003 ISO H6	+0.010, -0.000	+0.0002, -0.0002

MADE IN THE USA



M42 Cobalt Roughing End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

COARSE PITCH - NON CENTER CUTTING - 30° HELIX



ALTIM COATED

DIA	SHANK	LOC	OAL	# OF FLUTES	ITEM#	LIST PRICE
1/4	3/8	5/8	2-7/16	3	USA23071	94.34
5/16	3/8	3/4	2-1/2	3	USA23073	103.03
3/8	3/8	3/4	2-1/2	4	USA23075	107.63
7/16	3/8	1	2-11/16	4	USA23077	108.26
1/2	1/2	1	3	4	USA23079	110.23
1/2	1/2	1-1/4	3-1/4	4	USA23081	114.00
5/8	5/8	1-5/8	3-3/4	4	USA23083	145.07
3/4	3/4	1-5/8	3-7/8	4	USA23085	159.66
7/8	3/4	1-7/8	4-1/8	5	USA23087	221.24
1	1	2	4-1/2	5	USA23089	213.85
1-1/8	1	2	4-1/2	6	USA23091	332.10
1-1/4	1-1/4	2	4-1/2	6	USA23093	360.42
1-1/2	1-1/4	2	4-1/2	6	USA23095	422.71
2	1-1/4	2	4-1/2	8	USA23099	587.36

FINE PITCH - NON CENTER CUTTING - 30° HELIX



ALTIM COATED

DIA	SHANK	LOC	OAL	# OF FLUTES	ITEM#	LIST PRICE
1/4	3/8	5/8	2-7/16	3	USA23277	94.34
5/16	3/8	3/4	2-1/2	3	USA23279	103.03
3/8	3/8	3/4	2-1/2	4	USA23281	108.26
7/16	3/8	1	2-11/16	4	USA23283	108.81
1/2	1/2	1-1/4	3-1/4	4	USA23285	110.23
5/8	5/8	1-5/8	3-3/4	4	USA23287	145.07
3/4	3/4	1-5/8	3-7/8	4	USA23289	159.66
7/8	3/4	1-7/8	4-1/8	5	USA23291	208.86
1	1	2	4-1/2	5	USA23293	214.01
1-1/8	1	2	4-1/2	6	USA23295	354.79
1-1/4	1-1/4	2	4-1/2	6	USA23297	360.42
1-1/2	1-1/4	2	4-1/2	6	USA23299	445.36
2	1-1/4	2	4-1/2	8	USA23303	627.79

For coating information see page 6. For technical information please see page 233.

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+0.005, -0.005	+0.0000, -0.0005

M42 Cobalt End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



2 FLUTE - REGULAR LENGTH - SQUARE END - 30° HELIX



UNCOATED

ALTiN COATED

DIA	SHANK	LOC	OAL	# OF FLUTES	ITEM#	LIST PRICE
1/8	3/8	3/8	2-5/16	2	USA36020	36.07
3/16	3/8	9/32	2-5/16	2	USA36024	36.07
1/4	3/8	1/2	2-5/16	2	USA36028	36.07
5/16	3/8	9/16	2-5/16	2	USA36032	36.07
3/8	3/8	9/16	2-5/16	2	USA36034	36.07
7/16	3/8	13/16	2-1/2	2	USA36036	49.83
1/2	3/8	13/16	2-1/2	2	USA36038	49.83
1/2	1/2	1	3	2	USA36040	52.70
9/16	1/2	1-1/8	3-1/8	2	USA36042	59.31
5/8	1/2	1-1/8	3-1/8	2	USA36044	66.42
5/8	5/8	1-5/16	3-7/16	2	USA36046	67.47
3/4	1/2	1-5/16	3-5/16	2	USA36048	77.13
3/4	5/8	1-5/16	3-7/16	2	USA36050	77.13
3/4	3/4	1-5/16	3-9/16	2	USA36052	77.13
13/16	5/8	1-1/2	3-5/8	2	USA36054	94.82
13/16	3/4	1-1/2	3-3/4	2	USA36056	95.37
7/8	3/4	1-1/2	3-3/4	2	USA36060	105.69
7/8	7/8	1-1/2	3-3/4	2	USA36062	105.69
15/16	5/8	1-1/2	3-5/8	2	USA36064	114.86
15/16	3/4	1-1/2	3-3/4	2	USA36066	121.65
1	3/4	1-1/2	3-3/4	2	USA36072	107.52
1	1	1-5/8	4-1/8	2	USA36076	122.43
1-1/8	1	1-5/8	4-1/8	2	USA36080	179.06
1-1/4	1	1-5/8	4-1/8	2	USA36084	199.63
1-1/2	1-1/4	1-5/8	4-1/8	2	USA36092	238.76

DIA	SHANK	LOC	OAL	# OF FLUTES	ITEM#	LIST PRICE
1/8	3/8	3/8	2-5/16	2	USA36094	45.09
3/16	3/8	9/32	2-5/16	2	USA36098	45.09
1/4	3/8	1/2	2-5/16	2	USA36102	45.09
5/16	3/8	9/16	2-5/16	2	USA36106	45.09
3/8	3/8	9/16	2-5/16	2	USA36108	45.09
7/16	3/8	13/16	2-1/2	2	USA36110	62.29
1/2	3/8	13/16	2-1/2	2	USA36112	62.29
1/2	1/2	1	3	2	USA36114	65.90
9/16	1/2	1-1/8	3-1/8	2	USA36116	74.16
5/8	1/2	1-1/8	3-1/8	2	USA36118	83.04
5/8	5/8	1-5/16	3-7/16	2	USA36120	84.34
3/4	1/2	1-5/16	3-5/16	2	USA36122	96.52
3/4	5/8	1-5/16	3-7/16	2	USA36124	96.52
3/4	3/4	1-5/16	3-9/16	2	USA36126	96.52
13/16	5/8	1-1/2	3-5/8	2	USA36128	118.52
13/16	3/4	1-1/2	3-3/4	2	USA36130	118.94
7/8	3/4	1-1/2	3-3/4	2	USA36134	132.09
7/8	7/8	1-1/2	3-3/4	2	USA36136	132.09
15/16	5/8	1-1/2	3-5/8	2	USA36138	143.55
15/16	3/4	1-1/2	3-3/4	2	USA36140	152.10
1	3/4	1-1/2	3-3/4	2	USA36146	134.41
1	1	1-5/8	4-1/8	2	USA36150	153.05
1-1/8	1	1-5/8	4-1/8	2	USA36154	223.84
1-1/4	1	1-5/8	4-1/8	2	USA36158	249.53
1-1/2	1-1/4	1-5/8	4-1/8	2	USA36166	298.46

COBALT END MILLS

For coating information, please see page 6.

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+ .003, -.0000	+ .0000, -.0004





M42 Cobalt End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

4 & 6 FLUTE - REGULAR LENGTH - SQUARE END - 30° HELIX



UNCOATED

ALTiN COATED

DIA	SHANK	LOC	OAL	# OF FLUTES	ITEM #	LIST PRICE
1/8	3/8	3/8	2-5/16	4	USA35700	36.81
5/32	3/8	3/8	2-5/16	4	USA35702	50.43
3/16	3/8	1/2	2-3/8	4	USA35704	36.81
7/32	3/8	1/2	2-3/8	4	USA35706	50.43
1/4	3/8	5/8	2-7/16	4	USA35708	36.81
9/32	3/8	11/16	2-1/2	4	USA35710	50.43
5/16	3/8	3/4	2-1/2	4	USA35712	36.81
11/32	3/8	3/4	2-1/2	4	USA35714	51.50
3/8	3/8	3/4	2-1/2	4	USA35716	36.81
13/32	3/8	1	2-11/16	4	USA35718	75.24
7/16	3/8	1	2-11/16	4	USA35720	49.73
15/32	3/8	1	2-11/16	4	USA35722	88.23
1/2	3/8	1	2-11/16	4	USA35724	49.73
1/2	1/2	1-1/4	3-1/4	4	USA35726	49.73
17/32	1/2	1-3/8	3-3/8	4	USA35728	93.22
9/16	1/2	1-3/8	3-3/8	4	USA35730	59.67
5/8	1/2	1-3/8	3-3/8	4	USA35732	64.99
5/8	5/8	1-5/8	3-3/4	4	USA35734	72.17
11/16	1/2	1-5/8	3-5/8	4	USA35736	75.30
11/16	5/8	1-5/8	3-3/4	4	USA35738	76.74
3/4	1/2	1-5/8	3-5/8	4	USA35740	88.30
3/4	5/8	1-5/8	3-3/4	4	USA35742	88.30
3/4	3/4	1-5/8	3-7/8	4	USA35744	91.23
13/16	3/4	1-7/8	4-1/8	4	USA35746	103.11
7/8	3/4	1-7/8	4-1/8	4	USA35748	102.75
7/8	7/8	1-7/8	4-1/8	4	USA35750	102.75
15/16	3/4	1-7/8	4-1/8	4	USA35752	131.96
1	3/4	1-7/8	4-1/8	4	USA35754	116.95
1	1	2	4-1/2	4	USA35758	123.87
1-1/8	3/4	1-5/8	3-7/8	6	USA35760	176.71
1-1/4	1	2	4-1/2	6	USA35762	189.41
1-1/4	1-1/4	2	4-1/2	6	USA35764	193.07
1-3/8	3/4	2	4-1/4	6	USA35766	317.93
1-1/2	1	2	4-1/2	6	USA35768	340.06
1-1/2	1-1/4	2	4-1/2	4	USA35770	274.49
1-5/8	1-1/4	2	4-1/2	6	USA35772	425.99
2	1-1/4	2	4-1/2	6	USA35774	439.89

DIA	SHANK	LOC	OAL	# OF FLUTES	ITEM #	LIST PRICE
1/8	3/8	3/8	2-5/16	4	USA35776	46.01
5/32	3/8	3/8	2-5/16	4	USA35778	63.03
3/16	3/8	1/2	2-3/8	4	USA35780	46.01
7/32	3/8	1/2	2-3/8	4	USA35782	63.03
1/4	3/8	5/8	2-7/16	4	USA35784	46.01
9/32	3/8	11/16	2-1/2	4	USA35786	63.03
5/16	3/8	3/4	2-1/2	4	USA35788	46.01
11/32	3/8	3/4	2-1/2	4	USA35790	64.38
3/8	3/8	3/4	2-1/2	4	USA35792	46.01
13/32	3/8	11/16	2-1/2	4	USA35794	94.07
7/16	3/8	1	2-11/16	4	USA35796	62.18
15/32	3/8	1	2-11/16	4	USA35798	99.28
1/2	3/8	1	2-11/16	4	USA35800	62.18
1/2	1/2	1-1/4	3-1/4	4	USA35802	62.18
17/32	1/2	1-3/8	3-3/8	4	USA35804	116.52
9/16	1/2	1-3/8	3-3/8	4	USA35806	74.58
5/8	1/2	1-3/8	3-3/8	4	USA35808	81.21
5/8	5/8	1-5/8	3-3/4	4	USA35810	90.22
11/16	1/2	1-5/8	3-5/8	4	USA35812	94.13
11/16	5/8	1-5/8	3-3/4	4	USA35814	95.93
3/4	1/2	1-5/8	3-5/8	4	USA35816	114.21
3/4	5/8	1-5/8	3-3/4	4	USA35818	114.21
3/4	3/4	1-5/8	3-7/8	4	USA35820	114.21
13/16	3/4	1-7/8	4-1/8	4	USA35822	128.93
7/8	3/4	1-7/8	4-1/8	4	USA35824	128.47
7/8	7/8	1-7/8	4-1/8	4	USA35826	128.47
15/16	3/4	1-7/8	4-1/8	4	USA35828	164.96
1	3/4	1-7/8	4-1/8	4	USA35830	146.19
1	1	2	4-1/2	4	USA35834	154.81
1-1/8	3/4	1-5/8	3-7/8	6	USA35836	220.25
1-1/4	1	2	4-1/2	6	USA35838	236.77
1-1/4	1-1/4	2	4-1/2	6	USA35840	241.34
1-3/8	3/4	2	4-1/4	6	USA35842	328.32
1-1/2	1	2	4-1/2	6	USA35844	368.85
1-1/2	1-1/4	2	4-1/2	4	USA35846	302.35
1-5/8	1-1/4	2	4-1/2	6	USA35848	481.06
2	1-1/4	2	4-1/2	6	USA35850	545.51

For coating information, please see page 6.

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+ .003, -.0000	+ .0000, -.0004

M42 Cobalt End Mills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



2 FLUTE - DOUBLE END - SQUARE END - 30° HELIX



UNCOATED

DIA	SHANK	LOC	OAL	# OF FLUTES	ITEM#	LIST PRICE
1/8	3/8	3/8	3-1/16	2	USA35852	55.18
5/32	3/8	7/16	3-1/8	2	USA35854	58.57
3/16	3/8	7/16	3-1/8	2	USA35856	55.25
7/32	3/8	1/2	3-1/8	2	USA35858	58.61
1/4	3/8	1/2	3-1/8	2	USA35860	55.25
9/32	3/8	9/16	3-1/8	2	USA35862	58.61
5/16	3/8	9/16	3-1/8	2	USA35864	55.25
11/32	3/8	9/16	3-1/8	2	USA35866	58.61
3/8	3/8	9/16	3-1/8	2	USA35868	55.25
13/32	1/2	13/16	3-3/4	2	USA35870	89.30
7/16	1/2	13/16	3-3/4	2	USA35872	83.99
1/2	1/2	13/16	3-3/4	2	USA35876	83.99
9/16	5/8	1-1/8	4-1/2	2	USA35878	105.39
5/8	5/8	1-1/8	4-1/2	2	USA35880	105.39
3/4	3/4	1-5/16	5	2	USA35884	132.71
7/8	7/8	1-9/16	5-1/2	2	USA35888	166.99
1	1	1-5/8	5-7/8	2	USA35892	205.40

ALTiN COATED

DIA	SHANK	LOC	OAL	# OF FLUTES	ITEM#	LIST PRICE
1/8	3/8	3/8	3-1/16	2	USA35894	68.98
5/32	3/8	7/16	3-1/8	2	USA35896	73.23
3/16	3/8	7/16	3-1/8	2	USA35898	69.02
7/32	3/8	1/2	3-1/8	2	USA35900	73.26
1/4	3/8	1/2	3-1/8	2	USA35902	69.02
9/32	3/8	9/16	3-1/8	2	USA35904	73.26
5/16	3/8	9/16	3-1/8	2	USA35906	69.02
11/32	3/8	9/16	3-1/8	2	USA35908	73.26
3/8	3/8	9/16	3-1/8	2	USA35910	69.02
13/32	1/2	13/16	3-3/4	2	USA35912	47.92
7/16	1/2	13/16	3-3/4	2	USA35914	104.97
1/2	1/2	13/16	3-3/4	2	USA35918	104.97
9/16	5/8	1-1/8	4-1/2	2	USA35920	131.73
5/8	5/8	1-1/8	4-1/2	2	USA35922	131.73
3/4	3/4	1-5/16	5	2	USA35926	165.94
7/8	7/8	1-9/16	5-1/2	2	USA35930	208.73
1	1	1-5/8	5-7/8	2	USA35934	256.75

COBALT END MILLS

4 FLUTE - DOUBLE END - SQUARE END - 30° HELIX



UNCOATED

DIA	SHANK	LOC	OAL	# OF FLUTES	ITEM#	LIST PRICE
1/8	3/8	3/8	3-1/16	4	USA35936	55.74
5/32	3/8	7/16	3-1/8	4	USA35938	58.86
3/16	3/8	1/2	3-1/8	4	USA35940	55.74
7/32	3/8	9/16	3-1/4	4	USA35942	58.86
1/4	3/8	5/8	3-3/8	4	USA35944	55.74
9/32	3/8	11/16	3-3/8	4	USA35946	58.86
5/16	3/8	3/4	3-1/2	4	USA35948	55.74
11/32	3/8	3/4	3-1/2	4	USA35950	58.86
3/8	3/8	3/4	3-1/2	4	USA35952	55.74
13/32	1/2	1	4-1/8	4	USA35954	86.54
7/16	1/2	1	4-1/8	4	USA35956	84.16
1/2	1/2	1	4-1/8	4	USA35960	84.16
9/16	5/8	1-3/8	5	4	USA35962	103.60
5/8	5/8	1-3/8	5	4	USA35964	103.60
3/4	3/4	1-5/8	5-5/8	4	USA35968	130.49
7/8	7/8	1-7/8	6-1/8	4	USA35972	174.23
1	1	1-7/8	6-3/8	4	USA35976	202.30

ALTiN COATED

DIA	SHANK	LOC	OAL	# OF FLUTES	ITEM#	LIST PRICE
1/8	3/8	3/8	3-1/16	4	USA35978	69.69
5/32	3/8	7/16	3-1/8	4	USA35980	73.58
3/16	3/8	1/2	3-1/8	4	USA35982	69.69
7/32	3/8	9/16	3-1/4	4	USA35984	73.58
1/4	3/8	5/8	3-3/8	4	USA35986	69.69
9/32	3/8	11/16	3-3/8	4	USA35988	73.58
5/16	3/8	3/4	3-1/2	4	USA35990	69.69
11/32	3/8	3/4	3-1/2	4	USA35992	73.58
3/8	3/8	3/4	3-1/2	4	USA35994	69.69
13/32	1/2	1	4-1/8	4	USA35996	108.16
7/16	1/2	1	4-1/8	4	USA35998	105.22
1/2	1/2	1	4-1/8	4	USA36002	105.22
9/16	5/8	1-3/8	5	4	USA36004	129.52
5/8	5/8	1-3/8	5	4	USA36006	129.52
3/4	3/4	1-5/8	5-5/8	4	USA36010	163.13
7/8	7/8	1-7/8	6-1/8	4	USA36014	217.81
1	1	1-7/8	6-3/8	4	USA36018	252.73

For coating information, please see page 6.

TOLERANCES	DIAMETER		SHANK
ALL SIZES	IF SIZE & SHANK DIA. ARE NOT THE SAME	IF SIZE & SHANK DIA. ARE THE SAME	
	+0.000, -.0015	+0.000, -.0025	+0.001, -.0005

MADE IN THE USA



Carbide Countersinks

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

COUNTERSINKS

SINGLE FLUTE COUNTERSINKS



CARBIDE
60° 82° 90° 100°

SIZE	SHANK	OAL	PKG QTY	60° - ITEM #	82° - ITEM #	90° - ITEM #	100° - ITEM #	LIST PRICE
1/8	1/8	1-1/2	1	USA14045	USA14061	USA14077	USA33234	22.75
3/16	3/16	2	1	USA14047	USA14063	USA14079	USA33236	24.30
1/4	1/4	2	1	USA14049	USA14065	USA14081	USA33238	27.61
3/8	1/4	2-5/8	1	USA14051	USA14067	USA14083	USA33240	49.99
1/2	1/4	2-5/8	1	USA14053	USA14069	USA14085	USA33242	61.91
5/8	3/8	2-3/4	1	USA14055	USA14071	USA14087	USA33244	90.46
3/4	3/8	2-3/4	1	USA14057	USA14073	USA14089	USA33246	127.85
1	1/2	3	1	USA14059	USA14075	USA14091	USA33248	189.53

3 FLUTE COUNTERSINKS



CARBIDE
60° 82° 90° 100°

SIZE	SHANK	OAL	PKG QTY	60° - ITEM #	82° - ITEM #	90° - ITEM #	100° - ITEM #	LIST PRICE
1/8	1/8	1-1/2	1	USA14093	USA14109	USA14125	USA33250	22.75
3/16	3/16	2	1	USA14095	USA14111	USA14127	USA33252	24.30
1/4	1/4	2	1	USA14097	USA14113	USA14129	USA33254	27.61
3/8	1/4	2-5/8	1	USA14099	USA14115	USA14131	USA33256	49.99
1/2	1/4	2-5/8	1	USA14101	USA14117	USA14133	USA33258	61.91
5/8	3/8	2-3/4	1	USA14103	USA14119	USA14135	USA33260	90.46
3/4	3/8	2-3/4	1	USA14105	USA14121	USA14137	USA33262	127.85
1	1/2	3	1	USA14107	USA14123	USA14139	USA33264	189.53

6 FLUTE CHATTERLESS COUNTERSINKS



CARBIDE
60° 82° 90° 100°

SIZE	SHANK	OAL	PKG QTY	60° - ITEM #	82° - ITEM #	90° - ITEM #	100° - ITEM #	LIST PRICE
1/8	1/8	1-1/2	1	USA14161	USA14177	USA14193	USA33266	22.75
3/16	3/16	2	1	USA14163	USA14179	USA14195	USA33268	24.30
1/4	1/4	2	1	USA14165	USA14181	USA14197	USA33270	27.61
3/8	1/4	2-5/8	1	USA14167	USA14183	USA14199	USA33272	49.99
1/2	1/4	2-5/8	1	USA14169	USA14185	USA14201	USA33274	61.91
5/8	3/8	2-3/4	1	USA14171	USA14187	USA14203	USA33276	90.46
3/4	3/8	2-3/4	1	USA14173	USA14189	USA14205	USA33278	127.85
1	1/2	3	1	USA14175	USA14191	USA14207	USA33280	189.53

HSS Countersinks

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



SINGLE FLUTE COUNTERSINKS



HIGH SPEED STEEL
60° 82° 90°

SIZE	SHANK	OAL	PKG QTY	60°-ITEM#	82°-ITEM#	90°-ITEM#	LIST PRICE
1/4	3/16	1-7/16	1	USA13057	USA13067	USA13077	24.97
3/8	1/4	1-21/32	1	USA13059	USA13069	USA13079	28.42
1/2	1/4	1-13/32	1	USA13061	USA13071	USA13081	36.34
3/4	1/2	1-27/32	1	USA13063	USA13073	USA13083	50.18
1	1/2	2-13/16	1	USA13065	USA13075	USA13085	77.96

COUNTERSINKS

4 FLUTE COUNTERSINKS



HIGH SPEED STEEL
60° 82°

SIZE	SHANK	OAL	PKG. QTY	60°-ITEM#	82°-ITEM#	LIST PRICE
1/2	1/2	3-7/8	1	USA13087	USA13097	79.69
5/8	1/2	4	1	USA13089	USA13099	89.71
3/4	1/2	4-1/8	1	USA13091	USA13101	114.49
7/8	1/2	4-1/4	1	USA13093	USA13103	134.57
1	1/2	4-3/8	1	USA13095	USA13105	139.08





Combined Drill & Countersinks

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

COUNTERSINKS

CARBIDE



CARBIDE - REGULAR - 60°
UNCOATED

SIZE	DRILL DIA.	BODY DIA.	OVERALL LENGTH	PKG. QTY	ITEM#	LIST PRICE
00	.025	1/8	1-1/2	1	USA33232	30.88
0	1/32	1/8	1-1/2	1	USA33230	29.52
1	3/64	1/8	1-1/2	1	USA14033	26.87
2	5/64	3/16	2	1	USA14035	39.98
3	7/64	1/4	2	1	USA14037	45.10
4	1/8	5/16	2-1/8	1	USA14039	58.21
5	3/16	7/16	2-3/4	1	USA14041	92.27
6	7/32	1/2	3	1	USA14043	114.86



CARBIDE - REGULAR - 60°
ALTiN COATED

SIZE	DRILL DIA.	BODY DIA.	OVERALL LENGTH	PKG. QTY	ITEM#	LIST PRICE
00	.025	1/8	1-1/2	1	USA38112	38.58
0	1/32	1/8	1-1/2	1	USA38110	36.91
1	3/64	1/8	1-1/2	1	USA38098	33.58
2	5/64	3/16	2	1	USA38100	49.98
3	7/64	1/4	2	1	USA38102	56.35
4	1/8	5/16	2-1/8	1	USA38104	72.76
5	3/16	7/16	2-3/4	1	USA38106	115.35
6	7/32	1/2	3	1	USA38108	143.58

HIGH SPEED STEEL & COBALT



HIGH SPEED STEEL - REGULAR - 60°
UNCOATED

SIZE	DRILL DIA.	BODY DIA.	OVERALL LENGTH	PKG. QTY	ITEM#	LIST PRICE
0	1/32	1/8	1-1/4	6	USA14013	15.67
1	3/64	1/8	1-1/4	6	USA13997	9.37
2	5/64	3/16	1-7/8	6	USA13999	9.80
3	7/64	1/4	2	6	USA14001	10.23
4	1/8	5/16	2-1/8	6	USA14003	10.53
5	3/16	7/16	2-3/4	1	USA14005	16.67
6	7/32	1/2	3	1	USA14007	25.05
7	1/4	5/8	3-1/4	1	USA14009	43.69
8	5/16	3/4	3-1/2	1	USA14011	60.78



HIGH SPEED STEEL - REGULAR - 60°
TIN COATED

SIZE	DRILL DIA.	BODY DIA.	OVERALL LENGTH	PKG. QTY	ITEM#	LIST PRICE
00	.025	1/8	1-1/4	6	USA14159	19.66
0	1/32	1/8	1-1/4	6	USA14157	19.66
1	3/64	1/8	1-1/4	6	USA14141	14.87
2	5/64	3/16	1-7/8	6	USA14143	15.27
3	7/64	1/4	2	6	USA14145	20.80
4	1/8	5/16	2-1/8	6	USA14147	21.44
5	3/16	7/16	2-3/4	1	USA14149	29.86
6	7/32	1/2	3	1	USA14151	47.66
7	1/4	5/8	3-1/4	1	USA14153	68.50
8	5/16	3/4	3-1/2	1	USA14155	110.22

HIGH SPEED STEEL - MINIATURE - 60°

SIZE	DRILL DIA.	BODY DIA.	OVERALL LENGTH	PKG. QTY	ITEM#	LIST PRICE
00000	.010	1/8	1-1/4	6	USA13995	16.94
0000	.015	1/8	1-1/4	6	USA13993	15.54
000	.020	1/8	1-1/4	6	USA13991	14.70
00	.025	1/8	1-1/4	6	USA13989	14.70

M42 COBALT - REGULAR - 60°

SIZE	DRILL DIA.	BODY DIA.	OVERALL LENGTH	PKG. QTY	ITEM#	LIST PRICE
1	3/64	1/8	1-1/4	6	USA14025	27.80
2	5/64	3/16	1-7/8	6	USA14027	30.05
3	7/64	1/4	2	6	USA14029	31.07
4	1/8	5/16	2-1/8	6	USA14031	32.31

For coating information, please see page 6.

Combined Drill & Countersinks

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



HIGH SPEED STEEL



HIGH SPEED STEEL - LONG LENGTH - 60°

SIZE	DRILL DIA.	BODY DIA.	PKG. QTY.	ITEM#	LIST PRICE
1 x 3	3/64	1/8	1	USA14225	23.50
1 x 4	3/64	1/8	1	USA14227	24.52
1 x 5	3/64	1/8	1	USA14229	34.07
1 x 6	3/64	1/8	1	USA14231	44.64
2 x 3	5/64	3/16	1	USA14233	23.77
2 x 4	5/64	3/16	1	USA14235	26.89
2 x 5	5/64	3/16	1	USA14237	34.42
2 x 6	5/64	3/16	1	USA14239	44.77
3 x 3	7/64	1/4	1	USA14241	24.84
3 x 4	7/64	1/4	1	USA14243	28.31
3 x 5	7/64	1/4	1	USA14245	37.23
3 x 6	7/64	1/4	1	USA14247	45.17
4 x 4	1/8	5/16	1	USA14251	31.39
4 x 5	1/8	5/16	1	USA14253	40.09
4 x 6	1/8	5/16	1	USA14255	46.33
4-1/2 x 4	9/64	3/8	1	USA14249	35.27
4-1/2 x 5	9/64	3/8	1	USA14257	51.33
4-1/2 x 6	9/64	3/8	1	USA14265	57.36
5 x 4	3/16	7/16	1	USA14259	41.20
5 x 5	3/16	7/16	1	USA14261	47.71
5 x 6	3/16	7/16	1	USA14263	53.55
6 x 5	7/32	1/2	1	USA14267	51.28
6 x 6	7/32	1/2	1	USA14269	61.98
7 x 6	1/4	5/6	1	USA14271	115.44
8 x 6	5/16	3/4	1	USA14273	139.59

COUNTERSINKS



MADE IN THE USA

Spiral Point Taps

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



Predator

PREMIUM POWDERED METAL



UNCOATED



ALTiN COATED



STEAM OXIDE



TiCN COATED

SIZE	H LIMIT	# OF FLUTES	UNCOATED LIST PRICE	STM OXIDE LIST PRICE	ALTiN LIST PRICE	TiCN LIST PRICE
2-56	H2	2	USA42088 35.12	USA42086 37.15	USA42090 41.73	USA42138 41.73
4-40	H2	3	USA31427 27.12	USA31389 31.20	USA31465 41.73	USA42140 41.73
6-32	H3	3	USA31429 27.12	USA31391 31.20	USA31467 41.73	USA42142 41.73
8-32	H3	3	USA31431 27.12	USA31393 31.20	USA31469 41.73	USA42144 41.73
10-24	H3	3	USA31433 27.12	USA31395 31.20	USA31471 41.73	USA42146 41.73
10-32	H3	3	USA31435 27.12	USA31397 31.20	USA31473 41.73	USA42148 41.73
1/4-20	H3	3	USA44800 29.63	USA44772 34.08	USA44828 45.58	USA44968 45.59
1/4-20	H5	3	USA31437 29.63	USA31399 34.08	USA31475 45.58	USA42150 45.59
1/4-28	H3	3	USA44802 29.63	USA44774 34.08	USA44830 45.58	USA44970 45.59
1/4-28	H4	3	USA31439 29.63	USA31401 34.08	USA31477 45.58	USA42152 45.59
5/16-18	H3	3	USA44804 32.40	USA44776 37.27	USA44832 49.85	USA44972 49.86
5/16-18	H5	3	USA31441 32.40	USA31403 37.27	USA31479 49.85	USA42154 49.86
5/16-24	H3	3	USA44806 32.40	USA44778 37.27	USA44834 49.85	USA44974 49.86
5/16-24	H4	3	USA31443 32.40	USA31405 37.27	USA31481 49.85	USA42156 49.86
3/8-16	H3	3	USA44808 38.54	USA44780 44.31	USA44836 59.29	USA44976 59.30
3/8-16	H5	3	USA31445 38.54	USA31407 44.31	USA31483 59.29	USA42158 59.30
3/8-24	H3	3	USA44810 38.54	USA44782 44.31	USA44838 59.29	USA44978 59.30
3/8-24	H4	3	USA31447 38.54	USA31409 44.31	USA31485 59.29	USA42160 59.30
7/16-14	H3	3	USA44812 49.37	USA44784 56.75	USA44840 75.92	USA44980 75.93
7/16-14	H5	3	USA31449 49.37	USA31411 56.75	USA31487 75.92	USA42162 75.93
7/16-20	H3	3	USA44814 49.37	USA44786 56.75	USA44842 75.92	USA44982 75.93
7/16-20	H5	3	USA31451 49.37	USA31413 56.75	USA31489 75.92	USA42164 75.93
1/2-13	H3	4	USA44816 58.92	USA44788 67.76	USA44844 90.64	USA44984 90.64
1/2-13	H5	4	USA31453 58.92	USA31415 67.76	USA31491 90.64	USA42166 90.64
1/2-20	H3	4	USA44818 58.92	USA44790 67.76	USA44846 90.64	USA44986 90.64
1/2-20	H5	4	USA31455 58.92	USA31417 67.76	USA31493 90.64	USA42168 90.64
5/8-11	H3	4	USA44820 112.26	USA44792 129.11	USA44848 172.71	USA44988 172.71
5/8-11	H6	4	USA31457 112.26	USA31419 129.11	USA31495 172.71	USA42170 172.71
5/8-18	H3	4	USA44822 112.26	USA44794 129.11	USA44850 172.71	USA44990 172.71
5/8-18	H5	4	USA31459 112.26	USA31421 129.11	USA31497 172.71	USA42172 172.71
3/4-10	H3	4	USA44826 145.14	USA44798 166.90	USA44854 223.27	USA44994 223.28
3/4-10	H6	4	USA31461 145.14	USA31423 166.90	USA31499 223.27	USA42174 223.28
3/4-16	H3	4	USA44824 145.14	USA44796 166.90	USA44852 223.27	USA44992 223.28
3/4-16	H5	4	USA31463 145.14	USA31425 166.90	USA31501 223.27	USA42176 223.28

All taps sold individually

Predator Tap sizes 3/8" and smaller have male center.

For coating information see page 6. For technical information, please see pages 234-235.

HP TAPS

TAPS

DIES

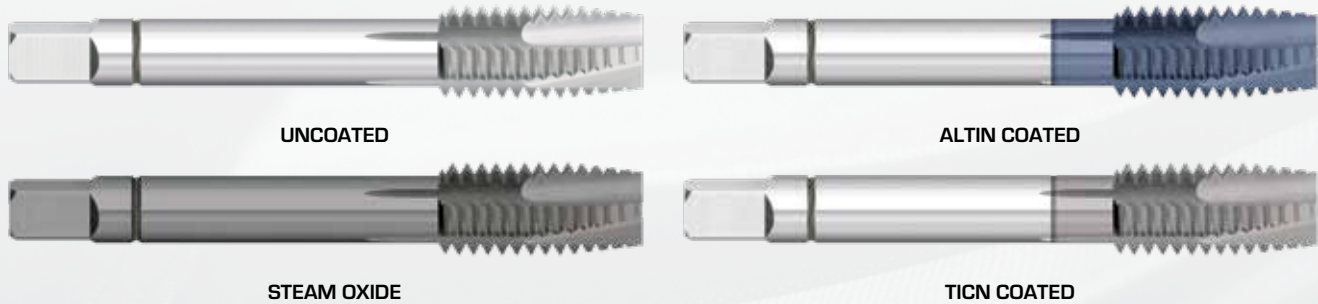
Spiral Point Taps

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



Predator

PREMIUM POWDERED METAL
METRIC



HP TAPS

TAPS

DIES

SIZE	D LIMIT	# OF FLUTES	UNCOATED	LIST PRICE	STM OXIDE	LIST PRICE	ALTIM	LIST PRICE	TICN	LIST PRICE
M2.5 x 0.45	D3	2	USA42178	30.78	USA42182	35.41	USA42186	46.15	USA42224	46.15
M3 x 0.5	D3	3	USA31665	30.77	USA31679	35.41	USA31693	46.14	USA42226	46.15
M3.5 x 0.6	D3	3	USA44996	30.78	USA45014	35.41	USA45032	46.15	USA45122	46.15
M3.5 x 0.6	D4	3	USA42180	30.78	USA42184	35.41	USA42188	46.15	USA42228	46.15
M4 x 0.7	D3	3	USA44998	30.77	USA45016	35.41	USA45034	46.14	USA45124	46.15
M4 x 0.7	D4	3	USA31667	30.77	USA31681	35.41	USA31695	46.14	USA42230	46.15
M5 x 0.8	D3	3	USA45000	30.77	USA45018	35.41	USA45036	46.14	USA45126	46.15
M5 x 0.8	D4	3	USA31669	30.77	USA31683	35.41	USA31697	46.14	USA42232	46.15
M6 x 1.0	D3	3	USA45002	33.82	USA45020	38.88	USA45038	50.71	USA45128	50.72
M6 x 1.0	D5	3	USA31671	33.82	USA31685	38.88	USA31699	50.71	USA42234	50.72
M8 x 1.25	D3	3	USA45004	36.79	USA45022	42.32	USA45040	55.24	USA45130	55.24
M8 x 1.25	D5	3	USA31673	36.79	USA31687	42.32	USA31701	55.24	USA42236	55.24
M10 x 1.5	D3	3	USA45006	43.70	USA45024	50.22	USA45042	65.02	USA45132	65.01
M10 x 1.5	D6	3	USA31675	43.70	USA31689	50.22	USA31703	65.02	USA42238	65.01
M12 x 1.75	D3	4	USA45008	66.97	USA45026	76.99	USA45044	100.11	USA45134	100.11
M12 x 1.75	D6	4	USA31677	66.97	USA31691	76.99	USA31705	100.11	USA42240	100.11
M14 x 2.0	D3	4	USA45010	102.10	USA45028	117.39	USA45046	137.72	USA45136	137.72
M14 x 2.0	D7	4	USA36332	102.10	USA36336	117.39	USA36340	137.72	USA42242	137.72
M16 x 2.0	D3	4	USA45012	119.91	USA45030	137.90	USA45048	161.80	USA45138	161.80
M16 x 2.0	D7	4	USA36334	119.91	USA36338	137.90	USA36342	161.80	USA42244	161.80

- CNC STYLE
- MANUFACTURED TO ANSI SPECIFICATIONS
- FOR THROUGH HOLE TAPPING
- MATERIALS: STEEL, STEEL ALLOYS, STAINLESS STEELS, AND A VARIETY OF OTHER STEELS WITH A MAXIMUM OF RC 32

All taps sold individually

Predator Tap sizes 3/8" and smaller have male center.

For coating information see page 6. For technical information, please see pages 234-235.

Spiral Flute Taps

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



Predator

HIGH VANADIUM POWDERED METAL

45° HELIX - SEMI BOTTOMING ■ 2 - 2-1/2 THREAD CHAMFER



UNCOATED



ALTiN COATED



STEAM OXIDE



TiCN COATED

SIZE	H LIMIT	# OF FLUTES	UNCOATED	LIST PRICE	STM OXIDE	LIST PRICE	ALTiN	LIST PRICE	TiCN	LIST PRICE
2-56	H2	2	USA42092	41.95	USA42096	48.24	USA42094	64.50	USA42098	64.50
4-40	H2	2	USA31503	41.95	USA31579	48.24	USA31541	64.50	USA42100	64.50
6-32	H3	3	USA31505	41.95	USA31581	48.24	USA31543	64.50	USA42102	64.50
8-32	H3	3	USA31507	41.95	USA31583	48.24	USA31545	64.50	USA42104	64.50
10-24	H3	3	USA31509	41.95	USA31585	48.24	USA31547	64.50	USA42106	64.50
10-32	H3	3	USA31511	41.95	USA31587	48.24	USA31549	64.50	USA42108	64.50
1/4-20	H3	3	USA44856	43.22	USA44912	49.70	USA44884	66.48	USA44940	66.49
1/4-20	H5	3	USA31513	43.22	USA31589	49.70	USA31551	66.48	USA42110	66.49
1/4-28	H3	3	USA44858	43.22	USA44914	49.70	USA44886	66.48	USA44942	66.49
1/4-28	H4	3	USA31515	43.22	USA31591	49.70	USA31553	66.48	USA42112	66.49
5/16-18	H3	3	USA44860	47.34	USA44916	54.42	USA44888	72.81	USA44944	72.81
5/16-18	H5	3	USA31517	47.34	USA31593	54.42	USA31555	72.81	USA42114	72.81
5/16-24	H3	3	USA44862	47.34	USA44918	54.42	USA44890	72.81	USA44946	72.81
5/16-24	H4	3	USA31519	47.34	USA31595	54.42	USA31557	72.81	USA42116	72.81
3/8-16	H3	3	USA44864	56.07	USA44920	64.50	USA44892	86.30	USA44948	86.30
3/8-16	H5	3	USA31521	56.07	USA31597	64.50	USA31559	86.30	USA42118	86.30
3/8-24	H3	3	USA44866	56.07	USA44922	64.50	USA44894	86.30	USA44950	86.30
3/8-24	H4	3	USA31523	56.07	USA31599	64.50	USA31561	86.30	USA42120	86.30
7/16-14	H3	3	USA44868	70.94	USA44924	81.62	USA44896	109.15	USA44952	109.15
7/16-14	H5	3	USA31525	70.94	USA31601	81.62	USA31563	109.15	USA42122	109.15
7/16-20	H3	3	USA44870	70.94	USA44926	81.62	USA44898	109.15	USA44954	109.15
7/16-20	H5	3	USA31527	70.94	USA31603	81.62	USA31565	109.15	USA42124	109.15
1/2-13	H3	3	USA44872	84.13	USA44928	96.79	USA44900	129.45	USA44956	129.45
1/2-13	H5	3	USA31529	84.13	USA31605	96.79	USA31567	129.45	USA42126	129.45
1/2-20	H3	3	USA44874	84.13	USA44930	96.79	USA44902	129.45	USA44958	129.45
1/2-20	H5	3	USA31531	84.13	USA31607	96.79	USA31569	129.45	USA42128	129.45
5/8-11	H3	4	USA44876	160.72	USA44932	184.85	USA44904	247.28	USA44960	247.28
5/8-11	H6	4	USA31533	160.72	USA31609	184.85	USA31571	247.28	USA42130	247.28
5/8-18	H3	4	USA44878	160.72	USA44934	184.85	USA44906	247.28	USA44962	247.28
5/8-18	H5	4	USA31535	160.72	USA31611	184.85	USA31573	247.28	USA42132	247.28
3/4-10	H3	4	USA44880	187.84	USA44936	216.05	USA44908	289.05	USA44964	289.05
3/4-10	H6	4	USA31537	187.84	USA31613	216.05	USA31575	289.05	USA42134	289.05
3/4-16	H3	4	USA44882	187.84	USA44938	216.05	USA44910	289.05	USA44966	289.05
3/4-16	H5	4	USA31539	187.84	USA31615	216.05	USA31577	289.05	USA42136	289.05

All taps sold individually

Predator Tap sizes 3/8" and smaller have male center.

For coating information see page 6. For technical information, please see pages 234-235.

HP TAPS

TAPS

DIES

Spiral Flute Taps

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



Predator

HIGH VANADIUM POWDERED METAL
METRIC

45° HELIX - SEMI BOTTOMING ■ 2 - 2-1/2 THREAD CHAMFER



UNCOATED



ALTiN COATED



STEAM OXIDE



TiCN COATED

SIZE	D LIMIT	# OF FLUTES	UNCOATED	LIST PRICE	STM OXIDE	LIST PRICE	ALTiN	LIST PRICE	TiCN	LIST PRICE
M2.5 x 0.45	D3	2	USA42190	47.59	USA42194	54.72	USA42198	70.22	USA42202	70.22
M3 x 0.5	D3	3	USA31707	47.59	USA31721	54.71	USA31735	70.22	USA42204	70.22
M3.5 x 0.6	D3	3	USA45050	47.59	USA45068	54.72	USA45086	70.22	USA45104	70.22
M3.5 x 0.6	D4	3	USA42192	47.59	USA42196	54.72	USA42200	70.22	USA42206	70.22
M4 x 0.7	D3	3	USA45052	47.59	USA45070	54.71	USA45088	70.22	USA45106	70.22
M4 x 0.7	D4	3	USA31709	47.59	USA31723	54.71	USA31737	70.22	USA42208	70.22
M5 x 0.8	D3	3	USA45054	47.59	USA45072	54.71	USA45090	70.22	USA45108	70.22
M5 x 0.8	D4	3	USA31711	47.59	USA31725	54.71	USA31739	70.22	USA42210	70.22
M6 x 1.0	D3	3	USA45056	49.01	USA45074	56.38	USA45092	72.81	USA45110	72.81
M6 x 1.0	D5	3	USA31713	49.01	USA31727	56.38	USA31741	72.81	USA42212	72.81
M8 x 1.25	D3	3	USA45058	53.83	USA45076	61.90	USA45094	80.60	USA45112	80.59
M8 x 1.25	D5	3	USA31715	53.83	USA31729	61.90	USA31743	80.60	USA42214	80.59
M10 x 1.5	D3	3	USA45060	63.64	USA45078	73.20	USA45096	94.91	USA45114	94.90
M10 x 1.5	D6	3	USA31717	63.64	USA31731	73.20	USA31745	94.91	USA42216	94.90
M12 x 1.75	D3	3	USA45062	95.51	USA45080	109.82	USA45098	143.03	USA45116	143.03
M12 x 1.75	D6	3	USA31719	95.51	USA31733	109.82	USA31747	143.03	USA42218	143.03
M14 x 2.0	D3	4	USA45064	135.35	USA45082	155.68	USA45100	182.73	USA45118	182.73
M14 x 2.0	D7	4	USA36344	135.35	USA36348	155.68	USA36352	182.73	USA42220	182.73
M16 x 2.0	D3	4	USA45066	158.37	USA45084	182.13	USA45102	213.79	USA45120	213.79
M16 x 2.0	D7	4	USA36346	158.37	USA36350	182.13	USA36354	213.79	USA42222	213.79

- CNC STYLE
- MANUFACTURED TO ANSI SPECIFICATIONS
- SUITED FOR BLIND HOLE TAPPING
- MATERIALS: STEEL, STEEL ALLOYS, STAINLESS STEELS, AND A VARIETY OF OTHER STEELS WITH A MAXIMUM OF RC 32

All taps sold individually

Predator Tap sizes 3/8" and smaller have male center.

For coating information see page 6. For technical information, please see pages 234-235.

HP TAPS

TAPS

DIES



Thread Forming Taps

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



HIGH SPEED STEEL UNCOATED

SIZE	H LIMIT	LUBE GROOVES	1.5 ITEM#	2.5 ITEM#	4.0 ITEM#	LIST PRICE
0-80	H2	0	USA41926	USA41136	-	29.04
0-80	H3	0	USA41928	USA41138	-	29.04
1-64	H3	0	-	USA41140	-	29.04
1-72	H3	0	USA41930	USA41142	-	29.04
2-56	H3	0	USA41932	USA41144	-	28.85
2-56	H4	0	USA41934	USA41146	-	28.85
2-64	H3	0	-	USA41150	-	28.85
3-48	H3	0	-	USA41154	-	28.85
3-56	H3	0	-	USA41156	-	28.85
3-56	H5	0	-	USA41158	-	28.85
4-40	H3	0	USA41936	USA41162	USA41160	26.01
4-40	H5	0	USA41938	USA41166	USA41164	26.01
4-48	H4	0	-	USA41170	-	26.01
5-40	H4	0	-	USA41178	USA41176	26.01
5-44	H4	0	-	USA41186	-	26.01
6-32	H3	1	USA41940	USA41194	USA41192	21.44
6-32	H5	1	USA41942	USA41198	USA41196	21.44
6-40	H4	1	-	USA41206	USA41204	21.44
8-32	H3	1	USA41944	USA41214	USA41212	21.44
8-32	H5	1	USA41946	USA41218	USA41216	21.44
8-32	H7	1	-	USA41222	USA41220	21.43
8-36	H4	1	-	USA41226	USA41224	21.44
10-24	H5	1	-	USA41230	USA41228	20.61
10-24	H7	1	-	USA41234	USA41232	20.61
10-32	H3	1	USA41948	USA41238	USA41236	20.61
10-32	H5	1	USA41950	USA41242	USA41240	20.61
12-24	H5	2	-	USA41246	USA41244	20.61
12-28	H4	2	-	USA41254	USA41252	20.61
1/4-20	H5	2	USA41952	USA41258	USA41256	21.89
1/4-20	H8	2	USA41954	USA41262	USA41260	21.89
1/4-28	H4	2	USA41956	USA41270	USA41268	21.89
1/4-28	H6	2	USA41958	USA41274	USA41272	21.89
5/16-18	H8	2	USA41960	USA41282	USA41280	24.30
5/16-18	H5	2	-	USA41278	USA41276	24.30
5/16-24	H5	2	USA41962	USA41286	USA41284	24.30
5/16-24	H7	2	USA41964	USA41290	USA41288	24.30
3/8-16	H6	2	USA41966	USA41294	USA41292	27.74
3/8-16	H8	2	USA41968	USA41298	USA41296	27.74
3/8-24	H5	2	USA41970	USA41302	USA41300	27.74
3/8-24	H7	2	USA41972	USA41306	USA41304	27.74
7/16-14	H7	4	-	USA41310	USA41308	42.21
7/16-14	H9	4	-	USA41314	USA41312	42.21
7/16-20	H5	4	-	USA41318	USA41316	42.21
7/16-20	H8	4	-	USA41322	USA41320	42.21
1/2-13	H7	6	-	USA41326	USA41324	47.21
1/2-13	H10	6	-	USA41330	USA41328	47.21
1/2-20	H5	6	-	USA41334	USA41332	47.21
1/2-20	H8	6	-	USA41338	USA41336	47.21

Plug Tap sizes 3/8" and smaller have male centers

HIGH SPEED STEEL - METRIC UNCOATED

SIZE	D LIMIT	LUBE GROOVES	1.5 ITEM#	2.5 ITEM#	4.0 ITEM#	LIST PRICE
M1.6 x 0.35	D5	0	-	USA42062	-	23.90
M1.7 x 0.35	D5	0	-	USA42064	-	23.90
M2 x 0.4	D5	0	USA41974	USA42066	-	23.90
M2.5 x 0.45	D6	0	USA41976	USA42068	-	23.90
M3 x 0.5	D6	0	USA41978	USA41342	-	23.90
M3.5 x 0.6	D7	1	USA41980	USA42072	USA42070	21.56
M4 x 0.7	D7	1	USA41982	USA41346	USA41344	21.56
M5 x 0.8	D8	1	USA41984	USA41350	USA41348	21.56
M6 x 1.0	D9	2	USA41986	USA41354	USA41352	22.87
M8 x 1.25	D10	2	USA41988	USA41358	USA41356	26.17
M10 x 1.5	D11	2	USA41990	USA41362	USA41360	29.44
M12 x 1.75	D12	4	USA41992	USA41366	USA41364	50.80

Plug Tap sizes M10 and smaller have male centers



- **SINGLE THREAD – 1.5 Thread Chamfer**
For maximum thread length in blind holes due to its short chamfer
- **BOTTOM – 2.5 Thread Chamfer**
For blind hole tapping
- **PLUG – 4.0 Thread Chamfer**
For through hole tapping
- **THREAD FORMING**
Taps have no flutes or cutting edges & provide chipless tapping
- **LUBE GROOVES**
For lubrication & venting in blind holes
- **MATERIALS:**
aluminum, brass, copper, zinc, most ductile materials producing stringy chips are great for uncoated thread forming taps

For technical information, please see pages 235 & 236

For coating options available on our Thread Forming Taps, please see page 6.

All taps sold individually

MADE IN THE USA

HP TAPS

TAPS

DIES

Thread Forming Taps

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



HIGH SPEED STEEL TIN COATED

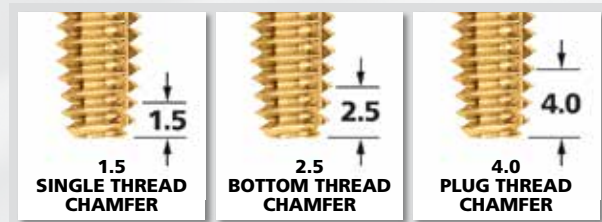
SIZE	H LIMIT	LUBE GROOVES	1.5 ITEM#	2.5 ITEM#	4.0 ITEM#	LIST PRICE
0-80	H2	0	USA41994	USA30785	-	36.30
0-80	H3	0	USA41996	USA30787	-	36.30
1-64	H3	0	-	USA30789	-	36.30
1-72	H3	0	USA41998	USA30791	-	36.30
2-56	H3	0	USA42000	USA30793	-	36.06
2-56	H4	0	USA42002	USA30795	-	36.06
2-64	H3	0	-	USA30799	-	36.06
3-48	H3	0	-	USA30803	-	36.06
3-56	H3	0	-	USA30805	-	36.06
3-56	H5	0	-	USA30807	-	36.06
4-40	H3	0	USA42004	USA30811	USA30809	32.51
4-40	H5	0	USA42006	USA30815	USA30813	32.51
4-48	H4	0	-	USA30819	-	32.51
5-40	H4	0	-	USA30827	USA30825	32.51
5-44	H4	0	-	USA30835	-	32.51
6-32	H3	1	USA42008	USA30843	USA30841	26.79
6-32	H5	1	USA42010	USA30847	USA30845	26.79
6-40	H4	1	-	USA30855	USA30853	26.79
8-32	H3	1	USA42012	USA30863	USA30861	26.79
8-32	H5	1	USA42014	USA30867	USA30865	26.79
8-32	H7	1	-	USA30871	USA30869	26.79
8-36	H4	1	-	USA30875	USA30873	26.79
10-24	H5	1	-	USA30879	USA30877	25.77
10-24	H7	1	-	USA30883	USA30881	25.77
10-32	H3	1	USA42016	USA30887	USA30885	25.77
10-32	H5	1	USA42018	USA30891	USA30889	25.77
12-24	H5	2	-	USA30895	USA30893	25.77
12-28	H4	2	-	USA30903	USA30901	25.77
1/4-20	H5	2	USA42020	USA30907	USA30905	27.36
1/4-20	H8	2	USA42022	USA30911	USA30909	27.36
1/4-28	H4	2	USA42024	USA30919	USA30917	27.36
1/4-28	H6	2	USA42026	USA30923	USA30921	27.36
5/16-18	H8	2	USA42028	USA30931	USA30929	30.38
5/16-18	H5	2	-	USA30927	USA30925	30.38
5/16-24	H5	2	USA42030	USA30935	USA30933	30.38
5/16-24	H7	2	USA42032	USA30939	USA30937	30.38
3/8-16	H6	2	USA42034	USA30943	USA30941	30.38
3/8-16	H8	2	USA42036	USA30947	USA30945	30.38
3/8-24	H5	2	USA42038	USA30951	USA30949	34.67
3/8-24	H7	2	USA42040	USA30955	USA30953	34.67
7/16-14	H7	4	-	USA30959	USA30957	52.76
7/16-14	H9	4	-	USA30963	USA30961	52.76
7/16-20	H5	4	-	USA30967	USA30965	52.76
7/16-20	H8	4	-	USA30971	USA30969	52.76
1/2-13	H7	6	-	USA30975	USA30973	59.01
1/2-13	H10	6	-	USA30979	USA30977	59.01
1/2-20	H5	6	-	USA30983	USA30981	59.01
1/2-20	H8	6	-	USA30987	USA30985	59.01

Plug Tap sizes 3/8" and smaller have male center

HIGH SPEED STEEL - METRIC TIN COATED

SIZE	D LIMIT	LUBE GROOVES	1.5 ITEM#	2.5 ITEM#	4.0 ITEM#	LIST PRICE
M1.6 x 0.35	D5	0	-	USA42074	-	29.09
M1.7 x 0.35	D5	0	-	USA42076	-	29.09
M2 x 0.4	D5	0	USA42042	USA42078	-	29.09
M2.5 x 0.45	D6	0	USA42044	USA42080	-	29.09
M3 x 0.5	D6	0	USA42046	USA28835	-	29.09
M3.5 x 0.6	D7	1	USA42048	USA42084	USA42082	26.96
M4 x 0.7	D7	1	USA42050	USA28839	USA28837	26.96
M5 x 0.8	D8	1	USA42052	USA28843	USA28841	26.96
M6 x 1.0	D9	2	USA42054	USA28847	USA28845	28.58
M8 x 1.25	D10	2	USA42056	USA28851	USA28849	32.72
M10 x 1.5	D11	2	USA42058	USA28855	USA28853	36.79
M12 x 1.75	D12	4	USA42060	USA28859	USA28857	63.50

Plug Tap sizes M10 and smaller have male center



- SINGLE THREAD – 1.5 Thread Chamfer**
 For maximum thread length in blind holes due to its short chamfer
- BOTTOM – 2.5 Thread Chamfer**
 For blind hole tapping
- PLUG – 4.0 Thread Chamfer**
 For through hole tapping
- THREAD FORMING**
 Taps have no flutes or cutting edges & provide chipless tapping
- LUBE GROOVES**
 For lubrication & venting in blind holes
- MATERIALS:**
 lead, stainless steels, carbon steels, die cast aluminum, most ductile materials producing stringy chips are great for Tin coated forming taps

For technical information, please see pages 235 & 236

For coating options available on our Thread Forming Taps, please see page 6.

All taps sold individually

MADE IN THE USA

HP TAPS

TAPS

DIES



Taper Pipe Taps

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

HP TAPS

TAPS

DIES

NPT HIGH SPEED STEEL



UNCOATED



STEAM OXIDE



TIN COATED

SIZE	# OF FLUTES	UNCOATED	LIST PRICE	STEAM OXIDE	LIST PRICE	TIN	LIST PRICE
1/16-27	4	USA31213	34.65	USA36248	39.87	USA36250	45.08
* 1/8-27	4	USA31215	34.65	USA36252	39.87	USA36254	45.08
1/8-27	4	USA31217	34.65	USA36256	39.87	USA36258	45.08
1/4-18	4	USA31219	38.36	USA36260	44.11	USA36262	49.89
3/8-18	4	USA31221	50.49	USA36264	58.07	USA36266	65.62
1/2-14	4	USA31223	80.29	USA36268	92.34	USA36270	104.35
3/4-14	5	USA31225	112.31	USA36272	129.17	USA36274	146.02
1-11-1/2	5	USA31227	170.68	USA36276	196.25	USA36278	204.62
1-1/4-11-1/2	5	USA31229	243.28	USA36280	279.77	USA36282	316.26
1-1/2-11-1/2	7	USA31231	326.32	USA36284	375.30	USA36286	424.21
2-11-1/2	7	USA31233	443.88	USA36288	510.47	USA36290	577.07

* SMALL SHANK

NPT - INTERRUPTED HIGH SPEED STEEL



UNCOATED



STEAM OXIDE



TIN COATED

SIZE	# OF FLUTES	UNCOATED	LIST PRICE	STEAM OXIDE	LIST PRICE	TIN	LIST PRICE
* 1/8-27	5	USA31253	53.75	USA36292	61.82	USA36294	69.90
1/8-27	5	USA31255	53.75	USA36296	61.82	USA36298	69.90
1/4-18	5	USA31257	59.46	USA36300	68.36	USA36302	77.29
3/8-18	5	USA31259	75.23	USA36304	86.49	USA36306	97.79
1/2-14	5	USA31261	119.63	USA36308	137.58	USA36310	155.52
3/4-14	5	USA31263	174.10	USA36312	200.19	USA36314	226.31
1-11-1/2	5	USA31265	264.57	USA36316	304.24	USA36318	343.92
1-1/4-11-1/2	5	USA31267	374.66	USA36320	430.86	USA36322	487.05
1-1/2-11-1/2	7	USA31269	502.55	USA36324	577.93	USA36326	653.31
2-11-1/2	7	USA31271	679.17	USA36328	781.05	USA36330	882.89

* SMALL SHANK

All taps sold individually.

For coating information see page 6. For technical information, please see page 237.

Taper Pipe Taps

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



NPTF DRYSEAL HIGH SPEED STEEL



UNCOATED

SIZE	# OF FLUTES	ITEM#	LIST PRICE
1/16-27	4	USA31291	38.14
* 1/8-27	4	USA31293	38.14
1/8-27	4	USA31295	38.14
1/4-18	4	USA31297	42.19
3/8-18	4	USA31299	55.52
1/2-14	4	USA31301	88.33
3/4-14	5	USA31303	123.54
1-11-1/2	5	USA31305	187.73
1-1/4-11-1/2	5	USA31307	267.61
1-1/2-11-1/2	7	USA31309	358.94
2-11-1/2	7	USA31311	488.29

* SMALL SHANK

TIN COATED

SIZE	# OF FLUTES	ITEM#	LIST PRICE
1/16-27	4	USA38710	57.13
* 1/8-27	4	USA38712	57.13
1/8-27	4	USA38714	57.13
1/4-18	4	USA38716	63.21
3/8-18	4	USA38718	83.18
1/2-14	4	USA38720	132.28
3/4-14	5	USA38722	185.06
1-11-1/2	5	USA38724	281.23
1-1/4-11-1/2	5	USA38726	400.86
1-1/2-11-1/2	7	USA38728	537.73
2-11-1/2	7	USA38770	731.46

* SMALL SHANK

HP TAPS

TAPS

DIES

NPTF DRYSEAL - INTERRUPTED HIGH SPEED STEEL



UNCOATED

SIZE	# OF FLUTES	ITEM#	LIST PRICE
* 1/8-27	5	USA31313	59.12
1/8-27	5	USA31315	59.12
1/4-18	5	USA31317	65.39
3/8-18	5	USA31319	82.73
1/2-14	5	USA31321	131.61
3/4-14	5	USA31323	191.48
1-11-1/2	5	USA31325	290.99
1-1/4-11-1/2	5	USA31327	412.09
1-1/2-11-1/2	7	USA31329	552.82
2-11-1/2	7	USA31331	747.07

* SMALL SHANK

TIN COATED

SIZE	# OF FLUTES	ITEM#	LIST PRICE
* 1/8-27	5	USA38730	88.59
1/8-27	5	USA38732	88.59
1/4-18	5	USA38734	97.97
3/8-18	5	USA38736	123.95
1/2-14	5	USA38738	197.11
3/4-14	5	USA38740	286.86
1-11-1/2	5	USA38742	435.93
1-1/4-11-1/2	5	USA38744	617.34
1-1/2-11-1/2	7	USA38746	828.08
2-11-1/2	7	USA38748	1119.11

* SMALL SHANK

All taps sold individually.

For coating information see page 6. For technical information, please see page 237.

