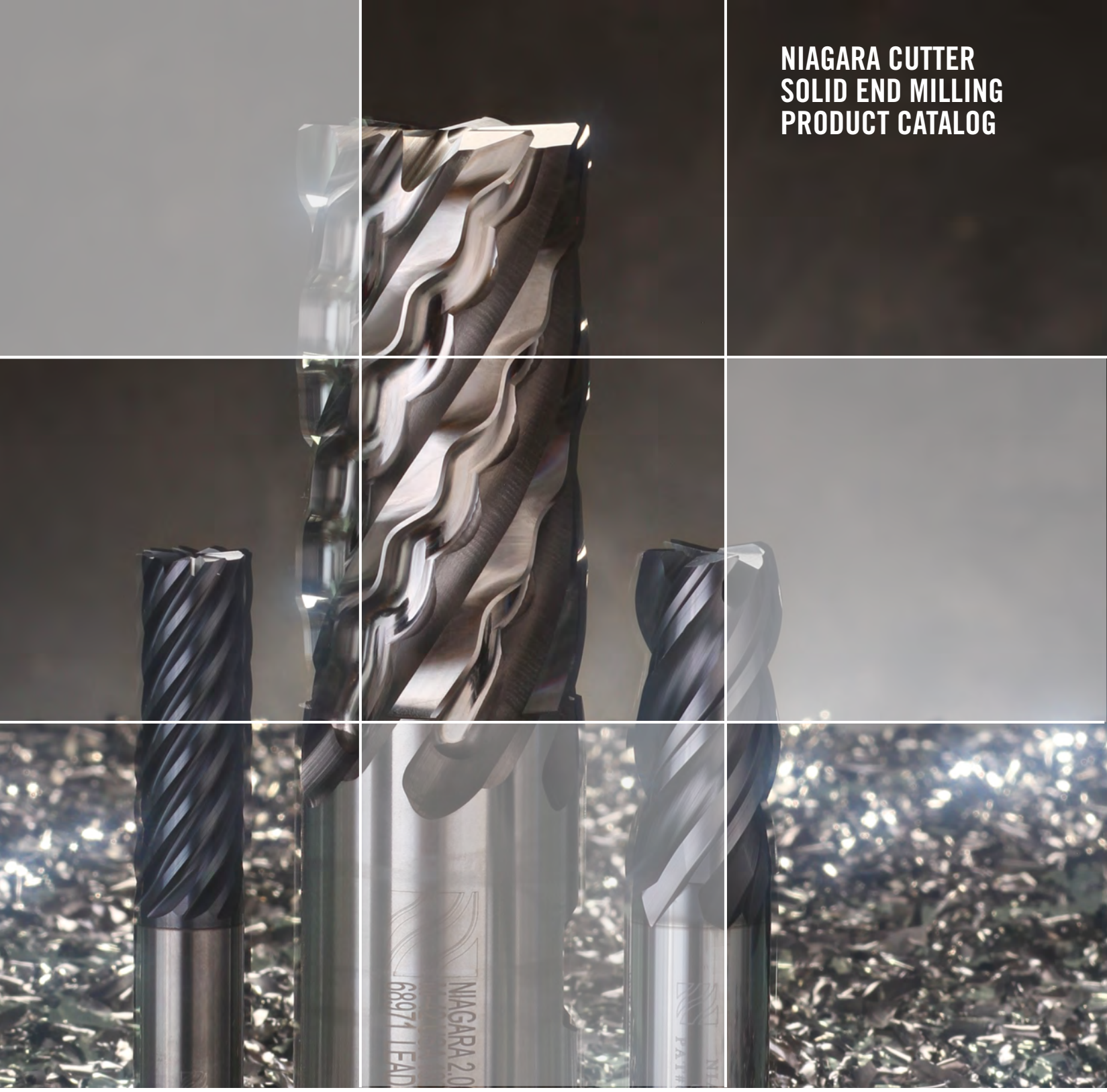
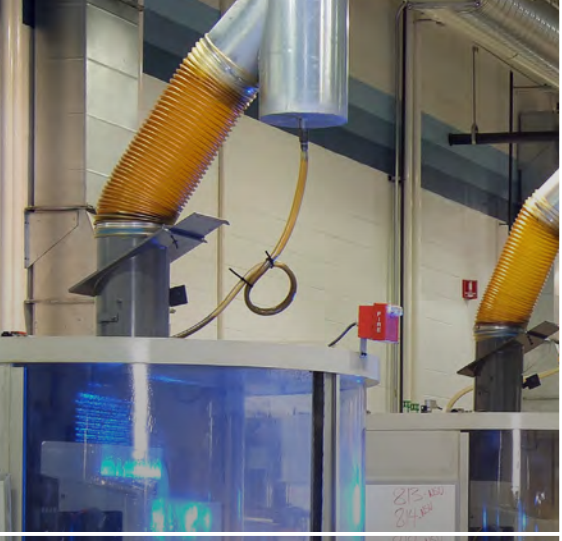
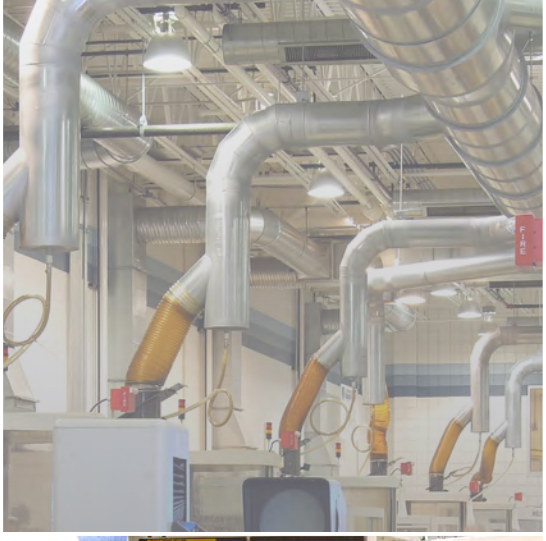


SOLID END MILLING

SOLID CARBIDE, HIGH SPEED STEEL & COBALT

Niagara Cutter



YOUR SOLID TOOLING & TECHNOLOGY EXPERTS

A TEST FOR OURSELVES & A PROMISE TO OUR CUSTOMERS

In the cutting tool industry, quality over time is assumed but not always achieved. No one in the industry pays more attention to the consistent quality of manufactured products than Niagara Cutter. Quality begins in our dedicated engineering, manufacturing and test facilities. Our in-plant machining laboratory, scanning electron microscope, and fully equipped and staffed metallurgical laboratory are just a few of the resources to help guarantee that the promise we make is the promise we keep … to provide the highest value cutting tools in the world.

INNOVATION | TECHNOLOGY | QUALITY | SERVICE

Niagara Cutter

Niagara Cutter

ELITE SERIES SOLID CARBIDE HIGH PERFORMANCE FOR ALUMINUM AND NON-FERROUS MATERIALS

CUTTING DATA FOR ELITE SERIES SOLID CARBIDE HIGH PERFORMANCE FOR ALUMINUM AND NON-FERROUS MATERIALS

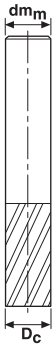
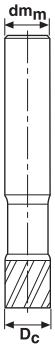
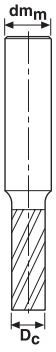
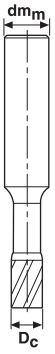
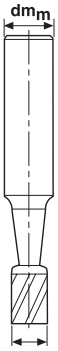
ELITE SERIES SOLID CARBIDE HIGH PERFORMANCE FOR STEEL, STAINLESS, TITANIUM & HIGH TEMP ALLOYS

TECHNICAL DATA

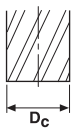
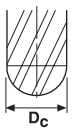
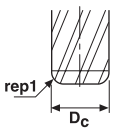
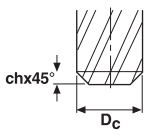
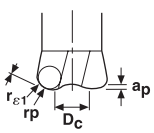
END MILL PRODUCT CODE KEY

Niagara Product Family		Tool shape		Tip shape		Number of flutes
STR440	- 0.125	D	2	R010	.0	- Z4
	Cutting diameter		Length of shape		Type of shank	

TOOL SHAPE

($D_c = dm_m$)		($D_c < dm_m$)		
				
D Cylindrical	**E Neck**	**F Step**	**G Step neck**	**J Taper neck**

TIP SHAPE

Sharp	Ball-nose	Corner radius	Chamfer	High-feed
				
S	**B**	**R...**	**C**	**H**

Size of radius for convex and concave radius tipped products

000 = For metric products the tip shape is shown by a three-digit figure.
By dividing this figure by 100 you will get the actual corner radius size in millimeters.

.000 = For inch products the tip shape is shown by a dot, followed by a three-digit figure.
This figure actually shows the size of the corner radius in inch (e.g. R.100 would indicate a radius of 0.100 Inch).

PRODUCT RANGE

Example:
ST = Stabilizer

For all products, see catalog.

CUTTING DIAMETER

Metric = 3 digit code (in case of 4 digit code: xx.xx mm)
Imperial = a decimal followed by a 3 digit code
For example: (050 = metric, 5 mm)
(.500 = imperial, ½ inch)

LENGTH OF SHAPE

Stub	= 1
S	= 2
M	= 3
L	= 4
LR1	= 5
LR2	= 6
LR3	= 7
LR4	= 8
LR5	= 9

TYPE OF SHANK

Indicates the shank types that are available.
.0 = Cylindrical
.3 = Weldon
.5 = Whistle Notch
.7 = Combo (twist)

NUMBER OF FLUTES

This figure indicates the number of flutes in the cutter.
For example;
Z2 = 2 flutes, Z6 = 6 flutes

COATING	DESCRIPTION
AlCrN	AlCrN
AlTiN	AlTiN
CVDDIA	Diamond CVD
TiAlN	TiAlN
TiCN	TiCN
TiN	TiN
	Uncoated

TECHNICAL DATA

THREAD MILLING PRODUCT CODE KEY

Niagara Product Family

Threads per inch (20TPI)
Thread pitch if metric (2.5)

Shank Size

NTM400 - 1/4 X 20 UN - .500

Thread Series and Diameter
M if metric (M10)

Thread Form
UN
NPT
NPTF
ISO

FORMULAE

a_e = Width of cut/radial depth of cut
a_p = Depth of cut/axial depth of cut
f = Feed per revolution
f_z = Feed per tooth
n = Rev/min RPM
v_c = Surface footage/min
v_f = Table travel (in/min)
z_n = No of teeth

SYMBOL KEY

TOOL MATERIAL - SUBSTRATE

- SOLID CARBIDE
- PREMIUM PARTICLE METAL 8.5% COBALT
- M42 8% COBALT
- HSS HIGH SPEED STEEL

TOOL END SHAPE

- SQUARE END
- BALL END
- CHAMFER 60°
- CHAMFER 90°
- CHAMFER 45°
- RADIUS
- HIGH FEED

HELIX ANGLE

- HELIX 0°
- HELIX 10°
- HELIX 15°
- HELIX 20°
- HELIX 30°
- HELIX 35°
- HELIX 36°
- HELIX 37°
- HELIX 38°
- HELIX 40°
- HELIX 45°
- HELIX 60°
- HELIX VARIABLE

END TEETH

- CENTER CUTTING
- NON CENTER CUTTING

ROUGHING PROFILES

- CHIPBREAKER
- COARSE PITCH
- FINE PITCH
- TRUNCATED

WORKPIECE MATERIAL CLASSIFICATION SECO MATERIAL GROUP (SMG)

STEEL, FERRITIC AND MARTENSITIC STAINLESS STEEL

ISO	SMG NO.	REPRESENTATIVE MATERIAL	DESCRIPTION	BHN	kc1.1 x 1000 lbf/in2	m_c
P	1	1010	Very soft carbon steels Purely ferritic steels	< 135	196	0.21
	2	1140	Free-cutting steels	120 < 210	218	0.22
	3	1045	Structural steels. Ordinary carbon steels with low to medium carbon content (<0,5%C)	135 < 165	218	0.25
	4	4140	Carbon steels with high carbon content (>0,5%C) Medium hard steels for toughening. Ordinary low-alloy steels Ferritic and martensitic stainless steels	165 < 210	247	0.24
	5	4340	Normal tool steels Harder steels for toughening Martensitic stainless steels	210 < 270	276	0.24
	6	D2	Difficult tool steels High-alloy steels with high hardness Martensitic stainless steels	270 < 360	290	0.24
H	7	A128 Grade A	Difficult high-strength steels with 42 to 56 HRC hardness Hardened steels from material group 3-6 Martensitic stainless steels	> 360	421	0.22

FREE-CUTTING, AUSTENITIC AND DUPLEX STAINLESS STEEL

M	8	304	Easy-cutting stainless steels Free-cutting stainless steels Calcium-treated stainless steels		254	0.22
	9	316	Moderately difficult stainless steels Austenitic and duplex stainless steels		276	0.2
	10	310	Difficult stainless steels Austenitic and duplex stainless steels		297	0.2
	11	330	Very difficult stainless steels Austenitic and duplex stainless steels		312	0.2

CAST IRON

K	12	60-40-18	Medium hard cast iron Grey cast iron		167	0.22
	13	A536 80-55-06	Low-alloy cast iron Malleable cast iron Nodular cast iron		178	0.25
	14	A536 100-70-03	Moderately difficult alloy cast iron Moderately difficult malleable cast iron Nodular cast iron		196	0.28
	15	A536 120-90-02	Difficult high-alloy cast iron Difficult malleable cast iron Nodular cast iron		213	0.3

OTHER MATERIALS

N	16	A380	Aluminum alloys: Low Si		101	0.25
	17	B390.0	Aluminum alloys: High Si		101	0.27
	18	CA937	Copper alloys			
S	19	Discalloy	Fe-based superalloys			
	20	Stellite 21	Co-based superalloys		377	0.24
	21	Inconel 718 (bar, forge, ring)	Ni-based superalloys		479	0.24
	22	Ti 6Al-4V (annealed)	Titanium alloys		210	0.23

k_c1.1-values with 0 degree effective cutting rake angle. For other rake angles, reduce the k_c1.1-value by 1% for every degree increase in the cutting rake angle and vice versa. Keep in mind that the BHN-value is only an aid in the selection of the material group when the material has been worked by rolling, drawing, heat treatment or other methods that increase the strength of the material.

TOOL SELECTION GUIDE

We can help you to increase your productivity, enhance your performance and reduce your costs with the range of products we offer that cover the full spectrum of application and performance requirements.

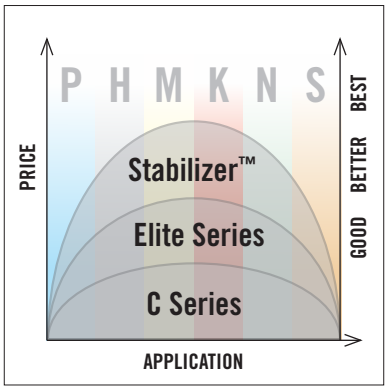
Although every situation is different, we can make some general suggestions on tool selection, per material and machining application. You will need to assess every opportunity and decide which tool is the best fit for your requirements.

PROVIDING SOLUTIONS FOR ANY APPLICATION

Stabilizer series tools provide high performance in the general machining category. These tools should be applied where performance is critical. The Stabilizer family offers high performance and versatility in a variety of materials and operations. Both 4 and 5 flute versions with square, ball and radius ends are available with AlCrN and AlTiN coatings.

Elite series tools are a high performance solution for material specific machining applications where performance is important. These tools come with AlCrN and AlTiN coatings as standard and are available in multiple geometries and number of flutes to provide process optimization in various materials.

Niagara C series should be applied in basic general machining environments. These tools are offered in uncoated or TiAlN coated as standard. Square shoulder and ball end geometries with 2, 3 or 4 flute versions are available.



RECOMMENDED TOOLING

ISO GROUP	SELECTION	SLOTTING		PROFILING		COPY MILLING	
		PRODUCT FAMILY	RANGE	PRODUCT FAMILY	RANGE	PRODUCT FAMILY	RANGE
P	1ST CHOICE	STR430	1/8 - 1 INCH	S545	1/8 - 1 INCH	STB430	1/8 - 1 INCH
	2ND CHOICE	S335	1/8 - 1 INCH	STS540	1/8 - 1 INCH	SB335	1/8 - 1 INCH
M	1ST CHOICE	STR440	1/8 - 1 INCH	S545	1/8 - 1 INCH	STB440	1/8 - 1 INCH
	2ND CHOICE	S335	1/8 - 1 INCH	STS540	1/8 - 1 INCH	SB335	1/8 - 1 INCH
K	1ST CHOICE	STS430	1/8 - 1 INCH	STR430	1/8 - 1 INCH	STB430	1/8 - 1 INCH
	2ND CHOICE	S335	1/8 - 1 INCH	S545	1/8 - 1 INCH	SB335	1/8 - 1 INCH
N	1ST CHOICE	AN340	1/8 - 1 INCH	A345	1/8 - 1 INCH	AB245	1/8 - 1 INCH
	2ND CHOICE	A245	1/8 - 1 INCH	A345R	1/8 - 1 INCH	-	1/8 - 1 INCH
S	1ST CHOICE	STR440	1/8 - 1 INCH	STR540	1/8 - 1 INCH	STB440	1/8 - 1 INCH
	2ND CHOICE	S335	1/8 - 1 INCH	STR440	1/8 - 1 INCH	SB335	1/8 - 1 INCH
H	1ST CHOICE	MZN410R	3/8 - 5/8 INCH	MZ645R	1/8 - 1/2 INCH	MBZ215	1/16 - 1/2 INCH
	2ND CHOICE	MZN510R	1/8 - 1/2 INCH	MZ645	1/8 - 1/2 INCH	MB215	1/16 - 1/2 INCH

A FULL SERVICE SOLID TOOLING PROVIDER

APPLICATION ENGINEERING

It starts with listening and learning and then culminates with a product that does not just perform, but outperforms that which previously existed. Between initial concept and final product there is application engineering, prototype development, exhaustive product testing and critical analysis – a truly innovative, and comprehensive, systems approach to world-class products.

Niagara Cutter has not only dedicated itself to this process of constant improvement, but is proud of its record of significant innovation and industry advancements.

MANUFACTURING TECHNOLOGY

Niagara Cutter continues to invest heavily in automated processes, but in the final analysis, these machines are only as capable as their programming and maintenance allows and the final products are only as consistent as the parameters set by Niagara's machinists. It is in these areas where no machine can match the human contribution.

Niagara Cutter aggressively pursues continuous improvement, in its automated operations, and its people. Therefore, the perfect operation between man and machine at Niagara Cutter results in a company that is far greater than the sum of the parts in achieving consistency and accuracy.

PRODUCTS - HIGH PERFORMANCE CUTTING TOOL SOLUTIONS

Niagara Cutter offers many product styles, including end mills, thread mills and special cutting tools to customer blue prints. With multiple material substrates (high-speed steel, cobalt, tungsten carbide), tool geometries and thin film coatings, we provide a complete product range to meet your cutting tool requirements.

Our job is not just producing millions of premium cutting tools; it is producing premium cutting tools specifically for your application and for absolute optimum performance, by asking the critical questions and quickly responding with the most effective solution.

SOLID CARBIDE END MILLS

HIGH PERFORMANCE STABILIZER™ SERIES

Stabilizer end mills are a cost effective, high performance solution for general machining applications. These solid carbide end mills feature our patented asymmetrical geometry which results in chatter reduction and increased productivity. Stabilizer end mills are offered with AlCrN and AlTiN coatings as standard. Standard geometries offered are four flute with square end, corner radius and ball end, as well as five flute square end and corner radius.

The GP series is for machining tool steels, carbon steels and alloy steels. The HT series is best suited for machining stainless steel and high temperature alloys. The HT series is offered with standard aerospace corner radii.

ELITE A & S SERIES

Our Elite series of end mills feature specific geometries for ferrous or nonferrous materials, available in 0.125 - 1.25" diameters.

The A series is designed for aluminum and non ferrous materials and is available with two or three flutes in a variety of configurations. The S series provides high performance machining in steel, stainless steel and high temperature alloys. These end mills are offered in standard in three, five, six, seven and nine flutes.

The new seven and nine flute end mills are designed for high speed machining in titanium and stainless steels.

GENERAL PURPOSE C SERIES

The C series end mills with two, three, or four flutes are available in square, corner radius or ball end, uncoated or with TiAlN as standard. This broad range of end mills is typical for job shop environments where one tool can handle a variety of applications.

MICRO

For the manufacturing of small components, Niagara Cutter has developed a range of miniature end mills. The Micro range delivers precision technology and quality in micro decimal diameters. These minature end mills are available in square end and ball end geometries with two and four flutes. All tools are 1/8" shank, 1-1/2" overall length.

Niagara Cutter

STABILIZER™ GP- STS430

SOLID CARBIDE

HELIX VARIABLE

SQUARE END

CENTER CUTTING

- Eccentric primary relief
- Asymmetrical flute geometry
- Weldon flat standard on shank sizes 3/8" and larger
- US Patent # 6,991,409
- Ideal for carbon steels, alloy steels, tool steels, cast iron, copper

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N60650	STS430-0.125-D1-S.0-Z4	1/8	1/8	1/8	1-1/2	4	AlTiN
N68200	STS430-0.125-D1-S.0-Z4	1/8	1/8	1/8	1-1/2	4	AlCrN
N60651	STS430-0.125-D3-S.0-Z4	1/8	1/8	3/8	1-1/2	4	AlTiN
N68201	STS430-0.125-D3-S.0-Z4	1/8	1/8	3/8	1-1/2	4	AlCrN
N60652	STS430-0.156-F1-S.0-Z4	5/32	3/16	3/16	2	4	AlTiN
N68202	STS430-0.156-F1-S.0-Z4	5/32	3/16	3/16	2	4	AlCrN
N60653	STS430-0.156-F3-S.0-Z4	5/32	3/16	7/16	2	4	AlTiN
N68203	STS430-0.156-F3-S.0-Z4	5/32	3/16	7/16	2	4	AlCrN
N60654	STS430-0.188-D1-S.0-Z4	3/16	3/16	3/16	2	4	AlTiN
N68204	STS430-0.188-D1-S.0-Z4	3/16	3/16	3/16	2	4	AlCrN
N60655	STS430-0.188-D2-S.0-Z4	3/16	3/16	7/16	2	4	AlTiN
N68205	STS430-0.188-D2-S.0-Z4	3/16	3/16	7/16	2	4	AlCrN
N60656	STS430-0.219-F1-S.0-Z4	7/32	1/4	1/4	2	4	AlTiN
N68206	STS430-0.219-F1-S.0-Z4	7/32	1/4	1/4	2	4	AlCrN
N60657	STS430-0.219-F2-S.0-Z4	7/32	1/4	7/16	2-1/2	4	AlTiN
N68207	STS430-0.219-F2-S.0-Z4	7/32	1/4	7/16	2-1/2	4	AlCrN
N60658	STS430-0.250-D1-S.0-Z4	1/4	1/4	1/4	2	4	AlTiN
N68208	STS430-0.250-D1-S.0-Z4	1/4	1/4	1/4	2	4	AlCrN
N60659	STS430-0.250-D2-S.0-Z4	1/4	1/4	1/2	2-1/2	4	AlTiN
N68209	STS430-0.250-D2-S.0-Z4	1/4	1/4	1/2	2-1/2	4	AlCrN
N60660	STS430-0.281-F2-S.0-Z4	9/32	5/16	5/8	2-1/2	4	AlTiN
N68210	STS430-0.281-F2-S.0-Z4	9/32	5/16	5/8	2-1/2	4	AlCrN
N60661	STS430-0.313-D1-S.0-Z4	5/16	5/16	5/16	2	4	AlTiN
N68211	STS430-0.313-D1-S.0-Z4	5/16	5/16	5/16	2	4	AlCrN
N60662	STS430-0.313-D3-S.0-Z4	5/16	5/16	13/16	2-1/2	4	AlTiN
N68212	STS430-0.313-D3-S.0-Z4	5/16	5/16	13/16	2-1/2	4	AlCrN
N60663	STS430-0.344-F2-S.3-Z4	11/32	3/8	13/16	2-1/2	4	AlTiN
N68213	STS430-0.344-F2-S.3-Z4	11/32	3/8	13/16	2-1/2	4	AlCrN
N60664	STS430-0.375-D1-S.3-Z4	3/8	3/8	3/8	2	4	AlTiN
N68214	STS430-0.375-D1-S.3-Z4	3/8	3/8	3/8	2	4	AlCrN
N60665	STS430-0.375-D2-S.3-Z4	3/8	3/8	7/8	2-1/2	4	AlTiN
N68215	STS430-0.375-D2-S.3-Z4	3/8	3/8	7/8	2-1/2	4	AlCrN
N60667	STS430-0.438-D1-S.3-Z4	7/16	7/16	7/16	2-1/2	4	AlTiN
N68217	STS430-0.438-D1-S.3-Z4	7/16	7/16	7/16	2-1/2	4	AlCrN
N60668	STS430-0.438-D2-S.3-Z4	7/16	7/16	1	2-3/4	4	AlTiN

DISCOUNT CODE D43

Niagara Cutter

STABILIZER™ GP- STS430

SOLID CARBIDE

HELIX VARIABLE

SQUARE END

CENTER CUTTING

- Eccentric primary relief
- Asymmetrical flute geometry
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- US Patent # 6,991,409
- Ideal for carbon steels, alloy steels, tool steels, cast iron, copper

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N68218	STS430-0.438-D2-S.3-Z4	7/16	7/16	1	2-3/4	4	AlCrN
N60670	STS430-0.500-D1-S.3-Z4	1/2	1/2	1/2	2-1/2	4	AlTiN
N68220	STS430-0.500-D1-S.3-Z4	1/2	1/2	1/2	2-1/2	4	AlCrN
N60671	STS430-0.500-D2-S.3-Z4	1/2	1/2	1	3	4	AlTiN
N68221	STS430-0.500-D2-S.3-Z4	1/2	1/2	1	3	4	AlCrN
N57330	STS430-0.500-D3-S.3-Z4	1/2	1/2	1-1/4	3	4	AlTiN
N68222	STS430-0.500-D3-S.3-Z4	1/2	1/2	1-1/4	3	4	AlCrN
N60672	STS430-0.563-D2-S.3-Z4	9/16	9/16	1-1/8	3-1/2	4	AlTiN
N68223	STS430-0.563-D2-S.3-Z4	9/16	9/16	1-1/8	3-1/2	4	AlCrN
N60673	STS430-0.625-D1-S.3-Z4	5/8	5/8	5/8	3	4	AlTiN
N68224	STS430-0.625-D1-S.3-Z4	5/8	5/8	5/8	3	4	AlCrN
N60674	STS430-0.625-D2-S.3-Z4	5/8	5/8	1-1/4	3-1/2	4	AlTiN
N68225	STS430-0.625-D2-S.3-Z4	5/8	5/8	1-1/4	3-1/2	4	AlCrN
N60675	STS430-0.750-D1-S.3-Z4	3/4	3/4	3/4	3	4	AlTiN
N68227	STS430-0.750-D1-S.3-Z4	3/4	3/4	3/4	3	4	AlCrN
N60676	STS430-0.750-D2-S.3-Z4	3/4	3/4	1-1/2	4	4	AlTiN
N68228	STS430-0.750-D2-S.3-Z4	3/4	3/4	1-1/2	4	4	AlCrN
N57332	STS430-0.813-F2-S.3-Z4	13/16	7/8	1-5/8	4	4	AlTiN
N68229	STS430-0.813-F2-S.3-Z4	13/16	7/8	1-5/8	4	4	AlCrN
N57333	STS430-0.875-D2-S.3-Z4	7/8	7/8	1-3/4	4	4	AlTiN
N68230	STS430-0.875-D2-S.3-Z4	7/8	7/8	1-3/4	4	4	AlCrN
N57334	STS430-0.938-F2-S.3-Z4	15/16	1	1-7/8	4	4	AlTiN
N68231	STS430-0.938-F2-S.3-Z4	15/16	1	1-7/8	4	4	AlCrN
N60678	STS430-1.000-D2-S.3-Z4	1	1	1-1/2	4	4	AlTiN
N68233	STS430-1.000-D2-S.3-Z4	1	1	1-1/2	4	4	AlCrN
N57335	STS430-1.000-D3-S.3-Z4	1	1	2	5	4	AlTiN
N68234	STS430-1.000-D3-S.3-Z4	1	1	2	5	4	AlCrN
N57336	STS430-1.250-D2-S.3-Z4	1-1/4	1-1/4	2-1/4	5	4	AlTiN
N68235	STS430-1.250-D2-S.3-Z4	1-1/4	1-1/4	2-1/4	5	4	AlCrN

Niagara Cutter

STABILIZER™ GP- STR430

SOLID CARBIDE

HELIX VARIABLE

RADIUS

CENTER CUTTING

- Eccentric primary relief
- Asymmetrical flute geometry
- Weldon flat standard on shank sizes 3/8" and larger
- US Patent # 6,991,409
- Ideal for carbon steels, alloy steels, tool steels, cast iron, copper

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS
N60679	STR430-0.125-D1-R010.0-Z4	1/8	1/8	1/8	1-1/2	4	AlTiN	0.010
N68236	STR430-0.125-D1-R010.0-Z4	1/8	1/8	1/8	1-1/2	4	AlCrN	0.010
N60680	STR430-0.125-D3-R010.0-Z4	1/8	1/8	3/8	1-1/2	4	AlTiN	0.010
N68237	STR430-0.125-D3-R010.0-Z4	1/8	1/8	3/8	1-1/2	4	AlCrN	0.010
N60681	STR430-0.156-F1-R010.0-Z4	5/32	3/16	3/16	2	4	AlTiN	0.010
N68238	STR430-0.156-F1-R010.0-Z4	5/32	3/16	3/16	2	4	AlCrN	0.010
N60682	STR430-0.156-F3-R010.0-Z4	5/32	3/16	7/16	2	4	AlTiN	0.010
N68239	STR430-0.156-F3-R010.0-Z4	5/32	3/16	7/16	2	4	AlCrN	0.010
N60683	STR430-0.188-D1-R010.0-Z4	3/16	3/16	3/16	2	4	AlTiN	0.010
N68240	STR430-0.188-D1-R010.0-Z4	3/16	3/16	3/16	2	4	AlCrN	0.010
N60684	STR430-0.188-D2-R010.0-Z4	3/16	3/16	7/16	2	4	AlTiN	0.010
N68241	STR430-0.188-D2-R010.0-Z4	3/16	3/16	7/16	2	4	AlCrN	0.010
N60685	STR430-0.219-F1-R020.0-Z4	7/32	1/4	1/4	2	4	AlTiN	0.020
N68242	STR430-0.219-F1-R020.0-Z4	7/32	1/4	1/4	2	4	AlCrN	0.020
N60686	STR430-0.219-F2-R020.0-Z4	7/32	1/4	7/16	2-1/2	4	AlTiN	0.020
N68243	STR430-0.219-F2-R020.0-Z4	7/32	1/4	7/16	2-1/2	4	AlCrN	0.020
N60687	STR430-0.250-D1-R020.0-Z4	1/4	1/4	1/4	2	4	AlTiN	0.020
N68244	STR430-0.250-D1-R020.0-Z4	1/4	1/4	1/4	2	4	AlCrN	0.020
N60688	STR430-0.250-D2-R020.0-Z4	1/4	1/4	1/2	2-1/2	4	AlTiN	0.020
N68245	STR430-0.250-D2-R020.0-Z4	1/4	1/4	1/2	2-1/2	4	AlCrN	0.020
N60689	STR430-0.281-F2-R020.0-Z4	9/32	5/16	5/8	2-1/2	4	AlTiN	0.020
N68246	STR430-0.281-F2-R020.0-Z4	9/32	5/16	5/8	2-1/2	4	AlCrN	0.020
N60690	STR430-0.313-D1-R020.0-Z4	5/16	5/16	5/16	2	4	AlTiN	0.020
N68247	STR430-0.313-D1-R020.0-Z4	5/16	5/16	5/16	2	4	AlCrN	0.020
N60691	STR430-0.313-D3-R020.0-Z4	5/16	5/16	13/16	2-1/2	4	AlTiN	0.020
N68248	STR430-0.313-D3-R020.0-Z4	5/16	5/16	13/16	2-1/2	4	AlCrN	0.020
N60693	STR430-0.375-D1-R020.3-Z4	3/8	3/8	3/8	2	4	AlTiN	0.020
N68250	STR430-0.375-D1-R020.3-Z4	3/8	3/8	3/8	2	4	AlCrN	0.020
N60694	STR430-0.375-D2-R020.3-Z4	3/8	3/8	7/8	2-1/2	4	AlTiN	0.020
N68251	STR430-0.375-D2-R020.3-Z4	3/8	3/8	7/8	2-1/2	4	AlCrN	0.020
N60697	STR430-0.438-D2-R020.3-Z4	7/16	7/16	1	2-3/4	4	AlTiN	0.020
N68254	STR430-0.438-D2-R020.3-Z4	7/16	7/16	1	2-3/4	4	AlCrN	0.020
N60698	STR430-0.469-F2-R030.3-Z4	15/32	1/2	1	3	4	AlTiN	0.030
N68255	STR430-0.469-F2-R030.3-Z4	15/32	1/2	1	3	4	AlCrN	0.030
N60699	STR430-0.500-D1-R030.3-Z4	1/2	1/2	1/2	2-1/2	4	AlTiN	0.030

DISCOUNT CODE D43

STABILIZER™ GP- STR430

SOLID CARBIDE

HELIX VARIABLE

RADIUS

CENTER CUTTING

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EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS
N68256	STR430-0.500-D1-R030.3-Z4	1/2	1/2	1/2	2-1/2	4	AlCrN	0.030
N60700	STR430-0.500-D2-R030.3-Z4	1/2	1/2	1	3	4	AlTiN	0.030
N68257	STR430-0.500-D2-R030.3-Z4	1/2	1/2	1	3	4	AlCrN	0.030
N57337	STR430-0.500-D3-R030.3-Z4	1/2	1/2	1-1/4	3	4	AlTiN	0.030
N68258	STR430-0.500-D3-R030.3-Z4	1/2	1/2	1-1/4	3	4	AlCrN	0.030
N60702	STR430-0.625-D1-R030.3-Z4	5/8	5/8	5/8	3	4	AlTiN	0.030
N68260	STR430-0.625-D1-R030.3-Z4	5/8	5/8	5/8	3	4	AlCrN	0.030
N60703	STR430-0.625-D2-R030.3-Z4	5/8	5/8	1-1/4	3-1/2	4	AlTiN	0.030
N68261	STR430-0.625-D2-R030.3-Z4	5/8	5/8	1-1/4	3-1/2	4	AlCrN	0.030
N60704	STR430-0.750-D1-R030.3-Z4	3/4	3/4	3/4	3	4	AlTiN	0.030
N68263	STR430-0.750-D1-R030.3-Z4	3/4	3/4	3/4	3	4	AlCrN	0.030
N60705	STR430-0.750-D2-R030.3-Z4	3/4	3/4	1-1/2	4	4	AlTiN	0.030
N68264	STR430-0.750-D2-R030.3-Z4	3/4	3/4	1-1/2	4	4	AlCrN	0.030
N57339	STR430-0.813-F2-R030.3-Z4	13/16	7/8	1-5/8	4	4	AlTiN	0.030
N68265	STR430-0.813-F2-R030.3-Z4	13/16	7/8	1-5/8	4	4	AlCrN	0.030
N57340	STR430-0.875-D2-R030.3-Z4	7/8	7/8	1-3/4	4	4	AlTiN	0.030
N68266	STR430-0.875-D2-R030.3-Z4	7/8	7/8	1-3/4	4	4	AlCrN	0.030
N57341	STR430-0.938-F2-R030.3-Z4	15/16	1	1-7/8	4	4	AlTiN	0.030
N68267	STR430-0.938-F2-R030.3-Z4	15/16	1	1-7/8	4	4	AlCrN	0.030
N60706	STR430-1.000-D1-R030.3-Z4	1	1	1	4	4	AlTiN	0.030
N68268	STR430-1.000-D1-R030.3-Z4	1	1	1	4	4	AlCrN	0.030
N60707	STR430-1.000-D2-R030.3-Z4	1	1	1-1/2	4	4	AlTiN	0.030
N68269	STR430-1.000-D2-R030.3-Z4	1	1	1-1/2	4	4	AlCrN	0.030
N57342	STR430-1.000-D3-R030.3-Z4	1	1	2	5	4	AlTiN	0.030
N68270	STR430-1.000-D3-R030.3-Z4	1	1	2	5	4	AlCrN	0.030

Niagara Cutter

STABILIZER™ GP- STB430

SOLID CARBIDE

HELIX VARIABLE

BALL END

CENTER CUTTING

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EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N60708	STB430-0.125-D1-B.0-Z4	1/8	1/8	1/8	1-1/2	4	AlTiN
N68272	STB430-0.125-D1-B.0-Z4	1/8	1/8	1/8	1-1/2	4	AlCrN
N60709	STB430-0.125-D3-B.0-Z4	1/8	1/8	3/8	1-1/2	4	AlTiN
N68273	STB430-0.125-D3-B.0-Z4	1/8	1/8	3/8	1-1/2	4	AlCrN
N60712	STB430-0.188-D1-B.0-Z4	3/16	3/16	3/16	2	4	AlTiN
N68276	STB430-0.188-D1-B.0-Z4	3/16	3/16	3/16	2	4	AlCrN
N60713	STB430-0.188-D2-B.0-Z4	3/16	3/16	7/16	2	4	AlTiN
N68277	STB430-0.188-D2-B.0-Z4	3/16	3/16	7/16	2	4	AlCrN
N60714	STB430-0.219-F1-B.0-Z4	7/32	1/4	1/4	2	4	AlTiN
N68278	STB430-0.219-F1-B.0-Z4	7/32	1/4	1/4	2	4	AlCrN
N60715	STB430-0.219-F2-B.0-Z4	7/32	1/4	7/16	2-1/2	4	AlTiN
N68279	STB430-0.219-F2-B.0-Z4	7/32	1/4	7/16	2-1/2	4	AlCrN
N60716	STB430-0.250-D1-B.0-Z4	1/4	1/4	1/4	2	4	AlTiN
N68280	STB430-0.250-D1-B.0-Z4	1/4	1/4	1/4	2	4	AlCrN
N60717	STB430-0.250-D2-B.0-Z4	1/4	1/4	1/2	2-1/2	4	AlTiN
N68281	STB430-0.250-D2-B.0-Z4	1/4	1/4	1/2	2-1/2	4	AlCrN
N60719	STB430-0.313-D1-B.0-Z4	5/16	5/16	5/16	2	4	AlTiN
N68283	STB430-0.313-D1-B.0-Z4	5/16	5/16	5/16	2	4	AlCrN
N60720	STB430-0.313-D3-B.0-Z4	5/16	5/16	13/16	2-1/2	4	AlTiN
N68284	STB430-0.313-D3-B.0-Z4	5/16	5/16	13/16	2-1/2	4	AlCrN
N60722	STB430-0.375-D1-B.3-Z4	3/8	3/8	3/8	2	4	AlTiN
N68286	STB430-0.375-D1-B.3-Z4	3/8	3/8	3/8	2	4	AlCrN
N60723	STB430-0.375-D2-B.3-Z4	3/8	3/8	7/8	2-1/2	4	AlTiN
N68287	STB430-0.375-D2-B.3-Z4	3/8	3/8	7/8	2-1/2	4	AlCrN
N60726	STB430-0.438-D2-B.3-Z4	7/16	7/16	1	2-3/4	4	AlTiN
N68290	STB430-0.438-D2-B.3-Z4	7/16	7/16	1	2-3/4	4	AlCrN
N60728	STB430-0.500-D1-B.3-Z4	1/2	1/2	1/2	2-1/2	4	AlTiN
N68292	STB430-0.500-D1-B.3-Z4	1/2	1/2	1/2	2-1/2	4	AlCrN
N60729	STB430-0.500-D2-B.3-Z4	1/2	1/2	1	3	4	AlTiN
N68293	STB430-0.500-D2-B.3-Z4	1/2	1/2	1	3	4	AlCrN
N57344	STB430-0.500-D3-B.3-Z4	1/2	1/2	1-1/4	3	4	AlTiN
N68294	STB430-0.500-D3-B.3-Z4	1/2	1/2	1-1/4	3	4	AlCrN
N60730	STB430-0.563-D2-B.3-Z4	9/16	9/16	1-1/8	3-1/2	4	AlTiN
N68295	STB430-0.563-D2-B.3-Z4	9/16	9/16	1-1/8	3-1/2	4	AlCrN
N60733	STB430-0.750-D1-B.3-Z4	3/4	3/4	3/4	3	4	AlTiN
N68299	STB430-0.750-D1-B.3-Z4	3/4	3/4	3/4	3	4	AlCrN
N60734	STB430-0.750-D2-B.3-Z4	3/4	3/4	1-1/2	4	4	AlTiN
N68300	STB430-0.750-D2-B.3-Z4	3/4	3/4	1-1/2	4	4	AlCrN
N57349	STB430-1.000-D3-B.3-Z4	1	1	2	5	4	AlTiN
N68306	STB430-1.000-D3-B.3-Z4	1	1	2	5	4	AlCrN

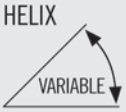
DISCOUNT CODE D43

Niagara Cutter

STABILIZER™ GP- STRN430

SOLID CARBIDE

HELIX



RADIUS

CENTER CUTTING

- Eccentric primary relief
- Asymmetrical flute geometry
- Weldon flat standard on shank sizes 3/8" and larger
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EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS	REACH	NECK DIA
N60737	STRN430-0.250-E2-R020.0-Z4	1/4	1/4	3/8	4	4	AlTiN	0.020	2-1/8	0.240
N60738	STRN430-0.313-E1-R020.0-Z4	5/16	5/16	7/16	4	4	AlTiN	0.020	2-1/8	0.300
N60739	STRN430-0.375-E1-R020.3-Z4	3/8	3/8	1/2	4	4	AlTiN	0.020	2-1/8	0.360
N60740	STRN430-0.375-E2-R020.3-Z4	3/8	3/8	1/2	6	4	AlTiN	0.020	4-1/8	0.360
N60741	STRN430-0.438-E1-R020.3-Z4	7/16	7/16	9/16	4	4	AlTiN	0.020	2-1/8	0.420
N60743	STRN430-0.500-E1-R030.3-Z4	1/2	1/2	5/8	4	4	AlTiN	0.030	2-1/8	0.480
N60744	STRN430-0.500-E2-R030.3-Z4	1/2	1/2	5/8	5	4	AlTiN	0.030	3-1/8	0.480
N60745	STRN430-0.500-E5-R030.3-Z4	1/2	1/2	5/8	6	4	AlTiN	0.030	4-1/8	0.480
N60746	STRN430-0.625-E1-R030.3-Z4	5/8	5/8	3/4	4	4	AlTiN	0.030	2-1/8	0.600
N60747	STRN430-0.625-E3-R030.3-Z4	5/8	5/8	3/4	5	4	AlTiN	0.030	3-1/8	0.600
N60748	STRN430-0.625-E5-R030.3-Z4	5/8	5/8	3/4	6	4	AlTiN	0.030	4	0.600
N60749	STRN430-0.750-E1-R030.3-Z4	3/4	3/4	1	4	4	AlTiN	0.030	2	0.720
N60750	STRN430-0.750-E3-R030.3-Z4	3/4	3/4	1	5	4	AlTiN	0.030	3	0.720
N60751	STRN430-0.750-E5-R030.3-Z4	3/4	3/4	1	6	4	AlTiN	0.030	4	0.720
N60752	STRN430-1.000-E1-R030.3-Z4	1	1	1-1/4	5	4	AlTiN	0.030	3	0.960

STABILIZER™ GP- STBN430

SOLID CARBIDE

HELIX VARIABLE

BALL END

CENTER CUTTING

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- Ideal for carbon steels, alloy steels, tool steels, cast iron, copper

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	REACH	NECK DIA
N60754	STBN430-0.250-E2-B.0-Z4	1/4	1/4	3/8	4	4	AlTiN	2-1/8	0.240
N60755	STBN430-0.313-E1-B.0-Z4	5/16	5/16	7/16	4	4	AlTiN	2-1/8	0.300
N60756	STBN430-0.375-E1-B.3-Z4	3/8	3/8	1/2	4	4	AlTiN	2-1/8	0.360
N60757	STBN430-0.375-E2-B.3-Z4	3/8	3/8	1/2	6	4	AlTiN	4-1/8	0.360
N60758	STBN430-0.438-E1-B.3-Z4	7/16	7/16	9/16	4	4	AlTiN	2-1/8	0.420
N60759	STBN430-0.438-E2-B.3-Z4	7/16	7/16	9/16	6	4	AlTiN	4-1/8	0.420
N60760	STBN430-0.500-E1-B.3-Z4	1/2	1/2	5/8	4	4	AlTiN	2-1/8	0.480
N60761	STBN430-0.500-E2-B.3-Z4	1/2	1/2	5/8	5	4	AlTiN	3-1/8	0.480
N60762	STBN430-0.500-E3-B.3-Z4	1/2	1/2	5/8	6	4	AlTiN	4-1/8	0.480
N60767	STBN430-0.750-E2-B.3-Z4	3/4	3/4	1	5	4	AlTiN	3	0.720
N60768	STBN430-0.750-E3-B.3-Z4	3/4	3/4	1	6	4	AlTiN	4	0.720
N60769	STBN430-1.000-E1-B.3-Z4	1	1	1-1/4	5	4	AlTiN	3	0.960
N60770	STBN430-1.000-E2-B.3-Z4	1	1	1-1/4	6	4	AlTiN	4	0.960

STABILIZER™ GP- STS430M

SOLID CARBIDE

HELIX VARIABLE

SQUARE END

CENTER CUTTING

- Eccentric OD relief
- Asymmetrical flute geometry
- US Patent # 6,991,409
- Ideal for carbon steels, alloy steels, tool steels, cast iron, copper

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N57351	STS430M-030-F1-S.0-Z4	3mm	6mm	3mm	58mm	4	AlTiN
N57352	STS430M-030-F2-S.0-Z4	3mm	6mm	6mm	58mm	4	AlTiN
N57354	STS430M-040-F2-S.0-Z4	4mm	6mm	8mm	58mm	4	AlTiN
N57355	STS430M-050-F1-S.0-Z4	5mm	6mm	5mm	58mm	4	AlTiN
N57356	STS430M-050-F2-S.0-Z4	5mm	6mm	10mm	58mm	4	AlTiN
N57357	STS430M-060-D1-S.0-Z4	6mm	6mm	6mm	58mm	4	AlTiN
N57358	STS430M-060-D2-S.0-Z4	6mm	6mm	12mm	58mm	4	AlTiN
N57362	STS430M-080-D2-S.0-Z4	8mm	8mm	16mm	64mm	4	AlTiN
N57365	STS430M-100-D1-S.0-Z4	10mm	10mm	10mm	63mm	4	AlTiN
N57366	STS430M-100-D2-S.0-Z4	10mm	10mm	20mm	73mm	4	AlTiN
N57369	STS430M-120-D1-S.0-Z4	12mm	12mm	12mm	74mm	4	AlTiN
N57370	STS430M-120-D2-S.0-Z4	12mm	12mm	24mm	84mm	4	AlTiN
N57371	STS430M-130-F1-S.0-Z4	13mm	14mm	13mm	76mm	4	AlTiN
N57372	STS430M-130-F2-S.0-Z4	13mm	14mm	26mm	84mm	4	AlTiN
N57374	STS430M-140-F2-S.0-Z4	14mm	14mm	28mm	84mm	4	AlTiN
N57375	STS430M-150-F1-S.0-Z4	15mm	16mm	15mm	83mm	4	AlTiN
N57376	STS430M-150-F2-S.0-Z4	15mm	16mm	30mm	93mm	4	AlTiN
N57378	STS430M-160-D2-S.0-Z4	16mm	16mm	32mm	93mm	4	AlTiN
N57381	STS430M-200-D1-S.0-Z4	20mm	20mm	20mm	93mm	4	AlTiN
N57382	STS430M-200-D2-S.0-Z4	20mm	20mm	40mm	105mm	4	AlTiN
N57384	STS430M-250-D2-S.0-Z4	25mm	25mm	50mm	115mm	4	AlTiN

STABILIZER™ GP- STR430M

SOLID CARBIDE

HELIX VARIABLE

RADIUS

CENTER CUTTING

- Eccentric OD relief
- Asymmetrical flute geometry
- US Patent # 6,991,409
- Ideal for carbon steels, alloy steels, tool steels, cast iron, copper

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS
N57387	STR430M-040-F1-R025.0-Z4	4mm	6mm	4mm	58mm	4	AlTiN	0.25mm
N57388	STR430M-040-F2-R025.0-Z4	4mm	6mm	8mm	58mm	4	AlTiN	0.25mm
N57390	STR430M-050-F2-R025.0-Z4	5mm	6mm	10mm	58mm	4	AlTiN	0.25mm
N57391	STR430M-060-D1-R050.0-Z4	6mm	6mm	6mm	58mm	4	AlTiN	0.50mm
N57392	STR430M-060-D2-R050.0-Z4	6mm	6mm	12mm	58mm	4	AlTiN	0.50mm
N57393	STR430M-070-F1-R050.0-Z4	7mm	8mm	7mm	64mm	4	AlTiN	0.50mm
N57395	STR430M-080-D1-R050.0-Z4	8mm	8mm	8mm	64mm	4	AlTiN	0.50mm
N57396	STR430M-080-D2-R050.0-Z4	8mm	8mm	16mm	64mm	4	AlTiN	0.50mm
N57398	STR430M-090-F2-R050.0-Z4	9mm	10mm	18mm	73mm	4	AlTiN	0.50mm
N57399	STR430M-100-D1-R050.0-Z4	10mm	10mm	10mm	63mm	4	AlTiN	0.50mm
N57400	STR430M-100-D2-R050.0-Z4	10mm	10mm	20mm	73mm	4	AlTiN	0.50mm
N57403	STR430M-120-D1-R075.0-Z4	12mm	12mm	12mm	74mm	4	AlTiN	0.75mm
N57404	STR430M-120-D2-R075.0-Z4	12mm	12mm	24mm	84mm	4	AlTiN	0.75mm
N57406	STR430M-130-F2-R075.0-Z4	13mm	14mm	26mm	84mm	4	AlTiN	0.75mm
N57408	STR430M-140-F2-R075.0-Z4	14mm	14mm	28mm	84mm	4	AlTiN	0.75mm
N57412	STR430M-160-D2-R075.0-Z4	16mm	16mm	32mm	93mm	4	AlTiN	0.75mm
N57415	STR430M-200-D1-R075.0-Z4	20mm	20mm	20mm	93mm	4	AlTiN	0.75mm
N57416	STR430M-200-D2-R075.0-Z4	20mm	20mm	40mm	105mm	4	AlTiN	0.75mm
N57418	STR430M-250-D2-R075.0-Z4	25mm	25mm	50mm	115mm	4	AlTiN	0.75mm

STABILIZER™ GP- STB430M

SOLID CARBIDE

HELIX VARIABLE

BALL END

CENTER CUTTING

- Eccentric OD relief
- Asymmetrical flute geometry
- US Patent # 6,991,409
- Ideal for carbon steels, alloy steels, tool steels, cast iron, copper

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N57422	STB430M-040-F2-B.0-Z4	4mm	6mm	8mm	58mm	4	AlTiN
N57426	STB430M-060-D2-B.0-Z4	6mm	6mm	12mm	58mm	4	AlTiN
N57427	STB430M-070-F1-B.0-Z4	7mm	8mm	7mm	64mm	4	AlTiN
N57428	STB430M-070-F2-B.0-Z4	7mm	8mm	14mm	64mm	4	AlTiN
N57430	STB430M-080-D2-B.0-Z4	8mm	8mm	16mm	64mm	4	AlTiN
N57434	STB430M-100-D2-B.0-Z4	10mm	10mm	20mm	73mm	4	AlTiN
N57438	STB430M-120-D2-B.0-Z4	12mm	12mm	24mm	84mm	4	AlTiN
N57440	STB430M-130-F2-B.0-Z4	13mm	14mm	26mm	84mm	4	AlTiN
N57444	STB430M-150-F2-B.0-Z4	15mm	16mm	30mm	93mm	4	AlTiN
N57445	STB430M-160-D1-B.0-Z4	16mm	16mm	16mm	83mm	4	AlTiN

Niagara Cutter

STABILIZER™ HT- STR440

SOLID CARBIDE

HELIX VARIABLE

RADIUS

CENTER CUTTING

- Eccentric primary relief
- Asymmetrical flute geometry
- US Patent # 6,991,409
- Ideal for stainless steel, high temperature alloys, nickel based alloys, titanium and titanium alloys

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS	SHANK CONDITION
N57453	STR440-0.125-D1-R010.0-Z4	1/8	1/8	1/8	1-1/2	4	AlTiN	0.010	Cylindrical Shank
N68444	STR440-0.125-D1-R010.0-Z4	1/8	1/8	1/8	1-1/2	4	AlCrN	0.010	Cylindrical Shank
N57454	STR440-0.125-D3-R010.0-Z4	1/8	1/8	3/8	1-1/2	4	AlTiN	0.010	Cylindrical Shank
N68445	STR440-0.125-D3-R010.0-Z4	1/8	1/8	3/8	1-1/2	4	AlCrN	0.010	Cylindrical Shank
N57455	STR440-0.156-F1-R010.0-Z4	5/32	3/16	3/16	2	4	AlTiN	0.010	Cylindrical Shank
N68446	STR440-0.156-F1-R010.0-Z4	5/32	3/16	3/16	2	4	AlCrN	0.010	Cylindrical Shank
N57456	STR440-0.156-F3-R010.0-Z4	5/32	3/16	7/16	2	4	AlTiN	0.010	Cylindrical Shank
N68447	STR440-0.156-F3-R010.0-Z4	5/32	3/16	7/16	2	4	AlCrN	0.010	Cylindrical Shank
N57457	STR440-0.188-D1-R010.0-Z4	3/16	3/16	3/16	2	4	AlTiN	0.010	Cylindrical Shank
N68448	STR440-0.188-D1-R010.0-Z4	3/16	3/16	3/16	2	4	AlCrN	0.010	Cylindrical Shank
N57458	STR440-0.188-D2-R010.0-Z4	3/16	3/16	7/16	2	4	AlTiN	0.010	Cylindrical Shank
N68449	STR440-0.188-D2-R010.0-Z4	3/16	3/16	7/16	2	4	AlCrN	0.010	Cylindrical Shank
N57011	STR440-0.188-D2-R030.0-Z4	3/16	3/16	7/16	2	4	AlTiN	0.030	Cylindrical Shank
N57459	STR440-0.219-F1-R020.0-Z4	7/32	1/4	1/4	2	4	AlTiN	0.020	Cylindrical Shank
N68450	STR440-0.219-F1-R020.0-Z4	7/32	1/4	1/4	2	4	AlCrN	0.020	Cylindrical Shank
N57461	STR440-0.250-D1-R020.0-Z4	1/4	1/4	1/4	2	4	AlTiN	0.020	Cylindrical Shank
N68452	STR440-0.250-D1-R020.0-Z4	1/4	1/4	1/4	2	4	AlCrN	0.020	Cylindrical Shank
N57012	STR440-0.250-D2-R015.0-Z4	1/4	1/4	1/2	2-1/2	4	AlTiN	0.015	Cylindrical Shank
N57462	STR440-0.250-D2-R020.0-Z4	1/4	1/4	1/2	2-1/2	4	AlTiN	0.020	Cylindrical Shank
N68453	STR440-0.250-D2-R020.0-Z4	1/4	1/4	1/2	2-1/2	4	AlCrN	0.020	Cylindrical Shank
N57013	STR440-0.250-D2-R030.0-Z4	1/4	1/4	1/2	2-1/2	4	AlTiN	0.030	Cylindrical Shank
N57014	STR440-0.250-D2-R060.0-Z4	1/4	1/4	1/2	2-1/2	4	AlTiN	0.060	Cylindrical Shank
N57463	STR440-0.281-F2-R020.0-Z4	9/32	5/16	5/8	2-1/2	4	AlTiN	0.020	Cylindrical Shank
N68454	STR440-0.281-F2-R020.0-Z4	9/32	5/16	5/8	2-1/2	4	AlCrN	0.020	Cylindrical Shank
N57464	STR440-0.313-D1-R020.0-Z4	5/16	5/16	5/16	2	4	AlTiN	0.020	Cylindrical Shank
N68455	STR440-0.313-D1-R020.0-Z4	5/16	5/16	5/16	2	4	AlCrN	0.020	Cylindrical Shank
N57465	STR440-0.313-D3-R020.0-Z4	5/16	5/16	13/16	2-1/2	4	AlTiN	0.020	Cylindrical Shank
N68456	STR440-0.313-D3-R020.0-Z4	5/16	5/16	13/16	2-1/2	4	AlCrN	0.020	Cylindrical Shank
N57467	STR440-0.375-D1-R020.3-Z4	3/8	3/8	3/8	2	4	AlTiN	0.020	Weldon Flat
N68458	STR440-0.375-D1-R020.3-Z4	3/8	3/8	3/8	2	4	AlCrN	0.020	Weldon Flat
N57468	STR440-0.375-D2-R020.3-Z4	3/8	3/8	7/8	2-1/2	4	AlTiN	0.020	Weldon Flat
N68459	STR440-0.375-D2-R020.3-Z4	3/8	3/8	7/8	2-1/2	4	AlCrN	0.020	Weldon Flat
N57015	STR440-0.375-D3-R020.0-Z4	3/8	3/8	7/8	2-1/2	4	AlTiN	0.020	Cylindrical Shank
N57016	STR440-0.375-D2-R030.0-Z4	3/8	3/8	7/8	2-1/2	4	AlTiN	0.030	Cylindrical Shank
N57017	STR440-0.375-D2-R060.0-Z4	3/8	3/8	7/8	2-1/2	4	AlTiN	0.060	Cylindrical Shank
N57018	STR440-0.375-D2-R090.0-Z4	3/8	3/8	7/8	2-1/2	4	AlTiN	0.090	Cylindrical Shank
N57471	STR440-0.438-D2-R020.3-Z4	7/16	7/16	1	2-3/4	4	AlTiN	0.020	Weldon Flat
N68462	STR440-0.438-D2-R020.3-Z4	7/16	7/16	1	2-3/4	4	AlCrN	0.020	Weldon Flat
N57473	STR440-0.500-D1-R030.3-Z4	1/2	1/2	1/2	2-1/2	4	AlTiN	0.030	Weldon Flat
N68464	STR440-0.500-D1-R030.3-Z4	1/2	1/2	1/2	2-1/2	4	AlCrN	0.030	Weldon Flat

DISCOUNT CODE D43

Niagara Cutter

STABILIZER™ HT- STR440

SOLID CARBIDE

HELIX VARIABLE

RADIUS

CENTER CUTTING

- Eccentric primary relief
- Asymmetrical flute geometry
- US Patent # 6,991,409
- Ideal for stainless steel, high temperature alloys, nickel based alloys, titanium and titanium alloys

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS	SHANK CONDITION
N57474	STR440-0.500-D2-R030.3-Z4	1/2	1/2	1	3	4	AlTiN	0.030	Weldon Flat
N68465	STR440-0.500-D2-R030.3-Z4	1/2	1/2	1	3	4	AlCrN	0.030	Weldon Flat
N57019	STR440-0.500-D3-R015.0-Z4	1/2	1/2	1-1/4	3	4	AlTiN	0.015	Cylindrical Shank
N57475	STR440-0.500-D3-R030.3-Z4	1/2	1/2	1-1/4	3	4	AlTiN	0.030	Weldon Flat
N68466	STR440-0.500-D3-R030.3-Z4	1/2	1/2	1-1/4	3	4	AlCrN	0.030	Weldon Flat
N57020	STR440-0.500-D4-R030.0-Z4	1/2	1/2	1-1/4	3	4	AlTiN	0.030	Cylindrical Shank
N57021	STR440-0.500-D3-R060.0-Z4	1/2	1/2	1-1/4	3	4	AlTiN	0.060	Cylindrical Shank
N57022	STR440-0.500-D3-R090.0-Z4	1/2	1/2	1-1/4	3	4	AlTiN	0.090	Cylindrical Shank
N57023	STR440-0.500-D3-R120.0-Z4	1/2	1/2	1-1/4	3	4	AlTiN	0.120	Cylindrical Shank
N57477	STR440-0.625-D1-R030.3-Z4	5/8	5/8	5/8	3	4	AlTiN	0.030	Weldon Flat
N68468	STR440-0.625-D1-R030.3-Z4	5/8	5/8	5/8	3	4	AlCrN	0.030	Weldon Flat
N57478	STR440-0.625-D2-R030.3-Z4	5/8	5/8	1-1/4	3-1/2	4	AlTiN	0.030	Weldon Flat
N68469	STR440-0.625-D2-R030.3-Z4	5/8	5/8	1-1/4	3-1/2	4	AlCrN	0.030	Weldon Flat
N57024	STR440-0.625-D3-R030.0-Z4	5/8	5/8	1-1/4	3-1/2	4	AlTiN	0.030	Cylindrical Shank
N57025	STR440-0.625-D2-R060.0-Z4	5/8	5/8	1-1/4	3-1/2	4	AlTiN	0.060	Cylindrical Shank
N57026	STR440-0.625-D2-R090.0-Z4	5/8	5/8	1-1/4	3-1/2	4	AlTiN	0.090	Cylindrical Shank
N57027	STR440-0.625-D2-R120.0-Z4	5/8	5/8	1-1/4	3-1/2	4	AlTiN	0.120	Cylindrical Shank
N57028	STR440-0.625-D2-R190.0-Z4	5/8	5/8	1-1/4	3-1/2	4	AlTiN	0.190	Cylindrical Shank
N57480	STR440-0.750-D1-R030.3-Z4	3/4	3/4	3/4	3	4	AlTiN	0.030	Weldon Flat
N68471	STR440-0.750-D1-R030.3-Z4	3/4	3/4	3/4	3	4	AlCrN	0.030	Weldon Flat
N57481	STR440-0.750-D2-R030.3-Z4	3/4	3/4	1-1/2	4	4	AlTiN	0.030	Weldon Flat
N68472	STR440-0.750-D2-R030.3-Z4	3/4	3/4	1-1/2	4	4	AlCrN	0.030	Weldon Flat
N57029	STR440-0.750-D3-R030.0-Z4	3/4	3/4	1-1/2	4	4	AlTiN	0.030	Cylindrical Shank
N57030	STR440-0.750-D2-R060.0-Z4	3/4	3/4	1-1/2	4	4	AlTiN	0.060	Cylindrical Shank
N57031	STR440-0.750-D2-R090.0-Z4	3/4	3/4	1-1/2	4	4	AlTiN	0.090	Cylindrical Shank
N57032	STR440-0.750-D2-R120.0-Z4	3/4	3/4	1-1/2	4	4	AlTiN	0.120	Cylindrical Shank
N57033	STR440-0.750-D2-R190.0-Z4	3/4	3/4	1-1/2	4	4	AlTiN	0.190	Cylindrical Shank
N57485	STR440-1.000-D1-R030.3-Z4	1	1	1	4	4	AlTiN	0.030	Weldon Flat
N68476	STR440-1.000-D1-R030.3-Z4	1	1	1	4	4	AlCrN	0.030	Weldon Flat
N57486	STR440-1.000-D2-R030.3-Z4	1	1	1-1/2	4	4	AlTiN	0.030	Weldon Flat
N68477	STR440-1.000-D2-R030.3-Z4	1	1	1-1/2	4	4	AlCrN	0.030	Weldon Flat
N57487	STR440-1.000-D3-R030.3-Z4	1	1	2	5	4	AlTiN	0.030	Weldon Flat
N68478	STR440-1.000-D3-R030.3-Z4	1	1	2	5	4	AlCrN	0.030	Weldon Flat
N57034	STR440-1.000-D4-R030.0-Z4	1	1	2	5	4	AlTiN	0.030	Cylindrical Shank
N57035	STR440-1.000-D2-R060.0-Z4	1	1	2	5	4	AlTiN	0.060	Cylindrical Shank
N57036	STR440-1.000-D2-R090.0-Z4	1	1	2	5	4	AlTiN	0.090	Cylindrical Shank
N57037	STR440-1.000-D2-R120.0-Z4	1	1	2	5	4	AlTiN	0.120	Cylindrical Shank
N57038	STR440-1.000-D2-R190.0-Z4	1	1	2	5	4	AlTiN	0.190	Cylindrical Shank
N57039	STR440-1.000-D2-R250.0-Z4	1	1	2	5	4	AlTiN	0.250	Cylindrical Shank

DISCOUNT CODE D43

Niagara Cutter

STABILIZER™ HT- STB440

SOLID CARBIDE

HELIX VARIABLE

BALL END

CENTER CUTTING

- Eccentric primary relief
- Asymmetrical flute geometry
- Weldon flat standard on shank sizes 3/8" and larger
- US Patent # 6,991,409
- Ideal for stainless, titanium, high temperature, nickel based and titanium alloys

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N57489	STB440-0.125-D1-B.0-Z4	1/8	1/8	1/8	1-1/2	4	AlTiN
N68480	STB440-0.125-D1-B.0-Z4	1/8	1/8	1/8	1-1/2	4	AlCrN
N57490	STB440-0.125-D3-B.0-Z4	1/8	1/8	3/8	1-1/2	4	AlTiN
N68481	STB440-0.125-D3-B.0-Z4	1/8	1/8	3/8	1-1/2	4	AlCrN
N57493	STB440-0.188-D1-B.0-Z4	3/16	3/16	3/16	2	4	AlTiN
N68484	STB440-0.188-D1-B.0-Z4	3/16	3/16	3/16	2	4	AlCrN
N57494	STB440-0.188-D2-B.0-Z4	3/16	3/16	7/16	2	4	AlTiN
N68485	STB440-0.188-D2-B.0-Z4	3/16	3/16	7/16	2	4	AlCrN
N57497	STB440-0.250-D1-B.0-Z4	1/4	1/4	1/4	2	4	AlTiN
N68488	STB440-0.250-D1-B.0-Z4	1/4	1/4	1/4	2	4	AlCrN
N57498	STB440-0.250-D2-B.0-Z4	1/4	1/4	1/2	2-1/2	4	AlTiN
N68489	STB440-0.250-D2-B.0-Z4	1/4	1/4	1/2	2-1/2	4	AlCrN
N57503	STB440-0.375-D1-B.3-Z4	3/8	3/8	3/8	2	4	AlTiN
N68494	STB440-0.375-D1-B.3-Z4	3/8	3/8	3/8	2	4	AlCrN
N57504	STB440-0.375-D2-B.3-Z4	3/8	3/8	7/8	2-1/2	4	AlTiN
N68495	STB440-0.375-D2-B.3-Z4	3/8	3/8	7/8	2-1/2	4	AlCrN
N57509	STB440-0.500-D1-B.3-Z4	1/2	1/2	1/2	2-1/2	4	AlTiN
N68500	STB440-0.500-D1-B.3-Z4	1/2	1/2	1/2	2-1/2	4	AlCrN
N57510	STB440-0.500-D2-B.3-Z4	1/2	1/2	1	3	4	AlTiN
N68501	STB440-0.500-D2-B.3-Z4	1/2	1/2	1	3	4	AlCrN
N57511	STB440-0.500-D3-B.3-Z4	1/2	1/2	1-1/4	3	4	AlTiN
N68502	STB440-0.500-D3-B.3-Z4	1/2	1/2	1-1/4	3	4	AlCrN
N57514	STB440-0.625-D2-B.3-Z4	5/8	5/8	1-1/4	3-1/2	4	AlTiN
N68505	STB440-0.625-D2-B.3-Z4	5/8	5/8	1-1/4	3-1/2	4	AlCrN
N57516	STB440-0.750-D1-B.3-Z4	3/4	3/4	3/4	3	4	AlTiN
N68507	STB440-0.750-D1-B.3-Z4	3/4	3/4	3/4	3	4	AlCrN
N57517	STB440-0.750-D2-B.3-Z4	3/4	3/4	1-1/2	4	4	AlTiN
N68508	STB440-0.750-D2-B.3-Z4	3/4	3/4	1-1/2	4	4	AlCrN
N57518	STB440-0.813-F2-B.3-Z4	13/16	7/8	1-5/8	4	4	AlTiN
N68509	STB440-0.813-F2-B.3-Z4	13/16	7/8	1-5/8	4	4	AlCrN
N57520	STB440-0.938-F2-B.3-Z4	15/16	1	1-7/8	4	4	AlTiN
N68511	STB440-0.938-F2-B.3-Z4	15/16	1	1-7/8	4	4	AlCrN
N57521	STB440-1.000-D1-B.3-Z4	1	1	1	4	4	AlTiN
N68512	STB440-1.000-D1-B.3-Z4	1	1	1	4	4	AlCrN
N57523	STB440-1.000-D3-B.3-Z4	1	1	2	5	4	AlTiN
N68514	STB440-1.000-D3-B.3-Z4	1	1	2	5	4	AlCrN
N57524	STB440-1.250-D2-B.3-Z4	1-1/4	1-1/4	2-1/4	5	4	AlTiN
N68515	STB440-1.250-D2-B.3-Z4	1-1/4	1-1/4	2-1/4	5	4	AlCrN

DISCOUNT CODE D43

Niagara Cutter

STABILIZER™ HT- STRN440

SOLID CARBIDE | HELIX VARIABLE | RADIUS | CENTER CUTTING

- Eccentric primary relief
- Asymmetrical flute geometry
- Weldon flat standard on shank sizes 3/8" and larger
- US Patent # 6,991,409
- Ideal for stainless, titanium, high temperature, nickel based and titanium alloys

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS	REACH	NECK DIA
N57525	STRN440-0.250-E2-R020.0-Z4	1/4	1/4	3/8	4	4	AlTiN	0.020	2-1/8	0.240
N57526	STRN440-0.313-E1-R020.0-Z4	5/16	5/16	7/16	4	4	AlTiN	0.020	2-1/8	0.300
N57527	STRN440-0.375-E1-R020.3-Z4	3/8	3/8	1/2	4	4	AlTiN	0.020	2-1/8	0.360
N57531	STRN440-0.500-E1-R030.3-Z4	1/2	1/2	5/8	4	4	AlTiN	0.030	2-1/8	0.480
N57532	STRN440-0.500-E2-R030.3-Z4	1/2	1/2	5/8	5	4	AlTiN	0.030	3-1/8	0.480
N57533	STRN440-0.500-E3-R030.3-Z4	1/2	1/2	5/8	6	4	AlTiN	0.030	4-1/8	0.480
N57536	STRN440-0.625-E3-R030.3-Z4	5/8	5/8	3/4	6	4	AlTiN	0.030	4	0.600
N57538	STRN440-0.750-E2-R030.3-Z4	3/4	3/4	1	5	4	AlTiN	0.030	3	0.720
N57539	STRN440-0.750-E3-R030.3-Z4	3/4	3/4	1	6	4	AlTiN	0.030	4	0.720
N57541	STRN440-1.000-E2-R030.3-Z4	1	1	1-1/4	6	4	AlTiN	0.030	4	0.960

STABILIZER™ HT- STBN440

SOLID CARBIDE | HELIX VARIABLE | BALL END | CENTER CUTTING

- Eccentric primary relief
- Asymmetrical flute geometry
- Weldon flat standard on shank sizes 3/8" and larger
- US Patent # 6,991,409
- Ideal for stainless, titanium, high temperature, nickel based and titanium alloys

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	REACH	NECK DIA
N57542	STBN440-0.250-E2-B.0-Z4	1/4	1/4	3/8	4	4	AlTiN	2-1/8	0.240
N57544	STBN440-0.375-E1-B.3-Z4	3/8	3/8	1/2	4	4	AlTiN	2-1/8	0.360
N57545	STBN440-0.375-E2-B.3-Z4	3/8	3/8	1/2	6	4	AlTiN	4-1/8	0.360
N57546	STBN440-0.438-E1-B.3-Z4	7/16	7/16	9/16	4	4	AlTiN	2-1/8	0.420
N57548	STBN440-0.500-E1-B.3-Z4	1/2	1/2	5/8	4	4	AlTiN	2-1/8	0.480
N57549	STBN440-0.500-E2-B.3-Z4	1/2	1/2	5/8	5	4	AlTiN	3-1/8	0.480
N57550	STBN440-0.500-E3-B.3-Z4	1/2	1/2	5/8	6	4	AlTiN	4-1/8	0.480
N57551	STBN440-0.625-E1-B.3-Z4	5/8	5/8	3/4	4	4	AlTiN	2-1/8	0.600
N57554	STBN440-0.750-E1-B.3-Z4	3/4	3/4	1	4	4	AlTiN	2	0.720
N57556	STBN440-0.750-E3-B.3-Z4	3/4	3/4	1	6	4	AlTiN	4	0.720

DISCOUNT CODE D43

STABILIZER™ HT- STR440M

SOLID CARBIDE

HELIX VARIABLE

RADIUS

CENTER CUTTING

- Eccentric OD relief
- Asymmetrical flute geometry
- US Patent # 6,991,409
- Ideal for stainless, titanium, high temperature, nickel based and titanium alloys

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS
N68666	STR440M-030-F2-R025.0-Z4	3mm	6mm	6mm	58mm	4	AlTiN	0.25mm
N68667	STR440M-040-F1-R025.0-Z4	4mm	6mm	4mm	58mm	4	AlTiN	0.25mm
N68668	STR440M-040-F2-R025.0-Z4	4mm	6mm	8mm	58mm	4	AlTiN	0.25mm
N68670	STR440M-050-F2-R025.0-Z4	5mm	6mm	10mm	58mm	4	AlTiN	0.25mm
N68671	STR440M-060-D1-R050.0-Z4	6mm	6mm	6mm	58mm	4	AlTiN	0.50mm
N68672	STR440M-060-D2-R050.0-Z4	6mm	6mm	12mm	58mm	4	AlTiN	0.50mm
N68675	STR440M-080-D1-R050.0-Z4	8mm	8mm	8mm	64mm	4	AlTiN	0.50mm
N68676	STR440M-080-D2-R050.0-Z4	8mm	8mm	16mm	64mm	4	AlTiN	0.50mm
N68679	STR440M-100-D1-R050.0-Z4	10mm	10mm	10mm	63mm	4	AlTiN	0.50mm
N68680	STR440M-100-D2-R050.0-Z4	10mm	10mm	20mm	73mm	4	AlTiN	0.50mm
N68683	STR440M-120-D1-R075.0-Z4	12mm	12mm	12mm	74mm	4	AlTiN	0.75mm
N68684	STR440M-120-D2-R075.0-Z4	12mm	12mm	24mm	84mm	4	AlTiN	0.75mm
N68692	STR440M-160-D2-R075.0-Z4	16mm	16mm	32mm	93mm	4	AlTiN	0.75mm
N68696	STR440M-200-D2-R075.0-Z4	20mm	20mm	40mm	105mm	4	AlTiN	0.75mm
N68698	STR440M-250-D2-R075.0-Z4	25mm	25mm	50mm	115mm	4	AlTiN	0.75mm

STABILIZER™ HT- STB440M

SOLID CARBIDE

HELIX

BALL END

CENTER CUTTING

- Eccentric OD relief
- Asymmetrical flute geometry
- US Patent # 6,991,409
- Ideal for stainless, titanium, high temperature, nickel based and titanium alloys

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N57593	STB440M-030-F1-B.0-Z4	3mm	6mm	3mm	58mm	4	AlTiN
N57594	STB440M-030-F2-B.0-Z4	3mm	6mm	6mm	58mm	4	AlTiN
N57595	STB440M-040-F1-B.0-Z4	4mm	6mm	4mm	58mm	4	AlTiN
N57597	STB440M-050-F1-B.0-Z4	5mm	6mm	5mm	58mm	4	AlTiN
N57599	STB440M-060-D1-B.0-Z4	6mm	6mm	6mm	58mm	4	AlTiN
N57600	STB440M-060-D2-B.0-Z4	6mm	6mm	12mm	58mm	4	AlTiN
N57604	STB440M-080-D2-B.0-Z4	8mm	8mm	16mm	64mm	4	AlTiN
N57608	STB440M-100-D2-B.0-Z4	10mm	10mm	20mm	73mm	4	AlTiN
N57611	STB440M-120-D1-B.0-Z4	12mm	12mm	12mm	74mm	4	AlTiN
N57612	STB440M-120-D2-B.0-Z4	12mm	12mm	24mm	84mm	4	AlTiN
N57613	STB440M-130-F1-B.0-Z4	13mm	14mm	13mm	76mm	4	AlTiN
N57614	STB440M-130-F2-B.0-Z4	13mm	14mm	26mm	84mm	4	AlTiN
N57617	STB440M-150-F1-B.0-Z4	15mm	16mm	15mm	83mm	4	AlTiN
N57620	STB440M-160-D2-B.0-Z4	16mm	16mm	32mm	93mm	4	AlTiN
N57623	STB440M-200-D1-B.0-Z4	20mm	20mm	20mm	93mm	4	AlTiN

STABILIZER™- STS540

SOLID CARBIDE

HELIX VARIABLE

SQUARE END

CENTER CUTTING

- Asymmetrical cutting edges
- US Patent # 6,991,409
- Ideal for profiling, high speed and trochoidal milling, stainless, titanium, high temperature alloys, carbon, alloy and tool steels

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N68625	STS540-0.250-D3-S.0-Z5	1/4	1/4	3/4	2-1/2	5	AlCrN
N68626	STS540-0.313-D2-S.0-Z5	5/16	5/16	3/4	2-1/2	5	AlCrN
N68627	STS540-0.375-D2-S.0-Z5	3/8	3/8	7/8	2-1/2	5	AlCrN
N68628	STS540-0.500-D3-S.0-Z5	1/2	1/2	1-1/4	3	5	AlCrN
N68629	STS540-0.625-D2-S.0-Z5	5/8	5/8	1-1/4	3-1/2	5	AlCrN
N68630	STS540-0.750-D2-S.0-Z5	3/4	3/4	1-1/2	4	5	AlCrN

STABILIZER™- STR540

SOLID CARBIDE

HELIX VARIABLE

RADIUS

CENTER CUTTING

- Asymmetrical flute geometry
- US Patent # 6,991,409
- Ideal for profiling, high speed and trochoidal milling, stainless, titanium, high temperature alloys, carbon, alloy and tool steels

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS
N68632	STR540-0.250-D3-R015.0-Z5	1/4	1/4	3/4	2-1/2	5	AlCrN	0.015
N68639	STR540-0.250-D3-R030.0-Z5	1/4	1/4	3/4	2-1/2	5	AlCrN	0.030
N68646	STR540-0.250-D3-R045.0-Z5	1/4	1/4	3/4	2-1/2	5	AlCrN	0.045
N68633	STR540-0.313-D2-R015.0-Z5	5/16	5/16	3/4	2-1/2	5	AlCrN	0.015
N68634	STR540-0.375-D2-R015.0-Z5	3/8	3/8	7/8	2-1/2	5	AlCrN	0.015
N68641	STR540-0.375-D2-R030.0-Z5	3/8	3/8	7/8	2-1/2	5	AlCrN	0.030
N68648	STR540-0.375-D2-R045.0-Z5	3/8	3/8	7/8	2-1/2	5	AlCrN	0.045
N68635	STR540-0.500-D3-R015.0-Z5	1/2	1/2	1-1/4	3	5	AlCrN	0.015
N68642	STR540-0.500-D3-R030.0-Z5	1/2	1/2	1-1/4	3	5	AlCrN	0.030
N68649	STR540-0.500-D3-R045.0-Z5	1/2	1/2	1-1/4	3	5	AlCrN	0.045
N68653	STR540-0.500-D3-R060.0-Z5	1/2	1/2	1-1/4	3	5	AlCrN	0.060
N68657	STR540-0.500-D3-R090.0-Z5	1/2	1/2	1-1/4	3	5	AlCrN	0.090
N68661	STR540-0.500-D3-R125.0-Z5	1/2	1/2	1-1/4	3	5	AlCrN	0.125
N68636	STR540-0.625-D2-R015.0-Z5	5/8	5/8	1-1/4	3-1/2	5	AlCrN	0.015
N68643	STR540-0.625-D2-R030.0-Z5	5/8	5/8	1-1/4	3-1/2	5	AlCrN	0.030
N68650	STR540-0.625-D2-R045.0-Z5	5/8	5/8	1-1/4	3-1/2	5	AlCrN	0.045
N68654	STR540-0.625-D2-R060.0-Z5	5/8	5/8	1-1/4	3-1/2	5	AlCrN	0.060
N68658	STR540-0.625-D2-R090.0-Z5	5/8	5/8	1-1/4	3-1/2	5	AlCrN	0.090
N68662	STR540-0.625-D2-R125.0-Z5	5/8	5/8	1-1/4	3-1/2	5	AlCrN	0.125
N68644	STR540-0.750-D2-R030.0-Z5	3/4	3/4	1-1/2	4	5	AlCrN	0.030
N68655	STR540-0.750-D2-R060.0-Z5	3/4	3/4	1-1/2	4	5	AlCrN	0.060
N68659	STR540-0.750-D2-R090.0-Z5	3/4	3/4	1-1/2	4	5	AlCrN	0.090
N68663	STR540-0.750-D2-R125.0-Z5	3/4	3/4	1-1/2	4	5	AlCrN	0.125
N68638	STR540-1.000-D2-R015.0-Z5	1	1	1-3/4	4	5	AlCrN	0.015
N68645	STR540-1.000-D2-R030.0-Z5	1	1	1-3/4	4	5	AlCrN	0.030
N68656	STR540-1.000-D2-R060.0-Z5	1	1	1-3/4	4	5	AlCrN	0.060

STABILIZER™- STS540M

SOLID CARBIDE | HELIX VARIABLE | SQUARE END | CENTER CUTTING

- Asymmetrical flute geometry
- US Patent # 6,991,409
- Ideal for profiling, high speed and trochoidal milling, stainless, titanium, high temperature alloys, carbon, alloy and tool steels

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N68699	STS540M-060-D2-S.0-Z5	6mm	6mm	12mm	58mm	5	AlTiN
N68700	STS540M-080-D2-S.0-Z5	8mm	8mm	16mm	64mm	5	AlTiN
N68701	STS540M-100-D2-S.0-Z5	10mm	10mm	20mm	73mm	5	AlTiN
N68702	STS540M-120-D2-S.0-Z5	12mm	12mm	24mm	84mm	5	AlTiN

STABILIZER™- STR540M

SOLID CARBIDE | HELIX VARIABLE | RADIUS | CENTER CUTTING

- Asymmetrical flute geometry
- US Patent # 6,991,409
- Ideal for profiling, high speed and trochoidal milling, stainless, titanium, high temperature alloys, carbon, alloy and tool steels

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS
N68717	STR540M-060-D2-R050.0-Z5	6mm	6mm	12mm	58mm	5	AlTiN	0.50mm
N68718	STR540M-080-D2-R050.0-Z5	8mm	8mm	16mm	64mm	5	AlTiN	0.50mm
N68719	STR540M-100-D2-R050.0-Z5	10mm	10mm	20mm	73mm	5	AlTiN	0.50mm
N68720	STR540M-120-D2-R075.0-Z5	12mm	12mm	24mm	84mm	5	AlTiN	0.75mm
N68722	STR540M-160-D2-R075.0-Z5	16mm	16mm	32mm	93mm	5	AlTiN	0.75mm

STS430 / STR430 / STB430

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 4$ 1/8	1/4	3/8	1/2	5/8	3/4	1
SLOTTING												
P	E 1 - 2	1.00	1.00	400	n (rev/min)	12224	6112	4075	3056	2445	2037	1528
					f_z (in)	0.0005	0.0010	0.0014	0.0019	0.0024	0.0029	0.0038
				300 - 500	v_f (in/min)	23.5	23.5	23.5	23.5	23.5	23.5	23.5
	E 3 - 4	1.00	1.00	325	n (rev/min)	9932	4966	3311	2483	1986	1655	1242
					f_z (in)	0.0004	0.0007	0.0011	0.0014	0.0018	0.0021	0.0028
				275 - 375	v_f (in/min)	13.9	13.9	13.9	13.9	13.9	13.9	13.9
	E 5 - 6	0.50	1.00	200	n (rev/min)	6112	3056	2037	1528	1222	1019	764
					f_z (in)	0.0003	0.0005	0.0008	0.0011	0.0014	0.0016	0.0022
				180 - 220	v_f (in/min)	6.6	6.6	6.6	6.6	6.6	6.6	6.6
K	E 12 - 13	1.00	1.00	350	n (rev/min)	10696	5348	3565	2674	2139	1783	1337
					f_z (in)	0.0006	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045
				280 - 420	v_f (in/min)	24.1	24.1	24.1	24.1	24.1	24.1	24.1
	E 14 - 15	0.40	1.00	325	n (rev/min)	9932	4966	3311	2483	1986	1655	1242
					f_z (in)	0.0004	0.0009	0.0013	0.0018	0.0022	0.0026	0.0035
				275 - 375	v_f (in/min)	17.4	17.4	17.4	17.4	17.4	17.4	17.4
N	E 18	1.00	1.00	500	n (rev/min)	15280	7640	5093	3820	3056	2547	1910
					f_z (in)	0.0003	0.0006	0.0009	0.0013	0.0016	0.0019	0.0025
				400 - 600	v_f (in/min)	19.1	19.1	19.1	19.1	19.1	19.1	19.1
SIDE MILLING - ROUGHING												
P	E 1 - 2	1.50	0.25	400	n (rev/min)	12224	6112	4075	3056	2445	2037	1528
					f_z (in)	0.0006	0.0012	0.0018	0.0024	0.0030	0.0036	0.0048
				300 - 500	v_f (in/min)	29.3	29.3	29.3	29.3	29.3	29.3	29.3
	E 3 - 4	1.50	0.25	325	n (rev/min)	9932	4966	3311	2483	1986	1655	1242
					f_z (in)	0.0004	0.0007	0.0011	0.0014	0.0018	0.0021	0.0028
				275 - 375	v_f (in/min)	13.9	13.9	13.9	13.9	13.9	13.9	13.9
	E 5 - 6	1.00	0.25	200	n (rev/min)	6112	3056	2037	1528	1222	1019	764
					f_z (in)	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				180 - 220	v_f (in/min)	7.3	7.3	7.3	7.3	7.3	7.3	7.3
K	E 12 - 13	1.50	0.25	270	n (rev/min)	8251	4126	2750	2063	1650	1375	1031
					f_z (in)	0.0007	0.0015	0.0022	0.0029	0.0036	0.0044	0.0058
				200 - 340	v_f (in/min)	23.9	23.9	23.9	23.9	23.9	23.9	23.9
	E 14 - 15	1.00	0.25	145	n (rev/min)	4431	2216	1477	1108	886	739	554
					f_z (in)	0.0004	0.0009	0.0013	0.0017	0.0021	0.0026	0.0034
				95 - 195	v_f (in/min)	7.5	7.5	7.5	7.5	7.5	7.5	7.5
N	E 18	1.50	0.25	500	n (rev/min)	15280	7640	5093	3820	3056	2547	1910
					f_z (in)	0.0003	0.0006	0.0009	0.0013	0.0016	0.0019	0.0025
				400 - 600	v_f (in/min)	19.1	19.1	19.1	19.1	19.1	19.1	19.1

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

STS430M / STR430M / STB430M

ISO GROUP	SMG	a_p x Dc	a_e X Dc	v_c (m / min)		$Z_n = 4$	4	6	8	10	12	14	16
SLOTTING													
P	E 1 - 2	1.00	1.00	122		n (rev/min)	9710	6470	4850	3880	3240	2770	2430
						f_z (mm)	0.015	0.023	0.031	0.038	0.046	0.054	0.061
				91	- 152	v_f (mm/min)	597	596	596	596	597	596	597
	E 3 - 4	1.00	1.00	99		n (rev/min)	7880	5250	3940	3150	2630	2250	1970
						f_z (mm)	0.011	0.017	0.022	0.028	0.034	0.039	0.045
				84	- 114	v_f (mm/min)	353	353	353	353	353	353	353
	E 5 - 6	0.50	1.00	61		n (rev/min)	4850	3240	2430	1940	1620	1390	1210
						f_z (mm)	0.009	0.013	0.017	0.022	0.026	0.030	0.035
				55	- 67	v_f (mm/min)	168	168	168	168	168	168	167
K	E 12 - 13	1.00	1.00	107		n (rev/min)	8510	5680	4260	3410	2840	2430	2130
						f_z (mm)	0.018	0.027	0.036	0.045	0.054	0.063	0.072
				85	- 128	v_f (mm/min)	613	613	613	614	613	612	613
	E 14 - 15	0.40	1.00	99		n (rev/min)	7880	5250	3940	3150	2630	2250	1970
						f_z (mm)	0.014	0.021	0.028	0.035	0.042	0.049	0.056
				84	- 114	v_f (mm/min)	441	441	441	441	442	441	441
N	E 18	1.00	1.00	152		n (rev/min)	12100	8060	6050	4840	4030	3460	3020
						f_z (mm)	0.010	0.015	0.020	0.025	0.030	0.035	0.040
				122	- 183	v_f (mm/min)	484	484	484	484	484	484	483
SIDE MILLING - ROUGHING													
P	E 1 - 2	1.50	0.25	122		n (rev/min)	9710	6470	4850	3880	3240	2770	2430
						f_z (mm)	0.019	0.029	0.038	0.048	0.058	0.067	0.077
				91	- 152	v_f (mm/min)	746	745	745	745	746	745	746
	E 3 - 4	1.50	0.25	99		n (rev/min)	7880	5250	3940	3150	2630	2250	1970
						f_z (mm)	0.011	0.017	0.022	0.028	0.034	0.039	0.045
				84	- 114	v_f (mm/min)	353	353	353	353	353	353	353
	E 5 - 6	1.00	0.25	61		n (rev/min)	4850	3240	2430	1940	1620	1390	1210
						f_z (mm)	0.010	0.014	0.019	0.024	0.029	0.034	0.038
				55	- 67	v_f (mm/min)	186	187	187	186	187	187	186
K	E 12 - 13	1.50	0.25	82		n (rev/min)	6530	4350	3260	2610	2180	1860	1630
						f_z (mm)	0.023	0.035	0.046	0.058	0.070	0.081	0.093
				61	- 104	v_f (mm/min)	606	606	605	606	607	604	605
	E 14 - 15	1.00	0.25	44		n (rev/min)	3500	2330	1750	1400	1170	1000	880
						f_z (mm)	0.014	0.020	0.027	0.034	0.041	0.048	0.054
				29	- 59	v_f (mm/min)	190	190	190	190	191	190	191
N	E 18	1.50	0.25	152		n (rev/min)	12100	8060	6050	4840	4030	3460	3020
						f_z (mm)	0.010	0.015	0.020	0.025	0.030	0.035	0.040
				122	- 183	v_f (mm/min)	484	484	484	484	484	484	483

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

STBN430 / STRN430

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 4$ 1/8	1/4	3/8	1/2	5/8	3/4	1
SLOTTING												
P	E 1 - 2	0.50	1.00	320	n (rev/min)	9779	4890	3260	2445	1956	1630	1222
					f_z (in)	0.0003	0.0007	0.0010	0.0014	0.0017	0.0021	0.0028
				220 - 420	v_f (in/min)	13.6	13.6	13.6	13.6	13.6	13.6	13.6
	E 3 - 4	0.50	1.00	260	n (rev/min)	7946	3973	2649	1986	1589	1324	993
					f_z (in)	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017	0.0022
				110 - 210	v_f (in/min)	8.9	8.9	8.9	8.9	8.9	8.9	8.9
	E 5 - 6	0.50	1.00	160	n (rev/min)	4890	2445	1630	1222	978	815	611
					f_z (in)	0.0002	0.0004	0.0006	0.0009	0.0011	0.0013	0.0017
				60 - 100	v_f (in/min)	4.2	4.2	4.2	4.2	4.2	4.2	4.2
K	E 12 - 13	0.50	1.00	280	n (rev/min)	8557	4278	2852	2139	1711	1426	1070
					f_z (in)	0.0005	0.0009	0.0014	0.0018	0.0023	0.0027	0.0036
				146 - 286	v_f (in/min)	15.4	15.4	15.4	15.4	15.4	15.4	15.4
	E 14 - 15	0.40	1.00	260	n (rev/min)	7946	3973	2649	1986	1589	1324	993
					f_z (in)	0.0004	0.0007	0.0011	0.0014	0.0018	0.0021	0.0028
				76 - 156	v_f (in/min)	11.1	11.1	11.1	11.1	11.1	11.1	11.1
N	E 18	0.50	1.00	400	n (rev/min)	12224	6112	4075	3056	2445	2037	1528
					f_z (in)	0.0003	0.0005	0.0008	0.0010	0.0013	0.0015	0.0020
				300 - 500	v_f (in/min)	12.2	12.2	12.2	12.2	12.2	12.2	12.2
SIDE MILLING - ROUGHING												
P	E 1 - 2	1.00	0.25	320	n (rev/min)	9779	4890	3260	2445	1956	1630	1222
					f_z (in)	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017	0.0022
				220 - 420	v_f (in/min)	10.8	10.8	10.8	10.8	10.8	10.8	10.8
	E 3 - 4	1.00	0.25	260	n (rev/min)	7946	3973	2649	1986	1589	1324	993
					f_z (in)	0.0002	0.0004	0.0007	0.0009	0.0011	0.0013	0.0018
				110 - 210	v_f (in/min)	7.0	7.0	7.0	7.0	7.0	7.0	7.0
	E 5 - 6	1.00	0.25	160	n (rev/min)	4890	2445	1630	1222	978	815	611
					f_z (in)	0.0002	0.0003	0.0005	0.0007	0.0009	0.0010	0.0014
				60 - 100	v_f (in/min)	3.4	3.4	3.4	3.4	3.4	3.4	3.4
K	E 12 - 13	1.00	0.25	280	n (rev/min)	8557	4278	2852	2139	1711	1426	1070
					f_z (in)	0.0004	0.0007	0.0011	0.0014	0.0018	0.0021	0.0028
				146 - 286	v_f (in/min)	12.0	12.0	12.0	12.0	12.0	12.0	12.0
	E 14 - 15	1.00	0.25	260	n (rev/min)	7946	3973	2649	1986	1589	1324	993
					f_z (in)	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017	0.0022
				76 - 156	v_f (in/min)	8.7	8.7	8.7	8.7	8.7	8.7	8.7
N	E 18	1.00	0.25	400	n (rev/min)	12224	6112	4075	3056	2445	2037	1528
					f_z (in)	0.0002	0.0004	0.0006	0.0008	0.0010	0.0012	0.0016
				300 - 500	v_f (in/min)	9.8	9.8	9.8	9.8	9.8	9.8	9.8

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

STR440 / STB440

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 4$ 1/8	1/4	3/8	1/2	5/8	3/4	1
SLOTTING												
M	E 8 - 9	0.50	1.00	370	n (rev/min)	11307	5654	3769	2827	2261	1885	1413
					f_z (in)	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				270 - 470	v_f (in/min)	17.0	17.0	17.0	17.0	17.0	17.0	17.0
	E 10 - 11	0.40	1.00	300	n (rev/min)	9168	4584	3056	2292	1834	1528	1146
					f_z (in)	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				250 - 350	v_f (in/min)	13.8	13.8	13.8	13.8	13.8	13.8	13.8
S	E 19	0.30	1.00	90	n (rev/min)	2750	1375	917	688	550	458	344
					f_z (in)	0.0002	0.0004	0.0006	0.0008	0.0010	0.0012	0.0016
				70 - 110	v_f (in/min)	2.2	2.2	2.2	2.2	2.2	2.2	2.2
	E 20	0.30	1.00	90	n (rev/min)	2750	1375	917	688	550	458	344
					f_z (in)	0.0002	0.0004	0.0006	0.0008	0.0010	0.0012	0.0016
				70 - 110	v_f (in/min)	2.2	2.2	2.2	2.2	2.2	2.2	2.2
	E 21	0.30	1.00	90	n (rev/min)	2750	1375	917	688	550	458	344
					f_z (in)	0.0002	0.0004	0.0006	0.0008	0.0010	0.0012	0.0016
				70 - 110	v_f (in/min)	2.2	2.2	2.2	2.2	2.2	2.2	2.2
	E 22	0.40	1.00	120	n (rev/min)	3667	1834	1222	917	733	611	458
					f_z (in)	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				100 - 140	v_f (in/min)	4.4	4.4	4.4	4.4	4.4	4.4	4.4
SIDE MILLING - ROUGHING												
M	E 8 - 9	1.00	0.40	370	n (rev/min)	11307	5654	3769	2827	2261	1885	1413
					f_z (in)	0.0004	0.0007	0.0011	0.0014	0.0018	0.0021	0.0028
				270 - 470	v_f (in/min)	15.8	15.8	15.8	15.8	15.8	15.8	15.8
	E 10 - 11	1.00	0.30	300	n (rev/min)	9168	4584	3056	2292	1834	1528	1146
					f_z (in)	0.0003	0.0006	0.0009	0.0012	0.0014	0.0017	0.0023
				250 - 350	v_f (in/min)	10.5	10.5	10.5	10.5	10.5	10.5	10.5
S	E 19	1.00	0.15	90	n (rev/min)	2750	1375	917	688	550	458	344
					f_z (in)	0.0004	0.0007	0.0011	0.0014	0.0018	0.0021	0.0028
				70 - 110	v_f (in/min)	3.9	3.9	3.9	3.9	3.9	3.9	3.9
	E 20	1.00	0.15	90	n (rev/min)	2750	1375	917	688	550	458	344
					f_z (in)	0.0004	0.0007	0.0011	0.0014	0.0018	0.0021	0.0028
				70 - 110	v_f (in/min)	3.9	3.9	3.9	3.9	3.9	3.9	3.9
	E 21	1.00	0.15	90	n (rev/min)	2750	1375	917	688	550	458	344
					f_z (in)	0.0004	0.0007	0.0011	0.0014	0.0018	0.0021	0.0028
				70 - 110	v_f (in/min)	3.9	3.9	3.9	3.9	3.9	3.9	3.9
	E 22	1.00	0.30	120	n (rev/min)	3667	1834	1222	917	733	611	458
					f_z (in)	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				100 - 140	v_f (in/min)	5.5	5.5	5.5	5.5	5.5	5.5	5.5

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

STR440M / STB440M

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (m / min)		$Z_n = 4$	4	6	8	10	12	14	16	20	25
SLOTTING															
M	E 8 - 9	0.50	1.00	113		n (rev/min)	8990	5990	4500	3600	3000	2570	2250	1800	1440
						f_z (mm)	0.012	0.018	0.024	0.030	0.036	0.042	0.048	0.060	0.075
				82	- 143	v_f (mm/min)	432	431	432	432	432	432	432	432	432
	E 10 - 11	0.40	1.00	91		n (rev/min)	7240	4830	3620	2900	2410	2070	1810	1450	1160
						f_z (mm)	0.012	0.018	0.024	0.030	0.036	0.042	0.048	0.060	0.075
				76	- 107	v_f (mm/min)	348	348	348	348	348	348	348	348	348
S	E 19	0.30	1.00	27		n (rev/min)	2150	1430	1070	860	720	610	540	430	340
						f_z (mm)	0.006	0.010	0.013	0.016	0.019	0.022	0.026	0.032	0.040
				21	- 34	v_f (mm/min)	55	55	55	55	55	55	55	55	54
	E 20	0.30	1.00	27		n (rev/min)	2150	1430	1070	860	720	610	540	430	340
						f_z (mm)	0.006	0.010	0.013	0.016	0.019	0.022	0.026	0.032	0.040
				21	- 34	v_f (mm/min)	55	55	55	55	55	55	55	55	54
	E 21	0.30	1.00	27		n (rev/min)	2150	1430	1070	860	720	610	540	430	340
						f_z (mm)	0.006	0.010	0.013	0.016	0.019	0.022	0.026	0.032	0.040
				21	- 34	v_f (mm/min)	55	55	55	55	55	55	55	55	54
	E 22	0.40	1.00	37		n (rev/min)	2940	1960	1470	1180	980	840	740	590	470
						f_z (mm)	0.010	0.014	0.019	0.024	0.029	0.034	0.038	0.048	0.060
				30	- 43	v_f (mm/min)	113	113	113	113	113	113	114	113	113
SIDE MILLING - ROUGHING															
M	E 8 - 9	1.00	0.40	113		n (rev/min)	8990	5990	4500	3600	3000	2570	2250	1800	1440
						f_z (mm)	0.011	0.017	0.022	0.028	0.034	0.039	0.045	0.056	0.070
				82	- 143	v_f (mm/min)	403	403	403	403	403	403	403	403	403
	E 10 - 11	1.00	0.30	91		n (rev/min)	7240	4830	3620	2900	2410	2070	1810	1450	1160
						f_z (mm)	0.009	0.014	0.018	0.023	0.028	0.032	0.037	0.046	0.058
				76	- 107	v_f (mm/min)	266	267	266	267	266	267	266	267	267
S	E 19	1.00	0.15	27		n (rev/min)	2150	1430	1070	860	720	610	540	430	340
						f_z (mm)	0.011	0.017	0.022	0.028	0.034	0.039	0.045	0.056	0.070
				21	- 34	v_f (mm/min)	96	96	96	96	97	96	97	96	95
	E 20	1.00	0.15	27		n (rev/min)	2150	1430	1070	860	720	610	540	430	340
						f_z (mm)	0.011	0.017	0.022	0.028	0.034	0.039	0.045	0.056	0.070
				21	- 34	v_f (mm/min)	96	96	96	96	97	96	97	96	95
	E 21	1.00	0.15	27		n (rev/min)	2150	1430	1070	860	720	610	540	430	340
						f_z (mm)	0.011	0.017	0.022	0.028	0.034	0.039	0.045	0.056	0.070
				21	- 34	v_f (mm/min)	96	96	96	96	97	96	97	96	95
	E 22	1.00	0.30	37		n (rev/min)	2940	1960	1470	1180	980	840	740	590	470
						f_z (mm)	0.012	0.018	0.024	0.030	0.036	0.042	0.048	0.060	0.075
				30	- 43	v_f (mm/min)	141	141	141	142	141	141	142	142	141

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

STRN440 / STBN440

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 4$ 1/8	1/4	3/8	1/2	5/8	3/4	1
SLOTTING												
M	E 8 - 9	0.50	1.00	296	n (rev/min)	9046	4523	3015	2261	1809	1508	1131
					f_z (in)	0.0002	0.0004	0.0007	0.0009	0.0011	0.0013	0.0018
				266 - 326	v_f (in/min)	8.1	8.1	8.1	8.1	8.1	8.1	8.1
	E 10 - 11	0.40	1.00	240	n (rev/min)	7334	3667	2445	1834	1467	1222	917
					f_z (in)	0.0002	0.0004	0.0006	0.0007	0.0009	0.0011	0.0015
				210 - 270	v_f (in/min)	5.4	5.4	5.4	5.4	5.4	5.4	5.4
S	E 19	0.30	1.00	72	n (rev/min)	2200	1100	733	550	440	367	275
					f_z (in)	0.0002	0.0003	0.0005	0.0006	0.0008	0.0010	0.0013
				52 - 92	v_f (in/min)	1.4	1.4	1.4	1.4	1.4	1.4	1.4
	E 20	0.30	1.00	72	n (rev/min)	2200	1100	733	550	440	367	275
					f_z (in)	0.0002	0.0003	0.0005	0.0006	0.0008	0.0010	0.0013
				52 - 92	v_f (in/min)	1.4	1.4	1.4	1.4	1.4	1.4	1.4
	E 21	0.30	1.00	72	n (rev/min)	2200	1100	733	550	440	367	275
					f_z (in)	0.0002	0.0003	0.0005	0.0006	0.0008	0.0010	0.0013
				52 - 92	v_f (in/min)	1.4	1.4	1.4	1.4	1.4	1.4	1.4
	E 22	0.40	1.00	96	n (rev/min)	2934	1467	978	733	587	489	367
					f_z (in)	0.0002	0.0005	0.0007	0.0010	0.0012	0.0014	0.0019
				76 - 116	v_f (in/min)	2.8	2.8	2.8	2.8	2.8	2.8	2.8
SIDE MILLING - ROUGHING												
M	E 8 - 9	1.00	0.40	370	n (rev/min)	11307	5654	3769	2827	2261	1885	1413
					f_z (in)	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017	0.0022
				340 - 400	v_f (in/min)	12.7	12.7	12.7	12.7	12.7	12.7	12.7
	E 10 - 11	1.00	0.30	300	n (rev/min)	9168	4584	3056	2292	1834	1528	1146
					f_z (in)	0.0002	0.0005	0.0007	0.0009	0.0012	0.0014	0.0018
				270 - 330	v_f (in/min)	8.4	8.4	8.4	8.4	8.4	8.4	8.4
S	E 19	1.00	0.15	90	n (rev/min)	2750	1375	917	688	550	458	344
					f_z (in)	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017	0.0022
				70 - 110	v_f (in/min)	3.1	3.1	3.1	3.1	3.1	3.1	3.1
	E 20	1.00	0.15	90	n (rev/min)	2750	1375	917	688	550	458	344
					f_z (in)	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017	0.0022
				70 - 110	v_f (in/min)	3.1	3.1	3.1	3.1	3.1	3.1	3.1
	E 21	1.00	0.15	80	n (rev/min)	2445	1222	815	611	489	407	306
					f_z (in)	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017	0.0022
				60 - 100	v_f (in/min)	2.7	2.7	2.7	2.7	2.7	2.7	2.7
	E 22	1.00	0.30	120	n (rev/min)	3667	1834	1222	917	733	611	458
					f_z (in)	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				100 - 140	v_f (in/min)	4.4	4.4	4.4	4.4	4.4	4.4	4.4

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

STS540 / STR540

SIDE MILLING - ROUGHING															
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 5$	1/16	1/8	1/4	3/8	1/2	5/8	3/4	1
P	E 1 - 2	1.00	0.30	500	n (rev/min)		30560	15280	7640	5093	3820	3056	2547	1910
					f_z (in)		0.0003	0.0006	0.0012	0.0018	0.0024	0.0030	0.0036	0.0048
				450 - 550	v_f (mm/min)		45.8	45.8	45.8	45.8	45.8	45.8	45.8	45.8
	E 3 - 4	1.00	0.30	400	n (rev/min)		24448	12224	6112	4075	3056	2445	2037	1528
					f_z (in)		0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				350 - 450	v_f (mm/min)		22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9
	E 5 - 6	1.00	0.20	200	n (rev/min)		12224	6112	3056	2037	1528	1222	1019	764
					f_z (in)		0.0002	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				150 - 250	v_f (mm/min)		9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2
H	M / A / D 7a (48>52HRc)	1.00	0.10	80	n (rev/min)		4890	2445	1222	815	611	489	407	306
					f_z (in)		0.0001	0.0002	0.0004	0.0006	0.0008	0.0010	0.0012	0.0016
				60 - 100	v_f (mm/min)		2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
M	E 8 - 9	1.00	0.20	380	n (rev/min)		23226	11613	5806	3871	2903	2323	1935	1452
					f_z (in)		0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				330 - 430	v_f (mm/min)		23.2	21.8	21.8	21.8	21.8	21.8	21.8	21.8
	E 10 - 11	1.00	0.15	275	n (rev/min)		16808	8404	4202	2801	2101	1681	1401	1051
					f_z (in)		0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				225 - 325	v_f (mm/min)		15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8
K	E 12 - 13	1.00	0.50	500	n (rev/min)		30560	15280	7640	5093	3820	3056	2547	1910
					f_z (in)		0.0004	0.0007	0.0014	0.0021	0.0028	0.0035	0.0042	0.0056
				450 - 550	v_f (mm/min)		53.5	53.5	53.5	53.5	53.5	53.5	53.5	53.5
	E 12 - 13	1.00	0.30	215	n (rev/min)		13141	6570	3285	2190	1643	1314	1095	821
					f_z (in)		0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				165 - 265	v_f (mm/min)		12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3
S	E 19	1.00	0.20	100	n (rev/min)		6112	3056	1528	1019	764	611	509	382
					f_z (in)		0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				80 - 120	v_f (mm/min)		5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
	E 20	1.00	0.20	100	n (rev/min)		6112	3056	1528	1019	764	611	509	382
					f_z (in)		0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				80 - 120	v_f (mm/min)		5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
	E 21	1.00	0.20	100	n (rev/min)		6112	3056	1528	1019	764	611	509	382
					f_z (in)		0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				80 - 120	v_f (mm/min)		5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
	E 22	1.00	0.20	170	n (rev/min)		10390	5195	2598	1732	1299	1039	866	649
					f_z (in)		0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				120 - 220	v_f (mm/min)		9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

STS540M / STR540M

SIDE MILLING - ROUGHING													
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (m / min)		$Z_n = 5$ 4	6	8	10	12	14	16
P	E 1 - 2	1.00	0.30	152	n (rev/min)	12100	8060	6050	4840	4030	3460	3020
					f_z (mm)	0.019	0.029	0.038	0.048	0.058	0.067	0.077
				137 - 168	v_f (mm/min)	1162	1161	1162	1162	1161	1163	1160
	E 3 - 4	1.00	0.30	122	n (rev/min)	9710	6470	4850	3880	3240	2770	2430
					f_z (mm)	0.012	0.018	0.024	0.030	0.036	0.042	0.048
				107 - 137	v_f (mm/min)	583	582	582	582	583	582	583
	E 5 - 6	1.00	0.20	61	n (rev/min)	4850	3240	2430	1940	1620	1390	1210
					f_z (mm)	0.010	0.014	0.019	0.024	0.029	0.034	0.038
				46 - 76	v_f (mm/min)	233	233	233	233	233	234	232
H	M / A / D 7a (48>52HRc)	1.00	0.10	24	n (rev/min)	1910	1270	950	760	640	550	480
					f_z (mm)	0.006	0.010	0.013	0.016	0.019	0.022	0.026
				18 - 30	v_f (mm/min)	61	61	61	61	61	62	61
M	E 8 - 9	1.00	0.20	116	n (rev/min)	9230	6150	4620	3690	3080	2640	2310
					f_z (mm)	0.013	0.018	0.024	0.030	0.036	0.042	0.048
				101 - 131	v_f (mm/min)	591	554	554	554	554	554	554
	E 10 - 11	1.00	0.15	84	n (rev/min)	6680	4460	3340	2670	2230	1910	1670
					f_z (mm)	0.012	0.018	0.024	0.030	0.036	0.042	0.048
				69 - 99	v_f (mm/min)	401	401	401	401	401	401	401
K	E 12 - 13	1.00	0.50	152	n (rev/min)	12100	8060	6050	4840	4030	3460	3020
					f_z (mm)	0.022	0.034	0.045	0.056	0.067	0.078	0.090
				137 - 168	v_f (mm/min)	1355	1354	1355	1355	1354	1356	1353
	E 12 - 13	1.00	0.30	66	n (rev/min)	5250	3500	2630	2100	1750	1500	1310
					f_z (mm)	0.012	0.018	0.024	0.030	0.036	0.042	0.048
				50 - 81	v_f (mm/min)	315	315	316	315	315	315	314
S	E 19	1.00	0.10	30	n (rev/min)	2390	1590	1190	950	800	680	600
					f_z (mm)	0.012	0.018	0.024	0.030	0.036	0.042	0.048
				24 - 37	v_f (mm/min)	143	143	143	143	144	143	144
	E 20	1.00	0.10	30	n (rev/min)	2390	1590	1190	950	800	680	600
					f_z (mm)	0.012	0.018	0.024	0.030	0.036	0.042	0.048
				24 - 37	v_f (mm/min)	143	143	143	143	144	143	144
	E 21	1.00	0.10	30	n (rev/min)	2390	1590	1190	950	800	680	600
					f_z (mm)	0.012	0.018	0.024	0.030	0.036	0.042	0.048
				24 - 37	v_f (mm/min)	143	143	143	143	144	143	144
	E 22	1.00	0.20	52	n (rev/min)	4140	2760	2070	1660	1380	1180	1030
					f_z (mm)	0.012	0.018	0.024	0.030	0.036	0.042	0.048
				37 - 67	v_f (mm/min)	248	248	248	249	248	248	247

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

ELITE HIGH PERFORMANCE- A245

SOLID CARBIDE

HELIX 45°

SQUARE END

CENTER CUTTING

- Cylindrical land to eliminate chatter
- Form ground flute shape
- Eccentric primary relief
- Ideal for slotting in aluminum and non-ferrous materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N61350	A245-0.125-D2-S.0-Z2	1/8	1/8	1/4	1-1/2	2	
N61442	A245-0.125-D2-S.0-Z2	1/8	1/8	1/4	1-1/2	2	TiCN
N61351	A245-0.125-D3-S.0-Z2	1/8	1/8	3/8	1-1/2	2	
N61443	A245-0.125-D3-S.0-Z2	1/8	1/8	3/8	1-1/2	2	TiCN
N61352	A245-0.156-F2-S.0-Z2	5/32	3/16	5/16	2	2	
N61444	A245-0.156-F2-S.0-Z2	5/32	3/16	5/16	2	2	TiCN
N61353	A245-0.156-F3-S.0-Z2	5/32	3/16	1/2	2	2	
N61445	A245-0.156-F3-S.0-Z2	5/32	3/16	1/2	2	2	TiCN
N61354	A245-0.188-D2-S.0-Z2	3/16	3/16	5/16	2	2	
N61446	A245-0.188-D2-S.0-Z2	3/16	3/16	5/16	2	2	TiCN
N61355	A245-0.188-D3-S.0-Z2	3/16	3/16	9/16	2	2	
N61447	A245-0.188-D3-S.0-Z2	3/16	3/16	9/16	2	2	TiCN
N61357	A245-0.219-F3-S.0-Z2	7/32	1/4	3/4	2-1/2	2	
N61449	A245-0.219-F3-S.0-Z2	7/32	1/4	3/4	2-1/2	2	TiCN
N61358	A245-0.250-D2-S.0-Z2	1/4	1/4	3/8	2-1/2	2	
N61450	A245-0.250-D2-S.0-Z2	1/4	1/4	3/8	2-1/2	2	TiCN
N61359	A245-0.250-D3-S.0-Z2	1/4	1/4	3/4	2-1/2	2	
N61451	A245-0.250-D3-S.0-Z2	1/4	1/4	3/4	2-1/2	2	TiCN
N61360	A245-0.250-D5-S.0-Z2	1/4	1/4	1-1/4	4	2	
N61452	A245-0.250-D5-S.0-Z2	1/4	1/4	1-1/4	4	2	TiCN
N61363	A245-0.313-D1-S.0-Z2	5/16	5/16	7/16	2-1/2	2	
N61455	A245-0.313-D1-S.0-Z2	5/16	5/16	7/16	2-1/2	2	TiCN
N61364	A245-0.313-D3-S.0-Z2	5/16	5/16	13/16	2-1/2	2	
N61456	A245-0.313-D3-S.0-Z2	5/16	5/16	13/16	2-1/2	2	TiCN
N61365	A245-0.313-D4-S.0-Z2	5/16	5/16	1-1/4	3-1/2	2	
N61457	A245-0.313-D4-S.0-Z2	5/16	5/16	1-1/4	3-1/2	2	TiCN
N61369	A245-0.375-D1-S.0-Z2	3/8	3/8	1/2	2-1/2	2	
N61461	A245-0.375-D1-S.0-Z2	3/8	3/8	1/2	2-1/2	2	TiCN
N61370	A245-0.375-D3-S.0-Z2	3/8	3/8	1	2-1/2	2	
N61462	A245-0.375-D3-S.0-Z2	3/8	3/8	1	2-1/2	2	TiCN
N61371	A245-0.375-D4-S.0-Z2	3/8	3/8	1-1/2	4	2	
N61463	A245-0.375-D4-S.0-Z2	3/8	3/8	1-1/2	4	2	TiCN
N61378	A245-0.500-D1-S.0-Z2	1/2	1/2	5/8	3	2	
N61470	A245-0.500-D1-S.0-Z2	1/2	1/2	5/8	3	2	TiCN
N61379	A245-0.500-D3-S.0-Z2	1/2	1/2	1-1/4	3	2	

DISCOUNT CODE D43

ELITE HIGH PERFORMANCE- A245

SOLID CARBIDE

HELIX 45°

SQUARE END

CENTER CUTTING

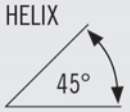
- Cylindrical land to eliminate chatter
- Form ground flute shape
- Eccentric primary relief
- Ideal for slotting in aluminum and non-ferrous materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N61471	A245-0.500-D3-S.0-Z2	1/2	1/2	1-1/4	3	2	TiCN
N61380	A245-0.500-D4-S.0-Z2	1/2	1/2	2	4	2	
N61472	A245-0.500-D4-S.0-Z2	1/2	1/2	2	4	2	TiCN
N61381	A245-0.500-D6-S.0-Z2	1/2	1/2	3-1/8	6	2	
N61473	A245-0.500-D6-S.0-Z2	1/2	1/2	3-1/8	6	2	TiCN
N61382	A245-0.625-D1-S.0-Z2	5/8	5/8	3/4	3	2	
N61474	A245-0.625-D1-S.0-Z2	5/8	5/8	3/4	3	2	TiCN
N61383	A245-0.625-D3-S.0-Z2	5/8	5/8	1-5/8	3-1/2	2	
N61475	A245-0.625-D3-S.0-Z2	5/8	5/8	1-5/8	3-1/2	2	TiCN
N61384	A245-0.625-D4-S.0-Z2	5/8	5/8	2-1/2	5	2	
N61476	A245-0.625-D4-S.0-Z2	5/8	5/8	2-1/2	5	2	TiCN
N61385	A245-0.625-D6-S.0-Z2	5/8	5/8	3-3/4	6	2	
N61477	A245-0.625-D6-S.0-Z2	5/8	5/8	3-3/4	6	2	TiCN
N61386	A245-0.750-D1-S.0-Z2	3/4	3/4	1	3	2	
N61478	A245-0.750-D1-S.0-Z2	3/4	3/4	1	3	2	TiCN
N61387	A245-0.750-D2-S.0-Z2	3/4	3/4	1-5/8	4	2	
N61479	A245-0.750-D2-S.0-Z2	3/4	3/4	1-5/8	4	2	TiCN
N61388	A245-0.750-D3-S.0-Z2	3/4	3/4	2-1/4	5	2	
N61480	A245-0.750-D3-S.0-Z2	3/4	3/4	2-1/4	5	2	TiCN
N61389	A245-0.750-D4-S.0-Z2	3/4	3/4	3-1/4	6	2	
N61481	A245-0.750-D4-S.0-Z2	3/4	3/4	3-1/4	6	2	TiCN
N61390	A245-0.750-D5-S.0-Z2	3/4	3/4	4	6-1/2	2	
N61482	A245-0.750-D5-S.0-Z2	3/4	3/4	4	6-1/2	2	TiCN
N61391	A245-1.000-D1-S.0-Z2	1	1	1-1/4	4	2	
N61483	A245-1.000-D1-S.0-Z2	1	1	1-1/4	4	2	TiCN
N61392	A245-1.000-D2-S.0-Z2	1	1	2	5	2	
N61484	A245-1.000-D2-S.0-Z2	1	1	2	5	2	TiCN
N61393	A245-1.000-D3-S.0-Z2	1	1	2-5/8	6	2	
N61485	A245-1.000-D3-S.0-Z2	1	1	2-5/8	6	2	TiCN
N61394	A245-1.000-D4-S.0-Z2	1	1	3-1/4	6	2	
N61486	A245-1.000-D4-S.0-Z2	1	1	3-1/4	6	2	TiCN
N61395	A245-1.000-D5-S.0-Z2	1	1	4-1/8	7	2	
N61487	A245-1.000-D5-S.0-Z2	1	1	4-1/8	7	2	TiCN

ELITE HIGH PERFORMANCE- A245R

SOLID CARBIDE

HELIX



RADIUS

CENTER CUTTING

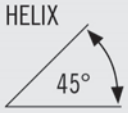
- Cylindrical land to eliminate chatter
- Form ground flute shape
- Eccentric primary relief
- Ideal for aluminum and non-ferrous materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS
N90645	A245R-0.375-D3-R010.0-Z2	3/8	3/8	1	2-1/2	2	TiCN	0.010
N90646	A245R-0.375-D3-R020.0-Z2	3/8	3/8	1	2-1/2	2	TiCN	0.020
N90648	A245R-0.375-D3-R030.0-Z2	3/8	3/8	1	2-1/2	2	TiCN	0.030
N90650	A245R-0.375-D3-R060.0-Z2	3/8	3/8	1	2-1/2	2	TiCN	0.060
N90678	A245R-0.500-D3-R010.0-Z2	1/2	1/2	1-1/4	3	2	TiCN	0.010
N90679	A245R-0.500-D3-R020.0-Z2	1/2	1/2	1-1/4	3	2	TiCN	0.020
N90680	A245R-0.500-D3-R030.0-Z2	1/2	1/2	1-1/4	3	2	TiCN	0.030
N90682	A245R-0.500-D3-R060.0-Z2	1/2	1/2	1-1/4	3	2	TiCN	0.060
N90683	A245R-0.500-D3-R090.0-Z2	1/2	1/2	1-1/4	3	2	TiCN	0.090
N90684	A245R-0.500-D3-R125.0-Z2	1/2	1/2	1-1/4	3	2	TiCN	0.125
N90685	A245R-0.500-D4-R010.0-Z2	1/2	1/2	2	4	2	TiCN	0.010
N90686	A245R-0.500-D4-R020.0-Z2	1/2	1/2	2	4	2	TiCN	0.020
N90687	A245R-0.500-D4-R030.0-Z2	1/2	1/2	2	4	2	TiCN	0.030
N90689	A245R-0.500-D4-R060.0-Z2	1/2	1/2	2	4	2	TiCN	0.060
N90690	A245R-0.500-D4-R090.0-Z2	1/2	1/2	2	4	2	TiCN	0.090
N90691	A245R-0.500-D4-R125.0-Z2	1/2	1/2	2	4	2	TiCN	0.125
N90721	A245R-0.750-D3-R010.0-Z2	3/4	3/4	2-1/4	5	2	TiCN	0.010
N90722	A245R-0.750-D3-R020.0-Z2	3/4	3/4	2-1/4	5	2	TiCN	0.020
N90723	A245R-0.750-D3-R030.0-Z2	3/4	3/4	2-1/4	5	2	TiCN	0.030
N90725	A245R-0.750-D3-R060.0-Z2	3/4	3/4	2-1/4	5	2	TiCN	0.060
N90726	A245R-0.750-D3-R090.0-Z2	3/4	3/4	2-1/4	5	2	TiCN	0.090
N90727	A245R-0.750-D3-R125.0-Z2	3/4	3/4	2-1/4	5	2	TiCN	0.125
N90729	A245R-0.750-D5-R010.0-Z2	3/4	3/4	4	6-1/2	2	TiCN	0.010
N90730	A245R-0.750-D5-R020.0-Z2	3/4	3/4	4	6-1/2	2	TiCN	0.020
N90731	A245R-0.750-D5-R030.0-Z2	3/4	3/4	4	6-1/2	2	TiCN	0.030
N90733	A245R-0.750-D5-R060.0-Z2	3/4	3/4	4	6-1/2	2	TiCN	0.060
N90734	A245R-0.750-D5-R090.0-Z2	3/4	3/4	4	6-1/2	2	TiCN	0.090
N90735	A245R-0.750-D5-R125.0-Z2	3/4	3/4	4	6-1/2	2	TiCN	0.125

ELITE HIGH PERFORMANCE- AB245

SOLID CARBIDE

HELIX



BALL END

CENTER CUTTING

- Cylindrical land to eliminate chatter
- Form ground flute shape
- Eccentric primary relief
- Ideal for aluminum and non-ferrous materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N66070	AB245-0.250-D2-B.0-Z2	1/4	1/4	3/8	2-1/2	2	
N66102	AB245-0.250-D2-B.0-Z2	1/4	1/4	3/8	2-1/2	2	TiCN
N66071	AB245-0.250-D3-B.0-Z2	1/4	1/4	3/4	2-1/2	2	
N66103	AB245-0.250-D3-B.0-Z2	1/4	1/4	3/4	2-1/2	2	TiCN
N66073	AB245-0.313-D3-B.0-Z2	5/16	5/16	13/16	2-1/2	2	
N66105	AB245-0.313-D3-B.0-Z2	5/16	5/16	13/16	2-1/2	2	TiCN
N66074	AB245-0.375-D1-B.0-Z2	3/8	3/8	1/2	2-1/2	2	
N66106	AB245-0.375-D1-B.0-Z2	3/8	3/8	1/2	2-1/2	2	TiCN
N66075	AB245-0.375-D3-B.0-Z2	3/8	3/8	1	2-1/2	2	
N66107	AB245-0.375-D3-B.0-Z2	3/8	3/8	1	2-1/2	2	TiCN
N66078	AB245-0.500-D1-B.0-Z2	1/2	1/2	5/8	3	2	
N66110	AB245-0.500-D1-B.0-Z2	1/2	1/2	5/8	3	2	TiCN
N66079	AB245-0.500-D3-B.0-Z2	1/2	1/2	1-1/4	3	2	
N66111	AB245-0.500-D3-B.0-Z2	1/2	1/2	1-1/4	3	2	TiCN
N66083	AB245-0.750-D2-B.0-Z2	3/4	3/4	1-5/8	4	2	
N66115	AB245-0.750-D2-B.0-Z2	3/4	3/4	1-5/8	4	2	TiCN
N66084	AB245-1.000-D1-B.0-Z2	1	1	1-1/4	4	2	
N66116	AB245-1.000-D1-B.0-Z2	1	1	1-1/4	4	2	TiCN
N66085	AB245-1.000-D2-B.0-Z2	1	1	2	5	2	
N66117	AB245-1.000-D2-B.0-Z2	1	1	2	5	2	TiCN

Niagara Cutter

ELITE HIGH PERFORMANCE- AN245

SOLID CARBIDE | HELIX 45° | SQUARE END | CENTER CUTTING

- Cylindrical land to eliminate chatter
- Form ground flute shape
- Eccentric primary relief
- Designed for aluminum and non-ferrous materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	REACH	NECK DIA
N57993	AN245-0.375-E5-S.0-Z2	3/8	3/8	1/2	4	2	TiCN	2-1/8	0.360
N57996	AN245-0.500-E7-S.0-Z2	1/2	1/2	5/8	4	2	TiCN	2-1/8	0.480
N57997	AN245-0.500-E9-S.0-Z2	1/2	1/2	5/8	8	2	TiCN	3-3/8	0.480
N57999	AN245-0.500-E10-S.0-Z2	1/2	1/2	3/4	6	2	TiCN	4	0.480
N57998	AN245-0.500-E8-S.0-Z2	1/2	1/2	3/4	6	2	TiCN	6	0.480
N58001	AN245-0.625-E7-S.0-Z2	5/8	5/8	3/4	5	2	TiCN	2-3/8	0.600
N58006	AN245-0.750-E9-S.0-Z2	3/4	3/4	1	5	2	TiCN	2-1/2	0.720
N58009	AN245-0.750-E11-S.0-Z2	3/4	3/4	1	6	2	TiCN	4	0.720
N58010	AN245-0.750-E12-S.0-Z2	3/4	3/4	1	8	2	TiCN	6	0.720

ELITE HIGH PERFORMANCE- ANB245

SOLID CARBIDE | HELIX 45° | BALL END | CENTER CUTTING

- Cylindrical land to eliminate chatter
- Form ground flute shape
- Eccentric primary relief
- Designed for aluminum and non-ferrous materials

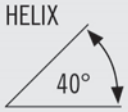
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	REACH	NECK DIA
N58028	ANB245-0.375-E2-B.0-Z2	3/8	3/8	3/4	4	2		2-1/8	0.360
N58033	ANB245-0.375-E2-B.0-Z2	3/8	3/8	3/4	4	2	TiCN	2-1/8	0.360
N58029	ANB245-0.500-E2-B.0-Z2	1/2	1/2	1	6	2		4-1/8	0.480
N58034	ANB245-0.500-E2-B.0-Z2	1/2	1/2	1	6	2	TiCN	4-1/8	0.480
N58030	ANB245-0.625-E2-B.0-Z2	5/8	5/8	1-1/4	6	2		4	0.600
N58035	ANB245-0.625-E2-B.0-Z2	5/8	5/8	1-1/4	6	2	TiCN	4	0.600