MADE IN THE USA



Pipe Taps

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

HP TAPS

TAPS

DIES

STRAIGHT PIPE - NPS HIGH SPEED STEEL



UNCOATED

SIZE	# OF FLUTES	ITEM#	LIST PRICE
1/8-27	4	USA31369	55.37
1/4-18	4	USA31371	61.26
3/8-18	4	USA31373	80.63
1/2-14	4	USA31375	128.27
3/4-14	5	USA31377	179.39
1-11-1/2	5	USA31379	272.60

TIN COATED

SIZE	# OF FLUTES	ITEM#	LIST PRICE
1/8-27	4	USA38750	82.96
1/4-18	4	USA38752	91.78
3/8-18	4	USA38754	120.80
1/2-14	4	USA38756	192.12
3/4-14	5	USA38758	268.73
1-11-1/2	5	USA38760	408.37

EXTENSION TAPER PIPE - NPT HIGH SPEED STEEL



UNCOATED

SIZE	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
1/8-27	6	4	USA31381	103.79
1/4-18	6	4	USA31383	119.63
3/8-18	6	4	USA31385	161.86
1/2-14	6	4	USA31387	259.76



TIN COATED

SIZE	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
1/8-27	6	4	USA38762	155.48
1/4-18	6	4	USA38764	179.24
3/8-18	6	4	USA38766	242.49
1/2-14	6	4	USA38768	389.12

All taps sold individually.

For coating information see page 6. For technical information, please see page 237.

Spiral Flute Taps

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



52° HELIX - SEMI BOTTOMING - 2 TO 2-1/2 THREAD CHAMFER HIGH SPEED STEEL



HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	ITEM#	LIST PRICE
3 -48	H2	2	USA28683	36.86
3-56	H2	2	USA28685	36.86
4-40	H2	2	USA28687	30.33
4-48	H2	2	USA28689	30.33
5-40	H3	2	USA28691	30.33
5-44	H3	2	USA28693	30.33
6-32	H3	2	USA28695	24.62
6-40	H3	2	USA28697	24.62
8-32	H3	3	USA28699	24.62
8-36	H3	3	USA28701	24.62
10-24	H3	3	USA28703	24.62
10-32	H3	3	USA28705	24.62
12-24	H3	3	USA28707	26.73
12-28	H3	3	USA28709	26.73
1/4-20	H3	3	USA28711	26.73
1/4-28	H3	3	USA28713	26.73
5/16-18	H3	3	USA28715	32.92
5/16-24	H3	3	USA28717	32.92
3/8-16	H3	3	USA28719	37.99
3/8-24	H3	3	USA28721	37.99
7/16-14	H3	3	USA28723	56.94
7/16-20	H3	3	USA28725	56.94
1/2-13	H3	3	USA28727	68.54
1/2-20	H3	3	USA28729	68.54
9/16-12	H3	4	USA28731	114.34
9/16-18	H3	4	USA28733	114.34
5/8-11	H3	4	USA28735	149.21
5/8-18	H3	4	USA28737	149.21
3/4-10	H3	4	USA28739	190.99
3/4-16	H3	4	USA28741	190.99



HIGH SPEED STEEL - METRIC

SIZE	D LIMIT	# OF FLUTES	ITEM#	LIST PRICE
M3 x 0.5	D3	2	USA28743	31.19
M3.5 x 0.6	D4	3	USA28745	25.26
M4 x 0.7	D4	3	USA28747	25.26
M4.5 x 0.75	D4	3	USA28749	25.26
M5 x 0.8	D4	3	USA28751	25.26
M6 x 1.0	D5	3	USA28753	27.59
M8 x 1.25	D5	3	USA28755	34.01
M10 x 1.5	D6	3	USA28757	58.78
M12 x 1.75	D6	3	USA28759	70.76

- CAN BE USED FOR PLUG OR BOTTOMING APPLICATIONS
- ALLOWS FOR THREADING CLOSE TO BOTTOM IN BLIND HOLES
- CAN BE USED FOR THROUGH OR BLIND HOLES
- CUTS MORE EFFICIENTLY THAN BOTTOMING TAPS
- SLIGHTLY LONGER CHAMFER DISTRIBUTES CUTTING OVER GREATER NUMBER OF TEETH FOR INCREASED PRODUCTION
- MATERIALS: FOR TAPPING IN RELATIVELY DEEP HOLES IN COPPER, BRASS, ALUMINUM AND OTHER SOFT DUCTILE MATERIALS

HP TAPS

TAPS

DIES



All taps sold individually.

MADE IN THE USA



Hand Tap Sets

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

HP TAPS

TAPS

DIES



HIGH SPEED STEEL - HAND TAP SETS

SIZE	H LIMIT	# OF FLUTES	ITEM#	LIST PRICE
0-80	H1	2	USA28873	53.08
1-72	H1	2	USA28901	49.37
2-56	H1	3	USA28913	45.65
* 2-56	H2	3	USA28931	42.50
2-64	H2	3	USA28945	45.65
3-48	H2	3	USA28965	32.69
3-56	H2	3	USA28973	36.72
4-40	H1	3	USA28983	28.83
* 4-40	H2	3	USA29005	26.84
4-48	H2	3	USA29025	28.83
5-40	H2	3	USA29069	26.84
5-44	H2	3	USA29089	28.93
6-32	H1	3	USA29099	25.36
* 6-32	H2	3	USA29121	21.85
6-32	H3	3	USA29133	20.57
6-40	H2	3	USA29159	21.85
8-32	H1	4	USA29173	25.36
8-32	H2	4	USA29189	21.85
* 8-32	H3	4	USA29215	21.07
8-36	H2	4	USA29243	21.85
10-24	H1	4	USA29253	22.49
10-24	H2	4	USA29267	22.49
* 10-24	H3	4	USA29293	21.85
10-32	H1	4	USA29315	22.49
10-32	H2	4	USA29331	22.49
* 10-32	H3	4	USA29357	21.85
12-24	H3	4	USA29383	23.05
12-28	H3	4	USA29403	25.36

SIZE	H LIMIT	# OF FLUTES	ITEM#	LIST PRICE
1/4-20	H1	4	USA29413	29.32
1/4-20	H2	4	USA29423	27.94
* 1/4-20	H3	4	USA29449	23.48
1/4-28	H3	4	USA29491	23.48
5/16-18	H2	4	USA29509	32.51
* 5/16-18	H3	4	USA29535	28.90
5/16-24	H3	4	USA29575	28.90
3/8-16	H2	4	USA29593	36.58
* 3/8-16	H3	4	USA29615	32.62
3/8-24	H3	4	USA29655	32.62
7/16-14	H3	4	USA29687	56.06
7/16-20	H3	4	USA29719	56.06
1/2-13	H3	4	USA29753	58.47
1/2-20	H3	4	USA29787	66.08
9/16-12	H3	4	USA29811	98.09
9/16-18	H3	4	USA29835	98.09
5/8-11	H3	4	USA29861	117.68
5/8-18	H3	4	USA29889	117.68
11/16-11	H3	4	USA29911	146.18
11/16-16	H3	4	USA29929	146.18
3/4-10	H3	4	USA29951	164.67
3/4-16	H3	4	USA29977	164.67
7/8-9	H4	4	USA30001	229.58
7/8-14	H4	4	USA30023	229.58
1-8	H4	4	USA30045	305.26
1-12	H4	4	USA30065	305.26
1-14	H4	4	USA30085	305.26

* popular size when multiple options available

For technical information, please see page 237.

Hand Tap Sets

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



HP TAPS

TAPS

DIES

HIGH SPEED STEEL - HAND TAP SETS - METRIC

SIZE	D LIMIT	# OF FLUTES	ITEM#	LIST PRICE
M2 x 0.4	D3	3	USA31135	70.93
M3 x 0.5	D3	3	USA31137	36.37
M4 x 0.7	D4	4	USA31139	30.07
M5 x 0.8	D4	4	USA31141	30.07
M6 x 1.0	D5	4	USA31143	31.73
M7 x 1.0	D5	4	USA31145	31.77
M8 x 1.25	D5	4	USA31147	31.77
M10 x 1.25	D5	4	USA31149	65.20
M10 x 1.50	D6	4	USA31151	65.20
M12 x 1.25	D5	4	USA31153	76.46
M12 x 1.75	D6	4	USA31155	76.46
M14 x 1.5	D6	4	USA31157	114.31
M14 x 2.0	D7	4	USA31159	114.31
M16 x 1.5	D6	4	USA31161	139.28
M16 x 2.0	D7	4	USA31163	139.28
M18 x 1.5	D6	4	USA31165	187.58
M18 x 2.5	D7	4	USA31167	187.58
M20 x 2.5	D7	4	USA31169	242.61
M24 x 3.0	D8	4	USA31171	355.01

For technical information, please see page 237.

MADE IN THE USA



Hand Taps

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

HP TAPS



HIGH SPEED STEEL

TAPS

DIES

SIZE	H LIMIT	# OF FLUTES	TAPER ITEM#	PLUG ITEM#	BOTTOM ITEM#	LIST PRICE
* 0-80	H1	2	USA28861	USA28865	USA28869	17.71
0-80	H2	2	-	USA28875	USA28877	17.71
1-64	H1	2	-	USA28883	USA28887	16.47
* 1-72	H1	2	USA28895	USA28897	USA28899	16.47
1-72	H2	2	-	USA28903	USA28905	16.47
2-56	H1	3	USA28907	USA28909	USA28911	15.23
2-56	H2	2	-	USA28915	USA28917	15.23
* 2-56	H2	3	USA28919	USA28923	USA28927	14.17
2-64	H2	3	USA28933	USA28937	USA28941	15.23
3-48	H2	2	-	USA28949	-	12.39
* 3-48	H2	3	USA28953	USA28957	USA28961	10.91
3-56	H2	3	USA28967	USA28969	USA28971	12.25
4-40	H1	2	-	USA28975	-	10.02
4-40	H1	3	USA28977	USA28979	USA28981	9.63
4-40	H2	2	-	USA28985	USA28987	9.63
* 4-40	H2	3	USA28989	USA28993	USA28999	8.96
4-48	H2	3	USA29009	USA29013	USA29019	9.63
4-36	H2	3	-	USA29031	-	9.63
5-40	H1	3	-	USA29045	USA29047	9.63
5-40	H2	2	-	USA29049	USA29051	9.63
* 5-40	H2	3	USA29053	USA29057	USA29063	8.96
5-44	H2	3	USA29073	USA29077	USA29083	9.63
6-32	H1	3	USA29093	USA29095	USA29097	8.46
6-32	H2	2	-	USA29101	USA29103	8.46
* 6-32	H2	3	USA29105	USA29109	USA29115	7.26
6-32	H3	2	-	USA29123	USA29125	7.26
6-32	H3	3	USA29127	USA29129	USA29131	6.87
6-32	H7	3	-	USA29135	USA29137	8.46
6-40	H2	2	-	USA29141	-	8.46
* 6-40	H2	3	USA29143	USA29147	USA29153	7.26
8-32	H1	3	-	USA29163	USA29165	8.46
8-32	H1	4	USA29167	USA29169	USA29171	8.46
8-32	H2	2	-	USA29175	USA29177	8.46
8-32	H2	3	-	USA29179	USA29181	8.46
8-32	H2	4	USA29183	USA29185	USA29187	7.26
8-32	H3	2	-	USA29191	USA29193	7.26
8-32	H3	3	-	USA29195	USA29197	7.26
* 8-32	H3	4	USA29199	USA29203	USA29209	7.01

* popular size when multiple options available

All taps sold individually.
For technical information, please see page 237.

Hand Taps

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



HIGH SPEED STEEL

HP TAPS

TAPS

DIES

SIZE	H LIMIT	# OF FLUTES	TAPER ITEM#	PLUG ITEM#	BOTTOM ITEM#	LIST PRICE
8-32	H7	3	-	USA29217	USA29219	8.46
8-36	H1	4	-	USA29225	-	8.46
* 8-36	H2	4	USA29227	USA29231	USA29237	7.26
10-24	H1	3	-	USA29245	-	8.46
10-24	H1	4	USA29247	USA29249	USA29251	7.51
10-24	H2	2	-	USA29255	USA29257	8.46
10-24	H2	3	-	USA29259	-	8.46
10-24	H2	4	USA29261	USA29263	USA29265	7.51
10-24	H3	2	-	USA29269	USA29271	7.51
10-24	H3	3	-	USA29273	USA29275	7.51
* 10-24	H3	4	USA29277	USA29281	USA29287	7.26
10-24	H7	3	-	USA29295	USA29297	8.46
10-24	H7	4	-	USA29299	USA29301	8.46
10-32	H1	2	-	USA29303	USA29305	8.46
10-32	H1	3	-	USA29307	-	8.46
10-32	H1	4	USA29309	USA29311	USA29313	7.51
10-32	H2	2	-	USA29317	USA29319	8.46
10-32	H2	3	-	USA29321	USA29323	8.46
10-32	H2	4	USA29325	USA29327	USA29329	7.51
10-32	H3	2	-	USA29333	USA29335	7.51
10-32	H3	3	-	USA29337	USA29339	7.51
* 10-32	H3	4	USA29341	USA29345	USA29351	7.26
12-24	H3	4	USA29367	USA29371	USA29377	7.68
12-28	H3	4	USA29387	USA29391	USA29397	8.46
1/4-20	H1	3	-	USA29405	-	9.77
1/4-20	H1	4	USA29407	USA29409	USA29411	9.77
1/4-20	H2	3	-	USA29415	-	9.77
1/4-20	H2	4	USA29417	USA29419	USA29421	9.31
1/4-20	H3	2	-	USA29425	USA29427	9.77
1/4-20	H3	3	-	USA29429	USA29431	9.31
* 1/4-20	H3	4	USA29433	USA29437	USA29443	7.83
1/4-20	H5	3	-	USA29451	USA29453	9.77
1/4-20	H5	4	-	USA29455	USA29457	9.31
1/4-28	H1	4	-	USA29459	USA29461	9.31
1/4-28	H2	4	-	USA29463	USA29465	9.77
1/4-28	H3	2	-	USA29467	USA29469	9.77
1/4-28	H3	3	-	USA29471	USA29473	9.77
* 1/4-28	H3	4	USA29475	USA29479	USA29485	7.83

* popular size when multiple options available

All taps sold individually.
For technical information, please see page 237.

MADE IN THE USA



Hand Taps

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

HP TAPS

TAPS

DIES



HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	TAPER ITEM#	PLUG ITEM#	BOTTOM ITEM#	LIST PRICE
1/4-28	H4	4	-	USA29493	USA29495	9.77
5/16-18	H1	4	USA29497	USA29499	USA29501	10.84
5/16-18	H2	4	USA29503	USA29505	USA29507	10.84
5/16-18	H3	2	-	USA29511	USA29513	12.18
5/16-18	H3	3	-	USA29515	USA29517	10.84
* 5/16-18	H3	4	USA29519	USA29523	USA29529	9.63
5/16-18	H5	3	-	USA29537	USA29539	12.18
5/16-18	H5	4	-	USA29541	USA29543	10.84
5/16-24	H1	4	-	USA29547	USA29549	10.84
5/16-24	H2	4	-	USA29551	-	10.84
5/16-24	H3	3	-	USA29555	USA29557	10.84
* 5/16-24	H3	4	USA29559	USA29563	USA29569	9.63
5/16-24	H4	4	-	USA29577	USA29579	10.84
3/8-16	H1	3	-	USA29581	-	13.88
3/8-16	H2	4	USA29587	USA29589	USA29591	12.18
3/8-16	H3	3	-	USA29595	USA29597	12.18
* 3/8-16	H3	4	USA29599	USA29603	USA29609	10.87
3/8-16	H5	3	-	USA29617	USA29619	13.88
3/8-16	H5	4	-	USA29621	USA29623	12.18
3/8-24	H3	3	-	USA29635	USA29637	13.88
* 3/8-24	H3	4	USA29639	USA29643	USA29649	10.87
3/8-24	H4	4	-	USA29657	USA29659	12.18
7/16-14	H2	4	-	USA29665	USA29667	20.54
7/16-14	H3	3	-	USA29669	-	20.54
* 7/16-14	H3	4	USA29671	USA29675	USA29681	18.70
7/16-14	H5	4	-	USA29689	USA29691	20.54
7/16-20	H2	4	-	USA29697	USA29699	20.54
7/16-20	H3	3	-	USA29701	-	20.54
* 7/16-20	H3	4	USA29703	USA29707	USA29713	18.70
7/16-20	H5	4	-	USA29721	USA29723	20.54
1/2-13	H1	4	-	USA29725	USA29727	23.97
1/2-13	H2	4	-	USA29729	USA29731	23.97
1/2-13	H3	3	-	USA29733	USA29735	23.97
* 1/2-13	H3	4	USA29737	USA29741	USA29747	19.48
1/2-13	H5	4	-	USA29755	USA29757	24.33
1/2-20	H1	4	USA29759	USA29761	USA29763	23.97
1/2-20	H3	3	-	USA29769	-	23.97
* 1/2-20	H3	4	USA29771	USA29775	USA29781	22.03
1/2-20	H5	4	-	USA29789	USA29791	23.97

* popular size when multiple options available

All taps sold individually.
For technical information, please see page 237.

Hand Taps

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



HIGH SPEED STEEL

HP TAPS

TAPS

DIES

SIZE	H LIMIT	# OF FLUTES	TAPER ITEM#	PLUG ITEM#	BOTTOM ITEM#	LIST PRICE
9/16-12	H2	4	-	USA29793	-	35.63
* 9/16-12	H3	4	USA29795	USA29799	USA29805	32.69
9/16-12	H5	4	-	USA29813	USA29815	35.63
9/16-18	H2	4	-	USA29817	-	35.63
* 9/16-18	H3	4	USA29819	USA29823	USA29829	32.69
9/16-18	H5	4	-	USA29837	USA29839	35.63
* 5/8-11	H3	4	USA29845	USA29849	USA29855	39.24
5/8-11	H5	4	-	USA29863	USA29865	45.12
5/8-18	H2	4	-	USA29869	USA29871	45.12
* 5/8-18	H3	4	USA29873	USA29877	USA29883	39.24
11/16-11	H3	4	USA29895	USA29899	USA29905	48.73
11/16-16	H3	4	USA29913	USA29917	USA29923	48.73
3/4-10	H2	4	-	USA29933	-	59.32
* 3/4-10	H3	4	USA29935	USA29939	USA29945	54.93
3/4-10	H5	4	-	USA29953	USA29955	59.32
3/4-16	H2	4	-	USA29959	-	59.32
* 3/4-16	H3	4	USA29961	USA29965	USA29971	54.93
3/4-16	H5	4	-	USA29979	USA29981	59.32
* 7/8-9	H4	4	USA29985	USA29989	USA29995	76.53
7/8-9	H6	4	-	USA30003	-	80.35
7/8-14	H2	4	-	USA30005	-	80.35
* 7/8-14	H4	4	USA30007	USA30011	USA30017	76.53
7/8-14	H6	4	-	USA30025	-	80.35
1-8	H2	4	-	USA30027	-	104.79
* 1-8	H4	4	USA30029	USA30033	USA30039	101.74
1-8	H6	4	-	USA30047	-	104.79
1-12	H4	4	USA30049	USA30053	USA30059	101.74
1-14	H2	4	-	USA30067	-	104.79
* 1-14	H4	4	USA30069	USA30073	USA30079	101.74
1-14	H6	4	USA30087	USA30089	USA30091	104.79
1-1/8-7	H4	4	USA30093	USA30097	USA30103	164.67
1-1/8-12	H4	4	USA30111	USA30115	USA30121	174.41
1-1/4-7	H4	4	USA30129	USA30133	USA30139	216.16
1-1/4-12	H4	6	USA30147	USA30151	USA30157	219.91
1-3/8-6	H4	4	USA30165	USA30169	USA30175	271.58
1-3/8-12	H4	6	USA30183	USA30187	USA30193	273.49
1-1/2-6	H4	4	USA30201	USA30205	USA30211	313.62
1-1/2-12	H4	6	USA30219	USA30223	USA30229	319.39

* popular size when multiple options available

All taps sold individually.
For technical information, please see page 237.

MADE IN THE USA



Hand Taps

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



HIGH SPEED STEEL
STEAM OXIDE

SIZE	H LIMIT	# OF FLUTES	TAPER ITEM#	PLUG ITEM#	BOTTOM ITEM#	LIST PRICE
0-80	H1	2	USA28863	USA28867	USA28871	20.36
2-56	H2	3	USA28921	USA28925	USA28929	16.33
3-48	H2	3	USA28955	USA28959	USA28963	12.57
4-40	H2	3	USA28991	USA28997	USA29003	10.31
4-48	H2	3	USA29011	USA29017	USA29023	11.08
5-40	H2	3	USA29055	USA29061	USA29067	10.31
6-32	H2	3	USA29107	USA29113	USA29119	8.39
6-40	H2	3	USA29145	USA29151	USA29157	8.39
8-32	H3	4	USA29201	USA29207	USA29213	8.11
8-36	H2	4	USA29229	USA29235	USA29241	8.39
10-24	H3	4	USA29279	USA29285	USA29291	8.39
10-32	H3	4	USA29343	USA29349	USA29355	8.39
12-24	H3	4	USA29369	USA29375	USA29381	8.85
12-28	H3	4	USA29389	USA29395	USA29401	9.74
1/4-20	H3	4	USA29435	USA29441	USA29447	8.99
1/4-28	H3	4	USA29477	USA29483	USA29489	8.99
5/16-18	H3	4	USA29521	USA29527	USA29533	11.08
5/16-24	H3	4	USA29561	USA29567	USA29573	11.08
3/8-16	H3	4	USA29601	USA29607	USA29613	12.50
3/8-24	H3	4	USA29641	USA29647	USA29653	12.50
7/16-14	H3	4	USA29673	USA29679	USA29685	21.53
7/16-20	H3	4	USA29705	USA29711	USA29717	21.53
1/2-13	H3	4	USA29739	USA29745	USA29751	22.42
1/2-20	H3	4	USA29773	USA29779	USA29785	25.36
9/16-12	H3	4	USA29797	USA29803	USA29809	37.57
9/16-18	H3	4	USA29821	USA29827	USA29833	37.57
5/8-11	H3	4	USA29847	USA29853	USA29859	45.12
5/8-18	H3	4	USA29875	USA29881	USA29887	45.12
3/4-10	H3	4	USA29937	USA29943	USA29949	63.14
3/4-16	H3	4	USA29963	USA29969	USA29975	63.14
7/8-9	H4	4	USA29987	USA29993	USA29999	88.04
7/8-14	H4	4	USA30009	USA30015	USA30021	88.04
1-8	H4	4	USA30031	USA30037	USA30043	116.93
1-12	H4	4	USA30051	USA30057	USA30063	116.93
1-14	H4	4	USA30071	USA30077	USA30083	116.93
1-1/8-7	H4	4	USA30095	USA30101	USA30107	189.35
1-1/8-12	H4	4	USA30113	USA30119	USA30125	200.58
1-1/4-7	H4	4	USA30131	USA30137	USA30143	248.56
1-1/4-12	H4	6	USA30149	USA30155	USA30161	252.88
1-3/8-6	H4	4	USA30167	USA30173	USA30179	312.31
1-3/8-12	H4	6	USA30185	USA30191	USA30197	314.50
1-1/2-6	H4	4	USA30203	USA30209	USA30215	360.64
1-1/2-12	H4	6	USA30221	USA30227	USA30233	367.30

STEAM OXIDE: A BLACK OXIDE TREATMENT OF NON-MEASURABLE THICKNESS IS USED TO INCREASE TAP SURFACE CAPILLARY WHERE LUBRICANT PROPERTIES ARE REQUIRED.

MATERIALS: STEEL, STEEL ALLOYS, STAINLESS STEELS, TITANIUM ALLOYS AND A WIDE RANGE OF FERROUS MATERIALS (IRON BASED).

**All taps sold individually.
For technical information, please see page 237.**

HP TAPS

TAPS

DIES

Hand Taps

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



HIGH SPEED STEEL
NITRIDE & STEAM OXIDE

SIZE	H LIMIT	# OF FLUTES	PLUG ITEM#	BOTTOM ITEM#	LIST PRICE
4-40	H2	3	USA28995	USA29001	10.31
6-32	H2	3	USA29111	USA29117	8.39
6-40	H2	3	USA29149	USA29155	8.39
8-32	H3	4	USA29205	USA29211	8.11
10-24	H3	4	USA29283	USA29289	8.39
10-32	H3	4	USA29347	USA29353	8.39
1/4-20	H3	4	USA29439	USA29445	8.99
1/4-28	H3	4	USA29481	USA29487	8.99
5/16-18	H3	4	USA29525	USA29531	11.08
3/8-16	H3	4	USA29605	USA29611	12.50
3/8-24	H3	4	USA29645	USA29651	12.50
7/16-14	H3	4	USA29677	USA29683	21.53
7/16-20	H3	4	USA29709	USA29715	21.53
1/2-13	H3	4	USA29743	USA29749	22.42
1/2-20	H3	4	USA29777	USA29783	25.36
9/16-12	H3	4	USA29801	USA29807	37.57
9/16-18	H3	4	USA29825	USA29831	37.57
5/8-11	H3	4	USA29851	USA29857	45.12
5/8-18	H3	4	USA29879	USA29885	45.12
3/4-10	H3	4	USA29941	USA29947	63.14
3/4-16	H3	4	USA29967	USA29973	63.14
7/8-9	H4	4	USA29991	USA29997	88.04
7/8-14	H4	4	USA30013	USA30019	88.04
1-8	H4	4	USA30035	USA30041	116.93
1-1/8-7	H4	4	USA30099	USA30105	189.35
1-1/4-7	H4	4	USA30135	USA30141	248.56
1-1/4-12	H4	6	USA30153	USA30159	252.88
1-1/2-6	H4	4	USA30207	USA30213	360.64
1-1/2-12	H4	6	USA30225	USA30231	367.30

NITRIDE & STEAM OXIDE: A NITRIDED SURFACE FOLLOWED BY A STEAM OXIDE TREATMENT PROVIDES THE BENEFITS OF WEAR AND DUCTILITY.

MATERIALS: ALL TYPES OF GRAY, DUCTILE AND MALLEABLE CAST IRON FERROUS MATERIALS (IRON BASED).

HP TAPS

TAPS

DIES

All taps sold individually.
For technical information, please see page 237.

MADE IN THE USA



Hand Taps

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



HIGH SPEED STEEL
NITRIDE & STEAM OXIDE

SIZE	H LIMIT	# OF FLUTES	PLUG ITEM#	BOTTOM ITEM#	BOTTOM ITEM#	LIST PRICE
0 - 80	H1	2	USA38326	USA38328	USA38330	31.87
2 - 56	H2	3	USA38334	USA38336	USA38338	25.53
4 - 40	H2	3	USA38342	USA38344	USA38346	16.10
5 - 40	H2	3	USA38350	USA38352	USA38354	16.10
6 - 32	H3	3	USA38358	USA38360	USA38362	12.35
8 - 32	H3	4	USA38366	USA38368	USA38370	12.65
10 - 24	H3	4	USA38374	USA38376	USA38378	13.10
10 - 32	H3	4	USA38382	USA38384	USA38386	13.10
12 - 24	H3	4	USA38390	USA38392	USA38394	13.85
12 - 28	H3	4	USA38398	USA38400	USA38402	15.24
1/4 - 20	H3	4	USA38406	USA38408	USA38410	14.08
1/4 - 28	H3	4	USA38414	USA38416	USA38418	14.08
5/16 - 18	H3	4	USA38422	USA38424	USA38426	17.38
5/16 - 24	H3	4	USA38430	USA38432	USA38434	17.38
3/8 - 16	H3	4	USA38438	USA38440	USA38442	19.59
3/8 - 24	H3	4	USA38446	USA38448	USA38450	19.59
7/16 - 14	H3	4	USA38454	USA38456	USA38458	33.67
7/16 - 20	H3	4	USA38462	USA38464	USA38466	33.67
1/2 - 13	H3	4	USA38470	USA38472	USA38474	35.10
1/2 - 20	H3	4	USA38478	USA38480	USA38482	39.68
9/16 - 18	H3	4	USA40398	USA40400	USA40402	53.90
5/8 - 11	H3	4	USA38486	USA38488	USA38490	70.72
5/8 - 18	H3	4	USA38494	USA38496	USA38498	70.72
3/4 - 10	H3	4	USA38502	USA38504	USA38506	98.95
3/4 - 16	H3	4	USA38510	USA38512	USA38514	98.95
1 - 8	H4	4	USA40406	USA40408	USA40410	167.91

All taps sold individually.

For coating information see page 6. For technical information, please see page 237.

HP TAPS

TAPS

DIES

Hand Taps

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



HIGH SPEED STEEL
METRIC
UNCOATED

SIZE	D LIMIT	# OF FLUTES	TAPER ITEM#	PLUG ITEM#	BOTTOM ITEM#	LIST PRICE
M1.6 x 0.35	D3	2	-	USA30989	-	23.66
M2 x 0.4	D3	3	USA30991	USA30993	USA30995	23.66
M2.5 x 0.45	D3	3	-	USA30997	-	14.55
M3 x 0.5	D3	3	USA30999	USA31001	USA31003	12.11
M3.5 x 0.6	D4	3	-	USA31005	-	10.02
M4 x 0.7	D4	4	USA31007	USA31009	USA31011	10.02
M4.5 x 0.75	D4	4	-	USA31013	-	10.02
M5 x 0.8	D4	4	USA31015	USA31017	USA31019	10.02
M6 x 1.0	D5	4	USA31021	USA31023	USA31025	10.59
M7 x 1.0	D5	4	USA31027	USA31029	USA31031	10.59
M8 x 1.25	D5	4	USA31033	USA31035	USA31037	10.59
M10 x 1.25	D5	4	USA31039	USA31041	USA31043	21.74
M10 x 1.50	D6	4	USA31045	USA31047	USA31049	21.74
M12 x 1.25	D5	4	USA31051	USA31053	USA31055	25.50
M12 x 1.75	D6	4	USA31057	USA31059	USA31061	25.50
M14 x 1.5	D6	4	USA31063	USA31065	USA31067	38.10
M14 x 2.0	D7	4	USA31069	USA31071	USA31073	38.10
M16 x 1.5	D6	4	USA31075	USA31077	USA31079	46.43
M16 x 2.0	D7	4	USA31081	USA31083	USA31085	46.43
M18 x 1.5	D6	4	USA31087	USA31089	USA31091	62.54
M18 x 2.5	D7	4	USA31093	USA31095	USA31097	62.54
M20 x 2.5	D7	4	USA31099	USA31101	USA31103	80.88
M24 x 3.0	D8	4	USA31105	USA31107	USA31109	118.35
M27 x 3.0	D8	4	USA31111	USA31113	USA31115	204.54
M30 x 3.5	D9	4	USA31117	USA31119	USA31121	261.24
M33 x 3.5	D9	4	USA31123	USA31125	USA31127	260.53
M36 x 4.0	D9	4	USA31129	USA31131	USA31133	330.40

HP TAPS

TAPS

DIES

All taps sold individually.
For technical information, please see page 237.

MADE IN THE USA



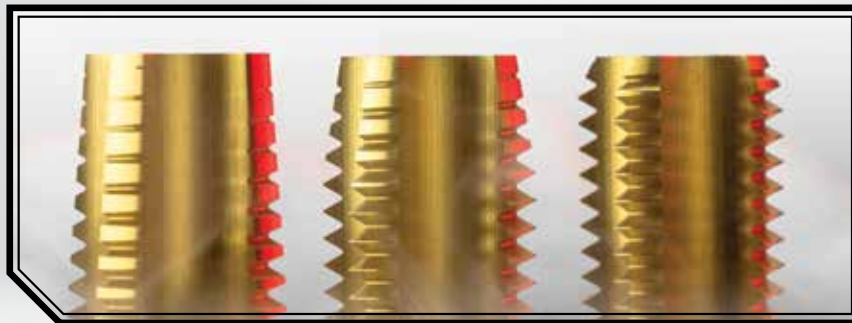
Hand Taps

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



HIGH SPEED STEEL
METRIC
TIN COATED

SIZE	D LIMIT	# OF FLUTES	TAPER ITEM#	PLUG ITEM#	BOTTOM ITEM#	LIST PRICE
M1.6 x 0.35	D3	2	–	USA38518	–	42.61
M2 x 0.4	D3	3	USA38520	USA38522	USA38524	42.61
M2.5 x 0.45	D3	3	–	USA38526	–	26.20
M3 x 0.5	D3	3	USA38528	USA38530	USA38532	21.85
M3.5 x 0.6	D4	3	–	USA38534	–	18.06
M4 x 0.7	D4	4	USA38536	USA38538	USA38540	18.06
M4.5 x 0.75	D4	4	–	USA38542	–	18.06
M5 x 0.8	D4	4	USA38544	USA38546	USA38548	18.06
M6 x 1.0	D5	4	USA38550	USA38552	USA38554	19.07
M7 x 1.0	D5	4	USA38556	USA38558	USA38560	19.11
M8 x 1.25	D5	4	USA38562	USA38564	USA38566	19.11
M10 x 1.25	D5	4	USA38568	USA38570	USA38572	39.15
M10 x 1.50	D6	4	USA38574	USA38576	USA38578	39.15
M12 x 1.25	D5	4	USA38580	USA38582	USA38584	45.91
M12 x 1.75	D6	4	USA38586	USA38588	USA38590	45.91
M14 x 1.5	D6	4	USA38592	USA38594	USA38596	68.66
M14 x 2.0	D7	4	USA38598	USA38600	USA38602	68.66
M16 x 1.5	D6	4	USA38604	USA38606	USA38608	83.67
M16 x 2.0	D7	4	USA38610	USA38612	USA38614	83.67
M18 x 1.5	D6	4	USA38616	USA38618	USA38620	112.65
M18 x 2.5	D7	4	USA38622	USA38624	USA38626	112.65
M20 x 2.5	D7	4	USA38628	USA38630	USA38632	145.72
M24 x 3.0	D8	4	USA38634	USA38636	USA38638	213.25
M27 x 3.0	D8	4	USA38640	USA38642	USA38644	368.58
M30 x 3.5	D9	4	USA38646	USA38648	USA38650	470.72
M33 x 3.5	D9	4	USA38652	USA38654	USA38656	469.48
M36 x 4.0	D9	4	USA38658	USA38660	USA38662	595.42



All taps sold individually.
For coating information see page 6. For technical information, please see page 237.

HP TAPS

TAPS

DIES

Spiral Point Plug Taps

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



HIGH SPEED STEEL
UNCOATED

SIZE	H LIMIT	# OF FLUTES	ITEM#	LIST PRICE
0-80	H1	2	USA30257	21.81
* 0-80	H2	2	USA30259	21.81
1-64	H1	2	USA30263	19.69
* 1-64	H2	2	USA30265	19.69
1-72	H1	2	USA30269	19.69
* 1-72	H2	2	USA30271	19.69
2-56	H1	2	USA30275	18.73
* 2-56	H2	2	USA30277	16.72
2-64	H1	2	USA30281	18.73
* 2-64	H2	2	USA30283	18.73
3-48	H1	2	USA30287	13.42
* 3-48	H2	2	USA30289	13.42
3-56	H1	2	USA30293	16.43
* 3-56	H2	2	USA30295	14.94
4-40	H1	2	USA30299	12.25
* 4-40	H2	2	USA30301	10.77
4-48	H1	2	USA30307	12.47
* 4-48	H2	2	USA30309	12.25
4-36	H2	2	USA30315	12.25
5-40	H1	2	USA30321	12.25
* 5-40	H2	2	USA30323	10.77
5-44	H2	2	USA30329	12.25
6-32	H1	2	USA30335	10.77
6-32	H2	2	USA30337	9.07
* 6-32	H3	2	USA30339	9.07
6-32	H7	2	USA30345	10.27
6-40	H1	2	USA30347	10.27
* 6-40	H2	2	USA30349	10.27
8-32	H1	2	USA30355	10.27
8-32	H2	2	USA30357	9.07
* 8-32	H3	2	USA30359	9.07
8-32	H7	2	USA30365	10.27
8-36	H1	2	USA30367	10.27

SIZE	H LIMIT	# OF FLUTES	ITEM#	LIST PRICE
* 8-36	H2	2	USA30369	10.27
10-24	H1	2	USA30375	11.23
10-24	H2	2	USA30377	10.27
* 10-24	H3	2	USA30379	9.07
10-24	H7	2	USA30385	11.23
10-32	H1	2	USA30387	10.27
10-32	H2	2	USA30389	9.07
* 10-32	H3	2	USA30391	9.07
10-32	H7	2	USA30397	11.23
12-24	H1	2	USA30399	10.27
* 12-24	H3	2	USA30401	10.27
12-28	H3	2	USA30407	10.27
1/4-20	H1	2	USA30409	10.27
1/4-20	H2	2	USA30411	10.27
* 1/4-20	H3	2	USA30413	9.07
1/4-20	H3	3	USA30419	11.23
1/4-20	H5	2	USA30421	10.23
1/4-28	H5	3	USA30423	11.23
1/4-28	H1	2	USA30425	11.23
1/4-28	H2	2	USA30427	10.23
1/4-28	H2	3	USA30429	11.23
1/4-28	H3	2	USA30431	9.07
* 1/4-28	H4	2	USA30437	11.23
1/4-28	H4	3	USA30439	11.23
5/16-18	H1	2	USA30441	12.93
5/16-18	H2	2	USA30443	11.23
* 5/16-18	H3	2	USA30445	9.77
5/16-18	H3	3	USA30451	12.93
5/16-18	H5	2	USA30453	11.23
5/16-18	H5	3	USA30455	12.93
5/16-24	H1	2	USA30457	12.93
5/16-24	H2	2	USA30459	12.93
5/16-24	H2	3	USA30461	12.93

SIZE	H LIMIT	# OF FLUTES	ITEM#	LIST PRICE
* 5/16-24	H3	2	USA30463	11.41
5/16-24	H4	2	USA30469	12.93
5/16-24	H4	3	USA30471	12.93
3/8-16	H1	3	USA30473	14.48
3/8-16	H2	3	USA30475	13.46
* 3/8-16	H3	3	USA30477	11.58
3/8-16	H5	3	USA30483	14.59
3/8-24	H1	3	USA30485	14.70
3/8-24	H2	3	USA30487	14.70
* 3/8-24	H3	3	USA30489	12.47
3/8-24	H4	3	USA30495	14.70
7/16-14	H2	3	USA30497	21.50
* 7/16-14	H3	3	USA30499	19.69
7/16-14	H5	3	USA30505	21.50
7/16-20	H2	3	USA30507	21.50
* 7/16-20	H3	3	USA30509	19.69
7/16-20	H5	3	USA30515	21.50
1/2-13	H1	3	USA30517	26.31
1/2-13	H2	3	USA30519	26.31
* 1/2-13	H3	3	USA30521	20.08
1/2-13	H5	3	USA30527	23.69
1/2-20	H1	3	USA30529	26.31
1/2-20	H2	3	USA30531	26.31
* 1/2-20	H3	3	USA30533	23.59
1/2-20	H5	3	USA30539	26.31
9/16-12	H3	3	USA30541	32.79
9/16-18	H3	3	USA30547	32.79
* 5/8-11	H3	3	USA30553	44.76
5/8-11	H5	3	USA30559	44.76
5/8-18	H3	3	USA30561	44.76
* 3/4-10	H3	3	USA30567	63.14
3/4-10	H5	3	USA30573	63.14
3/4-16	H3	3	USA30575	63.14

* popular size when multiple options available

HP TAPS

TAPS

DIES

All taps sold individually.
For technical information, please see page 237.

MADE IN THE USA



Spiral Point Plug Taps

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

HP TAPS

TAPS

DIES



HIGH SPEED STEEL
STEAM OXIDE



HIGH SPEED STEEL
NITRIDE & STEAM OXIDE

SIZE	H LIMIT	# OF FLUTES	ITEM#	LIST PRICE
0-80	H2	2	USA30261	25.11
1-64	H2	2	USA30267	22.70
1-72	H2	2	USA30273	22.70
2-56	H2	2	USA30279	19.26
2-64	H2	2	USA30285	21.57
3-48	H2	2	USA30291	15.44
3-56	H2	2	USA30297	17.21
4-40	H2	2	USA30305	12.39
4-48	H2	2	USA30313	14.13
4-36	H2	2	USA30319	14.13
5-40	H2	2	USA30327	12.39
5-44	H2	2	USA30333	14.13
6-32	H3	2	USA30343	10.41
6-40	H2	2	USA30353	11.83
8-32	H3	2	USA30363	10.41
8-36	H2	2	USA30373	11.83
10-24	H3	2	USA30383	10.41
10-32	H3	2	USA30395	10.41
12-24	H3	2	USA30405	11.83
1/4-20	H3	2	USA30417	10.41
1/4-28	H3	2	USA30435	10.41
5/16-18	H3	2	USA30449	11.26
5/16-24	H3	2	USA30467	12.00
3/8-16	H3	3	USA30481	13.35
3/8-24	H3	3	USA30493	14.34
7/16-14	H3	3	USA30503	22.70
7/16-20	H3	3	USA30513	22.70
1/2-13	H3	3	USA30525	23.12
1/2-20	H3	3	USA30537	27.13
9/16-12	H3	3	USA30545	37.71
9/16-18	H3	3	USA30551	37.71
5/8-11	H3	3	USA30557	51.49
5/8-18	H3	3	USA30565	51.49
3/4-10	H3	3	USA30571	72.63
3/4-16	H3	3	USA30579	72.63

SIZE	H LIMIT	# OF FLUTES	ITEM#	LIST PRICE
4-40	H2	2	USA30303	12.39
4-48	H2	2	USA30311	14.13
4-36	H2	2	USA30317	14.13
5-40	H2	2	USA30325	12.39
5-44	H2	2	USA30331	14.13
6-32	H3	2	USA30341	10.41
6-40	H2	2	USA30351	11.83
8-32	H3	2	USA30361	10.41
8-36	H2	2	USA30371	11.83
10-24	H3	2	USA30381	10.41
10-32	H3	2	USA30393	10.41
12-24	H3	2	USA30403	11.83
1/4-20	H3	2	USA30415	10.41
1/4-28	H3	2	USA30433	10.41
5/16-18	H3	2	USA30447	11.26
5/16-24	H3	2	USA30465	11.26
3/8-16	H3	3	USA30479	13.35
3/8-24	H3	3	USA30491	14.34
7/16-14	H3	3	USA30501	22.70
7/16-20	H3	3	USA30511	22.70
1/2-13	H3	3	USA30523	23.12
1/2-20	H3	3	USA30535	27.13
9/16-12	H3	3	USA30543	37.71
9/16-18	H3	3	USA30549	37.71
5/8-11	H3	3	USA30555	51.49
5/8-18	H3	3	USA30563	51.49
3/4-10	H3	3	USA30569	72.63
3/4-16	H3	3	USA30577	72.63

NITRIDE & STEAM OXIDE: A NITRIDED SURFACE FOLLOWED BY A STEAM OXIDE TREATMENT PROVIDES THE BENEFITS OF WEAR AND DUCTILITY.

MATERIALS: ALL TYPES OF GRAY, DUCTILE AND MALLEABLE CAST IRON FERROUS MATERIALS (IRON BASED).

STEAM OXIDE: A BLACK OXIDE TREATMENT OF NON-MEASURABLE THICKNESS IS USED TO INCREASE TAP SURFACE CAPILLARY WHERE LUBRICANT PROPERTIES ARE REQUIRED.

MATERIALS: STEEL, STEEL ALLOYS, STAINLESS STEELS, TITANIUM ALLOYS AND A WIDE RANGE OF FERROUS MATERIALS (IRON BASED).

All taps sold individually.
For technical information, please see page 237.

Spiral Point Plug Taps

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



HIGH SPEED STEEL
TIN COATED



HIGH SPEED STEEL
ALTiN COATED

SIZE	H LIMIT	# OF FLUTES	ITEM#	LIST PRICE
0-80	H2	2	USA31749	32.28
2-56	H2	2	USA31751	25.90
4-40	H2	2	USA31753	18.32
5-40	H2	2	USA31755	18.32
6-32	H3	2	USA31757	17.12
8-32	H3	2	USA31759	17.12
10-24	H3	2	USA31761	17.12
10-32	H3	2	USA31763	17.12
12-24	H3	2	USA31765	18.69
12-28	H3	2	USA31767	18.69
1/4-20	H3	2	USA31769	17.12
1/4-28	H3	2	USA31771	17.12
5/16-18	H3	2	USA31773	19.77
5/16-24	H3	2	USA31775	19.77
3/8-16	H3	3	USA31777	22.00
3/8-24	H3	3	USA31779	23.12
7/16-14	H3	3	USA31781	36.37
7/16-20	H3	3	USA31783	36.37
1/2-13	H3	3	USA31785	36.86
1/2-20	H3	3	USA31787	41.18
5/8-11	H3	3	USA31789	85.21
5/8-18	H3	3	USA31791	85.21
3/4-10	H3	3	USA31793	111.26
3/4-16	H3	3	USA31795	111.26

TIN COATED: IT IS AN EXCELLENT GENERAL PURPOSE WEAR COATING WITH GOOD LUBRICITY.

SIZE	H LIMIT	# OF FLUTES	ITEM#	LIST PRICE
0-80	H2	2	USA31617	32.28
2-56	H2	2	USA31619	25.90
4-40	H2	2	USA31621	18.32
5-40	H2	2	USA31623	18.32
6-32	H3	2	USA31625	17.12
8-32	H3	2	USA31627	17.12
10-24	H3	2	USA31629	17.12
10-32	H3	2	USA31631	17.12
12-24	H3	2	USA31633	18.69
12-28	H3	2	USA31635	18.69
1/4-20	H3	2	USA31637	17.12
1/4-28	H3	2	USA31639	17.12
5/16-18	H3	2	USA31641	19.77
5/16-24	H3	2	USA31643	19.77
3/8-16	H3	3	USA31645	22.00
3/8-24	H3	3	USA31647	23.12
7/16-14	H3	3	USA31649	36.37
7/16-20	H3	3	USA31651	36.37
1/2-13	H3	3	USA31653	36.86
1/2-20	H3	3	USA31655	41.18
5/8-11	H3	3	USA31657	85.21
5/8-18	H3	3	USA31659	85.21
3/4-10	H3	3	USA31661	111.26
3/4-16	H3	3	USA31663	111.26

ALTiN COATED: A MULTI-LAYERED COATING FOR A WIDE RANGE OF HIGH SPEED STEEL APPLICATIONS FOR CAST IRON, STAINLESS STEEL, NICKEL BASED HIGH TEMPERATURE ALLOYS AND TITANIUM ALLOYS.



All taps sold individually.

For coating information see page 6. For technical information, please see page 237.

MADE IN THE USA

HP TAPS

TAPS

DIES



Spiral Point Plug & Bottoming Taps

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

SPIRAL POINT PLUG TAPS



HIGH SPEED STEEL - METRIC
UNCOATED

SIZE	D LIMIT	# OF FLUTES	ITEM#	LIST PRICE
M2 x 0.4	D3	2	USA31181	24.15
M2.5 x 0.45	D3	2	USA31183	17.32
M3 x 0.5	D3	2	USA31185	13.92
M3.5 x 0.6	D4	2	USA31187	12.00
M4 x 0.7	D4	2	USA31189	12.00
M4.5 x 0.75	D4	2	USA31191	12.00
M5 x 0.8	D4	2	USA31193	12.00
M6 x 1.0	D5	2	USA31195	12.00
M7 x 1.0	D5	2	USA31197	13.88
M8 x 1.25	D5	2	USA31199	13.88
M10 x 1.50	D6	3	USA31201	23.05
M12 x 1.75	D6	3	USA31203	28.86
M14 x 2.0	D7	3	USA31205	44.80
M16 x 2.0	D7	3	USA31207	50.75
M18 x 2.5	D7	3	USA31209	74.65
M20 x 2.5	D7	3	USA31211	98.52



HIGH SPEED STEEL - METRIC
TIN COATED

SIZE	D LIMIT	# OF FLUTES	ITEM#	LIST PRICE
M2 x 0.4	D3	2	USA36216	33.30
M2.5 x 0.45	D3	2	USA36218	23.87
M3 x 0.5	D3	2	USA36220	19.22
M3.5 x 0.6	D4	2	USA36222	16.55
M4 x 0.7	D4	2	USA36224	16.55
M4.5 x 0.75	D4	2	USA36226	16.55
M5 x 0.8	D4	2	USA36228	16.55
M6 x 1.0	D5	2	USA36230	16.55
M7 x 1.0	D5	2	USA36232	19.11
M8 x 1.25	D5	2	USA36234	19.11
M10 x 1.50	D6	3	USA36236	31.76
M12 x 1.75	D6	3	USA36238	39.79
M14 x 2.0	D7	3	USA36240	61.71
M16 x 2.0	D7	3	USA36242	69.93
M18 x 2.5	D7	3	USA36244	102.85
M20 x 2.5	D7	3	USA36246	135.77

SPIRAL POINT BOTTOMING TAPS



HIGH SPEED STEEL
UNCOATED

SIZE	H LIMIT	# OF FLUTES	ITEM#	LIST PRICE
0-80	H2	2	USA30581	40.17
2-56	H2	2	USA30583	30.78
3-48	H2	2	USA30585	24.70
4-40	H2	2	USA30587	19.82
5-40	H2	2	USA30589	19.82
6-32	H2	2	USA30591	16.67
6-32	H3	2	USA30593	16.67
6-40	H2	2	USA30595	18.96
8-32	H2	2	USA30597	16.67
8-32	H3	2	USA30599	16.67
10-24	H2	2	USA30601	18.96
10-24	H3	2	USA30603	16.67
10-32	H2	2	USA30605	16.67
10-32	H3	2	USA30607	16.67
12-24	H3	2	USA30609	18.96
1/4-20	H3	2	USA30611	16.67
1/4-28	H3	2	USA30613	16.67
5/16-18	H3	2	USA30615	17.98
5/16-24	H3	2	USA30617	17.98



HIGH SPEED STEEL
TIN COATED

SIZE	H LIMIT	# OF FLUTES	ITEM#	LIST PRICE
0-80	H2	2	USA41368	54.22
2-56	H2	2	USA41370	41.55
3-48	H2	2	USA41372	33.34
4-40	H2	2	USA41374	26.76
5-40	H2	2	USA41376	26.76
6-32	H2	2	USA41378	22.50
6-32	H3	2	USA41380	22.50
6-40	H2	2	USA41382	25.59
8-32	H2	2	USA41384	22.50
8-32	H3	2	USA41386	22.50
10-24	H2	2	USA41388	25.59
10-24	H3	2	USA41390	22.50
10-32	H2	2	USA41392	22.50
10-32	H3	2	USA41394	22.50
12-24	H3	2	USA41396	25.59
1/4-20	H3	2	USA41398	22.50
1/4-28	H3	2	USA41400	22.50
5/16-18	H3	2	USA41402	24.27
5/16-24	H3	2	USA41404	24.27

SPIRAL POINT BOTTOMING TAPS ARE RECOMMENDED FOR USE WHERE CLOSE GAGING IS REQUIRED.

All taps sold individually.

For coating information see page 6. For technical information, please see page 237.

HP TAPS

TAPS

DIES

STI Taps • Oversize Taps

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



STI - SPIRAL POINT PLUG



HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	ITEM#	LIST PRICE
4-40	H1	2	USA30711	26.28
5-40	H1	2	USA30713	26.28
6-32	H2	2	USA30715	26.46
6-40	H2	2	USA30717	26.46
8-32	H2	2	USA30719	26.73
10-24	H2	2	USA30721	27.21
10-32	H2	2	USA30723	27.70
12-24	H2	2	USA30725	27.70
1/4-20	H2	2	USA30727	27.70
1/4-28	H2	2	USA30729	28.15
5/16-18	H3	3	USA30731	35.59
5/16-24	H2	3	USA30733	36.04
3/8-16	H3	3	USA30735	43.81
3/8-24	H2	3	USA30737	44.33
7/16-14	H3	3	USA30739	48.05
7/16-20	H3	3	USA30741	48.05
1/2-13	H3	3	USA30743	53.49
1/2-20	H3	3	USA30745	53.49

STI - HAND PLUG & BOTTOMING



HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	PLUG ITEM#	BOTTOM ITEM#	LIST PRICE
4-40	H1	3	USA28761	USA28763	23.42
5-40	H1	3	USA28765	USA28767	23.42
6-32	H2	3	USA28769	USA28771	23.84
6-40	H1	3	USA28773	USA28775	23.84
8-32	H2	3	USA28777	USA28779	24.40
10-24	H2	3	USA28781	USA28783	24.40
10-32	H2	3	USA28785	USA28787	25.38
12-24	H2	3	USA28789	USA28791	25.38
1/4-20	H2	3	USA28793	USA28795	25.49
1/4-28	H2	3	USA28797	USA28799	25.49
5/16-18	H3	4	USA28801	USA28803	27.52
5/16-24	H2	4	USA28805	USA28807	27.52
3/8-16	H3	4	USA28809	USA28811	29.88
3/8-24	H2	4	USA28813	USA28815	29.88
7/16-14	H3	4	USA28817	USA28819	41.10
7/16-20	H3	4	USA28821	USA28823	41.10
1/2-13	H3	4	USA28825	USA28827	46.13
1/2-20	H3	4	USA28829	USA28831	46.13

STI TAPS ARE OVERSIZE SO THAT THEY WILL PRODUCE THREADS THAT WILL ACCEPT HELICAL COIL WIRE SCREW THREAD INSERTS THAT HAVE THE SAME SIZE AND PITCH. MATERIALS: ALUMINUM AND NON-FERROUS MATERIALS

+ .005 OVERSIZE SPIRAL POINT PLUG



HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	ITEM#	LIST PRICE
6-32	H11	2	USA30619	13.59
8-32	H11	2	USA30621	13.59
10-24	H11	2	USA30623	14.79
10-32	H11	2	USA30625	14.79
1/4-20	H11	2	USA30627	16.85
5/16-18	H11	2	USA30629	19.37
3/8-16	H11	3	USA30631	22.00
7/16-14	H11	3	USA30633	33.03
1/2-13	H11	3	USA30635	40.20
5/8-11	H11	3	USA30637	68.51

+ .005 OVERSIZE HAND PLUG



HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	ITEM#	LIST PRICE
6-32	H11	3	USA30237	11.30
8-32	H11	4	USA30239	11.30
10-24	H11	4	USA30241	12.50
10-32	H11	4	USA30243	12.50
1/4-20	H11	4	USA30245	14.90
5/16-18	H11	4	USA30247	18.77
3/8-16	H11	4	USA30249	21.55
7/16-14	H11	4	USA30251	32.45
1/2-13	H11	4	USA30253	36.60
5/8-11	H11	4	USA30255	68.92

THESE OVERSIZE TAPS CAN BE USED ON A WIDE RANGE OF MATERIALS. PRIMARILY USED WHERE PARTS ARE GOING TO BE PLATED AFTER TAPPING.

All taps sold individually.
For technical information, please see page 237.

MADE IN THE USA

HP TAPS

TAPS

DIES



Combination Drill & Tap

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

HP TAPS

TAPS

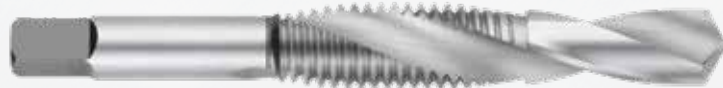
DIES



HIGH SPEED STEEL

SIZE	SHANK DIAMETER	OVERALL LENGTH	DRILL LENGTH	DRILL SIZE	THREAD LENGTH	# OF FLUTES	ITEM#	LIST PRICE
4-40	.141	1-7/8	1/4	0.0890	3/8	2	USA32001	40.39
5-40	.141	1-15/16	9/32	0.1015	13/32	2	USA32003	40.39
6-32	.141	2	5/16	0.1110	7/16	2	USA32005	40.39
8-32	.168	2-5/32	13/32	0.1360	1/2	2	USA32007	40.39
10-24	.194	2-13/32	7/16	0.1540	5/8	2	USA32009	40.39
10-32	.194	2-13/32	7/16	0.1610	5/8	2	USA32011	40.39
12-24	.220	2-13/32	1/2	0.1800	21/32	2	USA32013	43.66
1/4-20	.255	2-9/16	9/16	0.2055	25/32	2	USA32015	40.39
1/4-28	.255	2-9/16	9/16	0.2188	25/32	2	USA32017	40.39
5/16-18	.318	2-29/32	3/4	0.2660	15/16	2	USA32019	59.65
5/16-24	.318	2-29/32	3/4	0.2770	15/16	2	USA32021	59.65
3/8-16	.381	3-15/32	29/32	0.3230	1-1/16	2	USA32023	72.49
3/8-24	.381	3-15/32	29/32	0.3390	1-1/16	2	USA32025	72.49
7/16-14	.323	3-27/32	1-3/32	0.3770	1-1/4	2	USA32027	86.75
7/16-20	.323	3-27/32	1-3/32	0.3937	1-1/4	2	USA32029	86.75
1/2-13	.367	4-3/16	1-1/4	0.4331	1-3/8	2	USA32031	97.90
1/2-20	.367	4-3/16	1-1/4	0.4531	1-3/8	2	USA32033	97.90

PITCH DIAMETER AND THREAD TOLERANCES ARE DESIGNED TO PRODUCE A CLASS 2B FIT.



HIGH SPEED STEEL METRIC

SIZE	SHANK DIAMETER	OVERALL LENGTH	DRILL LENGTH	DRILL SIZE	THREAD LENGTH	# OF FLUTES	ITEM#	LIST PRICE
M4 x 0.7	.168	2-5/32	13/32	0.1310	1/2	2	USA32035	44.44
M5 x 0.8	.194	2-13/32	7/16	0.1660	5/8	2	USA32037	44.44
M6 x 1.0	.255	2-17/32	9/16	0.1980	25/32	2	USA32039	44.44
M8 x 1.25	.318	2-29/32	3/4	0.2670	15/16	2	USA32041	80.52
M10 x 1.50	.381	3-15/32	29/32	0.3360	1-1/16	2	USA32043	92.00
M12 x 1.75	.367	4-3/16	1-1/4	0.4050	1-3/8	2	USA32045	92.00

PITCH DIAMETER AND THREAD TOLERANCES ARE DESIGNED TO PRODUCE A CLASS 6H FIT.

All taps sold individually.
For technical information, please see page 237.

Pulley Taps • Extension Taps

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



PULLEY - PLUG



HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	OVERALL LENGTH	ITEM#	LIST PRICE
1/4-20	H3	4	6	USA30747	79.73
1/4-20	H3	4	8	USA30749	98.57
5/16-18	H3	4	6	USA30751	84.08
5/16-18	H3	4	8	USA30753	101.50
3/8-16	H3	4	6	USA30755	94.22
3/8-16	H3	4	8	USA30757	113.06
3/8-16	H3	4	10	USA30759	142.08
7/16-14	H3	4	6	USA30761	100.04
7/16-14	H3	4	8	USA30763	130.48
1/2-13	H3	4	6	USA30765	101.50

SIZE	H LIMIT	# OF FLUTES	OVERALL LENGTH	ITEM#	LIST PRICE
1/2-13	H3	4	8	USA30767	133.37
1/2-13	H3	4	10	USA30769	163.81
1/2-13	H3	4	12	USA30771	201.50
5/8-11	H3	4	6	USA30773	134.84
5/8-11	H3	4	8	USA30775	175.41
5/8-11	H3	4	10	USA30777	220.38
5/8-11	H3	4	12	USA30779	258.07
3/4-10	H3	4	10	USA30781	258.07
3/4-10	H3	4	12	USA30783	307.36

HP TAPS

TAPS

SMALL SHANK EXTENSION - SPIRAL POINT PLUG



HIGH SPEED STEEL

SIZE	H LIMIT	OVERALL LENGTH	NC/NF	THREAD LENGTH	SQUARE LENGTH	SHANK DIAMETER	SQUARE	# OF FLUTES	ITEM#	LIST PRICE
6-32	H3	6	NC	11/16	3/16	0.097	0.073	2	USA31333	80.89
8-32	H3	6	NC	3/4	1/4	0.123	0.092	2	USA31335	79.24
10-24	H3	6	NC	7/8	1/4	0.136	0.102	2	USA31337	74.29
10-32	H3	6	NF	7/8	1/4	0.136	0.102	2	USA31339	74.29
1/4-20	H3	6	NC	1	5/16	0.185	0.139	2	USA31341	101.35
1/4-28	H3	6	NF	1	5/16	0.185	0.139	2	USA31343	101.35
5/16-18	H3	6	NC	1-1/8	3/8	0.240	0.180	2	USA31345	106.38
5/16-24	H3	6	NF	1-1/8	3/8	0.240	0.180	2	USA31347	106.38
3/8-16	H3	6	NC	1-1/4	7/16	0.275	0.206	3	USA31349	114.60
3/8-24	H3	6	NF	1-1/4	7/16	0.275	0.206	3	USA31351	114.60
7/16-14	H3	6	NC	1-7/16	13/32	0.323	0.242	3	USA31353	131.38
7/16-20	H3	6	NF	1-7/16	13/32	0.323	0.242	3	USA31355	131.38
1/2-13	H3	6	NC	1-21/32	7/16	0.367	0.275	3	USA31357	137.91
1/2-20	H3	6	NF	1-21/32	7/16	0.367	0.275	3	USA31359	137.91
5/8-11	H3	6	NC	1-13/16	9/16	0.480	0.360	3	USA31361	178.19
5/8-18	H3	6	NF	1-13/16	9/16	0.480	0.360	3	USA31363	178.19
3/4-10	H3	6	NC	2	11/16	0.590	0.442	3	USA31365	231.42
3/4-16	H3	6	NF	2	11/16	0.590	0.442	3	USA31367	231.42

SMALL SHANK EXTENSIONS: LONG REACH SMALL SHANKS ALLOW FOR DEEPER TAPPING

DIES

All taps sold individually.
For technical information, please see page 237.