Niagara Cutter

ELITE HIGH PERFORMANCE- AN340

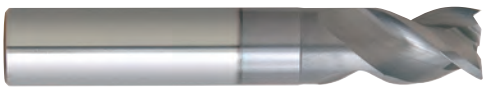
SOLID CARBIDE

HELIX



RADIUS

CENTER CUTTING



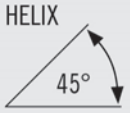
- Cylindrical land to eliminate chatter
- Form ground flute shape
- Eccentric primary relief
- Ideal for high volume material removal in aluminum and non-ferrous materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS	REACH	NECK DIA
N57881	AN340-0.188-E1-R010.0-Z3	3/16	3/16	1/4	2	3		0.010	9/16	0.178
N57910	AN340-0.188-E1-R010.0-Z3	3/16	3/16	1/4	2	3	TiCN	0.010	9/16	0.178
N57882	AN340-0.188-E2-R010.0-Z3	3/16	3/16	1/4	3	3		0.010	1-9/16	0.178
N57911	AN340-0.188-E2-R010.0-Z3	3/16	3/16	1/4	3	3	TiCN	0.010	1-9/16	0.178
N57884	AN340-0.250-E1-R010.0-Z3	1/4	1/4	5/16	2-1/2	3		0.010	3/4	0.240
N57913	AN340-0.250-E1-R010.0-Z3	1/4	1/4	5/16	2-1/2	3	TiCN	0.010	3/4	0.240
N57885	AN340-0.250-E2-R010.0-Z3	1/4	1/4	5/16	3-1/4	3		0.010	1-3/4	0.240
N57914	AN340-0.250-E2-R010.0-Z3	1/4	1/4	5/16	3-1/4	3	TiCN	0.010	1-3/4	0.240
N57888	AN340-0.375-E1-R015.0-Z3	3/8	3/8	1/2	2-1/2	3		0.015	7/8	0.360
N57917	AN340-0.375-E1-R015.0-Z3	3/8	3/8	1/2	2-1/2	3	TiCN	0.015	7/8	0.360
N57889	AN340-0.375-E2-R015.0-Z3	3/8	3/8	1/2	3	3		0.015	1-3/8	0.360
N57918	AN340-0.375-E2-R015.0-Z3	3/8	3/8	1/2	3	3	TiCN	0.015	1-3/8	0.360
N57890	AN340-0.375-E3-R015.0-Z3	3/8	3/8	1/2	4	3		0.015	2-3/8	0.360
N57919	AN340-0.375-E3-R015.0-Z3	3/8	3/8	1/2	4	3	TiCN	0.015	2-3/8	0.360
N57893	AN340-0.500-E1-R020.0-Z3	1/2	1/2	5/8	3	3		0.020	1-1/8	0.480
N57922	AN340-0.500-E1-R020.0-Z3	1/2	1/2	5/8	3	3	TiCN	0.020	1-1/8	0.480
N57894	AN340-0.500-E2-R020.0-Z3	1/2	1/2	5/8	4	3		0.020	2-1/8	0.480
N57923	AN340-0.500-E2-R020.0-Z3	1/2	1/2	5/8	4	3	TiCN	0.020	2-1/8	0.480
N57895	AN340-0.500-E3-R020.0-Z3	1/2	1/2	5/8	5	3		0.020	3-1/8	0.480
N57924	AN340-0.500-E3-R020.0-Z3	1/2	1/2	5/8	5	3	TiCN	0.020	3-1/8	0.480
N57897	AN340-0.625-E1-R025.0-Z3	5/8	5/8	3/4	3-1/2	3		0.025	1-1/2	0.600
N57926	AN340-0.625-E1-R025.0-Z3	5/8	5/8	3/4	3-1/2	3	TiCN	0.025	1-1/2	0.600
N57901	AN340-0.750-E1-R030.0-Z3	3/4	3/4	1	4	3		0.030	1-7/8	0.720
N57930	AN340-0.750-E1-R030.0-Z3	3/4	3/4	1	4	3	TiCN	0.030	1-7/8	0.720
N57902	AN340-0.750-E2-R030.0-Z3	3/4	3/4	1	5	3		0.030	2-7/8	0.720
N57931	AN340-0.750-E2-R030.0-Z3	3/4	3/4	1	5	3	TiCN	0.030	2-7/8	0.720
N57903	AN340-0.750-E3-R030.0-Z3	3/4	3/4	1	6	3		0.030	3-7/8	0.720
N57932	AN340-0.750-E3-R030.0-Z3	3/4	3/4	1	6	3	TiCN	0.030	3-7/8	0.720
N57906	AN340-1.000-E1-R040.0-Z3	1	1	1-1/4	4	3		0.040	1-5/8	0.960
N57935	AN340-1.000-E1-R040.0-Z3	1	1	1-1/4	4	3	TiCN	0.040	1-5/8	0.960

ELITE HIGH PERFORMANCE- A345

SOLID CARBIDE

HELIX



SQUARE END

CENTER CUTTING

- Cylindrical land to eliminate chatter
- Form ground flute shape
- Eccentric primary relief
- Ideal for peripheral milling in aluminum and non-ferrous materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N61534	A345-0.125-D2-S.0-Z3	1/8	1/8	1/4	1-1/2	3	
N61626	A345-0.125-D2-S.0-Z3	1/8	1/8	1/4	1-1/2	3	TiCN
N61535	A345-0.125-D3-S.0-Z3	1/8	1/8	3/8	1-1/2	3	
N61627	A345-0.125-D3-S.0-Z3	1/8	1/8	3/8	1-1/2	3	TiCN
N61536	A345-0.156-F2-S.0-Z3	5/32	3/16	5/16	2	3	
N61628	A345-0.156-F2-S.0-Z3	5/32	3/16	5/16	2	3	TiCN
N61537	A345-0.156-F3-S.0-Z3	5/32	3/16	1/2	2	3	
N61629	A345-0.156-F3-S.0-Z3	5/32	3/16	1/2	2	3	TiCN
N61538	A345-0.188-D2-S.0-Z3	3/16	3/16	5/16	2	3	
N61630	A345-0.188-D2-S.0-Z3	3/16	3/16	5/16	2	3	TiCN
N61539	A345-0.188-D3-S.0-Z3	3/16	3/16	9/16	2	3	
N61631	A345-0.188-D3-S.0-Z3	3/16	3/16	9/16	2	3	TiCN
N61541	A345-0.219-F3-S.0-Z3	7/32	1/4	3/4	2-1/2	3	
N61633	A345-0.219-F3-S.0-Z3	7/32	1/4	3/4	2-1/2	3	TiCN
N61542	A345-0.250-D2-S.0-Z3	1/4	1/4	3/8	2-1/2	3	
N61634	A345-0.250-D2-S.0-Z3	1/4	1/4	3/8	2-1/2	3	TiCN
N61543	A345-0.250-D3-S.0-Z3	1/4	1/4	3/4	2-1/2	3	
N61635	A345-0.250-D3-S.0-Z3	1/4	1/4	3/4	2-1/2	3	TiCN
N61544	A345-0.250-D5-S.0-Z3	1/4	1/4	1-1/4	4	3	
N61636	A345-0.250-D5-S.0-Z3	1/4	1/4	1-1/4	4	3	TiCN
N61547	A345-0.313-D1-S.0-Z3	5/16	5/16	7/16	2-1/2	3	
N61639	A345-0.313-D1-S.0-Z3	5/16	5/16	7/16	2-1/2	3	TiCN
N61548	A345-0.313-D3-S.0-Z3	5/16	5/16	13/16	2-1/2	3	
N61640	A345-0.313-D3-S.0-Z3	5/16	5/16	13/16	2-1/2	3	TiCN
N61549	A345-0.313-D4-S.0-Z3	5/16	5/16	1-1/4	3-1/2	3	
N61641	A345-0.313-D4-S.0-Z3	5/16	5/16	1-1/4	3-1/2	3	TiCN
N61550	A345-0.313-D7-S.0-Z3	5/16	5/16	2-1/4	4	3	
N61642	A345-0.313-D7-S.0-Z3	5/16	5/16	2-1/4	4	3	TiCN
N61553	A345-0.375-D1-S.0-Z3	3/8	3/8	1/2	2-1/2	3	
N61645	A345-0.375-D1-S.0-Z3	3/8	3/8	1/2	2-1/2	3	TiCN
N61554	A345-0.375-D3-S.0-Z3	3/8	3/8	1	2-1/2	3	
N61646	A345-0.375-D3-S.0-Z3	3/8	3/8	1	2-1/2	3	TiCN
N61555	A345-0.375-D4-S.0-Z3	3/8	3/8	1-1/2	4	3	
N61647	A345-0.375-D4-S.0-Z3	3/8	3/8	1-1/2	4	3	TiCN
N61559	A345-0.438-D2-S.0-Z3	7/16	7/16	1	2-3/4	3	
N61651	A345-0.438-D2-S.0-Z3	7/16	7/16	1	2-3/4	3	TiCN

DISCOUNT CODE D43

Niagara Cutter

ELITE HIGH PERFORMANCE- A345

SOLID CARBIDE

HELIX 45°

SQUARE END

CENTER CUTTING

- Cylindrical land to eliminate chatter
- Form ground flute shape
- Eccentric primary relief
- Ideal for peripheral milling in aluminum and non-ferrous materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N61562	A345-0.500-D1-S.0-Z3	1/2	1/2	5/8	3	3	
N61654	A345-0.500-D1-S.0-Z3	1/2	1/2	5/8	3	3	TiCN
N61563	A345-0.500-D3-S.0-Z3	1/2	1/2	1-1/4	3	3	
N61655	A345-0.500-D3-S.0-Z3	1/2	1/2	1-1/4	3	3	TiCN
N61564	A345-0.500-D4-S.0-Z3	1/2	1/2	2	4	3	
N61656	A345-0.500-D4-S.0-Z3	1/2	1/2	2	4	3	TiCN
N61565	A345-0.500-D6-S.0-Z3	1/2	1/2	3-1/8	6	3	
N61657	A345-0.500-D6-S.0-Z3	1/2	1/2	3-1/8	6	3	TiCN
N61566	A345-0.625-D1-S.0-Z3	5/8	5/8	3/4	3	3	
N61658	A345-0.625-D1-S.0-Z3	5/8	5/8	3/4	3	3	TiCN
N61567	A345-0.625-D3-S.0-Z3	5/8	5/8	1-5/8	3-1/2	3	
N61659	A345-0.625-D3-S.0-Z3	5/8	5/8	1-5/8	3-1/2	3	TiCN
N61568	A345-0.625-D4-S.0-Z3	5/8	5/8	2-1/2	5	3	
N61660	A345-0.625-D4-S.0-Z3	5/8	5/8	2-1/2	5	3	TiCN
N61569	A345-0.625-D6-S.0-Z3	5/8	5/8	3-3/4	6	3	
N61661	A345-0.625-D6-S.0-Z3	5/8	5/8	3-3/4	6	3	TiCN
N61570	A345-0.750-D1-S.0-Z3	3/4	3/4	1	3	3	
N61662	A345-0.750-D1-S.0-Z3	3/4	3/4	1	3	3	TiCN
N61571	A345-0.750-D2-S.0-Z3	3/4	3/4	1-5/8	4	3	
N61663	A345-0.750-D2-S.0-Z3	3/4	3/4	1-5/8	4	3	TiCN
N61572	A345-0.750-D3-S.0-Z3	3/4	3/4	2-1/4	5	3	
N61664	A345-0.750-D3-S.0-Z3	3/4	3/4	2-1/4	5	3	TiCN
N61573	A345-0.750-D4-S.0-Z3	3/4	3/4	3-1/4	6	3	
N61665	A345-0.750-D4-S.0-Z3	3/4	3/4	3-1/4	6	3	TiCN
N61574	A345-0.750-D5-S.0-Z3	3/4	3/4	4	6-1/2	3	
N61666	A345-0.750-D5-S.0-Z3	3/4	3/4	4	6-1/2	3	TiCN
N61575	A345-1.000-D1-S.0-Z3	1	1	1-1/4	4	3	
N61667	A345-1.000-D1-S.0-Z3	1	1	1-1/4	4	3	TiCN
N61576	A345-1.000-D2-S.0-Z3	1	1	2	5	3	
N61668	A345-1.000-D2-S.0-Z3	1	1	2	5	3	TiCN
N61577	A345-1.000-D3-S.0-Z3	1	1	2-5/8	6	3	
N61669	A345-1.000-D3-S.0-Z3	1	1	2-5/8	6	3	TiCN
N61578	A345-1.000-D4-S.0-Z3	1	1	3-1/4	6	3	
N61670	A345-1.000-D4-S.0-Z3	1	1	3-1/4	6	3	TiCN
N61579	A345-1.000-D5-S.0-Z3	1	1	4-1/8	7	3	
N61671	A345-1.000-D5-S.0-Z3	1	1	4-1/8	7	3	TiCN

DISCOUNT CODE D43

ELITE HIGH PERFORMANCE- A345R

SOLID CARBIDE

HELIX 45°

RADIUS

CENTER CUTTING

- Cylindrical land to eliminate chatter
- Form ground flute shape
- Eccentric primary relief
- Ideal for aluminum and non-ferrous materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS
N90753	A345R-0.125-D3-R010.0-Z3	1/8	1/8	3/8	1-1/2	3	TiCN	0.010
N90755	A345R-0.125-D3-R020.0-Z3	1/8	1/8	3/8	1-1/2	3	TiCN	0.020
N90756	A345R-0.125-D3-R030.0-Z3	1/8	1/8	3/8	1-1/2	3	TiCN	0.030
N90757	A345R-0.156-F3-R010.0-Z3	5/32	3/16	1/2	2	3	TiCN	0.010
N90759	A345R-0.156-F3-R020.0-Z3	5/32	3/16	1/2	2	3	TiCN	0.020
N90760	A345R-0.156-F3-R030.0-Z3	5/32	3/16	1/2	2	3	TiCN	0.030
N90761	A345R-0.188-D3-R010.0-Z3	3/16	3/16	9/16	2	3	TiCN	0.010
N90763	A345R-0.188-D3-R020.0-Z3	3/16	3/16	9/16	2	3	TiCN	0.020
N90764	A345R-0.188-D3-R030.0-Z3	3/16	3/16	9/16	2	3	TiCN	0.030
N90765	A345R-0.219-F3-R010.0-Z3	7/32	1/4	3/4	2-1/2	3	TiCN	0.010
N90767	A345R-0.219-F3-R020.0-Z3	7/32	1/4	3/4	2-1/2	3	TiCN	0.020
N90768	A345R-0.219-F3-R030.0-Z3	7/32	1/4	3/4	2-1/2	3	TiCN	0.030
N90769	A345R-0.250-D3-R010.0-Z3	1/4	1/4	3/4	2-1/2	3	TiCN	0.010
N90775	A345R-0.250-D3-R020.0-Z3	1/4	1/4	3/4	2-1/2	3	TiCN	0.020
N90776	A345R-0.250-D3-R030.0-Z3	1/4	1/4	3/4	2-1/2	3	TiCN	0.030
N90777	A345R-0.250-D3-R045.0-Z3	1/4	1/4	3/4	2-1/2	3	TiCN	0.045
N90778	A345R-0.250-D3-R060.0-Z3	1/4	1/4	3/4	2-1/2	3	TiCN	0.060
N90785	A345R-0.313-D3-R010.0-Z3	5/16	5/16	13/16	2-1/2	3	TiCN	0.010
N90787	A345R-0.313-D3-R020.0-Z3	5/16	5/16	13/16	2-1/2	3	TiCN	0.020
N90788	A345R-0.313-D3-R030.0-Z3	5/16	5/16	13/16	2-1/2	3	TiCN	0.030
N90789	A345R-0.313-D3-R045.0-Z3	5/16	5/16	13/16	2-1/2	3	TiCN	0.045
N90790	A345R-0.313-D3-R060.0-Z3	5/16	5/16	13/16	2-1/2	3	TiCN	0.060
N90803	A345R-0.375-D3-R010.0-Z3	3/8	3/8	1	2-1/2	3	TiCN	0.010
N90805	A345R-0.375-D3-R020.0-Z3	3/8	3/8	1	2-1/2	3	TiCN	0.020
N90806	A345R-0.375-D3-R030.0-Z3	3/8	3/8	1	2-1/2	3	TiCN	0.030
N90807	A345R-0.375-D3-R045.0-Z3	3/8	3/8	1	2-1/2	3	TiCN	0.045
N90808	A345R-0.375-D3-R060.0-Z3	3/8	3/8	1	2-1/2	3	TiCN	0.060
N90815	A345R-0.438-D2-R010.0-Z3	7/16	7/16	1	2-3/4	3	TiCN	0.010
N90817	A345R-0.438-D2-R020.0-Z3	7/16	7/16	1	2-3/4	3	TiCN	0.020
N90818	A345R-0.438-D2-R030.0-Z3	7/16	7/16	1	2-3/4	3	TiCN	0.030
N90819	A345R-0.438-D2-R045.0-Z3	7/16	7/16	1	2-3/4	3	TiCN	0.045
N90820	A345R-0.438-D2-R060.0-Z3	7/16	7/16	1	2-3/4	3	TiCN	0.060
N90821	A345R-0.438-D2-R090.0-Z3	7/16	7/16	1	2-3/4	3	TiCN	0.090
N90822	A345R-0.438-D2-R125.0-Z3	7/16	7/16	1	2-3/4	3	TiCN	0.125
N90831	A345R-0.500-D1-R010.0-Z3	1/2	1/2	5/8	3	3	TiCN	0.010

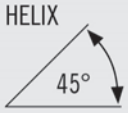
DISCOUNT CODE D43

Niagara Cutter

ELITE HIGH PERFORMANCE- A345R

SOLID CARBIDE

HELIX



RADIUS

CENTER CUTTING

- Cylindrical land to eliminate chatter
- Form ground flute shape
- Eccentric primary relief
- Ideal for aluminum and non-ferrous materials

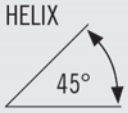
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS
N90833	A345R-0.500-D1-R020.0-Z3	1/2	1/2	5/8	3	3	TiCN	0.020
N90834	A345R-0.500-D1-R030.0-Z3	1/2	1/2	5/8	3	3	TiCN	0.030
N90835	A345R-0.500-D1-R045.0-Z3	1/2	1/2	5/8	3	3	TiCN	0.045
N90836	A345R-0.500-D1-R060.0-Z3	1/2	1/2	5/8	3	3	TiCN	0.060
N90837	A345R-0.500-D1-R090.0-Z3	1/2	1/2	5/8	3	3	TiCN	0.090
N90838	A345R-0.500-D1-R125.0-Z3	1/2	1/2	5/8	3	3	TiCN	0.125
N90839	A345R-0.500-D3-R010.0-Z3	1/2	1/2	1-1/4	3	3	TiCN	0.010
N90841	A345R-0.500-D3-R020.0-Z3	1/2	1/2	1-1/4	3	3	TiCN	0.020
N90842	A345R-0.500-D3-R030.0-Z3	1/2	1/2	1-1/4	3	3	TiCN	0.030
N90843	A345R-0.500-D3-R045.0-Z3	1/2	1/2	1-1/4	3	3	TiCN	0.045
N90844	A345R-0.500-D3-R060.0-Z3	1/2	1/2	1-1/4	3	3	TiCN	0.060
N90847	A345R-0.500-D3-R090.0-Z3	1/2	1/2	1-1/4	3	3	TiCN	0.090
N90848	A345R-0.500-D3-R125.0-Z3	1/2	1/2	1-1/4	3	3	TiCN	0.125
N90849	A345R-0.500-D4-R010.0-Z3	1/2	1/2	2	4	3	TiCN	0.010
N90851	A345R-0.500-D4-R020.0-Z3	1/2	1/2	2	4	3	TiCN	0.020
N90852	A345R-0.500-D4-R030.0-Z3	1/2	1/2	2	4	3	TiCN	0.030
N90853	A345R-0.500-D4-R045.0-Z3	1/2	1/2	2	4	3	TiCN	0.045
N90854	A345R-0.500-D4-R060.0-Z3	1/2	1/2	2	4	3	TiCN	0.060
N90855	A345R-0.500-D4-R090.0-Z3	1/2	1/2	2	4	3	TiCN	0.090
N90856	A345R-0.500-D4-R125.0-Z3	1/2	1/2	2	4	3	TiCN	0.125
N90865	A345R-0.625-D3-R010.0-Z3	5/8	5/8	1-5/8	3-1/2	3	TiCN	0.010
N90867	A345R-0.625-D3-R020.0-Z3	5/8	5/8	1-5/8	3-1/2	3	TiCN	0.020
N90868	A345R-0.625-D3-R030.0-Z3	5/8	5/8	1-5/8	3-1/2	3	TiCN	0.030
N90869	A345R-0.625-D3-R045.0-Z3	5/8	5/8	1-5/8	3-1/2	3	TiCN	0.045
N90870	A345R-0.625-D3-R060.0-Z3	5/8	5/8	1-5/8	3-1/2	3	TiCN	0.060
N90871	A345R-0.625-D3-R090.0-Z3	5/8	5/8	1-5/8	3-1/2	3	TiCN	0.090
N90872	A345R-0.625-D3-R125.0-Z3	5/8	5/8	1-5/8	3-1/2	3	TiCN	0.125
N90881	A345R-0.750-D1-R010.0-Z3	3/4	3/4	1	3	3	TiCN	0.010
N90883	A345R-0.750-D1-R020.0-Z3	3/4	3/4	1	3	3	TiCN	0.020
N90884	A345R-0.750-D1-R030.0-Z3	3/4	3/4	1	3	3	TiCN	0.030
N90885	A345R-0.750-D1-R045.0-Z3	3/4	3/4	1	3	3	TiCN	0.045
N90886	A345R-0.750-D1-R060.0-Z3	3/4	3/4	1	3	3	TiCN	0.060
N90887	A345R-0.750-D1-R090.0-Z3	3/4	3/4	1	3	3	TiCN	0.090
N90888	A345R-0.750-D1-R125.0-Z3	3/4	3/4	1	3	3	TiCN	0.125
N90889	A345R-0.750-D1-R190.0-Z3	3/4	3/4	1	3	3	TiCN	0.190

DISCOUNT CODE D43

ELITE HIGH PERFORMANCE- A345R

SOLID CARBIDE

HELIX



RADIUS

CENTER CUTTING

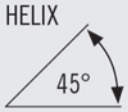
- Cylindrical land to eliminate chatter
- Form ground flute shape
- Eccentric primary relief
- Ideal for aluminum and non-ferrous materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS
N90890	A345R-0.750-D3-R010.0-Z3	3/4	3/4	2-1/4	5	3	TiCN	0.010
N90892	A345R-0.750-D3-R020.0-Z3	3/4	3/4	2-1/4	5	3	TiCN	0.020
N90893	A345R-0.750-D3-R030.0-Z3	3/4	3/4	2-1/4	5	3	TiCN	0.030
N90894	A345R-0.750-D3-R045.0-Z3	3/4	3/4	2-1/4	5	3	TiCN	0.045
N90895	A345R-0.750-D3-R060.0-Z3	3/4	3/4	2-1/4	5	3	TiCN	0.060
N90896	A345R-0.750-D3-R090.0-Z3	3/4	3/4	2-1/4	5	3	TiCN	0.090
N90897	A345R-0.750-D3-R125.0-Z3	3/4	3/4	2-1/4	5	3	TiCN	0.125
N90899	A345R-0.750-D3-R190.0-Z3	3/4	3/4	2-1/4	5	3	TiCN	0.190
N90900	A345R-0.750-D5-R010.0-Z3	3/4	3/4	4	6-1/2	3	TiCN	0.010
N90902	A345R-0.750-D5-R020.0-Z3	3/4	3/4	4	6-1/2	3	TiCN	0.020
N90903	A345R-0.750-D5-R030.0-Z3	3/4	3/4	4	6-1/2	3	TiCN	0.030
N90904	A345R-0.750-D5-R045.0-Z3	3/4	3/4	4	6-1/2	3	TiCN	0.045
N90905	A345R-0.750-D5-R060.0-Z3	3/4	3/4	4	6-1/2	3	TiCN	0.060
N90906	A345R-0.750-D5-R090.0-Z3	3/4	3/4	4	6-1/2	3	TiCN	0.090
N90907	A345R-0.750-D5-R125.0-Z3	3/4	3/4	4	6-1/2	3	TiCN	0.125
N90534	A345R-0.750-D5-R190.0-Z3	3/4	3/4	4	6-1/2	3	TiCN	0.190
N90909	A345R-1.000-D3-R010.0-Z3	1	1	2-5/8	6	3	TiCN	0.010
N90911	A345R-1.000-D3-R020.0-Z3	1	1	2-5/8	6	3	TiCN	0.020
N90912	A345R-1.000-D3-R030.0-Z3	1	1	2-5/8	6	3	TiCN	0.030
N90913	A345R-1.000-D3-R045.0-Z3	1	1	2-5/8	6	3	TiCN	0.045
N90914	A345R-1.000-D3-R060.0-Z3	1	1	2-5/8	6	3	TiCN	0.060
N90915	A345R-1.000-D3-R090.0-Z3	1	1	2-5/8	6	3	TiCN	0.090
N90916	A345R-1.000-D3-R125.0-Z3	1	1	2-5/8	6	3	TiCN	0.125
N90917	A345R-1.000-D3-R190.0-Z3	1	1	2-5/8	6	3	TiCN	0.190

ELITE HIGH PERFORMANCE- AN345

SOLID CARBIDE

HELIX



SQUARE END

CENTER CUTTING

- Cylindrical land to eliminate chatter
- Form ground flute shape
- Eccentric primary relief
- Ideal for slotting, pocketing and long reach peripheral milling in aluminum

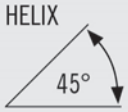
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	REACH	NECK DIA
N18597	AN345-0.250-E2-S.0-Z3	1/4	1/4	3/8	4	3		2-1/8	0.240
N57938	AN345-0.250-E3-S.0-Z3	1/4	1/4	1/2	3	3		1	0.240
N57939	AN345-0.250-E4-S.0-Z3	1/4	1/4	1/2	4	3		1-1/2	0.240
N18598	AN345-0.313-E1-S.0-Z3	5/16	5/16	7/16	4	3		2-1/8	0.300
N18599	AN345-0.375-E1-S.0-Z3	3/8	3/8	3/8	2-1/2	3		1-1/8	0.360
N18600	AN345-0.375-E2-S.0-Z3	3/8	3/8	1/2	4	3		2-1/8	0.360
N18601	AN345-0.375-E3-S.0-Z3	3/8	3/8	1/2	6	3		4-1/8	0.360
N57940	AN345-0.375-E4-S.0-Z3	3/8	3/8	3/4	4	3		2	0.360
N57941	AN345-0.375-E5-S.0-Z3	3/8	3/8	3/4	5	3		3	0.360
N18603	AN345-0.500-E2-S.0-Z3	1/2	1/2	5/8	4	3		2-1/8	0.480
N57942	AN345-0.500-E4-S.0-Z3	1/2	1/2	5/8	5	3		3	0.480
N18604	AN345-0.500-E3-S.0-Z3	1/2	1/2	5/8	6	3		4-1/8	0.480
N18606	AN345-0.625-E2-S.0-Z3	5/8	5/8	3/4	6	3		4	0.600
N18609	AN345-0.750-E3-S.0-Z3	3/4	3/4	1	6	3		3-1/2	0.720
N18610	AN345-0.750-E4-S.0-Z3	3/4	3/4	1	7	3		4-1/8	0.720
N18612	AN345-1.000-E2-S.0-Z3	1	1	1-1/4	6	3		3-1/2	0.960

Niagara Cutter

ELITE HIGH PERFORMANCE- AN345R

SOLID CARBIDE

HELIX



RADIUS

CENTER CUTTING

- Cylindrical land to eliminate chatter
- Form ground flute shape
- Eccentric primary relief

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS	REACH	NECK DIA
N90288	AN345R-0.250-E2-R010.0-Z3	1/4	1/4	3/8	4	3	TiCN	0.010	2-1/8	0.240
N90255	AN345R-0.250-E2-R020.0-Z3	1/4	1/4	3/8	4	3	TiCN	0.020	2-1/8	0.240
N90289	AN345R-0.250-E2-R030.0-Z3	1/4	1/4	3/8	4	3	TiCN	0.030	2-1/8	0.240
N90290	AN345R-0.250-E2-R045.0-Z3	1/4	1/4	3/8	4	3	TiCN	0.045	2-1/8	0.240
N90291	AN345R-0.250-E2-R060.0-Z3	1/4	1/4	3/8	4	3	TiCN	0.060	2-1/8	0.240
N90489	AN345R-0.250-E3-R010.0-Z3	1/4	1/4	1/2	3	3	TiCN	0.010	1	0.240
N90279	AN345R-0.250-E3-R020.0-Z3	1/4	1/4	1/2	3	3	TiCN	0.020	1	0.240
N90490	AN345R-0.250-E3-R030.0-Z3	1/4	1/4	1/2	3	3	TiCN	0.030	1	0.240
N90491	AN345R-0.250-E3-R045.0-Z3	1/4	1/4	1/2	3	3	TiCN	0.045	1	0.240
N90492	AN345R-0.250-E3-R060.0-Z3	1/4	1/4	1/2	3	3	TiCN	0.060	1	0.240
N90497	AN345R-0.250-E4-R010.0-Z3	1/4	1/4	1/2	4	3	TiCN	0.010	1-1/2	0.240
N90281	AN345R-0.250-E4-R020.0-Z3	1/4	1/4	1/2	4	3	TiCN	0.020	1-1/2	0.240
N90498	AN345R-0.250-E4-R030.0-Z3	1/4	1/4	1/2	4	3	TiCN	0.030	1-1/2	0.240
N90499	AN345R-0.250-E4-R045.0-Z3	1/4	1/4	1/2	4	3	TiCN	0.045	1-1/2	0.240
N90500	AN345R-0.250-E4-R060.0-Z3	1/4	1/4	1/2	4	3	TiCN	0.060	1-1/2	0.240
N90292	AN345R-0.313-E1-R010.0-Z3	5/16	5/16	7/16	4	3	TiCN	0.010	2-1/8	0.300
N90262	AN345R-0.313-E1-R020.0-Z3	5/16	5/16	7/16	4	3	TiCN	0.020	2-1/8	0.300
N90293	AN345R-0.313-E1-R030.0-Z3	5/16	5/16	7/16	4	3	TiCN	0.030	2-1/8	0.300
N90294	AN345R-0.313-E1-R045.0-Z3	5/16	5/16	7/16	4	3	TiCN	0.045	2-1/8	0.300
N90295	AN345R-0.313-E1-R060.0-Z3	5/16	5/16	7/16	4	3	TiCN	0.060	2-1/8	0.300
N90296	AN345R-0.375-E1-R010.0-Z3	3/8	3/8	3/8	2-1/2	3	TiCN	0.010	1-1/8	0.360
N90263	AN345R-0.375-E1-R020.0-Z3	3/8	3/8	3/8	2-1/2	3	TiCN	0.020	1-1/8	0.360
N90297	AN345R-0.375-E1-R030.0-Z3	3/8	3/8	3/8	2-1/2	3	TiCN	0.030	1-1/8	0.360
N90298	AN345R-0.375-E1-R045.0-Z3	3/8	3/8	3/8	2-1/2	3	TiCN	0.045	1-1/8	0.360
N90299	AN345R-0.375-E1-R060.0-Z3	3/8	3/8	3/8	2-1/2	3	TiCN	0.060	1-1/8	0.360
N90301	AN345R-0.375-E2-R010.0-Z3	3/8	3/8	1/2	4	3	TiCN	0.010	2-1/8	0.360
N90265	AN345R-0.375-E2-R020.0-Z3	3/8	3/8	1/2	4	3	TiCN	0.020	2-1/8	0.360
N90302	AN345R-0.375-E2-R030.0-Z3	3/8	3/8	1/2	4	3	TiCN	0.030	2-1/8	0.360
N90303	AN345R-0.375-E2-R045.0-Z3	3/8	3/8	1/2	4	3	TiCN	0.045	2-1/8	0.360
N90306	AN345R-0.375-E2-R060.0-Z3	3/8	3/8	1/2	4	3	TiCN	0.060	2-1/8	0.360
N90307	AN345R-0.375-E3-R010.0-Z3	3/8	3/8	1/2	6	3	TiCN	0.010	4-1/8	0.360
N90266	AN345R-0.375-E3-R020.0-Z3	3/8	3/8	1/2	6	3	TiCN	0.020	4-1/8	0.360
N90308	AN345R-0.375-E3-R030.0-Z3	3/8	3/8	1/2	6	3	TiCN	0.030	4-1/8	0.360
N90309	AN345R-0.375-E3-R045.0-Z3	3/8	3/8	1/2	6	3	TiCN	0.045	4-1/8	0.360
N90310	AN345R-0.375-E3-R060.0-Z3	3/8	3/8	1/2	6	3	TiCN	0.060	4-1/8	0.360

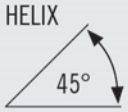
DISCOUNT CODE D43

Niagara Cutter

ELITE HIGH PERFORMANCE- AN345R

SOLID CARBIDE

HELIX



RADIUS

CENTER CUTTING

- Cylindrical land to eliminate chatter
- Form ground flute shape
- Eccentric primary relief

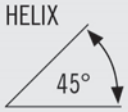
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS	REACH	NECK DIA
N90501	AN345R-0.375-E4-R010.0-Z3	3/8	3/8	3/4	4	3	TiCN	0.010	2	0.360
N90282	AN345R-0.375-E4-R020.0-Z3	3/8	3/8	3/4	4	3	TiCN	0.020	2	0.360
N90506	AN345R-0.375-E4-R030.0-Z3	3/8	3/8	3/4	4	3	TiCN	0.030	2	0.360
N90510	AN345R-0.375-E4-R045.0-Z3	3/8	3/8	3/4	4	3	TiCN	0.045	2	0.360
N90514	AN345R-0.375-E4-R060.0-Z3	3/8	3/8	3/4	4	3	TiCN	0.060	2	0.360
N90515	AN345R-0.375-E5-R010.0-Z3	3/8	3/8	3/4	5	3	TiCN	0.010	3	0.360
N90283	AN345R-0.375-E5-R020.0-Z3	3/8	3/8	3/4	5	3	TiCN	0.020	3	0.360
N90516	AN345R-0.375-E5-R030.0-Z3	3/8	3/8	3/4	5	3	TiCN	0.030	3	0.360
N90517	AN345R-0.375-E5-R045.0-Z3	3/8	3/8	3/4	5	3	TiCN	0.045	3	0.360
N90518	AN345R-0.375-E5-R060.0-Z3	3/8	3/8	3/4	5	3	TiCN	0.060	3	0.360
N90341	AN345R-0.500-E2-R010.0-Z3	1/2	1/2	5/8	4	3	TiCN	0.010	2-1/8	0.480
N90268	AN345R-0.500-E2-R020.0-Z3	1/2	1/2	5/8	4	3	TiCN	0.020	2-1/8	0.480
N90342	AN345R-0.500-E2-R030.0-Z3	1/2	1/2	5/8	4	3	TiCN	0.030	2-1/8	0.480
N90343	AN345R-0.500-E2-R045.0-Z3	1/2	1/2	5/8	4	3	TiCN	0.045	2-1/8	0.480
N90344	AN345R-0.500-E2-R060.0-Z3	1/2	1/2	5/8	4	3	TiCN	0.060	2-1/8	0.480
N90346	AN345R-0.500-E2-R090.0-Z3	1/2	1/2	5/8	4	3	TiCN	0.090	2-1/8	0.480
N90347	AN345R-0.500-E2-R125.0-Z3	1/2	1/2	5/8	4	3	TiCN	0.125	2-1/8	0.480
N90519	AN345R-0.500-E3-R010.0-Z3	1/2	1/2	5/8	5	3	TiCN	0.010	3	0.480
N90286	AN345R-0.500-E3-R020.0-Z3	1/2	1/2	5/8	5	3	TiCN	0.020	3	0.480
N90520	AN345R-0.500-E3-R030.0-Z3	1/2	1/2	5/8	5	3	TiCN	0.030	3	0.480
N90521	AN345R-0.500-E3-R045.0-Z3	1/2	1/2	5/8	5	3	TiCN	0.045	3	0.480
N90522	AN345R-0.500-E3-R060.0-Z3	1/2	1/2	5/8	5	3	TiCN	0.060	3	0.480
N90523	AN345R-0.500-E3-R090.0-Z3	1/2	1/2	5/8	5	3	TiCN	0.090	3	0.480
N90524	AN345R-0.500-E3-R125.0-Z3	1/2	1/2	5/8	5	3	TiCN	0.125	3	0.480
N90348	AN345R-0.500-E4-R010.0-Z3	1/2	1/2	5/8	6	3	TiCN	0.010	4-1/8	0.480
N90269	AN345R-0.500-E4-R020.0-Z3	1/2	1/2	5/8	6	3	TiCN	0.020	4-1/8	0.480
N90350	AN345R-0.500-E4-R030.0-Z3	1/2	1/2	5/8	6	3	TiCN	0.030	4-1/8	0.480
N90351	AN345R-0.500-E4-R045.0-Z3	1/2	1/2	5/8	6	3	TiCN	0.045	4-1/8	0.480
N90352	AN345R-0.500-E4-R060.0-Z3	1/2	1/2	5/8	6	3	TiCN	0.060	4-1/8	0.480
N90353	AN345R-0.500-E4-R090.0-Z3	1/2	1/2	5/8	6	3	TiCN	0.090	4-1/8	0.480
N90354	AN345R-0.500-E4-R125.0-Z3	1/2	1/2	5/8	6	3	TiCN	0.125	4-1/8	0.480
N90361	AN345R-0.625-E2-R010.0-Z3	5/8	5/8	3/4	6	3	TiCN	0.010	4	0.600
N90271	AN345R-0.625-E2-R020.0-Z3	5/8	5/8	1/2	6	3	TiCN	0.020	4	0.600
N90362	AN345R-0.625-E2-R030.0-Z3	5/8	5/8	3/4	6	3	TiCN	0.030	4	0.600
N90363	AN345R-0.625-E2-R045.0-Z3	5/8	5/8	3/4	6	3	TiCN	0.045	4	0.600

DISCOUNT CODE D43

ELITE HIGH PERFORMANCE- AN345R

SOLID CARBIDE

HELIX



RADIUS

CENTER CUTTING

- Cylindrical land to eliminate chatter
- Form ground flute shape
- Eccentric primary relief

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS	REACH	NECK DIA
N90364	AN345R-0.625-E2-R060.0-Z3	5/8	5/8	3/4	6	3	TiCN	0.060	4	0.600
N90365	AN345R-0.625-E2-R090.0-Z3	5/8	5/8	3/4	6	3	TiCN	0.090	4	0.600
N90366	AN345R-0.625-E2-R125.0-Z3	5/8	5/8	3/4	6	3	TiCN	0.125	4	0.600
N90380	AN345R-0.750-E3-R010.0-Z3	3/4	3/4	1	6	3	TiCN	0.010	3-1/2	0.720
N90274	AN345R-0.750-E3-R020.0-Z3	3/4	3/4	1	6	3	TiCN	0.020	3-1/2	0.720
N90382	AN345R-0.750-E3-R030.0-Z3	3/4	3/4	1	6	3	TiCN	0.030	3-1/2	0.720
N90383	AN345R-0.750-E3-R045.0-Z3	3/4	3/4	1	6	3	TiCN	0.045	3-1/2	0.720
N90384	AN345R-0.750-E3-R060.0-Z3	3/4	3/4	1	6	3	TiCN	0.060	3-1/2	0.720
N90385	AN345R-0.750-E3-R090.0-Z3	3/4	3/4	1	6	3	TiCN	0.090	3-1/2	0.720
N90386	AN345R-0.750-E3-R125.0-Z3	3/4	3/4	1	6	3	TiCN	0.125	3-1/2	0.720
N90399	AN345R-1.000-E2-R010.0-Z3	1	1	1-1/4	6	3	TiCN	0.010	3-1/2	0.960
N90277	AN345R-1.000-E2-R020.0-Z3	1	1	1-1/4	6	3	TiCN	0.020	3-1/2	0.960
N90401	AN345R-1.000-E2-R030.0-Z3	1	1	1-1/4	6	3	TiCN	0.030	3-1/2	0.960
N90402	AN345R-1.000-E2-R045.0-Z3	1	1	1-1/4	6	3	TiCN	0.045	3-1/2	0.960
N90403	AN345R-1.000-E2-R060.0-Z3	1	1	1-1/4	6	3	TiCN	0.060	3-1/2	0.960
N90404	AN345R-1.000-E2-R090.0-Z3	1	1	1-1/4	6	3	TiCN	0.090	3-1/2	0.960
N90441	AN345R-1.000-E2-R125.0-Z3	1	1	1-1/4	6	3	TiCN	0.125	3-1/2	0.960

ELITE HIGH PERFORMANCE- AR330

SOLID CARBIDE

HELIX 30°

CHAMFER 45°

CENTER CUTTING

COARSE PITCH

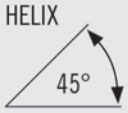
- Form ground flute shape
- Ideal for aluminum and non-ferrous materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N76195	AR330-0.250-D3-C020.0-Z3	1/4	1/4	3/4	2-1/2	3		0.020
N76227	AR330-0.250-D3-C020.0-Z3	1/4	1/4	3/4	2-1/2	3	TiCN	0.020
N76198	AR330-0.375-D1-C020.0-Z3	3/8	3/8	1/2	2	3		0.020
N76230	AR330-0.375-D1-C020.0-Z3	3/8	3/8	1/2	2	3	TiCN	0.020
N76199	AR330-0.375-D3-C020.0-Z3	3/8	3/8	1	2-1/2	3		0.020
N76231	AR330-0.375-D3-C020.0-Z3	3/8	3/8	1	2-1/2	3	TiCN	0.020
N76203	AR330-0.500-D3-C025.0-Z3	1/2	1/2	1-1/4	3	3		0.025
N76235	AR330-0.500-D3-C025.0-Z3	1/2	1/2	1-1/4	3	3	TiCN	0.025
N76205	AR330-0.625-D3-C025.0-Z3	5/8	5/8	1-5/8	3-1/2	3		0.025
N76237	AR330-0.625-D3-C025.0-Z3	5/8	5/8	1-5/8	3-1/2	3	TiCN	0.025
N76206	AR330-0.750-D1-C025.0-Z3	3/4	3/4	1	3	3		0.025
N76238	AR330-0.750-D1-C025.0-Z3	3/4	3/4	1	3	3	TiCN	0.025
N76207	AR330-0.750-D2-C025.0-Z3	3/4	3/4	1-5/8	4	3		0.025
N76239	AR330-0.750-D2-C025.0-Z3	3/4	3/4	1-5/8	4	3	TiCN	0.025
N76209	AR330-1.000-D2-C025.0-Z3	1	1	2	5	3		0.025
N76241	AR330-1.000-D2-C025.0-Z3	1	1	2	5	3	TiCN	0.025

ELITE HIGH PERFORMANCE- A345M

SOLID CARBIDE

HELIX



SQUARE END

CENTER CUTTING

- Cylindrical land to eliminate chatter
- Form ground flute shape
- Eccentric primary relief
- Ideal for aluminum and non-ferrous materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N47811	A345M-030-D4-S.0-Z3	3mm	3mm	12mm	39mm	3	
N47812	A345M-030-D4-S.0-Z3	3mm	3mm	12mm	39mm	3	TiCN
N47815	A345M-040-D3-S.0-Z3	4mm	4mm	12mm	51mm	3	
N47816	A345M-040-D3-S.0-Z3	4mm	4mm	12mm	51mm	3	TiCN
N47817	A345M-050-D3-S.0-Z3	5mm	5mm	14mm	51mm	3	
N47818	A345M-050-D3-S.0-Z3	5mm	5mm	14mm	51mm	3	TiCN
N47821	A345M-060-D3-S.0-Z3	6mm	6mm	16mm	58mm	3	
N47822	A345M-060-D3-S.0-Z3	6mm	6mm	16mm	58mm	3	TiCN
N47825	A345M-080-D2-S.0-Z3	8mm	8mm	20mm	64mm	3	
N47826	A345M-080-D2-S.0-Z3	8mm	8mm	20mm	64mm	3	TiCN
N47829	A345M-100-D2-S.0-Z3	10mm	10mm	22mm	73mm	3	
N47830	A345M-100-D2-S.0-Z3	10mm	10mm	22mm	73mm	3	TiCN
N47833	A345M-120-D3-S.0-Z3	12mm	12mm	32mm	84mm	3	
N47834	A345M-120-D3-S.0-Z3	12mm	12mm	32mm	84mm	3	TiCN
N47837	A345M-140-D2-S.0-Z3	14mm	14mm	32mm	84mm	3	
N47838	A345M-140-D2-S.0-Z3	14mm	14mm	32mm	84mm	3	TiCN
N47841	A345M-160-D2-S.0-Z3	16mm	16mm	36mm	93mm	3	
N47842	A345M-160-D2-S.0-Z3	16mm	16mm	36mm	93mm	3	TiCN
N47849	A345M-200-D3-S.0-Z3	20mm	20mm	50mm	105mm	3	
N47850	A345M-200-D3-S.0-Z3	20mm	20mm	50mm	105mm	3	TiCN
N47853	A345M-250-D3-S.0-Z3	25mm	25mm	60mm	140mm	3	
N47854	A345M-250-D3-S.0-Z3	25mm	25mm	60mm	140mm	3	TiCN

A245 / A245R / AB245

SLOTTING

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 2$ 1/8	1/4	3/8	1/2	5/8	3/4	1
N	E 16	1.0	1.00		1000		n (rev/min)	30560	15280	10187	7640	6112	5093	3820
							f_z (in)	0.0012	0.0024	0.0036	0.0048	0.0060	0.0072	0.0096
				700	-	1300	v_f (in/min)	73.3	73.3	73.3	73.3	73.3	73.3	73.3
	E 17	1.0	1.00		800		n (rev/min)	24448	12224	8149	6112	4890	4075	3056
							f_z (in)	0.0010	0.0019	0.0029	0.0038	0.0048	0.0058	0.0077
				500	-	1100	v_f (in/min)	46.9	46.9	46.9	46.9	46.9	46.9	46.9

SIDE MILLING - ROUGHING

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 2$ 1/8	1/4	3/8	1/2	5/8	3/4	1
N	E 16	2.0	0.50		1000		n (rev/min)	30560	15280	10187	7640	6112	5093	3820
							f_z (in)	0.0015	0.0030	0.0045	0.0060	0.0075	0.0090	0.0120
				700	-	1300	v_f (in/min)	91.7	91.7	91.7	91.7	91.7	91.7	91.7
	E 17	1.5	0.50		800		n (rev/min)	24448	12224	8149	6112	4890	4075	3056
							f_z (in)	0.0012	0.0024	0.0036	0.0048	0.0060	0.0072	0.0096
				500	-	1100	v_f (in/min)	58.7	58.7	58.7	58.7	58.7	58.7	58.7

AN245 / ANB245

SLOTTING

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 2$ 1/8	1/4	3/8	1/2	5/8	3/4	1
N	E 16	1.00	1.00		800		n (rev/min)	24448	12224	8149	6112	4890	4075	3056
							f_z (in)	0.0010	0.0019	0.0029	0.0039	0.0048	0.0058	0.0077
				500	-	1100	v_f (in/min)	47.1	47.1	47.1	47.1	47.1	47.1	47.1
	E 17	1.00	1.00		640		n (rev/min)	19558	9779	6519	4890	3912	3260	2445
							f_z (in)	0.0008	0.0015	0.0023	0.0031	0.0038	0.0046	0.0061
				340	-	940	v_f (in/min)	29.8	29.8	29.8	29.8	29.8	29.8	29.8

SIDE MILLING - ROUGHING

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 2$ 1/8	1/4	3/8	1/2	5/8	3/4	1
N	E 16	2.00	0.50		800		n (rev/min)	24448	12224	8149	6112	4890	4075	3056
							f_z (in)	0.0012	0.0024	0.0036	0.0048	0.0060	0.0072	0.0096
				500	-	1100	v_f (in/min)	58.7	58.7	58.7	58.7	58.7	58.7	58.7
	E 17	1.50	0.50		640		n (rev/min)	19558	9779	6519	4890	3912	3260	2445
							f_z (in)	0.0010	0.0019	0.0029	0.0039	0.0048	0.0058	0.0077
				340	-	940	v_f (in/min)	37.6	37.6	37.6	37.6	37.6	37.6	37.6

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

AN340

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 3$ 1/8	1/4	3/8	1/2	5/8	3/4	1
SLOTTING														
N	E 16	1.0	1.00	1200			n (rev/min)	36672	18336	12224	9168	7334	6112	4584
							f_z (in)	0.0019	0.0038	0.0056	0.0075	0.0094	0.0113	0.0150
				900	-	1500	v_f (in/min)	206.3	206.3	206.3	206.3	206.3	206.3	206.3
	E 17	1.0	1.00	1000			n (rev/min)	30560	15280	10187	7640	6112	5093	3820
							f_z (in)	0.0019	0.0038	0.0056	0.0075	0.0094	0.0113	0.0150
				700	-	1300	v_f (in/min)	171.9	171.9	171.9	171.9	171.9	171.9	171.9
SIDE MILLING - ROUGHING														
N	E 16	1.0	0.25	1200			n (rev/min)	36672	18336	12224	9168	7334	6112	4584
							f_z (in)	0.0028	0.0056	0.0084	0.0113	0.0141	0.0169	0.0225
				900	-	1500	v_f (in/min)	309.4	309.4	309.4	309.4	309.4	309.4	309.4
	E 17	1.0	0.25	1000			n (rev/min)	30560	15280	10187	7640	6112	5093	3820
							f_z (in)	0.0028	0.0056	0.0084	0.0113	0.0141	0.0169	0.0225
				700	-	1300	v_f (in/min)	257.9	257.9	257.9	257.9	257.9	257.9	257.9

A345 / A345R

ISO GROUP	SMG	ap x Dc	ae x Dc	vc (sf / min)				Zn = 3 1/8	1/4	3/8	1/2	5/8	3/4	1
SLOTTING														
N	E / M / A 16	0.5	1.00	1000			n (rev/min)	30560	15280	10187	7640	6112	5093	3820
							f_z (in)	0.0012	0.0024	0.0036	0.0048	0.0060	0.0072	0.0096
				700	-	1300	v_f (in/min)	110.0	110.0	110.0	110.0	110.0	110.0	110.0
	E / M / A 17	0.5	1.00	800			n (rev/min)	24448	12224	8149	6112	4890	4075	3056
							f_z (in)	0.0010	0.0019	0.0029	0.0038	0.0048	0.0058	0.0077
				500	-	1100	v_f (in/min)	70.4	70.4	70.4	70.4	70.4	70.4	70.4
SIDE MILLING - ROUGHING														
N	E / M / A 16	2.0	0.40	1000			n (rev/min)	30560	15280	10187	7640	6112	5093	3820
							f_z (in)	0.0015	0.0030	0.0045	0.0060	0.0075	0.0090	0.0120
				700	-	1300	v_f (in/min)	137.5	137.5	137.5	137.5	137.5	137.5	137.5
	E / M / A 17	1.5	0.40	800			n (rev/min)	24448	12224	8149	6112	4890	4075	3056
							f_z (in)	0.0012	0.0024	0.0036	0.0048	0.0060	0.0072	0.0096
				500	-	1100	v_f (in/min)	88.0	88.0	88.0	88.0	88.0	88.0	88.0

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

AN345 / AN345R

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 3$ 1/8	1/4	3/8	1/2	5/8	3/4	1
SLOTTING														
N	E 16	0.5	1.00	800			n (rev/min)	24448	12224	8149	6112	4890	4075	3056
							f_z (in)	0.0010	0.0019	0.0029	0.0039	0.0048	0.0058	0.0077
				500	-	1100	v_f (in/min)	70.6	70.6	70.6	70.6	70.6	70.6	70.6
	E 17	0.5	1.00	640			n (rev/min)	19558	9779	6519	4890	3912	3260	2445
							f_z (in)	0.0008	0.0015	0.0023	0.0031	0.0038	0.0046	0.0061
				340	-	940	v_f (in/min)	44.7	44.7	44.7	44.7	44.7	44.7	44.7
SIDE MILLING - ROUGHING														
N	E 16	2.0	0.40	800			n (rev/min)	24448	12224	8149	6112	4890	4075	3056
							f_z (in)	0.0012	0.0024	0.0036	0.0048	0.0060	0.0072	0.0096
				500	-	1100	v_f (in/min)	88.0	88.0	88.0	88.0	88.0	88.0	88.0
	E 17	1.5	0.40	640			n (rev/min)	19558	9779	6519	4890	3912	3260	2445
							f_z (in)	0.0010	0.0019	0.0029	0.0039	0.0048	0.0058	0.0077
				340	-	940	v_f (in/min)	56.5	56.5	56.5	56.5	56.5	56.5	56.5

AR330

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 3$ 1/8	1/4	3/8	1/2	5/8	3/4	1
SLOTTING														
N	E 16	1.00	1.00	800			n (rev/min)	24448	12224	8149	6112	4890	4075	3056
							f_z (in)	0.0008	0.0015	0.0023	0.0030	0.0038	0.0045	0.0060
				500	-	1100	v_f (in/min)	55.0	55.0	55.0	55.0	55.0	55.0	55.0
	E 17	1.00	1.00	800			n (rev/min)	24448	12224	8149	6112	4890	4075	3056
							f_z (in)	0.0008	0.0015	0.0023	0.0030	0.0038	0.0045	0.0060
				500	-	1100	v_f (in/min)	55.0	55.0	55.0	55.0	55.0	55.0	55.0
SIDE MILLING - ROUGHING														
N	E 16	1.00	0.25	1100			n (rev/min)	33616	16808	11205	8404	6723	5603	4202
							f_z (in)	0.0011	0.0021	0.0032	0.0042	0.0053	0.0063	0.0084
				800	-	1400	v_f (in/min)	105.9	105.9	105.9	105.9	105.9	105.9	105.9
	E 17	1.00	0.25	1100			n (rev/min)	33616	16808	11205	8404	6723	5603	4202
							f_z (in)	0.0011	0.0021	0.0032	0.0042	0.0053	0.0063	0.0084
				800	-	1400	v_f (in/min)	105.9	105.9	105.9	105.9	105.9	105.9	105.9

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

A345M

SLOTTING

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (m / min				$Z_n = 3$ 3	4	6	8	10	12	14	16	20	25
N	E 16	0.5	1.00		305		n (rev/min)	32360	24270	16180	12140	9710	8090	6930	6070	4850	3880
							f_z (mm)	0.029	0.038	0.058	0.077	0.096	0.115	0.134	0.154	0.192	0.240
				213	-	396	v_f (mm/min)	2796	2796	2796	2797	2796	2796	2794	2797	2794	2794
	E 17	0.5	1.00		244		n (rev/min)	25890	19420	12940	9710	7770	6470	5550	4850	3880	3110
							f_z (mm)	0.023	0.031	0.046	0.061	0.077	0.092	0.108	0.123	0.154	0.192
				152	-	335	v_f (mm/min)	1790	1790	1789	1790	1790	1789	1790	1788	1788	1791

SIDE MILLING - ROUGHING

N	E 16	2.0	0.40		305		n (rev/min)	32360	24270	16180	12140	9710	8090	6930	6070	4850	3880
							f_z (mm)	0.036	0.048	0.072	0.096	0.120	0.144	0.168	0.192	0.240	0.300
				213	-	396	v_f (mm/min)	3495	3495	3495	3496	3496	3495	3493	3496	3492	3492
	E 17	1.5	0.40		244		n (rev/min)	25890	19420	12940	9710	7770	6470	5550	4850	3880	3110
							f_z (mm)	0.029	0.038	0.058	0.077	0.096	0.115	0.134	0.154	0.192	0.240
				152	-	335	v_f (mm/min)	2237	2237	2236	2237	2238	2236	2238	2235	2235	2239

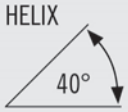
A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

ELITE HIGH PERFORMANCE- NS240R

SOLID CARBIDE

HELIX



RADIUS

CENTER CUTTING

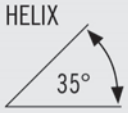
- High wear resistant AlTiN coating
- Rigid design to minimize tool deflection
- Designed for peripheral finish milling of aerospace parts requiring long axial engagement in materials such as titanium, stainless steels, and super alloys.

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS
N00291	NS240R-0.250-D1-R010.0-Z2	1/4	1/4	1-1/4	3	2	AlTiN	0.010
N00292	NS240R-0.313-D1-R010.0-Z2	5/16	5/16	1-1/2	3-1/2	2	AlTiN	0.010
N00293	NS240R-0.375-D1-R010.0-Z2	3/8	3/8	1-7/8	4	2	AlTiN	0.010
N00294	NS240R-0.500-D1-R010.0-Z2	1/2	1/2	2-1/2	5	2	AlTiN	0.010
N00295	NS240R-0.625-D1-R015.0-Z2	5/8	5/8	3-1/8	6	2	AlTiN	0.015
N00296	NS240R-0.750-D1-R015.0-Z2	3/4	3/4	3-3/4	7	2	AlTiN	0.015
N00297	NS240R-0.750-D1-R120.0-Z2	3/4	3/4	3-3/4	7	2	AlTiN	0.120
N00298	NS240R-0.750-D1-R250.0-Z2	3/4	3/4	3-3/4	7	2	AlTiN	0.250
N00299	NS240R-1.000-D1-R015.0-Z2	1	1	5	8	2	AlTiN	0.015
N00300	NS240R-1.000-D1-R120.0-Z2	1	1	5	8	2	AlTiN	0.120
N00301	NS240R-1.000-D1-R250.0-Z2	1	1	5	8	2	AlTiN	0.250
N00302	NS240R-1.250-D1-R015.0-Z2	1-1/4	1-1/4	6-1/4	9-1/2	2	AlTiN	0.015
N00303	NS240R-1.250-D1-R120.0-Z2	1-1/4	1-1/4	6-1/4	9-1/2	2	AlTiN	0.120
N00304	NS240R-1.250-D1-R250.0-Z2	1-1/4	1-1/4	6-1/4	9-1/2	2	AlTiN	0.250

ELITE HIGH PERFORMANCE- S335

SOLID CARBIDE

HELIX



RADIUS

CENTER CUTTING

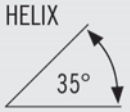
- Standard with radius
- Weldon flat standard on shank sizes 3/8" and larger
- Ideal for slotting in steel, stainless steel, titanium and high temperature alloys

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS
N61802	S335-0.125-D2-R010.0-Z3	1/8	1/8	1/4	1-1/2	3	AlTiN	0.010
N61803	S335-0.125-D4-R010.0-Z3	1/8	1/8	1/2	1-1/2	3	AlTiN	0.010
N61804	S335-0.156-F2-R010.0-Z3	5/32	3/16	5/16	2	3	AlTiN	0.010
N61805	S335-0.156-F4-R010.0-Z3	5/32	3/16	9/16	2	3	AlTiN	0.010
N61806	S335-0.188-D2-R010.0-Z3	3/16	3/16	5/16	2	3	AlTiN	0.010
N61807	S335-0.188-D3-R010.0-Z3	3/16	3/16	9/16	2	3	AlTiN	0.010
N61808	S335-0.219-F2-R020.0-Z3	7/32	1/4	3/8	2	3	AlTiN	0.020
N61809	S335-0.219-F3-R020.0-Z3	7/32	1/4	3/4	2-1/2	3	AlTiN	0.020
N61810	S335-0.250-D2-R020.0-Z3	1/4	1/4	3/8	2	3	AlTiN	0.020
N61811	S335-0.250-D3-R020.0-Z3	1/4	1/4	3/4	2-1/2	3	AlTiN	0.020
N61812	S335-0.281-F2-R020.0-Z3	9/32	5/16	7/16	2	3	AlTiN	0.020
N61813	S335-0.281-F3-R020.0-Z3	9/32	5/16	13/16	2-1/2	3	AlTiN	0.020
N61814	S335-0.313-D1-R020.0-Z3	5/16	5/16	7/16	2	3	AlTiN	0.020
N61815	S335-0.313-D3-R020.0-Z3	5/16	5/16	13/16	2-1/2	3	AlTiN	0.020
N61816	S335-0.344-F1-R020.3-Z3	11/32	3/8	1/2	2	3	AlTiN	0.020
N61817	S335-0.344-F3-R020.3-Z3	11/32	3/8	1	2-1/2	3	AlTiN	0.020
N61818	S335-0.375-D1-R020.3-Z3	3/8	3/8	1/2	2	3	AlTiN	0.020
N61819	S335-0.375-D3-R020.3-Z3	3/8	3/8	1	2-1/2	3	AlTiN	0.020
N61820	S335-0.438-D1-R020.3-Z3	7/16	7/16	9/16	2-1/2	3	AlTiN	0.020
N61821	S335-0.438-D2-R020.3-Z3	7/16	7/16	1	2-3/4	3	AlTiN	0.020
N61822	S335-0.500-D1-R030.3-Z3	1/2	1/2	5/8	2-1/2	3	AlTiN	0.030
N61823	S335-0.500-D3-R030.3-Z3	1/2	1/2	1-1/4	3	3	AlTiN	0.030
N61824	S335-0.625-D1-R030.3-Z3	5/8	5/8	3/4	3	3	AlTiN	0.030
N61825	S335-0.625-D3-R030.3-Z3	5/8	5/8	1-5/8	3-1/2	3	AlTiN	0.030
N61826	S335-0.750-D1-R030.3-Z3	3/4	3/4	1	3	3	AlTiN	0.030
N61827	S335-0.750-D2-R030.3-Z3	3/4	3/4	1-5/8	4	3	AlTiN	0.030
N61828	S335-1.000-D1-R030.3-Z3	1	1	1-1/4	4	3	AlTiN	0.030
N61829	S335-1.000-D2-R030.3-Z3	1	1	2	5	3	AlTiN	0.030

ELITE HIGH PERFORMANCE- SB335

SOLID CARBIDE

HELIX



BALL END

CENTER CUTTING

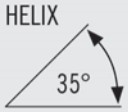
- Weldon flat standard on shank sizes 3/8" and larger
- Ideal for slotting in steel, stainless steel, titanium and high temperature alloys

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N66218	SB335-0.125-D2-B.0-Z3	1/8	1/8	1/4	1-1/2	3	AlTiN
N66219	SB335-0.125-D4-B.0-Z3	1/8	1/8	1/2	1-1/2	3	AlTiN
N66220	SB335-0.156-F2-B.0-Z3	5/32	3/16	5/16	2	3	AlTiN
N66221	SB335-0.156-F4-B.0-Z3	5/32	3/16	9/16	2	3	AlTiN
N66222	SB335-0.188-D2-B.0-Z3	3/16	3/16	5/16	2	3	AlTiN
N66223	SB335-0.188-D3-B.0-Z3	3/16	3/16	9/16	2	3	AlTiN
N66224	SB335-0.219-F2-B.0-Z3	7/32	1/4	3/8	2	3	AlTiN
N66225	SB335-0.219-F3-B.0-Z3	7/32	1/4	3/4	2-1/2	3	AlTiN
N66226	SB335-0.250-D2-B.0-Z3	1/4	1/4	3/8	2	3	AlTiN
N66227	SB335-0.250-D3-B.0-Z3	1/4	1/4	3/4	2-1/2	3	AlTiN
N66228	SB335-0.281-F2-B.0-Z3	9/32	5/16	7/16	2	3	AlTiN
N66229	SB335-0.281-F3-B.0-Z3	9/32	5/16	13/16	2-1/2	3	AlTiN
N66230	SB335-0.313-D1-B.0-Z3	5/16	5/16	7/16	2	3	AlTiN
N66231	SB335-0.313-D3-B.0-Z3	5/16	5/16	13/16	2-1/2	3	AlTiN
N66232	SB335-0.344-F1-B.3-Z3	11/32	3/8	1/2	2	3	AlTiN
N66233	SB335-0.344-F3-B.3-Z3	11/32	3/8	1	2-1/2	3	AlTiN
N66234	SB335-0.375-D1-B.3-Z3	3/8	3/8	1/2	2	3	AlTiN
N66235	SB335-0.375-D3-B.3-Z3	3/8	3/8	1	2-1/2	3	AlTiN
N66236	SB335-0.438-D1-B.3-Z3	7/16	7/16	9/16	2-1/2	3	AlTiN
N66237	SB335-0.438-D2-B.3-Z3	7/16	7/16	1	2-3/4	3	AlTiN
N66238	SB335-0.500-D1-B.3-Z3	1/2	1/2	5/8	2-1/2	3	AlTiN
N66239	SB335-0.500-D3-B.3-Z3	1/2	1/2	1-1/4	3	3	AlTiN
N66241	SB335-0.625-D3-B.3-Z3	5/8	5/8	1-5/8	3-1/2	3	AlTiN
N66243	SB335-0.750-D2-B.3-Z3	3/4	3/4	1-5/8	4	3	AlTiN
N66245	SB335-1.000-D2-B.3-Z3	1	1	2	5	3	AlTiN

ELITE HIGH PERFORMANCE- SN335

SOLID CARBIDE

HELIX



RADIUS

CENTER CUTTING

- Weldon flat standard on shank sizes 3/8" and larger
- Ideal for slotting, pocketing and long reach peripheral milling in steel, stainless steel, titanium and exotic alloys

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS	NECK DIA
N18648	SN335-0.250-E2-R020.0-Z3	1/4	1/4	3/8	4	3	AlTiN	0.020	.240
N18650	SN335-0.375-E1-R020.3-Z3	3/8	3/8	1/2	4	3	AlTiN	0.020	.360
N18651	SN335-0.375-E2-R020.3-Z3	3/8	3/8	1/2	6	3	AlTiN	0.020	.360
N18654	SN335-0.500-E1-R030.3-Z3	1/2	1/2	5/8	4	3	AlTiN	0.030	.480
N18655	SN335-0.500-E2-R030.3-Z3	1/2	1/2	5/8	5	3	AlTiN	0.030	.480
N18656	SN335-0.500-E3-R030.3-Z3	1/2	1/2	5/8	6	3	AlTiN	0.030	.480
N18657	SN335-0.625-E1-R030.3-Z3	5/8	5/8	3/4	4	3	AlTiN	0.030	.600
N18659	SN335-0.625-E3-R030.3-Z3	5/8	5/8	3/4	6	3	AlTiN	0.030	.600
N18661	SN335-0.750-E2-R030.3-Z3	3/4	3/4	1	5	3	AlTiN	0.030	.720

Niagara Cutter

ELITE HIGH PERFORMANCE- S545

SOLID CARBIDE

HELIX 45°

SQUARE END

CENTER CUTTING

- Eccentric primary relief
- Ideal for peripheral finish milling in steel, stainless steel, titanium and high temperature alloys

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N61830	S545-0.125-D2-S.0-Z5	1/8	1/8	1/4	1-1/2	5	
N61983	S545-0.125-D2-S.0-Z5	1/8	1/8	1/4	1-1/2	5	AlTiN
N61831	S545-0.125-D4-S.0-Z5	1/8	1/8	1/2	1-1/2	5	
N61984	S545-0.125-D4-S.0-Z5	1/8	1/8	1/2	1-1/2	5	AlTiN
N61832	S545-0.156-F2-S.0-Z5	5/32	3/16	5/16	2	5	
N61985	S545-0.156-F2-S.0-Z5	5/32	3/16	5/16	2	5	AlTiN
N61833	S545-0.156-F4-S.0-Z5	5/32	3/16	9/16	2	5	
N61986	S545-0.156-F4-S.0-Z5	5/32	3/16	9/16	2	5	AlTiN
N61834	S545-0.188-D2-S.0-Z5	3/16	3/16	5/16	2	5	
N61987	S545-0.188-D2-S.0-Z5	3/16	3/16	5/16	2	5	AlTiN
N61835	S545-0.188-D3-S.0-Z5	3/16	3/16	9/16	2	5	
N61988	S545-0.188-D3-S.0-Z5	3/16	3/16	9/16	2	5	AlTiN
N61836	S545-0.219-F2-S.0-Z5	7/32	1/4	3/8	2	5	
N61989	S545-0.219-F2-S.0-Z5	7/32	1/4	3/8	2	5	AlTiN
N61837	S545-0.219-F3-S.0-Z5	7/32	1/4	3/4	2-1/2	5	
N61990	S545-0.219-F3-S.0-Z5	7/32	1/4	3/4	2-1/2	5	AlTiN
N61838	S545-0.250-D2-S.0-Z5	1/4	1/4	3/8	2	5	
N61991	S545-0.250-D2-S.0-Z5	1/4	1/4	3/8	2	5	AlTiN
N61839	S545-0.250-D3-S.0-Z5	1/4	1/4	3/4	2-1/2	5	
N61992	S545-0.250-D3-S.0-Z5	1/4	1/4	3/4	2-1/2	5	AlTiN
N61840	S545-0.250-D5-S.0-Z5	1/4	1/4	1-1/4	4	5	
N61993	S545-0.250-D5-S.0-Z5	1/4	1/4	1-1/4	4	5	AlTiN
N61842	S545-0.281-F3-S.0-Z5	9/32	5/16	13/16	2-1/2	5	
N61995	S545-0.281-F3-S.0-Z5	9/32	5/16	13/16	2-1/2	5	AlTiN
N61843	S545-0.313-D1-S.0-Z5	5/16	5/16	7/16	2	5	
N61996	S545-0.313-D1-S.0-Z5	5/16	5/16	7/16	2	5	AlTiN
N61844	S545-0.313-D3-S.0-Z5	5/16	5/16	13/16	2-1/2	5	
N61997	S545-0.313-D3-S.0-Z5	5/16	5/16	13/16	2-1/2	5	AlTiN
N61845	S545-0.313-D4-S.0-Z5	5/16	5/16	1-1/4	4	5	
N61998	S545-0.313-D4-S.0-Z5	5/16	5/16	1-1/4	4	5	AlTiN
N61846	S545-0.313-D7-S.0-Z5	5/16	5/16	2-1/8	4	5	
N61999	S545-0.313-D7-S.0-Z5	5/16	5/16	2-1/8	4	5	AlTiN
N61849	S545-0.375-D1-S.0-Z5	3/8	3/8	1/2	2	5	
N62002	S545-0.375-D1-S.0-Z5	3/8	3/8	1/2	2	5	AlTiN
N61850	S545-0.375-D3-S.0-Z5	3/8	3/8	1	2-1/2	5	

DISCOUNT CODE D43

ELITE HIGH PERFORMANCE- S545

SOLID CARBIDE

HELIX 45°

SQUARE END

CENTER CUTTING

- Eccentric primary relief
- Ideal for peripheral finish milling in steel, stainless steel, titanium and high temperature alloys

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N62003	S545-0.375-D3-S.0-Z5	3/8	3/8	1	2-1/2	5	AlTiN
N61851	S545-0.375-D4-S.0-Z5	3/8	3/8	1-1/2	4	5	
N62004	S545-0.375-D4-S.0-Z5	3/8	3/8	1-1/2	4	5	AlTiN
N61852	S545-0.375-D7-S.0-Z5	3/8	3/8	2-1/2	6	5	
N62005	S545-0.375-D7-S.0-Z5	3/8	3/8	2-1/2	6	5	AlTiN
N61855	S545-0.438-D1-S.0-Z5	7/16	7/16	9/16	2-1/2	5	
N62008	S545-0.438-D1-S.0-Z5	7/16	7/16	9/16	2-1/2	5	AlTiN
N61856	S545-0.438-D2-S.0-Z5	7/16	7/16	1	2-3/4	5	
N62009	S545-0.438-D2-S.0-Z5	7/16	7/16	1	2-3/4	5	AlTiN
N61857	S545-0.438-D5-S.0-Z5	7/16	7/16	2	4	5	
N62010	S545-0.438-D5-S.0-Z5	7/16	7/16	2	4	5	AlTiN
N61860	S545-0.500-D1-S.0-Z5	1/2	1/2	5/8	2-1/2	5	
N62013	S545-0.500-D1-S.0-Z5	1/2	1/2	5/8	2-1/2	5	AlTiN
N61861	S545-0.500-D3-S.0-Z5	1/2	1/2	1-1/4	3	5	
N62014	S545-0.500-D3-S.0-Z5	1/2	1/2	1-1/4	3	5	AlTiN
N61862	S545-0.500-D4-S.0-Z5	1/2	1/2	2	4	5	
N62015	S545-0.500-D4-S.0-Z5	1/2	1/2	2	4	5	AlTiN
N61863	S545-0.500-D6-S.0-Z5	1/2	1/2	3-1/8	6	5	
N62016	S545-0.500-D6-S.0-Z5	1/2	1/2	3-1/8	6	5	AlTiN
N55330	S545-0.563-D3-S.0-Z5	9/16	9/16	1-1/2	3-1/2	5	
N55333	S545-0.563-D3-S.0-Z5	9/16	9/16	1-1/2	3-1/2	5	AlTiN
N61864	S545-0.625-D1-S.0-Z5	5/8	5/8	3/4	3	5	
N62017	S545-0.625-D1-S.0-Z5	5/8	5/8	3/4	3	5	AlTiN
N61865	S545-0.625-D3-S.0-Z5	5/8	5/8	1-5/8	3-1/2	5	
N62018	S545-0.625-D3-S.0-Z5	5/8	5/8	1-5/8	3-1/2	5	AlTiN
N61866	S545-0.625-D4-S.0-Z5	5/8	5/8	2-1/2	5	5	
N62019	S545-0.625-D4-S.0-Z5	5/8	5/8	2-1/2	5	5	AlTiN
N61867	S545-0.625-D6-S.0-Z5	5/8	5/8	4	6	5	
N62020	S545-0.625-D6-S.0-Z5	5/8	5/8	4	6	5	AlTiN
N61868	S545-0.750-D1-S.0-Z5	3/4	3/4	1	3	5	
N62021	S545-0.750-D1-S.0-Z5	3/4	3/4	1	3	5	AlTiN
N61869	S545-0.750-D2-S.0-Z5	3/4	3/4	1-5/8	4	5	
N62022	S545-0.750-D2-S.0-Z5	3/4	3/4	1-5/8	4	5	AlTiN
N61870	S545-0.750-D3-S.0-Z5	3/4	3/4	2-1/4	5	5	
N62023	S545-0.750-D3-S.0-Z5	3/4	3/4	2-1/4	5	5	AlTiN

DISCOUNT CODE D43

ELITE HIGH PERFORMANCE- S545

SOLID CARBIDE

HELIX 45°

SQUARE END

CENTER CUTTING

- Eccentric primary relief
- Ideal for peripheral finish milling in steel, stainless steel, titanium and high temperature alloys

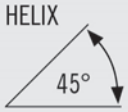
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N61871	S545-0.750-D4-S.0-Z5	3/4	3/4	3-1/4	6	5	
N62024	S545-0.750-D4-S.0-Z5	3/4	3/4	3-1/4	6	5	AlTiN
N61872	S545-0.750-D5-S.0-Z5	3/4	3/4	4	6	5	
N62025	S545-0.750-D5-S.0-Z5	3/4	3/4	4	6	5	AlTiN
N61873	S545-1.000-D1-S.0-Z5	1	1	1-1/4	4	5	
N62026	S545-1.000-D1-S.0-Z5	1	1	1-1/4	4	5	AlTiN
N61874	S545-1.000-D2-S.0-Z5	1	1	2	4	5	
N62027	S545-1.000-D2-S.0-Z5	1	1	2	4	5	AlTiN
N61875	S545-1.000-D3-S.0-Z5	1	1	2-5/8	6	5	
N62028	S545-1.000-D3-S.0-Z5	1	1	2-5/8	6	5	AlTiN
N61876	S545-1.000-D4-S.0-Z5	1	1	3-1/4	6	5	
N62029	S545-1.000-D4-S.0-Z5	1	1	3-1/4	6	5	AlTiN
N61877	S545-1.000-D5-S.0-Z5	1	1	4-1/8	7	5	
N62030	S545-1.000-D5-S.0-Z5	1	1	4-1/8	7	5	AlTiN
N61878	S545-1.250-D2-S.0-Z7	1-1/4	1-1/4	2	4-1/2	7	
N62031	S545-1.250-D2-S.0-Z7	1-1/4	1-1/4	2	4-1/2	7	AlTiN
N61879	S545-1.250-D3-S.0-Z7	1-1/4	1-1/4	3-1/4	6	7	
N62032	S545-1.250-D3-S.0-Z7	1-1/4	1-1/4	3-1/4	6	7	AlTiN
N61880	S545-1.250-D4-S.0-Z7	1-1/4	1-1/4	5	7-1/2	7	
N62033	S545-1.250-D4-S.0-Z7	1-1/4	1-1/4	5	7-1/2	7	AlTiN

Niagara Cutter

ELITE HIGH PERFORMANCE- S545R

SOLID CARBIDE

HELIX



RADIUS

CENTER CUTTING

- Eccentric primary relief
- Ideal for peripheral finish milling in steel, stainless steel, titanium and high temperature alloys

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS
N90927	S545R-0.125-D2-R015.0-Z5	1/8	1/8	1/4	1-1/2	5	AlTiN	0.015
N90928	S545R-0.125-D2-R020.0-Z5	1/8	1/8	1/4	1-1/2	5	AlTiN	0.020
N90929	S545R-0.125-D4-R015.0-Z5	1/8	1/8	1/2	1-1/2	5	AlTiN	0.015
N90930	S545R-0.125-D4-R020.0-Z5	1/8	1/8	1/2	1-1/2	5	AlTiN	0.020
N90931	S545R-0.188-D2-R015.0-Z5	3/16	3/16	5/16	2	5	AlTiN	0.015
N90932	S545R-0.188-D2-R020.0-Z5	3/16	3/16	5/16	2	5	AlTiN	0.020
N90908	S545R-0.188-D3-R015.0-Z5	3/16	3/16	9/16	2	5	AlTiN	0.015
N90933	S545R-0.188-D3-R020.0-Z5	3/16	3/16	9/16	2	5	AlTiN	0.020
N90935	S545R-0.250-D2-R015.0-Z5	1/4	1/4	3/8	2	5	AlTiN	0.015
N90936	S545R-0.250-D2-R020.0-Z5	1/4	1/4	3/8	2	5	AlTiN	0.020
N90937	S545R-0.250-D2-R030.0-Z5	1/4	1/4	3/8	2	5	AlTiN	0.030
N90938	S545R-0.250-D2-R045.0-Z5	1/4	1/4	3/8	2	5	AlTiN	0.045
N90926	S545R-0.250-D3-R015.0-Z5	1/4	1/4	3/4	2-1/2	5	AlTiN	0.015
N90940	S545R-0.250-D3-R020.0-Z5	1/4	1/4	3/4	2-1/2	5	AlTiN	0.020
N90934	S545R-0.250-D3-R030.0-Z5	1/4	1/4	3/4	2-1/2	5	AlTiN	0.030
N90941	S545R-0.250-D3-R045.0-Z5	1/4	1/4	3/4	2-1/2	5	AlTiN	0.045
N90943	S545R-0.313-D1-R015.0-Z5	5/16	5/16	7/16	2	5	AlTiN	0.015
N90945	S545R-0.313-D1-R030.0-Z5	5/16	5/16	7/16	2	5	AlTiN	0.030
N90944	S545R-0.313-D1-R020.0-Z5	5/16	5/16	7/16	2	5	AlTiN	0.020
N90946	S545R-0.313-D1-R045.0-Z5	5/16	5/16	7/16	2	5	AlTiN	0.045
N90947	S545R-0.313-D3-R015.0-Z5	5/16	5/16	13/16	2-1/2	5	AlTiN	0.015
N90948	S545R-0.313-D3-R020.0-Z5	5/16	5/16	13/16	2-1/2	5	AlTiN	0.020
N90939	S545R-0.313-D3-R030.0-Z5	5/16	5/16	13/16	2-1/2	5	AlTiN	0.030
N90949	S545R-0.313-D3-R045.0-Z5	5/16	5/16	13/16	2-1/2	5	AlTiN	0.045
N90950	S545R-0.375-D1-R015.0-Z5	3/8	3/8	1/2	2	5	AlTiN	0.015
N90952	S545R-0.375-D1-R020.0-Z5	3/8	3/8	1/2	2	5	AlTiN	0.020
N90953	S545R-0.375-D1-R030.0-Z5	3/8	3/8	1/2	2	5	AlTiN	0.030
N90954	S545R-0.375-D1-R045.0-Z5	3/8	3/8	1/2	2	5	AlTiN	0.045
N90955	S545R-0.375-D1-R060.0-Z5	3/8	3/8	1/2	2	5	AlTiN	0.060
N90956	S545R-0.375-D3-R015.0-Z5	3/8	3/8	1	2-1/2	5	AlTiN	0.015
N90957	S545R-0.375-D3-R020.0-Z5	3/8	3/8	1	2-1/2	5	AlTiN	0.020
N90958	S545R-0.375-D3-R030.0-Z5	3/8	3/8	1	2-1/2	5	AlTiN	0.030
N90942	S545R-0.375-D3-R045.0-Z5	3/8	3/8	1	2-1/2	5	AlTiN	0.045
N90960	S545R-0.438-D1-R015.0-Z5	7/16	7/16	9/16	2-1/2	5	AlTiN	0.015
N90961	S545R-0.438-D1-R020.0-Z5	7/16	7/16	9/16	2-1/2	5	AlTiN	0.020
N90962	S545R-0.438-D1-R030.0-Z5	7/16	7/16	9/16	2-1/2	5	AlTiN	0.030

DISCOUNT CODE D43

Niagara Cutter

ELITE HIGH PERFORMANCE- S545R

SOLID CARBIDE

HELIX 45°

RADIUS

CENTER CUTTING

- Eccentric primary relief
- Ideal for peripheral finish milling in steel, stainless steel, titanium and high temperature alloys

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS
N90963	S545R-0.438-D1-R045.0-Z5	7/16	7/16	9/16	2-1/2	5	AlTiN	0.045
N90964	S545R-0.438-D1-R060.0-Z5	7/16	7/16	9/16	2-1/2	5	AlTiN	0.060
N90965	S545R-0.438-D1-R090.0-Z5	7/16	7/16	9/16	2-1/2	5	AlTiN	0.090
N90967	S545R-0.438-D1-R125.0-Z5	7/16	7/16	9/16	2-1/2	5	AlTiN	0.125
N90951	S545R-0.438-D2-R015.0-Z5	7/16	7/16	1	2-3/4	5	AlTiN	0.015
N90972	S545R-0.438-D2-R020.0-Z5	7/16	7/16	1	2-3/4	5	AlTiN	0.020
N90973	S545R-0.438-D2-R030.0-Z5	7/16	7/16	1	2-3/4	5	AlTiN	0.030
N90976	S545R-0.438-D2-R045.0-Z5	7/16	7/16	1	2-3/4	5	AlTiN	0.045
N90977	S545R-0.438-D2-R060.0-Z5	7/16	7/16	1	2-3/4	5	AlTiN	0.060
N90978	S545R-0.438-D2-R090.0-Z5	7/16	7/16	1	2-3/4	5	AlTiN	0.090
N90979	S545R-0.438-D2-R125.0-Z5	7/16	7/16	1	2-3/4	5	AlTiN	0.125
N90982	S545R-0.500-D1-R015.0-Z5	1/2	1/2	5/8	2-1/2	5	AlTiN	0.015
N90987	S545R-0.500-D1-R020.0-Z5	1/2	1/2	5/8	2-1/2	5	AlTiN	0.020
N91004	S545R-0.500-D1-R030.0-Z5	1/2	1/2	5/8	2-1/2	5	AlTiN	0.030
N91008	S545R-0.500-D1-R045.0-Z5	1/2	1/2	5/8	2-1/2	5	AlTiN	0.045
N91009	S545R-0.500-D1-R060.0-Z5	1/2	1/2	5/8	2-1/2	5	AlTiN	0.060
N91010	S545R-0.500-D1-R090.0-Z5	1/2	1/2	5/8	2-1/2	5	AlTiN	0.090
N91011	S545R-0.500-D1-R125.0-Z5	1/2	1/2	5/8	2-1/2	5	AlTiN	0.125
N90959	S545R-0.500-D3-R015.0-Z5	1/2	1/2	1-1/4	3	5	AlTiN	0.015
N91012	S545R-0.500-D3-R020.0-Z5	1/2	1/2	1-1/4	3	5	AlTiN	0.020
N91013	S545R-0.500-D3-R030.0-Z5	1/2	1/2	1-1/4	3	5	AlTiN	0.030
N91015	S545R-0.500-D3-R045.0-Z5	1/2	1/2	1-1/4	3	5	AlTiN	0.045
N91017	S545R-0.500-D3-R060.0-Z5	1/2	1/2	1-1/4	3	5	AlTiN	0.060
N91019	S545R-0.500-D3-R090.0-Z5	1/2	1/2	1-1/4	3	5	AlTiN	0.090
N91021	S545R-0.500-D3-R125.0-Z5	1/2	1/2	1-1/4	3	5	AlTiN	0.125
N91042	S545R-0.625-D1-R015.0-Z5	5/8	5/8	3/4	3	5	AlTiN	0.015
N91051	S545R-0.625-D1-R020.0-Z5	5/8	5/8	3/4	3	5	AlTiN	0.020
N91060	S545R-0.625-D1-R030.0-Z5	5/8	5/8	3/4	3	5	AlTiN	0.030
N91075	S545R-0.625-D1-R045.0-Z5	5/8	5/8	3/4	3	5	AlTiN	0.045
N91076	S545R-0.625-D1-R060.0-Z5	5/8	5/8	3/4	3	5	AlTiN	0.060
N91077	S545R-0.625-D1-R090.0-Z5	5/8	5/8	3/4	3	5	AlTiN	0.090
N91078	S545R-0.625-D1-R125.0-Z5	5/8	5/8	3/4	3	5	AlTiN	0.125
N90980	S545R-0.625-D3-R015.0-Z5	5/8	5/8	1-5/8	3-1/2	5	AlTiN	0.015
N91079	S545R-0.625-D3-R020.0-Z5	5/8	5/8	1-5/8	3-1/2	5	AlTiN	0.020
N91084	S545R-0.625-D3-R030.0-Z5	5/8	5/8	1-5/8	3-1/2	5	AlTiN	0.030
N91086	S545R-0.625-D3-R045.0-Z5	5/8	5/8	1-5/8	3-1/2	5	AlTiN	0.045

DISCOUNT CODE D43

Niagara Cutter

ELITE HIGH PERFORMANCE- S545R

SOLID CARBIDE

HELIX 45°

RADIUS

CENTER CUTTING

- Eccentric primary relief
- Ideal for peripheral finish milling in steel, stainless steel, titanium and high temperature alloys

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS
N91090	S545R-0.625-D3-R060.0-Z5	5/8	5/8	1-5/8	3-1/2	5	AlTiN	0.060
N91091	S545R-0.625-D3-R090.0-Z5	5/8	5/8	1-5/8	3-1/2	5	AlTiN	0.090
N91093	S545R-0.625-D3-R125.0-Z5	5/8	5/8	1-5/8	3-1/2	5	AlTiN	0.125
N91095	S545R-0.750-D1-R015.0-Z5	3/4	3/4	1	3	5	AlTiN	0.015
N91096	S545R-0.750-D1-R020.0-Z5	3/4	3/4	1	3	5	AlTiN	0.020
N91097	S545R-0.750-D1-R030.0-Z5	3/4	3/4	1	3	5	AlTiN	0.030
N91098	S545R-0.750-D1-R045.0-Z5	3/4	3/4	1	3	5	AlTiN	0.045
N91099	S545R-0.750-D1-R060.0-Z5	3/4	3/4	1	3	5	AlTiN	0.060
N91102	S545R-0.750-D1-R090.0-Z5	3/4	3/4	1	3	5	AlTiN	0.090
N91103	S545R-0.750-D1-R125.0-Z5	3/4	3/4	1	3	5	AlTiN	0.125
N91104	S545R-0.750-D1-R190.0-Z5	3/4	3/4	1	3	5	AlTiN	0.190
N91039	S545R-0.750-D2-R015.0-Z5	3/4	3/4	1-5/8	4	5	AlTiN	0.015
N91105	S545R-0.750-D2-R020.0-Z5	3/4	3/4	1-5/8	4	5	AlTiN	0.020
N91107	S545R-0.750-D2-R030.0-Z5	3/4	3/4	1-5/8	4	5	AlTiN	0.030
N91108	S545R-0.750-D2-R045.0-Z5	3/4	3/4	1-5/8	4	5	AlTiN	0.045
N91110	S545R-0.750-D2-R060.0-Z5	3/4	3/4	1-5/8	4	5	AlTiN	0.060
N91111	S545R-0.750-D2-R090.0-Z5	3/4	3/4	1-5/8	4	5	AlTiN	0.090
N91116	S545R-0.750-D2-R125.0-Z5	3/4	3/4	1-5/8	4	5	AlTiN	0.125
N91117	S545R-0.750-D2-R190.0-Z5	3/4	3/4	1-5/8	4	5	AlTiN	0.190
N91133	S545R-1.000-D1-R015.0-Z5	1	1	1-1/4	4	5	AlTiN	0.015
N91135	S545R-1.000-D1-R020.0-Z5	1	1	1-1/4	4	5	AlTiN	0.020
N91136	S545R-1.000-D1-R030.0-Z5	1	1	1-1/4	4	5	AlTiN	0.030
N91138	S545R-1.000-D1-R045.0-Z5	1	1	1-1/4	4	5	AlTiN	0.045
N91139	S545R-1.000-D1-R060.0-Z5	1	1	1-1/4	4	5	AlTiN	0.060
N91142	S545R-1.000-D1-R090.0-Z5	1	1	1-1/4	4	5	AlTiN	0.090
N91143	S545R-1.000-D1-R125.0-Z5	1	1	1-1/4	4	5	AlTiN	0.125
N91145	S545R-1.000-D1-R190.0-Z5	1	1	1-1/4	4	5	AlTiN	0.190
N91094	S545R-1.000-D2-R015.0-Z5	1	1	2	4	5	AlTiN	0.015
N91146	S545R-1.000-D2-R020.0-Z5	1	1	2	4	5	AlTiN	0.020
N91148	S545R-1.000-D2-R030.0-Z5	1	1	2	4	5	AlTiN	0.030
N91149	S545R-1.000-D2-R045.0-Z5	1	1	2	4	5	AlTiN	0.045
N91152	S545R-1.000-D2-R060.0-Z5	1	1	2	4	5	AlTiN	0.060
N91155	S545R-1.000-D2-R090.0-Z5	1	1	2	4	5	AlTiN	0.090
N91158	S545R-1.000-D2-R125.0-Z5	1	1	2	4	5	AlTiN	0.125
N91163	S545R-1.000-D2-R190.0-Z5	1	1	2	4	5	AlTiN	0.190

DISCOUNT CODE D43

Niagara Cutter

SOLID CARBIDE END MILLS- S738

SOLID CARBIDE

HELIX 38°

CHAMFER 45°

NON CENTER CUTTING

- Unequal indexing
- Designed for high speed milling, smoother cutting performance, improved workpiece surface finish and increased feed rates
- Designed for titanium and aerospace materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N58244	S738-0.250-D2-C003.0-Z7	1/4	1/4	3/8	2	7	AlTiN	0.003
N58247	S738-0.250-D3-C003.0-Z7	1/4	1/4	3/4	2-1/2	7	AlTiN	0.003
N58250	S738-0.250-D5-C003.0-Z7	1/4	1/4	1-1/4	3	7	AlTiN	0.003
N58253	S738-0.375-D1-C005.0-Z7	3/8	3/8	1/2	2-1/2	7	AlTiN	0.005
N58256	S738-0.375-D3-C005.0-Z7	3/8	3/8	1	3	7	AlTiN	0.005
N58259	S738-0.375-D4-C005.0-Z7	3/8	3/8	1-1/2	3-1/2	7	AlTiN	0.005
N58262	S738-0.500-D2-C006.0-Z7	1/2	1/2	3/4	3	7	AlTiN	0.006
N58266	S738-0.500-D3-C006.0-Z7	1/2	1/2	1-1/4	3	7	AlTiN	0.006
N58270	S738-0.500-D4-C006.0-Z7	1/2	1/2	2	4	7	AlTiN	0.006

SOLID CARBIDE END MILLS- S938

SOLID CARBIDE

HELIX 38°

CHAMFER 45°

NON CENTER CUTTING

- Unequal Indexing
- Designed for high speed milling, smoother cutting performance, improved workpiece surface finish and increased feed rates
- Designed for titanium and aerospace materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N58274	S938-0.625-D1-C008.0-Z9	5/8	5/8	3/4	3	9	AlTiN	0.008
N58279	S938-0.625-D3-C008.0-Z9	5/8	5/8	1-5/8	4	9	AlTiN	0.008
N58284	S938-0.625-D4-C008.0-Z9	5/8	5/8	2-1/2	5	9	AlTiN	0.008
N58289	S938-0.750-D2-C010.0-Z9	3/4	3/4	1-5/8	4	9	AlTiN	0.010
N58294	S938-0.750-D3-C010.0-Z9	3/4	3/4	2-1/4	5	9	AlTiN	0.010
N58299	S938-0.750-D4-C010.0-Z9	3/4	3/4	3-1/4	6	9	AlTiN	0.010
N58304	S938-1.000-D2-C012.0-Z9	1	1	2	5	9	AlTiN	0.012
N58309	S938-1.000-D3-C012.0-Z9	1	1	3-1/4	6	9	AlTiN	0.012
N58314	S938-1.000-D4-C012.0-Z9	1	1	4-1/8	7	9	AlTiN	0.012

SOLID CARBIDE END MILLS- S738R

SOLID CARBIDE

HELIX 38°

RADIUS

NON CENTER CUTTING

- Unequal indexing
- Standard with aerospace corner radii
- Designed for high speed milling, smoother cutting performance, improved workpiece surface finish and increased feed rates
- Designed for titanium and aerospace materials

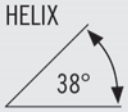
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS
N58245	S738R-0.250-D2-R015.0-Z7	1/4	1/4	3/8	2	7	AlTiN	0.015
N58246	S738R-0.250-D2-R030.0-Z7	1/4	1/4	3/8	2	7	AlTiN	0.030
N58248	S738R-0.250-D3-R015.0-Z7	1/4	1/4	3/4	2-1/2	7	AlTiN	0.015
N58249	S738R-0.250-D3-R030.0-Z7	1/4	1/4	3/4	2-1/2	7	AlTiN	0.030
N58251	S738R-0.250-D5-R015.0-Z7	1/4	1/4	1-1/4	3	7	AlTiN	0.015
N58252	S738R-0.250-D5-R030.0-Z7	1/4	1/4	1-1/4	3	7	AlTiN	0.030
N58254	S738R-0.375-D1-R015.0-Z7	3/8	3/8	1/2	2-1/2	7	AlTiN	0.015
N58255	S738R-0.375-D1-R030.0-Z7	3/8	3/8	1/2	2-1/2	7	AlTiN	0.030
N58257	S738R-0.375-D3-R015.0-Z7	3/8	3/8	1	3	7	AlTiN	0.015
N58258	S738R-0.375-D3-R030.0-Z7	3/8	3/8	1	3	7	AlTiN	0.030
N58260	S738R-0.375-D4-R015.0-Z7	3/8	3/8	1-1/2	3-1/2	7	AlTiN	0.015
N58261	S738R-0.375-D4-R030.0-Z7	3/8	3/8	1-1/2	3-1/2	7	AlTiN	0.030
N58263	S738R-0.500-D2-R015.0-Z7	1/2	1/2	3/4	3	7	AlTiN	0.015
N58264	S738R-0.500-D2-R030.0-Z7	1/2	1/2	3/4	3	7	AlTiN	0.030
N58265	S738R-0.500-D2-R060.0-Z7	1/2	1/2	3/4	3	7	AlTiN	0.060
N58267	S738R-0.500-D3-R015.0-Z7	1/2	1/2	1-1/4	3	7	AlTiN	0.015
N58268	S738R-0.500-D3-R030.0-Z7	1/2	1/2	1-1/4	3	7	AlTiN	0.030
N58269	S738R-0.500-D3-R060.0-Z7	1/2	1/2	1-1/4	3	7	AlTiN	0.060
N58271	S738R-0.500-D4-R015.0-Z7	1/2	1/2	2	4	7	AlTiN	0.015
N58272	S738R-0.500-D4-R030.0-Z7	1/2	1/2	2	4	7	AlTiN	0.030
N58273	S738R-0.500-D4-R060.0-Z7	1/2	1/2	2	4	7	AlTiN	0.060

Niagara Cutter

SOLID CARBIDE END MILLS- S938R

SOLID CARBIDE

HELIX



RADIUS

NON CENTER CUTTING

- Unequal indexing
- Standard with aerospace corner radii
- Designed for high speed milling, smoother cutting performance, improved workpiece surface finish and increased feed rates
- Designed for titanium and aerospace materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS
N58275	S938R-0.625-D1-R030.0-Z9	5/8	5/8	3/4	3	9	AlTiN	0.030
N58276	S938R-0.625-D1-R060.0-Z9	5/8	5/8	3/4	3	9	AlTiN	0.060
N58277	S938R-0.625-D1-R090.0-Z9	5/8	5/8	3/4	3	9	AlTiN	0.090
N58278	S938R-0.625-D1-R120.0-Z9	5/8	5/8	3/4	3	9	AlTiN	0.120
N58280	S938R-0.625-D3-R030.0-Z9	5/8	5/8	1-5/8	4	9	AlTiN	0.030
N58281	S938R-0.625-D3-R060.0-Z9	5/8	5/8	1-5/8	4	9	AlTiN	0.060
N58282	S938R-0.625-D3-R090.0-Z9	5/8	5/8	1-5/8	4	9	AlTiN	0.090
N58283	S938R-0.625-D3-R120.0-Z9	5/8	5/8	1-5/8	4	9	AlTiN	0.120
N58285	S938R-0.625-D4-R030.0-Z9	5/8	5/8	2-1/2	5	9	AlTiN	0.030
N58286	S938R-0.625-D4-R060.0-Z9	5/8	5/8	2-1/2	5	9	AlTiN	0.060
N58287	S938R-0.625-D4-R090.0-Z9	5/8	5/8	2-1/2	5	9	AlTiN	0.090
N58288	S938R-0.625-D4-R120.0-Z9	5/8	5/8	2-1/2	5	9	AlTiN	0.120
N58290	S938R-0.750-D2-R030.0-Z9	3/4	3/4	1-5/8	4	9	AlTiN	0.030
N58291	S938R-0.750-D2-R060.0-Z9	3/4	3/4	1-5/8	4	9	AlTiN	0.060
N58292	S938R-0.750-D2-R090.0-Z9	3/4	3/4	1-5/8	4	9	AlTiN	0.090
N58293	S938R-0.750-D2-R120.0-Z9	3/4	3/4	1-5/8	4	9	AlTiN	0.120
N58295	S938R-0.750-D3-R030.0-Z9	3/4	3/4	2-1/4	5	9	AlTiN	0.030
N58296	S938R-0.750-D3-R060.0-Z9	3/4	3/4	2-1/4	5	9	AlTiN	0.060
N58297	S938R-0.750-D3-R090.0-Z9	3/4	3/4	2-1/4	5	9	AlTiN	0.090
N58298	S938R-0.750-D3-R120.0-Z9	3/4	3/4	2-1/4	5	9	AlTiN	0.120
N58300	S938R-0.750-D4-R030.0-Z9	3/4	3/4	3-1/4	6	9	AlTiN	0.030
N58301	S938R-0.750-D4-R060.0-Z9	3/4	3/4	3-1/4	6	9	AlTiN	0.060
N58302	S938R-0.750-D4-R090.0-Z9	3/4	3/4	3-1/4	6	9	AlTiN	0.090
N58303	S938R-0.750-D4-R120.0-Z9	3/4	3/4	3-1/4	6	9	AlTiN	0.120
N58305	S938R-1.000-D2-R030.0-Z9	1	1	2	5	9	AlTiN	0.030
N58306	S938R-1.000-D2-R060.0-Z9	1	1	2	5	9	AlTiN	0.060
N58307	S938R-1.000-D2-R090.0-Z9	1	1	2	5	9	AlTiN	0.090
N58308	S938R-1.000-D2-R120.0-Z9	1	1	2	5	9	AlTiN	0.120
N58310	S938R-1.000-D3-R030.0-Z9	1	1	3-1/4	6	9	AlTiN	0.030
N58311	S938R-1.000-D3-R060.0-Z9	1	1	3-1/4	6	9	AlTiN	0.060
N58312	S938R-1.000-D3-R090.0-Z9	1	1	3-1/4	6	9	AlTiN	0.090
N58313	S938R-1.000-D3-R120.0-Z9	1	1	3-1/4	6	9	AlTiN	0.120
N58315	S938R-1.000-D4-R030.0-Z9	1	1	4-1/8	7	9	AlTiN	0.030
N58316	S938R-1.000-D4-R060.0-Z9	1	1	4-1/8	7	9	AlTiN	0.060
N58317	S938R-1.000-D4-R090.0-Z9	1	1	4-1/8	7	9	AlTiN	0.090
N58318	S938R-1.000-D4-R120.0-Z9	1	1	4-1/8	7	9	AlTiN	0.120

DISCOUNT CODE D43

Niagara Cutter

ELITE HIGH PERFORMANCE- SR420

SOLID CARBIDE

HELIX 20°

CHAMFER 45°

CENTER CUTTING

FINE PITCH

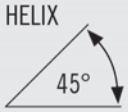
- Fine-pitch knuckle form
- Weldon flat standard on shank sizes 3/8" and larger
- Designed for steel and stainless steel

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N76130	SR420-0.250-D2-C020.0-Z4	1/4	1/4	3/8	2	4		0.020
N76178	SR420-0.250-D2-C020.0-Z4	1/4	1/4	3/8	2	4	AlTiN	0.020
N76131	SR420-0.250-D3-C020.0-Z4	1/4	1/4	3/4	2-1/2	4		0.020
N76179	SR420-0.250-D3-C020.0-Z4	1/4	1/4	3/4	2-1/2	4	AlTiN	0.020
N76132	SR420-0.313-D1-C020.0-Z4	5/16	5/16	7/16	2	4		0.020
N76180	SR420-0.313-D1-C020.0-Z4	5/16	5/16	7/16	2	4	AlTiN	0.020
N76133	SR420-0.313-D3-C020.0-Z4	5/16	5/16	13/16	2-1/2	4		0.020
N76181	SR420-0.313-D3-C020.0-Z4	5/16	5/16	13/16	2-1/2	4	AlTiN	0.020
N76134	SR420-0.375-D1-C020.3-Z4	3/8	3/8	1/2	2	4		0.020
N76182	SR420-0.375-D1-C020.3-Z4	3/8	3/8	1/2	2	4	AlTiN	0.020
N76135	SR420-0.375-D3-C020.3-Z4	3/8	3/8	1	2-1/2	4		0.020
N76183	SR420-0.375-D3-C020.3-Z4	3/8	3/8	1	2-1/2	4	AlTiN	0.020
N76136	SR420-0.438-D1-C020.3-Z4	7/16	7/16	9/16	2-1/2	4		0.020
N76184	SR420-0.438-D1-C020.3-Z4	7/16	7/16	9/16	2-1/2	4	AlTiN	0.020
N76137	SR420-0.438-D2-C020.3-Z4	7/16	7/16	1	2-3/4	4		0.020
N76185	SR420-0.438-D2-C020.3-Z4	7/16	7/16	1	2-3/4	4	AlTiN	0.020
N76138	SR420-0.500-D1-C025.3-Z4	1/2	1/2	5/8	2-1/2	4		0.025
N76186	SR420-0.500-D1-C025.3-Z4	1/2	1/2	5/8	2-1/2	4	AlTiN	0.025
N76139	SR420-0.500-D3-C025.3-Z4	1/2	1/2	1-1/4	3	4		0.025
N76187	SR420-0.500-D3-C025.3-Z4	1/2	1/2	1-1/4	3	4	AlTiN	0.025
N76140	SR420-0.625-D1-C025.3-Z4	5/8	5/8	3/4	3	4		0.025
N76188	SR420-0.625-D1-C025.3-Z4	5/8	5/8	3/4	3	4	AlTiN	0.025
N76141	SR420-0.625-D3-C025.3-Z4	5/8	5/8	1-5/8	3-1/2	4		0.025
N76189	SR420-0.625-D3-C025.3-Z4	5/8	5/8	1-5/8	3-1/2	4	AlTiN	0.025
N76142	SR420-0.750-D1-C025.3-Z4	3/4	3/4	1	3	4		0.025
N76190	SR420-0.750-D1-C025.3-Z4	3/4	3/4	1	3	4	AlTiN	0.025
N76143	SR420-0.750-D2-C025.3-Z4	3/4	3/4	1-5/8	4	4		0.025
N76191	SR420-0.750-D2-C025.3-Z4	3/4	3/4	1-5/8	4	4	AlTiN	0.025
N76144	SR420-1.000-D1-C025.3-Z5	1	1	1-1/4	4	5		0.025
N76192	SR420-1.000-D1-C025.3-Z5	1	1	1-1/4	4	5	AlTiN	0.025
N76145	SR420-1.000-D2-C025.3-Z5	1	1	2	5	5		0.025
N76193	SR420-1.000-D2-C025.3-Z5	1	1	2	5	5	AlTiN	0.025

ELITE HIGH PERFORMANCE- SR545

SOLID CARBIDE

HELIX



CHAMFER

CENTER CUTTING

FINE PITCH

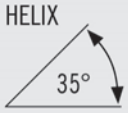
- Fine-pitch knuckle profile
- Designed for peripheral milling (25% of tool diameter maximum)
- Designed for stainless steel, titanium and high temperature alloys

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N99050	SR545-0.375-D1-C020.0-Z5	3/8	3/8	1/2	2	5		0.020
N99092	SR545-0.375-D1-C020.0-Z5	3/8	3/8	1/2	2	5	AlTiN	0.020
N99051	SR545-0.375-D3-C020.0-Z5	3/8	3/8	1	2-1/2	5		0.020
N99093	SR545-0.375-D3-C020.0-Z5	3/8	3/8	1	2-1/2	5	AlTiN	0.020
N99053	SR545-0.438-D2-C020.0-Z5	7/16	7/16	1	2-3/4	5		0.020
N99095	SR545-0.438-D2-C020.0-Z5	7/16	7/16	1	2-3/4	5	AlTiN	0.020
N99054	SR545-0.500-D1-C025.0-Z5	1/2	1/2	5/8	2-1/2	5		0.025
N99096	SR545-0.500-D1-C025.0-Z5	1/2	1/2	5/8	2-1/2	5	AlTiN	0.025
N99055	SR545-0.500-D3-C025.0-Z5	1/2	1/2	1-1/4	3	5		0.025
N99097	SR545-0.500-D3-C025.0-Z5	1/2	1/2	1-1/4	3	5	AlTiN	0.025
N99057	SR545-0.625-D3-C025.0-Z5	5/8	5/8	1-5/8	3-1/2	5		0.025
N99099	SR545-0.625-D3-C025.0-Z5	5/8	5/8	1-5/8	3-1/2	5	AlTiN	0.025
N99058	SR545-0.750-D1-C025.0-Z5	3/4	3/4	1	3	5		0.025
N99100	SR545-0.750-D1-C025.0-Z5	3/4	3/4	1	3	5	AlTiN	0.025
N99059	SR545-0.750-D2-C025.0-Z5	3/4	3/4	1-5/8	4	5		0.025
N99101	SR545-0.750-D2-C025.0-Z5	3/4	3/4	1-5/8	4	5	AlTiN	0.025
N99061	SR545-1.000-D2-C025.0-Z5	1	1	2	4	5		0.025
N99103	SR545-1.000-D2-C025.0-Z5	1	1	2	4	5	AlTiN	0.025

ELITE HIGH PERFORMANCE- S335M

SOLID CARBIDE

HELIX



RADIUS

CENTER CUTTING

- Designed for slotting and pocketing in steels, stainless steels and high temperature alloys

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS
N47768	S335M-040-D2-R020.0-Z3	4mm	4mm	6mm	50mm	3	AlTiN	0.20mm
N47770	S335M-040-D3-R020.0-Z3	4mm	4mm	12mm	50mm	3	AlTiN	0.20mm
N47772	S335M-050-D3-R020.0-Z3	5mm	5mm	14mm	50mm	3	AlTiN	0.20mm
N47776	S335M-060-D3-R050.0-Z3	6mm	6mm	16mm	58mm	3	AlTiN	0.50mm
N47778	S335M-080-D1-R050.0-Z3	8mm	8mm	10mm	59mm	3	AlTiN	0.50mm
N47780	S335M-080-D2-R050.0-Z3	8mm	8mm	20mm	64mm	3	AlTiN	0.50mm
N47784	S335M-100-D2-R050.0-Z3	10mm	10mm	22mm	73mm	3	AlTiN	0.50mm
N47788	S335M-120-D3-R100.0-Z3	12mm	12mm	32mm	84mm	3	AlTiN	1.00mm
N47796	S335M-160-D2-R100.0-Z3	16mm	16mm	36mm	89mm	3	AlTiN	1.00mm
N47804	S335M-200-D3-R100.0-Z3	20mm	20mm	50mm	104mm	3	AlTiN	1.00mm
N47806	S335M-250-D2-R100.0-Z3	25mm	25mm	38mm	115mm	3	AlTiN	1.00mm
N47808	S335M-250-D3-R100.0-Z3	25mm	25mm	60mm	140mm	3	AlTiN	1.00mm

Niagara Cutter

ELITE HIGH PERFORMANCE- S545M

SOLID CARBIDE | HELIX 45° | SQUARE END | CENTER CUTTING

- Eccentric primary relief
- Ideal for peripheral finish milling in steel, stainless steel, titanium and high temperature alloys

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N67967	S545M-040-D3-S.0-Z5	4mm	4mm	11mm	50mm	5	AlTiN
N67969	S545M-060-D2-S.0-Z5	6mm	6mm	13mm	57mm	5	AlTiN
N67970	S545M-080-D2-S.0-Z5	8mm	8mm	19mm	63mm	5	AlTiN
N67972	S545M-100-D2-S.0-Z5	10mm	10mm	22mm	72mm	5	AlTiN
N67973	S545M-120-D2-S.0-Z5	12mm	12mm	26mm	83mm	5	AlTiN

ELITE HIGH PERFORMANCE- S645M

SOLID CARBIDE | HELIX 45° | SQUARE END | CENTER CUTTING

- Eccentric primary relief
- Ideal for peripheral finish milling in steel, stainless steel, titanium and high temperature alloys

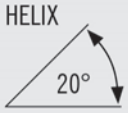
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N47858	S645M-030-D4-S.0-Z6	3mm	3mm	12mm	38mm	6	AlTiN
N47860	S645M-040-D2-S.0-Z6	4mm	4mm	6mm	50mm	6	AlTiN
N47862	S645M-040-D3-S.0-Z6	4mm	4mm	12mm	50mm	6	AlTiN
N47864	S645M-050-D3-S.0-Z6	5mm	5mm	14mm	50mm	6	AlTiN
N47866	S645M-060-D1-S.0-Z6	6mm	6mm	8mm	51mm	6	AlTiN
N47868	S645M-060-D3-S.0-Z6	6mm	6mm	16mm	58mm	6	AlTiN
N47870	S645M-080-D1-S.0-Z6	8mm	8mm	10mm	59mm	6	AlTiN
N47872	S645M-080-D2-S.0-Z6	8mm	8mm	20mm	64mm	6	AlTiN
N47874	S645M-100-D1-S.0-Z6	10mm	10mm	11mm	67mm	6	AlTiN
N47876	S645M-100-D2-S.0-Z6	10mm	10mm	22mm	73mm	6	AlTiN
N47880	S645M-120-D3-S.0-Z6	12mm	12mm	32mm	84mm	6	AlTiN
N47886	S645M-160-D1-S.0-Z6	16mm	16mm	16mm	83mm	6	AlTiN
N47888	S645M-160-D2-S.0-Z6	16mm	16mm	36mm	89mm	6	AlTiN
N47894	S645M-200-D2-S.0-Z6	20mm	20mm	38mm	101mm	6	AlTiN
N47896	S645M-200-D3-S.0-Z6	20mm	20mm	50mm	104mm	6	AlTiN

DISCOUNT CODE D43

ELITE HIGH PERFORMANCE- SR420M

SOLID CARBIDE

HELIX



CHAMFER

CENTER CUTTING

FINE PITCH

- Fine-pitch knuckle profile
- Designed for steel and stainless steel

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N47902	SR420M-060-D3-C050.0-Z4	6mm	6mm	16mm	58mm	4	AlTiN	0.50mm
N47904	SR420M-080-D2-C050.0-Z4	8mm	8mm	20mm	64mm	4	AlTiN	0.50mm
N47906	SR420M-100-D2-C050.0-Z4	10mm	10mm	22mm	73mm	4	AlTiN	0.50mm
N47907	SR420M-120-D1-C100.0-Z4	12mm	12mm	12mm	74mm	4	AlTiN	1.00mm
N47908	SR420M-120-D3-C100.0-Z4	12mm	12mm	32mm	84mm	4	AlTiN	1.00mm
N47910	SR420M-140-D2-C100.0-Z4	14mm	14mm	32mm	84mm	4	AlTiN	1.00mm
N47912	SR420M-160-D2-C100.0-Z4	16mm	16mm	36mm	93mm	4	AlTiN	1.00mm
N47916	SR420M-200-D3-C100.0-Z4	20mm	20mm	50mm	105mm	4	AlTiN	1.00mm

NS240R

SIDE MILLING - FINISHING														
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_f (sf / min)		$Z_n = 2$ 1/4	5/16	3/8	1/2	5/8	3/4	1	1 1/4
P	E / M / A 1 - 2	5	0.02	660	n (rev/min)	10080	8070	6720	5040	4030	3360	2520	2020
					f_z (in)	0.0025	0.0031	0.0038	0.0050	0.0063	0.0075	0.0100	0.0125
				590 - 720	v_f (in/min)	50.4	50.4	50.4	50.4	50.4	50.4	50.4	50.5
	E / M / A 3 - 4	5	0.02	590	n (rev/min)	9020	7210	6010	4510	3610	3010	2250	1800
					f_z (in)	0.0025	0.0031	0.0038	0.0050	0.0063	0.0075	0.0100	0.0125
				520 - 660	v_f (in/min)	45.1	45.1	45.1	45.1	45.1	45.2	45.0	45.0
	E / M / A 5 - 6	5	0.02	520	n (rev/min)	7950	6360	5300	3970	3180	2650	1990	1590
					f_z (in)	0.0025	0.0031	0.0038	0.0050	0.0063	0.0075	0.0100	0.0125
				460 - 590	v_f (in/min)	39.8	39.8	39.8	39.7	39.8	39.8	39.8	39.8
M	E / M / A 8 - 9	5	0.02	330	n (rev/min)	5040	4030	3360	2520	2020	1680	1260	1010
					f_z (in)	0.0025	0.0031	0.0038	0.0050	0.0063	0.0075	0.0100	0.0125
				260 - 390	v_f (in/min)	25.2	25.2	25.2	25.2	25.3	25.2	25.2	25.3
	E / M / A 10 - 11	5	0.02	260	n (rev/min)	3970	3180	2650	1990	1590	1320	990	790
					f_z (in)	0.0025	0.0031	0.0038	0.0050	0.0063	0.0075	0.0100	0.0125
				200 - 330	v_f (in/min)	19.9	19.9	19.9	19.9	19.9	19.8	19.8	19.8
K	E 12 - 13	5	0.02	390	n (rev/min)	5960	4770	3970	2980	2380	1990	1490	1190
					f_z (in)	0.0025	0.0031	0.0038	0.0050	0.0063	0.0075	0.0100	0.0125
				330 - 460	v_f (in/min)	29.8	29.8	29.8	29.8	29.8	29.9	29.8	29.8
	E 14 - 15	5	0.02	330	n (rev/min)	5040	4030	3360	2520	2020	1680	1260	1010
					f_z (in)	0.0025	0.0031	0.0038	0.0050	0.0063	0.0075	0.0100	0.0125
				260 - 390	v_f (in/min)	25.2	25.2	25.2	25.2	25.3	25.2	25.2	25.3
N	E / M / A 16	5	0.02	2620	n (rev/min)	40030	32030	26690	20020	16010	13340	10010	8010
					f_z (in)	0.0025	0.0031	0.0038	0.0050	0.0063	0.0075	0.0100	0.0125
				2300 - 2950	v_f (in/min)	200.2	200.2	200.2	200.2	200.1	200.1	200.2	200.3
	E / M / A 17	5	0.02	2620	n (rev/min)	40030	32030	26690	20020	16010	13340	10010	8010
					f_z (in)	0.0025	0.0031	0.0038	0.0050	0.0063	0.0075	0.0100	0.0125
				2300 - 2950	v_f (in/min)	200.2	200.2	200.2	200.2	200.1	200.1	200.2	200.3
	E / M / A 18	5	0.02	1310	n (rev/min)	20020	16010	13340	10010	8010	6670	5000	4000
					f_z (in)	0.0025	0.0031	0.0038	0.0050	0.0063	0.0075	0.0100	0.0125
				1150 - 1480	v_f (in/min)	100.1	100.1	100.1	100.1	100.1	100.1	100.0	100.0
S	E / M / A 19	5	0.02	160	n (rev/min)	2440	1960	1630	1220	980	810	610	490
					f_z (in)	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0070	0.0088
				130 - 200	v_f (in/min)	8.5	8.6	8.6	8.5	8.6	8.5	8.5	8.6
	E / M / A 20	5	0.02	160	n (rev/min)	2440	1960	1630	1220	980	810	610	490
					f_z (in)	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0070	0.0088
				130 - 200	v_f (in/min)	8.5	8.6	8.6	8.5	8.6	8.5	8.5	8.6
	E / M / A 21	5	0.02	130	n (rev/min)	1990	1590	1320	990	790	660	500	400
					f_z (in)	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0070	0.0088
				100 - 160	v_f (in/min)	7.0	7.0	6.9	6.9	6.9	6.9	7.0	7.0
	E / M / A 22	5	0.02	330	n (rev/min)	5040	4030	3360	2520	2020	1680	1260	1010
					f_z (in)	0.0025	0.0031	0.0038	0.0050	0.0063	0.0075	0.0100	0.0125
				260 - 390	v_f (in/min)	25.2	25.2	25.2	25.2	25.3	25.2	25.2	25.3
	A / D GRAPHITE	5	0.02	3280	n (rev/min)	50120	40090	33410	25060	20050	16710	12530	10020
					f_z (in)	0.0025	0.0031	0.0038	0.0050	0.0063	0.0075	0.0100	0.0125
				2950 - 3610	v_f (in/min)	250.6	250.6	250.6	250.6	250.6	250.7	250.6	250.5
	A / D PLASTIC (SOFT)	5	0.02	3280	n (rev/min)	50120	40090	33410	25060	20050	16710	12530	10020
					f_z (in)	0.0025	0.0031	0.0038	0.0050	0.0063	0.0075	0.0100	0.0125
				2950 - 3610	v_f (in/min)	250.6	250.6	250.6	250.6	250.6	250.7	250.6	250.5
	A / D PLASTIC (HARD)	5	0.02	1970	n (rev/min)	30100	24080	20070	15050	12040	10030	7530	6020
					f_z (in)	0.0025	0.0031	0.0038	0.0050	0.0063	0.0075	0.0100	0.0125
				1640 - 2300	v_f (in/min)	150.5	150.5	150.5	150.5	150.5	150.5	150.6	150.5

S335

SLOTTING														
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 3$ 1/16	1/8	1/4	3/8	1/2	5/8	3/4	1
P	E 1 - 2	1.0	1.00	395	n (rev/min)	24142	12071	6036	4024	3018	2414	2012	1509
					f_z (in)	0.0003	0.0005	0.0010	0.0015	0.0020	0.0025	0.0030	0.0040
				335 - 455	v_f (in/min)	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1
	E 3 - 4	1.0	1.00	330	n (rev/min)	20170	10085	5042	3362	2521	2017	1681	1261
					f_z (in)	0.0003	0.0005	0.0010	0.0015	0.0020	0.0025	0.0030	0.0040
				270 - 390	v_f (in/min)	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1
	E 5 - 6	1.0	1.00	260	n (rev/min)	15891	7946	3973	2649	1986	1589	1324	993
					f_z (in)	0.0002	0.0004	0.0008	0.0012	0.0016	0.0020	0.0024	0.0032
				200 - 320	v_f (in/min)	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
M	E 8 - 9	1.0	1.00	260	n (rev/min)	15891	7946	3973	2649	1986	1589	1324	993
					f_z (in)	0.0002	0.0003	0.0007	0.0010	0.0013	0.0016	0.0020	0.0026
				230 - 290	v_f (in/min)	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7
	E 10 - 11	1.0	1.00	230	n (rev/min)	14058	7029	3514	2343	1757	1406	1171	879
					f_z (in)	0.0002	0.0003	0.0007	0.0010	0.0013	0.0016	0.0020	0.0026
				200 - 260	v_f (in/min)	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
K	E 12 - 13	1.0	1.00	385	n (rev/min)	23531	11766	5883	3922	2941	2353	1961	1471
					f_z (in)	0.0003	0.0006	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045
				325 - 445	v_f (in/min)	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9
	E 14 - 15	1.0	1.00	340	n (rev/min)	20781	10390	5195	3463	2598	2078	1732	1299
					f_z (in)	0.0003	0.0006	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045
				280 - 400	v_f (in/min)	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
S	E 19	1.0	1.00	110	n (rev/min)	6723	3362	1681	1121	840	672	560	420
					f_z (in)	0.0001	0.0002	0.0005	0.0007	0.0009	0.0011	0.0014	0.0018
				80 - 140	v_f (in/min)	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
	E 20	1.0	1.00	110	n (rev/min)	6723	3362	1681	1121	840	672	560	420
					f_z (in)	0.0001	0.0002	0.0005	0.0007	0.0009	0.0011	0.0014	0.0018
				80 - 140	v_f (in/min)	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
	E 21	1.0	1.00	70	n (rev/min)	4278	2139	1070	713	535	428	357	267
					f_z (in)	0.0001	0.0002	0.0004	0.0006	0.0008	0.0009	0.0011	0.0015
				40 - 100	v_f (in/min)	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
	E 22	1.0	1.00	180	n (rev/min)	11002	5501	2750	1834	1375	1100	917	688
					f_z (in)	0.0001	0.0003	0.0006	0.0009	0.0011	0.0014	0.0017	0.0023
				120 - 240	v_f (in/min)	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

S335

SIDE MILLING - ROUGHING															
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 3$	1/16	1/8	1/4	3/8	1/2	5/8	3/4	1
P	E 1 - 2	1.0	0.20	525	n (rev/min)		32088	16044	8022	5348	4011	3209	2674	2006
					f_z (in)		0.0001	0.0002	0.0005	0.0007	0.0009	0.0011	0.0014	0.0018
				465 - 585	v_f (in/min)		10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8
	E 3 - 4	1.0	0.20	460	n (rev/min)		28115	14058	7029	4686	3514	2812	2343	1757
					f_z (in)		0.0001	0.0002	0.0005	0.0007	0.0009	0.0011	0.0014	0.0018
				400 - 520	v_f (in/min)		9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
	E 5 - 6	1.0	0.20	330	n (rev/min)		20170	10085	5042	3362	2521	2017	1681	1261
					f_z (in)		0.0001	0.0002	0.0005	0.0007	0.0009	0.0011	0.0014	0.0018
				270 - 390	v_f (in/min)		6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
M	E 8 - 9	1.0	0.20	280	n (rev/min)		17114	8557	4278	2852	2139	1711	1426	1070
					f_z (in)		0.0001	0.0002	0.0004	0.0006	0.0008	0.0011	0.0013	0.0017
				250 - 310	v_f (in/min)		5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
	E 10 - 11	1.0	0.20	250	n (rev/min)		15280	7640	3820	2547	1910	1528	1273	955
					f_z (in)		0.0001	0.0002	0.0004	0.0006	0.0008	0.0011	0.0013	0.0017
				220 - 280	v_f (in/min)		4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
K	E 12 - 13	1.0	0.20	340	n (rev/min)		20781	10390	5195	3463	2598	2078	1732	1299
					f_z (in)		0.0001	0.0002	0.0005	0.0007	0.0009	0.0011	0.0014	0.0018
				280 - 400	v_f (in/min)		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
	E 14 - 15	1.0	0.20	440	n (rev/min)		26893	13446	6723	4482	3362	2689	2241	1681
					f_z (in)		0.0001	0.0002	0.0005	0.0007	0.0009	0.0011	0.0014	0.0018
				380 - 500	v_f (in/min)		9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1
S	E 19	0.5	0.20	120	n (rev/min)		7334	3667	1834	1222	917	733	611	458
					f_z (in)		0.0001	0.0002	0.0005	0.0007	0.0009	0.0011	0.0014	0.0018
				90 - 150	v_f (in/min)		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	E 20	0.5	0.20	120	n (rev/min)		7334	3667	1834	1222	917	733	611	458
					f_z (in)		0.0001	0.0002	0.0005	0.0007	0.0009	0.0011	0.0014	0.0018
				90 - 150	v_f (in/min)		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	E 21	0.5	0.20	80	n (rev/min)		4890	2445	1222	815	611	489	407	306
					f_z (in)		0.0001	0.0002	0.0004	0.0006	0.0008	0.0009	0.0011	0.0015
				50 - 110	v_f (in/min)		1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
	E 22	0.5	0.20	220	n (rev/min)		13446	6723	3362	2241	1681	1345	1121	840
					f_z (in)		0.0001	0.0003	0.0006	0.0009	0.0011	0.0014	0.0017	0.0023
				160 - 280	v_f (in/min)		5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

SB335

SLOTTING															
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 3$							
								1/16	1/8	1/4	3/8	1/2	5/8	3/4	1
P	E 1 - 2	1.0	0.75		315		n (rev/min)	19253	9626	4813	3209	2407	1925	1604	1203
							f_z (in)	0.0003	0.0005	0.0010	0.0015	0.0020	0.0025	0.0030	0.0040
				255	-	375	v_f (in/min)	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4
	E 3 - 4	1.0	0.75		264		n (rev/min)	16136	8068	4034	2689	2017	1614	1345	1008
							f_z (in)	0.0003	0.0005	0.0010	0.0015	0.0020	0.0025	0.0030	0.0040
				204	-	324	v_f (in/min)	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1
	E 5 - 6	1.0	0.75		208		n (rev/min)	12713	6356	3178	2119	1589	1271	1059	795
							f_z (in)	0.0002	0.0004	0.0008	0.0012	0.0016	0.0020	0.0024	0.0032
				148	-	268	v_f (in/min)	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
M	E 8 - 9	1.0	0.75		208		n (rev/min)	12713	6356	3178	2119	1589	1271	1059	795
							f_z (in)	0.0002	0.0003	0.0007	0.0010	0.0013	0.0016	0.0020	0.0026
				178	-	238	v_f (in/min)	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2
	E 10 - 11	1.0	0.75		185		n (rev/min)	11307	5654	2827	1885	1413	1131	942	707
							f_z (in)	0.0002	0.0003	0.0007	0.0010	0.0013	0.0016	0.0020	0.0026
				155	-	215	v_f (in/min)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
K	E 12 - 13	1.0	0.75		308		n (rev/min)	18825	9412	4706	3137	2353	1882	1569	1177
							f_z (in)	0.0003	0.0006	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045
				248	-	368	v_f (in/min)	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9
	E 14 - 15	1.0	0.75		272		n (rev/min)	16625	8312	4156	2771	2078	1662	1385	1039
							f_z (in)	0.0003	0.0006	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045
				212	-	332	v_f (in/min)	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
S	E 19	1.0	0.75		88		n (rev/min)	5379	2689	1345	896	672	538	448	336
							f_z (in)	0.0001	0.0002	0.0005	0.0007	0.0009	0.0011	0.0014	0.0018
				58	-	118	v_f (in/min)	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
	E 20	1.0	0.75		88		n (rev/min)	5379	2689	1345	896	672	538	448	336
							f_z (in)	0.0001	0.0002	0.0005	0.0007	0.0009	0.0011	0.0014	0.0018
				58	-	118	v_f (in/min)	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
	E 21	1.0	0.75		56		n (rev/min)	3423	1711	856	570	428	342	285	214
							f_z (in)	0.0001	0.0002	0.0004	0.0006	0.0008	0.0009	0.0011	0.0015
				26	-	86	v_f (in/min)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	E 22	1.0	0.75		145		n (rev/min)	8862	4431	2216	1477	1108	886	739	554
							f_z (in)	0.0001	0.0003	0.0006	0.0009	0.0011	0.0014	0.0017	0.0023
				85	-	205	v_f (in/min)	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

SB335

SIDE MILLING - ROUGHING															
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 3$							
								1/16	1/8	1/4	3/8	1/2	5/8	3/4	1
P	E 1 - 2	1.0	0.20		420		n (rev/min)	25670	12835	6418	4278	3209	2567	2139	1604
							f_z (in)	0.0001	0.0002	0.0005	0.0007	0.0009	0.0011	0.0014	0.0018
				360	-	480	v_f (in/min)	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7
	E 3 - 4	1.0	0.20		368		n (rev/min)	22492	11246	5623	3749	2812	2249	1874	1406
							f_z (in)	0.0001	0.0002	0.0005	0.0007	0.0009	0.0011	0.0014	0.0018
				308	-	428	v_f (in/min)	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
	E 5 - 6	1.0	0.20		264		n (rev/min)	16136	8068	4034	2689	2017	1614	1345	1008
							f_z (in)	0.0001	0.0002	0.0005	0.0007	0.0009	0.0011	0.0014	0.0018
				204	-	324	v_f (in/min)	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
M	E 8 - 9	1.0	0.20		225		n (rev/min)	13752	6876	3438	2292	1719	1375	1146	860
							f_z (in)	0.0001	0.0002	0.0004	0.0006	0.0008	0.0011	0.0013	0.0017
				195	-	255	v_f (in/min)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
	E 10 - 11	1.0	0.20		200		n (rev/min)	12224	6112	3056	2037	1528	1222	1019	764
							f_z (in)	0.0001	0.0002	0.0004	0.0006	0.0008	0.0011	0.0013	0.0017
				170	-	230	v_f (in/min)	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
K	E 12 - 13	1.0	0.20		272		n (rev/min)	16625	8312	4156	2771	2078	1662	1385	1039
							f_z (in)	0.0001	0.0002	0.0005	0.0007	0.0009	0.0011	0.0014	0.0018
				212	-	332	v_f (in/min)	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
	E 14 - 15	1.0	0.20		350		n (rev/min)	21392	10696	5348	3565	2674	2139	1783	1337
							f_z (in)	0.0001	0.0002	0.0005	0.0007	0.0009	0.0011	0.0014	0.0018
				290	-	410	v_f (in/min)	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
S	E 19	0.5	0.20		96		n (rev/min)	5868	2934	1467	978	733	587	489	367
							f_z (in)	0.0001	0.0002	0.0005	0.0007	0.0009	0.0011	0.0014	0.0018
				66	-	126	v_f (in/min)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
	E 20	0.5	0.20		96		n (rev/min)	5868	2934	1467	978	733	587	489	367
							f_z (in)	0.0001	0.0002	0.0005	0.0007	0.0009	0.0011	0.0014	0.0018
				66	-	126	v_f (in/min)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
	E 21	0.5	0.20		64		n (rev/min)	3912	1956	978	652	489	391	326	244
							f_z (in)	0.0001	0.0002	0.0004	0.0006	0.0008	0.0009	0.0011	0.0015
				34	-	94	v_f (in/min)	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
	E 22	0.5	0.20		175		n (rev/min)	10696	5348	2674	1783	1337	1070	891	669
							f_z (in)	0.0001	0.0003	0.0006	0.0009	0.0011	0.0014	0.0017	0.0023
				115	-	235	v_f (in/min)	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

SN335

SLOTTING														
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 3$ 1/16	1/8	1/4	3/8	1/2	5/8	3/4	1
P	E 1 - 2	1.0	1.00	316	n (rev/min)	19314	9657	4828	3219	2414	1931	1609	1207
					f_z (in)	0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				256 - 376	v_f (in/min)	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9
	E 3 - 4	1.0	1.00	264	n (rev/min)	16136	8068	4034	2689	2017	1614	1345	1008
					f_z (in)	0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				204 - 324	v_f (in/min)	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1
	E 5 - 6	1.0	1.00	210	n (rev/min)	12835	6418	3209	2139	1604	1284	1070	802
					f_z (in)	0.0002	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				150 - 270	v_f (in/min)	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
M	E 8 - 9	1.0	1.00	210	n (rev/min)	12835	6418	3209	2139	1604	1284	1070	802
					f_z (in)	0.0001	0.0003	0.0005	0.0008	0.0010	0.0013	0.0015	0.0020
				180 - 240	v_f (in/min)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
	E 10 - 11	1.0	1.00	185	n (rev/min)	11307	5654	2827	1885	1413	1131	942	707
					f_z (in)	0.0001	0.0003	0.0005	0.0008	0.0010	0.0013	0.0015	0.0020
				155 - 215	v_f (in/min)	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
K	E 12 - 13	1.0	1.00	310	n (rev/min)	18947	9474	4737	3158	2368	1895	1579	1184
					f_z (in)	0.0002	0.0004	0.0009	0.0013	0.0017	0.0021	0.0026	0.0034
				250 - 370	v_f (in/min)	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1
	E 14 - 15	1.0	1.00	272	n (rev/min)	16625	8312	4156	2771	2078	1662	1385	1039
					f_z (in)	0.0002	0.0004	0.0009	0.0013	0.0017	0.0021	0.0026	0.0034
				212 - 332	v_f (in/min)	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6
S	E 19	1.0	1.00	88	n (rev/min)	5379	2689	1345	896	672	538	448	336
					f_z (in)	0.0001	0.0002	0.0004	0.0005	0.0007	0.0009	0.0011	0.0014
				58 - 118	v_f (in/min)	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
	E 20	1.0	1.00	88	n (rev/min)	5379	2689	1345	896	672	538	448	336
					f_z (in)	0.0001	0.0002	0.0004	0.0005	0.0007	0.0009	0.0011	0.0014
				58 - 118	v_f (in/min)	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
	E 21	1.0	1.00	56	n (rev/min)	3423	1711	856	570	428	342	285	214
					f_z (in)	0.0001	0.0001	0.0003	0.0004	0.0006	0.0007	0.0008	0.0011
				26 - 86	v_f (in/min)	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
	E 22	1.0	1.00	144	n (rev/min)	8801	4401	2200	1467	1100	880	733	550
					f_z (in)	0.0001	0.0002	0.0004	0.0006	0.0009	0.0011	0.0013	0.0017
				84 - 204	v_f (in/min)	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

SN335

SIDE MILLING - ROUGHING														
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 3$ 1/16	1/8	1/4	3/8	1/2	5/8	3/4	1
P	E 1 - 2	1.0	0.20	420	n (rev/min)	25670	12835	6418	4278	3209	2567	2139	1604
					f_z (in)	0.0001	0.0002	0.0004	0.0005	0.0007	0.0009	0.0011	0.0014
				360 - 480	v_f (in/min)	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
	E 3 - 4	1.0	0.20	368	n (rev/min)	22492	11246	5623	3749	2812	2249	1874	1406
					f_z (in)	0.0001	0.0002	0.0004	0.0005	0.0007	0.0009	0.0011	0.0014
				308 - 428	v_f (in/min)	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9
	E 5 - 6	1.0	0.20	264	n (rev/min)	16136	8068	4034	2689	2017	1614	1345	1008
					f_z (in)	0.0001	0.0002	0.0004	0.0005	0.0007	0.0009	0.0011	0.0014
				204 - 324	v_f (in/min)	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
M	E 8 - 9	1.0	0.20	224	n (rev/min)	13691	6845	3423	2282	1711	1369	1141	856
					f_z (in)	0.0001	0.0002	0.0003	0.0005	0.0007	0.0008	0.0010	0.0013
				194 - 254	v_f (in/min)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
	E 10 - 11	1.0	0.20	200	n (rev/min)	12224	6112	3056	2037	1528	1222	1019	764
					f_z (in)	0.0001	0.0002	0.0003	0.0005	0.0007	0.0008	0.0010	0.0013
				170 - 230	v_f (in/min)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
K	E 12 - 13	1.0	0.20	272	n (rev/min)	16625	8312	4156	2771	2078	1662	1385	1039
					f_z (in)	0.0001	0.0002	0.0004	0.0005	0.0007	0.0009	0.0011	0.0014
				212 - 332	v_f (in/min)	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
	E 14 - 15	1.0	0.20	352	n (rev/min)	21514	10757	5379	3586	2689	2151	1793	1345
					f_z (in)	0.0001	0.0002	0.0004	0.0005	0.0007	0.0009	0.0011	0.0014
				292 - 412	v_f (in/min)	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
S	E 19	0.5	0.20	96	n (rev/min)	5868	2934	1467	978	733	587	489	367
					f_z (in)	0.0001	0.0002	0.0004	0.0005	0.0007	0.0009	0.0011	0.0014
				66 - 126	v_f (in/min)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	E 20	0.5	0.20	96	n (rev/min)	5868	2934	1467	978	733	587	489	367
					f_z (in)	0.0001	0.0002	0.0004	0.0005	0.0007	0.0009	0.0011	0.0014
				66 - 126	v_f (in/min)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	E 21	0.5	0.20	64	n (rev/min)	3912	1956	978	652	489	391	326	244
					f_z (in)	0.0001	0.0001	0.0003	0.0004	0.0006	0.0007	0.0008	0.0011
				34 - 94	v_f (in/min)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
	E 22	0.5	0.20	176	n (rev/min)	10757	5379	2689	1793	1345	1076	896	672
					f_z (in)	0.0001	0.0002	0.0004	0.0006	0.0009	0.0011	0.0013	0.0017
				116 - 236	v_f (in/min)	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

S545 / S545R

SIDE MILLING - ROUGHING															
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 5$	1/16	1/8	1/4	3/8	1/2	5/8	3/4	1
P	E 1 - 2	1.0	0.25	500	n (rev/min)		30560	15280	7640	5093	3820	3056	2547	1910
					f_z (in)		0.0003	0.0006	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045
				400 - 700	v_f (in/min)		43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0
	E 3 - 4	1.0	0.25	380	n (rev/min)		23226	11613	5806	3871	2903	2323	1935	1452
					f_z (in)		0.0003	0.0005	0.0010	0.0015	0.0020	0.0025	0.0030	0.0040
				320 - 700	v_f (in/min)		29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
	E 5 - 6	1.0	0.20	300	n (rev/min)		18336	9168	4584	3056	2292	1834	1528	1146
					f_z (in)		0.0002	0.0004	0.0008	0.0012	0.0016	0.0019	0.0023	0.0031
				200 - 400	v_f (in/min)		17.8	17.8	17.8	17.8	17.8	17.8	17.8	17.8
H	M / A / D 7a (48>52HRc)	1.0	0.10	150	n (rev/min)		9168	4584	2292	1528	1146	917	764	573
					f_z (in)		0.0002	0.0004	0.0008	0.0012	0.0016	0.0019	0.0023	0.0031
				80 - 200	v_f (in/min)		8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9
M	E 8 - 9	1.0	0.20	250	n (rev/min)		15280	7640	3820	2547	1910	1528	1273	955
					f_z (in)		0.0002	0.0004	0.0008	0.0012	0.0016	0.0020	0.0024	0.0032
				150 - 350	v_f (in/min)		15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3
	E 10 - 11	1.0	0.20	200	n (rev/min)		12224	6112	3056	2037	1528	1222	1019	764
					f_z (in)		0.0002	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				150 - 350	v_f (in/min)		9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2
K	E 12 - 13	1.0	0.25	300	n (rev/min)		18336	9168	4584	3056	2292	1834	1528	1146
					f_z (in)		0.0005	0.0009	0.0018	0.0027	0.0036	0.0045	0.0054	0.0072
				250 - 350	v_f (in/min)		41.3	41.3	41.3	41.3	41.3	41.3	41.3	41.3
	E 12 - 13	1.0	0.25	180	n (rev/min)		11002	5501	2750	1834	1375	1100	917	688
					f_z (in)		0.0002	0.0004	0.0008	0.0012	0.0016	0.0019	0.0023	0.0031
				150 - 230	v_f (in/min)		10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7
N	E / M / A 16	2.0	0.05	800	n (rev/min)		11002	5501	2750	1834	1375	1100	917	688
					f_z (in)		0.0005	0.0010	0.0020	0.0030	0.0040	0.0050	0.0060	0.0080
				640 - 1320	v_f (in/min)		27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
	E / M / A 17	2.0	0.05	800	n (rev/min)		11002	5501	2750	1834	1375	1100	917	688
					f_z (in)		0.0005	0.0010	0.0020	0.0030	0.0040	0.0050	0.0060	0.0080
				640 - 1320	v_f (in/min)		27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
S	E 19	1.0	0.05	90	n (rev/min)		5501	2750	1375	917	688	550	458	344
					f_z (in)		0.0001	0.0002	0.0004	0.0005	0.0007	0.0009	0.0011	0.0014
				60 - 120	v_f (in/min)		2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
	E 20	1.0	0.05	90	n (rev/min)		5501	2750	1375	917	688	550	458	344
					f_z (in)		0.0001	0.0002	0.0004	0.0005	0.0007	0.0009	0.0011	0.0014
				60 - 120	v_f (in/min)		2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
	E 21	1.0	0.05	90	n (rev/min)		5501	2750	1375	917	688	550	458	344
					f_z (in)		0.0001	0.0002	0.0004	0.0005	0.0007	0.0009	0.0011	0.0014
				60 - 120	v_f (in/min)		2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
	E 22	1.0	0.15	120	n (rev/min)		7334	3667	1834	1222	917	733	611	458
					f_z (in)		0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				100 - 180	v_f (in/min)		6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

S738 / S938 / S738R / S938R

SIDE MILLING - ROUGHING														
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 7$			$Z_n = 9$			
								1/4	3/8	1/2	5/8	3/4	1	
P	E 1 - 2	1.5	0.05		525		n (rev/min)	8022	5348	4011	3209	2674	2006	
							f_z (in)	0.0010	0.0015	0.0020	0.0023	0.0026	0.0030	
				425	-	725	v_f (in/min)	56.2	56.2	56.2	66.4	62.6	54.1	
	E 3 - 4	1.5	0.05		475		n (rev/min)	7258	4839	3629	2903	2419	1815	
							f_z (in)	0.0010	0.0015	0.0020	0.0023	0.0026	0.0030	
				415	-	795	v_f (in/min)	50.8	50.8	50.8	60.1	56.6	49.0	
	E 5 - 6	1.5	0.05		450		n (rev/min)	6876	4584	3438	2750	2292	1719	
							f_z (in)	0.0011	0.0017	0.0022	0.0025	0.0028	0.0033	
				350	-	550	v_f (in/min)	52.9	54.5	52.9	61.9	57.8	51.1	
M	E 8 - 9	1.5	0.05		425		n (rev/min)	6494	4329	3247	2598	2165	1624	
							f_z (in)	0.0010	0.0015	0.0020	0.0023	0.0025	0.0030	
				325	-	525	v_f (in/min)	45.5	45.5	45.5	53.8	48.7	43.8	
	E 10 - 11	1.5	0.05		400		n (rev/min)	6112	4075	3056	2445	2037	1528	
							f_z (in)	0.0008	0.0012	0.0016	0.0018	0.0020	0.0024	
				350	-	550	v_f (in/min)	34.2	34.2	34.2	39.6	36.7	33.0	
K	E 12 - 13	1.5	0.05		450		n (rev/min)	6876	4584	3438	2750	2292	1719	
							f_z (in)	0.0009	0.0014	0.0018	0.0020	0.0023	0.0027	
				400	-	500	v_f (in/min)	43.3	44.9	43.3	49.5	47.4	41.8	
	E 14 - 15	1.5	0.05		500		n (rev/min)	7640	5093	3820	3056	2547	1910	
							f_z (in)	0.0009	0.0014	0.0018	0.0020	0.0023	0.0027	
				470	-	550	v_f (in/min)	48.1	49.9	48.1	55.0	52.7	46.4	
S	E 19	1.5	0.05		140		n (rev/min)	2139	1426	1070	856	713	535	
							f_z (in)	0.0008	0.0011	0.0015	0.0017	0.0019	0.0023	
				110	-	170	v_f (in/min)	12.0	11.0	11.2	13.1	12.2	11.1	
	E 20	1.5	0.05		100		n (rev/min)	1528	1019	764	611	509	382	
							f_z (in)	0.0008	0.0011	0.0015	0.0017	0.0019	0.0023	
				70	-	130	v_f (in/min)	8.6	7.8	8.0	9.4	8.7	7.9	
	E 21	1.5	0.05		100		n (rev/min)	1528	1019	764	611	509	382	
							f_z (in)	0.0008	0.0011	0.0015	0.0017	0.0019	0.0023	
				70	-	130	v_f (in/min)	8.6	7.8	8.0	9.4	8.7	7.9	
	E 22	1.5	0.05		275		n (rev/min)	4202	2801	2101	1681	1401	1051	
							f_z (in)	0.0010	0.0015	0.0020	0.0023	0.0025	0.0030	
				255	-	335	v_f (in/min)	29.4	29.4	29.4	34.8	31.5	28.4	

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

SR420

SLOTTING

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 4$	1/4	3/8	1/2	5/8	3/4	1
P	E 1 - 2	1.00	1.00	300	n (rev/min)		4584	3056	2292	1834	1528	1146
					f_z (in)		0.0008	0.0012	0.0016	0.0020	0.0023	0.0031
				200 - 400	v_f (in/min)		14.3	14.3	14.3	14.3	14.3	14.3
	E 3 - 4	1.00	1.00	250	n (rev/min)		3820	2547	1910	1528	1273	955
					f_z (in)		0.0005	0.0008	0.0010	0.0013	0.0016	0.0021
				225 - 270	v_f (in/min)		8.3	8.3	8.3	8.3	8.3	8.3
	E 5 - 6	1.00	1.00	380	n (rev/min)		5806	3871	2903	2323	1935	1452
					f_z (in)		0.0004	0.0007	0.0009	0.0011	0.0013	0.0018
				330 - 430	v_f (in/min)		10.2	10.2	10.2	10.2	10.2	10.2
M	E 8 - 9	0.50	1.00	380	n (rev/min)		5806	3871	2903	2323	1935	1452
					f_z (in)		0.0005	0.0008	0.0011	0.0014	0.0016	0.0022
				330 - 430	v_f (in/min)		12.5	12.5	12.5	12.5	12.5	12.5
	E 10 - 11	0.30	1.00	200	n (rev/min)		3056	2037	1528	1222	1019	764
					f_z (in)		0.0004	0.0005	0.0007	0.0009	0.0011	0.0014
				150 - 250	v_f (in/min)		4.4	4.4	4.4	4.4	4.4	4.4
K	E 12 - 13	1.00	1.00	380	n (rev/min)		5806	3871	2903	2323	1935	1452
					f_z (in)		0.0012	0.0017	0.0023	0.0029	0.0035	0.0046
				330 - 430	v_f (in/min)		26.9	26.9	26.9	26.9	26.9	26.9
	E 14 - 15	0.30	1.00	150	n (rev/min)		2292	1528	1146	917	764	573
					f_z (in)		0.0007	0.0010	0.0014	0.0017	0.0020	0.0027
				100 - 200	v_f (in/min)		6.2	6.2	6.2	6.2	6.2	6.2

SIDE MILLING - ROUGHING

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)								
P	E 1 - 2	1.00	0.40	300	n (rev/min)		4584	3056	2292	1834	1528	1146
					f_z (in)		0.0010	0.0015	0.0020	0.0024	0.0029	0.0039
				240 - 360	v_f (in/min)		17.9	17.9	17.9	17.9	17.9	17.9
	E 3 - 4	1.00	0.40	250	n (rev/min)		3820	2547	1910	1528	1273	955
					f_z (in)		0.0007	0.0010	0.0014	0.0017	0.0020	0.0027
				190 - 310	v_f (in/min)		10.3	10.3	10.3	10.3	10.3	10.3
	E 5 - 6	1.00	0.40	175	n (rev/min)		2674	1783	1337	1070	891	669
					f_z (in)		0.0006	0.0008	0.0011	0.0014	0.0017	0.0022
				115 - 235	v_f (in/min)		5.9	5.9	5.9	5.9	5.9	5.9
M	E 8 - 9	1.00	0.40	380	n (rev/min)		5806	3871	2903	2323	1935	1452
					f_z (in)		0.0007	0.0010	0.0014	0.0017	0.0020	0.0027
				350 - 410	v_f (in/min)		15.7	15.7	15.7	15.7	15.7	15.7
	E 10 - 11	1.00	0.30	200	n (rev/min)		3056	2037	1528	1222	1019	764
					f_z (in)		0.0005	0.0007	0.0009	0.0011	0.0014	0.0018
				170 - 230	v_f (in/min)		5.5	5.5	5.5	5.5	5.5	5.5
K	E 12 - 13	1.00	0.40	380	n (rev/min)		5806	3871	2903	2323	1935	1452
					f_z (in)		0.0015	0.0022	0.0029	0.0036	0.0044	0.0058
				320 - 440	v_f (in/min)		33.7	33.7	33.7	33.7	33.7	33.7
	E 14 - 15	1.00	0.30	150	n (rev/min)		2292	1528	1146	917	764	573
					f_z (in)		0.0009	0.0013	0.0017	0.0021	0.0026	0.0034
				90 - 210	v_f (in/min)		7.8	7.8	7.8	7.8	7.8	7.8

SR545

SIDE MILLING - ROUGHING												
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 5$ 1/4	3/8	1/2	5/8	3/4	1
P	E 1 - 2	1.00	0.30	300	n (rev/min)	4584	3056	2292	1834	1528	1146
					f_z (in)	0.0010	0.0015	0.0020	0.0024	0.0029	0.0039
				200 - 400	v_f (in/min)	22.3	22.3	22.3	22.3	22.3	22.3
	E 3 - 4	1.00	0.30	250	n (rev/min)	3820	2547	1910	1528	1273	955
					f_z (in)	0.0007	0.0010	0.0014	0.0017	0.0020	0.0027
				225 - 275	v_f (in/min)	12.9	12.9	12.9	12.9	12.9	12.9
	E 5 - 6	1.00	0.30	175	n (rev/min)	2674	1783	1337	1070	891	669
					f_z (in)	0.0006	0.0008	0.0011	0.0014	0.0017	0.0022
				150 - 200	v_f (in/min)	7.4	7.4	7.4	7.4	7.4	7.4
M	E 8 - 9	1.00	0.30	380	n (rev/min)	5806	3871	2903	2323	1935	1452
					f_z (in)	0.0007	0.0010	0.0014	0.0017	0.0020	0.0027
				330 - 430	v_f (in/min)	19.6	19.6	19.6	19.6	19.6	19.6
	E 10 - 11	1.00	0.25	200	n (rev/min)	3056	2037	1528	1222	1019	764
					f_z (in)	0.0005	0.0007	0.0009	0.0011	0.0014	0.0018
				150 - 250	v_f (in/min)	6.9	6.9	6.9	6.9	6.9	6.9
K	E 12 - 13	1.00	0.30	380	n (rev/min)	5806	3871	2903	2323	1935	1452
					f_z (in)	0.0015	0.0022	0.0029	0.0036	0.0044	0.0058
				330 - 430	v_f (in/min)	42.1	42.1	42.1	42.1	42.1	42.1
	E 14 - 15	1.00	0.25	150	n (rev/min)	2292	1528	1146	917	764	573
					f_z (in)	0.0009	0.0013	0.0017	0.0021	0.0026	0.0034
				100 - 200	v_f (in/min)	9.7	9.7	9.7	9.7	9.7	9.7
S	E 22	1.0	0.20	275	n (rev/min)	4202	2801	2101	1681	1401	1051
					f_z (in)	0.0009	0.0013	0.0017	0.0021	0.0026	0.0034
				225 - 325	v_f (in/min)	17.9	17.9	17.9	17.9	17.9	17.9

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

S335M

SLOTTING														
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (m / min)		Zn = 3								
						1.5	3	6	10	12	16	18	25
P	E 1 - 2	1.0	1.00	120	n (rev/min)	25460	12730	6370	3820	3180	2390	2120	1530
					f_z (mm)	0.006	0.012	0.024	0.040	0.048	0.064	0.072	0.100
				102 - 139	v_f (mm/min)	458	458	459	458	458	459	458	459
	E 3 - 4	1.0	1.00	101	n (rev/min)	21430	10720	5360	3210	2680	2010	1790	1290
					f_z (mm)	0.006	0.012	0.024	0.040	0.048	0.064	0.072	0.100
				82 - 119	v_f (mm/min)	386	386	386	385	386	386	387	387
	E 5 - 6	1.0	1.00	79	n (rev/min)	16760	8380	4190	2510	2100	1570	1400	1010
					f_z (mm)	0.005	0.010	0.019	0.032	0.038	0.051	0.058	0.080
				61 - 98	v_f (mm/min)	241	241	241	241	242	241	242	242
M	E 8 - 9	1.0	1.00	79	n (rev/min)	16760	8380	4190	2510	2100	1570	1400	1010
					f_z (mm)	0.004	0.008	0.016	0.026	0.031	0.042	0.047	0.065
				70 - 88	v_f (mm/min)	196	196	196	196	197	196	197	197
	E 10 - 11	1.0	1.00	70	n (rev/min)	14850	7430	3710	2230	1860	1390	1240	890
					f_z (mm)	0.004	0.008	0.016	0.026	0.031	0.042	0.047	0.065
				61 - 79	v_f (mm/min)	174	174	174	174	174	173	174	174
K	E 12 - 13	1.0	1.00	117	n (rev/min)	24830	12410	6210	3720	3100	2330	2070	1490
					f_z (mm)	0.007	0.014	0.027	0.045	0.054	0.072	0.081	0.113
				99 - 136	v_f (mm/min)	503	503	503	502	502	503	503	503
	E 14 - 15	1.0	1.00	104	n (rev/min)	22070	11030	5520	3310	2760	2070	1840	1320
					f_z (mm)	0.007	0.014	0.027	0.045	0.054	0.072	0.081	0.113
				85 - 122	v_f (mm/min)	447	447	447	447	447	447	447	446
S	E 19	1.0	1.00	34	n (rev/min)	7220	3610	1800	1080	900	680	600	430
					f_z (mm)	0.003	0.005	0.011	0.018	0.022	0.029	0.032	0.045
				24 - 43	v_f (mm/min)	58	58	58	58	58	59	58	58
	E 20	1.0	1.00	34	n (rev/min)	7220	3610	1800	1080	900	680	600	430
					f_z (mm)	0.003	0.005	0.011	0.018	0.022	0.029	0.032	0.045
				24 - 43	v_f (mm/min)	58	58	58	58	58	59	58	58
	E 21	1.0	1.00	21	n (rev/min)	4460	2230	1110	670	560	420	370	270
					f_z (mm)	0.002	0.005	0.009	0.015	0.018	0.024	0.027	0.038
				12 - 30	v_f (mm/min)	30	30	30	30	30	30	30	30
	E 22	1.0	1.00	55	n (rev/min)	11670	5840	2920	1750	1460	1090	970	700
					f_z (mm)	0.003	0.007	0.014	0.023	0.027	0.036	0.041	0.057
				37 - 73	v_f (mm/min)	120	120	120	120	120	119	119	120

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

S335M

SIDE MILLING - ROUGHING														
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (m / min)		$Z_n = 3$	1.5	3	6	10	12	16	18	25
P	E 1 - 2	1.0	0.20	160		n (rev/min)	33950	16980	8490	5090	4240	3180	2830	2040
						f_z (mm)	0.003	0.005	0.011	0.018	0.022	0.029	0.032	0.045
				142	- 178	v_f (mm/min)	275	275	275	275	275	275	275	275
	E 3 - 4	1.0	0.20	140		n (rev/min)	33950	16980	8490	5090	4240	3180	2830	2040
						f_z (mm)	0.003	0.005	0.011	0.018	0.022	0.029	0.032	0.045
				122	- 158	v_f (mm/min)	275	275	275	275	275	275	275	275
	E 5 - 6	1.0	0.20	101		n (rev/min)	21430	10720	5360	3210	2680	2010	1790	1290
						f_z (mm)	0.003	0.005	0.011	0.018	0.022	0.029	0.032	0.045
				82	- 119	v_f (mm/min)	174	174	174	173	174	174	174	174
M	E 8 - 9	1.0	0.20	85		n (rev/min)	18040	9020	4510	2710	2250	1690	1500	1080
						f_z (mm)	0.003	0.005	0.010	0.017	0.020	0.027	0.030	0.042
				76	- 94	v_f (mm/min)	136	136	136	137	136	136	136	136
	E 10 - 11	1.0	0.20	76		n (rev/min)	16130	8060	4030	2420	2020	1510	1340	970
						f_z (mm)	0.003	0.005	0.010	0.017	0.020	0.027	0.030	0.042
				27	- 46	v_f (mm/min)	122	122	122	122	122	122	122	122
K	E 12 - 13	1.0	0.20	104		n (rev/min)	22070	11030	5520	3310	2760	2070	1840	1320
						f_z (mm)	0.003	0.005	0.011	0.018	0.022	0.029	0.032	0.045
				85	- 122	v_f (mm/min)	179	179	179	179	179	179	179	178
	E 14 - 15	1.0	0.20	134		n (rev/min)	28440	14220	7110	4270	3550	2670	2370	1710
						f_z (mm)	0.003	0.005	0.011	0.018	0.022	0.029	0.032	0.045
				116	- 152	v_f (mm/min)	230	230	230	231	230	231	230	231
S	E 19	0.5	0.20	37		n (rev/min)	7850	3930	1960	1180	980	740	650	470
						f_z (mm)	0.003	0.005	0.011	0.018	0.022	0.029	0.032	0.045
				27	- 46	v_f (mm/min)	64	64	64	64	64	64	63	63
	E 20	0.5	0.20	37		n (rev/min)	7850	3930	1960	1180	980	740	650	470
						f_z (mm)	0.003	0.005	0.011	0.018	0.022	0.029	0.032	0.045
				27	- 46	v_f (mm/min)	64	64	64	64	64	64	63	63
	E 21	0.5	0.20	24		n (rev/min)	5090	2550	1270	760	640	480	420	310
						f_z (mm)	0.002	0.005	0.009	0.015	0.018	0.024	0.027	0.038
				15	- 34	v_f (mm/min)	34	34	34	34	35	35	34	35
	E 22	0.5	0.20	67		n (rev/min)	14220	7110	3550	2130	1780	1330	1180	850
						f_z (mm)	0.003	0.007	0.014	0.023	0.027	0.036	0.041	0.057
				49	- 85	v_f (mm/min)	146	146	146	146	146	146	145	145

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

S545M

SIDE MILLING - ROUGHING															
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (m / min)		$Z_n = 5$	4	6	8	10	12	14	16	20	25
P	E 1 - 2	1.0	0.25	150	n (rev/min)		11940	7960	5970	4770	3980	3410	2980	2390	1910
					f_z (mm)		0.018	0.027	0.036	0.045	0.054	0.063	0.072	0.090	0.113
				120 - 210	v_f (mm/min)		1075	1075	1075	1075	1075	1075	1075	1075	1075
	E 3 - 4	1.0	0.25	120	n (rev/min)		9550	6370	4770	3820	3180	2730	2390	1910	1530
					f_z (mm)		0.018	0.027	0.036	0.045	0.054	0.063	0.072	0.090	0.113
				100 - 210	v_f (mm/min)		860	860	860	860	860	860	860	860	860
	E 5 - 6	1.0	0.20	90	n (rev/min)		7160	4770	3580	2860	2390	2050	1790	1430	1150
					f_z (mm)		0.018	0.027	0.036	0.045	0.054	0.063	0.072	0.090	0.113
				60 - 120	v_f (mm/min)		645	645	645	645	645	645	645	645	645
H	M / A / D 7a (48>52HRc)	1.0	0.10	50	n (rev/min)		3980	2650	1990	1590	1330	1140	990	800	640
					f_z (mm)		0.018	0.027	0.036	0.045	0.054	0.063	0.072	0.090	0.113
				20 - 60	v_f (mm/min)		360	360	360	360	360	360	355	360	360
M	E 8 - 9	1.0	0.20	80	n (rev/min)		6370	4240	3180	2550	2120	1820	1590	1270	1020
					f_z (mm)		0.018	0.027	0.036	0.045	0.054	0.063	0.072	0.090	0.113
				50 - 110	v_f (mm/min)		575	570	570	575	570	575	570	570	575
	E 10 - 11	1.0	0.20	60	n (rev/min)		4770	3180	2390	1910	1590	1360	1190	950	760
					f_z (mm)		0.018	0.027	0.036	0.045	0.054	0.063	0.072	0.090	0.113
				50 - 110	v_f (mm/min)		430	430	430	430	430	430	430	430	430
K	E 12 - 13	1.0	0.25	90	n (rev/min)		7160	4770	3580	2860	2390	2050	1790	1430	1150
					f_z (mm)		0.018	0.027	0.036	0.045	0.054	0.063	0.072	0.090	0.113
				80 - 110	v_f (mm/min)		645	645	645	645	645	645	645	645	645
	E 12 - 13	1.0	0.25	50	n (rev/min)		3980	2650	1990	1590	1330	1140	990	800	640
					f_z (mm)		0.018	0.027	0.036	0.045	0.054	0.063	0.072	0.090	0.113
				50 - 70	v_f (mm/min)		360	360	360	360	360	360	355	360	360
N	E / M / A 16	2.0	0.05	240	n (rev/min)		19100	12730	9550	7640	6370	5460	4770	3820	3060
					f_z (mm)		0.018	0.027	0.036	0.045	0.054	0.063	0.072	0.090	0.113
				200 - 400	v_f (mm/min)		1720	1720	1720	1720	1720	1720	1715	1720	1720
	E / M / A 17	2.0	0.05	240	n (rev/min)		19100	12730	9550	7640	6370	5460	4770	3820	3060
					f_z (mm)		0.018	0.027	0.036	0.045	0.054	0.063	0.072	0.090	0.113
				200 - 400	v_f (mm/min)		1720	1720	1720	1720	1720	1720	1715	1720	1720
S	E 19	1.0	0.05	30	n (rev/min)		2390	1590	1190	950	800	680	600	480	380
					f_z (mm)		0.018	0.027	0.036	0.045	0.054	0.063	0.072	0.090	0.113
				20 - 40	v_f (mm/min)		215	215	215	215	215	215	215	215	215
	E 20	1.0	0.05	30	n (rev/min)		2390	1590	1190	950	800	680	600	480	380
					f_z (mm)		0.018	0.027	0.036	0.045	0.054	0.063	0.072	0.090	0.113
				20 - 40	v_f (mm/min)		215	215	215	215	215	215	215	215	215
	E 21	1.0	0.05	30	n (rev/min)		2390	1590	1190	950	800	680	600	480	380
					f_z (mm)		0.018	0.027	0.036	0.045	0.054	0.063	0.072	0.090	0.113
				20 - 40	v_f (mm/min)		215	215	215	215	215	215	215	215	215
	E 22	1.0	0.15	40	n (rev/min)		3180	2120	1590	1270	1060	910	800	640	510
					f_z (mm)		0.018	0.027	0.036	0.045	0.054	0.063	0.072	0.090	0.113
				30 - 50	v_f (mm/min)		285	285	285	285	285	285	290	290	285

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

S645M

SIDE MILLING - ROUGHING															
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (m / min)		Zn = 6	4	6	8	10	12	14	16	20	25
P	E 1 - 2	1.0	0.25	150		n (rev/min)	11940	7960	5970	4770	3980	3410	2980	2390	1910
						f_z (mm)	0.018	0.027	0.036	0.045	0.054	0.063	0.072	0.090	0.113
				120 - 210		v_f (mm/min)	1290	1290	1290	1290	1290	1290	1285	1290	1290
	E 3 - 4	1.0	0.25	120		n (rev/min)	9550	6370	4770	3820	3180	2730	2390	1910	1530
						f_z (mm)	0.018	0.027	0.036	0.045	0.054	0.063	0.072	0.090	0.113
				100 - 210		v_f (mm/min)	1030	1030	1030	1030	1030	1030	1030	1030	1035
	E 5 - 6	1.0	0.20	90		n (rev/min)	7160	4770	3580	2860	2390	2050	1790	1430	1150
						f_z (mm)	0.018	0.027	0.036	0.045	0.054	0.063	0.072	0.090	0.113
				60 - 120		v_f (mm/min)	775	775	775	770	775	775	775	770	775
H	M / A / D 7a (48>52HRc)	1.0	0.10	50		n (rev/min)	3980	2650	1990	1590	1330	1140	990	800	640
						f_z (mm)	0.018	0.027	0.036	0.045	0.054	0.063	0.072	0.090	0.113
				20 - 60		v_f (mm/min)	430	430	430	430	430	430	430	430	430
M	E 8 - 9	1.0	0.20	80		n (rev/min)	6370	4240	3180	2550	2120	1820	1590	1270	1020
						f_z (mm)	0.018	0.027	0.036	0.045	0.054	0.063	0.072	0.090	0.113
				50 - 110		v_f (mm/min)	690	685	685	690	685	690	685	685	690
	E 10 - 11	1.0	0.20	60		n (rev/min)	4770	3180	2390	1910	1590	1360	1190	950	760
						f_z (mm)	0.018	0.027	0.036	0.045	0.054	0.063	0.072	0.090	0.113
				50 - 110		v_f (mm/min)	515	515	515	515	515	515	515	515	515
K	E 12 - 13	1.0	0.25	90		n (rev/min)	7160	4770	3580	2860	2390	2050	1790	1430	1150
						f_z (mm)	0.018	0.027	0.036	0.045	0.054	0.063	0.072	0.090	0.113
				80 - 110		v_f (mm/min)	775	775	775	770	775	775	775	770	775
	E 14 - 15	1.0	0.25	50		n (rev/min)	3980	2650	1990	1590	1330	1140	990	800	640
						f_z (mm)	0.018	0.027	0.036	0.045	0.054	0.063	0.072	0.090	0.113
				50 - 70		v_f (mm/min)	430	430	430	430	430	430	430	430	430
N	E / M / A 16	2.0	0.05	240		n (rev/min)	19100	12730	9550	7640	6370	5460	4770	3820	3060
						f_z (mm)	0.018	0.027	0.036	0.045	0.054	0.063	0.072	0.090	0.113
				200 - 400		v_f (mm/min)	2065	2060	2065	2065	2065	2065	2060	2065	2065
	E / M / A 17	2.0	0.05	240		n (rev/min)	19100	12730	9550	7640	6370	5460	4770	3820	3060
						f_z (mm)	0.018	0.027	0.036	0.045	0.054	0.063	0.072	0.090	0.113
				200 - 400		v_f (mm/min)	2065	2060	2065	2065	2065	2065	2060	2065	2065
S	E 19	1.0	0.05	30		n (rev/min)	2390	1590	1190	950	800	680	600	480	380
						f_z (mm)	0.018	0.027	0.036	0.045	0.054	0.063	0.072	0.090	0.113
				20 - 40		v_f (mm/min)	260	260	255	255	260	255	260	260	255
	E 20	1.0	0.05	30		n (rev/min)	2390	1590	1190	950	800	680	600	480	380
						f_z (mm)	0.018	0.027	0.036	0.045	0.054	0.063	0.072	0.090	0.113
				20 - 40		v_f (mm/min)	260	260	255	255	260	255	260	260	255
	E 21	1.0	0.05	30		n (rev/min)	2390	1590	1190	950	800	680	600	480	380
						f_z (mm)	0.018	0.027	0.036	0.045	0.054	0.063	0.072	0.090	0.113
				20 - 40		v_f (mm/min)	260	260	255	255	260	255	260	260	255
	E 22	1.0	0.15	40		n (rev/min)	3180	2120	1590	1270	1060	910	800	640	510
						f_z (mm)	0.018	0.027	0.036	0.045	0.054	0.063	0.072	0.090	0.113
				30 - 50		v_f (mm/min)	345	345	345	345	345	345	345	345	345

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

SR420M

SLOTTING

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (m / min)				$Z_n = 4$ 6	10	12	16	20	25
P	E 1 - 2	1.00	1.00	90			n (rev/min)	4770	2860	2390	1790	1430	1150
							f_z (mm)	0.019	0.031	0.037	0.050	0.062	0.078
				60	-	120	v_f (mm/min)	357	357	358	357	357	359
	E 3 - 4	1.00	1.00	80			n (rev/min)	4240	2550	2120	1590	1270	1020
							f_z (mm)	0.019	0.031	0.037	0.050	0.062	0.078
				70	-	80	v_f (mm/min)	317	318	317	317	317	318
	E 5 - 6	1.00	1.00	50			n (rev/min)	2650	1590	1330	990	800	640
							f_z (mm)	0.019	0.031	0.037	0.050	0.062	0.078
				50	-	60	v_f (mm/min)	198	198	199	198	200	200
M	E 8 - 9	0.50	1.00	120			n (rev/min)	6370	3820	3180	2390	1910	1530
							f_z (mm)	0.019	0.031	0.037	0.050	0.062	0.078
				100	-	130	v_f (mm/min)	477	477	476	477	477	477
	E 10 - 11	0.30	1.00	60			n (rev/min)	3180	1910	1590	1190	950	760
							f_z (mm)	0.019	0.031	0.037	0.050	0.062	0.078
				50	-	80	v_f (mm/min)	238	238	238	238	237	237
K	E 12 - 13	1.00	1.00	120			n (rev/min)	6370	3820	3180	2390	1910	1530
							f_z (mm)	0.019	0.031	0.037	0.050	0.062	0.078
				100	-	130	v_f (mm/min)	477	477	476	477	477	477
	E 14 - 15	0.30	1.00	50			n (rev/min)	2650	1590	1330	990	800	640
							f_z (mm)	0.019	0.031	0.037	0.050	0.062	0.078
				30	-	60	v_f (mm/min)	198	198	199	198	200	200

SIDE MILLING - ROUGHING

P	E 1 - 2	1.00	0.40	90			n (rev/min)	4770	2860	2390	1790	1430	1150
							f_z (mm)	0.0187	0.031	0.037	0.050	0.062	0.078
				70	-	110	v_f (mm/min)	357	357	358	357	357	359
	E 3 - 4	1.00	0.40	80			n (rev/min)	4240	2550	2120	1590	1270	1020
							f_z (mm)	0.019	0.031	0.037	0.050	0.062	0.078
				60	-	90	v_f (mm/min)	317	318	317	317	317	318
	E 5 - 6	1.00	0.40	50			n (rev/min)	2650	1590	1330	990	800	640
							f_z (mm)	0.019	0.031	0.037	0.050	0.062	0.078
				40	-	70	v_f (mm/min)	198	198	199	198	200	200
M	E 8 - 9	1.00	0.40	120			n (rev/min)	6370	46	38	29	23	18
							f_z (mm)	0.019	0.027	0.032	0.043	0.054	0.068
				110	-	120	v_f (mm/min)	477	5.0	5.0	5.0	5.0	5.0
	E 10 - 11	1.00	0.30	60			n (rev/min)	3180	1910	1590	1190	950	760
							f_z (mm)	0.019	0.031	0.037	0.050	0.062	0.078
				50	-	70	v_f (mm/min)	238	238	238	238	237	237
K	E 12 - 13	1.00	0.40	120			n (rev/min)	6370	3820	3180	2390	1910	1530
							f_z (mm)	0.019	0.031	0.037	0.050	0.062	0.078
				100	-	130	v_f (mm/min)	477	477	476	477	477	477
	E 14 - 15	1.00	0.30	50			n (rev/min)	2650	1590	1330	990	800	640
							f_z (mm)	0.019	0.031	0.037	0.050	0.062	0.078
				30	-	60	v_f (mm/min)	198	198	199	198	200	200

Niagara Cutter

GENERAL PURPOSE- C230

SOLID CARBIDE

HELIX 30°

SQUARE END

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N85261	C230-0.031-F3-S.0-Z2	1/32	1/8	5/64	1-1/2	2	
N85337	C230-0.031-F3-S.0-Z2	1/32	1/8	5/64	1-1/2	2	TiAlN
N54012	C230-0.031-F4-S.0-Z2	1/32	1/8	3/32	1-1/2	2	
N54018	C230-0.031-F4-S.0-Z2	1/32	1/8	3/32	1-1/2	2	TiAlN
N85262	C230-0.047-F2-S.0-Z2	3/64	1/8	7/64	1-1/2	2	
N85338	C230-0.047-F2-S.0-Z2	3/64	1/8	7/64	1-1/2	2	TiAlN
N54013	C230-0.047-F3-S.0-Z2	3/64	1/8	1/8	1-1/2	2	
N54019	C230-0.047-F3-S.0-Z2	3/64	1/8	1/8	1-1/2	2	TiAlN
N85408	C230-0.063-F2-S.0-Z2	1/16	1/8	1/8	1-1/2	2	
N85434	C230-0.063-F2-S.0-Z2	1/16	1/8	1/8	1-1/2	2	TiAlN
N85263	C230-0.063-F3-S.0-Z2	1/16	1/8	3/16	1-1/2	2	
N85339	C230-0.063-F3-S.0-Z2	1/16	1/8	3/16	1-1/2	2	TiAlN
N55334	C230-0.063-F4-S.0-Z2	1/16	1/8	1/4	1-1/2	2	
N55430	C230-0.063-F4-S.0-Z2	1/16	1/8	1/4	1-1/2	2	TiAlN
N85264	C230-0.078-F2-S.0-Z2	5/64	1/8	3/16	1-1/2	2	
N85340	C230-0.078-F2-S.0-Z2	5/64	1/8	3/16	1-1/2	2	TiAlN
N55335	C230-0.078-F3-S.0-Z2	5/64	1/8	1/4	1-1/2	2	
N55431	C230-0.078-F3-S.0-Z2	5/64	1/8	1/4	1-1/2	2	TiAlN
N85409	C230-0.094-F2-S.0-Z2	3/32	1/8	3/16	1-1/2	2	
N85435	C230-0.094-F2-S.0-Z2	3/32	1/8	3/16	1-1/2	2	TiAlN
N85265	C230-0.094-F3-S.0-Z2	3/32	1/8	9/32	1-1/2	2	
N85341	C230-0.094-F3-S.0-Z2	3/32	1/8	9/32	1-1/2	2	TiAlN
N55336	C230-0.094-F4-S.0-Z2	3/32	1/8	3/8	1-1/2	2	
N55432	C230-0.094-F4-S.0-Z2	3/32	1/8	3/8	1-1/2	2	TiAlN
N85266	C230-0.109-F3-S.0-Z2	7/64	1/8	3/8	1-1/2	2	
N85342	C230-0.109-F3-S.0-Z2	7/64	1/8	3/8	1-1/2	2	TiAlN
N85410	C230-0.125-D2-S.0-Z2	1/8	1/8	1/4	1-1/2	2	
N85436	C230-0.125-D2-S.0-Z2	1/8	1/8	1/4	1-1/2	2	TiAlN
N85267	C230-0.125-D4-S.0-Z2	1/8	1/8	1/2	1-1/2	2	
N85343	C230-0.125-D4-S.0-Z2	1/8	1/8	1/2	1-1/2	2	TiAlN
N55337	C230-0.125-D5-S.0-Z2	1/8	1/8	5/8	2	2	
N55433	C230-0.125-D5-S.0-Z2	1/8	1/8	5/8	2	2	TiAlN
N55338	C230-0.125-D6-S.0-Z2	1/8	1/8	3/4	3	2	
N55434	C230-0.125-D6-S.0-Z2	1/8	1/8	3/4	3	2	TiAlN
N55339	C230-0.125-D8-S.0-Z2	1/8	1/8	1	3	2	
N55435	C230-0.125-D8-S.0-Z2	1/8	1/8	1	3	2	TiAlN

DISCOUNT CODE D42

GENERAL PURPOSE- C230

SOLID CARBIDE

HELIX 30°

SQUARE END

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N85411	C230-0.156-F2-S.0-Z2	5/32	3/16	5/16	2	2	
N85437	C230-0.156-F2-S.0-Z2	5/32	3/16	5/16	2	2	TiAlN
N85269	C230-0.156-F3-S.0-Z2	5/32	3/16	1/2	2	2	
N85345	C230-0.156-F3-S.0-Z2	5/32	3/16	1/2	2	2	TiAlN
N85412	C230-0.188-D2-S.0-Z2	3/16	3/16	3/8	2	2	
N85438	C230-0.188-D2-S.0-Z2	3/16	3/16	3/8	2	2	TiAlN
N85271	C230-0.188-D3-S.0-Z2	3/16	3/16	5/8	2	2	
N85347	C230-0.188-D3-S.0-Z2	3/16	3/16	5/8	2	2	TiAlN
N85448	C230-0.188-D4-S.0-Z2	3/16	3/16	3/4	2-1/2	2	
N85484	C230-0.188-D4-S.0-Z2	3/16	3/16	3/4	2-1/2	2	TiAlN
N55341	C230-0.188-D6-S.0-Z2	3/16	3/16	1	4	2	
N55437	C230-0.188-D6-S.0-Z2	3/16	3/16	1	4	2	TiAlN
N85449	C230-0.188-D7-S.0-Z2	3/16	3/16	1-1/8	3	2	
N85485	C230-0.188-D7-S.0-Z2	3/16	3/16	1-1/8	3	2	TiAlN
N85272	C230-0.203-F3-S.0-Z2	13/64	1/4	5/8	2-1/2	2	
N85348	C230-0.203-F3-S.0-Z2	13/64	1/4	5/8	2-1/2	2	TiAlN
N85413	C230-0.219-F2-S.0-Z2	7/32	1/4	7/16	2	2	
N85439	C230-0.219-F2-S.0-Z2	7/32	1/4	7/16	2	2	TiAlN
N85273	C230-0.219-F3-S.0-Z2	7/32	1/4	5/8	2-1/2	2	
N85349	C230-0.219-F3-S.0-Z2	7/32	1/4	5/8	2-1/2	2	TiAlN
N85274	C230-0.234-F3-S.0-Z2	15/64	1/4	3/4	2-1/2	2	
N85350	C230-0.234-F3-S.0-Z2	15/64	1/4	3/4	2-1/2	2	TiAlN
N85414	C230-0.250-D2-S.0-Z2	1/4	1/4	1/2	2	2	
N85440	C230-0.250-D2-S.0-Z2	1/4	1/4	1/2	2	2	TiAlN
N85275	C230-0.250-D3-S.0-Z2	1/4	1/4	3/4	2-1/2	2	
N85351	C230-0.250-D3-S.0-Z2	1/4	1/4	3/4	2-1/2	2	TiAlN
N55342	C230-0.250-D4-S.0-Z2	1/4	1/4	1	3	2	
N55438	C230-0.250-D4-S.0-Z2	1/4	1/4	1	3	2	TiAlN
N55343	C230-0.250-D5-S.0-Z2	1/4	1/4	1	4	2	
N55439	C230-0.250-D5-S.0-Z2	1/4	1/4	1	4	2	TiAlN
N85450	C230-0.250-D6-S.0-Z2	1/4	1/4	1-1/8	3	2	
N85486	C230-0.250-D6-S.0-Z2	1/4	1/4	1-1/8	3	2	TiAlN
N85451	C230-0.250-D7-S.0-Z2	1/4	1/4	1-1/2	4	2	
N85487	C230-0.250-D7-S.0-Z2	1/4	1/4	1-1/2	4	2	TiAlN
N55344	C230-0.250-D8-S.0-Z2	1/4	1/4	1-1/2	6	2	
N55440	C230-0.250-D8-S.0-Z2	1/4	1/4	1-1/2	6	2	TiAlN

DISCOUNT CODE D42

Niagara Cutter

GENERAL PURPOSE- C230

SOLID CARBIDE

HELIX 30°

SQUARE END

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N85276	C230-0.266-F3-S.0-Z2	17/64	5/16	3/4	2-1/2	2	
N85352	C230-0.266-F3-S.0-Z2	17/64	5/16	3/4	2-1/2	2	TiAlN
N85277	C230-0.281-F3-S.0-Z2	9/32	5/16	3/4	2-1/2	2	
N85353	C230-0.281-F3-S.0-Z2	9/32	5/16	3/4	2-1/2	2	TiAlN
N85415	C230-0.313-D2-S.0-Z2	5/16	5/16	1/2	2	2	
N85441	C230-0.313-D2-S.0-Z2	5/16	5/16	1/2	2	2	TiAlN
N85279	C230-0.313-D3-S.0-Z2	5/16	5/16	13/16	2-1/2	2	
N85355	C230-0.313-D3-S.0-Z2	5/16	5/16	13/16	2-1/2	2	TiAlN
N55345	C230-0.313-D4-S.0-Z2	5/16	5/16	1	3	2	
N55441	C230-0.313-D4-S.0-Z2	5/16	5/16	1	3	2	TiAlN
N55346	C230-0.313-D5-S.0-Z2	5/16	5/16	1	4	2	
N55442	C230-0.313-D5-S.0-Z2	5/16	5/16	1	4	2	TiAlN
N55347	C230-0.313-D7-S.0-Z2	5/16	5/16	1-1/2	6	2	
N55443	C230-0.313-D7-S.0-Z2	5/16	5/16	1-1/2	6	2	TiAlN
N85453	C230-0.313-D8-S.0-Z2	5/16	5/16	1-5/8	4	2	
N85489	C230-0.313-D8-S.0-Z2	5/16	5/16	1-5/8	4	2	TiAlN
N85280	C230-0.328-F3-S.0-Z2	21/64	3/8	1	2-1/2	2	
N85356	C230-0.328-F3-S.0-Z2	21/64	3/8	1	2-1/2	2	TiAlN
N85281	C230-0.344-F3-S.0-Z2	11/32	3/8	1	2-1/2	2	
N85357	C230-0.344-F3-S.0-Z2	11/32	3/8	1	2-1/2	2	TiAlN
N85416	C230-0.375-D1-S.0-Z2	3/8	3/8	5/8	2	2	
N85442	C230-0.375-D1-S.0-Z2	3/8	3/8	5/8	2	2	TiAlN
N85283	C230-0.375-D2-S.0-Z2	3/8	3/8	1	2-1/2	2	
N85359	C230-0.375-D2-S.0-Z2	3/8	3/8	1	2-1/2	2	TiAlN
N55348	C230-0.375-D3-S.0-Z2	3/8	3/8	1	3	2	
N55444	C230-0.375-D3-S.0-Z2	3/8	3/8	1	3	2	TiAlN
N55349	C230-0.375-D4-S.0-Z2	3/8	3/8	1	4	2	
N55445	C230-0.375-D4-S.0-Z2	3/8	3/8	1	4	2	TiAlN
N85454	C230-0.375-D5-S.0-Z2	3/8	3/8	1-1/8	3	2	
N85490	C230-0.375-D5-S.0-Z2	3/8	3/8	1-1/8	3	2	TiAlN
N55350	C230-0.375-D6-S.0-Z2	3/8	3/8	1-1/2	6	2	
N55446	C230-0.375-D6-S.0-Z2	3/8	3/8	1-1/2	6	2	TiAlN
N85455	C230-0.375-D7-S.0-Z2	3/8	3/8	1-3/4	4	2	
N85491	C230-0.375-D7-S.0-Z2	3/8	3/8	1-3/4	4	2	TiAlN
N55351	C230-0.375-D8-S.0-Z2	3/8	3/8	2	4	2	
N55447	C230-0.375-D8-S.0-Z2	3/8	3/8	2	4	2	TiAlN

DISCOUNT CODE D42

Niagara Cutter

GENERAL PURPOSE- C230

SOLID CARBIDE

HELIX 30°

SQUARE END

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N55352	C230-0.375-D9-S.0-Z2	3/8	3/8	3	6	2	
N55448	C230-0.375-D9-S.0-Z2	3/8	3/8	3	6	2	TiAlN
N85287	C230-0.438-D2-S.0-Z2	7/16	7/16	1	2-3/4	2	
N85363	C230-0.438-D2-S.0-Z2	7/16	7/16	1	2-3/4	2	TiAlN
N55354	C230-0.438-D4-S.0-Z2	7/16	7/16	1-1/2	6	2	
N55450	C230-0.438-D4-S.0-Z2	7/16	7/16	1-1/2	6	2	TiAlN
N55355	C230-0.438-D5-S.0-Z2	7/16	7/16	2	4	2	
N55451	C230-0.438-D5-S.0-Z2	7/16	7/16	2	4	2	TiAlN
N85457	C230-0.438-D7-S.0-Z2	7/16	7/16	3	6	2	
N85493	C230-0.438-D7-S.0-Z2	7/16	7/16	3	6	2	TiAlN
N85418	C230-0.500-D1-S.0-Z2	1/2	1/2	5/8	2-1/2	2	
N85444	C230-0.500-D1-S.0-Z2	1/2	1/2	5/8	2-1/2	2	TiAlN
N85291	C230-0.500-D2-S.0-Z2	1/2	1/2	1	3	2	
N85367	C230-0.500-D2-S.0-Z2	1/2	1/2	1	3	2	TiAlN
N55356	C230-0.500-D3-S.0-Z2	1/2	1/2	1	4	2	
N55452	C230-0.500-D3-S.0-Z2	1/2	1/2	1	4	2	TiAlN
N55357	C230-0.500-D4-S.0-Z2	1/2	1/2	1-1/2	6	2	
N55453	C230-0.500-D4-S.0-Z2	1/2	1/2	1-1/2	6	2	TiAlN
N55358	C230-0.500-D5-S.0-Z2	1/2	1/2	2	4	2	
N55454	C230-0.500-D5-S.0-Z2	1/2	1/2	2	4	2	TiAlN
N85458	C230-0.500-D6-S.0-Z2	1/2	1/2	2	4-1/2	2	
N85494	C230-0.500-D6-S.0-Z2	1/2	1/2	2	4-1/2	2	TiAlN
N85459	C230-0.500-D7-S.0-Z2	1/2	1/2	3	6	2	
N85495	C230-0.500-D7-S.0-Z2	1/2	1/2	3	6	2	TiAlN
N85292	C230-0.563-D2-S.0-Z2	9/16	9/16	1-1/8	3-1/2	2	
N85368	C230-0.563-D2-S.0-Z2	9/16	9/16	1-1/8	3-1/2	2	TiAlN
N55360	C230-0.563-D5-S.0-Z2	9/16	9/16	3	6	2	
N55456	C230-0.563-D5-S.0-Z2	9/16	9/16	3	6	2	TiAlN
N85419	C230-0.625-D1-S.0-Z2	5/8	5/8	3/4	3	2	
N85445	C230-0.625-D1-S.0-Z2	5/8	5/8	3/4	3	2	TiAlN
N85293	C230-0.625-D2-S.0-Z2	5/8	5/8	1-1/4	3-1/2	2	
N85369	C230-0.625-D2-S.0-Z2	5/8	5/8	1-1/4	3-1/2	2	TiAlN
N55361	C230-0.625-D3-S.0-Z2	5/8	5/8	2	6	2	
N55457	C230-0.625-D3-S.0-Z2	5/8	5/8	2	6	2	TiAlN
N85460	C230-0.625-D4-S.0-Z2	5/8	5/8	2-1/4	5	2	
N85496	C230-0.625-D4-S.0-Z2	5/8	5/8	2-1/4	5	2	TiAlN

DISCOUNT CODE D42

GENERAL PURPOSE- C230

SOLID CARBIDE

HELIX 30°

SQUARE END

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N85461	C230-0.625-D5-S.0-Z2	5/8	5/8	3	6	2	
N85497	C230-0.625-D5-S.0-Z2	5/8	5/8	3	6	2	TiAlN
N85294	C230-0.688-F2-S.0-Z2	11/16	3/4	1-3/8	4	2	
N85370	C230-0.688-F2-S.0-Z2	11/16	3/4	1-3/8	4	2	TiAlN
N85420	C230-0.750-D1-S.0-Z2	3/4	3/4	1	3	2	
N85446	C230-0.750-D1-S.0-Z2	3/4	3/4	1	3	2	TiAlN
N85295	C230-0.750-D2-S.0-Z2	3/4	3/4	1-1/2	4	2	
N85371	C230-0.750-D2-S.0-Z2	3/4	3/4	1-1/2	4	2	TiAlN
N55362	C230-0.750-D3-S.0-Z2	3/4	3/4	2	6	2	
N55458	C230-0.750-D3-S.0-Z2	3/4	3/4	2	6	2	TiAlN
N85462	C230-0.750-D4-S.0-Z2	3/4	3/4	2-1/4	5	2	
N85498	C230-0.750-D4-S.0-Z2	3/4	3/4	2-1/4	5	2	TiAlN
N85463	C230-0.750-D5-S.0-Z2	3/4	3/4	3	6	2	
N85499	C230-0.750-D5-S.0-Z2	3/4	3/4	3	6	2	TiAlN
N55363	C230-0.750-D7-S.0-Z2	3/4	3/4	4	7	2	
N55459	C230-0.750-D7-S.0-Z2	3/4	3/4	4	7	2	TiAlN
N85296	C230-0.875-D2-S.0-Z2	7/8	7/8	1-1/2	4	2	
N85372	C230-0.875-D2-S.0-Z2	7/8	7/8	1-1/2	4	2	TiAlN
N85297	C230-1.000-D2-S.0-Z2	1	1	1-1/2	4	2	
N85373	C230-1.000-D2-S.0-Z2	1	1	1-1/2	4	2	TiAlN
N55364	C230-1.000-D3-S.0-Z2	1	1	2	6	2	
N55460	C230-1.000-D3-S.0-Z2	1	1	2	6	2	TiAlN
N85465	C230-1.000-D5-S.0-Z2	1	1	3	6	2	
N85501	C230-1.000-D5-S.0-Z2	1	1	3	6	2	TiAlN
N55365	C230-1.000-D6-S.0-Z2	1	1	4	7	2	
N55461	C230-1.000-D6-S.0-Z2	1	1	4	7	2	TiAlN

Niagara Cutter

GENERAL PURPOSE- C230R

SOLID CARBIDE

HELIX 30°

RADIUS

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS
N91165	C230R-0.125-D4-R015.0-Z2	1/8	1/8	1/2	1-1/2	2	TiAlN	0.015
N91168	C230R-0.188-D3-R015.0-Z2	3/16	3/16	5/8	2	2	TiAlN	0.015
N91170	C230R-0.250-D3-R015.0-Z2	1/4	1/4	3/4	2-1/2	2	TiAlN	0.015
N91173	C230R-0.250-D3-R030.0-Z2	1/4	1/4	3/4	2-1/2	2	TiAlN	0.030
N91175	C230R-0.313-D3-R015.0-Z2	5/16	5/16	13/16	2-1/2	2	TiAlN	0.015
N91183	C230R-0.313-D3-R030.0-Z2	5/16	5/16	13/16	2-1/2	2	TiAlN	0.030
N91321	C230R-0.375-D3-R015.0-Z2	3/8	3/8	1	2-1/2	2	TiAlN	0.015
N91323	C230R-0.375-D3-R030.0-Z2	3/8	3/8	1	2-1/2	2	TiAlN	0.030
N91327	C230R-0.438-D2-R015.0-Z2	7/16	7/16	1	2-3/4	2	TiAlN	0.015
N91330	C230R-0.438-D2-R030.0-Z2	7/16	7/16	1	2-3/4	2	TiAlN	0.030
N91332	C230R-0.438-D2-R060.0-Z2	7/16	7/16	1	2-3/4	2	TiAlN	0.060
N91333	C230R-0.438-D2-R090.0-Z2	7/16	7/16	1	2-3/4	2	TiAlN	0.090
N91334	C230R-0.438-D2-R125.0-Z2	7/16	7/16	1	2-3/4	2	TiAlN	0.125
N91335	C230R-0.500-D2-R015.0-Z2	1/2	1/2	1	3	2	TiAlN	0.015
N91337	C230R-0.500-D2-R030.0-Z2	1/2	1/2	1	3	2	TiAlN	0.030
N91339	C230R-0.500-D2-R060.0-Z2	1/2	1/2	1	3	2	TiAlN	0.060
N91341	C230R-0.500-D2-R090.0-Z2	1/2	1/2	1	3	2	TiAlN	0.090
N91342	C230R-0.500-D2-R125.0-Z2	1/2	1/2	1	3	2	TiAlN	0.125
N91343	C230R-0.625-D2-R015.0-Z2	5/8	5/8	1-1/4	3-1/2	2	TiAlN	0.015
N91345	C230R-0.625-D2-R030.0-Z2	5/8	5/8	1-1/4	3-1/2	2	TiAlN	0.030
N91347	C230R-0.625-D2-R060.0-Z2	5/8	5/8	1-1/4	3-1/2	2	TiAlN	0.060
N91348	C230R-0.625-D2-R090.0-Z2	5/8	5/8	1-1/4	3-1/2	2	TiAlN	0.090
N91349	C230R-0.625-D2-R125.0-Z2	5/8	5/8	1-1/4	3-1/2	2	TiAlN	0.125
N91132	C230R-0.750-D2-R015.0-Z2	3/4	3/4	1-1/2	4	2	TiAlN	0.015
N91352	C230R-0.750-D2-R030.0-Z2	3/4	3/4	1-1/2	4	2	TiAlN	0.030
N91159	C230R-0.750-D2-R060.0-Z2	3/4	3/4	1-1/2	4	2	TiAlN	0.060
N91356	C230R-0.750-D2-R090.0-Z2	3/4	3/4	1-1/2	4	2	TiAlN	0.090
N91358	C230R-0.750-D2-R125.0-Z2	3/4	3/4	1-1/2	4	2	TiAlN	0.125
N91362	C230R-0.750-D2-R190.0-Z2	3/4	3/4	1-1/2	4	2	TiAlN	0.190
N91363	C230R-1.000-D2-R015.0-Z2	1	1	1-1/2	4	2	TiAlN	0.015
N91365	C230R-1.000-D2-R030.0-Z2	1	1	1-1/2	4	2	TiAlN	0.030
N91367	C230R-1.000-D2-R060.0-Z2	1	1	1-1/2	4	2	TiAlN	0.060
N91368	C230R-1.000-D2-R090.0-Z2	1	1	1-1/2	4	2	TiAlN	0.090
N91369	C230R-1.000-D2-R125.0-Z2	1	1	1-1/2	4	2	TiAlN	0.125
N91371	C230R-1.000-D2-R190.0-Z2	1	1	1-1/2	4	2	TiAlN	0.190

Niagara Cutter

GENERAL PURPOSE- CNC230

SOLID CARBIDE | HELIX 30° | SQUARE END | CENTER CUTTING

- Weldon flat standard on shank sizes - 3/8", 1/2", 5/8", 3/4" and 1"
- NC Tolerance (see page 388 for details)
- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N85775	CNC230-0.125-D4-S.0-Z2	1/8	1/8	1/2	1-1/2	2	TiAlN
N85776	CNC230-0.156-F4-S.0-Z2	5/32	3/16	9/16	2	2	TiAlN
N85777	CNC230-0.188-D3-S.0-Z2	3/16	3/16	5/8	2	2	TiAlN
N85779	CNC230-0.250-D3-S.0-Z2	1/4	1/4	3/4	2-1/2	2	TiAlN
N85781	CNC230-0.313-D3-S.0-Z2	5/16	5/16	13/16	2-1/2	2	TiAlN
N85782	CNC230-0.375-D2-S.3-Z2	3/8	3/8	7/8	2-1/2	2	TiAlN
N85784	CNC230-0.500-D2-S.3-Z2	1/2	1/2	1	3	2	TiAlN
N85785	CNC230-0.563-D2-S.0-Z2	9/16	9/16	1-1/4	3-1/2	2	TiAlN
N85786	CNC230-0.625-D2-S.3-Z2	5/8	5/8	1-1/4	3-1/2	2	TiAlN
N85787	CNC230-0.750-D2-S.3-Z2	3/4	3/4	1-1/2	4	2	TiAlN
N85788	CNC230-1.000-D2-S.3-Z2	1	1	1-1/2	4	2	TiAlN

GENERAL PURPOSE- CNCB230

SOLID CARBIDE | HELIX 30° | BALL END | CENTER CUTTING

- Weldon flat standard on shank sizes - 3/8", 1/2", 5/8", 3/4" and 1"
- NC Tolerance (see page 388 for details)
- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N85818	CNCB230-0.125-D4-B.0-Z2	1/8	1/8	1/2	1-1/2	2	TiAlN
N85820	CNCB230-0.188-D3-B.0-Z2	3/16	3/16	5/8	2	2	TiAlN
N85822	CNCB230-0.250-D3-B.0-Z2	1/4	1/4	3/4	2-1/2	2	TiAlN
N85824	CNCB230-0.313-D3-B.0-Z2	5/16	5/16	13/16	2-1/2	2	TiAlN
N85825	CNCB230-0.375-D2-B.3-Z2	3/8	3/8	7/8	2-1/2	2	TiAlN
N85827	CNCB230-0.500-D2-B.3-Z2	1/2	1/2	1	3	2	TiAlN
N85830	CNCB230-0.750-D2-B.3-Z2	3/4	3/4	1-1/2	4	2	TiAlN

GENERAL PURPOSE- CD230

SOLID CARBIDE

HELIX 30°

SQUARE END

CENTER CUTTING

- Weldon flat standard
- General purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N85375	CD230-0.125-XF3-S.3-Z2	1/8	3/8	3/8	3-1/16	2	
N85397	CD230-0.125-XF3-S.3-Z2	1/8	3/8	3/8	3-1/16	2	TiAlN
N85377	CD230-0.188-XF3-S.3-Z2	3/16	3/8	1/2	3-1/4	2	
N85399	CD230-0.188-XF3-S.3-Z2	3/16	3/8	1/2	3-1/4	2	TiAlN
N85379	CD230-0.250-XF3-S.3-Z2	1/4	3/8	5/8	3-3/8	2	
N85401	CD230-0.250-XF3-S.3-Z2	1/4	3/8	5/8	3-3/8	2	TiAlN
N85381	CD230-0.313-XF2-S.3-Z2	5/16	3/8	3/4	3-1/2	2	
N85403	CD230-0.313-XF2-S.3-Z2	5/16	3/8	3/4	3-1/2	2	TiAlN
N85383	CD230-0.375-XD2-S.3-Z2	3/8	3/8	3/4	3-1/2	2	
N85405	CD230-0.375-XD2-S.3-Z2	3/8	3/8	3/4	3-1/2	2	TiAlN
N85385	CD230-0.500-XD2-S.3-Z2	1/2	1/2	1	4	2	
N85407	CD230-0.500-XD2-S.3-Z2	1/2	1/2	1	4	2	TiAlN

Niagara Cutter

GENERAL PURPOSE- CSD230

SOLID CARBIDE

HELIX 30°

SQUARE END

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N89650	CSD230-0.031-XF2-S.0-Z2	1/32	1/8	1/16	1-1/2	2	
N89653	CSD230-0.031-XF2-S.0-Z2	1/32	1/8	1/16	1-1/2	2	TiAlN
N89654	CSD230-0.047-XF2-S.0-Z2	3/64	1/8	3/32	1-1/2	2	
N89657	CSD230-0.047-XF2-S.0-Z2	3/64	1/8	3/32	1-1/2	2	TiAlN
N89658	CSD230-0.063-XF2-S.0-Z2	1/16	1/8	1/8	1-1/2	2	
N89661	CSD230-0.063-XF2-S.0-Z2	1/16	1/8	1/8	1-1/2	2	TiAlN
N89662	CSD230-0.078-XF2-S.0-Z2	5/64	1/8	1/8	1-1/2	2	
N89665	CSD230-0.078-XF2-S.0-Z2	5/64	1/8	1/8	1-1/2	2	TiAlN
N89666	CSD230-0.094-XF2-S.0-Z2	3/32	1/8	3/16	1-1/2	2	
N89669	CSD230-0.094-XF2-S.0-Z2	3/32	1/8	3/16	1-1/2	2	TiAlN
N89674	CSD230-0.125-XD2-S.0-Z2	1/8	1/8	1/4	1-1/2	2	
N89677	CSD230-0.125-XD2-S.0-Z2	1/8	1/8	1/4	1-1/2	2	TiAlN
N89682	CSD230-0.156-XF2-S.0-Z2	5/32	3/16	5/16	2	2	
N89685	CSD230-0.156-XF2-S.0-Z2	5/32	3/16	5/16	2	2	TiAlN
N89690	CSD230-0.188-XD2-S.0-Z2	3/16	3/16	3/8	2	2	
N89693	CSD230-0.188-XD2-S.0-Z2	3/16	3/16	3/8	2	2	TiAlN
N89698	CSD230-0.219-XF2-S.0-Z2	7/32	1/4	1/2	2-1/2	2	
N89701	CSD230-0.219-XF2-S.0-Z2	7/32	1/4	1/2	2-1/2	2	TiAlN
N89706	CSD230-0.250-XD2-S.0-Z2	1/4	1/4	1/2	2-1/2	2	
N89709	CSD230-0.250-XD2-S.0-Z2	1/4	1/4	1/2	2-1/2	2	TiAlN
N89714	CSD230-0.313-XD2-S.0-Z2	5/16	5/16	1/2	2-1/2	2	
N89717	CSD230-0.313-XD2-S.0-Z2	5/16	5/16	1/2	2-1/2	2	TiAlN
N89722	CSD230-0.375-XD2-S.0-Z2	3/8	3/8	9/16	2-1/2	2	
N89725	CSD230-0.375-XD2-S.0-Z2	3/8	3/8	9/16	2-1/2	2	TiAlN
N89730	CSD230-0.500-XD1-S.0-Z2	1/2	1/2	5/8	3	2	
N89733	CSD230-0.500-XD1-S.0-Z2	1/2	1/2	5/8	3	2	TiAlN

GENERAL PURPOSE- CB230

SOLID CARBIDE

HELIX 30°

BALL END

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N86149	CB230-0.016-F2-B.0-Z2	1/64	1/8	1/32	1-1/2	2	
N86225	CB230-0.016-F2-B.0-Z2	1/64	1/8	1/32	1-1/2	2	TiAlN
N86150	CB230-0.031-F3-B.0-Z2	1/32	1/8	5/64	1-1/2	2	
N86226	CB230-0.031-F3-B.0-Z2	1/32	1/8	5/64	1-1/2	2	TiAlN
N54020	CB230-0.031-F4-B.0-Z2	1/32	1/8	3/32	1-1/2	2	
N54032	CB230-0.031-F4-B.0-Z2	1/32	1/8	3/32	1-1/2	2	TiAlN
N86151	CB230-0.047-F2-B.0-Z2	3/64	1/8	7/64	1-1/2	2	
N86227	CB230-0.047-F2-B.0-Z2	3/64	1/8	7/64	1-1/2	2	TiAlN
N54021	CB230-0.047-F3-B.0-Z2	3/64	1/8	1/8	1-1/2	2	
N54033	CB230-0.047-F3-B.0-Z2	3/64	1/8	1/8	1-1/2	2	TiAlN
N55462	CB230-0.063-F2-B.0-Z2	1/16	1/8	1/8	1-1/2	2	
N55615	CB230-0.063-F2-B.0-Z2	1/16	1/8	1/8	1-1/2	2	TiAlN
N86152	CB230-0.063-F3-B.0-Z2	1/16	1/8	3/16	1-1/2	2	
N86228	CB230-0.063-F3-B.0-Z2	1/16	1/8	3/16	1-1/2	2	TiAlN
N54022	CB230-0.063-F4-B.0-Z2	1/16	1/8	1/4	1-1/2	2	
N54034	CB230-0.063-F4-B.0-Z2	1/16	1/8	1/4	1-1/2	2	TiAlN
N86153	CB230-0.078-F2-B.0-Z2	5/64	1/8	3/16	1-1/2	2	
N86229	CB230-0.078-F2-B.0-Z2	5/64	1/8	3/16	1-1/2	2	TiAlN
N54023	CB230-0.078-F3-B.0-Z2	5/64	1/8	1/4	1-1/2	2	
N54035	CB230-0.078-F3-B.0-Z2	5/64	1/8	1/4	1-1/2	2	TiAlN
N55463	CB230-0.094-F2-B.0-Z2	3/32	1/8	3/16	1-1/2	2	
N55616	CB230-0.094-F2-B.0-Z2	3/32	1/8	3/16	1-1/2	2	TiAlN
N86154	CB230-0.094-F3-B.0-Z2	3/32	1/8	9/32	1-1/2	2	
N86230	CB230-0.094-F3-B.0-Z2	3/32	1/8	9/32	1-1/2	2	TiAlN
N55464	CB230-0.094-F4-B.0-Z2	3/32	1/8	3/8	1-1/2	2	
N55617	CB230-0.094-F4-B.0-Z2	3/32	1/8	3/8	1-1/2	2	TiAlN
N55465	CB230-0.125-D2-B.0-Z2	1/8	1/8	1/4	1-1/2	2	
N55618	CB230-0.125-D2-B.0-Z2	1/8	1/8	1/4	1-1/2	2	TiAlN
N86156	CB230-0.125-D4-B.0-Z2	1/8	1/8	1/2	1-1/2	2	
N86232	CB230-0.125-D4-B.0-Z2	1/8	1/8	1/2	1-1/2	2	TiAlN
N55466	CB230-0.125-D5-B.0-Z2	1/8	1/8	5/8	2	2	
N55619	CB230-0.125-D5-B.0-Z2	1/8	1/8	5/8	2	2	TiAlN
N55467	CB230-0.125-D6-B.0-Z2	1/8	1/8	3/4	3	2	
N55620	CB230-0.125-D6-B.0-Z2	1/8	1/8	3/4	3	2	TiAlN
N55468	CB230-0.125-D8-B.0-Z2	1/8	1/8	1	3	2	
N55621	CB230-0.125-D8-B.0-Z2	1/8	1/8	1	3	2	TiAlN

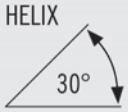
DISCOUNT CODE D42

Niagara Cutter

GENERAL PURPOSE- CB230

SOLID CARBIDE

HELIX



BALL END

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N55469	CB230-0.156-F2-B.0-Z2	5/32	3/16	5/16	2	2	
N55622	CB230-0.156-F2-B.0-Z2	5/32	3/16	5/16	2	2	TiAlN
N86158	CB230-0.156-F3-B.0-Z2	5/32	3/16	1/2	2	2	
N86234	CB230-0.156-F3-B.0-Z2	5/32	3/16	1/2	2	2	TiAlN
N55470	CB230-0.188-D2-B.0-Z2	3/16	3/16	3/8	2	2	
N55623	CB230-0.188-D2-B.0-Z2	3/16	3/16	3/8	2	2	TiAlN
N86160	CB230-0.188-D3-B.0-Z2	3/16	3/16	5/8	2	2	
N86236	CB230-0.188-D3-B.0-Z2	3/16	3/16	5/8	2	2	TiAlN
N55471	CB230-0.188-D4-B.0-Z2	3/16	3/16	1	3	2	
N55624	CB230-0.188-D4-B.0-Z2	3/16	3/16	1	3	2	TiAlN
N55472	CB230-0.188-D5-B.0-Z2	3/16	3/16	1	4	2	
N55625	CB230-0.188-D5-B.0-Z2	3/16	3/16	1	4	2	TiAlN
N55473	CB230-0.188-D6-B.0-Z2	3/16	3/16	1-1/8	3	2	
N55626	CB230-0.188-D6-B.0-Z2	3/16	3/16	1-1/8	3	2	TiAlN
N55475	CB230-0.250-D2-B.0-Z2	1/4	1/4	1/2	2	2	
N55628	CB230-0.250-D2-B.0-Z2	1/4	1/4	1/2	2	2	TiAlN
N86164	CB230-0.250-D3-B.0-Z2	1/4	1/4	3/4	2-1/2	2	
N86240	CB230-0.250-D3-B.0-Z2	1/4	1/4	3/4	2-1/2	2	TiAlN
N55476	CB230-0.250-D4-B.0-Z2	1/4	1/4	1	3	2	
N55629	CB230-0.250-D4-B.0-Z2	1/4	1/4	1	3	2	TiAlN
N55477	CB230-0.250-D5-B.0-Z2	1/4	1/4	1	4	2	
N55630	CB230-0.250-D5-B.0-Z2	1/4	1/4	1	4	2	TiAlN
N55478	CB230-0.250-D6-B.0-Z2	1/4	1/4	1-1/2	4	2	
N55631	CB230-0.250-D6-B.0-Z2	1/4	1/4	1-1/2	4	2	TiAlN
N55479	CB230-0.250-D7-B.0-Z2	1/4	1/4	1-1/2	6	2	
N55632	CB230-0.250-D7-B.0-Z2	1/4	1/4	1-1/2	6	2	TiAlN
N86166	CB230-0.281-F3-B.0-Z2	9/32	5/16	3/4	2-1/2	2	
N86242	CB230-0.281-F3-B.0-Z2	9/32	5/16	3/4	2-1/2	2	TiAlN
N55480	CB230-0.313-D2-B.0-Z2	5/16	5/16	1/2	2	2	
N55633	CB230-0.313-D2-B.0-Z2	5/16	5/16	1/2	2	2	TiAlN
N86168	CB230-0.313-D3-B.0-Z2	5/16	5/16	13/16	2-1/2	2	
N86244	CB230-0.313-D3-B.0-Z2	5/16	5/16	13/16	2-1/2	2	TiAlN
N55481	CB230-0.313-D4-B.0-Z2	5/16	5/16	1	3	2	
N55634	CB230-0.313-D4-B.0-Z2	5/16	5/16	1	3	2	TiAlN
N55482	CB230-0.313-D5-B.0-Z2	5/16	5/16	1	4	2	
N55635	CB230-0.313-D5-B.0-Z2	5/16	5/16	1	4	2	TiAlN

DISCOUNT CODE D42

GENERAL PURPOSE- CB230

SOLID CARBIDE

HELIX 30°

BALL END

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N55484	CB230-0.313-D7-B.0-Z2	5/16	5/16	1-5/8	4	2	
N55637	CB230-0.313-D7-B.0-Z2	5/16	5/16	1-5/8	4	2	TiAlN
N55485	CB230-0.375-D2-B.0-Z2	3/8	3/8	5/8	2	2	
N55638	CB230-0.375-D2-B.0-Z2	3/8	3/8	5/8	2	2	TiAlN
N86172	CB230-0.375-D3-B.0-Z2	3/8	3/8	1	2-1/2	2	
N86248	CB230-0.375-D3-B.0-Z2	3/8	3/8	1	2-1/2	2	TiAlN
N55486	CB230-0.375-D4-B.0-Z2	3/8	3/8	1	3	2	
N55639	CB230-0.375-D4-B.0-Z2	3/8	3/8	1	3	2	TiAlN
N55487	CB230-0.375-D5-B.0-Z2	3/8	3/8	1	4	2	
N55640	CB230-0.375-D5-B.0-Z2	3/8	3/8	1	4	2	TiAlN
N55488	CB230-0.375-D6-B.0-Z2	3/8	3/8	1-1/2	6	2	
N55641	CB230-0.375-D6-B.0-Z2	3/8	3/8	1-1/2	6	2	TiAlN
N55489	CB230-0.375-D7-B.0-Z2	3/8	3/8	2	4	2	
N55642	CB230-0.375-D7-B.0-Z2	3/8	3/8	2	4	2	TiAlN
N55492	CB230-0.438-D3-B.0-Z2	7/16	7/16	1	4	2	
N55645	CB230-0.438-D3-B.0-Z2	7/16	7/16	1	4	2	TiAlN
N55494	CB230-0.438-D5-B.0-Z2	7/16	7/16	2	4	2	
N55647	CB230-0.438-D5-B.0-Z2	7/16	7/16	2	4	2	TiAlN
N55496	CB230-0.500-D1-B.0-Z2	1/2	1/2	5/8	2-1/2	2	
N55649	CB230-0.500-D1-B.0-Z2	1/2	1/2	5/8	2-1/2	2	TiAlN
N86180	CB230-0.500-D2-B.0-Z2	1/2	1/2	1	3	2	
N86256	CB230-0.500-D2-B.0-Z2	1/2	1/2	1	3	2	TiAlN
N55497	CB230-0.500-D3-B.0-Z2	1/2	1/2	1	4	2	
N55650	CB230-0.500-D3-B.0-Z2	1/2	1/2	1	4	2	TiAlN
N55498	CB230-0.500-D4-B.0-Z2	1/2	1/2	1-1/2	6	2	
N55651	CB230-0.500-D4-B.0-Z2	1/2	1/2	1-1/2	6	2	TiAlN
N55499	CB230-0.500-D5-B.0-Z2	1/2	1/2	2	4	2	
N55652	CB230-0.500-D5-B.0-Z2	1/2	1/2	2	4	2	TiAlN
N55500	CB230-0.500-D6-B.0-Z2	1/2	1/2	3	6	2	
N55653	CB230-0.500-D6-B.0-Z2	1/2	1/2	3	6	2	TiAlN
N55501	CB230-0.563-D4-B.0-Z2	9/16	9/16	2	6	2	
N55654	CB230-0.563-D4-B.0-Z2	9/16	9/16	2	6	2	TiAlN
N86182	CB230-0.625-D2-B.0-Z2	5/8	5/8	1-1/4	3-1/2	2	
N86258	CB230-0.625-D2-B.0-Z2	5/8	5/8	1-1/4	3-1/2	2	TiAlN
N55504	CB230-0.625-D3-B.0-Z2	5/8	5/8	2	6	2	
N55657	CB230-0.625-D3-B.0-Z2	5/8	5/8	2	6	2	TiAlN

DISCOUNT CODE D42

GENERAL PURPOSE- CB230

SOLID CARBIDE

HELIX 30°

BALL END

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N55506	CB230-0.750-D1-B.0-Z2	3/4	3/4	1	3	2	
N55659	CB230-0.750-D1-B.0-Z2	3/4	3/4	1	3	2	TiAlN
N86184	CB230-0.750-D2-B.0-Z2	3/4	3/4	1-1/2	4	2	
N86260	CB230-0.750-D2-B.0-Z2	3/4	3/4	1-1/2	4	2	TiAlN
N55507	CB230-0.750-D3-B.0-Z2	3/4	3/4	2	6	2	
N55660	CB230-0.750-D3-B.0-Z2	3/4	3/4	2	6	2	TiAlN
N55508	CB230-0.750-D4-B.0-Z2	3/4	3/4	3	6	2	
N55661	CB230-0.750-D4-B.0-Z2	3/4	3/4	3	6	2	TiAlN
N86185	CB230-0.875-D2-B.0-Z2	7/8	7/8	1-1/2	4	2	
N86261	CB230-0.875-D2-B.0-Z2	7/8	7/8	1-1/2	4	2	TiAlN
N86186	CB230-1.000-D1-B.0-Z2	1	1	1-1/2	4	2	
N86262	CB230-1.000-D1-B.0-Z2	1	1	1-1/2	4	2	TiAlN
N55510	CB230-1.000-D2-B.0-Z2	1	1	2	6	2	
N55663	CB230-1.000-D2-B.0-Z2	1	1	2	6	2	TiAlN
N55511	CB230-1.000-D3-B.0-Z2	1	1	3	6	2	
N55664	CB230-1.000-D3-B.0-Z2	1	1	3	6	2	TiAlN
N55512	CB230-1.000-D4-B.0-Z2	1	1	4	7	2	
N55665	CB230-1.000-D4-B.0-Z2	1	1	4	7	2	TiAlN

GENERAL PURPOSE- CSDB230

SOLID CARBIDE

HELIX 30°

BALL END

CENTER CUTTING

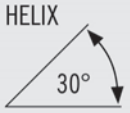
- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N89734	CSDB230-0.031-XF2-B.0-Z2	1/32	1/8	1/16	1-1/2	2	
N89737	CSDB230-0.031-XF2-B.0-Z2	1/32	1/8	1/16	1-1/2	2	TiAlN
N89738	CSDB230-0.047-XF2-B.0-Z2	3/64	1/8	3/32	1-1/2	2	
N89741	CSDB230-0.047-XF2-B.0-Z2	3/64	1/8	3/32	1-1/2	2	TiAlN
N89742	CSDB230-0.063-XF2-B.0-Z2	1/16	1/8	1/8	1-1/2	2	
N89745	CSDB230-0.063-XF2-B.0-Z2	1/16	1/8	1/8	1-1/2	2	TiAlN
N89746	CSDB230-0.078-XF2-B.0-Z2	5/64	1/8	1/8	1-1/2	2	
N89749	CSDB230-0.078-XF2-B.0-Z2	5/64	1/8	1/8	1-1/2	2	TiAlN
N89750	CSDB230-0.094-XF2-B.0-Z2	3/32	1/8	3/16	1-1/2	2	
N89753	CSDB230-0.094-XF2-B.0-Z2	3/32	1/8	3/16	1-1/2	2	TiAlN
N89758	CSDB230-0.125-XD2-B.0-Z2	1/8	1/8	1/4	1-1/2	2	
N89761	CSDB230-0.125-XD2-B.0-Z2	1/8	1/8	1/4	1-1/2	2	TiAlN
N89762	CSDB230-0.141-XF2-B.0-Z2	9/64	3/16	5/16	2	2	
N89765	CSDB230-0.141-XF2-B.0-Z2	9/64	3/16	5/16	2	2	TiAlN
N89774	CSDB230-0.188-XD2-B.0-Z2	3/16	3/16	3/8	2	2	
N89777	CSDB230-0.188-XD2-B.0-Z2	3/16	3/16	3/8	2	2	TiAlN
N89790	CSDB230-0.250-XD2-B.0-Z2	1/4	1/4	1/2	2-1/2	2	
N89793	CSDB230-0.250-XD2-B.0-Z2	1/4	1/4	1/2	2-1/2	2	TiAlN
N89798	CSDB230-0.313-XD2-B.0-Z2	5/16	5/16	1/2	2-1/2	2	
N89801	CSDB230-0.313-XD2-B.0-Z2	5/16	5/16	1/2	2-1/2	2	TiAlN
N89806	CSDB230-0.375-XD2-B.0-Z2	3/8	3/8	9/16	2-1/2	2	
N89809	CSDB230-0.375-XD2-B.0-Z2	3/8	3/8	9/16	2-1/2	2	TiAlN
N89814	CSDB230-0.500-XD1-B.0-Z2	1/2	1/2	5/8	3	2	
N89817	CSDB230-0.500-XD1-B.0-Z2	1/2	1/2	5/8	3	2	TiAlN

METRIC GENERAL PURPOSE- C230M

SOLID CARBIDE

HELIX



SQUARE END

CENTER CUTTING

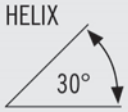
- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N46327	C230M-010-F4-S.0-Z2	1mm	3mm	4mm	39mm	2	
N46328	C230M-010-F4-S.0-Z2	1mm	3mm	4mm	39mm	2	AlTiN
N46331	C230M-020-F3-S.0-Z2	2mm	3mm	6.3mm	39mm	2	
N46332	C230M-020-F3-S.0-Z2	2mm	3mm	6.3mm	39mm	2	AlTiN
N46335	C230M-030-D4-S.0-Z2	3mm	3mm	12mm	39mm	2	
N46336	C230M-030-D4-S.0-Z2	3mm	3mm	12mm	39mm	2	AlTiN
N46339	C230M-040-D4-S.0-Z2	4mm	4mm	14mm	51mm	2	
N46340	C230M-040-D4-S.0-Z2	4mm	4mm	14mm	51mm	2	AlTiN
N46341	C230M-045-F4-S.0-Z2	4.5mm	6mm	16mm	51mm	2	
N46342	C230M-045-F4-S.0-Z2	4.5mm	6mm	16mm	51mm	2	AlTiN
N46345	C230M-060-D3-S.0-Z2	6mm	6mm	19mm	51mm	2	
N46346	C230M-060-D3-S.0-Z2	6mm	6mm	19mm	51mm	2	AlTiN
N46349	C230M-080-D2-S.0-Z2	8mm	8mm	20mm	64mm	2	
N46350	C230M-080-D2-S.0-Z2	8mm	8mm	20mm	64mm	2	AlTiN
N46353	C230M-100-D2-S.0-Z2	10mm	10mm	22mm	73mm	2	
N46354	C230M-100-D2-S.0-Z2	10mm	10mm	22mm	73mm	2	AlTiN
N46357	C230M-120-D2-S.0-Z2	12mm	12mm	25mm	74mm	2	
N46358	C230M-120-D2-S.0-Z2	12mm	12mm	25mm	74mm	2	AlTiN
N46359	C230M-140-F2-S.0-Z2	14mm	14mm	32mm	84mm	2	
N46360	C230M-140-F2-S.0-Z2	14mm	14mm	32mm	84mm	2	AlTiN
N46361	C230M-160-D2-S.0-Z2	16mm	16mm	32mm	93mm	2	
N46362	C230M-160-D2-S.0-Z2	16mm	16mm	32mm	93mm	2	AlTiN
N46363	C230M-180-D2-S.0-Z2	18mm	18mm	38mm	100mm	2	
N46364	C230M-180-D2-S.0-Z2	18mm	18mm	38mm	100mm	2	AlTiN
N46365	C230M-200-D2-S.0-Z2	20mm	20mm	38mm	100mm	2	
N46366	C230M-200-D2-S.0-Z2	20mm	20mm	38mm	100mm	2	AlTiN

METRIC GENERAL PURPOSE- CB230M

SOLID CARBIDE

HELIX



BALL END

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N34419	CB230M-005-F2-B.0-Z2	0.5mm	3mm	1mm	39mm	2	
N34420	CB230M-005-F2-B.0-Z2	0.5mm	3mm	1mm	39mm	2	AlTiN
N46369	CB230M-010-F4-B.0-Z2	1mm	3mm	4mm	39mm	2	
N46370	CB230M-010-F4-B.0-Z2	1mm	3mm	4mm	39mm	2	AlTiN
N46373	CB230M-020-F3-B.0-Z2	2mm	3mm	6.3mm	39mm	2	
N46374	CB230M-020-F3-B.0-Z2	2mm	3mm	6.3mm	39mm	2	AlTiN
N46377	CB230M-030-D4-B.0-Z2	3mm	3mm	12mm	39mm	2	
N46378	CB230M-030-D4-B.0-Z2	3mm	3mm	12mm	39mm	2	AlTiN
N46381	CB230M-040-D4-B.0-Z2	4mm	4mm	14mm	51mm	2	
N46382	CB230M-040-D4-B.0-Z2	4mm	4mm	14mm	51mm	2	AlTiN
N46385	CB230M-050-F3-B.0-Z2	5mm	6mm	16mm	51mm	2	
N46386	CB230M-050-F3-B.0-Z2	5mm	6mm	16mm	51mm	2	AlTiN
N46387	CB230M-060-D3-B.0-Z2	6mm	6mm	19mm	51mm	2	
N46388	CB230M-060-D3-B.0-Z2	6mm	6mm	19mm	51mm	2	AlTiN
N46391	CB230M-080-D2-B.0-Z2	8mm	8mm	20mm	64mm	2	
N46392	CB230M-080-D2-B.0-Z2	8mm	8mm	20mm	64mm	2	AlTiN
N46395	CB230M-100-D2-B.0-Z2	10mm	10mm	22mm	73mm	2	
N46396	CB230M-100-D2-B.0-Z2	10mm	10mm	22mm	73mm	2	AlTiN
N46399	CB230M-120-D2-B.0-Z2	12mm	12mm	25mm	74mm	2	
N46400	CB230M-120-D2-B.0-Z2	12mm	12mm	25mm	74mm	2	AlTiN
N46401	CB230M-140-F2-B.0-Z2	14mm	14mm	32mm	84mm	2	
N46402	CB230M-140-F2-B.0-Z2	14mm	14mm	32mm	84mm	2	AlTiN
N46403	CB230M-160-D2-B.0-Z2	16mm	16mm	32mm	93mm	2	
N46404	CB230M-160-D2-B.0-Z2	16mm	16mm	32mm	93mm	2	AlTiN
N46405	CB230M-180-D2-B.0-Z2	18mm	18mm	38mm	100mm	2	
N46406	CB230M-180-D2-B.0-Z2	18mm	18mm	38mm	100mm	2	AlTiN
N46407	CB230M-200-D2-B.0-Z2	20mm	20mm	38mm	100mm	2	
N46408	CB230M-200-D2-B.0-Z2	20mm	20mm	38mm	100mm	2	AlTiN
N46409	CB230M-250-D2-B.0-Z2	25mm	25mm	38mm	101mm	2	
N46410	CB230M-250-D2-B.0-Z2	25mm	25mm	38mm	101mm	2	AlTiN

Niagara Cutter

GENERAL PURPOSE- C330

SOLID CARBIDE

HELIX 30°

SQUARE END

CENTER CUTTING

- General Purpose

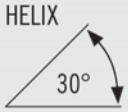
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N85920	C330-0.031-F3-S.0-Z3	1/32	1/8	5/64	1-1/2	3	
N85996	C330-0.031-F3-S.0-Z3	1/32	1/8	5/64	1-1/2	3	TiAlN
N85921	C330-0.047-F2-S.0-Z3	3/64	1/8	7/64	1-1/2	3	
N85997	C330-0.047-F2-S.0-Z3	3/64	1/8	7/64	1-1/2	3	TiAlN
N85922	C330-0.063-F3-S.0-Z3	1/16	1/8	3/16	1-1/2	3	
N85998	C330-0.063-F3-S.0-Z3	1/16	1/8	3/16	1-1/2	3	TiAlN
N85923	C330-0.078-F2-S.0-Z3	5/64	1/8	3/16	1-1/2	3	
N85999	C330-0.078-F2-S.0-Z3	5/64	1/8	3/16	1-1/2	3	TiAlN
N85924	C330-0.094-F3-S.0-Z3	3/32	1/8	9/32	1-1/2	3	
N86000	C330-0.094-F3-S.0-Z3	3/32	1/8	9/32	1-1/2	3	TiAlN
N85925	C330-0.109-F3-S.0-Z3	7/64	1/8	3/8	1-1/2	3	
N86001	C330-0.109-F3-S.0-Z3	7/64	1/8	3/8	1-1/2	3	TiAlN
N85926	C330-0.125-D4-S.0-Z3	1/8	1/8	1/2	1-1/2	3	
N86002	C330-0.125-D4-S.0-Z3	1/8	1/8	1/2	1-1/2	3	TiAlN
N85928	C330-0.156-F3-S.0-Z3	5/32	3/16	1/2	2	3	
N86004	C330-0.156-F3-S.0-Z3	5/32	3/16	1/2	2	3	TiAlN
N85930	C330-0.188-D3-S.0-Z3	3/16	3/16	5/8	2	3	
N86006	C330-0.188-D3-S.0-Z3	3/16	3/16	5/8	2	3	TiAlN
N85931	C330-0.203-F3-S.0-Z3	13/64	1/4	5/8	2-1/2	3	
N86007	C330-0.203-F3-S.0-Z3	13/64	1/4	5/8	2-1/2	3	TiAlN
N85932	C330-0.219-F3-S.0-Z3	7/32	1/4	5/8	2-1/2	3	
N86008	C330-0.219-F3-S.0-Z3	7/32	1/4	5/8	2-1/2	3	TiAlN
N85933	C330-0.234-F3-S.0-Z3	15/64	1/4	3/4	2-1/2	3	
N86009	C330-0.234-F3-S.0-Z3	15/64	1/4	3/4	2-1/2	3	TiAlN
N85934	C330-0.250-D3-S.0-Z3	1/4	1/4	3/4	2-1/2	3	
N86010	C330-0.250-D3-S.0-Z3	1/4	1/4	3/4	2-1/2	3	TiAlN
N85938	C330-0.313-D3-S.0-Z3	5/16	5/16	13/16	2-1/2	3	
N86014	C330-0.313-D3-S.0-Z3	5/16	5/16	13/16	2-1/2	3	TiAlN
N85942	C330-0.375-D3-S.0-Z3	3/8	3/8	1	2-1/2	3	
N86018	C330-0.375-D3-S.0-Z3	3/8	3/8	1	2-1/2	3	TiAlN
N85946	C330-0.438-D2-S.0-Z3	7/16	7/16	1	2-3/4	3	
N86022	C330-0.438-D2-S.0-Z3	7/16	7/16	1	2-3/4	3	TiAlN
N85950	C330-0.500-D2-S.0-Z3	1/2	1/2	1	3	3	
N86026	C330-0.500-D2-S.0-Z3	1/2	1/2	1	3	3	TiAlN
N85951	C330-0.563-D2-S.0-Z3	9/16	9/16	1-1/8	3-1/2	3	
N86027	C330-0.563-D2-S.0-Z3	9/16	9/16	1-1/8	3-1/2	3	TiAlN

DISCOUNT CODE D42

GENERAL PURPOSE- C330

SOLID CARBIDE

HELIX



SQUARE END

CENTER CUTTING

- General Purpose

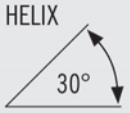
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N85952	C330-0.625-D2-S.0-Z3	5/8	5/8	1-1/4	3-1/2	3	
N86028	C330-0.625-D2-S.0-Z3	5/8	5/8	1-1/4	3-1/2	3	TiAlN
N85953	C330-0.688-F2-S.0-Z3	11/16	3/4	1-3/8	4	3	
N86029	C330-0.688-F2-S.0-Z3	11/16	3/4	1-3/8	4	3	TiAlN
N85954	C330-0.750-D2-S.0-Z3	3/4	3/4	1-1/2	4	3	
N86030	C330-0.750-D2-S.0-Z3	3/4	3/4	1-1/2	4	3	TiAlN
N85955	C330-0.875-D2-S.0-Z3	7/8	7/8	1-1/2	4	3	
N86031	C330-0.875-D2-S.0-Z3	7/8	7/8	1-1/2	4	3	TiAlN
N85956	C330-1.000-D2-S.0-Z3	1	1	1-1/2	4	3	
N86032	C330-1.000-D2-S.0-Z3	1	1	1-1/2	4	3	TiAlN

Niagara Cutter

GENERAL PURPOSE- CB330

SOLID CARBIDE

HELIX



BALL END

CENTER CUTTING

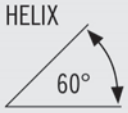
- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N86034	CB330-0.016-F2-B.0-Z3	1/64	1/8	1/32	1-1/2	3	
N86110	CB330-0.016-F2-B.0-Z3	1/64	1/8	1/32	1-1/2	3	TiAlN
N86035	CB330-0.031-F3-B.0-Z3	1/32	1/8	5/64	1-1/2	3	
N86111	CB330-0.031-F3-B.0-Z3	1/32	1/8	5/64	1-1/2	3	TiAlN
N86037	CB330-0.063-F3-B.0-Z3	1/16	1/8	3/16	1-1/2	3	
N86113	CB330-0.063-F3-B.0-Z3	1/16	1/8	3/16	1-1/2	3	TiAlN
N86039	CB330-0.094-F3-B.0-Z3	3/32	1/8	9/32	1-1/2	3	
N86115	CB330-0.094-F3-B.0-Z3	3/32	1/8	9/32	1-1/2	3	TiAlN
N86041	CB330-0.125-D4-B.0-Z3	1/8	1/8	1/2	1-1/2	3	
N86117	CB330-0.125-D4-B.0-Z3	1/8	1/8	1/2	1-1/2	3	TiAlN
N86043	CB330-0.156-F3-B.0-Z3	5/32	3/16	1/2	2	3	
N86119	CB330-0.156-F3-B.0-Z3	5/32	3/16	1/2	2	3	TiAlN
N86045	CB330-0.188-D3-B.0-Z3	3/16	3/16	5/8	2	3	
N86121	CB330-0.188-D3-B.0-Z3	3/16	3/16	5/8	2	3	TiAlN
N86047	CB330-0.219-F3-B.0-Z3	7/32	1/4	5/8	2-1/2	3	
N86123	CB330-0.219-F3-B.0-Z3	7/32	1/4	5/8	2-1/2	3	TiAlN
N86049	CB330-0.250-D3-B.0-Z3	1/4	1/4	3/4	2-1/2	3	
N86125	CB330-0.250-D3-B.0-Z3	1/4	1/4	3/4	2-1/2	3	TiAlN
N86057	CB330-0.375-D3-B.0-Z3	3/8	3/8	1	2-1/2	3	
N86133	CB330-0.375-D3-B.0-Z3	3/8	3/8	1	2-1/2	3	TiAlN
N86061	CB330-0.438-D2-B.0-Z3	7/16	7/16	1	2-3/4	3	
N86137	CB330-0.438-D2-B.0-Z3	7/16	7/16	1	2-3/4	3	TiAlN
N86065	CB330-0.500-D2-B.0-Z3	1/2	1/2	1	3	3	
N86141	CB330-0.500-D2-B.0-Z3	1/2	1/2	1	3	3	TiAlN
N86066	CB330-0.563-D2-B.0-Z3	9/16	9/16	1-1/8	3-1/2	3	
N86142	CB330-0.563-D2-B.0-Z3	9/16	9/16	1-1/8	3-1/2	3	TiAlN
N86067	CB330-0.625-D2-B.0-Z3	5/8	5/8	1-1/4	3-1/2	3	
N86143	CB330-0.625-D2-B.0-Z3	5/8	5/8	1-1/4	3-1/2	3	TiAlN
N86069	CB330-0.750-D2-B.0-Z3	3/4	3/4	1-1/2	4	3	
N86145	CB330-0.750-D2-B.0-Z3	3/4	3/4	1-1/2	4	3	TiAlN
N86071	CB330-1.000-D2-B.0-Z3	1	1	1-1/2	4	3	
N86147	CB330-1.000-D2-B.0-Z3	1	1	1-1/2	4	3	TiAlN

GENERAL PURPOSE- C360

SOLID CARBIDE

HELIX



SQUARE END

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N18854	C360-0.250-D3-S.0-Z3	1/4	1/4	3/4	2-1/2	3	
N86850	C360-0.250-D3-S.0-Z3	1/4	1/4	3/4	2-1/2	3	TiAlN
N18858	C360-0.375-D2-S.0-Z3	3/8	3/8	7/8	2-1/2	3	
N86852	C360-0.375-D2-S.0-Z3	3/8	3/8	7/8	2-1/2	3	TiAlN
N18862	C360-0.500-D2-S.0-Z3	1/2	1/2	1	3	3	
N86854	C360-0.500-D2-S.0-Z3	1/2	1/2	1	3	3	TiAlN
N18866	C360-0.625-D2-S.0-Z3	5/8	5/8	1-1/4	3-1/2	3	
N86856	C360-0.625-D2-S.0-Z3	5/8	5/8	1-1/4	3-1/2	3	TiAlN
N18870	C360-0.750-D3-S.0-Z4	3/4	3/4	1-1/2	4	4	
N86858	C360-0.750-D3-S.0-Z4	3/4	3/4	1-1/2	4	4	TiAlN
N18874	C360-1.000-D3-S.0-Z4	1	1	1-1/2	4	4	
N86860	C360-1.000-D3-S.0-Z4	1	1	1-1/2	4	4	TiAlN

METRIC GENERAL PURPOSE- C330M

SOLID CARBIDE

HELIX 30°

SQUARE END

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N47703	C330M-010-F4-S.0-Z3	1mm	3mm	4mm	39mm	3	
N47704	C330M-010-F4-S.0-Z3	1mm	3mm	4mm	39mm	3	AlTiN
N47713	C330M-030-D4-S.0-Z3	3mm	3mm	12mm	39mm	3	
N47714	C330M-030-D4-S.0-Z3	3mm	3mm	12mm	39mm	3	AlTiN
N47715	C330M-035-F3-S.0-Z3	3.5mm	4mm	12mm	51mm	3	
N47716	C330M-035-F3-S.0-Z3	3.5mm	4mm	12mm	51mm	3	AlTiN
N47727	C330M-060-D3-S.0-Z3	6mm	6mm	19mm	51mm	3	
N47728	C330M-060-D3-S.0-Z3	6mm	6mm	19mm	51mm	3	AlTiN
N47733	C330M-080-D2-S.0-Z3	8mm	8mm	20mm	64mm	3	
N47734	C330M-080-D2-S.0-Z3	8mm	8mm	20mm	64mm	3	AlTiN
N47739	C330M-100-D2-S.0-Z3	10mm	10mm	22mm	73mm	3	
N47740	C330M-100-D2-S.0-Z3	10mm	10mm	22mm	73mm	3	AlTiN
N47741	C330M-110-F2-S.0-Z3	11mm	12mm	25mm	74mm	3	
N47742	C330M-110-F2-S.0-Z3	11mm	12mm	25mm	74mm	3	AlTiN
N47745	C330M-120-D2-S.0-Z3	12mm	12mm	25mm	74mm	3	
N47746	C330M-120-D2-S.0-Z3	12mm	12mm	25mm	74mm	3	AlTiN
N47747	C330M-140-F2-S.0-Z3	14mm	14mm	32mm	84mm	3	
N47748	C330M-140-F2-S.0-Z3	14mm	14mm	32mm	84mm	3	AlTiN
N47751	C330M-160-D2-S.0-Z3	16mm	16mm	32mm	93mm	3	
N47752	C330M-160-D2-S.0-Z3	16mm	16mm	32mm	93mm	3	AlTiN
N47759	C330M-200-D2-S.0-Z3	20mm	20mm	32mm	104mm	3	
N47760	C330M-200-D2-S.0-Z3	20mm	20mm	32mm	104mm	3	AlTiN

GENERAL PURPOSE- C430

SOLID CARBIDE

HELIX 30°

SQUARE END

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N85503	C430-0.016-F2-S.0-Z4	1/64	1/8	1/32	1-1/2	4	
N85579	C430-0.016-F2-S.0-Z4	1/64	1/8	1/32	1-1/2	4	TiAlN
N85504	C430-0.031-F3-S.0-Z4	1/32	1/8	5/64	1-1/2	4	
N85580	C430-0.031-F3-S.0-Z4	1/32	1/8	5/64	1-1/2	4	TiAlN
N55666	C430-0.031-F4-S.0-Z4	1/32	1/8	3/32	1-1/2	4	
N55792	C430-0.031-F4-S.0-Z4	1/32	1/8	3/32	1-1/2	4	TiAlN
N85505	C430-0.047-F2-S.0-Z4	3/64	1/8	7/64	1-1/2	4	
N85581	C430-0.047-F2-S.0-Z4	3/64	1/8	7/64	1-1/2	4	TiAlN
N55667	C430-0.047-F3-S.0-Z4	3/64	1/8	1/8	1-1/2	4	
N55793	C430-0.047-F3-S.0-Z4	3/64	1/8	1/8	1-1/2	4	TiAlN
N85652	C430-0.063-F2-S.0-Z4	1/16	1/8	1/8	1-1/2	4	
N85678	C430-0.063-F2-S.0-Z4	1/16	1/8	1/8	1-1/2	4	TiAlN
N85506	C430-0.063-F3-S.0-Z4	1/16	1/8	3/16	1-1/2	4	
N85582	C430-0.063-F3-S.0-Z4	1/16	1/8	3/16	1-1/2	4	TiAlN
N55668	C430-0.063-F4-S.0-Z4	1/16	1/8	1/4	1-1/2	4	
N55794	C430-0.063-F4-S.0-Z4	1/16	1/8	1/4	1-1/2	4	TiAlN
N55669	C430-0.063-F8-S.0-Z4	1/16	1/8	1	3	4	
N55795	C430-0.063-F8-S.0-Z4	1/16	1/8	1	3	4	TiAlN
N55670	C430-0.063-F9-S.0-Z4	1/16	1/8	1	4	4	
N55796	C430-0.063-F9-S.0-Z4	1/16	1/8	1	4	4	TiAlN
N85507	C430-0.078-F2-S.0-Z4	5/64	1/8	3/16	1-1/2	4	
N85583	C430-0.078-F2-S.0-Z4	5/64	1/8	3/16	1-1/2	4	TiAlN
N55671	C430-0.078-F3-S.0-Z4	5/64	1/8	1/4	1-1/2	4	
N55797	C430-0.078-F3-S.0-Z4	5/64	1/8	1/4	1-1/2	4	TiAlN
N85653	C430-0.094-F2-S.0-Z4	3/32	1/8	3/16	1-1/2	4	
N85679	C430-0.094-F2-S.0-Z4	3/32	1/8	3/16	1-1/2	4	TiAlN
N85508	C430-0.094-F3-S.0-Z4	3/32	1/8	9/32	1-1/2	4	
N85584	C430-0.094-F3-S.0-Z4	3/32	1/8	9/32	1-1/2	4	TiAlN
N55672	C430-0.094-F4-S.0-Z4	3/32	1/8	3/8	1-1/2	4	
N55798	C430-0.094-F4-S.0-Z4	3/32	1/8	3/8	1-1/2	4	TiAlN
N55673	C430-0.094-F8-S.0-Z4	3/32	1/8	1	3	4	
N55799	C430-0.094-F8-S.0-Z4	3/32	1/8	1	3	4	TiAlN
N55674	C430-0.094-F9-S.0-Z4	3/32	1/8	1	4	4	
N55800	C430-0.094-F9-S.0-Z4	3/32	1/8	1	4	4	TiAlN
N85509	C430-0.109-F3-S.0-Z4	7/64	1/8	3/8	1-1/2	4	
N85585	C430-0.109-F3-S.0-Z4	7/64	1/8	3/8	1-1/2	4	TiAlN
N85654	C430-0.125-D2-S.0-Z4	1/8	1/8	1/4	1-1/2	4	

DISCOUNT CODE D42

Niagara Cutter

GENERAL PURPOSE- C430

SOLID CARBIDE

HELIX 30°

SQUARE END

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N85680	C430-0.125-D2-S.0-Z4	1/8	1/8	1/4	1-1/2	4	TiAlN
N85510	C430-0.125-D4-S.0-Z4	1/8	1/8	1/2	1-1/2	4	
N85586	C430-0.125-D4-S.0-Z4	1/8	1/8	1/2	1-1/2	4	TiAlN
N55675	C430-0.125-D5-S.0-Z4	1/8	1/8	5/8	2	4	
N55801	C430-0.125-D5-S.0-Z4	1/8	1/8	5/8	2	4	TiAlN
N55676	C430-0.125-D6-S.0-Z4	1/8	1/8	3/4	3	4	
N55802	C430-0.125-D6-S.0-Z4	1/8	1/8	3/4	3	4	TiAlN
N55677	C430-0.125-D8-S.0-Z4	1/8	1/8	1	3	4	
N55803	C430-0.125-D8-S.0-Z4	1/8	1/8	1	3	4	TiAlN
N55678	C430-0.125-D9-S.0-Z4	1/8	1/8	1	4	4	
N55804	C430-0.125-D9-S.0-Z4	1/8	1/8	1	4	4	TiAlN
N85511	C430-0.141-F4-S.0-Z4	9/64	3/16	1/2	2	4	
N85587	C430-0.141-F4-S.0-Z4	9/64	3/16	1/2	2	4	TiAlN
N85655	C430-0.156-F2-S.0-Z4	5/32	3/16	5/16	2	4	
N85681	C430-0.156-F2-S.0-Z4	5/32	3/16	5/16	2	4	TiAlN
N85512	C430-0.156-F3-S.0-Z4	5/32	3/16	1/2	2	4	
N85588	C430-0.156-F3-S.0-Z4	5/32	3/16	1/2	2	4	TiAlN
N85513	C430-0.172-F4-S.0-Z4	11/64	3/16	5/8	2	4	
N85589	C430-0.172-F4-S.0-Z4	11/64	3/16	5/8	2	4	TiAlN
N85656	C430-0.188-D2-S.0-Z4	3/16	3/16	3/8	2	4	
N85682	C430-0.188-D2-S.0-Z4	3/16	3/16	3/8	2	4	TiAlN
N85514	C430-0.188-D3-S.0-Z4	3/16	3/16	5/8	2	4	
N85590	C430-0.188-D3-S.0-Z4	3/16	3/16	5/8	2	4	TiAlN
N85692	C430-0.188-D4-S.0-Z4	3/16	3/16	3/4	2-1/2	4	
N85728	C430-0.188-D4-S.0-Z4	3/16	3/16	3/4	2-1/2	4	TiAlN
N55679	C430-0.188-D5-S.0-Z4	3/16	3/16	1	3	4	
N55805	C430-0.188-D5-S.0-Z4	3/16	3/16	1	3	4	TiAlN
N55680	C430-0.188-D6-S.0-Z4	3/16	3/16	1	4	4	
N55806	C430-0.188-D6-S.0-Z4	3/16	3/16	1	4	4	TiAlN
N85693	C430-0.188-D7-S.0-Z4	3/16	3/16	1-1/8	3	4	
N85729	C430-0.188-D7-S.0-Z4	3/16	3/16	1-1/8	3	4	TiAlN
N85515	C430-0.203-F3-S.0-Z4	13/64	1/4	5/8	2-1/2	4	
N85591	C430-0.203-F3-S.0-Z4	13/64	1/4	5/8	2-1/2	4	TiAlN
N85657	C430-0.219-F2-S.0-Z4	7/32	1/4	7/16	2	4	
N85683	C430-0.219-F2-S.0-Z4	7/32	1/4	7/16	2	4	TiAlN
N85516	C430-0.219-F3-S.0-Z4	7/32	1/4	5/8	2-1/2	4	
N85592	C430-0.219-F3-S.0-Z4	7/32	1/4	5/8	2-1/2	4	TiAlN

DISCOUNT CODE D42

GENERAL PURPOSE- C430

SOLID CARBIDE

HELIX 30°

SQUARE END

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N85517	C430-0.234-F3-S.0-Z4	15/64	1/4	3/4	2-1/2	4	
N85593	C430-0.234-F3-S.0-Z4	15/64	1/4	3/4	2-1/2	4	TiAlN
N85658	C430-0.250-D2-S.0-Z4	1/4	1/4	1/2	2	4	
N85684	C430-0.250-D2-S.0-Z4	1/4	1/4	1/2	2	4	TiAlN
N85518	C430-0.250-D3-S.0-Z4	1/4	1/4	3/4	2-1/2	4	
N85594	C430-0.250-D3-S.0-Z4	1/4	1/4	3/4	2-1/2	4	TiAlN
N55681	C430-0.250-D4-S.0-Z4	1/4	1/4	1	3	4	
N55807	C430-0.250-D4-S.0-Z4	1/4	1/4	1	3	4	TiAlN
N55682	C430-0.250-D5-S.0-Z4	1/4	1/4	1	4	4	
N55808	C430-0.250-D5-S.0-Z4	1/4	1/4	1	4	4	TiAlN
N85694	C430-0.250-D6-S.0-Z4	1/4	1/4	1-1/8	3	4	
N85730	C430-0.250-D6-S.0-Z4	1/4	1/4	1-1/8	3	4	TiAlN
N85695	C430-0.250-D7-S.0-Z4	1/4	1/4	1-1/2	4	4	
N85731	C430-0.250-D7-S.0-Z4	1/4	1/4	1-1/2	4	4	TiAlN
N55683	C430-0.250-D8-S.0-Z4	1/4	1/4	1-1/2	6	4	
N55809	C430-0.250-D8-S.0-Z4	1/4	1/4	1-1/2	6	4	TiAlN
N85519	C430-0.266-F3-S.0-Z4	17/64	5/16	3/4	2-1/2	4	
N85595	C430-0.266-F3-S.0-Z4	17/64	5/16	3/4	2-1/2	4	TiAlN
N85520	C430-0.281-F3-S.0-Z4	9/32	5/16	3/4	2-1/2	4	
N85596	C430-0.281-F3-S.0-Z4	9/32	5/16	3/4	2-1/2	4	TiAlN
N85521	C430-0.297-F3-S.0-Z4	19/64	5/16	13/16	2-1/2	4	
N85597	C430-0.297-F3-S.0-Z4	19/64	5/16	13/16	2-1/2	4	TiAlN
N85659	C430-0.313-D2-S.0-Z4	5/16	5/16	1/2	2	4	
N85685	C430-0.313-D2-S.0-Z4	5/16	5/16	1/2	2	4	TiAlN
N85522	C430-0.313-D3-S.0-Z4	5/16	5/16	13/16	2-1/2	4	
N85598	C430-0.313-D3-S.0-Z4	5/16	5/16	13/16	2-1/2	4	TiAlN
N55684	C430-0.313-D4-S.0-Z4	5/16	5/16	1	3	4	
N55810	C430-0.313-D4-S.0-Z4	5/16	5/16	1	3	4	TiAlN
N55685	C430-0.313-D5-S.0-Z4	5/16	5/16	1	4	4	
N55811	C430-0.313-D5-S.0-Z4	5/16	5/16	1	4	4	TiAlN
N85696	C430-0.313-D6-S.0-Z4	5/16	5/16	1-1/8	3	4	
N85732	C430-0.313-D6-S.0-Z4	5/16	5/16	1-1/8	3	4	TiAlN
N55686	C430-0.313-D7-S.0-Z4	5/16	5/16	1-1/2	6	4	
N55812	C430-0.313-D7-S.0-Z4	5/16	5/16	1-1/2	6	4	TiAlN
N85697	C430-0.313-D8-S.0-Z4	5/16	5/16	1-5/8	4	4	
N85733	C430-0.313-D8-S.0-Z4	5/16	5/16	1-5/8	4	4	TiAlN
N85523	C430-0.328-F3-S.0-Z4	21/64	3/8	1	2-1/2	4	

DISCOUNT CODE D42

Niagara Cutter

GENERAL PURPOSE- C430

SOLID CARBIDE

HELIX 30°

SQUARE END

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N85599	C430-0.328-F3-S.0-Z4	21/64	3/8	1	2-1/2	4	TiAlN
N85524	C430-0.344-F3-S.0-Z4	11/32	3/8	1	2-1/2	4	
N85600	C430-0.344-F3-S.0-Z4	11/32	3/8	1	2-1/2	4	TiAlN
N85525	C430-0.359-F3-S.0-Z4	23/64	3/8	1	2-1/2	4	
N85601	C430-0.359-F3-S.0-Z4	23/64	3/8	1	2-1/2	4	TiAlN
N85660	C430-0.375-D1-S.0-Z4	3/8	3/8	5/8	2	4	
N85686	C430-0.375-D1-S.0-Z4	3/8	3/8	5/8	2	4	TiAlN
N85526	C430-0.375-D2-S.0-Z4	3/8	3/8	1	2-1/2	4	
N85602	C430-0.375-D2-S.0-Z4	3/8	3/8	1	2-1/2	4	TiAlN
N55687	C430-0.375-D3-S.0-Z4	3/8	3/8	1	3	4	
N55813	C430-0.375-D3-S.0-Z4	3/8	3/8	1	3	4	TiAlN
N55688	C430-0.375-D4-S.0-Z4	3/8	3/8	1	4	4	
N55814	C430-0.375-D4-S.0-Z4	3/8	3/8	1	4	4	TiAlN
N85698	C430-0.375-D5-S.0-Z4	3/8	3/8	1-1/8	3	4	
N85734	C430-0.375-D5-S.0-Z4	3/8	3/8	1-1/8	3	4	TiAlN
N55689	C430-0.375-D6-S.0-Z4	3/8	3/8	1-1/2	6	4	
N55815	C430-0.375-D6-S.0-Z4	3/8	3/8	1-1/2	6	4	TiAlN
N85699	C430-0.375-D7-S.0-Z4	3/8	3/8	1-3/4	4	4	
N85735	C430-0.375-D7-S.0-Z4	3/8	3/8	1-3/4	4	4	TiAlN
N55690	C430-0.375-D8-S.0-Z4	3/8	3/8	2	4	4	
N55816	C430-0.375-D8-S.0-Z4	3/8	3/8	2	4	4	TiAlN
N55691	C430-0.375-D9-S.0-Z4	3/8	3/8	3	6	4	
N55817	C430-0.375-D9-S.0-Z4	3/8	3/8	3	6	4	TiAlN
N85527	C430-0.391-F3-S.0-Z4	25/64	7/16	1	2-3/4	4	
N85603	C430-0.391-F3-S.0-Z4	25/64	7/16	1	2-3/4	4	TiAlN
N85528	C430-0.406-F2-S.0-Z4	13/32	7/16	1	2-3/4	4	
N85604	C430-0.406-F2-S.0-Z4	13/32	7/16	1	2-3/4	4	TiAlN
N85529	C430-0.422-F2-S.0-Z4	27/64	7/16	1	2-3/4	4	
N85605	C430-0.422-F2-S.0-Z4	27/64	7/16	1	2-3/4	4	TiAlN
N85661	C430-0.438-D1-S.0-Z4	7/16	7/16	5/8	2-1/2	4	
N85687	C430-0.438-D1-S.0-Z4	7/16	7/16	5/8	2-1/2	4	TiAlN
N85530	C430-0.438-D2-S.0-Z4	7/16	7/16	1	2-3/4	4	
N85606	C430-0.438-D2-S.0-Z4	7/16	7/16	1	2-3/4	4	TiAlN
N55692	C430-0.438-D3-S.0-Z4	7/16	7/16	1	4	4	
N55818	C430-0.438-D3-S.0-Z4	7/16	7/16	1	4	4	TiAlN
N55693	C430-0.438-D4-S.0-Z4	7/16	7/16	1-1/2	6	4	
N55819	C430-0.438-D4-S.0-Z4	7/16	7/16	1-1/2	6	4	TiAlN

DISCOUNT CODE D42

Niagara Cutter

GENERAL PURPOSE- C430

SOLID CARBIDE

HELIX 30°

SQUARE END

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N55694	C430-0.438-D5-S.0-Z4	7/16	7/16	2	4	4	
N55820	C430-0.438-D5-S.0-Z4	7/16	7/16	2	4	4	TiAlN
N85700	C430-0.438-D6-S.0-Z4	7/16	7/16	2	4-1/2	4	
N85736	C430-0.438-D6-S.0-Z4	7/16	7/16	2	4-1/2	4	TiAlN
N85701	C430-0.438-D7-S.0-Z4	7/16	7/16	3	6	4	
N85737	C430-0.438-D7-S.0-Z4	7/16	7/16	3	6	4	TiAlN
N85532	C430-0.469-F2-S.0-Z4	15/32	1/2	1	3	4	
N85608	C430-0.469-F2-S.0-Z4	15/32	1/2	1	3	4	TiAlN
N85662	C430-0.500-D1-S.0-Z4	1/2	1/2	5/8	2-1/2	4	
N85688	C430-0.500-D1-S.0-Z4	1/2	1/2	5/8	2-1/2	4	TiAlN
N85534	C430-0.500-D2-S.0-Z4	1/2	1/2	1	3	4	
N85610	C430-0.500-D2-S.0-Z4	1/2	1/2	1	3	4	TiAlN
N55695	C430-0.500-D3-S.0-Z4	1/2	1/2	1	4	4	
N55821	C430-0.500-D3-S.0-Z4	1/2	1/2	1	4	4	TiAlN
N55696	C430-0.500-D4-S.0-Z4	1/2	1/2	1-1/2	6	4	
N55822	C430-0.500-D4-S.0-Z4	1/2	1/2	1-1/2	6	4	TiAlN
N55697	C430-0.500-D5-S.0-Z4	1/2	1/2	2	4	4	
N55823	C430-0.500-D5-S.0-Z4	1/2	1/2	2	4	4	TiAlN
N85702	C430-0.500-D6-S.0-Z4	1/2	1/2	2	4-1/2	4	
N85738	C430-0.500-D6-S.0-Z4	1/2	1/2	2	4-1/2	4	TiAlN
N85703	C430-0.500-D7-S.0-Z4	1/2	1/2	3	6	4	
N85739	C430-0.500-D7-S.0-Z4	1/2	1/2	3	6	4	TiAlN
N85535	C430-0.563-D2-S.0-Z4	9/16	9/16	1-1/8	3-1/2	4	
N85611	C430-0.563-D2-S.0-Z4	9/16	9/16	1-1/8	3-1/2	4	TiAlN
N85663	C430-0.625-D1-S.0-Z4	5/8	5/8	3/4	3	4	
N85689	C430-0.625-D1-S.0-Z4	5/8	5/8	3/4	3	4	TiAlN
N85536	C430-0.625-D2-S.0-Z4	5/8	5/8	1-1/4	3-1/2	4	
N85612	C430-0.625-D2-S.0-Z4	5/8	5/8	1-1/4	3-1/2	4	TiAlN
N55700	C430-0.625-D3-S.0-Z4	5/8	5/8	2	6	4	
N55826	C430-0.625-D3-S.0-Z4	5/8	5/8	2	6	4	TiAlN
N85704	C430-0.625-D4-S.0-Z4	5/8	5/8	2-1/4	5	4	
N85740	C430-0.625-D4-S.0-Z4	5/8	5/8	2-1/4	5	4	TiAlN
N85705	C430-0.625-D5-S.0-Z4	5/8	5/8	3	6	4	
N85741	C430-0.625-D5-S.0-Z4	5/8	5/8	3	6	4	TiAlN
N85537	C430-0.688-F2-S.0-Z4	11/16	3/4	1-3/8	4	4	
N85613	C430-0.688-F2-S.0-Z4	11/16	3/4	1-3/8	4	4	TiAlN
N85664	C430-0.750-D1-S.0-Z4	3/4	3/4	1	3	4	

DISCOUNT CODE D42

Niagara Cutter

GENERAL PURPOSE- C430

SOLID CARBIDE

HELIX 30°

SQUARE END

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N85690	C430-0.750-D1-S.0-Z4	3/4	3/4	1	3	4	TiAlN
N85538	C430-0.750-D2-S.0-Z4	3/4	3/4	1-1/2	4	4	
N85614	C430-0.750-D2-S.0-Z4	3/4	3/4	1-1/2	4	4	TiAlN
N55701	C430-0.750-D3-S.0-Z4	3/4	3/4	2	6	4	
N55827	C430-0.750-D3-S.0-Z4	3/4	3/4	2	6	4	TiAlN
N85706	C430-0.750-D4-S.0-Z4	3/4	3/4	2-1/4	5	4	
N85742	C430-0.750-D4-S.0-Z4	3/4	3/4	2-1/4	5	4	TiAlN
N85707	C430-0.750-D5-S.0-Z4	3/4	3/4	3	6	4	
N85743	C430-0.750-D5-S.0-Z4	3/4	3/4	3	6	4	TiAlN
N55702	C430-0.750-D6-S.0-Z4	3/4	3/4	4	6	4	
N55828	C430-0.750-D6-S.0-Z4	3/4	3/4	4	6	4	TiAlN
N85539	C430-0.875-D2-S.0-Z4	7/8	7/8	1-1/2	4	4	
N85615	C430-0.875-D2-S.0-Z4	7/8	7/8	1-1/2	4	4	TiAlN
N55703	C430-1.000-D1-S.0-Z4	1	1	1	3	4	
N55829	C430-1.000-D1-S.0-Z4	1	1	1	3	4	TiAlN
N85540	C430-1.000-D2-S.0-Z4	1	1	1-1/2	4	4	
N85616	C430-1.000-D2-S.0-Z4	1	1	1-1/2	4	4	TiAlN
N55704	C430-1.000-D3-S.0-Z4	1	1	2	6	4	
N55830	C430-1.000-D3-S.0-Z4	1	1	2	6	4	TiAlN
N85708	C430-1.000-D4-S.0-Z4	1	1	2-1/4	5	4	
N85744	C430-1.000-D4-S.0-Z4	1	1	2-1/4	5	4	TiAlN
N85709	C430-1.000-D5-S.0-Z4	1	1	3	6	4	
N85745	C430-1.000-D5-S.0-Z4	1	1	3	6	4	TiAlN
N55705	C430-1.000-D6-S.0-Z4	1	1	4	7	4	
N55831	C430-1.000-D6-S.0-Z4	1	1	4	7	4	TiAlN
N55706	C430-1.250-D2-S.0-Z4	1-1/4	1-1/4	2	4-1/2	4	
N55832	C430-1.250-D2-S.0-Z4	1-1/4	1-1/4	2	4-1/2	4	TiAlN
N55707	C430-1.250-D3-S.0-Z4	1-1/4	1-1/4	3	6	4	
N55833	C430-1.250-D3-S.0-Z4	1-1/4	1-1/4	3	6	4	TiAlN