MADE IN THE USA



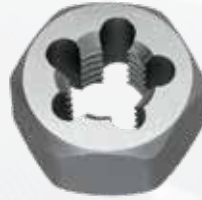
Carbon Steel Dies

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

HP TAPS

TAPS

DIES



HEXAGON RETHREADING

CARBON STEEL

SIZE	ACROSS FLATS	THICKNESS	ITEM#	LIST PRICE
1/4-20	19/32	1/4	USA23735	24.54
1/4-28	19/32	1/4	USA23737	24.54
5/16-18	11/16	5/16	USA23739	28.62
5/16-24	11/16	5/16	USA23741	28.62
3/8-16	25/32	3/8	USA23743	31.68
3/8-24	25/32	3/8	USA23745	31.68
7/16-14	7/8	7/16	USA23747	38.83
7/16-20	7/8	7/16	USA23749	38.83
1/2-13	1-1/16	1/2	USA23751	42.94
1/2-20	1-1/16	1/2	USA23753	42.94
9/16-12	1-1/16	1/2	USA23755	45.98
9/16-18	1-1/16	1/2	USA23757	45.98
5/8-11	1-1/4	5/8	USA23759	48.03
5/8-18	1-1/4	5/8	USA23761	48.03
11/16-11	1-7/16	3/4	USA23763	53.16
11/16-16	1-7/16	3/4	USA23765	53.16

SIZE	ACROSS FLATS	THICKNESS	ITEM#	LIST PRICE
3/4-10	1-7/16	3/4	USA23767	59.29
3/4-16	1-7/16	3/4	USA23769	59.29
7/8-9	1-5/8	7/8	USA23771	64.38
7/8-14	1-5/8	7/8	USA23773	64.38
1-8	1-13/16	1	USA23775	72.57
1-12	1-13/16	1	USA23777	72.57
1-14	1-13/16	1	USA23779	72.57
1-1/8-7	2	1	USA23781	83.80
1-1/8-12	2	1	USA23783	83.80
1-1/4-7	2-3/16	1	USA23785	91.99
1-1/4-12	2-3/16	1	USA23787	91.99
1-3/8-6	2-3/8	1	USA23789	173.76
1-3/8-12	2-3/8	1	USA23791	173.76
1-1/2-6	2-9/16	1	USA23793	194.19
1-1/2-12	2-9/16	1	USA23795	194.19



HEXAGON RETHREADING METRIC

CARBON STEEL

SIZE	ACROSS FLATS	ITEM#	LIST PRICE
M3 x 0.5	1	USA23797	18.69
M4 x 0.7	1	USA23799	18.19
M5 x 0.8	1	USA23801	18.19
M6 x 1.0	1	USA23803	18.19
M7 x 1.0	1	USA23805	18.69
M8 x 1.25	1	USA23807	18.19
M10 x 1.25	1	USA23809	18.19
M10 x 1.50	1	USA23811	18.19
M12 x 1.25	1	USA23813	18.19

SIZE	ACROSS FLATS	ITEM#	LIST PRICE
M12 x 1.75	1	USA23815	18.19
M14 x 1.50	1-7/16	USA23817	28.22
M14 x 2.0	1-7/16	USA23819	28.22
M16 x 1.50	1-7/16	USA23821	28.22
M16 x 2.0	1-7/16	USA23823	28.22
M18 x 1.50	1-7/16	USA23825	28.22
M18 x 2.50	1-7/16	USA23827	28.22
M20 x 2.5	1-13/16	USA23829	58.93
M24 x 3.0	1-13/16	USA23831	58.93

Dies sold individually.

Carbon Steel Dies

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



NPT HEXAGON RETHREADING

CARBON STEEL

SIZE	ACROSS FLATS	THICKNESS	ITEM#	LIST PRICE
1/8-27 NPT	1-1/16	3/8	USA23833	33.92
1/4 - 18 NPT	1-1/4	5/8	USA23835	37.60
3/8 - 18 NPT	1-7/16	5/8	USA23837	52.00

SIZE	ACROSS FLATS	THICKNESS	ITEM#	LIST PRICE
1/2 - 14 NPT	1-5/8	3/4	USA23839	75.13
3/4 - 14 NPT	2	13/16	USA23841	92.89
1 - 11-1/2 NPT	2-3/8	1	USA23843	179.82

HP TAPS

TAPS

DIES



ADJUSTABLE ROUND SPLIT

CARBON STEEL

SIZE	OUTSIDE DIAMETER	ITEM#	LIST PRICE
6 - 32	1	USA23615	41.86
8 - 32	1	USA23621	41.86
10 - 24	1	USA23627	41.86
10 - 32	1	USA23631	41.86
1/4 - 20	1	USA23643	41.86
1/4 - 20	1-1/2	USA23645	68.49
1/4 - 28	1	USA23647	41.86
1/4 - 32	1	USA23653	41.86
5/16 - 18	1	USA23655	41.86
5/16 - 18	1-1/2	USA23657	68.49
5/16 - 24	1	USA23659	41.86
5/16 - 24	1-1/2	USA23661	68.49
5/16 - 32	1	USA23663	41.86

SIZE	OUTSIDE DIAMETER	ITEM#	LIST PRICE
3/8 - 16	1	USA23665	41.86
3/8 - 16	1-1/2	USA23667	68.49
3/8 - 24	1	USA23669	41.86
3/8 - 24	1-1/2	USA23671	68.49
7/16 - 14	1	USA23673	41.86
7/16 - 14	1-1/2	USA23675	68.49
7/16 - 20	1	USA23677	41.86
1/2 - 13	1-1/2	USA23681	68.49
1/2 - 20	1-1/2	USA23683	68.49
9/16 - 12	1-1/2	USA23685	68.49
9/16 - 18	1-1/2	USA23687	68.49
5/8 - 11	1-1/2	USA23689	68.49
5/8 - 18	1-1/2	USA23693	68.49

Dies sold individually.

MADE IN THE USA



High Speed Steel Dies

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



ADJUSTABLE ROUND SPLIT

HIGH SPEED STEEL

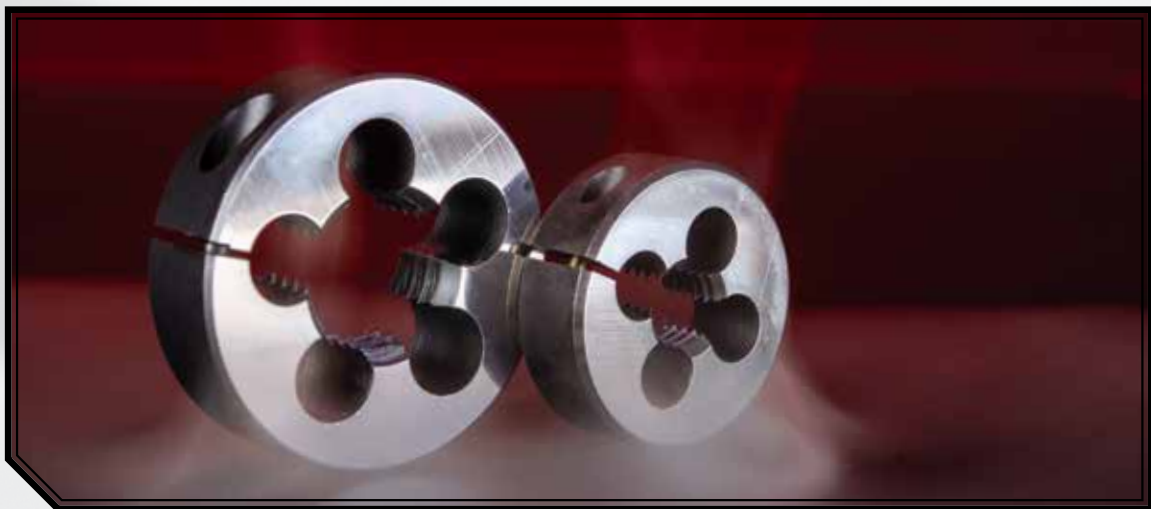
HP TAPS

TAPS

DIES

SIZE	OUTSIDE DIAMETER	ITEM#	LIST PRICE
4-40	1	USA23857	78.34
5-40	13/16	USA23859	53.16
5-44	13/16	USA23861	53.16
6-32	13/16	USA23863	53.16
6-32	1	USA23865	64.38
6-40	13/16	USA23867	53.16
8-32	13/16	USA23869	53.16
8-32	1	USA23871	64.38
10-24	13/16	USA23873	53.16
10-24	1	USA23875	64.38
10-32	13/16	USA23877	53.16
10-32	1	USA23879	64.38
12-24	13/16	USA23881	53.16
12-24	1	USA23883	64.38
12-28	13/16	USA23885	53.16
1/4-20	13/16	USA23887	53.16
1/4-20	1	USA23889	64.38
1/4-20	1-1/2	USA23891	105.27
1/4-28	13/16	USA23893	53.16
1/4-28	1	USA23895	64.38
1/4-28	1-1/2	USA23897	105.27
5/16-18	13/16	USA23899	53.16
5/16-18	1	USA23901	64.38
5/16-18	1-1/2	USA23903	105.27
5/16-24	13/16	USA23905	53.16
5/16-24	1	USA23907	64.38

SIZE	OUTSIDE DIAMETER	ITEM#	LIST PRICE
5/16-24	1-1/2	USA23909	105.27
3/8-16	1	USA23911	64.38
3/8-16	1-1/2	USA23913	105.27
3/8-24	1	USA23915	64.38
3/8-24	1-1/2	USA23917	105.27
7/16-14	1	USA23919	64.38
7/16-14	1-1/2	USA23921	105.27
7/16-20	1	USA23923	64.38
7/16-20	1-1/2	USA23925	105.27
1/2-13	1	USA23927	64.38
1/2-13	1-1/2	USA23929	105.27
1/2-20	1	USA23931	64.38
1/2-20	1-1/2	USA23933	105.27
9/16-12	1-1/2	USA23935	105.27
9/16-18	1-1/2	USA23937	105.27
5/8-11	1-1/2	USA23939	105.27
5/8-11	2	USA23941	143.09
5/8-18	1-1/2	USA23943	105.27
5/8-18	2	USA23945	143.09
3/4-10	1-1/2	USA23947	105.27
3/4-10	2	USA23949	143.09
3/4-16	1-1/2	USA23951	105.27
3/4-16	2	USA23953	143.09
7/8-9	2	USA23955	143.09
7/8-14	2	USA23957	143.09



Dies sold individually.

Tap Handles & Die Stocks

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



HP TAPS

TAPS

DIES

T - HANDLE TAP WRENCHES



SIZE	ITEM#	LIST PRICE
0 - 1/4	USA23573	15.52
1/4-1/2	USA23575	23.24

DIE STOCKS



SIZE	ITEM#	LIST PRICE
1 OD	USA23583	47.92
1-1/2 OD	USA23585	78.49
2 OD	USA23587	138.18

Tools sold individually.

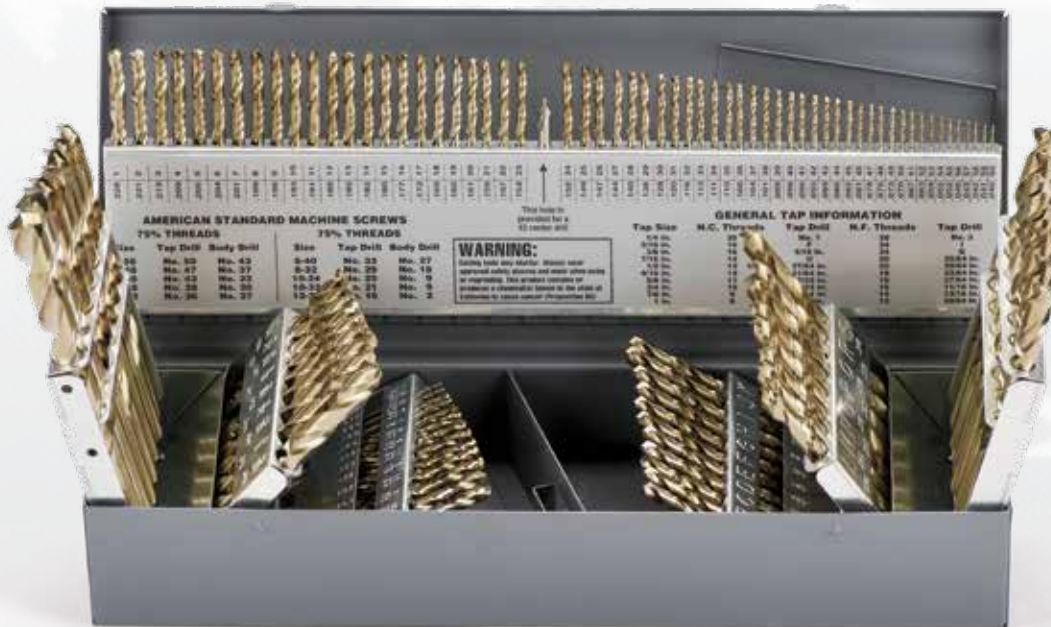
MADE IN THE USA



Drill Sets

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

HSS & COBALT DRILLS



ITEM# USA14333

115 PC. JOBBER DRILL SET - M42 COBALT

M42 COBALT - JOBBER DRILL SETS

DESCRIPTION	ITEM#	LIST PRICE
13Pc. • 1/16" - 1/4" by 64ths • Heavy Duty • 135° SP/PT	USA14321	55.26
15Pc. • 1/16" - 1/2" by 32nds • Heavy Duty • 135° SP/PT	USA14323	186.45
21Pc. • 1/16" - 3/8" by 64ths • Heavy Duty • 135° SP/PT	USA14325	203.08
26Pc. • A - Z • Heavy Duty • 135° SP/PT	USA14327	309.24
29Pc. • 1/16" - 1/2" by 64ths • Heavy Duty • 135° SP/PT	USA14329	302.67
60Pc. • #1 - #60 • Heavy Duty • 135° SP/PT	USA14331	264.19
115Pc. • 1/16" - 1/2" by 64ths • #1 - #60 • A - Z • H.D. • 135° SP/PT	USA14333	1,114.19

M42 COBALT - SCREW MACHINE DRILL SETS

DESCRIPTION	ITEM#	LIST PRICE
115Pc. • 1/16" - 1/2" by 64ths • #1 - #60 • A - Z • H.D. • 135° SP/PT	USA42246	923.67

HIGH SPEED STEEL - TAP & DRILL SETS

DESCRIPTION	ITEM#	LIST PRICE
18Pc. • (6-32, #36), (8-32, #29), (10-24, #25), (10-32, #21), (1/4-20, #7) (5/16-18,"F"), (3/8-16, 5/16"), (7/16-14,"U"), (1/2-13, 27/64)	USA14335	210.89

NOTE: SIZES BELOW 1/16" ARE NOT SPLIT POINT.

For technical information, please see pages 238 & 239.

Drill Sets

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



ITEM# USA14337
8 PC. SILVER & DEMING DRILL SET
HIGH SPEED STEEL

HSS & COBALT DRILLS

SILVER & DEMING SETS - 1/2" SHANK

DESCRIPTION	ITEM#	LIST PRICE
8Pc. • HSS • 9/16", 5/8", 11/16", 3/4", 13/16", 7/8", 15/16", 1" • 118° Point • In Plastic Case	USA14337	382.25
8Pc. • HSS • Black & Gold • 118° Split Point • In Plastic Case	USA14343	485.44
8Pc. • M42 Cobalt • 118° Split Point • In Plastic Case	USA14341	788.60
33Pc. • HSS • 1/2" - 1" by 64ths • 118° Point • Metal Stand	USA14339	1,719.68

ITEM# USA14361
29 PC. MECHANICS LENGTH DRILL SET
HIGH SPEED STEEL - BLACK/GOLD



HIGH SPEED STEEL - MECHANICS LENGTH SETS

DESCRIPTION	ITEM#	LIST PRICE
15Pc. • 1/16" - 1/2" by 32ths • Black/Gold • Heavy Duty • 135° SP/PT • Metal Case	USA14357	139.18
29Pc. • 1/16" - 1/2" by 64ths • Black/Gold • Heavy Duty • 135° SP/PT • Metal Case	USA14355	257.21
29Pc. • 1/16" - 1/2" by 64ths • Black/Gold • Heavy Duty • 135° SP/PT • Plastic Case	USA14361	257.21

MECHANICS LENGTH: SIZES 3/16" TO 1/2" - HAVE 3 FLATS;
 SIZES 27/64" AND HIGHER - HAVE 3/8" REDUCED FLATTED SHANKS

For technical information, please see pages 238 & 239.

MADE IN THE USA



Drill Sets

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

HSS & COBALT DRILLS



ITEM# USA14299

29 PC. JOBBER DRILL SET - BRIGHT FINISH
HIGH SPEED STEEL



ITEM# USA14303

29 PC. HEAVY DUTY DRILL SET - BLACK/GOLD
HIGH SPEED STEEL

HIGH SPEED STEEL - JOBBER DRILL SETS

DESCRIPTION	ITEM#	LIST PRICE
13Pc. • 1/16" - 1/4" by 64ths • 118° Point • Oxided	USA14275	40.99
13Pc. • 1/16" - 1/4" by 64ths • 118° Point • Bright	USA14277	40.99
15Pc. • 1/16" - 1/2" by 32nds • 118° Point • Oxided	USA14281	114.45
15Pc. • 1/16" - 1/2" by 32nds • 118° Point • Bright	USA14285	114.45
15Pc. • 1/16" - 1/2" by 32nds • Heavy Duty • 135° SP/PT • Oxided	USA14287	126.24
21Pc. • 1/16" - 3/8" by 64ths • 118° Point • Oxided	USA14289	96.73
21Pc. • 1/16" - 3/8" by 64ths • 118° Point • Bright	USA14291	96.73
25Pc. • 1.0mm - 13.0mm by 0.5mm • 118° Point • Oxided	USA38114	220.91
26Pc. • A-Z • 118° Point • Oxided	USA14295	161.90
26Pc. • A-Z • 118° Point • Bright	USA14297	161.90
29Pc. • 1/16" - 1/2" by 64ths • 118° Point • Oxided	USA14299	157.28
29Pc. • 1/16" - 1/2" by 64ths • 118° Point • Bright	USA14301	157.28
29Pc. • 1/16" - 1/2" by 64ths • Heavy Duty • 135° SP/PT • Oxided	USA14305	195.76
29Pc. • 1/16" - 1/2" by 64ths • 118° Point • TIN Coated	USA14309	388.97
60Pc. • #1 - #60 • 118° Point • Oxided	USA14311	142.27
60Pc. • #1 - #60 • 118° Point • Bright	USA14313	142.27
115Pc. • 1/16" - 1/2" by 64ths • #1 - #60 • A - Z • 118° Point • Oxided	USA14315	452.07
115Pc. • 1/16" - 1/2" by 64ths • #1 - #60 • A - Z • 118° Point • Bright	USA14317	452.07

HIGH SPEED STEEL - BLACK & GOLD SETS

DESCRIPTION	ITEM#	LIST PRICE
13Pc. • 1/16" - 1/4" by 64ths • Heavy Duty • 135° SP/PT • Black/Gold	USA14279	51.13
15Pc. • 1/16" - 1/2" by 32nds • Heavy Duty • 135° SP/PT • Black/Gold	USA14283	148.09
21Pc. • 1/16" - 3/8" by 64ths • Heavy Duty • 135° SP/PT • Black/Gold	USA14293	145.05
29Pc. • 1/16" - 1/2" by 64ths • Heavy Duty • 135° SP/PT • Black/Gold	USA14303	236.94
29Pc. • 1/16" - 1/2" by 64ths • H.D. • 135° SP/PT • Black/Gold • Plastic Case	USA14359	236.94
115Pc. • 1/16" - 1/2" by 64ths • Heavy Duty • 135° SP/PT • Black/Gold	USA14319	653.53

NOTE: SIZES BELOW 1/16" ARE NOT SPLIT POINT.

For coating information see page 6. For technical information, please see pages 238 & 239.

HSS Drills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



MECHANICS LENGTH - HEAVY DUTY - 135° SPLIT POINT - TYPE "B"



BLACK & GOLD

FRACTIONAL SIZES						FRACTIONAL SIZES					
SIZE	FLUTE LENGTH	OAL	PACKAGE QUANTITY	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	OAL	PACKAGE QUANTITY	ITEM#	LIST PRICE
1/16	7/8	1-7/8	12	USA12497	2.27	19/64	2-3/8	3-7/8	6	USA12527	7.65
5/64	1	2	12	USA12499	2.44	5/16	2-1/2	4	6	USA12529	8.18
3/32	1-1/4	2-1/4	12	USA12501	2.44	21/64	2-9/16	4-1/16	6	USA12531	8.71
7/64	1-5/16	2-3/8	12	USA12503	2.51	11/32	2-5/8	4-1/8	6	USA12533	9.49
1/8	1-7/16	2-1/2	12	USA12505	2.62	23/64	2-11/16	4-3/16	6	USA12535	10.09
9/64	1-9/16	2-5/8	12	USA12507	2.69	3/8	2-11/16	4-1/4	6	USA12537	10.69
5/32	1-11/16	2-3/4	12	USA12509	3.22	25/64	2-3/4	4-5/16	6	USA12539	11.37
11/64	1-13/16	2-7/8	12	USA12511	3.29	13/32	2-13/16	4-3/8	6	USA12541	12.25
3/16	1-7/8	3	12	USA12513	3.75	27/64	2-7/8	4-7/16	6	USA12543	13.81
13/64	1-15/16	3-1/8	12	USA12515	4.07	7/16	2-15/16	4-1/2	6	USA12545	14.59
7/32	2	3-1/4	12	USA12517	4.53	29/64	3	4-5/8	6	USA12547	15.90
15/64	2-1/16	3-3/8	12	USA12519	4.85	15/32	3-1/8	4-3/4	6	USA12549	17.03
1/4	2	3-1/2	12	USA12521	5.13	31/64	3-1/4	4-7/8	6	USA12551	17.39
17/64	2-1/8	3-5/8	6	USA12523	6.45	1/2	3-3/8	5	6	USA12553	17.85
9/32	2-1/4	3-3/4	6	USA12525	6.45						

SIZES 3/16" TO 1/2" - HAVE 3 FLATS;
SIZES 27/64" AND HIGHER - HAVE 3/8" REDUCED FLATTED SHANKS



For technical information, please see pages 238 & 239.

MADE IN THE USA

HSS & COBALT DRILLS



HSS Drills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

STUB LENGTH - HEAVY DUTY - 135° SPLIT POINT - TYPE "C"



OXIDE FINISH

FRACTIONAL SIZES

SIZE	FLUTE LENGTH	OAL	PKG. QTY.	BLACK OXIDE	LIST PRICE
1/16	5/8	1-5/8	12	USA11001	1.95
5/64	11/16	1-11/16	12	USA11003	1.98
3/32	3/4	1-3/4	12	USA11005	1.98
7/64	13/16	1-13/16	12	USA11007	1.98
1/8	7/8	1-7/8	12	USA11009	1.98
9/64	15/16	1-15/16	12	USA11011	1.98
5/32	1	2-1/16	12	USA11013	2.16
11/64	1-1/16	2-1/8	12	USA11015	2.16
3/16	1-1/8	2-3/16	12	USA11017	2.51
13/64	1-3/16	2-1/4	12	USA11019	2.59
7/32	1-1/4	2-3/8	12	USA11021	2.94
15/64	1-5/16	2-7/16	12	USA11023	3.40
1/4	1-3/8	2-1/2	12	USA11025	3.75
17/64	1-7/16	2-5/8	6	USA11027	3.86
9/32	1-1/2	2-11/16	6	USA11029	4.07

FRACTIONAL SIZES

SIZE	FLUTE LENGTH	OAL	PKG. QTY.	BLACK OXIDE	LIST PRICE
19/64	1-9/16	2-3/4	6	USA11031	4.43
5/16	1-5/8	2-13/16	6	USA11033	4.71
21/64	1-11/16	2-15/16	6	USA11035	5.28
11/32	1-11/16	3	6	USA11037	5.63
23/64	1-3/4	3-1/16	6	USA11039	5.98
3/8	1-13/16	3-1/8	6	USA11041	6.52
25/64	1-7/8	3-1/4	6	USA11043	6.91
13/32	1-15/16	3-5/16	6	USA11045	7.58
27/64	2	3-3/8	6	USA11047	8.00
7/16	1-1/16	3-7/16	6	USA11049	8.75
29/64	2-1/8	3-9/16	6	USA11051	9.28
15/32	2-1/8	3-5/8	6	USA11053	10.20
31/64	2-3/16	3-11/16	6	USA11055	10.59
1/2	2-1/4	3-3/4	6	USA11057	11.16

LETTER SIZES

SIZE	FLUTE LENGTH	OAL	PKG. QTY.	BLACK OXIDE	LIST PRICE
A	1-5/16	2-7/16	12	USA11179	4.07
B	1-3/8	2-1/2	12	USA11181	4.28
C	1-3/8	2-1/2	12	USA11183	4.28
D	1-3/8	2-1/2	12	USA11185	4.32
E	1-3/8	2-1/2	12	USA11187	4.32
F	1-7/16	2-5/8	6	USA11189	5.56
G	1-7/16	2-5/8	6	USA11191	5.95
H	1-1/2	2-11/16	6	USA11193	6.13
I	1-1/2	2-11/16	6	USA11195	6.16
J	1-1/2	2-11/16	6	USA11197	6.30
K	1-1/2	2-11/16	6	USA11199	6.41
L	1-9/16	2-3/4	6	USA11201	6.55
M	1-9/16	2-3/4	6	USA11203	6.87

LETTER SIZES

SIZE	FLUTE LENGTH	OAL	PKG. QTY.	BLACK OXIDE	LIST PRICE
N	1-5/8	2-13/16	6	USA11205	7.15
O	1-11/16	2-15/16	6	USA11207	8.04
P	1-11/16	2-15/16	6	USA11209	8.25
Q	1-11/16	3	6	USA11211	8.61
R	1-11/16	3	6	USA11213	8.85
S	1-3/4	3-1/16	6	USA11215	9.21
T	1-3/4	3-1/16	6	USA11217	9.42
U	1-13/16	3-1/8	6	USA11219	10.16
V	1-7/8	3-1/4	6	USA11221	10.80
W	1-7/8	3-1/4	6	USA11223	11.19
X	1-15/16	3-5/16	6	USA11225	11.86
Y	1-15/16	3-5/16	6	USA11227	12.11
Z	2	3-3/8	6	USA11229	12.54

NOTE: SIZES BELOW 1/16" ARE NOT SPLIT POINT.

For technical information, please see pages 238 & 239.

HSS Drills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



STUB LENGTH - HEAVY DUTY - 135° SPLIT POINT - TYPE "C"



OXIDE FINISH

WIRE SIZES						WIRE SIZES					
SIZE	FLUTE LENGTH	OAL	PKG. QTY.	BLACK OXIDE	LIST PRICE	SIZE	FLUTE LENGTH	OAL	PKG. QTY.	BLACK OXIDE	LIST PRICE
1	1-5/16	2-7/16	12	USA11059	3.40	31	7/8	1-7/8	12	USA11119	2.20
2	1-5/16	2-7/16	12	USA11061	3.40	32	7/8	1-7/8	12	USA11121	2.20
3	1-1/4	2-3/8	12	USA11063	3.51	33	7/8	1-7/8	12	USA11123	2.20
4	1-1/4	2-3/8	12	USA11065	3.51	34	7/8	1-7/8	12	USA11125	2.20
5	1-1/4	2-3/8	12	USA11067	3.51	35	7/8	1-7/8	12	USA11127	2.20
6	1-1/4	2-3/8	12	USA11069	3.51	36	13/16	1-13/16	12	USA11129	2.20
7	1-3/16	2-1/4	12	USA11071	3.01	37	13/16	1-13/16	12	USA11131	2.20
8	1-3/16	2-1/4	12	USA11073	3.01	38	13/16	1-13/16	12	USA11133	2.20
9	1-3/16	2-1/4	12	USA11075	3.01	39	13/16	1-13/16	12	USA11135	2.20
10	1-3/16	2-1/4	12	USA11077	3.01	40	13/16	1-13/16	12	USA11137	2.20
11	1-3/16	2-1/4	12	USA11079	3.01	41	13/16	1-13/16	12	USA11139	2.20
12	1-3/16	2-1/4	12	USA11081	3.01	42	3/4	1-3/4	12	USA11141	2.20
13	1-1/8	2-3/16	12	USA11083	3.01	43	3/4	1-3/4	12	USA11143	2.20
14	1-1/8	2-3/16	12	USA11085	3.01	44	3/4	1-3/4	12	USA11145	2.20
15	1-1/8	2-3/16	12	USA11087	3.01	45	3/4	1-3/4	12	USA11147	2.20
16	1-1/8	2-3/16	12	USA11089	3.01	46	3/4	1-3/4	12	USA11149	2.20
17	1-1/8	2-3/16	12	USA11091	3.01	47	11/16	1-11/16	12	USA11151	2.20
18	1-1/16	2-1/8	12	USA11093	2.87	48	11/16	1-11/16	12	USA11153	2.20
19	1-1/16	2-1/8	12	USA11095	2.87	49	11/16	1-11/16	12	USA11155	2.20
20	1-1/16	2-1/8	12	USA11097	2.87	50	11/16	1-11/16	12	USA11157	2.20
21	1-1/16	2-1/8	12	USA11099	2.87	51	11/16	1-11/16	12	USA11159	2.20
22	1-1/16	2-1/8	12	USA11101	2.80	52	11/16	1-11/16	12	USA11161	2.20
23	1	2-1/16	12	USA11103	2.80	53	5/8	1-5/8	12	USA11163	2.20
24	1	2-1/16	12	USA11105	2.80	54	5/8	1-5/8	12	USA11165	2.20
25	1	2-1/16	12	USA11107	2.80	55	5/8	1-5/8	12	USA11167	2.20
26	1	2-1/16	12	USA11109	2.80	56	1/2	1-3/8	12	USA11169	2.20
27	1	2-1/16	12	USA11111	2.80	57	1/2	1-3/8	12	USA11171	2.20
28	15/16	1-15/16	12	USA11113	2.80	58	1/2	1-3/8	12	USA11173	2.20
29	15/16	1-15/16	12	USA11115	2.80	59	1/2	1-3/8	12	USA11175	2.20
30	15/16	1-15/16	12	USA11117	2.20	60	1/2	1-3/8	12	USA11177	2.20

NOTE: SIZES BELOW 1/16" ARE NOT SPLIT POINT.

For technical information, please see pages 238 & 239.

MADE IN THE USA

HSS & COBALT DRILLS



M42 Cobalt Drills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

STUB LENGTH - HEAVY DUTY - 135° SPLIT POINT - TYPE "J"

NAS 907 - M42 COBALT



NAS 907 - M42 COBALT
ALTIN COATED



HSS & COBALT DRILLS

FRACTIONAL SIZES

SIZE	FLUTE LENGTH	OAL	PKG. QTY.	UNCOATED	LIST PRICE	ALTIN	LIST PRICE
1/16	5/8	1-5/8	12	USA11231	2.41	USA36356	4.37
5/64	11/16	1-11/16	12	USA11233	2.41	USA36358	4.37
3/32	3/4	1-3/4	12	USA11235	2.41	USA36360	4.37
7/64	13/16	1-13/16	12	USA11237	2.73	USA36362	4.94
1/8	7/8	1-7/8	12	USA11239	3.15	USA36364	5.74
9/64	15/16	1-15/16	12	USA11241	3.15	USA36366	5.74
5/32	1	2-1/16	12	USA11243	3.47	USA36368	6.28
11/64	1-1/16	2-1/8	12	USA11245	3.93	USA36370	7.07
3/16	1-1/8	2-3/16	12	USA11247	4.60	USA36372	8.34
13/64	1-3/16	2-1/4	12	USA11249	5.28	USA36374	9.49
7/32	1-1/4	2-3/8	12	USA11251	5.81	USA36376	10.50
15/64	1-5/16	2-7/16	12	USA11253	6.23	USA36378	11.30
1/4	1-3/8	2-1/2	12	USA11255	6.48	USA36380	11.73
17/64	1-7/16	2-5/8	6	USA11257	7.40	USA36382	13.35
9/32	1-1/2	2-11/16	6	USA11259	8.04	USA36384	14.55

FRACTIONAL SIZES

SIZE	FLUTE LENGTH	OAL	PKG. QTY.	UNCOATED	LIST PRICE	ALTIN	LIST PRICE
19/64	1-9/16	2-3/4	6	USA11261	9.31	USA36386	16.82
5/16	1-5/8	2-13/16	6	USA11263	9.99	USA36388	18.05
21/64	1-11/16	2-15/16	6	USA11265	11.08	USA36390	20.03
11/32	1-11/16	3	6	USA11267	11.97	USA36392	21.66
23/64	1-3/4	3-1/16	6	USA11269	13.78	USA36394	24.90
3/8	1-13/16	3-1/8	6	USA11271	13.78	USA36396	24.90
25/64	1-7/8	3-1/4	6	USA11273	15.76	USA36398	28.51
13/32	1-15/16	3-5/16	6	USA11275	16.29	USA36400	29.42
27/64	2	3-3/8	6	USA11277	18.06	USA36402	32.59
7/16	1-1/16	3-7/16	6	USA11279	18.56	USA36404	33.53
29/64	2-1/8	3-9/16	6	USA11281	22.27	USA36406	40.21
15/32	2-1/8	3-5/8	6	USA11283	22.27	USA36408	40.21
31/64	2-3/16	3-11/16	6	USA11285	22.27	USA36410	40.21
1/2	2-1/4	3-3/4	6	USA11287	22.27	USA36412	40.21

LETTER SIZES

SIZE	FLUTE LENGTH	OAL	PKG. QTY.	UNCOATED	LIST PRICE	ALTIN	LIST PRICE
A	1-5/16	2-7/16	12	USA11409	7.44	USA36534	13.43
B	1-3/8	2-1/2	12	USA11411	7.90	USA36536	14.26
C	1-3/8	2-1/2	12	USA11413	7.90	USA36538	14.26
D	1-3/8	2-1/2	12	USA11415	7.90	USA36540	14.26
E	1-3/8	2-1/2	12	USA11417	7.19	USA36542	13.03
F	1-7/16	2-5/8	6	USA11419	8.36	USA36544	15.09
G	1-7/16	2-5/8	6	USA11421	8.36	USA36546	15.09
H	1-1/2	2-11/16	6	USA11423	8.85	USA36548	16.03
I	1-1/2	2-11/16	6	USA11425	8.85	USA36550	16.03
J	1-1/2	2-11/16	6	USA11427	8.85	USA36552	16.03
K	1-1/2	2-11/16	6	USA11429	8.85	USA36554	16.03
L	1-9/16	2-3/4	6	USA11431	10.52	USA36556	18.99
M	1-9/16	2-3/4	6	USA11433	10.52	USA36558	18.99

LETTER SIZES

SIZE	FLUTE LENGTH	OAL	PKG. QTY.	UNCOATED	LIST PRICE	ALTIN	LIST PRICE
N	1-5/8	2-13/16	6	USA11435	11.30	USA36560	20.39
O	1-11/16	2-15/16	6	USA11437	12.50	USA36562	22.59
P	1-11/16	2-15/16	6	USA11439	12.50	USA36564	22.59
Q	1-11/16	3	6	USA11441	13.53	USA36566	24.44
R	1-11/16	3	6	USA11443	13.53	USA36568	24.44
S	1-3/4	3-1/16	6	USA11445	16.82	USA36570	30.43
T	1-3/4	3-1/16	6	USA11447	16.82	USA36572	30.43
U	1-13/16	3-1/8	6	USA11449	16.82	USA36574	30.43
V	1-7/8	3-1/4	6	USA11451	18.70	USA36576	33.75
W	1-7/8	3-1/4	6	USA11453	18.70	USA36578	33.75
X	1-15/16	3-5/16	6	USA11455	18.70	USA36580	33.75
Y	1-15/16	3-5/16	6	USA11457	18.70	USA36582	33.75
Z	2	3-3/8	6	USA11459	21.42	USA36584	38.73

All cobalt drills have identification ring on shank.
For coating information see page 6. For technical information, please see pages 238 & 239.

M42 Cobalt Drills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



STUB LENGTH - HEAVY DUTY - 135° SPLIT POINT - TYPE "J"

NAS 907 - M42 COBALT



NAS 907 - M42 COBALT
ALTIM COATED



HSS & COBALT DRILLS

WIRE SIZES							WIRE SIZES								
SIZE	FLUTE LENGTH	OAL	PKG. QTY.	UNCOATED	LIST PRICE	ALTIM	LIST PRICE	SIZE	FLUTE LENGTH	OAL	PKG. QTY.	UNCOATED	LIST PRICE	ALTIM	LIST PRICE
1	1-5/16	2-7/16	12	USA11289	7.15	USA36414	12.92	31	7/8	1-7/8	12	USA11349	2.97	USA36474	5.38
2	1-5/16	2-7/16	12	USA11291	7.15	USA36416	12.92	32	7/8	1-7/8	12	USA11351	2.97	USA36476	5.38
3	1-1/4	2-3/8	12	USA11293	7.15	USA36418	12.92	33	7/8	1-7/8	12	USA11353	2.87	USA36478	5.20
4	1-1/4	2-3/8	12	USA11295	6.37	USA36420	11.55	34	7/8	1-7/8	12	USA11355	2.87	USA36480	5.20
5	1-1/4	2-3/8	12	USA11297	6.37	USA36422	11.55	35	7/8	1-7/8	12	USA11357	2.87	USA36482	5.20
6	1-1/4	2-3/8	12	USA11299	6.37	USA36424	11.55	36	13/16	1-13/16	12	USA11359	2.87	USA36484	5.20
7	1-3/16	2-1/4	12	USA11301	5.03	USA36426	9.06	37	13/16	1-13/16	12	USA11361	2.87	USA36486	5.20
8	1-3/16	2-1/4	12	USA11303	5.03	USA36428	9.06	38	13/16	1-13/16	12	USA11363	2.62	USA36488	4.73
9	1-3/16	2-1/4	12	USA11305	5.03	USA36430	9.06	39	13/16	1-13/16	12	USA11365	2.62	USA36490	4.73
10	1-3/16	2-1/4	12	USA11307	5.03	USA36432	9.06	40	13/16	1-13/16	12	USA11367	2.62	USA36492	4.73
11	1-3/16	2-1/4	12	USA11309	4.89	USA36434	8.81	41	13/16	1-13/16	12	USA11369	2.51	USA36494	4.73
12	1-3/16	2-1/4	12	USA11311	4.89	USA36436	8.81	42	3/4	1-3/4	12	USA11371	2.48	USA36496	4.73
13	1-1/8	2-3/16	12	USA11313	4.78	USA36438	8.66	43	3/4	1-3/4	12	USA11373	2.48	USA36498	4.73
14	1-1/8	2-3/16	12	USA11315	4.78	USA36440	8.66	44	3/4	1-3/4	12	USA11375	2.48	USA36500	4.73
15	1-1/8	2-3/16	12	USA11317	4.78	USA36442	8.66	45	3/4	1-3/4	12	USA11377	2.48	USA36502	4.73
16	1-1/8	2-3/16	12	USA11319	4.78	USA36444	8.63	46	3/4	1-3/4	12	USA11379	2.48	USA36504	4.73
17	1-1/8	2-3/16	12	USA11321	4.60	USA36446	8.34	47	11/16	1-11/16	12	USA11381	2.48	USA36506	4.73
18	1-1/16	2-1/8	12	USA11323	3.93	USA36448	7.07	48	11/16	1-11/16	12	USA11383	2.48	USA36508	4.73
19	1-1/16	2-1/8	12	USA11325	3.72	USA36450	6.71	49	11/16	1-11/16	12	USA11385	2.48	USA36510	4.73
20	1-1/16	2-1/8	12	USA11327	3.72	USA36452	6.71	50	11/16	1-11/16	12	USA11387	2.48	USA36512	4.73
21	1-1/16	2-1/8	12	USA11329	3.72	USA36454	6.71	51	11/16	1-11/16	12	USA11389	2.48	USA36514	4.73
22	1-1/16	2-1/8	12	USA11331	3.72	USA36456	6.71	52	11/16	1-11/16	12	USA11391	2.48	USA36516	4.73
23	1	2-1/16	12	USA11333	3.72	USA36458	6.71	53	5/8	1-5/8	12	USA11393	2.80	USA36518	5.05
24	1	2-1/16	12	USA11335	3.72	USA36460	6.71	54	5/8	1-5/8	12	USA11395	2.80	USA36520	5.05
25	1	2-1/16	12	USA11337	3.47	USA36462	6.28	55	5/8	1-5/8	12	USA11397	2.80	USA36522	5.05
26	1	2-1/16	12	USA11339	3.47	USA36464	6.28	56	1/2	1-3/8	12	USA11399	2.80	USA36524	5.05
27	1	2-1/16	12	USA11341	3.47	USA36466	6.28	57	1/2	1-3/8	12	USA11401	2.80	USA36526	5.05
28	15/16	1-15/16	12	USA11343	3.15	USA36468	5.74	58	1/2	1-3/8	12	USA11403	2.97	USA36528	5.38
29	15/16	1-15/16	12	USA11345	3.15	USA36470	5.74	59	1/2	1-3/8	12	USA11405	2.97	USA36530	5.38
30	15/16	1-15/16	12	USA11347	2.97	USA36472	5.38	60	1/2	1-3/8	12	USA11407	2.97	USA36532	5.38

NOTE: SIZES BELOW 1/16" ARE NOT SPLIT POINT.

- For use where extreme temperatures are found
- Coating allows for increased machining speeds from 50% up to 200%
- Used in machining Stainless Steels, Nickel-based and Titanium alloys
- Not recommended for aluminum

All cobalt drills have identification ring on shank.
For coating information see page 6. For technical information, please see pages 238 & 239.

MADE IN THE USA



HSS Drills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

JOBBER LENGTH - 118° POINT

BRIGHT FINISH



TIN COATED



HSS & COBALT DRILLS

FRACTIONAL SIZES								FRACTIONAL SIZES							
SIZE	FLUTE LENGTH	OAL	PKG. QTY.	BRIGHT	LIST PRICE	TIN	LIST PRICE	SIZE	FLUTE LENGTH	OAL	PKG. QTY.	BRIGHT	LIST PRICE	TIN	LIST PRICE
1/16	7/8	1-7/8	12	USA11767	1.66	USA12555	4.71	19/64	3-1/16	4-3/8	6	USA11797	5.17	USA12585	15.04
5/64	1	2	12	USA11769	1.66	USA12557	4.71	5/16	3-3/16	4-1/2	6	USA11799	5.38	USA12587	15.88
3/32	1-1/4	2-1/4	12	USA11771	1.66	USA12559	4.71	21/64	3-5/16	4-5/8	6	USA11801	6.02	USA12589	18.10
7/64	1-1/2	2-5/8	12	USA11773	1.66	USA12561	4.78	11/32	3-7/16	4-3/4	6	USA11803	6.45	USA12591	19.05
1/8	1-5/8	2-3/4	12	USA11775	1.66	USA12563	4.78	23/64	3-1/2	4-7/8	6	USA11805	7.08	USA12593	21.50
9/64	1-3/4	2-7/8	12	USA11777	1.77	USA12565	5.01	3/8	3-5/8	5	6	USA11807	7.44	USA12595	21.73
5/32	2	3-1/8	12	USA11779	1.84	USA12567	5.59	25/64	3-3/4	5-1/8	6	USA11809	8.04	USA12597	26.90
11/64	2-1/8	3-1/4	12	USA11781	1.98	USA12569	5.66	13/32	3-7/8	5-1/4	6	USA11811	8.78	USA12599	27.51
3/16	2-5/16	3-1/2	12	USA11783	2.16	USA12571	5.97	27/64	3-15/16	5-3/8	6	USA11813	9.35	USA12601	28.47
13/64	2-7/16	3-5/8	12	USA11785	2.44	USA12573	8.49	7/16	4-1/16	5-1/2	6	USA11815	10.20	USA12603	29.08
7/32	2-1/2	3-3/4	12	USA11787	2.69	USA12575	8.72	29/64	4-3/16	5-5/8	6	USA11817	10.87	USA12605	31.95
15/64	2-5/8	3-7/8	12	USA11789	3.01	USA12577	9.11	15/32	4-5/16	5-3/4	6	USA11819	11.83	USA12607	32.86
1/4	2-3/4	4	12	USA11791	3.08	USA12579	9.34	31/64	4-3/8	5-7/8	6	USA11821	12.50	USA12609	33.13
17/64	2-7/8	4-1/8	6	USA11793	4.43	USA12581	13.28	1/2	4-1/2	6	6	USA11823	13.03	USA12611	33.82
9/32	2-15/16	4-1/4	6	USA11795	4.71	USA12583	14.73								

LETTER SIZES								LETTER SIZES							
SIZE	FLUTE LENGTH	OAL	PKG. QTY.	BRIGHT	LIST PRICE	TIN	LIST PRICE	SIZE	FLUTE LENGTH	OAL	PKG. QTY.	BRIGHT	LIST PRICE	TIN	LIST PRICE
A	2-5/8	3-7/8	12	USA11985	3.01	USA12613	9.49	N	3-1/16	4-3/8	6	USA12011	5.38	USA12639	17.98
B	2-3/4	4	12	USA11987	3.08	USA12615	9.72	O	3-3/16	4-1/2	6	USA12013	5.84	USA12641	17.98
C	2-3/4	4	12	USA11989	3.08	USA12617	9.72	P	3-5/16	4-5/8	6	USA12015	6.27	USA12643	18.75
D	2-3/4	4	12	USA11991	3.19	USA12619	9.72	Q	3-7/16	4-3/4	6	USA12017	6.52	USA12645	18.75
E	2-3/4	4	12	USA11993	3.22	USA12621	9.34	R	3-7/16	4-3/4	6	USA12019	6.76	USA12647	19.24
F	2-7/8	4-1/8	6	USA11995	4.46	USA12623	16.03	S	3-1/2	4-7/8	6	USA12021	7.08	USA12649	24.26
G	2-7/8	4-1/8	6	USA11997	4.28	USA12625	16.03	T	3-1/2	4-7/8	6	USA12023	7.44	USA12651	25.40
H	2-7/8	4-1/8	6	USA11999	4.36	USA12627	16.03	U	3-5/8	5	6	USA12025	8.04	USA12653	25.40
I	2-7/8	4-1/8	6	USA12001	4.46	USA12629	16.03	V	3-5/8	5	6	USA12027	8.32	USA12655	25.75
J	2-7/8	4-1/8	6	USA12003	4.60	USA12631	16.15	W	3-3/4	5-1/8	6	USA12029	8.85	USA12657	29.80
K	2-15/16	4-1/4	6	USA12005	4.71	USA12633	17.37	X	3-3/4	5-1/8	6	USA12031	9.38	USA12659	32.10
L	2-15/16	4-1/4	6	USA12007	4.92	USA12635	17.37	Y	3-7/8	5-1/4	6	USA12033	9.84	USA12661	34.20
M	3-1/16	4-3/8	6	USA12009	5.21	USA12637	17.68	Z	3-7/8	5-1/4	6	USA12035	10.06	USA12663	34.59

For coating information see page 6. For technical information, please see pages 238 & 239.

HSS Drills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



JOBBER LENGTH - 118° POINT

BRIGHT FINISH



TIN COATED



HSS & COBALT DRILLS

WIRE SIZES						WIRE SIZES									
SIZE	FLUTE LENGTH	OAL	PKG. QTY.	BRIGHT	LIST PRICE	TIN	LIST PRICE	SIZE	FLUTE LENGTH	OAL	PKG. QTY.	BRIGHT	LIST PRICE	TIN	LIST PRICE
1	2-5/8	3-7/8	12	USA11825	3.29	USA12665	9.49	31	1-5/8	2-3/4	12	USA11885	1.52	USA12725	4.78
2	2-5/8	3-7/8	12	USA11827	3.29	USA12667	9.49	32	1-5/8	2-3/4	12	USA11887	1.52	USA12727	4.78
3	2-1/2	3-3/4	12	USA11829	3.01	USA12669	9.11	33	1-1/2	2-5/8	12	USA11889	1.52	USA12729	4.78
4	2-1/2	3-3/4	12	USA11831	3.01	USA12671	9.11	34	1-1/2	2-5/8	12	USA11891	1.52	USA12731	4.78
5	2-1/2	3-3/4	12	USA11833	2.97	USA12673	9.11	35	1-1/2	2-5/8	12	USA11893	1.52	USA12733	4.78
6	2-1/2	3-3/4	12	USA11835	2.97	USA12675	9.11	36	1-7/16	2-1/2	12	USA11895	1.52	USA12735	4.71
7	2-7/16	3-5/8	12	USA11837	2.87	USA12677	8.65	37	1-7/16	2-1/2	12	USA11897	1.52	USA12737	4.71
8	2-7/16	3-5/8	12	USA11839	2.87	USA12679	8.65	38	1-7/16	2-1/2	12	USA11899	1.52	USA12739	4.71
9	2-7/16	3-5/8	12	USA11841	2.83	USA12681	8.65	39	1-3/8	2-3/8	12	USA11901	1.52	USA12741	4.71
10	2-7/16	3-5/8	12	USA11843	2.59	USA12683	8.65	40	1-3/8	2-3/8	12	USA11903	1.52	USA12743	4.71
11	2-5/16	3-1/2	12	USA11845	2.59	USA12685	8.65	41	1-3/8	2-3/8	12	USA11905	1.52	USA12745	4.71
12	2-5/16	3-1/2	12	USA11847	2.59	USA12687	7.08	42	1-1/4	2-1/4	12	USA11907	1.52	USA12747	4.71
13	2-5/16	3-1/2	12	USA11849	2.59	USA12689	6.96	43	1-1/4	2-1/4	12	USA11909	1.52	USA12749	4.71
14	2-3/16	3-3/8	12	USA11851	2.44	USA12691	6.96	44	1-1/8	2-1/8	12	USA11911	1.52	USA12751	4.71
15	2-3/16	3-3/8	12	USA11853	2.44	USA12693	6.96	45	1-1/8	2-1/8	12	USA11913	1.59	USA12753	4.71
16	2-3/16	3-3/8	12	USA11855	2.44	USA12695	6.96	46	1-1/8	2-1/8	12	USA11915	1.59	USA12755	4.71
17	2-3/16	3-3/8	12	USA11857	2.34	USA12697	6.96	47	1	2	12	USA11917	1.59	USA12757	4.71
18	2-1/8	3-1/4	12	USA11859	2.34	USA12699	6.20	48	1	2	12	USA11919	1.59	USA12759	4.71
19	2-1/8	3-1/4	12	USA11861	2.34	USA12701	6.20	49	1	2	12	USA11921	1.59	USA12761	4.71
20	2-1/8	3-1/4	12	USA11863	2.09	USA12703	6.20	50	1	2	12	USA11923	1.59	USA12763	4.71
21	2-1/8	3-1/4	12	USA11865	2.09	USA12705	6.12	51	1	2	12	USA11925	1.59	USA12765	4.71
22	2	3-1/8	12	USA11867	1.98	USA12707	6.12	52	7/8	1-7/8	12	USA11927	1.59	USA12767	4.71
23	2	3-1/8	12	USA11869	1.98	USA12709	6.05	53	7/8	1-7/8	12	USA11929	1.59	USA12769	4.71
24	2	3-1/8	12	USA11871	1.98	USA12711	6.05	54	7/8	1-7/8	12	USA11931	1.70	USA12771	4.71
25	1-7/8	3	12	USA11873	1.74	USA12713	5.93	55	7/8	1-7/8	12	USA11933	1.70	USA12773	4.71
26	1-7/8	3	12	USA11875	1.74	USA12715	5.93	56	3/4	1-3/4	12	USA11935	1.70	USA12775	4.71
27	1-7/8	3	12	USA11877	1.74	USA12717	5.93	57	3/4	1-3/4	12	USA11937	1.88	USA12777	4.71
28	1-3/4	2-7/8	12	USA11879	1.59	USA12719	5.74	58	11/16	1-5/8	12	USA11939	1.88	USA12779	4.71
29	1-3/4	2-7/8	12	USA11881	1.59	USA12721	5.74	59	11/16	1-5/8	12	USA11941	1.88	USA12781	4.71
30	1-5/8	2-3/4	12	USA11883	1.56	USA12723	4.78	60	11/16	1-5/8	12	USA11943	1.88	USA12783	4.71

For coating information see page 6. For technical information, please see pages 238 & 239.

MADE IN THE USA



HSS Drills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

JOBBER LENGTH - 118° POINT



OXIDE FINISH

HSS & COBALT DRILLS

FRACTIONAL SIZES					
SIZE	FLUTE LENGTH	OAL	PKG. QTY.	BLACK OXIDE	LIST PRICE
1/16	7/8	1-7/8	12	USA11467	1.66
5/64	1	2	12	USA11469	1.66
3/32	1-1/4	2-1/4	12	USA11471	1.66
7/64	1-1/2	2-5/8	12	USA11473	1.66
1/8	1-5/8	2-3/4	12	USA11475	1.66
9/64	1-3/4	2-7/8	12	USA11477	1.77
5/32	2	3-1/8	12	USA11479	1.84
11/64	2-1/8	3-1/4	12	USA11481	1.98
3/16	2-5/16	3-1/2	12	USA11483	2.16
13/64	2-7/16	3-5/8	12	USA11485	2.44
7/32	2-1/2	3-3/4	12	USA11487	2.69
15/64	2-5/8	3-7/8	12	USA11489	3.01
1/4	2-3/4	4	12	USA11491	3.08
17/64	2-7/8	4-1/8	6	USA11493	4.43
9/32	2-15/16	4-1/4	6	USA11495	4.71
19/64	3-1/16	4-3/8	6	USA11497	5.17
5/16	3-3/16	4-1/2	6	USA11499	5.38
21/64	3-5/16	4-5/8	6	USA11501	6.02
11/32	3-7/16	4-3/4	6	USA11503	6.45
23/64	3-1/2	4-7/8	6	USA11505	7.08
3/8	3-5/8	5	6	USA11507	7.44

FRACTIONAL SIZES					
SIZE	FLUTE LENGTH	OAL	PKG. QTY.	BLACK OXIDE	LIST PRICE
25/64	3-3/4	5-1/8	6	USA11509	8.04
13/32	3-7/8	5-1/4	6	USA11511	8.78
27/64	3-15/16	5-3/8	6	USA11513	9.35
7/16	4-1/16	5-1/2	6	USA11515	10.20
29/64	4-3/16	5-5/8	6	USA11517	10.87
15/32	4-5/16	5-3/4	6	USA11519	11.83
31/64	4-3/8	5-7/8	6	USA11521	12.50
1/2	4-1/2	6	6	USA11523	13.03
33/64	4-13/16	6-5/8	1	USA11525	31.13
17/32	4-13/16	6-5/8	1	USA11527	32.62
35/64	4-13/16	6-5/8	1	USA11529	35.31
9/16	4-13/16	6-5/8	1	USA11531	36.97
37/64	4-13/16	6-5/8	1	USA11533	37.08
19/32	5-3/16	7-1/8	1	USA11535	38.10
39/64	5-3/16	7-1/8	1	USA11537	41.86
5/8	5-3/16	7-1/8	1	USA11539	40.87
41/64	5-3/16	7-1/8	1	USA11541	44.69
21/32	5-3/16	7-1/8	1	USA11543	43.17
43/64	5-5/8	7-5/8	1	USA11545	50.75
11/16	5-5/8	7-5/8	1	USA11547	49.65

METRIC SIZES					
SIZE	FLUTE LENGTH	OAL	PKG. QTY.	BLACK OXIDE	LIST PRICE
1.00	17	41	12	USA33002	2.18
1.05	17	41	12	USA33004	2.40
1.10	19	44	12	USA33006	2.29
1.15	19	44	12	USA33008	2.33
1.20	22	48	12	USA33010	2.29
1.25	22	48	12	USA33012	2.33
1.30	22	48	12	USA33014	2.29
1.35	22	48	12	USA33016	2.40
1.40	22	48	12	USA33018	2.29
1.50	22	48	12	USA33022	2.29
1.60	22	48	12	USA33026	2.29
1.70	25	51	12	USA33030	2.33
1.80	25	51	12	USA33034	2.33
1.90	25	51	12	USA33038	2.33
2.00	25	51	12	USA33042	2.33
2.50	35	60	12	USA33062	2.44
3.00	41	70	12	USA33072	2.55
3.50	45	73	12	USA33082	2.67
4.00	54	83	12	USA33092	2.78

METRIC SIZES					
SIZE	FLUTE LENGTH	OAL	PKG. QTY.	BLACK OXIDE	LIST PRICE
4.50	56	86	12	USA33102	3.12
5.00	62	92	12	USA33112	3.53
5.50	64	95	12	USA33122	3.98
6.00	70	102	12	USA33132	4.32
6.50	73	105	6	USA33142	5.52
7.00	73	105	6	USA33152	5.74
7.50	78	111	6	USA33162	6.83
8.00	81	114	6	USA33172	7.51
8.50	87	121	6	USA33182	8.60
9.00	89	124	6	USA33192	9.68
9.50	92	127	6	USA33202	10.14
10.00	95	130	6	USA33212	12.38
10.50	98	133	6	USA33216	12.39
11.00	103	140	6	USA33218	12.73
11.50	106	143	6	USA33222	14.30
12.00	111	149	6	USA33224	15.77
12.50	114	152	6	USA33226	16.10
13.00	114	152	6	USA33228	26.69

For technical information, please see pages 238 & 239.

HSS Drills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



JOBBER LENGTH - 118° POINT



OXIDE FINISH

LETTER SIZES						LETTER SIZES					
SIZE	FLUTE LENGTH	OAL	PKG. QTY.	BLACK OXIDE	LIST PRICE	SIZE	FLUTE LENGTH	OAL	PKG. QTY.	BLACK OXIDE	LIST PRICE
A	2-5/8	3-7/8	12	USA11709	3.01	N	3-1/16	4-3/8	6	USA11735	5.38
B	2-3/4	4	12	USA11711	3.08	O	3-3/16	4-1/2	6	USA11737	5.84
C	2-3/4	4	12	USA11713	3.08	P	3-5/16	4-5/8	6	USA11739	6.27
D	2-3/4	4	12	USA11715	3.19	Q	3-7/16	4-3/4	6	USA11741	6.52
E	2-3/4	4	12	USA11717	3.22	R	3-7/16	4-3/4	6	USA11743	6.76
F	2-7/8	4-1/8	6	USA11719	4.46	S	3-1/2	4-7/8	6	USA11745	7.08
G	2-7/8	4-1/8	6	USA11721	4.28	T	3-1/2	4-7/8	6	USA11747	7.44
H	2-7/8	4-1/8	6	USA11723	4.36	U	3-5/8	5	6	USA11749	8.04
I	2-7/8	4-1/8	6	USA11725	4.46	V	3-5/8	5	6	USA11751	8.32
J	2-7/8	4-1/8	6	USA11727	4.60	W	3-3/4	5-1/8	6	USA11753	8.85
K	2-15/16	4-1/4	6	USA11729	4.71	X	3-3/4	5-1/8	6	USA11755	9.38
L	2-15/16	4-1/4	6	USA11731	4.92	Y	3-7/8	5-1/4	6	USA11757	9.84
M	3-1/16	4-3/8	6	USA11733	5.21	Z	3-7/8	5-1/4	6	USA11759	10.06

WIRE SIZES						WIRE SIZES					
SIZE	FLUTE LENGTH	OAL	PKG. QTY.	BLACK OXIDE	LIST PRICE	SIZE	FLUTE LENGTH	OAL	PKG. QTY.	BLACK OXIDE	LIST PRICE
1	2-5/8	3-7/8	12	USA11549	3.29	31	1-5/8	2-3/4	12	USA11609	1.52
2	2-5/8	3-7/8	12	USA11551	3.29	32	1-5/8	2-3/4	12	USA11611	1.52
3	2-1/2	3-3/4	12	USA11553	3.01	33	1-1/2	2-5/8	12	USA11613	1.52
4	2-1/2	3-3/4	12	USA11555	3.01	34	1-1/2	2-5/8	12	USA11615	1.52
5	2-1/2	3-3/4	12	USA11557	2.97	35	1-1/2	2-5/8	12	USA11617	1.52
6	2-1/2	3-3/4	12	USA11559	2.97	36	1-7/16	2-1/2	12	USA11619	1.52
7	2-7/16	3-5/8	12	USA11561	2.87	37	1-7/16	2-1/2	12	USA11621	1.52
8	2-7/16	3-5/8	12	USA11563	2.87	38	1-7/16	2-1/2	12	USA11623	1.52
9	2-7/16	3-5/8	12	USA11565	2.83	39	1-3/8	2-3/8	12	USA11625	1.52
10	2-7/16	3-5/8	12	USA11567	2.59	40	1-3/8	2-3/8	12	USA11627	1.52
11	2-5/16	3-1/2	12	USA11569	2.59	41	1-3/8	2-3/8	12	USA11629	1.52
12	2-5/16	3-1/2	12	USA11571	2.59	42	1-1/4	2-1/4	12	USA11631	1.52
13	2-5/16	3-1/2	12	USA11573	2.59	43	1-1/4	2-1/4	12	USA11633	1.52
14	2-3/16	3-3/8	12	USA11575	2.44	44	1-1/8	2-1/8	12	USA11635	1.52
15	2-3/16	3-3/8	12	USA11577	2.44	45	1-1/8	2-1/8	12	USA11637	1.59
16	2-3/16	3-3/8	12	USA11579	2.44	46	1-1/8	2-1/8	12	USA11639	1.59
17	2-3/16	3-3/8	12	USA11581	2.34	47	1	2	12	USA11641	1.59
18	2-1/8	3-1/4	12	USA11583	2.34	48	1	2	12	USA11643	1.59
19	2-1/8	3-1/4	12	USA11585	2.34	49	1	2	12	USA11645	1.59
20	2-1/8	3-1/4	12	USA11587	2.09	50	1	2	12	USA11647	1.59
21	2-1/8	3-1/4	12	USA11589	2.09	51	1	2	12	USA11649	1.59
22	2	3-1/8	12	USA11591	2.02	52	7/8	1-7/8	12	USA11651	1.59
23	2	3-1/8	12	USA11593	2.02	53	7/8	1-7/8	12	USA11653	1.59
24	2	3-1/8	12	USA11595	2.02	54	7/8	1-7/8	12	USA11655	1.70
25	1-7/8	3	12	USA11597	1.74	55	7/8	1-7/8	12	USA11657	1.70
26	1-7/8	3	12	USA11599	1.74	56	3/4	1-3/4	12	USA11659	1.70
27	1-7/8	3	12	USA11601	1.74	57	3/4	1-3/4	12	USA11661	1.88
28	1-3/4	2-7/8	12	USA11603	1.59	58	11/16	1-5/8	12	USA11663	1.88
29	1-3/4	2-7/8	12	USA11605	1.59	59	11/16	1-5/8	12	USA11665	1.88
30	1-5/8	2-3/4	12	USA11607	1.56	60	11/16	1-5/8	12	USA11667	1.88

For technical information, please see pages 238 & 239.