GENERAL PURPOSE- C430R

SOLID CARBIDE

HELIX 30°

RADIUS

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS
N91372	C430R-0.125-D4-R015.0-Z4	1/8	1/8	1/2	1-1/2	4	TiAlN	0.015
N91373	C430R-0.125-D4-R020.0-Z4	1/8	1/8	1/2	1-1/2	4	TiAlN	0.020
N91374	C430R-0.125-D4-R030.0-Z4	1/8	1/8	1/2	1-1/2	4	TiAlN	0.030
N91375	C430R-0.188-D3-R015.0-Z4	3/16	3/16	5/8	2	4	TiAlN	0.015
N91376	C430R-0.188-D3-R020.0-Z4	3/16	3/16	5/8	2	4	TiAlN	0.020
N91377	C430R-0.188-D3-R030.0-Z4	3/16	3/16	5/8	2	4	TiAlN	0.030
N91378	C430R-0.250-D3-R015.0-Z4	1/4	1/4	3/4	2-1/2	4	TiAlN	0.015
N91379	C430R-0.250-D3-R020.0-Z4	1/4	1/4	3/4	2-1/2	4	TiAlN	0.020
N91380	C430R-0.250-D3-R030.0-Z4	1/4	1/4	3/4	2-1/2	4	TiAlN	0.030
N91381	C430R-0.250-D3-R045.0-Z4	1/4	1/4	3/4	2-1/2	4	TiAlN	0.045
N91382	C430R-0.313-D3-R015.0-Z4	5/16	5/16	13/16	2-1/2	4	TiAlN	0.015
N91383	C430R-0.313-D3-R020.0-Z4	5/16	5/16	13/16	2-1/2	4	TiAlN	0.020
N91384	C430R-0.313-D3-R030.0-Z4	5/16	5/16	13/16	2-1/2	4	TiAlN	0.030
N91385	C430R-0.313-D3-R045.0-Z4	5/16	5/16	13/16	2-1/2	4	TiAlN	0.045
N91386	C430R-0.375-D3-R015.0-Z4	3/8	3/8	1	2-1/2	4	TiAlN	0.015
N91387	C430R-0.375-D3-R020.0-Z4	3/8	3/8	1	2-1/2	4	TiAlN	0.020
N91389	C430R-0.375-D3-R030.0-Z4	3/8	3/8	1	2-1/2	4	TiAlN	0.030
N91390	C430R-0.375-D3-R045.0-Z4	3/8	3/8	1	2-1/2	4	TiAlN	0.045
N91391	C430R-0.438-D2-R015.0-Z4	7/16	7/16	1	2-3/4	4	TiAlN	0.015
N91392	C430R-0.438-D2-R020.0-Z4	7/16	7/16	1	2-3/4	4	TiAlN	0.020
N91393	C430R-0.438-D2-R030.0-Z4	7/16	7/16	1	2-3/4	4	TiAlN	0.030
N91394	C430R-0.438-D2-R045.0-Z4	7/16	7/16	1	2-3/4	4	TiAlN	0.045
N91395	C430R-0.438-D2-R060.0-Z4	7/16	7/16	1	2-3/4	4	TiAlN	0.060
N91396	C430R-0.438-D2-R090.0-Z4	7/16	7/16	1	2-3/4	4	TiAlN	0.090
N91397	C430R-0.438-D2-R125.0-Z4	7/16	7/16	1	2-3/4	4	TiAlN	0.125
N91353	C430R-0.500-D2-R015.0-Z4	1/2	1/2	1	3	4	TiAlN	0.015
N91398	C430R-0.500-D2-R020.0-Z4	1/2	1/2	1	3	4	TiAlN	0.020
N91399	C430R-0.500-D2-R030.0-Z4	1/2	1/2	1	3	4	TiAlN	0.030
N91401	C430R-0.500-D2-R045.0-Z4	1/2	1/2	1	3	4	TiAlN	0.045
N91402	C430R-0.500-D2-R060.0-Z4	1/2	1/2	1	3	4	TiAlN	0.060
N91403	C430R-0.500-D2-R090.0-Z4	1/2	1/2	1	3	4	TiAlN	0.090
N91404	C430R-0.500-D2-R125.0-Z4	1/2	1/2	1	3	4	TiAlN	0.125
N91406	C430R-0.625-D2-R015.0-Z4	5/8	5/8	1-1/4	3-1/2	4	TiAlN	0.015
N91408	C430R-0.625-D2-R020.0-Z4	5/8	5/8	1-1/4	3-1/2	4	TiAlN	0.020
N91409	C430R-0.625-D2-R030.0-Z4	5/8	5/8	1-1/4	3-1/2	4	TiAlN	0.030
N91410	C430R-0.625-D2-R045.0-Z4	5/8	5/8	1-1/4	3-1/2	4	TiAlN	0.045

DISCOUNT CODE D42

GENERAL PURPOSE- C430R

SOLID CARBIDE

HELIX 30°

RADIUS

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS
N91411	C430R-0.625-D2-R060.0-Z4	5/8	5/8	1-1/4	3-1/2	4	TiAlN	0.060
N91412	C430R-0.625-D2-R090.0-Z4	5/8	5/8	1-1/4	3-1/2	4	TiAlN	0.090
N91413	C430R-0.625-D2-R125.0-Z4	5/8	5/8	1-1/4	3-1/2	4	TiAlN	0.125
N91361	C430R-0.750-D2-R015.0-Z4	3/4	3/4	1-1/2	4	4	TiAlN	0.015
N91415	C430R-0.750-D2-R020.0-Z4	3/4	3/4	1-1/2	4	4	TiAlN	0.020
N91416	C430R-0.750-D2-R030.0-Z4	3/4	3/4	1-1/2	4	4	TiAlN	0.030
N91417	C430R-0.750-D2-R045.0-Z4	3/4	3/4	1-1/2	4	4	TiAlN	0.045
N91418	C430R-0.750-D2-R060.0-Z4	3/4	3/4	1-1/2	4	4	TiAlN	0.060
N91419	C430R-0.750-D2-R090.0-Z4	3/4	3/4	1-1/2	4	4	TiAlN	0.090
N91420	C430R-0.750-D2-R125.0-Z4	3/4	3/4	1-1/2	4	4	TiAlN	0.125
N91421	C430R-0.750-D2-R190.0-Z4	3/4	3/4	1-1/2	4	4	TiAlN	0.190
N91422	C430R-1.000-D2-R015.0-Z4	1	1	1-1/2	4	4	TiAlN	0.015
N91423	C430R-1.000-D2-R020.0-Z4	1	1	1-1/2	4	4	TiAlN	0.020
N91405	C430R-1.000-D2-R030.0-Z4	1	1	1-1/2	4	4	TiAlN	0.030
N91424	C430R-1.000-D2-R045.0-Z4	1	1	1-1/2	4	4	TiAlN	0.045
N91425	C430R-1.000-D2-R060.0-Z4	1	1	1-1/2	4	4	TiAlN	0.060
N91426	C430R-1.000-D2-R090.0-Z4	1	1	1-1/2	4	4	TiAlN	0.090
N91427	C430R-1.000-D2-R125.0-Z4	1	1	1-1/2	4	4	TiAlN	0.125
N91428	C430R-1.000-D2-R190.0-Z4	1	1	1-1/2	4	4	TiAlN	0.190

GENERAL PURPOSE- CNC430

SOLID CARBIDE

HELIX 30°

SQUARE END

CENTER CUTTING

- Weldon flat standard on shank sizes - 3/8", 1/2", 5/8", 3/4" and 1"
- NC Tolerance (see page 388 for details)
- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	NO. OF FLUTES	COATING
N85833	CNC430-0.125-D4-S.0-Z4	1/8	1/8	1/2	4	
N85861	CNC430-0.125-D4-S.0-Z4	1/8	1/8	1/2	4	TiAlN
N85834	CNC430-0.156-F4-S.0-Z4	5/32	3/16	9/16	4	
N85862	CNC430-0.156-F4-S.0-Z4	5/32	3/16	9/16	4	TiAlN
N85835	CNC430-0.188-D3-S.0-Z4	3/16	3/16	5/8	4	
N85863	CNC430-0.188-D3-S.0-Z4	3/16	3/16	5/8	4	TiAlN
N85837	CNC430-0.250-D3-S.0-Z4	1/4	1/4	3/4	4	
N85865	CNC430-0.250-D3-S.0-Z4	1/4	1/4	3/4	4	TiAlN
N85839	CNC430-0.313-D3-S.0-Z4	5/16	5/16	13/16	4	
N85867	CNC430-0.313-D3-S.0-Z4	5/16	5/16	13/16	4	TiAlN
N85840	CNC430-0.375-D2-S.3-Z4	3/8	3/8	7/8	4	
N85868	CNC430-0.375-D2-S.3-Z4	3/8	3/8	7/8	4	TiAlN
N85842	CNC430-0.500-D2-S.3-Z4	1/2	1/2	1	4	
N85870	CNC430-0.500-D2-S.3-Z4	1/2	1/2	1	4	TiAlN
N85844	CNC430-0.625-D2-S.3-Z4	5/8	5/8	1-1/4	4	
N85872	CNC430-0.625-D2-S.3-Z4	5/8	5/8	1-1/4	4	TiAlN
N85845	CNC430-0.750-D2-S.3-Z4	3/4	3/4	1-1/2	4	
N85873	CNC430-0.750-D2-S.3-Z4	3/4	3/4	1-1/2	4	TiAlN
N85846	CNC430-1.000-D2-S.3-Z4	1	1	1-1/2	4	
N85874	CNC430-1.000-D2-S.3-Z4	1	1	1-1/2	4	TiAlN

GENERAL PURPOSE- CD430

SOLID CARBIDE

HELIX 30°

SQUARE END

CENTER CUTTING

- Weldon flat standard
- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N85618	CD430-0.125-XF3-S.3-Z4	1/8	3/8	3/8	3-1/16	4	
N85640	CD430-0.125-XF3-S.3-Z4	1/8	3/8	3/8	3-1/16	4	TiAlN
N85619	CD430-0.156-XF3-S.3-Z4	5/32	3/8	7/16	3-1/8	4	
N85641	CD430-0.156-XF3-S.3-Z4	5/32	3/8	7/16	3-1/8	4	TiAlN
N85620	CD430-0.188-XF3-S.3-Z4	3/16	3/8	1/2	3-1/4	4	
N85642	CD430-0.188-XF3-S.3-Z4	3/16	3/8	1/2	3-1/4	4	TiAlN
N85621	CD430-0.219-XF3-S.3-Z4	7/32	3/8	9/16	3-3/8	4	
N85643	CD430-0.219-XF3-S.3-Z4	7/32	3/8	9/16	3-3/8	4	TiAlN
N85622	CD430-0.250-XF3-S.3-Z4	1/4	3/8	5/8	3-3/8	4	
N85644	CD430-0.250-XF3-S.3-Z4	1/4	3/8	5/8	3-3/8	4	TiAlN
N85623	CD430-0.281-XF2-S.3-Z4	9/32	3/8	11/16	3-1/2	4	
N85645	CD430-0.281-XF2-S.3-Z4	9/32	3/8	11/16	3-1/2	4	TiAlN
N85624	CD430-0.313-XF2-S.3-Z4	5/16	3/8	3/4	3-1/2	4	
N85646	CD430-0.313-XF2-S.3-Z4	5/16	3/8	3/4	3-1/2	4	TiAlN
N85625	CD430-0.344-XF2-S.3-Z4	11/32	3/8	3/4	3-1/2	4	
N85647	CD430-0.344-XF2-S.3-Z4	11/32	3/8	3/4	3-1/2	4	TiAlN
N85626	CD430-0.375-XD2-S.3-Z4	3/8	3/8	3/4	3-1/2	4	
N85648	CD430-0.375-XD2-S.3-Z4	3/8	3/8	3/4	3-1/2	4	TiAlN
N85627	CD430-0.438-XF2-S.3-Z4	7/16	1/2	7/8	4	4	
N85649	CD430-0.438-XF2-S.3-Z4	7/16	1/2	7/8	4	4	TiAlN
N85628	CD430-0.500-XD2-S.3-Z4	1/2	1/2	1	4	4	
N85650	CD430-0.500-XD2-S.3-Z4	1/2	1/2	1	4	4	TiAlN

Niagara Cutter

GENERAL PURPOSE- CSD430

SOLID CARBIDE

HELIX 30°

SQUARE END

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N89818	CSD430-0.031-XF2-S.0-Z4	1/32	1/8	1/16	1-1/2	4	
N89821	CSD430-0.031-XF2-S.0-Z4	1/32	1/8	1/16	1-1/2	4	TiAlN
N89822	CSD430-0.047-XF2-S.0-Z4	3/64	1/8	3/32	1-1/2	4	
N89825	CSD430-0.047-XF2-S.0-Z4	3/64	1/8	3/32	1-1/2	4	TiAlN
N89826	CSD430-0.063-XF2-S.0-Z4	1/16	1/8	1/8	1-1/2	4	
N89829	CSD430-0.063-XF2-S.0-Z4	1/16	1/8	1/8	1-1/2	4	TiAlN
N89830	CSD430-0.078-XF2-S.0-Z4	5/64	1/8	1/8	1-1/2	4	
N89833	CSD430-0.078-XF2-S.0-Z4	5/64	1/8	1/8	1-1/2	4	TiAlN
N89834	CSD430-0.094-XF2-S.0-Z4	3/32	1/8	3/16	1-1/2	4	
N89837	CSD430-0.094-XF2-S.0-Z4	3/32	1/8	3/16	1-1/2	4	TiAlN
N89838	CSD430-0.109-XF2-S.0-Z4	7/64	1/8	3/16	1-1/2	4	
N89841	CSD430-0.109-XF2-S.0-Z4	7/64	1/8	3/16	1-1/2	4	TiAlN
N89842	CSD430-0.125-XD2-S.0-Z4	1/8	1/8	1/4	1-1/2	4	
N89845	CSD430-0.125-XD2-S.0-Z4	1/8	1/8	1/4	1-1/2	4	TiAlN
N89846	CSD430-0.141-XF2-S.0-Z4	9/64	3/16	5/16	2	4	
N89849	CSD430-0.141-XF2-S.0-Z4	9/64	3/16	5/16	2	4	TiAlN
N89850	CSD430-0.156-XF2-S.0-Z4	5/32	3/16	5/16	2	4	
N89853	CSD430-0.156-XF2-S.0-Z4	5/32	3/16	5/16	2	4	TiAlN
N89854	CSD430-0.172-XF2-S.0-Z4	11/64	3/16	5/16	2	4	
N89857	CSD430-0.172-XF2-S.0-Z4	11/64	3/16	5/16	2	4	TiAlN
N89858	CSD430-0.188-XD2-S.0-Z4	3/16	3/16	3/8	2	4	
N89861	CSD430-0.188-XD2-S.0-Z4	3/16	3/16	3/8	2	4	TiAlN
N89862	CSD430-0.203-XF2-S.0-Z4	13/64	1/4	1/2	2-1/2	4	
N89865	CSD430-0.203-XF2-S.0-Z4	13/64	1/4	1/2	2-1/2	4	TiAlN
N89866	CSD430-0.219-XF2-S.0-Z4	7/32	1/4	1/2	2-1/2	4	
N89869	CSD430-0.219-XF2-S.0-Z4	7/32	1/4	1/2	2-1/2	4	TiAlN
N89870	CSD430-0.234-XF2-S.0-Z4	15/64	1/4	1/2	2-1/2	4	
N89873	CSD430-0.234-XF2-S.0-Z4	15/64	1/4	1/2	2-1/2	4	TiAlN
N89874	CSD430-0.250-XD2-S.0-Z4	1/4	1/4	1/2	2-1/2	4	
N89877	CSD430-0.250-XD2-S.0-Z4	1/4	1/4	1/2	2-1/2	4	TiAlN
N89878	CSD430-0.281-XF2-S.0-Z4	9/32	5/16	1/2	2-1/2	4	
N89881	CSD430-0.281-XF2-S.0-Z4	9/32	5/16	1/2	2-1/2	4	TiAlN
N89882	CSD430-0.313-XD2-S.0-Z4	5/16	5/16	1/2	2-1/2	4	
N89885	CSD430-0.313-XD2-S.0-Z4	5/16	5/16	1/2	2-1/2	4	TiAlN
N89886	CSD430-0.344-XF2-S.0-Z4	11/32	3/8	9/16	2-1/2	4	

DISCOUNT CODE D42

GENERAL PURPOSE- CSD430

SOLID CARBIDE

HELIX 30°

SQUARE END

CENTER CUTTING

- General Purpose

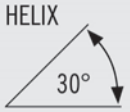
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N89889	CSD430-0.344-XF2-S.0-Z4	11/32	3/8	9/16	2-1/2	4	TiAlN
N89890	CSD430-0.375-XD2-S.0-Z4	3/8	3/8	9/16	2-1/2	4	
N89893	CSD430-0.375-XD2-S.0-Z4	3/8	3/8	9/16	2-1/2	4	TiAlN
N89894	CSD430-0.438-XD1-S.0-Z4	7/16	7/16	9/16	2-3/4	4	
N89897	CSD430-0.438-XD1-S.0-Z4	7/16	7/16	9/16	2-3/4	4	TiAlN
N89898	CSD430-0.500-XD1-S.0-Z4	1/2	1/2	5/8	3	4	
N89901	CSD430-0.500-XD1-S.0-Z4	1/2	1/2	5/8	3	4	TiAlN

Niagara Cutter

GENERAL PURPOSE- CB430

SOLID CARBIDE

HELIX



BALL END

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N86264	CB430-0.016-F2-B.0-Z4	1/64	1/8	1/32	1-1/2	4	
N86340	CB430-0.016-F2-B.0-Z4	1/64	1/8	1/32	1-1/2	4	TiAlN
N86265	CB430-0.031-F3-B.0-Z4	1/32	1/8	5/64	1-1/2	4	
N86341	CB430-0.031-F3-B.0-Z4	1/32	1/8	5/64	1-1/2	4	TiAlN
N55834	CB430-0.031-F4-B.0-Z4	1/32	1/8	3/32	1-1/2	4	
N56014	CB430-0.031-F4-B.0-Z4	1/32	1/8	3/32	1-1/2	4	TiAlN
N86266	CB430-0.047-F2-B.0-Z4	3/64	1/8	7/64	1-1/2	4	
N86342	CB430-0.047-F2-B.0-Z4	3/64	1/8	7/64	1-1/2	4	TiAlN
N55835	CB430-0.047-F3-B.0-Z4	3/64	1/8	1/8	1-1/2	4	
N56015	CB430-0.047-F3-B.0-Z4	3/64	1/8	1/8	1-1/2	4	TiAlN
N55836	CB430-0.063-F2-B.0-Z4	1/16	1/8	1/8	1-1/2	4	
N56016	CB430-0.063-F2-B.0-Z4	1/16	1/8	1/8	1-1/2	4	TiAlN
N86267	CB430-0.063-F3-B.0-Z4	1/16	1/8	3/16	1-1/2	4	
N86343	CB430-0.063-F3-B.0-Z4	1/16	1/8	3/16	1-1/2	4	TiAlN
N55837	CB430-0.063-F4-B.0-Z4	1/16	1/8	1/4	1-1/2	4	
N56017	CB430-0.063-F4-B.0-Z4	1/16	1/8	1/4	1-1/2	4	TiAlN
N55838	CB430-0.063-F8-B.0-Z4	1/16	1/8	1	3	4	
N56018	CB430-0.063-F8-B.0-Z4	1/16	1/8	1	3	4	TiAlN
N86268	CB430-0.078-F2-B.0-Z4	5/64	1/8	3/16	1-1/2	4	
N86344	CB430-0.078-F2-B.0-Z4	5/64	1/8	3/16	1-1/2	4	TiAlN
N55840	CB430-0.078-F3-B.0-Z4	5/64	1/8	1/4	1-1/2	4	
N56020	CB430-0.078-F3-B.0-Z4	5/64	1/8	1/4	1-1/2	4	TiAlN
N55841	CB430-0.094-F2-B.0-Z4	3/32	1/8	3/16	1-1/2	4	
N56021	CB430-0.094-F2-B.0-Z4	3/32	1/8	3/16	1-1/2	4	TiAlN
N86269	CB430-0.094-F3-B.0-Z4	3/32	1/8	9/32	1-1/2	4	
N86345	CB430-0.094-F3-B.0-Z4	3/32	1/8	9/32	1-1/2	4	TiAlN
N55842	CB430-0.094-F4-B.0-Z4	3/32	1/8	3/8	1-1/2	4	
N56022	CB430-0.094-F4-B.0-Z4	3/32	1/8	3/8	1-1/2	4	TiAlN
N55843	CB430-0.094-F8-B.0-Z4	3/32	1/8	1	3	4	
N56023	CB430-0.094-F8-B.0-Z4	3/32	1/8	1	3	4	TiAlN
N86270	CB430-0.109-F3-B.0-Z4	7/64	1/8	3/8	1-1/2	4	
N86346	CB430-0.109-F3-B.0-Z4	7/64	1/8	3/8	1-1/2	4	TiAlN
N55845	CB430-0.125-D2-B.0-Z4	1/8	1/8	1/4	1-1/2	4	
N56025	CB430-0.125-D2-B.0-Z4	1/8	1/8	1/4	1-1/2	4	TiAlN
N86271	CB430-0.125-D4-B.0-Z4	1/8	1/8	1/2	1-1/2	4	
N86347	CB430-0.125-D4-B.0-Z4	1/8	1/8	1/2	1-1/2	4	TiAlN

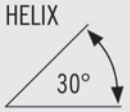
DISCOUNT CODE D42

Niagara Cutter

GENERAL PURPOSE- CB430

SOLID CARBIDE

HELIX



BALL END

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N55846	CB430-0.125-D5-B.0-Z4	1/8	1/8	5/8	2	4	
N56026	CB430-0.125-D5-B.0-Z4	1/8	1/8	5/8	2	4	TiAlN
N55847	CB430-0.125-D6-B.0-Z4	1/8	1/8	3/4	3	4	
N56027	CB430-0.125-D6-B.0-Z4	1/8	1/8	3/4	3	4	TiAlN
N55848	CB430-0.125-D7-B.0-Z4	1/8	1/8	1	3	4	
N56028	CB430-0.125-D7-B.0-Z4	1/8	1/8	1	3	4	TiAlN
N55849	CB430-0.125-D8-B.0-Z4	1/8	1/8	1	4	4	
N56029	CB430-0.125-D8-B.0-Z4	1/8	1/8	1	4	4	TiAlN
N86272	CB430-0.141-F4-B.0-Z4	9/64	3/16	1/2	2	4	
N86348	CB430-0.141-F4-B.0-Z4	9/64	3/16	1/2	2	4	TiAlN
N55850	CB430-0.156-F2-B.0-Z4	5/32	3/16	5/16	2	4	
N56030	CB430-0.156-F2-B.0-Z4	5/32	3/16	5/16	2	4	TiAlN
N86273	CB430-0.156-F3-B.0-Z4	5/32	3/16	1/2	2	4	
N86349	CB430-0.156-F3-B.0-Z4	5/32	3/16	1/2	2	4	TiAlN
N86274	CB430-0.172-F4-B.0-Z4	11/64	3/16	5/8	2	4	
N86350	CB430-0.172-F4-B.0-Z4	11/64	3/16	5/8	2	4	TiAlN
N55851	CB430-0.188-D2-B.0-Z4	3/16	3/16	3/8	2	4	
N56031	CB430-0.188-D2-B.0-Z4	3/16	3/16	3/8	2	4	TiAlN
N86275	CB430-0.188-D3-B.0-Z4	3/16	3/16	5/8	2	4	
N86351	CB430-0.188-D3-B.0-Z4	3/16	3/16	5/8	2	4	TiAlN
N55852	CB430-0.188-D4-B.0-Z4	3/16	3/16	1	3	4	
N56032	CB430-0.188-D4-B.0-Z4	3/16	3/16	1	3	4	TiAlN
N55853	CB430-0.188-D5-B.0-Z4	3/16	3/16	1	4	4	
N56033	CB430-0.188-D5-B.0-Z4	3/16	3/16	1	4	4	TiAlN
N55854	CB430-0.188-D6-B.0-Z4	3/16	3/16	1-1/8	3	4	
N53972	CB430-0.188-D6-B.0-Z4	3/16	3/16	1-1/8	3	4	TiAlN
N86276	CB430-0.203-F3-B.0-Z4	13/64	1/4	5/8	2-1/2	4	
N86352	CB430-0.203-F3-B.0-Z4	13/64	1/4	5/8	2-1/2	4	TiAlN
N86277	CB430-0.219-F3-B.0-Z4	7/32	1/4	5/8	2-1/2	4	
N86353	CB430-0.219-F3-B.0-Z4	7/32	1/4	5/8	2-1/2	4	TiAlN
N86278	CB430-0.234-F3-B.0-Z4	15/64	1/4	3/4	2-1/2	4	
N86354	CB430-0.234-F3-B.0-Z4	15/64	1/4	3/4	2-1/2	4	TiAlN
N55856	CB430-0.250-D2-B.0-Z4	1/4	1/4	1/2	2	4	
N53974	CB430-0.250-D2-B.0-Z4	1/4	1/4	1/2	2	4	TiAlN
N86279	CB430-0.250-D3-B.0-Z4	1/4	1/4	3/4	2-1/2	4	
N86355	CB430-0.250-D3-B.0-Z4	1/4	1/4	3/4	2-1/2	4	TiAlN

DISCOUNT CODE D42

Niagara Cutter

GENERAL PURPOSE- CB430

SOLID CARBIDE

HELIX 30°

BALL END

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N55857	CB430-0.250-D4-B.0-Z4	1/4	1/4	1	3	4	
N53975	CB430-0.250-D4-B.0-Z4	1/4	1/4	1	3	4	TiAlN
N55858	CB430-0.250-D5-B.0-Z4	1/4	1/4	1	4	4	
N53976	CB430-0.250-D5-B.0-Z4	1/4	1/4	1	4	4	TiAlN
N55859	CB430-0.250-D6-B.0-Z4	1/4	1/4	1-1/2	4	4	
N53977	CB430-0.250-D6-B.0-Z4	1/4	1/4	1-1/2	4	4	TiAlN
N55860	CB430-0.250-D7-B.0-Z4	1/4	1/4	1-1/2	6	4	
N53978	CB430-0.250-D7-B.0-Z4	1/4	1/4	1-1/2	6	4	TiAlN
N86281	CB430-0.281-F3-B.0-Z4	9/32	5/16	3/4	2-1/2	4	
N86357	CB430-0.281-F3-B.0-Z4	9/32	5/16	3/4	2-1/2	4	TiAlN
N55861	CB430-0.313-D2-B.0-Z4	5/16	5/16	1/2	2	4	
N53979	CB430-0.313-D2-B.0-Z4	5/16	5/16	1/2	2	4	TiAlN
N86283	CB430-0.313-D3-B.0-Z4	5/16	5/16	13/16	2-1/2	4	
N86359	CB430-0.313-D3-B.0-Z4	5/16	5/16	13/16	2-1/2	4	TiAlN
N55862	CB430-0.313-D4-B.0-Z4	5/16	5/16	1	3	4	
N53980	CB430-0.313-D4-B.0-Z4	5/16	5/16	1	3	4	TiAlN
N55864	CB430-0.313-D6-B.0-Z4	5/16	5/16	1-1/2	6	4	
N53982	CB430-0.313-D6-B.0-Z4	5/16	5/16	1-1/2	6	4	TiAlN
N86284	CB430-0.328-F3-B.0-Z4	21/64	3/8	1	2-1/2	4	
N86360	CB430-0.328-F3-B.0-Z4	21/64	3/8	1	2-1/2	4	TiAlN
N86285	CB430-0.344-F3-B.0-Z4	11/32	3/8	1	2-1/2	4	
N86361	CB430-0.344-F3-B.0-Z4	11/32	3/8	1	2-1/2	4	TiAlN
N55866	CB430-0.375-D2-B.0-Z4	3/8	3/8	5/8	2	4	
N53984	CB430-0.375-D2-B.0-Z4	3/8	3/8	5/8	2	4	TiAlN
N86287	CB430-0.375-D3-B.0-Z4	3/8	3/8	1	2-1/2	4	
N86363	CB430-0.375-D3-B.0-Z4	3/8	3/8	1	2-1/2	4	TiAlN
N55867	CB430-0.375-D4-B.0-Z4	3/8	3/8	1	3	4	
N53985	CB430-0.375-D4-B.0-Z4	3/8	3/8	1	3	4	TiAlN
N55868	CB430-0.375-D5-B.0-Z4	3/8	3/8	1	4	4	
N53986	CB430-0.375-D5-B.0-Z4	3/8	3/8	1	4	4	TiAlN
N55869	CB430-0.375-D6-B.0-Z4	3/8	3/8	1-1/2	6	4	
N53987	CB430-0.375-D6-B.0-Z4	3/8	3/8	1-1/2	6	4	TiAlN
N55870	CB430-0.375-D7-B.0-Z4	3/8	3/8	2	4	4	
N53988	CB430-0.375-D7-B.0-Z4	3/8	3/8	2	4	4	TiAlN
N55871	CB430-0.375-D8-B.0-Z4	3/8	3/8	3	6	4	
N53989	CB430-0.375-D8-B.0-Z4	3/8	3/8	3	6	4	TiAlN

DISCOUNT CODE D42

Niagara Cutter

GENERAL PURPOSE- CB430

SOLID CARBIDE

HELIX 30°

BALL END

CENTER CUTTING

- General Purpose

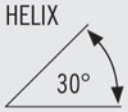
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N86289	CB430-0.406-F2-B.0-Z4	13/32	7/16	1	2-3/4	4	
N86365	CB430-0.406-F2-B.0-Z4	13/32	7/16	1	2-3/4	4	TiAlN
N86291	CB430-0.438-D2-B.0-Z4	7/16	7/16	1	2-3/4	4	
N86367	CB430-0.438-D2-B.0-Z4	7/16	7/16	1	2-3/4	4	TiAlN
N55873	CB430-0.438-D3-B.0-Z4	7/16	7/16	1	4	4	
N53991	CB430-0.438-D3-B.0-Z4	7/16	7/16	1	4	4	TiAlN
N86293	CB430-0.469-F2-B.0-Z4	15/32	1/2	1	3	4	
N86369	CB430-0.469-F2-B.0-Z4	15/32	1/2	1	3	4	TiAlN
N55877	CB430-0.500-D1-B.0-Z4	1/2	1/2	5/8	2-1/2	4	
N53995	CB430-0.500-D1-B.0-Z4	1/2	1/2	5/8	2-1/2	4	TiAlN
N86295	CB430-0.500-D2-B.0-Z4	1/2	1/2	1	3	4	
N86371	CB430-0.500-D2-B.0-Z4	1/2	1/2	1	3	4	TiAlN
N55878	CB430-0.500-D3-B.0-Z4	1/2	1/2	1	4	4	
N53996	CB430-0.500-D3-B.0-Z4	1/2	1/2	1	4	4	TiAlN
N55879	CB430-0.500-D4-B.0-Z4	1/2	1/2	1-1/2	6	4	
N53997	CB430-0.500-D4-B.0-Z4	1/2	1/2	1-1/2	6	4	TiAlN
N55880	CB430-0.500-D5-B.0-Z4	1/2	1/2	2	4	4	
N53998	CB430-0.500-D5-B.0-Z4	1/2	1/2	2	4	4	TiAlN
N55881	CB430-0.500-D6-B.0-Z4	1/2	1/2	3	6	4	
N53999	CB430-0.500-D6-B.0-Z4	1/2	1/2	3	6	4	TiAlN
N86296	CB430-0.563-D2-B.0-Z4	9/16	9/16	1-1/8	3-1/2	4	
N86372	CB430-0.563-D2-B.0-Z4	9/16	9/16	1-1/8	3-1/2	4	TiAlN
N55884	CB430-0.625-D1-B.0-Z4	5/8	5/8	3/4	3	4	
N54002	CB430-0.625-D1-B.0-Z4	5/8	5/8	3/4	3	4	TiAlN
N86297	CB430-0.625-D2-B.0-Z4	5/8	5/8	1-1/4	3-1/2	4	
N86373	CB430-0.625-D2-B.0-Z4	5/8	5/8	1-1/4	3-1/2	4	TiAlN
N55885	CB430-0.625-D3-B.0-Z4	5/8	5/8	2	6	4	
N54003	CB430-0.625-D3-B.0-Z4	5/8	5/8	2	6	4	TiAlN
N55886	CB430-0.625-D5-B.0-Z4	5/8	5/8	3	6	4	
N54004	CB430-0.625-D5-B.0-Z4	5/8	5/8	3	6	4	TiAlN
N55887	CB430-0.750-D1-B.0-Z4	3/4	3/4	1	3	4	
N54005	CB430-0.750-D1-B.0-Z4	3/4	3/4	1	3	4	TiAlN
N86299	CB430-0.750-D2-B.0-Z4	3/4	3/4	1-1/2	4	4	
N86375	CB430-0.750-D2-B.0-Z4	3/4	3/4	1-1/2	4	4	TiAlN
N55888	CB430-0.750-D3-B.0-Z4	3/4	3/4	2	6	4	
N54006	CB430-0.750-D3-B.0-Z4	3/4	3/4	2	6	4	TiAlN

DISCOUNT CODE D42

GENERAL PURPOSE- CB430

SOLID CARBIDE

HELIX



BALL END

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N55889	CB430-0.750-D4-B.0-Z4	3/4	3/4	3	6	4	
N54007	CB430-0.750-D4-B.0-Z4	3/4	3/4	3	6	4	TiAlN
N55890	CB430-0.750-D5-B.0-Z4	3/4	3/4	4	6	4	
N54008	CB430-0.750-D5-B.0-Z4	3/4	3/4	4	6	4	TiAlN
N86300	CB430-0.875-D2-B.0-Z4	7/8	7/8	1-1/2	4	4	
N86376	CB430-0.875-D2-B.0-Z4	7/8	7/8	1-1/2	4	4	TiAlN
N86301	CB430-1.000-D2-B.0-Z4	1	1	1-1/2	4	4	
N86377	CB430-1.000-D2-B.0-Z4	1	1	1-1/2	4	4	TiAlN
N55891	CB430-1.000-D3-B.0-Z4	1	1	2	6	4	
N54009	CB430-1.000-D3-B.0-Z4	1	1	2	6	4	TiAlN
N55892	CB430-1.000-D4-B.0-Z4	1	1	3	6	4	
N54010	CB430-1.000-D4-B.0-Z4	1	1	3	6	4	TiAlN
N55893	CB430-1.000-D5-B.0-Z4	1	1	4	7	4	
N54011	CB430-1.000-D5-B.0-Z4	1	1	4	7	4	TiAlN

GENERAL PURPOSE- CNCB430

SOLID CARBIDE

HELIX 30°

BALL END

CENTER CUTTING

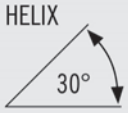
- Weldon flat standard on shank sizes - 3/8", 1/2", 5/8", 3/4" and 1"
- NC Tolerance (see page 388 for details)
- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N85876	CNCB430-0.125-D4-B.0-Z4	1/8	1/8	1/2	1-1/2	4	
N85904	CNCB430-0.125-D4-B.0-Z4	1/8	1/8	1/2	1-1/2	4	TiAlN
N85877	CNCB430-0.156-F4-B.0-Z4	5/32	3/16	9/16	2	4	
N85905	CNCB430-0.156-F4-B.0-Z4	5/32	3/16	9/16	2	4	TiAlN
N85878	CNCB430-0.188-D3-B.0-Z4	3/16	3/16	5/8	2	4	
N85906	CNCB430-0.188-D3-B.0-Z4	3/16	3/16	5/8	2	4	TiAlN
N85880	CNCB430-0.250-D3-B.0-Z4	1/4	1/4	3/4	2-1/2	4	
N85908	CNCB430-0.250-D3-B.0-Z4	1/4	1/4	3/4	2-1/2	4	TiAlN
N85882	CNCB430-0.313-D3-B.0-Z4	5/16	5/16	13/16	2-1/2	4	
N85910	CNCB430-0.313-D3-B.0-Z4	5/16	5/16	13/16	2-1/2	4	TiAlN
N85883	CNCB430-0.375-D2-B.3-Z4	3/8	3/5	7/8	2-1/2	4	
N85911	CNCB430-0.375-D2-B.3-Z4	3/8	3/5	7/8	2-1/2	4	TiAlN
N85885	CNCB430-0.500-D2-B.3-Z4	1/2	1/2	1	3	4	
N85913	CNCB430-0.500-D2-B.3-Z4	1/2	1/2	1	3	4	TiAlN

GENERAL PURPOSE- CSDB430

SOLID CARBIDE

HELIX



BALL END

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N89902	CSDB430-0.031-XF2-B.0-Z4	1/32	1/8	1/16	1-1/2	4	
N89905	CSDB430-0.031-XF2-B.0-Z4	1/32	1/8	1/16	1-1/2	4	TiAlN
N89906	CSDB430-0.047-XF2-B.0-Z4	3/64	1/8	3/32	1-1/2	4	
N89909	CSDB430-0.047-XF2-B.0-Z4	3/64	1/8	3/32	1-1/2	4	TiAlN
N89910	CSDB430-0.063-XF2-B.0-Z4	1/16	1/8	1/8	1-1/2	4	
N89913	CSDB430-0.063-XF2-B.0-Z4	1/16	1/8	1/8	1-1/2	4	TiAlN
N89914	CSDB430-0.078-XF2-B.0-Z4	5/64	1/8	1/8	1-1/2	4	
N89917	CSDB430-0.078-XF2-B.0-Z4	5/64	1/8	1/8	1-1/2	4	TiAlN
N89918	CSDB430-0.094-XF2-B.0-Z4	3/32	1/8	3/16	1-1/2	4	
N89921	CSDB430-0.094-XF2-B.0-Z4	3/32	1/8	3/16	1-1/2	4	TiAlN
N89922	CSDB430-0.109-XF2-B.0-Z4	7/64	1/8	3/16	1-1/2	4	
N89925	CSDB430-0.109-XF2-B.0-Z4	7/64	1/8	3/16	1-1/2	4	TiAlN
N89926	CSDB430-0.125-XD2-B.0-Z4	1/8	1/8	1/4	1-1/2	4	
N89929	CSDB430-0.125-XD2-B.0-Z4	1/8	1/8	1/4	1-1/2	4	TiAlN
N89930	CSDB430-0.141-XF2-B.0-Z4	9/64	3/16	5/16	2	4	
N89933	CSDB430-0.141-XF2-B.0-Z4	9/64	3/16	5/16	2	4	TiAlN
N89934	CSDB430-0.156-XF2-B.0-Z4	5/32	3/16	5/16	2	4	
N89937	CSDB430-0.156-XF2-B.0-Z4	5/32	3/16	5/16	2	4	TiAlN
N89938	CSDB430-0.172-XF2-B.0-Z4	11/64	3/16	5/16	2	4	
N89941	CSDB430-0.172-XF2-B.0-Z4	11/64	3/16	5/16	2	4	TiAlN
N89942	CSDB430-0.188-XD2-B.0-Z4	3/16	3/16	3/8	2	4	
N89945	CSDB430-0.188-XD2-B.0-Z4	3/16	3/16	3/8	2	4	TiAlN
N89958	CSDB430-0.250-XD2-B.0-Z4	1/4	1/4	1/2	2-1/2	4	
N89961	CSDB430-0.250-XD2-B.0-Z4	1/4	1/4	1/2	2-1/2	4	TiAlN
N89962	CSDB430-0.281-XF2-B.0-Z4	9/32	5/16	1/2	2-1/2	4	
N89965	CSDB430-0.281-XF2-B.0-Z4	9/32	5/16	1/2	2-1/2	4	TiAlN
N89966	CSDB430-0.313-XD2-B.0-Z4	5/16	5/16	1/2	2-1/2	4	
N89969	CSDB430-0.313-XD2-B.0-Z4	5/16	5/16	1/2	2-1/2	4	TiAlN
N89974	CSDB430-0.375-XD2-B.0-Z4	3/8	3/8	9/16	2-1/2	4	
N89977	CSDB430-0.375-XD2-B.0-Z4	3/8	3/8	9/16	2-1/2	4	TiAlN
N89982	CSDB430-0.500-XD1-B.0-Z4	1/2	1/2	5/8	3	4	
N89985	CSDB430-0.500-XD1-B.0-Z4	1/2	1/2	5/8	3	4	TiAlN

METRIC GENERAL PURPOSE- C430M

SOLID CARBIDE

HELIX 30°

SQUARE END

CENTER CUTTING

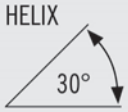
- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N46411	C430M-010-F4-S.0-Z4	1mm	3mm	4mm	39mm	4	
N46412	C430M-010-F4-S.0-Z4	1mm	3mm	4mm	39mm	4	AlTiN
N46413	C430M-015-F3-S.0-Z4	1.5mm	3mm	4.5mm	39mm	4	
N46414	C430M-015-F3-S.0-Z4	1.5mm	3mm	4.5mm	39mm	4	AlTiN
N34455	C430M-020-F2-S.0-Z4	2mm	3mm	4mm	39mm	4	
N34456	C430M-020-F2-S.0-Z4	2mm	3mm	4mm	39mm	4	AlTiN
N46415	C430M-020-F3-S.0-Z4	2mm	3mm	6.3mm	39mm	4	
N46416	C430M-020-F3-S.0-Z4	2mm	3mm	6.3mm	39mm	4	AlTiN
N46419	C430M-030-D4-S.0-Z4	3mm	3mm	12mm	39mm	4	
N46420	C430M-030-D4-S.0-Z4	3mm	3mm	12mm	39mm	4	AlTiN
N46421	C430M-035-F3-S.0-Z4	3.5mm	4mm	12mm	51mm	4	
N46422	C430M-035-F3-S.0-Z4	3.5mm	4mm	12mm	51mm	4	AlTiN
N46423	C430M-040-D4-S.0-Z4	4mm	4mm	14mm	51mm	4	
N46424	C430M-040-D4-S.0-Z4	4mm	4mm	14mm	51mm	4	AlTiN
N34331	C430M-050-D5-S.0-Z4	5mm	5mm	25mm	75mm	4	
N34332	C430M-050-D5-S.0-Z4	5mm	5mm	25mm	75mm	4	AlTiN
N46427	C430M-050-F3-S.0-Z4	5mm	6mm	16mm	51mm	4	
N46428	C430M-050-F3-S.0-Z4	5mm	6mm	16mm	51mm	4	AlTiN
N46429	C430M-060-D3-S.0-Z4	6mm	6mm	19mm	51mm	4	
N46430	C430M-060-D3-S.0-Z4	6mm	6mm	19mm	51mm	4	AlTiN
N46433	C430M-080-D2-S.0-Z4	8mm	8mm	20mm	64mm	4	
N46434	C430M-080-D2-S.0-Z4	8mm	8mm	20mm	64mm	4	AlTiN
N46435	C430M-090-F2-S.0-Z4	9mm	10mm	22mm	73mm	4	
N46436	C430M-090-F2-S.0-Z4	9mm	10mm	22mm	73mm	4	AlTiN
N46437	C430M-100-D2-S.0-Z4	10mm	10mm	22mm	73mm	4	
N46438	C430M-100-D2-S.0-Z4	10mm	10mm	22mm	73mm	4	AlTiN
N34343	C430M-100-D5-S.0-Z4	10mm	10mm	38mm	150mm	4	
N34344	C430M-100-D5-S.0-Z4	10mm	10mm	38mm	150mm	4	AlTiN
N46439	C430M-110-F2-S.0-Z4	11mm	12mm	25mm	74mm	4	
N46440	C430M-110-F2-S.0-Z4	11mm	12mm	25mm	74mm	4	AlTiN
N46441	C430M-120-D2-S.0-Z4	12mm	12mm	25mm	74mm	4	
N46442	C430M-120-D2-S.0-Z4	12mm	12mm	25mm	74mm	4	AlTiN
N34345	C430M-120-D4-S.0-Z4	12mm	12mm	50mm	100mm	4	
N34346	C430M-120-D4-S.0-Z4	12mm	12mm	50mm	100mm	4	AlTiN
N46443	C430M-140-F2-S.0-Z4	14mm	14mm	32mm	84mm	4	

METRIC GENERAL PURPOSE- C430M

SOLID CARBIDE

HELIX



SQUARE END

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N46444	C430M-140-F2-S.0-Z4	14mm	14mm	32mm	84mm	4	AlTiN
N46445	C430M-160-D2-S.0-Z4	16mm	16mm	32mm	93mm	4	
N46446	C430M-160-D2-S.0-Z4	16mm	16mm	32mm	93mm	4	AlTiN
N46447	C430M-180-D2-S.0-Z4	18mm	18mm	38mm	100mm	4	
N46448	C430M-180-D2-S.0-Z4	18mm	18mm	38mm	100mm	4	AlTiN
N46449	C430M-200-D2-S.0-Z4	20mm	20mm	38mm	100mm	4	
N46450	C430M-200-D2-S.0-Z4	20mm	20mm	38mm	100mm	4	AlTiN
N46451	C430M-250-D2-S.0-Z4	25mm	25mm	38mm	101mm	4	
N46452	C430M-250-D2-S.0-Z4	25mm	25mm	38mm	101mm	4	AlTiN

METRIC GENERAL PURPOSE- CB430M

SOLID CARBIDE

HELIX 30°

BALL END

CENTER CUTTING

- General Purpose

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N46453	CB430M-010-F4-B.0-Z4	1mm	3mm	4mm	39mm	4	
N46454	CB430M-010-F4-B.0-Z4	1mm	3mm	4mm	39mm	4	AlTiN
N34477	CB430M-020-F2-B.0-Z4	2mm	3mm	4mm	39mm	4	
N34478	CB430M-020-F2-B.0-Z4	2mm	3mm	4mm	39mm	4	AlTiN
N47937	CB430M-030-D2-B.0-Z4	3mm	3mm	6mm	39mm	4	
N47938	CB430M-030-D2-B.0-Z4	3mm	3mm	6mm	39mm	4	AlTiN
N46461	CB430M-030-D4-B.0-Z4	3mm	3mm	12mm	39mm	4	
N46462	CB430M-030-D4-B.0-Z4	3mm	3mm	12mm	39mm	4	AlTiN
N46465	CB430M-040-D4-B.0-Z4	4mm	4mm	14mm	51mm	4	
N46466	CB430M-040-D4-B.0-Z4	4mm	4mm	14mm	51mm	4	AlTiN
N34361	CB430M-040-D6-B.0-Z4	4mm	4mm	25mm	75mm	4	
N34362	CB430M-040-D6-B.0-Z4	4mm	4mm	25mm	75mm	4	AlTiN
N46469	CB430M-050-F3-B.0-Z4	5mm	6mm	16mm	51mm	4	
N46470	CB430M-050-F3-B.0-Z4	5mm	6mm	16mm	51mm	4	AlTiN
N47941	CB430M-060-D2-B.0-Z4	6mm	6mm	9mm	51mm	4	
N47942	CB430M-060-D2-B.0-Z4	6mm	6mm	9mm	51mm	4	AlTiN
N46471	CB430M-060-D3-B.0-Z4	6mm	6mm	19mm	51mm	4	
N46472	CB430M-060-D3-B.0-Z4	6mm	6mm	19mm	51mm	4	AlTiN
N34369	CB430M-080-D3-B.0-Z4	8mm	8mm	25mm	75mm	4	
N34370	CB430M-080-D3-B.0-Z4	8mm	8mm	25mm	75mm	4	AlTiN
N34371	CB430M-080-D4-B.0-Z4	8mm	8mm	25mm	150mm	4	
N34372	CB430M-080-D4-B.0-Z4	8mm	8mm	25mm	150mm	4	AlTiN
N46479	CB430M-100-D2-B.0-Z4	10mm	10mm	22mm	73mm	4	
N46480	CB430M-100-D2-B.0-Z4	10mm	10mm	22mm	73mm	4	AlTiN
N46483	CB430M-120-D2-B.0-Z4	12mm	12mm	25mm	74mm	4	
N46484	CB430M-120-D2-B.0-Z4	12mm	12mm	25mm	74mm	4	AlTiN

C230 / C230R / CNC230 / CD230 / CSD230

SLOTTING																
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 2$								
								1/16	1/8	1/4	3/8	1/2	5/8	3/4	1
P	E 1 - 2	0.30	1.00		400		n (rev/min)	24448	12224	6112	4075	3056	2445	2037	1528
							f_z (in)	0.0002	0.0005	0.0009	0.0014	0.0018	0.0023	0.0027	0.0036
				340	-	460	v_f (in/min)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
	E 3 - 4	0.20	1.00		200		n (rev/min)	12224	6112	3056	2037	1528	1222	1019	764
							f_z (in)	0.0001	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017	0.0022
				140	-	260	v_f (in/min)	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
	E 5 - 6	0.20	1.00		100		n (rev/min)	6112	3056	1528	1019	764	611	509	382
							f_z (in)	0.0001	0.0002	0.0005	0.0007	0.0010	0.0012	0.0014	0.0019
				40	-	160	v_f (in/min)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
M	E 8 - 9	0.50	1.00		320		n (rev/min)	19558	9779	4890	3260	2445	1956	1630	1222
							f_z (in)	0.0001	0.0002	0.0004	0.0007	0.0009	0.0011	0.0013	0.0018
				290	-	350	v_f (in/min)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
	E 10 - 11	0.30	1.00		250		n (rev/min)	15280	7640	3820	2547	1910	1528	1273	955
							f_z (in)	0.0001	0.0002	0.0004	0.0006	0.0008	0.0010	0.0012	0.0016
				220	-	280	v_f (in/min)	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
K	E 12 - 13	0.30	1.00		270		n (rev/min)	16502	8251	4126	2750	2063	1650	1375	1031
							f_z (in)	0.0003	0.0006	0.0012	0.0017	0.0023	0.0029	0.0035	0.0046
				210	-	330	v_f (in/min)	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
	E 14 - 15	0.20	1.00		145		n (rev/min)	8862	4431	2216	1477	1108	886	739	554
							f_z (in)	0.0002	0.0003	0.0007	0.0010	0.0014	0.0017	0.0020	0.0027
				85	-	205	v_f (in/min)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
N	E / M / A 16	1.00	1.00		700		n (rev/min)	42784	21392	10696	7131	5348	4278	3565	2674
							f_z (in)	0.0005	0.0009	0.0018	0.0027	0.0036	0.0045	0.0054	0.0072
				400	-	1000	v_f (in/min)	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5
	E / M / A 17	1.00	1.00		700		n (rev/min)	42784	21392	10696	7131	5348	4278	3565	2674
							f_z (in)	0.0005	0.0009	0.0018	0.0027	0.0036	0.0045	0.0054	0.0072
				400	-	1000	v_f (in/min)	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5
S	E 19	0.30	1.00		80		n (rev/min)	4890	2445	1222	815	611	489	407	306
							f_z (in)	0.0002	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				50	-	110	v_f (in/min)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	E 20	0.30	1.00		80		n (rev/min)	4890	2445	1222	815	611	489	407	306
							f_z (in)	0.0002	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				50	-	110	v_f (in/min)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	E 21	0.30	1.00		80		n (rev/min)	4890	2445	1222	815	611	489	407	306
							f_z (in)	0.0002	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				50	-	110	v_f (in/min)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	E 22	0.30	1.00		140		n (rev/min)	8557	4278	2139	1426	1070	856	713	535
							f_z (in)	0.0001	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017	0.0022
				80	-	200	v_f (in/min)	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

C230 / C230R / CNC230 / CD230 / CSD230

SIDE MILLING - ROUGHING

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 2$ 1/16	1/8	1/4	3/8	1/2	5/8	3/4	1
P	E 1 - 2	1.00	0.25		400		n (rev/min)	24448	12224	6112	4075	3056	2445	2037	1528
							f_z (in)	0.0003	0.0006	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045
				340	-	460	v_f (in/min)	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8
	E 3 - 4	1.00	0.25		200		n (rev/min)	12224	6112	3056	2037	1528	1222	1019	764
							f_z (in)	0.0002	0.0004	0.0007	0.0011	0.0014	0.0018	0.0021	0.0028
				140	-	260	v_f (in/min)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
	E 5 - 6	1.00	0.20		100		n (rev/min)	6112	3056	1528	1019	764	611	509	382
							f_z (in)	0.0002	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				40	-	160	v_f (in/min)	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
M	E 8 - 9	0.50	0.20		320		n (rev/min)	19558	9779	4890	3260	2445	1956	1630	1222
							f_z (in)	0.0001	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017	0.0022
				290	-	350	v_f (in/min)	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
	E 10 - 11	0.30	0.20		250		n (rev/min)	15280	7640	3820	2547	1910	1528	1273	955
							f_z (in)	0.0001	0.0003	0.0005	0.0008	0.0010	0.0013	0.0015	0.0020
				220	-	280	v_f (in/min)	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
K	E 12 - 13	1.00	0.25		270		n (rev/min)	16502	8251	4126	2750	2063	1650	1375	1031
							f_z (in)	0.0004	0.0007	0.0015	0.0022	0.0029	0.0036	0.0044	0.0058
				210	-	330	v_f (in/min)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
	E 14 - 15	0.50	0.25		145		n (rev/min)	8862	4431	2216	1477	1108	886	739	554
							f_z (in)	0.0002	0.0004	0.0009	0.0013	0.0017	0.0021	0.0026	0.0034
				85	-	205	v_f (in/min)	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
N	E / M / A 16	2.00	0.05		700		n (rev/min)	42784	21392	10696	7131	5348	4278	3565	2674
							f_z (in)	0.0006	0.0011	0.0023	0.0034	0.0045	0.0056	0.0068	0.0090
				400	-	1000	v_f (in/min)	48.1	48.1	48.1	48.1	48.1	48.1	48.1	48.1
	E / M / A 17	2.00	0.05		700		n (rev/min)	42784	21392	10696	7131	5348	4278	3565	2674
							f_z (in)	0.0006	0.0011	0.0023	0.0034	0.0045	0.0056	0.0068	0.0090
				400	-	1000	v_f (in/min)	48.1	48.1	48.1	48.1	48.1	48.1	48.1	48.1
S	E 19	0.20	0.05		80		n (rev/min)	4890	2445	1222	815	611	489	407	306
							f_z (in)	0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				50	-	110	v_f (in/min)	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
	E 20	0.20	0.05		80		n (rev/min)	4890	2445	1222	815	611	489	407	306
							f_z (in)	0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				50	-	110	v_f (in/min)	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
	E 21	0.20	0.05		80		n (rev/min)	4890	2445	1222	815	611	489	407	306
							f_z (in)	0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				50	-	110	v_f (in/min)	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
	E 22	0.30	0.15		140		n (rev/min)	8557	4278	2139	1426	1070	856	713	535
							f_z (in)	0.0002	0.0004	0.0007	0.0011	0.0014	0.0018	0.0021	0.0028
				80	-	200	v_f (in/min)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

CB230 / CNCB230 / CSDB230

SLOTTING															
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 2$							
								1/16	1/8	1/4	3/8	1/2	5/8	3/4	1
P	E 1 - 2	0.50	1.00		320		n (rev/min)	19558	9779	4890	3260	2445	1956	1630	1222
							f_z (in)	0.0002	0.0005	0.0009	0.0014	0.0018	0.0023	0.0027	0.0036
				260	-	380	v_f (in/min)	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
	E 3 - 4	0.40	1.00		160		n (rev/min)	9779	4890	2445	1630	1222	978	815	611
							f_z (in)	0.0001	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017	0.0022
				100	-	220	v_f (in/min)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
	E 5 - 6	0.30	1.00		80		n (rev/min)	4890	2445	1222	815	611	489	407	306
							f_z (in)	0.0001	0.0002	0.0005	0.0007	0.0010	0.0012	0.0014	0.0019
				20	-	140	v_f (in/min)	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
M	E 8 - 9	0.50	1.00		256		n (rev/min)	15647	7823	3912	2608	1956	1565	1304	978
							f_z (in)	0.0001	0.0002	0.0004	0.0007	0.0009	0.0011	0.0013	0.0018
				226	-	286	v_f (in/min)	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
	E 10 - 11	0.40	1.00		200		n (rev/min)	12224	6112	3056	2037	1528	1222	1019	764
							f_z (in)	0.0001	0.0002	0.0004	0.0006	0.0008	0.0010	0.0012	0.0016
				170	-	230	v_f (in/min)	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
K	E 12 - 13	0.50	1.00		216		n (rev/min)	13202	6601	3300	2200	1650	1320	1100	825
							f_z (in)	0.0003	0.0006	0.0012	0.0017	0.0023	0.0029	0.0035	0.0046
				156	-	276	v_f (in/min)	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7
	E 14 - 15	0.30	1.00		116		n (rev/min)	7090	3545	1772	1182	886	709	591	443
							f_z (in)	0.0002	0.0003	0.0007	0.0010	0.0014	0.0017	0.0020	0.0027
				56	-	176	v_f (in/min)	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
N	E / M / A 16	1.00	1.00		560		n (rev/min)	34227	17114	8557	5705	4278	3423	2852	2139
							f_z (in)	0.0005	0.0009	0.0018	0.0027	0.0036	0.0045	0.0054	0.0072
				260	-	860	v_f (in/min)	30.8	30.8	30.8	30.8	30.8	30.8	30.8	30.8
	E / M / A 17	1.00	1.00		560		n (rev/min)	34227	17114	8557	5705	4278	3423	2852	2139
							f_z (in)	0.0005	0.0009	0.0018	0.0027	0.0036	0.0045	0.0054	0.0072
				260	-	860	v_f (in/min)	30.8	30.8	30.8	30.8	30.8	30.8	30.8	30.8
S	E 19	0.20	1.00		70		n (rev/min)	4278	2139	1070	713	535	428	357	267
							f_z (in)	0.0002	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				40	-	100	v_f (in/min)	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
	E 20	0.20	1.00		70		n (rev/min)	4278	2139	1070	713	535	428	357	267
							f_z (in)	0.0002	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				40	-	100	v_f (in/min)	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
	E 21	0.20	1.00		70		n (rev/min)	4278	2139	1070	713	535	428	357	267
							f_z (in)	0.0002	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				40	-	100	v_f (in/min)	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
	E 22	0.30	1.00		112		n (rev/min)	6845	3423	1711	1141	856	685	570	428
							f_z (in)	0.0001	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017	0.0022
				52	-	172	v_f (in/min)	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

CB230 / CNCB230 / CSDB230

SIDE MILLING - ROUGHING

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 2$ 1/16	1/8	1/4	3/8	1/2	5/8	3/4	1
P	E 1 - 2	1.00	0.30		320		n (rev/min)	19558	9779	4890	3260	2445	1956	1630	1222
							f_z (in)	0.0003	0.0006	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045
				260	-	380	v_f (in/min)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
	E 3 - 4	1.00	0.30		160		n (rev/min)	9779	4890	2445	1630	1222	978	815	611
							f_z (in)	0.0002	0.0004	0.0007	0.0011	0.0014	0.0018	0.0021	0.0028
				100	-	220	v_f (in/min)	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
	E 5 - 6	1.00	0.20		80		n (rev/min)	4890	2445	1222	815	611	489	407	306
							f_z (in)	0.0002	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				20	-	140	v_f (in/min)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
M	E 8 - 9	0.50	0.30		256		n (rev/min)	15647	7823	3912	2608	1956	1565	1304	978
							f_z (in)	0.0001	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017	0.0022
				226	-	286	v_f (in/min)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
	E 10 - 11	0.30	0.20		200		n (rev/min)	12224	6112	3056	2037	1528	1222	1019	764
							f_z (in)	0.0001	0.0003	0.0005	0.0008	0.0010	0.0013	0.0015	0.0020
				170	-	230	v_f (in/min)	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
K	E 12 - 13	1.00	0.50		216		n (rev/min)	13202	6601	3300	2200	1650	1320	1100	825
							f_z (in)	0.0004	0.0007	0.0015	0.0022	0.0029	0.0036	0.0044	0.0058
				156	-	276	v_f (in/min)	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
	E 14 - 15	0.50	0.30		116		n (rev/min)	7090	3545	1772	1182	886	709	591	443
							f_z (in)	0.0002	0.0004	0.0009	0.0013	0.0017	0.0021	0.0026	0.0034
				56	-	176	v_f (in/min)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
N	E / M / A 16	2.00	0.50		560		n (rev/min)	34227	17114	8557	5705	4278	3423	2852	2139
							f_z (in)	0.0006	0.0011	0.0023	0.0034	0.0045	0.0056	0.0068	0.0090
				260	-	860	v_f (in/min)	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5
	E / M / A 17	2.00	0.50		560		n (rev/min)	34227	17114	8557	5705	4278	3423	2852	2139
							f_z (in)	0.0006	0.0011	0.0023	0.0034	0.0045	0.0056	0.0068	0.0090
				260	-	860	v_f (in/min)	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5
S	E 19	0.20	0.10		70		n (rev/min)	4278	2139	1070	713	535	428	357	267
							f_z (in)	0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				40	-	100	v_f (in/min)	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
	E 20	0.20	0.10		70		n (rev/min)	4278	2139	1070	713	535	428	357	267
							f_z (in)	0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				40	-	100	v_f (in/min)	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
	E 21	0.20	0.10		70		n (rev/min)	4278	2139	1070	713	535	428	357	267
							f_z (in)	0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				40	-	100	v_f (in/min)	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
	E 22	0.30	0.20		112		n (rev/min)	6845	3423	1711	1141	856	685	570	428
							f_z (in)	0.0002	0.0004	0.0007	0.0011	0.0014	0.0018	0.0021	0.0028
				52	-	172	v_f (in/min)	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

C230M

SLOTTING															
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (m / min)				$Z_n = 2$							
								1.5	3	6	10	12	16	20	25
P	E 1 - 2	0.30	1.00		122		n (min-0)	25890	12940	6470	3880	3240	2430	1940	1550
							f_z (mm)	0.005	0.011	0.022	0.036	0.043	0.058	0.072	0.090
				104	-	140	v_f (mm/min)	280	280	280	280	280	280	280	280
	E 3 - 4	0.20	1.00		61		n (min-0)	12940	6470	3240	1940	1620	1210	970	780
							f_z (mm)	0.005	0.011	0.022	0.036	0.043	0.058	0.072	0.090
				43	-	79	v_f (mm/min)	140	140	140	140	140	140	140	140
	E 5 - 6	0.20	1.00		30		n (min-0)	6370	3180	1590	950	800	600	480	380
							f_z (mm)	0.005	0.011	0.022	0.036	0.043	0.058	0.072	0.090
				12	-	49	v_f (mm/min)	70	70	70	70	70	70	70	70
M	E 8 - 9	0.50	1.00		98		n (min-0)	20800	10400	5200	3120	2600	1950	1560	1250
							f_z (mm)	0.005	0.011	0.022	0.036	0.043	0.058	0.072	0.090
				88	-	107	v_f (mm/min)	225	225	225	225	225	225	225	225
	E 10 - 11	0.30	1.00		76		n (min-0)	16130	8060	4030	2420	2020	1510	1210	970
							f_z (mm)	0.504	0.504	0.504	0.504	0.504	0.504	0.504	0.504
				67	-	85	v_f (mm/min)	16260	8125	4060	2440	2035	1520	1220	980
K	E 12 - 13	0.30	1.00		82		n (min-0)	17400	8700	4350	2610	2180	1630	1310	1040
							f_z (mm)	0.005	0.011	0.022	0.036	0.043	0.058	0.072	0.090
				64	-	101	v_f (mm/min)	190	190	190	190	190	190	190	185
	E 14 - 15	0.20	1.00		44		n (min-0)	9340	4670	2330	1400	1170	880	700	560
							f_z (mm)	0.005	0.011	0.022	0.036	0.043	0.058	0.072	0.090
				26	-	62	v_f (mm/min)	100	100	100	100	100	100	100	100
N	E / M / A 16	1.00	1.00		213		n (min-0)	45200	22600	11300	6780	5650	4240	3390	2710
							f_z (mm)	0.005	0.011	0.022	0.036	0.043	0.058	0.072	0.090
				122	-	305	v_f (mm/min)	490	490	490	490	490	490	490	490
	E / M / A 17	1.00	1.00		213		n (min-0)	45200	22600	11300	6780	5650	4240	3390	2710
							f_z (mm)	0.005	0.011	0.022	0.036	0.043	0.058	0.072	0.090
				122	-	305	v_f (mm/min)	490	490	490	490	490	490	490	490
S	E 19	0.30	1.00		24		n (min-0)	5090	2550	1270	760	640	480	380	310
							f_z (mm)	0.005	0.011	0.022	0.036	0.043	0.058	0.072	0.090
				15	-	34	v_f (mm/min)	55	55	55	55	55	55	55	55
	E 20	0.30	1.00		24		n (min-0)	5090	2550	1270	760	640	480	380	310
							f_z (mm)	0.005	0.011	0.022	0.036	0.043	0.058	0.072	0.090
				15	-	34	v_f (mm/min)	55	55	55	55	55	55	55	55
	E 21	0.30	1.00		24		n (min-0)	5090	2550	1270	760	640	480	380	310
							f_z (mm)	0.005	0.011	0.022	0.036	0.043	0.058	0.072	0.090
				15	-	34	v_f (mm/min)	55	55	55	55	55	55	55	55
	E 22	0.30	1.00		43		n (min-0)	9120	4560	2280	1370	1140	860	680	550
							f_z (mm)	0.005	0.011	0.022	0.036	0.043	0.058	0.072	0.090
				24	-	61	v_f (mm/min)	100	100	100	100	100	100	100	100

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

C230M

SIDE MILLING - ROUGHING															
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (m / min)				$Z_n = 2$							
								1.5	3	6	10	12	16	20	25
P	E 1 - 2	1.00	0.25		122		n (min-0)	25890	12940	6470	3880	3240	2430	1940	1550
							f_z (mm)	0.005	0.011	0.022	0.036	0.043	0.058	0.072	0.090
				104	-	140	v_f (mm/min)	280	280	280	280	280	280	280	280
	E 3 - 4	1.00	0.25		61		n (min-0)	12940	6470	3240	1940	1620	1210	970	780
							f_z (mm)	0.005	0.011	0.022	0.036	0.043	0.058	0.072	0.090
				43	-	79	v_f (mm/min)	140	140	140	140	140	140	140	140
	E 5 - 6	1.00	0.20		30		n (min-0)	6370	3180	1590	950	800	600	480	380
							f_z (mm)	0.005	0.011	0.022	0.036	0.043	0.058	0.072	0.090
				12	-	49	v_f (mm/min)	70	70	70	70	70	70	70	70
M	E 8 - 9	0.50	0.20		98		n (min-0)	20800	10400	5200	3120	2600	1950	1560	1250
							f_z (mm)	0.005	0.011	0.022	0.036	0.043	0.058	0.072	0.090
				88	-	107	v_f (mm/min)	225	225	225	225	225	225	225	225
	E 10 - 11	0.30	0.20		76		n (min-0)	16130	8060	4030	2420	2020	1510	1210	970
							f_z (mm)	0.005	0.011	0.022	0.036	0.043	0.058	0.072	0.090
				67	-	85	v_f (mm/min)	175	175	175	175	175	175	175	175
K	E 12 - 13	1.00	0.25		82		n (min-0)	17400	8700	4350	2610	2180	1630	1310	1040
							f_z (mm)	0.005	0.011	0.022	0.036	0.043	0.058	0.072	0.090
				64	-	101	v_f (mm/min)	190	190	190	190	190	190	190	185
	E 14 - 15	0.50	0.25		44		n (min-0)	9340	4670	2330	1400	1170	880	700	560
							f_z (mm)	0.005	0.011	0.022	0.036	0.043	0.058	0.072	0.090
				26	-	62	v_f (mm/min)	100	100	100	100	100	100	100	100
N	E / M / A 16	2.00	0.05		213		n (min-0)	45200	22600	11300	6780	5650	4240	3390	2710
							f_z (mm)	0.005	0.011	0.022	0.036	0.043	0.058	0.072	0.090
				122	-	305	v_f (mm/min)	490	490	490	490	490	490	490	490
	E / M / A 17	2.00	0.05		213		n (min-0)	45200	22600	11300	6780	5650	4240	3390	2710
							f_z (mm)	0.005	0.011	0.022	0.036	0.043	0.058	0.072	0.090
				122	-	305	v_f (mm/min)	490	490	490	490	490	490	490	490
S	E 19	0.20	0.05		24		n (min-0)	5090	2550	1270	760	640	480	380	310
							f_z (mm)	0.005	0.011	0.022	0.036	0.043	0.058	0.072	0.090
				15	-	34	v_f (mm/min)	55	55	55	55	55	55	55	55
	E 20	0.20	0.05		24		n (min-0)	5090	2550	1270	760	640	480	380	310
							f_z (mm)	0.005	0.011	0.022	0.036	0.043	0.058	0.072	0.090
				15	-	34	v_f (mm/min)	55	55	55	55	55	55	55	55
	E 21	0.20	0.05		24		n (min-0)	5090	2550	1270	760	640	480	380	310
							f_z (mm)	0.005	0.011	0.022	0.036	0.043	0.058	0.072	0.090
				15	-	34	v_f (mm/min)	55	55	55	55	55	55	55	55
	E 22	0.30	0.15		43		n (min-0)	9120	4560	2280	1370	1140	860	680	550
							f_z (mm)	0.005	0.011	0.022	0.036	0.043	0.058	0.072	0.090
				24	-	61	v_f (mm/min)	100	100	100	100	100	100	100	100

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

CB230M

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (m / min)				SLOTTING $Z_n = 2$							
								1.5	3	6	10	12	16	20	25
P	E 1 - 2	0.50	1.00		98		n (rev/min)	20800	10400	5200	3120	2600	2230	1560	1250
							f_z (mm)	0.005	0.011	0.022	0.036	0.043	0.050	0.072	0.090
				79	-	116	v_f (mm/min)	225	225	225	225	225	225	225	225
	E 3 - 4	0.40	1.00		49		n (rev/min)	10400	5200	2600	1560	1300	1110	780	620
							f_z (mm)	0.003	0.007	0.013	0.022	0.027	0.031	0.045	0.056
				30	-	67	v_f (mm/min)	70	70	70	70	70	70	70	69
	E 5 - 6	0.30	1.00		24		n (rev/min)	5090	2550	1270	760	640	550	380	310
							f_z (mm)	0.003	0.006	0.012	0.019	0.023	0.027	0.038	0.048
				6	-	43	v_f (mm/min)	29	29	29	29	29	30	29	30
M	E 8 - 9	0.50	1.00		78		n (rev/min)	16550	8280	4140	2480	2070	1770	1240	990
							f_z (mm)	0.003	0.005	0.011	0.018	0.021	0.025	0.035	0.044
				69	-	87	v_f (mm/min)	87	87	87	87	87	87	87	87
	E 10 - 11	0.40	1.00		61		n (rev/min)	12940	6470	3240	1940	1620	1390	970	780
							f_z (mm)	0.002	0.005	0.010	0.016	0.019	0.022	0.032	0.040
				52	-	70	v_f (mm/min)	62	62	62	62	62	62	62	62
K	E 12 - 13	0.50	1.00		66		n (rev/min)	14010	7000	3500	2100	1750	1500	1050	840
							f_z (mm)	0.007	0.014	0.028	0.046	0.056	0.065	0.093	0.116
				48	-	84	v_f (mm/min)	195	195	195	195	195	195	195	195
	E 14 - 15	0.30	1.00		35		n (rev/min)	7430	3710	1860	1110	930	800	560	450
							f_z (mm)	0.004	0.008	0.016	0.027	0.033	0.038	0.054	0.068
				17	-	54	v_f (mm/min)	61	61	61	60	61	61	61	61
N	E / M / A 16	1.00	1.00		171		n (rev/min)	36290	18140	9070	5440	4540	3890	2720	2180
							f_z (mm)	0.011	0.022	0.043	0.072	0.086	0.101	0.144	0.180
				79	-	262	v_f (mm/min)	784	784	784	783	785	784	783	785
	E / M / A 17	1.00	1.00		171		n (rev/min)	36290	18140	9070	5440	4540	3890	2720	2180
							f_z (mm)	0.011	0.022	0.043	0.072	0.086	0.101	0.144	0.180
				79	-	262	v_f (mm/min)	784	784	784	783	785	784	783	785
S	E 19	0.20	1.00		21		n (rev/min)	4460	2230	1110	670	560	480	330	270
							f_z (mm)	0.004	0.007	0.014	0.024	0.029	0.034	0.048	0.060
				12	-	30	v_f (mm/min)	32	32	32	32	32	32	32	32
	E 20	0.20	1.00		21		n (rev/min)	4460	2230	1110	670	560	480	330	270
							f_z (mm)	0.004	0.007	0.014	0.024	0.029	0.034	0.048	0.060
				12	-	30	v_f (mm/min)	32	32	32	32	32	32	32	32
	E 21	0.20	1.00		21		n (rev/min)	4460	2230	1110	670	560	480	330	270
							f_z (mm)	0.004	0.007	0.014	0.024	0.029	0.034	0.048	0.060
				12	-	30	v_f (mm/min)	32	32	32	32	32	32	32	32
	E 22	0.30	1.00		34		n (rev/min)	7220	3610	1800	1080	900	770	540	430
							f_z (mm)	0.003	0.007	0.013	0.022	0.027	0.031	0.045	0.056
				16	-	52	v_f (mm/min)	49	49	48	48	48	48	48	48

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

CB230M

SIDE MILLING - ROUGHING															
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (m / min)				$Z_n = 2$							
								1.5	3	6	10	12	16	20	25
P	E 1 - 2	1.00	0.30		98		n (rev/min)	20800	10400	5200	3120	2600	2230	1560	1250
							f_z (mm)	0.007	0.014	0.027	0.045	0.054	0.063	0.090	0.113
				79	-	116	v_f (mm/min)	281	281	281	281	281	281	281	281
	E 3 - 4	1.00	0.30		49		n (rev/min)	10400	5200	2600	1560	1300	1110	780	620
							f_z (mm)	0.004	0.008	0.017	0.028	0.034	0.039	0.056	0.070
				30	-	67	v_f (mm/min)	87	87	87	87	87	87	87	87
	E 5 - 6	1.00	0.20		24		n (rev/min)	5090	2550	1270	760	640	550	380	310
							f_z (mm)	0.004	0.007	0.014	0.024	0.029	0.034	0.048	0.060
				6	-	43	v_f (mm/min)	37	37	37	36	37	37	36	37
M	E 8 - 9	0.50	0.30		78		n (rev/min)	16550	8280	4140	2480	2070	1770	1240	990
							f_z (mm)	0.003	0.007	0.013	0.022	0.026	0.031	0.044	0.055
				69	-	87	v_f (mm/min)	109	109	109	109	109	109	109	109
	E 10 - 11	0.30	0.20		61		n (rev/min)	12940	6470	3240	1940	1620	1390	970	780
							f_z (mm)	0.003	0.006	0.012	0.020	0.024	0.028	0.040	0.050
				52	-	70	v_f (mm/min)	78	78	78	78	78	78	78	78
K	E 12 - 13	1.00	0.50		66		n (rev/min)	14010	7000	3500	2100	1750	1500	1050	840
							f_z (mm)	0.009	0.017	0.035	0.058	0.070	0.081	0.116	0.145
				48	-	84	v_f (mm/min)	244	244	244	244	244	244	244	244
	E 14 - 15	0.50	0.30		35		n (rev/min)	7430	3710	1860	1110	930	800	560	450
							f_z (mm)	0.005	0.010	0.020	0.034	0.041	0.048	0.068	0.085
				17	-	54	v_f (mm/min)	76	76	76	75	76	76	76	77
N	E / M / A 16	2.00	0.50		171		n (rev/min)	36290	18140	9070	5440	4540	3890	2720	2180
							f_z (mm)	0.014	0.027	0.054	0.090	0.108	0.126	0.180	0.225
				79	-	262	v_f (mm/min)	980	980	980	979	981	980	979	981
	E / M / A 17	2.00	0.50		171		n (rev/min)	36290	18140	9070	5440	4540	3890	2720	2180
							f_z (mm)	0.014	0.027	0.054	0.090	0.108	0.126	0.180	0.225
				79	-	262	v_f (mm/min)	980	980	980	979	981	980	979	981
S	E 19	0.20	0.10		21		n (rev/min)	4460	2230	1110	670	560	480	330	270
							f_z (mm)	0.005	0.009	0.018	0.030	0.036	0.042	0.060	0.075
				12	-	30	v_f (mm/min)	40	40	40	40	40	40	40	41
	E 20	0.20	0.10		21		n (rev/min)	4460	2230	1110	670	560	480	330	270
							f_z (mm)	0.005	0.009	0.018	0.030	0.036	0.042	0.060	0.075
				12	-	30	v_f (mm/min)	40	40	40	40	40	40	40	41
	E 21	0.20	0.10		21		n (rev/min)	4460	2230	1110	670	560	480	330	270
							f_z (mm)	0.005	0.009	0.018	0.030	0.036	0.042	0.060	0.075
				12	-	30	v_f (mm/min)	40	40	40	40	40	40	40	41
	E 22	0.30	0.20		34		n (rev/min)	7220	3610	1800	1080	900	770	540	430
							f_z (mm)	0.004	0.008	0.017	0.028	0.034	0.039	0.056	0.070
				16	-	52	v_f (mm/min)	61	61	60	60	60	60	60	60

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

C330

SLOTTING															
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 3$							
								1/16	1/8	1/4	3/8	1/2	5/8	3/4	1
P	E 1 - 2	0.50	1.00		400		n (rev/min)	24448	12224	6112	4075	3056	2445	2037	1528
							f_z (in)	0.0002	0.0005	0.0009	0.0014	0.0018	0.0023	0.0027	0.0036
				340	-	460	v_f (in/min)	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
	E 3 - 4	0.40	1.00		200		n (rev/min)	12224	6112	3056	2037	1528	1222	1019	764
							f_z (in)	0.0001	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017	0.0022
				140	-	260	v_f (in/min)	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
	E 5 - 6	0.30	1.00		100		n (rev/min)	6112	3056	1528	1019	764	611	509	382
							f_z (in)	0.0001	0.0002	0.0005	0.0007	0.0010	0.0012	0.0014	0.0019
				40	-	160	v_f (in/min)	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
M	E 8 - 9	0.50	1.00		320		n (rev/min)	19558	9779	4890	3260	2445	1956	1630	1222
							f_z (in)	0.0001	0.0002	0.0004	0.0007	0.0009	0.0011	0.0013	0.0018
				290	-	350	v_f (in/min)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
	E 10 - 11	0.40	1.00		290		n (rev/min)	17725	8862	4431	2954	2216	1772	1477	1108
							f_z (in)	0.0001	0.0002	0.0004	0.0006	0.0008	0.0010	0.0012	0.0016
				260	-	320	v_f (in/min)	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
K	E 12 - 13	0.50	1.00		270		n (rev/min)	16502	8251	4126	2750	2063	1650	1375	1031
							f_z (in)	0.0003	0.0006	0.0012	0.0017	0.0023	0.0029	0.0035	0.0046
				210	-	330	v_f (in/min)	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4
	E 14 - 15	0.30	1.00		145		n (rev/min)	8862	4431	2216	1477	1108	886	739	554
							f_z (in)	0.0002	0.0003	0.0007	0.0010	0.0014	0.0017	0.0020	0.0027
				85	-	205	v_f (in/min)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
N	E / M / A 16	1.00	1.00		700		n (rev/min)	42784	21392	10696	7131	5348	4278	3565	2674
							f_z (in)	0.0005	0.0009	0.0018	0.0027	0.0036	0.0045	0.0054	0.0072
				400	-	1000	v_f (in/min)	57.8	57.8	57.8	57.8	57.8	57.8	57.8	57.8
	E / M / A 17	1.00	1.00		700		n (rev/min)	42784	21392	10696	7131	5348	4278	3565	2674
							f_z (in)	0.0005	0.0009	0.0018	0.0027	0.0036	0.0045	0.0054	0.0072
				400	-	1000	v_f (in/min)	57.8	57.8	57.8	57.8	57.8	57.8	57.8	57.8
S	E 19	0.20	1.00		80		n (rev/min)	4890	2445	1222	815	611	489	407	306
							f_z (in)	0.0002	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				50	-	110	v_f (in/min)	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
	E 20	0.20	1.00		80		n (rev/min)	4890	2445	1222	815	611	489	407	306
							f_z (in)	0.0002	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				50	-	110	v_f (in/min)	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
	E 21	0.20	1.00		80		n (rev/min)	4890	2445	1222	815	611	489	407	306
							f_z (in)	0.0002	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				50	-	110	v_f (in/min)	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
	E 22	0.30	1.00		130		n (rev/min)	7946	3973	1986	1324	993	795	662	497
							f_z (in)	0.0001	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017	0.0022
				70	-	190	v_f (in/min)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

C330

SIDE MILLING - ROUGHING															
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 3$							
								1/16	1/8	1/4	3/8	1/2	5/8	3/4	1
P	E 1 - 2	1.00	0.30		400		n (rev/min)	24448	12224	6112	4075	3056	2445	2037	1528
							f_z (in)	0.0003	0.0006	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045
				340	-	460	v_f (in/min)	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6
	E 3 - 4	1.00	0.30		200		n (rev/min)	12224	6112	3056	2037	1528	1222	1019	764
							f_z (in)	0.0002	0.0004	0.0007	0.0011	0.0014	0.0018	0.0021	0.0028
				140	-	260	v_f (in/min)	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
	E 5 - 6	1.00	0.20		100		n (rev/min)	6112	3056	1528	1019	764	611	509	382
							f_z (in)	0.0002	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				40	-	160	v_f (in/min)	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
M	E 8 - 9	0.50	0.30		320		n (rev/min)	19558	9779	4890	3260	2445	1956	1630	1222
							f_z (in)	0.0001	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017	0.0022
				290	-	350	v_f (in/min)	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1
	E 10 - 11	0.30	0.20		290		n (rev/min)	17725	8862	4431	2954	2216	1772	1477	1108
							f_z (in)	0.0001	0.0003	0.0005	0.0008	0.0010	0.0013	0.0015	0.0020
				260	-	320	v_f (in/min)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
K	E 12 - 13	1.00	0.50		270		n (rev/min)	16502	8251	4126	2750	2063	1650	1375	1031
							f_z (in)	0.0004	0.0007	0.0015	0.0022	0.0029	0.0036	0.0044	0.0058
				210	-	330	v_f (in/min)	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9
	E 14 - 15	0.50	0.30		145		n (rev/min)	8862	4431	2216	1477	1108	886	739	554
							f_z (in)	0.0002	0.0004	0.0009	0.0013	0.0017	0.0021	0.0026	0.0034
				85	-	205	v_f (in/min)	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
N	E / M / A 16	2.00	0.50		700		n (rev/min)	42784	21392	10696	7131	5348	4278	3565	2674
							f_z (in)	0.0006	0.0011	0.0023	0.0034	0.0045	0.0056	0.0068	0.0090
				400	-	1000	v_f (in/min)	72.2	72.2	72.2	72.2	72.2	72.2	72.2	72.2
	E / M / A 17	2.00	0.50		700		n (rev/min)	42784	21392	10696	7131	5348	4278	3565	2674
							f_z (in)	0.0006	0.0011	0.0023	0.0034	0.0045	0.0056	0.0068	0.0090
				400	-	1000	v_f (in/min)	72.2	72.2	72.2	72.2	72.2	72.2	72.2	72.2
S	E 19	0.20	0.10		80		n (rev/min)	4890	2445	1222	815	611	489	407	306
							f_z (in)	0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				50	-	110	v_f (in/min)	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
	E 20	0.20	0.10		80		n (rev/min)	4890	2445	1222	815	611	489	407	306
							f_z (in)	0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				50	-	110	v_f (in/min)	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
	E 21	0.20	0.10		80		n (rev/min)	4890	2445	1222	815	611	489	407	306
							f_z (in)	0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				50	-	110	v_f (in/min)	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
	E 22	0.30	0.20		130		n (rev/min)	7946	3973	1986	1324	993	795	662	497
							f_z (in)	0.0002	0.0004	0.0007	0.0011	0.0014	0.0018	0.0021	0.0028
				70	-	190	v_f (in/min)	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

CB330

SLOTTING															
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 3$							
								1/16	1/8	1/4	3/8	1/2	5/8	3/4	1
P	E 1 - 2	0.30	1.00		320		n (rev/min)	19558	9779	4890	3260	2445	1956	1630	1222
							f_z (in)	0.0002	0.0005	0.0009	0.0014	0.0018	0.0023	0.0027	0.0036
				260	-	380	v_f (in/min)	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2
	E 3 - 4	0.20	1.00		150		n (rev/min)	9168	4584	2292	1528	1146	917	764	573
							f_z (in)	0.0001	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017	0.0022
				90	-	210	v_f (in/min)	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
	E 5 - 6	0.20	1.00		80		n (rev/min)	4890	2445	1222	815	611	489	407	306
							f_z (in)	0.0001	0.0002	0.0005	0.0007	0.0010	0.0012	0.0014	0.0019
				20	-	140	v_f (in/min)	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
M	E 8 - 9	0.60	1.00		240		n (rev/min)	14669	7334	3667	2445	1834	1467	1222	917
							f_z (in)	0.0001	0.0002	0.0004	0.0007	0.0009	0.0011	0.0013	0.0018
				210	-	270	v_f (in/min)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
	E 10 - 11	0.30	1.00		200		n (rev/min)	12224	6112	3056	2037	1528	1222	1019	764
							f_z (in)	0.0001	0.0002	0.0004	0.0006	0.0008	0.0010	0.0012	0.0016
				170	-	230	v_f (in/min)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
K	E 12 - 13	0.40	1.00		200		n (rev/min)	12224	6112	3056	2037	1528	1222	1019	764
							f_z (in)	0.0003	0.0006	0.0012	0.0017	0.0023	0.0029	0.0035	0.0046
				140	-	260	v_f (in/min)	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6
	E 14 - 15	0.20	1.00		120		n (rev/min)	7334	3667	1834	1222	917	733	611	458
							f_z (in)	0.0002	0.0003	0.0007	0.0010	0.0014	0.0017	0.0020	0.0027
				60	-	180	v_f (in/min)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
N	E / M / A 16	0.20	1.00		400		n (rev/min)	24448	12224	6112	4075	3056	2445	2037	1528
							f_z (in)	0.0005	0.0009	0.0018	0.0027	0.0036	0.0045	0.0054	0.0072
				100	-	700	v_f (in/min)	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
	E / M / A 17	0.20	1.00		400		n (rev/min)	24448	12224	6112	4075	3056	2445	2037	1528
							f_z (in)	0.0005	0.0009	0.0018	0.0027	0.0036	0.0045	0.0054	0.0072
				100	-	700	v_f (in/min)	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
S	E 19	0.10	1.00		60		n (rev/min)	3667	1834	917	611	458	367	306	229
							f_z (in)	0.0002	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				30	-	90	v_f (in/min)	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
	E 20	0.10	1.00		60		n (rev/min)	3667	1834	917	611	458	367	306	229
							f_z (in)	0.0002	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				30	-	90	v_f (in/min)	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
	E 21	0.10	1.00		60		n (rev/min)	3667	1834	917	611	458	367	306	229
							f_z (in)	0.0002	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				30	-	90	v_f (in/min)	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
	E 22	0.10	1.00		100		n (rev/min)	6112	3056	1528	1019	764	611	509	382
							f_z (in)	0.0001	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017	0.0022
				40	-	160	v_f (in/min)	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

CB330

SIDE MILLING - ROUGHING															
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 3$							
								1/16	1/8	1/4	3/8	1/2	5/8	3/4	1
P	E 1 - 2	1.00	0.30		320		n (rev/min)	19558	9779	4890	3260	2445	1956	1630	1222
							f_z (in)	0.0003	0.0006	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045
				260	-	380	v_f (in/min)	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
	E 3 - 4	1.00	0.30		150		n (rev/min)	9168	4584	2292	1528	1146	917	764	573
							f_z (in)	0.0002	0.0004	0.0007	0.0011	0.0014	0.0018	0.0021	0.0028
				90	-	210	v_f (in/min)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
	E 5 - 6	1.00	0.20		80		n (rev/min)	4890	2445	1222	815	611	489	407	306
							f_z (in)	0.0002	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				20	-	140	v_f (in/min)	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
M	E 8 - 9	1.00	0.30		240		n (rev/min)	14669	7334	3667	2445	1834	1467	1222	917
							f_z (in)	0.0001	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017	0.0022
				210	-	270	v_f (in/min)	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
	E 10 - 11	1.00	0.20		200		n (rev/min)	12224	6112	3056	2037	1528	1222	1019	764
							f_z (in)	0.0001	0.0003	0.0005	0.0008	0.0010	0.0013	0.0015	0.0020
				170	-	230	v_f (in/min)	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
K	E 12 - 13	1.00	0.40		200		n (rev/min)	12224	6112	3056	2037	1528	1222	1019	764
							f_z (in)	0.0004	0.0007	0.0015	0.0022	0.0029	0.0036	0.0044	0.0058
				140	-	260	v_f (in/min)	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3
	E 14 - 15	1.00	0.20		120		n (rev/min)	7334	3667	1834	1222	917	733	611	458
							f_z (in)	0.0002	0.0004	0.0009	0.0013	0.0017	0.0021	0.0026	0.0034
				60	-	180	v_f (in/min)	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
N	E / M / A 16	2.00	0.70		400		n (rev/min)	24448	12224	6112	4075	3056	2445	2037	1528
							f_z (in)	0.0006	0.0011	0.0023	0.0034	0.0045	0.0056	0.0068	0.0090
				100	-	700	v_f (in/min)	41.3	41.3	41.3	41.3	41.3	41.3	41.3	41.3
	E / M / A 17	2.00	0.70		400		n (rev/min)	24448	12224	6112	4075	3056	2445	2037	1528
							f_z (in)	0.0006	0.0011	0.0023	0.0034	0.0045	0.0056	0.0068	0.0090
				100	-	700	v_f (in/min)	41.3	41.3	41.3	41.3	41.3	41.3	41.3	41.3
S	E 19	0.50	0.30		60		n (rev/min)	3667	1834	917	611	458	367	306	229
							f_z (in)	0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				30	-	90	v_f (in/min)	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
	E 20	0.50	0.30		60		n (rev/min)	3667	1834	917	611	458	367	306	229
							f_z (in)	0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				30	-	90	v_f (in/min)	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
	E 21	0.50	0.30		60		n (rev/min)	3667	1834	917	611	458	367	306	229
							f_z (in)	0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				30	-	90	v_f (in/min)	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
	E 22	0.50	0.20		100		n (rev/min)	6112	3056	1528	1019	764	611	509	382
							f_z (in)	0.0002	0.0004	0.0007	0.0011	0.0014	0.0018	0.0021	0.0028
				40	-	160	v_f (in/min)	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

C360

SIDE MILLING - ROUGHING															
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 3$							
								1/16	1/8	1/4	3/8	1/2	5/8	3/4	1
P	E 1 - 2	1.00	0.15		400		n (rev/min)	24448	12224	6112	4075	3056	2445	2037	1528
							f_z (in)	0.0003	0.0006	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045
				340	-	460	v_f (in/min)	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6
	E 3 - 4	1.00	0.15		200		n (rev/min)	12224	6112	3056	2037	1528	1222	1019	764
							f_z (in)	0.0002	0.0004	0.0007	0.0011	0.0014	0.0018	0.0021	0.0028
				140	-	260	v_f (in/min)	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
	E 5 - 6	1.00	0.15		100		n (rev/min)	6112	3056	1528	1019	764	611	509	382
							f_z (in)	0.0002	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				40	-	160	v_f (in/min)	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
M	E 8 - 9	0.50	0.15		320		n (rev/min)	19558	9779	4890	3260	2445	1956	1630	1222
							f_z (in)	0.0001	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017	0.0022
				290	-	350	v_f (in/min)	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1
	E 10 - 11	0.30	0.15		290		n (rev/min)	17725	8862	4431	2954	2216	1772	1477	1108
							f_z (in)	0.0001	0.0003	0.0005	0.0008	0.0010	0.0013	0.0015	0.0020
				260	-	320	v_f (in/min)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
K	E 12 - 13	1.00	0.15		270		n (rev/min)	16502	8251	4126	2750	2063	1650	1375	1031
							f_z (in)	0.0004	0.0007	0.0015	0.0022	0.0029	0.0036	0.0044	0.0058
				210	-	330	v_f (in/min)	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9
	E 14 - 15	0.50	0.15		145		n (rev/min)	8862	4431	2216	1477	1108	886	739	554
							f_z (in)	0.0002	0.0004	0.0009	0.0013	0.0017	0.0021	0.0026	0.0034
				85	-	205	v_f (in/min)	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
N	E / M / A 16	2.00	0.15		700		n (rev/min)	42784	21392	10696	7131	5348	4278	3565	2674
							f_z (in)	0.0006	0.0011	0.0023	0.0034	0.0045	0.0056	0.0068	0.0090
				400	-	1000	v_f (in/min)	72.2	72.2	72.2	72.2	72.2	72.2	72.2	72.2
	E / M / A 17	2.00	0.15		700		n (rev/min)	42784	21392	10696	7131	5348	4278	3565	2674
							f_z (in)	0.0006	0.0011	0.0023	0.0034	0.0045	0.0056	0.0068	0.0090
				400	-	1000	v_f (in/min)	72.2	72.2	72.2	72.2	72.2	72.2	72.2	72.2
S	E 19	0.20	0.15		80		n (rev/min)	4890	2445	1222	815	611	489	407	306
							f_z (in)	0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				50	-	110	v_f (in/min)	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
	E 20	0.20	0.15		80		n (rev/min)	4890	2445	1222	815	611	489	407	306
							f_z (in)	0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				50	-	110	v_f (in/min)	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
	E 21	0.20	0.15		80		n (rev/min)	4890	2445	1222	815	611	489	407	306
							f_z (in)	0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				50	-	110	v_f (in/min)	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
	E 22	0.30	0.15		130		n (rev/min)	7946	3973	1986	1324	993	795	662	497
							f_z (in)	0.0002	0.0004	0.0007	0.0011	0.0014	0.0018	0.0021	0.0028
				70	-	190	v_f (in/min)	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

C330M

SLOTTING															
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (m / min)				$Z_n = 3$							
								1.5	3	6	10	12	16	20	25
P	E 1 - 2	0.50	1.00		122		n (rev/min)	25890	12940	6470	3880	3240	2430	1940	1550
							f_z (mm)	0.0054	0.0108	0.0216	0.0360	0.0432	0.0576	0.0720	0.0900
				104	-	140	v_f (mm/min)	419.4	419.3	419.3	419.0	419.9	419.9	419.0	418.5
	E 3 - 4	0.40	1.00		61		n (rev/min)	12940	6470	3240	1940	1620	1210	970	780
							f_z (mm)	0.0034	0.0067	0.0134	0.0224	0.0269	0.0358	0.0448	0.0560
				43	-	79	v_f (mm/min)	130.4	130.4	130.6	130.4	130.6	130.1	130.4	131.0
	E 5 - 6	0.30	1.00		30		n (rev/min)	6370	3180	1590	950	800	600	480	380
							f_z (mm)	0.0029	0.0058	0.0115	0.0192	0.0230	0.0307	0.0384	0.0480
				12	-	49	v_f (mm/min)	55.0	55.0	55.0	54.7	55.3	55.3	55.3	54.7
M	E 8 - 9	0.50	1.00		98		n (rev/min)	20800	10400	5200	3120	2600	1950	1560	1250
							f_z (mm)	0.0026	0.0053	0.0106	0.0176	0.0211	0.0282	0.0352	0.0440
				88	-	107	v_f (mm/min)	164.7	164.7	164.7	164.7	164.7	164.7	164.7	165.0
	E 10 - 11	0.40	1.00		88		n (rev/min)	18670	9340	4670	2800	2330	1750	1400	1120
							f_z (mm)	0.0024	0.0048	0.0096	0.0160	0.0192	0.0256	0.0320	0.0400
				79	-	98	v_f (mm/min)	134.4	134.5	134.5	134.4	134.2	134.4	134.4	134.4
K	E 12 - 13	0.50	1.00		82		n (rev/min)	17400	8700	4350	2610	2180	1630	1310	1040
							f_z (mm)	0.0070	0.0139	0.0278	0.0464	0.0557	0.0742	0.0928	0.1160
				64	-	101	v_f (mm/min)	363.3	363.3	363.3	363.3	364.1	363.0	364.7	361.9
	E 14 - 15	0.30	1.00		44		n (rev/min)	9340	4670	2330	1400	1170	880	700	560
							f_z (mm)	0.0041	0.0082	0.0163	0.0272	0.0326	0.0435	0.0544	0.0680
				26	-	62	v_f (mm/min)	114.3	114.3	114.1	114.2	114.6	114.9	114.2	114.2
N	E / M / A 16	1.00	1.00		213		n (rev/min)	45200	22600	11300	6780	5650	4240	3390	2710
							f_z (mm)	0.0108	0.0216	0.0432	0.0720	0.0864	0.1152	0.1440	0.1800
				122	-	305	v_f (mm/min)	1464.5	1464.5	1464.5	1464.5	1464.5	1465.3	1464.5	1463.4
	E / M / A 17	1.00	1.00		213		n (rev/min)	45200	22600	11300	6780	5650	4240	3390	2710
							f_z (mm)	0.0108	0.0216	0.0432	0.0720	0.0864	0.1152	0.1440	0.1800
				122	-	305	v_f (mm/min)	1464.5	1464.5	1464.5	1464.5	1464.5	1465.3	1464.5	1463.4
S	E 19	0.20	1.00		24		n (rev/min)	5090	2550	1270	760	640	480	380	310
							f_z (mm)	0.0036	0.0072	0.0144	0.0240	0.0288	0.0384	0.0480	0.0600
				15	-	34	v_f (mm/min)	55.0	55.1	54.9	54.7	55.3	55.3	54.7	55.8
	E 20	0.20	1.00		24		n (rev/min)	5090	2550	1270	760	640	480	380	310
							f_z (mm)	0.0036	0.0072	0.0144	0.0240	0.0288	0.0384	0.0480	0.0600
				15	-	34	v_f (mm/min)	55.0	55.1	54.9	54.7	55.3	55.3	54.7	55.8
	E 21	0.20	1.00		24		n (rev/min)	5090	2550	1270	760	640	480	380	310
							f_z (mm)	0.0036	0.0072	0.0144	0.0240	0.0288	0.0384	0.0480	0.0600
				15	-	34	v_f (mm/min)	55.0	55.1	54.9	54.7	55.3	55.3	54.7	55.8
	E 22	0.30	1.00		40		n (rev/min)	8490	4240	2120	1270	1060	800	640	510
							f_z (mm)	0.0034	0.0067	0.0134	0.0224	0.0269	0.0358	0.0448	0.0560
				21	-	58	v_f (mm/min)	85.6	85.5	85.5	85.3	85.5	86.0	86.0	85.7

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

C330M

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (m / min)				$Z_n = 3$							
								1.5	3	6	10	12	16	20	25
							SIDE MILLING - ROUGHING								
P	E 1 - 2	1.00	0.30		122		n (rev/min)	25890	12940	6470	3880	3240	2430	1940	1550
							f_z (mm)	0.0068	0.0135	0.0270	0.0450	0.0540	0.0720	0.0900	0.1125
				104	-	140	v_f (mm/min)	524.3	524.1	524.1	523.8	524.9	524.9	523.8	523.1
	E 3 - 4	1.00	0.30		61		n (rev/min)	12940	6470	3240	1940	1620	1210	970	780
							f_z (mm)	0.0042	0.0084	0.0168	0.0280	0.0336	0.0448	0.0560	0.0700
				43	-	79	v_f (mm/min)	163.0	163.0	163.3	163.0	163.3	162.6	163.0	163.8
	E 5 - 6	1.00	0.20		30		n (rev/min)	6370	3180	1590	950	800	600	480	380
							f_z (mm)	0.0036	0.0072	0.0144	0.0240	0.0288	0.0384	0.0480	0.0600
				12	-	49	v_f (mm/min)	68.8	68.7	68.7	68.4	69.1	69.1	69.1	68.4
M	E 8 - 9	0.50	0.30		98		n (rev/min)	20800	10400	5200	3120	2600	1950	1560	1250
							f_z (mm)	0.0033	0.0066	0.0132	0.0220	0.0264	0.0352	0.0440	0.0550
				88	-	107	v_f (mm/min)	205.9	205.9	205.9	205.9	205.9	205.9	205.9	206.3
	E 10 - 11	0.30	0.20		88		n (rev/min)	18670	9340	4670	2800	2330	1750	1400	1120
							f_z (mm)	0.0030	0.0060	0.0120	0.0200	0.0240	0.0320	0.0400	0.0500
				79	-	98	v_f (mm/min)	168.0	168.1	168.1	168.0	167.8	168.0	168.0	168.0
K	E 12 - 13	1.00	0.50		82		n (rev/min)	17400	8700	4350	2610	2180	1630	1310	1040
							f_z (mm)	0.0087	0.0174	0.0348	0.0580	0.0696	0.0928	0.1160	0.1450
				64	-	101	v_f (mm/min)	454.1	454.1	454.1	454.1	455.2	453.8	455.9	452.4
	E 14 - 15	0.50	0.30		44		n (rev/min)	9340	4670	2330	1400	1170	880	700	560
							f_z (mm)	0.0051	0.0102	0.0204	0.0340	0.0408	0.0544	0.0680	0.0850
				26	-	62	v_f (mm/min)	142.9	142.9	142.6	142.8	143.2	143.6	142.8	142.8
N	E / M / A 16	2.00	0.50		213		n (rev/min)	45200	22600	11300	6780	5650	4240	3390	2710
							f_z (mm)	0.0135	0.0270	0.0540	0.0900	0.1080	0.1440	0.1800	0.2250
				122	-	305	v_f (mm/min)	1830.6	1830.6	1830.6	1830.6	1830.6	1831.7	1830.6	1829.3
	E / M / A 17	2.00	0.50		213		n (rev/min)	45200	22600	11300	6780	5650	4240	3390	2710
							f_z (mm)	0.0135	0.0270	0.0540	0.0900	0.1080	0.1440	0.1800	0.2250
				122	-	305	v_f (mm/min)	1830.6	1830.6	1830.6	1830.6	1830.6	1831.7	1830.6	1829.3
S	E 19	0.20	0.10		24		n (rev/min)	5090	2550	1270	760	640	480	380	310
							f_z (mm)	0.0045	0.0090	0.0180	0.0300	0.0360	0.0480	0.0600	0.0750
				15	-	34	v_f (mm/min)	68.7	68.9	68.6	68.4	69.1	69.1	68.4	69.8
	E 20	0.20	0.10		24		n (rev/min)	5090	2550	1270	760	640	480	380	310
							f_z (mm)	0.0045	0.0090	0.0180	0.0300	0.0360	0.0480	0.0600	0.0750
				15	-	34	v_f (mm/min)	68.7	68.9	68.6	68.4	69.1	69.1	68.4	69.8
	E 21	0.20	0.10		24		n (rev/min)	5090	2550	1270	760	640	480	380	310
							f_z (mm)	0.0045	0.0090	0.0180	0.0300	0.0360	0.0480	0.0600	0.0750
				15	-	34	v_f (mm/min)	68.7	68.9	68.6	68.4	69.1	69.1	68.4	69.8
	E 22	0.30	0.20		40		n (rev/min)	8490	4240	2120	1270	1060	800	640	510
							f_z (mm)	0.0042	0.0084	0.0168	0.0280	0.0336	0.0448	0.0560	0.0700
				21	-	58	v_f (mm/min)	107.0	106.8	106.8	106.7	106.8	107.5	107.5	107.1

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

C430 / C430R / CNC430 / CD430 / CSD430

SLOTTING															
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 4$							
								1/16	1/8	1/4	3/8	1/2	5/8	3/4	1
P	E 1 - 2	0.50	1.00		400		n (rev/min)	24448	12224	6112	4075	3056	2445	2037	1528
							f_z (in)	0.0002	0.0005	0.0009	0.0014	0.0018	0.0023	0.0027	0.0036
				340	-	460	v_f (in/min)	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
	E 3 - 4	0.40	1.00		200		n (rev/min)	12224	6112	3056	2037	1528	1222	1019	764
							f_z (in)	0.0001	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017	0.0022
				140	-	260	v_f (in/min)	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
	E 5 - 6	0.30	1.00		100		n (rev/min)	6112	3056	1528	1019	764	611	509	382
							f_z (in)	0.0001	0.0002	0.0005	0.0007	0.0010	0.0012	0.0014	0.0019
				40	-	160	v_f (in/min)	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
M	E 8 - 9	0.50	1.00		320		n (rev/min)	19558	9779	4890	3260	2445	1956	1630	1222
							f_z (in)	0.0001	0.0002	0.0004	0.0007	0.0009	0.0011	0.0013	0.0018
				290	-	350	v_f (in/min)	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6
	E 10 - 11	0.40	1.00		250		n (rev/min)	15280	7640	3820	2547	1910	1528	1273	955
							f_z (in)	0.0001	0.0002	0.0004	0.0006	0.0008	0.0010	0.0012	0.0016
				220	-	280	v_f (in/min)	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
K	E 12 - 13	0.50	1.00		270		n (rev/min)	16502	8251	4126	2750	2063	1650	1375	1031
							f_z (in)	0.0003	0.0006	0.0012	0.0017	0.0023	0.0029	0.0035	0.0046
				210	-	330	v_f (in/min)	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1
	E 14 - 15	0.30	1.00		145		n (rev/min)	8862	4431	2216	1477	1108	886	739	554
							f_z (in)	0.0002	0.0003	0.0007	0.0010	0.0014	0.0017	0.0020	0.0027
				85	-	205	v_f (in/min)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
S	E 19	0.20	1.00		70		n (rev/min)	4278	2139	1070	713	535	428	357	267
							f_z (in)	0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				40	-	100	v_f (in/min)	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
	E 20	0.20	1.00		70		n (rev/min)	4278	2139	1070	713	535	428	357	267
							f_z (in)	0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				40	-	100	v_f (in/min)	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
	E 21	0.20	1.00		70		n (rev/min)	4278	2139	1070	713	535	428	357	267
							f_z (in)	0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				40	-	100	v_f (in/min)	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
	E 22	0.20	1.00		112		n (rev/min)	6845	3423	1711	1141	856	685	570	428
							f_z (in)	0.0002	0.0004	0.0007	0.0011	0.0014	0.0018	0.0021	0.0028
				52	-	172	v_f (in/min)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

C430 / C430R / CNC430 / CD430 / CSD430

SIDE MILLING - ROUGHING															
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 4$							
								1/16	1/8	1/4	3/8	1/2	5/8	3/4	1
P	E 1 - 2	1.00	0.30		400		n (rev/min)	24448	12224	6112	4075	3056	2445	2037	1528
							f_z (in)	0.0003	0.0006	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045
				340	-	460	v_f (in/min)	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
	E 3 - 4	1.00	0.30		200		n (rev/min)	12224	6112	3056	2037	1528	1222	1019	764
							f_z (in)	0.0002	0.0004	0.0007	0.0011	0.0014	0.0018	0.0021	0.0028
				140	-	260	v_f (in/min)	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6
	E 5 - 6	1.00	0.20		100		n (rev/min)	6112	3056	1528	1019	764	611	509	382
							f_z (in)	0.0002	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				40	-	160	v_f (in/min)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
M	E 8 - 9	0.50	0.30		320		n (rev/min)	19558	9779	4890	3260	2445	1956	1630	1222
							f_z (in)	0.0001	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017	0.0022
				290	-	350	v_f (in/min)	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8
	E 10 - 11	0.30	0.20		250		n (rev/min)	15280	7640	3820	2547	1910	1528	1273	955
							f_z (in)	0.0001	0.0003	0.0005	0.0008	0.0010	0.0013	0.0015	0.0020
				220	-	280	v_f (in/min)	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
K	E 12 - 13	1.00	0.50		270		n (rev/min)	16502	8251	4126	2750	2063	1650	1375	1031
							f_z (in)	0.0004	0.0007	0.0015	0.0022	0.0029	0.0036	0.0044	0.0058
				210	-	330	v_f (in/min)	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.9
	E 14 - 15	0.50	0.30		145		n (rev/min)	8862	4431	2216	1477	1108	886	739	554
							f_z (in)	0.0002	0.0004	0.0009	0.0013	0.0017	0.0021	0.0026	0.0034
				85	-	205	v_f (in/min)	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
S	E 19	0.20	0.10		120		n (rev/min)	7334	3667	1834	1222	917	733	611	458
							f_z (in)	0.0002	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				90	-	150	v_f (in/min)	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
	E 20	0.20	0.10		120		n (rev/min)	7334	3667	1834	1222	917	733	611	458
							f_z (in)	0.0002	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				90	-	150	v_f (in/min)	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
	E 21	0.20	0.10		120		n (rev/min)	7334	3667	1834	1222	917	733	611	458
							f_z (in)	0.0002	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				90	-	150	v_f (in/min)	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
	E 22	0.30	0.20		80		n (rev/min)	4890	2445	1222	815	611	489	407	306
							f_z (in)	0.0001	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017	0.0022
				20	-	140	v_f (in/min)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

CB430 / CNCB430 / CSDB430

SLOTTING															
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 4$							
								1/16	1/8	1/4	3/8	1/2	5/8	3/4	1
P	E 1 - 2	0.50	1.00		320		n (rev/min)	19558	9779	4890	3260	2445	1956	1630	1222
							f_z (in)	0.0002	0.0005	0.0009	0.0014	0.0018	0.0023	0.0027	0.0036
				260	-	380	v_f (in/min)	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6
	E 3 - 4	0.40	1.00		160		n (rev/min)	9779	4890	2445	1630	1222	978	815	611
							f_z (in)	0.0001	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017	0.0022
				100	-	220	v_f (in/min)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
	E 5 - 6	0.30	1.00		80		n (rev/min)	4890	2445	1222	815	611	489	407	306
							f_z (in)	0.0001	0.0002	0.0005	0.0007	0.0010	0.0012	0.0014	0.0019
				20	-	140	v_f (in/min)	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
M	E 8 - 9	0.50	1.00		256		n (rev/min)	15647	7823	3912	2608	1956	1565	1304	978
							f_z (in)	0.0001	0.0002	0.0004	0.0007	0.0009	0.0011	0.0013	0.0018
				226	-	286	v_f (in/min)	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
	E 10 - 11	0.40	1.00		200		n (rev/min)	12224	6112	3056	2037	1528	1222	1019	764
							f_z (in)	0.0001	0.0002	0.0004	0.0006	0.0008	0.0010	0.0012	0.0016
				170	-	230	v_f (in/min)	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
K	E 12 - 13	0.50	1.00		216		n (rev/min)	13202	6601	3300	2200	1650	1320	1100	825
							f_z (in)	0.0003	0.0006	0.0012	0.0017	0.0023	0.0029	0.0035	0.0046
				156	-	276	v_f (in/min)	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3
	E 14 - 15	0.30	1.00		116		n (rev/min)	7090	3545	1772	1182	886	709	591	443
							f_z (in)	0.0002	0.0003	0.0007	0.0010	0.0014	0.0017	0.0020	0.0027
				56	-	176	v_f (in/min)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
S	E 19	0.10	1.00		70		n (rev/min)	4278	2139	1070	713	535	428	357	267
							f_z (in)	0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				40	-	100	v_f (in/min)	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
	E 20	0.10	1.00		70		n (rev/min)	4278	2139	1070	713	535	428	357	267
							f_z (in)	0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				40	-	100	v_f (in/min)	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
	E 21	0.10	1.00		70		n (rev/min)	4278	2139	1070	713	535	428	357	267
							f_z (in)	0.0002	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				40	-	100	v_f (in/min)	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
	E 22	0.20	1.00		112		n (rev/min)	6845	3423	1711	1141	856	685	570	428
							f_z (in)	0.0002	0.0004	0.0007	0.0011	0.0014	0.0018	0.0021	0.0028
				52	-	172	v_f (in/min)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

CB430 / CNCB430 / CSDB430

SIDE MILLING - ROUGHING															
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 4$							
								1/16	1/8	1/4	3/8	1/2	5/8	3/4	1
P	E 1 - 2	1.00	0.30		320		n (rev/min)	19558	9779	4890	3260	2445	1956	1630	1222
							f_z (in)	0.0003	0.0006	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045
				260	-	380	v_f (in/min)	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
	E 3 - 4	1.00	0.30		160		n (rev/min)	9779	4890	2445	1630	1222	978	815	611
							f_z (in)	0.0002	0.0004	0.0007	0.0011	0.0014	0.0018	0.0021	0.0028
				100	-	220	v_f (in/min)	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
	E 5 - 6	1.00	0.20		80		n (rev/min)	4890	2445	1222	815	611	489	407	306
							f_z (in)	0.0002	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				20	-	140	v_f (in/min)	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
M	E 8 - 9	0.50	0.30		256		n (rev/min)	15647	7823	3912	2608	1956	1565	1304	978
							f_z (in)	0.0001	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017	0.0022
				226	-	286	v_f (in/min)	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6
	E 10 - 11	0.30	0.20		200		n (rev/min)	12224	6112	3056	2037	1528	1222	1019	764
							f_z (in)	0.0001	0.0003	0.0005	0.0008	0.0010	0.0013	0.0015	0.0020
				170	-	230	v_f (in/min)	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
K	E 12 - 13	1.00	0.50		216		n (rev/min)	13202	6601	3300	2200	1650	1320	1100	825
							f_z (in)	0.0004	0.0007	0.0015	0.0022	0.0029	0.0036	0.0044	0.0058
				156	-	276	v_f (in/min)	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1
	E 14 - 15	0.50	0.30		116		n (rev/min)	7090	3545	1772	1182	886	709	591	443
							f_z (in)	0.0002	0.0004	0.0009	0.0013	0.0017	0.0021	0.0026	0.0034
				56	-	176	v_f (in/min)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
S	E 19	0.30	0.10		70		n (rev/min)	4278	2139	1070	713	535	428	357	267
							f_z (in)	0.0002	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				40	-	100	v_f (in/min)	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
	E 20	0.30	0.10		70		n (rev/min)	4278	2139	1070	713	535	428	357	267
							f_z (in)	0.0002	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				40	-	100	v_f (in/min)	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
	E 21	0.30	0.10		70		n (rev/min)	4278	2139	1070	713	535	428	357	267
							f_z (in)	0.0002	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				40	-	100	v_f (in/min)	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
	E 22	0.40	0.20		112		n (rev/min)	6845	3423	1711	1141	856	685	570	428
							f_z (in)	0.0001	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017	0.0022
				52	-	172	v_f (in/min)	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

C430M

SLOTTING															
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (m / min)				$Z_n = 4$							
								1.5	3	6	10	12	16	20	25
P	E 1 - 2	0.50	1.00		122		n (rev/min)	25890	12940	6470	3880	3240	2430	1940	1550
							f_z (mm)	0.005	0.011	0.022	0.036	0.043	0.058	0.072	0.090
				104	-	140	v_f (mm/min)	559	559	559	559	560	560	559	558
	E 3 - 4	0.40	1.00		61		n (rev/min)	12940	6470	3240	1940	1620	1210	970	780
							f_z (mm)	0.003	0.007	0.013	0.022	0.027	0.036	0.045	0.056
				43	-	79	v_f (mm/min)	174	174	174	174	174	173	174	175
	E 5 - 6	0.30	1.00		30		n (rev/min)	6370	3180	1590	950	800	600	480	380
							f_z (mm)	0.003	0.006	0.012	0.019	0.023	0.031	0.038	0.048
				12	-	49	v_f (mm/min)	73	73	73	73	74	74	74	73
M	E 8 - 9	0.50	1.00		98		n (rev/min)	20800	10400	5200	3120	2600	1950	1560	1250
							f_z (mm)	0.003	0.005	0.011	0.018	0.021	0.028	0.035	0.044
				88	-	107	v_f (mm/min)	220	220	220	220	220	220	220	220
	E 10 - 11	0.40	1.00		76		n (rev/min)	16130	8060	4030	2420	2020	1510	1210	970
							f_z (mm)	0.002	0.005	0.010	0.016	0.019	0.026	0.032	0.040
				67	-	85	v_f (mm/min)	155	155	155	155	155	155	155	155
K	E 12 - 13	0.50	1.00		82		n (rev/min)	17400	8700	4350	2610	2180	1630	1310	1040
							f_z (mm)	0.007	0.014	0.028	0.046	0.056	0.074	0.093	0.116
				64	-	101	v_f (mm/min)	484	484	484	484	486	484	486	483
	E 14 - 15	0.30	1.00		44		n (rev/min)	9340	4670	2330	1400	1170	880	700	560
							f_z (mm)	0.004	0.008	0.016	0.027	0.033	0.044	0.054	0.068
				26	-	62	v_f (mm/min)	152	152	152	152	153	153	152	152
S	E 19	0.20	1.00		21		n (rev/min)	4460	2230	1110	670	560	420	330	270
							f_z (mm)	0.005	0.009	0.018	0.030	0.036	0.048	0.060	0.075
				12	-	30	v_f (mm/min)	80	80	80	80	81	81	79	81
	E 20	0.20	1.00		21		n (rev/min)	4460	2230	1110	670	560	420	330	270
							f_z (mm)	0.005	0.009	0.018	0.030	0.036	0.048	0.060	0.075
				12	-	30	v_f (mm/min)	80	80	80	80	81	81	79	81
	E 21	0.20	1.00		21		n (rev/min)	4460	2230	1110	670	560	420	330	270
							f_z (mm)	0.005	0.009	0.018	0.030	0.036	0.048	0.060	0.075
				12	-	30	v_f (mm/min)	80	80	80	80	81	81	79	81
	E 22	0.20	1.00		34		n (rev/min)	7220	3610	1800	1080	900	680	540	430
							f_z (mm)	0.004	0.008	0.017	0.028	0.034	0.045	0.056	0.070
				16	-	52	v_f (mm/min)	121	121	121	121	121	122	121	120

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

C430M

SIDE MILLING - ROUGHING															
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (m / min)				$Z_n = 4$							
								1.5	3	6	10	12	16	20	25
P	E 1 - 2	1.00	0.30		122		n (rev/min)	25890	12940	6470	3880	3240	2430	1940	1550
							f_z (mm)	0.007	0.014	0.027	0.045	0.054	0.072	0.090	0.113
				104	-	140	v_f (mm/min)	699	699	699	698	700	700	698	698
	E 3 - 4	1.00	0.30		61		n (rev/min)	12940	6470	3240	1940	1620	1210	970	780
							f_z (mm)	0.004	0.008	0.017	0.028	0.034	0.045	0.056	0.070
				43	-	79	v_f (mm/min)	217	217	218	217	218	217	217	218
	E 5 - 6	1.00	0.20		30		n (rev/min)	6370	3180	1590	950	800	600	480	380
							f_z (mm)	0.004	0.007	0.014	0.024	0.029	0.038	0.048	0.060
				12	-	49	v_f (mm/min)	92	92	92	91	92	92	92	91
M	E 8 - 9	0.50	0.30		98		n (rev/min)	20800	10400	5200	3120	2600	1950	1560	1250
							f_z (mm)	0.003	0.007	0.013	0.022	0.026	0.035	0.044	0.055
				88	-	107	v_f (mm/min)	275	275	275	275	275	275	275	275
	E 10 - 11	0.30	0.20		76		n (rev/min)	16130	8060	4030	2420	2020	1510	1210	970
							f_z (mm)	0.003	0.006	0.012	0.020	0.024	0.032	0.040	0.050
				67	-	85	v_f (mm/min)	194	193	193	194	194	193	194	194
K	E 12 - 13	1.00	0.50		82		n (rev/min)	17400	8700	4350	2610	2180	1630	1310	1040
							f_z (mm)	0.009	0.017	0.035	0.058	0.070	0.093	0.116	0.145
				64	-	101	v_f (mm/min)	606	606	606	606	607	605	608	603
	E 14 - 15	0.50	0.30		44		n (rev/min)	9340	4670	2330	1400	1170	880	700	560
							f_z (mm)	0.005	0.010	0.020	0.034	0.041	0.054	0.068	0.085
				26	-	62	v_f (mm/min)	191	191	190	190	191	191	190	190
S	E 19	0.20	0.10		37		n (rev/min)	7850	3930	1960	1180	980	740	590	470
							f_z (mm)	0.004	0.007	0.014	0.024	0.029	0.038	0.048	0.060
				27	-	46	v_f (mm/min)	113	113	113	113	113	114	113	113
	E 20	0.20	0.10		37		n (rev/min)	7850	3930	1960	1180	980	740	590	470
							f_z (mm)	0.004	0.007	0.014	0.024	0.029	0.038	0.048	0.060
				27	-	46	v_f (mm/min)	113	113	113	113	113	114	113	113
	E 21	0.20	0.10		37		n (rev/min)	7850	3930	1960	1180	980	740	590	470
							f_z (mm)	0.004	0.007	0.014	0.024	0.029	0.038	0.048	0.060
				27	-	46	v_f (mm/min)	113	113	113	113	113	114	113	113
	E 22	0.30	0.20		24		n (rev/min)	5090	2550	1270	760	640	480	380	310
							f_z (mm)	0.003	0.007	0.013	0.022	0.027	0.036	0.045	0.056
				6	-	43	v_f (mm/min)	68	69	68	68	69	69	68	69

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

CB430M

SLOTTING															
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (m / min)				$Z_n = 4$							
								1.5	3	6	10	12	16	20	25
P	E 1 - 2	0.50	1.00		98		n (rev/min)	20800	10400	5200	3120	2600	1950	1560	1250
							f_z (mm)	0.005	0.011	0.022	0.036	0.043	0.058	0.072	0.090
				79	-	116	v_f (mm/min)	449	449	449	449	449	449	449	450
	E 3 - 4	0.40	1.00		49		n (rev/min)	10400	5200	2600	1560	1300	970	780	620
							f_z (mm)	0.003	0.007	0.013	0.022	0.027	0.036	0.045	0.056
				30	-	67	v_f (mm/min)	140	140	140	140	140	139	140	139
	E 5 - 6	0.30	1.00		24		n (rev/min)	5090	2550	1270	760	640	480	380	310
							f_z (mm)	0.003	0.006	0.012	0.019	0.023	0.031	0.038	0.048
				6	-	43	v_f (mm/min)	59	59	59	58	59	59	58	60
M	E 8 - 9	0.50	1.00		78		n (rev/min)	16550	8280	4140	2480	2070	1550	1240	990
							f_z (mm)	0.003	0.005	0.011	0.018	0.021	0.028	0.035	0.044
				69	-	87	v_f (mm/min)	175	175	175	175	175	175	175	174
	E 10 - 11	0.40	1.00		61		n (rev/min)	12940	6470	3240	1940	1620	1210	970	780
							f_z (mm)	0.002	0.005	0.010	0.016	0.019	0.026	0.032	0.040
				52	-	70	v_f (mm/min)	124	124	124	124	124	124	124	125
K	E 12 - 13	0.50	1.00		66		n (rev/min)	14010	7000	3500	2100	1750	1310	1050	840
							f_z (mm)	0.007	0.014	0.028	0.046	0.056	0.074	0.093	0.116
				48	-	84	v_f (mm/min)	390	390	390	390	390	389	390	390
	E 14 - 15	0.30	1.00		35		n (rev/min)	7430	3710	1860	1110	930	700	560	450
							f_z (mm)	0.004	0.008	0.016	0.027	0.033	0.044	0.054	0.068
				17	-	54	v_f (mm/min)	121	121	121	121	121	122	122	122
S	E 19	0.10	1.00		21		n (rev/min)	4460	2230	1110	670	560	420	330	270
							f_z (mm)	0.005	0.009	0.018	0.030	0.036	0.048	0.060	0.075
				12	-	30	v_f (mm/min)	80	80	80	80	81	81	79	81
	E 20	0.10	1.00		21		n (rev/min)	4460	2230	1110	670	560	420	330	270
							f_z (mm)	0.0045	0.009	0.018	0.030	0.036	0.048	0.060	0.075
				12	-	30	v_f (mm/min)	80	80	80	80	81	81	79	81
	E 21	0.10	1.00		21		n (rev/min)	4460	2230	1110	670	560	420	330	270
							f_z (mm)	0.005	0.009	0.018	0.030	0.036	0.048	0.060	0.075
				12	-	30	v_f (mm/min)	80	80	80	80	81	81	79	81
	E 22	0.20	1.00		34		n (rev/min)	7220	3610	1800	1080	900	680	540	430
							f_z (mm)	0.004	0.008	0.017	0.028	0.034	0.045	0.056	0.070
				16	-	52	v_f (mm/min)	121	121	121	121	121	122	121	120

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

CB430M

SIDE MILLING - ROUGHING																
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (m / min)				$Z_n = 4$								
								1.5	3	6	10	12	16	20	25
P	E 1 - 2	1.00	0.30		98		n (rev/min)	20800	10400	5200	3120	2600	1950	1560	1250
							f_z (mm)	0.007	0.014	0.027	0.045	0.054	0.072	0.090	0.113
				79	-	116	v_f (mm/min)	562	562	562	562	562	562	562	563
	E 3 - 4	1.00	0.30		49		n (rev/min)	10400	5200	2600	1560	1300	970	780	620
							f_z (mm)	0.004	0.008	0.017	0.028	0.034	0.045	0.056	0.070
				30	-	67	v_f (mm/min)	175	175	175	175	175	174	175	174
	E 5 - 6	1.00	0.20		24		n (rev/min)	5090	2550	1270	760	640	480	380	310
							f_z (mm)	0.004	0.007	0.014	0.024	0.029	0.038	0.048	0.060
				6	-	43	v_f (mm/min)	73	73	73	73	74	74	73	74
M	E 8 - 9	0.50	0.30		78		n (rev/min)	16550	8280	4140	2480	2070	1550	1240	990
							f_z (mm)	0.003	0.007	0.013	0.022	0.026	0.035	0.044	0.055
				69	-	87	v_f (mm/min)	218	219	219	218	219	218	218	218
	E 10 - 11	0.30	0.20		61		n (rev/min)	12940	6470	3240	1940	1620	1210	970	780
							f_z (mm)	0.003	0.006	0.012	0.020	0.024	0.032	0.040	0.050
				52	-	70	v_f (mm/min)	155	155	156	155	156	155	155	156
K	E 12 - 13	1.00	0.50		66		n (rev/min)	14010	7000	3500	2100	1750	1310	1050	840
							f_z (mm)	0.009	0.017	0.035	0.058	0.070	0.093	0.116	0.145
				48	-	84	v_f (mm/min)	488	487	487	487	487	486	487	487
	E 14 - 15	0.50	0.30		35		n (rev/min)	7430	3710	1860	1110	930	700	560	450
							f_z (mm)	0.005	0.010	0.020	0.034	0.041	0.054	0.068	0.085
				17	-	54	v_f (mm/min)	152	151	152	151	152	152	152	153
S	E 19	0.30	0.10		21		n (rev/min)	4460	2230	1110	670	560	420	330	270
							f_z (mm)	0.004	0.007	0.014	0.024	0.029	0.038	0.048	0.060
				12	-	30	v_f (mm/min)	64	64	64	64	65	65	63	65
	E 20	0.30	0.10		21		n (rev/min)	4460	2230	1110	670	560	420	330	270
							f_z (mm)	0.004	0.007	0.014	0.024	0.029	0.038	0.048	0.060
				12	-	30	v_f (mm/min)	64	64	64	64	65	65	63	65
	E 21	0.30	0.10		21		n (rev/min)	4460	2230	1110	670	560	420	330	270
							f_z (mm)	0.004	0.007	0.014	0.024	0.029	0.038	0.048	0.060
				12	-	30	v_f (mm/min)	64	64	64	64	65	65	63	65
	E 22	0.40	0.20		34		n (rev/min)	7220	3610	1800	1080	900	680	540	430
							f_z (mm)	0.003	0.007	0.013	0.022	0.027	0.036	0.045	0.056
				16	-	52	v_f (mm/min)	97	97	97	97	97	97	97	96

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

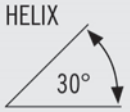
Please reference the Workpiece Material Classification chart located on page 12

Niagara Cutter

MICRO END MILLS- ME230

SOLID CARBIDE

HELIX



SQUARE END

CENTER CUTTING

- Sub micron grain carbide
- .005" - .055" in .001" increments
- .060" - .120" in .005" increments

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N59570	ME230-0.005-F3-S.0-Z2	.005	1/8	.0150	1-1/2	2	
N59571	ME230-0.006-F3-S.0-Z2	.006	1/8	.0180	1-1/2	2	
N59572	ME230-0.007-F3-S.0-Z2	.007	1/8	.0210	1-1/2	2	
N59573	ME230-0.008-F3-S.0-Z2	.008	1/8	.0240	1-1/2	2	
N59574	ME230-0.009-F3-S.0-Z2	.009	1/8	.0270	1-1/2	2	
N59575	ME230-0.010-F3-S.0-Z2	.010	1/8	.0300	1-1/2	2	
N59576	ME230-0.011-F3-S.0-Z2	.011	1/8	.0330	1-1/2	2	
N59577	ME230-0.012-F3-S.0-Z2	.012	1/8	.0360	1-1/2	2	
N59578	ME230-0.013-F3-S.0-Z2	.013	1/8	.0390	1-1/2	2	
N59579	ME230-0.014-F3-S.0-Z2	.014	1/8	.0420	1-1/2	2	
N59580	ME230-0.015-F3-S.0-Z2	.015	1/8	.0450	1-1/2	2	
N59581	ME230-0.016-F3-S.0-Z2	.016	1/8	.0480	1-1/2	2	
N59582	ME230-0.017-F3-S.0-Z2	.017	1/8	.0510	1-1/2	2	
N59583	ME230-0.018-F3-S.0-Z2	.018	1/8	.0540	1-1/2	2	
N59584	ME230-0.019-F3-S.0-Z2	.019	1/8	.0570	1-1/2	2	
N59585	ME230-0.020-F3-S.0-Z2	.020	1/8	.0600	1-1/2	2	
N59586	ME230-0.021-F3-S.0-Z2	.021	1/8	.0630	1-1/2	2	
N59587	ME230-0.022-F3-S.0-Z2	.022	1/8	.0660	1-1/2	2	
N59588	ME230-0.023-F3-S.0-Z2	.023	1/8	.0690	1-1/2	2	
N59589	ME230-0.024-F3-S.0-Z2	.024	1/8	.0720	1-1/2	2	
N59590	ME230-0.025-F3-S.0-Z2	.025	1/8	.0750	1-1/2	2	
N59591	ME230-0.026-F3-S.0-Z2	.026	1/8	.0780	1-1/2	2	
N59592	ME230-0.027-F3-S.0-Z2	.027	1/8	.0810	1-1/2	2	
N59593	ME230-0.028-F3-S.0-Z2	.028	1/8	.0840	1-1/2	2	
N59594	ME230-0.029-F3-S.0-Z2	.029	1/8	.0870	1-1/2	2	
N59595	ME230-0.030-F3-S.0-Z2	.030	1/8	.0900	1-1/2	2	
N59596	ME230-0.031-F3-S.0-Z2	.031	1/8	.0930	1-1/2	2	
N59597	ME230-0.032-F3-S.0-Z2	.032	1/8	.0960	1-1/2	2	
N59598	ME230-0.033-F3-S.0-Z2	.033	1/8	.0990	1-1/2	2	
N59599	ME230-0.034-F3-S.0-Z2	.034	1/8	.1020	1-1/2	2	
N59600	ME230-0.035-F3-S.0-Z2	.035	1/8	.1050	1-1/2	2	
N59601	ME230-0.036-F3-S.0-Z2	.036	1/8	.1080	1-1/2	2	
N59602	ME230-0.037-F3-S.0-Z2	.037	1/8	.1110	1-1/2	2	
N59603	ME230-0.038-F3-S.0-Z2	.038	1/8	.1140	1-1/2	2	
N59604	ME230-0.039-F3-S.0-Z2	.039	1/8	.1170	1-1/2	2	