MADE IN THE USA

HSS & COBALT DRILLS



HSS Drills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

JOBBER LENGTH - HEAVY DUTY - 135° SPLIT POINT - TYPE "B"

HIGH SPEED STEEL
OXIDE FINISH



HIGH SPEED STEEL
BLACK & GOLD



HSS & COBALT DRILLS

FRACTIONAL SIZES							FRACTIONAL SIZES								
SIZE	FLUTE LENGTH	OAL	PKG. QTY.	BLACK OXIDE	LIST PRICE	BLACK & GOLD	LIST PRICE	SIZE	FLUTE LENGTH	OAL	PKG. QTY.	BLACK OXIDE	LIST PRICE	BLACK & GOLD	LIST PRICE
1/16	7/8	1-7/8	12	USA12037	1.66	USA12267	1.91	19/64	3-1/16	4-3/8	6	USA12067	6.02	USA12297	7.05
5/64	1	2	12	USA12039	1.66	USA12269	1.91	5/16	3-3/16	4-1/2	6	USA12069	6.20	USA12299	7.30
3/32	1-1/4	2-1/4	12	USA12041	1.66	USA12271	1.91	21/64	3-5/16	4-5/8	6	USA12071	7.01	USA12301	8.04
7/64	1-1/2	2-5/8	12	USA12043	1.66	USA12273	1.98	11/32	3-7/16	4-3/4	6	USA12073	7.44	USA12303	8.61
1/8	1-5/8	2-3/4	12	USA12045	1.66	USA12275	2.20	23/64	3-1/2	4-7/8	6	USA12075	7.83	USA12305	9.31
9/64	1-3/4	2-7/8	12	USA12047	1.81	USA12277	2.30	3/8	3-5/8	5	6	USA12077	8.53	USA12307	9.74
5/32	2	3-1/8	12	USA12049	2.20	USA12279	2.76	25/64	3-3/4	5-1/8	6	USA12079	9.28	USA12309	10.59
11/64	2-1/8	3-1/4	12	USA12051	2.34	USA12281	2.90	13/32	3-7/8	5-1/4	6	USA12081	10.06	USA12311	11.65
3/16	2-5/16	3-1/2	12	USA12053	2.66	USA12283	3.22	27/64	3-15/16	5-3/8	6	USA12083	10.84	USA12313	12.43
13/64	2-7/16	3-5/8	12	USA12055	2.87	USA12285	3.51	7/16	4-1/16	5-1/2	6	USA12085	11.76	USA12315	13.39
7/32	2-1/2	3-3/4	12	USA12057	3.15	USA12287	3.82	29/64	4-3/16	5-5/8	6	USA12087	12.54	USA12317	14.24
15/64	2-5/8	3-7/8	12	USA12059	3.44	USA12289	4.21	15/32	4-5/16	5-3/4	6	USA12089	13.63	USA12319	15.48
1/4	2-3/4	4	12	USA12061	3.65	USA12291	4.43	31/64	4-3/8	5-7/8	6	USA12091	14.41	USA12321	16.33
17/64	2-7/8	4-1/8	6	USA12063	5.03	USA12293	5.95	1/2	4-1/2	6	6	USA12093	15.16	USA12323	17.07
9/32	2-15/16	4-1/4	6	USA12065	5.45	USA12295	6.41								

LETTER SIZES							LETTER SIZES								
SIZE	FLUTE LENGTH	OAL	PKG. QTY.	BLACK OXIDE	LIST PRICE	BLACK & GOLD	LIST PRICE	SIZE	FLUTE LENGTH	OAL	PKG. QTY.	BLACK OXIDE	LIST PRICE	BLACK & GOLD	LIST PRICE
A	2-5/8	3-7/8	12	USA12215	3.93	USA12445	6.21	N	3-1/16	4-3/8	6	USA12241	7.44	USA12471	9.31
B	2-3/4	4	12	USA12217	3.93	USA12447	6.21	O	3-3/16	4-1/2	6	USA12243	7.44	USA12473	9.31
C	2-3/4	4	12	USA12219	3.93	USA12449	6.21	P	3-5/16	4-5/8	6	USA12245	8.39	USA12475	10.41
D	2-3/4	4	12	USA12221	3.93	USA12451	6.01	Q	3-7/16	4-3/4	6	USA12247	8.39	USA12477	10.71
E	2-3/4	4	12	USA12223	3.93	USA12453	5.01	R	3-7/16	4-3/4	6	USA12249	8.39	USA12479	11.16
F	2-7/8	4-1/8	6	USA12225	4.99	USA12455	6.71	S	3-1/2	4-7/8	6	USA12251	9.56	USA12481	12.06
G	2-7/8	4-1/8	6	USA12227	4.99	USA12457	7.26	T	3-1/2	4-7/8	6	USA12253	9.56	USA12483	13.56
H	2-7/8	4-1/8	6	USA12229	4.99	USA12459	7.41	U	3-5/8	5	6	USA12255	10.16	USA12485	13.56
I	2-7/8	4-1/8	6	USA12231	4.99	USA12461	7.41	V	3-5/8	5	6	USA12257	10.16	USA12487	13.82
J	2-7/8	4-1/8	6	USA12233	6.06	USA12463	7.86	W	3-3/4	5-1/8	6	USA12259	11.54	USA12489	16.92
K	2-15/16	4-1/4	6	USA12235	6.06	USA12465	8.76	X	3-3/4	5-1/8	6	USA12261	11.54	USA12491	19.97
L	2-15/16	4-1/4	6	USA12237	6.06	USA12467	8.46	Y	3-7/8	5-1/4	6	USA12263	12.57	USA12493	20.22
M	3-1/16	4-3/8	6	USA12239	7.44	USA12469	9.31	Z	3-7/8	5-1/4	6	USA12265	12.57	USA12495	20.67

For technical information, please see pages 238 & 239.

HSS Drills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



JOBBER LENGTH - HEAVY DUTY - 135° SPLIT POINT - TYPE "B"

HIGH SPEED STEEL
OXIDE FINISH



HIGH SPEED STEEL
BLACK & GOLD



HSS & COBALT DRILLS

WIRE SIZES						WIRE SIZES									
SIZE	FLUTE LENGTH	OAL	PKG. QTY.	BLACK OXIDE	LIST PRICE	BLACK & GOLD	LIST PRICE	SIZE	FLUTE LENGTH	OAL	PKG. QTY.	BLACK OXIDE	LIST PRICE	BLACK & GOLD	LIST PRICE
1	2-5/8	3-7/8	12	USA12095	3.40	USA12325	5.76	31	1-5/8	2-3/4	12	USA12155	2.37	USA12385	2.87
2	2-5/8	3-7/8	12	USA12097	3.40	USA12327	5.76	32	1-5/8	2-3/4	12	USA12157	2.37	USA12387	2.87
3	2-1/2	3-3/4	12	USA12099	3.15	USA12329	5.36	33	1-1/2	2-5/8	12	USA12159	2.37	USA12389	2.87
4	2-1/2	3-3/4	12	USA12101	3.15	USA12331	5.36	34	1-1/2	2-5/8	12	USA12161	2.37	USA12391	2.87
5	2-1/2	3-3/4	12	USA12103	3.15	USA12333	5.36	35	1-1/2	2-5/8	12	USA12163	2.37	USA12393	2.87
6	2-1/2	3-3/4	12	USA12105	3.15	USA12335	5.36	36	1-7/16	2-1/2	12	USA12165	2.37	USA12395	2.76
7	2-7/16	3-5/8	12	USA12107	2.97	USA12337	4.71	37	1-7/16	2-1/2	12	USA12167	2.37	USA12397	2.76
8	2-7/16	3-5/8	12	USA12109	3.01	USA12339	4.71	38	1-7/16	2-1/2	12	USA12169	2.37	USA12399	2.76
9	2-7/16	3-5/8	12	USA12111	3.01	USA12341	4.71	39	1-3/8	2-3/8	12	USA12171	2.37	USA12401	2.76
10	2-7/16	3-5/8	12	USA12113	2.73	USA12343	4.61	40	1-3/8	2-3/8	12	USA12173	2.37	USA12403	2.76
11	2-5/16	3-1/2	12	USA12115	2.73	USA12345	4.25	41	1-3/8	2-3/8	12	USA12175	2.27	USA12405	2.76
12	2-5/16	3-1/2	12	USA12117	2.73	USA12347	4.25	42	1-1/4	2-1/4	12	USA12177	2.27	USA12407	2.76
13	2-5/16	3-1/2	12	USA12119	3.01	USA12349	4.10	43	1-1/4	2-1/4	12	USA12179	2.27	USA12409	2.76
14	2-3/16	3-3/8	12	USA12121	3.01	USA12351	4.10	44	1-1/8	2-1/8	12	USA12181	2.27	USA12411	2.76
15	2-3/16	3-3/8	12	USA12123	3.01	USA12353	4.10	45	1-1/8	2-1/8	12	USA12183	2.27	USA12413	2.76
16	2-3/16	3-3/8	12	USA12125	3.01	USA12355	4.10	46	1-1/8	2-1/8	12	USA12185	2.27	USA12415	2.76
17	2-3/16	3-3/8	12	USA12127	3.01	USA12357	4.10	47	1	2	12	USA12187	2.27	USA12417	2.76
18	2-1/8	3-1/4	12	USA12129	3.01	USA12359	3.60	48	1	2	12	USA12189	2.27	USA12419	2.76
19	2-1/8	3-1/4	12	USA12131	2.87	USA12361	3.60	49	1	2	12	USA12191	2.27	USA12421	2.76
20	2-1/8	3-1/4	12	USA12133	2.87	USA12363	3.60	50	1	2	12	USA12193	2.27	USA12423	2.76
21	2-1/8	3-1/4	12	USA12135	2.69	USA12365	3.58	51	1	2	12	USA12195	2.27	USA12425	2.76
22	2	3-1/8	12	USA12137	2.69	USA12367	3.58	52	7/8	1-7/8	12	USA12197	2.27	USA12427	2.59
23	2	3-1/8	12	USA12139	2.69	USA12369	3.47	53	7/8	1-7/8	12	USA12199	2.27	USA12429	2.59
24	2	3-1/8	12	USA12141	2.69	USA12371	3.47	54	7/8	1-7/8	12	USA12201	2.27	USA12431	2.59
25	1-7/8	3	12	USA12143	2.69	USA12373	3.47	55	7/8	1-7/8	12	USA12203	2.27	USA12433	2.59
26	1-7/8	3	12	USA12145	2.69	USA12375	3.47	56	3/4	1-3/4	12	USA12205	2.27	USA12435	2.59
27	1-7/8	3	12	USA12147	2.69	USA12377	3.36	57	3/4	1-3/4	12	USA12207	2.27	USA12437	2.59
28	1-3/4	2-7/8	12	USA12149	2.69	USA12379	3.36	58	11/16	1-5/8	12	USA12209	2.27	USA12439	2.59
29	1-3/4	2-7/8	12	USA12151	2.16	USA12381	3.29	59	11/16	1-5/8	12	USA12211	2.27	USA12441	2.59
30	1-5/8	2-3/4	12	USA12153	2.16	USA12383	2.87	60	11/16	1-5/8	12	USA12213	2.27	USA12443	2.59

NOTE: SIZES BELOW 1/16" ARE NOT SPLIT POINT.

For technical information, please see pages 238 & 239.

MADE IN THE USA



M42 Cobalt Drills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

JOBBER LENGTH - HEAVY DUTY - 135° SPLIT POINT - TYPE "J"

NAS 907 - M42 COBALT



NAS 907 - M42 COBALT
ALTIN COATED



FRACTIONAL SIZES

SIZE	FLUTE LENGTH	OAL	PKG. QTY.	UNCOATED LIST PRICE	ALTIN LIST PRICE
1/16	7/8	1-7/8	12	USA12787 2.80	USA36586 5.02
5/64	1	2	12	USA12789 2.80	USA36588 5.02
3/32	1-1/4	2-1/4	12	USA12791 2.80	USA36590 5.02
7/64	1-1/2	2-5/8	12	USA12793 2.94	USA36592 5.31
1/8	1-5/8	2-3/4	12	USA12795 3.61	USA36594 6.50
9/64	1-3/4	2-7/8	12	USA12797 3.61	USA36596 6.50
5/32	2	3-1/8	12	USA12799 4.04	USA36598 7.29
11/64	2-1/8	3-1/4	12	USA12801 4.25	USA36600 7.69
3/16	2-5/16	3-1/2	12	USA12803 4.78	USA36602 8.63
13/64	2-7/16	3-5/8	12	USA12805 5.74	USA36604 10.36
7/32	2-1/2	3-3/4	12	USA12807 6.27	USA36606 11.33
15/64	2-5/8	3-7/8	12	USA12809 6.66	USA36608 12.02
1/4	2-3/4	4	12	USA12811 7.12	USA36610 12.89
17/64	2-7/8	4-1/8	6	USA12813 8.07	USA36612 14.58
9/32	2-15/16	4-1/4	6	USA12815 8.46	USA36614 15.30

FRACTIONAL SIZES

SIZE	FLUTE LENGTH	OAL	PKG. QTY.	UNCOATED LIST PRICE	ALTIN LIST PRICE
19/64	3-1/16	4-3/8	6	USA12817 10.31	USA36616 18.62
5/16	3-3/16	4-1/2	6	USA12819 10.98	USA36618 19.82
21/64	3-5/16	4-5/8	6	USA12821 12.15	USA36620 21.95
11/32	3-7/16	4-3/4	6	USA12823 13.35	USA36622 24.11
23/64	3-1/2	4-7/8	6	USA12825 15.30	USA36624 27.61
3/8	3-5/8	5	6	USA12827 15.30	USA36626 27.61
25/64	3-3/4	5-1/8	6	USA12829 17.39	USA36628 31.40
13/32	3-7/8	5-1/4	6	USA12831 18.13	USA36630 32.77
27/64	3-15/16	5-3/8	6	USA12833 20.04	USA36632 36.24
7/16	4-1/16	5-1/2	6	USA12835 20.50	USA36634 37.07
29/64	4-3/16	5-5/8	6	USA12837 24.61	USA36636 44.47
15/32	4-5/16	5-3/4	6	USA12839 25.07	USA36638 45.30
31/64	4-3/8	5-7/8	6	USA12841 25.21	USA36640 45.55
1/2	4-1/2	6	6	USA12843 25.21	USA36642 45.55

LETTER SIZES

SIZE	FLUTE LENGTH	OAL	PKG. QTY.	UNCOATED LIST PRICE	ALTIN LIST PRICE
A	2-5/8	3-7/8	12	USA13005 7.54	USA36764 13.61
B	2-3/4	4	12	USA13007 8.71	USA36766 15.70
C	2-3/4	4	12	USA13009 8.71	USA36768 15.70
D	2-3/4	4	12	USA13011 9.81	USA36770 17.69
E	2-3/4	4	12	USA13013 7.12	USA36772 12.89
F	2-7/8	4-1/8	6	USA13015 8.71	USA36774 15.70
G	2-7/8	4-1/8	6	USA13017 8.71	USA36776 15.70
H	2-7/8	4-1/8	6	USA13019 9.81	USA36778 17.69
I	2-7/8	4-1/8	6	USA13021 9.81	USA36780 17.69
J	2-7/8	4-1/8	6	USA13023 9.81	USA36782 17.69
K	2-15/16	4-1/4	6	USA13025 9.81	USA36784 17.69
L	2-15/16	4-1/4	6	USA13027 11.12	USA36786 20.10
M	3-1/16	4-3/8	6	USA13029 11.79	USA36788 21.33

LETTER SIZES

SIZE	FLUTE LENGTH	OAL	PKG. QTY.	UNCOATED LIST PRICE	ALTIN LIST PRICE
N	3-1/16	4-3/8	6	USA13031 11.79	USA36790 21.33
O	3-3/16	4-1/2	6	USA13033 13.03	USA36792 23.57
P	3-5/16	4-5/8	6	USA13035 13.85	USA36794 25.05
Q	3-7/16	4-3/4	6	USA13037 14.38	USA36796 25.95
R	3-7/16	4-3/4	6	USA13039 14.38	USA36798 25.95
S	3-1/2	4-7/8	6	USA13041 17.60	USA36800 31.83
T	3-1/2	4-7/8	6	USA13043 17.60	USA36802 31.83
U	3-5/8	5	6	USA13045 17.60	USA36804 31.83
V	3-5/8	5	6	USA13047 19.41	USA36806 35.08
W	3-3/4	5-1/8	6	USA13049 19.41	USA36808 35.08
X	3-3/4	5-1/8	6	USA13051 19.41	USA36810 35.08
Y	3-7/8	5-1/4	6	USA13053 20.57	USA36812 37.18
Z	3-7/8	5-1/4	6	USA13055 22.38	USA36814 40.43

All cobalt drills have identification ring on shank.
For coating information see page 6. For technical information, please see pages 238 & 239.

M42 Cobalt Drills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



JOBBER LENGTH - HEAVY DUTY - 135° SPLIT POINT - TYPE "J"

NAS 907 - M42 COBALT



NAS 907 - M42 COBALT
ALTIN COATED



HSS & COBALT DRILLS

WIRE SIZES							WIRE SIZES								
SIZE	FLUTE LENGTH	OAL	PKG. QTY.	UNCOATED	LIST PRICE	ALTIN	LIST PRICE	SIZE	FLUTE LENGTH	OAL	PKG. QTY.	UNCOATED	LIST PRICE	ALTIN	LIST PRICE
1	2-5/8	3-7/8	12	USA12845	7.61	USA36644	13.79	31	1-5/8	2-3/4	12	USA12905	3.22	USA36704	5.85
2	2-5/8	3-7/8	12	USA12847	7.61	USA36646	13.79	32	1-5/8	2-3/4	12	USA12907	3.19	USA36706	5.78
3	2-1/2	3-3/4	12	USA12849	7.12	USA36648	12.89	33	1-1/2	2-5/8	12	USA12909	3.08	USA36708	5.56
4	2-1/2	3-3/4	12	USA12851	7.12	USA36650	12.89	34	1-1/2	2-5/8	12	USA12911	3.08	USA36710	5.56
5	2-1/2	3-3/4	12	USA12853	7.12	USA36652	12.89	35	1-1/2	2-5/8	12	USA12913	3.08	USA36712	5.56
6	2-1/2	3-3/4	12	USA12855	7.12	USA36654	12.89	36	1-7/16	2-1/2	12	USA12915	3.05	USA36714	5.49
7	2-7/16	3-5/8	12	USA12857	5.56	USA36656	10.03	37	1-7/16	2-1/2	12	USA12917	3.05	USA36716	5.49
8	2-7/16	3-5/8	12	USA12859	5.56	USA36658	10.03	38	1-7/16	2-1/2	12	USA12919	2.83	USA36718	5.25
9	2-7/16	3-5/8	12	USA12861	5.56	USA36660	10.03	39	1-3/8	2-3/8	12	USA12921	2.83	USA36720	5.25
10	2-7/16	3-5/8	12	USA12863	5.56	USA36662	10.03	40	1-3/8	2-3/8	12	USA12923	2.83	USA36722	5.25
11	2-5/16	3-1/2	12	USA12865	5.56	USA36664	10.03	41	1-3/8	2-3/8	12	USA12925	2.80	USA36724	5.25
12	2-5/16	3-1/2	12	USA12867	5.56	USA36666	10.03	42	1-1/4	2-1/4	12	USA12927	2.76	USA36726	5.25
13	2-5/16	3-1/2	12	USA12869	5.45	USA36668	9.85	43	1-1/4	2-1/4	12	USA12929	2.76	USA36728	5.25
14	2-3/16	3-3/8	12	USA12871	5.45	USA36670	9.85	44	1-1/8	2-1/8	12	USA12931	2.76	USA36730	5.25
15	2-3/16	3-3/8	12	USA12873	5.45	USA36672	9.85	45	1-1/8	2-1/8	12	USA12933	2.76	USA36732	5.25
16	2-3/16	3-3/8	12	USA12875	4.96	USA36674	8.99	46	1-1/8	2-1/8	12	USA12935	2.76	USA36734	5.25
17	2-3/16	3-3/8	12	USA12877	4.85	USA36676	8.77	47	1	2	12	USA12937	2.76	USA36736	5.25
18	2-1/8	3-1/4	12	USA12879	4.43	USA36678	8.01	48	1	2	12	USA12939	2.76	USA36738	5.25
19	2-1/8	3-1/4	12	USA12881	4.32	USA36680	7.80	49	1	2	12	USA12941	2.76	USA36740	5.25
20	2-1/8	3-1/4	12	USA12883	4.32	USA36682	7.80	50	1	2	12	USA12943	2.76	USA36742	5.25
21	2-1/8	3-1/4	12	USA12885	4.28	USA36684	7.72	51	1	2	12	USA12945	2.76	USA36744	5.25
22	2	3-1/8	12	USA12887	4.28	USA36686	7.72	52	7/8	1-7/8	12	USA12947	2.76	USA36746	5.25
23	2	3-1/8	12	USA12889	4.28	USA36688	7.72	53	7/8	1-7/8	12	USA12949	3.08	USA36748	5.59
24	2	3-1/8	12	USA12891	4.28	USA36690	7.72	54	7/8	1-7/8	12	USA12951	3.08	USA36750	5.59
25	1-7/8	3	12	USA12893	3.93	USA36692	7.07	55	7/8	1-7/8	12	USA12953	3.08	USA36752	5.59
26	1-7/8	3	12	USA12895	3.86	USA36694	7.00	56	3/4	1-3/4	12	USA12955	3.47	USA36754	6.32
27	1-7/8	3	12	USA12897	3.86	USA36696	7.00	57	3/4	1-3/4	12	USA12957	3.47	USA36756	6.32
28	1-3/4	2-7/8	12	USA12899	3.61	USA36698	6.57	58	11/16	1-5/8	12	USA12959	3.47	USA36758	6.32
29	1-3/4	2-7/8	12	USA12901	3.51	USA36700	6.35	59	11/16	1-5/8	12	USA12961	3.47	USA36760	6.32
30	1-5/8	2-3/4	12	USA12903	3.33	USA36702	5.96	60	11/16	1-5/8	12	USA12963	3.47	USA36762	6.32

NOTE: SIZES BELOW 1/16" ARE NOT SPLIT POINT.

- For use where extreme temperatures are found
- Coating allows for increased machining speeds from 50% up to 200%
- Used in machining Stainless Steels, Nickel-based and Titanium alloys
- Not recommended for aluminum

All cobalt drills have identification ring on shank.
For coating information see page 6. For technical information, please see pages 238 & 239.

MADE IN THE USA



HSS Drills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

TAPER LENGTH - 118° POINT



OXIDE FINISH

FRACTIONAL SIZES

SIZE	FLUTE LENGTH	OAL	PKG. QTY.	OXIDE	LIST PRICE
3/64	1-1/8	2-1/4	12	USA13107	10.93
1/16	1-3/4	3	12	USA13109	10.93
5/64	2	3-3/4	12	USA13111	10.93
3/32	2-1/4	4-1/4	12	USA13113	10.18
7/64	2-1/2	4-5/8	12	USA13115	10.64
1/8	2-3/4	5-1/8	12	USA13117	10.94
9/64	3	5-3/8	12	USA13119	14.62
5/32	3	5-3/8	12	USA13121	14.77
11/64	3-3/8	5-3/4	12	USA13123	15.50
3/16	3-3/8	5-3/4	12	USA13125	14.42
13/64	3-5/8	6	12	USA13127	17.60
7/32	3-5/8	6	12	USA13129	18.98
15/64	3-3/4	6-1/8	12	USA13131	18.98
1/4	3-3/4	6-1/8	12	USA13133	16.38
17/64	3-7/8	6-1/4	6	USA13135	19.86
9/32	3-7/8	6-1/4	6	USA13137	19.86
19/64	4	6-3/8	6	USA13139	21.62
5/16	4	6-3/8	6	USA13141	21.62
21/64	4-1/8	6-1/2	6	USA13143	21.62
11/32	4-1/8	6-1/2	6	USA13145	21.62
23/64	4-1/4	6-3/4	6	USA13147	25.48
3/8	4-1/4	6-3/4	6	USA13149	25.48
25/64	4-3/8	6-3/4	6	USA13151	29.00
13/32	4-3/8	7	6	USA13153	29.00
27/64	4-5/8	7-1/4	6	USA13155	30.76
7/16	4-5/8	7-1/4	6	USA13157	30.76
29/64	4-3/4	7-1/2	6	USA13159	35.01
15/32	4-3/4	7-1/2	6	USA13161	35.01
31/64	4-3/4	7-3/4	6	USA13163	37.04
1/2	4-3/4	7-3/4	6	USA13165	37.04
33/64	4-3/4	8	1	USA13167	49.20
17/32	4-3/4	8	1	USA13169	49.20
35/64	4-7/8	8-1/4	1	USA13171	51.69
9/16	4-7/8	8-1/4	1	USA13173	51.69

FRACTIONAL SIZES

SIZE	FLUTE LENGTH	OAL	PKG. QTY.	OXIDE	LIST PRICE
37/64	4-7/8	8-3/4	1	USA13175	60.49
19/32	4-7/8	8-3/4	1	USA13177	60.49
39/64	4-7/8	8-3/4	1	USA13179	62.67
5/8	4-7/8	8-3/4	1	USA13181	62.67
41/64	5-1/8	9	1	USA13183	71.35
21/32	5-1/8	9	1	USA13185	71.35
43/64	5-3/8	9-1/4	1	USA13187	84.40
11/16	5-3/8	9-1/4	1	USA13189	84.40
45/64	5-5/8	9-1/2	1	USA13191	88.26
23/32	5-5/8	9-1/2	1	USA13193	88.26
47/64	5-7/8	9-3/4	1	USA13195	94.92
3/4	5-7/8	9-3/4	1	USA13197	94.92
49/64	6	9-7/8	1	USA13199	102.84
25/32	6	9-7/8	1	USA13201	102.84
51/64	6-1/8	10	1	USA13203	111.03
13/16	6-1/8	10	1	USA13205	111.03
53/64	6-1/8	10	1	USA13207	116.92
27/32	6-1/8	10	1	USA13209	116.92
55/64	6-1/8	10	1	USA13211	122.70
7/8	6-1/8	10	1	USA13213	122.70
57/64	6-1/8	10	1	USA13215	127.90
29/32	6-1/8	10	1	USA13217	127.90
59/64	6-1/8	10-3/4	1	USA13219	139.04
15/16	6-1/8	10-3/4	1	USA13221	139.04
61/64	6-3/8	11	1	USA13223	153.46
31/32	6-3/8	11	1	USA13225	153.46
63/64	6-3/8	11	1	USA13227	159.96
1	6-3/8	11	1	USA13229	159.96
1-1/16	6-5/8	11-1/4	1	USA13233	198.22
1-1/8	7-1/8	11-3/4	1	USA13237	220.64
1-3/16	7-3/8	12	1	USA13241	258.60
1-1/4	7-7/8	12-1/2	1	USA13245	276.96
1-5/16	8-5/8	14-1/4	1	USA13249	330.49
1-3/8	8-7/8	14-1/2	1	USA13253	354.44

For technical information, please see pages 238 & 239.

HSS Drills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



TAPER LENGTH - 118° POINT



OXIDE FINISH

WIRE SIZES						WIRE SIZES					
SIZE	FLUTE LENGTH	OAL	PKG. QTY.	OXIDE	LIST PRICE	SIZE	FLUTE LENGTH	OAL	PKG. QTY.	OXIDE	LIST PRICE
1	3-3/4	6-1/8	12	USA13269	19.90	21	3-3/8	5-3/4	12	USA13309	17.48
2	3-3/4	6-1/8	12	USA13271	19.90	22	3-3/8	5-3/4	12	USA13311	17.48
3	3-5/8	6	12	USA13273	19.24	23	3	5-3/8	12	USA13313	17.48
4	3-5/8	6	12	USA13275	19.24	24	3	5-3/8	12	USA13315	17.48
5	3-5/8	6	12	USA13277	19.24	25	3	5-3/8	12	USA13317	17.48
6	3-5/8	6	12	USA13279	19.24	26	3	5-3/8	12	USA13319	17.48
7	3-5/8	6	12	USA13281	19.24	27	3	5-3/8	12	USA13321	17.48
8	3-5/8	6	12	USA13283	19.24	28	3	5-3/8	12	USA13323	17.48
9	3-5/8	6	12	USA13285	19.24	29	3	5-3/8	12	USA13325	17.48
10	3-5/8	6	12	USA13287	19.24	30	3	5-3/8	12	USA13327	17.48
11	3-5/8	6	12	USA13289	19.24	31	2-3/4	5-1/8	12	USA13329	17.14
12	3-5/8	6	12	USA13291	19.24	32	2-3/4	5-1/8	12	USA13331	17.14
13	3-3/8	5-3/4	12	USA13293	17.48	33	2-3/4	5-1/8	12	USA13333	17.14
14	3-3/8	5-3/4	12	USA13295	17.48	34	2-3/4	5-1/8	12	USA13335	17.14
15	3-3/8	5-3/4	12	USA13297	17.48	35	2-3/4	5-1/8	12	USA13337	17.14
16	3-3/8	5-3/4	12	USA13299	17.48	36	2-1/2	4-5/8	12	USA13339	12.82
17	3-3/8	5-3/4	12	USA13301	17.48	37	2-1/2	4-5/8	12	USA13341	12.82
18	3-3/8	5-3/4	12	USA13303	17.48	38	2-1/2	4-5/8	12	USA13343	12.82
19	3-3/8	5-3/4	12	USA13305	17.48	39	2-1/2	4-5/8	12	USA13345	11.25
20	3-3/8	5-3/4	12	USA13307	17.48	40	2-1/2	4-5/8	12	USA13347	11.25



HSS & COBALT DRILLS

For technical information, please see pages 238 & 239.

MADE IN THE USA



HSS Drills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

TAPER SHANK - 118° POINT



OXIDE FINISH

HSS & COBALT DRILLS

FRACTIONAL SIZES						FRACTIONAL SIZES					
SIZE	MORSE TAPER	FLUTE LENGTH	OAL	OXIDE	LIST PRICE	SIZE	MORSE TAPER	FLUTE LENGTH	OAL	OXIDE	LIST PRICE
3/16	1	2-1/2	5-3/4	USA13383	38.68	13/16	3	6-1/8	10-3/4	USA13463	129.66
13/64	1	2-3/4	6	USA13385	38.68	53/64	3	6-1/8	10-3/4	USA13465	143.63
7/32	1	2-3/4	6	USA13387	38.68	27/32	3	6-1/8	10-3/4	USA13467	139.76
15/64	1	2-7/8	6-1/8	USA13389	38.68	55/64	3	6-1/8	10-3/4	USA13469	157.71
1/4	1	2-7/8	6-1/8	USA13391	38.68	7/8	3	6-1/8	10-3/4	USA13471	144.01
17/64	1	3	6-1/4	USA13393	38.68	57/64	3	6-1/8	10-3/4	USA13473	152.08
9/32	1	3	6-1/4	USA13395	38.68	29/32	3	6-1/8	10-3/4	USA13475	152.08
19/64	1	3-1/8	6-3/8	USA13397	40.98	59/64	3	6-1/8	10-3/4	USA13477	154.19
5/16	1	3-1/8	6-3/8	USA13399	43.08	15/16	3	6-1/8	10-3/4	USA13479	144.51
21/64	1	3-1/4	6-1/2	USA13401	43.08	61/64	3	6-3/8	11	USA13481	158.39
11/32	1	3-1/4	6-1/2	USA13403	43.08	31/32	3	6-3/8	11	USA13483	157.32
23/64	1	3-1/2	6-3/4	USA13405	43.96	63/64	3	6-3/8	11	USA13485	168.07
3/8	1	3-1/2	6-3/4	USA13407	43.96	1	3	6-3/8	11	USA13487	159.96
25/64	1	3-5/8	7	USA13409	52.22	1-1/64	3	6-1/2	11-1/8	USA13489	185.98
13/32	1	3-5/8	7	USA13411	52.22	1-1/32	3	6-1/2	11-1/8	USA13491	184.60
27/64	1	3-7/8	7-1/4	USA13413	56.24	1-3/64	3	6-5/8	11-1/4	USA13493	193.40
7/16	1	3-7/8	7-1/4	USA13415	56.24	1-1/16	3	6-5/8	11-1/4	USA13495	184.60
29/64	1	4-1/8	7-1/2	USA13417	56.24	1-5/64	4	6-7/8	12-1/2	USA13497	219.72
15/32	1	4-1/8	7-1/2	USA13419	56.24	1-3/32	4	6-7/8	12-1/2	USA13499	219.72
31/64	2	4-3/8	8-1/4	USA13421	61.52	1-7/64	4	7-1/8	12-3/4	USA13501	228.52
1/2	2	4-3/8	8-1/4	USA13423	57.58	1-1/8	4	7-1/8	12-3/4	USA13503	228.52
33/64	2	4-5/8	8-1/2	USA13425	66.38	1-9/64	4	7-1/4	12-7/8	USA13505	246.12
17/32	2	4-5/8	8-1/2	USA13427	68.56	1-5/32	4	7-1/4	12-7/8	USA13507	237.32
35/64	2	4-7/8	8-3/4	USA13429	72.23	1-11/64	4	7-3/8	13	USA13509	246.12
9/16	2	4-7/8	8-3/4	USA13431	70.32	1-3/16	4	7-3/8	13	USA13511	246.12
37/64	2	4-7/8	8-3/4	USA13433	76.90	1-13/64	4	7-1/2	13-1/8	USA13513	263.68
19/32	2	4-7/8	8-3/4	USA13435	75.60	1-7/32	4	7-1/2	13-1/8	USA13515	263.68
39/64	2	4-7/8	8-3/4	USA13437	80.00	1-1/4	4	7-7/8	13-1/2	USA13519	276.00
5/8	2	4-7/8	8-3/4	USA13439	76.48	1-5/16	4	8-5/8	14-1/4	USA13525	339.29
41/64	2	5-1/8	9	USA13441	87.92	1-3/8	4	8-7/8	14-1/2	USA13529	362.13
21/32	2	5-1/8	9	USA13443	86.16	1-7/16	4	9-1/8	14-3/4	USA13533	397.29
43/64	2	5-3/8	9-1/4	USA13445	94.92	1-1/2	4	9-3/8	15	USA13537	416.65
11/16	2	5-3/8	9-1/4	USA13447	89.64	1-9/16	5	9-5/8	16-5/8	USA13541	508.05
45/64	2	5-5/8	9-1/2	USA13449	98.44	1-5/8	5	10	17	USA13545	548.49
23/32	2	5-5/8	9-1/2	USA13451	95.11	1-11/16	5	10-1/8	17-1/8	USA13549	604.77
47/64	2	5-7/8	9-3/4	USA13453	105.48	1-3/4	5	10-1/8	17-1/8	USA13553	643.45
3/4	2	5-7/8	9-3/4	USA13455	104.60	1-13/16	5	10-1/8	17-1/8	USA13557	690.89
49/64	2	6	9-7/8	USA13457	126.07	1-7/8	5	10-3/8	17-3/8	USA13561	720.77
25/32	2	6	9-7/8	USA13459	125.34	1-15/16	5	10-3/8	17-3/8	USA13565	777.05
51/64	3	6-1/8	10-3/4	USA13461	138.00	2	5	10-3/8	17-3/8	USA13569	805.17

Taper shank drills sold individually.

For technical information, please see pages 238 & 239.

HSS Drills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



EXTRA LENGTH DRILL - STRAIGHT SHANK - 118° POINT - 12" O.A.L.



BRIGHT FINISH

FRACTIONAL SIZES					FRACTIONAL SIZES				
SIZE	FLUTE LENGTH	OAL	BRIGHT	LIST PRICE	SIZE	FLUTE LENGTH	OAL	BRIGHT	LIST PRICE
1/8	9	12	USA13867	43.20	3/8	9	12	USA13899	57.69
9/64	9	12	USA13869	62.61	25/64	9	12	USA13901	87.31
5/32	9	12	USA13871	56.93	13/32	9	12	USA13903	87.31
11/64	9	12	USA13873	48.56	27/64	9	12	USA13905	87.31
3/16	9	12	USA13875	48.56	7/16	9	12	USA13907	74.56
13/64	9	12	USA13877	58.84	29/64	9	12	USA13909	91.12
7/32	9	12	USA13879	52.69	15/32	9	12	USA13911	81.99
15/64	9	12	USA13881	52.69	31/64	9	12	USA13913	83.89
1/4	9	12	USA13883	54.47	1/2	9	12	USA13915	83.89
17/64	9	12	USA13885	56.38	17/32	9	12	USA13919	106.29
9/32	9	12	USA13887	56.38	9/16	9	12	USA13923	106.29
19/64	9	12	USA13889	58.44	19/32	9	12	USA13927	132.85
5/16	9	12	USA13891	58.44	5/8	9	12	USA13931	129.08
21/64	9	12	USA13893	62.61	11/16	9	12	USA13939	136.66
11/32	9	12	USA13895	62.61	3/4	9	12	USA13947	153.93
23/64	9	12	USA13897	62.61					

HSS & COBALT DRILLS

SCREW EXTRACTORS



SIZE	FOR SCREW & BOLT SIZES	PIPE SIZE	PKG. QTY.	ITEM#	LIST PRICE
1	3/16 - 1/4	-	1	USA13349	7.19
2	1/4 - 5/16	-	1	USA13351	7.66
3	5/16 - 7/16	-	1	USA13353	9.29
4	7/16 - 9/16	1/8	1	USA13355	9.85
5	9/16 - 3/4	1/4	1	USA13357	12.31
6	3/4-1	3/8	1	USA13359	27.04
7	1 - 1-3/8	1/2	1	USA13361	43.51
8	1-3/8 - 1-3/4	3/4	1	USA13363	59.20
9	1-3/4 - 2-1/8	1	1	USA13365	102.95
10	2-1/8 - 2-1/2	1-1/4	1	USA13367	267.16
SET	SIZES 1-5	-	1	USA13373	46.25

All tools sold individually.
For technical information, please see pages 238 & 239.

MADE IN THE USA



Aircraft Extension Drills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

6" OVERALL LENGTH - 135° SPLIT POINT



HIGH SPEED STEEL - NAS 907 - TYPE "B"
OXIDE FINISH



M42 COBALT - NAS 907 - TYPE "J"

FRACTIONAL SIZES							
SIZE	OVERALL LENGTH	FLUTE LENGTH	PACKAGE QUANTITY	HSS	LIST PRICE	COBALT	LIST PRICE
3/32	6	1-1/4	12	USA13607	7.07	USA13663	11.69
7/64	6	1-1/2	12	USA13609	7.04	USA13665	13.25
1/8	6	1-5/8	12	USA13611	6.93	USA13667	10.87
9/64	6	1-3/4	12	USA13613	8.26	USA13669	14.86
5/32	6	2	12	USA13615	9.14	USA13671	14.86
11/64	6	2-1/8	12	USA13617	10.08	USA13673	16.36
3/16	6	2-5/16	12	USA13619	9.97	USA13675	13.77
13/64	6	2-7/16	12	USA13621	12.16	USA13677	20.26
7/32	6	2-1/2	12	USA13623	12.16	USA13679	20.78
15/64	6	2-5/8	12	USA13625	13.51	USA13681	22.08
1/4	6	2-3/4	12	USA13627	12.01	USA13683	21.56
17/64	6	2-7/8	6	USA13629	30.65	-	-
9/32	6	2-15/16	6	USA13631	31.69	-	-
19/64	6	3-1/16	6	USA13633	37.40	-	-
5/16	6	3-3/16	6	USA13635	40.52	-	-
21/64	6	3-5/16	6	USA13637	43.64	-	-
11/32	6	3-7/16	6	USA13639	43.64	-	-
23/64	6	3-1/2	6	USA13641	48.57	-	-
3/8	6	3-5/8	6	USA13643	49.35	-	-

WIRE SIZES							
SIZE	OVERALL LENGTH	FLUTE LENGTH	PACKAGE QUANTITY	HSS	LIST PRICE	COBALT	LIST PRICE
1	6	2-5/8	12	USA13645	14.03	USA13685	23.12
2	6	2-5/8	12	USA13647	14.03	USA13687	23.12
10	6	2-7/16	12	USA13649	10.91	USA13689	15.76
11	6	2-5/16	12	USA13651	10.91	USA13691	15.15
20	6	2-1/8	12	USA13653	9.09	USA13693	14.34
21	6	2-1/8	12	USA13655	9.56	USA13695	14.34
29	6	1-3/4	12	USA13657	10.13	USA13697	15.84
30	6	1-5/8	12	USA13659	7.79	USA13699	10.91
40	6	1-5/8	12	USA13661	6.39	USA13701	9.91

For technical information, please see pages 238 & 239.

Aircraft Extension Drills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



12" OVERALL LENGTH - 135° SPLIT POINT



HIGH SPEED STEEL - NAS 907 - TYPE "B"
OXIDE FINISH



M42 COBALT - NAS 907 - TYPE "J"

HSS & COBALT DRILLS

FRACTIONAL SIZES

SIZE	OVERALL LENGTH	FLUTE LENGTH	PACKAGE QUANTITY	HSS	LIST PRICE	COBALT	LIST PRICE
1/8	12	1-5/8	12	USA13703	20.05	USA13949	33.25
9/64	12	1-3/4	12	USA13705	20.24	USA13951	36.62
5/32	12	2	12	USA13707	20.24	USA13953	33.77
11/64	12	2-1/8	12	USA13709	22.81	USA13955	36.37
3/16	12	2-5/16	12	USA13711	22.58	USA13957	35.33
13/64	12	2-7/16	12	USA13713	25.90	USA13959	46.24
7/32	12	2-1/2	12	USA13715	25.63	USA13961	42.08
15/64	12	2-5/8	12	USA13717	28.88	USA13963	44.68
1/4	12	2-3/4	12	USA13719	31.43	USA13965	40.86
17/64	12	2-7/8	6	USA13721	36.37	-	-
9/32	12	2-15/16	6	USA13723	36.11	-	-
19/64	12	3-1/16	6	USA13725	40.41	-	-
5/16	12	3-3/16	6	USA13727	44.23	-	-
21/64	12	3-5/16	6	USA13729	48.05	-	-
11/32	12	3-7/16	6	USA13731	47.51	-	-
23/64	12	3-1/2	6	USA13733	53.83	-	-
3/8	12	3-5/8	6	USA13735	54.33	-	-
25/64	12	3-3/4	6	USA13737	60.60	-	-
13/32	12	3-7/8	6	USA13739	58.42	-	-
27/64	12	3-15/16	6	USA13741	64.43	-	-
7/16	12	4-1/16	6	USA13743	64.54	-	-
29/64	12	4-3/16	6	USA13745	72.81	-	-
15/32	12	4-5/16	6	USA13747	75.45	-	-
31/64	12	4-3/8	6	USA13749	78.24	-	-
1/2	12	4-1/2	6	USA13751	77.40	-	-

WIRE SIZES

SIZE	OVERALL LENGTH	FLUTE LENGTH	PACKAGE QUANTITY	HSS	LIST PRICE	COBALT	LIST PRICE
1	12	2-5/8	12	USA13753	31.45	USA13967	49.87
10	12	2-7/16	12	USA13755	25.29	USA13969	38.44
11	12	2-5/16	12	USA13757	25.52	USA13971	37.14
20	12	2-1/8	12	USA13759	22.95	USA13973	34.29
21	12	2-1/8	12	USA13761	22.54	USA13975	34.29
29	12	1-3/4	12	USA13763	23.88	USA13977	35.59
30	12	1-5/8	12	USA13765	22.54	USA13979	32.48
40	12	1-3/8	12	USA13767	22.54	USA13981	35.59

For technical information, please see pages 238 & 239.

MADE IN THE USA



Silver & Deming Drills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

HSS & COBALT DRILLS



HIGH SPEED STEEL
1/2" ROUND SHANK - 118° POINT

SIZE	OAL	ITEM#	LIST PRICE
33/64	6	USA14363	31.87
17/32	6	USA14365	31.87
35/64	6	USA14367	33.64
9/16	6	USA14369	33.64
37/64	6	USA14371	36.12
19/32	6	USA14373	36.12
39/64	6	USA14375	37.96
5/8	6	USA14377	37.96
41/64	6	USA14379	39.77
21/32	6	USA14381	39.77
43/64	6	USA14383	42.28
11/16	6	USA14385	42.28
45/64	6	USA14387	42.46
23/32	6	USA14389	42.46
47/64	6	USA14391	46.32

SIZE	OAL	ITEM#	LIST PRICE
3/4	6	USA14393	46.46
49/64	6	USA14395	49.26
25/32	6	USA14397	49.26
51/64	6	USA14399	51.77
13/16	6	USA14401	51.77
53/64	6	USA14403	53.79
27/32	6	USA14405	53.79
55/64	6	USA14407	55.56
7/8	6	USA14409	55.56
57/64	6	USA14411	57.83
29/32	6	USA14413	57.83
59/64	6	USA14415	62.96
15/16	6	USA14417	62.96
61/64	6	USA14419	66.01
31/32	6	USA14421	66.01

SIZE	OAL	ITEM#	LIST PRICE
63/64	6	USA14423	73.59
1	6	USA14425	73.59
1-1/32	6	USA14427	98.73
1-1/16	6	USA14429	98.73
1-3/32	6	USA14431	105.28
1-1/8	6	USA14433	112.47
1-5/32	6	USA14435	112.47
1-3/16	6	USA14437	124.51
1-7/32	6	USA14439	137.79
1-1/4	6	USA14441	137.79
1-5/16	6	USA14443	145.76
1-3/8	6	USA14445	167.89
1-7/16	6	USA14447	184.61
1-1/2	6	USA14449	202.85



HIGH SPEED STEEL
1/2" SHANK - 3 FLATS - 118° POINT

SIZE	OAL	ITEM#	LIST PRICE
33/64	6	USA14451	34.74
17/32	6	USA14453	34.74
35/64	6	USA14455	36.94
9/16	6	USA14457	36.94
37/64	6	USA14459	39.70
19/32	6	USA14461	39.70
39/64	6	USA14463	41.54
5/8	6	USA14465	41.54
41/64	6	USA14467	44.30
21/32	6	USA14469	44.30
43/64	6	USA14471	46.07

SIZE	OAL	ITEM#	LIST PRICE
11/16	6	USA14473	46.07
45/64	6	USA14475	46.67
23/32	6	USA14477	46.67
47/64	6	USA14479	50.85
3/4	6	USA14481	50.85
49/64	6	USA14483	54.25
25/32	6	USA14485	54.25
51/64	6	USA14487	59.46
13/16	6	USA14489	59.46
53/64	6	USA14491	61.94
27/32	6	USA14493	61.94

SIZE	OAL	ITEM#	LIST PRICE
55/64	6	USA14495	66.08
7/8	6	USA14497	66.08
57/64	6	USA14499	68.56
29/32	6	USA14501	68.56
59/64	6	USA14503	70.19
15/16	6	USA14505	70.19
61/64	6	USA14507	73.48
31/32	6	USA14509	73.48
63/64	6	USA14511	80.53
1	6	USA14513	80.53

All S & D drills have 3" flute length.
For technical information, please see pages 238 & 239.

Silver & Deming Drills

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



HIGH SPEED STEEL - BLACK & GOLD
1/2" SHANK - 3 FLATS - 118° SPLIT POINT

SIZE	OAL	ITEM#	LIST PRICE
33/64	6	USA14579	40.69
17/32	6	USA14581	40.69
35/64	6	USA14583	43.10
9/16	6	USA14585	43.10
37/64	6	USA14587	45.75
19/32	6	USA14589	45.75
39/64	6	USA14591	47.56
5/8	6	USA14593	47.56
41/64	6	USA14595	50.46
21/32	6	USA14597	50.46
43/64	6	USA14599	52.62

SIZE	OAL	ITEM#	LIST PRICE
11/16	6	USA14601	52.62
45/64	6	USA14603	54.82
23/32	6	USA14605	54.82
47/64	6	USA14607	57.19
3/4	6	USA14609	57.19
49/64	6	USA14611	60.38
25/32	6	USA14613	60.38
51/64	6	USA14615	64.24
13/16	6	USA14617	64.24
53/64	6	USA14619	67.04
27/32	6	USA14621	67.04

SIZE	OAL	ITEM#	LIST PRICE
55/64	6	USA14623	68.84
7/8	6	USA14625	68.84
57/64	6	USA14627	71.85
29/32	6	USA14629	71.85
59/64	6	USA14631	77.24
15/16	6	USA14633	77.24
61/64	6	USA14635	83.18
31/32	6	USA14637	83.18
63/64	6	USA14639	87.36
1	6	USA14641	87.36

HSS & COBALT DRILLS



M42 COBALT
1/2" ROUND SHANK - 135° SPLIT POINT

SIZE	OAL	ITEM#	LIST PRICE
33/64	6	USA14515	63.39
17/32	6	USA14517	63.39
35/64	6	USA14519	76.28
9/16	6	USA14521	76.28
37/64	6	USA14523	78.86
19/32	6	USA14525	78.86
39/64	6	USA14527	80.88
5/8	6	USA14529	80.88
41/64	6	USA14531	84.85
21/32	6	USA14533	84.85
43/64	6	USA14535	86.58

SIZE	OAL	ITEM#	LIST PRICE
11/16	6	USA14537	86.58
45/64	6	USA14539	91.33
23/32	6	USA14541	91.33
47/64	6	USA14543	95.30
3/4	6	USA14545	95.30
49/64	6	USA14547	99.65
25/32	6	USA14549	99.65
51/64	6	USA14551	102.31
13/16	6	USA14553	102.31
53/64	6	USA14555	110.56
27/32	6	USA14557	110.56

SIZE	OAL	ITEM#	LIST PRICE
55/64	6	USA14559	110.56
7/8	6	USA14561	110.56
57/64	6	USA14563	114.77
29/32	6	USA14565	114.77
59/64	6	USA14567	119.73
15/16	6	USA14569	119.73
61/64	6	USA14571	126.35
31/32	6	USA14573	126.35
63/64	6	USA14575	143.38
1	6	USA14577	143.38

All S & D drills have 3" flute length.
For technical information, please see pages 238 & 239.

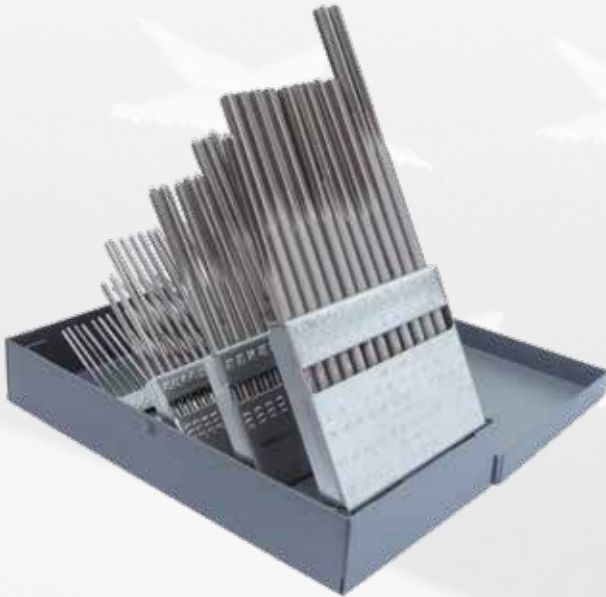
MADE IN THE USA



Reamer Sets

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

HSS & COBALT REAMERS



ITEM# USA26419
60 PC. #1 - #60
HIGH SPEED STEEL



ITEM# USA26415
29 PC. 1/16" - 1/2" BY 64ths
HIGH SPEED STEEL

HSS & M42 COBALT

DESCRIPTION	FLUTE STYLE	ITEM#	LIST PRICE
10Pc • #4 - 1/2" • Standard • Ctr Bore Set • HSS	RH Spiral	USA26435	642.21
10Pc • #4 - 1/2" • 1/64" OS • Ctr Bore Set • HSS	RH Spiral	USA26437	642.21
10Pc • #4 - 1/2" • 1/32" OS • Ctr Bore Set • HSS	RH Spiral	USA26439	642.21
14Pc • Dowel Pin • .1230 - .4995 • HSS	Straight	USA26411	653.35
14Pc • Dowel Pin • .1230 - .4995 • M42 Cobalt	Straight	USA26413	857.00
14Pc • O/U • .1240 - .5010 • HSS	Straight	USA26427	653.35
14Pc • O/U • .1240 - .5010 • M42 Cobalt	Straight	USA26429	818.94
20Pc • #61 - #80 • HSS	Straight	USA26431	765.85
26Pc • A-Z • HSS	Straight	USA26423	1165.66
26Pc • A-Z • M42 Cobalt	Straight	USA26425	1622.60
29Pc • 1/16" - 1/2" by 64ths • HSS	Straight	USA26415	1259.69
29Pc • 1/16" - 1/2" by 64ths • M42 Cobalt	Straight	USA26417	1650.18
60Pc • #1 - #60 • HSS	Straight	USA26419	1868.82
60Pc • #1 - #60 • M42 Cobalt	Straight	USA26421	2029.02

For technical information, please see page 240.

Reamers

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



CHUCKING STRAIGHT SHANK - STRAIGHT FLUTE



SIZE	DECIMAL EQUIVALENT	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIAMETER	HSS	LIST PRICE	M42 COBALT	LIST PRICE
80	.0135	3/8	2	3/4	.0135	USA25857	36.36	USA26441	40.25
79	.0145	3/8	2	3/4	.0145	USA25859	36.36	USA26443	40.25
1/64	.0156	3/8	2	3/4	.0156	USA25861	36.36	USA26445	40.25
78	.0160	3/8	2	7/8	.0160	USA25863	36.36	USA26447	40.25
77	.0180	3/8	2	7/8	.0180	USA25865	36.36	USA26449	40.25
76	.0200	3/8	2	7/8	.0200	USA25867	36.36	USA26451	40.25
75	.0210	1/2	3	1	.0210	USA25869	36.36	USA26453	40.25
74	.0225	1/2	3	1	.0225	USA25871	36.36	USA26455	40.25
73	.0240	1/2	3	1-1/8	.0240	USA25873	36.36	USA26457	40.25
72	.0250	1/2	3	1-1/8	.0250	USA25875	36.36	USA26459	40.25
71	.0260	1/2	3	1-1/4	.0260	USA25877	36.36	USA26461	40.25
70	.0280	1/2	3	1-1/4	.0280	USA25879	36.36	USA26463	40.25
69	.0292	1/2	3	1-3/8	.0292	USA25881	36.36	USA26465	40.25
68	.0310	1/2	3	1-3/8	.0310	USA25883	36.36	USA26467	40.25
1/32	.0312	1/2	3	1-3/8	.0312	USA25885	28.67	USA26469	33.13
67	.0320	1/2	3	1-3/8	.0320	USA25887	30.45	USA26471	33.13
66	.0330	1/2	3	1-3/8	.0330	USA25889	30.45	USA26473	33.13
65	.0350	1/2	3	1-1/2	.0350	USA25891	30.45	USA26475	33.13
64	.0360	1/2	3	1-1/2	.0360	USA25893	30.45	USA26477	33.13
63	.0370	1/2	3	1-1/2	.0370	USA25895	30.45	USA26479	33.13
62	.0380	1/2	3	1-1/2	.0380	USA25897	30.45	USA26481	33.13
61	.0390	1/2	3	1-1/2	.0390	USA25899	30.45	USA26483	33.13
1.0mm	.0394	1/2	4	2-1/2	.0394	USA25901	30.45	USA26485	32.60
60	.0400	1/2	4	2-1/2	.0390	USA25903	30.45	USA26487	32.60
59	.0410	1/2	4	2-1/2	.0390	USA25905	30.45	USA26489	32.60
58	.0420	1/2	4	2-1/2	.0390	USA25907	30.45	USA26491	32.60
57	.0430	1/2	4	2-1/2	.0390	USA25909	30.45	USA26493	32.60
56	.0465	1/2	4	2-1/2	.0455	USA25911	30.45	USA26495	32.60
3/64	.0469	1/2	4	2-1/2	.0455	USA25913	30.45	USA26497	32.60
55	.0520	1/2	4	2-1/2	.0510	USA25915	30.45	USA26499	32.60
54	.0550	1/2	4	2-1/2	.0510	USA25917	30.45	USA26501	32.60
1.5mm	.0591	1/2	4	2-1/2	.0510	USA25919	30.45	USA26503	32.60
53	.0595	1/2	4	2-1/2	.0585	USA25921	30.45	USA26505	32.60
1/16	.0625	1/2	4	2-1/2	.0585	USA25923	27.37	USA26507	32.60
52	.0635	1/2	4	2-1/2	.0585	USA25925	27.37	USA26509	32.60
51	.0670	3/4	4	3	.0660	USA25927	24.50	USA26511	26.24
50	.0700	3/4	4	3	.0660	USA25929	24.50	USA26513	26.24
49	.0730	3/4	4	3	.0660	USA25931	24.50	USA26515	26.24
48	.0760	3/4	4	3	.0720	USA25933	24.50	USA26517	26.24
5/64	.0781	3/4	4	3	.0720	USA25935	24.50	USA26519	26.24

For technical information, please see page 240.

THRU 1/2" DIAMETER	1/2" TO 5/8"	5/8" TO 1-1/2"	1-1/2" TO 2"
+ .0002, -.0000	+ .0003, -.0000	+ .0001, +.0004	+ .0002, +.0006

MADE IN THE USA

HSS & COBALT REAMERS



Reamers

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

CHUCKING STRAIGHT SHANK - STRAIGHT FLUTE



HSS & COBALT REAMERS

SIZE	DECIMAL EQUIVALENT	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIAMETER	HSS	LIST PRICE	M42 COBALT	LIST PRICE
47	.0785	3/4	4	3	.0720	USA25937	24.50	USA26521	26.24
2.0mm	.0787	3/4	4	3	.0720	USA25939	24.50	USA26523	26.24
46	.0810	3/4	4	3	.0771	USA25941	24.50	USA26525	26.24
45	.0820	3/4	4	3	.0771	USA25943	24.50	USA26527	26.24
44	.0860	3/4	4	3	.0810	USA25945	24.50	USA26529	26.24
43	.0890	3/4	4	3	.0810	USA25947	24.50	USA26531	26.24
42	.0935	3/4	4	3	.0880	USA25949	24.50	USA26533	26.24
3/32	.0938	3/4	4	3	.0880	USA25951	22.03	USA26535	26.24
41	.0960	7/8	4	3-1/2	.0928	USA25953	24.74	USA26537	26.44
40	.0980	7/8	4	3-1/2	.0928	USA25955	24.74	USA26539	26.44
2.5mm	.0984	7/8	4	3-1/2	.0928	USA25957	24.74	USA26541	26.44
39	.0995	7/8	4	3-1/2	.0928	USA25959	24.74	USA26543	26.44
38	.1015	7/8	4	3-1/2	.0950	USA25961	24.74	USA26545	26.44
37	.1040	7/8	4	3-1/2	.0950	USA25963	24.74	USA26547	26.44
36	.1065	7/8	4	3-1/2	.1030	USA25965	24.74	USA26549	26.44
7/64	.1094	7/8	4	3-1/2	.1030	USA25967	25.51	USA26551	27.25
35	.1100	7/8	4	3-1/2	.1030	USA25969	25.51	USA26553	27.25
34	.1110	7/8	4	3-1/2	.1055	USA25971	25.51	USA26555	27.25
33	.1130	7/8	4	3-1/2	.1055	USA25973	25.51	USA26557	27.25
32	.1160	7/8	4	3-1/2	.1120	USA25975	25.51	USA26559	27.25
3.0mm	.1181	7/8	4	3-1/2	.1120	USA25977	25.51	USA26561	27.25
31	.1200	7/8	4	3-1/2	.1120	USA25979	25.51	USA26563	27.25
o/u	.1240	7/8	4	3-1/2	.1190	USA25981	25.51	USA26565	27.25
1/8	.1250	7/8	4	3-1/2	.1190	USA25983	20.33	USA26567	21.79
o/u	.1260	7/8	4	3-1/2	.1190	USA25985	25.51	USA26569	27.25
30	.1285	7/8	4	3-1/2	.1190	USA25987	25.51	USA26571	27.25
29	.1360	1	4	4	.1275	USA25989	30.45	USA26573	32.60
3.5mm	.1378	1	4	4	.1350	USA25991	30.45	USA26575	32.60
28	.1405	1	4	4	.1350	USA25993	30.45	USA26577	32.60
9/64	.1406	1	4	4	.1350	USA25995	30.45	USA26579	32.60
27	.1440	1	4	4	.1350	USA25997	30.45	USA26581	32.60
26	.1470	1	4	4	.1430	USA25999	30.45	USA26583	32.60
25	.1495	1	4	4	.1430	USA26001	30.45	USA26585	32.60
24	.1520	1	4	4	.1460	USA26003	30.45	USA26587	32.60
23	.1540	1	4	4	.1460	USA26005	30.45	USA26589	32.60
5/32	.1562	1	4	4	.1510	USA26007	30.45	USA26591	32.60
22	.1570	1	6	4	.1510	USA26009	30.45	USA26593	32.60
4.0mm	.1575	1	6	4	.1510	USA26011	30.45	USA26595	32.60
21	.1590	1-1/8	6	4-1/2	.1530	USA26013	32.52	USA26597	34.79
20	.1610	1-1/8	6	4-1/2	.1530	USA26015	32.52	USA26599	34.79

For technical information, please see page 240.