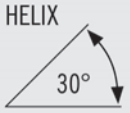
DISCOUNT CODE D42

Niagara Cutter

MICRO END MILLS- ME230

SOLID CARBIDE

HELIX



SQUARE END

CENTER CUTTING

- Sub micron grain carbide
- .005" - .055" in .001" increments
- .060" - .120" in .005" increments

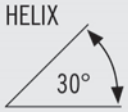
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N59605	ME230-0.040-F3-S.0-Z2	.040	1/8	.1200	1-1/2	2	
N59606	ME230-0.041-F3-S.0-Z2	.041	1/8	.1230	1-1/2	2	
N59607	ME230-0.042-F3-S.0-Z2	.042	1/8	.1260	1-1/2	2	
N59608	ME230-0.043-F3-S.0-Z2	.043	1/8	.1290	1-1/2	2	
N59609	ME230-0.044-F3-S.0-Z2	.044	1/8	.1320	1-1/2	2	
N59610	ME230-0.045-F3-S.0-Z2	.045	1/8	.1350	1-1/2	2	
N59611	ME230-0.046-F3-S.0-Z2	.046	1/8	.1380	1-1/2	2	
N59612	ME230-0.047-F3-S.0-Z2	.047	1/8	.1410	1-1/2	2	
N59613	ME230-0.048-F3-S.0-Z2	.048	1/8	.1440	1-1/2	2	
N59614	ME230-0.049-F3-S.0-Z2	.049	1/8	.1470	1-1/2	2	
N59615	ME230-0.050-F3-S.0-Z2	.050	1/8	.1500	1-1/2	2	
N59616	ME230-0.051-F3-S.0-Z2	.051	1/8	.1530	1-1/2	2	
N59617	ME230-0.052-F3-S.0-Z2	.052	1/8	.1560	1-1/2	2	
N59618	ME230-0.053-F3-S.0-Z2	.053	1/8	.1590	1-1/2	2	
N59619	ME230-0.054-F3-S.0-Z2	.054	1/8	.1620	1-1/2	2	
N59620	ME230-0.055-F3-S.0-Z2	.055	1/8	.1650	1-1/2	2	
N59621	ME230-0.060-F3-S.0-Z2	.060	1/8	.1800	1-1/2	2	
N59622	ME230-0.065-F3-S.0-Z2	.065	1/8	.1950	1-1/2	2	
N59623	ME230-0.070-F3-S.0-Z2	.070	1/8	.2100	1-1/2	2	
N59624	ME230-0.075-F3-S.0-Z2	.075	1/8	.2250	1-1/2	2	
N59625	ME230-0.080-F3-S.0-Z2	.080	1/8	.2400	1-1/2	2	
N59626	ME230-0.085-F3-S.0-Z2	.085	1/8	.2550	1-1/2	2	
N59627	ME230-0.090-F3-S.0-Z2	.090	1/8	.2700	1-1/2	2	
N59628	ME230-0.095-F3-S.0-Z2	.095	1/8	.2850	1-1/2	2	
N59629	ME230-0.100-F3-S.0-Z2	.100	1/8	.3000	1-1/2	2	
N59630	ME230-0.105-F3-S.0-Z2	.105	1/8	.3150	1-1/2	2	
N59631	ME230-0.110-F3-S.0-Z2	.110	1/8	.3300	1-1/2	2	
N59632	ME230-0.115-F3-S.0-Z2	.115	1/8	.3450	1-1/2	2	
N59633	ME230-0.120-F3-S.0-Z2	.120	1/8	.3600	1-1/2	2	

Niagara Cutter

MICRO END MILLS- MEB230

SOLID CARBIDE

HELIX



BALL END

CENTER CUTTING

- Sub micron grain carbide
- .010" - .055" in .001" increments
- .060" - .120" in .005" increments

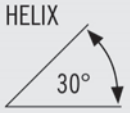
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N59634	MEB230-0.010-F3-B.0-Z2	.010	1/8	.0300	1-1/2	2	
N59635	MEB230-0.011-F3-B.0-Z2	.011	1/8	.0330	1-1/2	2	
N59636	MEB230-0.012-F3-B.0-Z2	.012	1/8	.0360	1-1/2	2	
N59637	MEB230-0.013-F3-B.0-Z2	.013	1/8	.0390	1-1/2	2	
N59638	MEB230-0.014-F3-B.0-Z2	.014	1/8	.0420	1-1/2	2	
N59639	MEB230-0.015-F3-B.0-Z2	.015	1/8	.0450	1-1/2	2	
N59640	MEB230-0.016-F3-B.0-Z2	.016	1/8	.0480	1-1/2	2	
N59641	MEB230-0.017-F3-B.0-Z2	.017	1/8	.0510	1-1/2	2	
N59642	MEB230-0.018-F3-B.0-Z2	.018	1/8	.0540	1-1/2	2	
N59643	MEB230-0.019-F3-B.0-Z2	.019	1/8	.0570	1-1/2	2	
N59644	MEB230-0.020-F3-B.0-Z2	.020	1/8	.0600	1-1/2	2	
N59645	MEB230-0.021-F3-B.0-Z2	.021	1/8	.0630	1-1/2	2	
N59646	MEB230-0.022-F3-B.0-Z2	.022	1/8	.0660	1-1/2	2	
N59647	MEB230-0.023-F3-B.0-Z2	.023	1/8	.0690	1-1/2	2	
N59648	MEB230-0.024-F3-B.0-Z2	.024	1/8	.0720	1-1/2	2	
N59649	MEB230-0.025-F3-B.0-Z2	.025	1/8	.0750	1-1/2	2	
N59650	MEB230-0.026-F3-B.0-Z2	.026	1/8	.0780	1-1/2	2	
N59651	MEB230-0.027-F3-B.0-Z2	.027	1/8	.0810	1-1/2	2	
N59652	MEB230-0.028-F3-B.0-Z2	.028	1/8	.0840	1-1/2	2	
N59653	MEB230-0.029-F3-B.0-Z2	.029	1/8	.0870	1-1/2	2	
N59654	MEB230-0.030-F3-B.0-Z2	.030	1/8	.0900	1-1/2	2	
N59655	MEB230-0.031-F3-B.0-Z2	.031	1/8	.0930	1-1/2	2	
N59656	MEB230-0.032-F3-B.0-Z2	.032	1/8	.0960	1-1/2	2	
N59657	MEB230-0.033-F3-B.0-Z2	.033	1/8	.0990	1-1/2	2	
N59658	MEB230-0.034-F3-B.0-Z2	.034	1/8	.1020	1-1/2	2	
N59659	MEB230-0.035-F3-B.0-Z2	.035	1/8	.1050	1-1/2	2	
N59660	MEB230-0.036-F3-B.0-Z2	.036	1/8	.1080	1-1/2	2	
N59661	MEB230-0.037-F3-B.0-Z2	.037	1/8	.1110	1-1/2	2	
N59662	MEB230-0.038-F3-B.0-Z2	.038	1/8	.1140	1-1/2	2	
N59663	MEB230-0.039-F3-B.0-Z2	.039	1/8	.1170	1-1/2	2	
N59664	MEB230-0.040-F3-B.0-Z2	.040	1/8	.1200	1-1/2	2	
N59665	MEB230-0.041-F3-B.0-Z2	.041	1/8	.1230	1-1/2	2	
N59666	MEB230-0.042-F3-B.0-Z2	.042	1/8	.1260	1-1/2	2	
N59667	MEB230-0.043-F3-B.0-Z2	.043	1/8	.1290	1-1/2	2	
N59668	MEB230-0.044-F3-B.0-Z2	.044	1/8	.1320	1-1/2	2	

DISCOUNT CODE D42

MICRO END MILLS- MEB230

SOLID CARBIDE

HELIX



BALL END

CENTER CUTTING

- Sub micron grain carbide
- .010" - .055" in .001" increments
- .060" - .120" in .005" increments

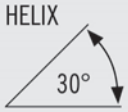
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N59669	MEB230-0.045-F3-B.0-Z2	.045	1/8	.1350	1-1/2	2	
N59670	MEB230-0.046-F3-B.0-Z2	.046	1/8	.1380	1-1/2	2	
N59671	MEB230-0.047-F3-B.0-Z2	.047	1/8	.1410	1-1/2	2	
N59672	MEB230-0.048-F3-B.0-Z2	.048	1/8	.1440	1-1/2	2	
N59673	MEB230-0.049-F3-B.0-Z2	.049	1/8	.1470	1-1/2	2	
N59674	MEB230-0.050-F3-B.0-Z2	.050	1/8	.1500	1-1/2	2	
N59675	MEB230-0.051-F3-B.0-Z2	.051	1/8	.1530	1-1/2	2	
N59676	MEB230-0.052-F3-B.0-Z2	.052	1/8	.1560	1-1/2	2	
N59677	MEB230-0.053-F3-B.0-Z2	.053	1/8	.1590	1-1/2	2	
N59678	MEB230-0.054-F3-B.0-Z2	.054	1/8	.1620	1-1/2	2	
N59679	MEB230-0.055-F3-B.0-Z2	.055	1/8	.1650	1-1/2	2	
N59680	MEB230-0.060-F3-B.0-Z2	.060	1/8	.1800	1-1/2	2	
N59681	MEB230-0.065-F3-B.0-Z2	.065	1/8	.1950	1-1/2	2	
N59682	MEB230-0.070-F3-B.0-Z2	.070	1/8	.2100	1-1/2	2	
N59683	MEB230-0.075-F3-B.0-Z2	.075	1/8	.2250	1-1/2	2	
N59684	MEB230-0.080-F3-B.0-Z2	.080	1/8	.2400	1-1/2	2	
N59685	MEB230-0.085-F3-B.0-Z2	.085	1/8	.2550	1-1/2	2	
N59686	MEB230-0.090-F3-B.0-Z2	.090	1/8	.2700	1-1/2	2	
N59687	MEB230-0.095-F3-B.0-Z2	.095	1/8	.2850	1-1/2	2	
N59688	MEB230-0.100-F3-B.0-Z2	.100	1/8	.3000	1-1/2	2	
N59689	MEB230-0.105-F3-B.0-Z2	.105	1/8	.3150	1-1/2	2	
N59690	MEB230-0.110-F3-B.0-Z2	.110	1/8	.3300	1-1/2	2	
N59691	MEB230-0.115-F3-B.0-Z2	.115	1/8	.3450	1-1/2	2	
N59692	MEB230-0.120-F3-B.0-Z2	.120	1/8	.3600	1-1/2	2	

Niagara Cutter

MICRO END MILLS- MES230

SOLID CARBIDE

HELIX



SQUARE END

CENTER CUTTING

- Sub micron grain carbide
- .005" - .055" in .001" increments

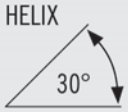
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N59693	MES230-0.005-F2-S.0-Z2	.005	1/8	.0075	1-1/2	2	
N59694	MES230-0.006-F2-S.0-Z2	.006	1/8	.0090	1-1/2	2	
N59695	MES230-0.007-F2-S.0-Z2	.007	1/8	.0105	1-1/2	2	
N59696	MES230-0.008-F2-S.0-Z2	.008	1/8	.0120	1-1/2	2	
N59697	MES230-0.009-F2-S.0-Z2	.009	1/8	.0135	1-1/2	2	
N59698	MES230-0.010-F2-S.0-Z2	.010	1/8	.0150	1-1/2	2	
N59699	MES230-0.011-F2-S.0-Z2	.011	1/8	.0165	1-1/2	2	
N59700	MES230-0.012-F2-S.0-Z2	.012	1/8	.0180	1-1/2	2	
N59701	MES230-0.013-F2-S.0-Z2	.013	1/8	.0195	1-1/2	2	
N59702	MES230-0.014-F2-S.0-Z2	.014	1/8	.0210	1-1/2	2	
N59703	MES230-0.015-F2-S.0-Z2	.015	1/8	.0225	1-1/2	2	
N59704	MES230-0.016-F2-S.0-Z2	.016	1/8	.0240	1-1/2	2	
N59705	MES230-0.017-F2-S.0-Z2	.017	1/8	.0255	1-1/2	2	
N59706	MES230-0.018-F2-S.0-Z2	.018	1/8	.0270	1-1/2	2	
N59707	MES230-0.019-F2-S.0-Z2	.019	1/8	.0285	1-1/2	2	
N59708	MES230-0.020-F2-S.0-Z2	.020	1/8	.0300	1-1/2	2	
N59709	MES230-0.021-F2-S.0-Z2	.021	1/8	.0315	1-1/2	2	
N59710	MES230-0.022-F2-S.0-Z2	.022	1/8	.0330	1-1/2	2	
N59711	MES230-0.023-F2-S.0-Z2	.023	1/8	.0345	1-1/2	2	
N59712	MES230-0.024-F2-S.0-Z2	.024	1/8	.0360	1-1/2	2	
N59713	MES230-0.025-F2-S.0-Z2	.025	1/8	.0375	1-1/2	2	
N59714	MES230-0.026-F2-S.0-Z2	.026	1/8	.0390	1-1/2	2	
N59715	MES230-0.027-F2-S.0-Z2	.027	1/8	.0405	1-1/2	2	
N59716	MES230-0.028-F2-S.0-Z2	.028	1/8	.0420	1-1/2	2	
N59717	MES230-0.029-F2-S.0-Z2	.029	1/8	.0435	1-1/2	2	
N59718	MES230-0.030-F2-S.0-Z2	.030	1/8	.0450	1-1/2	2	
N59719	MES230-0.031-F2-S.0-Z2	.031	1/8	.0465	1-1/2	2	
N59720	MES230-0.032-F2-S.0-Z2	.032	1/8	.0480	1-1/2	2	
N59721	MES230-0.033-F2-S.0-Z2	.033	1/8	.0495	1-1/2	2	
N59722	MES230-0.034-F2-S.0-Z2	.034	1/8	.0510	1-1/2	2	
N59723	MES230-0.035-F2-S.0-Z2	.035	1/8	.0525	1-1/2	2	
N59724	MES230-0.036-F2-S.0-Z2	.036	1/8	.0540	1-1/2	2	
N59725	MES230-0.037-F2-S.0-Z2	.037	1/8	.0555	1-1/2	2	
N59726	MES230-0.038-F2-S.0-Z2	.038	1/8	.0570	1-1/2	2	
N59727	MES230-0.039-F2-S.0-Z2	.039	1/8	.0585	1-1/2	2	

DISCOUNT CODE D42

MICRO END MILLS- MES230

SOLID CARBIDE

HELIX



SQUARE END

CENTER CUTTING

- Sub micron grain carbide
- .005" - .055" in .001" increments

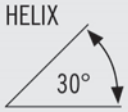
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N59728	MES230-0.040-F2-S.0-Z2	.040	1/8	.0600	1-1/2	2	
N59729	MES230-0.041-F2-S.0-Z2	.041	1/8	.0615	1-1/2	2	
N59730	MES230-0.042-F2-S.0-Z2	.042	1/8	.0630	1-1/2	2	
N59731	MES230-0.043-F2-S.0-Z2	.043	1/8	.0645	1-1/2	2	
N59732	MES230-0.044-F2-S.0-Z2	.044	1/8	.0660	1-1/2	2	
N59733	MES230-0.045-F2-S.0-Z2	.045	1/8	.0675	1-1/2	2	
N59734	MES230-0.046-F2-S.0-Z2	.046	1/8	.0690	1-1/2	2	
N59735	MES230-0.047-F2-S.0-Z2	.047	1/8	.0705	1-1/2	2	
N59736	MES230-0.048-F2-S.0-Z2	.048	1/8	.0720	1-1/2	2	
N59737	MES230-0.049-F2-S.0-Z2	.049	1/8	.0735	1-1/2	2	
N59738	MES230-0.050-F2-S.0-Z2	.050	1/8	.0750	1-1/2	2	
N59739	MES230-0.051-F2-S.0-Z2	.051	1/8	.0765	1-1/2	2	
N59740	MES230-0.052-F2-S.0-Z2	.052	1/8	.0780	1-1/2	2	
N59741	MES230-0.053-F2-S.0-Z2	.053	1/8	.0795	1-1/2	2	
N59742	MES230-0.054-F2-S.0-Z2	.054	1/8	.0810	1-1/2	2	
N59743	MES230-0.055-F2-S.0-Z2	.055	1/8	.0825	1-1/2	2	

Niagara Cutter

MICRO END MILLS- MESB230

SOLID CARBIDE

HELIX



BALL END

CENTER CUTTING

- Sub micron grain carbide
- .005" - .055" in .001" increments

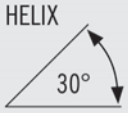
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N59744	MESB230-0.005-F2-B.0-Z2	.005	1/8	.0075	1-1/2	2	
N59745	MESB230-0.006-F2-B.0-Z2	.006	1/8	.0090	1-1/2	2	
N59746	MESB230-0.007-F2-B.0-Z2	.007	1/8	.0105	1-1/2	2	
N59747	MESB230-0.008-F2-B.0-Z2	.008	1/8	.0120	1-1/2	2	
N59748	MESB230-0.009-F2-B.0-Z2	.009	1/8	.0135	1-1/2	2	
N59749	MESB230-0.010-F2-B.0-Z2	.010	1/8	.0150	1-1/2	2	
N59750	MESB230-0.011-F2-B.0-Z2	.011	1/8	.0165	1-1/2	2	
N59751	MESB230-0.012-F2-B.0-Z2	.012	1/8	.0180	1-1/2	2	
N59752	MESB230-0.013-F2-B.0-Z2	.013	1/8	.0195	1-1/2	2	
N59753	MESB230-0.014-F2-B.0-Z2	.014	1/8	.0210	1-1/2	2	
N59754	MESB230-0.015-F2-B.0-Z2	.015	1/8	.0225	1-1/2	2	
N59755	MESB230-0.016-F2-B.0-Z2	.016	1/8	.0240	1-1/2	2	
N59756	MESB230-0.017-F2-B.0-Z2	.017	1/8	.0255	1-1/2	2	
N59757	MESB230-0.018-F2-B.0-Z2	.018	1/8	.0270	1-1/2	2	
N59758	MESB230-0.019-F2-B.0-Z2	.019	1/8	.0285	1-1/2	2	
N59759	MESB230-0.020-F2-B.0-Z2	.020	1/8	.0300	1-1/2	2	
N59760	MESB230-0.021-F2-B.0-Z2	.021	1/8	.0315	1-1/2	2	
N59761	MESB230-0.022-F2-B.0-Z2	.022	1/8	.0330	1-1/2	2	
N59762	MESB230-0.023-F2-B.0-Z2	.023	1/8	.0345	1-1/2	2	
N59763	MESB230-0.024-F2-B.0-Z2	.024	1/8	.0360	1-1/2	2	
N59764	MESB230-0.025-F2-B.0-Z2	.025	1/8	.0375	1-1/2	2	
N59765	MESB230-0.026-F2-B.0-Z2	.026	1/8	.0390	1-1/2	2	
N59766	MESB230-0.027-F2-B.0-Z2	.027	1/8	.0405	1-1/2	2	
N59767	MESB230-0.028-F2-B.0-Z2	.028	1/8	.0420	1-1/2	2	
N59768	MESB230-0.029-F2-B.0-Z2	.029	1/8	.0435	1-1/2	2	
N59769	MESB230-0.030-F2-B.0-Z2	.030	1/8	.0450	1-1/2	2	
N59770	MESB230-0.031-F2-B.0-Z2	.031	1/8	.0465	1-1/2	2	
N59771	MESB230-0.032-F2-B.0-Z2	.032	1/8	.0480	1-1/2	2	
N59772	MESB230-0.033-F2-B.0-Z2	.033	1/8	.0495	1-1/2	2	
N59773	MESB230-0.034-F2-B.0-Z2	.034	1/8	.0510	1-1/2	2	
N59774	MESB230-0.035-F2-B.0-Z2	.035	1/8	.0525	1-1/2	2	
N59775	MESB230-0.036-F2-B.0-Z2	.036	1/8	.0540	1-1/2	2	
N59776	MESB230-0.037-F2-B.0-Z2	.037	1/8	.0555	1-1/2	2	
N59777	MESB230-0.038-F2-B.0-Z2	.038	1/8	.0570	1-1/2	2	
N59778	MESB230-0.039-F2-B.0-Z2	.039	1/8	.0585	1-1/2	2	

DISCOUNT CODE D42

MICRO END MILLS- MESB230

SOLID CARBIDE

HELIX



BALL END

CENTER CUTTING

- Sub micron grain carbide
- .005" - .055" in .001" increments

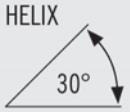
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N59779	MESB230-0.040-F2-B.0-Z2	.040	1/8	.0600	1-1/2	2	
N59780	MESB230-0.041-F2-B.0-Z2	.041	1/8	.0615	1-1/2	2	
N59781	MESB230-0.042-F2-B.0-Z2	.042	1/8	.0630	1-1/2	2	
N59782	MESB230-0.043-F2-B.0-Z2	.043	1/8	.0645	1-1/2	2	
N59783	MESB230-0.044-F2-B.0-Z2	.044	1/8	.0660	1-1/2	2	
N59784	MESB230-0.045-F2-B.0-Z2	.045	1/8	.0675	1-1/2	2	
N59785	MESB230-0.046-F2-B.0-Z2	.046	1/8	.0690	1-1/2	2	
N59786	MESB230-0.047-F2-B.0-Z2	.047	1/8	.0705	1-1/2	2	
N59787	MESB230-0.048-F2-B.0-Z2	.048	1/8	.0720	1-1/2	2	
N59788	MESB230-0.049-F2-B.0-Z2	.049	1/8	.0735	1-1/2	2	
N59789	MESB230-0.050-F2-B.0-Z2	.050	1/8	.0750	1-1/2	2	
N59790	MESB230-0.051-F2-B.0-Z2	.051	1/8	.0765	1-1/2	2	
N59791	MESB230-0.052-F2-B.0-Z2	.052	1/8	.0780	1-1/2	2	
N59792	MESB230-0.053-F2-B.0-Z2	.053	1/8	.0795	1-1/2	2	
N59793	MESB230-0.054-F2-B.0-Z2	.054	1/8	.0810	1-1/2	2	
N59794	MESB230-0.055-F2-B.0-Z2	.055	1/8	.0825	1-1/2	2	

Niagara Cutter

MICRO END MILLS- ME430

SOLID CARBIDE

HELIX



SQUARE END

CENTER CUTTING

- Sub micron grain carbide
- .005" - .055" in .001" increments
- .060" - .120" in .005" increments

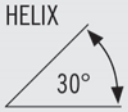
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N59795	ME430-0.005-F3-S.0-Z4	.005	1/8	.0150	1-1/2	4	
N59796	ME430-0.006-F3-S.0-Z4	.006	1/8	.0180	1-1/2	4	
N59797	ME430-0.007-F3-S.0-Z4	.007	1/8	.0210	1-1/2	4	
N59798	ME430-0.008-F3-S.0-Z4	.008	1/8	.0240	1-1/2	4	
N59799	ME430-0.009-F3-S.0-Z4	.009	1/8	.0270	1-1/2	4	
N59800	ME430-0.010-F3-S.0-Z4	.010	1/8	.0300	1-1/2	4	
N59801	ME430-0.011-F3-S.0-Z4	.011	1/8	.0330	1-1/2	4	
N59802	ME430-0.012-F3-S.0-Z4	.012	1/8	.0360	1-1/2	4	
N59803	ME430-0.013-F3-S.0-Z4	.013	1/8	.0390	1-1/2	4	
N59804	ME430-0.014-F3-S.0-Z4	.014	1/8	.0420	1-1/2	4	
N59805	ME430-0.015-F3-S.0-Z4	.015	1/8	.0450	1-1/2	4	
N59806	ME430-0.016-F3-S.0-Z4	.016	1/8	.0480	1-1/2	4	
N59807	ME430-0.017-F3-S.0-Z4	.017	1/8	.0510	1-1/2	4	
N59808	ME430-0.018-F3-S.0-Z4	.018	1/8	.0540	1-1/2	4	
N59809	ME430-0.019-F3-S.0-Z4	.019	1/8	.0570	1-1/2	4	
N59810	ME430-0.020-F3-S.0-Z4	.020	1/8	.0600	1-1/2	4	
N59811	ME430-0.021-F3-S.0-Z4	.021	1/8	.0630	1-1/2	4	
N59812	ME430-0.022-F3-S.0-Z4	.022	1/8	.0660	1-1/2	4	
N59813	ME430-0.023-F3-S.0-Z4	.023	1/8	.0690	1-1/2	4	
N59814	ME430-0.024-F3-S.0-Z4	.024	1/8	.0720	1-1/2	4	
N59815	ME430-0.025-F3-S.0-Z4	.025	1/8	.0750	1-1/2	4	
N59816	ME430-0.026-F3-S.0-Z4	.026	1/8	.0780	1-1/2	4	
N59817	ME430-0.027-F3-S.0-Z4	.027	1/8	.0810	1-1/2	4	
N59818	ME430-0.028-F3-S.0-Z4	.028	1/8	.0840	1-1/2	4	
N59819	ME430-0.029-F3-S.0-Z4	.029	1/8	.0870	1-1/2	4	
N59820	ME430-0.030-F3-S.0-Z4	.030	1/8	.0900	1-1/2	4	
N59821	ME430-0.031-F3-S.0-Z4	.031	1/8	.0930	1-1/2	4	
N59822	ME430-0.032-F3-S.0-Z4	.032	1/8	.0960	1-1/2	4	
N59823	ME430-0.033-F3-S.0-Z4	.033	1/8	.0990	1-1/2	4	
N59824	ME430-0.034-F3-S.0-Z4	.034	1/8	.1020	1-1/2	4	
N59825	ME430-0.035-F3-S.0-Z4	.035	1/8	.1050	1-1/2	4	
N59826	ME430-0.036-F3-S.0-Z4	.036	1/8	.1080	1-1/2	4	
N59827	ME430-0.037-F3-S.0-Z4	.037	1/8	.1110	1-1/2	4	
N59828	ME430-0.038-F3-S.0-Z4	.038	1/8	.1140	1-1/2	4	
N59829	ME430-0.039-F3-S.0-Z4	.039	1/8	.1170	1-1/2	4	

Niagara Cutter

MICRO END MILLS- ME430

SOLID CARBIDE

HELIX



SQUARE END

CENTER CUTTING

- Sub micron grain carbide
- .005" - .055" in .001" increments
- .060" - .120" in .005" increments

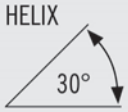
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N59830	ME430-0.040-F3-S.0-Z4	.040	1/8	.1200	1-1/2	4	
N59831	ME430-0.041-F3-S.0-Z4	.041	1/8	.1230	1-1/2	4	
N59832	ME430-0.042-F3-S.0-Z4	.042	1/8	.1260	1-1/2	4	
N59833	ME430-0.043-F3-S.0-Z4	.043	1/8	.1290	1-1/2	4	
N59834	ME430-0.044-F3-S.0-Z4	.044	1/8	.1320	1-1/2	4	
N59835	ME430-0.045-F3-S.0-Z4	.045	1/8	.1350	1-1/2	4	
N59836	ME430-0.046-F3-S.0-Z4	.046	1/8	.1380	1-1/2	4	
N59837	ME430-0.047-F3-S.0-Z4	.047	1/8	.1410	1-1/2	4	
N59838	ME430-0.048-F3-S.0-Z4	.048	1/8	.1440	1-1/2	4	
N59839	ME430-0.049-F3-S.0-Z4	.049	1/8	.1470	1-1/2	4	
N59840	ME430-0.050-F3-S.0-Z4	.050	1/8	.1500	1-1/2	4	
N59841	ME430-0.051-F3-S.0-Z4	.051	1/8	.1530	1-1/2	4	
N59842	ME430-0.052-F3-S.0-Z4	.052	1/8	.1560	1-1/2	4	
N59843	ME430-0.053-F3-S.0-Z4	.053	1/8	.1590	1-1/2	4	
N59844	ME430-0.054-F3-S.0-Z4	.054	1/8	.1620	1-1/2	4	
N59845	ME430-0.055-F3-S.0-Z4	.055	1/8	.1650	1-1/2	4	
N59846	ME430-0.060-F3-S.0-Z4	.060	1/8	.1800	1-1/2	4	
N59847	ME430-0.065-F3-S.0-Z4	.065	1/8	.1950	1-1/2	4	
N59848	ME430-0.070-F3-S.0-Z4	.070	1/8	.2100	1-1/2	4	
N59849	ME430-0.075-F3-S.0-Z4	.075	1/8	.2250	1-1/2	4	
N59850	ME430-0.080-F3-S.0-Z4	.080	1/8	.2400	1-1/2	4	
N59851	ME430-0.085-F3-S.0-Z4	.085	1/8	.2550	1-1/2	4	
N59852	ME430-0.090-F3-S.0-Z4	.090	1/8	.2700	1-1/2	4	
N59853	ME430-0.095-F3-S.0-Z4	.095	1/8	.2850	1-1/2	4	
N59854	ME430-0.100-F3-S.0-Z4	.100	1/8	.3000	1-1/2	4	
N59855	ME430-0.105-F3-S.0-Z4	.105	1/8	.3150	1-1/2	4	
N59856	ME430-0.110-F3-S.0-Z4	.110	1/8	.3300	1-1/2	4	
N59857	ME430-0.115-F3-S.0-Z4	.115	1/8	.3450	1-1/2	4	
N59858	ME430-0.120-F3-S.0-Z4	.120	1/8	.3600	1-1/2	4	

Niagara Cutter

MICRO END MILLS- MEB430

SOLID CARBIDE

HELIX



BALL END

CENTER CUTTING

- Sub micron grain carbide
- .015" - .055" in .001" increments
- .060" - .120" in .005" increments

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N59859	MEB430-0.015-F3-B.0-Z4	.015	1/8	.0450	1-1/2	4	
N59860	MEB430-0.016-F3-B.0-Z4	.016	1/8	.0480	1-1/2	4	
N59861	MEB430-0.017-F3-B.0-Z4	.017	1/8	.0510	1-1/2	4	
N59862	MEB430-0.018-F3-B.0-Z4	.018	1/8	.0540	1-1/2	4	
N59863	MEB430-0.019-F3-B.0-Z4	.019	1/8	.0570	1-1/2	4	
N59864	MEB430-0.020-F3-B.0-Z4	.020	1/8	.0600	1-1/2	4	
N59865	MEB430-0.021-F3-B.0-Z4	.021	1/8	.0630	1-1/2	4	
N59866	MEB430-0.022-F3-B.0-Z4	.022	1/8	.0660	1-1/2	4	
N59867	MEB430-0.023-F3-B.0-Z4	.023	1/8	.0690	1-1/2	4	
N59868	MEB430-0.024-F3-B.0-Z4	.024	1/8	.0720	1-1/2	4	
N59869	MEB430-0.025-F3-B.0-Z4	.025	1/8	.0750	1-1/2	4	
N59870	MEB430-0.026-F3-B.0-Z4	.026	1/8	.0780	1-1/2	4	
N59871	MEB430-0.027-F3-B.0-Z4	.027	1/8	.0810	1-1/2	4	
N59872	MEB430-0.028-F3-B.0-Z4	.028	1/8	.0840	1-1/2	4	
N59873	MEB430-0.029-F3-B.0-Z4	.029	1/8	.0870	1-1/2	4	
N59874	MEB430-0.030-F3-B.0-Z4	.030	1/8	.0900	1-1/2	4	
N59875	MEB430-0.031-F3-B.0-Z4	.031	1/8	.0930	1-1/2	4	
N59876	MEB430-0.032-F3-B.0-Z4	.032	1/8	.0960	1-1/2	4	
N59877	MEB430-0.033-F3-B.0-Z4	.033	1/8	.0990	1-1/2	4	
N59878	MEB430-0.034-F3-B.0-Z4	.034	1/8	.1020	1-1/2	4	
N59879	MEB430-0.035-F3-B.0-Z4	.035	1/8	.1050	1-1/2	4	
N59880	MEB430-0.036-F3-B.0-Z4	.036	1/8	.1080	1-1/2	4	
N59881	MEB430-0.037-F3-B.0-Z4	.037	1/8	.1110	1-1/2	4	
N59882	MEB430-0.038-F3-B.0-Z4	.038	1/8	.1140	1-1/2	4	
N59883	MEB430-0.039-F3-B.0-Z4	.039	1/8	.1170	1-1/2	4	
N59884	MEB430-0.040-F3-B.0-Z4	.040	1/8	.1200	1-1/2	4	
N59885	MEB430-0.041-F3-B.0-Z4	.041	1/8	.1230	1-1/2	4	
N59886	MEB430-0.042-F3-B.0-Z4	.042	1/8	.1260	1-1/2	4	
N59887	MEB430-0.043-F3-B.0-Z4	.043	1/8	.1290	1-1/2	4	
N59888	MEB430-0.044-F3-B.0-Z4	.044	1/8	.1320	1-1/2	4	
N59889	MEB430-0.045-F3-B.0-Z4	.045	1/8	.1350	1-1/2	4	
N59890	MEB430-0.046-F3-B.0-Z4	.046	1/8	.1380	1-1/2	4	
N59891	MEB430-0.047-F3-B.0-Z4	.047	1/8	.1410	1-1/2	4	
N59892	MEB430-0.048-F3-B.0-Z4	.048	1/8	.1440	1-1/2	4	
N59893	MEB430-0.049-F3-B.0-Z4	.049	1/8	.1470	1-1/2	4	

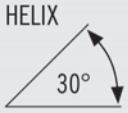
DISCOUNT CODE D42

Niagara Cutter

MICRO END MILLS- MEB430

SOLID CARBIDE

HELIX



BALL END

CENTER CUTTING

- Sub micron grain carbide
- .015" - .055" in .001" increments
- .060" - .120" in .005" increments

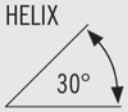
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N59894	MEB430-0.050-F3-B.0-Z4	.050	1/8	.1500	1-1/2	4	
N59895	MEB430-0.051-F3-B.0-Z4	.051	1/8	.1530	1-1/2	4	
N59896	MEB430-0.052-F3-B.0-Z4	.052	1/8	.1560	1-1/2	4	
N59897	MEB430-0.053-F3-B.0-Z4	.053	1/8	.1590	1-1/2	4	
N59898	MEB430-0.054-F3-B.0-Z4	.054	1/8	.1620	1-1/2	4	
N59899	MEB430-0.055-F3-B.0-Z4	.055	1/8	.1650	1-1/2	4	
N59900	MEB430-0.060-F3-B.0-Z4	.060	1/8	.1800	1-1/2	4	
N59901	MEB430-0.065-F3-B.0-Z4	.065	1/8	.1950	1-1/2	4	
N59902	MEB430-0.070-F3-B.0-Z4	.070	1/8	.2100	1-1/2	4	
N59903	MEB430-0.075-F3-B.0-Z4	.075	1/8	.2250	1-1/2	4	
N59904	MEB430-0.080-F3-B.0-Z4	.080	1/8	.2400	1-1/2	4	
N59905	MEB430-0.085-F3-B.0-Z4	.085	1/8	.2550	1-1/2	4	
N59906	MEB430-0.090-F3-B.0-Z4	.090	1/8	.2700	1-1/2	4	
N59907	MEB430-0.095-F3-B.0-Z4	.095	1/8	.2850	1-1/2	4	
N59908	MEB430-0.100-F3-B.0-Z4	.100	1/8	.3000	1-1/2	4	
N59909	MEB430-0.105-F3-B.0-Z4	.105	1/8	.3150	1-1/2	4	
N59910	MEB430-0.110-F3-B.0-Z4	.110	1/8	.3300	1-1/2	4	
N59911	MEB430-0.115-F3-B.0-Z4	.115	1/8	.3450	1-1/2	4	
N59912	MEB430-0.120-F3-B.0-Z4	.120	1/8	.3600	1-1/2	4	

Niagara Cutter

MICRO END MILLS- MES430

SOLID CARBIDE

HELIX



SQUARE END

CENTER CUTTING

- Sub micron grain carbide
- .005" - .055" in .001" increments

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N59913	MES430-0.005-F2-S.0-Z4	.005	1/8	.0075	1-1/2	4	
N59914	MES430-0.006-F2-S.0-Z4	.006	1/8	.0090	1-1/2	4	
N59915	MES430-0.007-F2-S.0-Z4	.007	1/8	.0105	1-1/2	4	
N59916	MES430-0.008-F2-S.0-Z4	.008	1/8	.0120	1-1/2	4	
N59917	MES430-0.009-F2-S.0-Z4	.009	1/8	.0135	1-1/2	4	
N59918	MES430-0.010-F2-S.0-Z4	.010	1/8	.0150	1-1/2	4	
N59919	MES430-0.011-F2-S.0-Z4	.011	1/8	.0165	1-1/2	4	
N59920	MES430-0.012-F2-S.0-Z4	.012	1/8	.0180	1-1/2	4	
N59921	MES430-0.013-F2-S.0-Z4	.013	1/8	.0195	1-1/2	4	
N59922	MES430-0.014-F2-S.0-Z4	.014	1/8	.0210	1-1/2	4	
N59923	MES430-0.015-F2-S.0-Z4	.015	1/8	.0225	1-1/2	4	
N59924	MES430-0.016-F2-S.0-Z4	.016	1/8	.0240	1-1/2	4	
N59925	MES430-0.017-F2-S.0-Z4	.017	1/8	.0255	1-1/2	4	
N59926	MES430-0.018-F2-S.0-Z4	.018	1/8	.0270	1-1/2	4	
N59927	MES430-0.019-F2-S.0-Z4	.019	1/8	.0285	1-1/2	4	
N59928	MES430-0.020-F2-S.0-Z4	.020	1/8	.0300	1-1/2	4	
N59929	MES430-0.021-F2-S.0-Z4	.021	1/8	.0315	1-1/2	4	
N59930	MES430-0.022-F2-S.0-Z4	.022	1/8	.0330	1-1/2	4	
N59931	MES430-0.023-F2-S.0-Z4	.023	1/8	.0345	1-1/2	4	
N59932	MES430-0.024-F2-S.0-Z4	.024	1/8	.0360	1-1/2	4	
N59933	MES430-0.025-F2-S.0-Z4	.025	1/8	.0375	1-1/2	4	
N59934	MES430-0.026-F2-S.0-Z4	.026	1/8	.0390	1-1/2	4	
N59935	MES430-0.027-F2-S.0-Z4	.027	1/8	.0405	1-1/2	4	
N59936	MES430-0.028-F2-S.0-Z4	.028	1/8	.0420	1-1/2	4	
N59937	MES430-0.029-F2-S.0-Z4	.029	1/8	.0435	1-1/2	4	
N59938	MES430-0.030-F2-S.0-Z4	.030	1/8	.0450	1-1/2	4	
N59939	MES430-0.031-F2-S.0-Z4	.031	1/8	.0465	1-1/2	4	
N59940	MES430-0.032-F2-S.0-Z4	.032	1/8	.0480	1-1/2	4	
N59941	MES430-0.033-F2-S.0-Z4	.033	1/8	.0495	1-1/2	4	
N59942	MES430-0.034-F2-S.0-Z4	.034	1/8	.0510	1-1/2	4	
N59943	MES430-0.035-F2-S.0-Z4	.035	1/8	.0525	1-1/2	4	
N59944	MES430-0.036-F2-S.0-Z4	.036	1/8	.0540	1-1/2	4	
N59945	MES430-0.037-F2-S.0-Z4	.037	1/8	.0555	1-1/2	4	
N59946	MES430-0.038-F2-S.0-Z4	.038	1/8	.0570	1-1/2	4	
N59947	MES430-0.039-F2-S.0-Z4	.039	1/8	.0585	1-1/2	4	

DISCOUNT CODE D42

MICRO END MILLS- MES430

SOLID CARBIDE

HELIX 30°

SQUARE END

CENTER CUTTING

- Sub micron grain carbide
- .005" - .055" in .001" increments

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N59948	MES430-0.040-F2-S.0-Z4	.040	1/8	.0600	1-1/2	4	
N59949	MES430-0.041-F2-S.0-Z4	.041	1/8	.0615	1-1/2	4	
N59950	MES430-0.042-F2-S.0-Z4	.042	1/8	.0630	1-1/2	4	
N59951	MES430-0.043-F2-S.0-Z4	.043	1/8	.0645	1-1/2	4	
N59952	MES430-0.044-F2-S.0-Z4	.044	1/8	.0660	1-1/2	4	
N59953	MES430-0.045-F2-S.0-Z4	.045	1/8	.0675	1-1/2	4	
N59954	MES430-0.046-F2-S.0-Z4	.046	1/8	.0690	1-1/2	4	
N59955	MES430-0.047-F2-S.0-Z4	.047	1/8	.0705	1-1/2	4	
N59956	MES430-0.048-F2-S.0-Z4	.048	1/8	.0720	1-1/2	4	
N59957	MES430-0.049-F2-S.0-Z4	.049	1/8	.0735	1-1/2	4	
N59958	MES430-0.050-F2-S.0-Z4	.050	1/8	.0750	1-1/2	4	
N59959	MES430-0.051-F2-S.0-Z4	.051	1/8	.0765	1-1/2	4	
N59960	MES430-0.052-F2-S.0-Z4	.052	1/8	.0780	1-1/2	4	
N59961	MES430-0.053-F2-S.0-Z4	.053	1/8	.0795	1-1/2	4	
N59962	MES430-0.054-F2-S.0-Z4	.054	1/8	.0810	1-1/2	4	
N59963	MES430-0.055-F2-S.0-Z4	.055	1/8	.0825	1-1/2	4	

SOLID CARBIDE END MILLS

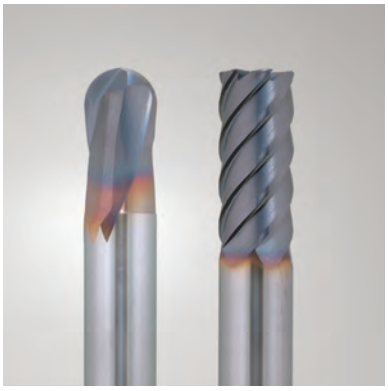
CVD DIAMOND

Diamond is the material of choice for machining abrasive non-ferrous metals, ceramics, and composites. The unique hardness of the Diamond coating makes it more resistant to abrasive wear than any other cutting tool material. In addition, high chemical stability and the resulting low affinity to non-ferrous materials as well as the low coefficient of friction helps retard the formation of built-up edges.

CVD Diamond coating offers a new level of wear protection and performance. DiamondPlus™ coating combines micro and nano-crystalline diamond coatings into one super hard layer.

CHAMFER MILLS

Chamfer mills are available to produce either a 60° or 90° chamfer. Both styles are available with two or four flutes.



MOLD & DIE

The mold & die range offers geometries for hard milling of steels up to 62Rc. Two geometries are available for rough and finish milling of contours and complex shapes.

The new MZ is designed specifically for high feed milling hard materials.

THREAD MILLS

Thread milling is a versatile and cost effective solution, especially if you are machining a variety of parts and materials on the same machine. Niagara Cutter offers a broad range of solid carbide thread mills to meet your requirements.

One thread mill can produce, regardless of diameter, thread forms of the same pitch. Thread forms produced can be internal or external, right-hand or left-hand. Plus, milled threads produce excellent form, finish, and dimensional accuracy, even in difficult to machine materials.

DIAMONDPLUS™ COATED- DIA230

SOLID CARBIDE | HELIX 30° | SQUARE END | CENTER CUTTING

- Designed for carbon fiber, composite applications, graphite and green ceramics

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N77898	DIA230-0.016-F3-S.0-Z2	1/64	1/8	3/64	1-1/2	2	CVDDIA
N77901	DIA230-0.031-F3-S.0-Z2	1/32	1/8	3/32	1-1/2	2	CVDDIA
N77904	DIA230-0.063-F3-S.0-Z2	1/16	1/8	3/16	1-1/2	2	CVDDIA
N77910	DIA230-0.125-D4-S.0-Z2	1/8	1/8	1/2	1-1/2	2	CVDDIA
N77913	DIA230-0.188-D3-S.0-Z2	3/16	3/16	5/8	2	2	CVDDIA
N77916	DIA230-0.250-D3-S.0-Z2	1/4	1/4	3/4	2-1/2	2	CVDDIA
N77928	DIA230-0.500-D2-S.0-Z2	1/2	1/2	1	3	2	CVDDIA

DIAMONDPLUS™ COATED- DIA230M

SOLID CARBIDE | HELIX 30° | SQUARE END | CENTER CUTTING

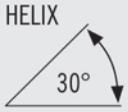
- Designed for carbon fiber, composite applications, graphite and green ceramics

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N77259	DIA230M-010-F4-S.0-Z2	1mm	3mm	4mm	45mm	2	CVDDIA
N77260	DIA230M-020-F5-S.0-Z2	2mm	3mm	10mm	45mm	2	CVDDIA
N77261	DIA230M-030-D5-S.0-Z2	3mm	3mm	15mm	45mm	2	CVDDIA
N77263	DIA230M-060-D3-S.0-Z2	6mm	6mm	20mm	64mm	2	CVDDIA
N77264	DIA230M-080-D2-S.0-Z2	8mm	8mm	20mm	64mm	2	CVDDIA
N77265	DIA230M-100-D2-S.0-Z2	10mm	10mm	25mm	63mm	2	CVDDIA
N77266	DIA230M-120-D2-S.0-Z2	12mm	12mm	30mm	76mm	2	CVDDIA

DIAMONDPLUS™ COATED- DIAL230

SOLID CARBIDE

HELIX



SQUARE END

CENTER CUTTING

- Designed for carbon fiber, composite applications, graphite and green ceramics

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N77964	DIAL230-0.125-D8-S.0-Z2	1/8	1/8	1	3	2	CVDDIA
N77967	DIAL230-0.188-D6-S.0-Z2	3/16	3/16	1-1/8	3	2	CVDDIA
N77970	DIAL230-0.250-D5-S.0-Z2	1/4	1/4	1-1/4	3	2	CVDDIA
N72663	DIAL230-0.250-D7-S.0-Z2	1/4	1/4	1-3/8	6	2	CVDDIA
N77976	DIAL230-0.375-D4-S.0-Z2	3/8	3/8	1-3/8	3-1/4	2	CVDDIA
N18692	DIAL230-0.500-D4-S.0-Z2	1/2	1/2	1-3/8	6	2	CVDDIA
N77982	DIAL230-0.500-D5-S.0-Z2	1/2	1/2	2	4	2	CVDDIA

Niagara Cutter

DIAMONDPLUS™ COATED- DIA430

SOLID CARBIDE | HELIX 30° | SQUARE END | CENTER CUTTING

- Designed for carbon fiber, composite applications, graphite and green ceramics

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N77790	DIA430-0.016-F3-S.0-Z4	1/64	1/8	3/64	1-1/2	4	CVDDIA
N77793	DIA430-0.031-F3-S.0-Z4	1/32	1/8	3/32	1-1/2	4	CVDDIA
N77796	DIA430-0.063-F3-S.0-Z4	1/16	1/8	3/16	1-1/2	4	CVDDIA
N77799	DIA430-0.094-F4-S.0-Z4	3/32	1/8	3/8	1-1/2	4	CVDDIA
N77802	DIA430-0.125-D4-S.0-Z4	1/8	1/8	1/2	1-1/2	4	CVDDIA
N77805	DIA430-0.188-D3-S.0-Z4	3/16	3/16	5/8	2	4	CVDDIA
N77808	DIA430-0.250-D3-S.0-Z4	1/4	1/4	3/4	2-1/2	4	CVDDIA
N77814	DIA430-0.375-D2-S.0-Z4	3/8	3/8	7/8	2-1/2	4	CVDDIA
N77820	DIA430-0.500-D2-S.0-Z4	1/2	1/2	1	3	4	CVDDIA

DIAMONDPLUS™ COATED- DIA430M

SOLID CARBIDE | HELIX 30° | SQUARE END | CENTER CUTTING

- Designed for carbon fiber, composite applications, graphite and green ceramics

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N77276	DIA430M-020-F5-S.0-Z4	2mm	3mm	10mm	45mm	4	CVDDIA
N77277	DIA430M-030-D5-S.0-Z4	3mm	3mm	15mm	45mm	4	CVDDIA
N77278	DIA430M-040-D4-S.0-Z4	4mm	4mm	15mm	55mm	4	CVDDIA
N77279	DIA430M-060-D3-S.0-Z4	6mm	6mm	20mm	64mm	4	CVDDIA
N77280	DIA430M-080-D2-S.0-Z4	8mm	8mm	20mm	64mm	4	CVDDIA

DIAMONDPLUS™ COATED- DIACR430

SOLID CARBIDE

HELIX 30°

RADIUS

CENTER CUTTING

- Designed for carbon fiber, composite applications, graphite and green ceramics

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS
N18415	DIACR430-0.063-F3-R010.0-Z4	1/16	1/8	3/16	1-1/2	4	CVDDIA	0.010
N18416	DIACR430-0.063-F3-R015.0-Z4	1/16	1/8	3/16	1-1/2	4	CVDDIA	0.015
N18417	DIACR430-0.125-D4-R015.0-Z4	1/8	1/8	1/2	1-1/2	4	CVDDIA	0.015
N18418	DIACR430-0.125-D4-R020.0-Z4	1/8	1/8	1/2	1-1/2	4	CVDDIA	0.020
N18419	DIACR430-0.188-D3-R020.0-Z4	3/16	3/16	5/8	2	4	CVDDIA	0.020
N18421	DIACR430-0.250-D3-R020.0-Z4	1/4	1/4	3/4	2-1/2	4	CVDDIA	0.020
N18422	DIACR430-0.250-D3-R030.0-Z4	1/4	1/4	3/4	2-1/2	4	CVDDIA	0.030
N77191	DIACR430-0.250-D6-R030.0-Z4	1/4	1/4	1-3/8	4	4	CVDDIA	0.030
N18423	DIACR430-0.375-D2-R020.0-Z4	3/8	3/8	7/8	2-1/2	4	CVDDIA	0.020
N18424	DIACR430-0.375-D2-R030.0-Z4	3/8	3/8	7/8	2-1/2	4	CVDDIA	0.030
N18425	DIACR430-0.500-D2-R030.0-Z4	1/2	1/2	1	3	4	CVDDIA	0.030
N18426	DIACR430-0.500-D2-R060.0-Z4	1/2	1/2	1	3	4	CVDDIA	0.060
N77194	DIACR430-0.500-D3-R030.0-Z4	1/2	1/2	1-3/8	4	4	CVDDIA	0.030

DIAMONDPLUS™ COATED- DIAL430

SOLID CARBIDE

HELIX 30°

SQUARE END

CENTER CUTTING

- Designed for carbon fiber, composite applications, graphite and green ceramics

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N77856	DIAL430-0.125-D8-S.0-Z4	1/8	1/8	1	3	4	CVDDIA
N77859	DIAL430-0.188-D5-S.0-Z4	3/16	3/16	1	4	4	CVDDIA
N72693	DIAL430-0.188-D6-S.0-Z4	3/16	3/16	1-1/8	3	4	CVDDIA
N77862	DIAL430-0.250-D5-S.0-Z4	1/4	1/4	1-1/4	3	4	CVDDIA
N72699	DIAL430-0.250-D6-S.0-Z4	1/4	1/4	1-3/8	4	4	CVDDIA
N77868	DIAL430-0.375-D4-S.0-Z4	3/8	3/8	1-3/8	3-1/4	4	CVDDIA
N72717	DIAL430-0.375-D5-S.0-Z4	3/8	3/8	1-3/8	4	4	CVDDIA
N18695	DIAL430-0.500-D3-S.0-Z4	1/2	1/2	1-3/8	4	4	CVDDIA
N77874	DIAL430-0.500-D5-S.0-Z4	1/2	1/2	2	4	4	CVDDIA
N72729	DIAL430-0.500-D6-S.0-Z4	1/2	1/2	3	6	4	CVDDIA

Niagara Cutter

DIAMONDPLUS™ COATED- DIAXSR430

SOLID CARBIDE | HELIX 30° | RADIUS | CENTER CUTTING

- Designed for carbon fiber, composite applications, graphite and green ceramics

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	RADIUS	REACH	NECK DIA
N77222	DIAXSR430-0.125-E1-R015.0-Z4	1/8	1/8	1/8	3	4	0.015	5/8	0.115
N77225	DIAXSR430-0.250-E1-R015.0-Z4	1/4	1/4	1/4	4	4	0.015	3/4	0.240
N77228	DIAXSR430-0.375-E1-R030.0-Z4	3/8	3/8	3/8	4	4	0.030	1-1/8	0.365
N77229	DIAXSR430-0.500-E1-R060.0-Z4	1/2	1/2	1/2	6	4	0.060	1-1/2	0.490

DIAMONDPLUS™ COATED- DIAXRR430

SOLID CARBIDE | HELIX 30° | RADIUS | CENTER CUTTING

- Designed for carbon fiber, composite applications, graphite and green ceramics

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS	REACH	NECK DIA
N18671	DIAXRR430-0.031-G3-R005.0-Z4	1/32	1/8	3/32	3	4	CVDDIA	0.005	3/8	0.028
N18676	DIAXRR430-0.031-G4-R005.0-Z4	1/32	1/8	3/32	3	4	CVDDIA	0.005	1/2	0.028
N18672	DIAXRR430-0.047-G3-R010.0-Z4	3/64	1/8	9/64	3	4	CVDDIA	0.010	9/16	0.043
N18677	DIAXRR430-0.047-G4-R010.0-Z4	3/64	1/8	9/64	3	4	CVDDIA	0.010	3/4	0.043
N18673	DIAXRR430-0.063-G4-R010.0-Z4	1/16	1/8	3/16	3	4	CVDDIA	0.010	3/4	0.057
N18678	DIAXRR430-0.063-G5-R010.0-Z4	1/16	1/8	3/16	3	4	CVDDIA	0.010	1	0.057
N18674	DIAXRR430-0.094-G3-R010.0-Z4	3/32	1/8	9/32	3	4	CVDDIA	0.010	1	0.086
N18679	DIAXRR430-0.094-G4-R010.0-Z4	3/32	1/8	9/32	3	4	CVDDIA	0.010	1-1/2	0.086
N18675	DIAXRR430-0.125-E3-R010.0-Z4	1/8	1/8	3/8	3	4	CVDDIA	0.010	1-1/2	0.115
N77253	DIAXRR430-0.125-E6-R030.0-Z4	1/8	1/8	3/4	3	4	CVDDIA	0.030	1-1/2	0.115

Niagara Cutter

DIAMONDPLUS™ COATED- DIAB230

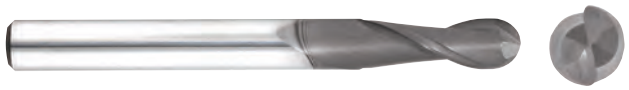
SOLID CARBIDE | HELIX 30° | BALL END | CENTER CUTTING

- Designed for carbon fiber, composite applications, graphite and green ceramics

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N77931	DIAB230-0.016-F3-B.0-Z2	1/64	1/8	3/64	1-1/2	2	CVDDIA
N77934	DIAB230-0.031-F3-B.0-Z2	1/32	1/8	3/32	1-1/2	2	CVDDIA
N77174	DIAB230-0.047-F3-B.0-Z2	3/64	1/8	1/8	1-1/2	2	CVDDIA
N77937	DIAB230-0.063-F3-B.0-Z2	1/16	1/8	3/16	1-1/2	2	CVDDIA
N77943	DIAB230-0.125-D4-B.0-Z2	1/8	1/8	1/2	1-1/2	2	CVDDIA
N77946	DIAB230-0.188-D3-B.0-Z2	3/16	3/16	5/8	2	2	CVDDIA
N77949	DIAB230-0.250-D3-B.0-Z2	1/4	1/4	3/4	2-1/2	2	CVDDIA
N77961	DIAB230-0.500-D2-B.0-Z2	1/2	1/2	1	3	2	CVDDIA

DIAMONDPLUS™ COATED- DIAB230M

SOLID CARBIDE | HELIX 30° | BALL END | CENTER CUTTING



- Designed for carbon fiber, composite applications, graphite and green ceramics

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N77267	DIAB230M-010-F4-B.0-Z2	1mm	3mm	4mm	45mm	2	CVDDIA
N77268	DIAB230M-020-F5-B.0-Z2	2mm	3mm	10mm	45mm	2	CVDDIA
N77269	DIAB230M-030-D5-B.0-Z2	3mm	3mm	15mm	45mm	2	CVDDIA
N77270	DIAB230M-040-D4-B.0-Z2	4mm	4mm	15mm	55mm	2	CVDDIA
N77271	DIAB230M-060-D3-B.0-Z2	6mm	6mm	20mm	64mm	2	CVDDIA

DIAMONDPLUS™ COATED- DIAB430

SOLID CARBIDE

HELIX 30°

BALL END

CENTER CUTTING

- Designed for carbon fiber, composite applications, graphite and green ceramics

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N77823	DIAB430-0.016-F3-B.0-Z4	1/64	1/8	3/64	1-1/2	4	CVDDIA
N77826	DIAB430-0.031-F3-B.0-Z4	1/32	1/8	3/32	1-1/2	4	CVDDIA
N77829	DIAB430-0.063-F3-B.0-Z4	1/16	1/8	3/16	1-1/2	4	CVDDIA
N77183	DIAB430-0.078-F3-B.0-Z4	5/64	1/8	1/4	1-1/2	4	CVDDIA
N77832	DIAB430-0.094-F4-B.0-Z4	3/32	1/8	3/8	1-1/2	4	CVDDIA
N77835	DIAB430-0.125-D4-B.0-Z4	1/8	1/8	1/2	1-1/2	4	CVDDIA
N77838	DIAB430-0.188-D3-B.0-Z4	3/16	3/16	5/8	2	4	CVDDIA
N77841	DIAB430-0.250-D3-B.0-Z4	1/4	1/4	3/4	2-1/2	4	CVDDIA
N77847	DIAB430-0.375-D2-B.0-Z4	3/8	3/8	7/8	2-1/2	4	CVDDIA
N77853	DIAB430-0.500-D2-B.0-Z4	1/2	1/2	1	3	4	CVDDIA

DIAMONDPLUS™ COATED- DIALB430

SOLID CARBIDE | HELIX 30° | BALL END | CENTER CUTTING

- Designed for carbon fiber, composite applications, graphite and green Ceramics

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N77877	DIALB430-0.125-D8-B.0-Z4	1/8	1/8	1	3	4	CVDDIA
N77880	DIALB430-0.188-D5-B.0-Z4	3/16	3/16	1	4	4	CVDDIA
N72696	DIALB430-0.188-D6-B.0-Z4	3/16	3/16	1-1/8	3	4	CVDDIA
N77883	DIALB430-0.250-D5-B.0-Z4	1/4	1/4	1-1/4	3	4	CVDDIA
N72702	DIALB430-0.250-D6-B.0-Z4	1/4	1/4	1-3/8	4	4	CVDDIA
N72708	DIALB430-0.250-D7-B.0-Z4	1/4	1/4	1-3/8	6	4	CVDDIA
N72720	DIALB430-0.375-D5-B.0-Z4	3/8	3/8	1-3/8	4	4	CVDDIA
N72726	DIALB430-0.375-D6-B.0-Z4	3/8	3/8	1-3/8	6	4	CVDDIA
N18697	DIALB430-0.500-D3-B.0-Z4	1/2	1/2	1-3/8	4	4	CVDDIA
N77895	DIALB430-0.500-D5-B.0-Z4	1/2	1/2	2	4	4	CVDDIA
N18698	DIALB430-0.500-D4-B.0-Z4	1/2	1/2	1-3/8	6	4	CVDDIA
N72732	DIALB430-0.500-D6-B.0-Z4	1/2	1/2	3	6	4	CVDDIA

DIAMONDPLUS™ COATED- DIAXSB430

SOLID CARBIDE | HELIX 30° | BALL END | CENTER CUTTING

- Designed for carbon fiber, composite applications, graphite and green ceramics

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	REACH	NECK DIA
N77214	DIAXSB430-0.063-G1-B.0-Z4	1/16	1/8	1/16	3	4	5/16	0.057
N77216	DIAXSB430-0.125-E1-B.0-Z4	1/8	1/8	1/8	3	4	5/8	0.115
N77218	DIAXSB430-0.250-E1-B.0-Z4	1/4	1/4	1/4	4	4	3/4	0.240

DIAMONDPLUS™ COATED- DIAXRB430

SOLID CARBIDE

HELIX 30°

BALL END

CENTER CUTTING

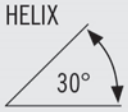
- Designed for carbon fiber, composite applications, graphite and green ceramics

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	REACH	NECK DIA
N18681	DIAXRB430-0.031-G4-B.0-Z4	1/32	1/8	3/32	3	4	CVDDIA	3/8	0.028
N18686	DIAXRB430-0.031-G5-B.0-Z4	1/32	1/8	3/32	3	4	CVDDIA	1/2	0.028
N18682	DIAXRB430-0.047-G3-B.0-Z4	3/64	1/8	9/64	3	4	CVDDIA	9/16	0.043
N18687	DIAXRB430-0.047-G4-B.0-Z4	3/64	1/8	9/64	3	4	CVDDIA	3/4	0.043
N18683	DIAXRB430-0.063-G4-B.0-Z4	1/16	1/8	3/16	3	4	CVDDIA	3/4	0.057
N18688	DIAXRB430-0.063-G5-B.0-Z4	1/16	1/8	3/16	3	4	CVDDIA	1	0.057
N18684	DIAXRB430-0.094-G3-B.0-Z4	3/32	1/8	9/32	3	4	CVDDIA	1	0.086
N18689	DIAXRB430-0.094-G4-B.0-Z4	3/32	1/8	9/32	3	4	CVDDIA	1-1/2	0.086
N18685	DIAXRB430-0.125-E3-B.0-Z4	1/8	1/8	3/8	3	4	CVDDIA	1-1/2	0.115
N18690	DIAXRB430-0.125-E4-B.0-Z4	1/8	1/8	3/8	3	4	CVDDIA	2	0.115

DIAMONDPLUS™ COATED- DIACC

SOLID CARBIDE

HELIX



SQUARE END

CENTER CUTTING

- Coarse-pitch
- Chip breaking notches
- Open flute design
- "X" DIM equals the length to helix transition from end teeth
- Designed to avoid delamination
- Designed for carbon fiber, composite applications, graphite and green ceramics

COARSE-PITCH

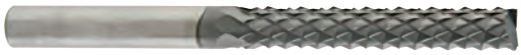
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	"X" DIM
N77311	DIACC-0.250-D3-S.0-Z3	1/4	1/4	3/4	2-1/2	3	CVDDIA	0.150
N77312	DIACC-0.375-D3-S.0-Z3	3/8	3/8	1	3	3	CVDDIA	0.213
N77313	DIACC-0.500-D3-S.0-Z5	1/2	1/2	1-1/4	3	5	CVDDIA	0.275

FINE-PITCH

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	"X" DIM
N68196	DIACC-0.250-D3-S.0-Z5	1/4	1/4	3/4	2-1/2	5	CVDDIA	0.150
N68197	DIACC-0.375-D3-S.0-Z5	3/8	3/8	1	3	5	CVDDIA	0.213
N68198	DIACC-0.500-D3-S.0-Z7	1/2	1/2	1-1/4	3	7	CVDDIA	0.275

DIAMONDPLUS™ COATED- DIAEPB

SOLID CARBIDE



- Positive end cutting geometry
- Low cutting forces
- End mill style end teeth geometry
- High shearing capabilities to reduce material delamination
- Designed for carbon fiber, composite applications, graphite and green ceramics

COARSE-PITCH

- Up to 100% radial engagement

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	COATING
N68077	DIAEPB-0.125-D1-S.0-Z	1/8	1/8	1/2	2	CVDDIA
N68078	DIAEPB-0.250-D2-S.0-Z	1/4	1/4	3/4	2-1/2	CVDDIA
N68079	DIAEPB-0.250-D4-S.0-Z	1/4	1/4	1-3/8	3	CVDDIA
N68081	DIAEPB-0.375-D1-S.0-Z	3/8	3/8	1-3/8	3-1/4	CVDDIA
N68083	DIAEPB-0.500-D1-S.0-Z	1/2	1/2	1	3	CVDDIA
N68084	DIAEPB-0.500-D3-S.0-Z	1/2	1/2	2	4	CVDDIA

FINE-PITCH

- Improved surface finish as compared to coarse-pitch
- Up to 50% radial engagement

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	COATING
N68172	DIAEPB-0.125-D2-S.0-Z	1/8	1/8	1/2	1-1/2	CVDDIA
N68173	DIAEPB-0.250-D1-S.0-Z	1/4	1/4	3/4	2-1/2	CVDDIA
N68176	DIAEPB-0.375-D4-S.0-Z	3/8	3/8	1-3/8	3-1/4	CVDDIA
N68178	DIAEPB-0.500-D2-S.0-Z	1/2	1/2	1	3	CVDDIA
N68179	DIAEPB-0.500-D4-S.0-Z	1/2	1/2	2	4	CVDDIA

DIAMONDPLUS™ COATED- DIABEB

SOLID CARBIDE

- Positive cutting geometry
- Lower cutting forces
- High shear capabilities to reduce material delamination
- Burr style end teeth geometry
- Designed for carbon fiber, composite applications, graphite and green ceramics

COARSE-PITCH

- Can be utilized up to 100% radial engagement

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	COATING
N68093	DIABEB-0.125-D1-S.0-Z	1/8	1/8	1/2	1-1/2	CVDDIA
N68094	DIABEB-0.250-D1-S.0-Z	1/4	1/4	3/4	2-1/2	CVDDIA
N68097	DIABEB-0.375-D1-S.0-Z	3/8	3/8	1-3/8	3-1/4	CVDDIA
N68098	DIABEB-0.375-D7-S.0-Z	3/8	3/8	2-1/8	4	CVDDIA
N68099	DIABEB-0.500-D1-S.0-Z	1/2	1/2	1	3	CVDDIA
N68100	DIABEB-0.500-D3-S.0-Z	1/2	1/2	2	4	CVDDIA

FINE-PITCH

- Improved surface finish as compared to coarse-pitch
- Up to 50% radial engagement

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	COATING
N68188	DIABEB-0.125-D2-S.0-Z	1/8	1/8	1/2	1-1/2	CVDDIA
N68189	DIABEB-0.250-D2-S.0-Z	1/4	1/4	3/4	2-1/2	CVDDIA
N68192	DIABEB-0.375-D2-S.0-Z	3/8	3/8	1-3/8	3-1/4	CVDDIA
N68193	DIABEB-0.375-D8-S.0-Z	3/8	3/8	2-1/8	4	CVDDIA
N68194	DIABEB-0.500-D2-S.0-Z	1/2	1/2	1	3	CVDDIA
N68195	DIABEB-0.500-D4-S.0-Z	1/2	1/2	2	4	CVDDIA

DIAMONDPLUS™ COATED- DIAPPB

SOLID CARBIDE

- Drill point design
- Positive end cutting geometry
- Low cutting forces
- High shearing capabilities to reduce material delamination
- Designed for carbon fiber, composite applications, graphite and green ceramics

COARSE-PITCH

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	COATING
N68085	DIAPPB-0.125-D1-C.0-Z	1/8	1/8	1/2	2	CVDDIA
N68086	DIAPPB-0.250-D1-C.0-Z	1/4	1/4	3/4	2-1/2	CVDDIA
N68087	DIAPPB-0.250-D3-C.0-Z	1/4	1/4	1-3/8	3	CVDDIA
N68088	DIAPPB-0.250-D5-C.0-Z	1/4	1/4	2	4	CVDDIA

FINE-PITCH

- Improved surface finish as compared to coarse-pitch

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	COATING
N68180	DIAPPB-0.125-D2-C.0-Z	1/8	1/8	1/2	1-1/2	CVDDIA
N68181	DIAPPB-0.250-D2-C.0-Z	1/4	1/4	3/4	2-1/2	CVDDIA
N68182	DIAPPB-0.250-D4-C.0-Z	1/4	1/4	1-3/8	3	CVDDIA
N68183	DIAPPB-0.250-D6-C.0-Z	1/4	1/4	2	4	CVDDIA

DIA230 / DIAB230

SLOTTING														
	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 2$						
								1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4
	GRAPHITE	1.00	1.00		1425		n (rev/min)	43548	29032	21774	17419	14516	10887	8710	7258
							f_z (in)	0.0005	0.0007	0.0009	0.0011	0.0014	0.0018	0.0023	0.0027
				1125	-	1725	v_f (in/min)	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5
	PLASTIC (SOFT)	1.00	1.00		1425		n (rev/min)	43548	29032	21774	17419	14516	10887	8710	7258
							f_z (in)	0.0005	0.0007	0.0009	0.0011	0.0014	0.0018	0.0023	0.0027
				1125	-	1725	v_f (in/min)	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5
	PLASTIC (HARD)	1.00	1.00		1425		n (rev/min)	43548	29032	21774	17419	14516	10887	8710	7258
							f_z (in)	0.0005	0.0007	0.0009	0.0011	0.0014	0.0018	0.0023	0.0027
				1125	-	1725	v_f (in/min)	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5
THERMOPLAST	CFRP	1.00	1.00		1313		n (rev/min)	40110	26740	20055	16044	13370	10028	8022	6685
							f_z (in)	0.0005	0.0007	0.0010	0.0012	0.0015	0.0020	0.0025	0.0030
				1163	-	1463	v_f (in/min)	39.7	39.7	39.7	39.7	39.7	39.7	39.7	39.7
	GRP	0.80	1.00		1425		n (rev/min)	43548	29032	21774	17419	14516	10887	8710	7258
							f_z (in)	0.0010	0.0015	0.0020	0.0025	0.0030	0.0040	0.0050	0.0059
				1335	-	1515	v_f (in/min)	86.2	86.2	86.2	86.2	86.2	86.2	86.2	86.2
THERMOSET	CFRP	1.00	1.00		1313		n (rev/min)	40110	26740	20055	16044	13370	10028	8022	6685
							f_z (in)	0.0005	0.0007	0.0010	0.0012	0.0015	0.0020	0.0025	0.0030
				1162.5	-	1462.5	v_f (in/min)	39.7	39.7	39.7	39.7	39.7	39.7	39.7	39.7
	GRP	0.80	1.00		1425		n (rev/min)	43548	29032	21774	17419	14516	10887	8710	7258
							f_z (in)	0.0010	0.0015	0.0020	0.0025	0.0030	0.0040	0.0050	0.0059
				1335	-	1515	v_f (in/min)	86.2	86.2	86.2	86.2	86.2	86.2	86.2	86.2

DIA230 / DIAB230

SIDE MILLING - ROUGHING															
SMG		a_p x Dc	a_e x Dc	v_c (sf / min)				Zn = 2							
								1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4
GRAPHITE		1.00	0.40	1900			n (rev/min)	58064	38709	29032	23226	19355	14516	11613	9677
							f_z (in)	0.0007	0.0010	0.0014	0.0017	0.0021	0.0028	0.0034	0.0041
				1600	-	2200	v_f (in/min)	79.8	79.8	79.8	79.8	79.8	79.8	79.8	79.8
PLASTIC (SOFT)		1.00	0.40	1900			n (rev/min)	58064	38709	29032	23226	19355	14516	11613	9677
							f_z (in)	0.0007	0.0010	0.0014	0.0017	0.0021	0.0028	0.0034	0.0041
				1600	-	2200	v_f (in/min)	79.8	79.8	79.8	79.8	79.8	79.8	79.8	79.8
PLASTIC (HARD)		1.00	0.40	1900			n (rev/min)	58064	38709	29032	23226	19355	14516	11613	9677
							f_z (in)	0.0007	0.0010	0.0014	0.0017	0.0021	0.0028	0.0034	0.0041
				1600	-	2200	v_f (in/min)	79.8	79.8	79.8	79.8	79.8	79.8	79.8	79.8
THERMOPLAST	CFRP	1.00	0.40	1750			n (rev/min)	53480	35653	26740	21392	17827	13370	10696	8913
							f_z (in)	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030	0.0038	0.0045
				1600	-	1900	v_f (in/min)	80.2	80.2	80.2	80.2	80.2	80.2	80.2	80.2
	GRP	1.00	0.40	1900			n (rev/min)	58064	38709	29032	23226	19355	14516	11613	9677
							f_z (in)	0.0015	0.0023	0.0030	0.0038	0.0045	0.0060	0.0075	0.0090
				1810	-	1990	v_f (in/min)	174.2	174.2	174.2	174.2	174.2	174.2	174.2	174.2
THERMOSET	CFRP	1.00	0.40	1750			n (rev/min)	53480	35653	26740	21392	17827	13370	10696	8913
							f_z (in)	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030	0.0038	0.0045
				1600	-	1900	v_f (in/min)	80.2	80.2	80.2	80.2	80.2	80.2	80.2	80.2
	GRP	1.00	0.40	1900			n (rev/min)	58064	38709	29032	23226	19355	14516	11613	9677
							f_z (in)	0.0015	0.0023	0.0030	0.0038	0.0045	0.0060	0.0075	0.0090
				1810	-	1990	v_f (in/min)	174.2	174.2	174.2	174.2	174.2	174.2	174.2	174.2

DIAL230

SLOTTING															
SMG		a_p x Dc	a_e x Dc	v_c (sf / min)				Zn = 2							
								1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4
GRAPHITE		1.00	1.00		1140		n (rev/min)	34838	23226	17419	13935	11613	8710	6968	5806
							f_z (in)	0.0003	0.0005	0.0007	0.0009	0.0010	0.0014	0.0017	0.0020
				840	-	1440	v_f (in/min)	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7
PLASTIC (SOFT)		1.00	1.00		1140		n (rev/min)	34838	23226	17419	13935	11613	8710	6968	5806
							f_z (in)	0.0003	0.0005	0.0007	0.0009	0.0010	0.0014	0.0017	0.0020
				840	-	1440	v_f (in/min)	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7
PLASTIC (HARD)		1.00	1.00		1140		n (rev/min)	34838	23226	17419	13935	11613	8710	6968	5806
							f_z (in)	0.0003	0.0005	0.0007	0.0009	0.0010	0.0014	0.0017	0.0020
				840	-	1440	v_f (in/min)	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7
THERMOPLAST	CFRP	1.00	1.00		1050		n (rev/min)	32088	21392	16044	12835	10696	8022	6418	5348
							f_z (in)	0.0004	0.0006	0.0007	0.0009	0.0011	0.0015	0.0019	0.0022
				900	-	1200	v_f (in/min)	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8
	GRP	0.80	1.00		1140		n (rev/min)	34838	23226	17419	13935	11613	8710	6968	5806
							f_z (in)	0.0007	0.0011	0.0015	0.0019	0.0022	0.0030	0.0037	0.0045
				1050	-	1230	v_f (in/min)	51.7	51.7	51.7	51.7	51.7	51.7	51.7	51.7
THERMOSET	CFRP	1.00	1.00		1050		n (rev/min)	32088	21392	16044	12835	10696	8022	6418	5348
							f_z (in)	0.0004	0.0006	0.0007	0.0009	0.0011	0.0015	0.0019	0.0022
				900	-	1200	v_f (in/min)	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8
	GRP	0.80	1.00		1140		n (rev/min)	34838	23226	17419	13935	11613	8710	6968	5806
							f_z (in)	0.0007	0.0011	0.0015	0.0019	0.0022	0.0030	0.0037	0.0045
				1050	-	1230	v_f (in/min)	51.7	51.7	51.7	51.7	51.7	51.7	51.7	51.7

DIAL230

SIDE MILLING - ROUGHING															
	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				Zn = 2							
								1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4
	GRAPHITE	1.00	0.40		1520		n (rev/min)	46451	30967	23226	18580	15484	11613	9290	7742
							f_z (in)	0.0005	0.0008	0.0010	0.0013	0.0015	0.0021	0.0026	0.0031
				1220	-	1820	v_f (in/min)	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9
	PLASTIC (SOFT)	1.00	0.40		1520		n (rev/min)	46451	30967	23226	18580	15484	11613	9290	7742
							f_z (in)	0.0005	0.0008	0.0010	0.0013	0.0015	0.0021	0.0026	0.0031
				1220	-	1820	v_f (in/min)	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9
	PLASTIC (HARD)	1.00	0.40		1520		n (rev/min)	46451	30967	23226	18580	15484	11613	9290	7742
							f_z (in)	0.0005	0.0008	0.0010	0.0013	0.0015	0.0021	0.0026	0.0031
				1220	-	1820	v_f (in/min)	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9
THERMOPLAST	CFRP	1.00	0.40		1400		n (rev/min)	42784	28523	21392	17114	14261	10696	8557	7131
							f_z (in)	0.0006	0.0008	0.0011	0.0014	0.0017	0.0023	0.0028	0.0034
				1250	-	1550	v_f (in/min)	48.1	48.1	48.1	48.1	48.1	48.1	48.1	48.1
	GRP	1.00	0.40		1520		n (rev/min)	46451	30967	23226	18580	15484	11613	9290	7742
							f_z (in)	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045	0.0056	0.0068
				1430	-	1610	v_f (in/min)	104.5	104.5	104.5	104.5	104.5	104.5	104.5	104.5
THERMOSET	CFRP	1.00	0.40		1400		n (rev/min)	42784	28523	21392	17114	14261	10696	8557	7131
							f_z (in)	0.0006	0.0008	0.0011	0.0014	0.0017	0.0023	0.0028	0.0034
				1250	-	1550	v_f (in/min)	48.1	48.1	48.1	48.1	48.1	48.1	48.1	48.1
	GRP	1.00	0.40		1520		n (rev/min)	46451	30967	23226	18580	15484	11613	9290	7742
							f_z (in)	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045	0.0056	0.0068
				1430	-	1610	v_f (in/min)	104.5	104.5	104.5	104.5	104.5	104.5	104.5	104.5

DIA230M / DIAB230M

SLOTTING														
SMG		a_p x Dc	a_e x Dc	v_c (m / min)				Zn = 2						
								4	6	8	10	12	14	16
GRAPHITE		1.00	1.00		434		n (rev/min)	34540	23020	17270	13810	11510	9870	8630
							f_z (mm)	0.015	0.022	0.029	0.036	0.044	0.051	0.058
				343	-	526	v_f (mm/min)	1003	1003	1003	1003	1003	1003	1002
PLASTIC (SOFT)		1.00	1.00		434		n (rev/min)	34540	23020	17270	13810	11510	9870	8630
							f_z (mm)	0.015	0.022	0.029	0.036	0.044	0.051	0.058
				343	-	526	v_f (mm/min)	1003	1003	1003	1003	1003	1003	1002
PLASTIC (HARD)		1.00	1.00		434		n (rev/min)	34540	23020	17270	13810	11510	9870	8630
							f_z (mm)	0.015	0.022	0.029	0.036	0.044	0.051	0.058
				343	-	526	v_f (mm/min)	1003	1003	1003	1003	1003	1003	1002
THERMOPLAST	CFRP	1.00	1.00		400		n (rev/min)	31830	21220	15920	12730	10610	9090	7960
							f_z (mm)	0.016	0.024	0.032	0.040	0.048	0.055	0.063
				354	-	446	v_f (mm/min)	1008	1008	1009	1008	1008	1008	1009
	GRP	0.80	1.00		434		n (rev/min)	34540	23020	17270	13810	11510	9870	8630
							f_z (mm)	0.032	0.048	0.063	0.079	0.095	0.111	0.127
				407	-	462	v_f (mm/min)	2188	2188	2188	2188	2188	2189	2187
THERMOSET	CFRP	1.00	1.00		400		n (rev/min)	31830	21220	15920	12730	10610	9090	7960
							f_z (mm)	0.016	0.024	0.032	0.040	0.048	0.055	0.063
				354	-	446	v_f (mm/min)	1008	1008	1009	1008	1008	1008	1009
	GRP	0.80	1.00		434		n (rev/min)	34540	23020	17270	13810	11510	9870	8630
							f_z (mm)	0.032	0.048	0.063	0.079	0.095	0.111	0.127
				407	-	462	v_f (mm/min)	2188	2188	2188	2188	2188	2189	2187

DIA230M / DIAB230M

SIDE MILLING - ROUGHING														
SMG		a_p x Dc	a_e x Dc	v_c (m / min)				Zn = 2						
								4	6	8	10	12	14	16
GRAPHITE		1.00	0.40		579		n (rev/min)	46080	30720	23040	18430	15360	13160	11520
							f_z (mm)	0.022	0.033	0.044	0.055	0.066	0.077	0.088
				488	-	671	v_f (mm/min)	2028	2028	2028	2027	2028	2027	2028
PLASTIC (SOFT)		1.00	0.40		579		n (rev/min)	46080	30720	23040	18430	15360	13160	11520
							f_z (mm)	0.015	0.022	0.029	0.036	0.044	0.051	0.058
				488	-	671	v_f (mm/min)	1338	1338	1338	1338	1338	1338	1338
PLASTIC (HARD)		1.00	0.40		579		n (rev/min)	46080	30720	23040	18430	15360	13160	11520
							f_z (mm)	0.015	0.022	0.029	0.036	0.044	0.051	0.058
				488	-	671	v_f (mm/min)	1338	1338	1338	1338	1338	1338	1338
THERMOPLAST	CFRP	1.00	0.40		533		n (rev/min)	42410	28280	21210	16970	14140	12120	10600
							f_z (mm)	0.016	0.024	0.032	0.040	0.048	0.055	0.063
				488	-	579	v_f (mm/min)	1344	1344	1344	1344	1344	1344	1343
	GRP	1.00	0.40		579		n (rev/min)	46080	30720	23040	18430	15360	13160	11520
							f_z (mm)	0.032	0.048	0.063	0.079	0.095	0.111	0.127
				552	-	607	v_f (mm/min)	2920	2920	2920	2919	2920	2918	2920
THERMOSET	CFRP	1.00	0.40		533		n (rev/min)	42410	28280	21210	16970	14140	12120	10600
							f_z (mm)	0.016	0.024	0.032	0.040	0.048	0.055	0.063
				488	-	579	v_f (mm/min)	1344	1344	1344	1344	1344	1344	1343
	GRP	1.00	0.40		579		n (rev/min)	46080	30720	23040	18430	15360	13160	11520
							f_z (mm)	0.032	0.048	0.063	0.079	0.095	0.111	0.127
				552	-	607	v_f (mm/min)	2920	2920	2920	2919	2920	2918	2920

DIA430 / DIACR430 / DIAB430

SLOTTING															
	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 4$ 1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4
	GRAPHITE	1.00	1.00		1425		n (rev/min)	43548	29032	21774	17419	14516	10887	8710	7258
							f_z (in)	0.0005	0.0007	0.0009	0.0011	0.0014	0.0018	0.0023	0.0027
				1125	-	1725	v_f (in/min)	79.0	79.0	79.0	79.0	79.0	79.0	79.0	79.0
	PLASTIC (SOFT)	1.00	1.00		1425		n (rev/min)	43548	29032	21774	17419	14516	10887	8710	7258
							f_z (in)	0.0005	0.0007	0.0009	0.0011	0.0014	0.0018	0.0023	0.0027
				1125	-	1725	v_f (in/min)	79.0	79.0	79.0	79.0	79.0	79.0	79.0	79.0
	PLASTIC (HARD)	1.00	1.00		1425		n (rev/min)	43548	29032	21774	17419	14516	10887	8710	7258
							f_z (in)	0.0005	0.0007	0.0009	0.0011	0.0014	0.0018	0.0023	0.0027
				1125	-	1725	v_f (in/min)	79.0	79.0	79.0	79.0	79.0	79.0	79.0	79.0
THERMOPLAST	CFRP	1.00	1.00		1313		f_z (in)	40110	26740	20055	16044	13370	10028	8022	6685
							v_f (in/min)	0.0005	0.0007	0.0010	0.0012	0.0015	0.0020	0.0025	0.0030
				1163	-	1463	f_z (in)	79.4	79.4	79.4	79.4	79.4	79.4	79.4	79.4
	GRP	0.80	1.00		1425		v_f (in/min)	43548	29032	21774	17419	14516	10887	8710	7258
							f_z (in)	0.0010	0.0015	0.0020	0.0025	0.0030	0.0040	0.0050	0.0059
				1335	-	1515	v_f (in/min)	172.5	172.5	172.5	172.4	172.5	172.5	172.5	172.5
THERMOSET	CFRP	1.00	1.00		1313		f_z (in)	40110	26740	20055	16044	13370	10028	8022	6685
							v_f (in/min)	0.0005	0.0007	0.0010	0.0012	0.0015	0.0020	0.0025	0.0030
				1162.5	-	1462.5	f_z (in)	79.4	79.4	79.4	79.4	79.4	79.4	79.4	79.4
	GRP	0.80	1.00		1425		v_f (in/min)	43548	29032	21774	17419	14516	10887	8710	7258
							f_z (in)	0.0010	0.0015	0.0020	0.0025	0.0030	0.0040	0.0050	0.0059
				1335	-	1515	v_f (in/min)	172.5	172.5	172.5	172.4	172.5	172.5	172.5	172.5

DIA430 / DIACR430 / DIAB430

SIDE MILLING - ROUGHING															
SMG		a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 4$							
								1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4
GRAPHITE		1.00	0.40	1900			n (rev/min)	58064	38709	29032	23226	19355	14516	11613	9677
							f_z (in)	0.0007	0.0010	0.0014	0.0017	0.0021	0.0028	0.0034	0.0041
				1600	-	2200	v_f (in/min)	159.7	159.7	159.7	159.7	159.7	159.7	159.7	159.7
PLASTIC (SOFT)		1.00	0.40	1900			n (rev/min)	58064	38709	29032	23226	19355	14516	11613	9677
							f_z (in)	0.0007	0.0010	0.0014	0.0017	0.0021	0.0028	0.0034	0.0041
				1600	-	2200	v_f (in/min)	159.7	159.7	159.7	159.7	159.7	159.7	159.7	159.7
PLASTIC (HARD)		1.00	0.40	1900			n (rev/min)	58064	38709	29032	23226	19355	14516	11613	9677
							f_z (in)	0.0007	0.0010	0.0014	0.0017	0.0021	0.0028	0.0034	0.0041
				1600	-	2200	v_f (in/min)	159.7	159.7	159.7	159.7	159.7	159.7	159.7	159.7
THERMOPLAST	CFRP	1.00	0.40	1750			n (rev/min)	53480	35653	26740	21392	17827	13370	10696	8913
							f_z (in)	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030	0.0038	0.0045
				1600	-	1900	v_f (in/min)	160.4	160.4	160.4	160.4	160.4	160.4	160.4	160.4
	GRP	1.00	0.40	1900			n (rev/min)	58064	38709	29032	23226	19355	14516	11613	9677
							f_z (in)	0.0015	0.0023	0.0030	0.0038	0.0045	0.0060	0.0075	0.0090
				1810	-	1990	v_f (in/min)	348.4	348.4	348.4	348.4	348.4	348.4	348.4	348.4
THERMOSET	CFRP	1.00	0.40	1750			n (rev/min)	53480	35653	26740	21392	17827	13370	10696	8913
							f_z (in)	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030	0.0038	0.0045
				1600	-	1900	v_f (in/min)	160.4	160.4	160.4	160.4	160.4	160.4	160.4	160.4
	GRP	1.00	0.40	1900			n (rev/min)	58064	38709	29032	23226	19355	14516	11613	9677
							f_z (in)	0.0015	0.0023	0.0030	0.0038	0.0045	0.0060	0.0075	0.0090
				1810	-	1990	v_f (in/min)	348.4	348.4	348.4	348.4	348.4	348.4	348.4	348.4

DIAXSR430 / DIAXSB430 / DIAL430 / DIALB430 / DIAXRR430 / DIAXRB430

SLOTTING															
SMG		a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 4$							
								1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4
GRAPHITE		1.00	1.00	1140			n (rev/min)	34838	23226	17419	13935	11613	8710	6968	5806
							f_z (in)	0.0003	0.0005	0.0007	0.0009	0.0010	0.0014	0.0017	0.0020
				840	-	1440	v_f (in/min)	47.4	47.4	47.4	47.4	47.4	47.4	47.4	47.4
PLASTIC (SOFT)		1.00	1.00	1140			n (rev/min)	34838	23226	17419	13935	11613	8710	6968	5806
							f_z (in)	0.0003	0.0005	0.0007	0.0009	0.0010	0.0014	0.0017	0.0020
				840	-	1440	v_f (in/min)	47.4	47.4	47.4	47.4	47.4	47.4	47.4	47.4
PLASTIC (HARD)		1.00	1.00	1140			n (rev/min)	34838	23226	17419	13935	11613	8710	6968	5806
							f_z (in)	0.0003	0.0005	0.0007	0.0009	0.0010	0.0014	0.0017	0.0020
				840	-	1440	v_f (in/min)	47.4	47.4	47.4	47.4	47.4	47.4	47.4	47.4
THERMOPLAST	CFRP	1.00	1.00	1050			n (rev/min)	32088	21392	16044	12835	10696	8022	6418	5348
							f_z (in)	0.0004	0.0006	0.0007	0.0009	0.0011	0.0015	0.0019	0.0022
				900	-	1200	v_f (in/min)	47.7	47.7	47.7	47.6	47.7	47.7	47.7	47.7
	GRP	0.80	1.00	1140			n (rev/min)	34838	23226	17419	13935	11613	8710	6968	5806
							f_z (in)	0.0007	0.0011	0.0015	0.0019	0.0022	0.0030	0.0037	0.0045
				1050	-	1230	v_f (in/min)	103.5	103.5	103.5	103.5	103.5	103.5	103.5	103.5
THERMOSET	CFRP	1.00	1.00	1050			n (rev/min)	32088	21392	16044	12835	10696	8022	6418	5348
							f_z (in)	0.0004	0.0006	0.0007	0.0009	0.0011	0.0015	0.0019	0.0022
				900	-	1200	v_f (in/min)	47.7	47.7	47.7	47.6	47.7	47.7	47.7	47.7
	GRP	0.80	1.00	1140			n (rev/min)	34838	23226	17419	13935	11613	8710	6968	5806
							f_z (in)	0.0007	0.0011	0.0015	0.0019	0.0022	0.0030	0.0037	0.0045
				1050	-	1230	v_f (in/min)	103.5	103.5	103.5	103.5	103.5	103.5	103.5	103.5

DIAXSR430 / DIAXSB430 / DIAL430 / DIALB430 / DIAXRR430 / DIAXRB430

SIDE MILLING - ROUGHING															
SMG		a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 4$							
								1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4
GRAPHITE		1.00	0.40		1520		n (rev/min)	46451	30967	23226	18580	15484	11613	9290	7742
							f_z (in)	0.0005	0.0008	0.0010	0.0013	0.0015	0.0021	0.0026	0.0031
				1220	-	1820	v_f (in/min)	95.8	95.8	95.8	95.8	95.8	95.8	95.8	95.8
PLASTIC (SOFT)		1.00	0.40		1520		n (rev/min)	46451	30967	23226	18580	15484	11613	9290	7742
							f_z (in)	0.0005	0.0008	0.0010	0.0013	0.0015	0.0021	0.0026	0.0031
				1220	-	1820	v_f (in/min)	95.8	95.8	95.8	95.8	95.8	95.8	95.8	95.8
PLASTIC (HARD)		1.00	0.40		1520		n (rev/min)	46451	30967	23226	18580	15484	11613	9290	7742
							f_z (in)	0.0005	0.0008	0.0010	0.0013	0.0015	0.0021	0.0026	0.0031
				1220	-	1820	v_f (in/min)	95.8	95.8	95.8	95.8	95.8	95.8	95.8	95.8
THERMOPLAST	CFRP	1.00	0.40		1400		n (rev/min)	42784	28523	21392	17114	14261	10696	8557	7131
							f_z (in)	0.0006	0.0008	0.0011	0.0014	0.0017	0.0023	0.0028	0.0034
				1250	-	1550	v_f (in/min)	96.3	96.3	96.3	96.3	96.3	96.3	96.3	96.3
	GRP	1.00	0.40		1520		n (rev/min)	46451	30967	23226	18580	15484	11613	9290	7742
							f_z (in)	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045	0.0056	0.0068
				1430	-	1610	v_f (in/min)	209.0	209.0	209.0	209.0	209.0	209.0	209.0	209.0
THERMOSET	CFRP	1.00	0.40		1400		n (rev/min)	42784	28523	21392	17114	14261	10696	8557	7131
							f_z (in)	0.0006	0.0008	0.0011	0.0014	0.0017	0.0023	0.0028	0.0034
				1250	-	1550	v_f (in/min)	96.3	96.3	96.3	96.3	96.3	96.3	96.3	96.3
	GRP	1.00	0.40		1520		n (rev/min)	46451	30967	23226	18580	15484	11613	9290	7742
							f_z (in)	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045	0.0056	0.0068
				1430	-	1610	v_f (in/min)	209.0	209.0	209.0	209.0	209.0	209.0	209.0	209.0

DIA430M

SLOTTING														
	SMG	a_p x Dc	a_e x Dc	v_c (m / min)				$Z_n = 4$						
								4	6	8	10	12	14	16
	GRAPHITE	1.00	1.00		434		n (rev/min)	34540	23020	17270	13810	11510	9870	8630
							f_z (mm)	0.015	0.022	0.029	0.036	0.044	0.051	0.058
				343	-	526	v_f (mm/min)	2006	2006	2006	2005	2006	2006	2005
	PLASTIC (SOFT)	1.00	1.00		434		n (rev/min)	34540	23020	17270	13810	11510	9870	8630
							f_z (mm)	0.015	0.022	0.029	0.036	0.044	0.051	0.058
				343	-	526	v_f (mm/min)	2006	2006	2006	2005	2006	2006	2005
	PLASTIC (HARD)	1.00	1.00		434		n (rev/min)	34540	23020	17270	13810	11510	9870	8630
							f_z (mm)	0.015	0.022	0.029	0.036	0.044	0.051	0.058
				343	-	526	v_f (mm/min)	2006	2006	2006	2005	2006	2006	2005
THERMOPLAST	CFRP	1.00	1.00		400		n (rev/min)	31830	21220	15920	12730	10610	9090	7960
							f_z (mm)	0.016	0.024	0.032	0.040	0.048	0.055	0.063
				354	-	446	v_f (mm/min)	2017	2017	2017	2016	2017	2016	2017
	GRP	0.80	1.00		434		n (rev/min)	34540	23020	17270	13810	11510	9870	8630
							f_z (mm)	0.032	0.048	0.063	0.079	0.095	0.111	0.127
				407	-	462	v_f (mm/min)	4377	4376	4377	4375	4376	4378	4374
THERMOSET	CFRP	1.00	1.00		400		n (rev/min)	31830	21220	15920	12730	10610	9090	7960
							f_z (mm)	0.016	0.024	0.032	0.040	0.048	0.055	0.063
				354	-	446	v_f (mm/min)	2017	2017	2017	2016	2017	2016	2017
	GRP	0.80	1.00		434		n (rev/min)	34540	23020	17270	13810	11510	9870	8630
							f_z (mm)	0.032	0.048	0.063	0.079	0.095	0.111	0.127
				407	-	462	v_f (mm/min)	4377	4376	4377	4375	4376	4378	4374

DIA430M

SIDE MILLING - ROUGHING														
	SMG	a_p x Dc	a_e x Dc	v_c (m / min)				$Z_n = 4$						
								4	6	8	10	12	14	16
	GRAPHITE	1.00	0.40		579		n (rev/min)	46080	30720	23040	18430	15360	13160	11520
							f_z (mm)	0.022	0.033	0.044	0.055	0.066	0.077	0.088
				488	-	671	v_f (mm/min)	4055	4055	4055	4055	4055	4053	4055
	PLASTIC (SOFT)	1.00	0.40		579		n (rev/min)	46080	30720	23040	18430	15360	13160	11520
							f_z (mm)	0.015	0.022	0.029	0.036	0.044	0.051	0.058
				488	-	671	v_f (mm/min)	2676	2676	2676	2676	2676	2675	2676
	PLASTIC (HARD)	1.00	0.40		579		n (rev/min)	46080	30720	23040	18430	15360	13160	11520
							f_z (mm)	0.015	0.022	0.029	0.036	0.044	0.051	0.058
				488	-	671	v_f (mm/min)	2676	2676	2676	2676	2676	2675	2676
THERMOPLAST	CFRP	1.00	0.40		533		n (rev/min)	42410	28280	21210	16970	14140	12120	10600
							f_z (mm)	0.016	0.024	0.032	0.040	0.048	0.055	0.063
				488	-	579	v_f (mm/min)	2687	2688	2688	2688	2688	2688	2686
THERMOPLAST	GRP	1.00	0.40		579		n (rev/min)	46080	30720	23040	18430	15360	13160	11520
							f_z (mm)	0.032	0.048	0.063	0.079	0.095	0.111	0.127
				552	-	607	v_f (mm/min)	5839	5839	5839	5839	5839	5837	5839
THERMOSET	CFRP	1.00	0.40		533		n (rev/min)	42410	28280	21210	16970	14140	12120	10600
							f_z (mm)	0.016	0.024	0.032	0.040	0.048	0.055	0.063
				488	-	579	v_f (mm/min)	2687	2688	2688	2688	2688	2688	2686
THERMOSET	GRP	1.00	0.40		579		n (rev/min)	46080	30720	23040	18430	15360	13160	11520
							f_z (mm)	0.032	0.048	0.063	0.079	0.095	0.111	0.127
				552	-	607	v_f (mm/min)	5839	5839	5839	5839	5839	5837	5839

DIACC COARSE-PITCH

SLOTTING										
SMG		a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 3$ 1/4	$Z_n = 3$ 3/8	$Z_n = 5$ 1/2
GRAPHITE		1.00	1.00		1425		n (rev/min)	21774	14516	10887
							f_z (in)	0.0009	0.0014	0.0018
				1125	-	1725	v_f (in/min)	59.3	59.3	98.8
PLASTIC (SOFT)		1.00	1.00		1425		n (rev/min)	21774	14516	10887
							f_z (in)	0.0009	0.0014	0.0018
				1125	-	1725	v_f (in/min)	59.3	59.3	98.8
PLASTIC (HARD)		1.00	1.00		1425		n (rev/min)	21774	14516	10887
							f_z (in)	0.0009	0.0014	0.0018
				1125	-	1725	v_f (in/min)	59.3	59.3	98.8
THERMOPLAST	CFRP	1.00	1.00		1313		n (rev/min)	20055	13370	10028
							f_z (in)	0.0010	0.0015	0.0020
				1163	-	1463	v_f (in/min)	59.6	59.6	99.3
	GRP	0.80	1.00		1425		n (rev/min)	21774	14516	10887
							f_z (in)	0.0010	0.0015	0.0020
				1335	-	1515	v_f (in/min)	64.7	64.7	107.8
THERMOSET	CFRP	1.00	1.00		1313		n (rev/min)	20055	13370	10028
							f_z (in)	0.0010	0.0015	0.0020
				1162.5	-	1462.5	v_f (in/min)	59.6	59.6	99.3
	GRP	0.80	1.00		1425		n (rev/min)	21774	14516	10887
							f_z (in)	0.0010	0.0015	0.0020
				1335	-	1515	v_f (in/min)	64.7	64.7	107.8
SIDE MILLING - ROUGHING										
GRAPHITE		2.00	0.40		1900		n (rev/min)	29032	19355	14516
							f_z (in)	0.0014	0.0021	0.0028
				1600	-	2200	v_f (in/min)	119.8	119.8	199.6
PLASTIC (SOFT)		2.00	0.40		1900		n (rev/min)	29032	19355	14516
							f_z (in)	0.0014	0.0021	0.0028
				1600	-	2200	v_f (in/min)	119.8	119.8	199.6
PLASTIC (HARD)		2.00	0.40		1900		n (rev/min)	29032	19355	14516
							f_z (in)	0.0014	0.0021	0.0028
				1600	-	2200	v_f (in/min)	119.8	119.8	199.6
THERMOPLAST	CFRP	2.00	0.40		1750		n (rev/min)	26740	17827	13370
							f_z (in)	0.0015	0.0023	0.0030
				1600	-	1900	v_f (in/min)	120.3	120.3	200.6
	GRP	2.00	0.40		1900		n (rev/min)	29032	19355	14516
							f_z (in)	0.0015	0.0023	0.0030
				1810	-	1990	v_f (in/min)	130.6	130.6	217.7
THERMOSET	CFRP	2.00	0.40		1750		n (rev/min)	26740	17827	13370
							f_z (in)	0.0015	0.0023	0.0030
				1600	-	1900	v_f (in/min)	120.3	120.3	200.6
	GRP	2.00	0.40		1900		n (rev/min)	29032	19355	14516
							f_z (in)	0.0015	0.0023	0.0030
				1810	-	1990	v_f (in/min)	130.6	130.6	217.7

Niagara Cutter

DIACC - FINE PITCH

SIDE MILLING - ROUGHING											
SMG		a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 5$		$Z_n = 7$
								1/4	3/8	1/2
GRAPHITE		2.00	0.40		1900		n (rev/min)	29032	19355	14516
							f_z (in)	0.0014	0.0021	0.0028
				1600	-	2200	v_f (in/min)	199.6	199.6	279.4
PLASTIC (SOFT)		2.00	0.40		1900		n (rev/min)	29032	19355	14516
							f_z (in)	0.0014	0.0021	0.0028
				1600	-	2200	v_f (in/min)	199.6	199.6	279.4
PLASTIC (HARD)		2.00	0.40		1900		n (rev/min)	29032	19355	14516
							f_z (in)	0.0014	0.0021	0.0028
				1600	-	2200	v_f (in/min)	199.6	199.6	279.4
THERMOPLAST	CFRP	2.00	0.40		1750		n (rev/min)	26740	17827	13370
							f_z (in)	0.0015	0.0023	0.0030
				1600	-	1900	v_f (in/min)	200.6	200.6	280.8
	GRP	2.00	0.40		1900		n (rev/min)	29032	19355	14516
							f_z (in)	0.0015	0.0023	0.0030
				1810	-	1990	v_f (in/min)	217.7	217.7	304.8
THERMOSET	CFRP	2.00	0.40		1750		n (rev/min)	26740	17827	13370
							f_z (in)	0.0015	0.0023	0.0030
				1600	-	1900	v_f (in/min)	200.6	200.6	280.8
	GRP	2.00	0.40		1900		n (rev/min)	29032	19355	14516
							f_z (in)	0.0015	0.0023	0.0030
				1810	-	1990	v_f (in/min)	217.7	217.7	304.8

DIAEPB / DIAPPB / DIABEB COARSE PITCH

SLOTTING													
SMG		a_p x Dc	a_e x Dc	v_c (sf / min)				1/8	3/16	1/4	5/16	3/8	1/2
GRAPHITE		1.00	1.00		1800		n (rev/min)	55008	36672	27504	22003	18336	13752
							f_z (in)	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				1600	-	2000	v_f (in/min)	32.9	32.9	32.9	32.9	32.9	32.9
PLASTIC (SOFT)		1.00	1.00		1800		n (rev/min)	55008	36672	27504	22003	18336	13752
							f_z (in)	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				1600	-	2000	v_f (in/min)	32.9	32.9	32.9	32.9	32.9	32.9
PLASTIC (HARD)		1.00	1.00		1800		n (rev/min)	55008	36672	27504	22003	18336	13752
							f_z (in)	0.0006	0.0009	0.0012	0.0015	0.0018	0.0024
				1600	-	2000	v_f (in/min)	32.9	32.9	32.9	32.9	32.9	32.9
THERMOPLAST	**CFRP**	1.00	1.00		1800		n (rev/min)	55008	36672	27504	22003	18336	13752
							f_z (in)	0.0005	0.0007	0.0010	0.0012	0.0015	0.0020
				1600	-	2000	v_f (in/min)	27.2	27.2	27.2	27.2	27.2	27.2
	GRP	0.80	1.00		1800		n (rev/min)	55008	36672	27504	22003	18336	13752
							f_z (in)	0.0005	0.0007	0.0010	0.0012	0.0015	0.0020
				1600	-	2000	v_f (in/min)	27.2	27.2	27.2	27.2	27.2	27.2
THERMOSET	**CFRP**	1.00	1.00		1800		n (rev/min)	55008	36672	27504	22003	18336	13752
							f_z (in)	0.0005	0.0007	0.0010	0.0012	0.0015	0.0020
				1600	-	2000	v_f (in/min)	27.2	27.2	27.2	27.2	27.2	27.2
	GRP	0.80	1.00		1800		n (rev/min)	55008	36672	27504	22003	18336	13752
							f_z (in)	0.0005	0.0007	0.0010	0.0012	0.0015	0.0020
				1600	-	2000	v_f (in/min)	27.2	27.2	27.2	27.2	27.2	27.2

DIAEPB / DIAPPB / DIABEB COARSE PITCH

SIDE MILLING - ROUGHING												
SMG		a_p x Dc	a_e x Dc	v_c (sf / min)				1/8	3/16	1/4	5/16	3/8	1/2
GRAPHITE		2.00	0.50		2400		n (rev/min)	73344	48896	36672	29338	24448	18336
							f_z (in)	0.0009	0.0014	0.0018	0.0023	0.0027	0.0036
				2200	-	2600	v_f (in/min)	66.5	66.5	66.5	66.5	66.5	66.5
PLASTIC (SOFT)		2.00	0.50		2400		n (rev/min)	73344	48896	36672	29338	24448	18336
							f_z (in)	0.0009	0.0014	0.0018	0.0023	0.0027	0.0036
				2200	-	2600	v_f (in/min)	66.5	66.5	66.5	66.5	66.5	66.5
PLASTIC (HARD)		2.00	0.50		2400		n (rev/min)	73344	48896	36672	29338	24448	18336
							f_z (in)	0.0009	0.0014	0.0018	0.0023	0.0027	0.0036
				2200	-	2600	v_f (in/min)	66.5	66.5	66.5	66.5	66.5	66.5
THERMOPLAST	CFRP	2.00	0.50		2400		n (rev/min)	73344	48896	36672	29338	24448	18336
							f_z (in)	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				2200	-	2600	v_f (in/min)	55.0	55.0	55.0	55.0	55.0	55.0
	GRP	2.00	0.50		2400		n (rev/min)	73344	48896	36672	29338	24448	18336
							f_z (in)	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				2200	-	2600	v_f (in/min)	55.0	55.0	55.0	55.0	55.0	55.0
THERMOSET	CFRP	2.00	0.50		2400		n (rev/min)	73344	48896	36672	29338	24448	18336
							f_z (in)	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				2200	-	2600	v_f (in/min)	55.0	55.0	55.0	55.0	55.0	55.0
	GRP	2.00	0.50		2400		n (rev/min)	73344	48896	36672	29338	24448	18336
							f_z (in)	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
				2200	-	2600	v_f (in/min)	55.0	55.0	55.0	55.0	55.0	55.0

DIAEPB / DIAPPB / DIABEB FINE PITCH

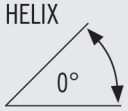
SIDE MILLING - ROUGHING											
SMG		a_p x Dc	a_e x Dc	v_c (sf / min)				1/8	1/4	3/8	1/2
GRAPHITE		2.00	0.25		2400		n (rev/min)	73344	36672	24448	18336
							f_z (in)	0.0009	0.0018	0.0027	0.0036
				2100	-	2700	v_f (in/min)	66.5	66.5	66.5	66.5
PLASTIC (SOFT)		2.00	0.25		2400		n (rev/min)	73344	36672	24448	18336
							f_z (in)	0.0009	0.0018	0.0027	0.0036
				2100	-	2700	v_f (in/min)	66.5	66.5	66.5	66.5
PLASTIC (HARD)		2.00	0.25		2400		n (rev/min)	73344	36672	24448	18336
							f_z (in)	0.0009	0.0018	0.0027	0.0036
				2100	-	2700	v_f (in/min)	66.5	66.5	66.5	66.5
THERMOPLAST	CFRP	2.00	0.25		2400		n (rev/min)	73344	36672	24448	18336
							f_z (in)	0.0008	0.0015	0.0023	0.0030
				2250	-	2550	v_f (in/min)	55.0	55.0	55.0	55.0
	GRP	2.00	0.25		2400		n (rev/min)	73344	36672	24448	18336
							f_z (in)	0.0008	0.0015	0.0023	0.0030
				2310	-	2490	v_f (in/min)	55.0	55.0	55.0	55.0
THERMOSET	CFRP	2.00	0.25		2400		n (rev/min)	73344	36672	24448	18336
							f_z (in)	0.0008	0.0015	0.0023	0.0030
				2250	-	2550	v_f (in/min)	55.0	55.0	55.0	55.0
	GRP	2.00	0.25		2400		n (rev/min)	73344	36672	24448	18336
							f_z (in)	0.0008	0.0015	0.0023	0.0030
				2310	-	2490	v_f (in/min)	55.0	55.0	55.0	55.0

Niagara Cutter

CHAMFER- CM260

SOLID CARBIDE

HELIX



CHAMFER

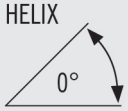
CENTER CUTTING

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N76590	CM260-0.250-D1-C.0-Z2	1/4	1/4	3/16	2-1/2	2	TiAlN	60
N76591	CM260-0.375-D1-C.0-Z2	3/8	3/8	5/16	2-1/2	2	TiAlN	60
N76592	CM260-0.500-D1-C.0-Z2	1/2	1/2	7/16	3	2	TiAlN	60

CHAMFER- CM290

SOLID CARBIDE

HELIX



CHAMFER

CENTER CUTTING

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N76593	CM290-0.250-D1-C.0-Z2	1/4	1/4	1/8	2-1/2	2	TiAlN	90
N76594	CM290-0.375-D1-C.0-Z2	3/8	3/8	3/16	2-1/2	2	TiAlN	90
N76595	CM290-0.500-D1-C.0-Z2	1/2	1/2	1/4	3	2	TiAlN	90

CHAMFER- CM460

SOLID CARBIDE

HELIX 0°

CHAMFER 60°

CENTER CUTTING

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N76596	CM460-0.250-D1-C.0-Z4	1/4	1/4	3/16	2-1/2	4	TiAlN	60
N76597	CM460-0.375-D1-C.0-Z4	3/8	3/8	5/16	2-1/2	4	TiAlN	60
N76598	CM460-0.500-D1-C.0-Z4	1/2	1/2	7/16	3	4	TiAlN	60
N76599	CM460-0.750-D1-C.0-Z4	3/4	3/4	5/8	3	4	TiAlN	60

CHAMFER- CM490

SOLID CARBIDE

HELIX 0°

CHAMFER 90°

CENTER CUTTING

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N76600	CM490-0.250-D1-C.0-Z4	1/4	1/4	1/8	2-1/2	4	TiAlN	90
N76601	CM490-0.375-D1-C.0-Z4	3/8	3/8	3/16	2-1/2	4	TiAlN	90
N76602	CM490-0.500-D1-C.0-Z4	1/2	1/2	1/4	3	4	TiAlN	90
N76603	CM490-0.750-D1-C.0-Z4	3/4	3/4	3/8	3	4	TiAlN	90

CM260 / CM290

SLOTTING												
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 2$ 1/4	3/8	1/2	5/8	3/4
P	E 1 - 2	0.30	1.00		400		n (rev/min)	6112	4075	3056	2445	2037
							f_z (in)	0.00050	0.00075	0.00100	0.00125	0.00150
				340	-	460	v_f (in/min)	6.1	6.1	6.1	6.1	6.1
	E 3 - 4	0.20	1.00		200		n (rev/min)	3056	2037	1528	1222	1019
							f_z (in)	0.00028	0.00042	0.00056	0.00070	0.00084
				140	-	260	v_f (in/min)	1.7	1.7	1.7	1.7	1.7
	E 5 - 6	0.20	1.00		100		n (rev/min)	1528	1019	764	611	509
							f_z (in)	0.00240	0.00360	0.00480	0.00600	0.00720
				40	-	160	v_f (in/min)	7.3	7.3	7.3	7.3	7.3
H	M / A / D 7a (48>52HRc)	0.20	1.00		70		n (rev/min)	1070	713	535	428	357
							f_z (in)	0.00016	0.00024	0.00032	0.00040	0.00048
				55	-	85	v_f (in/min)	0.3	0.3	0.3	0.3	0.3
M	E 8 - 9	0.50	1.00		320		n (rev/min)	4890	3260	2445	1956	1630
							f_z (in)	0.00024	0.00036	0.00048	0.00060	0.00072
				290	-	350	v_f (in/min)	2.3	2.3	2.3	2.3	2.3
	E 10 - 11	0.30	1.00		250		n (rev/min)	3820	2547	1910	1528	1273
							f_z (in)	0.00020	0.00030	0.00040	0.00050	0.00060
				220	-	280	v_f (in/min)	1.5	1.5	1.5	1.5	1.5
K	E 12 - 13	0.30	1.00		270		n (rev/min)	4126	2750	2063	1650	1375
							f_z (in)	0.00058	0.00087	0.00116	0.00145	0.00174
				210	-	330	v_f (in/min)	4.8	4.8	4.8	4.8	4.8
	E 14 - 15	0.20	1.00		145		n (rev/min)	2216	1477	1108	886	739
							f_z (in)	0.00034	0.00051	0.00068	0.00085	0.00102
				85	-	205	v_f (in/min)	1.5	1.5	1.5	1.5	1.5

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

CM260 / CM290

SIDE MILLING - ROUGHING												
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 2$ 1/4	3/8	1/2	5/8	3/4
P	E 1 - 2	1.00	0.50		400		n (rev/min)	6112	4075	3056	2445	2037
							f_z (in)	0.00063	0.00094	0.00125	0.00156	0.00188
				340	-	460	v_f (in/min)	7.6	7.6	7.6	7.6	7.6
	E 3 - 4	1.00	0.50		200		n (rev/min)	3056	2037	1528	1222	1019
							f_z (in)	0.00035	0.00053	0.00070	0.00088	0.00105
				140	-	260	v_f (in/min)	2.1	2.1	2.1	2.1	2.1
	E 5 - 6	1.00	0.50		100		n (rev/min)	1528	1019	764	611	509
							f_z (in)	0.00030	0.00045	0.00060	0.00075	0.00090
				40	-	160	v_f (in/min)	0.9	0.9	0.9	0.9	0.9
H	M / A / D 7a (48>52HRc)	0.30	0.20		70		n (rev/min)	1070	713	535	428	357
							f_z (in)	0.00020	0.00030	0.00040	0.00050	0.00060
				55	-	85	v_f (in/min)	0.4	0.4	0.4	0.4	0.4
M	E 8 - 9	1.00	0.50		320		n (rev/min)	4890	3260	2445	1956	1630
							f_z (in)	0.00030	0.00045	0.00060	0.00075	0.00090
				290	-	350	v_f (in/min)	2.9	2.9	2.9	2.9	2.9
	E 10 - 11	1.00	0.50		250		n (rev/min)	3820	2547	1910	1528	1273
							f_z (in)	0.00025	0.00038	0.00050	0.00063	0.00075
				220	-	280	v_f (in/min)	1.9	1.9	1.9	1.9	1.9
K	E 12 - 13	1.00	0.50		270		n (rev/min)	4126	2750	2063	1650	1375
							f_z (in)	0.00073	0.00109	0.00145	0.00181	0.00218
				210	-	330	v_f (in/min)	6.0	6.0	6.0	6.0	6.0
	E 14 - 15	1.00	0.50		145		n (rev/min)	2216	1477	1108	886	739
							f_z (in)	0.00043	0.00064	0.00085	0.00106	0.00128
				85	-	205	v_f (in/min)	1.9	1.9	1.9	1.9	1.9

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

CM460 / CM490

SLOTTING												
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 4$ 1/4	3/8	1/2	5/8	3/4
P	E 1 - 2	0.30	1.00		400		n (rev/min)	6112	4075	3056	2445	2037
							f_z (in)	0.00050	0.00075	0.00100	0.00125	0.00150
				340	-	460	v_f (in/min)	12.2	12.2	12.2	12.2	12.2
	E 3 - 4	0.20	1.00		200		n (rev/min)	3056	2037	1528	1222	1019
							f_z (in)	0.00028	0.00042	0.00056	0.00070	0.00084
				140	-	260	v_f (in/min)	3.4	3.4	3.4	3.4	3.4
	E 5 - 6	0.20	1.00		100		n (rev/min)	1528	1019	764	611	509
							f_z (in)	0.00240	0.00360	0.00480	0.00600	0.00720
				40	-	160	v_f (in/min)	14.7	14.7	14.7	14.7	14.7
H	M / A / D 7a (48>52HRc)	0.20	1.00		70		n (rev/min)	1070	713	535	428	357
							f_z (in)	0.00016	0.00024	0.00032	0.00040	0.00048
				55	-	85	v_f (in/min)	0.7	0.7	0.7	0.7	0.7
M	E 8 - 9	0.50	1.00		320		n (rev/min)	4890	3260	2445	1956	1630
							f_z (in)	0.00024	0.00036	0.00048	0.00060	0.00072
				290	-	350	v_f (in/min)	4.7	4.7	4.7	4.7	4.7
	E 10 - 11	0.30	1.00		250		n (rev/min)	3820	2547	1910	1528	1273
							f_z (in)	0.00020	0.00030	0.00040	0.00050	0.00060
				220	-	280	v_f (in/min)	3.1	3.1	3.1	3.1	3.1
K	E 12 - 13	0.30	1.00		270		n (rev/min)	4126	2750	2063	1650	1375
							f_z (in)	0.00058	0.00087	0.00116	0.00145	0.00174
				210	-	330	v_f (in/min)	9.6	9.6	9.6	9.6	9.6
	E 14 - 15	0.20	1.00		145		n (rev/min)	2216	1477	1108	886	739
							f_z (in)	0.00034	0.00051	0.00068	0.00085	0.00102
				85	-	205	v_f (in/min)	3.0	3.0	3.0	3.0	3.0

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

CM460 / CM490

SIDE MILLING - ROUGHING												
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 4$ 1/4	3/8	1/2	5/8	3/4
P	E 1 - 2	1.00	0.50		400		n (rev/min)	6112	4075	3056	2445	2037
							f_z (in)	0.00063	0.00094	0.00125	0.00156	0.00188
				340	-	460	v_f (in/min)	15.3	15.3	15.3	15.3	15.3
	E 3 - 4	1.00	0.50		200		n (rev/min)	3056	2037	1528	1222	1019
							f_z (in)	0.00035	0.00053	0.00070	0.00088	0.00105
				140	-	260	v_f (in/min)	4.3	4.3	4.3	4.3	4.3
	E 5 - 6	1.00	0.50		100		n (rev/min)	1528	1019	764	611	509
							f_z (in)	0.00030	0.00045	0.00060	0.00075	0.00090
				40	-	160	v_f (in/min)	1.8	1.8	1.8	1.8	1.8
H	M / A / D 7a (48>52HRc)	0.30	0.20		70		n (rev/min)	1070	713	535	428	357
							f_z (in)	0.00020	0.00030	0.00040	0.00050	0.00060
				55	-	85	v_f (in/min)	0.9	0.9	0.9	0.9	0.9
M	E 8 - 9	1.00	0.50		320		n (rev/min)	4890	3260	2445	1956	1630
							f_z (in)	0.00030	0.00045	0.00060	0.00075	0.00090
				290	-	350	v_f (in/min)	5.9	5.9	5.9	5.9	5.9
	E 10 - 11	1.00	0.50		250		n (rev/min)	3820	2547	1910	1528	1273
							f_z (in)	0.00025	0.00038	0.00050	0.00063	0.00075
				220	-	280	v_f (in/min)	3.8	3.8	3.8	3.8	3.8
K	E 12 - 13	1.00	0.50		270		n (rev/min)	4126	2750	2063	1650	1375
							f_z (in)	0.00073	0.00109	0.00145	0.00181	0.00218
				210	-	330	v_f (in/min)	12.0	12.0	12.0	12.0	12.0
	E 14 - 15	1.00	0.50		145		n (rev/min)	2216	1477	1108	886	739
							f_z (in)	0.00043	0.00064	0.00085	0.00106	0.00128
				85	-	205	v_f (in/min)	3.8	3.8	3.8	3.8	3.8

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

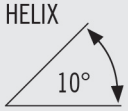
Please reference the Workpiece Material Classification chart located on page 12

Niagara Cutter

MOLD AND DIE- MZN410R / MZN510R

SOLID CARBIDE

HELIX



RADIUS

CENTER CUTTING

HIGH FEED

- High wear resistant AlTiN coating
- Strong end tooth design
- Designed for high feed milling of hardened steels and nickel based super alloys such as Inconel
- Edge preparation for increased cutting edge strength 2° back taper with reduced neck diameter for workpiece clearance

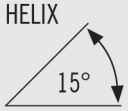
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS	REACH	NECK DIA
N00305	MZN410R-0.125-J1-R030.0-Z4	1/8	1/4	1/8	2-1/2	4	AlTiN	0.030	0.375	0.112
N00001	MZN410R-0.125-J2-R030.0-Z4	1/8	1/4	1/8	2-1/2	4	AlTiN	0.030	0.625	0.112
N00002	MZN410R-0.188-J1-R050.0-Z4	3/16	1/4	3/16	2-1/2	4	AlTiN	0.050	0.562	0.172
N00003	MZN410R-0.188-J2-R050.0-Z4	3/16	1/4	3/16	2-1/2	4	AlTiN	0.050	0.937	0.172
N00004	MZN410R-0.250-E1-R060.0-Z4	1/4	1/4	1/4	2-1/2	4	AlTiN	0.060	0.750	0.230
N00005	MZN410R-0.250-E2-R060.0-Z4	1/4	1/4	1/4	2-1/2	4	AlTiN	0.060	1.250	0.230
N00006	MZN410R-0.313-G1-R080.0-Z4	5/16	3/8	5/16	3	4	AlTiN	0.080	0.750	0.290
N00007	MZN410R-0.313-G2-R080.0-Z4	5/16	3/8	5/16	3	4	AlTiN	0.080	1.250	0.290
N00008	MZN410R-0.375-E1-R080.0-Z4	3/8	3/8	3/8	3	4	AlTiN	0.080	1.125	0.348
N00009	MZN510R-0.375-E2-R080.0-Z5	3/8	3/8	3/8	3	5	AlTiN	0.080	1.125	0.348
N00010	MZN410R-0.375-E3-R080.0-Z4	3/8	3/8	3/8	3	4	AlTiN	0.080	1.875	0.348
N00011	MZN410R-0.500-E1-R120.0-Z4	1/2	1/2	1/2	4	4	AlTiN	0.120	1.500	0.468
N00012	MZN510R-0.500-E2-R120.0-Z5	1/2	1/2	1/2	4	5	AlTiN	0.120	1.500	0.468
N00013	MZN510R-0.625-E1-R120.0-Z5	5/8	5/8	5/8	4	5	AlTiN	0.120	1.875	0.584

Niagara Cutter

MOLD AND DIE- MB215

SOLID CARBIDE

HELIX



BALL END

CENTER CUTTING

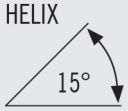
- 7° Draft Angle
- Ideal for milling hardened mold and die steels up to 52HRc
- Rough and finish milling of contours and complex shapes

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N76671	MB215-0.063-G1-B.0-Z2	1/16	1/4	1/16	2-1/2	2	AlTiN
N76673	MB215-0.125-G1-B.0-Z2	1/8	1/4	1/8	3	2	AlTiN
N76675	MB215-0.250-E1-B.0-Z2	1/4	1/4	1/4	3	2	AlTiN
N76677	MB215-0.375-E1-B.0-Z2	3/8	3/8	3/8	3	2	AlTiN
N76679	MB215-0.500-E1-B.0-Z2	1/2	1/2	1/2	4	2	AlTiN

METRIC MOLD AND DIE- MB215M

SOLID CARBIDE

HELIX



BALL END

CENTER CUTTING

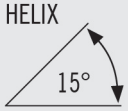
- 7° Draft Angle
- Ideal for milling hardened mold and die steels up to 52HRc
- Rough and finish milling of contours and complex shapes

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	NECK DIA	NECK LENGTH
N76660	MB215M-010-G1-B.0-Z2	1mm	6mm	1mm	64mm	2	AlTiN	0.9mm	1mm
N76661	MB215M-020-G1-B.0-Z2	2mm	6mm	2mm	64mm	2	AlTiN	1.9mm	2mm
N76662	MB215M-030-G1-B.0-Z2	3mm	6mm	3mm	64mm	2	AlTiN	2.9mm	3mm
N76663	MB215M-040-G1-B.0-Z2	4mm	6mm	4mm	64mm	2	AlTiN	3.9mm	4mm
N76665	MB215M-060-E1-B.0-Z2	6mm	6mm	6mm	64mm	2	AlTiN	5.9mm	6mm
N76666	MB215M-080-E1-B.0-Z2	8mm	8mm	8mm	80mm	2	AlTiN	7.8mm	8mm
N76667	MB215M-100-E1-B.0-Z2	10mm	10mm	10mm	82mm	2	AlTiN	9.8mm	10mm
N76668	MB215M-120-E1-B.0-Z2	12mm	12mm	12mm	100mm	2	AlTiN	11.8mm	12mm

MOLD AND DIE- MBZ215

SOLID CARBIDE

HELIX



BALL END

CENTER CUTTING

- 7° Draft Angle
- Ideal for milling hardened mold and die steels up to 62HRc
- Rough and finish milling of contours and complex shapes

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	NECK DIA	NECK LENGTH
N76691	MBZ215-0.063-G1-B.0-Z2	1/16	1/4	1/16	2-1/2	2	AlTiN	0.059	1/16
N76693	MBZ215-0.125-G1-B.0-Z2	1/8	1/4	1/8	3	2	AlTiN	0.121	1/8
N76695	MBZ215-0.250-E1-B.0-Z2	1/4	1/4	1/4	3	2	AlTiN	0.246	1/4
N76697	MBZ215-0.375-E1-B.0-Z2	3/8	3/8	3/8	3	2	AlTiN	0.367	3/8
N76699	MBZ215-0.500-E1-B.0-Z2	1/2	1/2	1/2	4	2	AlTiN	0.492	1/2

MOLD AND DIE- MZ645

SOLID CARBIDE | HELIX 45° | SQUARE END | CENTER CUTTING

- Ideal for peripheral milling of hard steels up to 62HRc

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N76617	MZ645-0.125-F3-S.0-Z6	1/8	1/4	3/8	3	6	AlTiN
N76619	MZ645-0.188-F3-S.0-Z6	3/16	1/4	1/2	3	6	AlTiN
N76621	MZ645-0.250-D3-S.0-Z6	1/4	1/4	5/8	3	6	AlTiN
N76623	MZ645-0.313-D2-S.0-Z6	5/16	5/16	3/4	3	6	AlTiN
N76625	MZ645-0.375-D3-S.0-Z6	3/8	3/8	1	3	6	AlTiN
N76627	MZ645-0.500-D2-S.0-Z6	1/2	1/2	1-1/8	4	6	AlTiN

MOLD AND DIE- MZ645R

SOLID CARBIDE | HELIX 45° | RADIUS | CENTER CUTTING

- Ideal for peripheral milling of hard steels up to 62HRc

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	RADIUS
N76616	MZ645R-0.125-F3-R020.0-Z6	1/8	1/4	3/8	3	6	AlTiN	0.020
N76618	MZ645R-0.188-F3-R020.0-Z6	3/16	1/4	1/2	3	6	AlTiN	0.020
N76620	MZ645R-0.250-D3-R020.0-Z6	1/4	1/4	5/8	3	6	AlTiN	0.020
N76622	MZ645R-0.313-D2-R020.0-Z6	5/16	5/16	3/4	3	6	AlTiN	0.020
N76624	MZ645R-0.375-D3-R020.0-Z6	3/8	3/8	1	3	6	AlTiN	0.020
N76626	MZ645R-0.500-D2-R030.0-Z6	1/2	1/2	1-1/8	4	6	AlTiN	0.030