THRU 1/2" DIAMETER	1/2" TO 5/8"	5/8" TO 1-1/2"	1-1/2" TO 2"
+ .0002, -.0000	+ .0003, -.0000	+ .0001, +.0004	+ .0002, +.0006

Reamers

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



CHUCKING STRAIGHT SHANK - STRAIGHT FLUTE



SIZE	DECIMAL EQUIVALENT	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIAMETER	HSS	LIST PRICE	M42 COBALT	LIST PRICE
19	.1660	1-1/8	6	4-1/2	.1595	USA26017	32.52	USA26601	34.79
18	.1695	1-1/8	6	4-1/2	.1595	USA26019	32.52	USA26603	34.79
11/64	.1719	1-1/8	6	4-1/2	.1645	USA26021	32.52	USA26605	34.79
17	.1730	1-1/8	6	4-1/2	.1645	USA26023	32.52	USA26607	34.79
16	.1770	1-1/8	6	4-1/2	.1704	USA26025	32.52	USA26609	34.79
4.5mm	.1772	1-1/8	6	4-1/2	.1704	USA26027	32.52	USA26611	34.79
15	.1800	1-1/8	6	4-1/2	.1755	USA26029	32.52	USA26613	34.79
14	.1820	1-1/8	6	4-1/2	.1755	USA26031	32.52	USA26615	34.79
13	.1850	1-1/8	6	4-1/2	.1805	USA26033	32.52	USA26617	34.79
o/u	.1865	1-1/8	6	4-1/2	.1805	USA26035	32.52	USA26619	34.79
3/16	.1875	1-1/8	6	4-1/2	.1805	USA26037	29.24	USA26621	33.61
o/u	.1885	1-1/8	6	4-1/2	.1805	USA26039	32.52	USA26623	34.79
12	.1890	1-1/8	6	4-1/2	.1805	USA26041	32.52	USA26625	34.79
11	.1910	1-1/4	6	5	.1860	USA26043	36.41	USA26627	42.03
10	.1935	1-1/4	6	5	.1860	USA26045	36.41	USA26629	42.03
9	.1960	1-1/4	6	5	.1895	USA26047	36.41	USA26631	42.03
5.0mm	.1969	1-1/4	6	5	.1895	USA26049	36.41	USA26633	42.03
8	.1990	1-1/4	6	5	.1895	USA26051	36.41	USA26635	42.03
7	.2010	1-1/4	6	5	.1895	USA26053	36.41	USA26637	42.03
13/64	.2031	1-1/4	6	5	.1945	USA26055	36.41	USA26639	42.03
6	.2040	1-1/4	6	5	.1945	USA26057	36.41	USA26641	42.03
5	.2055	1-1/4	6	5	.2016	USA26059	36.41	USA26643	42.03
4	.2090	1-1/4	6	5	.2016	USA26061	36.41	USA26645	42.03
3	.2130	1-1/4	6	5	.2075	USA26063	36.41	USA26647	42.03
5.5mm	.2165	1-1/4	6	5	.2075	USA26065	36.41	USA26649	42.03
7/32	.2188	1-1/4	6	5	.2075	USA26067	36.41	USA26651	42.03
2	.2210	1-1/2	6	6	.2173	USA26069	37.42	USA26653	43.25
1	.2280	1-1/2	6	6	.2173	USA26071	37.42	USA26655	43.25
A	.2340	1-1/2	6	6	.2265	USA26073	37.42	USA26657	43.25
15/64	.2344	1-1/2	6	6	.2265	USA26075	37.42	USA26659	43.25
6.0mm	.2362	1-1/2	6	6	.2265	USA26077	39.44	USA26661	43.45
B	.2380	1-1/2	6	6	.2329	USA26079	39.44	USA26663	43.45
C	.2420	1-1/2	6	6	.2329	USA26081	39.44	USA26665	43.45
D	.2460	1-1/2	6	6	.2329	USA26083	39.44	USA26667	39.48
o/u	.2490	1-1/2	6	6	.2405	USA26085	35.51	USA26669	39.08
1/4	.2500	1-1/2	6	6	.2405	USA26087	33.49	USA26671	36.93
o/u	.2510	1-1/2	6	6	.2405	USA26089	35.51	USA26673	39.12
6.5mm	.2559	1-1/2	6	6	.2405	USA26091	39.44	USA26675	43.45
F	.2570	1-1/2	6	6	.2485	USA26093	39.44	USA26677	43.45
G	.2610	1-1/2	6	6	.2485	USA26095	39.44	USA26679	43.45

For technical information, please see page 240.

THRU 1/2" DIAMETER	1/2" TO 5/8"	5/8" TO 1-1/2"	1-1/2" TO 2"
+ .0002, -.0000	+ .0003, -.0000	+ .0001, +.0004	+ .0002, +.0006

MADE IN THE USA

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Reamers

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

CHUCKING STRAIGHT SHANK - STRAIGHT FLUTE



HSS & COBALT REAMERS

SIZE	DECIMAL EQUIVALENT	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIAMETER	HSS	LIST PRICE	M42 COBALT	LIST PRICE
17/64	.2656	1-1/2	6	6	.2485	USA26097	43.94	USA26681	58.92
H	.2660	1-1/2	6	6	.2485	USA26099	43.94	USA26683	58.92
I	.2720	1-1/2	6	6	.2485	USA26101	43.94	USA26685	58.92
7.0mm	.2756	1-1/2	6	6	.2485	USA26103	43.94	USA26687	58.92
J	.2770	1-1/2	6	6	.2485	USA26105	43.94	USA26689	58.92
K	.2810	1-1/2	6	6	.2485	USA26107	43.94	USA26691	58.92
9/32	.2812	1-1/2	6	6	.2485	USA26109	41.71	USA26693	55.96
L	.2900	1-1/2	6	6	.2792	USA26111	43.94	USA26695	58.92
M	.2950	1-1/2	6	6	.2792	USA26113	43.94	USA26697	58.92
7.5mm	.2953	1-1/2	6	6	.2792	USA26115	43.94	USA26699	58.92
19/64	.2969	1-1/2	6	6	.2792	USA26117	43.94	USA26701	58.92
N	.3020	1-1/2	6	6	.2792	USA26119	43.94	USA26703	58.92
o/u	.3115	1-1/2	6	6	.2792	USA26121	41.71	USA26705	55.96
5/16	.3125	1-1/2	6	6	.2792	USA26123	39.60	USA26707	53.01
o/u	.3135	1-1/2	6	6	.2792	USA26125	41.71	USA26709	55.96
8.0mm	.3150	1-1/2	6	6	.2792	USA26127	43.94	USA26711	58.92
O	.3160	1-1/2	6	6	.2792	USA26129	43.94	USA26713	58.92
P	.3230	1-1/2	6	6	.2792	USA26131	46.97	USA26715	63.50
21/64	.3281	1-1/2	6	6	.2792	USA26133	46.97	USA26717	63.50
Q	.3320	1-1/2	6	6	.2792	USA26135	46.97	USA26719	63.50
8.5mm	.3346	1-1/2	6	6	.2792	USA26137	46.97	USA26721	63.50
R	.3390	1-1/2	6	6	.2792	USA26139	46.97	USA26723	63.50
11/32	.3438	1-1/2	6	6	.2792	USA26141	46.97	USA26725	63.50
S	.3480	1-3/4	6	7	.3105	USA26143	47.46	USA26727	64.55
9.0mm	.3543	1-3/4	6	7	.3105	USA26145	47.46	USA26729	64.55
T	.3580	1-3/4	6	7	.3105	USA26147	47.46	USA26731	64.55
23/64	.3594	1-3/4	6	7	.3105	USA26149	47.46	USA26733	64.55
U	.3680	1-3/4	6	7	.3105	USA26151	47.46	USA26735	64.55
9.5mm-o/u	.3740	1-3/4	6	7	.3105	USA26153	45.07	USA26737	61.27
3/8	.3750	1-3/4	6	7	.3105	USA26155	42.64	USA26739	58.07
o/u	.3760	1-3/4	6	7	.3105	USA26157	45.07	USA26741	61.27
V	.3770	1-3/4	6	7	.3105	USA26159	51.59	USA26743	78.68
W	.3860	1-3/4	6	7	.3105	USA26161	51.59	USA26745	78.68
25/64	.3906	1-3/4	6	7	.3105	USA26163	51.59	USA26747	78.68
10.0mm	.3937	1-3/4	6	7	.3105	USA26165	51.59	USA26749	78.68
X	.3970	1-3/4	6	7	.3105	USA26167	51.59	USA26751	78.68
Y	.4040	1-3/4	6	7	.3105	USA26169	53.53	USA26753	78.68
13/32	.4062	1-3/4	6	7	.3105	USA26171	53.53	USA26755	78.68
Z	.4130	1-3/4	6	7	.3730	USA26173	53.53	USA26757	78.68
10.5mm	.4134	1-3/4	6	7	.3730	USA26175	54.06	USA26759	78.68

For technical information, please see page 240.

THRU 1/2" DIAMETER	1/2" TO 5/8"	5/8" TO 1-1/2"	1-1/2" TO 2"
+ .0002, -.0000	+ .0003, -.0000	+ .0001, +.0004	+ .0002, +.0006

Reamers

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



CHUCKING STRAIGHT SHANK - STRAIGHT FLUTE



SIZE	DECIMAL EQUIVALENT	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIAMETER	HSS	LIST PRICE	M42 COBALT	LIST PRICE
27/64	.4219	1-3/4	6	7	.3730	USA26177	53.53	USA26761	78.68
11.0mm	.4331	1-3/4	6	7	.3730	USA26179	53.53	USA26763	78.68
o/u	.4365	1-3/4	6	7	.3730	USA26181	50.86	USA26765	78.68
7/16	.4375	1-3/4	6	7	.3730	USA26183	50.86	USA26767	78.68
o/u	.4385	1-3/4	6	7	.3730	USA26185	50.86	USA26769	78.68
11.5mm	.4528	1-3/4	6	7	.3730	USA26187	58.31	USA26771	90.18
29/64	.4531	1-3/4	6	7	.3730	USA26189	58.31	USA26773	90.18
15/32	.4688	1-3/4	6	7	.3730	USA26191	58.31	USA26775	90.18
12.0mm	.4724	2	6	8	.4355	USA26193	58.31	USA26777	90.18
31/64	.4844	2	6	8	.4355	USA26195	58.31	USA26779	90.18
12.5mm	.4921	2	6	8	.4355	USA26197	58.31	USA26781	90.18
o/u	.4990	2	6	8	.4355	USA26199	55.36	USA26783	90.18
1/2	.5000	2	6	8	.4355	USA26201	55.36	USA26785	90.18
o/u	.5010	2	6	8	.4355	USA26203	55.36	USA26787	90.18
13.0mm	.5118	2	6	8	.4355	USA26205	72.24	-	-
33/64	.5156	2	6	8	.4355	USA26207	72.24	-	-
17/32	.5312	2	6	8	.4355	USA26209	68.80	USA26789	101.16
13.5mm	.5315	2	6	8	.4355	USA26211	72.24	-	-
35/64	.5469	2	8	8	.4355	USA26213	72.24	-	-
14.0mm	.5512	2	8	8	.4355	USA26215	72.24	-	-
o/u	.5615	2	8	8	.4355	USA26217	72.24	-	-
9/16	.5625	2	8	8	.4355	USA26219	68.80	USA26791	101.16
o/u	.5635	2	8	8	.4355	USA26221	72.24	-	-
14.5mm	.5709	2	8	8	.4355	USA26223	72.24	-	-
37/64	.5781	2	8	8	.4355	USA26225	72.24	-	-
15.0mm	.5906	2	8	8	.4355	USA26227	72.24	-	-
19/32	.5938	2	8	8	.4355	USA26229	68.80	USA26793	101.16
39/64	.6094	2-1/4	8	9	.5615	USA26231	84.31	-	-
15.5mm	.6102	2-1/4	8	9	.5615	USA26233	84.31	-	-
o/u	.6240	2-1/4	8	9	.5615	USA26235	84.31	-	-
5/8	.6250	2-1/4	8	9	.5615	USA26237	80.59	USA26795	118.04
o/u	.6260	2-1/4	8	9	.5615	USA26239	84.31	-	-
16.0mm	.6299	2-1/4	8	9	.5615	USA26241	84.31	-	-
41/64	.6406	2-1/4	8	9	.5615	USA26243	84.31	-	-
16.5mm	.6496	2-1/4	8	9	.5615	USA26245	84.31	-	-
21/32	.6562	2-1/4	8	9	.5615	USA26247	90.79	USA26797	133.43
17.0mm	.6693	2-1/4	8	9	.5615	USA26249	95.29	-	-
43/64	.6719	2-1/4	8	9	.5615	USA26251	95.29	-	-
o/u	.6865	2-1/4	8	9	.5615	USA26253	95.29	-	-
11/16	.6875	2-1/4	8	9	.5615	USA26255	90.79	USA26799	133.43

For technical information, please see page 240.

THRU 1/2" DIAMETER	1/2" TO 5/8"	5/8" TO 1-1/2"	1-1/2" TO 2"
+ .0002, -.0000	+ .0003, -.0000	+ .0001, +.0004	+ .0002, +.0006

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CHUCKING STRAIGHT SHANK - STRAIGHT FLUTE



HSS & COBALT REAMERS

SIZE	DECIMAL EQUIVALENT	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIAMETER	HSS	LIST PRICE	M42 COBALT	LIST PRICE
o/u	.6885	2-1/4	8	9	.5615	USA26257	102.29	-	-
17.5mm	.6890	2-1/4	8	9	.5615	USA26259	102.29	-	-
45/64	.7031	2-1/4	8	9	.5615	USA26261	102.29	-	-
18.0mm	.7087	2-1/4	8	9	.5615	USA26263	102.29	-	-
23/32	.7188	2-1/4	8	9	.5615	USA26265	101.32	USA26801	148.94
18.5mm	.7283	2-1/2	8	9-1/2	.6240	USA26267	106.34	-	-
47/64	.7344	2-1/2	8	9-1/2	.6240	USA26269	117.80	-	-
19.0mm	.7480	2-1/2	8	9-1/2	.6240	USA26271	117.80	-	-
o/u	.7490	2-1/2	8	9-1/2	.6240	USA26273	117.80	-	-
3/4	.7500	2-1/2	8	9-1/2	.6240	USA26275	101.93	USA26803	149.79
o/u	.7510	2-1/2	8	9-1/2	.6240	USA26277	113.39	-	-
49/64	.7656	2-1/2	8	9-1/2	.6240	USA26279	113.39	-	-
19.5mm	.7677	2-1/2	8	9-1/2	.6240	USA26281	113.39	-	-
25/32	.7812	2-1/2	8	9-1/2	.6240	USA26283	109.90	USA26805	161.54
20.0mm	.7874	2-1/2	8	9-1/2	.6240	USA26285	121.40	-	-
51/64	.7969	2-1/2	8	9-1/2	.6240	USA26287	121.40	-	-
20.5mm	.8071	2-1/2	8	9-1/2	.6240	USA26289	121.40	-	-
o/u	.8115	2-1/2	8	9-1/2	.6240	USA26291	121.40	-	-
13/16	.8125	2-1/2	8	9-1/2	.6240	USA26293	109.90	USA26807	161.54
o/u	.8135	2-1/2	8	9-1/2	.6240	USA26295	121.40	-	-
21.0mm	.8268	2-1/2	8	9-1/2	.6240	USA26297	121.40	-	-
53/64	.8281	2-1/2	8	9-1/2	.6240	USA26299	121.40	-	-
27/32	.8438	2-1/2	8	9-1/2	.6240	USA26301	130.03	USA26809	191.14
21.5mm	.8465	2-5/8	8	10	.7490	USA26303	141.53	-	-
55/64	.8594	2-5/8	8	10	.7490	USA26305	141.53	-	-
22.0mm	.8661	2-5/8	8	10	.7490	USA26307	141.53	-	-
o/u	.8740	2-5/8	8	10	.7490	USA26309	141.53	-	-
7/8	.8750	2-5/8	8	10	.7490	USA26311	133.03	USA26811	195.59
o/u	.8760	2-5/8	8	10	.7490	USA26313	144.57	-	-
22.5mm	.8858	2-5/8	8	10	.7490	USA26315	144.57	-	-
57/64	.8906	2-5/8	8	10	.7490	USA26317	144.57	-	-
23.0mm	.9055	2-5/8	8	10	.7490	USA26319	144.57	-	-
29/32	.9062	2-5/8	8	10	.7490	USA26321	143.39	USA26813	210.74
59/64	.9219	2-5/8	8	10	.7490	USA26323	154.81	-	-
23.5mm	.9252	2-5/8	8	10	.7490	USA26325	154.81	-	-
o/u	.9365	2-5/8	8	10	.7490	USA26327	154.81	-	-
15/16	.9375	2-5/8	8	10	.7490	USA26329	143.39	USA26815	210.74
o/u	.9385	2-5/8	8	10	.7490	USA26331	154.81	-	-
24.0mm	.9449	2-5/8	8	10	.7490	USA26333	154.81	-	-
61/64	.9531	2-5/8	8	10	.7490	USA26335	154.81	-	-

For technical information, please see page 240.

THRU 1/2" DIAMETER	1/2" TO 5/8"	5/8" TO 1-1/2"	1-1/2" TO 2"
+ .0002, -.0000	+ .0003, -.0000	+ .0001, +.0004	+ .0002, +.0006

Reamers

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



CHUCKING STRAIGHT SHANK - STRAIGHT FLUTE



SIZE	DECIMAL EQUIVALENT	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIAMETER	HSS	LIST PRICE	M42 COBALT	LIST PRICE
24.5mm	.9646	2-5/8	8	10	.7490	USA26337	154.81	-	-
31/32	.9688	2-5/8	8	10	.7490	USA26339	160.60	USA26817	236.01
25.0mm	.9843	2-3/4	8	10-1/2	.8740	USA26341	164.37	-	-
63/64	.9844	2-3/4	8	10-1/2	.8740	USA26343	164.37	-	-
o/u	.9990	2-3/4	8	10-1/2	.8740	USA26345	164.37	-	-
1	1.0000	2-3/4	8	10-1/2	.8740	USA26347	162.10	USA26819	238.23
o/u	1.0010	2-3/4	8	10-1/2	.8740	USA26349	173.56	-	-
1-1/32	1.0312	2-3/4	8	10-1/2	.8740	USA26351	225.52	-	-
1-1/16	1.0625	2-3/4	8	10-1/2	.8740	USA26353	179.68	USA26821	264.11
1-3/32	1.0938	2-7/8	8	11	.8740	USA26355	236.86	-	-
1-1/8	1.1250	2-7/8	8	11	.8740	USA26357	190.98	USA26823	280.67
1-5/32	1.1562	2-7/8	10	11	.9990	USA26359	269.50	-	-
1-3/16	1.1875	2-7/8	10	11	.9990	USA26361	223.66	USA26825	328.78
1-7/32	1.2188	3	10	11-1/2	.9990	USA26363	282.90	-	-
1-1/4	1.2500	3	10	11-1/2	.9990	USA26365	237.02	USA26827	348.38
1-9/32	1.2812	3	10	11-1/2	.9990	USA26367	322.38	-	-
1-5/16	1.3125	3	10	11-1/2	.9990	USA26369	276.46	USA26829	406.33
1-11/32	1.3438	3-1/4	10	12	.9990	USA26371	336.39	-	-
1-3/8	1.3750	3-1/4	10	12	.9990	USA26373	290.51	USA26831	427.06
1-13/32	1.4062	3-1/4	10	12	1.2490	USA26375	357.41	-	-
1-7/16	1.4375	3-1/4	10	12	1.2490	USA26377	311.53	USA26833	458.04
1-15/32	1.4688	3-1/2	10	12-1/2	1.2490	USA26379	381.38	-	-
1-1/2	1.5000	3-1/2	10	12-1/2	1.2490	USA26381	335.46	USA26835	493.15
1-9/16	1.5625	3-1/2	12	13	1.2490	USA27569	474.93	-	-
1-5/8	1.6250	3-1/2	12	13	1.2490	USA27571	474.93	-	-
1-11/16	1.6875	4	12	13-1/2	1.2490	USA27573	545.43	-	-
1-3/4	1.7500	4	12	13-1/2	1.2490	USA27575	545.43	-	-
1-13/16	1.8125	4	12	14	1.4990	USA27577	628.20	-	-
1-7/8	1.8750	4	12	14	1.4990	USA27579	628.20	-	-
1-15/16	1.9375	4	12	14	1.4990	USA27581	736.69	-	-
2	2.0000	4	12	14	1.4990	USA27583	736.69	-	-

HSS & COBALT REAMERS

For technical information, please see page 240.

THRU 1/2" DIAMETER	1/2" TO 5/8"	5/8" TO 1-1/2"	1-1/2" TO 2"
+0.002, -0.000	+0.003, -0.000	+0.001, +0.004	+0.002, +0.006

MADE IN THE USA



Reamers

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

CHUCKING

STOCKED INTERMEDIATE SIZES - STRAIGHT SHANK STRAIGHT FLUTE - HIGH SPEED STEEL

HSS & COBALT REAMERS

DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE
0.0140	USA23973	45.27	0.0490	USA24067	35.64	0.0770	USA24161	31.95	0.1060	USA24255	31.95	0.1340	USA24349	37.46
0.0150	USA23975	45.27	0.0495	USA24069	35.64	0.0775	USA24163	31.95	0.1070	USA24257	31.95	0.1345	USA24351	37.46
0.0155	USA23977	45.27	0.0500	USA24071	35.64	0.0780	USA24165	31.95	0.1075	USA24259	31.95	0.1350	USA24353	37.46
0.0165	USA23979	45.27	0.0505	USA24073	35.64	0.0790	USA24167	31.95	0.1080	USA24261	31.95	0.1355	USA24355	37.46
0.0170	USA23981	45.27	0.0510	USA24075	35.64	0.0795	USA24169	31.95	0.1085	USA24263	31.95	0.1365	USA24357	37.46
0.0175	USA23983	45.27	0.0515	USA24077	35.64	0.0800	USA24171	31.95	0.1090	USA24265	31.95	0.1370	USA24359	37.46
0.0185	USA23985	45.27	0.0525	USA24079	35.64	0.0805	USA24173	31.95	0.1095	USA24267	27.62	0.1375	USA24361	37.46
0.0190	USA23987	45.27	0.0530	USA24081	35.64	0.0815	USA24175	31.95	0.1105	USA24269	27.62	0.1380	USA24363	37.46
0.0195	USA23989	45.27	0.0535	USA24083	35.64	0.0825	USA24177	31.95	0.1115	USA24271	27.62	0.1385	USA24365	37.46
0.0205	USA23991	41.22	0.0540	USA24085	35.64	0.0830	USA24179	31.95	0.1120	USA24273	27.62	0.1390	USA24367	37.46
0.0215	USA23993	41.22	0.0545	USA24087	35.64	0.0835	USA24181	31.95	0.1125	USA24275	27.62	0.1395	USA24369	37.46
0.0220	USA23995	41.22	0.0555	USA24089	35.64	0.0840	USA24183	31.95	0.1135	USA24277	27.62	0.1400	USA24371	37.46
0.0230	USA23997	41.22	0.0560	USA24091	35.64	0.0845	USA24185	31.95	0.1140	USA24279	27.62	0.1410	USA24373	35.64
0.0235	USA23999	41.22	0.0565	USA24093	35.64	0.0850	USA24187	31.95	0.1145	USA24281	27.62	0.1415	USA24375	35.64
0.0245	USA24001	41.22	0.0570	USA24095	35.64	0.0855	USA24189	31.95	0.1150	USA24283	27.62	0.1420	USA24377	35.64
0.0255	USA24003	41.22	0.0575	USA24097	35.64	0.0865	USA24191	31.95	0.1155	USA24285	27.62	0.1425	USA24379	35.64
0.0265	USA24005	41.22	0.0580	USA24099	35.64	0.0870	USA24193	31.95	0.1165	USA24287	27.62	0.1430	USA24381	35.64
0.0270	USA24007	41.22	0.0585	USA24101	35.64	0.0875	USA24195	31.95	0.1170	USA24289	27.62	0.1435	USA24383	35.64
0.0275	USA24009	41.22	0.0590	USA24103	35.64	0.0880	USA24197	31.95	0.1175	USA24291	27.62	0.1445	USA24385	35.64
0.0285	USA24011	41.22	0.0600	USA24105	35.64	0.0885	USA24199	31.95	0.1180	USA24293	27.62	0.1450	USA24387	35.64
0.0290	USA24013	41.22	0.0605	USA24107	35.64	0.0895	USA24201	31.95	0.1185	USA24295	27.62	0.1455	USA24389	35.64
0.0295	USA24015	37.46	0.0610	USA24109	35.64	0.0900	USA24203	31.95	0.1190	USA24297	27.62	0.1460	USA24391	35.64
0.0300	USA24017	37.46	0.0615	USA24111	35.64	0.0905	USA24205	31.95	0.1195	USA24299	27.62	0.1465	USA24393	35.64
0.0305	USA24019	37.46	0.0620	USA24113	35.64	0.0910	USA24207	31.95	0.1205	USA24301	27.62	0.1475	USA24395	35.64
0.0315	USA24021	37.46	0.0630	USA24115	31.95	0.0915	USA24209	31.95	0.1210	USA24303	27.62	0.1480	USA24397	35.64
0.0325	USA24023	37.46	0.0640	USA24117	31.95	0.0920	USA24211	31.95	0.1215	USA24305	27.62	0.1485	USA24399	35.64
0.0335	USA24025	37.46	0.0645	USA24119	31.95	0.0925	USA24213	31.95	0.1220	USA24307	27.62	0.1490	USA24401	35.64
0.0340	USA24027	37.46	0.0650	USA24121	31.95	0.0930	USA24215	31.95	0.1225	USA24309	27.62	0.1500	USA24403	35.64
0.0345	USA24029	37.46	0.0655	USA24123	31.95	0.0940	USA24217	31.95	0.1230	USA24311	27.62	0.1505	USA24405	35.64
0.0355	USA24031	37.46	0.0660	USA24125	31.95	0.0945	USA24219	31.95	0.1235	USA24313	27.62	0.1510	USA24407	35.64
0.0365	USA24033	37.46	0.0665	USA24127	31.95	0.0950	USA24221	31.95	0.1245	USA24315	27.62	0.1515	USA24409	35.64
0.0375	USA24035	37.46	0.0675	USA24129	31.95	0.0955	USA24223	31.95	0.1247	USA24317	27.62	0.1525	USA24411	35.64
0.0385	USA24037	37.46	0.0680	USA24131	31.95	0.0965	USA24225	31.95	0.1255	USA24319	37.46	0.1530	USA24413	35.64
0.0395	USA24039	35.64	0.0685	USA24133	31.95	0.0970	USA24227	31.95	0.1265	USA24321	37.46	0.1535	USA24415	35.64
0.0405	USA24041	35.64	0.0690	USA24135	31.95	0.0975	USA24229	31.95	0.1270	USA24323	37.46	0.1545	USA24417	35.64
0.0415	USA24043	35.64	0.0695	USA24137	31.95	0.0985	USA24231	31.95	0.1275	USA24325	37.46	0.1550	USA24419	35.64
0.0425	USA24045	35.64	0.0705	USA24139	31.95	0.0990	USA24233	31.95	0.1280	USA24327	37.46	0.1555	USA24421	35.64
0.0435	USA24047	35.64	0.0710	USA24141	31.95	0.1000	USA24235	31.95	0.1290	USA24329	37.46	0.1560	USA24423	35.64
0.0440	USA24049	35.64	0.0715	USA24143	31.95	0.1005	USA24237	31.95	0.1295	USA24331	37.46	0.1565	USA24425	37.46
0.0445	USA24051	35.64	0.0720	USA24145	31.95	0.1010	USA24239	31.95	0.1300	USA24333	37.46	0.1580	USA24427	37.46
0.0450	USA24053	35.64	0.0725	USA24147	31.95	0.1020	USA24241	31.95	0.1305	USA24335	37.46	0.1585	USA24429	37.46
0.0455	USA24055	35.64	0.0735	USA24149	31.95	0.1025	USA24243	31.95	0.1310	USA24337	37.46	0.1595	USA24431	37.46
0.0460	USA24057	35.64	0.0740	USA24151	31.95	0.1030	USA24245	31.95	0.1315	USA24339	37.46	0.1600	USA24433	37.46
0.0470	USA24059	35.64	0.0745	USA24153	31.95	0.1035	USA24247	31.95	0.1320	USA24341	37.46	0.1605	USA24435	37.46
0.0475	USA24061	35.64	0.0750	USA24155	31.95	0.1045	USA24249	31.95	0.1325	USA24343	37.46	0.1615	USA24437	37.46
0.0480	USA24063	35.64	0.0755	USA24157	31.95	0.1050	USA24251	31.95	0.1330	USA24345	37.46	0.1620	USA24439	37.46
0.0485	USA24065	35.64	0.0765	USA24159	31.95	0.1055	USA24253	31.95	0.1335	USA24347	37.46	0.1625	USA24441	37.46

For technical information, please see page 240.

Reamers

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



CHUCKING

STOCKED INTERMEDIATE SIZES - STRAIGHT SHANK STRAIGHT FLUTE - HIGH SPEED STEEL

DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE
0.1630	USA24443	37.46	0.1925	USA24537	44.42	0.2205	USA24631	44.02	0.2470	USA24725	39.69	0.2740	USA24819	50.62
0.1635	USA24445	37.46	0.1930	USA24539	44.42	0.2215	USA24633	44.02	0.2475	USA24727	39.69	0.2745	USA24821	50.62
0.1640	USA24447	37.46	0.1940	USA24541	44.42	0.2220	USA24635	44.02	0.2480	USA24729	39.69	0.2750	USA24823	50.62
0.1645	USA24449	37.46	0.1945	USA24543	44.42	0.2225	USA24637	44.02	0.2485	USA24731	39.69	0.2755	USA24825	50.62
0.1650	USA24451	37.46	0.1950	USA24545	44.42	0.2230	USA24639	44.02	0.2495	USA24733	39.69	0.2760	USA24827	50.62
0.1655	USA24453	37.46	0.1955	USA24547	44.42	0.2235	USA24641	44.02	0.2505	USA24735	50.62	0.2765	USA24829	50.62
0.1665	USA24455	37.46	0.1965	USA24549	44.42	0.2240	USA24643	44.02	0.2515	USA24737	50.62	0.2775	USA24831	50.62
0.1670	USA24457	37.46	0.1970	USA24551	44.42	0.2245	USA24645	44.02	0.2520	USA24739	50.62	0.2780	USA24833	50.62
0.1675	USA24459	37.46	0.1975	USA24553	44.42	0.2250	USA24647	44.02	0.2525	USA24741	50.62	0.2785	USA24835	50.62
0.1680	USA24461	37.46	0.1980	USA24555	44.42	0.2255	USA24649	44.02	0.2530	USA24743	50.62	0.2790	USA24837	50.62
0.1685	USA24463	37.46	0.1985	USA24557	44.42	0.2260	USA24651	44.02	0.2535	USA24745	50.62	0.2795	USA24839	50.62
0.1690	USA24465	37.46	0.1995	USA24559	44.42	0.2265	USA24653	44.02	0.2540	USA24747	50.62	0.2800	USA24841	50.62
0.1700	USA24467	37.46	0.2000	USA24561	44.42	0.2270	USA24655	44.02	0.2545	USA24749	50.62	0.2805	USA24843	50.62
0.1705	USA24469	37.46	0.2005	USA24563	44.42	0.2275	USA24657	44.02	0.2550	USA24751	50.62	0.2815	USA24845	50.62
0.1710	USA24471	37.46	0.2015	USA24565	44.42	0.2285	USA24659	44.02	0.2555	USA24753	50.62	0.2820	USA24847	50.62
0.1715	USA24473	37.46	0.2020	USA24567	44.42	0.2290	USA24661	44.02	0.2560	USA24755	50.62	0.2825	USA24849	50.62
0.1720	USA24475	35.19	0.2025	USA24569	44.42	0.2295	USA24663	44.02	0.2565	USA24757	50.62	0.2830	USA24851	50.62
0.1725	USA24477	35.19	0.2030	USA24571	44.42	0.2300	USA24665	44.02	0.2575	USA24759	50.62	0.2835	USA24853	50.62
0.1735	USA24479	35.19	0.2035	USA24573	43.29	0.2305	USA24667	44.02	0.2580	USA24761	50.62	0.2840	USA24855	50.62
0.1740	USA24481	35.19	0.2045	USA24575	43.29	0.2310	USA24669	44.02	0.2585	USA24763	50.62	0.2845	USA24857	50.62
0.1745	USA24483	35.19	0.2050	USA24577	43.29	0.2315	USA24671	44.02	0.2590	USA24765	50.62	0.2850	USA24859	50.62
0.1750	USA24485	35.19	0.2060	USA24579	43.29	0.2320	USA24673	44.02	0.2595	USA24767	50.62	0.2855	USA24861	50.62
0.1755	USA24487	35.19	0.2065	USA24581	43.29	0.2325	USA24675	44.02	0.2600	USA24769	50.62	0.2860	USA24863	50.62
0.1760	USA24489	35.19	0.2070	USA24583	43.29	0.2330	USA24677	44.02	0.2605	USA24771	50.62	0.2865	USA24865	50.62
0.1765	USA24491	35.19	0.2075	USA24585	43.29	0.2335	USA24679	44.02	0.2615	USA24773	50.62	0.2870	USA24867	50.62
0.1775	USA24493	35.19	0.2080	USA24587	43.29	0.2345	USA24681	39.69	0.2620	USA24775	50.62	0.2875	USA24869	50.62
0.1780	USA24495	35.19	0.2085	USA24589	43.29	0.2350	USA24683	39.69	0.2625	USA24777	50.62	0.2880	USA24871	50.62
0.1785	USA24497	35.19	0.2095	USA24591	43.29	0.2355	USA24685	39.69	0.2630	USA24779	50.62	0.2885	USA24873	50.62
0.1790	USA24499	35.19	0.2100	USA24593	43.29	0.2360	USA24687	39.69	0.2635	USA24781	50.62	0.2890	USA24875	50.62
0.1795	USA24501	35.19	0.2105	USA24595	43.29	0.2365	USA24689	39.69	0.2640	USA24783	50.62	0.2895	USA24877	50.62
0.1805	USA24503	35.19	0.2110	USA24597	43.29	0.2370	USA24691	39.69	0.2645	USA24785	50.62	0.2905	USA24879	50.62
0.1810	USA24505	35.19	0.2115	USA24599	43.29	0.2375	USA24693	39.69	0.2650	USA24787	50.62	0.2910	USA24881	50.62
0.1815	USA24507	35.19	0.2120	USA24601	43.29	0.2385	USA24695	39.69	0.2655	USA24789	50.62	0.2915	USA24883	50.62
0.1825	USA24509	35.19	0.2125	USA24603	43.29	0.2390	USA24697	39.69	0.2665	USA24791	50.62	0.2920	USA24885	50.62
0.1830	USA24511	35.19	0.2135	USA24605	43.29	0.2395	USA24699	39.69	0.2670	USA24793	50.62	0.2925	USA24887	50.62
0.1835	USA24513	35.19	0.2140	USA24607	43.29	0.2400	USA24701	39.69	0.2675	USA24795	50.62	0.2930	USA24889	50.62
0.1840	USA24515	35.19	0.2145	USA24609	43.29	0.2405	USA24703	39.69	0.2680	USA24797	50.62	0.2935	USA24891	50.62
0.1845	USA24517	35.19	0.2150	USA24611	43.29	0.2410	USA24705	39.69	0.2685	USA24799	50.62	0.2940	USA24893	50.62
0.1855	USA24519	35.19	0.2155	USA24613	43.29	0.2415	USA24707	39.69	0.2690	USA24801	50.62	0.2945	USA24895	50.62
0.1860	USA24521	35.19	0.2160	USA24615	43.29	0.2425	USA24709	39.69	0.2695	USA24803	50.62	0.2955	USA24897	50.62
0.1870	USA24523	35.19	0.2170	USA24617	43.29	0.2430	USA24711	39.69	0.2700	USA24805	50.62	0.2960	USA24899	50.62
0.1880	USA24525	44.42	0.2175	USA24619	43.29	0.2435	USA24713	39.69	0.2705	USA24807	50.62	0.2965	USA24901	50.62
0.1895	USA24527	44.42	0.2180	USA24621	43.29	0.2440	USA24715	39.69	0.2710	USA24809	50.62	0.2970	USA24903	45.31
0.1900	USA24529	44.42	0.2185	USA24623	43.29	0.2445	USA24717	39.69	0.2715	USA24811	50.62	0.2975	USA24905	45.31
0.1905	USA24531	44.42	0.2190	USA24625	44.02	0.2450	USA24719	39.69	0.2725	USA24813	50.62	0.2980	USA24907	45.31
0.1915	USA24533	44.42	0.2195	USA24627	44.02	0.2455	USA24721	39.69	0.2730	USA24815	50.62	0.2985	USA24909	45.31
0.1920	USA24535	44.42	0.2200	USA24629	44.02	0.2465	USA24723	39.69	0.2735	USA24817	50.62	0.2990	USA24911	45.31

HSS & COBALT REAMERS

For technical information, please see page 240.

MADE IN THE USA



Reamers

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

CHUCKING

STOCKED INTERMEDIATE SIZES - STRAIGHT SHANK STRAIGHT FLUTE - HIGH SPEED STEEL

HSS & COBALT REAMERS

DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE
0.2995	USA24913	45.31	0.3265	USA25007	53.37	0.3515	USA25101	54.14	0.3780	USA25195	58.39	0.4025	USA25289	59.89
0.3000	USA24915	45.31	0.3270	USA25009	53.37	0.3520	USA25103	54.14	0.3785	USA25197	58.39	0.4030	USA25291	59.89
0.3005	USA24917	45.31	0.3275	USA25011	53.37	0.3525	USA25105	54.14	0.3790	USA25199	58.39	0.4035	USA25293	59.89
0.3010	USA24919	45.31	0.3280	USA25013	53.37	0.3530	USA25107	54.14	0.3795	USA25201	58.39	0.4045	USA25295	59.89
0.3015	USA24921	45.31	0.3285	USA25015	53.37	0.3535	USA25109	54.14	0.3800	USA25203	58.39	0.4050	USA25297	59.89
0.3025	USA24923	45.31	0.3290	USA25017	53.37	0.3540	USA25111	54.14	0.3805	USA25205	58.39	0.4055	USA25299	59.89
0.3030	USA24925	45.31	0.3295	USA25019	53.37	0.3545	USA25113	54.14	0.3810	USA25207	58.39	0.4060	USA25301	59.89
0.3035	USA24927	45.31	0.3300	USA25021	53.37	0.3550	USA25115	54.14	0.3815	USA25209	58.39	0.4065	USA25303	59.89
0.3040	USA24929	45.31	0.3305	USA25023	53.37	0.3555	USA25117	54.14	0.3820	USA25211	58.39	0.4070	USA25305	59.89
0.3045	USA24931	45.31	0.3310	USA25025	53.37	0.3560	USA25119	54.14	0.3825	USA25213	58.39	0.4075	USA25307	59.89
0.3050	USA24933	45.31	0.3315	USA25027	53.37	0.3565	USA25121	54.14	0.3830	USA25215	58.39	0.4080	USA25309	59.89
0.3055	USA24935	45.31	0.3325	USA25029	53.37	0.3570	USA25123	54.14	0.3835	USA25217	58.39	0.4085	USA25311	59.89
0.3060	USA24937	45.31	0.3330	USA25031	53.37	0.3575	USA25125	54.14	0.3840	USA25219	58.39	0.4090	USA25313	59.89
0.3065	USA24939	45.31	0.3335	USA25033	53.37	0.3585	USA25127	54.14	0.3845	USA25221	58.39	0.4095	USA25315	59.89
0.3070	USA24941	45.31	0.3340	USA25035	53.37	0.3590	USA25129	54.14	0.3850	USA25223	58.39	0.4100	USA25317	59.89
0.3075	USA24943	45.31	0.3345	USA25037	53.37	0.3595	USA25131	48.51	0.3855	USA25225	58.39	0.4105	USA25319	59.89
0.3080	USA24945	45.31	0.3350	USA25039	53.37	0.3600	USA25133	48.51	0.3865	USA25227	58.39	0.4110	USA25321	59.89
0.3085	USA24947	45.31	0.3355	USA25041	53.37	0.3605	USA25135	48.51	0.3870	USA25229	58.39	0.4115	USA25323	59.89
0.3090	USA24949	45.31	0.3360	USA25043	53.37	0.3610	USA25137	48.51	0.3875	USA25231	58.39	0.4120	USA25325	59.89
0.3095	USA24951	45.31	0.3365	USA25045	53.37	0.3615	USA25139	48.51	0.3880	USA25233	58.39	0.4125	USA25327	59.89
0.3100	USA24953	45.31	0.3370	USA25047	53.37	0.3620	USA25141	48.51	0.3885	USA25235	58.39	0.4135	USA25329	59.89
0.3105	USA24955	45.31	0.3375	USA25049	53.37	0.3625	USA25143	48.51	0.3890	USA25237	58.39	0.4140	USA25331	59.89
0.3110	USA24957	45.31	0.3380	USA25051	53.37	0.3630	USA25145	48.51	0.3895	USA25239	58.39	0.4145	USA25333	59.89
0.3120	USA24959	45.31	0.3385	USA25053	53.37	0.3635	USA25147	48.51	0.3900	USA25241	58.39	0.4150	USA25335	59.89
0.3130	USA24961	53.37	0.3395	USA25055	53.37	0.3640	USA25149	48.51	0.3905	USA25243	58.39	0.4155	USA25337	59.89
0.3140	USA24963	53.37	0.3400	USA25057	53.37	0.3645	USA25151	48.51	0.3910	USA25245	59.89	0.4160	USA25339	59.89
0.3145	USA24965	53.37	0.3405	USA25059	53.37	0.3650	USA25153	48.51	0.3915	USA25247	59.89	0.4165	USA25341	59.89
0.3155	USA24967	53.37	0.3410	USA25061	53.37	0.3655	USA25155	48.51	0.3920	USA25249	59.89	0.4170	USA25343	59.89
0.3165	USA24969	53.37	0.3415	USA25063	53.37	0.3660	USA25157	48.51	0.3925	USA25251	59.89	0.4175	USA25345	59.89
0.3170	USA24971	53.37	0.3420	USA25065	53.37	0.3665	USA25159	48.51	0.3930	USA25253	59.89	0.4180	USA25347	59.89
0.3175	USA24973	53.37	0.3425	USA25067	53.37	0.3670	USA25161	48.51	0.3935	USA25255	59.89	0.4185	USA25349	59.89
0.3180	USA24975	53.37	0.3430	USA25069	53.37	0.3675	USA25163	48.51	0.3940	USA25257	59.89	0.4190	USA25351	59.89
0.3185	USA24977	53.37	0.3435	USA25071	53.37	0.3685	USA25165	48.51	0.3945	USA25259	59.89	0.4195	USA25353	59.89
0.3190	USA24979	53.37	0.3440	USA25073	54.14	0.3690	USA25167	48.51	0.3950	USA25261	59.89	0.4200	USA25355	59.89
0.3195	USA24981	53.37	0.3445	USA25075	54.14	0.3695	USA25169	48.51	0.3955	USA25263	59.89	0.4205	USA25357	59.89
0.3200	USA24983	53.37	0.3450	USA25077	54.14	0.3700	USA25171	48.51	0.3960	USA25265	59.89	0.4210	USA25359	59.89
0.3205	USA24985	53.37	0.3455	USA25079	54.14	0.3705	USA25173	48.51	0.3965	USA25267	59.89	0.4215	USA25361	59.89
0.3210	USA24987	53.37	0.3460	USA25081	54.14	0.3710	USA25175	48.51	0.3975	USA25269	59.89	0.4220	USA25363	56.17
0.3215	USA24989	53.37	0.3465	USA25083	54.14	0.3715	USA25177	48.51	0.3980	USA25271	59.89	0.4225	USA25365	56.17
0.3220	USA24991	53.37	0.3470	USA25085	54.14	0.3720	USA25179	48.51	0.3985	USA25273	59.89	0.4230	USA25367	56.17
0.3225	USA24993	53.37	0.3475	USA25087	54.14	0.3725	USA25181	48.51	0.3990	USA25275	59.89	0.4235	USA25369	56.17
0.3235	USA24995	53.37	0.3485	USA25089	54.14	0.3730	USA25183	48.51	0.3995	USA25277	59.89	0.4240	USA25371	56.17
0.3240	USA24997	53.37	0.3490	USA25091	54.14	0.3735	USA25185	48.51	0.4000	USA25279	59.89	0.4245	USA25373	56.17
0.3245	USA24999	53.37	0.3495	USA25093	54.14	0.3745	USA25187	48.51	0.4005	USA25281	59.89	0.4250	USA25375	56.17
0.3250	USA25001	53.37	0.3500	USA25095	54.14	0.3755	USA25189	58.39	0.4010	USA25283	59.89	0.4255	USA25377	56.17
0.3255	USA25003	53.37	0.3505	USA25097	54.14	0.3765	USA25191	58.39	0.4015	USA25285	59.89	0.4260	USA25379	56.17
0.3260	USA25005	53.37	0.3510	USA25099	54.14	0.3775	USA25193	58.39	0.4020	USA25287	59.89	0.4265	USA25381	56.17

For technical information, please see page 240.

Reamers

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



CHUCKING

STOCKED INTERMEDIATE SIZES - STRAIGHT SHANK STRAIGHT FLUTE - HIGH SPEED STEEL

DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE
0.4270	USA25383	56.17	0.4525	USA25479	63.70	0.4765	USA25575	63.70	0.5020	USA25671	80.59	0.7525	USA25765	129.26
0.4275	USA25385	56.17	0.4530	USA25481	63.70	0.4770	USA25577	63.70	0.5025	USA25673	80.59	0.7530	USA25767	129.26
0.4280	USA25387	56.17	0.4535	USA25483	63.70	0.4775	USA25579	63.70	0.5030	USA25675	80.59	0.7540	USA25769	129.26
0.4285	USA25389	56.17	0.4540	USA25485	63.70	0.4780	USA25581	63.70	0.5035	USA25677	80.59	0.7550	USA25771	129.26
0.4290	USA25391	56.17	0.4545	USA25487	63.70	0.4785	USA25583	63.70	0.5040	USA25679	80.59	0.8095	USA25773	129.26
0.4295	USA25393	56.17	0.4550	USA25489	63.70	0.4790	USA25585	63.70	0.5045	USA25681	80.59	0.8100	USA25775	129.26
0.4300	USA25395	56.17	0.4555	USA25491	63.70	0.4795	USA25587	63.70	0.5050	USA25683	80.59	0.8105	USA25777	129.26
0.4305	USA25397	56.17	0.4560	USA25493	63.70	0.4800	USA25589	63.70	0.5060	USA25685	80.59	0.8110	USA25779	129.26
0.4310	USA25399	56.17	0.4565	USA25495	63.70	0.4805	USA25591	63.70	0.5070	USA25687	80.59	0.8120	USA25781	129.26
0.4315	USA25401	56.17	0.4570	USA25497	63.70	0.4810	USA25593	63.70	0.5080	USA25689	80.59	0.8130	USA25783	142.34
0.4320	USA25403	56.17	0.4575	USA25499	63.70	0.4815	USA25595	63.70	0.5090	USA25691	80.59	0.8140	USA25785	142.34
0.4325	USA25405	56.17	0.4580	USA25501	63.70	0.4820	USA25597	63.70	0.5100	USA25693	80.59	0.8145	USA25787	142.34
0.4330	USA25407	56.17	0.4585	USA25503	63.70	0.4825	USA25599	63.70	0.5600	USA25695	78.93	0.8150	USA25789	142.34
0.4335	USA25409	56.17	0.4590	USA25505	63.70	0.4830	USA25601	63.70	0.5605	USA25697	78.93	0.8155	USA25791	142.34
0.4340	USA25411	56.17	0.4595	USA25507	63.70	0.4835	USA25603	63.70	0.5610	USA25699	78.93	0.8720	USA25793	146.03
0.4345	USA25413	56.17	0.4600	USA25509	63.70	0.4840	USA25605	63.70	0.5620	USA25701	78.93	0.8725	USA25795	146.03
0.4350	USA25415	56.17	0.4605	USA25511	63.70	0.4845	USA25607	59.89	0.5630	USA25703	90.63	0.8730	USA25797	146.03
0.4355	USA25417	56.17	0.4610	USA25513	63.70	0.4850	USA25609	59.89	0.5640	USA25705	90.63	0.8735	USA25799	146.03
0.4360	USA25419	56.17	0.4615	USA25515	63.70	0.4855	USA25611	59.89	0.5645	USA25707	90.63	0.8745	USA25801	146.03
0.4370	USA25421	56.17	0.4620	USA25517	63.70	0.4860	USA25613	59.89	0.5650	USA25709	90.63	0.8755	USA25803	159.11
0.4380	USA25423	63.70	0.4625	USA25519	63.70	0.4865	USA25615	59.89	0.5655	USA25711	90.63	0.8765	USA25805	159.11
0.4390	USA25425	63.70	0.4630	USA25521	63.70	0.4870	USA25617	59.89	0.6220	USA25713	91.03	0.8770	USA25807	159.11
0.4395	USA25427	63.70	0.4635	USA25523	63.70	0.4875	USA25619	59.89	0.6225	USA25715	91.03	0.8775	USA25809	159.11
0.4400	USA25429	63.70	0.4640	USA25525	63.70	0.4880	USA25621	59.89	0.6230	USA25717	91.03	0.8780	USA25811	159.11
0.4405	USA25431	63.70	0.4645	USA25527	63.70	0.4885	USA25623	59.89	0.6235	USA25719	91.03	0.9340	USA25813	159.11
0.4410	USA25433	63.70	0.4650	USA25529	63.70	0.4890	USA25625	59.89	0.6245	USA25721	91.03	0.9345	USA25815	159.11
0.4415	USA25435	63.70	0.4655	USA25531	63.70	0.4895	USA25627	59.89	0.6255	USA25723	101.68	0.9350	USA25817	159.11
0.4420	USA25437	63.70	0.4660	USA25533	63.70	0.4900	USA25629	59.89	0.6265	USA25725	101.68	0.9355	USA25819	159.11
0.4425	USA25439	63.70	0.4665	USA25535	63.70	0.4905	USA25631	59.89	0.6270	USA25727	101.68	0.9360	USA25821	159.11
0.4430	USA25441	63.70	0.4670	USA25537	63.70	0.4910	USA25633	59.89	0.6275	USA25729	101.68	0.9370	USA25823	159.11
0.4435	USA25443	63.70	0.4675	USA25539	63.70	0.4915	USA25635	59.89	0.6280	USA25731	101.68	0.9380	USA25825	174.66
0.4440	USA25445	63.70	0.4680	USA25541	63.70	0.4920	USA25637	59.89	0.6300	USA25855	101.68	0.9390	USA25827	174.66
0.4445	USA25447	63.70	0.4685	USA25543	63.70	0.4925	USA25639	59.89	0.6845	USA25733	101.68	0.9395	USA25829	174.66
0.4450	USA25449	63.70	0.4690	USA25545	63.70	0.4930	USA25641	59.89	0.6850	USA25735	101.68	0.9400	USA25831	174.66
0.4455	USA25451	63.70	0.4695	USA25547	63.70	0.4935	USA25643	59.89	0.6855	USA25737	101.68	0.9405	USA25833	174.66
0.4460	USA25453	63.70	0.4700	USA25549	63.70	0.4940	USA25645	59.89	0.6860	USA25739	101.68	0.9970	USA25835	178.02
0.4465	USA25455	63.70	0.4705	USA25551	63.70	0.4945	USA25647	59.89	0.6870	USA25741	101.68	0.9975	USA25837	178.02
0.4470	USA25457	63.70	0.4710	USA25553	63.70	0.4950	USA25649	59.89	0.6880	USA25743	112.09	0.9980	USA25839	178.02
0.4475	USA25459	63.70	0.4715	USA25555	63.70	0.4955	USA25651	59.89	0.6895	USA25745	112.09	0.9985	USA25841	178.02
0.4480	USA25461	63.70	0.4720	USA25557	63.70	0.4960	USA25653	59.89	0.6900	USA25747	112.09	0.9995	USA25843	178.02
0.4485	USA25463	63.70	0.4725	USA25559	63.70	0.4965	USA25655	59.89	0.6905	USA25749	112.09	1.0005	USA25845	247.26
0.4490	USA25465	63.70	0.4730	USA25561	63.70	0.4970	USA25657	59.89	0.7470	USA25751	119.10	1.0015	USA25847	247.26
0.4495	USA25467	63.70	0.4735	USA25563	63.70	0.4975	USA25659	59.89	0.7475	USA25753	119.10	1.0020	USA25849	247.26
0.4500	USA25469	63.70	0.4740	USA25565	63.70	0.4980	USA25661	59.89	0.7485	USA25755	119.10	1.0025	USA25851	247.26
0.4505	USA25471	63.70	0.4745	USA25567	63.70	0.4985	USA25663	59.89	0.7495	USA25757	119.10	1.0030	USA25853	247.26
0.4510	USA25473	63.70	0.4750	USA25569	63.70	0.4995	USA25665	59.89	0.7505	USA25759	129.26	-	-	-
0.4515	USA25475	63.70	0.4755	USA25571	63.70	0.5005	USA25667	80.59	0.7515	USA25761	129.26	-	-	-
0.4520	USA25477	63.70	0.4760	USA25573	63.70	0.5015	USA25669	80.59	0.7520	USA25763	129.26	-	-	-

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MADE IN THE USA

HSS & COBALT REAMERS



Reamers

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

CHUCKING STRAIGHT SHANK - STRAIGHT FLUTE



HIGH SPEED STEEL

SPECIAL SIZES - QUANTITY PRICING

SIZE RANGE	1	2	3-5	6-7	8-11	12-17	18-23	24-35	36-47	48-59	60-71	72-95	96+
.0135 - .0195	218.04	142.49	106.18	70.07	63.30	53.80	48.68	45.28	44.10	40.41	39.18	38.67	37.76
.0196 - .0290	198.24	129.54	96.60	63.69	57.52	50.42	44.24	41.23	38.22	36.69	36.53	36.47	36.34
.0291 - .0390	180.20	117.56	87.77	57.85	52.27	45.88	40.26	37.46	34.71	33.37	32.43	31.97	31.21
.0391 - .0624	162.88	108.44	87.77	55.80	50.31	43.60	38.36	35.64	32.87	30.85	30.37	30.26	30.06
.0626 - .1093	171.50	109.78	84.66	52.75	46.24	38.34	34.71	31.95	29.27	27.62	26.95	26.46	25.56
.1095 - .1249	169.23	107.41	79.58	46.10	40.48	37.04	30.37	27.62	27.22	26.78	26.33	25.84	25.64
.1251 - .1405	180.20	117.56	79.37	57.85	54.49	45.88	40.26	37.46	34.71	33.37	32.52	31.97	30.90
.1407 - .1561	177.47	115.70	87.87	56.10	50.31	43.94	38.36	35.64	33.64	32.87	32.13	31.37	30.58
.1563 - .1718	180.20	112.46	87.36	57.85	52.40	45.88	40.26	37.46	34.71	34.17	33.64	33.37	32.72
.1720 - .1874	172.83	107.88	87.31	53.89	48.43	43.28	38.08	35.19	34.82	34.29	33.80	32.94	32.52
.1876 - .2030	185.06	123.29	96.75	64.76	59.24	52.66	47.10	44.42	41.39	39.18	38.34	38.08	37.77
.2032 - .2187	185.06	123.29	95.71	63.76	58.27	51.58	45.95	43.30	40.48	38.08	37.60	37.15	36.97
.2189 - .2343	185.80	124.26	96.49	64.57	59.03	52.40	46.79	44.01	41.29	39.63	39.04	38.67	38.36
.2345 - .2499	185.80	124.26	91.85	59.92	54.33	47.93	42.45	39.68	36.74	36.53	36.04	35.66	35.51
.2501 - .2968	192.97	131.19	103.35	71.43	65.95	58.91	53.37	50.62	47.69	45.21	44.77	44.38	43.94
.2970 - .3124	187.61	125.89	98.03	65.99	60.45	53.80	48.14	45.31	45.12	44.73	44.51	44.21	43.94
.3126 - .3437	197.09	134.35	106.35	68.89	66.79	61.62	56.25	53.37	50.37	48.18	47.69	47.37	46.98
.3439 - .3593	196.81	135.08	107.15	75.18	69.60	65.33	56.25	54.14	51.39	48.93	48.43	48.04	47.69
.3595 - .3749	191.16	129.24	101.40	69.24	63.76	57.02	51.51	48.51	48.25	48.18	47.85	47.61	47.44
.3751 - .3905	200.09	138.42	110.74	78.47	72.94	66.86	61.17	58.39	55.69	52.75	52.46	52.02	51.58
.3907 - .4218	202.61	140.81	112.88	80.93	75.40	68.12	62.61	59.90	57.06	54.57	54.05	53.80	53.65
.4220 - .4374	198.78	137.12	109.05	77.22	71.72	64.57	58.91	56.16	55.69	55.50	55.26	54.12	53.53
.4376 - .4843	207.99	146.16	118.30	86.36	80.82	73.25	65.01	63.69	62.30	60.36	59.92	59.24	58.71
.4845 - .4999	203.09	141.31	113.41	81.33	75.94	68.42	60.07	59.90	59.41	59.18	58.71	58.51	58.32
.5001 - .5311	294.71	183.05	145.93	108.55	99.37	89.96	83.83	80.58	77.48	76.05	75.08	74.47	73.74
.5313 - .5624	293.06	181.34	144.14	106.83	97.65	88.21	82.16	78.94	75.75	74.22	73.29	72.61	72.27
.5626 - .5937	304.59	192.86	155.59	118.30	111.21	99.78	96.52	90.62	87.31	85.89	84.89	84.26	83.40
.5939 - .6249	305.02	193.17	155.94	118.66	109.48	100.17	93.98	91.03	87.67	86.27	85.22	84.66	84.29
.6251 - .6874	315.90	204.17	166.92	129.64	120.34	115.50	104.78	101.69	98.63	97.03	96.10	95.58	95.28
.6876 - .7187	326.12	214.49	177.19	139.46	130.37	121.26	115.12	112.10	109.02	107.41	106.39	105.65	105.04
.7189 - .7499	330.24	218.52	181.47	144.06	134.93	125.55	119.26	119.10	118.97	118.86	118.43	118.19	117.79
.7501 - .8124	343.25	231.61	194.52	157.15	147.89	138.61	132.39	129.26	126.17	124.63	123.72	123.01	122.18
.8126 - .8437	356.42	244.63	207.58	170.25	160.94	151.77	145.45	142.34	139.30	137.68	136.67	136.13	135.35
.8439 - .8749	359.72	248.02	210.71	173.42	164.16	154.90	148.60	146.02	144.66	140.81	139.81	139.22	136.58
.8751 - .9374	373.24	261.51	224.28	186.99	177.76	168.58	162.21	159.11	156.10	155.62	155.35	155.12	154.83
.9376 - .9687	388.74	275.37	239.81	202.61	193.32	184.03	177.76	174.65	171.59	170.16	169.00	168.64	167.70
.9689 - .9999	391.96	280.28	243.07	205.72	196.55	187.22	181.07	178.02	174.76	173.29	172.29	171.59	170.89
1.0001 - 1.0624	420.65	314.21	303.09	291.97	280.73	269.60	258.43	247.26	236.16	234.70	229.33	227.45	225.53
1.0626 - 1.1249	444.21	338.34	326.12	313.85	301.59	289.35	277.16	264.93	252.71	240.50	239.36	238.17	236.82
1.1251 - 1.1874	474.38	370.04	357.34	345.21	333.03	320.88	309.09	296.60	286.67	272.25	260.08	247.98	235.79
1.1876 - 1.2499	500.76	394.92	381.66	368.52	355.37	342.24	329.05	315.90	302.75	289.62	276.46	263.28	250.16
1.2501 - 1.3749	569.60	458.76	444.44	430.44	416.46	400.36	388.47	374.56	360.48	346.49	342.89	339.32	336.39
1.3751 - 1.4999	630.09	522.82	507.20	491.64	476.01	460.38	444.87	429.20	413.66	398.00	393.76	387.98	381.36

For technical information, please see page 240.