MZN410R / MZN510R

SLOTTING														
ISO GROUP	SMG	a_e x Dc^2	v_c (sf / min)				$Z_n = 4$						$Z_n = 5$	
						1/8	3/16	1/4	5/16	3/8	1/2	5/8	1/2	5/8
P	E / M / A 5 - 6	1.00		740		n (rev/min)	22614	15076	11967	9046	7538	5654	4523	5654	4523
						f_z(in)	0.0031	0.0047	0.0059	0.0078	0.0094	0.0125	0.0156	0.0125	0.0156
			690	-	790	v_f (in/min)	283	283	283	283	283	283	283	353	353
						max (a_p)	0.0059	0.0079	0.0098	0.0138	0.0157	0.0177	0.0197	0.0217	0.0217
H	M / A / D 7a	1.00		440		n (rev/min)	13446	8964	7115	5379	4482	3362	2689	3362	2689
						f_z(in)	0.0031	0.0047	0.0059	0.0078	0.0094	0.0125	0.0156	0.0125	0.0156
			390	-	490	v_f (in/min)	168	168	168	168	168	168	168	210	210
						max (a_p)	0.0059	0.0079	0.0098	0.0138	0.0157	0.0177	0.0197	0.0217	0.0217
	M / A / D 7b	1.00		230		n (rev/min)	7029	4686	3719	2812	2343	1757	1406	1757	1406
						f_z(in)	0.0025	0.0038	0.0047	0.0063	0.0075	0.0100	0.0125	0.0100	0.0125
			200	-	260	v_f (in/min)	70	70	70	70	70	70	70	88	88
						max (a_p)	0.0030	0.0039	0.0049	0.0069	0.0079	0.0089	0.0098	0.0108	0.0108
K	E / M / A 12 - 13	1.00		570		n (rev/min)	17419	11610	9220	6970	5810	4350	3480	4350	3480
						f_z(in)	0.0030	0.0045	0.0057	0.0075	0.0090	0.0120	0.0150	0.0120	0.0150
			490	-	660	v_f (in/min)	209	209	209	209	209	209	209	261	261
						max (a_p)	0.0059	0.0079	0.0098	0.0138	0.0157	0.0177	0.0197	0.0217	0.0217
	E / M / A 14 - 15	1.00		410		n (rev/min)	12530	8353	6630	5012	4177	3132	2506	3132	2506
						f_z(in)	0.0023	0.0034	0.0043	0.0056	0.0068	0.0090	0.0113	0.0090	0.0113
			330	-	490	v_f (in/min)	113	113	113	113	113	113	113	141	141
						max (a_p)	0.0059	0.0079	0.0098	0.0138	0.0157	0.0177	0.0197	0.0217	0.0217
S	E 21	1.00		100		n (rev/min)	3056	2037	1617	1222	1019	764	611	764	611
						f_z(in)	0.0017	0.0026	0.0033	0.0042	0.0051	0.0070	0.0087	0.0070	0.0087
			90	-	110	v_f (in/min)	21	21	21	21	21	21	21	27	27
						max (a_p)	0.0038	0.0050	0.0070	0.0077	0.0100	0.0150	0.0150	0.0150	0.0150

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

MZN410R / MZN510R

SIDE MILLING - ROUGHING														
ISO GROUP	SMG	a_e x Dc^2	v_c (sf / min)			$Z_n = 4$						$Z_n = 5$		
						1/8	3/16	1/4	5/16	3/8	1/2	5/8	1/2	5/8
P	E / M / A 5 - 6	0.30		740		n (rev/min)	22614	15076	11967	9046	7538	5654	4523	5654	4523
						f_z(in)	0.0050	0.0075	0.0094	0.0125	0.0150	0.0200	0.0250	0.0200	0.0250
			690		790	v_f (in/min)	452	452	452	452	452	452	452	565	565
						max (a_p)	0.0047	0.0063	0.0079	0.0110	0.0126	0.0142	0.0157	0.0173	0.0173
H	M / A / D 7a	0.30		480		n (rev/min)	14669	9779	7762	5868	4890	3667	2934	3667	2934
						f_z(in)	0.0050	0.0075	0.0094	0.0125	0.0150	0.0200	0.0250	0.0200	0.0250
			430		520	v_f (in/min)	293	293	293	293	293	293	293	367	367
						max (a_p)	0.0047	0.0063	0.0079	0.0110	0.0126	0.0142	0.0157	0.0173	0.0173
	M / A / D 7b	0.30		260		n (rev/min)	7946	5297	4205	3178	2649	1986	1589	1986	1589
						f_z(in)	0.0038	0.0056	0.0071	0.0094	0.0113	0.0150	0.0188	0.0150	0.0188
			230		300	v_f (in/min)	119	119	119	119	119	119	119	149	149
						max (a_p)	0.0047	0.0063	0.0079	0.0110	0.0126	0.0142	0.0157	0.0173	0.0173
K	E / M / A 12 - 13	0.30		570		n (rev/min)	17419	11613	9218	6968	5806	4355	3484	4355	3484
						f_z(in)	0.0050	0.0075	0.0094	0.0125	0.0150	0.0200	0.0250	0.0200	0.0250
			490		660	v_f (in/min)	348	348	348	348	348	348	348	435	435
						max (a_p)	0.0059	0.0079	0.0098	0.0138	0.0157	0.0177	0.0197	0.0217	0.0217
	E / M / A 14 - 15	0.30		410		n (rev/min)	12530	8353	6630	5012	4177	3132	2506	3132	2506
						f_z(in)	0.0038	0.0056	0.0071	0.0094	0.0113	0.0150	0.0188	0.0150	0.0188
			330		490	v_f (in/min)	188	188	188	188	188	188	188	235	235
						max (a_p)	0.0059	0.0079	0.0098	0.0138	0.0157	0.0177	0.0197	0.0217	0.0217
S	E 21	0.30		100		n (rev/min)	3056	2037	1617	1222	1019	764	611	764	611
						f_z(in)	0.0026	0.0039	0.0049	0.0065	0.0078	0.0105	0.0130	0.0105	0.0130
			90		110	v_f (in/min)	32	32	32	32	32	32	32	40	40
						max (a_p)	0.0038	0.0050	0.0070	0.0077	0.0100	0.0150	0.0150	0.0150	0.0150

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

MB215

SIDE MILLING - ROUGHING

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 2$ 1/32	1/16	3/32	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1
P	E 5 - 6	0.10	0.30	500	n (rev/min)	61120	30560	20373	15280	10187	7640	6112	5093	3820	3056	2547	1910
					f_z (in)	0.00030	0.00059	0.00089	0.00119	0.00178	0.00238	0.00297	0.00356	0.00475	0.00594	0.00713	0.00950
				470 - 530	v_f (in/min)	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3
H	M / A / D 7a (48>52HRc)	0.05	0.20	450	n (rev/min)	55008	27504	18336	13752	9168	6876	5501	4584	3438	2750	2292	1719
					f_z (in)	0.00027	0.00054	0.00081	0.00108	0.00161	0.00215	0.00269	0.00323	0.00430	0.00538	0.00645	0.00860
				420 - 480	v_f (in/min)	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6

SIDE MILLING - FINISHING

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 2$ 1/32	1/16	3/32	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1
P	E 5 - 6	0.10	0.15	500	n (rev/min)	61120	30560	20373	15280	10187	7640	6112	5093	3820	3056	2547	1910
					f_z (in)	0.00030	0.00059	0.00089	0.00119	0.00178	0.00238	0.00297	0.00356	0.00475	0.00594	0.00713	0.00950
				470 - 530	v_f (in/min)	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3
K	M / A / D 7a (48>52HRc)	0.05	0.10	450	n (rev/min)	55008	27504	18336	13752	9168	6876	5501	4584	3438	2750	2292	1719
					f_z (in)	0.00027	0.00054	0.00081	0.00108	0.00161	0.00215	0.00269	0.00323	0.00430	0.00538	0.00645	0.00860
				420 - 480	v_f (in/min)	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6

MB215M

SIDE MILLING - ROUGHING

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (m / min)		$Z_n = 2$ 1	2	3	4	5	6	8	10	12	16
P	E 5 - 6	0.10	0.30	152	n (rev/min)	48380	24190	16130	12100	9680	8060	6050	4840	4030	3020
					f_z (mm)	0.010	0.019	0.029	0.038	0.048	0.057	0.076	0.095	0.114	0.152
				143 - 162	v_f (mm/min)	919	919	919	920	920	919	920	920	919	918
H	M / A / D 7a (48>52HRc)	0.05	0.20	137	n (rev/min)	43610	21800	14540	10900	8720	7270	5450	4360	3630	2730
					f_z (mm)	0.009	0.017	0.026	0.034	0.043	0.052	0.069	0.086	0.103	0.138
				128 - 146	v_f (mm/min)	750	750	750	750	750	750	750	750	749	751

SIDE MILLING - FINISHING

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (m / min)		$Z_n = 2$ 1	2	3	4	5	6	8	10	12	16
P	E 5 - 6	0.10	0.15	152	n (rev/min)	48380	24190	16130	12100	9680	8060	6050	4840	4030	3020
					f_z (mm)	0.010	0.019	0.029	0.038	0.048	0.057	0.076	0.095	0.114	0.152
				143 - 162	v_f (mm/min)	919	919	919	920	920	919	920	920	919	918
H	M / A / D 7a (48>52HRc)	0.05	0.10	137	n (rev/min)	43610	21800	14540	10900	8720	7270	5450	4360	3630	2730
					f_z (mm)	0.009	0.017	0.026	0.034	0.043	0.052	0.069	0.086	0.103	0.138
				128 - 146	v_f (mm/min)	750	750	750	750	750	750	750	750	749	751

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

MBZ215

SIDE MILLING - ROUGHING																		
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 2$ 1/32	1/16	3/32	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1
P	E 5 - 6	0.10	0.30	500	n (rev/min)	61120	30560	20373	15280	10187	7640	6112	5093	3820	3056	2547	1910
					f_z (in)	0.00030	0.00059	0.00089	0.00119	0.00178	0.00238	0.00297	0.00356	0.00475	0.00594	0.00713	0.00950
				440 - 560	v_f (in/min)	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3
H	M / A / D 7a (48>52HRc)	0.05	0.20	450	n (rev/min)	55008	27504	18336	13752	9168	6876	5501	4584	3438	2750	2292	1719
					f_z (in)	0.00027	0.00054	0.00081	0.00108	0.00161	0.00215	0.00269	0.00323	0.00430	0.00538	0.00645	0.00860
				435 - 465	v_f (in/min)	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6
	M / A / D 7b (52>62HRc)	0.03	0.10	400	n (rev/min)	48896	24448	16299	12224	8149	6112	4890	4075	3056	2445	2037	1528
					f_z (in)	0.00019	0.00038	0.00056	0.00075	0.00113	0.00150	0.00188	0.00225	0.00300	0.00375	0.00450	0.00600
				385 - 415	v_f (in/min)	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3

SIDE MILLING - FINISHING																		
P	E 5 - 6	0.10	0.15	500	n (rev/min)	61120	30560	20373	15280	10187	7640	6112	5093	3820	3056	2547	1910
					f_z (in)	0.00030	0.00059	0.00089	0.00119	0.00178	0.00238	0.00297	0.00356	0.00475	0.00594	0.00713	0.00950
				440 - 560	v_f (in/min)	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3
H	M / A / D 7a (48>52HRc)	0.05	0.10	450	n (rev/min)	55008	27504	18336	13752	9168	6876	5501	4584	3438	2750	2292	1719
					f_z (in)	0.00027	0.00054	0.00081	0.00108	0.00161	0.00215	0.00269	0.00323	0.00430	0.00538	0.00645	0.00860
				435 - 465	v_f (in/min)	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6
	M / A / D 7b (52>62HRc)	0.03	0.05	400	n (rev/min)	48896	24448	16299	12224	8149	6112	4890	4075	3056	2445	2037	1528
					f_z (in)	0.00019	0.00038	0.00056	0.00075	0.00113	0.00150	0.00188	0.00225	0.00300	0.00375	0.00450	0.00600
				385 - 415	v_f (in/min)	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3

MZ645 / MZ645R

SIDE MILLING - ROUGHING												
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 6$ 1/8	3/16	1/4	5/16	3/8	1/2
P	E 5 - 6	1.50	0.10	450	n (rev/min)	13752	9168	6876	5501	4584	3438
					f_z (in)	0.00075	0.00113	0.00150	0.00188	0.00225	0.00300
				390 - 510	v_f (in/min)	61.9	61.9	61.9	61.9	61.9	61.9
H	M / A / D 7a (48>52HRc)	1.00	0.05	450	n (rev/min)	13752	9168	6876	5501	4584	3438
					f_z (in)	0.00056	0.00084	0.00113	0.00141	0.00169	0.00225
				435 - 465	v_f (in/min)	46.4	46.4	46.4	46.4	46.4	46.4
	M / A / D 7b (52>62HRc)	1.00	0.02	400	n (rev/min)	12224	8149	6112	4890	4075	3056
					f_z (in)	0.00040	0.00060	0.00080	0.00100	0.00120	0.00160
				385 - 415	v_f (in/min)	29.3	29.3	29.3	29.3	29.3	29.3

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

Niagara Cutter

THREAD MILLS- NTM100UN

SOLID CARBIDE

- Helical flutes for internal and external threading

EDP	DESCRIPTION	THREAD SIZE	THREADS PER INCH	CUTTER DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	CUTTING TEETH	COATING	DRILL SIZE 50%	DRILL SIZE 75%
N68746	NTM100-Nr.2X56UN-.125	2	56	0.065	1/8	0.1250	2	3	AlCrN	49	50
N68748	NTM100-Nr.4X40UN-.125	4	40	0.085	1/8	0.1750	2	3	AlCrN	41	43
N68750	NTM100-Nr.6X32UN-.125	6	32	0.100	1/8	0.2180	2	3	AlCrN	32	36
N68752	NTM100-Nr.8X32UN-.125	8	32	0.115	1/8	0.2500	2	3	AlCrN	27	29
N68754	NTM100-Nr.10X24UN-.187	10	24	0.134	3/16	0.3130	2	3	AlCrN	20	25
N68756	NTM100-Nr.10X28UN-.187	10	28	0.134	3/16	0.3130	2	3	AlCrN	19	23
N68758	NTM100-Nr.10X32UN-.187	10	32	0.134	3/16	0.3130	2	3	AlCrN	18	21
N68760	NTM100-1/4X20UN-.187	1/4	20	0.180	3/16	0.5000	2-1/2	3	AlCrN	7/32	7
N68762	NTM100-1/4X28UN-.187	1/4	28	0.180	3/16	0.5000	2-1/2	3	AlCrN	1	3
N68764	NTM100-1/4X32UN-.187	1/4	32	0.180	3/16	0.5000	2-1/2	3	AlCrN	1	7/32
N68766	NTM100-5/16X18UN-.250	5/16	18	0.235	1/4	0.6250	2-1/2	3	AlCrN	J	F
N68768	NTM100-5/16X24UN-.250	5/16	24	0.235	1/4	0.6250	2-1/2	3	AlCrN	9/32	I
N68770	NTM100-5/16X32UN-.250	5/16	32	0.235	1/4	0.6250	2-1/2	3	AlCrN	L	9/32
N68772	NTM100-3/8X16UN-.375	3/8	16	0.285	5/16	0.7500	3	3	AlCrN	Q	5/16
N68774	NTM100-3/8X24UN-.312	3/8	24	0.285	5/16	0.7500	3	3	AlCrN	S	Q
N68776	NTM100-7/16X14UN-.312	7/16	14	0.305	5/16	0.8750	3	3	AlCrN	25/64	U
N68778	NTM100-7/16X20UN-.375	7/16	20	0.305	5/16	0.8750	3	3	AlCrN	13/32	25/64
N68784	NTM100-1/2X28UN-.375	1/2	28	0.350	3/8	0.8750	3-1/2	3	AlCrN	15/32	15/32
N68786	NTM100-9/16X12UN-.375	9/16	12	0.370	3/8	0.8750	3-1/2	4	AlCrN	33/64	31/64
N68788	NTM100-9/16X18UN-.375	9/16	18	0.370	3/8	0.8750	3-1/2	4	AlCrN	17/32	33/64
N68780	NTM100-1/2X13UN-.375	1/2	13	0.350	3/8	0.8750	3-1/2	3	AlCrN	29/64	27/64
N68782	NTM100-1/2X20UN-.375	1/2	20	0.350	3/8	0.8750	3-1/2	3	AlCrN	15/32	29/64
N68790	NTM100-5/8X11UN-.500	5/8	11	0.470	1/2	1.2500	4	4	AlCrN	9/16	17/32
N68792	NTM100-5/8X12UN-.500	5/8	12	0.470	1/2	1.2500	4	4	AlCrN	9/16	35/64
N68794	NTM100-5/8X18UN-.500	5/8	18	0.470	1/2	1.2500	4	4	AlCrN	19/32	37/64
N68796	NTM100-3/4X10UN-.500	3/4	10	0.495	1/2	1.2500	4	4	AlCrN	11/16	21/32
N68798	NTM100-3/4X12UN-.500	3/4	12	0.495	1/2	1.2500	4	4	AlCrN	11/16	43/64
N68800	NTM100-3/4X16UN-.500	3/4	16	0.495	1/2	1.2500	4	4	AlCrN	45/64	11/16
N68802	NTM100-3/4X20UN-.500	3/4	20	0.495	1/2	1.2500	4	4	AlCrN	23/32	45/64
N68804	NTM100-7/8X9UN-.625	7/8	9	0.620	5/8	1.3750	4	4	AlCrN	51/64	49/64
N68806	NTM100-7/8X12UN-.625	7/8	12	0.620	5/8	1.3750	4	4	AlCrN	13/16	51/64
N68808	NTM100-7/8X14UN-.625	7/8	14	0.620	5/8	1.3750	4	4	AlCrN	53/64	13/16
N68810	NTM100-7/8X16UN-.625	7/8	16	0.620	5/8	1.3750	4	4	AlCrN	53/64	13/16
N68812	NTM100-7/8X20UN-.625	7/8	20	0.620	5/8	1.3750	4	4	AlCrN	27/32	53/64
N68814	NTM100-1X8UN-.625	1	8	0.620	5/8	1.3750	4	4	AlCrN	59/64	7/8
N68816	NTM100-1X12UN.625	1	12	0.620	5/8	1.3750	4	4	AlCrN	61/64	15/16
N68818	NTM100-1X16UN-.625	1	16	0.620	5/8	1.3750	4	4	AlCrN	61/64	15/16

THREAD MILLS- NTM120UN

SOLID CARBIDE

- Helical flutes for internal and external threading
- Coolant-through feature

EDP	DESCRIPTION	THREAD SIZE	THREADS PER INCH	CUTTER DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	CUTTING TEETH	COATING	DRILL SIZE 50%	DRILL SIZE 75%
N34479	NTM120-Nr.10X24UN-.187	10	24	0.134	3/16	0.3130	2	3	AlCrN	20	25
N34480	NTM120-Nr.10X32UN-.187	10	32	0.134	3/16	0.3130	2	3	AlCrN	18	21
N34481	NTM120-1/4X20UN-.187	1/4	20	0.180	3/16	0.5000	2-1/2	3	AlCrN	7/32	7
N34482	NTM120-1/4X28UN-.187	1/4	28	0.180	3/16	0.5000	2-1/2	3	AlCrN	1	3
N34483	NTM120-5/16X18UN-.250	5/16	18	0.235	1/4	0.6250	2-1/2	3	AlCrN	J	F
N34484	NTM120-5/16X24UN-.250	5/16	24	0.235	1/4	0.6250	2-1/2	3	AlCrN	9/32	I
N34485	NTM120-3/8X16UN-.312	3/8	16	0.285	5/16	0.7500	3	3	AlCrN	Q	5/16
N34486	NTM120-3/8X24UN-.312	3/8	24	0.285	5/16	0.7500	3	3	AlCrN	S	Q
N34487	NTM120-7/16X14UN-.312	7/16	14	0.305	5/16	0.8750	3	3	AlCrN	25/64	U
N34488	NTM120-7/16X20UN-.312	7/16	20	0.305	5/16	0.8750	3	3	AlCrN	13/32	25/64
N34489	NTM120-1/2X13UN-.375	1/2	13	0.350	3/8	0.8750	3-1/2	3	AlCrN	29/64	27/64
N34490	NTM120-1/2X20UN-.375	1/2	20	0.350	3/8	0.8750	3-1/2	3	AlCrN	15/32	29/64
N34491	NTM120-9/16X12UN-.375	9/16	12	0.370	3/8	0.8750	3-1/2	4	AlCrN	33/64	31/64
N34492	NTM120-9/16X18UN-.375	9/16	18	0.370	3/8	0.8750	3-1/2	4	AlCrN	17/32	33/64
N34493	NTM120-5/8X11UN-.500	5/8	11	0.470	1/2	1.2500	4	4	AlCrN	9/16	17/32
N34494	NTM120-3/4x10UN-.500	3/4	10	0.495	1/2	1.2500	4	4	AlCrN	11/16	21/32
N34495	NTM120-3/4X12UN-.500	3/4	12	0.495	1/2	1.2500	4	4	AlCrN	11/16	43/64
N34496	NTM120-3/4X16UN-.500	3/4	16	0.495	1/2	1.2500	4	4	AlCrN	45/64	11/16
N34497	NTM120-7/8X9UN-.625	7/8	9	0.620	5/8	1.3750	4	4	AlCrN	51/64	49/64
N34498	NTM120-1X8UN-.625	1	8	0.620	5/8	1.3750	4	4	AlCrN	59/64	7/8

THREAD MILLS- NTM160UN

SOLID CARBIDE

- Helical flutes for internal and external threading
- Extended reach

EDP	DESCRIPTION	THREAD SIZE	THREADS PER INCH	CUTTER DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	CUTTING TEETH	COATING	REACH	DRILL SIZE 50%	DRILL SIZE 75%
N34570	NTM160-Nr.10X32UN-.187	10	32	0.134	3/16	0.1000	2	3	AlCrN	0.500	18	21
N34569	NTM160-Nr.10X28UN-.187	10	28	0.134	3/16	0.1100	2	3	AlCrN	0.400	19	23
N34568	NTM160-Nr.10X24UN-.187	10	24	0.134	3/16	0.1250	2	3	AlCrN	0.300	20	25
N34573	NTM160-1/4X32UN-.187	1/4	32	0.180	3/16	0.1000	2-1/2	3	AlCrN	0.950	1	7/32
N34572	NTM160-1/4X28UN-.187	1/4	28	0.180	3/16	0.1100	2-1/2	3	AlCrN	0.875	1	3
N34571	NTM160-1/4X20UN-.187	1/4	20	0.180	3/16	0.1500	2-1/2	3	AlCrN	0.670	7/32	7
N34576	NTM160-5/16X32UN-.250	5/16	32	0.235	1/4	0.1000	2-1/2	3	AlCrN	1.375	L	9/32
N34575	NTM160-5/16X24UN-.250	5/16	24	0.235	1/4	0.1250	2-1/2	3	AlCrN	1.250	9/32	I
N34574	NTM160-5/16X18UN-.250	5/16	18	0.235	1/4	0.1700	2-1/2	3	AlCrN	1	J	F
N34578	NTM160-3/8X24UN-.312	3/8	24	0.285	5/16	0.1250	3	3	AlCrN	1.625	S	Q
N34577	NTM160-3/8X16UN-.312	3/8	16	0.285	5/16	0.1880	3	3	AlCrN	1.350	Q	5/16
N34580	NTM160-7/16X20UN-.312	7/16	20	0.305	5/16	0.1500	3	3	AlCrN	1.670	13/32	25/64
N34579	NTM160-7/16X14UN-.312	7/16	14	0.305	5/16	0.2150	3	3	AlCrN	1.375	25/64	U
N34583	NTM160-1/2X28UN-.375	1/2	28	0.350	3/8	0.1100	4	3	AlCrN	2.250	15/32	15/32
N34582	NTM160-1/2X20UN-.375	1/2	20	0.350	3/8	0.1500	4	3	AlCrN	1.250	15/32	29/64
N34581	NTM160-1/2X13UN-.375	1/2	13	0.350	3/8	0.2300	4	3	AlCrN	1.670	29/64	27/64
N34584	NTM160-9/16X12UN-.375	9/16	12	0.370	3/8	0.2500	4	4	AlCrN	1.725	33/64	31/64
N34585	NTM160-9/16X18UN-.375	9/16	18	0.370	3/5	0.1700	4	4	AlCrN	2.100	17/32	33/64
N34588	NTM160-5/8X18UN-.500	5/8	18	0.470	1/2	0.1700	4-1/2	4	AlCrN	2.900	19/32	37/64
N34587	NTM160-5/8X12UN-.500	5/8	12	0.470	1/2	0.2500	4-1/2	4	AlCrN	2.525	9/16	35/64
N34586	NTM160-5/8X11UN-.500	5/8	11	0.470	1/2	0.2750	4-1/2	4	AlCrN	2.400	9/16	17/32
N34592	NTM160-3/4X20UN-.500	3/4	20	0.495	1/2	0.1500	5	4	AlCrN	3.188	23/32	45/64
N34591	NTM160-3/4X16UN-.500	3/4	16	0.495	1/2	0.1880	5	4	AlCrN	3.000	45/64	11/16
N34590	NTM160-3/4X12UN-.500	3/4	12	0.495	1/2	0.2500	5	4	AlCrN	2.750	11/16	43/64
N34589	NTM160-3/4X10UN-.500	3/4	10	0.495	1/2	0.3000	5	4	AlCrN	2.500	11/16	21/32
N34597	NTM160-7/8X20UN-.625	7/8	20	0.620	5/8	0.1500	6	4	AlCrN	4.188	27/32	53/64
N34596	NTM160-7/8X16UN-.625	7/8	16	0.620	5/8	0.1880	6	4	AlCrN	4.000	53/64	13/16
N34595	NTM160-7/8X14UN-.625	7/8	14	0.620	5/8	0.2150	6	4	AlCrN	3.900	53/64	13/16
N34594	NTM160-7/8X12UN-.625	7/8	12	0.620	5/8	0.2500	6	4	AlCrN	3.725	13/16	51/64
N34593	NTM160-7/8X9UN-.625	7/8	9	0.620	5/8	0.3330	6	4	AlCrN	3.300	51/64	49/64
N34600	NTM160-1X16UN-.625	1	16	0.620	5/8	0.1880	6	4	AlCrN	4.000	61/64	15/16
N34599	NTM160-1X12UN-.625	1	12	0.620	5/8	0.2500	6	4	AlCrN	3.725	61/64	15/16
N34598	NTM160-1X8UN-.625	1	8	0.620	5/8	0.3750	6	4	AlCrN	3.150	59/64	7/8

THREAD MILLS- NTM200NPT

SOLID CARBIDE

- Straight flutes for internal and external threading

EDP	DESCRIPTION	THREAD SIZE	THREADS PER INCH	CUTTER DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	CUTTING TEETH	COATING	DRILL SIZE
N68820	NTM200-1/16X27NPT-.250	1/16	27	0.245	1/4	0.4375	2-1/2	3	AlCrN	B
N68822	NTM200-1/8X27NPT-.250	1/8	27	0.245	1/4	0.4375	2-1/2	3	AlCrN	21/64
N68824	NTM200-1/4X18NPT-.371	1/4	18	0.305	5/16	0.6250	3	3	AlCrN	27/64
N68826	NTM200-3/8X18NPT-.312	3/8	18	0.305	5/16	0.6250	3	3	AlCrN	9/16
N68828	NTM200-1/2X14NPT-.500	1/2	14	0.495	1/2	0.8750	4	4	AlCrN	11/16
N68830	NTM200-3/4X14NPT-.500	3/4	14	0.495	1/2	0.8750	4	4	AlCrN	29/32
N68832	NTM200-1X11.5NPT-.625	1	11.5	0.620	5/8	1.1250	4	4	AlCrN	1-5/32
N68834	NTM200-2-1/2X8NPT-.750	2.5	8	0.745	3/4	1.5000	5	4	AlCrN	2-39/64

THREAD MILLS- NTM300NPTF

SOLID CARBIDE

- Straight flutes for internal and external threading

EDP	DESCRIPTION	THREAD SIZE	THREADS PER INCH	CUTTER DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	CUTTING TEETH	COATING	DRILL SIZE
N68836	NTM300-1/16X27NPTF-.250	1/16	27	0.245	1/4	0.4375	2-1/2	3	AlCrN	B
N68838	NTM300-1/8X27NPTF-.250	1/8	27	0.245	1/4	0.4375	2-1/2	3	AlCrN	21/64
N68840	NTM300-1/4X18NPTF-.312	1/4	18	0.305	5/16	0.6250	3	3	AlCrN	27/64
N68842	NTM300-3/8X18NPTF-.312	3/8	18	0.305	5/16	0.6250	3	3	AlCrN	9/16
N68844	NTM300-1/2X4NPTF-.500	1/2	14	0.495	1/2	0.8750	4	4	AlCrN	11/16
N68846	NTM300-3/4X14NPTF-.500	3/4	14	0.495	1/2	0.8750	4	4	AlCrN	29/32
N68848	NTM300-1X11.5NPTF-.625	1.0	11.5	0.620	5/8	1.1250	4	4	AlCrN	1-5/32

METRIC THREAD MILLS- NTM400MI

SOLID CARBIDE

- Helical flutes for internal and external threading

EDP	DESCRIPTION	THREAD SIZE	THREADS PER INCH	CUTTER DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	CUTTING TEETH	COATING	DRILL SIZE 75%
N68850	NTM400-M3X.5ISO-.125	M3	.5	0.085	1/8	0.1780	2	3	AlCrN	39
N68852	NTM400-M3.5X.6ISO-.125	M3.5	.6	0.095	1/8	0.2350	2	3	AlCrN	32
N68854	NTM400-M4X.7ISO-.125	M4	.7	0.115	1/8	0.2760	2	3	AlCrN	30
N68856	NTM400-M4.5X.75ISO-.125	M4.5	.75	0.134	3/16	0.3130	2	3	AlCrN	19
N68858	NTM400-M5-X.8ISO-.125	M5	.8	0.134	3/16	0.3130	2	3	AlCrN	19
N68860	NTM400-M6X1.0ISO-.187	M6	1	0.170	3/16	0.5000	2-1/2	3	AlCrN	8
N68862	NTM400-M8X1.0ISO-.250	M8	1	0.235	1/4	0.6250	2-1/2	3	AlCrN	J
N68864	NTM400-M8X1.25ISO-.250	M8	1.25	0.235	1/4	0.6250	2-1/2	3	AlCrN	H
N68866	NTM400-M10X1.25ISO-.312	M10	1.25	0.300	5/16	0.7500	3	3	AlCrN	11/32
N68868	NTM400-M10X1.5ISO-.312	M10	1.5	0.300	5/16	0.7500	3	3	AlCrN	R
N68870	NTM400-M12X1.25ISO-.375	M12	1.25	0.360	3/8	0.8750	3-1/2	3	AlCrN	27/64
N68872	NTM400-M12X1.75ISO-.375	M12	1.75	0.360	3/8	0.8750	3-1/2	3	AlCrN	13/32
N68874	NTM400-M14X1.25ISO-.375	M14	1.25	0.370	3/8	0.8750	3-1/2	4	AlCrN	1/2
N68876	NTM400-M14X1.5ISO-.375	M14	1.5	0.370	3/8	0.8750	3-1/2	4	AlCrN	1/2
N68878	NTM400-M14X2.0ISO-.375	M14	2	0.370	3/8	0.8750	3-1/2	4	AlCrN	15/32
N68880	NTM400-M16X2.0ISO-.500	M16	2	0.470	1/2	1.2500	4	4	AlCrN	35/64
N68882	NTM400-M18X2.5ISO-.500	M18	2.5	0.490	1/2	1.2500	4	4	AlCrN	39/64
N68884	NTM400-M20X1.5ISO-.500	M20	1.5	0.495	1/2	1.2500	4	4	AlCrN	47/64
N68886	NTM400-M20X2.0ISO-.500	M20	2	0.495	1/2	1.2500	4	4	AlCrN	11/16
N68888	NTM400-M20X2.5ISO-.500	M20	2.5	0.495	1/2	1.2500	4	4	AlCrN	11/16
N68890	NTM400-M24X1.5ISO-.625	M24	1.5	0.620	5/8	1.3730	4	4	AlCrN	22.5mm
N68892	NTM400-M24X2.0ISO-.625	M24	2	0.620	5/8	1.3730	4	4	AlCrN	7/8
N68894	NTM400-M24X2.5ISO-.625	M24	2.5	0.620	5/8	1.3730	4	4	AlCrN	21.5mm
N68896	NTM400-M24X3.0ISO-.625	M24	3	0.620	5/8	1.3750	4	4	AlCrN	53/64

THREAD MILLS - INCH

THREAD MILLING													
ISO GROUP	SMG	v_c (sf / min)		$Z_n = 3$					$Z_n = 4$				
				1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1
P	E 1 - 2	500	n (rev/min)	15280	10187	7640	6112	5093	3820	3056	2547	1910
			f_z (in)	0.0005	0.0008	0.0010	0.0013	0.0015	0.0020	0.0025	0.0030	0.0040
		450 - 550	v_f (in/min)	22.9	22.9	22.9	22.9	22.9	22.9	30.6	30.6	30.6
	E 3 - 4	350	n (rev/min)	10696	7131	5348	4278	3565	2674	2139	1783	1337
			f_z (in)	0.0005	0.0007	0.0009	0.0011	0.0014	0.0018	0.0023	0.0027	0.0036
		400 - 400	v_f (in/min)	14.4	14.4	14.4	14.4	14.4	14.4	19.3	19.3	19.3
	E 5 - 6	275	n (rev/min)	8404	5603	4202	3362	2801	2101	1681	1401	1051
			f_z (in)	0.0004	0.0006	0.0008	0.0009	0.0011	0.0015	0.0019	0.0023	0.0030
		250 - 300	v_f (in/min)	9.5	9.5	9.5	9.5	9.5	9.5	12.6	12.6	12.6
H	M / A 7 >45HRc	150	n (rev/min)	4584	3056	2292	1834	1528	1146	917	764	573
			f_z (in)	0.0002	0.0003	0.0005	0.0006	0.0007	0.0009	0.0011	0.0014	0.0018
		125 - 175	v_f (in/min)	3.1	3.1	3.1	3.1	3.1	3.1	4.1	4.1	4.1
M	E 8 - 9	350	n (rev/min)	10696	7131	5348	4278	3565	2674	2139	1783	1337
			f_z (in)	0.0004	0.0006	0.0008	0.0009	0.0011	0.0015	0.0019	0.0023	0.0030
		300 - 400	v_f (in/min)	12.0	12.0	12.0	12.0	12.0	12.0	16.0	16.0	16.0
	E 10 - 11	250	n (rev/min)	7640	5093	3820	3056	2547	1910	1528	1273	955
			f_z (in)	0.0004	0.0006	0.0008	0.0009	0.0011	0.0015	0.0019	0.0023	0.0030
		200 - 300	v_f (in/min)	8.6	8.6	8.6	8.6	8.6	8.6	11.5	11.5	11.5
K	E 12 - 13	500	n (rev/min)	15280	10187	7640	6112	5093	3820	3056	2547	1910
			f_z (in)	0.0006	0.0009	0.0013	0.0016	0.0019	0.0025	0.0031	0.0038	0.0050
		450 - 550	v_f (in/min)	28.7	28.7	28.7	28.7	28.7	28.7	38.2	38.2	38.2
	E 14 - 15	425	n (rev/min)	12988	8659	6494	5195	4329	3247	2598	2165	1624
			f_z (in)	0.0005	0.0007	0.0009	0.0011	0.0014	0.0018	0.0023	0.0027	0.0036
		375 - 475	v_f (in/min)	17.5	17.5	17.5	17.5	17.5	17.5	23.4	23.4	23.4
N	E 16	600	n (rev/min)	18336	12224	9168	7334	6112	4584	3667	3056	2292
			f_z (in)	0.0006	0.0009	0.0013	0.0016	0.0019	0.0025	0.0031	0.0038	0.0050
		550 - 650	v_f (in/min)	34.4	34.4	34.4	34.4	34.4	34.4	45.8	45.8	45.8
	E 17	600	n (rev/min)	18336	12224	9168	7334	6112	4584	3667	3056	2292
			f_z (in)	0.0006	0.0009	0.0013	0.0016	0.0019	0.0025	0.0031	0.0038	0.0050
		550 - 650	v_f (in/min)	34.4	34.4	34.4	34.4	34.4	34.4	45.8	45.8	45.8
	E 18	600	n (rev/min)	18336	12224	9168	7334	6112	4584	3667	3056	2292
			f_z (in)	0.0005	0.0008	0.0010	0.0013	0.0015	0.0020	0.0025	0.0030	0.0040
		550 - 650	v_f (in/min)	27.5	27.5	27.5	27.5	27.5	27.5	36.7	36.7	36.7
S	E 20	100	n (rev/min)	3056	2037	1528	1222	1019	764	611	509	382
			f_z (in)	0.0003	0.0005	0.0006	0.0008	0.0009	0.0012	0.0015	0.0018	0.0024
		80 - 120	v_f (in/min)	2.8	2.8	2.8	2.8	2.8	2.8	3.7	3.7	3.7
	E 21	100	n (rev/min)	3056	2037	1528	1222	1019	764	611	509	382
			f_z (in)	0.0003	0.0005	0.0006	0.0008	0.0009	0.0012	0.0015	0.0018	0.0024
		80 - 120	v_f (in/min)	2.8	2.8	2.8	2.8	2.8	2.8	3.7	3.7	3.7
	E 22	350	n (rev/min)	10696	7131	5348	4278	3565	2674	2139	1783	1337
			f_z (in)	0.0004	0.0006	0.0008	0.0009	0.0011	0.0015	0.0019	0.0023	0.0030
		330 - 370	v_f (in/min)	12.0	12.0	12.0	12.0	12.0	12.0	16.0	16.0	16.0
GRAPHITE		300	n (rev/min)	9168	6112	4584	3667	3056	2292	1834	1528	1146
			f_z (in)	0.0004	0.0005	0.0007	0.0009	0.0011	0.0014	0.0018	0.0021	0.0028
		250 - 350	v_f (in/min)	9.6	9.6	9.6	9.6	9.6	9.6	12.8	12.8	12.8

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

THREAD MILLS - METRIC

THREAD MILLING														
ISO GROUP	SMG	vc (m / min)			Zn = 3						Zn = 4			
					3	5	6	8	10	12	16	20	25
P	E 1 - 2	152		n (rev/min)	16130	9680	8060	6050	4840	4030	3020	2420	1940
				f_z (mm)	0.012	0.020	0.024	0.032	0.040	0.048	0.064	0.080	0.100
		137	- 167	v_f (mm/min)	581	581	580	581	581	580	773	774	776
	E 3 - 4	107		n (rev/min)	11350	6810	5680	4260	3410	2840	2130	1700	1360
				f_z (mm)	0.011	0.018	0.022	0.029	0.036	0.043	0.058	0.072	0.090
		122	- 122	v_f (mm/min)	368	368	368	368	368	368	491	490	490
	E 5 - 6	84		n (rev/min)	8910	5350	4460	3340	2670	2230	1670	1340	1070
				f_z (mm)	0.009	0.015	0.018	0.024	0.030	0.036	0.048	0.060	0.075
		76	- 91	v_f (mm/min)	241	241	241	240	240	241	321	322	321
H	M / A 7 >45HRc	46		n (rev/min)	4880	2930	2440	1830	1460	1220	920	730	590
				f_z (mm)	0.005	0.009	0.011	0.014	0.018	0.022	0.029	0.036	0.045
		38	- 53	v_f (mm/min)	79	79	79	79	79	79	106	105	106
M	E 8 - 9	107		n (rev/min)	11350	6810	5680	4260	3410	2840	2130	1700	1360
				f_z (mm)	0.009	0.015	0.018	0.024	0.030	0.036	0.048	0.060	0.075
		91	- 400	v_f (mm/min)	306	306	307	307	307	307	409	408	408
	E 10 - 11	76		n (rev/min)	8060	4840	4030	3020	2420	2020	1510	1210	970
				f_z (mm)	0.009	0.015	0.018	0.024	0.030	0.036	0.048	0.060	0.075
		61	- 91	v_f (mm/min)	218	218	218	217	218	218	290	290	291
K	E 12 - 13	152		n (rev/min)	16130	9680	8060	6050	4840	4030	3020	2420	1940
				f_z (mm)	0.015	0.025	0.030	0.040	0.050	0.060	0.080	0.100	0.125
		137	- 168	v_f (mm/min)	726	726	725	726	726	725	966	968	970
	E 14 - 15	129		n (rev/min)	13690	8210	6840	5130	4110	3420	2570	2050	1640
				f_z (mm)	0.011	0.018	0.022	0.029	0.036	0.043	0.058	0.072	0.090
		114	- 145	v_f (mm/min)	444	443	443	443	444	443	592	590	590
N	E 16	183		n (rev/min)	19420	11650	9710	7280	5830	4850	3640	2910	2330
				f_z (mm)	0.015	0.025	0.030	0.040	0.050	0.060	0.080	0.100	0.125
		168	- 198	v_f (mm/min)	874	874	874	874	875	873	1165	1164	1165
	E 17	183		n (rev/min)	19420	11650	9710	7280	5830	4850	3640	2910	2330
				f_z (mm)	0.015	0.025	0.030	0.040	0.050	0.060	0.080	0.100	0.125
		168	- 198	v_f (mm/min)	874	874	874	874	875	873	1165	1164	1165
	E 18	183		n (rev/min)	19420	11650	9710	7280	5830	4850	3640	2910	2330
				f_z (mm)	0.012	0.020	0.024	0.032	0.040	0.048	0.064	0.080	0.100
		168	- 198	v_f (mm/min)	699	699	699	699	700	698	932	931	932
S	E 20	30		n (rev/min)	3180	1910	1590	1190	950	800	600	480	380
				f_z (mm)	0.007	0.012	0.014	0.019	0.024	0.029	0.038	0.048	0.060
		24	- 37	v_f (mm/min)	69	69	69	69	68	69	92	92	91
	E 21	30		n (rev/min)	3180	1910	1590	1190	950	800	600	480	380
				f_z (mm)	0.007	0.012	0.014	0.019	0.024	0.029	0.038	0.048	0.060
		24	- 37	v_f (mm/min)	69	69	69	69	68	69	92	92	91
	E 22	107		n (rev/min)	11350	6810	5680	4260	3410	2840	2130	1700	1360
				f_z (mm)	0.009	0.015	0.018	0.024	0.030	0.036	0.048	0.060	0.075
		101	- 113	v_f (mm/min)	306	306	307	307	307	307	409	408	408
GRAPHITE		91		n (rev/min)	9660	5790	4830	3620	2900	2410	1810	1450	1160
				f_z (mm)	0.008	0.014	0.017	0.022	0.028	0.034	0.045	0.056	0.070
		76	- 107	v_f (mm/min)	243	243	243	243	244	243	324	325	325

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

THREAD MILLING TECHNICAL DATA

THREAD FORMS AND DESIGN

Standard Niagara Cutter Thread Mills - Thread Form Styles

- Unified National Coarse – UNC / 60 Degree / Common Std.
- Unified National Fine – UNF / 60 Degree / Common Std.
- Unified National Extra Fine – UNEF / 60 Degree / Common Std.
- National Pipe Tapered – NPT – 60 Degree
- National Pipe Tapered - NPTF
- Metric – M Series

Special Thread Mills Available Upon Request - Thread Form Styles

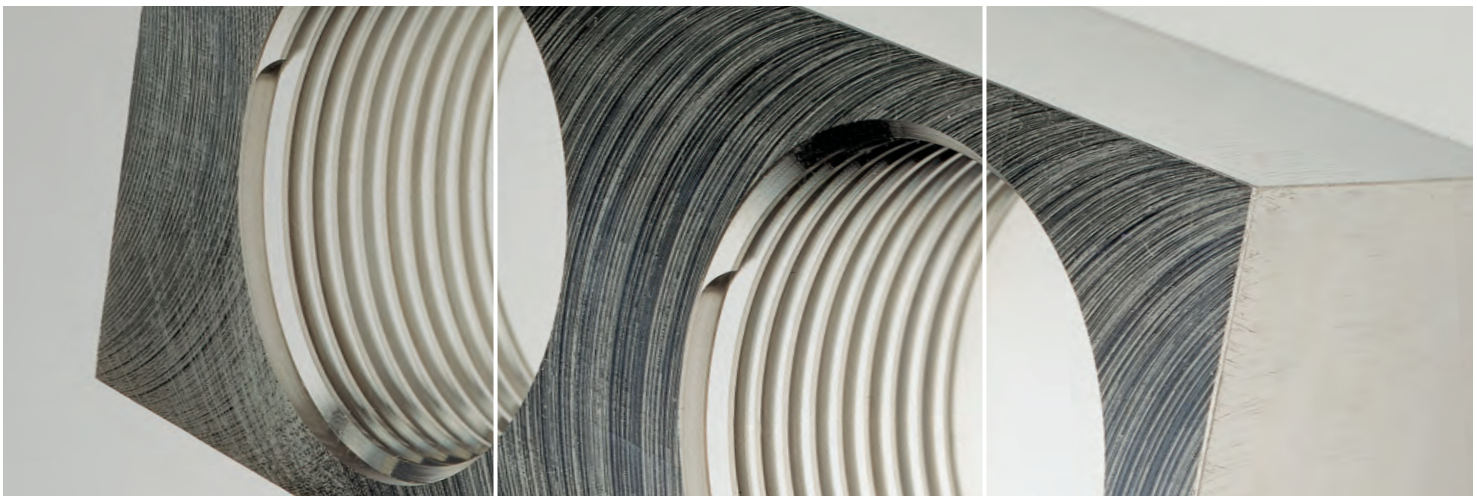
- UNJ - 60 Degree - Aerospace Threads / Controlled Root & Crest
- ACME Screw Threads – 29 Degree High Strength
- Buttress Threads – Three different styles 50, 45, and 33 Degree Threads
- American Petroleum Industry - API / 60 Degree / Controlled Root & Crest
- Whitworth Threads – 55 Degree

Please contact Niagara Cutter at 800-861-6111 if you have a special thread mill requirements. Information for special threads will include thread style, size, pitch, form & depth.

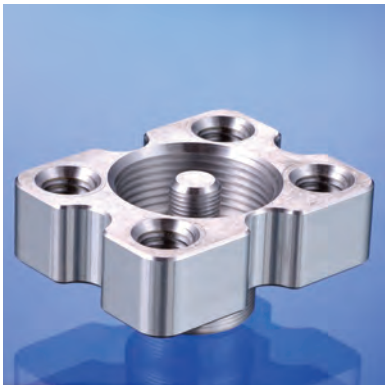
Thread Mill Design

Niagara Cutter Thread Mills are designed and comply with following standards:

- UN - ASME B1.1
- NPT / NPTF - ANSI / ASME B1.20.1
- Metric ISO 724



THREAD MILLING TECHNICAL DATA



THREAD MILL JUSTIFICATION

With modern machining centers utilizing helical interpolation programs, thread milling operations can be achieved economically. Thread milling offers many advantages over tapping and is a fast growing machining concept in the industry today.

Thread milling offers many advantages:

- One thread mill produces varying thread diameters of the same pitch
- One tool for left and right hand threads
- Increases quality; milled threads can be cut to full depth with excellent form, finish, and dimensional accuracy
- Easy machining of difficult materials
- Pitch diameter can be controlled by CNC offset
- NPT holes do not require taper reaming
- Produces small controllable chips
- Eliminates the safety issues and downtime associated with tap breakage
- Smaller machines can produce larger threads due to less spindle torque
- Less cutting pressure for thin walled workpieces
- Allows 100% thread depth -Tapping usually permits 65-75%

Is it faster to thread mill or tap the work piece?
This question is often asked. Look at the following example:

THREADING APPLICATION COMPARISON

Material	4140 Steel	
Thread Size	1/4 - 20	
Depth-of-Thread	1/2”	
Parameters	Thread Milling	Standard Tapping
SFM	150	50
IPM	16.04	38.20
Time-in-Cut (seconds)	.100	.218

Thread milling is generating a very small circumference at a high feed rate.

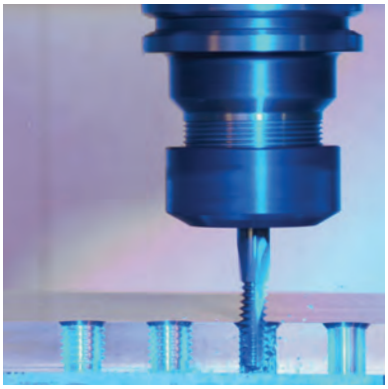
Example: Circumference = .050” Feed Rate = 16.04 IPM

TAPPING VS THREAD MILLING

Machining Comparison	Thread Mill	Traditional Tap
Broken Tooling Easy to Remove	+	-
Free Cutting	+	-
Consistent Results	+	-
Easy to thread difficult materials: Inconel, Stainless, Titanium, etc.	+	-
Special Programming	-	+

THREAD MILLING TECHNICAL DATA

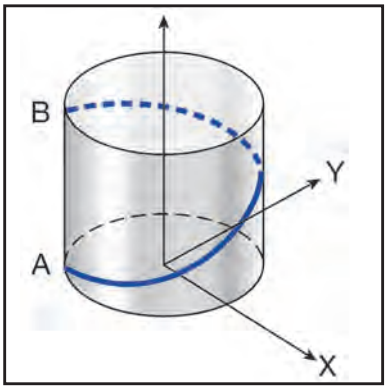
APPLICATION RECOMMENDATIONS



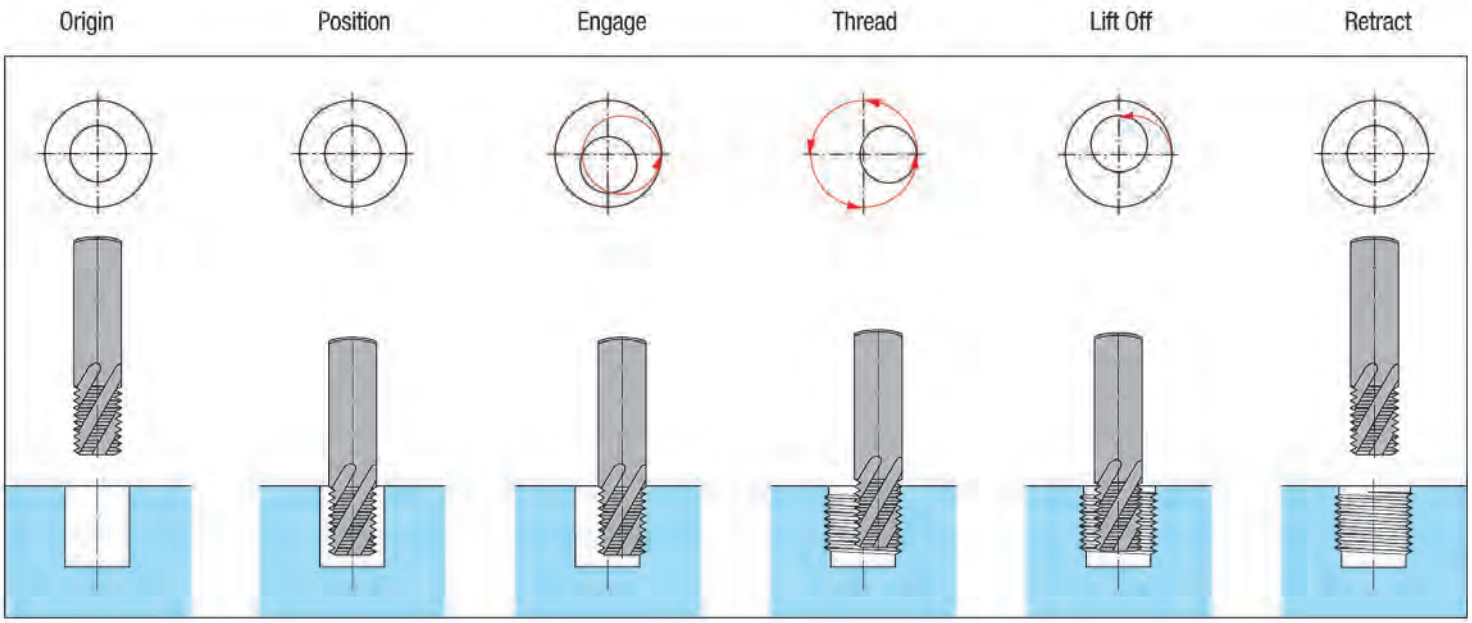
Thread milling tools form a thread using a motion referred to as helical interpolation. This process involves the movement of all three axes on the machine simultaneously. The X and Y axes move in a circular motion and the Z in an axial direction per 360 degrees at a distance equal to the pitch of the thread being machined.

Shown in Figure 1, the programmed tool path starts from the bottom (Point A) and moves toward the top (Point B). A right-hand thread will be climb cut using this process.
Note: When machining a right-hand thread you will be machining from bottom-to-top for climb cutting. If machining a left-hand thread you will start from top-to-bottom with a right-hand helix tool.
Left-hand threads can be climb cut with a left-hand helix tool starting from the bottom-to-top.

- Climb milling is the preferred method
- Start from the bottom of the hole to avoid re-cutting any chips
- Offset tool from center of the hole to allow a smooth start into the thread
- For difficult materials it may be necessary to make multiple passes

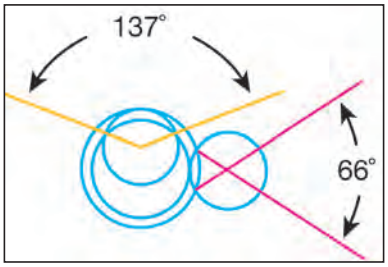


TOOL PATH DURING THREADMILLING



THREAD MILLING TECHNICAL DATA

UNDERSTANDING FEED RATE CALCULATION



Normal milling feed rates are calculated from the center-line of the cutting tool. The regular feed rate calculation is Feed Rate = Revolutions per Minute (RPM) x Number of Cutting Teeth x Chip per Tooth. The circular motion of the thread mill cutting action requires a different calculation to be used.

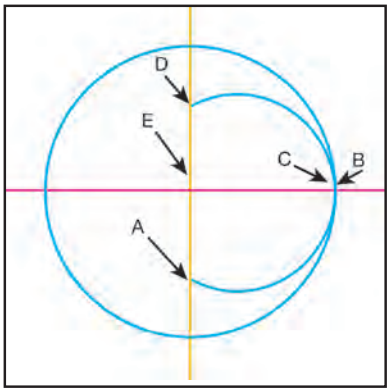
For an internal thread the feed rate at the cutting edge increases, as the cutter diameter increases. For an external thread the feed rate at the cutting edge decreases, as the cutter diameter decreases. As shown in the illustration the internal thread has a 137 degree engagement. While the external thread has a 66 degree engagement.

FORMULAS:

Internal Thread: Feed Rate to be Programmed = Actual Feed Rate x (Diameter of the Work – Diameter of the Cutter) / Diameter of the Work

External Thread: Feed Rate to be Programmed = Actual Feed Rate x (Diameter of the Work + Diameter of the Cutter) / Diameter of the Work

PROGRAMMING



A) Start Location

G01 G41 X_____ Y_____D____ F_____

B) Ramp into full depth-of-cut (Smooth Entrance)

G03 X_____ Y_____ Z_____ I_____J _____

C) Counter Clockwise interpolation (Climb Cut)

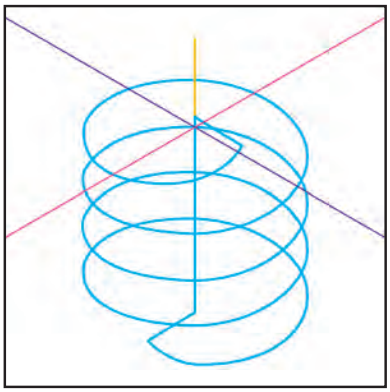
G03 X_____ Y_____ Z Thread Pitch I_____J_____

D) Ramp off for a smooth exit

G03 X_____ Y _____

E) Ramp away from work surface

G01 G40 X_____ Y_____ Z_____ I_____J _____



Cam software providers offer excellent thread mill programming routines and the programming is very easy to use. You will need to know the following application information:

Thread Size / Cutter Diameter / Thread Depth / Number of Passes / SFM / IPT

SOLID END MILLS

HIGH SPEED STEEL

High speed steel end mills are available in both center cutting and non center cutting geometries.

General purpose HSS end mills are available in a broad range of single end and double end styles. Configurations available are:

- 2,3,4 and Multi Flute Center Cutting
- 4 and Multi Flute Non-Center Cutting
- Square end and ball end
- Stub, regular, and long lengths of cut
- Miniature (3/16" shank)
- Metric flute diameter / inch shank

The A337 high helix geometry for aluminum combine a unique flute design and high performance geometries into a single end mill. This new design allows for higher feed-per-tooth rates and greater productivity. In addition, the eccentric O.D. relief helps reduce horizontal milling lines and keeps chatter to a minimum.

Niagara Cutter

GENERAL PURPOSE- S203

HSS
HIGH SPEED STEEL

HELIX
30°

SQUARE END

CENTER CUTTING

- 2 Flute
- Designed for slotting and pocketing in all materials
- Weldon flat standard

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N20041	S203-0.125-F3-S.3-Z2	1/8	3/8	3/8	2-5/16	2	
N20040	S203-0.125-F3-S.3-Z2	1/8	3/8	3/8	2-5/16	2	TiN
N20051	S203-0.156-F3-S.3-Z2	5/32	3/8	7/16	2-5/16	2	
N20050	S203-0.156-F3-S.3-Z2	5/32	3/8	7/16	2-5/16	2	TiN
N20059	S203-0.172-F3-S.3-Z2	11/64	3/8	7/16	2-5/16	2	
N20058	S203-0.172-F3-S.3-Z2	11/64	3/8	7/16	2-5/16	2	TiN
N21061	S203-0.188-F1-S.3-Z2	3/16	3/8	3/16	2-1/16	2	
N21060	S203-0.188-F1-S.3-Z2	3/16	3/8	3/16	2-1/16	2	TiN
N20061	S203-0.188-F2-S.3-Z2	3/16	3/8	7/16	2-5/16	2	
N20060	S203-0.188-F2-S.3-Z2	3/16	3/8	7/16	2-5/16	2	TiN
N22061	S203-0.188-F3-S.3-Z2	3/16	3/8	5/8	2-7/16	2	
N22060	S203-0.188-F3-S.3-Z2	3/16	3/8	5/8	2-7/16	2	TiN
N23061	S203-0.188-F4-S.3-Z2	3/16	3/8	3/4	2-5/8	2	
N23060	S203-0.188-F4-S.3-Z2	3/16	3/8	3/4	2-5/8	2	TiN
N20069	S203-0.203-F2-S.3-Z2	13/64	3/8	7/16	2-5/16	2	
N20068	S203-0.203-F2-S.3-Z2	13/64	3/8	7/16	2-5/16	2	TiN
N20071	S203-0.219-F2-S.3-Z2	7/32	3/8	1/2	2-5/16	2	
N20070	S203-0.219-F2-S.3-Z2	7/32	3/8	1/2	2-5/16	2	TiN
N22071	S203-0.219-F3-S.3-Z2	7/32	3/8	3/4	2-9/16	2	
N22070	S203-0.219-F3-S.3-Z2	7/32	3/8	3/4	2-9/16	2	TiN
N23071	S203-0.219-F4-S.3-Z2	7/32	3/8	7/8	2-11/16	2	
N23070	S203-0.219-F4-S.3-Z2	7/32	3/8	7/8	2-11/16	2	TiN
N20079	S203-0.234-F2-S.3-Z2	15/64	3/8	1/2	2-5/16	2	
N20078	S203-0.234-F2-S.3-Z2	15/64	3/8	1/2	2-5/16	2	TiN
N21081	S203-0.250-F1-S.3-Z2	1/4	3/8	1/4	2-1/16	2	
N21080	S203-0.250-F1-S.3-Z2	1/4	3/8	1/4	2-1/16	2	TiN
N20081	S203-0.250-F2-S.3-Z2	1/4	3/8	1/2	2-5/16	2	
N20080	S203-0.250-F2-S.3-Z2	1/4	3/8	1/2	2-5/16	2	TiN
N22081	S203-0.250-F3-S.3-Z2	1/4	3/8	3/4	2-5/8	2	
N22080	S203-0.250-F3-S.3-Z2	1/4	3/8	3/4	2-5/8	2	TiN
N23081	S203-0.250-F4-S.3-Z2	1/4	3/8	1	2-7/8	2	
N23080	S203-0.250-F4-S.3-Z2	1/4	3/8	1	2-7/8	2	TiN
N20089	S203-0.266-F2-S.3-Z2	17/64	3/8	9/16	2-5/16	2	
N20088	S203-0.266-F2-S.3-Z2	17/64	3/8	9/16	2-5/16	2	TiN
N20091	S203-0.281-F2-S.3-Z2	9/32	3/8	9/16	2-5/16	2	
N20090	S203-0.281-F2-S.3-Z2	9/32	3/8	9/16	2-5/16	2	TiN

DISCOUNT CODE D40

GENERAL PURPOSE- S203

HSS
HIGH SPEED STEEL

HELIX
30°

SQUARE END

CENTER CUTTING

- 2 Flute
- Designed for slotting and pocketing in all materials
- Weldon flat standard

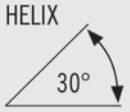
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N22091	S203-0.281-F4-S.3-Z2	9/32	3/8	1	2-3/4	2	
N22090	S203-0.281-F4-S.3-Z2	9/32	3/8	1	2-3/4	2	TiN
N23091	S203-0.281-F5-S.3-Z2	9/32	3/8	1-3/8	3-1/8	2	
N23090	S203-0.281-F5-S.3-Z2	9/32	3/8	1-3/8	3-1/8	2	TiN
N20101	S203-0.313-F2-S.3-Z2	5/16	3/8	9/16	2-5/16	2	
N20100	S203-0.313-F2-S.3-Z2	5/16	3/8	9/16	2-5/16	2	TiN
N22101	S203-0.313-F3-S.3-Z2	5/16	3/8	1	2-3/4	2	
N22100	S203-0.313-F3-S.3-Z2	5/16	3/8	1	2-3/4	2	TiN
N23101	S203-0.313-F4-S.3-Z2	5/16	3/8	1-3/8	3-1/8	2	
N23100	S203-0.313-F4-S.3-Z2	5/16	3/8	1-3/8	3-1/8	2	TiN
N20109	S203-0.328-F2-S.3-Z2	21/64	3/8	9/16	2-5/16	2	
N20108	S203-0.328-F2-S.3-Z2	21/64	3/8	9/16	2-5/16	2	TiN
N20111	S203-0.344-F2-S.3-Z2	11/32	3/8	9/16	2-5/16	2	
N20110	S203-0.344-F2-S.3-Z2	11/32	3/8	9/16	2-5/16	2	TiN
N22111	S203-0.344-F3-S.3-Z2	11/32	3/8	1-1/8	2-7/8	2	
N22110	S203-0.344-F3-S.3-Z2	11/32	3/8	1-1/8	2-7/8	2	TiN
N23111	S203-0.344-F4-S.3-Z2	11/32	3/8	1-1/2	3-1/4	2	
N23110	S203-0.344-F4-S.3-Z2	11/32	3/8	1-1/2	3-1/4	2	TiN
N20119	S203-0.359-F2-S.3-Z2	23/64	3/8	9/16	2-5/16	2	
N20118	S203-0.359-F2-S.3-Z2	23/64	3/8	9/16	2-5/16	2	TiN
N20121	S203-0.375-D2-S.3-Z2	3/8	3/8	9/16	2-5/16	2	
N20120	S203-0.375-D2-S.3-Z2	3/8	3/8	9/16	2-5/16	2	TiN
N22121	S203-0.375-D3-S.3-Z2	3/8	3/8	1-1/8	2-7/8	2	
N22120	S203-0.375-D3-S.3-Z2	3/8	3/8	1-1/8	2-7/8	2	TiN
N23121	S203-0.375-D4-S.3-Z2	3/8	3/8	1-1/2	3-1/4	2	
N23120	S203-0.375-D4-S.3-Z2	3/8	3/8	1-1/2	3-1/4	2	TiN
N20129	S203-0.391-P2-S.3-Z2	25/64	3/8	13/16	2-1/2	2	
N20128	S203-0.391-P2-S.3-Z2	25/64	3/8	13/16	2-1/2	2	TiN
N20131	S203-0.406-P2-S.3-Z2	13/32	3/8	13/16	2-1/2	2	
N20130	S203-0.406-P2-S.3-Z2	13/32	3/8	13/16	2-1/2	2	TiN
N22131	S203-0.406-P3-S.3-Z2	13/32	3/8	1-3/8	3-1/16	2	
N22130	S203-0.406-P3-S.3-Z2	13/32	3/8	1-3/8	3-1/16	2	TiN
N20139	S203-0.422-P2-S.3-Z2	27/64	3/8	13/16	2-1/2	2	
N20138	S203-0.422-P2-S.3-Z2	27/64	3/8	13/16	2-1/2	2	TiN
N20141	S203-0.438-P2-S.3-Z2	7/16	3/8	13/16	2-1/2	2	
N20140	S203-0.438-P2-S.3-Z2	7/16	3/8	13/16	2-1/2	2	TiN

DISCOUNT CODE D40

Niagara Cutter

GENERAL PURPOSE- S203

HSS
HIGH SPEED STEEL

HELIX


SQUARE END


CENTER CUTTING

- 2 Flute
- Designed for slotting and pocketing in all materials
- Weldon flat standard

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N22141	S203-0.438-P3-S.3-Z2	7/16	3/8	1-3/8	3-1/16	2	
N22140	S203-0.438-P3-S.3-Z2	7/16	3/8	1-3/8	3-1/16	2	TiN
N23141	S203-0.438-P5-S.3-Z2	7/16	3/8	2	3-11/16	2	
N23140	S203-0.438-P5-S.3-Z2	7/16	3/8	2	3-11/16	2	TiN
N20149	S203-0.453-P2-S.3-Z2	29/64	3/8	13/16	2-1/2	2	
N20148	S203-0.453-P2-S.3-Z2	29/64	3/8	13/16	2-1/2	2	TiN
N20151	S203-0.469-P2-S.3-Z2	15/32	3/8	13/16	2-1/2	2	
N20150	S203-0.469-P2-S.3-Z2	15/32	3/8	13/16	2-1/2	2	TiN
N20159	S203-0.484-P2-S.3-Z2	31/64	3/8	13/16	2-1/2	2	
N20158	S203-0.484-P2-S.3-Z2	31/64	3/8	13/16	2-1/2	2	TiN
N20161	S203-0.500-P2-S.3-Z2	1/2	3/8	13/16	2-1/2	2	
N20167	S203-0.500-P2-S.3-Z2	1/2	3/8	13/16	2-1/2	2	TiN
N21162	S203-0.500-D1-S.3-Z2	1/2	1/2	1/2	2-1/2	2	
N21160	S203-0.500-D1-S.3-Z2	1/2	1/2	1/2	2-1/2	2	TiN
N20162	S203-0.500-D2-S.3-Z2	1/2	1/2	1	3	2	
N20160	S203-0.500-D2-S.3-Z2	1/2	1/2	1	3	2	TiN
N22162	S203-0.500-D3-S.3-Z2	1/2	1/2	1-1/2	3-1/2	2	
N22160	S203-0.500-D3-S.3-Z2	1/2	1/2	1-1/2	3-1/2	2	TiN
N23162	S203-0.500-D4-S.3-Z2	1/2	1/2	2	4	2	
N23160	S203-0.500-D4-S.3-Z2	1/2	1/2	2	4	2	TiN
N20169	S203-0.516-P2-S.3-Z2	33/64	1/2	1	3	2	
N20168	S203-0.516-P2-S.3-Z2	33/64	1/2	1	3	2	TiN
N20172	S203-0.531-P2-S.3-Z2	17/32	1/2	1-1/8	3-1/8	2	
N20170	S203-0.531-P2-S.3-Z2	17/32	1/2	1-1/8	3-1/8	2	TiN
N22172	S203-0.531-P4-S.3-Z2	17/32	1/2	1-7/8	3-7/8	2	
N22170	S203-0.531-P4-S.3-Z2	17/32	1/2	1-7/8	3-7/8	2	TiN
N20179	S203-0.547-P2-S.3-Z2	35/64	1/2	1-1/8	3-1/8	2	
N20178	S203-0.547-P2-S.3-Z2	35/64	1/2	1-1/8	3-1/8	2	TiN
N20182	S203-0.563-P2-S.3-Z2	9/16	1/2	1-1/8	3-1/8	2	
N20180	S203-0.563-P2-S.3-Z2	9/16	1/2	1-1/8	3-1/8	2	TiN
N22182	S203-0.563-P3-S.3-Z2	9/16	1/2	1-7/8	3-7/8	2	
N22180	S203-0.563-P3-S.3-Z2	9/16	1/2	1-7/8	3-7/8	2	TiN
N23182	S203-0.563-P4-S.3-Z2	9/16	1/2	2-1/2	4-1/2	2	
N23180	S203-0.563-P4-S.3-Z2	9/16	1/2	2-1/2	4-1/2	2	TiN
N20189	S203-0.578-P2-S.3-Z2	37/64	1/2	1-1/8	3-1/8	2	
N20188	S203-0.578-P2-S.3-Z2	37/64	1/2	1-1/8	3-1/8	2	TiN

DISCOUNT CODE D40

Niagara Cutter

GENERAL PURPOSE- S203

HSS
HIGH SPEED STEEL

HELIX
30°

SQUARE END

CENTER CUTTING

- 2 Flute
- Designed for slotting and pocketing in all materials
- Weldon flat standard

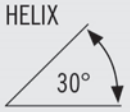
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N20192	S203-0.594-P2-S.3-Z2	19/32	1/2	1-1/8	3-1/8	2	
N20190	S203-0.594-P2-S.3-Z2	19/32	1/2	1-1/8	3-1/8	2	TiN
N20199	S203-0.609-F2-S.3-Z2	39/64	5/8	1-5/16	3-7/16	2	
N20198	S203-0.609-F2-S.3-Z2	39/64	5/8	1-5/16	3-7/16	2	TiN
N20202	S203-0.625-P2-S.3-Z2	5/8	1/2	1-1/8	3-1/8	2	
N20207	S203-0.625-P2-S.3-Z2	5/8	1/2	1-1/8	3-1/8	2	TiN
N21203	S203-0.625-D1-S.3-Z2	5/8	5/8	5/8	2-3/4	2	
N21200	S203-0.625-D1-S.3-Z2	5/8	5/8	5/8	2-3/4	2	TiN
N20203	S203-0.625-D2-S.3-Z2	5/8	5/8	1-5/16	3-7/16	2	
N20200	S203-0.625-D2-S.3-Z2	5/8	5/8	1-5/16	3-7/16	2	TiN
N22204	S203-0.625-D3-S.3-Z2	5/8	5/8	1-5/8	3-3/4	2	
N22201	S203-0.625-D3-S.3-Z2	5/8	5/8	1-5/8	3-3/4	2	TiN
N22203	S203-0.625-D4-S.3-Z2	5/8	5/8	1-7/8	4	2	
N22200	S203-0.625-D4-S.3-Z2	5/8	5/8	1-7/8	4	2	TiN
N23204	S203-0.625-D5-S.3-Z2	5/8	5/8	2	4-1/8	2	
N23201	S203-0.625-D5-S.3-Z2	5/8	5/8	2	4-1/8	2	TiN
N23203	S203-0.625-D6-S.3-Z2	5/8	5/8	2-1/2	4-5/8	2	
N23200	S203-0.625-D6-S.3-Z2	5/8	5/8	2-1/2	4-5/8	2	TiN
N20209	S203-0.641-P2-S.3-Z2	41/64	5/8	1-5/16	3-7/16	2	
N20208	S203-0.641-P2-S.3-Z2	41/64	5/8	1-5/16	3-7/16	2	TiN
N20213	S203-0.656-P2-S.3-Z2	21/32	5/8	1-5/16	3-7/16	2	
N20210	S203-0.656-P2-S.3-Z2	21/32	5/8	1-5/16	3-7/16	2	TiN
N20222	S203-0.688-P2-S.3-Z2	11/16	1/2	1-5/16	3-5/16	2	
N20227	S203-0.688-P2-S.3-Z2	11/16	1/2	1-5/16	3-5/16	2	TiN
N22222	S203-0.688-P3-S.3-Z2	11/16	1/2	1-5/8	3-5/8	2	
N22221	S203-0.688-P3-S.3-Z2	11/16	1/2	1-5/8	3-5/8	2	TiN
N20223	S203-0.688-P5-S.3-Z2	11/16	5/8	1-5/16	3-7/16	2	
N20220	S203-0.688-P5-S.3-Z2	11/16	5/8	1-5/16	3-7/16	2	TiN
N20229	S203-0.703-F2-S.3-Z2	45/64	3/4	1-5/16	3-9/16	2	
N20228	S203-0.703-F2-S.3-Z2	45/64	3/4	1-5/16	3-9/16	2	TiN
N20234	S203-0.719-F2-S.3-Z2	23/32	3/4	1-5/16	3-9/16	2	
N20230	S203-0.719-F2-S.3-Z2	23/32	3/4	1-5/16	3-9/16	2	TiN
N20242	S203-0.750-P1-S.3-Z2	3/4	1/2	1-5/16	3-5/16	2	
N20241	S203-0.750-P1-S.3-Z2	3/4	1/2	1-5/16	3-5/16	2	TiN
N20243	S203-0.750-P2-S.3-Z2	3/4	5/8	1-5/16	3-7/16	2	
N20247	S203-0.750-P2-S.3-Z2	3/4	5/8	1-5/16	3-7/16	2	TiN

DISCOUNT CODE D40

Niagara Cutter

GENERAL PURPOSE- S203

HSS
HIGH SPEED STEEL

HELIX


SQUARE END

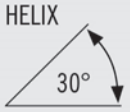

CENTER CUTTING

- 2 Flute
- Designed for slotting and pocketing in all materials
- Weldon flat standard

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N20244	S203-0.750-D2-S.3-Z2	3/4	3/4	1-5/16	3-9/16	2	
N20240	S203-0.750-D2-S.3-Z2	3/4	3/4	1-5/16	3-9/16	2	TiN
N22245	S203-0.750-D3-S.3-Z2	3/4	3/4	1-3/4	4	2	
N22241	S203-0.750-D3-S.3-Z2	3/4	3/4	1-3/4	4	2	TiN
N22244	S203-0.750-D4-S.3-Z2	3/4	3/4	2-1/4	4-1/2	2	
N22240	S203-0.750-D4-S.3-Z2	3/4	3/4	2-1/4	4-1/2	2	TiN
N23244	S203-0.750-D5-S.3-Z2	3/4	3/4	3	5-1/4	2	
N23240	S203-0.750-D5-S.3-Z2	3/4	3/4	3	5-1/4	2	TiN
N20249	S203-0.766-P2-S.3-Z2	49/64	3/4	1-1/2	3-3/4	2	
N20248	S203-0.766-P2-S.3-Z2	49/64	3/4	1-1/2	3-3/4	2	TiN
N20254	S203-0.781-P2-S.3-Z2	25/32	3/4	1-1/2	3-3/4	2	
N20250	S203-0.781-P2-S.3-Z2	25/32	3/4	1-1/2	3-3/4	2	TiN
N20263	S203-0.813-P2-S.3-Z2	13/16	5/8	1-1/2	3-5/8	2	
N20267	S203-0.813-P2-S.3-Z2	13/16	5/8	1-1/2	3-5/8	2	TiN
N20264	S203-0.813-P3-S.3-Z2	13/16	3/4	1-1/2	3-3/4	2	
N20260	S203-0.813-P3-S.3-Z2	13/16	3/4	1-1/2	3-3/4	2	TiN
N22264	S203-0.813-P4-S.3-Z2	13/16	3/4	2-5/8	4-7/8	2	
N22260	S203-0.813-P4-S.3-Z2	13/16	3/4	2-5/8	4-7/8	2	TiN
N20283	S203-0.875-P2-S.3-Z2	7/8	5/8	1-1/2	3-5/8	2	
N20281	S203-0.875-P2-S.3-Z2	7/8	5/8	1-1/2	3-5/8	2	TiN
N20284	S203-0.875-P3-S.3-Z2	7/8	3/4	1-1/2	3-3/4	2	
N20287	S203-0.875-P3-S.3-Z2	7/8	3/4	1-1/2	3-3/4	2	TiN
N20285	S203-0.875-D2-S.3-Z2	7/8	7/8	1-1/2	3-3/4	2	
N20280	S203-0.875-D2-S.3-Z2	7/8	7/8	1-1/2	3-3/4	2	TiN
N22286	S203-0.875-D3-S.3-Z2	7/8	7/8	2	4-1/4	2	
N22281	S203-0.875-D3-S.3-Z2	7/8	7/8	2	4-1/4	2	TiN
N23285	S203-0.875-D6-S.3-Z2	7/8	7/8	3-1/2	5-3/4	2	
N23280	S203-0.875-D6-S.3-Z2	7/8	7/8	3-1/2	5-3/4	2	TiN
N20304	S203-0.938-P2-S.3-Z2	15/16	3/4	1-1/2	3-3/4	2	
N20303	S203-0.938-P2-S.3-Z2	15/16	3/4	1-1/2	3-3/4	2	TiN
N20305	S203-0.938-P3-S.3-Z2	15/16	7/8	1-5/8	3-7/8	2	
N20300	S203-0.938-P3-S.3-Z2	15/16	7/8	1-5/8	3-7/8	2	TiN
N20323	S203-1.000-P1-S.3-Z2	1	5/8	1-1/2	3-5/8	2	
N20322	S203-1.000-P1-S.3-Z2	1	5/8	1-1/2	3-5/8	2	TiN
N20324	S203-1.000-P2-S.3-Z2	1	3/4	1-1/2	3-3/4	2	
N20321	S203-1.000-P2-S.3-Z2	1	3/4	1-1/2	3-3/4	2	TiN

GENERAL PURPOSE- S203

HSS
HIGH SPEED STEEL

HELIX


SQUARE END


CENTER CUTTING

- 2 Flute
- Designed for slotting and pocketing in all materials
- Weldon flat standard

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N20326	S203-1.000-D2-S.3-Z2	1	1	1-5/8	4-1/8	2	
N20320	S203-1.000-D2-S.3-Z2	1	1	1-5/8	4-1/8	2	TiN
N22327	S203-1.000-D3-S.3-Z2	1	1	2-1/4	4-3/4	2	
N22321	S203-1.000-D3-S.3-Z2	1	1	2-1/4	4-3/4	2	TiN
N22326	S203-1.000-D4-S.3-Z2	1	1	3	5-1/2	2	
N22320	S203-1.000-D4-S.3-Z2	1	1	3	5-1/2	2	TiN
N23326	S203-1.000-D5-S.3-Z2	1	1	4	6-1/2	2	
N23320	S203-1.000-D5-S.3-Z2	1	1	4	6-1/2	2	TiN
N20344	S203-1.063-P1-S.3-Z2	1-1/16	3/4	1-1/2	3-3/4	2	
N20348	S203-1.063-P1-S.3-Z2	1-1/16	3/4	1-1/2	3-3/4	2	TiN
N20346	S203-1.063-P2-S.3-Z2	1-1/16	1	1-5/8	4-1/8	2	
N20340	S203-1.063-P2-S.3-Z2	1-1/16	1	1-5/8	4-1/8	2	TiN
N20364	S203-1.125-P1-S.3-Z2	1-1/8	3/4	1-5/8	3-7/8	2	
N20361	S203-1.125-P1-S.3-Z2	1-1/8	3/4	1-5/8	3-7/8	2	TiN
N20366	S203-1.125-P3-S.3-Z2	1-1/8	1	1-5/8	4-1/8	2	
N20360	S203-1.125-P3-S.3-Z2	1-1/8	1	1-5/8	4-1/8	2	TiN
N20384	S203-1.188-P1-S.3-Z2	1-3/16	3/4	1-5/8	3-7/8	2	
N20381	S203-1.188-P1-S.3-Z2	1-3/16	3/4	1-5/8	3-7/8	2	TiN
N20386	S203-1.188-P2-S.3-Z2	1-3/16	1	1-5/8	4-1/8	2	
N20380	S203-1.188-P2-S.3-Z2	1-3/16	1	1-5/8	4-1/8	2	TiN
N20404	S203-1.250-P1-S.3-Z2	1-1/4	3/4	1-5/8	3-7/8	2	
N20402	S203-1.250-P1-S.3-Z2	1-1/4	3/4	1-5/8	3-7/8	2	TiN
N20406	S203-1.250-P3-S.3-Z2	1-1/4	1	1-5/8	4-1/8	2	
N20401	S203-1.250-P3-S.3-Z2	1-1/4	1	1-5/8	4-1/8	2	TiN
N20407	S203-1.250-D1-S.3-Z2	1-1/4	1-1/4	1-5/8	4-1/8	2	
N20400	S203-1.250-D1-S.3-Z2	1-1/4	1-1/4	1-5/8	4-1/8	2	TiN
N20426	S203-1.313-P1-S.3-Z2	1-5/16	1	1-5/8	4-1/8	2	
N20420	S203-1.313-P1-S.3-Z2	1-5/16	1	1-5/8	4-1/8	2	TiN
N20444	S203-1.375-P1-S.3-Z2	1-3/8	3/4	1-5/8	3-7/8	2	
N20448	S203-1.375-P1-S.3-Z2	1-3/8	3/4	1-5/8	3-7/8	2	TiN
N20446	S203-1.375-P2-S.3-Z2	1-3/8	1	1-5/8	4-1/8	2	
N20440	S203-1.375-P2-S.3-Z2	1-3/8	1	1-5/8	4-1/8	2	TiN
N20484	S203-1.500-P1-S.3-Z2	1-1/2	3/4	1-5/8	3-7/8	2	
N20482	S203-1.500-P1-S.3-Z2	1-1/2	3/4	1-5/8	3-7/8	2	TiN
N20486	S203-1.500-P2-S.3-Z2	1-1/2	1	1-5/8	4-1/8	2	

Niagara Cutter

GENERAL PURPOSE- S203

HSS
HIGH SPEED STEEL

HELIX
30°

SQUARE END

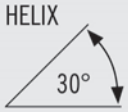
CENTER CUTTING

- 2 Flute
- Designed for slotting and pocketing in all materials
- Weldon flat standard

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N20481	S203-1.500-P2-S.3-Z2	1-1/2	1	1-5/8	4-1/8	2	TiN
N20487	S203-1.500-P3-S.3-Z2	1-1/2	1-1/4	1-5/8	4-1/8	2	
N20480	S203-1.500-P3-S.3-Z2	1-1/2	1-1/4	1-5/8	4-1/8	2	TiN
N20527	S203-1.625-P1-S.3-Z2	1-5/8	1-1/4	1-5/8	4-1/8	2	
N20520	S203-1.625-P1-S.3-Z2	1-5/8	1-1/4	1-5/8	4-1/8	2	TiN
N20564	S203-1.750-P1-S.3-Z2	1-3/4	3/4	1-5/8	3-7/8	2	
N20563	S203-1.750-P1-S.3-Z2	1-3/4	3/4	1-5/8	3-7/8	2	TiN
N20567	S203-1.750-P2-S.3-Z2	1-3/4	1-1/4	1-5/8	4-1/8	2	
N20560	S203-1.750-P2-S.3-Z2	1-3/4	1-1/4	1-5/8	4-1/8	2	TiN
N20644	S203-2.000-P1-S.3-Z2	2	3/4	1-5/8	3-7/8	2	
N20643	S203-2.000-P1-S.3-Z2	2	3/4	1-5/8	3-7/8	2	TiN
N20647	S203-2.000-P2-S.3-Z2	2	1-1/4	1-5/8	4-1/8	2	
N20640	S203-2.000-P2-S.3-Z2	2	1-1/4	1-5/8	4-1/8	2	TiN
N22646	S203-2.000-P3-S.3-Z2	2	1-1/4	2-1/4	4-3/4	2	
N22642	S203-2.000-P3-S.3-Z2	2	1-1/4	2-1/4	4-3/4	2	TiN
N22647	S203-2.000-P4-S.3-Z2	2	1-1/4	3	5-1/2	2	
N22640	S203-2.000-P4-S.3-Z2	2	1-1/4	3	5-1/2	2	TiN

GENERAL PURPOSE- SK204

HSS
HIGH SPEED STEEL

HELIX


SQUARE END


CENTER CUTTING

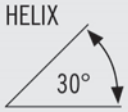
- Weldon flat standard
- Keyway tolerance = Flute Dia: +0 / - .0015"
- Designed for all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N82045	SK204-0.125-F3-S.3-Z2	1/8	3/8	3/8	2-5/16	2	
N82040	SK204-0.125-F3-S.3-Z2	1/8	3/8	3/8	2-5/16	2	TiN
N82065	SK204-0.188-F2-S.3-Z2	3/16	3/8	7/16	2-5/16	2	
N82060	SK204-0.188-F2-S.3-Z2	3/16	3/8	7/16	2-5/16	2	TiN
N82085	SK204-0.250-F2-S.3-Z2	1/4	3/8	1/2	2-5/16	2	
N82080	SK204-0.250-F2-S.3-Z2	1/4	3/8	1/2	2-5/16	2	TiN
N82105	SK204-0.313-F2-S.3-Z2	5/16	3/8	9/16	2-5/16	2	
N82100	SK204-0.313-F2-S.3-Z2	5/16	3/8	9/16	2-5/16	2	TiN
N82125	SK204-0.375-D2-S.3-Z2	3/8	3/8	9/16	2-5/16	2	
N82120	SK204-0.375-D2-S.3-Z2	3/8	3/8	9/16	2-5/16	2	TiN
N82145	SK204-0.438-P2-S.3-Z2	7/16	3/8	13/16	2-1/2	2	
N82140	SK204-0.438-P2-S.3-Z2	7/16	3/8	13/16	2-1/2	2	TiN
N82165	SK204-0.500-D2-S.3-Z2	1/2	1/2	1	3	2	
N82160	SK204-0.500-D2-S.3-Z2	1/2	1/2	1	3	2	TiN
N82205	SK204-0.625-D2-S.3-Z2	5/8	5/8	1-5/16	3-7/16	2	
N82200	SK204-0.625-D2-S.3-Z2	5/8	5/8	1-5/16	3-7/16	2	TiN
N82245	SK204-0.750-D2-S.3-Z2	3/4	3/4	1-5/16	3-9/16	2	
N82240	SK204-0.750-D2-S.3-Z2	3/4	3/4	1-5/16	3-9/16	2	TiN
N82285	SK204-0.875-D2-S.3-Z2	7/8	7/8	1-1/2	3-3/4	2	
N82280	SK204-0.875-D2-S.3-Z2	7/8	7/8	1-1/2	3-3/4	2	TiN
N82325	SK204-1.000-D2-S.3-Z2	1	1	1-5/8	4-1/8	2	
N82320	SK204-1.000-D2-S.3-Z2	1	1	1-5/8	4-1/8	2	TiN

Niagara Cutter

GENERAL PURPOSE- SB207

HSS
HIGH SPEED STEEL

HELIX


BALL END

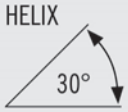

CENTER CUTTING

- Weldon flat standard
- Designed for slotting, pocketing and contour milling applications in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N24041	SB207-0.125-F3-B.3-Z2	1/8	3/8	3/8	2-5/16	2	
N24040	SB207-0.125-F3-B.3-Z2	1/8	3/8	3/8	2-5/16	2	TiN
N24061	SB207-0.188-F3-B.3-Z2	3/16	3/8	1/2	2-3/8	2	
N24060	SB207-0.188-F3-B.3-Z2	3/16	3/8	1/2	2-3/8	2	TiN
N24081	SB207-0.250-F3-B.3-Z2	1/4	3/8	5/8	2-7/16	2	
N24080	SB207-0.250-F3-B.3-Z2	1/4	3/8	5/8	2-7/16	2	TiN
N24101	SB207-0.313-F2-B.3-Z2	5/16	3/8	3/4	2-1/2	2	
N24100	SB207-0.313-F2-B.3-Z2	5/16	3/8	3/4	2-1/2	2	TiN
N24121	SB207-0.375-D2-B.3-Z2	3/8	3/8	3/4	2-1/2	2	
N24120	SB207-0.375-D2-B.3-Z2	3/8	3/8	3/4	2-1/2	2	TiN
N24142	SB207-0.438-F2-B.3-Z2	7/16	1/2	1	3	2	
N24140	SB207-0.438-F2-B.3-Z2	7/16	1/2	1	3	2	TiN
N24143	SB207-0.438-F4-B.3-Z2	7/16	1/2	1-3/4	3-3/4	2	
N24148	SB207-0.438-F4-B.3-Z2	7/16	1/2	1-3/4	3-3/4	2	TiN
N24162	SB207-0.500-D2-B.3-Z2	1/2	1/2	1	3	2	
N24160	SB207-0.500-D2-B.3-Z2	1/2	1/2	1	3	2	TiN
N24182	SB207-0.563-P2-B.3-Z2	9/16	1/2	1-1/8	3-1/8	2	
N24180	SB207-0.563-P2-B.3-Z2	9/16	1/2	1-1/8	3-1/8	2	TiN
N24202	SB207-0.625-P2-B.3-Z2	5/8	1/2	1-1/8	3-1/8	2	
N24208	SB207-0.625-P2-B.3-Z2	5/8	1/2	1-1/8	3-1/8	2	TiN
N24203	SB207-0.625-D2-B.3-Z2	5/8	5/8	1-3/8	3-1/2	2	
N24200	SB207-0.625-D2-B.3-Z2	5/8	5/8	1-3/8	3-1/2	2	TiN
N24223	SB207-0.688-P2-B.3-Z2	11/16	5/8	1-3/8	3-1/2	2	
N24220	SB207-0.688-P2-B.3-Z2	11/16	5/8	1-3/8	3-1/2	2	TiN
N24242	SB207-0.750-P2-B.3-Z2	3/4	1/2	1-5/16	3-5/16	2	
N24248	SB207-0.750-P2-B.3-Z2	3/4	1/2	1-5/16	3-5/16	2	TiN
N24244	SB207-0.750-D2-B.3-Z2	3/4	3/4	1-5/8	3-7/8	2	
N24240	SB207-0.750-D2-B.3-Z2	3/4	3/4	1-5/8	3-7/8	2	TiN
N24264	SB207-0.813-P2-B.3-Z2	13/16	3/4	2	4-1/4	2	
N24260	SB207-0.813-P2-B.3-Z2	13/16	3/4	2	4-1/4	2	TiN
N24284	SB207-0.875-P2-B.3-Z2	7/8	3/4	2	4-1/4	2	
N24288	SB207-0.875-P2-B.3-Z2	7/8	3/4	2	4-1/4	2	TiN
N24285	SB207-0.875-D2-B.3-Z2	7/8	7/8	2	4-1/4	2	
N24280	SB207-0.875-D2-B.3-Z2	7/8	7/8	2	4-1/4	2	TiN
N24304	SB207-0.938-P2-B.3-Z2	15/16	3/4	2-1/4	4-1/2	2	

GENERAL PURPOSE- SB207

HSS
HIGH SPEED STEEL

HELIX


BALL END


CENTER CUTTING

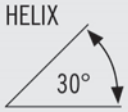
- Weldon flat standard
- Designed for slotting, pocketing and contour milling applications in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N24300	SB207-0.938-P2-B.3-Z2	15/16	3/4	2-1/4	4-1/2	2	TiN
N24324	SB207-1.000-P2-B.3-Z2	1	3/4	2-1/4	4-1/2	2	
N24328	SB207-1.000-P2-B.3-Z2	1	3/4	2-1/4	4-1/2	2	TiN
N24326	SB207-1.000-D2-B.3-Z2	1	1	2-1/4	4-3/4	2	
N24320	SB207-1.000-D2-B.3-Z2	1	1	2-1/4	4-3/4	2	TiN
N24364	SB207-1.125-P1-B.3-Z2	1-1/8	3/4	1-5/8	3-7/8	2	
N24368	SB207-1.125-P1-B.3-Z2	1-1/8	3/4	1-5/8	3-7/8	2	TiN
N24404	SB207-1.250-P1-B.3-Z2	1-1/4	3/4	1-5/8	3-7/8	2	
N24408	SB207-1.250-P1-B.3-Z2	1-1/4	3/4	1-5/8	3-7/8	2	TiN
N24444	SB207-1.375-P1-B.3-Z2	1-3/8	3/4	1-5/8	3-7/8	2	
N24440	SB207-1.375-P1-B.3-Z2	1-3/8	3/4	1-5/8	3-7/8	2	TiN
N24484	SB207-1.500-P1-B.3-Z2	1-1/2	3/4	1-5/8	3-7/8	2	
N24488	SB207-1.500-P1-B.3-Z2	1-1/2	3/4	1-5/8	3-7/8	2	TiN
N24487	SB207-1.500-P2-B.3-Z2	1-1/2	1-1/4	2-1/2	5	2	
N24480	SB207-1.500-P2-B.3-Z2	1-1/2	1-1/4	2-1/2	5	2	TiN
N24567	SB207-1.750-P1-B.3-Z2	1-3/4	1-1/4	1-5/8	4-1/8	2	
N24560	SB207-1.750-P1-B.3-Z2	1-3/4	1-1/4	1-5/8	4-1/8	2	TiN
N24647	SB207-2.000-P1-B.3-Z2	2	1-1/4	1-5/8	4-1/8	2	
N24640	SB207-2.000-P1-B.3-Z2	2	1-1/4	1-5/8	4-1/8	2	TiN

Niagara Cutter

GENERAL PURPOSE- D201

HSS
HIGH SPEED STEEL

HELIX


SQUARE END


CENTER CUTTING

- Weldon flat standard
- Designed for slotting and pocketing in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N28039	D201-0.109-XF3-S.3-Z2	7/64	3/8	3/8	3-1/16	2	
N28038	D201-0.109-XF3-S.3-Z2	7/64	3/8	3/8	3-1/16	2	TiN
N28041	D201-0.125-XF3-S.3-Z2	1/8	3/8	3/8	3-1/16	2	
N28040	D201-0.125-XF3-S.3-Z2	1/8	3/8	3/8	3-1/16	2	TiN
N28049	D201-0.141-XF3-S.3-Z2	9/64	3/8	7/16	3-1/8	2	
N28048	D201-0.141-XF3-S.3-Z2	9/64	3/8	7/16	3-1/8	2	TiN
N28051	D201-0.156-XF3-S.3-Z2	5/32	3/8	7/16	3-1/8	2	
N28050	D201-0.156-XF3-S.3-Z2	5/32	3/8	7/16	3-1/8	2	TiN
N28059	D201-0.172-XF3-S.3-Z2	11/64	3/8	7/16	3-1/8	2	
N28058	D201-0.172-XF3-S.3-Z2	11/64	3/8	7/16	3-1/8	2	TiN
N28061	D201-0.188-XF2-S.3-Z2	3/16	3/8	7/16	3-1/8	2	
N28060	D201-0.188-XF2-S.3-Z2	3/16	3/8	7/16	3-1/8	2	TiN
N28069	D201-0.203-XF2-S.3-Z2	13/64	3/8	1/2	3-1/8	2	
N28068	D201-0.203-XF2-S.3-Z2	13/64	3/8	1/2	3-1/8	2	TiN
N28071	D201-0.219-XF2-S.3-Z2	7/32	3/8	1/2	3-1/8	2	
N28070	D201-0.219-XF2-S.3-Z2	7/32	3/8	1/2	3-1/8	2	TiN
N28079	D201-0.234-XF2-S.3-Z2	15/64	3/8	1/2	3-1/8	2	
N28078	D201-0.234-XF2-S.3-Z2	15/64	3/8	1/2	3-1/8	2	TiN
N28081	D201-0.250-XF2-S.3-Z2	1/4	3/8	1/2	3-1/8	2	
N28080	D201-0.250-XF2-S.3-Z2	1/4	3/8	1/2	3-1/8	2	TiN
N28089	D201-0.266-XF2-S.3-Z2	17/64	3/8	9/16	3-1/8	2	
N28088	D201-0.266-XF2-S.3-Z2	17/64	3/8	9/16	3-1/8	2	TiN
N28091	D201-0.281-XF2-S.3-Z2	9/32	3/8	9/16	3-1/8	2	
N28090	D201-0.281-XF2-S.3-Z2	9/32	3/8	9/16	3-1/8	2	TiN
N28099	D201-0.297-XF2-S.3-Z2	19/64	3/8	9/16	3-1/8	2	
N28098	D201-0.297-XF2-S.3-Z2	19/64	3/8	9/16	3-1/8	2	TiN
N28101	D201-0.313-XF2-S.3-Z2	5/16	3/8	9/16	3-1/8	2	
N28100	D201-0.313-XF2-S.3-Z2	5/16	3/8	9/16	3-1/8	2	TiN
N28109	D201-0.328-XF2-S.3-Z2	21/64	3/8	9/16	3-1/8	2	
N28108	D201-0.328-XF2-S.3-Z2	21/64	3/8	9/16	3-1/8	2	TiN
N28111	D201-0.344-XF2-S.3-Z2	11/32	3/8	9/16	3-1/8	2	
N28110	D201-0.344-XF2-S.3-Z2	11/32	3/8	9/16	3-1/8	2	TiN
N28121	D201-0.375-XD2-S.3-Z2	3/8	3/8	9/16	3-1/8	2	
N28120	D201-0.375-XD2-S.3-Z2	3/8	3/8	9/16	3-1/8	2	TiN
N28129	D201-0.391-XF2-S.3-Z2	25/64	1/2	13/16	3-3/4	2	

Niagara Cutter

GENERAL PURPOSE- D201

HSS
HIGH SPEED STEEL

HELIX
30°

SQUARE END

CENTER CUTTING

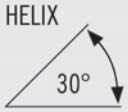
- Weldon flat standard
- Designed for slotting and pocketing in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N28128	D201-0.391-XF2-S.3-Z2	25/64	1/2	13/16	3-3/4	2	TiN
N28132	D201-0.406-XF2-S.3-Z2	13/32	1/2	13/16	3-3/4	2	
N28130	D201-0.406-XF2-S.3-Z2	13/32	1/2	13/16	3-3/4	2	TiN
N28139	D201-0.422-XF2-S.3-Z2	27/64	1/2	13/16	3-3/4	2	
N28138	D201-0.422-XF2-S.3-Z2	27/64	1/2	13/16	3-3/4	2	TiN
N28142	D201-0.438-XF2-S.3-Z2	7/16	1/2	13/16	3-3/4	2	
N28140	D201-0.438-XF2-S.3-Z2	7/16	1/2	13/16	3-3/4	2	TiN
N28152	D201-0.469-XF2-S.3-Z2	15/32	1/2	13/16	3-3/4	2	
N28150	D201-0.469-XF2-S.3-Z2	15/32	1/2	13/16	3-3/4	2	TiN
N28162	D201-0.500-XD2-S.3-Z2	1/2	1/2	13/16	3-3/4	2	
N28160	D201-0.500-XD2-S.3-Z2	1/2	1/2	13/16	3-3/4	2	TiN
N28173	D201-0.531-XF2-S.3-Z2	17/32	5/8	1-1/8	4-1/2	2	
N28170	D201-0.531-XF2-S.3-Z2	17/32	5/8	1-1/8	4-1/2	2	TiN
N28183	D201-0.563-XF2-S.3-Z2	9/16	5/8	1-1/8	4-1/2	2	
N28180	D201-0.563-XF2-S.3-Z2	9/16	5/8	1-1/8	4-1/2	2	TiN
N28203	D201-0.625-XD2-S.3-Z2	5/8	5/8	1-1/8	4-1/2	2	
N28200	D201-0.625-XD2-S.3-Z2	5/8	5/8	1-1/8	4-1/2	2	TiN
N28224	D201-0.688-XF2-S.3-Z2	11/16	3/4	1-5/16	5	2	
N28220	D201-0.688-XF2-S.3-Z2	11/16	3/4	1-5/16	5	2	TiN
N28244	D201-0.750-XD2-S.3-Z2	3/4	3/4	1-5/16	5	2	
N28240	D201-0.750-XD2-S.3-Z2	3/4	3/4	1-5/16	5	2	TiN
N28265	D201-0.813-XF2-S.3-Z2	13/16	7/8	1-9/16	5-1/2	2	
N28260	D201-0.813-XF2-S.3-Z2	13/16	7/8	1-9/16	5-1/2	2	TiN
N28285	D201-0.875-XD2-S.3-Z2	7/8	7/8	1-9/16	5-1/2	2	
N28280	D201-0.875-XD2-S.3-Z2	7/8	7/8	1-9/16	5-1/2	2	TiN
N28326	D201-1.000-XD2-S.3-Z2	1	1	1-5/8	5-7/8	2	
N28320	D201-1.000-XD2-S.3-Z2	1	1	1-5/8	5-7/8	2	TiN

Niagara Cutter

GENERAL PURPOSE- DB260

HSS
HIGH SPEED STEEL

HELIX


BALL END

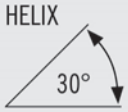

CENTER CUTTING

- Weldon flat standard
- Designed for slotting, pocketing and contour milling applications in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N26042	DB260-0.125-XF2-B.3-Z2	1/8	3/8	3/16	2-11/16	2	
N26048	DB260-0.125-XF2-B.3-Z2	1/8	3/8	3/16	2-11/16	2	TiN
N26041	DB260-0.125-XF3-B.3-Z2	1/8	3/8	3/8	3-1/16	2	
N26040	DB260-0.125-XF3-B.3-Z2	1/8	3/8	3/8	3-1/16	2	TiN
N26051	DB260-0.156-XF3-B.3-Z2	5/32	3/8	7/16	3-1/8	2	
N26050	DB260-0.156-XF3-B.3-Z2	5/32	3/8	7/16	3-1/8	2	TiN
N26061	DB260-0.188-XF2-B.3-Z2	3/16	3/8	7/16	3-1/8	2	
N26060	DB260-0.188-XF2-B.3-Z2	3/16	3/8	7/16	3-1/8	2	TiN
N26071	DB260-0.219-XF2-B.3-Z2	7/32	3/8	1/2	3-1/8	2	
N26070	DB260-0.219-XF2-B.3-Z2	7/32	3/8	1/2	3-1/8	2	TiN
N26081	DB260-0.250-XF2-B.3-Z2	1/4	3/8	1/2	3-1/8	2	
N26080	DB260-0.250-XF2-B.3-Z2	1/4	3/8	1/2	3-1/8	2	TiN
N26091	DB260-0.281-XF2-B.3-Z2	9/32	3/8	9/16	3-1/8	2	
N26090	DB260-0.281-XF2-B.3-Z2	9/32	3/8	9/16	3-1/8	2	TiN
N26101	DB260-0.313-XF2-B.3-Z2	5/16	3/8	9/16	3-1/8	2	
N26100	DB260-0.313-XF2-B.3-Z2	5/16	3/8	9/16	3-1/8	2	TiN
N26121	DB260-0.375-XD2-B.3-Z2	3/8	3/8	9/16	3-1/8	2	
N26120	DB260-0.375-XD2-B.3-Z2	3/8	3/8	9/16	3-1/8	2	TiN
N26142	DB260-0.438-XF2-B.3-Z2	7/16	1/2	13/16	3-3/4	2	
N26140	DB260-0.438-XF2-B.3-Z2	7/16	1/2	13/16	3-3/4	2	TiN
N26162	DB260-0.500-XD2-B.3-Z2	1/2	1/2	13/16	3-3/4	2	
N26160	DB260-0.500-XD2-B.3-Z2	1/2	1/2	13/16	3-3/4	2	TiN
N26203	DB260-0.625-XD2-B.3-Z2	5/8	5/8	1-1/8	4-1/2	2	
N26200	DB260-0.625-XD2-B.3-Z2	5/8	5/8	1-1/8	4-1/2	2	TiN

GENERAL PURPOSE- SEL250

HSS
HIGH SPEED STEEL

HELIX


SQUARE END

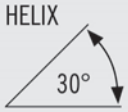

CENTER CUTTING

- Weldon flat standard
- Designed for slotting and pocketing in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	REACH
N25041	SEL250-0.125-G3-S.3-Z2	1/8	3/8	3/8	2-3/8	2		13/16
N25040	SEL250-0.125-G3-S.3-Z2	1/8	3/8	3/8	2-3/8	2	TiN	13/16
N25081	SEL250-0.250-G3-S.3-Z2	1/4	3/8	5/8	3-1/16	2		1-1/2
N25080	SEL250-0.250-G3-S.3-Z2	1/4	3/8	5/8	3-1/16	2	TiN	1-1/2
N25101	SEL250-0.313-G2-S.3-Z2	5/16	3/8	3/4	3-5/16	2		1-3/4
N25100	SEL250-0.313-G2-S.3-Z2	5/16	3/8	3/4	3-5/16	2	TiN	1-3/4
N25121	SEL250-0.375-E2-S.3-Z2	3/8	3/8	3/4	3-5/16	2		1-3/4
N25120	SEL250-0.375-E2-S.3-Z2	3/8	3/8	3/4	3-5/16	2	TiN	1-3/4
N25162	SEL250-0.500-E2-S.3-Z2	1/2	1/2	1	4	2		2-7/32
N25160	SEL250-0.500-E2-S.3-Z2	1/2	1/2	1	4	2	TiN	2-7/32
N25203	SEL250-0.625-E2-S.3-Z2	5/8	5/8	1-3/8	4-5/8	2		2-23/32
N25200	SEL250-0.625-E2-S.3-Z2	5/8	5/8	1-3/8	4-5/8	2	TiN	2-23/32
N25244	SEL250-0.750-E2-S.3-Z2	3/4	3/4	1-5/8	5-3/8	2		3-11/32
N25240	SEL250-0.750-E2-S.3-Z2	3/4	3/4	1-5/8	5-3/8	2	TiN	3-11/32
N25326	SEL250-1.000-E3-S.3-Z2	1	1	2-1/2	7-1/4	2		4-31/32
N25320	SEL250-1.000-E3-S.3-Z2	1	1	2-1/2	7-1/4	2	TiN	4-31/32

GENERAL PURPOSE- SEB270

HSS
HIGH SPEED STEEL

HELIX


BALL END

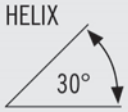

CENTER CUTTING

- Weldon flat standard
- Designed for slotting, pocketing and contour milling applications in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	REACH
N27061	SEB270-0.188-G6-B.3-Z2	3/16	3/8	1/2	2-11/16	2		1-1/8
N27060	SEB270-0.188-G6-B.3-Z2	3/16	3/8	1/2	2-11/16	2	TiN	1-1/8
N27081	SEB270-0.250-G6-B.3-Z2	1/4	3/8	5/8	3-1/16	2		1-1/2
N27080	SEB270-0.250-G6-B.3-Z2	1/4	3/8	3/4	3-1/16	2	TiN	1-1/2
N27101	SEB270-0.313-G6-B.3-Z2	5/16	3/8	3/4	3-5/16	2		1-3/4
N27100	SEB270-0.313-G6-B.3-Z2	5/16	3/8	3/4	3-5/16	2	TiN	1-3/4
N27121	SEB270-0.375-E5-B.3-Z2	3/8	3/8	3/4	3-5/16	2		1-3/4
N27120	SEB270-0.375-E5-B.3-Z2	3/8	3/8	3/4	3-5/16	2	TiN	1-3/4
N27162	SEB270-0.500-E4-B.3-Z2	1/2	1/2	1	4	2		2-7/32
N27160	SEB270-0.500-E4-B.3-Z2	1/2	1/2	1	4	2	TiN	2-7/32
N27244	SEB270-0.750-E4-B.3-Z2	3/4	3/4	1-5/8	5-3/8	2		3-11/32
N27240	SEB270-0.750-E4-B.3-Z2	3/4	3/4	1-5/8	5-3/8	2	TiN	3-11/32

GENERAL PURPOSE- SMM830

HSS
HIGH SPEED STEEL

HELIX


SQUARE END


CENTER CUTTING

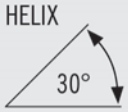
- Metric flute diameter / Inch shank
- Weldon flat standard
- Designed for slotting and pocketing in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N83030	SMM830-0.118-F3-S.3-Z2	3mm	3/8	3/8	2-5/16	2	
N83031	SMM830-0.118-F3-S.3-Z2	3mm	3/8	3/8	2-5/16	2	TiN
N83035	SMM830-0.138-F3-S.3-Z2	3.5mm	3/8	7/16	2-5/16	2	
N83036	SMM830-0.138-F3-S.3-Z2	3.5mm	3/8	7/16	2-5/16	2	TiN
N83040	SMM830-0.157-F3-S.3-Z2	4mm	3/8	7/16	2-5/16	2	
N83041	SMM830-0.157-F3-S.3-Z2	4mm	3/8	7/16	2-5/16	2	TiN
N83045	SMM830-0.177-F2-S.3-Z2	4.5mm	3/8	7/16	2-5/16	2	
N83046	SMM830-0.177-F2-S.3-Z2	4.5mm	3/8	7/16	2-5/16	2	TiN
N83050	SMM830-0.197-F2-S.3-Z2	5mm	3/8	7/16	2-5/16	2	
N83051	SMM830-0.197-F2-S.3-Z2	5mm	3/8	7/16	2-5/16	2	TiN
N83055	SMM830-0.217-F2-S.3-Z2	5.5mm	3/8	1/2	2-5/16	2	
N83056	SMM830-0.217-F2-S.3-Z2	5.5mm	3/8	1/2	2-5/16	2	TiN
N83060	SMM830-0.236-F2-S.3-Z2	6mm	3/8	1/2	2-5/16	2	
N83061	SMM830-0.236-F2-S.3-Z2	6mm	3/8	1/2	2-5/16	2	TiN
N83065	SMM830-0.256-F2-S.3-Z2	6.5mm	3/8	1/2	2-5/16	2	
N83066	SMM830-0.256-F2-S.3-Z2	6.5mm	3/8	1/2	2-5/16	2	TiN
N83070	SMM830-0.276-F2-S.3-Z2	7mm	3/8	9/16	2-5/16	2	
N83071	SMM830-0.276-F2-S.3-Z2	7mm	3/8	9/16	2-5/16	2	TiN
N83075	SMM830-0.295-F2-S.3-Z2	7.5mm	3/8	9/16	2-5/16	2	
N83076	SMM830-0.295-F2-S.3-Z2	7.5mm	3/8	9/16	2-5/16	2	TiN
N83080	SMM830-0.315-F2-S.3-Z2	8mm	3/8	9/16	2-5/16	2	
N83081	SMM830-0.315-F2-S.3-Z2	8mm	3/8	9/16	2-5/16	2	TiN
N83085	SMM830-0.335-F2-S.3-Z2	8.5mm	3/8	9/16	2-5/16	2	
N83086	SMM830-0.335-F2-S.3-Z2	8.5mm	3/8	9/16	2-5/16	2	TiN
N83090	SMM830-0.354-F2-S.3-Z2	9mm	3/8	9/16	2-5/16	2	
N83091	SMM830-0.354-F2-S.3-Z2	9mm	3/8	9/16	2-5/16	2	TiN
N83100	SMM830-0.394-P2-S.3-Z2	10mm	3/8	13/16	2-1/2	2	
N83101	SMM830-0.394-P2-S.3-Z2	10mm	3/8	13/16	2-1/2	2	TiN
N83105	SMM830-0.413-P2-S.3-Z2	10.5mm	3/8	13/16	2-1/2	2	
N83106	SMM830-0.413-P2-S.3-Z2	10.5mm	3/8	13/16	2-1/2	2	TiN
N83110	SMM830-0.433-P2-S.3-Z2	11mm	3/8	13/16	2-1/2	2	
N83111	SMM830-0.433-P2-S.3-Z2	11mm	3/8	13/16	2-1/2	2	TiN
N83115	SMM830-0.453-P2-S.3-Z2	11.5mm	3/8	13/16	2-1/2	2	
N83116	SMM830-0.453-P2-S.3-Z2	11.5mm	3/8	13/16	2-1/2	2	TiN
N83120	SMM830-0.472-P2-S.3-Z2	12mm	3/8	13/16	2-1/2	2	

Niagara Cutter

GENERAL PURPOSE- SMM830

HSS
HIGH SPEED STEEL

HELIX


SQUARE END


CENTER CUTTING

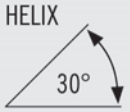
- Metric flute diameter / inch shank
- Weldon flat standard
- Designed for slotting and pocketing in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N83121	SMM830-0.472-P2-S.3-Z2	12mm	3/8	13/16	2-1/2	2	TiN
N83130	SMM830-0.512-P2-S.3-Z2	13mm	1/2	1	3	2	
N83131	SMM830-0.512-P2-S.3-Z2	13mm	1/2	1	3	2	TiN
N83140	SMM830-0.551-P2-S.3-Z2	14mm	1/2	1-1/8	3-1/8	2	
N83141	SMM830-0.551-P2-S.3-Z2	14mm	1/2	1-1/8	3-1/8	2	TiN
N83150	SMM830-0.591-P2-S.3-Z2	15mm	1/2	1-1/8	3-1/8	2	
N83151	SMM830-0.591-P2-S.3-Z2	15mm	1/2	1-1/8	3-1/8	2	TiN
N83160	SMM830-0.630-P2-S.3-Z2	16mm	5/8	1-5/16	3-7/16	2	
N83161	SMM830-0.630-P2-S.3-Z2	16mm	5/8	1-5/16	3-7/16	2	TiN
N83170	SMM830-0.669-P2-S.3-Z2	17mm	5/8	1-5/16	3-7/16	2	
N83171	SMM830-0.669-P2-S.3-Z2	17mm	5/8	1-5/16	3-7/16	2	TiN
N83180	SMM830-0.709-F2-S.3-Z2	18mm	3/4	1-5/16	3-9/16	2	
N83181	SMM830-0.709-F2-S.3-Z2	18mm	3/4	1-5/16	3-9/16	2	TiN
N83200	SMM830-0.787-P2-S.3-Z2	20mm	3/4	1-1/2	3-3/4	2	
N83201	SMM830-0.787-P2-S.3-Z2	20mm	3/4	1-1/2	3-3/4	2	TiN
N83220	SMM830-0.866-F2-S.3-Z2	22mm	7/8	1-1/2	3-3/4	2	
N83221	SMM830-0.866-F2-S.3-Z2	22mm	7/8	1-1/2	3-3/4	2	TiN
N83250	SMM830-0.984-F2-S.3-Z2	25mm	1	1-5/8	4-1/8	2	
N83251	SMM830-0.984-F2-S.3-Z2	25mm	1	1-5/8	4-1/8	2	TiN

Niagara Cutter

GENERAL PURPOSE- STF320

HSS
HIGH SPEED STEEL

HELIX


SQUARE END


CENTER CUTTING

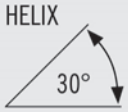
- Weldon flat standard
- Designed for slotting, pocketing and profiling in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N32041	STF320-0.125-F3-S.3-Z3	1/8	3/8	3/8	2-5/16	3	
N32040	STF320-0.125-F3-S.3-Z3	1/8	3/8	3/8	2-5/16	3	TiN
N32061	STF320-0.188-F3-S.3-Z3	3/16	3/8	1/2	2-3/8	3	
N32060	STF320-0.188-F3-S.3-Z3	3/16	3/8	1/2	2-3/8	3	TiN
N32081	STF320-0.250-F3-S.3-Z3	1/4	3/8	5/8	2-7/16	3	
N32080	STF320-0.250-F3-S.3-Z3	1/4	3/8	5/8	2-7/16	3	TiN
N30081	STF320-0.250-F5-S.3-Z3	1/4	3/8	1-1/4	3-1/8	3	
N30080	STF320-0.250-F5-S.3-Z3	1/4	3/8	1-1/4	3-1/8	3	TiN
N32101	STF320-0.313-F2-S.3-Z3	5/16	3/8	3/4	2-1/2	3	
N32100	STF320-0.313-F2-S.3-Z3	5/16	3/8	3/4	2-1/2	3	TiN
N30101	STF320-0.313-F4-S.3-Z3	5/16	3/8	1-3/8	3-1/8	3	
N30100	STF320-0.313-F4-S.3-Z3	5/16	3/8	1-3/8	3-1/8	3	TiN
N32121	STF320-0.375-D2-S.3-Z3	3/8	3/8	3/4	2-1/2	3	
N32120	STF320-0.375-D2-S.3-Z3	3/8	3/8	3/4	2-1/2	3	TiN
N30121	STF320-0.375-D4-S.3-Z3	3/8	3/8	1-1/2	3-1/4	3	
N30120	STF320-0.375-D4-S.3-Z3	3/8	3/8	1-1/2	3-1/4	3	TiN
N32141	STF320-0.438-P2-S.3-Z3	7/16	3/8	1	2-11/16	3	
N32140	STF320-0.438-P2-S.3-Z3	7/16	3/8	1	2-11/16	3	TiN
N30142	STF320-0.438-F4-S.3-Z3	7/16	1/2	1-3/4	3-3/4	3	
N30140	STF320-0.438-F4-S.3-Z3	7/16	1/2	1-3/4	3-3/4	3	TiN
N32161	STF320-0.500-P2-S.3-Z3	1/2	3/8	1	2-11/16	3	
N32163	STF320-0.500-P2-S.3-Z3	1/2	3/8	1	2-11/16	3	TiN
N32162	STF320-0.500-D3-S.3-Z3	1/2	1/2	1-1/4	3-1/4	3	
N32160	STF320-0.500-D3-S.3-Z3	1/2	1/2	1-1/4	3-1/4	3	TiN
N30162	STF320-0.500-D4-S.3-Z3	1/2	1/2	2	4	3	
N30160	STF320-0.500-D4-S.3-Z3	1/2	1/2	2	4	3	TiN
N32182	STF320-0.563-P2-S.3-Z3	9/16	1/2	1-3/8	3-3/8	3	
N32180	STF320-0.563-P2-S.3-Z3	9/16	1/2	1-3/8	3-3/8	3	TiN
N32202	STF320-0.625-P2-S.3-Z3	5/8	1/2	1-3/8	3-3/8	3	
N32201	STF320-0.625-P2-S.3-Z3	5/8	1/2	1-3/8	3-3/8	3	TiN
N32203	STF320-0.625-D3-S.3-Z3	5/8	5/8	1-5/8	3-3/4	3	
N32200	STF320-0.625-D3-S.3-Z3	5/8	5/8	1-5/8	3-3/4	3	TiN
N30203	STF320-0.625-D4-S.3-Z3	5/8	5/8	2-1/2	4-5/8	3	
N30200	STF320-0.625-D4-S.3-Z3	5/8	5/8	2-1/2	4-5/8	3	TiN
N32242	STF320-0.750-P1-S.3-Z3	3/4	1/2	1-5/8	3-5/8	3	

Niagara Cutter

GENERAL PURPOSE- STF320

HSS
HIGH SPEED STEEL

HELIX


SQUARE END


CENTER CUTTING

- Weldon flat standard
- Designed for slotting, pocketing and profiling in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N32241	STF320-0.750-P1-S.3-Z3	3/4	1/2	1-5/8	3-5/8	3	TiN
N32243	STF320-0.750-P2-S.3-Z3	3/4	5/8	1-5/8	3-3/4	3	
N32245	STF320-0.750-P2-S.3-Z3	3/4	5/8	1-5/8	3-3/4	3	TiN
N32244	STF320-0.750-D2-S.3-Z3	3/4	3/4	1-5/8	3-7/8	3	
N32240	STF320-0.750-D2-S.3-Z3	3/4	3/4	1-5/8	3-7/8	3	TiN
N30244	STF320-0.750-D4-S.3-Z3	3/4	3/4	3	5-1/4	3	
N30240	STF320-0.750-D4-S.3-Z3	3/4	3/4	3	5-1/4	3	TiN
N32284	STF320-0.875-P3-S.3-Z3	7/8	3/4	1-7/8	4-1/8	3	
N32282	STF320-0.875-P3-S.3-Z3	7/8	3/4	1-7/8	4-1/8	3	TiN
N32324	STF320-1.000-P3-S.3-Z3	1	3/4	1-7/8	4-1/8	3	
N32322	STF320-1.000-P3-S.3-Z3	1	3/4	1-7/8	4-1/8	3	TiN
N32326	STF320-1.000-D2-S.3-Z3	1	1	2	4-1/2	3	
N32320	STF320-1.000-D2-S.3-Z3	1	1	2	4-1/2	3	TiN
N30326	STF320-1.000-D4-S.3-Z3	1	1	4	6-1/2	3	
N30320	STF320-1.000-D4-S.3-Z3	1	1	4	6-1/2	3	TiN
N32406	STF320-1.250-P2-S.3-Z3	1-1/4	1	2	4-1/2	3	
N32400	STF320-1.250-P2-S.3-Z3	1-1/4	1	2	4-1/2	3	TiN
N32407	STF320-1.250-D2-S.3-Z3	1-1/4	1-1/4	2	4-1/2	3	
N32408	STF320-1.250-D2-S.3-Z3	1-1/4	1-1/4	2	4-1/2	3	TiN
N30487	STF320-1.500-P3-S.3-Z3	1-1/2	1-1/4	4	6-1/2	3	
N30480	STF320-1.500-P3-S.3-Z3	1-1/2	1-1/4	4	6-1/2	3	TiN

GENERAL PURPOSE- DTF310

HSS
HIGH SPEED STEEL

HELIX
30°

SQUARE END

CENTER CUTTING

- Designed for slotting, pocketing and profiling in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N31041	DTF310-0.125-XF3-S.3-Z3	1/8	3/8	3/8	3 1/16	3	
N31040	DTF310-0.125-XF3-S.3-Z3	1/8	3/8	3/8	3 1/16	3	TiN
N31061	DTF310-0.188-XF3-S.3-Z3	3/16	3/8	1/2	3 1/4	3	
N31060	DTF310-0.188-XF3-S.3-Z3	3/16	3/8	1/2	3 1/4	3	TiN
N31081	DTF310-0.250-XF3-S.3-Z3	1/4	3/8	5/8	3 3/8	3	
N31080	DTF310-0.250-XF3-S.3-Z3	1/4	3/8	5/8	3 3/8	3	TiN
N31101	DTF310-0.313-XF2-S.3-Z3	5/16	3/8	3/4	3 1/2	3	
N31100	DTF310-0.313-XF2-S.3-Z3	5/16	3/8	3/4	3 1/2	3	TiN
N31121	DTF310-0.375-XD2-S.3-Z3	3/8	3/8	3/4	3 1/2	3	
N31120	DTF310-0.375-XD2-S.3-Z3	3/8	3/8	3/4	3 1/2	3	TiN
N31142	DTF310-0.438-XF2-S.3-Z3	7/16	1/2	1	4 1/8	3	
N31140	DTF310-0.438-XF2-S.3-Z3	7/16	1/2	1	4 1/8	3	TiN
N31162	DTF310-0.500-XD2-S.3-Z3	1/2	1/2	1	4 1/8	3	
N31160	DTF310-0.500-XD2-S.3-Z3	1/2	1/2	1	4 1/8	3	TiN
N31183	DTF310-0.563-XF2-S.3-Z3	9/16	5/8	1 3/8	5	3	
N31180	DTF310-0.563-XF2-S.3-Z3	9/16	5/8	1 3/8	5	3	TiN
N31203	DTF310-0.625-XD2-S.3-Z3	5/8	5/8	1 3/8	5	3	
N31200	DTF310-0.625-XD2-S.3-Z3	5/8	5/8	1 3/8	5	3	TiN
N31244	DTF310-0.750-XD2-S.3-Z3	3/4	3/4	1 5/8	5 5/8	3	
N31240	DTF310-0.750-XD2-S.3-Z3	3/4	3/4	1 5/8	5 5/8	3	TiN

Niagara Cutter

GENERAL PURPOSE- A208

HSS
HIGH SPEED STEEL

HELIX
37°

SQUARE END

CENTER CUTTING

- Cylindrical margin to eliminate chatter
- Weldon flat standard
- Ideal for slotting and pocketing in aluminum and non-ferrous alloys

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N90041	A208-0.125-F3-S.3-Z2	1/8	3/8	3/8	2-5/16	2	
N89336	A208-0.125-F3-S.3-Z2	1/8	3/8	3/8	2-5/16	2	TiCN
N90061	A208-0.188-F3-S.3-Z2	3/16	3/8	1/2	2-3/8	2	
N89337	A208-0.188-F3-S.3-Z2	3/16	3/8	1/2	2-3/8	2	TiCN
N90081	A208-0.250-F3-S.3-Z2	1/4	3/8	5/8	2-7/16	2	
N89338	A208-0.250-F3-S.3-Z2	1/4	3/8	5/8	2-7/16	2	TiCN
N92081	A208-0.250-F5-S.3-Z2	1/4	3/8	1-1/4	3-1/16	2	
N89374	A208-0.250-F5-S.3-Z2	1/4	3/8	1-1/4	3-1/16	2	TiCN
N94081	A208-0.250-F7-S.3-Z2	1/4	3/8	1-3/4	3-9/16	2	
N89399	A208-0.250-F7-S.3-Z2	1/4	3/8	1-3/4	3-9/16	2	TiCN
N90101	A208-0.313-F2-S.3-Z2	5/16	3/8	3/4	2-1/2	2	
N89339	A208-0.313-F2-S.3-Z2	5/16	3/8	3/4	2-1/2	2	TiCN
N92101	A208-0.313-F4-S.3-Z2	5/16	3/8	1-3/8	3-1/8	2	
N89375	A208-0.313-F4-S.3-Z2	5/16	3/8	1-3/8	3-1/8	2	TiCN
N94101	A208-0.313-F6-S.3-Z2	5/16	3/8	2	3-3/4	2	
N89410	A208-0.313-F6-S.3-Z2	5/16	3/8	2	3-3/4	2	TiCN
N90121	A208-0.375-D2-S.3-Z2	3/8	3/8	3/4	2-1/2	2	
N89340	A208-0.375-D2-S.3-Z2	3/8	3/8	3/4	2-1/2	2	TiCN
N92121	A208-0.375-D4-S.3-Z2	3/8	3/8	1-1/2	3-1/4	2	
N89376	A208-0.375-D4-S.3-Z2	3/8	3/8	1-1/2	3-1/4	2	TiCN
N94121	A208-0.375-D7-S.3-Z2	3/8	3/8	2-1/2	4-1/4	2	
N89411	A208-0.375-D7-S.3-Z2	3/8	3/8	2-1/2	4-1/4	2	TiCN
N90141	A208-0.438-P2-S.3-Z2	7/16	3/8	1	2-11/16	2	
N89341	A208-0.438-P2-S.3-Z2	7/16	3/8	1	2-11/16	2	TiCN
N92142	A208-0.438-F4-S.3-Z2	7/16	1/2	1-3/4	3-3/4	2	
N89377	A208-0.438-F4-S.3-Z2	7/16	1/2	1-3/4	3-3/4	2	TiCN
N94142	A208-0.438-F6-S.3-Z2	7/16	1/2	2-3/4	4-3/4	2	
N89412	A208-0.438-F6-S.3-Z2	7/16	1/2	2-3/4	4-3/4	2	TiCN
N90162	A208-0.500-D3-S.3-Z2	1/2	1/2	1-1/4	3-1/4	2	
N89342	A208-0.500-D3-S.3-Z2	1/2	1/2	1-1/4	3-1/4	2	TiCN
N92162	A208-0.500-D4-S.3-Z2	1/2	1/2	2	4	2	
N89378	A208-0.500-D4-S.3-Z2	1/2	1/2	2	4	2	TiCN
N94162	A208-0.500-D6-S.3-Z2	1/2	1/2	3	5	2	
N89413	A208-0.500-D6-S.3-Z2	1/2	1/2	3	5	2	TiCN
N90182	A208-0.563-P2-S.3-Z2	9/16	1/2	1-3/8	3-3/8	2	
N89343	A208-0.563-P2-S.3-Z2	9/16	1/2	1-3/8	3-3/8	2	TiCN
N90202	A208-0.625-P2-S.3-Z2	5/8	1/2	1-3/8	3-3/8	2	
N89344	A208-0.625-P2-S.3-Z2	5/8	1/2	1-3/8	3-3/8	2	TiCN

DISCOUNT CODE D40

Niagara Cutter

GENERAL PURPOSE- A208

HSS
HIGH SPEED STEEL

HELIX
37°

SQUARE END

CENTER CUTTING

- Cylindrical margin to eliminate chatter
- Weldon flat standard
- Ideal for slotting and pocketing in aluminum and non-ferrous alloys