THRU 1/2" DIAMETER	ABOVE 1/2" TO 5/8"	ABOVE 5/8" TO 1-1/2"
+ .0002, - .0000	+ .0003, - .0000	+ .0001, + .0004

HSS & COBALT REAMERS

MADE IN THE USA

Reamers

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



CHUCKING STRAIGHT SHANK - STRAIGHT FLUTE



M42 COBALT

SPECIAL SIZES - QUANTITY PRICING

SIZE RANGE	1	2	3-5	6-7	8-11	12-17	18-23	24-35	36-47	48-59	60-71	72-95	96+
.0135 - .0195	314.97	166.51	123.42	80.55	69.81	59.00	51.89	48.28	44.70	42.93	41.88	40.41	40.26
.0196 - .0290	286.38	151.29	112.20	73.23	63.46	53.65	47.10	43.88	40.67	40.48	40.43	40.41	40.26
.0291 - .0390	260.36	137.64	102.04	66.51	57.64	51.57	42.84	39.93	36.97	35.51	34.64	34.00	33.21
.0391 - .0624	237.04	135.55	100.00	64.42	55.53	46.66	40.79	37.82	34.85	33.38	33.19	32.92	32.62
.0626 - .1093	238.67	132.51	96.97	61.40	52.59	43.61	37.76	34.78	31.80	30.37	30.19	30.06	29.81
.1095 - .1249	233.21	126.99	91.54	55.97	47.09	38.25	32.32	30.57	28.83	28.33	27.93	27.56	27.24
.1251 - .1405	243.76	137.57	101.62	66.51	57.64	48.79	42.84	39.93	36.97	35.51	34.64	34.00	33.21
.1407 - .1561	241.74	135.55	100.00	64.42	55.53	46.66	40.79	37.82	34.85	33.38	32.94	32.82	32.58
.1563 - .1718	243.98	137.68	102.14	66.68	57.82	48.93	43.05	40.06	37.07	35.58	35.32	35.07	34.78
.1720 - .1874	242.19	136.07	100.46	65.01	57.63	47.25	41.30	38.36	35.39	35.32	35.11	34.85	34.84
.1876 - .2030	252.12	145.93	110.30	74.83	65.98	57.02	51.19	48.20	45.22	43.73	42.84	42.29	42.06
.2032 - .2343	251.05	144.91	109.39	73.82	65.01	56.16	50.17	48.63	47.06	46.56	46.27	45.88	45.17
.2345 - .2499	246.74	140.81	105.29	69.81	60.88	52.00	46.10	45.83	45.53	45.17	44.74	43.94	43.38
.2501 - .2968	268.74	162.58	126.92	91.54	82.60	73.76	67.69	64.81	61.89	60.41	59.96	59.09	58.91
.2970 - .3124	261.97	155.70	120.18	84.66	75.71	66.88	61.03	60.65	60.27	59.99	59.48	59.40	58.98
.3126 - .3437	272.07	165.79	130.24	94.76	85.89	76.96	71.09	68.11	65.09	64.84	64.48	63.87	63.52
.3439 - .3593	272.55	166.39	130.83	95.32	86.47	77.63	71.63	68.75	65.84	65.37	64.99	64.84	64.42
.3595 - .3749	266.33	160.10	124.58	88.99	80.13	71.24	65.33	65.17	64.99	64.76	32.52	64.62	64.36
.3751 - .3905	290.90	184.74	149.23	113.70	104.78	95.94	89.76	86.93	84.10	82.60	81.69	81.15	80.39
.3907 - .4218	294.62	188.53	152.91	117.40	108.57	99.65	93.73	90.79	87.85	86.47	85.37	84.84	84.10
.4220 - .4374	288.84	182.65	147.13	111.59	102.77	93.85	87.89	84.97	81.99	80.58	79.65	79.08	78.35
.4376 - .4843	302.87	196.73	161.18	125.68	116.81	107.90	102.10	99.13	96.15	94.63	93.73	93.17	92.39
.4845 - .4999	295.23	188.99	153.50	117.96	109.02	100.20	94.32	92.72	91.10	90.85	90.53	90.34	90.19
.5001 - .5311	311.52	203.80	168.64	130.23	126.61	123.23	119.88	116.52	113.15	109.79	106.39	103.04	99.72
.5313 - .5624	313.85	207.23	173.28	134.39	130.44	126.61	122.83	119.05	115.26	111.48	107.69	103.91	100.11
.5626 - .5937	319.80	212.57	177.62	138.52	134.20	129.97	125.76	132.23	117.37	113.15	108.94	104.72	100.48
.5939 - .6249	329.91	223.23	189.31	150.09	146.06	142.34	138.61	134.88	131.16	127.34	123.63	119.88	116.15
.6251 - .6874	340.41	233.31	201.13	161.71	158.06	154.63	151.21	147.77	144.31	140.92	138.81	133.97	130.61
.6876 - .7187	350.75	243.51	209.19	169.58	166.63	163.87	160.94	158.26	155.59	152.87	150.09	149.23	148.96
.7189 - .7499	363.13	257.06	225.09	185.15	180.83	176.55	172.33	168.12	163.87	159.62	155.35	151.13	146.84
.7501 - .8124	382.30	275.36	241.98	203.39	190.67	186.59	182.48	178.41	174.35	170.25	166.13	162.06	157.99
.8126 - .8437	401.54	295.76	260.75	224.75	214.09	210.42	206.92	203.39	199.82	196.23	192.67	189.16	185.62
.8439 - .8749	422.42	315.38	281.01	243.12	228.95	224.12	219.41	214.69	209.94	205.22	200.44	195.78	191.03
.8751 - .9374	439.27	331.82	297.83	258.15	243.76	238.92	234.17	229.37	224.59	219.83	215.00	212.91	210.70
.9376 - .9687	461.78	352.09	318.52	279.85	274.02	268.82	263.28	257.85	252.31	246.78	241.32	238.56	235.99
.9689 - .9999	477.85	370.93	338.03	300.22	292.72	285.33	277.99	270.71	263.43	256.17	248.86	241.52	234.21
1.0001 - 1.0624	514.18	407.12	372.38	333.74	325.54	319.05	309.05	300.87	292.68	284.44	276.22	267.94	259.81
1.0626 - 1.1249	550.84	444.20	410.15	372.40	361.58	351.15	340.64	330.18	319.66	309.26	298.77	288.30	277.85
1.1251 - 1.1874	586.36	477.85	446.87	405.40	395.99	386.77	377.61	368.38	359.19	349.94	340.69	331.54	322.27
1.1876 - 1.2499	623.52	518.50	485.03	444.60	432.65	421.44	410.16	399.00	387.84	376.62	365.43	354.18	343.06
1.2501 - 1.3749	660.97	552.05	516.08	479.40	472.13	461.35	450.33	439.00	427.84	416.62	405.43	394.18	383.06
1.3751 - 1.4999	697.65	590.37	556.91	518.10	512.98	503.35	492.29	481.00	469.72	458.51	447.31	436.12	425.03

HSS & COBALT REAMERS

For technical information, please see page 240.

THRU 1/2" DIAMETER	ABOVE 1/2" TO 5/8"	ABOVE 5/8" TO 1-1/2"
+0.002, -0.000	+0.003, -0.000	+0.001, +0.004

MADE IN THE USA



Reamers

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

CHUCKING

STRAIGHT SHANK - RIGHT HAND SPIRAL - RIGHT HAND CUT



HSS & COBALT REAMERS

SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	HSS	LIST PRICE	M42 COBALT	LIST PRICE
1.0mm	.0394	1/2	4	2-1/2	.0394	USA26865	35.03	USA27217	38.31
#60	.0400	1/2	4	2-1/2	.0390	USA26867	35.03	USA27219	38.31
#59	.0410	1/2	4	2-1/2	.0390	USA26869	35.03	USA27221	38.31
#58	.0420	1/2	4	2-1/2	.0390	USA26871	35.03	USA27223	38.31
#57	.0430	1/2	4	2-1/2	.0390	USA26873	35.03	USA27225	38.31
#56	.0465	1/2	4	2-1/2	.0455	USA26875	35.03	USA27227	38.31
3/64	.0469	1/2	4	2-1/2	.0455	USA26877	35.03	USA27229	38.31
#55	.0520	1/2	4	2-1/2	.0510	USA26879	35.03	USA27231	38.31
#54	.0550	1/2	4	2-1/2	.0510	USA26881	35.03	USA27233	38.31
1.5mm	.0591	1/2	4	2-1/2	.0510	USA26883	35.03	USA27235	38.31
#53	.0595	1/2	4	2-1/2	.0585	USA26885	35.03	USA27237	38.31
1/16	.0625	1/2	4	2-1/2	.0585	USA26887	35.03	USA27239	38.31
#52	.0635	1/2	4	2-1/2	.0585	USA26889	35.03	USA27241	38.31
#51	.0670	3/4	4	3	.0660	USA26891	28.18	USA27243	30.86
#50	.0700	3/4	4	3	.0660	USA26893	28.18	USA27245	30.86
#49	.0730	3/4	4	3	.0660	USA26895	28.18	USA27247	30.86
#48	.0760	3/4	4	3	.0720	USA26897	28.18	USA27249	30.86
5/64	.0781	3/4	4	3	.0720	USA26899	28.18	USA27251	30.86
#47	.0785	3/4	4	3	.0720	USA26901	28.18	USA27253	30.86
2.0mm	.0787	3/4	4	3	.0720	USA26903	28.18	USA27255	30.86
#46	.0810	3/4	4	3	.0771	USA26905	28.18	USA27257	30.86
#45	.0820	3/4	4	3	.0771	USA26907	28.18	USA27259	30.86
#44	.0860	3/4	4	3	.0810	USA26909	28.18	USA27261	30.86
#43	.0890	3/4	4	3	.0810	USA26911	28.18	USA27263	30.86
#42	.0935	3/4	4	3	.0880	USA26913	28.18	USA27265	30.86
3/32	.0938	3/4	4	3	.0880	USA26915	27.94	USA27267	30.86
#41	.0960	7/8	4	3-1/2	.0928	USA26917	28.39	USA27269	31.14
#40	.0980	7/8	4	3-1/2	.0928	USA26919	28.39	USA27271	31.14
2.5mm	.0984	7/8	4	3-1/2	.0928	USA26921	28.39	USA27273	31.14
#39	.0995	7/8	4	3-1/2	.0928	USA26923	28.39	USA27275	31.14
#38	.1015	7/8	4	3-1/2	.0950	USA26925	28.39	USA27277	31.14
#37	.1040	7/8	4	3-1/2	.0950	USA26927	28.39	USA27279	31.14
#36	.1065	7/8	4	3-1/2	.1030	USA26929	28.39	USA27281	31.14
7/64	.1094	7/8	4	3-1/2	.1030	USA26931	29.24	USA27283	32.11
#35	.1100	7/8	4	3-1/2	.1030	USA26933	29.24	USA27285	32.11
#34	.1110	7/8	4	3-1/2	.1055	USA26935	29.24	USA27287	32.11
#33	.1130	7/8	4	3-1/2	.1055	USA26937	29.24	USA27289	32.11
#32	.1160	7/8	4	3-1/2	.1120	USA26939	29.24	USA27291	32.11
3.0mm	.1181	7/8	4	3-1/2	.1120	USA26941	29.24	USA27293	32.11
#31	.1200	7/8	4	3-1/2	.1120	USA26943	29.24	USA27295	32.11
o/u	.1240	7/8	4	3-1/2	.1190	USA26945	29.24	USA27297	32.11
1/8	.1250	7/8	4	3-1/2	.1190	USA26947	26.36	USA27299	28.87
o/u	.1260	7/8	4	3-1/2	.1190	USA26949	29.24	USA27301	32.11
#30	.1285	7/8	4	3-1/2	.1190	USA26951	29.24	USA27303	32.11
#29	.1360	1	4	4	.1275	USA26953	35.03	USA27305	38.35
3.5mm	.1378	1	4	4	.1350	USA26955	35.03	USA27307	38.35

For technical information, please see page 240.

THRU 1/2" DIAMETER	1/2" TO 5/8"	5/8" TO 1-1/2"	1-1/2" TO 2"
+ .0002, -.0000	+ .0003, -.0000	+ .0001, +.0004	+ .0002, +.0006

Reamers

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



CHUCKING STRAIGHT SHANK - RIGHT HAND SPIRAL - RIGHT HAND CUT



SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	HSS	LIST PRICE	M42 COBALT	LIST PRICE
#28	.1405	1	4	4	.1350	USA26957	35.03	USA27309	38.35
9/64	.1406	1	4	4	.1350	USA26959	35.03	USA27311	38.35
#27	.1440	1	4	4	.1350	USA26961	35.03	USA27313	38.35
#26	.1470	1	4	4	.1430	USA26963	35.03	USA27315	38.35
#25	.1495	1	4	4	.1430	USA26965	35.03	USA27317	38.35
#24	.1520	1	4	4	.1460	USA26967	36.45	USA27319	38.35
#23	.1540	1	4	4	.1460	USA26969	36.45	USA27321	38.35
5/32	.1562	1	4	4	.1510	USA26971	36.45	USA27323	38.35
#22	.1570	1	6	4	.1510	USA26973	36.45	USA27325	38.35
4.0mm	.1575	1	6	4	.1510	USA26975	36.45	USA27327	38.35
#21	.1590	1-1/8	6	4-1/2	.1530	USA26977	37.38	USA27329	40.94
#20	.1610	1-1/8	6	4-1/2	.1530	USA26979	37.38	USA27331	40.94
#19	.1660	1-1/8	6	4-1/2	.1595	USA26981	37.38	USA27333	40.94
#18	.1695	1-1/8	6	4-1/2	.1595	USA26983	37.38	USA27335	40.94
11/64	.1719	1-1/8	6	4-1/2	.1645	USA26985	37.38	USA27337	40.94
#17	.1730	1-1/8	6	4-1/2	.1645	USA26987	37.38	USA27339	40.94
#16	.1770	1-1/8	6	4-1/2	.1704	USA26989	37.38	USA27341	40.94
4.5mm	.1772	1-1/8	6	4-1/2	.1704	USA26991	37.38	USA27343	40.94
#15	.1800	1-1/8	6	4-1/2	.1755	USA26993	37.38	USA27345	40.94
#14	.1820	1-1/8	6	4-1/2	.1755	USA26995	37.38	USA27347	40.94
#13	.1850	1-1/8	6	4-1/2	.1805	USA26997	37.38	USA27349	40.94
o/u	.1865	1-1/8	6	4-1/2	.1805	USA26999	37.38	USA27351	40.94
3/16	.1875	1-1/8	6	4-1/2	.1805	USA27001	35.51	USA27353	38.88
o/u	.1885	1-1/8	6	4-1/2	.1805	USA27003	37.38	USA27355	40.94
#12	.1890	1-1/8	6	4-1/2	.1805	USA27005	37.38	USA27357	40.94
#11	.1910	1-1/4	6	5	.1860	USA27007	41.87	USA27359	45.88
#10	.1935	1-1/4	6	5	.1860	USA27009	41.87	USA27361	45.88
#9	.1960	1-1/4	6	5	.1895	USA27011	41.87	USA27363	45.88
5.0mm	.1969	1-1/4	6	5	.1895	USA27013	41.87	USA27365	45.88
#8	.1990	1-1/4	6	5	.1895	USA27015	41.87	USA27367	45.88
#7	.2010	1-1/4	6	5	.1895	USA27017	41.87	USA27369	45.88
13/64	.2031	1-1/4	6	5	.1945	USA27019	41.87	USA27371	45.88
#6	.2040	1-1/4	6	5	.1945	USA27021	41.87	USA27373	45.88
#5	.2055	1-1/4	6	5	.2016	USA27023	41.87	USA27375	45.88
#4	.2090	1-1/4	6	5	.2016	USA27025	41.87	USA27377	45.88
#3	.2130	1-1/4	6	5	.2075	USA27027	41.87	USA27379	45.88
5.5mm	.2165	1-1/4	6	5	.2075	USA27029	41.87	USA27381	45.88
7/32	.2188	1-1/4	6	5	.2075	USA27031	41.87	USA27383	45.88
#2	.2210	1-1/2	6	6	.2173	USA27033	43.05	USA27385	47.18
#1	.2280	1-1/2	6	6	.2173	USA27035	43.05	USA27387	47.18
A	.2340	1-1/2	6	6	.2265	USA27037	43.05	USA27389	47.18
15/64	.2344	1-1/2	6	6	.2265	USA27039	43.05	USA27391	47.18
6.0mm	.2362	1-1/2	6	6	.2265	USA27041	43.33	USA27393	49.65
B	.2380	1-1/2	6	6	.2329	USA27043	43.33	USA27395	49.65
C	.2420	1-1/2	6	6	.2329	USA27045	43.33	USA27397	49.65
D	.2460	1-1/2	6	6	.2329	USA27047	43.33	USA27399	45.15

HSS & COBALT REAMERS

For technical information, please see page 240.

THRU 1/2" DIAMETER	1/2" TO 5/8"	5/8" TO 1-1/2"	1-1/2" TO 2"
+ .0002, -.0000	+ .0003, -.0000	+ .0001, +.0004	+ .0002, +.0006

MADE IN THE USA



Reamers

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

CHUCKING STRAIGHT SHANK - RIGHT HAND SPIRAL - RIGHT HAND CUT



HSS & COBALT REAMERS

SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	HSS	LIST PRICE	M42 COBALT	LIST PRICE
o/u	.2490	1-1/2	6	6	.2405	USA27049	46.25	USA27401	53.17
1/4	.2500	1-1/2	6	6	.2405	USA27051	36.89	USA27403	42.20
o/u	.2510	1-1/2	6	6	.2405	USA27053	46.25	USA27405	53.17
6.5mm	.2559	1-1/2	6	6	.2405	USA27055	43.33	USA27407	49.65
F	.2570	1-1/2	6	6	.2485	USA27057	43.33	USA27409	49.65
G	.2610	1-1/2	6	6	.2485	USA27059	43.33	USA27411	49.65
17/64	.2656	1-1/2	6	6	.2485	USA27061	48.35	USA27413	61.31
H	.2660	1-1/2	6	6	.2485	USA27063	48.35	USA27415	61.31
I	.2720	1-1/2	6	6	.2485	USA27065	48.35	USA27417	61.31
7.0mm	.2756	1-1/2	6	6	.2485	USA27067	48.35	USA27419	61.31
J	.2770	1-1/2	6	6	.2485	USA27069	48.35	USA27421	61.31
K	.2810	1-1/2	6	6	.2485	USA27071	48.35	USA27423	61.31
9/32	.2812	1-1/2	6	6	.2485	USA27073	45.88	USA27425	58.27
L	.2900	1-1/2	6	6	.2792	USA27075	48.35	USA27427	61.31
M	.2950	1-1/2	6	6	.2792	USA27077	48.35	USA27429	61.31
7.5mm	.2953	1-1/2	6	6	.2792	USA27079	48.35	USA27431	61.31
19/64	.2969	1-1/2	6	6	.2792	USA27081	48.35	USA27433	61.31
N	.3020	1-1/2	6	6	.2792	USA27083	48.35	USA27435	61.31
o/u	.3115	1-1/2	6	6	.2792	USA27085	45.88	USA27437	58.27
5/16	.3125	1-1/2	6	6	.2792	USA27087	43.49	USA27439	55.20
o/u	.3135	1-1/2	6	6	.2792	USA27089	45.88	USA27441	58.27
8.0mm	.3150	1-1/2	6	6	.2792	USA27091	48.35	USA27443	61.31
O	.3160	1-1/2	6	6	.2792	USA27093	48.35	USA27445	61.31
P	.3230	1-1/2	6	6	.2792	USA27095	51.71	USA27447	66.05
21/64	.3281	1-1/2	6	6	.2792	USA27097	51.71	USA27449	66.05
Q	.3320	1-1/2	6	6	.2792	USA27099	51.71	USA27451	66.05
8.5mm	.3346	1-1/2	6	6	.2792	USA27101	51.71	USA27453	66.05
R	.3390	1-1/2	6	6	.2792	USA27103	51.71	USA27455	66.05
11/32	.3438	1-1/2	6	6	.2792	USA27105	51.71	USA27457	66.05
S	.3480	1-3/4	6	6	.3105	USA27107	52.16	USA27459	66.94
9.0mm	.3543	1-3/4	6	7	.3105	USA27109	52.16	USA27461	66.94
T	.3580	1-3/4	6	7	.3105	USA27111	52.16	USA27463	66.94
23/64	.3594	1-3/4	6	7	.3105	USA27113	52.16	USA27465	66.94
U	.3680	1-3/4	6	7	.3105	USA27115	52.16	USA27467	66.94
9.5mm-o/u	.3740	1-3/4	6	7	.3105	USA27117	49.57	USA27469	63.54
3/8	.3750	1-3/4	6	7	.3105	USA27119	46.97	USA27471	60.26
o/u	.3760	1-3/4	6	7	.3105	USA27121	49.57	USA27473	63.54
V	.3770	1-3/4	6	7	.3105	USA27123	56.77	USA27475	84.31
W	.3860	1-3/4	6	7	.3105	USA27125	56.77	USA27477	84.31
25/64	.3906	1-3/4	6	7	.3105	USA27127	56.77	USA27479	84.31
10.0mm	.3937	1-3/4	6	7	.3105	USA27129	56.77	USA27481	84.31
X	.3970	1-3/4	6	7	.3105	USA27131	56.77	USA27483	84.31
Y	.4040	1-3/4	6	7	.3105	USA27133	58.88	USA27485	84.31
13/32	.4062	1-3/4	6	7	.3105	USA27135	58.88	USA27487	84.31
Z	.4130	1-3/4	6	7	.3730	USA27137	58.88	USA27489	84.31
10.5mm	.4134	1-3/4	6	7	.3730	USA27139	58.88	USA27491	84.31

For technical information, please see page 240.

THRU 1/2" DIAMETER	1/2" TO 5/8"	5/8" TO 1-1/2"	1-1/2" TO 2"
+ .0002, -.0000	+ .0003, -.0000	+ .0001, +.0004	+ .0002, +.0006

Reamers

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



CHUCKING STRAIGHT SHANK - RIGHT HAND SPIRAL - RIGHT HAND CUT



SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	HSS	LIST PRICE	M42 COBALT	LIST PRICE
27/64	.4219	1-3/4	6	7	.3730	USA27141	58.88	USA27493	84.31
11.0mm	.4331	1-3/4	6	7	.3730	USA27143	58.88	USA27495	84.31
o/u	.4365	1-3/4	6	7	.3730	USA27145	58.88	USA27497	84.31
7/16	.4375	1-3/4	6	7	.3730	USA27147	55.92	USA27499	80.06
o/u	.4385	1-3/4	6	7	.3730	USA27149	58.88	USA27501	84.31
11.5mm	.4528	1-3/4	6	7	.3730	USA27151	64.19	USA27503	96.62
29/64	.4531	1-3/4	6	7	.3730	USA27153	64.19	USA27505	96.62
15/32	.4688	1-3/4	6	7	.3730	USA27155	64.19	USA27507	96.62
12.0mm	.4724	2	6	8	.4355	USA27157	64.19	USA27509	96.62
31/64	.4844	2	6	8	.4355	USA27159	64.19	USA27511	96.62
12.5mm	.4921	2	6	8	.4355	USA27161	64.19	USA27513	96.62
o/u	.4990	2	6	8	.4355	USA27163	64.19	USA27515	96.62
1/2	.5000	2	6	8	.4355	USA27165	60.86	USA27517	91.76
o/u	.5010	2	6	8	.4355	USA27167	64.19	USA27519	96.62
17/32	.5312	2	6	8	.4355	USA27169	75.69	USA27521	108.41
9/16	.5625	2	8	8	.4355	USA27171	75.69	USA27523	108.41
19/32	.5938	2	8	8	.4355	USA27173	75.69	USA27525	108.41
5/8	.6250	2-1/4	8	9	.5615	USA27175	88.32	USA27527	126.47
21/32	.6562	2-1/4	8	9	.5615	USA27177	92.90	USA27529	142.99
11/16	.6875	2-1/4	8	9	.5615	USA27179	99.86	USA27531	142.99
23/32	.7188	2-1/4	8	9	.5615	USA27181	111.48	USA27533	159.55
3/4	.7500	2-1/2	8	9-1/2	.6240	USA27183	111.48	USA27535	160.44
25/32	.7812	2-1/2	8	9-1/2	.6240	USA27185	120.84	USA27537	173.12
13/16	.8125	2-1/2	8	9-1/2	.6240	USA27187	120.84	USA27539	173.12
27/32	.8438	2-1/2	8	9-1/2	.6240	USA27189	143.03	USA27541	204.83
7/8	.8750	2-5/8	8	10	.7490	USA27191	146.31	USA27543	209.56
29/32	.9062	2-5/8	8	10	.7490	USA27193	157.73	USA27545	225.80
15/16	.9375	2-5/8	8	10	.7490	USA27195	157.73	USA27547	225.80
31/32	.9688	2-5/8	8	10	.7490	USA27197	176.60	USA27549	252.89
1	1.0000	2-3/4	8	10-1/2	.8740	USA27199	178.30	USA27551	254.92
1-1/16	1.0625	2-3/4	8	10-1/2	.8740	USA27201	197.66	-	-
1-1/8	1.1250	2-7/8	8	11	.8740	USA27203	210.05	-	-
1-3/16	1.1875	2-7/8	8	11	.9990	USA27205	245.97	-	-
1-1/4	1.2500	3	8	11-1/2	.9990	USA27207	260.71	-	-
1-5/16	1.3125	3	10	11-1/2	.9990	USA27209	304.12	-	-
1-3/8	1.3750	3-1/4	10	12	.9990	USA27211	319.63	-	-
1-7/16	1.4375	3-1/4	10	12	1.2490	USA27213	342.71	-	-
1-1/2	1.5000	3-1/2	10	12-1/2	1.2490	USA27215	368.95	-	-
1-9/16	1.5625	3-1/2	12	13	1.2490	USA27553	522.55	-	-
1-5/8	1.6250	3-1/2	12	13	1.2490	USA27555	522.55	-	-
1-11/16	1.6875	4	12	13-1/2	1.2490	USA27557	600.02	-	-
1-3/4	1.7500	4	12	13-1/2	1.2490	USA27559	600.02	-	-
1-13/16	1.8125	4	12	14	1.4990	USA27561	691.05	-	-
1-7/8	1.8750	4	12	14	1.4990	USA27563	691.05	-	-
1-15/16	1.9375	4	12	14	1.4990	USA27565	809.01	-	-
2	2.0000	4	12	14	1.4990	USA27567	809.01	-	-

HSS & COBALT REAMERS

For technical information, please see page 240.

THRU 1/2" DIAMETER	1/2" TO 5/8"	5/8" TO 1-1/2"	1-1/2" TO 2"
+ .0002, -.0000	+ .0003, -.0000	+ .0001, +.0004	+ .0002, +.0006

MADE IN THE USA



Reamers

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

DOWEL PIN

STRAIGHT SHANK - STRAIGHT FLUTE



HIGH SPEED STEEL

M42 COBALT

STRAIGHT SHANK - RIGHT HAND SPIRAL - RIGHT HAND CUT



HIGH SPEED STEEL

M42 COBALT

HSS & COBALT REAMERS

SIZE	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	STRAIGHT FLUTE				RIGHT HAND SPIRAL			
					HSS	LIST PRICE	M42	LIST PRICE	HSS	LIST PRICE	M42	LIST PRICE
.1230	7/8	4	3-1/2	.1190	USA26383	25.51	USA26837	26.40	USA27585	29.24	USA27613	30.49
.1247	7/8	4	3-1/2	.1190	USA26385	25.51	USA26839	26.40	USA27587	29.24	USA27615	30.49
.1855	1-1/8	6	4-1/2	.1805	USA26387	32.56	USA26841	33.17	USA27589	37.38	USA27617	39.20
.1870	1-1/8	6	4-1/2	.1805	USA26389	32.56	USA26843	33.17	USA27591	37.38	USA27619	39.20
.2480	1-1/2	6	6	.2405	USA26391	35.51	USA26845	37.22	USA27593	39.04	USA27621	42.56
.2495	1-1/2	6	6	.2405	USA26393	35.51	USA26847	37.22	USA27595	39.04	USA27623	42.56
.3105	1-1/2	6	6	.2792	USA26395	41.71	USA26849	53.29	USA27597	45.92	USA27625	55.28
.3120	1-1/2	6	6	.2792	USA26397	41.71	USA26851	53.29	USA27599	45.92	USA27627	55.28
.3730	1-3/4	6	7	.3105	USA26399	45.03	USA26853	58.39	USA27601	49.57	USA27629	60.54
.3745	1-3/4	6	7	.3105	USA26401	45.03	USA26855	58.39	USA27603	49.57	USA27631	60.54
.4355	1-3/4	6	7	.3730	USA26403	50.82	USA26857	74.92	USA27605	58.88	USA27633	80.30
.4370	1-3/4	6	7	.3730	USA26405	50.82	USA26859	74.92	USA27607	58.88	USA27635	80.30
.4980	2	6	8	.4355	USA26407	55.36	USA26861	85.93	USA27609	64.14	USA27637	92.05
.4995	2	6	8	.4355	USA26409	55.36	USA26863	85.93	USA27611	64.14	USA27639	92.05

TAPER SHANK - STRAIGHT FLUTE



HIGH SPEED STEEL

SIZE	DECIMAL EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	MORSE TAPER #	ITEM#	LIST PRICE	SIZE	DECIMAL EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	MORSE TAPER #	ITEM#	LIST PRICE
1/4	.2500	1-1/2	6	6	1	USA28563	59.77	29/32	.9062	2-5/8	8	10	2	USA28605	160.12
9/32	.2812	1-1/2	6	6	1	USA28565	62.57	15/16	.9375	2-5/8	8	10	3	USA28607	160.12
5/16	.3125	1-1/2	6	6	1	USA28567	61.51	31/32	.9688	2-5/8	8	10	3	USA28609	175.71
11/32	.3438	1-1/2	6	6	1	USA28569	66.66	1	1.0000	2-3/4	8	10-1/2	3	USA28611	177.25
3/8	.3750	1-3/4	6	7	1	USA28571	68.76	1-1/16	1.0625	2-3/4	8	10-1/2	3	USA28613	193.77
13/32	.4062	1-3/4	6	7	1	USA28573	69.98	1-1/8	1.1250	2-7/8	8	11	3	USA28615	215.03
7/16	.4375	1-3/4	6	7	1	USA28575	70.30	1-3/16	1.1875	2-7/8	10	11	3	USA28617	240.99
15/32	.4688	1-3/4	6	7	1	USA28577	75.93	1-1/4	1.2500	3	10	11-1/2	4	USA28619	260.91
1/2	.5000	2	6	8	1	USA28579	76.98	1-5/16	1.3125	3	10	11-1/2	4	USA28621	285.33
17/32	.5312	2	6	8	1	USA28581	85.69	1-3/8	1.3750	3-1/4	10	12	4	USA28623	308.37
9/16	.5625	2	8	8	1	USA28583	91.40	1-7/16	1.4375	3-1/4	10	12	4	USA28625	334.25
19/32	.5938	2	8	8	1	USA28585	93.02	1-1/2	1.5000	3-1/2	10	12-1/2	4	USA28627	355.27
5/8	.6250	2-1/4	8	9	2	USA28587	99.09	1-9/16	1.5625	3-1/2	12	13	4	USA28629	498.82
21/32	.6562	2-1/4	8	9	2	USA28589	100.02	1-5/8	1.6250	3-1/2	12	13	4	USA28631	498.82
11/16	.6875	2-1/4	8	9	2	USA28591	100.02	1-11/16	1.6875	4	12	13-1/2	5	USA28633	572.77
23/32	.7188	2-1/4	8	9	2	USA28593	112.78	1-3/4	1.7500	4	12	13-1/2	5	USA28635	572.77
3/4	.7500	2-1/2	8	9-1/2	2	USA28595	112.78	1-13/16	1.8125	4	12	14	5	USA28637	659.67
25/32	.7812	2-1/2	8	9-1/2	2	USA28597	128.90	1-7/8	1.8750	4	12	14	5	USA28639	659.67
13/16	.8125	2-1/2	8	9-1/2	2	USA28599	128.90	1-15/16	1.9375	4	12	14	5	USA28641	772.29
27/32	.8438	2-1/2	8	9-1/2	2	USA28601	143.92	2	2.0000	4	12	14	5	USA28643	772.29
7/8	.8750	2-5/8	8	10	2	USA28603	145.46								

For technical information, please see page 240.

THRU 1/2" DIAMETER	1/2" TO 5/8"	5/8" TO 1-1/2"	1-1/2" TO 2"
+ .0002, -.0000	+ .0003, -.0000	+ .0001, +.0004	+ .0002, +.0006

MADE IN THE USA

Reamers

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



EXPANSION

STRAIGHT SHANK - STRAIGHT FLUTE



HIGH SPEED STEEL

END VIEW

SIZE	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	ITEM#	LIST PRICE
3/8	3/4	6	7	5/16	USA27993	154.73
13/32	3/4	6	7	5/16	USA27995	164.82
7/16	7/8	6	7	3/8	USA27997	164.82
15/32	7/8	6	8	27/64	USA27999	171.17
1/2	1	6	8	7/16	USA28001	174.21
17/32	1	6	8	7/16	USA28003	181.58
9/16	1-1/8	6	8	7/16	USA28005	186.20
19/32	1-1/8	6	8	7/16	USA28007	189.03
5/8	1-1/4	6	9	9/16	USA28009	194.78
21/32	1-1/4	6	9	9/16	USA28011	202.56
11/16	1-1/4	6	9	9/16	USA28013	203.97
23/32	1-1/4	6	9	9/16	USA28015	217.22
3/4	1-3/8	6	9-1/2	5/8	USA28017	224.71
25/32	1-3/8	8	9-1/2	5/8	USA28019	237.91
13/16	1-3/8	8	9-1/2	5/8	USA28021	247.02
27/32	1-3/8	8	9-1/2	5/8	USA28023	260.26
7/8	1-1/2	8	10	3/4	USA28025	265.00

SIZE	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	ITEM#	LIST PRICE
29/32	1-1/2	8	10	3/4	USA28027	279.05
15/16	1-1/2	8	10	3/4	USA28029	292.13
31/32	1-1/2	8	10	3/4	USA28031	305.33
1	1-5/8	8	10-1/2	7/8	USA28033	322.06
1-1/32	1-5/8	8	10-1/2	7/8	USA28035	448.08
1-1/16	1-5/8	8	10-1/2	7/8	USA28037	355.95
1-3/32	1-5/8	8	10-1/2	7/8	USA28039	372.88
1-1/8	1-3/4	8	11	7/8	USA28041	389.52
1-5/32	1-3/4	8	11	7/8	USA28043	394.83
1-3/16	1-3/4	8	11	1	USA28045	410.26
1-7/32	1-3/4	8	11	1	USA28047	425.20
1-1/4	1-7/8	8	11-1/2	1	USA28049	442.17
1-5/16	1-7/8	8	11-1/2	1	USA28051	456.95
1-3/8	2	8	12	1	USA28053	473.75
1-7/16	2	8	12	1-1/4	USA28055	492.50
1-1/2	2-1/8	8	12-1/2	1-1/4	USA28057	513.28

TAPER SHANK - STRAIGHT FLUTE



HIGH SPEED STEEL

END VIEW

SIZE	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	MORSE TAPER #	ITEM#	LIST PRICE
3/8	3/4	6	7	1	USA28059	175.55
13/32	3/4	6	7	1	USA28061	203.57
7/16	7/8	6	7	1	USA28063	185.87
15/32	7/8	6	8	1	USA28065	190.29
1/2	1	6	8	1	USA28067	194.09
17/32	1	6	8	1	USA28069	201.79
9/16	1-1/8	6	8	1	USA28071	201.79
19/32	1-1/8	6	8	1	USA28073	209.16
5/8	1-1/4	6	9	2	USA28075	216.65
21/32	1-1/4	6	9	2	USA28077	222.60
11/16	1-1/4	6	9	2	USA28079	223.94
23/32	1-1/4	6	9	2	USA28081	238.88
3/4	1-3/8	6	9-1/2	2	USA28083	246.25
25/32	1-3/8	8	9-1/2	2	USA28085	257.59
13/16	1-3/8	8	9-1/2	2	USA28087	261.44
27/32	1-3/8	8	9-1/2	2	USA28089	276.66
7/8	1-1/2	8	10	2	USA28091	287.56

SIZE	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	MORSE TAPER #	ITEM#	LIST PRICE
29/32	1-1/2	8	10	2	USA28093	302.50
15/16	1-1/2	8	10	3	USA28095	310.03
31/32	1-1/2	8	10	3	USA28097	323.11
1	1-5/8	8	10-1/2	3	USA28099	341.74
1-1/32	1-5/8	8	10-1/2	3	USA28101	354.82
1-1/16	1-5/8	8	10-1/2	3	USA28103	371.79
1-3/32	1-5/8	8	10-1/2	3	USA28105	388.39
1-1/8	1-3/4	8	11	3	USA28107	401.79
1-5/32	1-3/4	8	11	3	USA28109	418.36
1-3/16	1-3/4	8	11	3	USA28111	435.08
1-7/32	1-3/4	8	11	3	USA28113	451.85
1-1/4	1-7/8	8	11-1/2	4	USA28115	472.74
1-5/16	1-7/8	8	11-1/2	4	USA28117	491.25
1-3/8	2	8	12	4	USA28119	511.62
1-7/16	2	8	12	4	USA28121	541.62
1-1/2	2-1/8	8	12-1/2	4	USA28123	560.13

For technical information, please see page 240.

THRU 1/2" DIAMETER	ABOVE 1/2" TO 5/8"	ABOVE 5/8" TO 1-1/2"
+0.0002, -0.0000	+0.0003, -0.0000	+0.0001, +0.0004

MADE IN THE USA

HSS & COBALT REAMERS



Reamers

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

HAND STRAIGHT SHANK STRAIGHT FLUTE



HIGH SPEED STEEL

SIZE	DECIMAL EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	ITEM#	LIST PRICE
1/16	.0625	1	4	2	.0625	USA28455	72.20
5/64	.0781	1	4	2	.0781	USA28457	72.20
3/32	.0938	1-1/4	4	2-1/2	.0938	USA28459	72.20
7/64	.1094	1-1/4	4	2-1/2	.1094	USA28461	72.20
1/8	.1250	1-1/2	4	3	.1250	USA28463	68.07
9/64	.1406	1-5/8	4	3-1/4	.1406	USA28465	68.07
5/32	.1562	1-5/8	4	3-1/4	.1562	USA28467	73.58
11/64	.1719	1-3/4	6	3-1/2	.1719	USA28469	73.58
3/16	.1875	1-3/4	6	3-1/2	.1875	USA28471	72.20
13/64	.2031	1-7/8	6	3-3/4	.2031	USA28473	72.20
7/32	.2188	1-7/8	6	3-3/4	.2188	USA28475	79.57
15/64	.2344	2	6	4	.2344	USA28477	79.57
1/4	.2500	2	6	4	.2500	USA28479	79.09
17/64	.2656	2-1/8	6	4-1/4	.2656	USA28481	79.57
9/32	.2812	2-1/8	6	4-1/4	.2812	USA28483	85.61
19/64	.2969	2-1/4	6	4-1/2	.2969	USA28485	85.61
5/16	.3125	2-1/4	6	4-1/2	.3125	USA28487	83.70
11/32	.3438	2-3/8	6	4-3/4	.3438	USA28489	97.15
3/8	.3750	2-1/2	6	5	.3750	USA28491	94.84
13/32	.4062	2-5/8	6	5-1/4	.4062	USA28493	110.07
7/16	.4375	2-3/4	6	5-1/2	.4375	USA28495	107.84
15/32	.4688	2-7/8	6	5-3/4	.4688	USA28497	119.30
1/2	.5000	3	6	6	.5000	USA28499	114.68
17/32	.5312	3-1/8	8	6-1/4	.5312	USA28501	123.92
9/16	.5625	3-1/4	8	6-1/2	.5625	USA28503	132.54
19/32	.5938	3-3/8	8	6-3/4	.5938	USA28505	147.32
5/8	.6250	3-1/2	8	7	.6250	USA28507	142.83
21/32	.6562	3-11/16	8	7-3/8	.6562	USA28509	160.08
11/16	.6875	3-7/8	8	7-3/4	.6875	USA28511	156.92
23/32	.7188	4-1/16	8	8-1/8	.7188	USA28513	171.90
3/4	.7500	4-3/16	8	8-3/8	.7500	USA28515	167.33
25/32	.7812	4-3/8	8	8-3/4	.7812	USA28517	183.61
13/16	.8125	4-9/16	8	9-1/8	.8125	USA28519	167.33
27/32	.8438	4-11/16	8	9-3/8	.8438	USA28521	201.02
7/8	.8750	4-7/8	8	9-3/4	.8750	USA28523	202.76
29/32	.9062	5	8	10	.9062	USA28525	224.06
15/16	.9375	5-1/8	8	10-1/4	.9375	USA28527	202.92
31/32	.9688	5-5/16	8	10-5/8	.9688	USA28529	246.70
1	1.0000	5-7/16	8	10-7/8	1.0000	USA28531	245.60
1-1/8	1.1250	5-13/16	8	11-5/8	1.1250	USA28533	320.97
1-1/4	1.2500	6-1/8	8	12-1/4	1.2500	USA28535	394.14
1-3/8	1.3750	6-5/16	10	12-5/8	1.3750	USA28537	465.86
1-1/2	1.5000	6-1/2	10	13	1.5000	USA28539	549.84

HAND STRAIGHT SHANK LEFT HAND SPIRAL - RIGHT HAND CUT



HIGH SPEED STEEL

SIZE	DECIMAL EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	ITEM#	LIST PRICE
1/16	.0625	1	4	2	.0625	USA28125	84.72
5/64	.0781	1	4	2	.0781	USA28127	84.72
3/32	.0938	1-1/4	4	2-1/2	.0938	USA28129	84.72
7/64	.1094	1-1/4	4	2-1/2	.1094	USA28131	84.72
1/8	.1250	1-1/2	4	3	.1250	USA28133	83.70
9/64	.1406	1-5/8	4	3-1/4	.1406	USA28135	83.70
5/32	.1562	1-5/8	4	3-1/4	.1562	USA28137	90.26
11/64	.1719	1-3/4	6	3-1/2	.1719	USA28139	90.26
3/16	.1875	1-3/4	6	3-1/2	.1875	USA28141	90.26
13/64	.2031	1-7/8	6	3-3/4	.2031	USA28143	90.26
7/32	.2188	1-7/8	6	3-3/4	.2188	USA28145	87.87
15/64	.2344	2	6	4	.2344	USA28147	87.87
1/4	.2500	2	6	4	.2500	USA28149	87.47
17/64	.2656	2-1/8	6	4-1/4	.2656	USA28151	87.87
9/32	.2812	2-1/8	6	4-1/4	.2812	USA28153	97.15
19/64	.2969	2-1/4	6	4-1/2	.2969	USA28155	97.15
5/16	.3125	2-1/4	6	4-1/2	.3125	USA28157	96.22
11/32	.3438	2-3/8	6	4-3/4	.3438	USA28159	108.20
3/8	.3750	2-1/2	6	5	.3750	USA28161	107.88
13/32	.4062	2-5/8	6	5-1/4	.4062	USA28163	119.87
7/16	.4375	2-3/4	6	5-1/2	.4375	USA28165	120.27
15/32	.4688	2-7/8	6	5-3/4	.4688	USA28167	132.78
1/2	.5000	3	6	6	.5000	USA28169	129.54
17/32	.5312	3-1/8	8	6-1/4	.5312	USA28171	151.25
9/16	.5625	3-1/4	8	6-1/2	.5625	USA28173	152.10
19/32	.5938	3-3/8	8	6-3/4	.5938	USA28175	165.42
5/8	.6250	3-1/2	8	7	.6250	USA28177	162.39
21/32	.6562	3-11/16	8	7-3/8	.6562	USA28179	178.06
11/16	.6875	3-7/8	8	7-3/4	.6875	USA28181	177.53
23/32	.7188	4-1/16	8	8-1/8	.7188	USA28183	191.42
3/4	.7500	4-3/16	8	8-3/8	.7500	USA28185	187.74
25/32	.7812	4-3/8	8	8-3/4	.7812	USA28187	204.02
13/16	.8125	4-9/16	8	9-1/8	.8125	USA28189	204.02
27/32	.8438	4-11/16	8	9-3/8	.8438	USA28191	223.29
7/8	.8750	4-7/8	8	9-3/4	.8750	USA28193	223.29
29/32	.9062	5	8	10	.9062	USA28195	248.92
15/16	.9375	5-1/8	8	10-1/4	.9375	USA28197	248.92
31/32	.9688	5-5/16	8	10-5/8	.9688	USA28199	274.11
1	1.0000	5-7/16	8	10-7/8	1.0000	USA28201	274.11
1-1/8	1.1250	5-13/16	8	11-5/8	1.1250	USA28203	352.84
1-1/4	1.2500	6-1/8	10	12-1/4	1.2500	USA28205	434.15
1-3/8	1.3750	6-5/16	10	12-5/8	1.3750	USA28207	512.22
1-1/2	1.5000	6-1/2	10	13	1.5000	USA28209	606.70

For technical information, please see page 240.

THRU 1/2" DIAMETER	ABOVE 1/2" TO 5/8"	ABOVE 5/8" TO 1-1/2"
+ .0002, -.0000	+ .0003, -.0000	+ .0001, +.0004

Reamers

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



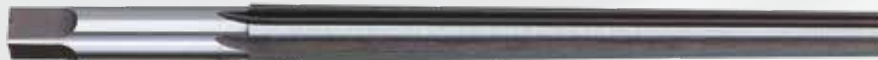
TAPER PIPE LEFT HAND SPIRAL - RIGHT HAND CUT



HIGH SPEED STEEL

SIZE	DIAMETER SMALL END	DIAMETER LARGE END	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIAMETER	SIZE OF SQUARE	ITEM#	LIST PRICE
1/16	0.2320	0.2750	3/4	6	2-1/8	.3125	.235	USA28541	94.43
1/8	0.3160	0.3620	3/4	6	2-1/8	.4375	.328	USA28543	88.04
1/4	0.4060	0.4720	1-1/16	6	2-7/16	.5625	.421	USA28545	100.79
3/8	0.5400	0.6060	1-1/16	6	2-9/16	.7000	.531	USA28547	114.12
1/2	0.6650	0.7510	1-3/8	6	3-1/8	.6875	.515	USA28549	144.16
3/4	0.8760	0.9620	1-3/8	8	3-1/4	.9063	.679	USA28551	199.88
1	1.1030	1.2120	1-3/4	8	3-3/4	1.1250	.843	USA28553	294.12
1-1/4	1.4440	1.5530	1-3/4	10	4	1.3125	.984	USA28555	495.38
1-1/2	1.6840	1.7930	1-3/4	12	4-1/4	1.5000	1.125	USA28557	626.38
2	2.1590	2.2680	1-3/4	12	4-1/2	1.8750	1.406	USA28559	836.67

TAPER PIN HIGH SPEED STEEL



STRAIGHT FLUTE



LEFT HAND SPIRAL
RIGHT HAND CUT



LEFT HAND HELICAL
RIGHT HAND CUT

SIZE	DIAMETER SMALL END	DIAMETER LARGE END	# OF FLUTES	STRAIGHT	LIST PRICE	LH-SPIRAL	LIST PRICE	LH-HELICAL	LIST PRICE
7/0	0.0497	0.0666	4	USA28295	75.52	USA28379	78.36	USA28337	70.06
6/0	0.0611	0.0806	4	USA28297	75.52	USA28381	78.36	USA28339	65.97
5/0	0.0719	0.0966	4	USA28299	68.84	USA28383	75.52	USA28341	68.44
4/0	0.0869	0.1142	4	USA28301	68.84	USA28385	75.52	USA28343	68.44
3/0	0.1029	0.1302	4	USA28303	68.84	USA28387	75.52	USA28345	61.80
2/0	0.1137	0.1462	4	USA28305	61.55	USA28389	65.97	USA28347	62.52
0	0.1287	0.1638	4	USA28307	59.20	USA28391	63.05	USA28349	64.02
1	0.1447	0.1798	6	USA28309	57.34	USA28393	64.02	USA28351	65.00
2	0.1605	0.2008	6	USA28311	57.34	USA28395	64.02	USA28353	73.58
3	0.1813	0.2294	6	USA28313	57.34	USA28397	64.02	USA28355	76.05
4	0.2071	0.2604	6	USA28315	64.02	USA28399	69.81	USA28357	85.61
5	0.2409	0.2994	6	USA28317	68.84	USA28401	74.47	USA28359	93.67
6	0.2773	0.3540	6	USA28319	83.10	USA28403	91.76	USA28361	109.94
7	0.3297	0.4220	6	USA28321	107.03	USA28405	116.02	USA28363	135.70
8	0.3971	0.5050	6	USA28323	137.15	USA28407	150.03	USA28365	159.23
9	0.4805	0.6066	6	USA28325	166.31	USA28409	181.05	USA28367	174.94
10	0.5799	0.7216	6	USA28327	182.59	USA28411	200.69	USA28369	222.12
11	0.7060	0.8780	8	USA28329	194.58	USA28413	214.10	USA28371	235.44
12	0.8420	1.0500	8	USA28331	301.08	USA28415	331.17	USA28373	364.46
13	1.0090	1.2590	10	USA28333	583.98	USA28417	642.38	USA28375	987.05
14	1.2500	1.5420	10	USA28335	935.72	USA28419	1038.46	USA28377	1140.27

For technical information, please see page 240.

MADE IN THE USA

HSS & COBALT REAMERS



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PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

CAPSCREW COUNTERBORES HIGH SPEED STEEL



STANDARD TOLERANCE

SIZE	PILOT SIZE	PILOT LENGTH	FLUTE SIZE	BODY LENGTH	OVERALL LENGTH	ITEM#	LIST PRICE
4	0.1120	1/8	0.1830	9/16	3-7/8	USA28211	43.33
5	0.1250	5/32	0.2050	5/8	4-1/8	USA28213	43.33
6	0.1380	3/16	0.2270	3/4	4-5/8	USA28215	45.88
8	0.1640	7/32	0.2700	3/4	5	USA28217	49.16
10	0.1900	1/4	0.3120	7/8	5-1/4	USA28219	50.21
1/4	0.2500	9/32	0.3800	1	5-5/8	USA28221	52.81
5/16	0.3125	5/16	0.4740	1	6-1/8	USA28223	65.97
3/8	0.3750	3/8	0.5690	1-1/4	6-1/2	USA28225	72.04
7/16	0.4370	7/16	0.6610	1-1/4	7	USA28227	86.66
1/2	0.5000	1/2	0.7550	1-1/2	7-1/2	USA28229	99.17
5/8	0.6250	5/8	0.9430	1-1/2	7-5/8	USA28231	161.82
3/4	0.7500	3/4	1.1310	1-5/8	7-3/4	USA28233	188.26
7/8	0.8750	7/8	1.3200	1-7/8	8	USA28235	229.32
1	1.0000	1	1.5080	2	8-1/2	USA28237	290.92

1/64 O/S TOLERANCE

SIZE	PILOT SIZE	PILOT LENGTH	FLUTE SIZE	BODY LENGTH	OVERALL LENGTH	ITEM#	LIST PRICE
4	0.1270	1/8	0.1990	9/16	3-7/8	USA28239	43.33
5	0.1400	5/32	0.2210	5/8	4-1/8	USA28241	43.33
6	0.1530	3/16	0.2430	3/4	4-5/8	USA28243	45.88
8	0.1790	7/32	0.2860	3/4	5	USA28245	49.16
10	0.2050	1/4	0.3280	7/8	5-1/4	USA28247	50.21
1/4	0.2650	9/32	0.3960	1	5-5/8	USA28249	52.81
5/16	0.3280	5/16	0.4890	1	6-1/8	USA28251	65.97
3/8	0.3900	3/8	0.5850	1-1/4	6-1/2	USA28253	72.04
7/16	0.4520	7/16	0.6760	1-1/4	7	USA28255	86.66
1/2	0.5150	1/2	0.7710	1-1/2	7-1/2	USA28257	99.17
5/8	0.6400	5/8	0.9590	1-1/2	7-5/8	USA28259	161.82
3/4	0.7650	3/4	1.1470	1-5/8	7-3/4	USA28261	188.26
7/8	0.8910	7/8	1.3360	1-7/8	8	USA28263	229.32
1	1.0150	1	1.5240	2	8-1/2	USA28265	290.92

1/32 O/S TOLERANCE

SIZE	PILOT SIZE	PILOT LENGTH	FLUTE SIZE	BODY LENGTH	OVERALL LENGTH	ITEM#	LIST PRICE
4	0.1430	1/8	0.2150	9/16	3-7/8	USA28267	43.33
5	0.1560	5/32	0.2370	5/8	4-1/8	USA28269	43.33
6	0.1690	3/16	0.2590	3/4	4-5/8	USA28271	45.88
8	0.1950	7/32	0.3020	3/4	5	USA28273	49.16
10	0.2180	1/4	0.3440	7/8	5-1/4	USA28275	50.21
1/4	0.2810	9/32	0.4120	1	5-5/8	USA28277	52.81
5/16	0.3430	5/16	0.5040	1	6-1/8	USA28279	65.97
3/8	0.4060	3/8	0.6010	1-1/4	6-1/2	USA28281	72.04
7/16	0.4680	7/16	0.6910	1-1/4	7	USA28283	86.66
1/2	0.5310	1/2	0.7870	1-1/2	7-1/2	USA28285	99.17
5/8	0.6560	5/8	0.9750	1-1/2	7-5/8	USA28287	161.82
3/4	0.7810	3/4	1.1630	1-5/8	7-3/4	USA28289	188.26
7/8	0.9060	7/8	1.3520	1-7/8	8	USA28291	229.32
1	1.0310	1	1.5400	2	8-1/2	USA28293	290.92

For technical information, please see page 240.

Reamers

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



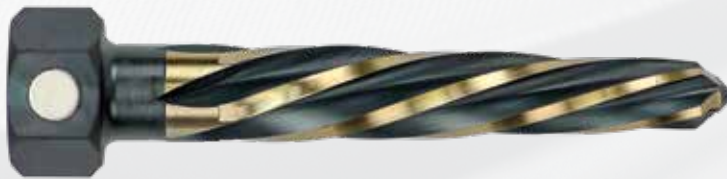
CONSTRUCTION

HIGH SPEED STEEL
LEFT HAND SPIRAL
RIGHT HAND CUT

BLACK & GOLD
3 FLATS

SIZE	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	ITEM#	LIST PRICE
3/8	2-1/2	5	4-5/8	3/8	USA28433	83.13
7/16	3-1/4	5	5-3/8	7/16	USA28435	89.71
1/2	3-3/4	5	5-7/8	1/2	USA28437	99.29
9/16	3-3/4	5	5-7/8	1/2	USA28439	103.34
5/8	4-1/4	5	6-3/8	1/2	USA28441	114.94
11/16	4-1/4	5	6-3/8	1/2	USA28443	125.30
3/4	4-1/2	5	6-7/8	1/2	USA28445	145.09
13/16	4-1/2	5	6-7/8	1/2	USA28447	145.09
7/8	4-1/2	5	6-7/8	1/2	USA28449	164.58
15/16	4-1/2	5	6-7/8	1/2	USA28451	164.58
1	4-1/2	5	6-7/8	1/2	USA28453	187.92
1-1/16	4-1/2	5	6-7/8	1/2	USA28561	221.08

HSS & COBALT REAMERS



SAFETY MAGNETIC HEX SHANK

HIGH SPEED STEEL
LEFT HAND SPIRAL
RIGHT HAND CUT

BLACK & GOLD
Magnetic Hex Shank has been
designed to protect against
danger and loss

See OSHA 29CFR Part 1926.759
(falling object protection)

SIZE	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	HEX SHANK DIA.	ITEM#	LIST PRICE
9/16	4	5	5-1/2	1-1/16	USA28673	175.23
11/16	4-1/2	5	6-3/8	1-1/16	USA28675	211.90
13/16	5	5	7	1-1/4	USA28677	253.39
15/16	5	5	7	1-7/16	USA28679	286.31
1-1/16	5	5	7	1-5/8	USA28681	379.22
1-3/16	5	5	7	1-13/16	USA36168	488.49
1-5/16	5	5	7-7/8	2	USA36170	583.54



BRIDGE

HIGH SPEED STEEL
LEFT HAND SPIRAL
RIGHT HAND CUT

SIZE	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	MORSE TAPER #	SMALL DIA.	ITEM#	LIST PRICE
7/16	5-1/8	5	9	2	.3050	USA28645	110.65
1/2	5-1/8	5	9	2	.3125	USA28647	120.19
9/16	5-1/8	5	9	2	.3430	USA28421	120.19
5/8	6-1/8	5	10	2	.3750	USA28649	129.88
11/16	7-1/8	5	11-3/4	3	.3906	USA28423	138.81
3/4	7-3/8	5	12	3	.5000	USA28425	180.79
13/16	7-3/8	5	12	3	.5000	USA28427	180.79
7/8	7-3/8	5	12	3	.5625	USA28651	198.14
15/16	7-3/8	5	12	3	.6250	USA28429	211.54
1	7-3/8	5	12	3	.6875	USA28653	230.14
1-1/16	7-3/8	5	12	3	.7500	USA28431	238.82
1-1/8	7-3/8	5	12	3	.8125	USA28655	291.23
1-3/16	7-3/8	5	12	3	.8750	USA28657	372.23
1-1/4	7-3/8	5	13	4	.9375	USA28659	423.60
1-5/16	7-3/8	5	13	4	1.000	USA28661	500.80

For technical information, please see page 240.

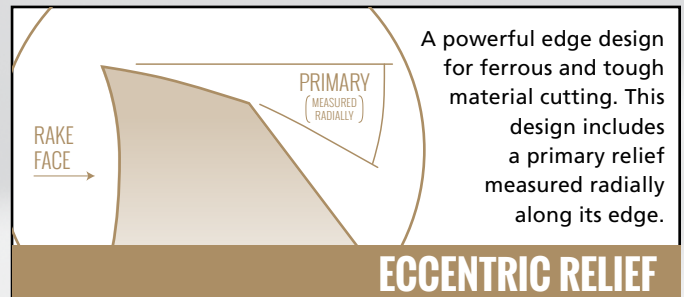
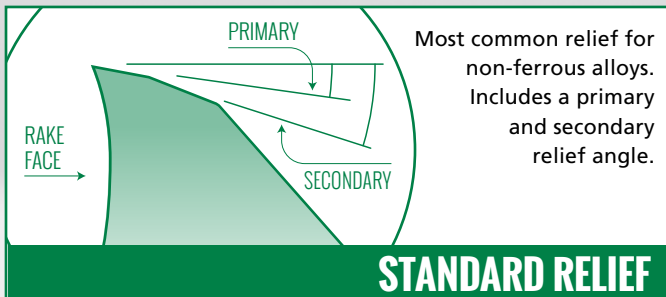
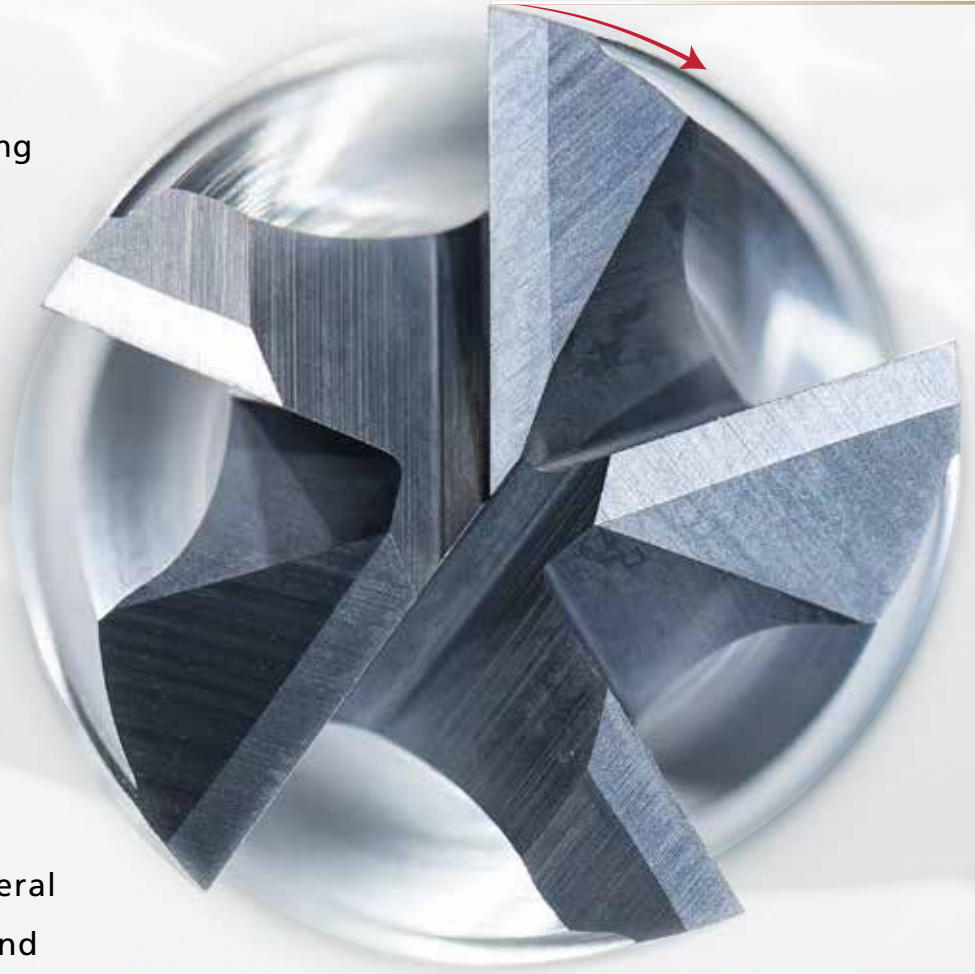
MADE IN THE USA



RADIAL RELIEF

Relief in a radial direction behind the cutting edge along the length of the flute - measured in the plane of rotation. The relief can be measured by the amount of indicator drop at a given radius in a given amount of angular rotation.

The two most common styles of radial relief found in our tools are **Standard Relief**, in our general purpose and cobalt tools, and **Eccentric Relief** in our high performance cutting tools.





VI-PRO CARBIDE END MILLS



- Running at higher SFM; heavier chip loads than conventional end mills
- Speed and feed chart parameters are for 4 flute full diameter slotting
- Slotting depth up to 1 x diameter
- Tool holding important for maximizing tool life. Minimize TIR
- Max ramp angle recommended 3° or less

Speed and Feed Calculation:

$$\text{RPM} = (3.82 \times \text{SFM}) \div \text{Dia.}$$

$$\text{IPR} = \text{IPM} \div \text{RPM}$$

$$\text{SFM} = (\text{RPM} \times \text{Dia.}) \div 3.82$$

$$\text{IPM} = \text{IPT}(\text{chip load}) \times \text{No. of Teeth} \times \text{RPM}$$

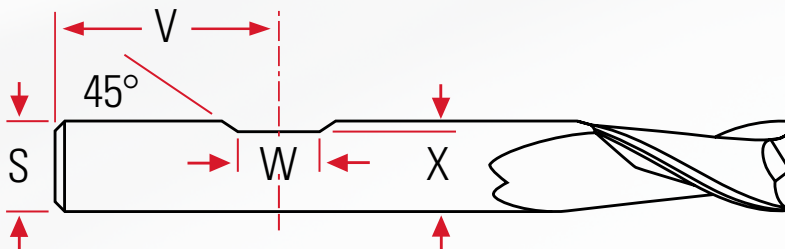
$$\text{IPT}(\text{chip load}) = \text{IPM} \div (\text{No. of teeth} \times \text{RPM})$$



Benefits of Post polishing

ALCRO-MAX by nature of the coating process leaves tiny "droplets" of the coating on the surface of the tool. Proven results have shown that the removal of these droplets provide a smoother tool surface which results in a better cut. Perhaps the most important benefit, is that the tool is able to run at faster feed rates due to the smoothness of the flute area. This results in better chip evacuation and cooler temperatures resulting in longer tool life.

Weldon Flat specifications for the VI-PRO



STUB LENGTH				
S SHANK DIAMETER	V	W		X
		MIN	MAX	
1/2"	.750"	.330"	.332"	.440"
5/8"	.750"	.400"	.402"	.560"
3/4"	.750"	.455"	.457"	.675"

REGULAR LENGTH				
S SHANK DIAMETER	V	W		X
		MIN	MAX	
1/2" (1-1/4" LOC)	.750"	.330"	.332"	.440"
1/2"	.875"	.330"	.332"	.440"
5/8"	.875"	.400"	.402"	.560"
3/4"	.875"	.455"	.457"	.675"
1"	.875"	.515"	.517"	.925"

LONG LENGTH				
S SHANK DIAMETER	V	W		X
		MIN	MAX	
1/2" (2" LOC)	.875"	.330"	.332"	.440"
1/2"	1.250"	.330"	.332"	.440"
5/8"	1.250"	.400"	.402"	.560"
3/4"	1.250"	.455"	.457"	.675"
1"	1.250"	.515"	.517"	.925"

EXTRA LONG LENGTH				
S SHANK DIAMETER	V	W		X
		MIN	MAX	
1/2"	1.5"	.330"	.332"	.440"
5/8"	1.5"	.400"	.402"	.560"
3/4"	1.5"	.455"	.457"	.675"
1"	1.5"	.515"	.517"	.925"
-	-	-	-	-



Technical Information

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

VI-PRO CARBIDE END MILLS



4 FLUTE

SFM

MATERIAL / TYPE	Rc HARDNESS	4 FLUTE STUB LENGTH	4 FLUTE REG LENGTH	4 FLUTE LONG LENGTH	4 FLUTE EXTRA LONG
COBALT BASE ALLOYS					
STELLITE, HS-21, HAYNES 25/188, X-40, L-605	UNDER 32	125 - 175	125 - 175	80 - 125	80 - 125
	OVER 32	80 - 100	80 - 100	55 - 70	55 - 70
NICKEL BASE ALLOYS					
INCONEL-625/718, WASPALLOY, RENE, HASTELLOY	UNDER 32	125 - 175	125 - 175	80 - 125	80 - 125
	OVER 32	80 - 100	80 - 100	55 - 70	55 - 70
IRON BASE ALLOYS					
INCOLOY 800-802, MULTIMET N-155, TIMKIN 16-25-6, CARPENTER 22-b3	UNDER 32	125 - 175	125 - 175	80 - 125	80 - 125
	OVER 32	80 - 100	80 - 100	55 - 70	55 - 70
MONEL					
MONEL-65% NICKEL	-	150 - 200	150 - 200	105 - 140	105 - 140
TITANIUM ALLOYS					
COMMERCIALLY PURE, 6Al-4V, ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si	-	-	-	-	-
	-	200 - 325	200 - 325	140 - 230	140 - 230
STAINLESS STEEL (PRECIPITATION)					
12/8, 15/5, 17/4, AM-350/355	UNDER 32	250 - 300	250 - 300	175 - 210	175 - 210
	OVER 32	200 - 250	200 - 250	140 - 175	140 - 175
STAINLESS STEEL (AUSTENITIC)					
200 SERIES, 302, 303, 304, 316	-	290 - 375	290 - 375	200 - 260	200 - 260
STAINLESS STEEL (AUSTENITIC)					
304L, 316L	UNDER 32	250 - 300	250 - 300	175 - 210	175 - 210
	OVER 32	200 - 250	200 - 250	140 - 175	140 - 175
STAINLESS STEEL (MARTENSITIC)					
403, 410, 416, 440	-	250 - 300	250 - 300	175 - 210	175 - 210
HIGH STRENGTH TOOL STEELS					
4140, 4340, 6150, 5210, A2, D2, P20, H11, H13, S2, 01	UNDER 32	250 - 350	250 - 350	175 - 210	175 - 210
	OVER 32	150 - 200	150 - 200	100 - 140	100 - 140
CARBON STEELS					
1000's, 1100's, 1300's	-	560 - 595	560 - 595	300 - 500	300 - 500
DUCTILE					
DUCTILE CAST IRONS	-	560 - 595	560 - 595	400 - 500	400 - 500
CAST IRONS					
GRAY CAST IRONS	-	560 - 595	560 - 595	400 - 500	400 - 500

Speed and feed chart parameters are for 4 flute full diameter slotting

Recommended slotting up to 1 x Diameter
 Tool holding important for maximizing tool life. Minimize TIR
 Max ramp angle recommended 3° or less

TECHNICAL INFORMATION

Technical Information

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



VI-PRO CARBIDE END MILLS



4 FLUTE

I.P.T. (Inch Per Tooth)

MATERIAL / TYPE	1/8"	3/16"	1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	1"
COBALT BASE ALLOYS										
STELLITE, HS-21, HAYNES 25/188, X-40, L-605	.0004 - .0008	.0005 - .0011	.0009 - .0016	.0010 - .0018	.0012 - .0019	.0014 - .0021	.0016 - .0028	.0019 - .0031	.0024 - .0037	.0029 - .0041
NICKEL BASE ALLOYS										
INCONEL-625/718, WASPALLOY, RENE, HASTELLOY	.0004 - .0008	.0005 - .0011	.0009 - .0016	.0010 - .0018	.0012 - .0019	.0014 - .0021	.0016 - .0028	.0019 - .0031	.0024 - .0037	.0029 - .0041
IRON BASE ALLOYS										
INCOLOY 800-802, MULTIMET N-155, TIMKIN 16-25-6, CARPENTER 22-b3	.0004 - .0008	.0005 - .0011	.0009 - .0016	.0010 - .0018	.0012 - .0019	.0014 - .0021	.0016 - .0028	.0019 - .0031	.0024 - .0037	.0029 - .0041
MONEL										
MONEL-65% NICKEL	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0015 - .0017	.0017 - .0019	.0019 - .0021	.0026 - .0028	.0029 - .0031	.0035 - .0037	.0039 - .0041
TITANIUM ALLOYS										
COMMERCIALLY PURE, 6Al-4V, ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0015 - .0017	.0017 - .0019	.0019 - .0021	.0026 - .0028	.0029 - .0031	.0035 - .0037	.0039 - .0041
STAINLESS STEEL (PRECIPITATION)										
12/8, 15/5, 17/4, AM-350/355	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0016 - .0020	.0017 - .0025	.0019 - .0031	.0026 - .0032	.0029 - .0037	.0035 - .0039	.0039 - .0041
STAINLESS STEEL (AUSTENITIC)										
200 SERIES, 302, 303, 304, 316	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0016 - .0020	.0017 - .0025	.0019 - .0031	.0026 - .0032	.0029 - .0037	.0035 - .0039	.0039 - .0041
STAINLESS STEEL (AUSTENITIC)										
304L, 316L	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0016 - .0020	.0017 - .0025	.0019 - .0031	.0026 - .0032	.0029 - .0037	.0035 - .0039	.0039 - .0041
STAINLESS STEEL (MARTENSITIC)										
403, 410, 416, 440	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0016 - .0020	.0017 - .0025	.0019 - .0031	.0026 - .0032	.0029 - .0037	.0035 - .0039	.0039 - .0041
HIGH STRENGTH TOOL STEELS										
4140, 4340, 6150, 5210, A2, D2, P20, H11, H13, S2, O1	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0016 - .0020	.0017 - .0025	.0019 - .0031	.0026 - .0032	.0029 - .0037	.0035 - .0039	.0039 - .0041
CARBON STEELS										
1000's, 1100's, 1300'S	.0004 - .0008	.0011 - .0013	.0018 - .0020	.0024 - .0026	.0030 - .0032	.0033 - .0035	.0035 - .0037	.0039 - .0041	.0041 - .0043	.0054 - .0056
DUCTILE										
DUCTILE CAST IRONS	.0004 - .0008	.0011 - .0013	.0018 - .0020	.0024 - .0026	.0030 - .0032	.0033 - .0035	.0035 - .0037	.0039 - .0041	.0041 - .0043	.0054 - .0056
CAST IRONS										
GRAY CAST IRONS	.0004 - .0008	.0011 - .0013	.0018 - .0020	.0024 - .0026	.0030 - .0032	.0033 - .0035	.0035 - .0037	.0039 - .0041	.0041 - .0043	.0054 - .0056

Chip Thinning recommended for 4 Flute to optimize tool life:

- 5% of Diameter Radial engaged: Multiply Feed 3X
- 10% of Diameter Radial engaged: Multiply Feed 2X
- 20% of Diameter Radial engaged: Multiply Feed 1.5X

TECHNICAL INFORMATION



Technical Information

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

VI-PRO CARBIDE END MILLS



5 FLUTE

SFM
SEMI-ROUGHING & FINISH PASSES, UP TO 25% OF DIAMETER

MATERIAL / TYPE	Rc HARDNESS	5 FLUTE STUB LENGTH	5 FLUTE REG LENGTH	5 FLUTE LONG LENGTH	5 FLUTE EXTRA LONG
COBALT BASE ALLOYS					
STELLITE, HS-21,	UNDER 32	550 - 570	550 - 570	385 - 400	385 - 400
HAYNES 25/188, X-40, L-605	OVER 32	200 - 225	200 - 225	140 - 160	140 - 160
NICKEL BASE ALLOYS					
INCONEL-625/718, WASPALLOY,	UNDER 32	550 - 570	550 - 570	385 - 400	385 - 400
RENE, HASTELLOY	OVER 32	200 - 225	200 - 225	140 - 160	140 - 160
IRON BASE ALLOYS					
INCOLOY 800-802, MULTIMET N-155,	UNDER 32	550 - 570	550 - 570	385 - 400	385 - 400
TIMKIN 16-25-6, CARPENTER 22-b3	OVER 32	200 - 225	200 - 225	140 - 160	140 - 160
MONEL					
MONEL-65% NICKEL	-	550 - 570	550 - 570	385 - 400	385 - 400
TITANIUM ALLOYS					
COMMERCIALLY PURE, 6Al-4V,	-	-	-	-	-
ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si	-	550 - 570	550 - 570	385 - 400	385 - 400
STAINLESS STEEL (PRECIPITATION)					
12/8, 15/5, 17/4, AM-350/355	UNDER 32	600 - 625	600 - 625	420 - 440	420 - 440
	OVER 32	550 - 570	550 - 570	385 - 400	385 - 400
STAINLESS STEEL (AUSTENITIC)					
200 SERIES, 302, 303, 304, 316	-	600 - 625	600 - 625	420 - 440	420 - 440
STAINLESS STEEL (AUSTENITIC)					
304L, 316L	UNDER 32	600 - 625	600 - 625	420 - 440	420 - 440
	OVER 32	550 - 570	550 - 570	385 - 400	385 - 400
STAINLESS STEEL (MARTENSITIC)					
403, 410, 416, 440	-	600 - 625	600 - 625	420 - 440	420 - 440
HIGH STRENGTH TOOL STEELS					
4140, 4340, 6150, 5210, A2,	UNDER 32	600 - 625	600 - 625	420 - 440	420 - 440
D2, P20, H11, H13, S2, 01	OVER 32	550 - 570	550 - 570	385 - 400	385 - 400
CARBON STEELS					
1000's, 1100's, 1300's	-	800 - 850	800 - 850	560 - 595	560 - 595
DUCTILE					
DUCTILE CAST IRONS	-	800 - 850	800 - 850	560 - 595	560 - 595
CAST IRONS					
GRAY CAST IRONS	-	800 - 850	800 - 850	560 - 595	560 - 595

Chip Thinning recommended for optimized tool life:

5% of Diameter Radial engaged: Multiply Feed 3X
10% of Diameter Radial engaged: Multiply Feed 2X

TECHNICAL INFORMATION

Technical Information

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



VI-PRO CARBIDE END MILLS



5 FLUTE

I.P.T. (Inch Per Tooth)										
MATERIAL / TYPE	1/8"	3/16"	1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	1"
COBALT BASE ALLOYS										
STELLITE, HS-21, HAYNES 25/188, X-40, L-605	.0004 - .0008	.0005 - .0011	.0009 - .0016	.0010 - .0018	.0012 - .0019	.0014 - .0021	.0016 - .0028	.0019 - .0031	.0024 - .0037	.0029 - .0041
NICKEL BASE ALLOYS										
INCONEL-625/718, WASSPALLOY, RENE, HASTELLOY	.0004 - .0008	.0005 - .0011	.0009 - .0016	.0010 - .0018	.0012 - .0019	.0014 - .0021	.0016 - .0028	.0019 - .0031	.0024 - .0037	.0029 - .0041
IRON BASE ALLOYS										
INCOLOY 800-802, MULTIMET N-155, TIMKIN 16-25-6, CARPENTER 22-b3	.0004 - .0008	.0005 - .0011	.0009 - .0016	.0010 - .0018	.0012 - .0019	.0014 - .0021	.0016 - .0028	.0019 - .0031	.0024 - .0037	.0029 - .0041
MONEL										
MONEL-65% NICKEL	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0015 - .0017	.0017 - .0019	.0019 - .0021	.0026 - .0028	.0029 - .0031	.0035 - .0037	.0039 - .0041
TITANIUM ALLOYS										
COMMERCIALLY PURE, 6Al-4V, ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0015 - .0017	.0017 - .0019	.0019 - .0021	.0026 - .0028	.0029 - .0031	.0035 - .0037	.0039 - .0041
STAINLESS STEEL (PRECIPITATION)										
12/8, 15/5, 17/4, AM-350/355	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0016 - .0020	.0017 - .0025	.0019 - .0031	.0026 - .0032	.0029 - .0037	.0035 - .0039	.0039 - .0041
STAINLESS STEEL (AUSTENITIC)										
200 SERIES, 302, 303, 304, 316	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0016 - .0020	.0017 - .0025	.0019 - .0031	.0026 - .0032	.0029 - .0037	.0035 - .0039	.0039 - .0041
STAINLESS STEEL (AUSTENITIC)										
304L, 316L	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0016 - .0020	.0017 - .0025	.0019 - .0031	.0026 - .0032	.0029 - .0037	.0035 - .0039	.0039 - .0041
STAINLESS STEEL (MARTENSITIC)										
403, 410, 416, 440	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0016 - .0020	.0017 - .0025	.0019 - .0031	.0026 - .0032	.0029 - .0037	.0035 - .0039	.0039 - .0041
HIGH STRENGTH TOOL STEELS										
4140, 4340, 6150, 5210, A2, D2, P20, H11, H13, S2, 01	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0016 - .0020	.0017 - .0025	.0019 - .0031	.0026 - .0032	.0029 - .0037	.0035 - .0039	.0039 - .0041
CARBON STEELS										
1000's, 1100's, 1300's	.0004 - .0008	.0011 - .0013	.0018 - .0020	.0024 - .0026	.0030 - .0032	.0033 - .0035	.0035 - .0037	.0039 - .0041	.0041 - .0043	.0054 - .0056
DUCTILE										
DUCTILE CAST IRONS	.0004 - .0008	.0011 - .0013	.0018 - .0020	.0024 - .0026	.0030 - .0032	.0033 - .0035	.0035 - .0037	.0039 - .0041	.0041 - .0043	.0054 - .0056
CAST IRONS										
GRAY CAST IRONS	.0004 - .0008	.0011 - .0013	.0018 - .0020	.0024 - .0026	.0030 - .0032	.0033 - .0035	.0035 - .0037	.0039 - .0041	.0041 - .0043	.0054 - .0056

Chip Thinning recommended for optimized tool life:

5% of Diameter Radial engaged: Multiply Feed 3X
 10% of Diameter Radial engaged: Multiply Feed 2X

TECHNICAL INFORMATION



Technical Information

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

VI-PRO CARBIDE END MILLS



6 FLUTE

SFM
FINISHING PASSES ONLY, UP TO 10% OF DIAMETER

MATERIAL / TYPE	Rc HARDNESS	6 FLUTE REG LENGTH	6 FLUTE LONG LENGTH
COBALT BASE ALLOYS			
STELLITE, HS-21,	UNDER 32	550 - 570	385 - 400
HAYNES 25/188, X-40, L-605	OVER 32	200 - 225	140 - 160
NICKEL BASE ALLOYS			
INCONEL-625/718, WASPALLOY,	UNDER 32	550 - 570	385 - 400
RENE, HASTELLOY	OVER 32	200 - 225	140 - 160
IRON BASE ALLOYS			
INCOLOY 800-802, MULTIMET N-155,	UNDER 32	550 - 570	385 - 400
TIMKIN 16-25-6, CARPENTER 22-b3	OVER 32	200 - 225	140 - 160
MONEL			
MONEL-65% NICKEL	-	550 - 570	385 - 400
TITANIUM ALLOYS			
COMMERCIALLY PURE, 6Al-4V,	-	-	-
ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si	-	550 - 570	385 - 400
STAINLESS STEEL (PRECIPITATION)			
12/8, 15/5, 17/4, AM-350/355	UNDER 32	600 - 625	420 - 440
	OVER 32	550 - 570	385 - 400
STAINLESS STEEL (AUSTENITIC)			
200 SERIES, 302, 303, 304, 316	-	600 - 625	420 - 440
STAINLESS STEEL (AUSTENITIC)			
304L, 316L	UNDER 32	600 - 625	420 - 440
	OVER 32	550 - 570	385 - 400
STAINLESS STEEL (MARTENSITIC)			
403, 410, 416, 440	-	600 - 625	420 - 440
HIGH STRENGTH TOOL STEELS			
4140, 4340, 6150, 5210, A2,	UNDER 32	600 - 625	420 - 440
D2, P20, H11, H13, S2, 01	OVER 32	550 - 570	385 - 400
CARBON STEELS			
1000's, 1100's, 1300's	-	800 - 850	560 - 595
DUCTILE			
DUCTILE CAST IRONS	-	800 - 850	560 - 595
CAST IRONS			
GRAY CAST IRONS	-	800 - 850	560 - 595

Chip Thinning recommended for optimized tool life:

5% of Diameter Radial engaged: Multiply Feed 3X
10% of Diameter Radial engaged: Multiply Feed 2X

TECHNICAL INFORMATION



VI-PRO CARBIDE END MILLS



6 FLUTE

I.P.T. (Inch Per Tooth)

MATERIAL / TYPE	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"
COBALT BASE ALLOYS							
STELLITE, HS-21, HAYNES 25/188, X-40, L-605	.0009 - .0016	.0010 - .0018	.0012 - .0019	.0016 - .0028	.0019 - .0031	.0024 - .0037	.0029 - .0041
NICKEL BASE ALLOYS							
INCONEL-625/718, WASPALLOY, RENE, HASTELLOY	.0009 - .0016	.0010 - .0018	.0012 - .0019	.0016 - .0028	.0019 - .0031	.0024 - .0037	.0029 - .0041
IRON BASE ALLOYS							
INCOLOY 800-802, MULTIMET N-155, TIMKIN 16-25-6, CARPENTER 22-b3	.0009 - .0016	.0010 - .0018	.0012 - .0019	.0016 - .0028	.0019 - .0031	.0024 - .0037	.0029 - .0041
MONEL							
MONEL-65% NICKEL	.0014 - .0016	.0015 - .0017	.0017 - .0019	.0026 - .0028	.0029 - .0031	.0035 - .0037	.0039 - .0041
TITANIUM ALLOYS							
COMMERCIALLY PURE, 6Al-4V, ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si	.0014 - .0016	.0015 - .0017	.0017 - .0019	.0026 - .0028	.0029 - .0031	.0035 - .0037	.0039 - .0041
STAINLESS STEEL (PRECIPITATION)							
12/8, 15/5, 17/4, AM-350/355	.0014 - .0016	.0016 - .0020	.0017 - .0025	.0026 - .0032	.0029 - .0037	.0035 - .0039	.0039 - .0041
STAINLESS STEEL (AUSTENITIC)							
200 SERIES, 302, 303, 304, 316	.0014 - .0016	.0016 - .0020	.0017 - .0025	.0026 - .0032	.0029 - .0037	.0035 - .0039	.0039 - .0041
STAINLESS STEEL (AUSTENITIC)							
304L, 316L	.0014 - .0016	.0016 - .0020	.0017 - .0025	.0026 - .0032	.0029 - .0037	.0035 - .0039	.0039 - .0041
STAINLESS STEEL (MARTENSITIC)							
403, 410, 416, 440	.0014 - .0016	.0016 - .0020	.0017 - .0025	.0026 - .0032	.0029 - .0037	.0035 - .0039	.0039 - .0041
HIGH STRENGTH TOOL STEELS							
4140, 4340, 6150, 5210, A2, D2, P20, H11, H13, S2, 01	.0014 - .0016	.0016 - .0020	.0017 - .0025	.0026 - .0032	.0029 - .0037	.0035 - .0039	.0039 - .0041
CARBON STEELS							
1000's, 1100's, 1300's	.0018 - .0020	.0024 - .0026	.0030 - .0032	.0035 - .0037	.0039 - .0041	.0041 - .0043	.0054 - .0056
DUCTILE							
DUCTILE CAST IRONS	.0018 - .0020	.0024 - .0026	.0030 - .0032	.0035 - .0037	.0039 - .0041	.0041 - .0043	.0054 - .0056
CAST IRONS							
GRAY CAST IRONS	.0018 - .0020	.0024 - .0026	.0030 - .0032	.0035 - .0037	.0039 - .0041	.0041 - .0043	.0054 - .0056

Chip Thinning recommended for optimized tool life:

5% of Diameter Radial engaged: Multiply Feed 3X
 10% of Diameter Radial engaged: Multiply Feed 2X



Technical Information

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

HIGH PERFORMANCE THREAD MILLS - CARBIDE

TECHNICAL INFORMATION

MATERIAL	GRADES	SFM	1/16	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4
			(.0625)	(.1250)	(.1875)	(.2500)	(.3125)	(.3750)	(.5000)	(.6250)	(.7500)
			IPT	IPT	IPT	IPT	IPT	IPT	IPT	IPT	IPT
ALLOYS											
COBALT BASE	STELLITE, HS-21, HAYNES 25/188,	50-90	.00015-.00025	.0002-.0005	.0003-.0005	.0004-.0006	.0006-.0009	.0008-.0015	.0010-.0020	.0014-.0028	.0018-.0030
IRON BASE	INCOLOY 800-802, MULTMET N-15, TIMKIN 16-25-6, CARPENTER 22-B3, TIMKIN 16-25-6, CARPENTER 22-B3	50-90	.00015-.00025	.0002-.0005	.0003-.0005	.0004-.0006	.0006-.0009	.0008-.0015	.0010-.0020	.0014-.0028	.0018-.0030
NICKEL BASE	INCONEL 625/718, INCO 700, 713C, 718, MONEL 400-401, 404, K401, RENE, RENE 41 & 95 HASTELLOY, WASPOLOY, UDIMET 500 & 700	60-100	.0002-.0003	.0003-.0006	.0005-.001	.0008-.0015	.001-.002	.0015-.0025	.0015-.0025	.002-.003	.0025-.0040
TITANIUM	COMMERCIALLY PURE, 6AL-4V, ASTM 1/2/3, 6AL-25N-4ZR-2MO-SI, TI-8AL-1MO, TI-8AL-4MO	80-150	.0002-.0005	.0003-.0006	.0005-.001	.0008-.0015	.001-.002	.0015-.0025	.0015-.0025	.0025-.0035	.0030-.0045
ALUMINUM											
ALUMINUM ALLOYS	2014, 2024, 6061, 7075	800-1400	.0002-.0004	.0005-.001	.001-.0015	.0015-.0025	.002-.003	.003-.0045	.0035-.0055	.005-.007	.006-.010
HIGH SILICON	A380, A390	475-750	.00015-.00022	.00035-.00040	.00075-.0008	.0010-.0020	.0015-.0025	.0018-.0028	.0023-0.0030	.0028-.0031	.0035-.0050
BRASS/BRONZE											
	ALUMINUM BRONZE, LOW SILICON BRONZE	550-800	.0002-.0005	.0005-.001	.001-.0015	.0015-.0025	.002-.003	.003-.0045	.0035-.0055	.005-.007	.006-.010
CAST IRON											
DUCTILE	A536, J434, 60-40-18	200-300	.00025-.00035	.0003-.0006	.0005-.0010	.0008-.0015	.001-.002	.0015-.0025	.002-.003	.003-.004	.0030-.0050
GRAY	A48, A436, A319, CLASS 20, G4000	250-350	.00025-.00035	.0004-.0008	.0007-.0013	.0007-.0013	.0015-.002	.002-.003	.002-.004	.003-.005	.0040-.0060
MALLEABLE	A220, A602, J158	200-300	.00025-.00035	.0003-.0006	.0005-.0010	.0008-.0015	.001-.002	.0015-.0025	.002-.003	.003-.004	.0030-.0050
COMPOSITES											
	G-10, FIBERGLASS, GRAPHITE, GRAPHITE EPOXY, PLASTICS	800-1400	.0003-.0005	.0005-.001	.001-.0015	.0015-.0025	.002-.003	.003-.0045	.0035-.0055	.005-.007	.0060-.0100
COPPER											
		450-1000	.00025-.00035	.0003-.0006	.0005-.001	.0008-.0015	.001-.002	.0015-.0025	.002-.003	.003-.004	.0035-.0050
MAGNESIUM											
		800-1400	.0003-.0005	.0005-.001	.001-.0015	.0015-.0025	.002-.003	.003-.0045	.0035-.0055	.005-.007	.0060-.0100
STAINLESS STEEL											
AUSTENITIC	301-304L, 310, 316L, 321, 347	100-250	.00015-.00025	.00025-.00055	.0005-.001	.0008-.0015	.001-.002	.0015-.0025	.002-.003	.003-.004	.0035-.0050
MARTENSITIC	403, 410, 416, 420, 430, 431, 440	150-250	.0002-.0003	.0004-.0008	.0006-.001	.001-.0015	.0015-.002	.0015-.003	.002-.0035	.003-.004	.0030-.0040
PRECIPITATION HARDENING	12/8, 15/5, 17/4, AM-350/355/363, PH13-8MO, PH14-8/MO	100-250	.00015-.00025	.00025-.00055	.0005-.001	.0008-.0015	.001-.002	.0015-.0025	.002-.003	.003-.004	.0035-.0050
STEELALLOY											
HIGH STRENGTH TOOL STEEL	A2, D2, P20, H11, H13,	250-400	.00015-.0003	.0003-.0006	.0005-.001	.0008-.0015	.001-.002	.0015-.0025	.002-.003	.003-.004	.0035-.0050
LOW CARBON	A36, 12L14, 12L15, 1005, 1018, 1020, 1108-1119, 1213-1215, 1513-1518, 4012, 5015, 9310	350-500	.0002-.0004	.0005-.001	.001-.0015	.0015-.0025	.002-.003	.003-.0045	.0035-.0055	.005-.007	.0060-.0080
MEDIUM CARBON	1040-1095, 1140-1151, 1330-1345	300-450	.0002-.0004	.0005-.001	.001-.0015	.0015-.0025	.002-.003	.003-.0045	.0035-.0055	.005-.007	.0060-.0080



END MILLS - CARBIDE

Trouble Shooting Guide

PROBLEM	CAUSE	SOLUTION
Premature Wear	<ul style="list-style-type: none"> • Cutting speed is too fast • Hard/Abrasive work-piece material • Speed and/or feed is too light • Helix angle is incorrect for application • Re-cutting chips 	<ul style="list-style-type: none"> • Decrease spindle speed • Use coatings (TiCN, AlTiN) • Increase speed and/or feed • Select tool with appropriate helix angle • Adjust speed & feed, axial and/or radial D.O.C., Increase coolant pressure and/or air to clear chips.
Edge Chipping	<ul style="list-style-type: none"> • Feed rate too aggressive • Feed rate too aggressive on initial cut • D.O.C. too aggressive • Tool rigidity • Work-piece rigidity • Machine tool rigidity 	<ul style="list-style-type: none"> • Reduce feed rate • Reduce feed rate on initial pass • Decrease axial and/or radial D.O.C. • Change tool holder, hold shank deeper and/or use shorter tool • Re-fixture work-piece and/or improve setup • Check spindle for run-out
Breakage	<ul style="list-style-type: none"> • Feed rate too aggressive • D.O.C. too aggressive • Excessive tool overhang • Chip packing • Excessive wear 	<ul style="list-style-type: none"> • Reduce feed rate • Reduce axial and/or radial D.O.C. • Hold shank deeper, use shorter endmill • Adjust speed and/or feed, select endmill with fewer flutes, increase coolant pressure and/or air • Re-grind tool sooner
Chip Packing	<ul style="list-style-type: none"> • Speed and/or feed too aggressive • Flute gullet too small for chips • Insufficient coolant volume and/or pressure 	<ul style="list-style-type: none"> • Reduce speed and/or feed • Use endmill with less flutes • Increase coolant and/or air pressure, reposition nozzle to point of cut
Chattering	<ul style="list-style-type: none"> • Speed and/or feed too aggressive • Tool rigidity • Work-piece rigidity • Machine tool rigidity • D.O.C. too aggressive • Wrong tool geometry 	<ul style="list-style-type: none"> • Reduce speed and/or feed • Change tool holder, hold shank deeper and/or use shorter tool • Re-fixture work-piece and/or improve setup • Check spindle for run-out • Reduce axial and/or radial D.O.C.
Burs	<ul style="list-style-type: none"> • Incorrect speed & feed • Helix angle is incorrect for application • Primary cutting edge(s) are dull 	<ul style="list-style-type: none"> • Adjust speed & feed • Change to correct helix angle, use climb milling • Re-grind tool sooner
Poor Finish	<ul style="list-style-type: none"> • Feed rate too aggressive • Speed is too slow • D.O.C. too aggressive • Excessive wear 	<ul style="list-style-type: none"> • Reduce feed rate • Increase spindle speed (RPM) • Reduce axial and/or radial D.O.C. • Re-grind tool sooner
Poor Dimensional Accuracy	<ul style="list-style-type: none"> • D.O.C. too aggressive • Tool Rigidity • Machine tool rigidity 	<ul style="list-style-type: none"> • Reduce axial and/or radial D.O.C. • Use tool with more flutes • Check, inspect & repair machine tool, tool holder and fixtures



END MILLS - CARBIDE

GENERAL RECOMMENDATIONS

All speed and feed recommendations should be considered only as a starting point. The suggested speed & feed values are recommended for uncoated tools only. When various coatings are applied, SFM may be increased accordingly. These general percentages are as follows under optimal conditions:

TICN = +25% ZRN = +30% ALTiN = +40%

RIGIDITY

Maximize rigidity to reduce chatter and increase tool life. Ways to improve rigidity include choosing the largest diameter possible to perform your milling task, use the shortest LOC (Length of Cut) available, and always use the tool holder which offers the shortest gage line (Shortest Tool Holder Length).

CHATTER

If chatter is present increase feed or reduce speed.

Speed and Feed Calculations:

$$\text{RPM} = (3.82 \times \text{SFM}) \div \text{Dia.}$$

$$\text{IPR} = \text{IPM} \div \text{RPM}$$

$$\text{SFM} = (\text{RPM} \times \text{Dia.}) \div 3.82$$

$$\text{IPM} = \text{IPT}(\text{chip load}) \times \text{No. of Teeth} \times \text{RPM}$$

$$\text{IPT}(\text{chip load}) = \text{IPM} \div (\text{No. of teeth} \times \text{RPM})$$

BURS - CARBIDE

SELECTION BY CUT

SINGLE CUT:

- Provides the best surface finish and largest contact patch on the work piece.
- Demands greater operator skill since the single flute direction pulls the bur into the work piece.

DOUBLE CUT:

- Most popular geometry as the dual flute direction reduces the contact patch on the work piece and therefore provides easier operator control while still maintaining a good surface finish.

ALUMINUM CUT:

- These burs employ a coarser flute which results in improved cutting performance for aluminum and aluminum alloys.

CARBIDE BURS - SPEEDS

CUTTING DIA.	SUGGESTED RPM	MAXIMUM RPM
1/16	55,000 – 85,000	90,000
1/8	35,000 – 65,000	80,000
3/16	30,000 – 55,000	70,000
1/4	25,000 – 50,000	70,000
5/16	20,000 – 40,000	67,000
3/8	18,000 – 40,000	63,000
7/16	16,000 – 38,000	58,000
1/2	14,000 – 36,000	50,000
5/8	12,000 – 25,000	40,000
3/4	10,000 – 20,000	33,000
1	7,500 – 20,000	25,000

When using double cut: Reduce speeds by 25% approximately.
For stainless steel material: Increase speeds by 50% approximately.

Technical Information

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



ROUGHING END MILLS - CARBIDE

MATERIAL	GRADES	STUB & REGULAR		LONG LENGTH		1/4	3/8	1/2	5/8	3/4	1
		SFM	SFM	SFM	SFM	(.2500)	(.3750)	(.5000)	(.0625)	(.7500)	(1.000)
		UNCOATED	ALTiN	UNCOATED	ALTiN	IPT	IPT	IPT	IPT	IPT	IPT
ALLOYS											
COBALT BASE	STELLITE, HS-21, HAYNES 25/188	25-45	45-75	20-35	35-60	.0009-.0012	.0012-.0015	.0015-.0018	.0018-.0021	.0021-.0025	.0025-.0027
COBALT BASE >32HRC	X40, L605	25-45	45-75	20-35	35-60	.0009-.0012	.0012-.0015	.0015-.0018	.0018-.0021	.0021-.0025	.0025-.0027
IRON BASE	INCOLOY 800-802, MULTMET N-155	25-45	45-75	20-35	35-60	.0009-.0012	.0012-.0015	.0015-.0018	.0018-.0021	.0021-.0025	.0025-.0027
IRON BASE >32HRC	TIMKIN 16-25-6, CARPENTER 22-B3	25-45	45-75	20-35	35-60	.0009-.0012	.0012-.0015	.0015-.0018	.0018-.0021	.0021-.0025	.0025-.0027
NICKEL BASE	INCONEL 625/718, INCO 700, 713C, 718	40-85	65-145	30-65	50-115	.0009-.0012	.0012-.0015	.0015-.0018	.0018-.0021	.0021-.0025	.0025-.0027
NICKEL BASE >32HRC	MONEL 400-401, 404, K401, RENE, RENE 41 & 95 HASTELLOY, WASPOLOY, UDIMET 500 & 700	30-65	55-110	25-50	45-90	.0009-.0012	.0012-.0015	.0015-.0018	.0018-.0021	.0021-.0025	.0025-.0027
TITANIUM	COMMERCIALLY PURE, 6AL-4VASTM 1/2/3, 6AL-25N-4ZR-2MO-SITI-8AL-1MO, TI-8AL-4MO	75-130	125-215	60-100	100-170	.0009-.0012	.0012-.0015	.0015-.0018	.0018-.0021	.0021-.0025	.0025-.0027
ALUMINUM											
ALUMINUM ALLOYS		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
HIGH SILICON		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BRASS/BRONZE											
	ALUMINUM BRONZE, LOW SILICON BRONZE	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CAST IRON											
DUCTILE	A536, J434, 60-40-18	200-250	300-350	140-175	210-250	.0005-.0015	.0015-.002	.002-.0025	.0025-.003	.003-.0035	.0035-.004
GRAY	A48, A436, A319, CLASS 20, G4000	250-300	450-500	175-210	315-350	.0005-.0015	.0015-.002	.002-.0025	.0025-.003	.003-.0035	.0035-.004
MALLEABLE	A220, A602, J158	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
COMPOSITES											
	G-10, FIBERGLASS, GRAPHITE, GRAPHITE EPOXY, PLASTICS	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
COPPER											
		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MAGNESIUM											
		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
STAINLESS STEEL											
AUSTENITIC	301-304L, 310, 316L, 321, 347	150-300	250-500	120-240	200-400	.0010-.0015	.0015-.0020	.0020-.0025	.0025-.0030	.0030-.0035	.0035-.0040
MARTENSITIC	403, 410, 416, 420, 430,	135-255	225-430	110-200	180-340	.0015-.0020	.0020-.0030	.0030-.0035	.0035-.0040	.0038-.0042	.0040-.0045
PRECIPITATION HARDENING	12/8, 15/5, 17/4, AM-350/355/363, PH13-8MO, PH14-8/MO	135-255	225-430	110-200	180-340	.0015-.0020	.0020-.0030	.0030-.0035	.0035-.0040	.0038-.0042	.0040-.0045
STEELALLOY											
HIGH STRENGTH TOOL STEEL	A2, D2, P20, H11, H13,	200-230	250-320	140-160	180-210	.0003-.001	.001-.0015	.0015-.002	.002-.003	.003-.0035	.0035-.004
HIGH STRENGTH TOOL STEEL >32 HRC		180-220	240-280	130-150	170-190	.0003-.001	.001-.0015	.0015-.002	.002-.003	.003-.0035	.0035-.004
LOW CARBON	A36, 12L14, 12L15, 1005, 1018, 1020, 1108-1119, 1213-1215, 1513-1518, 4012, 5015, 9310	210-345	350-575	165-275	280-460	.0015-.0020	.0020-.0030	.0030-.0035	.0035-.0040	.0038-.0042	.0040-.0045
LOW CARBON >32HRC		125-190	210-320	100-150	165-255	.0011-.0015	.0015-.0020	.0020-.0025	.0023-.0025	.0025-.0030	.0028-.0032
MEDIUM CARBON	1040-1095, 1140-1151, 1330-1345, 1520-1572, 4023-4063, 4120-4161, 4330-4340, 4620-4640, 8620-8660, 8740-8750, 6150, 51000, 52100	210-345	350-575	165-275	280-460	.0015-.0020	.0020-.0030	.0030-.0035	.0035-.0040	.0038-.0042	.0040-.0045
MEDIUM CARBON >32 HRC		180-220	240-280	130-150	170-190	.0003-.001	.001-.0015	.0015-.002	.002-.003	.003-.0035	.0035-.004

TECHNICAL INFORMATION



Technical Information

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

END MILLS - CARBIDE

THESE VALUES ARE FOR UNCOATED TOOLS
FOR COATED TOOLS INCREASE SFM: ZRN = +30% ALTIN = +40%

SFM FOR 45° & 60° HELIX CARBIDE END MILLS

MATERIAL / TYPE	Rc HARDNESS	2 Fl, 3 Fl 45° Helix Aluminum	3 Flute 45° & 60° Helix	5 Flute 45° Helix
COBALT BASE ALLOYS				
STELLITE, HS-21, HAYNES 25/188, X-40, L-605	UNDER 32 OVER 32	- -	200 - 275 125 - 175	250 - 300 150 - 200
NICKEL BASE ALLOYS				
INCONEL-625/718, WASPALLOY, RENE, HASTELLOY	UNDER 32 OVER 32	- -	150 - 200 90 - 125	250 - 300 150 - 200
IRON BASE ALLOYS				
INCOLOY 800-802, MULTIMET N-155, TIMKIN 16-25-6, CARPENTER 22-b3	UNDER 32 OVER 32	- -	250 - 300 150 - 200	250 - 300 150 - 200
MONEL				
MONEL-65% NICKEL	-	-	200 - 300	225 - 350
TITANIUM ALLOYS				
COMMERCIALLY PURE, 6Al-4V, ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si	- -	500 min. -	250 - 400 -	250 - 400 -
STAINLESS STEEL (PRECIPITATION)				
12/8, 15/5, 17/4, AM-350/355	UNDER 32 OVER 32	- -	200 - 350 150 - 250	200 - 350 150 - 250
STAINLESS STEEL (AUSTENITIC)				
200 SERIES, 302, 303, 304, 316	UNDER 32 OVER 32	- -	250 - 350 175 - 275	250 - 350 175 - 275
STAINLESS STEEL (AUSTENITIC)				
304L, 316L	UNDER 32 OVER 32	- -	125 - 200 90 - 125	125 - 200 90 - 125
STAINLESS STEEL (MARTENSITIC)				
403, 410, 416, 440	UNDER 32 OVER 32	- -	200 - 350 150 - 250	200 - 350 150 - 250
HIGH STRENGTH TOOL STEELS				
4140, 4340, 6150, 5210, A2, D2, P20, H11, H13, S2, 01	UNDER 32 OVER 32	- -	225 - 300 125 - 200	225 - 300 125 - 200
MEDIUM ALLOY STEELS				
200, 250, 300	UNDER 32 OVER 32	- -	250 - 350 150 - 200	250 - 350 150 - 200
CARBON STEELS				
1000's, 1100's, 1300's	UNDER 32 OVER 32	- -	250 - 350 150 - 200	250 - 350 150 - 200
DUCTILE				
DUCTILE CAST IRONS	-	-	350 - 450	300 - 400
CAST IRONS				
GRAY CAST IRONS	-	-	300 - 400	250 - 350
ALUMINUM				
2014, 2024, 6061-(T1-T6) 7075, DIE CAST, EXTRUDED	- -	500 min. -	500 min. -	500 min. -
MAGNESIUM				
	-	500 min.	500 min.	500 min.
COPPER, COPPER ALLOYS				
	-	400 - 500	400 - 500	250 - 350
BRASS BRONZE				
BRASS, ALUM/BRONZE, LOW SILICON BRONZE	- -	300 - 400 -	300 - 400 -	- -
COMPOSITES				
G-10 FIBERGLASS, GRAPHITE, GRAPHITE/EPOXY, PLASTICS	- -	250 - 1000 -	- -	- -

TECHNICAL INFORMATION

Technical Information

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



END MILLS - CARBIDE

I.P.T. (Inch Per Tooth)					
MATERIAL / TYPE	Rc HARDNESS	1/8"	1/8" - 1/4"	1/4" - 1/2"	1/2" - 1"
COBALT BASE ALLOYS					
STELLITE, HS-21, HAYNES 25/188, X-40, L-605	UNDER 32 OVER 32	.0005"-.0010" .0003"-.0005"	.0005"-.0010" .0003"-.0005"	.0008"-.0020" .0005"-.0015"	.0020"-.0040" .0010"-.0030"
NICKEL BASE ALLOYS					
INCONEL-625/718, WASSPALLOY, RENE, HASTELLOY	UNDER 32 OVER 32	.0005"-.0010" .0003"-.0005"	.0005"-.0010" .0003"-.0005"	.0008"-.0020" .0005"-.0015"	.0020"-.0040" .0010"-.0030"
IRON BASE ALLOYS					
INCOLOY 800-802, MULTIMET N-155, TIMKIN 16-25-6, CARPENTER 22-b3	UNDER 32 OVER 32	.0005"-.0010" .0003"-.0005"	.0005"-.0010" .0003"-.0005"	.0008"-.0020" .0005"-.0015"	.0020"-.0040" .0010"-.0030"
MONEL					
MONEL-65% NICKEL	-	.0007"-.0015"	.0007"-.0015"	.0010"-.0025"	.0030"-.0050"
TITANIUM ALLOYS					
COMMERCIALLY PURE, 6Al-4V, ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si	- -	.0007"-.0015" -	.0007"-.0015" -	.0010"-.0025" -	.0030"-.0050" -
STAINLESS STEEL (PRECIPITATION)					
12/8, 15/5, 17/4, AM-350/355	UNDER 32 OVER 32	.0005"-.0010" .0003"-.0005"	.0005"-.0010" .0003"-.0005"	.0008"-.0020" .0005"-.0015"	.0020"-.0040" .0010"-.0030"
STAINLESS STEEL (AUSTENITIC)					
200 SERIES, 302, 303, 304, 316	UNDER 32 OVER 32	.0005"-.0010" .0003"-.0005"	.0005"-.0010" .0003"-.0005"	.0008"-.0020" .0005"-.0015"	.0020"-.0040" .0010"-.0030"
STAINLESS STEEL (AUSTENITIC)					
304L, 316L	UNDER 32 OVER 32	.0005"-.0008" .0003"-.0005"	.0005"-.0008" .0003"-.0005"	.0008"-.0015" .0005"-.0010"	.0015"-.0030" .0010"-.0020"
STAINLESS STEEL (MARTENSITIC)					
403, 410, 416, 440	UNDER 32 OVER 32	.0005"-.0010" .0003"-.0005"	.0005"-.0010" .0003"-.0005"	.0008"-.0020" .0005"-.0015"	.0020"-.0040" .0010"-.0030"
HIGH STRENGTH TOOL STEELS					
4140, 4340, 6150, 5210, A2, D2, P20, H11, H13, S2, O1	UNDER 32 OVER 32	.0005"-.0010" .0003"-.0005"	.0005"-.0010" .0003"-.0005"	.0008"-.0020" .0005"-.0015"	.0020"-.0040" .0010"-.0030"
MEDIUM ALLOY STEELS					
200, 250, 300	UNDER 32 OVER 32	.0007"-.0015" .0005"-.0010"	.0007"-.0015" .0005"-.0010"	.0010"-.0025" .0008"-.0020"	.0030"-.0050" .0020"-.0040"
CARBON STEELS					
1000's, 1100's, 1300's	UNDER 32 OVER 32	.0007"-.0015" .0005"-.0010"	.0007"-.0015" .0005"-.0010"	.0010"-.0025" .0008"-.0020"	.0030"-.0050" .0020"-.0040"
DUCTILE					
DUCTILE CAST IRONS	-	.0010"-.0020"	.0010"-.0020"	.0015"-.0040"	.0030"-.0100"
CAST IRONS					
GRAY CAST IRONS	-	.0010"-.0020"	.0010"-.0020"	.0015"-.0040"	.0030"-.0100"
ALUMINUM					
2014, 2024, 6061-(T1-T6) 7075, DIE CAST, EXTRUDED	- -	.0010"-.0020" -	.0010"-.0020" -	.0015"-.0040" -	.0030"-.0150" -
MAGNESIUM					
	-	.0010"-.0020"	.0010"-.0020"	.0015"-.0040"	.0030"-.0100"
COPPER, COPPER ALLOYS					
	-	.0007"-.0015"	.0007"-.0015"	.0010"-.0025"	.0020"-.0080"
BRASS BRONZE					
BRASS, ALUM/BRONZE, LOW SILICON BRONZE	- -	.0007"-.0015" -	.0007"-.0015" -	.0010"-.0025" -	.0020"-.0080" -
COMPOSITES					
G-10 FIBERGLASS, GRAPHITE, GRAPHITE/EPOXY, PLASTICS	- -	.0010"-.0020" -	.0010"-.0020" -	.0015"-.0040" -	.0030"-.0100" -

TECHNICAL INFORMATION



Technical Information

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

GENERAL PURPOSE END MILLS - CARBIDE

THESE VALUES ARE FOR UNCOATED TOOLS.
FOR COATED TOOLS INCREASE SFM: TICN = +25% ALTIN = +40%

SFM FOR GENERAL PURPOSE CARBIDE END MILLS

MATERIAL / TYPE	Rc HARDNESS	2 Flute 30° Helix Stub, Reg	2 Flute 30° Helix Long, X-Long	4 Flute 30° Helix Stub, Reg	4 Flute 30° Helix Long, X-Long
COBALT BASE ALLOYS					
STELLITE, HS-21, HAYNES 25/188, X-40, L-605	UNDER 32 OVER 32	- -	- -	175 - 225 125 - 175	150 - 200 100 - 150
NICKEL BASE ALLOYS					
INCONEL-625/718, WASPALLOY, RENE, HASTELLOY	UNDER 32 OVER 32	- -	- -	125 - 175 70 - 115	150 - 200 100 - 150
IRON BASE ALLOYS					
INCOLOY 800-802, MULTIMET N-155, TIMKIN 16-25-6, CARPENTER 22-b3	UNDER 32 OVER 32	- -	- -	175 - 225 125 - 175	150 - 200 100 - 150
MONEL					
MONEL-65% NICKEL	-	175 - 300	125 - 175	175 - 300	125 - 175
TITANIUM ALLOYS					
COMMERCIALLY PURE, 6Al-4V, ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si	- -	200 - 300 -	125 - 250 -	200 - 300 -	125 - 250 -
STAINLESS STEEL (PRECIPITATION)					
12/8, 15/5, 17/4, AM-350/355	UNDER 32 OVER 32	- -	- -	150 - 250 125 - 175	100 - 150 80 - 150
STAINLESS STEEL (AUSTENITIC)					
200 SERIES, 302, 303, 304, 316	UNDER 32 OVER 32	- -	- -	200 - 250 150 - 200	125 - 175 100 - 150
STAINLESS STEEL (AUSTENITIC)					
304L, 316L	UNDER 32 OVER 32	- -	- -	90 - 125 75 - 110	80 - 120 60 - 90
STAINLESS STEEL (MARTENSITIC)					
403, 410, 416, 440	UNDER 32 OVER 32	- -	- -	150 - 250 125 - 175	100 - 150 80 - 150
HIGH STRENGTH TOOL STEELS					
4140, 4340, 6150, 5210, A2, D2, P20, H11, H13, S2, 01	UNDER 32 OVER 32	- -	- -	150 - 225 60 - 125	125 - 175 80 - 120
MEDIUM ALLOY STEELS					
200, 250, 300	UNDER 32 OVER 32	- -	- -	200 - 250 125 - 175	150 - 200 100 - 150
CARBON STEELS					
1000's, 1100's, 1300's	UNDER 32 OVER 32	- -	- -	200 - 250 125 - 175	150 - 200 100 - 150
DUCTILE					
DUCTILE CAST IRONS	-	250 - 350	200 - 300	300 - 400	200 - 300
CAST IRONS					
GRAY CAST IRONS	-	225 - 325	175 - 250	250 - 350	175 - 250
ALUMINUM					
2014, 2024, 6061-(T1-T6) 7075, DIE CAST, EXTRUDED	- -	500 min. -	500 min. -	500 min. -	500 min. -
MAGNESIUM					
	-	500 min.	500 min.	500 min.	500 min.
COPPER, COPPER ALLOYS					
	-	400 - 500	400 - 500	300 - 400	250 - 350
BRASS BRONZE					
BRASS, ALUM/BRONZE, LOW SILICON BRONZE	- -	300 - 400 -	300 - 400 -	250 - 350 -	200 - 300 -
COMPOSITES					
G-10 FIBERGLASS, GRAPHITE, GRAPHITE/EPOXY, PLASTICS	- -	250 - 1000 -	250 - 1000 -	250 - 1000 -	250 - 1000 -

TECHNICAL INFORMATION

Technical Information

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



GENERAL PURPOSE END MILLS - CARBIDE

CHIP LOAD FOR GENERAL PURPOSE CARBIDE END MILLS

MATERIAL / TYPE	Rc HARDNESS	UP TO 1/8"	1/8" - 1/4"	1/4" - 1/2"	1/2" - 1"	1" - 1-1/4"
COBALT BASE ALLOYS						
STELLITE, HS-21,	UNDER 32	.0005"-.0010"	.0005"-.0010"	.0008"-.0020"	.0020"-.0040"	.0030"-.0050"
HAYNES 25/188, X-40, L-605	OVER 32	.0003"-.0005"	.0003"-.0005"	.0005"-.0015"	.0010"-.0030"	.0020"-.0040"
NICKEL BASE ALLOYS						
INCONEL-625/718, Waspalloy,	UNDER 32	.0005"-.0010"	.0005"-.0010"	.0008"-.0020"	.0020"-.0040"	.0030"-.0050"
RENE, HASTELLOY	OVER 32	.0003"-.0005"	.0003"-.0005"	.0005"-.0015"	.0010"-.0030"	.0020"-.0040"
IRON BASE ALLOYS						
INCOLOY 800-802, MULTIMET N-155,	UNDER 32	.0005"-.0010"	.0005"-.0010"	.0008"-.0020"	.0020"-.0040"	.0030"-.0050"
TIMKIN 16-25-6, CARPENTER 22-b3	OVER 32	.0003"-.0005"	.0003"-.0005"	.0005"-.0015"	.0010"-.0030"	.0020"-.0040"
MONEL						
MONEL-65% NICKEL	-	.0007"-.0015"	.0007"-.0015"	.0010"-.0025"	.0030"-.0050"	.0040"-.0060"
TITANIUM ALLOYS						
COMMERCIALLY PURE, 6Al-4V,	-	.0007"-.0015"	.0007"-.0015"	.0010"-.0025"	.0030"-.0050"	.0040"-.0060"
ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si	-	-	-	-	-	-
STAINLESS STEEL (PRECIPITATION)						
12/8, 15/5, 17/4, AM-350/355	UNDER 32	.0005"-.0010"	.0005"-.0010"	.0008"-.0020"	.0020"-.0040"	.0030"-.0050"
	OVER 32	.0003"-.0005"	.0003"-.0005"	.0005"-.0015"	.0010"-.0030"	.0020"-.0040"
STAINLESS STEEL (AUSTENITIC)						
200 SERIES, 302, 303, 304, 316	UNDER 32	.0005"-.0010"	.0005"-.0010"	.0008"-.0020"	.0020"-.0040"	.0030"-.0050"
	OVER 32	.0003"-.0005"	.0003"-.0005"	.0005"-.0015"	.0010"-.0030"	.0020"-.0040"
STAINLESS STEEL (AUSTENITIC)						
304L, 316L	UNDER 32	.0005"-.0008"	.0005"-.0008"	.0008"-.0015"	.0015"-.0030"	.0020"-.0040"
	OVER 32	.0003"-.0005"	.0003"-.0005"	.0005"-.0010"	.0010"-.0020"	.0015"-.0030"
STAINLESS STEEL (MARTENSITIC)						
403, 410, 416, 440	UNDER 32	.0005"-.0010"	.0005"-.0010"	.0008"-.0020"	.0020"-.0040"	.0030"-.0050"
	OVER 32	.0003"-.0005"	.0003"-.0005"	.0005"-.0015"	.0010"-.0030"	.0020"-.0040"
HIGH STRENGTH TOOL STEELS						
4140, 4340, 6150, 5210, A2,	UNDER 32	.0005"-.0010"	.0005"-.0010"	.0008"-.0020"	.0020"-.0040"	.0030"-.0050"
D2, P20, H11, H13, S2, 01	OVER 32	.0003"-.0005"	.0003"-.0005"	.0005"-.0015"	.0010"-.0030"	.0020"-.0040"
MEDIUM ALLOY STEELS						
200, 250, 300	UNDER 32	.0007"-.0015"	.0007"-.0015"	.0010"-.0025"	.0030"-.0050"	.0040"-.0060"
	OVER 32	.0005"-.0010"	.0005"-.0010"	.0008"-.0020"	.0020"-.0040"	.0030"-.0050"
CARBON STEELS						
1000's, 1100's, 1300's	UNDER 32	.0007"-.0015"	.0007"-.0015"	.0010"-.0025"	.0030"-.0050"	.0040"-.0060"
	OVER 32	.0005"-.0010"	.0005"-.0010"	.0008"-.0020"	.0020"-.0040"	.0030"-.0050"
DUCTILE						
DUCTILE CAST IRONS	-	.0010"-.0020"	.0010"-.0020"	.0015"-.0040"	.0030"-.0100"	.0050"-.0100"
CAST IRONS						
GRAY CAST IRONS	-	.0010"-.0020"	.0010"-.0020"	.0015"-.0040"	.0030"-.0100"	.0050"-.0100"
ALUMINUM						
2014, 2024, 6061-(T1-T6)	-	.0010"-.0020"	.0010"-.0020"	.0015"-.0040"	.0030"-.0150"	.0050"-.0150"
7075, DIE CAST, EXTRUDED	-	-	-	-	-	-
MAGNESIUM						
	-	.0010"-.0020"	.0010"-.0020"	.0015"-.0040"	.0030"-.0100"	.0050"-.0100"
COPPER, COPPER ALLOYS						
	-	.0007"-.0015"	.0007"-.0015"	.0010"-.0025"	.0020"-.0080"	.0040"-.0100"
BRASS BRONZE						
BRASS, ALUM/BRONZE,	-	.0007"-.0015"	.0007"-.0015"	.0010"-.0025"	.0020"-.0080"	.0040"-.0100"
LOW SILICON BRONZE	-	-	-	-	-	-
COMPOSITES						
G-10 FIBERGLASS, GRAPHITE,	-	.0010"-.0020"	.0010"-.0020"	.0015"-.0040"	.0030"-.0100"	.0050"-.0100"
GRAPHITE/EPOXY, PLASTICS	-	-	-	-	-	-

TECHNICAL INFORMATION



Technical Information

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

CHAMFER MILLS - CARBIDE

THESE VALUES ARE A STARTING POINT BASED ON A UNCOATED TOOL.
FOR ALTiN COATED TOOLS INCREASE VALUES BY UP TO +40%

TECHNICAL INFORMATION

SFM & CHIP LOAD

MATERIAL TYPE (<32 HRC)	SFM	SUGGESTED CHIP LOAD PER TOOTH					
		1/8"	3/16"	1/4"	5/16"	3/8"	1/2"
NON FERROUS							
ALUMINUM ALLOYS — 2024-T4/T6, 2014, 6061-T6/T651, 7075-T68	500 - 1000	.001	.002	.002	.002	.003	.004
COPPER — YELLOW BRASS, HIGH LEAD BRASS, RED BRASS	400 - 750	.001	.001	.002	.002	.0025	.003
COPPER ALLOYS — ALUM/BRONZE, LOW SILICON BRONZE	400 - 500	.001	.001	.002	.002	.0025	.003
MAGNESIUM — DE-CAT, EXTRUDED	450 - 650	.001	.002	.002	.002	.003	.004
PLASTICS, ACRYLICS, PHENOLICS — POLYSULFONE	100 - 300	.001	.002	.003	.003	.004	.006
CARBON, GRAPHITES	100 - 200	.040	.040	.060	.060	.080	.10
STAINLESS STEEL							
PRECIPITATION — 13/8, 15/5, AM-350/355	40 - 125	.0005	.0005	.001	.001	.001	.002
AUSTENIC — 200 SERIES, 302, 303, 304L, 316L	50 - 175	.0001	.0002	.0005	.0005	.001	.0015
MARTENSITIC — 403, 410, 416	50 - 125	.0001	.0002	.0005	.0005	.0005	.001
HIGH TEMP ALLOYS							
COBALT BASE — STELLITE, HS-21, HAYNES25/188, X-40, L-605	30 - 50	.0004	.0005	.001	.001	.001	.001
IRON BASE — INCOLY 600-802, MULTIMET N-155, TIMKIN 16-25-6	40 - 65	.0005	.0005	.001	.001	.0015	.002
TITANIUM ALLOYS — 6AL-4V, ASTM 1/2/3, 6 AL-25N-4ZR-2MO-SI	25 - 125	.0005	.0005	.0005	.0005	.001	.001
STEEL							
HIGH STRENGTH STEELS — 4340, 6150, 52100, H-11, H-13	25 - 125	.0005	.0005	.001	.001	.001	.001
HIGH ALLOY STEELS — A-2/6/10, P-3/10, 01, 02, 06	50 - 150	.0005	.0005	.001	.001	.001	.001
MEDIUM ALLOY STEELS — 200, 250, 300	75 - 175	.0005	.0005	.001	.001	.002	.0025
LOW ALLOY STEELS MARAGING — 10XX, 11XX, 13XX	50 - 200	.0005	.001	.0015	.0015	.002	.003
CAST IRON							
DUCTILE IRON — DUCTILE CAST IRON	50 - 200	.0005	.001	.0015	.0015	.002	.002
CAST IRON — GRAY CAST IRON	50 - 200	.0005	.001	.002	.002	.003	.004