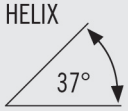
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N90203	A208-0.625-D3-S.3-Z2	5/8	5/8	1-5/8	3-3/4	2	
N89345	A208-0.625-D3-S.3-Z2	5/8	5/8	1-5/8	3-3/4	2	TiCN
N92203	A208-0.625-D4-S.3-Z2	5/8	5/8	2-1/2	4-5/8	2	
N89379	A208-0.625-D4-S.3-Z2	5/8	5/8	2-1/2	4-5/8	2	TiCN
N94203	A208-0.625-D6-S.3-Z2	5/8	5/8	4	6-1/8	2	
N89414	A208-0.625-D6-S.3-Z2	5/8	5/8	4	6-1/8	2	TiCN
N90223	A208-0.688-P2-S.3-Z2	11/16	5/8	1-5/8	3-3/4	2	
N89346	A208-0.688-P2-S.3-Z2	11/16	5/8	1-5/8	3-3/4	2	TiCN
N90242	A208-0.750-P2-S.3-Z2	3/4	1/2	1-5/8	3-5/8	2	
N89347	A208-0.750-P2-S.3-Z2	3/4	1/2	1-5/8	3-5/8	2	TiCN
N90244	A208-0.750-D2-S.3-Z2	3/4	3/4	1-5/8	3-7/8	2	
N89348	A208-0.750-D2-S.3-Z2	3/4	3/4	1-5/8	3-7/8	2	TiCN
N92244	A208-0.750-D4-S.3-Z2	3/4	3/4	3	5-1/4	2	
N89380	A208-0.750-D4-S.3-Z2	3/4	3/4	3	5-1/4	2	TiCN
N94244	A208-0.750-D5-S.3-Z2	3/4	3/4	4	6-1/4	2	
N89415	A208-0.750-D5-S.3-Z2	3/4	3/4	4	6-1/4	2	TiCN
N90264	A208-0.813-P2-S.3-Z2	13/16	3/4	1-7/8	4-1/8	2	
N89349	A208-0.813-P2-S.3-Z2	13/16	3/4	1-7/8	4-1/8	2	TiCN
N90284	A208-0.875-P2-S.3-Z2	7/8	3/4	1-7/8	4-1/8	2	
N89350	A208-0.875-P2-S.3-Z2	7/8	3/4	1-7/8	4-1/8	2	TiCN
N90285	A208-0.875-D2-S.3-Z2	7/8	7/8	1-7/8	4-1/8	2	
N89351	A208-0.875-D2-S.3-Z2	7/8	7/8	1-7/8	4-1/8	2	TiCN
N90324	A208-1.000-P2-S.3-Z2	1	3/4	1-7/8	4-1/8	2	
N89353	A208-1.000-P2-S.3-Z2	1	3/4	1-7/8	4-1/8	2	TiCN
N90326	A208-1.000-D2-S.3-Z2	1	1	2	4-1/2	2	
N89354	A208-1.000-D2-S.3-Z2	1	1	2	4-1/2	2	TiCN
N92326	A208-1.000-D4-S.3-Z2	1	1	4	6-1/2	2	
N89382	A208-1.000-D4-S.3-Z2	1	1	4	6-1/2	2	TiCN
N94326	A208-1.000-D6-S.3-Z2	1	1	6	8-1/2	2	
N89417	A208-1.000-D6-S.3-Z2	1	1	6	8-1/2	2	TiCN
N92407	A208-1.250-D3-S.3-Z2	1-1/4	1-1/4	4	6-1/2	2	
N89383	A208-1.250-D3-S.3-Z2	1-1/4	1-1/4	4	6-1/2	2	TiCN
N94407	A208-1.250-D5-S.3-Z2	1-1/4	1-1/4	6	8-1/2	2	
N89418	A208-1.250-D5-S.3-Z2	1-1/4	1-1/4	6	8-1/2	2	TiCN
N90487	A208-1.500-P1-S.3-Z2	1-1/2	1-1/4	2	4-1/2	2	
N89356	A208-1.500-P1-S.3-Z2	1-1/2	1-1/4	2	4-1/2	2	TiCN
N90647	A208-2.000-P1-S.3-Z2	2	1-1/4	2	4-1/2	2	
N89358	A208-2.000-P1-S.3-Z2	2	1-1/4	2	4-1/2	2	TiCN

DISCOUNT CODE D40

Niagara Cutter

GENERAL PURPOSE- AB910

HSS
HIGH SPEED STEEL

HELIX


BALL END


CENTER CUTTING

- Cylindrical margin to eliminate chatter
- Weldon flat standard
- Designed for slotting, pocketing and contour milling applications in aluminum and non-ferrous materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N91081	AB910-0.250-F3-B.3-Z2	1/4	3/8	5/8	2-7/16	2	
N89359	AB910-0.250-F3-B.3-Z2	1/4	3/8	5/8	2-7/16	2	TiCN
N93081	AB910-0.250-F5-B.3-Z2	1/4	3/8	1-1/4	3-1/16	2	
N89387	AB910-0.250-F5-B.3-Z2	1/4	3/8	1-1/4	3-1/16	2	TiCN
N95081	AB910-0.250-F7-B.3-Z2	1/4	3/8	1-3/4	3-9/16	2	
N89420	AB910-0.250-F7-B.3-Z2	1/4	3/8	1-3/4	3-9/16	2	TiCN
N91121	AB910-0.375-D2-B.3-Z2	3/8	3/8	3/4	2-1/2	2	
N89361	AB910-0.375-D2-B.3-Z2	3/8	3/8	3/4	2-1/2	2	TiCN
N93121	AB910-0.375-D4-B.3-Z2	3/8	3/8	1-1/2	3-1/4	2	
N89389	AB910-0.375-D4-B.3-Z2	3/8	3/8	1-1/2	3-1/4	2	TiCN
N95121	AB910-0.375-D7-B.3-Z2	3/8	3/8	2-1/2	4-1/4	2	
N89422	AB910-0.375-D7-B.3-Z2	3/8	3/8	2-1/2	4-1/4	2	TiCN
N93142	AB910-0.438-F4-B.3-Z2	7/16	1/2	1-3/4	3-3/4	2	
N89390	AB910-0.438-F4-B.3-Z2	7/16	1/2	1-3/4	3-3/4	2	TiCN
N91162	AB910-0.500-D3-B.3-Z2	1/2	1/2	1-1/4	3-1/4	2	
N89363	AB910-0.500-D3-B.3-Z2	1/2	1/2	1-1/4	3-1/4	2	TiCN
N93162	AB910-0.500-D4-B.3-Z2	1/2	1/2	2	4	2	
N89391	AB910-0.500-D4-B.3-Z2	1/2	1/2	2	4	2	TiCN
N95162	AB910-0.500-D6-B.3-Z2	1/2	1/2	3	5	2	
N89424	AB910-0.500-D6-B.3-Z2	1/2	1/2	3	5	2	TiCN
N91244	AB910-0.750-D2-B.3-Z2	3/4	3/4	1-5/8	3-7/8	2	
N89367	AB910-0.750-D2-B.3-Z2	3/4	3/4	1-5/8	3-7/8	2	TiCN
N93244	AB910-0.750-D4-B.3-Z2	3/4	3/4	3	5-1/4	2	
N89393	AB910-0.750-D4-B.3-Z2	3/4	3/4	3	5-1/4	2	TiCN
N91324	AB910-1.000-P2-B.3-Z2	1	3/4	1-7/8	4-1/8	2	
N89370	AB910-1.000-P2-B.3-Z2	1	3/4	1-7/8	4-1/8	2	TiCN
N91326	AB910-1.000-D2-B.3-Z2	1	1	2	4-1/2	2	
N89371	AB910-1.000-D2-B.3-Z2	1	1	2	4-1/2	2	TiCN
N93326	AB910-1.000-D4-B.3-Z2	1	1	4	6-1/2	2	
N89395	AB910-1.000-D4-B.3-Z2	1	1	4	6-1/2	2	TiCN
N95326	AB910-1.000-D6-B.3-Z2	1	1	6	8-1/2	2	
N89428	AB910-1.000-D6-B.3-Z2	1	1	6	8-1/2	2	TiCN
N91487	AB910-1.500-P1-B.3-Z2	1-1/2	1-1/4	2	4-1/2	2	
N89373	AB910-1.500-P1-B.3-Z2	1-1/2	1-1/4	2	4-1/2	2	TiCN
N91647	AB910-2.000-P1-B.3-Z2	2	1-1/4	2	4-1/2	2	
N79405	AB910-2.000-P1-B.3-Z2	2	1-1/4	2	4-1/2	2	TiCN

DISCOUNT CODE D40

GENERAL PURPOSE- DA206

HSS
HIGH SPEED STEEL

HELIX
37°

SQUARE END

CENTER CUTTING

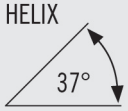
- Cylindrical margin to eliminate chatter
- Weldon flat standard
- Ideal for slotting and pocketing in aluminum and non-ferrous materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N96041	DA206-0.125-XF3-S.3-Z2	1/8	3/8	3/8	3-1/16	2	
N89431	DA206-0.125-XF3-S.3-Z2	1/8	3/8	3/8	3-1/16	2	TiCN
N96061	DA206-0.188-XF2-S.3-Z2	3/16	3/8	7/16	3-1/8	2	
N89432	DA206-0.188-XF2-S.3-Z2	3/16	3/8	7/16	3-1/8	2	TiCN
N96081	DA206-0.250-XF2-S.3-Z2	1/4	3/8	1/2	3-1/8	2	
N89433	DA206-0.250-XF2-S.3-Z2	1/4	3/8	1/2	3-1/8	2	TiCN
N96101	DA206-0.313-XF2-S.3-Z2	5/16	3/8	9/16	3-1/8	2	
N89434	DA206-0.313-XF2-S.3-Z2	5/16	3/8	9/16	3-1/8	2	TiCN
N96121	DA206-0.375-XD2-S.3-Z2	3/8	3/8	9/16	3-1/8	2	
N89435	DA206-0.375-XD2-S.3-Z2	3/8	3/8	9/16	3-1/8	2	TiCN
N96162	DA206-0.500-XD2-S.3-Z2	1/2	1/2	13/16	3-3/4	2	
N89437	DA206-0.500-XD2-S.3-Z2	1/2	1/2	13/16	3-3/4	2	TiCN
N96203	DA206-0.625-XD2-S.3-Z2	5/8	5/8	1-1/8	4-1/2	2	
N89439	DA206-0.625-XD2-S.3-Z2	5/8	5/8	1-1/8	4-1/2	2	TiCN
N96244	DA206-0.750-XD2-S.3-Z2	3/4	3/4	1-5/16	5	2	
N89441	DA206-0.750-XD2-S.3-Z2	3/4	3/4	1-5/16	5	2	TiCN

Niagara Cutter

HIGH PERFORMANCE- A337

HSS
HIGH SPEED STEEL

HELIX


SQUARE END


CENTER CUTTING

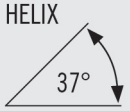
- Cylindrical margin to eliminate chatter
- Weldon flat standard
- Designed for slotting, pocketing and profiling in aluminum

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N33800	A337-0.188-F3-S.3-Z3	3/16	3/8	1/2	2-3/8	3	
N33802	A337-0.188-F3-S.3-Z3	3/16	3/8	1/2	2-3/8	3	TiCN
N33803	A337-0.250-F2-S.3-Z3	1/4	3/8	3/8	2-3/16	3	
N33805	A337-0.250-F2-S.3-Z3	1/4	3/8	3/8	2-3/16	3	TiCN
N33806	A337-0.250-F3-S.3-Z3	1/4	3/8	5/8	2-7/16	3	
N33808	A337-0.250-F3-S.3-Z3	1/4	3/8	5/8	2-7/16	3	TiCN
N33809	A337-0.250-F5-S.3-Z3	1/4	3/8	1-1/4	3-1/16	3	
N33811	A337-0.250-F5-S.3-Z3	1/4	3/8	1-1/4	3-1/16	3	TiCN
N33812	A337-0.250-F7-S.3-Z3	1/4	3/8	1-3/4	3-9/16	3	
N33814	A337-0.250-F7-S.3-Z3	1/4	3/8	1-3/4	3-9/16	3	TiCN
N33818	A337-0.313-F2-S.3-Z3	5/16	3/8	3/4	2-1/2	3	
N33820	A337-0.313-F2-S.3-Z3	5/16	3/8	3/4	2-1/2	3	TiCN
N33821	A337-0.313-F4-S.3-Z3	5/16	3/8	1-3/8	3-1/8	3	
N33823	A337-0.313-F4-S.3-Z3	5/16	3/8	1-3/8	3-1/8	3	TiCN
N33824	A337-0.313-F6-S.3-Z3	5/16	3/8	2	3-3/4	3	
N33826	A337-0.313-F6-S.3-Z3	5/16	3/8	2	3-3/4	3	TiCN
N33830	A337-0.375-D2-S.3-Z3	3/8	3/8	3/4	2-1/2	3	
N33832	A337-0.375-D2-S.3-Z3	3/8	3/8	3/4	2-1/2	3	TiCN
N33833	A337-0.375-D4-S.3-Z3	3/8	3/8	1-1/2	3-1/4	3	
N33835	A337-0.375-D4-S.3-Z3	3/8	3/8	1-1/2	3-1/4	3	TiCN
N33836	A337-0.375-D7-S.3-Z3	3/8	3/8	2-1/2	4-1/4	3	
N33838	A337-0.375-D7-S.3-Z3	3/8	3/8	2-1/2	4-1/4	3	TiCN
N33842	A337-0.438-F3-S.3-Z3	7/16	1/2	1-1/4	3-1/4	3	
N33844	A337-0.438-F3-S.3-Z3	7/16	1/2	1-1/4	3-1/4	3	TiCN
N33845	A337-0.438-F4-S.3-Z3	7/16	1/2	1-3/4	3-3/4	3	
N33847	A337-0.438-F4-S.3-Z3	7/16	1/2	1-3/4	3-3/4	3	TiCN
N33851	A337-0.500-D1-S.3-Z3	1/2	1/2	1/2	2-1/2	3	
N33853	A337-0.500-D1-S.3-Z3	1/2	1/2	1/2	2-1/2	3	TiCN
N33854	A337-0.500-D3-S.3-Z3	1/2	1/2	1-1/4	3-1/4	3	
N33856	A337-0.500-D3-S.3-Z3	1/2	1/2	1-1/4	3-1/4	3	TiCN
N33857	A337-0.500-D4-S.3-Z3	1/2	1/2	2	4	3	
N33859	A337-0.500-D4-S.3-Z3	1/2	1/2	2	4	3	TiCN
N33860	A337-0.500-D6-S.3-Z3	1/2	1/2	3	5	3	
N33862	A337-0.500-D6-S.3-Z3	1/2	1/2	3	5	3	TiCN
N33863	A337-0.625-D1-S.3-Z3	5/8	5/8	5/8	2-3/4	3	
N33865	A337-0.625-D1-S.3-Z3	5/8	5/8	5/8	2-3/4	3	TiCN
N33866	A337-0.625-D3-S.3-Z3	5/8	5/8	1-5/8	3-3/4	3	

Niagara Cutter

HIGH PERFORMANCE- A337

HSS
HIGH SPEED STEEL

HELIX


SQUARE END

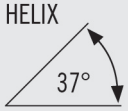

CENTER CUTTING

- Cylindrical margin to eliminate chatter
- Weldon flat standard
- Designed for slotting, pocketing and profiling in aluminum

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N33868	A337-0.625-D3-S.3-Z3	5/8	5/8	1-5/8	3-3/4	3	TiCN
N33869	A337-0.625-D4-S.3-Z3	5/8	5/8	2	4-1/8	3	
N33871	A337-0.625-D4-S.3-Z3	5/8	5/8	2	4-1/8	3	TiCN
N33875	A337-0.625-D6-S.3-Z3	5/8	5/8	3	5-1/8	3	
N33877	A337-0.625-D6-S.3-Z3	5/8	5/8	3	5-1/8	3	TiCN
N33878	A337-0.750-D1-S.3-Z3	3/4	3/4	3/4	3	3	
N33880	A337-0.750-D1-S.3-Z3	3/4	3/4	3/4	3	3	TiCN
N33881	A337-0.750-D2-S.3-Z3	3/4	3/4	1-5/8	3-7/8	3	
N33883	A337-0.750-D2-S.3-Z3	3/4	3/4	1-5/8	3-7/8	3	TiCN
N33884	A337-0.750-D3-S.3-Z3	3/4	3/4	2-1/4	4-1/2	3	
N33886	A337-0.750-D3-S.3-Z3	3/4	3/4	2-1/4	4-1/2	3	TiCN
N33887	A337-0.750-D4-S.3-Z3	3/4	3/4	3	5-1/4	3	
N33889	A337-0.750-D4-S.3-Z3	3/4	3/4	3	5-1/4	3	TiCN
N33890	A337-0.750-D5-S.3-Z3	3/4	3/4	4	6-1/4	3	
N33892	A337-0.750-D5-S.3-Z3	3/4	3/4	4	6-1/4	3	TiCN
N33896	A337-1.000-D1-S.3-Z3	1	1	1	3-1/2	3	
N33898	A337-1.000-D1-S.3-Z3	1	1	1	3-1/2	3	TiCN
N33899	A337-1.000-D2-S.3-Z3	1	1	2	4-1/2	3	
N33901	A337-1.000-D2-S.3-Z3	1	1	2	4-1/2	3	TiCN
N33902	A337-1.000-D3-S.3-Z3	1	1	3	5-1/2	3	
N33904	A337-1.000-D3-S.3-Z3	1	1	3	5-1/2	3	TiCN
N33905	A337-1.000-D4-S.3-Z3	1	1	4	6-1/2	3	
N33907	A337-1.000-D4-S.3-Z3	1	1	4	6-1/2	3	TiCN
N33908	A337-1.000-D6-S.3-Z3	1	1	6	8-1/2	3	
N33910	A337-1.000-D6-S.3-Z3	1	1	6	8-1/2	3	TiCN
N33911	A337-1.250-D1-S.3-Z3	1-1/4	1-1/4	2	4-1/2	3	
N33913	A337-1.250-D1-S.3-Z3	1-1/4	1-1/4	2	4-1/2	3	TiCN
N33914	A337-1.250-D2-S.3-Z3	1-1/4	1-1/4	3	5-1/2	3	
N33916	A337-1.250-D2-S.3-Z3	1-1/4	1-1/4	3	5-1/2	3	TiCN
N33917	A337-1.250-D3-S.3-Z3	1-1/4	1-1/4	4	6-1/2	3	
N33919	A337-1.250-D3-S.3-Z3	1-1/4	1-1/4	4	6-1/2	3	TiCN
N33920	A337-1.250-D5-S.3-Z3	1-1/4	1-1/4	6	8-1/2	3	
N33922	A337-1.250-D5-S.3-Z3	1-1/4	1-1/4	6	8-1/2	3	TiCN
N33923	A337-1.500-P1-S.3-Z3	1-1/2	1-1/4	2	4-1/2	3	
N33925	A337-1.500-P1-S.3-Z3	1-1/2	1-1/4	2	4-1/2	3	TiCN
N33932	A337-1.500-P4-S.3-Z3	1-1/2	1-1/4	6	8-1/2	3	
N33934	A337-1.500-P4-S.3-Z3	1-1/2	1-1/4	6	8-1/2	3	TiCN

HIGH PERFORMANCE- AB337

HSS
HIGH SPEED STEEL

HELIX


BALL END

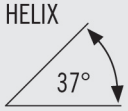

CENTER CUTTING

- Cylindrical margin to eliminate chatter
- Weldon flat standard
- Designed for slotting, pocketing, profiling and contour milling applications in aluminum

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N33959	AB337-0.500-D3-B.3-Z3	1/2	1/2	1-1/4	3-1/4	3	
N33961	AB337-0.500-D3-B.3-Z3	1/2	1/2	1-1/4	3-1/4	3	TiCN
N33962	AB337-0.500-D4-B.3-Z3	1/2	1/2	2	4	3	
N33964	AB337-0.500-D4-B.3-Z3	1/2	1/2	2	4	3	TiCN
N33965	AB337-0.750-D2-B.3-Z3	3/4	3/4	1-5/8	3-7/8	3	
N33967	AB337-0.750-D2-B.3-Z3	3/4	3/4	1-5/8	3-7/8	3	TiCN
N33968	AB337-0.750-D4-B.3-Z3	3/4	3/4	3	5-1/4	3	
N33970	AB337-0.750-D4-B.3-Z3	3/4	3/4	3	5-1/4	3	TiCN
N33971	AB337-1.000-D2-B.3-Z3	1	1	2	4-1/2	3	
N33973	AB337-1.000-D2-B.3-Z3	1	1	2	4-1/2	3	TiCN

FOR ALUMINUM- ACB337

HSS
HIGH SPEED STEEL

HELIX


CHAMFER


CENTER CUTTING

CHIPBREAKER

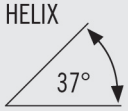
- Cylindrical margin to eliminate chatter
- Weldon flat standard
- Designed for slotting, pocketing and profiling aluminum

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N70751	ACB337-0.375-D2-C025.3-Z3	3/8	3/8	3/4	2-1/2	3		0.025
N70839	ACB337-0.375-D2-C025.3-Z3	3/8	3/8	3/4	2-1/2	3	TiCN	0.025
N70752	ACB337-0.375-D4-C025.3-Z3	3/8	3/8	1-1/2	3-1/4	3		0.025
N70840	ACB337-0.375-D4-C025.3-Z3	3/8	3/8	1-1/2	3-1/4	3	TiCN	0.025
N70759	ACB337-0.500-D3-C030.3-Z3	1/2	1/2	1-1/4	3-1/4	3		0.030
N70847	ACB337-0.500-D3-C030.3-Z3	1/2	1/2	1-1/4	3-1/4	3	TiCN	0.030
N70767	ACB337-0.750-D1-C040.3-Z3	3/4	3/4	3/4	2-7/8	3		0.040
N70855	ACB337-0.750-D1-C040.3-Z3	3/4	3/4	3/4	2-7/8	3	TiCN	0.040
N70768	ACB337-0.750-D2-C040.3-Z3	3/4	3/4	1-5/8	3-7/8	3		0.040
N70856	ACB337-0.750-D2-C040.3-Z3	3/4	3/4	1-5/8	3-7/8	3	TiCN	0.040
N70769	ACB337-0.750-D3-C040.3-Z3	3/4	3/4	2-1/4	4-1/2	3		0.040
N70857	ACB337-0.750-D3-C040.3-Z3	3/4	3/4	2-1/4	4-1/2	3	TiCN	0.040
N70770	ACB337-0.750-D4-C040.3-Z3	3/4	3/4	3	5-1/8	3		0.040
N70858	ACB337-0.750-D4-C040.3-Z3	3/4	3/4	3	5-1/8	3	TiCN	0.040
N70774	ACB337-1.000-D2-C040.3-Z3	1	1	2	4-1/2	3		0.040
N70862	ACB337-1.000-D2-C040.3-Z3	1	1	2	4-1/2	3	TiCN	0.040
N70775	ACB337-1.000-D3-C040.3-Z3	1	1	3	5-1/2	3		0.040
N70863	ACB337-1.000-D3-C040.3-Z3	1	1	3	5-1/2	3	TiCN	0.040
N70777	ACB337-1.000-D6-C040.3-Z3	1	1	6	8-1/2	3		0.040
N70865	ACB337-1.000-D6-C040.3-Z3	1	1	6	8-1/2	3	TiCN	0.040
N70783	ACB337-1.500-P2-C045.3-Z3	1-1/2	1-1/4	3	5-1/2	3		0.045
N70871	ACB337-1.500-P2-C045.3-Z3	1-1/2	1-1/4	3	5-1/2	3	TiCN	0.045

Niagara Cutter

FOR ALUMINUM- AL337

HSS
HIGH SPEED STEEL

HELIX


SQUARE END


CENTER CUTTING

- Cylindrical margin to eliminate chatter
- Weldon flat standard
- Designed for slotting, pocketing and contour milling applications in aluminum

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	REACH
N08688	AL337-0.500-E3-S.3-Z3	1/2	1/2	1-1/4	6	3		4
N08738	AL337-0.500-E3-S.3-Z3	1/2	1/2	1-1/4	6	3	TiCN	4
N08694	AL337-0.625-E2-S.3-Z3	5/8	5/8	1-1/2	7-1/8	3		5
N08746	AL337-0.625-E2-S.3-Z3	5/8	5/8	1-1/2	7-1/8	3	TiCN	5
N08698	AL337-0.750-E3-S.3-Z3	3/4	3/4	2	8-1/4	3		6
N08748	AL337-0.750-E3-S.3-Z3	3/4	3/4	2	8-1/4	3	TiCN	6
N08706	AL337-1.000-E3-S.3-Z3	1	1	2-1/2	10-1/2	3		8
N08754	AL337-1.000-E3-S.3-Z3	1	1	2-1/2	10-1/2	3	TiCN	8

GENERAL PURPOSE- S404

HSS
HIGH SPEED STEEL

HELIX
30°

SQUARE END

NON CENTER CUTTING

- Weldon flat standard
- Designed for profile milling applications in all common materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N35041	S404-0.125-F3-S.3-Z4	1/8	3/8	3/8	2-5/16	4	
N35040	S404-0.125-F3-S.3-Z4	1/8	3/8	3/8	2-5/16	4	TiN
N35051	S404-0.156-F3-S.3-Z4	5/32	3/8	7/16	2-5/16	4	
N35050	S404-0.156-F3-S.3-Z4	5/32	3/8	7/16	2-5/16	4	TiN
N35059	S404-0.172-F3-S.3-Z4	11/64	3/8	1/2	2-3/8	4	
N35058	S404-0.172-F3-S.3-Z4	11/64	3/8	1/2	2-3/8	4	TiN
N34061	S404-0.188-F1-S.3-Z4	3/16	3/8	3/16	2-1/16	4	
N34060	S404-0.188-F1-S.3-Z4	3/16	3/8	3/16	2-1/16	4	TiN
N35061	S404-0.188-F2-S.3-Z4	3/16	3/8	1/2	2-3/8	4	
N35060	S404-0.188-F2-S.3-Z4	3/16	3/8	1/2	2-3/8	4	TiN
N36061	S404-0.188-F3-S.3-Z4	3/16	3/8	5/8	2-1/2	4	
N36060	S404-0.188-F3-S.3-Z4	3/16	3/8	5/8	2-1/2	4	TiN
N37061	S404-0.188-F4-S.3-Z4	3/16	3/8	3/4	2-5/8	4	
N37060	S404-0.188-F4-S.3-Z4	3/16	3/8	3/4	2-5/8	4	TiN
N33061	S404-0.188-F5-S.3-Z4	3/16	3/8	1	2-7/8	4	
N33060	S404-0.188-F5-S.3-Z4	3/16	3/8	1	2-7/8	4	TiN
N38061	S404-0.188-F6-S.3-Z4	3/16	3/8	1-1/8	3	4	
N38060	S404-0.188-F6-S.3-Z4	3/16	3/8	1-1/8	3	4	TiN
N35069	S404-0.203-F2-S.3-Z4	13/64	3/8	1/2	2-3/8	4	
N35068	S404-0.203-F2-S.3-Z4	13/64	3/8	1/2	2-3/8	4	TiN
N35071	S404-0.219-F2-S.3-Z4	7/32	3/8	5/8	2-7/16	4	
N35070	S404-0.219-F2-S.3-Z4	7/32	3/8	5/8	2-7/16	4	TiN
N36071	S404-0.219-F3-S.3-Z4	7/32	3/8	3/4	2-9/16	4	
N36070	S404-0.219-F3-S.3-Z4	7/32	3/8	3/4	2-9/16	4	TiN
N37071	S404-0.219-F4-S.3-Z4	7/32	3/8	7/8	2-11/16	4	
N37070	S404-0.219-F4-S.3-Z4	7/32	3/8	7/8	2-11/16	4	TiN
N38071	S404-0.219-F8-S.3-Z4	7/32	3/8	1-3/4	3-9/16	4	
N38070	S404-0.219-F8-S.3-Z4	7/32	3/8	1-3/4	3-9/16	4	TiN
N35079	S404-0.234-F3-S.3-Z4	15/64	3/8	5/8	2-7/16	4	
N35078	S404-0.234-F3-S.3-Z4	15/64	3/8	5/8	2-7/16	4	TiN
N34081	S404-0.250-F1-S.3-Z4	1/4	3/8	1/4	2-1/16	4	
N34080	S404-0.250-F1-S.3-Z4	1/4	3/8	1/4	2-1/16	4	TiN
N35081	S404-0.250-F2-S.3-Z4	1/4	3/8	5/8	2-7/16	4	
N35080	S404-0.250-F2-S.3-Z4	1/4	3/8	5/8	2-7/16	4	TiN
N36081	S404-0.250-F3-S.3-Z4	1/4	3/8	3/4	2-9/16	4	
N36080	S404-0.250-F3-S.3-Z4	1/4	3/8	3/4	2-9/16	4	TiN

Niagara Cutter

GENERAL PURPOSE- S404

HSS
HIGH SPEED STEEL

HELIX
30°

SQUARE END

NON CENTER CUTTING

- Weldon flat standard
- Designed for profile milling applications in all common materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N37081	S404-0.250-F5-S.3-Z4	1/4	3/8	1-1/4	3-1/16	4	
N37080	S404-0.250-F5-S.3-Z4	1/4	3/8	1-1/4	3-1/16	4	TiN
N33081	S404-0.250-F6-S.3-Z4	1/4	3/8	1-1/2	3-5/16	4	
N33080	S404-0.250-F6-S.3-Z4	1/4	3/8	1-1/2	3-5/16	4	TiN
N38081	S404-0.250-F7-S.3-Z4	1/4	3/8	1-3/4	3-9/16	4	
N38080	S404-0.250-F7-S.3-Z4	1/4	3/8	1-3/4	3-9/16	4	TiN
N35089	S404-0.266-F2-S.3-Z4	17/64	3/8	5/8	2-7/16	4	
N35088	S404-0.266-F2-S.3-Z4	17/64	3/8	5/8	2-7/16	4	TiN
N35091	S404-0.281-F2-S.3-Z4	9/32	3/8	5/8	2-7/16	4	
N35090	S404-0.281-F2-S.3-Z4	9/32	3/8	5/8	2-7/16	4	TiN
N36091	S404-0.281-F4-S.3-Z4	9/32	3/8	1	2-3/4	4	
N36090	S404-0.281-F4-S.3-Z4	9/32	3/8	1	2-3/4	4	TiN
N37091	S404-0.281-F5-S.3-Z4	9/32	3/8	1-3/8	3-1/8	4	
N37090	S404-0.281-F5-S.3-Z4	9/32	3/8	1-3/8	3-1/8	4	TiN
N38091	S404-0.281-F7-S.3-Z4	9/32	3/8	2	3-3/4	4	
N38090	S404-0.281-F7-S.3-Z4	9/32	3/8	2	3-3/4	4	TiN
N35099	S404-0.297-F3-S.3-Z4	19/64	3/8	3/4	2-1/2	4	
N35098	S404-0.297-F3-S.3-Z4	19/64	3/8	3/4	2-1/2	4	TiN
N35101	S404-0.313-F2-S.3-Z4	5/16	3/8	3/4	2-1/2	4	
N35100	S404-0.313-F2-S.3-Z4	5/16	3/8	3/4	2-1/2	4	TiN
N36101	S404-0.313-F3-S.3-Z4	5/16	3/8	1	2-3/4	4	
N36100	S404-0.313-F3-S.3-Z4	5/16	3/8	1	2-3/4	4	TiN
N37101	S404-0.313-F4-S.3-Z4	5/16	3/8	1-3/8	3-1/8	4	
N37100	S404-0.313-F4-S.3-Z4	5/16	3/8	1-3/8	3-1/8	4	TiN
N33101	S404-0.313-F5-S.3-Z4	5/16	3/8	1-5/8	3-3/8	4	
N33100	S404-0.313-F5-S.3-Z4	5/16	3/8	1-5/8	3-3/8	4	TiN
N38101	S404-0.313-F6-S.3-Z4	5/16	3/8	2	3-3/4	4	
N38100	S404-0.313-F6-S.3-Z4	5/16	3/8	2	3-3/4	4	TiN
N35111	S404-0.344-F2-S.3-Z4	11/32	3/8	3/4	2-1/2	4	
N35110	S404-0.344-F2-S.3-Z4	11/32	3/8	3/4	2-1/2	4	TiN
N36111	S404-0.344-F3-S.3-Z4	11/32	3/8	1-1/8	2-7/8	4	
N36110	S404-0.344-F3-S.3-Z4	11/32	3/8	1-1/8	2-7/8	4	TiN
N37111	S404-0.344-F4-S.3-Z4	11/32	3/8	1-1/2	3-1/4	4	
N37110	S404-0.344-F4-S.3-Z4	11/32	3/8	1-1/2	3-1/4	4	TiN
N35119	S404-0.359-F2-S.3-Z4	23/64	3/8	3/4	2-1/2	4	
N35118	S404-0.359-F2-S.3-Z4	23/64	3/8	3/4	2-1/2	4	TiN

GENERAL PURPOSE- S404

HSS HIGH SPEED STEEL

HELIX 30°

SQUARE END

NON CENTER CUTTING

- Weldon flat standard
- Designed for profile milling applications in all common materials

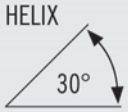
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N34121	S404-0.375-D1-S.3-Z4	3/8	3/8	3/8	2-1/8	4	
N34120	S404-0.375-D1-S.3-Z4	3/8	3/8	3/8	2-1/8	4	TiN
N35121	S404-0.375-D2-S.3-Z4	3/8	3/8	3/4	2-1/2	4	
N35120	S404-0.375-D2-S.3-Z4	3/8	3/8	3/4	2-1/2	4	TiN
N36121	S404-0.375-D3-S.3-Z4	3/8	3/8	1-1/8	2-7/8	4	
N36120	S404-0.375-D3-S.3-Z4	3/8	3/8	1-1/8	2-7/8	4	TiN
N37121	S404-0.375-D4-S.3-Z4	3/8	3/8	1-1/2	3-1/4	4	
N37120	S404-0.375-D4-S.3-Z4	3/8	3/8	1-1/2	3-1/4	4	TiN
N33121	S404-0.375-D5-S.3-Z4	3/8	3/8	1-7/8	3-5/8	4	
N33120	S404-0.375-D5-S.3-Z4	3/8	3/8	1-7/8	3-5/8	4	TiN
N38121	S404-0.375-D7-S.3-Z4	3/8	3/8	2-1/2	4-1/4	4	
N38120	S404-0.375-D7-S.3-Z4	3/8	3/8	2-1/2	4-1/4	4	TiN
N35129	S404-0.391-P3-S.3-Z4	25/64	3/8	1	2-11/16	4	
N35128	S404-0.391-P3-S.3-Z4	25/64	3/8	1	2-11/16	4	TiN
N35131	S404-0.406-P2-S.3-Z4	13/32	3/8	1	2-11/16	4	
N35130	S404-0.406-P2-S.3-Z4	13/32	3/8	1	2-11/16	4	TiN
N36131	S404-0.406-P3-S.3-Z4	13/32	3/8	1-3/8	3-1/16	4	
N36130	S404-0.406-P3-S.3-Z4	13/32	3/8	1-3/8	3-1/16	4	TiN
N37131	S404-0.406-P4-S.3-Z4	13/32	3/8	2	3-11/16	4	
N37130	S404-0.406-P4-S.3-Z4	13/32	3/8	2	3-11/16	4	TiN
N35139	S404-0.422-P2-S.3-Z4	27/64	3/8	1	2-11/16	4	
N35138	S404-0.422-P2-S.3-Z4	27/64	3/8	1	2-11/16	4	TiN
N34141	S404-0.438-P1-S.3-Z4	7/16	3/8	7/16	2-1/8	4	
N34140	S404-0.438-P1-S.3-Z4	7/16	3/8	7/16	2-1/8	4	TiN
N35141	S404-0.438-P2-S.3-Z4	7/16	3/8	1	2-11/16	4	
N35140	S404-0.438-P2-S.3-Z4	7/16	3/8	1	2-11/16	4	TiN
N36141	S404-0.438-P3-S.3-Z4	7/16	3/8	1-3/8	3-1/16	4	
N36140	S404-0.438-P3-S.3-Z4	7/16	3/8	1-3/8	3-1/16	4	TiN
N37141	S404-0.438-P4-S.3-Z4	7/16	3/8	2	3-11/16	4	
N37140	S404-0.438-P4-S.3-Z4	7/16	3/8	2	3-11/16	4	TiN
N33141	S404-0.438-P5-S.3-Z4	7/16	3/8	2-1/4	3-15/16	4	
N33140	S404-0.438-P5-S.3-Z4	7/16	3/8	2-1/4	3-15/16	4	TiN
N38141	S404-0.438-P6-S.3-Z4	7/16	3/8	2-5/8	4-5/16	4	
N38140	S404-0.438-P6-S.3-Z4	7/16	3/8	2-5/8	4-5/16	4	TiN
N37142	S404-0.438-F4-S.3-Z4	7/16	1/2	1-3/4	3-3/4	4	
N37148	S404-0.438-F4-S.3-Z4	7/16	1/2	1-3/4	3-3/4	4	TiN

DISCOUNT CODE D40

Niagara Cutter

GENERAL PURPOSE- S404

HSS
HIGH SPEED STEEL

HELIX


SQUARE END


NON CENTER CUTTING

- Weldon flat standard
- Designed for profile milling applications in all common materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N35149	S404-0.453-P2-S.3-Z4	29/64	3/8	1	2-11/16	4	
N35148	S404-0.453-P2-S.3-Z4	29/64	3/8	1	2-11/16	4	TiN
N35151	S404-0.469-P2-S.3-Z4	15/32	3/8	1	2-11/16	4	
N35150	S404-0.469-P2-S.3-Z4	15/32	3/8	1	2-11/16	4	TiN
N35159	S404-0.484-P2-S.3-Z4	31/64	3/8	1	2-11/16	4	
N35158	S404-0.484-P2-S.3-Z4	31/64	3/8	1	2-11/16	4	TiN
N35161	S404-0.500-P2-S.3-Z4	1/2	3/8	1	2-11/16	4	
N35167	S404-0.500-P2-S.3-Z4	1/2	3/8	1	2-11/16	4	TiN
N34162	S404-0.500-D1-S.3-Z4	1/2	1/2	1/2	2-1/2	4	
N34160	S404-0.500-D1-S.3-Z4	1/2	1/2	1/2	2-1/2	4	TiN
N35162	S404-0.500-D2-S.3-Z4	1/2	1/2	1-1/4	3-1/4	4	
N35160	S404-0.500-D2-S.3-Z4	1/2	1/2	1-1/4	3-1/4	4	TiN
N36162	S404-0.500-D3-S.3-Z4	1/2	1/2	1-1/2	3-1/2	4	
N36160	S404-0.500-D3-S.3-Z4	1/2	1/2	1-1/2	3-1/2	4	TiN
N37162	S404-0.500-D4-S.3-Z4	1/2	1/2	2	4	4	
N37160	S404-0.500-D4-S.3-Z4	1/2	1/2	2	4	4	TiN
N33162	S404-0.500-D5-S.3-Z4	1/2	1/2	2-1/2	4-1/2	4	
N33160	S404-0.500-D5-S.3-Z4	1/2	1/2	2-1/2	4-1/2	4	TiN
N38162	S404-0.500-D6-S.3-Z4	1/2	1/2	3	5	4	
N38160	S404-0.500-D6-S.3-Z4	1/2	1/2	3	5	4	TiN
N35169	S404-0.516-P2-S.3-Z4	33/64	1/2	1-1/4	3-1/4	4	
N35168	S404-0.516-P2-S.3-Z4	33/64	1/2	1-1/4	3-1/4	4	TiN
N35172	S404-0.531-P3-S.3-Z4	17/32	1/2	1-3/8	3-3/8	4	
N35170	S404-0.531-P3-S.3-Z4	17/32	1/2	1-3/8	3-3/8	4	TiN
N37172	S404-0.531-P5-S.3-Z4	17/32	1/2	2-1/2	4-1/2	4	
N37170	S404-0.531-P5-S.3-Z4	17/32	1/2	2-1/2	4-1/2	4	TiN
N35179	S404-0.547-P3-S.3-Z4	35/64	1/2	1-3/8	3-3/8	4	
N35178	S404-0.547-P3-S.3-Z4	35/64	1/2	1-3/8	3-3/8	4	TiN
N34182	S404-0.563-P1-S.3-Z4	9/16	1/2	5/8	2-5/8	4	
N34180	S404-0.563-P1-S.3-Z4	9/16	1/2	5/8	2-5/8	4	TiN
N35182	S404-0.563-P2-S.3-Z4	9/16	1/2	1-3/8	3-3/8	4	
N35180	S404-0.563-P2-S.3-Z4	9/16	1/2	1-3/8	3-3/8	4	TiN
N36182	S404-0.563-P3-S.3-Z4	9/16	1/2	1-7/8	3-7/8	4	
N36180	S404-0.563-P3-S.3-Z4	9/16	1/2	1-7/8	3-7/8	4	TiN
N37182	S404-0.563-P4-S.3-Z4	9/16	1/2	2-1/2	4-1/2	4	
N37180	S404-0.563-P4-S.3-Z4	9/16	1/2	2-1/2	4-1/2	4	TiN

GENERAL PURPOSE- S404

HSS
HIGH SPEED STEEL

HELIX
30°

SQUARE END

NON CENTER CUTTING

- Weldon flat standard
- Designed for profile milling applications in all common materials

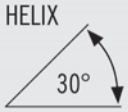
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N38182	S404-0.563-P7-S.3-Z4	9/16	1/2	4	6	4	
N38180	S404-0.563-P7-S.3-Z4	9/16	1/2	4	6	4	TiN
N35189	S404-0.578-P2-S.3-Z4	37/64	1/2	1-3/8	3-3/8	4	
N35188	S404-0.578-P2-S.3-Z4	37/64	1/2	1-3/8	3-3/8	4	TiN
N35192	S404-0.594-P2-S.3-Z4	19/32	1/2	1-3/8	3-3/8	4	
N35190	S404-0.594-P2-S.3-Z4	19/32	1/2	1-3/8	3-3/8	4	TiN
N35199	S404-0.609-F3-S.3-Z4	39/64	5/8	1-5/8	3-3/4	4	
N35198	S404-0.609-F3-S.3-Z4	39/64	5/8	1-5/8	3-3/4	4	TiN
N35202	S404-0.625-P2-S.3-Z4	5/8	1/2	1-3/8	3-3/8	4	
N35207	S404-0.625-P2-S.3-Z4	5/8	1/2	1-3/8	3-3/8	4	TiN
N34203	S404-0.625-D1-S.3-Z4	5/8	5/8	5/8	2-3/4	4	
N34200	S404-0.625-D1-S.3-Z4	5/8	5/8	5/8	2-3/4	4	TiN
N35203	S404-0.625-D2-S.3-Z4	5/8	5/8	1-5/8	3-3/4	4	
N35200	S404-0.625-D2-S.3-Z4	5/8	5/8	1-5/8	3-3/4	4	TiN
N36203	S404-0.625-D3-S.3-Z4	5/8	5/8	1-7/8	4	4	
N36200	S404-0.625-D3-S.3-Z4	5/8	5/8	1-7/8	4	4	TiN
N37203	S404-0.625-D4-S.3-Z4	5/8	5/8	2-1/2	4-5/8	4	
N37200	S404-0.625-D4-S.3-Z4	5/8	5/8	2-1/2	4-5/8	4	TiN
N38203	S404-0.625-D6-S.3-Z4	5/8	5/8	4	6-1/8	4	
N38200	S404-0.625-D6-S.3-Z4	5/8	5/8	4	6-1/8	4	TiN
N35209	S404-0.641-P3-S.3-Z4	41/64	5/8	1-5/8	3-3/4	4	
N35208	S404-0.641-P3-S.3-Z4	41/64	5/8	1-5/8	3-3/4	4	TiN
N35213	S404-0.656-P2-S.3-Z4	21/32	5/8	1-5/8	3-3/4	4	
N35210	S404-0.656-P2-S.3-Z4	21/32	5/8	1-5/8	3-3/4	4	TiN
N35219	S404-0.672-P2-S.3-Z4	43/64	5/8	1-5/8	3-3/4	4	
N35218	S404-0.672-P2-S.3-Z4	43/64	5/8	1-5/8	3-3/4	4	TiN
N35222	S404-0.688-P1-S.3-Z4	11/16	1/2	1-5/8	3-5/8	4	
N35227	S404-0.688-P1-S.3-Z4	11/16	1/2	1-5/8	3-5/8	4	TiN
N35223	S404-0.688-P3-S.3-Z4	11/16	5/8	1-5/8	3-3/4	4	
N35220	S404-0.688-P3-S.3-Z4	11/16	5/8	1-5/8	3-3/4	4	TiN
N36223	S404-0.688-P4-S.3-Z4	11/16	5/8	2-1/4	4-3/8	4	
N36220	S404-0.688-P4-S.3-Z4	11/16	5/8	2-1/4	4-3/8	4	TiN
N37223	S404-0.688-P5-S.3-Z4	11/16	5/8	3	5-1/8	4	
N37220	S404-0.688-P5-S.3-Z4	11/16	5/8	3	5-1/8	4	TiN
N38223	S404-0.688-P7-S.3-Z4	11/16	5/8	4	6-1/8	4	
N38220	S404-0.688-P7-S.3-Z4	11/16	5/8	4	6-1/8	4	TiN

DISCOUNT CODE D40

Niagara Cutter

GENERAL PURPOSE- S404

HSS
HIGH SPEED STEEL

HELIX


SQUARE END


NON CENTER CUTTING

- Weldon flat standard
- Designed for profile milling applications in all common materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N35229	S404-0.703-F2-S.3-Z4	45/64	3/4	1-5/8	3-7/8	4	
N35228	S404-0.703-F2-S.3-Z4	45/64	3/4	1-5/8	3-7/8	4	TiN
N35234	S404-0.719-F2-S.3-Z4	23/32	3/4	1-5/8	3-7/8	4	
N35230	S404-0.719-F2-S.3-Z4	23/32	3/4	1-5/8	3-7/8	4	TiN
N35239	S404-0.734-F2-S.3-Z4	47/64	3/4	1-5/8	3-7/8	4	
N35238	S404-0.734-F2-S.3-Z4	47/64	3/4	1-5/8	3-7/8	4	TiN
N87242	S404-0.750-P1-S.3-Z4	3/4	1/2	3/4	2-3/4	4	
N87240	S404-0.750-P1-S.3-Z4	3/4	1/2	3/4	2-3/4	4	TiN
N35242	S404-0.750-P2-S.3-Z4	3/4	1/2	1-5/8	3-5/8	4	
N35241	S404-0.750-P2-S.3-Z4	3/4	1/2	1-5/8	3-5/8	4	TiN
N37242	S404-0.750-P4-S.3-Z4	3/4	1/2	3	5	4	
N37248	S404-0.750-P4-S.3-Z4	3/4	1/2	3	5	4	TiN
N35243	S404-0.750-P3-S.3-Z4	3/4	5/8	1-5/8	3-3/4	4	
N35247	S404-0.750-P3-S.3-Z4	3/4	5/8	1-5/8	3-3/4	4	TiN
N34244	S404-0.750-D1-S.3-Z4	3/4	3/4	3/4	3	4	
N34240	S404-0.750-D1-S.3-Z4	3/4	3/4	3/4	3	4	TiN
N35246	S404-0.750-D2-S.3-Z6	3/4	3/4	1-1/2	3-3/4	6	
N35255	S404-0.750-D2-S.3-Z6	3/4	3/4	1-1/2	3-3/4	6	TiN
N35244	S404-0.750-D2-S.3-Z4	3/4	3/4	1-5/8	3-7/8	4	
N35240	S404-0.750-D2-S.3-Z4	3/4	3/4	1-5/8	3-7/8	4	TiN
N36244	S404-0.750-D3-S.3-Z4	3/4	3/4	2-1/4	4-1/2	4	
N36240	S404-0.750-D3-S.3-Z4	3/4	3/4	2-1/4	4-1/2	4	TiN
N37244	S404-0.750-D4-S.3-Z4	3/4	3/4	3	5-1/4	4	
N37240	S404-0.750-D4-S.3-Z4	3/4	3/4	3	5-1/4	4	TiN
N33244	S404-0.750-D5-S.3-Z4	3/4	3/4	3-1/2	5-3/4	4	
N33240	S404-0.750-D5-S.3-Z4	3/4	3/4	3-1/2	5-3/4	4	TiN
N38244	S404-0.750-D6-S.3-Z4	3/4	3/4	4	6-1/4	4	
N38240	S404-0.750-D6-S.3-Z4	3/4	3/4	4	6-1/4	4	TiN
N35249	S404-0.766-P2-S.3-Z4	49/64	3/4	1-7/8	4-1/8	4	
N35248	S404-0.766-P2-S.3-Z4	49/64	3/4	1-7/8	4-1/8	4	TiN
N35254	S404-0.781-P2-S.3-Z4	25/32	3/4	1-7/8	4-1/8	4	
N35250	S404-0.781-P2-S.3-Z4	25/32	3/4	1-7/8	4-1/8	4	TiN
N35259	S404-0.797-P2-S.3-Z4	51/64	3/4	1-7/8	4-1/8	4	
N35258	S404-0.797-P2-S.3-Z4	51/64	3/4	1-7/8	4-1/8	4	TiN
N35263	S404-0.813-P2-S.3-Z6	13/16	5/8	1-7/8	4	6	
N35267	S404-0.813-P2-S.3-Z6	13/16	5/8	1-7/8	4	6	TiN

Niagara Cutter

GENERAL PURPOSE- S404

HSS
HIGH SPEED STEEL

HELIX
30°

SQUARE END

NON CENTER CUTTING

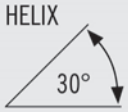
- Weldon flat standard
- Designed for profile milling applications in all common materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N35264	S404-0.813-P2-S.3-Z4	13/16	3/4	1-7/8	4-1/8	4	
N35260	S404-0.813-P2-S.3-Z4	13/16	3/4	1-7/8	4-1/8	4	TiN
N36264	S404-0.813-P3-S.3-Z4	13/16	3/4	2-5/8	4-7/8	4	
N36260	S404-0.813-P3-S.3-Z4	13/16	3/4	2-5/8	4-7/8	4	TiN
N37264	S404-0.813-P4-S.3-Z4	13/16	3/4	3-1/2	5-3/4	4	
N37260	S404-0.813-P4-S.3-Z4	13/16	3/4	3-1/2	5-3/4	4	TiN
N35269	S404-0.828-F2-S.3-Z4	53/64	7/8	1-7/8	4-1/8	4	
N35268	S404-0.828-F2-S.3-Z4	53/64	7/8	1-7/8	4-1/8	4	TiN
N35275	S404-0.844-F2-S.3-Z4	27/32	7/8	1-7/8	4-1/8	4	
N35270	S404-0.844-F2-S.3-Z4	27/32	7/8	1-7/8	4-1/8	4	TiN
N35279	S404-0.859-F2-S.3-Z4	55/64	7/8	1-7/8	4-1/8	4	
N35278	S404-0.859-F2-S.3-Z4	55/64	7/8	1-7/8	4-1/8	4	TiN
N87282	S404-0.875-P1-S.3-Z4	7/8	1/2	7/8	2-7/8	4	
N87280	S404-0.875-P1-S.3-Z4	7/8	1/2	7/8	2-7/8	4	TiN
N35283	S404-0.875-P2-S.3-Z6	7/8	5/8	1-7/8	4	6	
N35281	S404-0.875-P2-S.3-Z6	7/8	5/8	1-7/8	4	6	TiN
N35284	S404-0.875-P2-S.3-Z4	7/8	3/4	1-7/8	4-1/8	4	
N35287	S404-0.875-P2-S.3-Z4	7/8	3/4	1-7/8	4-1/8	4	TiN
N35285	S404-0.875-D2-S.3-Z4	7/8	7/8	1-7/8	4-1/8	4	
N35280	S404-0.875-D2-S.3-Z4	7/8	7/8	1-7/8	4-1/8	4	TiN
N36285	S404-0.875-D3-S.3-Z4	7/8	7/8	2-5/8	4-7/8	4	
N36280	S404-0.875-D3-S.3-Z4	7/8	7/8	2-5/8	4-7/8	4	TiN
N37285	S404-0.875-D4-S.3-Z4	7/8	7/8	3-1/2	5-3/4	4	
N37280	S404-0.875-D4-S.3-Z4	7/8	7/8	3-1/2	5-3/4	4	TiN
N33285	S404-0.875-D5-S.3-Z4	7/8	7/8	4-3/8	6-5/8	4	
N33280	S404-0.875-D5-S.3-Z4	7/8	7/8	4-3/8	6-5/8	4	TiN
N38285	S404-0.875-D6-S.3-Z4	7/8	7/8	5	7-1/4	4	
N38280	S404-0.875-D6-S.3-Z4	7/8	7/8	5	7-1/4	4	TiN
N35295	S404-0.906-P2-S.3-Z4	29/32	7/8	1-7/8	4-1/8	4	
N35290	S404-0.906-P2-S.3-Z4	29/32	7/8	1-7/8	4-1/8	4	TiN
N35304	S404-0.938-P1-S.3-Z4	15/16	3/4	1-7/8	4-1/8	4	
N35302	S404-0.938-P1-S.3-Z4	15/16	3/4	1-7/8	4-1/8	4	TiN
N35323	S404-1.000-P2-S.3-Z6	1	5/8	1-7/8	4	6	
N35322	S404-1.000-P2-S.3-Z6	1	5/8	1-7/8	4	6	TiN
N87324	S404-1.000-P1-S.3-Z4	1	3/4	1-1/4	3-1/2	4	
N87323	S404-1.000-P1-S.3-Z4	1	3/4	1-1/4	3-1/2	4	TiN

Niagara Cutter

GENERAL PURPOSE- S404

HSS
HIGH SPEED STEEL

HELIX


SQUARE END


NON CENTER CUTTING

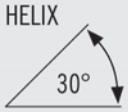
- Weldon flat standard
- Designed for profile milling applications in all common materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N87328	S404-1.000-P3-S.3-Z6	1	3/4	1-1/4	3-1/2	6	
N87327	S404-1.000-P3-S.3-Z6	1	3/4	1-1/4	3-1/2	6	TiN
N35324	S404-1.000-P3-S.3-Z4	1	3/4	1-7/8	4-1/8	4	
N35321	S404-1.000-P3-S.3-Z4	1	3/4	1-7/8	4-1/8	4	TiN
N34326	S404-1.000-D1-S.3-Z4	1	1	1	3-1/2	4	
N34320	S404-1.000-D1-S.3-Z4	1	1	1	3-1/2	4	TiN
N35326	S404-1.000-D2-S.3-Z4	1	1	2	4-1/2	4	
N35320	S404-1.000-D2-S.3-Z4	1	1	2	4-1/2	4	TiN
N36326	S404-1.000-D3-S.3-Z4	1	1	3	5-1/2	4	
N36320	S404-1.000-D3-S.3-Z4	1	1	3	5-1/2	4	TiN
N37326	S404-1.000-D4-S.3-Z4	1	1	4	6-1/2	4	
N37320	S404-1.000-D4-S.3-Z4	1	1	4	6-1/2	4	TiN
N33326	S404-1.000-D5-S.3-Z4	1	1	5	7-1/2	4	
N33320	S404-1.000-D5-S.3-Z4	1	1	5	7-1/2	4	TiN
N38326	S404-1.000-D6-S.3-Z4	1	1	6	8-1/2	4	
N38320	S404-1.000-D6-S.3-Z4	1	1	6	8-1/2	4	TiN
N35344	S404-1.063-P2-S.3-Z6	1-1/16	3/4	2	4-1/4	6	
N35348	S404-1.063-P2-S.3-Z6	1-1/16	3/4	2	4-1/4	6	TiN
N35346	S404-1.063-P3-S.3-Z6	1-1/16	1	2	4-1/2	6	
N35340	S404-1.063-P3-S.3-Z6	1-1/16	1	2	4-1/2	6	TiN
N87364	S404-1.125-P2-S.3-Z6	1-1/8	3/4	1-1/4	3-1/2	6	
N87363	S404-1.125-P2-S.3-Z6	1-1/8	3/4	1-1/4	3-1/2	6	TiN
N35364	S404-1.125-P3-S.3-Z6	1-1/8	3/4	2	4-1/4	6	
N35361	S404-1.125-P3-S.3-Z6	1-1/8	3/4	2	4-1/4	6	TiN
N35365	S404-1.125-P4-S.3-Z6	1-1/8	7/8	2	4-1/4	6	
N35362	S404-1.125-P4-S.3-Z6	1-1/8	7/8	2	4-1/4	6	TiN
N35366	S404-1.125-P5-S.3-Z6	1-1/8	1	2	4-1/2	6	
N35360	S404-1.125-P5-S.3-Z6	1-1/8	1	2	4-1/2	6	TiN
N37366	S404-1.125-P6-S.3-Z6	1-1/8	1	4	6-1/2	6	
N37360	S404-1.125-P6-S.3-Z6	1-1/8	1	4	6-1/2	6	TiN
N35384	S404-1.188-P1-S.3-Z6	1-3/16	3/4	2	4-1/4	6	
N35381	S404-1.188-P1-S.3-Z6	1-3/16	3/4	2	4-1/4	6	TiN
N35386	S404-1.188-P2-S.3-Z6	1-3/16	1	2	4-1/2	6	
N35380	S404-1.188-P2-S.3-Z6	1-3/16	1	2	4-1/2	6	TiN
N87404	S404-1.250-P2-S.3-Z6	1-1/4	3/4	1-1/4	3-1/2	6	
N87403	S404-1.250-P2-S.3-Z6	1-1/4	3/4	1-1/4	3-1/2	6	TiN

Niagara Cutter

GENERAL PURPOSE- S404

HSS
HIGH SPEED STEEL

HELIX


SQUARE END


NON CENTER CUTTING

- Weldon flat standard
- Designed for profile milling applications in all common materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N35404	S404-1.250-P3-S.3-Z6	1-1/4	3/4	2	4-1/4	6	
N35402	S404-1.250-P3-S.3-Z6	1-1/4	3/4	2	4-1/4	6	TiN
N35406	S404-1.250-P5-S.3-Z6	1-1/4	1	2	4-1/2	6	
N35401	S404-1.250-P5-S.3-Z6	1-1/4	1	2	4-1/2	6	TiN
N37406	S404-1.250-P7-S.3-Z6	1-1/4	1	4	6-1/2	6	
N37401	S404-1.250-P7-S.3-Z6	1-1/4	1	4	6-1/2	6	TiN
N35407	S404-1.250-D1-S.3-Z6	1-1/4	1-1/4	2	4-1/2	6	
N35400	S404-1.250-D1-S.3-Z6	1-1/4	1-1/4	2	4-1/2	6	TiN
N36407	S404-1.250-D2-S.3-Z4	1-1/4	1-1/4	3	5-1/2	4	
N36400	S404-1.250-D2-S.3-Z4	1-1/4	1-1/4	3	5-1/2	4	TiN
N37407	S404-1.250-D3-S.3-Z6	1-1/4	1-1/4	4	6-1/2	6	
N37400	S404-1.250-D3-S.3-Z6	1-1/4	1-1/4	4	6-1/2	6	TiN
N38407	S404-1.250-D5-S.3-Z6	1-1/4	1-1/4	6	8-1/2	6	
N38400	S404-1.250-D5-S.3-Z6	1-1/4	1-1/4	6	8-1/2	6	TiN
N35426	S404-1.313-P2-S.3-Z6	1-5/16	1	2	4-1/2	6	
N35420	S404-1.313-P2-S.3-Z6	1-5/16	1	2	4-1/2	6	TiN
N87444	S404-1.375-P1-S.3-Z6	1-3/8	3/4	1-1/4	3-1/2	6	
N87443	S404-1.375-P1-S.3-Z6	1-3/8	3/4	1-1/4	3-1/2	6	TiN
N35444	S404-1.375-P2-S.3-Z6	1-3/8	3/4	2	4-1/4	6	
N35448	S404-1.375-P2-S.3-Z6	1-3/8	3/4	2	4-1/4	6	TiN
N35446	S404-1.375-P3-S.3-Z6	1-3/8	1	2	4-1/2	6	
N35440	S404-1.375-P3-S.3-Z6	1-3/8	1	2	4-1/2	6	TiN
N37446	S404-1.375-P4-S.3-Z6	1-3/8	1	4	6-1/2	6	
N37440	S404-1.375-P4-S.3-Z6	1-3/8	1	4	6-1/2	6	TiN
N87484	S404-1.500-P1-S.3-Z6	1-1/2	3/4	1-1/4	3-1/2	6	
N87483	S404-1.500-P1-S.3-Z6	1-1/2	3/4	1-1/4	3-1/2	6	TiN
N35484	S404-1.500-P2-S.3-Z6	1-1/2	3/4	2	4-1/4	6	
N35482	S404-1.500-P2-S.3-Z6	1-1/2	3/4	2	4-1/4	6	TiN
N35486	S404-1.500-P3-S.3-Z6	1-1/2	1	2	4-1/2	6	
N35481	S404-1.500-P3-S.3-Z6	1-1/2	1	2	4-1/2	6	TiN
N35487	S404-1.500-P4-S.3-Z6	1-1/2	1-1/4	2	4-1/2	6	
N35480	S404-1.500-P4-S.3-Z6	1-1/2	1-1/4	2	4-1/2	6	TiN
N36487	S404-1.500-P5-S.3-Z4	1-1/2	1-1/4	3	5-1/2	4	
N36480	S404-1.500-P5-S.3-Z4	1-1/2	1-1/4	3	5-1/2	4	TiN
N37487	S404-1.500-P6-S.3-Z6	1-1/2	1-1/4	4	6-1/2	6	
N37480	S404-1.500-P6-S.3-Z6	1-1/2	1-1/4	4	6-1/2	6	TiN

DISCOUNT CODE D40

Niagara Cutter

GENERAL PURPOSE- S404

HSS
HIGH SPEED STEEL

HELIX
30°

SQUARE END

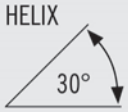
NON CENTER CUTTING

- Weldon flat standard
- Designed for profile milling applications in all common materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N38487	S404-1.500-P7-S.3-Z6	1-1/2	1-1/4	8	10-1/2	6	
N38480	S404-1.500-P7-S.3-Z6	1-1/2	1-1/4	8	10-1/2	6	TiN
N35507	S404-1.563-P1-S.3-Z6	1-9/16	1-1/4	2	4-1/2	6	
N35500	S404-1.563-P1-S.3-Z6	1-9/16	1-1/4	2	4-1/2	6	TiN
N35527	S404-1.625-P1-S.3-Z6	1-5/8	1-1/4	2	4-1/2	6	
N35520	S404-1.625-P1-S.3-Z6	1-5/8	1-1/4	2	4-1/2	6	TiN
N37527	S404-1.625-P2-S.3-Z6	1-5/8	1-1/4	4	6-1/2	6	
N37520	S404-1.625-P2-S.3-Z6	1-5/8	1-1/4	4	6-1/2	6	TiN
N35564	S404-1.750-P1-S.3-Z6	1-3/4	3/4	2	4-1/4	6	
N35561	S404-1.750-P1-S.3-Z6	1-3/4	3/4	2	4-1/4	6	TiN
N87566	S404-1.750-P1-S.3-Z8	1-3/4	1	1-1/4	3-3/4	8	
N87560	S404-1.750-P1-S.3-Z8	1-3/4	1	1-1/4	3-3/4	8	TiN
N35567	S404-1.750-P2-S.3-Z6	1-3/4	1-1/4	2	4-1/2	6	
N35560	S404-1.750-P2-S.3-Z6	1-3/4	1-1/4	2	4-1/2	6	TiN
N35607	S404-1.875-P1-S.3-Z6	1-7/8	1-1/4	2	4-1/2	6	
N35600	S404-1.875-P1-S.3-Z6	1-7/8	1-1/4	2	4-1/2	6	TiN
N37607	S404-1.875-P2-S.3-Z6	1-7/8	1-1/4	4	6-1/2	6	
N37600	S404-1.875-P2-S.3-Z6	1-7/8	1-1/4	4	6-1/2	6	TiN
N35644	S404-2.000-P1-S.3-Z8	2	3/4	2	4-1/4	8	
N35641	S404-2.000-P1-S.3-Z8	2	3/4	2	4-1/4	8	TiN
N35647	S404-2.000-P3-S.3-Z8	2	1-1/4	2	4-1/2	8	
N35640	S404-2.000-P3-S.3-Z8	2	1-1/4	2	4-1/2	8	TiN
N36647	S404-2.000-P5-S.3-Z4	2	1-1/4	3	5-1/2	4	
N36640	S404-2.000-P5-S.3-Z4	2	1-1/4	3	5-1/2	4	TiN
N37647	S404-2.000-P7-S.3-Z8	2	1-1/4	4	6-1/2	8	
N37640	S404-2.000-P7-S.3-Z8	2	1-1/4	4	6-1/2	8	TiN

GENERAL PURPOSE- SC406

HSS
HIGH SPEED STEEL

HELIX


SQUARE END


CENTER CUTTING

- Weldon flat standard
- Designed for profile milling applications in all common materials

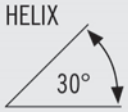
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N40041	SC406-0.125-F3-S.3-Z4	1/8	3/8	3/8	2-5/16	4	
N40040	SC406-0.125-F3-S.3-Z4	1/8	3/8	3/8	2-5/16	4	TiN
N40051	SC406-0.156-F3-S.3-Z4	5/32	3/8	1/2	2-3/8	4	
N40050	SC406-0.156-F3-S.3-Z4	5/32	3/8	1/2	2-3/8	4	TiN
N39061	SC406-0.188-F1-S.3-Z4	3/16	3/8	3/16	2-1/16	4	
N39060	SC406-0.188-F1-S.3-Z4	3/16	3/8	3/16	2-1/16	4	TiN
N40061	SC406-0.188-F2-S.3-Z4	3/16	3/8	1/2	2-3/8	4	
N40060	SC406-0.188-F2-S.3-Z4	3/16	3/8	1/2	2-3/8	4	TiN
N41061	SC406-0.188-F3-S.3-Z4	3/16	3/8	5/8	2-1/2	4	
N41060	SC406-0.188-F3-S.3-Z4	3/16	3/8	5/8	2-1/2	4	TiN
N42061	SC406-0.188-F4-S.3-Z4	3/16	3/8	3/4	2-5/8	4	
N42060	SC406-0.188-F4-S.3-Z4	3/16	3/8	3/4	2-5/8	4	TiN
N43061	SC406-0.188-F5-S.3-Z4	3/16	3/8	1	2-7/8	4	
N43060	SC406-0.188-F5-S.3-Z4	3/16	3/8	1	2-7/8	4	TiN
N44061	SC406-0.188-F6-S.3-Z4	3/16	3/8	1-1/8	3	4	
N44060	SC406-0.188-F6-S.3-Z4	3/16	3/8	1-1/8	3	4	TiN
N40071	SC406-0.219-F2-S.3-Z4	7/32	3/8	5/8	2-7/16	4	
N40070	SC406-0.219-F2-S.3-Z4	7/32	3/8	5/8	2-7/16	4	TiN
N42071	SC406-0.219-F4-S.3-Z4	7/32	3/8	7/8	2-11/16	4	
N42070	SC406-0.219-F4-S.3-Z4	7/32	3/8	7/8	2-11/16	4	TiN
N43071	SC406-0.219-F6-S.3-Z4	7/32	3/8	1-1/4	3-1/16	4	
N43070	SC406-0.219-F6-S.3-Z4	7/32	3/8	1-1/4	3-1/16	4	TiN
N44071	SC406-0.219-F8-S.3-Z4	7/32	3/8	1-3/4	3-9/16	4	
N44070	SC406-0.219-F8-S.3-Z4	7/32	3/8	1-3/4	3-9/16	4	TiN
N39081	SC406-0.250-F1-S.3-Z4	1/4	3/8	1/4	2-1/16	4	
N39080	SC406-0.250-F1-S.3-Z4	1/4	3/8	1/4	2-1/16	4	TiN
N40081	SC406-0.250-F3-S.3-Z4	1/4	3/8	5/8	2-7/16	4	
N40080	SC406-0.250-F3-S.3-Z4	1/4	3/8	5/8	2-7/16	4	TiN
N41081	SC406-0.250-F4-S.3-Z4	1/4	3/8	3/4	2-9/16	4	
N41080	SC406-0.250-F4-S.3-Z4	1/4	3/8	3/4	2-9/16	4	TiN
N42081	SC406-0.250-F5-S.3-Z4	1/4	3/8	1-1/4	3-1/16	4	
N42080	SC406-0.250-F5-S.3-Z4	1/4	3/8	1-1/4	3-1/16	4	TiN
N43081	SC406-0.250-F6-S.3-Z4	1/4	3/8	1-1/2	3-5/16	4	
N43080	SC406-0.250-F6-S.3-Z4	1/4	3/8	1-1/2	3-5/16	4	TiN
N44081	SC406-0.250-F7-S.3-Z4	1/4	3/8	1-3/4	3-9/16	4	
N44080	SC406-0.250-F7-S.3-Z4	1/4	3/8	1-3/4	3-9/16	4	TiN

DISCOUNT CODE D40

Niagara Cutter

GENERAL PURPOSE- SC406

HSS
HIGH SPEED STEEL

HELIX


SQUARE END


CENTER CUTTING

- Weldon flat standard
- Designed for profile milling applications in all common materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N39091	SC406-0.281-F1-S.3-Z4	9/32	3/8	5/16	2-1/8	4	
N39090	SC406-0.281-F1-S.3-Z4	9/32	3/8	5/16	2-1/8	4	TiN
N40091	SC406-0.281-F2-S.3-Z4	9/32	3/8	5/8	2-7/16	4	
N40090	SC406-0.281-F2-S.3-Z4	9/32	3/8	5/8	2-7/16	4	TiN
N41091	SC406-0.281-F4-S.3-Z4	9/32	3/8	1	2-3/4	4	
N41090	SC406-0.281-F4-S.3-Z4	9/32	3/8	1	2-3/4	4	TiN
N42091	SC406-0.281-F5-S.3-Z4	9/32	3/8	1-3/8	3-1/8	4	
N42090	SC406-0.281-F5-S.3-Z4	9/32	3/8	1-3/8	3-1/8	4	TiN
N44091	SC406-0.281-F7-S.3-Z4	9/32	3/8	2	3-3/4	4	
N44090	SC406-0.281-F7-S.3-Z4	9/32	3/8	2	3-3/4	4	TiN
N39101	SC406-0.313-F1-S.3-Z4	5/16	3/8	5/16	2-1/16	4	
N39100	SC406-0.313-F1-S.3-Z4	5/16	3/8	5/16	2-1/16	4	TiN
N40101	SC406-0.313-F2-S.3-Z4	5/16	3/8	3/4	2-1/2	4	
N40100	SC406-0.313-F2-S.3-Z4	5/16	3/8	3/4	2-1/2	4	TiN
N41101	SC406-0.313-F3-S.3-Z4	5/16	3/8	1	2-3/4	4	
N41100	SC406-0.313-F3-S.3-Z4	5/16	3/8	1	2-3/4	4	TiN
N42101	SC406-0.313-F4-S.3-Z4	5/16	3/8	1-3/8	3-1/8	4	
N42100	SC406-0.313-F4-S.3-Z4	5/16	3/8	1-3/8	3-1/8	4	TiN
N43101	SC406-0.313-F5-S.3-Z4	5/16	3/8	1-5/8	3-3/8	4	
N43100	SC406-0.313-F5-S.3-Z4	5/16	3/8	1-5/8	3-3/8	4	TiN
N44101	SC406-0.313-F6-S.3-Z4	5/16	3/8	2	3-3/4	4	
N44100	SC406-0.313-F6-S.3-Z4	5/16	3/8	2	3-3/4	4	TiN
N40111	SC406-0.344-F2-S.3-Z4	11/32	3/8	3/4	2-1/2	4	
N40110	SC406-0.344-F2-S.3-Z4	11/32	3/8	3/4	2-1/2	4	TiN
N41111	SC406-0.344-F3-S.3-Z4	11/32	3/8	1-1/8	2-7/8	4	
N41110	SC406-0.344-F3-S.3-Z4	11/32	3/8	1-1/8	2-7/8	4	TiN
N42111	SC406-0.344-F4-S.3-Z4	11/32	3/8	1-1/2	3-1/4	4	
N42110	SC406-0.344-F4-S.3-Z4	11/32	3/8	1-1/2	3-1/4	4	TiN
N44111	SC406-0.344-F7-S.3-Z4	11/32	3/8	2-1/2	4-1/4	4	
N44110	SC406-0.344-F7-S.3-Z4	11/32	3/8	2-1/2	4-1/4	4	TiN
N39121	SC406-0.375-D1-S.3-Z4	3/8	3/8	3/8	2-1/8	4	
N39120	SC406-0.375-D1-S.3-Z4	3/8	3/8	3/8	2-1/8	4	TiN
N40121	SC406-0.375-D2-S.3-Z4	3/8	3/8	3/4	2-1/2	4	
N40120	SC406-0.375-D2-S.3-Z4	3/8	3/8	3/4	2-1/2	4	TiN
N41121	SC406-0.375-D3-S.3-Z4	3/8	3/8	1-1/8	2-7/8	4	
N41120	SC406-0.375-D3-S.3-Z4	3/8	3/8	1-1/8	2-7/8	4	TiN

Niagara Cutter

GENERAL PURPOSE- SC406

HSS
HIGH SPEED STEEL

HELIX
30°

SQUARE END

CENTER CUTTING

- Weldon flat standard
- Designed for profile milling applications in all common materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N42121	SC406-0.375-D4-S.3-Z4	3/8	3/8	1-1/2	3-1/4	4	
N42120	SC406-0.375-D4-S.3-Z4	3/8	3/8	1-1/2	3-1/4	4	TiN
N43121	SC406-0.375-D5-S.3-Z4	3/8	3/8	1-7/8	3-5/8	4	
N43120	SC406-0.375-D5-S.3-Z4	3/8	3/8	1-7/8	3-5/8	4	TiN
N44121	SC406-0.375-D7-S.3-Z4	3/8	3/8	2-1/2	4-1/4	4	
N44120	SC406-0.375-D7-S.3-Z4	3/8	3/8	2-1/2	4-1/4	4	TiN
N39131	SC406-0.406-P1-S.3-Z4	13/32	3/8	7/16	2-1/8	4	
N39130	SC406-0.406-P1-S.3-Z4	13/32	3/8	7/16	2-1/8	4	TiN
N40131	SC406-0.406-P2-S.3-Z4	13/32	3/8	1	2-11/16	4	
N40130	SC406-0.406-P2-S.3-Z4	13/32	3/8	1	2-11/16	4	TiN
N41131	SC406-0.406-P3-S.3-Z4	13/32	3/8	1-3/8	3-1/16	4	
N41130	SC406-0.406-P3-S.3-Z4	13/32	3/8	1-3/8	3-1/16	4	TiN
N42131	SC406-0.406-P5-S.3-Z4	13/32	3/8	2	3-11/16	4	
N42130	SC406-0.406-P5-S.3-Z4	13/32	3/8	2	3-11/16	4	TiN
N44131	SC406-0.406-P7-S.3-Z4	13/32	3/8	2-5/8	4-5/16	4	
N44130	SC406-0.406-P7-S.3-Z4	13/32	3/8	2-5/8	4-5/16	4	TiN
N39141	SC406-0.438-P1-S.3-Z4	7/16	3/8	7/16	2-1/8	4	
N39140	SC406-0.438-P1-S.3-Z4	7/16	3/8	7/16	2-1/8	4	TiN
N40141	SC406-0.438-P2-S.3-Z4	7/16	3/8	1	2-11/16	4	
N40140	SC406-0.438-P2-S.3-Z4	7/16	3/8	1	2-11/16	4	TiN
N41141	SC406-0.438-P3-S.3-Z4	7/16	3/8	1-3/8	3-1/16	4	
N41140	SC406-0.438-P3-S.3-Z4	7/16	3/8	1-3/8	3-1/16	4	TiN
N42141	SC406-0.438-P4-S.3-Z4	7/16	3/8	2	3-11/16	4	
N42140	SC406-0.438-P4-S.3-Z4	7/16	3/8	2	3-11/16	4	TiN
N43141	SC406-0.438-P5-S.3-Z4	7/16	3/8	2-1/4	3-15/16	4	
N43140	SC406-0.438-P5-S.3-Z4	7/16	3/8	2-1/4	3-15/16	4	TiN
N44141	SC406-0.438-P6-S.3-Z4	7/16	3/8	2-5/8	4-5/16	4	
N44140	SC406-0.438-P6-S.3-Z4	7/16	3/8	2-5/8	4-5/16	4	TiN
N40151	SC406-0.469-P2-S.3-Z4	15/32	3/8	1	2-11/16	4	
N40150	SC406-0.469-P2-S.3-Z4	15/32	3/8	1	2-11/16	4	TiN
N40161	SC406-0.500-P2-S.3-Z4	1/2	3/8	1	2-11/16	4	
N40167	SC406-0.500-P2-S.3-Z4	1/2	3/8	1	2-11/16	4	TiN
N39162	SC406-0.500-D1-S.3-Z4	1/2	1/2	1/2	2-1/2	4	
N39160	SC406-0.500-D1-S.3-Z4	1/2	1/2	1/2	2-1/2	4	TiN
N40162	SC406-0.500-D2-S.3-Z4	1/2	1/2	1-1/4	3-1/4	4	
N40160	SC406-0.500-D2-S.3-Z4	1/2	1/2	1-1/4	3-1/4	4	TiN

Niagara Cutter

GENERAL PURPOSE- SC406

HSS
HIGH SPEED STEEL

HELIX
30°

SQUARE END

CENTER CUTTING

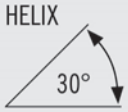
- Weldon flat standard
- Designed for profile milling applications in all common materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N41162	SC406-0.500-D3-S.3-Z4	1/2	1/2	1-1/2	3-1/2	4	
N41160	SC406-0.500-D3-S.3-Z4	1/2	1/2	1-1/2	3-1/2	4	TiN
N42162	SC406-0.500-D4-S.3-Z4	1/2	1/2	2	4	4	
N42160	SC406-0.500-D4-S.3-Z4	1/2	1/2	2	4	4	TiN
N43162	SC406-0.500-D5-S.3-Z4	1/2	1/2	2-1/2	4-1/2	4	
N43160	SC406-0.500-D5-S.3-Z4	1/2	1/2	2-1/2	4-1/2	4	TiN
N44162	SC406-0.500-D6-S.3-Z4	1/2	1/2	3	5	4	
N44160	SC406-0.500-D6-S.3-Z4	1/2	1/2	3	5	4	TiN
N39172	SC406-0.531-P1-S.3-Z4	17/32	1/2	5/8	2-5/8	4	
N39170	SC406-0.531-P1-S.3-Z4	17/32	1/2	5/8	2-5/8	4	TiN
N40172	SC406-0.531-P3-S.3-Z4	17/32	1/2	1-3/8	3-3/8	4	
N40170	SC406-0.531-P3-S.3-Z4	17/32	1/2	1-3/8	3-3/8	4	TiN
N42172	SC406-0.531-P5-S.3-Z4	17/32	1/2	2-1/2	4-1/2	4	
N42170	SC406-0.531-P5-S.3-Z4	17/32	1/2	2-1/2	4-1/2	4	TiN
N43172	SC406-0.531-P6-S.3-Z4	17/32	1/2	3-1/8	5-1/8	4	
N43170	SC406-0.531-P6-S.3-Z4	17/32	1/2	3-1/8	5-1/8	4	TiN
N39182	SC406-0.563-P1-S.3-Z4	9/16	1/2	5/8	2-5/8	4	
N39180	SC406-0.563-P1-S.3-Z4	9/16	1/2	5/8	2-5/8	4	TiN
N40182	SC406-0.563-P2-S.3-Z4	9/16	1/2	1-3/8	3-3/8	4	
N40180	SC406-0.563-P2-S.3-Z4	9/16	1/2	1-3/8	3-3/8	4	TiN
N41182	SC406-0.563-P3-S.3-Z4	9/16	1/2	1-7/8	3-7/8	4	
N41180	SC406-0.563-P3-S.3-Z4	9/16	1/2	1-7/8	3-7/8	4	TiN
N42182	SC406-0.563-P4-S.3-Z4	9/16	1/2	2-1/2	4-1/2	4	
N42180	SC406-0.563-P4-S.3-Z4	9/16	1/2	2-1/2	4-1/2	4	TiN
N43182	SC406-0.563-P6-S.3-Z4	9/16	1/2	3-1/8	5-1/8	4	
N43180	SC406-0.563-P6-S.3-Z4	9/16	1/2	3-1/8	5-1/8	4	TiN
N44182	SC406-0.563-P7-S.3-Z4	9/16	1/2	4	6	4	
N44180	SC406-0.563-P7-S.3-Z4	9/16	1/2	4	6	4	TiN
N39203	SC406-0.625-D1-S.3-Z4	5/8	5/8	5/8	2-3/4	4	
N39200	SC406-0.625-D1-S.3-Z4	5/8	5/8	5/8	2-3/4	4	TiN
N40203	SC406-0.625-D2-S.3-Z4	5/8	5/8	1-5/8	3-3/4	4	
N40200	SC406-0.625-D2-S.3-Z4	5/8	5/8	1-5/8	3-3/4	4	TiN
N41203	SC406-0.625-D3-S.3-Z4	5/8	5/8	1-7/8	4	4	
N41200	SC406-0.625-D3-S.3-Z4	5/8	5/8	1-7/8	4	4	TiN
N42203	SC406-0.625-D4-S.3-Z4	5/8	5/8	2-1/2	4-5/8	4	
N42200	SC406-0.625-D4-S.3-Z4	5/8	5/8	2-1/2	4-5/8	4	TiN

Niagara Cutter

GENERAL PURPOSE- SC406

HSS
HIGH SPEED STEEL

HELIX


SQUARE END


CENTER CUTTING

- Weldon flat standard
- Designed for profile milling applications in all common materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N43203	SC406-0.625-D5-S.3-Z4	5/8	5/8	3-1/8	5-1/4	4	
N43200	SC406-0.625-D5-S.3-Z4	5/8	5/8	3-1/8	5-1/4	4	TiN
N44203	SC406-0.625-D6-S.3-Z4	5/8	5/8	4	6-1/8	4	
N44200	SC406-0.625-D6-S.3-Z4	5/8	5/8	4	6-1/8	4	TiN
N39223	SC406-0.688-P1-S.3-Z4	11/16	5/8	3/4	2-7/8	4	
N39220	SC406-0.688-P1-S.3-Z4	11/16	5/8	3/4	2-7/8	4	TiN
N40223	SC406-0.688-P2-S.3-Z4	11/16	5/8	1-5/8	3-3/4	4	
N40220	SC406-0.688-P2-S.3-Z4	11/16	5/8	1-5/8	3-3/4	4	TiN
N41223	SC406-0.688-P3-S.3-Z4	11/16	5/8	2-1/4	4-3/8	4	
N41220	SC406-0.688-P3-S.3-Z4	11/16	5/8	2-1/4	4-3/8	4	TiN
N42223	SC406-0.688-P4-S.3-Z4	11/16	5/8	3	5-1/8	4	
N42220	SC406-0.688-P4-S.3-Z4	11/16	5/8	3	5-1/8	4	TiN
N43223	SC406-0.688-P5-S.3-Z4	11/16	5/8	3-1/2	5-5/8	4	
N43220	SC406-0.688-P5-S.3-Z4	11/16	5/8	3-1/2	5-5/8	4	TiN
N44223	SC406-0.688-P6-S.3-Z4	11/16	5/8	4	6-1/8	4	
N44220	SC406-0.688-P6-S.3-Z4	11/16	5/8	4	6-1/8	4	TiN
N40242	SC406-0.750-P2-S.3-Z4	3/4	1/2	1-5/8	3-5/8	4	
N40248	SC406-0.750-P2-S.3-Z4	3/4	1/2	1-5/8	3-5/8	4	TiN
N39244	SC406-0.750-D1-S.3-Z4	3/4	3/4	3/4	3	4	
N39240	SC406-0.750-D1-S.3-Z4	3/4	3/4	3/4	3	4	TiN
N40244	SC406-0.750-D2-S.3-Z4	3/4	3/4	1-5/8	3-7/8	4	
N40240	SC406-0.750-D2-S.3-Z4	3/4	3/4	1-5/8	3-7/8	4	TiN
N41244	SC406-0.750-D3-S.3-Z4	3/4	3/4	2-1/4	4-1/2	4	
N41240	SC406-0.750-D3-S.3-Z4	3/4	3/4	2-1/4	4-1/2	4	TiN
N42244	SC406-0.750-D4-S.3-Z4	3/4	3/4	3	5-1/4	4	
N42240	SC406-0.750-D4-S.3-Z4	3/4	3/4	3	5-1/4	4	TiN
N43244	SC406-0.750-D5-S.3-Z4	3/4	3/4	3-1/2	5-3/4	4	
N43240	SC406-0.750-D5-S.3-Z4	3/4	3/4	3-1/2	5-3/4	4	TiN
N44244	SC406-0.750-D6-S.3-Z4	3/4	3/4	4	6-1/4	4	
N44240	SC406-0.750-D6-S.3-Z4	3/4	3/4	4	6-1/4	4	TiN
N39264	SC406-0.813-P1-S.3-Z4	13/16	3/4	7/8	3-1/8	4	
N39260	SC406-0.813-P1-S.3-Z4	13/16	3/4	7/8	3-1/8	4	TiN
N40264	SC406-0.813-P2-S.3-Z4	13/16	3/4	1-7/8	4-1/8	4	
N40260	SC406-0.813-P2-S.3-Z4	13/16	3/4	1-7/8	4-1/8	4	TiN
N41264	SC406-0.813-P3-S.3-Z4	13/16	3/4	2-5/8	4-7/8	4	
N41260	SC406-0.813-P3-S.3-Z4	13/16	3/4	2-5/8	4-7/8	4	TiN

DISCOUNT CODE D40

Niagara Cutter

GENERAL PURPOSE- SC406

HSS
HIGH SPEED STEEL

HELIX
30°

SQUARE END

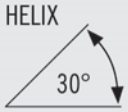
CENTER CUTTING

- Weldon flat standard
- Designed for profile milling applications in all common materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N42264	SC406-0.813-P4-S.3-Z4	13/16	3/4	3-1/2	5-3/4	4	
N42260	SC406-0.813-P4-S.3-Z4	13/16	3/4	3-1/2	5-3/4	4	TiN
N43264	SC406-0.813-P5-S.3-Z4	13/16	3/4	4-3/8	6-5/8	4	
N43260	SC406-0.813-P5-S.3-Z4	13/16	3/4	4-3/8	6-5/8	4	TiN
N44264	SC406-0.813-P6-S.3-Z4	13/16	3/4	5	7-1/4	4	
N44260	SC406-0.813-P6-S.3-Z4	13/16	3/4	5	7-1/4	4	TiN
N39285	SC406-0.875-D1-S.3-Z4	7/8	7/8	7/8	3-1/8	4	
N39280	SC406-0.875-D1-S.3-Z4	7/8	7/8	7/8	3-1/8	4	TiN
N40285	SC406-0.875-D2-S.3-Z4	7/8	7/8	1-7/8	4-1/8	4	
N40280	SC406-0.875-D2-S.3-Z4	7/8	7/8	1-7/8	4-1/8	4	TiN
N41285	SC406-0.875-D3-S.3-Z4	7/8	7/8	2-5/8	4-7/8	4	
N41280	SC406-0.875-D3-S.3-Z4	7/8	7/8	2-5/8	4-7/8	4	TiN
N42285	SC406-0.875-D4-S.3-Z4	7/8	7/8	3-1/2	5-3/4	4	
N42280	SC406-0.875-D4-S.3-Z4	7/8	7/8	3-1/2	5-3/4	4	TiN
N43285	SC406-0.875-D5-S.3-Z4	7/8	7/8	4-3/8	6-5/8	4	
N43280	SC406-0.875-D5-S.3-Z4	7/8	7/8	4-3/8	6-5/8	4	TiN
N44285	SC406-0.875-D6-S.3-Z4	7/8	7/8	5	7-1/4	4	
N44280	SC406-0.875-D6-S.3-Z4	7/8	7/8	5	7-1/4	4	TiN
N40305	SC406-0.938-P2-S.3-Z4	15/16	7/8	1-7/8	4-1/8	4	
N40300	SC406-0.938-P2-S.3-Z4	15/16	7/8	1-7/8	4-1/8	4	TiN
N41305	SC406-0.938-P3-S.3-Z4	15/16	7/8	3	5-1/4	4	
N41300	SC406-0.938-P3-S.3-Z4	15/16	7/8	3	5-1/4	4	TiN
N40324	SC406-1.000-P2-S.3-Z4	1	3/4	1-7/8	4-1/8	4	
N40321	SC406-1.000-P2-S.3-Z4	1	3/4	1-7/8	4-1/8	4	TiN
N39326	SC406-1.000-D1-S.3-Z4	1	1	1	3-1/2	4	
N39320	SC406-1.000-D1-S.3-Z4	1	1	1	3-1/2	4	TiN
N40326	SC406-1.000-D2-S.3-Z4	1	1	2	4-1/2	4	
N40320	SC406-1.000-D2-S.3-Z4	1	1	2	4-1/2	4	TiN
N41326	SC406-1.000-D3-S.3-Z4	1	1	3	5-1/2	4	
N41320	SC406-1.000-D3-S.3-Z4	1	1	3	5-1/2	4	TiN
N42326	SC406-1.000-D4-S.3-Z4	1	1	4	6-1/2	4	
N42320	SC406-1.000-D4-S.3-Z4	1	1	4	6-1/2	4	TiN
N43326	SC406-1.000-D5-S.3-Z4	1	1	5	7-1/2	4	
N43320	SC406-1.000-D5-S.3-Z4	1	1	5	7-1/2	4	TiN
N44326	SC406-1.000-D6-S.3-Z4	1	1	6	8-1/2	4	
N44320	SC406-1.000-D6-S.3-Z4	1	1	6	8-1/2	4	TiN

GENERAL PURPOSE- SC406

HSS
HIGH SPEED STEEL

HELIX


SQUARE END


CENTER CUTTING

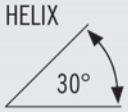
- Weldon flat standard
- Designed for profile milling applications in all common materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N40366	SC406-1.125-P2-S.3-Z4	1-1/8	1	2	4-1/2	4	
N40360	SC406-1.125-P2-S.3-Z4	1-1/8	1	2	4-1/2	4	TiN
N42366	SC406-1.125-P4-S.3-Z6	1-1/8	1	4	6-1/2	6	
N42360	SC406-1.125-P4-S.3-Z6	1-1/8	1	4	6-1/2	6	TiN
N40406	SC406-1.250-P2-S.3-Z4	1-1/4	1	2	4-1/2	4	
N40401	SC406-1.250-P2-S.3-Z4	1-1/4	1	2	4-1/2	4	TiN
N42406	SC406-1.250-P3-S.3-Z6	1-1/4	1	4	6-1/2	6	
N42401	SC406-1.250-P3-S.3-Z6	1-1/4	1	4	6-1/2	6	TiN
N40407	SC406-1.250-D1-S.3-Z4	1-1/4	1-1/4	2	4-1/2	4	
N40400	SC406-1.250-D1-S.3-Z4	1-1/4	1-1/4	2	4-1/2	4	TiN
N41407	SC406-1.250-D2-S.3-Z4	1-1/4	1-1/4	3	5-1/2	4	
N41400	SC406-1.250-D2-S.3-Z4	1-1/4	1-1/4	3	5-1/2	4	TiN
N42407	SC406-1.250-D3-S.3-Z6	1-1/4	1-1/4	4	6-1/2	6	
N42400	SC406-1.250-D3-S.3-Z6	1-1/4	1-1/4	4	6-1/2	6	TiN
N44407	SC406-1.250-D5-S.3-Z6	1-1/4	1-1/4	6	8-1/2	6	
N44400	SC406-1.250-D5-S.3-Z6	1-1/4	1-1/4	6	8-1/2	6	TiN
N42486	SC406-1.500-P3-S.3-Z6	1-1/2	1	4	6-1/2	6	
N42481	SC406-1.500-P3-S.3-Z6	1-1/2	1	4	6-1/2	6	TiN
N40487	SC406-1.500-P1-S.3-Z4	1-1/2	1-1/4	2	4-1/2	4	
N40480	SC406-1.500-P1-S.3-Z4	1-1/2	1-1/4	2	4-1/2	4	TiN
N42487	SC406-1.500-P4-S.3-Z6	1-1/2	1-1/4	4	6-1/2	6	
N42480	SC406-1.500-P4-S.3-Z6	1-1/2	1-1/4	4	6-1/2	6	TiN
N44487	SC406-1.500-P5-S.3-Z6	1-1/2	1-1/4	8	10-1/2	6	
N44480	SC406-1.500-P5-S.3-Z6	1-1/2	1-1/4	8	10-1/2	6	TiN
N40567	SC406-1.750-P1-S.3-Z6	1-3/4	1-1/4	2	4-1/2	6	
N40560	SC406-1.750-P1-S.3-Z6	1-3/4	1-1/4	2	4-1/2	6	TiN
N40647	SC406-2.000-P1-S.3-Z6	2	1-1/4	2	4-1/2	6	
N40640	SC406-2.000-P1-S.3-Z6	2	1-1/4	2	4-1/2	6	TiN
N41648	SC406-2.000-P2-S.3-Z6	2	1-1/4	3	5-1/2	6	
N41649	SC406-2.000-P2-S.3-Z6	2	1-1/4	3	5-1/2	6	TiN
N42647	SC406-2.000-P2-S.3-Z8	2	1-1/4	4	6-1/2	8	
N42640	SC406-2.000-P2-S.3-Z8	2	1-1/4	4	6-1/2	8	TiN

Niagara Cutter

GENERAL PURPOSE- SB470

HSS
HIGH SPEED STEEL

HELIX


BALL END

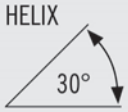

CENTER CUTTING

- Weldon flat standard
- Designed for profile milling applications in all common materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N47081	SB470-0.250-F3-B.3-Z4	1/4	3/8	5/8	2-7/16	4	
N47080	SB470-0.250-F3-B.3-Z4	1/4	3/8	5/8	2-7/16	4	TiN
N47082	SB470-0.250-F4-B.3-Z4	1/4	3/8	1	2-13/16	4	
N47083	SB470-0.250-F4-B.3-Z4	1/4	3/8	1	2-13/16	4	TiN
N48081	SB470-0.250-F5-B.3-Z4	1/4	3/8	1-1/4	3-1/16	4	
N48080	SB470-0.250-F5-B.3-Z4	1/4	3/8	1-1/4	3-1/16	4	TiN
N49081	SB470-0.250-F7-B.3-Z4	1/4	3/8	1-3/4	3-9/16	4	
N49080	SB470-0.250-F7-B.3-Z4	1/4	3/8	1-3/4	3-9/16	4	TiN
N47101	SB470-0.313-F2-B.3-Z4	5/16	3/8	3/4	2-1/2	4	
N47100	SB470-0.313-F2-B.3-Z4	5/16	3/8	3/4	2-1/2	4	TiN
N48101	SB470-0.313-F4-B.3-Z4	5/16	3/8	1-3/8	3-1/8	4	
N48100	SB470-0.313-F4-B.3-Z4	5/16	3/8	1-3/8	3-1/8	4	TiN
N49101	SB470-0.313-F6-B.3-Z4	5/16	3/8	2	3-3/4	4	
N49100	SB470-0.313-F6-B.3-Z4	5/16	3/8	2	3-3/4	4	TiN
N47121	SB470-0.375-D2-B.3-Z4	3/8	3/8	3/4	2-1/2	4	
N47120	SB470-0.375-D2-B.3-Z4	3/8	3/8	3/4	2-1/2	4	TiN
N48121	SB470-0.375-D4-B.3-Z4	3/8	3/8	1-1/2	3-1/4	4	
N48120	SB470-0.375-D4-B.3-Z4	3/8	3/8	1-1/2	3-1/4	4	TiN
N49121	SB470-0.375-D7-B.3-Z4	3/8	3/8	2-1/2	4-1/4	4	
N49120	SB470-0.375-D7-B.3-Z4	3/8	3/8	2-1/2	4-1/4	4	TiN
N47163	SB470-0.500-D2-B.3-Z4	1/2	1/2	1	3	4	
N47161	SB470-0.500-D2-B.3-Z4	1/2	1/2	1	3	4	TiN
N47162	SB470-0.500-D3-B.3-Z4	1/2	1/2	1-1/4	3-1/4	4	
N47160	SB470-0.500-D3-B.3-Z4	1/2	1/2	1-1/4	3-1/4	4	TiN
N48162	SB470-0.500-D4-B.3-Z4	1/2	1/2	2	4	4	
N48160	SB470-0.500-D4-B.3-Z4	1/2	1/2	2	4	4	TiN
N48163	SB470-0.500-D5-B.3-Z4	1/2	1/2	2-1/2	4-1/2	4	
N48168	SB470-0.500-D5-B.3-Z4	1/2	1/2	2-1/2	4-1/2	4	TiN
N49162	SB470-0.500-D6-B.3-Z4	1/2	1/2	3	5	4	
N49160	SB470-0.500-D6-B.3-Z4	1/2	1/2	3	5	4	TiN
N47204	SB470-0.625-D2-B.3-Z4	5/8	5/8	1-1/4	3-3/8	4	
N47201	SB470-0.625-D2-B.3-Z4	5/8	5/8	1-1/4	3-3/8	4	TiN
N47203	SB470-0.625-D3-B.3-Z4	5/8	5/8	1-5/8	3-3/4	4	
N47200	SB470-0.625-D3-B.3-Z4	5/8	5/8	1-5/8	3-3/4	4	TiN
N48203	SB470-0.625-D4-B.3-Z4	5/8	5/8	2-1/2	4-5/8	4	

GENERAL PURPOSE- SB470

HSS
HIGH SPEED STEEL

HELIX


BALL END


CENTER CUTTING

- Weldon flat standard
- Designed for profile milling applications in all common materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N48200	SB470-0.625-D4-B.3-Z4	5/8	5/8	2-1/2	4-5/8	4	TiN
N48204	SB470-0.625-D5-B.3-Z4	5/8	5/8	3	5-1/8	4	
N48201	SB470-0.625-D5-B.3-Z4	5/8	5/8	3	5-1/8	4	TiN
N49203	SB470-0.625-D6-B.3-Z4	5/8	5/8	4	6-1/8	4	
N49200	SB470-0.625-D6-B.3-Z4	5/8	5/8	4	6-1/8	4	TiN
N47244	SB470-0.750-D2-B.3-Z4	3/4	3/4	1-5/8	3-7/8	4	
N47240	SB470-0.750-D2-B.3-Z4	3/4	3/4	1-5/8	3-7/8	4	TiN
N48245	SB470-0.750-D3-B.3-Z4	3/4	3/4	2-1/4	4-1/2	4	
N48241	SB470-0.750-D3-B.3-Z4	3/4	3/4	2-1/4	4-1/2	4	TiN
N48244	SB470-0.750-D4-B.3-Z4	3/4	3/4	3	5-1/4	4	
N48240	SB470-0.750-D4-B.3-Z4	3/4	3/4	3	5-1/4	4	TiN
N49244	SB470-0.750-D5-B.3-Z4	3/4	3/4	4	6-1/4	4	
N49240	SB470-0.750-D5-B.3-Z4	3/4	3/4	4	6-1/4	4	TiN
N49245	SB470-0.750-D6-B.3-Z4	3/4	3/4	4-1/2	6-3/4	4	
N49241	SB470-0.750-D6-B.3-Z4	3/4	3/4	4-1/2	6-3/4	4	TiN
N47285	SB470-0.875-D2-B.3-Z4	7/8	7/8	1-7/8	4-1/8	4	
N47280	SB470-0.875-D2-B.3-Z4	7/8	7/8	1-7/8	4-1/8	4	TiN
N47326	SB470-1.000-D2-B.3-Z4	1	1	2	4-1/2	4	
N47320	SB470-1.000-D2-B.3-Z4	1	1	2	4-1/2	4	TiN
N48327	SB470-1.000-D3-B.3-Z4	1	1	3	5-1/2	4	
N48321	SB470-1.000-D3-B.3-Z4	1	1	3	5-1/2	4	TiN
N48326	SB470-1.000-D4-B.3-Z4	1	1	4	6-1/2	4	
N48320	SB470-1.000-D4-B.3-Z4	1	1	4	6-1/2	4	TiN
N49326	SB470-1.000-D6-B.3-Z4	1	1	6	8-1/2	4	
N49320	SB470-1.000-D6-B.3-Z4	1	1	6	8-1/2	4	TiN
N47407	SB470-1.250-D1-B.3-Z4	1-1/4	1-1/4	2	4-1/2	4	
N47400	SB470-1.250-D1-B.3-Z4	1-1/4	1-1/4	2	4-1/2	4	TiN
N48407	SB470-1.250-D3-B.3-Z6	1-1/4	1-1/4	4	6-1/2	6	
N48400	SB470-1.250-D3-B.3-Z6	1-1/4	1-1/4	4	6-1/2	6	TiN
N49408	SB470-1.250-D5-B.3-Z4	1-1/4	1-1/4	6	8-1/2	4	
N49401	SB470-1.250-D5-B.3-Z4	1-1/4	1-1/4	6	8-1/2	4	TiN
N47487	SB470-1.500-P1-B.3-Z4	1-1/2	1-1/4	2	4-1/2	4	
N47480	SB470-1.500-P1-B.3-Z4	1-1/2	1-1/4	2	4-1/2	4	TiN

Niagara Cutter

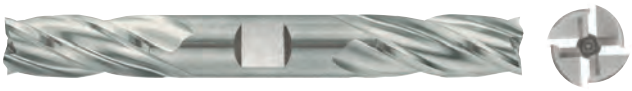
GENERAL PURPOSE- D400

HSS
HIGH SPEED STEEL

HELIX
30°

SQUARE END

NON CENTER CUTTING

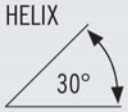


- Weldon flat standard
- Designed for profile milling applications in all common materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N45039	D400-0.109-XF3-S.3-Z4	7/64	3/8	3/8	3-1/16	4	
N45030	D400-0.109-XF3-S.3-Z4	7/64	3/8	3/8	3-1/16	4	TiN
N45041	D400-0.125-XF3-S.3-Z4	1/8	3/8	3/8	3-1/16	4	
N45040	D400-0.125-XF3-S.3-Z4	1/8	3/8	3/8	3-1/16	4	TiN
N45049	D400-0.141-XF3-S.3-Z4	9/64	3/8	7/16	3-1/8	4	
N45048	D400-0.141-XF3-S.3-Z4	9/64	3/8	7/16	3-1/8	4	TiN
N45051	D400-0.156-XF3-S.3-Z4	5/32	3/8	7/16	3-1/8	4	
N45050	D400-0.156-XF3-S.3-Z4	5/32	3/8	7/16	3-1/8	4	TiN
N45059	D400-0.172-XF3-S.3-Z4	11/64	3/8	1/2	3-1/4	4	
N45058	D400-0.172-XF3-S.3-Z4	11/64	3/8	1/2	3-1/4	4	TiN
N45061	D400-0.188-XF3-S.3-Z4	3/16	3/8	1/2	3-1/4	4	
N45060	D400-0.188-XF3-S.3-Z4	3/16	3/8	1/2	3-1/4	4	TiN
N45069	D400-0.203-XF3-S.3-Z4	13/64	3/8	9/16	3-1/4	4	
N45068	D400-0.203-XF3-S.3-Z4	13/64	3/8	9/16	3-1/4	4	TiN
N45071	D400-0.219-XF3-S.3-Z4	7/32	3/8	9/16	3-1/4	4	
N45070	D400-0.219-XF3-S.3-Z4	7/32	3/8	9/16	3-1/4	4	TiN
N45079	D400-0.234-XF3-S.3-Z4	15/64	3/8	5/8	3-3/8	4	
N45078	D400-0.234-XF3-S.3-Z4	15/64	3/8	5/8	3-3/8	4	TiN
N45081	D400-0.250-XF3-S.3-Z4	1/4	3/8	5/8	3-3/8	4	
N45080	D400-0.250-XF3-S.3-Z4	1/4	3/8	5/8	3-3/8	4	TiN
N45089	D400-0.266-XF3-S.3-Z4	17/64	3/8	11/16	3-3/8	4	
N45088	D400-0.266-XF3-S.3-Z4	17/64	3/8	11/16	3-3/8	4	TiN
N45091	D400-0.281-XF2-S.3-Z4	9/32	3/8	11/16	3-3/8	4	
N45090	D400-0.281-XF2-S.3-Z4	9/32	3/8	11/16	3-3/8	4	TiN
N45099	D400-0.297-XF3-S.3-Z4	19/64	3/8	3/4	3-1/2	4	
N45098	D400-0.297-XF3-S.3-Z4	19/64	3/8	3/4	3-1/2	4	TiN
N45101	D400-0.313-XF2-S.3-Z4	5/16	3/8	3/4	3-1/2	4	
N45100	D400-0.313-XF2-S.3-Z4	5/16	3/8	3/4	3-1/2	4	TiN
N45109	D400-0.328-XF2-S.3-Z4	21/64	3/8	3/4	3-1/2	4	
N45108	D400-0.328-XF2-S.3-Z4	21/64	3/8	3/4	3-1/2	4	TiN
N45111	D400-0.344-XF2-S.3-Z4	11/32	3/8	3/4	3-1/2	4	
N45110	D400-0.344-XF2-S.3-Z4	11/32	3/8	3/4	3-1/2	4	TiN
N45119	D400-0.359-XF2-S.3-Z4	23/64	3/8	3/4	3-1/2	4	
N45118	D400-0.359-XF2-S.3-Z4	23/64	3/8	3/4	3-1/2	4	TiN
N45121	D400-0.375-XD2-S.3-Z4	3/8	3/8	3/4	3-1/2	4	

GENERAL PURPOSE- D400

HSS
HIGH SPEED STEEL

HELIX


SQUARE END


NON CENTER CUTTING

- Weldon flat standard
- Designed for profile milling applications in all common materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N45120	D400-0.375-XD2-S.3-Z4	3/8	3/8	3/4	3-1/2	4	TiN
N45132	D400-0.406-XF2-S.3-Z4	13/32	1/2	1	4-1/8	4	
N45130	D400-0.406-XF2-S.3-Z4	13/32	1/2	1	4-1/8	4	TiN
N45142	D400-0.438-XF2-S.3-Z4	7/16	1/2	1	4-1/8	4	
N45140	D400-0.438-XF2-S.3-Z4	7/16	1/2	1	4-1/8	4	TiN
N45162	D400-0.500-XD2-S.3-Z4	1/2	1/2	1	4-1/8	4	
N45160	D400-0.500-XD2-S.3-Z4	1/2	1/2	1	4-1/8	4	TiN
N45173	D400-0.531-XF3-S.3-Z4	17/32	5/8	1-3/8	5	4	
N45170	D400-0.531-XF3-S.3-Z4	17/32	5/8	1-3/8	5	4	TiN
N45183	D400-0.563-XF2-S.3-Z4	9/16	5/8	1-3/8	5	4	
N45180	D400-0.563-XF2-S.3-Z4	9/16	5/8	1-3/8	5	4	TiN
N45203	D400-0.625-XD2-S.3-Z4	5/8	5/8	1-3/8	5	4	
N45200	D400-0.625-XD2-S.3-Z4	5/8	5/8	1-3/8	5	4	TiN
N45224	D400-0.688-XF2-S.3-Z4	11/16	3/4	1-5/8	5-5/8	4	
N45220	D400-0.688-XF2-S.3-Z4	11/16	3/4	1-5/8	5-5/8	4	TiN
N45244	D400-0.750-XD2-S.3-Z4	3/4	3/4	1-5/8	5-5/8	4	
N45240	D400-0.750-XD2-S.3-Z4	3/4	3/4	1-5/8	5-5/8	4	TiN
N45285	D400-0.875-XD2-S.3-Z4	7/8	7/8	1-7/8	6-1/8	4	
N45280	D400-0.875-XD2-S.3-Z4	7/8	7/8	1-7/8	6-1/8	4	TiN
N45326	D400-1.000-XD2-S.3-Z4	1	1	1-7/8	6-3/8	4	
N45320	D400-1.000-XD2-S.3-Z4	1	1	1-7/8	6-3/8	4	TiN

Niagara Cutter

GENERAL PURPOSE- DC402

HSS
HIGH SPEED STEEL

HELIX
30°

SQUARE END

CENTER CUTTING

- Weldon flat standard
- Designed for profile milling applications in all common materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N46041	DC402-0.125-XF3-S.3-Z4	1/8	3/8	3/8	3-1/16	4	
N46040	DC402-0.125-XF3-S.3-Z4	1/8	3/8	3/8	3-1/16	4	TiN
N46049	DC402-0.141-XF3-S.3-Z4	9/64	3/8	7/16	3-1/8	4	
N46048	DC402-0.141-XF3-S.3-Z4	9/64	3/8	7/16	3-1/8	4	TiN
N46051	DC402-0.156-XF3-S.3-Z4	5/32	3/8	7/16	3-1/8	4	
N46050	DC402-0.156-XF3-S.3-Z4	5/32	3/8	7/16	3-1/8	4	TiN
N46059	DC402-0.172-XF3-S.3-Z4	11/64	3/8	1/2	3-1/4	4	
N46058	DC402-0.172-XF3-S.3-Z4	11/64	3/8	1/2	3-1/4	4	TiN
N46061	DC402-0.188-XF3-S.3-Z4	3/16	3/8	1/2	3-1/4	4	
N46060	DC402-0.188-XF3-S.3-Z4	3/16	3/8	1/2	3-1/4	4	TiN
N46069	DC402-0.203-XF3-S.3-Z4	13/64	3/8	9/16	3-1/4	4	
N46068	DC402-0.203-XF3-S.3-Z4	13/64	3/8	9/16	3-1/4	4	TiN
N46071	DC402-0.219-XF3-S.3-Z4	7/32	3/8	9/16	3-1/4	4	
N46070	DC402-0.219-XF3-S.3-Z4	7/32	3/8	9/16	3-1/4	4	TiN
N46079	DC402-0.234-XF3-S.3-Z4	15/64	3/8	5/8	3-3/8	4	
N46078	DC402-0.234-XF3-S.3-Z4	15/64	3/8	5/8	3-3/8	4	TiN
N46081	DC402-0.250-XF3-S.3-Z4	1/4	3/8	5/8	3-3/8	4	
N46080	DC402-0.250-XF3-S.3-Z4	1/4	3/8	5/8	3-3/8	4	TiN
N46089	DC402-0.266-XF3-S.3-Z4	17/64	3/8	11/64	3-3/8	4	
N46088	DC402-0.266-XF3-S.3-Z4	17/64	3/8	11/64	3-3/8	4	TiN
N46091	DC402-0.281-XF2-S.3-Z4	9/32	3/8	11/16	3-3/8	4	
N46090	DC402-0.281-XF2-S.3-Z4	9/32	3/8	11/16	3-3/8	4	TiN
N46099	DC402-0.297-XF3-S.3-Z4	19/64	3/8	3/4	3-1/2	4	
N46098	DC402-0.297-XF3-S.3-Z4	19/64	3/8	3/4	3-1/2	4	TiN
N46101	DC402-0.313-XF2-S.3-Z4	5/16	3/8	3/4	3-1/2	4	
N46100	DC402-0.313-XF2-S.3-Z4	5/16	3/8	3/4	3-1/2	4	TiN
N46109	DC402-0.328-XF2-S.3-Z4	21/64	3/8	3/4	3-1/2	4	
N46108	DC402-0.328-XF2-S.3-Z4	21/64	3/8	3/4	3-1/2	4	TiN
N46111	DC402-0.344-XF2-S.3-Z4	11/32	3/8	3/4	3-1/2	4	
N46110	DC402-0.344-XF2-S.3-Z4	11/32	3/8	3/4	3-1/2	4	TiN
N46119	DC402-0.359-XF2-S.3-Z4	23/64	3/8	3/4	3-1/2	4	
N46118	DC402-0.359-XF2-S.3-Z4	23/64	3/8	3/4	3-1/2	4	TiN
N46121	DC402-0.375-XD2-S.3-Z4	3/8	3/8	3/4	3-1/2	4	
N46120	DC402-0.375-XD2-S.3-Z4	3/8	3/8	3/4	3-1/2	4	TiN
N46129	DC402-0.359-XF3-S.3-Z4	25/64	1/2	1	4-1/8	4	

GENERAL PURPOSE- DC402

HSS
HIGH SPEED STEEL

HELIX
30°

SQUARE END

CENTER CUTTING

- Weldon flat standard
- Designed for profile milling applications in all common materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N46128	DC402-0.359-XF3-S.3-Z4	25/64	1/2	1	4-1/8	4	TiN
N46132	DC402-0.406-XF2-S.3-Z4	13/32	1/2	1	4-3/16	4	
N46130	DC402-0.406-XF2-S.3-Z4	13/32	1/2	1	4-3/16	4	TiN
N46142	DC402-0.438-XF2-S.3-Z4	7/16	1/2	1	4-1/8	4	
N46140	DC402-0.438-XF2-S.3-Z4	7/16	1/2	1	4-1/8	4	TiN
N46162	DC402-0.500-XD2-S.3-Z4	1/2	1/2	1	4-1/8	4	
N46160	DC402-0.500-XD2-S.3-Z4	1/2	1/2	1	4-1/8	4	TiN
N46173	DC402-0.531-XF3-S.3-Z4	17/32	5/8	1-3/8	5	4	
N46170	DC402-0.531-XF3-S.3-Z4	17/32	5/8	1-3/8	5	4	TiN
N46183	DC402-0.563-XF2-S.3-Z4	9/16	5/8	1-3/8	5	4	
N46180	DC402-0.563-XF2-S.3-Z4	9/16	5/8	1-3/8	5	4	TiN
N46203	DC402-0.625-XD2-S.3-Z4	5/8	5/8	1-3/8	5	4	
N46200	DC402-0.625-XD2-S.3-Z4	5/8	5/8	1-3/8	5	4	TiN
N46214	DC402-0.656-XF2-S.3-Z4	21/32	3/4	1-5/8	5-5/8	4	
N46210	DC402-0.656-XF2-S.3-Z4	21/32	3/4	1-5/8	5-5/8	4	TiN
N46224	DC402-0.688-XF2-S.3-Z4	11/16	3/4	1-5/8	5-5/8	4	
N46220	DC402-0.688-XF2-S.3-Z4	11/16	3/4	1-5/8	5-5/8	4	TiN
N46244	DC402-0.750-XD2-S.3-Z4	3/4	3/4	1-5/8	5-5/8	4	
N46240	DC402-0.750-XD2-S.3-Z4	3/4	3/4	1-5/8	5-5/8	4	TiN
N46265	DC402-0.813-XF2-S.3-Z4	13/16	7/8	1-7/8	6-1/8	4	
N46260	DC402-0.813-XF2-S.3-Z4	13/16	7/8	1-7/8	6-1/8	4	TiN
N46285	DC402-0.875-XD2-S.3-Z4	7/8	7/8	1-7/8	6-1/8	4	
N46280	DC402-0.875-XD2-S.3-Z4	7/8	7/8	1-7/8	6-1/8	4	TiN
N46326	DC402-1.000-XD2-S.3-Z4	1	1	1-7/8	6-3/8	4	
N46320	DC402-1.000-XD2-S.3-Z4	1	1	1-7/8	6-3/8	4	TiN

Niagara Cutter

GENERAL PURPOSE- SLR600

HSS HIGH SPEED STEEL

HELIX 30°

SQUARE END

NON CENTER CUTTING

- Weldon flat standard
- Designed for profile milling applications in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	REACH
N60121	SLR600-0.375-E3-S.3-Z4	3/8	3/8	1	5	4		3-1/4
N60120	SLR600-0.375-E3-S.3-Z4	3/8	3/8	1	5	4	TiN	3-1/4
N60162	SLR600-0.500-E3-S.3-Z4	1/2	1/2	1-1/4	6	4		4
N60160	SLR600-0.500-E3-S.3-Z4	1/2	1/2	1-1/4	6	4	TiN	4
N60203	SLR600-0.625-E2-S.3-Z4	5/8	5/8	1-1/2	7-1/8	4		5
N60200	SLR600-0.625-E2-S.3-Z4	5/8	5/8	1-1/2	7-1/8	4	TiN	5
N60244	SLR600-0.750-E3-S.3-Z4	3/4	3/4	2	8-1/4	4		6
N60240	SLR600-0.750-E3-S.3-Z4	3/4	3/4	2	8-1/4	4	TiN	6
N60326	SLR600-1.000-E3-S.3-Z4	1	1	2-1/2	10-1/2	4		8
N60320	SLR600-1.000-E3-S.3-Z4	1	1	2-1/2	10-1/2	4	TiN	8
N60407	SLR600-1.250-E3-S.3-Z6	1-1/4	1-1/4	3-1/2	12-1/2	6		10
N60400	SLR600-1.250-E3-S.3-Z6	1-1/4	1-1/4	3-1/2	12-1/2	6	TiN	10

GENERAL PURPOSE- SLRC602

HSS HIGH SPEED STEEL

HELIX 30°

SQUARE END

CENTER CUTTING

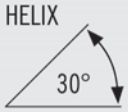
- Extra long reach
- Weldon flat standard
- Designed for profile milling applications in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	REACH
N79121	SLRC602-0.375-E3-S.3-Z4	3/8	3/8	1	5	4		3-1/4
N79120	SLRC602-0.375-E3-S.3-Z4	3/8	3/8	1	5	4	TiN	3-1/4
N79162	SLRC602-0.500-E3-S.3-Z4	1/2	1/2	1-1/4	6	4		4
N79160	SLRC602-0.500-E3-S.3-Z4	1/2	1/2	1-1/4	6	4	TiN	4
N79203	SLRC602-0.625-E2-S.3-Z4	5/8	5/8	1-1/2	7-1/8	4		5
N79200	SLRC602-0.625-E2-S.3-Z4	5/8	5/8	1-1/2	7-1/8	4	TiN	5
N79244	SLRC602-0.750-E3-S.3-Z4	3/4	3/4	2	8-1/4	4		6
N79240	SLRC602-0.750-E3-S.3-Z4	3/4	3/4	2	8-1/4	4	TiN	6
N79326	SLRC602-1.000-E3-S.3-Z4	1	1	2-1/2	10-1/2	4		8
N79320	SLRC602-1.000-E3-S.3-Z4	1	1	2-1/2	10-1/2	4	TiN	8

DISCOUNT CODE D40

GENERAL PURPOSE- SLRB601

HSS
HIGH SPEED STEEL

HELIX


BALL END


CENTER CUTTING

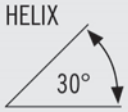
- Weldon flat standard
- Designed for profiling and contour milling applications in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	REACH
N80121	SLRB601-0.375-E3-B.3-Z4	3/8	3/8	1	5	4		3-1/4
N80120	SLRB601-0.375-E3-B.3-Z4	3/8	3/8	1	5	4	TiN	3-1/4
N80162	SLRB601-0.500-E3-B.3-Z4	1/2	1/2	1-1/4	6	4		4
N80160	SLRB601-0.500-E3-B.3-Z4	1/2	1/2	1-1/4	6	4	TiN	4
N80203	SLRB601-0.625-E2-B.3-Z4	5/8	5/8	1-1/2	7-1/8	4		5
N80200	SLRB601-0.625-E2-B.3-Z4	5/8	5/8	1-1/2	7-1/8	4	TiN	5
N80244	SLRB601-0.750-E3-B.3-Z4	3/4	3/4	2	8-1/4	4		6
N80240	SLRB601-0.750-E3-B.3-Z4	3/4	3/4	2	8-1/4	4	TiN	6
N80326	SLRB601-1.000-E3-B.3-Z4	1	1	2-1/2	10-1/2	4		8
N80320	SLRB601-1.000-E3-B.3-Z4	1	1	2-1/2	10-1/2	4	TiN	8

Niagara Cutter

GENERAL PURPOSE- SMM850

HSS
HIGH SPEED STEEL

HELIX


SQUARE END


NON CENTER CUTTING

- Metric flute / inch shank
- Weldon flat standard
- Designed for profile milling applications in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N85030	SMM850-0.118-F3-S.3-Z4	3mm	3/8	3/8	2-5/16	4	
N85031	SMM850-0.118-F3-S.3-Z4	3mm	3/8	3/8	2-5/16	4	TiN
N85040	SMM850-0.157-F3-S.3-Z4	4mm	3/8	1/2	2-3/8	4	
N85041	SMM850-0.157-F3-S.3-Z4	4mm	3/8	1/2	2-3/8	4	TiN
N85050	SMM850-0.197-F3-S.3-Z4	5mm	3/8	1/2	2-3/8	4	
N85051	SMM850-0.197-F3-S.3-Z4	5mm	3/8	1/2	2-3/8	4	TiN
N85060	SMM850-0.236-F3-S.3-Z4	6mm	3/8	5/8	2-7/16	4	
N85061	SMM850-0.236-F3-S.3-Z4	6mm	3/8	5/8	2-7/16	4	TiN
N85065	SMM850-0.256-F2-S.3-Z4	6.5mm	3/8	5/8	2-7/16	4	
N85066	SMM850-0.256-F2-S.3-Z4	6.5mm	3/8	5/8	2-7/16	4	TiN
N85070	SMM850-0.276-F2-S.3-Z4	7mm	3/8	5/8	2-7/16	4	
N85071	SMM850-0.276-F2-S.3-Z4	7mm	3/8	5/8	2-7/16	4	TiN
N85080	SMM850-0.315-F2-S.3-Z4	8mm	3/8	3/4	2-1/2	4	
N85081	SMM850-0.315-F2-S.3-Z4	8mm	3/8	3/4	2-1/2	4	TiN
N85085	SMM850-0.335-F2-S.3-Z4	8.5mm	3/8	3/4	2-1/2	4	
N85086	SMM850-0.335-F2-S.3-Z4	8.5mm	3/8	3/4	2-1/2	4	TiN
N85090	SMM850-0.354-F2-S.3-Z4	9mm	3/8	3/4	2-1/2	4	
N85091	SMM850-0.354-F2-S.3-Z4	9mm	3/8	3/4	2-1/2	4	TiN
N85100	SMM850-0.394-P3-S.3-Z4	10mm	3/8	1	2-11/16	4	
N85101	SMM850-0.394-P3-S.3-Z4	10mm	3/8	1	2-11/16	4	TiN
N85120	SMM850-0.472-P2-S.3-Z4	12mm	3/8	1	2-11/16	4	
N85121	SMM850-0.472-P2-S.3-Z4	12mm	3/8	1	2-11/16	4	TiN
N85125	SMM850-0.492-F3-S.3-Z4	12.5mm	1/2	1-1/4	3-1/4	4	
N85126	SMM850-0.492-F3-S.3-Z4	12.5mm	1/2	1-1/4	3-1/4	4	TiN
N85135	SMM850-0.531-P3-S.3-Z4	13.5mm	1/2	1-3/8	3-3/8	4	
N85136	SMM850-0.531-P3-S.3-Z4	13.5mm	1/2	1-3/8	3-3/8	4	TiN
N85140	SMM850-0.551-P2-S.3-Z4	14mm	1/2	1-3/8	3-3/8	4	
N85141	SMM850-0.551-P2-S.3-Z4	14mm	1/2	1-3/8	3-3/8	4	TiN
N85150	SMM850-0.591-P2-S.3-Z4	15mm	1/2	1-3/8	3-3/8	4	
N85151	SMM850-0.591-P2-S.3-Z4	15mm	1/2	1-3/8	3-3/8	4	TiN
N85160	SMM850-0.630-P3-S.3-Z4	16mm	5/8	1-5/8	3-3/4	4	
N85161	SMM850-0.630-P3-S.3-Z4	16mm	5/8	1-5/8	3-3/4	4	TiN
N85170	SMM850-0.669-P2-S.3-Z4	17mm	5/8	1-5/8	3-3/4	4	
N85171	SMM850-0.669-P2-S.3-Z4	17mm	5/8	1-5/8	3-3/4	4	TiN
N85180	SMM850-0.709-F2-S.3-Z4	18mm	3/4	1-5/8	3-7/8	4	
N85181	SMM850-0.709-F2-S.3-Z4	18mm	3/4	1-5/8	3-7/8	4	TiN
N85200	SMM850-0.787-P2-S.3-Z4	20mm	3/4	1-7/8	4-1/8	4	
N85201	SMM850-0.787-P2-S.3-Z4	20mm	3/4	1-7/8	4-1/8	4	TiN
N85250	SMM850-0.984-F2-S.3-Z4	25mm	1	2	4-1/2	4	
N85251	SMM850-0.984-F2-S.3-Z4	25mm	1	2	4-1/2	4	TiN

DISCOUNT CODE D40

GENERAL PURPOSE- SR208

HSS
HIGH SPEED STEEL

HELIX
35°

SQUARE END

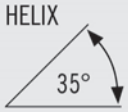
CENTER CUTTING

- Designed for slotting and pocket milling applications in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N66012	SR208-0.031-F3-S.0-Z2	1/32	3/16	3/32	1-1/2	2	
N66014	SR208-0.031-F3-S.0-Z2	1/32	3/16	3/32	1-1/2	2	TiN
N66015	SR208-0.047-F3-S.0-Z2	3/64	3/16	9/64	1-1/2	2	
N66016	SR208-0.047-F3-S.0-Z2	3/64	3/16	9/64	1-1/2	2	TiN
N66022	SR208-0.063-F3-S.0-Z2	1/16	3/16	3/16	1-1/2	2	
N66024	SR208-0.063-F3-S.0-Z2	1/16	3/16	3/16	1-1/2	2	TiN
N66025	SR208-0.078-F3-S.0-Z2	5/64	3/16	15/64	1-1/2	2	
N66026	SR208-0.078-F3-S.0-Z2	5/64	3/16	15/64	1-1/2	2	TiN
N66032	SR208-0.094-F3-S.0-Z2	3/32	3/16	9/32	1-1/2	2	
N66034	SR208-0.094-F3-S.0-Z2	3/32	3/16	9/32	1-1/2	2	TiN
N66035	SR208-0.109-F3-S.0-Z2	7/64	3/16	21/64	1-1/2	2	
N66036	SR208-0.109-F3-S.0-Z2	7/64	3/16	21/64	1-1/2	2	TiN
N66042	SR208-0.125-F3-S.0-Z2	1/8	3/16	3/8	1-1/2	2	
N66044	SR208-0.125-F3-S.0-Z2	1/8	3/16	3/8	1-1/2	2	TiN
N66045	SR208-0.141-F3-S.0-Z2	9/64	3/16	27/64	1-1/2	2	
N66046	SR208-0.141-F3-S.0-Z2	9/64	3/16	27/64	1-1/2	2	TiN
N66052	SR208-0.156-F3-S.0-Z2	5/32	3/16	7/16	1-1/2	2	
N66054	SR208-0.156-F3-S.0-Z2	5/32	3/16	7/16	1-1/2	2	TiN
N66062	SR208-0.188-D3-S.0-Z2	3/16	3/16	1/2	1-1/2	2	
N66064	SR208-0.188-D3-S.0-Z2	3/16	3/16	1/2	1-1/2	2	TiN

GENERAL PURPOSE- DR209

HSS
HIGH SPEED STEEL

HELIX


SQUARE END

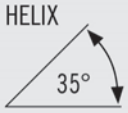

CENTER CUTTING

- Designed for slotting and pocket milling applications in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N66010	DR209-0.031-XF3-S.0-Z2	1/32	3/16	3/32	2	2	
N66017	DR209-0.031-XF3-S.0-Z2	1/32	3/16	3/32	2	2	TiN
N66019	DR209-0.047-XF3-S.0-Z2	3/64	3/16	9/64	2	2	
N66018	DR209-0.047-XF3-S.0-Z2	3/64	3/16	9/64	2	2	TiN
N66020	DR209-0.063-XF3-S.0-Z2	1/16	3/16	3/16	2-1/4	2	
N66027	DR209-0.063-XF3-S.0-Z2	1/16	3/16	3/16	2-1/4	2	TiN
N66029	DR209-0.078-XF3-S.0-Z2	5/64	3/16	15/64	2-1/4	2	
N66028	DR209-0.078-XF3-S.0-Z2	5/64	3/16	15/64	2-1/4	2	TiN
N66030	DR209-0.094-XF3-S.0-Z2	3/32	3/16	9/32	2-1/4	2	
N66037	DR209-0.094-XF3-S.0-Z2	3/32	3/16	9/32	2-1/4	2	TiN
N66039	DR209-0.109-XF3-S.0-Z2	7/64	3/16	21/64	2-1/4	2	
N66038	DR209-0.109-XF3-S.0-Z2	7/64	3/16	21/64	2-1/4	2	TiN
N66040	DR209-0.125-XF3-S.0-Z2	1/8	3/16	3/8	2-1/4	2	
N66047	DR209-0.125-XF3-S.0-Z2	1/8	3/16	3/8	2-1/4	2	TiN
N66050	DR209-0.156-XF3-S.0-Z2	5/32	3/16	7/16	2-1/4	2	
N66057	DR209-0.156-XF3-S.0-Z2	5/32	3/16	7/16	2-1/4	2	TiN
N66059	DR209-0.172-XF3-S.0-Z2	11/64	3/16	1/2	2-1/4	2	
N66058	DR209-0.172-XF3-S.0-Z2	11/64	3/16	1/2	2-1/4	2	TiN
N66060	DR209-0.188-XD3-S.0-Z2	3/16	3/16	1/2	2-1/4	2	
N66068	DR209-0.188-XD3-S.0-Z2	3/16	3/16	1/2	2-1/4	2	TiN

GENERAL PURPOSE- DS211

HSS
HIGH SPEED STEEL

HELIX


SQUARE END


CENTER CUTTING

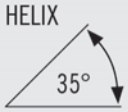
- 3/16" shank
- Designed for slotting and pocket milling applications in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N64010	DS211-0.031-XF2-S.0-Z2	1/32	3/16	3/64	1-7/8	2	
N64017	DS211-0.031-XF2-S.0-Z2	1/32	3/16	3/64	1-7/8	2	TiN
N64019	DS211-0.047-XF1-S.0-Z2	3/64	3/16	1/16	1-7/8	2	
N64018	DS211-0.047-XF1-S.0-Z2	3/64	3/16	1/16	1-7/8	2	TiN
N64020	DS211-0.063-XF2-S.0-Z2	1/16	3/16	3/32	2	2	
N64027	DS211-0.063-XF2-S.0-Z2	1/16	3/16	3/32	2	2	TiN
N64029	DS211-0.078-XF2-S.0-Z2	5/64	3/16	1/8	2	2	
N64028	DS211-0.078-XF2-S.0-Z2	5/64	3/16	1/8	2	2	TiN
N64030	DS211-0.094-XF2-S.0-Z2	3/32	3/16	9/64	2	2	
N64037	DS211-0.094-XF2-S.0-Z2	3/32	3/16	9/64	2	2	TiN
N64040	DS211-0.125-XF2-S.0-Z2	1/8	3/16	3/16	2	2	
N64047	DS211-0.125-XF2-S.0-Z2	1/8	3/16	3/16	2	2	TiN
N64049	DS211-0.141-XF2-S.0-Z2	9/64	3/16	7/32	2	2	
N64048	DS211-0.141-XF2-S.0-Z2	9/64	3/16	7/32	2	2	TiN
N64050	DS211-0.156-XF2-S.0-Z2	5/32	3/16	15/64	2	2	
N64057	DS211-0.156-XF2-S.0-Z2	5/32	3/16	15/64	2	2	TiN
N64060	DS211-0.188-XD2-S.0-Z2	3/16	3/16	9/32	2	2	
N64068	DS211-0.188-XD2-S.0-Z2	3/16	3/16	9/32	2	2	TiN