FORMULAS

TO CALCULATE	USE THIS FORMULA
RPM	$\frac{\text{SFM} \times 3.82}{(\text{TOOL DIAMETER})}$
IPM	$(\text{CHIP LOAD PER TOOTH}) \times (\text{NUMBER OF FLUTES}) \times \text{RPM}$

Technical Information

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



DRILLS - CARBIDE

THESE VALUES ARE FOR UNCOATED TOOLS. FOR ALTiN COATED TOOLS INCREASE SFM +40%

CARBIDE DRILLING – SFM & CHIP LOAD									
MATERIAL / TYPE	Rc HARDNESS	25° HELIX	15° HELIX STR FLT	SUGGESTED CHIP LOAD PER TOOTH					
				1/16" - 1/8"	1/8" - 1/4"	1/4" - 3/8"	3/8" - 1/2"	1/2" - 5/8"	
COBALT BASE ALLOYS									
STELLITE, HS-21, HAYNES 25/188, X-40, L-605	UNDER 32 OVER 32	100 - 150 80 - 110	100 - 150 80 - 110	.0004"-.0010" .0004"-.0010"	.0008"-.0020" .0005"-.0010"	.0015"-.0025" .0010"-.0015"	.0020"-.0040" .0010"-.0020"	.0025"-.0050" .0015"-.0030"	
NICKEL BASE ALLOYS									
INCONEL-625/718, WASPALLOY, RENE, HASTELLOY	UNDER 32 OVER 32	125 - 150 100 - 125	125 - 175 100 - 125	.0005"-.0015" .0004"-.0010"	.0010"-.0015" .0008"-.0015"	.0015"-.0025" .0010"-.0015"	.0020"-.0040" .0015"-.0030"	.0025"-.0050" .0020"-.0040"	
IRON BASE ALLOYS									
INCOLOY 800-802, MULTIMET N-155, TIMKIN 16-25-6, CARPENTER 22-b3	UNDER 32 OVER 32	150 - 200 150 - 175	175 - 200 150 - 200	.0010"-.0015" .0008"-.0015"	.0010"-.0020" .0010"-.0020"	.0015"-.0035" .0015"-.0025"	.0020"-.0020" .0020"-.0040"	.0030"-.0060" .0025"-.0050"	
MONEL									
MONEL-65% NICKEL	-	100 - 150	100 - 150	.0004"-.0010"	.0008"-.0015"	.0010"-.0015"	.0015"-.0030"	.0020"-.0040"	
TITANIUM ALLOYS									
COMMERCIALLY PURE, 6Al-4V, ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si	- -	150 - 200 -	150 - 200 -	.0008"-.0015" -	.0010"-.0020" -	.0015"-.0030" -	.0020"-.0040" -	.0025"-.0050" -	
STAINLESS STEEL (PRECIPITATION)									
12/8, 15/5, 17/4, AM-350/355	UNDER 32 OVER 32	125 - 175 80 - 125	150 - 200 100 - 150	.0005"-.0015" .0004"-.0010"	.0010"-.0020" .0008"-.0015"	.0015"-.0035" .0010"-.0015"	.0020"-.0040" .0015"-.0030"	.0025"-.0050" .0020"-.0040"	
STAINLESS STEEL (AUSTENITIC)									
200 SERIES, 302, 303, 304, 316	UNDER 32 OVER 32	100 - 175 100 - 125	150 - 200 125 - 150	.0005"-.0015" .0004"-.0010"	.0010"-.0020" .0008"-.0015"	.0015"-.0035" .0010"-.0015"	.0020"-.0040" .0015"-.0030"	.0025"-.0050" .0020"-.0040"	
STAINLESS STEEL (AUSTENITIC)									
304L, 316L	UNDER 32 OVER 32	80 - 100 60 - 90	90 - 125 80 - 100	.0004"-.0010" .0003"-.0008"	.0008"-.0015" .0005"-.0010"	.0010"-.0015" .0010"-.0015"	.0015"-.0030" .0010"-.0020"	.0020"-.0040" .0015"-.0030"	
STAINLESS STEEL (MARTENSITIC)									
403, 410, 416, 440	UNDER 32 OVER 32	100 - 150 80 - 125	125 - 175 100 - 140	.0005"-.0015" .0004"-.0010"	.0010"-.0020" .0008"-.0015"	.0015"-.0035" .0010"-.0015"	.0020"-.0040" .0015"-.0030"	.0025"-.0050" .0020"-.0040"	
HIGH STRENGTH TOOL STEELS									
4140, 4340, 6150, 5210, A2, D2, P20, H11, H13, S2, 01	UNDER 32 OVER 32	100 - 175 80 - 130	125 - 175 80 - 130	.0005"-.0015" .0004"-.0010"	.0010"-.0020" .0010"-.0020"	.0015"-.0025" .0010"-.0020"	.0015"-.0030" .0015"-.0030"	.0020"-.0040" .0020"-.0040"	
MEDIUM ALLOY STEELS									
200, 250, 300	UNDER 32 OVER 32	125 - 175 100 - 150	125 - 175 100 - 150	.0010"-.0015" .0005"-.0010"	.0015"-.0025" .0010"-.0020"	.0020"-.0030" .0010"-.0025"	.0020"-.0040" .0015"-.0030"	.0025"-.0050" .0020"-.0040"	
CARBON STEELS									
1000's, 1100's, 1300's	UNDER 32 OVER 32	125 - 175 100 - 125	150 - 200 100 - 175	.0010"-.0015" .0005"-.0010"	.0015"-.0025" .0010"-.0020"	.0020"-.0030" .0010"-.0025"	.0020"-.0040" .0015"-.0035"	.0025"-.0050" .0020"-.0040"	
DUCTILE									
DUCTILE CAST IRONS	-	125 - 200	150 - 250	.0010"-.0020"	.0010"-.0030"	.0015"-.0035"	.0025"-.0040"	.0030"-.0050"	
CAST IRONS									
GRAY CAST IRONS	-	100 - 200	150 - 250	.0010"-.0020"	.0010"-.0030"	.0015"-.0035"	.0025"-.0040"	.0030"-.0050"	
ALUMINUM									
2014, 2024, 6061-(T1-T6) 7075, DIE CAST, EXTRUDED	- -	150 - 300 -	- -	.0010"-.0020" -	.0015"-.0040" -	.0020"-.0020" -	.0030"-.0060" -	.0035"-.0070" -	
MAGNESIUM									
	-	200 - 500	-	.0010"-.0020"	.0010"-.0030"	.0015"-.0035"	.0025"-.0040"	.0030"-.0050"	
COPPER, COPPER ALLOYS									
	-	150 - 300	-	.0010"-.0020"	.0010"-.0030"	.0015"-.0035"	.0025"-.0040"	.0030"-.0050"	
BRASS BRONZE									
BRASS, ALUM/BRONZE	-	150 - 300	-	.0010"-.0020"	.0010"-.0030"	.0015"-.0035"	.0025"-.0040"	.0030"-.0050"	
BRASS BRONZE									
LOW SILICON BRONZE	-	125 - 200	-	.0008"-.0015"	.0010"-.0020"	.0015"-.0030"	.0020"-.0040"	.0025"-.0050"	
COMPOSITES									
G-10 FIBERGLASS, GRAPHITE, GRAPHITE/EPOXY, PLASTICS	- -	150 - 300 -	150 - 300 -	.0010"-.0020" -	.0010"-.0030" -	.0015"-.0035" -	.0025"-.0040" -	.0030"-.0050" -	

TECHNICAL INFORMATION



Technical Information

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

MICRO END MILLS - CARBIDE

THESE VALUES ARE FOR UNCOATED TOOLS. FOR ALTiN COATED TOOLS INCREASE SFM +40%

TECHNICAL INFORMATION

SFM & CHIP LOAD

MATERIAL / TYPE	CONDITIONS	STARTING SFM	DIAMETER RANGE - SUGGESTED CHIP LOAD PER TOOTH							
			.005-.015	.015-.030	.030-.045	.045-.060	.06-.075	.075-.090	.090-.105	.105-.125
STAINLESS STEELS										
PRECIPITATION 13-8, 15-5, 17-4PH	Slotting @ ≤ 10% of D	90	.0002"	.0002"	.0003"	.0003"	.0004"	.0004"	.0005"	.0005"
	Profiling @ 6% of D Axial ≤ 20% of D Radial	250	.0002"	.0002"	.0003"	.0003"	.0004"	.0004"	.0005"	.0005"
AUSTENITIC 302, 303, 304L, 316L	Slotting @ ≤ 15% of D	100	.0002"	.0002"	.0003"	.0003"	.0004"	.0004"	.0005"	.0005"
	Profiling @ 6% of D Axial ≤ 30% of D Radial	250	.0002"	.0002"	.0003"	.0003"	.0004"	.0004"	.0005"	.0005"
MARTENSITIC 302, 303, 304L, 316L	Slotting @ ≤ 15% of D	100	.0002"	.0002"	.0003"	.0003"	.0004"	.0004"	.0005"	.0005"
	Profiling @ 6% of D Axial ≤ 30% of D Radial	250	.0002"	.0002"	.0003"	.0003"	.0004"	.0004"	.0005"	.0005"
HIGH TEMP ALLOYS										
COBALT BASE Stellite, Haynes 25, 188, X-40, L-605	Slotting @ 7% of D	50	.0001"	.0001"	.0002"	.0002"	.0003"	.0003"	.0004"	.0004"
	Profiling @ 5% of D Axial ≤ 20% of D Radial	80	.0001"	.0001"	.0002"	.0002"	.0003"	.0003"	.0004"	.0004"
NICKEL BASE Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel 400, 405, K-Monel PermaNickel 300, Incoloy 600	Slotting @ 7% of D	40	.0001"	.0001"	.0002"	.0002"	.0003"	.0003"	.0004"	.0004"
	Profiling @ 5% of D Axial ≤ 20% of D Radial	60	.0001"	.0001"	.0002"	.0002"	.0003"	.0003"	.0004"	.0004"
IRON BASE Incoly 800-802, Multimet N-155, Timken 16-26-6	Slotting @ 7% of D	80	.0001"	.0001"	.0002"	.0002"	.0003"	.0003"	.0004"	.0004"
	Profiling @ 5% of D Axial ≤ 20% of D Radial	100	.0001"	.0001"	.0002"	.0002"	.0003"	.0003"	.0004"	.0004"
STEELS										
HIGH STRENGTH STEELS 4140, 4340, 52100	Slotting @ ≤ 15% of D	100	.0002"	.0002"	.0003"	.0003"	.0004"	.0004"	.0005"	.0005"
	Profiling @ 6% of D Axial ≤ 30% of D Radial	180	.0002"	.0002"	.0003"	.0003"	.0004"	.0004"	.0005"	.0005"
HIGH ALLOY STEELS MOLD & DIE A-2, P20, 01, 02, D2, H-13	Slotting @ ≤ 10% of D	125	.0002"	.0002"	.0003"	.0003"	.0004"	.0004"	.0005"	.0005"
	Profiling @ 6% of D Axial ≤ 20% of D Radial	250	.0002"	.0002"	.0003"	.0003"	.0004"	.0004"	.0005"	.0005"
MEDIUM ALLOY STEELS 200, 250, 300	Slotting @ ≤ 15% of D	125	.0003"	.0003"	.0004"	.0004"	.0005"	.0005"	.0006"	.0006"
	Profiling @ 6% of D Axial ≤ 30% of D Radial	250	.0003"	.0003"	.0004"	.0004"	.0005"	.0005"	.0006"	.0006"
LOW ALLOY STEELS MARAGING 10XX, 11XX, 13XX	Slotting @ ≤ 15% of D	150	.0004"	.0004"	.0005"	.0005"	.0006"	.0006"	.0007"	.0007"
	Profiling @ 6% of D Axial ≤ 35% of D Radial	300	.0004"	.0004"	.0005"	.0005"	.0006"	.0006"	.0007"	.0007"
CAST IRONS										
DUCTILE IRON Ductile Cast Iron	Slotting @ ≤ 15% of D	100	.0004"	.0004"	.0005"	.0005"	.0006"	.0006"	.0007"	.0007"
	Profiling @ 10% of D Axial ≤ 25% of D Radial	250	.0004"	.0004"	.0005"	.0005"	.0006"	.0006"	.0007"	.0007"
CAST IRON Gray Cast Iron	Slotting @ ≤ 25% of D	125	.0004"	.0004"	.0005"	.0005"	.0008"	.0008"	.0010"	.0010"
	Profiling @ 10% of D Axial ≤ 35% of D Radial	400	.0004"	.0004"	.0005"	.0005"	.0008"	.0008"	.0010"	.0010"
TITANIUMS										
TITANIUM ALLOYS 6AL-4V, ASTM 1, 2, 3, 6AL-2S For 5553, decrease SFM & IPM 25%	Slotting @ ≤ 15% of D	125	.0002"	.0002"	.0003"	.0003"	.0004"	.0004"	.0005"	.0005"
	Profiling @ 6% of D Axial ≤ 20% of D Radial	250	.0002"	.0002"	.0003"	.0003"	.0004"	.0004"	.0005"	.0005"
ALUMINUM										
ALUMINUM ALLOYS 6061-T6, 7075	Slotting @ ≤ 15% of D	650	.0004"	.0004"	.0005"	.0006"	.0008"	.0008"	.0010"	.0010"
	Profiling @ 10% of D Axial ≤ 35% of D Radial	775	.0004"	.0004"	.0005"	.0006"	.0008"	.0008"	.0010"	.0010"

SPEED & FEED CALCULATION FORMULAS

$$RPM = (3.82 \times SFM) \div Dia.$$

$$IPR = IPM \div RPM$$

$$SFM = (RPM \times Dia.) \div 3.82$$

$$IPM = IPT(\text{chip load}) \times \text{No. of Teeth} \times RPM$$

$$IPT(\text{chip load}) = IPM \div (\text{No. of teeth} \times RPM)$$

Technical Information

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



ROUGHING END MILLS - M42 COBALT

TECHNICAL INFORMATION

SFM & CHIP LOAD									
MATERIAL / TYPE	CONDITIONS	STARTING SFM ALTN	DIAMETER RANGE - SUGGESTED CHIP LOAD PER TOOTH						
			1/4"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"
STAINLESS STEELS									
PRECIPITATION 13-8, 15-5, 17-4PH	Slotting Axial 1 x D	100-150	.0015"	.0020"	.0026"	.0036"	.0046"	.0054"	.0070"
	Heavy Profiling		.0015"	.0020"	.0029"	.0040"	.0050"	.0060"	.0075"
AUSTENITIC 302, 303, 304L, 316L	Slotting 1 x D	100-150	.0015"	.0020"	.0030"	.0045"	.0056"	.0067"	.0090"
	Heavy Profiling		.0019"	.0025"	.0034"	.0049"	.0061"	.0074"	.0098"
MARTENSITIC 403, 410, 416	Slotting Axial 1 x D	100-170	.0015"	.0020"	.0030"	.0045"	.0056"	.0067"	.0090"
	Heavy Profiling		.0019"	.0025"	.0034"	.0049"	.0061"	.0074"	.0098"
HIGH TEMP ALLOYS									
COBALT BASE Stellite, Haynes 25, 188, X-40, L-605	Slotting 1 x D	10-40	.0011"	.0014"	.0018"	.0026"	.0033"	.0040"	.0053"
	Heavy Profiling		.0011"	.0014"	.0020"	.0029"	.0037"	.0045"	.0059"
NICKEL BASE Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel 400, 405, K-Monel PermaNickel 300, Incoly 600	Slotting Axial 1 x D	20-40	.0011"	.0014"	.0018"	.0026"	.0033"	.0040"	.0053"
	Heavy Profiling		.0011"	.0014"	.0020"	.0029"	.0037"	.0045"	.0059"
IRON BASE Incoly 800-802, Multimet N-155, Timken 16-26-6	Slotting 1 x D	30-80	.0011"	.0014"	.0018"	.0026"	.0033"	.0040"	.0053"
	Heavy Profiling		.0011"	.0014"	.0020"	.0029"	.0037"	.0045"	.0059"
STEELS									
HIGH STRENGTH STEELS 4140, 4340, 52100	Slotting Axial 1 x D	100-150	.0015"	.0020"	.0025"	.0035"	.0045"	.0053"	.0071"
	Heavy Profiling		.0015"	.0020"	.0028"	.0039"	.0050"	.0059"	.0079"
HIGH ALLOY STEELS MOLD & DIE A-2, P20, O1, O2, D2, H-13	Slotting 1 x D	80-115	.0015"	.0020"	.0025"	.0035"	.0045"	.0053"	.0071"
	Heavy Profiling		.0015"	.0020"	.0028"	.0039"	.0050"	.0059"	.0079"
MEDIUM ALLOY STEELS 200, 250, 300	Slotting Axial 1 x D	100-180	.0016"	.0023"	.0033"	.0050"	.0032"	.0075"	.0093"
	Heavy Profiling		.0020"	.0027"	.0040"	.0054"	.0070"	.0082"	.0110"
LOW ALLOY STEELS MARAGING 10XX, 11XX, 13XX	Slotting 1 x D	130-200	.0018"	.0025"	.0037"	.0053"	.0068"	.0080"	.0100"
	Heavy Profiling		.0022"	.0029"	.0042"	.0059"	.0074"	.0090"	.0115"
CAST IRONS									
DUCTILE IRON Ductile Cast Iron	Slotting Axial 1 x D	70-130	.0015"	.0019"	.0030"	.0042"	.0056"	.0065"	.0087"
	Heavy Profiling		.0018"	.0024"	.0034"	.0048"	.0061"	.0073"	.0093"
CAST IRON Gray Cast Iron	Slotting 1 x D	120-200	.0014"	.0018"	.0024"	.0034"	.0044"	.0053"	.0070"
	Heavy Profiling		.0014"	.0018"	.0027"	.0038"	.0050"	.0058"	.0078"
TITANIUMS									
TITANIUM ALLOYS 6AL-4V, ASTM 1, 2, 3, 6AL-2S For 5553, decrease SFM & IPM 25%	Slotting Axial 1 x D	75-150	.0015"	.0020"	.0028"	.0040"	.0052"	.0062"	.0080"
	Heavy Profiling		.0017"	.0022"	.0030"	.0045"	.0057"	.0067"	.0090"
ALUMINUM									
ALUMINUM ALLOYS 6061-T6, 7075	Slotting Axial 1 x D	650-950	.0024"	.0058"	.0067"	.0103"	.0112"	.0180"	.0210"
	Heavy Profiling		.0027"	.0058"	.0076"	.0110"	.0120"	.0205"	.0260"

SPEED & FEED CALCULATION FORMULAS

RPM = (3.82 x SFM) ÷ Dia.	IPR = IPM ÷ RPM	SFM = (RPM x Dia.) ÷ 3.82
IPM = IPT(chip load) x No. of Teeth x RPM		IPT(chip load) = IPM ÷ (No. of teeth x RPM)



Technical Information

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

PREDATOR TAPS - HIGH PERFORMANCE

Predator

SPEED CHART

MATERIAL / TYPE	HARDNESS		CUTTING SPEED (fpm)		CUTTING FLUID*
	Bhn	Rc	SPIRAL POINT	SPIRAL FLUTE	
ALUMINUM ALLOYS					
UNALLOYED - 1000 SERIES	-	-	80	60	WS, CO
CAST - 360, A380	-	-	60	45	WS, CO
WROUGHT - 2000-7000 SERIES	-	-	80	60	WS, CO
BRASS					
HIGH-LEADED, FREE CUTTING - C34000, C36000	-	-	60	45	WS
NAVAL, RED - C46400-C46700, C23000	-	-	60	45	WS
CAST IRON					
PEARLITIC, GRAY CAST IRON, FERRITIC - A48 CLASS 20, CLASS 25, CLASS 40	< 253	< 25	20	15	WS
MALLEABLE - ASTM A47 GRADE 32510, SAE J158 GRADE M3210	< 253	< 25	15	12	CO
NICKEL ALLOYS					
NICKEL BASE ALLOY, WROUGHT & CAST - NICKEL 200, MONEL ALLOY 400	< 253	< 25	15	12	CO
HIGH TEMPERATURE ALLOY, WROUGHT & CAST - INCONEL 600, 718, HASTALLOY B & C	253 - 390	25 - 42	10	10	CO
STEEL					
LOW CARBON - 1010, 1018, 1029, 1513, 1522	< 190	< 10	55	40	WS, CO
MEDIUM CARBON - 1030, 1040, 1045, 1050	< 208	< 15	35	25	WS, CO
HIGH CARBON - 1050, 1070, 1080, 1090, 1561, 1572	< 253	< 25	15	12	CO
HIGH STRENGTH STEEL - 4140, 4340	327 - 390	35 - 42	10	10	CO
STAINLESS STEEL					
AUSTENITIC - SAE (300 SERIES)	< 253	< 25	20	15	CO
MARTENSITIC & FERRITIC - 400 SERIES, 416, 420F, 446	253 - 301	25 - 32	15	12	CO
HARDENED - 15-5PH, 17-4PH, A286	< 327 - 390	< 35 - 42	10	10	CO
TITANIUM ALLOYS					
ALPHA & ALPHA-BETA ALLOYS ANNEALED - Ti-6Al-4V	253 - 301	25 - 32	10	10	CO
ALPHA & ALPHA-BETA ALLOYS SOLUTION TREATED & AGED - Ti-6Al-6V	327 - 390	35 - 42	8	8	CO
TOOL STEEL					
HOT WORK, COLD WORK & MOLD - A2, D2, H10, H14, P2, P13	190 - 253	10 - 25	20	15	CO
HOT WORK, COLD WORK & MOLD - A2, D2, H10, H14, P2, P13	327 - 390	35 - 42	15	12	CO

Your individual manufacturing conditions will greatly influence speeds.

* WS - Water Soluble
CO - Cutting Oil

In most instances cutting fluid manufacturers recommend specific fluid for different materials.



THREAD FORMING TAPS

SPEED CHART FOR THREAD FORMING TAPS			
MATERIAL / TYPE	HARDNESS		FORMING SPEED (fpm)
	Bhn	Rc	
ALUMINUM ALLOYS			
UNALLOYED - 1000 SERIES	-	-	80
CAST - 360, A380	-	-	60
WROUGHT - 2000-7000 SERIES	-	-	80
BRASS			
HIGH-LEADED, FREE CUTTING - C34000, C36000	-	-	60
NAVAL, RED - C46400-C46700, C23000	-	-	60
NICKEL ALLOYS			
NICKEL BASE ALLOY, WROUGHT & CAST - NICKEL 200, MONEL ALLOY 400	< 253	< 25	15
STEEL			
LOW CARBON - 1010, 1018, 1029, 1513, 1522	< 190	< 10	55
MEDIUM CARBON - 1030, 1040, 1045, 1050	< 208	< 15	35
HIGH CARBON - 1050, 1070, 1080, 1090, 1561, 1572	< 253	< 25	15
STAINLESS STEEL			
AUSTENITIC - SAE (300 SERIES)	< 253	< 25	20
MARTENSITIC & FERRITIC - 400 SERIES, 416, 420F, 446	253 - 301	25 - 32	15
TITANIUM ALLOYS			
ALPHA & ALPHA-BETA ALLOYS ANNEALED - Ti-6Al-4V	253 - 301	25 - 32	10
TOOL STEEL			
HOT WORK, COLD WORK & MOLD - A2, D2, H10, H14, P2, P13	190 - 253	10 - 25	20

CALCULATING TAP DRILL SIZES - THREAD FORMING TAPS

$$\text{DRILL SIZE} = \text{MAJOR DIAMETER} - [(0.0068 \times \text{desired \% of thread}) \div \text{Threads Per Inch}]$$

$$\text{DRILL SIZE (mm)} = \text{MAJOR DIAMETER} - [(0.0068 \times \text{desired \% of thread} \times \text{Pitch (mm)})]$$

GUIDELINES FOR USING THREAD FORMING TAPS

PRE-TAP HOLE SIZE - Thread Forming taps require a larger pre-tap hole size than a cutting tap. Tapping with too small of a pre-tap hole size results in excessive tap wear, torque and possible tap breakage.

LUBRICATION - Forming Taps require good lubrication. Cutting oils are generally preferred because of their lubricity compared to water soluble coolants.



Technical Information

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

TECHNICAL INFORMATION

THREAD FORMING TAPS

PRE TAP HOLE SIZE				
TAP SIZE	TPI	75% THREAD	65% THREAD	NEAREST DRILL SIZE
0	80	0.054	0.055	#54 or 1.4 mm
1	64	0.066	0.067	#51 or 1.7 mm
1	72	0.067	0.068	#51 or 1.75 mm
2	56	0.078	0.079	#47 or 2.0 mm
2	64	0.079	0.080	2.0 mm
3	48	0.090	0.091	2.3 mm
3	56	0.091	0.092	2.3 mm
4	40	0.100	0.101	#39
4	48	0.103	0.104	#37
5	40	0.113	0.114	#33 or 2.9 mm
5	44	0.114	0.115	#33 or 2.9 mm
6	32	0.124	0.125	3.1 mm
6	40	0.126	0.127	1/8" or 3.2 mm
8	32	0.149	0.150	#25 or 3.8 mm
8	36	0.151	0.152	#24
10	24	0.170	0.172	11/64"
10	32	0.175	0.176	#16 or .176"
12	24	0.196	0.198	#9 or 5.0 mm
12	28	0.199	0.201	#7 or 5.1 mm
1/4	20	0.225	0.227	5.75 mm
1/4	28	0.233	0.235	"A"
5/16	18	0.285	0.287	7.25 mm
5/16	24	0.292	0.294	.293"
3/8	16	0.344	0.347	"S" or 11/32"
3/8	24	0.355	0.357	9.0 mm
7/16	14	0.402	0.405	"Y"
7/16	20	0.414	0.416	"Z" or 10.5 mm
1/2	13	0.462	0.466	.463"

PRE TAP HOLE SIZE - METRIC				
TAP SIZE	PITCH	75% THREAD	65% THREAD	NEAREST DRILL SIZE
M1.6	0.35	0.057	0.058	1.45 mm
M1.7	0.35	0.061	0.062	1.55 mm
M2	0.4	0.072	0.073	1.85 mm
M2.5	0.45	0.091	0.092	2.30 mm
M3	0.5	0.110	0.111	#35
M3.5	0.6	0.128	0.129	#30
M4	0.7	0.145	0.146	3.70 mm
M5	0.8	0.183	0.184	#14
M6	1	0.218	0.220	5.50 mm
M8	1.25	0.291	0.294	7.40 mm
M10	1.5	0.365	0.368	9.30 mm
M12	1.75	0.439	0.442	7/16"

WHERE TO USE THREAD FORMING TAPS

Materials particularly well suited for thread forming include aluminum, brass, copper, lead, stainless steel, carbon steel, cast steel, leaded steel and zinc. In general, any material which produces a stringy chip is a good candidate for cold forming threads. If the chips are powdery, the material may be too brittle. Forming taps generate threads without producing chips. The threads produced are much stronger than those created by cut taps because of the displacements of the grain of the metal in the workpiece. Cutting taps produce chips which may interfere with the tapping process.

MAJOR ADVANTAGES TO THREAD FORMING

- Chipless Tapping – no chip removal problems in blind holes.
- Stronger Threads – the grain flow of formed threads follows the contour of the thread in steel and stainless steel, resulting in greater thread strength.
- Better Thread Gaging – forming taps create their own lead therefore the possibility of producing oversized threads is greatly reduced.
- Stronger Taps – the absence for the need for flutes results in a stronger more solid tap.
- Longer Tap Life – forming taps last 3 to 20 times longer because they have no cutting edge to dull.
- More Efficient Production – longer tap life, less tap breakage and faster tapping speeds (up to 2X faster than cutting taps).
- Ideal for Non-Lead Screw Tappers – the ability to form their own lead makes forming taps well suited for NC machines or other machines without lead screws.

Technical Information

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



GENERAL PURPOSE TAPS

MACHINE SCREW TAPS (NC & NF)

SIZE	OVERALL LENGTH	THREAD LENGTH	SQUARE LENGTH	SHANK DIAMETER	SQUARE
#0 (.060)	1-5/8	5/16	3/16	.141	.110
#1 (.073)	1-11/16	3/8	3/16	.141	.110
#2 (.066)	1-3/4	7/16	3/16	.141	.110
#3 (.099)	1-13/16	1/2	3/16	.141	.110
#4 (.112)	1-7/8	9/16	3/16	.141	.110
#5 (.125)	1-15/16	5/8	3/16	.141	.110
#6 (.138)	2	11/16	3/16	.141	.110
#8 (.164)	2-1/8	3/4	1/4	.168	.131
#10 (.190)	2-3/8	7/8	1/4	.194	.152
#12 (.216)	2-3/8	15/16	9/32	.220	.165

FRACTIONAL SIZE TAPS (NC & NF)

SIZE	OVERALL LENGTH	THREAD LENGTH	SQUARE LENGTH	SHANK DIAMETER	SQUARE
1/4	2-1/2	1	5/16	.255	.191
5/16	2-23/32	1-1/8	3/8	.318	.238
3/8	2-15/16	1-1/4	7/16	.381	.286
7/16	3-5/32	1-7/16	13/32	.323	.242
1/2	3-3/8	1-21/32	7/16	.367	.275
9/16	3-19/32	1-21/32	1/2	.429	.322
5/8	3-13/16	1-13/16	9/16	.480	.360
11/16	4-1/32	1-13/16	5/8	.542	.406
3/4	4-1/4	2	11/16	.590	.442
7/8	4-11/16	2-7/32	3/4	.697	.523
1	5-1/8	2-1/2	13/16	.800	.600
1-1/8	5-7/16	2-9/16	7/8	.896	.672
1-1/4	5-3/4	2-9/16	1	1.021	.766
1-3/8	6-1/16	3	1-1/16	1.108	.831
1-1/2	6-3/8	3	1-1/8	1.233	.925

PIPE TAPS - STRAIGHT & TAPER

SIZE	OVERALL LENGTH	THREAD LENGTH	SQUARE LENGTH	SHANK DIAMETER	SQUARE
1/16 - 27	2-1/8	11/16	3/8	.3125	.234
1/8 - 27	2-1/8	3/4	3/8	.3125(SS)	.234
1/8 - 27	2-1/8	3/4	3/8	.4375(LS)	.328
1/4 - 18	2-7/16	1-1/16	7/16	.5625	.421
3/8 - 18	2-9/16	1-1/16	1/2	.7000	.531
1/2 - 14	3-1/8	1-3/8	5/8	.6875	.515
3/4 - 14	3-1/4	1-3/8	11/16	.9063	.679
1 - 11-1/2	3-3/4	1-3/4	13/16	1.1250	.843
1-1/4 - 11-1/2	4	1-3/4	15/16	1.3125	.984
1-1/2 - 11-1/2	4-1/4	1-3/4	1	1.5000	1.125
2 - 11-1/2	4-1/2	1-3/4	1-1/8	1.8750	1.406

(SS) = SMALL SHANK (LS) = LARGE SHANK

PULLEY TAPS

SIZE	THREAD LENGTH	SQUARE LENGTH	SHANK DIAMETER	SQUARE	NECK LENGTH	GROUND LENGTH
1/4	1	5/16	.255	.191	3/8	1-1/2
5/16	1-1/8	3/8	.318	.238	3/8	1-9/16
3/8	1-1/4	7/16	.381	.286	3/8	1-5/8
7/16	1-7/16	1/2	.444	.333	7/16	1-11/16
1/2	1-21/32	9/16	.507	.380	1/2	1-11/16
5/8	1-13/16	11/16	.633	.475	5/8	2
3/4	2	3/4	.759	.569	3/4	2-1/4

SEE PAGE 167 FOR OVERALL LENGTHS AVAILABLE.

SMALL SHANK EXTENSION TAPS

SIZE	NC/NF	THREAD LENGTH	SQUARE LENGTH	SHANK DIAMETER	SQUARE
6 - 32	NC	11/16	3/16	0.097	0.073
8 - 32	NC	3/4	1/4	0.123	0.092
10 - 24	NC	7/8	1/4	0.136	0.102
10 - 32	NF	7/8	1/4	0.136	0.102
1/4 - 20	NC	1	5/16	0.185	0.139
1/4 - 28	NF	1	5/16	0.185	0.139
5/16 - 18	NC	1-1/8	3/8	0.240	0.180
5/16 - 24	NF	1-1/8	3/8	0.240	0.180
3/8 - 16	NC	1-1/4	7/16	0.275	0.206
3/8 - 24	NF	1-1/4	7/16	0.275	0.206
7/16 - 14	NC	1-7/16	13/32	0.323	0.242
7/16 - 20	NF	1-7/16	13/32	0.323	0.242
1/2 - 13	NC	1-21/32	7/16	0.367	0.275
1/2 - 20	NF	1-21/32	7/16	0.367	0.275
5/8 - 11	NC	1-13/16	9/16	0.480	0.360
5/8 - 18	NF	1-13/16	9/16	0.480	0.360
3/4 - 10	NC	2	11/16	0.590	0.442
3/4 - 16	NF	2	11/16	0.590	0.442

METRIC TAPS

SIZE	OVERALL LENGTH	THREAD LENGTH	SQUARE LENGTH	SHANK DIAMETER	SQUARE	INCH BLANK
M1.6 x 0.35	1-5/8	5/16	3/16	.141	.110	#0
M2 x 0.40	1-3/4	7/16	3/16	.141	.110	#2
M2.5 x 0.45	1-13/16	1/2	3/16	.141	.110	#3
M3 x 0.50	1-15/16	5/8	3/16	.141	.110	#5
M3.5 x 0.60	2	11/16	3/16	.141	.110	#6
M4 x 0.70	2-1/8	3/4	1/4	.168	.131	#8
M4.5 x 0.75	2-3/8	7/8	1/4	.194	.152	#10
M5 x 0.80	2-3/8	7/8	1/4	.194	.152	#10
M6 x 1	2-1/2	1	5/16	.255	.191	1/4
M6.3 x 1	2-1/2	1	5/16	.255	.191	1/4
M7 x 1	2-23/32	1-1/8	3/8	.318	.238	5/16
M8 x 1.25	2-23/32	1-1/8	3/8	.318	.238	5/16
M10 x 1.50	2-15/16	1-1/4	7/16	.381	.286	3/8
M12 x 1.75	3-3/8	1-21/32	7/16	.367	.275	1/2
M14 x 2	3-19/32	1-21/32	1/2	.429	.322	9/16
M16 x 2	3-13/16	1-13/16	9/16	.480	.360	5/8
M18 x 2.50	4-1/32	1-13/16	5/8	.542	.406	11/16
M20 x 2.50	4-15/32	2	11/16	.652	.489	13/16
M24 x 3	4-29/32	2-7/32	3/4	.760	.570	15/16
M30 x 3.50	5-7/16	2-9/16	1	1.021	.766	1-3/16
M36 x 4	6-1/16	3	1-1/8	1.233	.925	1-7/16

TECHNICAL INFORMATION



Technical Information

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

TECHNICAL INFORMATION

DRILLS - HIGH SPEED STEEL

ELEMENT & DIMENSIONAL TOLERANCES FOR 2, 3 & 4 FLUTE DRILLS

DIAMETER AT POINT

SIZE (INCLUSIVE)	TOLERANCE
OVER #81 TO 1/8	+0.000 TO -0.005
OVER 1/8 TO 1/4	+0.000 TO -0.007
OVER 1/4 TO 1/2	+0.000 TO -0.010
OVER 1/2 TO 1	+0.000 TO -0.012
OVER 1 TO 2	+0.000 TO -0.015
OVER 2 TO 3-1/2	+0.000 TO -0.020

SHANK DIAMETER

SIZE (INCLUSIVE)	TOLERANCE
OVER #81 TO 1/8	-0.000 TO -0.025
OVER 1/8 TO 1/4	-0.005 TO -0.030
OVER 1/4 TO 1/2	-0.005 TO -0.045
OVER 1/2 TO 2	-0.005 TO -0.030

BACK TAPER

SIZE (INCLUSIVE)	TOLERANCE PER INCH
OVER #81 TO 1/8	.0000 TO .0008
OVER 1/8 TO 1/4	.0002 TO .0008
OVER 1/4 TO 1/2	.0002 TO .0009
OVER 1/2 TO 1	.0003 TO .0011
OVER 1 TO 3-1/2	.0004 TO .0015

FLUTE LENGTH

SIZE (INCLUSIVE)	TOLERANCE
OVER #81 TO 1/8	+1/8 TO -1/16
OVER 1/8 TO 1/2	+1/8 TO -1/8
OVER 1/2 TO 1	+1/4 TO -1/8
OVER 1 TO 2	+1/4 TO -1/4
OVER 2 TO 3-1/2	+3/8 TO -3/8

OVERALL LENGTH

SIZE (INCLUSIVE)	TOLERANCE
OVER #81 TO 1/8	+1/8 TO -1/16
OVER 1/8 TO 1/2	+1/8 TO -1/8
OVER 1/2 TO 1	+1/4 TO -1/8
OVER 1 TO 2	+1/4 TO -1/4
OVER 2 TO 3-1/2	+3/8 TO -3/8

INCLUDED POINT ANGLE

SIZE (INCLUSIVE)	INCLUDED ANGLE	TOLERANCE
1/16 TO 1/2	118°	±5°
OVER 1/2 TO 1-1/2	118°	±3°
OVER 1-1/2 TO 3-1/2	118°	±2°

LIP HEIGHT

SIZE (INCLUSIVE)	TIV (TOTAL INDICATOR VARIATION)
1/16 TO 1/8	.0020
OVER 1/8 TO 1/4	.0030
OVER 1/4 TO 1/2	.0040
OVER 1/2 TO 1	.0050
OVER 1 TO 3-1/2	.0060

NOTE: 95% of drills in any one lot to fall within tolerances above.

SUGGESTED METHOD OF MEASUREMENT:

1. Rotate the drill in a vee block against a back end stop.
2. Measure the cutting lip height variation on a comparator, or with an indicator set at allocation approximately 75% of the distance from the center to the periphery of the drill.

CENTRALITY OF WEB

SIZE (INCLUSIVE)	TIV (TOTAL INDICATOR VARIATION)
1/16 TO 1/8	.0030
OVER 1/8 TO 1/4	.0040
OVER 1/4 TO 1/2	.0050
OVER 1/2 TO 1	.0070
OVER 1 TO 3-1/2	.0100

NOTE: 95% of drills in any one lot to fall within tolerances above.

SUGGESTED METHOD OF MEASUREMENT:

1. Rotate the drill in a close fitting bushing.
2. Record the difference in indicator readings of the web at the point as the drill is indexed 180°.

FLUTE SPACING

SIZE (INCLUSIVE)	TOLERANCE (TIV)	ACTUAL DEVIATION
1/16 TO 1/8	.0030	.0015
OVER 1/8 TO 1/4	.0060	.0030
OVER 1/4 TO 1/2	.0100	.0050
OVER 1/2 TO 1	.0140	.0070
OVER 1 TO 3-1/2	.0260	.0130

NOTE: 95% of drills in any one lot to fall within tolerances above.

SUGGESTED METHOD OF MEASUREMENT:

1. Place the drill in a vee block against a back end stop, and rotate it against a radial finger stop.
2. Take an indicator reading at the leading edge of the margin on the opposite flute.
3. Repeat for the other flute and note the difference between the two readings.
4. The deviation in flute spacing is equal to one-half the difference between the two readings.

Technical Information

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS



DRILLS - HIGH SPEED STEEL & M42 COBALT

ALTiN COATED INCREASE SFM BY 40%

SFM & CHIP LOAD

MATERIAL / TYPE	SFM			FEED in INCHES PER REVOLUTION (IPR) +/-25%									
	GENERAL PURPOSE	HSS HEAVY DUTY	COBALT	1/32"	3/32"	1/8"	5/32"	3/16"	1/4"	5/16"	3/8"	1/2"	9/16"
STEEL													
12L14, 12L15	115	115	115	.0008-.0009	.0026-.0033	.0040-.0053	.0046-.0060	.0051-.0067	.0059-.0078	.0075-.0098	.009-.0117	.0096-.0124	.0107-.0137
1005-1025, 1214, 1215, A36	98	98	98	0.0008	0.0026	0.004	0.0046	0.0051	0.0059	0.0075	0.009	0.0096	0.0107
1000'S, 1100'S	82	89	89	0.0007	.0020-.0022	.0029-.0033	.0033-.0038	.0037-.0043	.0043-.0050	.0054-.0063	.0065-.0075	.0070-.0081	.0080-.0091
4140, 4340, 52100, 8620, H11-H41, A2, D2, 01, P20, 420	30-66	33-79	33-79	.0006-.0007	.0015-.0020	.0021-.0029	.0024-.0033	.0027-.0037	.0031-.0043	.0039-.0054	.0047-.0065	.0051-.0070	.0059-.0080
STAINLESS STEEL													
200, 303, 416, 440	49	72	72	0.0007	0.0017	0.0024	0.0028	0.0031	0.0037	0.0045	0.0055	0.0059	0.0068
300 SERIES	26	36	36	0.0007	0.0022	0.0033	0.0038	0.0043	0.005	0.0063	0.0075	0.0081	0.0091
318-329, 400-446, DUPLEX	30	49	49	0.0006	0.0013	0.0017	0.002	0.0022	0.0025	0.0031	0.0039	0.0043	0.0049
CAST IRON													
GREY, G10, Gg40, J431C, A48 CLASS 20	79-98	92-115	92-115	.0006-.0008	.0013-.0026	.0021-.0040	.0024-.0046	.0027-.0051	.0031-.0059	.0039-.0075	.0047-.009	.0051-.0096	.0059-.0107
A220, A436, A439, A602, BLACK	66	72	72	0.0007	0.0017	0.0024	0.0028	0.0031	0.0037	0.0045	0.0055	0.0059	0.0068
BLACK Gts/Gtw, J434C	46	56	56	0.0007	0.0017	0.0024	0.0028	0.0031	0.0037	0.0045	0.0055	0.0059	0.0068
TITANIUM													
COMMERCIALLY PURE	75	92	92	0.0007	.0017-.0020	.0024-.0029	.0028-.0033	.0031-.0037	.0037-.0043	.0045-.0054	.0055-.0065	.0059-.0070	.0068-.0080
6Al4V, 6A14V-2SnMonel, Monel K	20-39	36-66	36-66	0.0006	.0011-.0015	.0015-.0021	.0016-.0024	.0018-.0027	.0021-.0031	.0026-.0039	.0031-.0047	.0035-.0051	.0041-.0059
NICKEL													
COMMERCIALLY PURE, 17644, 200, 5553	33	49	49	0.0007	0.0022	0.0033	0.0038	0.0043	0.005	0.0063	0.0075	0.0081	0.0091
Monel 400, Hastelloy C, Inconel 625, Waspalloy	20	23	23	0.0007	0.0017	0.0024	0.0028	0.0031	0.0037	0.0045	0.0055	0.0059	0.0068
Inconel 718, Nimonic 75-95, Rene 41, Inconel 825, A286	10	20	20	.0004-.0006	.0009-.0011	.0011-.0015	.0013-.0016	.0014-.0018	.0017-.0021	.0021-.0026	.0024-.0031	.0027-.0035	.0032-.0041
COPPER													
COMMERCIALLY PURE	108	125	125	.0007-.0008	.0022-.0026	.0033-.0040	.0038-.0046	.0043-.0051	.0050-.0059	.0063-.0075	.0075-.0090	.0081-.0096	.0091-.0107
BRASS, BRONZE 314-340, 350-370	115	131	131	.0007-.0008	.0020-.0030	.0029-.0047	.0033-.0053	.0037-.0059	.0043-.0068	.0054-.0087	.0065-.0104	.0070-.0110	.008-.0122
BRASS ALLOYED Cu+Al+Fe, LONG CHIPPING	89	89	89	0.0008	0.0026	0.004	0.0046	0.0051	0.0059	0.0075	0.009	0.0096	0.0107
High Strength Bronze	52	69	69	0.0007	.0020-.0022	.0029-.0033	.0033-.0038	.0037-.0043	.0043-.0050	.0054-.0063	.0065-.0075	.0070-.0081	.0080-.0091
ALUMINUM, MAGNESIUM													
Commercially Pure	108	108	108	0.0009	0.0033	0.0053	0.006	0.0067	0.0078	0.0098	0.0117	0.0124	0.0137
6061, T6	89-98	98	98	.0007-.0009	.0022-.0033	.0033-.0053	.0038-.0060	.0043-.0067	.0050-.0078	.0063-.0098	.0075-.0117	.0081-.0124	.0091-.0137
SYNTHETIC MATERIALS													
Thermoplastics	98	-	-	0.0009	0.0033	0.0053	0.006	0.0067	0.0078	0.0098	0.0117	0.0124	0.0137
Thermosetting Plastics	92	-	-	0.0008	0.0026	0.004	0.0046	0.0051	0.0059	0.0075	0.009	0.0096	0.0107
Reinforced Plastic Material	46	-	-	0.0007	0.002	0.0029	0.0033	0.0037	0.0043	0.0054	0.0065	0.007	0.008

TECHNICAL INFORMATION



Technical Information

PREMIUM QUALITY AMERICAN-MADE CUTTING TOOLS

TECHNICAL INFORMATION

REAMERS - CARBIDE

CARBIDE REAMERS - SFM & CHIP LOAD

MATERIAL	SFM	FEED (IPR)
ALUMINUM / ALUMINUM ALLOYS	100 - 250	.005 - .015
ALUMINUM - HIGH SILICON	80 - 200	.003 - .012
BRASS	100 - 250	.005 - .015
BRONZE	90 - 175	.003 - .012
COPPER / COPPER ALLOYS	90 - 220	.005 - .015
CAST IRON - SOFT	80 - 200	.006 - .015
CAST IRON - MEDIUM	60 - 150	.006 - .012
CAST IRON - HARD	40 - 90	.004 - .010
MAGNESIUM	100 - 250	.005 - .015
MONEL	40 - 120	.004 - .012
STEEL - CAST & FORGED	40 - 100	.003 - .010
STEEL - HEAT TREATED (35-40 Rc)	40 - 70	.004 - .008
STEEL - HEAT TREATED (40-45 Rc)	30 - 50	.002 - .006
STEEL - HEAT TREATED (45+ Rc)	15 - 40	.001 - .004

MATERIAL	SFM	FEED (IPR)
STEEL - MEDIUM CARBON	50 - 100	.005 - .010
MOLD STEEL	40 - 120	.004 - .006
TOOL STEEL	30 - 90	.004 - .006
STAINLESS STEEL - 300 SERIES	20 - 80	.004 - .008
STAINLESS STEEL - 400 SERIES	30 - 120	.005 - .010
INCONEL	20 - 60	.001 - .005
RENE	20 - 60	.002 - .006
TITANIUM	30 - 90	.002 - .008
WASPOLOY	20 - 60	.002 - .006
EPOXY FIBER	100 - 250	.005 - .015
PLASTIC	100 - 300	.005 - .015
RESIN - FIBER GLASS	100 - 300	.005 - .015
MASONITE	60 - 150	.005 - .015
PHENOLIC	60 - 100	.005 - .015

REAMERS - HIGH SPEED STEEL

RECOMMENDED SPEEDS

MATERIAL	SFM
STEEL - ALL TYPES	
60+ Rc	8 - 12
50 - 60 Rc	15 - 30
40 - 50 Rc	20 - 40
30 - 40 Rc	35 - 65
Less than 30 Rc	60 - 90
CAST IRON & MALLEABLE IRON	50 - 85
NON-FERROUS	
ALUMINUM, BRASS, BRONZE, COPPER	90 - 175
FIBER, PLASTIC, HARD RUBBER, etc.	90 - 175

Work piece hardness and machinability must be considered when setting machine speed. The feed rate plays an important part in the life expectancy of a tool and the hole finish which one is looking to attain. Improper feed rate can cause excessive tool wear as well as an inadequate hole finish.

To eliminate chatter, slow cutting speed and increase feed appropriately. Stock removal on roughing operations should not exceed 2 to 4 percent of tool diameter in most cases. Stock removal recommendations on finishing operations are .002 to .004.

For best results with brass, cast iron and some plastics, use a Left-Hand Spiral-Fluted reamer with negative shear action. This type of reamer helps prevent chips from working back into the flutes and scoring the hole. In all reaming operations, use constant-flow coolants. Soluble oil is effective for most metals; however, sulphur-based oils are recommended for stainless and certain alloy steels. Lard oil and kerosene improve the finish on aluminum.

RECOMMENDED FEEDS

MATERIAL	FEED (IPR)
STEEL - ALL TYPES	
50+ Rc	.002 - .004
30 - 50 Rc	.004 - .008
CAST IRON & MALLEABLE IRON	.005 - .012
NON-FERROUS	
ALUMINUM, BRASS, BRONZE, COPPER	.005 - .012
FIBER, PLASTIC, HARD RUBBER, etc.	.005 - .012

RECOMMENDED STOCK REMOVAL

REAMER DIAMETER	REMOVAL (Inches)
Up to 1/16" incl.	.003 - .005
Over 1/16" to 1/8" incl.	.004 - .008
Over 1/8" to 1/4" incl.	.006 - .012
Over 1/4" to 3/8" incl.	.008 - .014
Over 3/8" to 1/2" incl.	.010 - .015
Over 1/2" to 3/4" incl.	.012 - .018

RECOMMENDED LUBRICANTS

MATERIAL	LUBRICANT
Steel harder than 50 Rc	Light Oil
Steel softer than 50 Rc	Light Oil for good finishes or Soluable Oil and Water
Cast Iron & Malleable Iron	Soluable Oil and Water
Non-Ferrous Materials	Soluable Oil and Water

Decimal Equivalent Chart

YOUR #1 SOURCE FOR AMERICAN-MADE PREMIUM CUTTING TOOLS



DECIMAL EQUIVALENTS AND TAP SIZES OF FRACTION, WIRE, LETTER AND METRIC SIZES

DRILL SIZE	DECIMAL INCHES	DRILL SIZE	DECIMAL INCHES	TAP SIZE	DRILL SIZE	DECIMAL INCHES	TAP SIZE	DRILL SIZE	DECIMAL INCHES	TAP SIZE	DRILL SIZE	DECIMAL INCHES	TAP SIZE
97	.0059	58	.0420		27	.1440		H	.2660		17/32	.5312	5/8-11
.15mm	.0059	57	.0430		3.7mm	.1457		6.8mm	.2677		13.5mm	.5315	
96	.0063	1.1mm	.0433		26	.1470	3/16-24NS	6.9mm	.2717		35/64	.5469	
.16mm	.0063	1.15mm	.0453		3.75mm	.1476	m4.5x0.75	I	.2720	5/16-24NF	14mm	.5512	m16x2
95	.0067	56	.0465		25	.1495	#10-24	7mm	.2756	m8x1	9/16	.5625	3/8-18NPT
.17mm	.0067	3/64	.0469	#0-80	3.8mm	.1496		J	.2770		14.5mm	.5709	m16x1.5
94	.0071	1.2mm	.0472		24	.1520		7.1mm	.2795		37/64	.5781	5/8-18NF
.18mm	.0071	1.25mm	.0492	m1.6x0.35	3.9mm	.1535		K	.2810		15mm	.5906	
93	.0075	1.3mm	.0512		23	.1540		9/32	.2812	5/16-32NS	19/32	.5938	3/8-18 NPS PIPE
.19mm	.0075	55	.0520		5/32	.1562		7.2mm	.2835		39/64	.6094	
92	.0079	1.35mm	.0531		22	.1570	3/16-32NS	7.25mm	.2854		15.5mm	.6102	m18x2.5
.2mm	.0079	54	.0550		4mm	.1575		7.3mm	.2874		5/8	.6250	11/16-16NS
91	.0083	1.4mm	.0551		21	.1590	#10-32	L	.2900		16mm	.6299	m18x2.0
.21mm	.0083	1.45mm	.0571	m1.8x0.35	20	.1610		7.4mm	.2913		41/64	.6406	
90	.0087	1.5mm	.0591		4.1mm	.1614		M	.2950		16.5mm	.6496	
.22mm	.0087	53	.0595	#1-64,72	4.2mm	.1654	m5x0.8	7.5mm	.2953		21/32	.6562	3/4-10NC
89	.0091	1.55mm	.0610		19	.1660		19/64	.2969		17mm	.6693	
.23mm	.0091	1/16	.0625		4.25mm	.1673		7.6mm	.2992		43/64	.6719	
.24mm	.0094	1.6mm	.0630	m2x0.4	4.3mm	.1693		N	.3020		11/16	.6875	3/4-16NF
88	.0095	52	.0635		18	.1695		7.7mm	.3031		17.5mm	.6890	m20x2.5
.25mm	.0098	1.65mm	.0650		11/64	.1719		7.75mm	.3051	m9x1.25	45/64	.7031	1/2-14NPT PIPE
87	.0100	1.7mm	.0669		17	.1730		7.8mm	.3071		18mm	.7087	m20x2.0
.26mm	.0102	51	.0670	#2-56	4.4mm	.1732		7.9mm	.3110		23/32	.7188	
86	.0105	1.75mm	.0689	m2.2x0.45	16	.1770	#12-24	5/16	.3125	3/8-16NC	18.5mm	.7283	m20x1.5
.27mm	.0106	50	.0700	#2-64	4.5mm	.1772		8mm	.3150		47/64	.7344	1/2-14NPS PIPE
85	.0110	1.8mm	.0709		15	.1800		O	.3160		19mm	.7480	
.28mm	.0110	1.85mm	.0728		4.6mm	.1811		8.1mm	.3189		3/4	.7500	
.29mm	.0114	49	.0730		14	.1820	#12-28	8.2mm	.3228		49/64	.7656	7/8-9NC
84	.0115	1.9mm	.0748	m2.3x.04	13	.1850		P	.3230		19.5mm	.7677	m22x2.5
.3mm	.0118	48	.0760		4.7mm	.1850		8.25mm	.3248		25/32	.7812	
83	.0120	1.95mm	.0768		4.75mm	.1870		8.3mm	.3268		20mm	.7874	m22x2.0
82	.0125	5/64	.0781		3/16	.1875		21/64	.3281		51/64	.7969	
.32mm	.0126	47	.0785	#3-48	4.8mm	.1890		8.4mm	.3307		20.5mm	.8071	m22x1.5
81	.0130	2mm	.0787		12	.1890	7/32-32NS	Q	.3320	1/8-27NPT PIPE 3/8-24NF	13/16	.8125	7/8-14NF
.34mm	.0134	2.05mm	.0807	m2.5x0.45	11	.1910		8.5mm	.3346	m10x1.5	21mm	.8268	m24x3
80	.0135	46	.0810		4.9mm	.1929		8.6mm	.3386		53/64	.8281	
.35mm	.0138	45	.0820	#3-56	10	.1935		R	.3390		27/32	.8438	
.36mm	.0142	2.1mm	.0827		9	.1960		8.7mm	.3425		21.5mm	.8465	
79	.0145	2.15mm	.0846	m2.6x0.45	5mm	.1969	m6x1	11/32	.3438		55/64	.8594	
.38mm	.0150	44	.0860	#4-36	8	.1990		8.75mm	.3445	m10x1.25	22mm	.8661	m24x2
1/64	.0156	2.2mm	.0866		5.1mm	.2008		8.8mm	.3465		7/8	.8750	1-8NC
.4mm	.0157	2.25mm	.0886		7	.2010	1/4-20	S	.3480	1/8-27NPS PIPE	22.25mm	.8760	
78	.0160	43	.0890	#4-40	13/64	.2031		8.9mm	.3504		22.5mm	.8858	m24x1.50
.42mm	.0165	2.3mm	.0906		6	.2040		9mm	.3543	m10x1.00	57/64	.8906	
.44mm	.0173	2.35mm	.0925		5.2mm	.2047		T	.3580		23mm	.9055	
.45mm	.0177	42	.0935	#4-48	5	.2055		9.1mm	.3583		29/32	.9062	3/4-14NPT PIPE
77	.0180	3/32	.0938		5.25mm	.2067	m6x0.75	23/64	.3594		59/64	.9219	
.46mm	.0181	2.4mm	.0945		5.3mm	.2087		9.2mm	.3622		23.5mm	.9252	
.48mm	.0189	41	.0960		4	.2090	1/4-24	9.25mm	.3642		15/16	.9375	3/4-14 NPS 1-14 NF
.5mm	.0197	2.45mm	.0965		5.4mm	.2126		9.3mm	.3661		24mm	.9449	m27x3
76	.0200	40	.0980		3	.2130	1/4-28	U	.3680	7/16-14NC	61/64	.9531	
75	.0210	2.5mm	.0984	m3x0.5	5.5mm	.2165		9.4mm	.3701		24.5mm	.9646	
.55mm	.0217	39	.0995		7/32	.2188		9.5mm	.3740	m11x1.50	31/32	.9688	
74	.0225	38	.1015	#5-40	5.6mm	.2205		3/8	.3750		25mm	.9843	m27x2
.6mm	.0236	2.6mm	.1024		2	.2210		V	.3770		63/64	.9844	1-1/8-7NC
73	.0240	37	.1040	#5-44	5.7mm	.2244		9.6mm	.3780		1	1.0000	
72	.0250	2.7mm	.1063		5.75mm	.2264		9.7mm	.3819		25.5mm	1.0039	
.65mm	.0256	36	.1065	#6-32	1	.2280		9.75mm	.3839		1-1/64	1.0156	
71	.0260	2.75mm	.1083		5.8mm	.2283		9.8mm	.3858		26mm	1.0236	
.7mm	.0276	7/64	.1094		5.9mm	.2323		W	.3860		1-1/32	1.0312	
70	.0280	35	.1100		A	.2340		9.9mm	.3898		26.5mm	1.0433	m30x3.5
69	.0292	2.8mm	.1102		15/64	.2344		25/64	.3906	7/16-20	1-3/64	1.0469	1-1/8-12NF
.75mm	.0295	34	.1110		6mm	.2362	m7x1	10mm	.3937	m12x1.75	1-1/16	1.0625	
68	.0310	33	.1130	#6-40	B	.2380		X	.3970		27mm	1.0630	
1/32	.0312	2.9mm	.1142	m3.5x0.6	6.1mm	.2402		Y	.4040		1-5/64	1.0781	
.8mm	.0315	32	.1160		C	.2420	1/16-27 NPT PIPE	13/32	.4062		27.5mm	1.0827	
67	.0320	3mm	.1181		6.2mm	.2441		Z	.4130		1-3/32	1.0938	
66	.0330	31	.1200		D	.2460		10.5mm	.4134	m12x1.25	28mm	1.1024	m30x2.0
.85mm	.0335	3.1mm	.1220		6.25mm	.2461		27/64	.4219	1/2-13	1-7/64	1.1094	1-1/4-7NC
65	.0350	1/8	.1250	5/32-32NS	6.3mm	.2480		11mm	.4331		28.5mm	1.1220	
.9mm	.0354	3.2mm	.1260		E	.2500	1/16-27 NPS PIPE	7/16	.4375	1/4-18 NPT PIPE	1-1/8	1.1250	
64	.0360	3.25mm	.1280		1/4	.2500		11.5mm	.4528		1-9/64	1.1406	
63	.0370	30	.1285	5/32-36NS	6.4mm	.2520		29/64	.4531	1/4-18 ^{NPS} PIPE 1/2-20	29mm	1.1417	
.95mm	.0374	3.3mm	.1299	m4x0.70	6.5mm	.2559		15/32	.4688		1-5/32	1.1562	1-11/2NPT PIPE
62	.0380	3.4mm	.1339		F	.2570	5/16-18NC	12mm	.4724	m14x2	29.5mm	1.1614	
61	.0390	29	.1360	#8-32	6.6mm	.2598		31/64	.4844	9/16-12	1-11/64	1.1719	1-1/4-12NF
1mm	.0394	3.5mm	.1378		G	.2610		12.5mm	.4921	m14x1.5			
60	.0400	28	.1405		6.7mm	.2638		1/2	.5000				
59	.0410	9/64	.1406		17/64	.2656		13mm	.5118	m14x1.25			
1.05mm	.0413	3.6mm	.1417		6.75mm	.2657	m8x1.25	33/64	.5156	9/16-18			

TECHNICAL INFORMATION

MADE IN THE USA



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