Niagara Cutter

GENERAL PURPOSE- DL213

HSS
HIGH SPEED STEEL

HELIX


SQUARE END

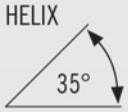

CENTER CUTTING

- Designed for slotting and pocket milling applications in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N68020	DL213-0.063-XF4-S.0-Z2	1/16	3/16	7/32	2-1/2	2	
N68028	DL213-0.063-XF4-S.0-Z2	1/16	3/16	7/32	2-1/2	2	TiN
N68040	DL213-0.125-XF6-S.0-Z2	1/8	3/16	3/4	3-1/8	2	
N68048	DL213-0.125-XF6-S.0-Z2	1/8	3/16	3/4	3-1/8	2	TiN
N68050	DL213-0.156-XF6-S.0-Z2	5/32	3/16	7/8	3-1/4	2	
N68058	DL213-0.156-XF6-S.0-Z2	5/32	3/16	7/8	3-1/4	2	TiN
N68060	DL213-0.188-XD5-S.0-Z2	3/16	3/16	1	3-1/8	2	
N68068	DL213-0.188-XD5-S.0-Z2	3/16	3/16	1	3-1/8	2	TiN

GENERAL PURPOSE- DB215

HSS
HIGH SPEED STEEL

HELIX


BALL END

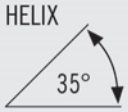

CENTER CUTTING

- Designed for slotting, pocketing and contour milling applications in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N67010	DB215-0.063-XF3-B.0-Z2	1/16	3/16	3/16	2-1/4	2	
N67018	DB215-0.063-XF3-B.0-Z2	1/16	3/16	3/16	2-1/4	2	TiN
N67030	DB215-0.094-XF3-B.0-Z2	3/32	3/16	9/32	2-1/4	2	
N67038	DB215-0.094-XF3-B.0-Z2	3/32	3/16	9/32	2-1/4	2	TiN
N67040	DB215-0.125-XF3-B.0-Z2	1/8	3/16	3/8	2-1/4	2	
N67048	DB215-0.125-XF3-B.0-Z2	1/8	3/16	3/8	2-1/4	2	TiN

GENERAL PURPOSE- DBS217

HSS
HIGH SPEED STEEL

HELIX


BALL END


CENTER CUTTING

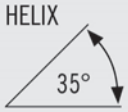
- Designed for slotting, pocketing and contour milling applications in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N65020	DBS217-0.063-XF2-B.0-Z2	1/16	3/16	3/32	2	2	
N65028	DBS217-0.063-XF2-B.0-Z2	1/16	3/16	3/32	2	2	TiN
N65030	DBS217-0.094-XF2-B.0-Z2	3/32	3/16	9/64	2	2	
N65038	DBS217-0.094-XF2-B.0-Z2	3/32	3/16	9/64	2	2	TiN

Niagara Cutter

GENERAL PURPOSE- SR414

HSS
HIGH SPEED STEEL

HELIX


SQUARE END

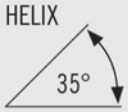

NON CENTER CUTTING

- Designed for profile milling applications in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N76022	SR414-0.063-F3-S.0-Z4	1/16	3/16	3/16	1-1/2	4	
N76024	SR414-0.063-F3-S.0-Z4	1/16	3/16	3/16	1-1/2	4	TiN
N76025	SR414-0.078-F3-S.0-Z4	5/64	3/16	1/4	1-1/2	4	
N76026	SR414-0.078-F3-S.0-Z4	5/64	3/16	1/4	1-1/2	4	TiN
N76032	SR414-0.094-F3-S.0-Z4	3/32	3/16	9/32	1-1/2	4	
N76034	SR414-0.094-F3-S.0-Z4	3/32	3/16	9/32	1-1/2	4	TiN
N76042	SR414-0.125-F3-S.0-Z4	1/8	3/16	3/8	1-1/2	4	
N76044	SR414-0.125-F3-S.0-Z4	1/8	3/16	3/8	1-1/2	4	TiN
N76052	SR414-0.156-F3-S.0-Z4	5/32	3/16	7/16	1-1/2	4	
N76054	SR414-0.156-F3-S.0-Z4	5/32	3/16	7/16	1-1/2	4	TiN

GENERAL PURPOSE- DR416

HSS
HIGH SPEED STEEL

HELIX


SQUARE END

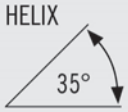

NON CENTER CUTTING

- Designed for profile milling applications in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N76020	DR416-0.063-XF3-S.0-Z4	1/16	3/16	3/16	2-1/4	4	
N76028	DR416-0.063-XF3-S.0-Z4	1/16	3/16	3/16	2-1/4	4	TiN
N76030	DR416-0.094-XF3-S.0-Z4	3/32	3/16	9/32	2-1/4	4	
N76038	DR416-0.094-XF3-S.0-Z4	3/32	3/16	9/32	2-1/4	4	TiN
N76040	DR416-0.125-XF3-S.0-Z4	1/8	3/16	3/8	2-1/4	4	
N76048	DR416-0.125-XF3-S.0-Z4	1/8	3/16	3/8	2-1/4	4	TiN

GENERAL PURPOSE- DS420

HSS
HIGH SPEED STEEL

HELIX


SQUARE END

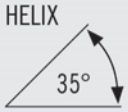

NON CENTER CUTTING

- Designed for profile milling applications in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N74020	DS420-0.063-XF2-S.0-Z4	1/16	3/16	3/32	2	4	
N74028	DS420-0.063-XF2-S.0-Z4	1/16	3/16	3/32	2	4	TiN
N74030	DS420-0.094-XF2-S.0-Z4	3/32	3/16	9/64	2	4	
N74038	DS420-0.094-XF2-S.0-Z4	3/32	3/16	9/64	2	4	TiN
N74040	DS420-0.125-XF2-S.0-Z4	1/8	3/16	3/16	2	4	
N74048	DS420-0.125-XF2-S.0-Z4	1/8	3/16	3/16	2	4	TiN

GENERAL PURPOSE- DL418

HSS
HIGH SPEED STEEL

HELIX


SQUARE END


NON CENTER CUTTING

- Designed for profile milling applications in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N78020	DL418-0.063-XF4-S.0-Z4	1/16	3/16	7/32	2-1/2	4	
N78028	DL418-0.063-XF4-S.0-Z4	1/16	3/16	7/32	2-1/2	4	TiN
N78030	DL418-0.094-XF3-S.0-Z4	3/32	3/16	9/32	2-5/8	4	
N78038	DL418-0.094-XF3-S.0-Z4	3/32	3/16	9/32	2-5/8	4	TiN
N78040	DL418-0.125-XF6-S.0-Z4	1/8	3/16	3/4	3-1/8	4	
N78048	DL418-0.125-XF6-S.0-Z4	1/8	3/16	3/4	3-1/8	4	TiN
N78050	DL418-0.156-XF6-S.0-Z4	5/32	3/16	7/8	3-1/4	4	
N78058	DL418-0.156-XF6-S.0-Z4	5/32	3/16	7/8	3-1/4	4	TiN
N78060	DL418-0.188-XD5-S.0-Z4	3/16	3/16	1	3-3/8	4	
N78068	DL418-0.188-XD5-S.0-Z4	3/16	3/16	1	3-3/8	4	TiN

S203 / SK204 / SB207 / D201 / DB260

SLOTTING

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 2$ 1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1 /2	1 3/4	2
P	E 1 - 2	1.00	1.00	110	n (rev/min)	1681	1121	840	672	560	420	336	280	240	210
					f_z (in)	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045	0.0056	0.0068	0.0079	0.0090
				80 - 140	v_f (in/min)	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
	E 3 - 4	1.00	1.00	50	n (rev/min)	764	509	382	306	255	191	153	127	109	96
					f_z (in)	0.0009	0.0013	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0061	0.0070
				40 - 60	v_f (in/min)	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
M	E 8 - 9	1.00	1.00	50	n (rev/min)	764	509	382	306	255	191	153	127	109	96
					f_z (in)	0.0009	0.0013	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0061	0.0070
				40 - 60	v_f (in/min)	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
K	E 12 - 13	1.00	1.00	50	n (rev/min)	764	509	382	306	255	191	153	127	109	96
					f_z (in)	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045	0.0056	0.0068	0.0079	0.0090
				40 - 60	v_f (in/min)	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
N	E 18	1.00	1.00	240	n (rev/min)	3667	2445	1834	1467	1222	917	733	611	524	458
					f_z (in)	0.0013	0.0019	0.0025	0.0031	0.0038	0.0050	0.0063	0.0075	0.0088	0.0100
				200 - 280	v_f (in/min)	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2

SIDE MILLING - ROUGHING

P	E 1 - 2	1.50	0.25	160	n (rev/min)	2445	1630	1222	978	815	611	489	407	349	306
					f_z (in)	0.0014	0.0021	0.0028	0.0035	0.0042	0.0056	0.0070	0.0084	0.0098	0.0113
				120 - 200	v_f (in/min)	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
	E 3 - 4	1.50	0.25	80	n (rev/min)	1222	815	611	489	407	306	244	204	175	153
					f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				60 - 100	v_f (in/min)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
M	E 8 - 9	1.50	0.25	80	n (rev/min)	1222	815	611	489	407	306	244	204	175	153
					f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				60 - 100	v_f (in/min)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
K	E 12 - 13	1.50	0.25	95	n (rev/min)	1452	968	726	581	484	363	290	242	207	181
					f_z (in)	0.0014	0.0021	0.0028	0.0035	0.0042	0.0056	0.0070	0.0084	0.0098	0.0113
				75 - 115	v_f (in/min)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
N	E 18	1.50	0.25	350	n (rev/min)	5348	3565	2674	2139	1783	1337	1070	891	764	669
					f_z (in)	0.0016	0.0023	0.0031	0.0039	0.0047	0.0063	0.0078	0.0094	0.0109	0.0125
				300 - 400	v_f (in/min)	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

SEL250 / SEB270

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		Z_n = 2									
						1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	1 3/4	2
SLOTTING															
P	E 1 - 2	1.00	1.00	80	n (rev/min)	1222	815	611	489	407	306	244	204	175	153
					f_z (in)	0.0009	0.0014	0.0018	0.0023	0.0027	0.0036	0.0045	0.0054	0.0063	0.0072
				50 - 110	v_f (in/min)	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
	E 3 - 4	1.00	1.00	35	n (rev/min)	535	357	267	214	178	134	107	89	76	67
					f_z (in)	0.0007	0.0011	0.0014	0.0018	0.0021	0.0028	0.0035	0.0042	0.0049	0.0056
				25 - 45	v_f (in/min)	0.7	0.7	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.8
M	E 8 - 9	1.00	1.00	35	n (rev/min)	535	357	267	214	178	134	107	89	76	67
					f_z (in)	0.0007	0.0011	0.0014	0.0018	0.0021	0.0028	0.0035	0.0042	0.0049	0.0056
				25 - 45	v_f (in/min)	0.7	0.7	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.8
K	E 12 - 13	1.00	1.00	35	n (rev/min)	535	357	267	214	178	134	107	89	76	67
					f_z (in)	0.0009	0.0014	0.0018	0.0023	0.0027	0.0036	0.0045	0.0054	0.0063	0.0072
				25 - 45	v_f (in/min)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
N	E 18	1.00	1.00	240	n (rev/min)	3667	2445	1834	1467	1222	917	733	611	524	458
					f_z (in)	0.0013	0.0019	0.0025	0.0031	0.0038	0.0050	0.0063	0.0075	0.0088	0.0100
				200 - 280	v_f (in/min)	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2
SIDE MILLING - ROUGHING															
P	E 1 - 2	1.50	0.25	112	n (rev/min)	1711	1141	856	685	570	428	342	285	244	214
					f_z (in)	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045	0.0056	0.0068	0.0079	0.0090
				72 - 152	v_f (in/min)	3.8	3.9	3.9	3.9	3.8	3.9	3.8	3.8	3.8	3.9
	E 3 - 4	1.50	0.25	56	n (rev/min)	856	570	428	342	285	214	171	143	122	107
					f_z (in)	0.0009	0.0013	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0061	0.0070
				36 - 76	v_f (in/min)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
M	E 8 - 9	1.50	0.25	56	n (rev/min)	856	570	428	342	285	214	171	143	122	107
					f_z (in)	0.0009	0.0013	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0061	0.0070
				36 - 76	v_f (in/min)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
K	E 12 - 13	1.50	0.25	67	n (rev/min)	1024	683	512	410	341	256	205	171	146	128
					f_z (in)	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045	0.0056	0.0068	0.0079	0.0090
				47 - 87	v_f (in/min)	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
N	E 18	1.50	0.25	350	n (rev/min)	5348	3565	2674	2139	1783	1337	1070	891	764	669
					f_z (in)	0.0016	0.0023	0.0031	0.0039	0.0047	0.0063	0.0078	0.0094	0.0109	0.0125
				300 - 400	v_f (in/min)	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

SMM830

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (m / min)		Z_n = 2	4	6	8	10	12	14	16	18	20	25
SLOTTING																
P	E / M / A 1 - 2	1.00	1.00	30		n (rev/min)	2390	1590	1190	950	800	680	600	530	480	380
						f_z (mm)	0.02	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.09	0.11
				20	- 40	v_f (mm/min)	85	85	85	85	85	85	85	85	85	85
	E / M / A 3 - 4	1.00	1.00	15		n (rev/min)	1190	800	600	480	400	340	300	270	240	190
						f_z (mm)	0.01	0.02	0.03	0.04	0.04	0.05	0.06	0.06	0.07	0.09
				12	- 18	v_f (mm/min)	35	35	35	35	35	35	35	35	35	35
M	E 8 - 9	1.00	1.00	15		n (rev/min)	1190	800	600	480	400	340	300	270	240	190
						f_z (mm)	0.01	0.02	0.03	0.04	0.04	0.05	0.06	0.06	0.07	0.09
				12	- 18	v_f (mm/min)	35	35	35	35	35	35	35	35	35	35
K	E / M / A 12 - 13	1.00	1.00	15		n (rev/min)	1190	800	600	480	400	340	300	270	240	190
						f_z (mm)	0.018	0.027	0.036	0.045	0.054	0.063	0.072	0.081	0.09	0.1125
				12	- 18	v_f (mm/min)	45	45	45	45	45	45	45	45	45	45
N	E 18	1.00	1.00	70		n (rev/min)	5570	3710	2790	2230	1860	1590	1390	1240	1110	890
						f_z (mm)	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.13
				60	- 90	v_f (mm/min)	225	225	225	225	225	225	220	225	220	225
SIDE MILLING - ROUGHING																
P	E / M / A 1 - 2	1.50	0.25	50		n (rev/min)	3980	2650	1990	1590	1330	1140	990	880	800	640
						f_z (mm)	0.02	0.03	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.14
				40	- 60	v_f (mm/min)	180	180	180	180	180	180	180	180	180	180
	E / M / A 3 - 4	1.50	0.25	24		n (rev/min)	1910	1270	950	760	640	550	480	420	380	310
						f_z (mm)	0.02	0.03	0.04	0.04	0.05	0.06	0.07	0.08	0.09	0.11
				18	- 30	v_f (mm/min)	65	65	65	65	65	65	65	65	65	70
M	E 8 - 9	1.50	0.25	24		n (rev/min)	1910	1270	950	760	640	550	480	420	380	310
						f_z (mm)	0.02	0.03	0.04	0.04	0.05	0.06	0.07	0.08	0.09	0.11
				18	- 30	v_f (mm/min)	65	65	65	65	65	65	65	65	65	70
K	E / M / A 12 - 13	1.50	0.25	30		n (rev/min)	2390	1590	1190	950	800	680	600	530	480	380
						f_z (mm)	0.02	0.03	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.14
				20	- 40	v_f (mm/min)	110	105	105	105	110	105	110	105	110	105
N	E 18	1.50	0.25	110		n (rev/min)	8750	5840	4380	3500	2920	2500	2190	1950	1750	1400
						f_z (mm)	0.03	0.04	0.05	0.06	0.08	0.09	0.10	0.11	0.13	0.16
				90	- 120	v_f (mm/min)	440	440	440	440	440	440	440	440	440	440

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

Niagara Cutter

STF320 / DTF310

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		Z_n = 3 1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	1 3/4	2
SLOTTING															
P	E 1 - 2	1.00	1.00	110	n (rev/min)	1681	1121	840	672	560	420	336	280	240	210
					f_z (in)	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045	0.0056	0.0068	0.0079	0.0090
				80 - 140	v_f (in/min)	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
	E 3 - 4	1.00	1.00	50	n (rev/min)	764	509	382	306	255	191	153	127	109	96
					f_z (in)	0.0009	0.0013	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0061	0.0070
				40 - 60	v_f (in/min)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
M	E 8 - 9	1.00	1.00	50	n (rev/min)	764	509	382	306	255	191	153	127	109	96
					f_z (in)	0.0009	0.0013	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0061	0.0070
				40 - 60	v_f (in/min)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
K	E 12 - 13	1.00	1.00	50	n (rev/min)	764	509	382	306	255	191	153	127	109	96
					f_z (in)	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045	0.0056	0.0068	0.0079	0.0090
				40 - 60	v_f (in/min)	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
N	E 18	1.00	1.00	240	n (rev/min)	3667	2445	1834	1467	1222	917	733	611	524	458
					f_z (in)	0.0013	0.0019	0.0025	0.0031	0.0038	0.0050	0.0063	0.0075	0.0088	0.0100
				200 - 280	v_f (in/min)	13.8	13.8	13.8	13.8	13.7	13.8	13.7	13.7	13.8	13.7
SIDE MILLING - ROUGHING															
P	E 1 - 2	1.50	0.25	160	n (rev/min)	2445	1630	1222	978	815	611	489	407	349	306
					f_z (in)	0.0014	0.0021	0.0028	0.0035	0.0042	0.0056	0.0070	0.0084	0.0098	0.0113
				120 - 200	v_f (in/min)	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3
	E 3 - 4	1.50	0.25	80	n (rev/min)	1222	815	611	489	407	306	244	204	175	153
					f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				60 - 100	v_f (in/min)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
M	E 8 - 9	1.50	0.25	80	n (rev/min)	1222	815	611	489	407	306	244	204	175	153
					f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				60 - 100	v_f (in/min)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
K	E 12 - 13	1.50	0.25	95	n (rev/min)	1452	968	726	581	484	363	290	242	207	181
					f_z (in)	0.0014	0.0021	0.0028	0.0035	0.0042	0.0056	0.0070	0.0084	0.0098	0.0113
				75 - 115	v_f (in/min)	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
N	E 18	1.50	0.25	350	n (rev/min)	5348	3565	2674	2139	1783	1337	1070	891	764	669
					f_z (in)	0.0016	0.0023	0.0031	0.0039	0.0047	0.0063	0.0078	0.0094	0.0109	0.0125
				300 - 400	v_f (in/min)	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

A208 / AB910 / DA206

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		Z_n = 2 1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	1 3/4	2
SLOTTING															
N	E 16	1.00	1.00	500	n (rev/min)	7640	5093	3820	3056	2547	1910	1528	1273	1091	955
					f_z (in)	0.0025	0.0038	0.0050	0.0063	0.0075	0.0100	0.0125	0.0150	0.0175	0.0200
				200 - 800	v_f (in/min)	38.2	38.2	38.2	38.2	38.2	38.2	38.2	38.2	38.2	38.2
	E 17	1.00	1.00	500	n (rev/min)	7640	5093	3820	3056	2547	1910	1528	1273	1091	955
					f_z (in)	0.0025	0.0038	0.0050	0.0063	0.0075	0.0100	0.0125	0.0150	0.0175	0.0200
				200 - 800	v_f (in/min)	38.2	38.2	38.2	38.2	38.2	38.2	38.2	38.2	38.2	38.2
SIDE MILLING - ROUGHING															
N	E 16	1.50	0.25	750	n (rev/min)	11460	7640	5730	4584	3820	2865	2292	1910	1637	1433
					f_z (in)	0.0031	0.0047	0.0063	0.0078	0.0094	0.0125	0.0156	0.0188	0.0219	0.0250
				450 - 1050	v_f (in/min)	71.6	71.6	71.6	71.6	71.6	71.6	71.6	71.6	71.6	71.7
	E 17	1.50	0.25	750	n (rev/min)	11460	7640	5730	4584	3820	2865	2292	1910	1637	1433
					f_z (in)	0.0031	0.0047	0.0063	0.0078	0.0094	0.0125	0.0156	0.0188	0.0219	0.0250
				450 - 1050	v_f (in/min)	71.6	71.6	71.6	71.6	71.6	71.6	71.6	71.6	71.6	71.7

A337 / AB337 / ACB337

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		Z_n = 3 1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	1 3/4	2
SLOTTING															
N	E 16	1.00	1.00	500	n (rev/min)	7640	5093	3820	3056	2547	1910	1528	1273	1091	955
					f_z (in)	0.0025	0.0038	0.0050	0.0063	0.0075	0.0100	0.0125	0.0150	0.0175	0.0200
				200 - 800	v_f (in/min)	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3
	E 17	1.00	1.00	500	n (rev/min)	7640	5093	3820	3056	2547	1910	1528	1273	1091	955
					f_z (in)	0.0025	0.0038	0.0050	0.0063	0.0075	0.0100	0.0125	0.0150	0.0175	0.0200
				200 - 800	v_f (in/min)	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3
SIDE MILLING - ROUGHING															
N	E 16	1.50	0.25	750	n (rev/min)	11460	7640	5730	4584	3820	2865	2292	1910	1637	1433
					f_z (in)	0.0031	0.0047	0.0063	0.0078	0.0094	0.0125	0.0156	0.0188	0.0219	0.0250
				450 - 1050	v_f (in/min)	107.4	107.4	107.4	107.4	107.4	107.4	107.4	107.4	107.4	107.5
	E 17	1.50	0.25	750	n (rev/min)	11460	7640	5730	4584	3820	2865	2292	1910	1637	1433
					f_z (in)	0.0031	0.0047	0.0063	0.0078	0.0094	0.0125	0.0156	0.0188	0.0219	0.0250
				450 - 1050	v_f (in/min)	107.4	107.4	107.4	107.4	107.4	107.4	107.4	107.4	107.4	107.5

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

AL337

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		Z_n = 3 1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	1 3/4	2
SLOTTING															
N	E 16	1.00	1.00	400	n (rev/min)	6112	4075	3056	2445	2037	1528	1222	1019	873	764
					f_z (in)	0.0020	0.0030	0.0040	0.0050	0.0060	0.0080	0.0100	0.0120	0.0140	0.0160
				100 - 700	v_f (in/min)	36.7	36.7	36.7	36.7	36.7	36.7	36.7	36.7	36.7	36.7
	E 17	1.00	1.00	400	n (rev/min)	6112	4075	3056	2445	2037	1528	1222	1019	873	764
					f_z (in)	0.0020	0.0030	0.0040	0.0050	0.0060	0.0080	0.0100	0.0120	0.0140	0.0160
				100 - 700	v_f (in/min)	36.7	36.7	36.7	36.7	36.7	36.7	36.7	36.7	36.7	36.7
SIDE MILLING - ROUGHING															
N	E 16	1.50	0.25	600	n (rev/min)	9168	6112	4584	3667	3056	2292	1834	1528	1310	1146
					f_z (in)	0.0025	0.0038	0.0050	0.0063	0.0075	0.0100	0.0125	0.0150	0.0175	0.0200
				300 - 900	v_f (in/min)	68.8	68.8	68.8	68.8	68.8	68.8	68.8	68.8	68.8	68.8
	E 17	1.50	0.25	600	n (rev/min)	9168	6112	4584	3667	3056	2292	1834	1528	1310	1146
					f_z (in)	0.0025	0.0038	0.0050	0.0063	0.0075	0.0100	0.0125	0.0150	0.0175	0.0200
				300 - 900	v_f (in/min)	68.8	68.8	68.8	68.8	68.8	68.8	68.8	68.8	68.8	68.8

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

S404 / SC406 / SB470 / D400 / DC402

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		Z_n = 4									
						1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	1 3/4	2
SLOTTING															
P	E 1 - 2	1.00	1.00	110	n (rev/min)	1681	1121	840	672	560	420	336	280	240	210
					f_z (in)	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045	0.0056	0.0068	0.0079	0.0090
				80 - 140	v_f (in/min)	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
	E 3 - 4	1.00	1.00	50	n (rev/min)	764	509	382	306	255	191	153	127	109	96
					f_z (in)	0.0009	0.0013	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0061	0.0070
				40 - 60	v_f (in/min)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
M	E 8 - 9	1.00	1.00	50	n (rev/min)	764	509	382	306	255	191	153	127	109	96
					f_z (in)	0.0009	0.0013	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0061	0.0070
				40 - 60	v_f (in/min)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
K	E 12 - 13	1.00	1.00	50	n (rev/min)	764	509	382	306	255	191	153	127	109	96
					f_z (in)	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045	0.0056	0.0068	0.0079	0.0090
				40 - 60	v_f (in/min)	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.5
N	E 18	1.00	1.00	240	n (rev/min)	3667	2445	1834	1467	1222	917	733	611	524	458
					f_z (in)	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045	0.0056	0.0068	0.0079	0.0090
				200 - 280	v_f (in/min)	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
SIDE MILING - ROUGHING															
P	E 1 - 2	1.50	0.25	160	n (rev/min)	2445	1630	1222	978	815	611	489	407	349	306
					f_z (in)	0.0014	0.0021	0.0028	0.0035	0.0042	0.0056	0.0070	0.0084	0.0098	0.0113
				120 - 200	v_f (in/min)	13.8	13.8	13.7	13.8	13.8	13.7	13.8	13.7	13.7	13.8
	E 3 - 4	1.50	0.25	80	n (rev/min)	1222	815	611	489	407	306	244	204	175	153
					f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				60 - 100	v_f (in/min)	5.3	5.3	5.3	5.3	5.3	5.4	5.3	5.4	5.4	5.4
M	E 8 - 9	1.50	0.25	80	n (rev/min)	1222	815	611	489	407	306	244	204	175	153
					f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				60 - 100	v_f (in/min)	5.3	5.3	5.3	5.3	5.3	5.4	5.3	5.4	5.4	5.4
K	E 12 - 13	1.50	0.25	95	n (rev/min)	1452	968	726	581	484	363	290	242	207	181
					f_z (in)	0.0014	0.0021	0.0028	0.0035	0.0042	0.0056	0.0070	0.0084	0.0098	0.0113
				75 - 115	v_f (in/min)	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.1
N	E 18	1.50	0.25	350	n (rev/min)	5348	3565	2674	2139	1783	1337	1070	891	764	669
					f_z (in)	0.0014	0.0021	0.0028	0.0035	0.0042	0.0056	0.0070	0.0084	0.0098	0.0113
				300 - 400	v_f (in/min)	30.1	30.1	30.1	30.1	30.1	30.1	30.1	30.1	30.1	30.1

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

S404 / SC406 / SB470 / D400 / DC402

SIDE MILLING - ROUGHING																	
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		Z_n = 6											
						1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	1 3/4	2
P	E 1 - 2	1.50	0.25	160	n (rev/min)	2445	1630	1222	978	815	611	489	407	349	306
					f_z (in)	0.0014	0.0021	0.0028	0.0035	0.0042	0.0056	0.0070	0.0084	0.0098	0.0113
				120 - 200	v_f (in/min)	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.7
	E 3 - 4	1.50	0.25	80	n (rev/min)	1222	815	611	489	407	306	244	204	175	153
					f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				60 - 100	v_f (in/min)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
M	E 8 - 9	1.50	0.25	80	n (rev/min)	1222	815	611	489	407	306	244	204	175	153
					f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				60 - 100	v_f (in/min)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
K	E 12 - 13	1.50	0.25	95	n (rev/min)	1452	968	726	581	484	363	290	242	207	181
					f_z (in)	0.0014	0.0021	0.0028	0.0035	0.0042	0.0056	0.0070	0.0084	0.0098	0.0113
				75 - 115	v_f (in/min)	12.3	12.3	12.3	12.3	12.3	12.3	12.2	12.3	12.2	12.2
N	E 18	1.50	0.25	350	n (rev/min)	5348	3565	2674	2139	1783	1337	1070	891	764	669
					f_z (in)	0.0014	0.0021	0.0028	0.0035	0.0042	0.0056	0.0070	0.0084	0.0098	0.0113
				300 - 400	v_f (in/min)	45.1	45.1	45.1	45.1	45.1	45.1	45.1	45.1	45.1	45.2

SLR600 / SLRC602 / SLRB601

SLOTTING																	
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		Z_n = 4											
						1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	1 3/4	2
P	E 1 - 2	1.00	1.00	80	n (rev/min)	1222	815	611	489	407	306	244	204	175	153
					f_z (in)	0.0009	0.0014	0.0018	0.0023	0.0027	0.0036	0.0045	0.0054	0.0063	0.0072
				50 - 110	v_f (in/min)	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
	E 3 - 4	1.00	1.00	35	n (rev/min)	535	357	267	214	178	134	107	89	76	67
					f_z (in)	0.0007	0.0011	0.0014	0.0018	0.0021	0.0028	0.0035	0.0042	0.0049	0.0056
				25 - 45	v_f (in/min)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
M	E 8 - 9	1.00	1.00	35	n (rev/min)	535	357	267	214	178	134	107	89	76	67
					f_z (in)	0.0007	0.0011	0.0014	0.0018	0.0021	0.0028	0.0035	0.0042	0.0049	0.0056
				25 - 45	v_f (in/min)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
K	E 12 - 13	1.00	1.00	35	n (rev/min)	535	357	267	214	178	134	107	89	76	67
					f_z (in)	0.0009	0.0014	0.0018	0.0023	0.0027	0.0036	0.0045	0.0054	0.0063	0.0072
				25 - 45	v_f (in/min)	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
N	E 18	1.00	1.00	240	n (rev/min)	3667	2445	1834	1467	1222	917	733	611	524	458
					f_z (in)	0.0013	0.0019	0.0025	0.0031	0.0038	0.0050	0.0063	0.0075	0.0088	0.0100
				200 - 280	v_f (in/min)	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

SLR600 / SLRC602 / SLRB601

SIDE MILLING - ROUGHING																
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		Z_n = 4	1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	1 3/4	2
P	E 1 - 2	1.50	0.25	112	n (rev/min)		1711	1141	856	685	570	428	342	285	244	214
					f_z (in)		0.0011	0.0017	0.0023	0.0028	0.0034	0.0045	0.0056	0.0068	0.0079	0.0090
				72 - 152	v_f (in/min)		7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7
	E 3 - 4	1.50	0.25	56	n (rev/min)		856	570	428	342	285	214	171	143	122	107
					f_z (in)		0.0009	0.0013	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0061	0.0070
				36 - 76	v_f (in/min)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
M	E 8 - 9	1.50	0.25	56	n (rev/min)		856	570	428	342	285	214	171	143	122	107
					f_z (in)		0.0009	0.0013	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0061	0.0070
				36 - 76	v_f (in/min)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
K	E 12 - 13	1.50	0.25	67	n (rev/min)		1024	683	512	410	341	256	205	171	146	128
					f_z (in)		0.0011	0.0017	0.0023	0.0028	0.0034	0.0045	0.0056	0.0068	0.0079	0.0090
				47 - 87	v_f (in/min)		4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
N	E 18	1.50	0.25	350	n (rev/min)		5348	3565	2674	2139	1783	1337	1070	891	764	669
					f_z (in)		0.0016	0.0023	0.0031	0.0039	0.0047	0.0063	0.0078	0.0094	0.0109	0.0125
				300 - 400	v_f (in/min)		33.4	33.4	33.4	33.4	33.4	33.4	33.4	33.4	33.4	33.5

SIDE MILLING - ROUGHING Z_n = 6																
P	E 1 - 2	1.50	0.25	112	n (rev/min)		1711	1141	856	685	570	428	342	285	244	214
					f_z (in)		0.0011	0.0017	0.0023	0.0028	0.0034	0.0045	0.0056	0.0068	0.0079	0.0090
				72 - 152	v_f (in/min)		11.5	11.6	11.6	11.6	11.5	11.6	11.5	11.5	11.5	11.6
	E 3 - 4	1.50	0.25	56	n (rev/min)		856	570	428	342	285	214	171	143	122	107
					f_z (in)		0.0009	0.0013	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0061	0.0070
				36 - 76	v_f (in/min)		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
M	E 8 - 9	1.50	0.25	56	n (rev/min)		856	570	428	342	285	214	171	143	122	107
					f_z (in)		0.0009	0.0013	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0061	0.0070
				36 - 76	v_f (in/min)		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
K	E 12 - 13	1.50	0.25	67	n (rev/min)		1024	683	512	410	341	256	205	171	146	128
					f_z (in)		0.0011	0.0017	0.0023	0.0028	0.0034	0.0045	0.0056	0.0068	0.0079	0.0090
				47 - 87	v_f (in/min)		6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
N	E 18	1.50	0.25	350	n (rev/min)		5348	3565	2674	2139	1783	1337	1070	891	764	669
					f_z (in)		0.0016	0.0023	0.0031	0.0039	0.0047	0.0063	0.0078	0.0094	0.0109	0.0125
				300 - 400	v_f (in/min)		50.1	50.1	50.1	50.1	50.1	50.1	50.2	50.1	50.1	50.2

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

SMM850

SLOTTING															
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (m / min)		Z_n = 4									
						6	10	12	16	18	25	32	38	45	50
P	E 1 - 2	1.00	1.00	34	n (rev/min)	1800	1080	900	680	600	430	340	280	240	220
					f_z (mm)	0.027	0.045	0.054	0.072	0.081	0.113	0.144	0.171	0.203	0.225
				24 - 43	v_f (mm/min)	194	194	194	196	194	194	196	192	194	198
	E 3 - 4	1.00	1.00	15	n (rev/min)	800	480	400	300	270	190	150	130	110	100
					f_z (mm)	0.021	0.035	0.042	0.056	0.063	0.088	0.112	0.133	0.158	0.175
				12 - 18	v_f (mm/min)	67	67	67	67	68	67	67	69	69	70
M	E 8 - 9	1.00	1.00	15	n (rev/min)	800	480	400	300	270	190	150	130	110	100
					f_z (mm)	0.021	0.035	0.042	0.056	0.063	0.088	0.112	0.133	0.158	0.175
				12 - 18	v_f (mm/min)	67	67	67	67	68	67	67	69	69	70
K	E 12 - 13	1.00	1.00	15	n (rev/min)	800	480	400	300	270	190	150	130	110	100
					f_z (mm)	0.027	0.045	0.054	0.072	0.081	0.113	0.144	0.171	0.203	0.225
				12 - 18	v_f (mm/min)	86	86	86	86	87	86	86	89	89	90
N	E 18	1.00	1.00	73	n (rev/min)	3870	2320	1940	1450	1290	930	730	610	520	460
					f_z (mm)	0.027	0.045	0.054	0.072	0.081	0.113	0.144	0.171	0.203	0.225
				61 - 85	v_f (mm/min)	418	418	419	418	418	419	420	417	421	414

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

SMM850

SIDE MILLING - ROUGHING																
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (m / min)		Z_n = 4										
						6	10	12	16	18	25	32	38	45	50
P	E 1 - 2	1.50	0.25	49	n (rev/min)	2600	1560	1300	970	870	620	490	410	350	310
					f_z (mm)	0.034	0.056	0.068	0.090	0.101	0.141	0.180	0.214	0.253	0.281
				37 - 61	v_f (mm/min)	351	351	351	349	352	349	353	351	354	349
	E 3 - 4	1.50	0.25	24	n (rev/min)	1270	760	640	480	420	310	240	200	170	150
					f_z (mm)	0.026	0.044	0.053	0.070	0.079	0.109	0.140	0.166	0.197	0.219
				18 - 30	v_f (mm/min)	133	133	134	134	132	136	134	133	134	131
M	E 8 - 9	1.50	0.25	24	n (rev/min)	1270	760	640	480	420	310	240	200	170	150
					f_z (mm)	0.026	0.044	0.053	0.070	0.079	0.109	0.140	0.166	0.197	0.219
				18 - 30	v_f (mm/min)	133	133	134	134	132	136	134	133	134	131
K	E 12 - 13	1.50	0.25	29	n (rev/min)	1540	920	770	580	510	370	290	240	210	180
					f_z (mm)	0.034	0.056	0.068	0.090	0.101	0.141	0.180	0.214	0.253	0.281
				23 - 35	v_f (mm/min)	208	207	208	209	207	208	209	205	213	203
N	E 18	1.50	0.25	107	n (rev/min)	5680	3410	2840	2130	1890	1360	1060	900	760	680
					f_z (mm)	0.034	0.056	0.068	0.090	0.101	0.141	0.180	0.214	0.253	0.281
				91 - 122	v_f (mm/min)	767	767	767	767	765	765	763	770	770	765

SIDE MILLING -ROUGHING Z_n = 6																
P	E 1 - 2	1.50	0.25	49	n (rev/min)	2600	1560	1300	970	870	620	490	410	350	310
					f_z (mm)	0.034	0.056	0.068	0.090	0.101	0.141	0.180	0.214	0.253	0.281
				37 - 61	v_f (mm/min)	527	527	527	524	529	523	529	526	532	523
	E 3 - 4	1.50	0.25	24	n (rev/min)	1270	760	640	480	420	310	240	200	170	150
					f_z (mm)	0.026	0.044	0.053	0.070	0.079	0.109	0.140	0.166	0.197	0.219
				18 - 30	v_f (mm/min)	200	200	202	202	198	203	202	200	201	197
M	E 8 - 9	1.50	0.25	24	n (rev/min)	1270	760	640	480	420	310	240	200	170	150
					f_z (mm)	0.026	0.044	0.053	0.070	0.079	0.109	0.140	0.166	0.197	0.219
				18 - 30	v_f (mm/min)	200	200	202	202	198	203	202	200	201	197
K	E 12 - 13	1.50	0.25	29	n (rev/min)	1540	920	770	580	510	370	290	240	210	180
					f_z (mm)	0.034	0.056	0.068	0.090	0.101	0.141	0.180	0.214	0.253	0.281
				23 - 35	v_f (mm/min)	312	311	312	313	310	312	313	308	319	304
N	E 18	1.50	0.25	107	n (rev/min)	5680	3410	2840	2130	1890	1360	1060	900	760	680
					f_z (mm)	0.034	0.056	0.068	0.090	0.101	0.141	0.180	0.214	0.253	0.281
				91 - 122	v_f (mm/min)	1150	1151	1150	1150	1148	1148	1145	1154	1154	1148

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

SR208 / DR209 / DS211 / DL213 / DB215 / DBS217

SLOTTING

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 2$ 1/32	1/16	3/32	1/8	5/32	3/16
P	E 1 - 2	0.50	1.00	110	n (rev/min)	13446	6723	4482	3362	2689	2241
					f_z (in)	0.0001	0.0003	0.0004	0.0006	0.0007	0.0008
				80 - 140	v_f (in/min)	3.8	3.8	3.8	3.8	3.8	3.8
	E 3 - 4	0.50	1.00	65	n (rev/min)	7946	3973	2649	1986	1589	1324
					f_z (in)	0.0001	0.0002	0.0003	0.0004	0.0005	0.0007
				55 - 75	v_f (in/min)	1.7	1.7	1.7	1.7	1.7	1.7
M	E 8 - 9	0.50	1.00	50	n (rev/min)	6112	3056	2037	1528	1222	1019
					f_z (in)	0.0001	0.0002	0.0003	0.0004	0.0005	0.0007
				40 - 60	v_f (in/min)	1.3	1.3	1.3	1.3	1.3	1.3
K	E 12 - 13	0.50	1.00	50	n (rev/min)	6112	3056	2037	1528	1222	1019
					f_z (in)	0.0001	0.0003	0.0004	0.0006	0.0007	0.0008
				40 - 60	v_f (in/min)	1.7	1.7	1.7	1.7	1.7	1.7
N	E 16	0.50	1.00	240	n (rev/min)	29338	14669	9779	7334	5868	4890
					f_z (in)	0.0002	0.0003	0.0005	0.0006	0.0008	0.0009
				220 - 260	v_f (in/min)	9.2	9.2	9.2	9.2	9.2	9.2
	E 17	0.50	1.00	240	n (rev/min)	29338	14669	9779	7334	5868	4890
					f_z (in)	0.0002	0.0003	0.0005	0.0006	0.0008	0.0009
				220 - 260	v_f (in/min)	9.2	9.2	9.2	9.2	9.2	9.2
	E 18	0.50	1.00	200	n (rev/min)	24448	12224	8149	6112	4890	4075
					f_z (in)	0.0002	0.0003	0.0005	0.0006	0.0008	0.0009
				180 - 220	v_f (in/min)	7.6	7.6	7.6	7.6	7.6	7.6

SIDE MILLING - ROUGHING

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 2$ 1/32	1/16	3/32	1/8	5/32	3/16
P	E 1 - 2	1.00	0.25	160	n (rev/min)	19558	9779	6519	4890	3912	3260
					f_z (in)	0.0002	0.0004	0.0005	0.0007	0.0009	0.0011
				120 - 200	v_f (in/min)	6.9	6.9	6.9	6.9	6.9	6.9
	E 3 - 4	1.00	0.25	100	n (rev/min)	12224	6112	4075	3056	2445	2037
					f_z (in)	0.0001	0.0003	0.0004	0.0005	0.0007	0.0008
				80 - 120	v_f (in/min)	3.3	3.3	3.3	3.3	3.3	3.3
M	E 8 - 9	1.00	0.25	80	n (rev/min)	9779	4890	3260	2445	1956	1630
					f_z (in)	0.0001	0.0003	0.0004	0.0005	0.0007	0.0008
				60 - 100	v_f (in/min)	2.7	2.7	2.7	2.7	2.7	2.7
K	E 12 - 13	1.00	0.25	95	n (rev/min)	11613	5806	3871	2903	2323	1935
					f_z (in)	0.0002	0.0004	0.0005	0.0007	0.0009	0.0011
				75 - 115	v_f (in/min)	4.1	4.1	4.1	4.1	4.1	4.1
N	E 16	1.00	0.25	350	n (rev/min)	42784	21392	14261	10696	8557	7131
					f_z (in)	0.0002	0.0004	0.0006	0.0008	0.0010	0.0012
				330 - 370	v_f (in/min)	16.7	16.7	16.7	16.7	16.7	16.7
	E 17	1.00	0.25	350	n (rev/min)	42784	21392	14261	10696	8557	7131
					f_z (in)	0.0002	0.0004	0.0006	0.0008	0.0010	0.0012
				330 - 370	v_f (in/min)	16.7	16.7	16.7	16.7	16.7	16.7
	E 18	1.00	0.25	300	n (rev/min)	36672	18336	12224	9168	7334	6112
					f_z (in)	0.0002	0.0004	0.0006	0.0008	0.0010	0.0012
				280 - 320	v_f (in/min)	14.3	14.3	14.3	14.3	14.3	14.3

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

SR414 / DR416 / DS420 / DL418

SIDE MILLING - ROUGHING												
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 4$						
						1/32	1/16	3/32	1/8	5/32	3/16
P	E 1 - 2	1.00	0.15	160	n (rev/min)	19558	9779	6519	4890	3912	3260
					f_z (in)	0.0001	0.0002	0.0004	0.0005	0.0006	0.0007
				120 - 200	v_f (in/min)	9.5	9.5	9.5	9.5	9.5	9.5
	E 3 - 4	1.00	0.15	100	n (rev/min)	12224	6112	4075	3056	2445	2037
					f_z (in)	0.0001	0.0002	0.0003	0.0004	0.0005	0.0006
				80 - 120	v_f (in/min)	4.7	4.7	4.7	4.7	4.7	4.7
M	E 8 - 9	1.00	0.15	80	n (rev/min)	9779	4890	3260	2445	1956	1630
					f_z (in)	0.0001	0.0002	0.0003	0.0004	0.0005	0.0006
				60 - 100	v_f (in/min)	3.8	3.8	3.8	3.8	3.8	3.8
K	E 12 - 13	1.00	0.15	95	n (rev/min)	11613	5806	3871	2903	2323	1935
					f_z (in)	0.0001	0.0002	0.0004	0.0005	0.0006	0.0007
				75 - 115	v_f (in/min)	5.7	5.7	5.7	5.7	5.7	5.7
N	E 18	1.00	0.15	350	n (rev/min)	42784	21392	14261	10696	8557	7131
					f_z (in)	0.0001	0.0003	0.0004	0.0006	0.0007	0.0008
				300 - 400	v_f (in/min)	23.5	23.5	23.5	23.5	23.5	23.5

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

COBALT

General purpose M42 cobalt roughers and finishers are available in a wide variety of sizes in both center cutting and non center cutting geometries.

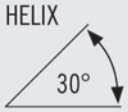
The new VFP geometry is designed specifically for high metal removal rates in stainless steel and titanium alloys.

Our EXCEL end mills are a revolutionary solution that combines superior geometry, high grade cobalt substrate and wear resistant PVD coatings to handle difficult milling applications.

Niagara Cutter

GENERAL PURPOSE- SP205

M42
8% COBALT

HELIX


SQUARE END


CENTER CUTTING

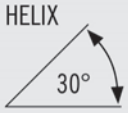
- Weldon flat standard
- Designed for pocketing and slotting in all materials including high temperature alloys

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N50041	SP205-0.125-F3-S.3-Z2	1/8	3/8	3/8	2-5/16	2	
N88565	SP205-0.125-F3-S.3-Z2	1/8	3/8	3/8	2-5/16	2	TiCN
N50051	SP205-0.156-F3-S.3-Z2	5/32	3/8	7/16	2-5/16	2	
N88566	SP205-0.156-F3-S.3-Z2	5/32	3/8	7/16	2-5/16	2	TiCN
N50061	SP205-0.188-F2-S.3-Z2	3/16	3/8	7/16	2-5/16	2	
N88567	SP205-0.188-F2-S.3-Z2	3/16	3/8	7/16	2-5/16	2	TiCN
N50071	SP205-0.219-F2-S.3-Z2	7/32	3/8	1/2	2-5/16	2	
N88568	SP205-0.219-F2-S.3-Z2	7/32	3/8	1/2	2-5/16	2	TiCN
N50081	SP205-0.250-F2-S.3-Z2	1/4	3/8	1/2	2-5/16	2	
N88569	SP205-0.250-F2-S.3-Z2	1/4	3/8	1/2	2-5/16	2	TiCN
N50091	SP205-0.281-F2-S.3-Z2	9/32	3/8	9/16	2-5/16	2	
N88570	SP205-0.281-F2-S.3-Z2	9/32	3/8	9/16	2-5/16	2	TiCN
N50101	SP205-0.313-F2-S.3-Z2	5/16	3/8	9/16	2-5/16	2	
N88571	SP205-0.313-F2-S.3-Z2	5/16	3/8	9/16	2-5/16	2	TiCN
N50121	SP205-0.375-D2-S.3-Z2	3/8	3/8	9/16	2-5/16	2	
N88573	SP205-0.375-D2-S.3-Z2	3/8	3/8	9/16	2-5/16	2	TiCN
N50141	SP205-0.438-P2-S.3-Z2	7/16	3/8	13/16	2-1/2	2	
N88574	SP205-0.438-P2-S.3-Z2	7/16	3/8	13/16	2-1/2	2	TiCN
N50161	SP205-0.500-P2-S.3-Z2	1/2	3/8	13/16	2-1/2	2	
N88575	SP205-0.500-P2-S.3-Z2	1/2	3/8	13/16	2-1/2	2	TiCN
N50162	SP205-0.500-D2-S.3-Z2	1/2	1/2	1	3	2	
N88576	SP205-0.500-D2-S.3-Z2	1/2	1/2	1	3	2	TiCN
N50182	SP205-0.563-P2-S.3-Z2	9/16	1/2	1-1/8	3-1/8	2	
N88577	SP205-0.563-P2-S.3-Z2	9/16	1/2	1-1/8	3-1/8	2	TiCN
N50203	SP205-0.625-D2-S.3-Z2	5/8	5/8	1-5/16	3-7/16	2	
N88578	SP205-0.625-D2-S.3-Z2	5/8	5/8	1-5/16	3-7/16	2	TiCN
N50242	SP205-0.750-P2-S.3-Z2	3/4	1/2	1-5/16	3-5/16	2	
N88579	SP205-0.750-P2-S.3-Z2	3/4	1/2	1-5/16	3-5/16	2	TiCN
N50244	SP205-0.750-D2-S.3-Z2	3/4	3/4	1-5/16	3-9/16	2	
N88580	SP205-0.750-D2-S.3-Z2	3/4	3/4	1-5/16	3-9/16	2	TiCN
N50285	SP205-0.875-D2-S.3-Z2	7/8	7/8	1-1/2	3-3/4	2	
N88581	SP205-0.875-D2-S.3-Z2	7/8	7/8	1-1/2	3-3/4	2	TiCN
N50324	SP205-1.000-P2-S.3-Z2	1	3/4	1-1/2	3-3/4	2	
N88582	SP205-1.000-P2-S.3-Z2	1	3/4	1-1/2	3-3/4	2	TiCN
N50326	SP205-1.000-D2-S.3-Z2	1	1	1-5/8	4-1/8	2	
N88583	SP205-1.000-D2-S.3-Z2	1	1	1-5/8	4-1/8	2	TiCN

DISCOUNT CODE D40

GENERAL PURPOSE- SP205

M42
8% COBALT

HELIX


SQUARE END


CENTER CUTTING

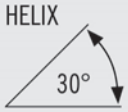
- Weldon flat standard
- Designed for pocketing and slotting in all materials including high temperature alloys

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N50366	SP205-1.125-P1-S.3-Z2	1-1/8	1	1-5/8	4-1/8	2	
N88584	SP205-1.125-P1-S.3-Z2	1-1/8	1	1-5/8	4-1/8	2	TiCN
N50407	SP205-1.250-D1-S.3-Z2	1-1/4	1-1/4	1-5/8	4-1/8	2	
N88586	SP205-1.250-D1-S.3-Z2	1-1/4	1-1/4	1-5/8	4-1/8	2	TiCN
N50487	SP205-1.500-P1-S.3-Z2	1-1/2	1-1/4	1-5/8	4-1/8	2	
N88587	SP205-1.500-P1-S.3-Z2	1-1/2	1-1/4	1-5/8	4-1/8	2	TiCN
N50647	SP205-2.000-P1-S.3-Z2	2	1-1/4	1-5/8	4-1/8	2	
N88588	SP205-2.000-P1-S.3-Z2	2	1-1/4	1-5/8	4-1/8	2	TiCN

Niagara Cutter

GENERAL PURPOSE- DP530

M42
8% COBALT

HELIX


SQUARE END


CENTER CUTTING

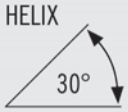
- Weldon flat standard
- Designed for pocketing and slotting in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N53041	DP530-0.125-XF3-S.3-Z2	1/8	3/8	3/8	3-1/16	2	
N88672	DP530-0.125-XF3-S.3-Z2	1/8	3/8	3/8	3-1/16	2	TiCN
N53051	DP530-0.156-XF3-S.3-Z2	5/32	3/8	7/16	3-1/8	2	
N88673	DP530-0.156-XF3-S.3-Z2	5/32	3/8	7/16	3-1/8	2	TiCN
N53061	DP530-0.188-XF2-S.3-Z2	3/16	3/8	7/16	3-1/8	2	
N88674	DP530-0.188-XF2-S.3-Z2	3/16	3/8	7/16	3-1/8	2	TiCN
N53071	DP530-0.219-XF2-S.3-Z2	7/32	3/8	1/2	3-1/8	2	
N88675	DP530-0.219-XF2-S.3-Z2	7/32	3/8	1/2	3-1/8	2	TiCN
N53081	DP530-0.250-XF2-S.3-Z2	1/4	3/8	1/2	3-1/8	2	
N88676	DP530-0.250-XF2-S.3-Z2	1/4	3/8	1/2	3-1/8	2	TiCN
N53091	DP530-0.281-XF2-S.3-Z2	9/32	3/8	9/16	3-1/8	2	
N88677	DP530-0.281-XF2-S.3-Z2	9/32	3/8	9/16	3-1/8	2	TiCN
N53101	DP530-0.313-XF2-S.3-Z2	5/16	3/8	9/16	3-1/8	2	
N88678	DP530-0.313-XF2-S.3-Z2	5/16	3/8	9/16	3-1/8	2	TiCN
N53121	DP530-0.375-XD2-S.3-Z2	3/8	3/8	9/16	3-1/8	2	
N88680	DP530-0.375-XD2-S.3-Z2	3/8	3/8	9/16	3-1/8	2	TiCN
N53142	DP530-0.438-XF2-S.3-Z2	7/16	1/2	13/16	3-3/4	2	
N88681	DP530-0.438-XF2-S.3-Z2	7/16	1/2	13/16	3-3/4	2	TiCN
N53162	DP530-0.500-XD2-S.3-Z2	1/2	1/2	13/16	3-3/4	2	
N88682	DP530-0.500-XD2-S.3-Z2	1/2	1/2	13/16	3-3/4	2	TiCN
N53203	DP530-0.625-XD2-S.3-Z2	5/8	5/8	1-1/8	4-1/2	2	
N88684	DP530-0.625-XD2-S.3-Z2	5/8	5/8	1-1/8	4-1/2	2	TiCN
N53244	DP530-0.750-XD2-S.3-Z2	3/4	3/4	1-5/16	5	2	
N88685	DP530-0.750-XD2-S.3-Z2	3/4	3/4	1-5/16	5	2	TiCN
N53285	DP530-0.875-XD2-S.3-Z2	7/8	7/8	1-9/16	5-1/2	2	
N88686	DP530-0.875-XD2-S.3-Z2	7/8	7/8	1-9/16	5-1/2	2	TiCN
N53326	DP530-1.000-XD2-S.3-Z2	1	1	1-5/8	5-7/8	2	
N88687	DP530-1.000-XD2-S.3-Z2	1	1	1-5/8	5-7/8	2	TiCN

Niagara Cutter

GENERAL PURPOSE- SMM835

M42
8% COBALT

HELIX


SQUARE END


CENTER CUTTING

- Metric flute / inch shank
- Weldon flat standard
- Designed for pocketing in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N72840	SMM835-0.079-F4-S.3-Z2	2mm	3/8	5/16	2-5/16	2	
N88934	SMM835-0.079-F4-S.3-Z2	2mm	3/8	5/16	2-5/16	2	TiCN
N72843	SMM835-0.197-F3-S.3-Z2	5mm	3/8	1/2	2-5/16	2	
N88937	SMM835-0.197-F3-S.3-Z2	5mm	3/8	1/2	2-5/16	2	TiCN
N72844	SMM835-0.236-F2-S.3-Z2	6mm	3/8	1/2	2-5/16	2	
N88938	SMM835-0.236-F2-S.3-Z2	6mm	3/8	1/2	2-5/16	2	TiCN
N72847	SMM835-0.394-P2-S.3-Z2	10mm	3/8	13/16	2-1/2	2	
N88941	SMM835-0.394-P2-S.3-Z2	10mm	3/8	13/16	2-1/2	2	TiCN
N72848	SMM835-0.472-F2-S.3-Z2	12mm	1/2	13/16	2-1/2	2	
N88942	SMM835-0.472-F2-S.3-Z2	12mm	1/2	13/16	2-1/2	2	TiCN
N72849	SMM835-0.551-P2-S.3-Z2	14mm	1/2	1-1/8	3-1/8	2	
N88943	SMM835-0.551-P2-S.3-Z2	14mm	1/2	1-1/8	3-1/8	2	TiCN
N72850	SMM835-0.630-P2-S.3-Z2	16mm	5/8	1-5/16	3-7/16	2	
N88944	SMM835-0.630-P2-S.3-Z2	16mm	5/8	1-5/16	3-7/16	2	TiCN

Niagara Cutter

EXCEL SERIES- EX350

PREMIUM PARTICLE METAL
8.5% COBALT

HELIX
35°

SQUARE END

CENTER CUTTING

- Form ground flutes
- Weldon flat standard

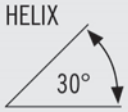
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N53342	EX350-0.375-D7-S.3-Z4	3/8	3/8	2-1/2	4-1/4	4	
N53458	EX350-0.375-D7-S.3-Z4	3/8	3/8	2-1/2	4-1/4	4	TiCN
N53343	EX350-0.500-D1-S.3-Z4	1/2	1/2	1/2	2-1/2	4	
N53459	EX350-0.500-D1-S.3-Z4	1/2	1/2	1/2	2-1/2	4	TiCN
N53344	EX350-0.500-D3-S.3-Z4	1/2	1/2	1-1/4	3-1/4	4	
N53460	EX350-0.500-D3-S.3-Z4	1/2	1/2	1-1/4	3-1/4	4	TiCN
N53346	EX350-0.500-D8-S.3-Z4	1/2	1/2	4	6	4	
N53462	EX350-0.500-D8-S.3-Z4	1/2	1/2	4	6	4	TiCN
N53347	EX350-0.625-D1-S.3-Z4	5/8	5/8	5/8	2-3/4	4	
N53463	EX350-0.625-D1-S.3-Z4	5/8	5/8	5/8	2-3/4	4	TiCN
N53348	EX350-0.625-D3-S.3-Z4	5/8	5/8	1-5/8	3-3/4	4	
N53464	EX350-0.625-D3-S.3-Z4	5/8	5/8	1-5/8	3-3/4	4	TiCN
N53352	EX350-0.750-D1-S.3-Z4	3/4	3/4	3/4	3	4	
N53468	EX350-0.750-D1-S.3-Z4	3/4	3/4	3/4	3	4	TiCN
N53353	EX350-0.750-D2-S.3-Z4	3/4	3/4	1-5/8	3-7/8	4	
N53469	EX350-0.750-D2-S.3-Z4	3/4	3/4	1-5/8	3-7/8	4	TiCN
N53355	EX350-0.750-D3-S.3-Z4	3/4	3/4	2	4-1/4	4	
N53471	EX350-0.750-D3-S.3-Z4	3/4	3/4	2	4-1/4	4	TiCN
N53357	EX350-0.750-D4-S.3-Z4	3/4	3/4	3	5-1/4	4	
N53473	EX350-0.750-D4-S.3-Z4	3/4	3/4	3	5-1/4	4	TiCN
N53359	EX350-0.750-D5-S.3-Z4	3/4	3/4	4	6-1/4	4	
N53475	EX350-0.750-D5-S.3-Z4	3/4	3/4	4	6-1/4	4	TiCN
N53363	EX350-1.000-D1-S.3-Z4	1	1	1	3-1/2	4	
N53479	EX350-1.000-D1-S.3-Z4	1	1	1	3-1/2	4	TiCN
N53364	EX350-1.000-D2-S.3-Z4	1	1	2	4-1/2	4	
N53480	EX350-1.000-D2-S.3-Z4	1	1	2	4-1/2	4	TiCN
N53366	EX350-1.000-D3-S.3-Z4	1	1	3	5-1/2	4	
N53482	EX350-1.000-D3-S.3-Z4	1	1	3	5-1/2	4	TiCN
N53368	EX350-1.000-D4-S.3-Z4	1	1	4	6-1/2	4	
N53484	EX350-1.000-D4-S.3-Z4	1	1	4	6-1/2	4	TiCN
N53370	EX350-1.000-D6-S.3-Z4	1	1	6	8-1/2	4	
N53486	EX350-1.000-D6-S.3-Z4	1	1	6	8-1/2	4	TiCN
N53374	EX350-1.250-D3-S.3-Z4	1-1/4	1-1/4	3	5-1/2	4	
N53490	EX350-1.250-D3-S.3-Z4	1-1/4	1-1/4	3	5-1/2	4	TiCN
N53375	EX350-1.250-D3-S.3-Z6	1-1/4	1-1/4	3	5-1/2	6	
N53491	EX350-1.250-D3-S.3-Z6	1-1/4	1-1/4	3	5-1/2	6	TiCN
N53379	EX350-1.250-D5-S.3-Z6	1-1/4	1-1/4	6	8-1/2	6	
N53495	EX350-1.250-D5-S.3-Z6	1-1/4	1-1/4	6	8-1/2	6	TiCN
N53385	EX350-1.500-P3-S.3-Z6	1-1/2	1-1/4	4	6-1/2	6	
N53501	EX350-1.500-P3-S.3-Z6	1-1/2	1-1/4	4	6-1/2	6	TiCN
N53395	EX350-2.000-D4-S.7-Z6	2	2	6	9-3/4	6	
N53511	EX350-2.000-D4-S.7-Z6	2	2	6	9-3/4	6	TiCN

DISCOUNT CODE D40

Niagara Cutter

GENERAL PURPOSE- SP408

M42
8% COBALT

HELIX


SQUARE END


NON CENTER CUTTING

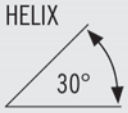
- Weldon flat standard
- Designed for profiling in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N46668	SP408-0.125-F3-S.3-Z4	1/8	3/8	3/8	2-5/16	4	
N46870	SP408-0.125-F3-S.3-Z4	1/8	3/8	3/8	2-5/16	4	TiCN
N46670	SP408-0.188-F3-S.3-Z4	3/16	3/8	1/2	2-3/8	4	
N46872	SP408-0.188-F3-S.3-Z4	3/16	3/8	1/2	2-3/8	4	TiCN
N46672	SP408-0.250-F3-S.3-Z4	1/4	3/8	5/8	2-7/16	4	
N46874	SP408-0.250-F3-S.3-Z4	1/4	3/8	5/8	2-7/16	4	TiCN
N46676	SP408-0.313-F2-S.3-Z4	5/16	3/8	3/4	2-1/2	4	
N46878	SP408-0.313-F2-S.3-Z4	5/16	3/8	3/4	2-1/2	4	TiCN
N46680	SP408-0.375-D2-S.3-Z4	3/8	3/8	3/4	2-1/2	4	
N46882	SP408-0.375-D2-S.3-Z4	3/8	3/8	3/4	2-1/2	4	TiCN
N46681	SP408-0.375-D4-S.3-Z4	3/8	3/8	1-1/2	3-1/4	4	
N46883	SP408-0.375-D4-S.3-Z4	3/8	3/8	1-1/2	3-1/4	4	TiCN
N46688	SP408-0.500-D3-S.3-Z4	1/2	1/2	1-1/4	3-1/4	4	
N46890	SP408-0.500-D3-S.3-Z4	1/2	1/2	1-1/4	3-1/4	4	TiCN
N46690	SP408-0.500-D4-S.3-Z4	1/2	1/2	2	4	4	
N46892	SP408-0.500-D4-S.3-Z4	1/2	1/2	2	4	4	TiCN
N46696	SP408-0.625-D3-S.3-Z4	5/8	5/8	1-5/8	3-3/4	4	
N46898	SP408-0.625-D3-S.3-Z4	5/8	5/8	1-5/8	3-3/4	4	TiCN
N46698	SP408-0.625-D4-S.3-Z4	5/8	5/8	2-1/2	4-5/8	4	
N46900	SP408-0.625-D4-S.3-Z4	5/8	5/8	2-1/2	4-5/8	4	TiCN
N46706	SP408-0.750-D2-S.3-Z4	3/4	3/4	1-5/8	3-7/8	4	
N46908	SP408-0.750-D2-S.3-Z4	3/4	3/4	1-5/8	3-7/8	4	TiCN
N46707	SP408-0.750-D2-S.3-Z6	3/4	3/4	1-5/8	3-7/8	6	
N46909	SP408-0.750-D2-S.3-Z6	3/4	3/4	1-5/8	3-7/8	6	TiCN
N46708	SP408-0.750-D4-S.3-Z4	3/4	3/4	3	5-1/4	4	
N46910	SP408-0.750-D4-S.3-Z4	3/4	3/4	3	5-1/4	4	TiCN
N46709	SP408-0.750-D5-S.3-Z4	3/4	3/4	4	6-1/4	4	
N46911	SP408-0.750-D5-S.3-Z4	3/4	3/4	4	6-1/4	4	TiCN
N46710	SP408-0.781-P2-S.3-Z4	25/32	5/8	1-7/8	4	4	
N46912	SP408-0.781-P2-S.3-Z4	25/32	5/8	1-7/8	4	4	TiCN
N46711	SP408-0.813-P2-S.3-Z4	13/16	5/8	1-7/8	4	4	
N46913	SP408-0.813-P2-S.3-Z4	13/16	5/8	1-7/8	4	4	TiCN
N46714	SP408-0.875-P2-S.3-Z4	7/8	3/4	1-7/8	4-1/8	4	
N46916	SP408-0.875-P2-S.3-Z4	7/8	3/4	1-7/8	4-1/8	4	TiCN
N46722	SP408-1.000-P2-S.3-Z4	1	3/4	1-7/8	4-1/8	4	

DISCOUNT CODE D40

GENERAL PURPOSE- SP408

M42
8% COBALT

HELIX


SQUARE END


NON CENTER CUTTING

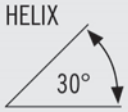
- Weldon flat standard
- Designed for profiling in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N46924	SP408-1.000-P2-S.3-Z4	1	3/4	1-7/8	4-1/8	4	TiCN
N46724	SP408-1.000-P1-S.3-Z4	1	7/8	1-7/8	4-1/8	4	
N46926	SP408-1.000-P1-S.3-Z4	1	7/8	1-7/8	4-1/8	4	TiCN
N46726	SP408-1.000-D2-S.3-Z4	1	1	2	4-1/2	4	
N46928	SP408-1.000-D2-S.3-Z4	1	1	2	4-1/2	4	TiCN
N46728	SP408-1.000-D3-S.3-Z4	1	1	3	5-1/2	4	
N46930	SP408-1.000-D3-S.3-Z4	1	1	3	5-1/2	4	TiCN
N46730	SP408-1.000-D4-S.3-Z4	1	1	4	6-1/2	4	
N46932	SP408-1.000-D4-S.3-Z4	1	1	4	6-1/2	4	TiCN
N46739	SP408-1.125-P4-S.3-Z6	1-1/8	1	4	6-1/2	6	
N46941	SP408-1.125-P4-S.3-Z6	1-1/8	1	4	6-1/2	6	TiCN
N46744	SP408-1.250-D2-S.3-Z6	1-1/4	1-1/4	3	5-1/2	6	
N46946	SP408-1.250-D2-S.3-Z6	1-1/4	1-1/4	3	5-1/2	6	TiCN
N46745	SP408-1.250-D3-S.3-Z6	1-1/4	1-1/4	4	6-1/2	6	
N46947	SP408-1.250-D3-S.3-Z6	1-1/4	1-1/4	4	6-1/2	6	TiCN
N46747	SP408-1.250-D5-S.3-Z6	1-1/4	1-1/4	6	8-1/2	6	
N46949	SP408-1.250-D5-S.3-Z6	1-1/4	1-1/4	6	8-1/2	6	TiCN
N46753	SP408-1.500-P5-S.3-Z6	1-1/2	1-1/4	4	6-1/2	6	
N46955	SP408-1.500-P5-S.3-Z6	1-1/2	1-1/4	4	6-1/2	6	TiCN
N46754	SP408-1.500-P6-S.3-Z6	1-1/2	1-1/4	5	7-1/2	6	
N46956	SP408-1.500-P6-S.3-Z6	1-1/2	1-1/4	5	7-1/2	6	TiCN
N46755	SP408-1.500-P7-S.3-Z6	1-1/2	1-1/4	6	8-1/2	6	
N46957	SP408-1.500-P7-S.3-Z6	1-1/2	1-1/4	6	8-1/2	6	TiCN
N46756	SP408-1.500-P8-S.3-Z6	1-1/2	1-1/4	8	10-1/2	6	
N46958	SP408-1.500-P8-S.3-Z6	1-1/2	1-1/4	8	10-1/2	6	TiCN
N46768	SP408-2.000-D4-S.7-Z6	2	2	8	11-3/4	6	
N46970	SP408-2.000-D4-S.7-Z6	2	2	8	11-3/4	6	TiCN

Niagara Cutter

GENERAL PURPOSE- SPC408

M42
8% COBALT

HELIX


SQUARE END


CENTER CUTTING

- Weldon flat standard
- Designed for profiling in all materials

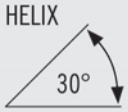
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N52041	SPC408-0.125-F3-S.3-Z4	1/8	3/8	3/8	2-5/16	4	
N88604	SPC408-0.125-F3-S.3-Z4	1/8	3/8	3/8	2-5/16	4	TiCN
N52051	SPC408-0.156-F3-S.3-Z4	5/32	3/8	1/2	2-3/8	4	
N88605	SPC408-0.156-F3-S.3-Z4	5/32	3/8	1/2	2-3/8	4	TiCN
N52049	SPC408-0.188-F1-S.3-Z4	3/16	3/8	3/16	2-1/16	4	
N89446	SPC408-0.188-F1-S.3-Z4	3/16	3/8	3/16	2-1/16	4	TiCN
N52061	SPC408-0.188-F3-S.3-Z4	3/16	3/8	1/2	2-3/8	4	
N88606	SPC408-0.188-F3-S.3-Z4	3/16	3/8	1/2	2-3/8	4	TiCN
N52071	SPC408-0.219-F3-S.3-Z4	7/32	3/8	5/8	2-7/16	4	
N88607	SPC408-0.219-F3-S.3-Z4	7/32	3/8	5/8	2-7/16	4	TiCN
N52069	SPC408-0.250-F1-S.3-Z4	1/4	3/8	1/4	2-1/16	4	
N89447	SPC408-0.250-F1-S.3-Z4	1/4	3/8	1/4	2-1/16	4	TiCN
N52081	SPC408-0.250-F3-S.3-Z4	1/4	3/8	5/8	2-7/16	4	
N88608	SPC408-0.250-F3-S.3-Z4	1/4	3/8	5/8	2-7/16	4	TiCN
N52082	SPC408-0.250-F5-S.3-Z4	1/4	3/8	1-1/4	3-1/16	4	
N88609	SPC408-0.250-F5-S.3-Z4	1/4	3/8	1-1/4	3-1/16	4	TiCN
N52083	SPC408-0.250-F7-S.3-Z4	1/4	3/8	1-3/4	3-9/16	4	
N88610	SPC408-0.250-F7-S.3-Z4	1/4	3/8	1-3/4	3-9/16	4	TiCN
N52091	SPC408-0.281-F2-S.3-Z4	9/32	3/8	5/8	2-7/16	4	
N88611	SPC408-0.281-F2-S.3-Z4	9/32	3/8	5/8	2-7/16	4	TiCN
N52109	SPC408-0.313-F1-S.3-Z4	5/16	3/8	5/16	2-1/16	4	
N89448	SPC408-0.313-F1-S.3-Z4	5/16	3/8	5/16	2-1/16	4	TiCN
N52101	SPC408-0.313-F2-S.3-Z4	5/16	3/8	3/4	2-1/2	4	
N88612	SPC408-0.313-F2-S.3-Z4	5/16	3/8	3/4	2-1/2	4	TiCN
N52102	SPC408-0.313-F4-S.3-Z4	5/16	3/8	1-3/8	3-1/8	4	
N88613	SPC408-0.313-F4-S.3-Z4	5/16	3/8	1-3/8	3-1/8	4	TiCN
N52103	SPC408-0.313-F6-S.3-Z4	5/16	3/8	2	3-3/4	4	
N88614	SPC408-0.313-F6-S.3-Z4	5/16	3/8	2	3-3/4	4	TiCN
N52129	SPC408-0.375-D1-S.3-Z4	3/8	3/8	3/8	2-1/8	4	
N89449	SPC408-0.375-D1-S.3-Z4	3/8	3/8	3/8	2-1/8	4	TiCN
N52121	SPC408-0.375-D2-S.3-Z4	3/8	3/8	3/4	2-1/2	4	
N88616	SPC408-0.375-D2-S.3-Z4	3/8	3/8	3/4	2-1/2	4	TiCN
N52122	SPC408-0.375-D4-S.3-Z4	3/8	3/8	1-1/2	3-1/4	4	
N88617	SPC408-0.375-D4-S.3-Z4	3/8	3/8	1-1/2	3-1/4	4	TiCN
N52123	SPC408-0.375-D7-S.3-Z4	3/8	3/8	2-1/2	4-1/4	4	

DISCOUNT CODE D40

Niagara Cutter

GENERAL PURPOSE- SPC408

M42
8% COBALT

HELIX


SQUARE END


CENTER CUTTING

- Weldon flat standard
- Designed for profiling in all materials

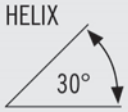
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N88618	SPC408-0.375-D7-S.3-Z4	3/8	3/8	2-1/2	4-1/4	4	TiCN
N52141	SPC408-0.438-P2-S.3-Z4	7/16	3/8	1	2-11/16	4	
N88619	SPC408-0.438-P2-S.3-Z4	7/16	3/8	1	2-11/16	4	TiCN
N52142	SPC408-0.438-P5-S.3-Z4	7/16	3/8	2	3-11/16	4	
N88620	SPC408-0.438-P5-S.3-Z4	7/16	3/8	2	3-11/16	4	TiCN
N52166	SPC408-0.500-P2-S.3-Z4	1/2	3/8	1	2-11/16	4	
N88625	SPC408-0.500-P2-S.3-Z4	1/2	3/8	1	2-11/16	4	TiCN
N52160	SPC408-0.500-D3-S.3-Z4	1/2	1/2	1-1/4	3-1/4	4	
N88621	SPC408-0.500-D3-S.3-Z4	1/2	1/2	1-1/4	3-1/4	4	TiCN
N52162	SPC408-0.500-D3-S.3-Z6	1/2	1/2	1-1/4	3-1/4	6	
N88622	SPC408-0.500-D3-S.3-Z6	1/2	1/2	1-1/4	3-1/4	6	TiCN
N52163	SPC408-0.500-D4-S.3-Z4	1/2	1/2	2	4	4	
N88623	SPC408-0.500-D4-S.3-Z4	1/2	1/2	2	4	4	TiCN
N52164	SPC408-0.500-D6-S.3-Z4	1/2	1/2	3	5	4	
N88624	SPC408-0.500-D6-S.3-Z4	1/2	1/2	3	5	4	TiCN
N52167	SPC408-0.500-D8-S.3-Z4	1/2	1/2	4	6	4	
N88626	SPC408-0.500-D8-S.3-Z4	1/2	1/2	4	6	4	TiCN
N52182	SPC408-0.563-P2-S.3-Z4	9/16	1/2	1-3/8	3-3/8	4	
N88627	SPC408-0.563-P2-S.3-Z4	9/16	1/2	1-3/8	3-3/8	4	TiCN
N52200	SPC408-0.625-D3-S.3-Z4	5/8	5/8	1-5/8	3-3/4	4	
N88628	SPC408-0.625-D3-S.3-Z4	5/8	5/8	1-5/8	3-3/4	4	TiCN
N52203	SPC408-0.625-D3-S.3-Z6	5/8	5/8	1-5/8	3-3/4	6	
N88631	SPC408-0.625-D3-S.3-Z6	5/8	5/8	1-5/8	3-3/4	6	TiCN
N52201	SPC408-0.625-D4-S.3-Z4	5/8	5/8	2-1/2	4-5/8	4	
N88629	SPC408-0.625-D4-S.3-Z4	5/8	5/8	2-1/2	4-5/8	4	TiCN
N52202	SPC408-0.625-D5-S.3-Z4	5/8	5/8	3	5-1/8	4	
N88630	SPC408-0.625-D5-S.3-Z4	5/8	5/8	3	5-1/8	4	TiCN
N52204	SPC408-0.625-D6-S.3-Z4	5/8	5/8	4	6-1/8	4	
N88632	SPC408-0.625-D6-S.3-Z4	5/8	5/8	4	6-1/8	4	TiCN
N52206	SPC408-0.750-P2-S.3-Z4	3/4	1/2	1-5/8	3-5/8	4	
N88633	SPC408-0.750-P2-S.3-Z4	3/4	1/2	1-5/8	3-5/8	4	TiCN
N52240	SPC408-0.750-D2-S.3-Z4	3/4	3/4	1-5/8	3-7/8	4	
N88634	SPC408-0.750-D2-S.3-Z4	3/4	3/4	1-5/8	3-7/8	4	TiCN
N52244	SPC408-0.750-D2-S.3-Z6	3/4	3/4	1-5/8	3-7/8	6	
N88638	SPC408-0.750-D2-S.3-Z6	3/4	3/4	1-5/8	3-7/8	6	TiCN

DISCOUNT CODE D40

Niagara Cutter

GENERAL PURPOSE- SPC408

M42
8% COBALT

HELIX


SQUARE END


CENTER CUTTING

- Weldon flat standard
- Designed for profiling in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N52241	SPC408-0.750-D3-S.3-Z4	3/4	3/4	2	4-1/4	4	
N88635	SPC408-0.750-D3-S.3-Z4	3/4	3/4	2	4-1/4	4	TiCN
N52242	SPC408-0.750-D4-S.3-Z4	3/4	3/4	3	5-1/4	4	
N88636	SPC408-0.750-D4-S.3-Z4	3/4	3/4	3	5-1/4	4	TiCN
N52243	SPC408-0.750-D5-S.3-Z4	3/4	3/4	4	6-1/4	4	
N88637	SPC408-0.750-D5-S.3-Z4	3/4	3/4	4	6-1/4	4	TiCN
N52247	SPC408-0.750-D5-S.3-Z6	3/4	3/4	4	6-1/4	6	
N88640	SPC408-0.750-D5-S.3-Z6	3/4	3/4	4	6-1/4	6	TiCN
N52285	SPC408-0.875-D2-S.3-Z4	7/8	7/8	1-7/8	4-1/8	4	
N88642	SPC408-0.875-D2-S.3-Z4	7/8	7/8	1-7/8	4-1/8	4	TiCN
N52286	SPC408-0.875-D4-S.3-Z4	7/8	7/8	3-1/2	5-3/4	4	
N88643	SPC408-0.875-D4-S.3-Z4	7/8	7/8	3-1/2	5-3/4	4	TiCN
N52334	SPC408-1.000-P2-S.3-Z4	1	3/4	1-7/8	4-1/8	4	
N88652	SPC408-1.000-P2-S.3-Z4	1	3/4	1-7/8	4-1/8	4	TiCN
N52320	SPC408-1.000-D2-S.3-Z4	1	1	2	4-1/2	4	
N88644	SPC408-1.000-D2-S.3-Z4	1	1	2	4-1/2	4	TiCN
N52326	SPC408-1.000-D2-S.3-Z6	1	1	2	4-1/2	6	
N88649	SPC408-1.000-D2-S.3-Z6	1	1	2	4-1/2	6	TiCN
N52321	SPC408-1.000-D3-S.3-Z4	1	1	3	5-1/2	4	
N88645	SPC408-1.000-D3-S.3-Z4	1	1	3	5-1/2	4	TiCN
N52327	SPC408-1.000-D3-S.3-Z6	1	1	3	5-1/2	6	
N88650	SPC408-1.000-D3-S.3-Z6	1	1	3	5-1/2	6	TiCN
N52322	SPC408-1.000-D4-S.3-Z4	1	1	4	6-1/2	4	
N88646	SPC408-1.000-D4-S.3-Z4	1	1	4	6-1/2	4	TiCN
N52324	SPC408-1.000-D4-S.3-Z6	1	1	4	6-1/2	6	
N88648	SPC408-1.000-D4-S.3-Z6	1	1	4	6-1/2	6	TiCN
N52323	SPC408-1.000-D6-S.3-Z4	1	1	6	8-1/2	4	
N88647	SPC408-1.000-D6-S.3-Z4	1	1	6	8-1/2	4	TiCN
N52329	SPC408-1.000-D6-S.3-Z6	1	1	6	8-1/2	6	
N88651	SPC408-1.000-D6-S.3-Z6	1	1	6	8-1/2	6	TiCN
N52366	SPC408-1.125-P2-S.3-Z6	1-1/8	1	2	4-1/2	6	
N88653	SPC408-1.125-P2-S.3-Z6	1-1/8	1	2	4-1/2	6	TiCN
N52367	SPC408-1.125-P4-S.3-Z6	1-1/8	1	4	6-1/2	6	
N88654	SPC408-1.125-P4-S.3-Z6	1-1/8	1	4	6-1/2	6	TiCN
N52414	SPC408-1.250-P2-S.3-Z4	1-1/4	1	2	4-1/2	4	

DISCOUNT CODE D40

Niagara Cutter

GENERAL PURPOSE- SPC408

M42
8% COBALT

HELIX
30°

SQUARE END

CENTER CUTTING

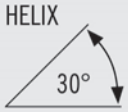
- Weldon flat standard
- Designed for profiling in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N88663	SPC408-1.250-P2-S.3-Z4	1-1/4	1	2	4-1/2	4	TiCN
N52416	SPC408-1.250-P2-S.3-Z6	1-1/4	1	2	4-1/2	6	
N88664	SPC408-1.250-P2-S.3-Z6	1-1/4	1	2	4-1/2	6	TiCN
N52400	SPC408-1.250-D1-S.3-Z4	1-1/4	1-1/4	2	4-1/2	4	
N88655	SPC408-1.250-D1-S.3-Z4	1-1/4	1-1/4	2	4-1/2	4	TiCN
N52407	SPC408-1.250-D1-S.3-Z6	1-1/4	1-1/4	2	4-1/2	6	
N88660	SPC408-1.250-D1-S.3-Z6	1-1/4	1-1/4	2	4-1/2	6	TiCN
N52401	SPC408-1.250-D2-S.3-Z4	1-1/4	1-1/4	3	5-1/2	4	
N88656	SPC408-1.250-D2-S.3-Z4	1-1/4	1-1/4	3	5-1/2	4	TiCN
N52406	SPC408-1.250-D2-S.3-Z6	1-1/4	1-1/4	3	5-1/2	6	
N88659	SPC408-1.250-D2-S.3-Z6	1-1/4	1-1/4	3	5-1/2	6	TiCN
N52402	SPC408-1.250-D3-S.3-Z4	1-1/4	1-1/4	4	6-1/2	4	
N88657	SPC408-1.250-D3-S.3-Z4	1-1/4	1-1/4	4	6-1/2	4	TiCN
N52409	SPC408-1.250-D3-S.3-Z6	1-1/4	1-1/4	4	6-1/2	6	
N88661	SPC408-1.250-D3-S.3-Z6	1-1/4	1-1/4	4	6-1/2	6	TiCN
N52403	SPC408-1.250-D5-S.3-Z4	1-1/4	1-1/4	6	8-1/2	4	
N88658	SPC408-1.250-D5-S.3-Z4	1-1/4	1-1/4	6	8-1/2	4	TiCN
N52410	SPC408-1.250-D5-S.3-Z6	1-1/4	1-1/4	6	8-1/2	6	
N88662	SPC408-1.250-D5-S.3-Z6	1-1/4	1-1/4	6	8-1/2	6	TiCN
N52480	SPC408-1.500-P1-S.3-Z4	1-1/2	1-1/4	2	4-1/2	4	
N88665	SPC408-1.500-P1-S.3-Z4	1-1/2	1-1/4	2	4-1/2	4	TiCN
N52487	SPC408-1.500-P1-S.3-Z6	1-1/2	1-1/4	2	4-1/2	6	
N88667	SPC408-1.500-P1-S.3-Z6	1-1/2	1-1/4	2	4-1/2	6	TiCN
N52486	SPC408-1.500-P4-S.3-Z6	1-1/2	1-1/4	4	6-1/2	6	
N88666	SPC408-1.500-P4-S.3-Z6	1-1/2	1-1/4	4	6-1/2	6	TiCN
N52499	SPC408-1.500-P5-S.3-Z6	1-1/2	1-1/4	8	10-1/2	6	
N88669	SPC408-1.500-P5-S.3-Z6	1-1/2	1-1/4	8	10-1/2	6	TiCN
N52644	SPC408-2.000-P1-S.3-Z6	2	1-1/4	2	4-1/2	6	
N88670	SPC408-2.000-P1-S.3-Z6	2	1-1/4	2	4-1/2	6	TiCN
N52646	SPC408-2.000-P2-S.3-Z6	2	1-1/4	4	6-1/2	6	
N88671	SPC408-2.000-P2-S.3-Z6	2	1-1/4	4	6-1/2	6	TiCN

Niagara Cutter

GENERAL PURPOSE- SPB540

M42
8% COBALT

HELIX


BALL END


CENTER CUTTING

- Weldon flat standard
- Designed for profiling and contouring in all materials

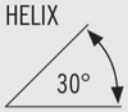
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N54041	SPB540-0.125-F3-B.3-Z4	1/8	3/8	3/8	2-5/16	4	
N88688	SPB540-0.125-F3-B.3-Z4	1/8	3/8	3/8	2-5/16	4	TiCN
N54061	SPB540-0.188-F3-B.3-Z4	3/16	3/8	1/2	2-3/8	4	
N88689	SPB540-0.188-F3-B.3-Z4	3/16	3/8	1/2	2-3/8	4	TiCN
N54081	SPB540-0.250-F3-B.3-Z4	1/4	3/8	5/8	2-7/16	4	
N88690	SPB540-0.250-F3-B.3-Z4	1/4	3/8	5/8	2-7/16	4	TiCN
N67268	SPB540-0.250-F5-B.3-Z4	1/4	3/8	1-1/4	3-1/8	4	
N67338	SPB540-0.250-F5-B.3-Z4	1/4	3/8	1-1/4	3-1/8	4	TiCN
N54121	SPB540-0.375-D2-B.3-Z4	3/8	3/8	3/4	2-1/2	4	
N88692	SPB540-0.375-D2-B.3-Z4	3/8	3/8	3/4	2-1/2	4	TiCN
N67272	SPB540-0.375-D4-B.3-Z4	3/8	3/8	1-1/2	3-1/4	4	
N67342	SPB540-0.375-D4-B.3-Z4	3/8	3/8	1-1/2	3-1/4	4	TiCN
N67275	SPB540-0.500-D2-B.3-Z4	1/2	1/2	1	3	4	
N67345	SPB540-0.500-D2-B.3-Z4	1/2	1/2	1	3	4	TiCN
N54160	SPB540-0.500-D3-B.3-Z4	1/2	1/2	1-1/4	3-1/4	4	
N88693	SPB540-0.500-D3-B.3-Z4	1/2	1/2	1-1/4	3-1/4	4	TiCN
N67276	SPB540-0.500-D4-B.3-Z4	1/2	1/2	2	4	4	
N67346	SPB540-0.500-D4-B.3-Z4	1/2	1/2	2	4	4	TiCN
N67277	SPB540-0.500-D5-B.3-Z4	1/2	1/2	2-1/2	4-1/2	4	
N67347	SPB540-0.500-D5-B.3-Z4	1/2	1/2	2-1/2	4-1/2	4	TiCN
N54200	SPB540-0.625-D3-B.3-Z4	5/8	5/8	1-5/8	3-3/4	4	
N88694	SPB540-0.625-D3-B.3-Z4	5/8	5/8	1-5/8	3-3/4	4	TiCN
N67282	SPB540-0.625-D6-B.3-Z4	5/8	5/8	4	6-1/8	4	
N67352	SPB540-0.625-D6-B.3-Z4	5/8	5/8	4	6-1/8	4	TiCN
N54240	SPB540-0.750-D2-B.3-Z4	3/4	3/4	1-5/8	3-7/8	4	
N88695	SPB540-0.750-D2-B.3-Z4	3/4	3/4	1-5/8	3-7/8	4	TiCN
N67283	SPB540-0.750-D3-B.3-Z4	3/4	3/4	2-1/4	4-1/2	4	
N67353	SPB540-0.750-D3-B.3-Z4	3/4	3/4	2-1/4	4-1/2	4	TiCN
N54280	SPB540-0.875-D2-B.3-Z4	7/8	7/8	1-7/8	4-1/8	4	
N88696	SPB540-0.875-D2-B.3-Z4	7/8	7/8	1-7/8	4-1/8	4	TiCN
N54320	SPB540-1.000-D2-B.3-Z4	1	1	2	4-1/2	4	
N88697	SPB540-1.000-D2-B.3-Z4	1	1	2	4-1/2	4	TiCN
N67287	SPB540-1.000-D3-B.3-Z4	1	1	3	5-1/2	4	
N67357	SPB540-1.000-D3-B.3-Z4	1	1	3	5-1/2	4	TiCN
N67288	SPB540-1.000-D4-B.3-Z4	1	1	4	6-1/2	4	

DISCOUNT CODE D40

Niagara Cutter

GENERAL PURPOSE- SPB540

M42
8% COBALT

HELIX


BALL END


CENTER CUTTING

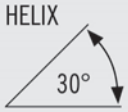
- Weldon flat standard
- Designed for profiling and contouring in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N67358	SPB540-1.000-D4-B.3-Z4	1	1	4	6-1/2	4	TiCN
N67290	SPB540-1.000-D6-B.3-Z4	1	1	6	8-1/2	4	
N67360	SPB540-1.000-D6-B.3-Z4	1	1	6	8-1/2	4	TiCN
N54407	SPB540-1.250-D1-B.3-Z6	1-1/4	1-1/4	2	4-1/2	6	
N88698	SPB540-1.250-D1-B.3-Z6	1-1/4	1-1/4	2	4-1/2	6	TiCN
N54487	SPB540-1.500-P1-B.3-Z6	1-1/2	1-1/4	2	4-1/2	6	
N88699	SPB540-1.500-P1-B.3-Z6	1-1/2	1-1/4	2	4-1/2	6	TiCN
N67297	SPB540-2.000-D1-B.7-Z6	2	2	2	5-3/4	6	
N67367	SPB540-2.000-D1-B.7-Z6	2	2	2	5-3/4	6	TiCN
N67299	SPB540-2.000-D3-B.7-Z6	2	2	4	7-3/4	6	
N67369	SPB540-2.000-D3-B.7-Z6	2	2	4	7-3/4	6	TiCN
N67300	SPB540-2.000-D4-B.7-Z6	2	2	6	9-3/4	6	
N67370	SPB540-2.000-D4-B.7-Z6	2	2	6	9-3/4	6	TiCN
N67301	SPB540-2.000-D5-B.7-Z6	2	2	8	11-3/4	6	
N67371	SPB540-2.000-D5-B.7-Z6	2	2	8	11-3/4	6	TiCN

Niagara Cutter

GENERAL PURPOSE- DPC560

M42
8% COBALT

HELIX


SQUARE END

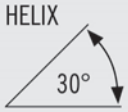

CENTER CUTTING

- Weldon flat standard
- Designed for profiling in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N56041	DPC560-0.125-XF3-S.3-Z4	1/8	3/8	3/8	3-1/16	4	
N88715	DPC560-0.125-XF3-S.3-Z4	1/8	3/8	3/8	3-1/16	4	TiCN
N56051	DPC560-0.156-XF3-S.3-Z4	5/32	3/8	7/16	3-1/8	4	
N88716	DPC560-0.156-XF3-S.3-Z4	5/32	3/8	7/16	3-1/8	4	TiCN
N56061	DPC560-0.188-XF3-S.3-Z4	3/16	3/8	1/2	3-1/4	4	
N88717	DPC560-0.188-XF3-S.3-Z4	3/16	3/8	1/2	3-1/4	4	TiCN
N56071	DPC560-0.219-XF3-S.3-Z4	7/32	3/8	9/16	3-1/4	4	
N88718	DPC560-0.219-XF3-S.3-Z4	7/32	3/8	9/16	3-1/4	4	TiCN
N56081	DPC560-0.250-XF3-S.3-Z4	1/4	3/8	5/8	3-3/8	4	
N88719	DPC560-0.250-XF3-S.3-Z4	1/4	3/8	5/8	3-3/8	4	TiCN
N56091	DPC560-0.281-XF2-S.3-Z4	9/32	3/8	11/16	3-3/8	4	
N88720	DPC560-0.281-XF2-S.3-Z4	9/32	3/8	11/16	3-3/8	4	TiCN
N56101	DPC560-0.313-XF2-S.3-Z4	5/16	3/8	3/4	3-1/2	4	
N88721	DPC560-0.313-XF2-S.3-Z4	5/16	3/8	3/4	3-1/2	4	TiCN
N56111	DPC560-0.344-XF2-S.3-Z4	11/32	3/8	3/4	3-1/2	4	
N88722	DPC560-0.344-XF2-S.3-Z4	11/32	3/8	3/4	3-1/2	4	TiCN
N56121	DPC560-0.375-XD2-S.3-Z4	3/8	3/8	3/4	3-1/2	4	
N88723	DPC560-0.375-XD2-S.3-Z4	3/8	3/8	3/4	3-1/2	4	TiCN
N56142	DPC560-0.438-XF2-S.3-Z4	7/16	1/2	1	4-1/8	4	
N88724	DPC560-0.438-XF2-S.3-Z4	7/16	1/2	1	4-1/8	4	TiCN
N56162	DPC560-0.500-XD2-S.3-Z4	1/2	1/2	1	4-1/8	4	
N88725	DPC560-0.500-XD2-S.3-Z4	1/2	1/2	1	4-1/8	4	TiCN
N56203	DPC560-0.625-XD2-S.3-Z4	5/8	5/8	1-3/8	5	4	
N88727	DPC560-0.625-XD2-S.3-Z4	5/8	5/8	1-3/8	5	4	TiCN
N56244	DPC560-0.750-XD2-S.3-Z4	3/4	3/4	1-5/8	5-5/8	4	
N88728	DPC560-0.750-XD2-S.3-Z4	3/4	3/4	1-5/8	5-5/8	4	TiCN
N56285	DPC560-0.875-XD2-S.3-Z4	7/8	7/8	1-7/8	6-1/8	4	
N88729	DPC560-0.875-XD2-S.3-Z4	7/8	7/8	1-7/8	6-1/8	4	TiCN

GENERAL PURPOSE- HDP890

M42
8% COBALT

HELIX


SQUARE END


CENTER CUTTING

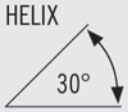
- Combo shank standard
- Designed for profiling in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N60539	HDP890-2.000-D3-S.7-Z8	2	2	4	7-3/4	8	
N60555	HDP890-2.000-D3-S.7-Z8	2	2	4	7-3/4	8	TiCN
N60541	HDP890-2.000-D5-S.7-Z8	2	2	6	9-3/4	8	
N60557	HDP890-2.000-D5-S.7-Z8	2	2	6	9-3/4	8	TiCN
N60542	HDP890-2.000-D6-S.7-Z8	2	2	8	11-3/4	8	
N60558	HDP890-2.000-D6-S.7-Z8	2	2	8	11-3/4	8	TiCN

Niagara Cutter

GENERAL PURPOSE- SMM845

M42
8% COBALT

HELIX


SQUARE END


CENTER CUTTING

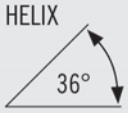
- Metric flute / inch shank
- Weldon flat standard
- Designed for profiling in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N72860	SMM845-0.079-F5-S.3-Z4	2mm	3/8	3/8	2-5/16	4	
N88948	SMM845-0.079-F5-S.3-Z4	2mm	3/8	3/8	2-5/16	4	TiCN
N72861	SMM845-0.118-F3-S.3-Z4	3mm	3/8	3/8	2-5/16	4	
N88949	SMM845-0.118-F3-S.3-Z4	3mm	3/8	3/8	2-5/16	4	TiCN
N72862	SMM845-0.157-F3-S.3-Z4	4mm	3/8	1/2	2-5/16	4	
N88950	SMM845-0.157-F3-S.3-Z4	4mm	3/8	1/2	2-5/16	4	TiCN
N72863	SMM845-0.197-F3-S.3-Z4	5mm	3/8	9/16	2-1/2	4	
N88951	SMM845-0.197-F3-S.3-Z4	5mm	3/8	9/16	2-1/2	4	TiCN
N72864	SMM845-0.236-F3-S.3-Z4	6mm	3/8	5/8	2-1/2	4	
N88952	SMM845-0.236-F3-S.3-Z4	6mm	3/8	5/8	2-1/2	4	TiCN
N72866	SMM845-0.315-F2-S.3-Z4	8mm	3/8	3/4	2-1/2	4	
N88954	SMM845-0.315-F2-S.3-Z4	8mm	3/8	3/4	2-1/2	4	TiCN
N72867	SMM845-0.394-P3-S.3-Z4	10mm	3/8	1	2-11/16	4	
N88955	SMM845-0.394-P3-S.3-Z4	10mm	3/8	1	2-11/16	4	TiCN
N72868	SMM845-0.472-F2-S.3-Z4	12mm	1/2	1	2-11/16	4	
N88956	SMM845-0.472-F2-S.3-Z4	12mm	1/2	1	2-11/16	4	TiCN
N72869	SMM845-0.551-P2-S.3-Z4	14mm	1/2	1-3/8	3-3/8	4	
N88957	SMM845-0.551-P2-S.3-Z4	14mm	1/2	1-3/8	3-3/8	4	TiCN
N72870	SMM845-0.630-P3-S.3-Z4	16mm	5/8	1-5/8	3-3/4	4	
N88958	SMM845-0.630-P3-S.3-Z4	16mm	5/8	1-5/8	3-3/4	4	TiCN
N72871	SMM845-0.709-P2-S.3-Z4	18mm	5/8	1-5/8	3-3/4	4	
N88959	SMM845-0.709-P2-S.3-Z4	18mm	5/8	1-5/8	3-3/4	4	TiCN
N72872	SMM845-0.787-P2-S.3-Z4	20mm	3/4	1-7/8	4-1/8	4	
N88960	SMM845-0.787-P2-S.3-Z4	20mm	3/4	1-7/8	4-1/8	4	TiCN

Niagara Cutter

GENERAL PURPOSE- RTM713

M42
8% COBALT

HELIX


CHAMFER


CENTER CUTTING

COARSE PITCH

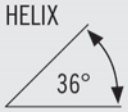
- Weldon flat standard
- Designed for profiling and slotting in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N73081	RTM713-0.250-F3-C020.3-Z3	1/4	3/8	5/8	2-1/2	3		0.020
N89019	RTM713-0.250-F3-C020.3-Z3	1/4	3/8	5/8	2-1/2	3	TiCN	0.020
N73121	RTM713-0.375-D2-C020.3-Z3	3/8	3/8	7/8	2-3/4	3		0.020
N89022	RTM713-0.375-D2-C020.3-Z3	3/8	3/8	7/8	2-3/4	3	TiCN	0.020
N73162	RTM713-0.500-D2-C025.3-Z3	1/2	1/2	1	3-1/16	3		0.025
N89025	RTM713-0.500-D2-C025.3-Z3	1/2	1/2	1	3-1/16	3	TiCN	0.025
N73203	RTM713-0.625-D2-C025.3-Z3	5/8	5/8	1-1/4	3-1/2	3		0.025
N89027	RTM713-0.625-D2-C025.3-Z3	5/8	5/8	1-1/4	3-1/2	3	TiCN	0.025
N73249	RTM713-0.750-D1-C025.3-Z3	3/4	3/4	3/4	3	3		0.025
N89030	RTM713-0.750-D1-C025.3-Z3	3/4	3/4	3/4	3	3	TiCN	0.025
N73244	RTM713-0.750-D2-C025.3-Z3	3/4	3/4	1-1/2	3-3/4	3		0.025
N89029	RTM713-0.750-D2-C025.3-Z3	3/4	3/4	1-1/2	3-3/4	3	TiCN	0.025
N73327	RTM713-1.000-P1-C030.3-Z3	1	3/4	1	3-1/4	3		0.030
N89035	RTM713-1.000-P1-C030.3-Z3	1	3/4	1	3-1/4	3	TiCN	0.030
N73326	RTM713-1.000-D2-C030.3-Z3	1	1	1-3/4	4-5/8	3		0.030
N89034	RTM713-1.000-D2-C030.3-Z3	1	1	1-3/4	4-5/8	3	TiCN	0.030

Niagara Cutter

GENERAL PURPOSE- RHC752

HSCO
8% COBALT

HELIX


CHAMFER


CENTER CUTTING

COARSE PITCH

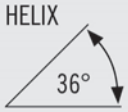
- Weldon flat standard
- Designed for profiling and slotting in aluminum and non-ferrous materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N75215	RHC752-0.250-F3-C020.3-Z3	1/4	3/8	5/8	2-7/16	3		0.020
N79460	RHC752-0.250-F3-C020.3-Z3	1/4	3/8	5/8	2-7/16	3	TiCN	0.020
N75201	RHC752-0.375-D2-C025.3-Z3	3/8	3/8	3/4	2-1/2	3		0.025
N69360	RHC752-0.375-D2-C025.3-Z3	3/8	3/8	3/4	2-1/2	3	TiCN	0.025
N75203	RHC752-0.375-D4-C025.3-Z3	3/8	3/8	1-1/2	3-1/4	3		0.025
N79464	RHC752-0.375-D4-C025.3-Z3	3/8	3/8	1-1/2	3-1/4	3	TiCN	0.025
N75313	RHC752-0.500-D1-C030.3-Z3	1/2	1/2	1	3	3		0.030
N79466	RHC752-0.500-D1-C030.3-Z3	1/2	1/2	1	3	3	TiCN	0.030
N75205	RHC752-0.500-D2-C030.3-Z3	1/2	1/2	1-1/4	3-1/4	3		0.030
N69361	RHC752-0.500-D2-C030.3-Z3	1/2	1/2	1-1/4	3-1/4	3	TiCN	0.030
N75209	RHC752-0.500-D4-C030.3-Z3	1/2	1/2	2	4	3		0.030
N69362	RHC752-0.500-D4-C030.3-Z3	1/2	1/2	2	4	3	TiCN	0.030
N75213	RHC752-0.625-D3-C040.3-Z3	5/8	5/8	1-5/8	3-3/4	3		0.040
N69363	RHC752-0.625-D3-C040.3-Z3	5/8	5/8	1-5/8	3-3/4	3	TiCN	0.040
N75217	RHC752-0.625-D5-C040.3-Z3	5/8	5/8	2-1/2	4-5/8	3		0.040
N69364	RHC752-0.625-D5-C040.3-Z3	5/8	5/8	2-1/2	4-5/8	3	TiCN	0.040
N75233	RHC752-0.750-D1-C040.3-Z3	3/4	3/4	3/4	3	3		0.040
N69368	RHC752-0.750-D1-C040.3-Z3	3/4	3/4	3/4	3	3	TiCN	0.040
N75229	RHC752-0.750-D3-C040.3-Z3	3/4	3/4	1-1/2	3-3/4	3		0.040
N69367	RHC752-0.750-D3-C040.3-Z3	3/4	3/4	1-1/2	3-3/4	3	TiCN	0.040
N75221	RHC752-0.750-D4-C040.3-Z3	3/4	3/4	1-5/8	3-7/8	3		0.040
N69365	RHC752-0.750-D4-C040.3-Z3	3/4	3/4	1-5/8	3-7/8	3	TiCN	0.040
N75225	RHC752-0.750-D5-C040.3-Z3	3/4	3/4	2	4-1/4	3		0.040
N69366	RHC752-0.750-D5-C040.3-Z3	3/4	3/4	2	4-1/4	3	TiCN	0.040
N75223	RHC752-0.750-D6-C040.3-Z3	3/4	3/4	2-1/2	4-3/4	3		0.040
N79478	RHC752-0.750-D6-C040.3-Z3	3/4	3/4	2-1/2	4-3/4	3	TiCN	0.040
N75235	RHC752-0.750-D7-C040.3-Z3	3/4	3/4	3	5-1/4	3		0.040
N79479	RHC752-0.750-D7-C040.3-Z3	3/4	3/4	3	5-1/4	3	TiCN	0.040
N75257	RHC752-1.000-P1-C040.3-Z3	1	3/4	3/4	3	3		0.040
N69374	RHC752-1.000-P1-C040.3-Z3	1	3/4	3/4	3	3	TiCN	0.040
N75253	RHC752-1.000-P3-C040.3-Z3	1	3/4	1-1/2	3-3/4	3		0.040
N69373	RHC752-1.000-P3-C040.3-Z3	1	3/4	1-1/2	3-3/4	3	TiCN	0.040
N75245	RHC752-1.000-D3-C040.3-Z3	1	1	2	4-1/2	3		0.040
N69371	RHC752-1.000-D3-C040.3-Z3	1	1	2	4-1/2	3	TiCN	0.040
N75249	RHC752-1.000-D4-C040.3-Z3	1	1	3	5-1/2	3		0.040

DISCOUNT CODE D41

GENERAL PURPOSE- RHC752

HSCO
8% COBALT

HELIX


CHAMFER


CENTER CUTTING

COARSE PITCH

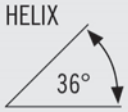
- Weldon flat standard
- Designed for profiling and slotting in aluminum and non-ferrous materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N69372	RHC752-1.000-D4-C040.3-Z3	1	1	3	5-1/2	3	TiCN	0.040
N75351	RHC752-1.000-D5-C040.3-Z3	1	1	4	6-1/2	3		0.040
N79493	RHC752-1.000-D5-C040.3-Z3	1	1	4	6-1/2	3	TiCN	0.040
N75261	RHC752-1.250-D2-C045.3-Z3	1-1/4	1-1/4	2	4-1/2	3		0.045
N69375	RHC752-1.250-D2-C045.3-Z3	1-1/4	1-1/4	2	4-1/2	3	TiCN	0.045
N75265	RHC752-1.250-D3-C045.3-Z3	1-1/4	1-1/4	3	5-1/2	3		0.045
N69376	RHC752-1.250-D3-C045.3-Z3	1-1/4	1-1/4	3	5-1/2	3	TiCN	0.045
N75283	RHC752-1.500-P7-C045.3-Z3	1-1/2	1-1/4	4	6-1/2	3		0.045
N79508	RHC752-1.500-P7-C045.3-Z3	1-1/2	1-1/4	4	6-1/2	3	TiCN	0.045

Niagara Cutter

GENERAL PURPOSE- RHLC754

HSCO
8% COBALT

HELIX


CHAMFER


CENTER CUTTING

COARSE PITCH

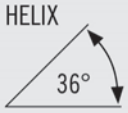
- Weldon flat standard
- Designed for profiling and slotting in aluminum and non-ferrous materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	REACH	CHAMFER
N75421	RHLC754-1.000-E2-C040.3-Z3	1	1	2-1/2	6-1/2	3		4	0.040
N89112	RHLC754-1.000-E2-C040.3-Z3	1	1	2-1/2	6-1/2	3	TiCN	4	0.040
N75425	RHLC754-1.000-E3-C040.3-Z3	1	1	2-1/2	8-1/2	3		6	0.040
N89113	RHLC754-1.000-E3-C040.3-Z3	1	1	2-1/2	8-1/2	3	TiCN	6	0.040
N75437	RHLC754-1.250-E2-C045.3-Z3	1-1/4	1-1/4	2-1/2	6-1/2	3		4	0.045
N89114	RHLC754-1.250-E2-C045.3-Z3	1-1/4	1-1/4	2-1/2	6-1/2	3	TiCN	4	0.045
N75441	RHLC754-1.250-E3-C045.3-Z3	1-1/4	1-1/4	2-1/2	8-1/2	3		6	0.045
N89115	RHLC754-1.250-E3-C045.3-Z3	1-1/4	1-1/4	2-1/2	8-1/2	3	TiCN	6	0.045
N75459	RHLC754-1.500-P6-C045.3-Z3	1-1/2	1-1/4	2-1/2	10-1/2	3		6	0.045
N89118	RHLC754-1.500-P6-C045.3-Z3	1-1/2	1-1/4	2-1/2	10-1/2	3	TiCN	6	0.045

Niagara Cutter

GENERAL PURPOSE- RTM447

M42
8% COBALT

HELIX


CHAMFER


CENTER CUTTING

FINE PITCH

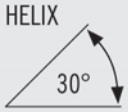
- Weldon flat standard
- Designed for profiling and slotting in steel, stainless steel and high temperature alloys

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N44701	RTM447-0.250-F1-C020.3-Z3	1/4	3/8	1/4	2-1/8	3		0.020
N88456	RTM447-0.250-F1-C020.3-Z3	1/4	3/8	1/4	2-1/8	3	TiCN	0.020
N44703	RTM447-0.250-F3-C020.3-Z3	1/4	3/8	5/8	2-1/2	3		0.020
N88457	RTM447-0.250-F3-C020.3-Z3	1/4	3/8	5/8	2-1/2	3	TiCN	0.020
N44705	RTM447-0.375-D1-C020.3-Z3	3/8	3/8	3/8	2-1/4	3		0.020
N88458	RTM447-0.375-D1-C020.3-Z3	3/8	3/8	3/8	2-1/4	3	TiCN	0.020
N44707	RTM447-0.375-D2-C020.3-Z3	3/8	3/8	7/8	2-3/4	3		0.020
N88459	RTM447-0.375-D2-C020.3-Z3	3/8	3/8	7/8	2-3/4	3	TiCN	0.020
N44709	RTM447-0.500-D1-C025.3-Z3	1/2	1/2	1/2	2-9/16	3		0.025
N88460	RTM447-0.500-D1-C025.3-Z3	1/2	1/2	1/2	2-9/16	3	TiCN	0.025
N44711	RTM447-0.500-D2-C025.3-Z3	1/2	1/2	1	3-1/16	3		0.025
N88461	RTM447-0.500-D2-C025.3-Z3	1/2	1/2	1	3-1/16	3	TiCN	0.025
N44713	RTM447-0.625-D1-C025.3-Z3	5/8	5/8	5/8	2-7/8	3		0.025
N88462	RTM447-0.625-D1-C025.3-Z3	5/8	5/8	5/8	2-7/8	3	TiCN	0.025
N44715	RTM447-0.625-D2-C025.3-Z3	5/8	5/8	1-1/4	3-1/2	3		0.025
N88463	RTM447-0.625-D2-C025.3-Z3	5/8	5/8	1-1/4	3-1/2	3	TiCN	0.025
N44719	RTM447-0.750-D2-C025.3-Z3	3/4	3/4	1-1/2	3-3/4	3		0.025
N88465	RTM447-0.750-D2-C025.3-Z3	3/4	3/4	1-1/2	3-3/4	3	TiCN	0.025
N44731	RTM447-1.000-D2-C030.3-Z3	1	1	1-3/4	4-5/8	3		0.030
N88471	RTM447-1.000-D2-C030.3-Z3	1	1	1-3/4	4-5/8	3	TiCN	0.030

Niagara Cutter

GENERAL PURPOSE- REM710

M42
8% COBALT

HELIX


CHAMFER


NON CENTER CUTTING

COARSE PITCH

- Weldon flat standard
- Designed for profiling and slotting in all materials

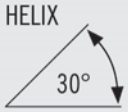
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N71061	REM710-0.188-F3-C020.3-Z4	3/16	3/8	1/2	2-3/8	4		0.020
N69290	REM710-0.188-F3-C020.3-Z4	3/16	3/8	1/2	2-3/8	4	TiCN	0.020
N71081	REM710-0.250-F2-C020.3-Z4	1/4	3/8	5/8	2-7/16	4		0.020
N71084	REM710-0.250-F2-C020.3-Z4	1/4	3/8	5/8	2-7/16	4	TiCN	0.020
N71082	REM710-0.250-F4-C020.3-Z4	1/4	3/8	1-1/4	3-1/16	4		0.020
N69291	REM710-0.250-F4-C020.3-Z4	1/4	3/8	1-1/4	3-1/16	4	TiCN	0.020
N71101	REM710-0.313-F2-C025.3-Z4	5/16	3/8	3/4	2-1/2	4		0.025
N71104	REM710-0.313-F2-C025.3-Z4	5/16	3/8	3/4	2-1/2	4	TiCN	0.025
N71102	REM710-0.313-F4-C025.3-Z4	5/16	3/8	1-3/8	3-1/8	4		0.025
N69293	REM710-0.313-F4-C025.3-Z4	5/16	3/8	1-3/8	3-1/8	4	TiCN	0.025
N71121	REM710-0.375-D2-C025.3-Z4	3/8	3/8	3/4	2-1/2	4		0.025
N71124	REM710-0.375-D2-C025.3-Z4	3/8	3/8	3/4	2-1/2	4	TiCN	0.025
N71126	REM710-0.375-D3-C025.3-Z4	3/8	3/8	1-3/8	3-1/8	4		0.025
N70940	REM710-0.375-D3-C025.3-Z4	3/8	3/8	1-3/8	3-1/8	4	TiCN	0.025
N71122	REM710-0.375-D4-C025.3-Z4	3/8	3/8	1-1/2	3-1/4	4		0.025
N69294	REM710-0.375-D4-C025.3-Z4	3/8	3/8	1-1/2	3-1/4	4	TiCN	0.025
N71141	REM710-0.438-P2-C025.3-Z4	7/16	3/8	1	2-11/16	4		0.025
N69295	REM710-0.438-P2-C025.3-Z4	7/16	3/8	1	2-11/16	4	TiCN	0.025
N71161	REM710-0.500-D1-C025.3-Z4	1/2	1/2	1	3	4		0.025
N79420	REM710-0.500-D1-C025.3-Z4	1/2	1/2	1	3	4	TiCN	0.025
N71162	REM710-0.500-D2-C025.3-Z4	1/2	1/2	1-1/4	3-1/4	4		0.025
N71165	REM710-0.500-D2-C025.3-Z4	1/2	1/2	1-1/4	3-1/4	4	TiCN	0.025
N72162	REM710-0.500-D3-C025.3-Z4	1/2	1/2	1-5/8	3-5/8	4		0.025
N79421	REM710-0.500-D3-C025.3-Z4	1/2	1/2	1-5/8	3-5/8	4	TiCN	0.025
N71163	REM710-0.500-D4-C025.3-Z4	1/2	1/2	2	4	4		0.025
N69296	REM710-0.500-D4-C025.3-Z4	1/2	1/2	2	4	4	TiCN	0.025
N72163	REM710-0.500-D5-C025.3-Z4	1/2	1/2	2-1/2	4-1/2	4		0.025
N79422	REM710-0.500-D5-C025.3-Z4	1/2	1/2	2-1/2	4-1/2	4	TiCN	0.025
N72167	REM710-0.500-D6-C025.3-Z4	1/2	1/2	3	5	4		0.025
N79423	REM710-0.500-D6-C025.3-Z4	1/2	1/2	3	5	4	TiCN	0.025
N71182	REM710-0.563-P2-C025.3-Z4	9/16	1/2	1-3/8	3-3/8	4		0.025
N69297	REM710-0.563-P2-C025.3-Z4	9/16	1/2	1-3/8	3-3/8	4	TiCN	0.025
N71206	REM710-0.625-D1-C030.3-Z4	5/8	5/8	3/4	2-7/8	4		0.030
N79424	REM710-0.625-D1-C030.3-Z4	5/8	5/8	3/4	2-7/8	4	TiCN	0.030
N71202	REM710-0.625-D2-C030.3-Z4	5/8	5/8	1-1/4	3-3/8	4		0.030

DISCOUNT CODE D41

Niagara Cutter

GENERAL PURPOSE- REM710

M42
8% COBALT

HELIX


CHAMFER


NON CENTER CUTTING

COARSE PITCH

- Weldon flat standard
- Designed for profiling and slotting in all materials

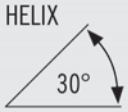
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N79425	REM710-0.625-D2-C030.3-Z4	5/8	5/8	1-1/4	3-3/8	4	TiCN	0.030
N71203	REM710-0.625-D3-C030.3-Z4	5/8	5/8	1-5/8	3-3/4	4		0.030
N71208	REM710-0.625-D3-C030.3-Z4	5/8	5/8	1-5/8	3-3/4	4	TiCN	0.030
N71204	REM710-0.625-D5-C030.3-Z4	5/8	5/8	2-1/2	4-5/8	4		0.030
N69298	REM710-0.625-D5-C030.3-Z4	5/8	5/8	2-1/2	4-5/8	4	TiCN	0.030
N72204	REM710-0.625-D6-C030.3-Z4	5/8	5/8	3-1/8	5-1/4	4		0.030
N79427	REM710-0.625-D6-C030.3-Z4	5/8	5/8	3-1/8	5-1/4	4	TiCN	0.030
N71243	REM710-0.750-P2-C030.3-Z4	3/4	5/8	1-5/8	3-3/4	4		0.030
N69301	REM710-0.750-P2-C030.3-Z4	3/4	5/8	1-5/8	3-3/4	4	TiCN	0.030
N72243	REM710-0.750-D1-C030.3-Z4	3/4	3/4	3/4	3	4		0.030
N69300	REM710-0.750-D1-C030.3-Z4	3/4	3/4	3/4	3	4	TiCN	0.030
N71241	REM710-0.750-D2-C030.3-Z4	3/4	3/4	1-1/4	3-1/2	4		0.030
N79429	REM710-0.750-D2-C030.3-Z4	3/4	3/4	1-1/4	3-1/2	4	TiCN	0.030
N72241	REM710-0.750-D3-C030.3-Z4	3/4	3/4	1-1/2	3-3/4	4		0.030
N79430	REM710-0.750-D3-C030.3-Z4	3/4	3/4	1-1/2	3-3/4	4	TiCN	0.030
N71244	REM710-0.750-D4-C030.3-Z4	3/4	3/4	1-5/8	3-7/8	4		0.030
N71245	REM710-0.750-D4-C030.3-Z4	3/4	3/4	1-5/8	3-7/8	4	TiCN	0.030
N71247	REM710-0.750-D5-C030.3-Z4	3/4	3/4	2	4-1/4	4		0.030
N79431	REM710-0.750-D5-C030.3-Z4	3/4	3/4	2	4-1/4	4	TiCN	0.030
N72245	REM710-0.750-D6-C030.3-Z4	3/4	3/4	2-1/2	4-3/4	4		0.030
N79432	REM710-0.750-D6-C030.3-Z4	3/4	3/4	2-1/2	4-3/4	4	TiCN	0.030
N72244	REM710-0.750-D7-C030.3-Z4	3/4	3/4	3	5-1/4	4		0.030
N69299	REM710-0.750-D7-C030.3-Z4	3/4	3/4	3	5-1/4	4	TiCN	0.030
N72248	REM710-0.750-D8-C030.3-Z4	3/4	3/4	4-1/8	6-3/8	4		0.030
N79433	REM710-0.750-D8-C030.3-Z4	3/4	3/4	4-1/8	6-3/8	4	TiCN	0.030
N72284	REM710-0.875-P3-C030.3-Z5	7/8	3/4	1-7/8	4-1/8	5		0.030
N69302	REM710-0.875-P3-C030.3-Z5	7/8	3/4	1-7/8	4-1/8	5	TiCN	0.030
N71283	REM710-0.875-P4-C030.3-Z5	7/8	3/4	3-1/2	5-3/4	5		0.030
N69303	REM710-0.875-P4-C030.3-Z5	7/8	3/4	3-1/2	5-3/4	5	TiCN	0.030
N71284	REM710-0.875-D2-C030.3-Z5	7/8	7/8	1-7/8	4-1/8	5		0.030
N69304	REM710-0.875-D2-C030.3-Z5	7/8	7/8	1-7/8	4-1/8	5	TiCN	0.030
N71285	REM710-0.875-D4-C030.3-Z5	7/8	7/8	3-1/2	5-3/4	5		0.030
N69305	REM710-0.875-D4-C030.3-Z5	7/8	7/8	3-1/2	5-3/4	5	TiCN	0.030
N71324	REM710-1.000-P1-C030.3-Z5	1	3/4	3/4	3	5		0.030
N69310	REM710-1.000-P1-C030.3-Z5	1	3/4	3/4	3	5	TiCN	0.030

DISCOUNT CODE D41

Niagara Cutter

GENERAL PURPOSE- REM710

M42
8% COBALT

HELIX


CHAMFER


NON CENTER CUTTING

COARSE PITCH

- Weldon flat standard
- Designed for profiling and slotting in all materials

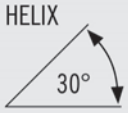
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N72324	REM710-1.000-P3-C030.3-Z5	1	3/4	1-1/2	3-3/4	5		0.030
N69309	REM710-1.000-P3-C030.3-Z5	1	3/4	1-1/2	3-3/4	5	TiCN	0.030
N71330	REM710-1.000-P4-C030.3-Z5	1	3/4	2	4-1/4	5		0.030
N79439	REM710-1.000-P4-C030.3-Z5	1	3/4	2	4-1/4	5	TiCN	0.030
N72318	REM710-1.000-D1-C030.3-Z5	1	1	1-1/8	3-5/8	5		0.030
N79442	REM710-1.000-D1-C030.3-Z5	1	1	1-1/8	3-5/8	5	TiCN	0.030
N71326	REM710-1.000-D3-C030.3-Z5	1	1	2	4-1/2	5		0.030
N71329	REM710-1.000-D3-C030.3-Z5	1	1	2	4-1/2	5	TiCN	0.030
N71327	REM710-1.000-D4-C030.3-Z5	1	1	3	5-1/2	5		0.030
N69306	REM710-1.000-D4-C030.3-Z5	1	1	3	5-1/2	5	TiCN	0.030
N72326	REM710-1.000-D5-C030.3-Z5	1	1	4	6-1/2	5		0.030
N69307	REM710-1.000-D5-C030.3-Z5	1	1	4	6-1/2	5	TiCN	0.030
N72327	REM710-1.000-D6-C030.3-Z5	1	1	6	8-1/2	5		0.030
N69308	REM710-1.000-D6-C030.3-Z5	1	1	6	8-1/2	5	TiCN	0.030
N71366	REM710-1.125-P3-C040.3-Z6	1-1/8	1	2	4-1/2	6		0.040
N69311	REM710-1.125-P3-C040.3-Z6	1-1/8	1	2	4-1/2	6	TiCN	0.040
N71367	REM710-1.125-P4-C040.3-Z6	1-1/8	1	3-1/2	6	6		0.040
N79446	REM710-1.125-P4-C040.3-Z6	1-1/8	1	3-1/2	6	6	TiCN	0.040
N71404	REM710-1.250-P1-C040.3-Z6	1-1/4	3/4	3/4	3	6		0.040
N69317	REM710-1.250-P1-C040.3-Z6	1-1/4	3/4	3/4	3	6	TiCN	0.040
N72404	REM710-1.250-P3-C040.3-Z6	1-1/4	3/4	1-1/2	3-3/4	6		0.040
N69316	REM710-1.250-P3-C040.3-Z6	1-1/4	3/4	1-1/2	3-3/4	6	TiCN	0.040
N71406	REM710-1.250-P4-C040.3-Z6	1-1/4	3/4	2	4-1/4	6		0.040
N79448	REM710-1.250-P4-C040.3-Z6	1-1/4	3/4	2	4-1/4	6	TiCN	0.040
N71407	REM710-1.250-D2-C040.3-Z6	1-1/4	1-1/4	2	4-1/2	6		0.040
N69312	REM710-1.250-D2-C040.3-Z6	1-1/4	1-1/4	2	4-1/2	6	TiCN	0.040
N71408	REM710-1.250-D3-C040.3-Z6	1-1/4	1-1/4	3	5-1/2	6		0.040
N69313	REM710-1.250-D3-C040.3-Z6	1-1/4	1-1/4	3	5-1/2	6	TiCN	0.040
N72407	REM710-1.250-D4-C040.3-Z6	1-1/4	1-1/4	4	6-1/2	6		0.040
N69314	REM710-1.250-D4-C040.3-Z6	1-1/4	1-1/4	4	6-1/2	6	TiCN	0.040
N72408	REM710-1.250-D5-C040.3-Z6	1-1/4	1-1/4	6	8-1/2	6		0.040
N69315	REM710-1.250-D5-C040.3-Z6	1-1/4	1-1/4	6	8-1/2	6	TiCN	0.040
N72484	REM710-1.500-P3-C040.3-Z6	1-1/2	3/4	1-1/2	3-3/4	6		0.040
N69324	REM710-1.500-P3-C040.3-Z6	1-1/2	3/4	1-1/2	3-3/4	6	TiCN	0.040
N72485	REM710-1.500-P4-C040.3-Z6	1-1/2	3/4	2	4-1/4	6		0.040

DISCOUNT CODE D41

Niagara Cutter

GENERAL PURPOSE- REM710

M42
8% COBALT

HELIX


CHAMFER


NON CENTER CUTTING

COARSE PITCH

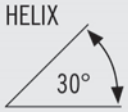
- Weldon flat standard
- Designed for profiling and slotting in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N79453	REM710-1.500-P4-C040.3-Z6	1-1/2	3/4	2	4-1/4	6	TiCN	0.040
N71487	REM710-1.500-P5-C040.3-Z6	1-1/2	1-1/4	2	4-1/2	6		0.040
N69318	REM710-1.500-P5-C040.3-Z6	1-1/2	1-1/4	2	4-1/2	6	TiCN	0.040
N71488	REM710-1.500-P6-C040.3-Z6	1-1/2	1-1/4	3	5-1/2	6		0.040
N69319	REM710-1.500-P6-C040.3-Z6	1-1/2	1-1/4	3	5-1/2	6	TiCN	0.040
N72487	REM710-1.500-P7-C040.3-Z6	1-1/2	1-1/4	4	6-1/2	6		0.040
N69320	REM710-1.500-P7-C040.3-Z6	1-1/2	1-1/4	4	6-1/2	6	TiCN	0.040
N72488	REM710-1.500-P8-C040.3-Z6	1-1/2	1-1/4	5	7-1/2	6		0.040
N69321	REM710-1.500-P8-C040.3-Z6	1-1/2	1-1/4	5	7-1/2	6	TiCN	0.040
N71489	REM710-1.500-P9-C040.3-Z6	1-1/2	1-1/4	6	8-1/2	6		0.040
N69322	REM710-1.500-P9-C040.3-Z6	1-1/2	1-1/4	6	8-1/2	6	TiCN	0.040
N72489	REM710-1.500-P10-C040.3-Z6	1-1/2	1-1/4	8	10-1/2	6		0.040
N69323	REM710-1.500-P10-C040.3-Z6	1-1/2	1-1/4	8	10-1/2	6	TiCN	0.040
N72574	REM710-1.750-P5-C040.3-Z6	1-3/4	1-1/4	4	6-1/2	6		0.040
N69328	REM710-1.750-P5-C040.3-Z6	1-3/4	1-1/4	4	6-1/2	6	TiCN	0.040
N71644	REM710-2.000-P1-C040.3-Z8	2	3/4	3/4	3	8		0.040
N69330	REM710-2.000-P1-C040.3-Z8	2	3/4	3/4	3	8	TiCN	0.040
N71640	REM710-2.000-P2-C040.3-Z8	2	3/4	1-1/8	3-3/8	8		0.040
N79456	REM710-2.000-P2-C040.3-Z8	2	3/4	1-1/8	3-3/8	8	TiCN	0.040
N71645	REM710-2.000-P4-C040.3-Z8	2	1-1/4	2	4-1/2	8		0.040
N69331	REM710-2.000-P4-C040.3-Z8	2	1-1/4	2	4-1/2	8	TiCN	0.040
N71648	REM710-2.000-P5-C040.3-Z8	2	1-1/4	4	6-1/2	8		0.040
N69332	REM710-2.000-P5-C040.3-Z8	2	1-1/4	4	6-1/2	8	TiCN	0.040
N71343	REM710-2.000-D3-C040.7-Z8	2	2	4	7-3/4	8		0.040
N69335	REM710-2.000-D3-C040.7-Z8	2	2	4	7-3/4	8	TiCN	0.040
N71353	REM710-2.000-D4-C040.7-Z8	2	2	5	8-3/4	8		0.040
N69336	REM710-2.000-D4-C040.7-Z8	2	2	5	8-3/4	8	TiCN	0.040
N71363	REM710-2.000-D5-C040.7-Z8	2	2	6	9-3/4	8		0.040
N69337	REM710-2.000-D5-C040.7-Z8	2	2	6	9-3/4	8	TiCN	0.040
N71383	REM710-2.000-D7-C040.7-Z8	2	2	8	11-3/4	8		0.040
N69339	REM710-2.000-D7-C040.7-Z8	2	2	8	11-3/4	8	TiCN	0.040

Niagara Cutter

GENERAL PURPOSE- REC700

M42
8% COBALT

HELIX


CHAMFER


CENTER CUTTING

COARSE PITCH

- Weldon flat standard
- Designed for profiling and slotting in all materials

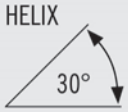
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N70013	REC700-0.188-F3-C020.3-Z4	3/16	3/8	1/2	2-3/8	4		0.020
N88861	REC700-0.188-F3-C020.3-Z4	3/16	3/8	1/2	2-3/8	4	TiCN	0.020
N70210	REC700-0.250-F2-C020.3-Z4	1/4	3/8	3/8	2-3/16	4		0.020
N70212	REC700-0.250-F2-C020.3-Z4	1/4	3/8	3/8	2-3/16	4	TiCN	0.020
N70015	REC700-0.250-F3-C020.3-Z4	1/4	3/8	5/8	2-7/16	4		0.020
N88862	REC700-0.250-F3-C020.3-Z4	1/4	3/8	5/8	2-7/16	4	TiCN	0.020
N70017	REC700-0.250-F5-C020.3-Z4	1/4	3/8	1-1/4	3-1/16	4		0.020
N88863	REC700-0.250-F5-C020.3-Z4	1/4	3/8	1-1/4	3-1/16	4	TiCN	0.020
N70019	REC700-0.313-F2-C025.3-Z4	5/16	3/8	3/4	2-1/2	4		0.025
N88864	REC700-0.313-F2-C025.3-Z4	5/16	3/8	3/4	2-1/2	4	TiCN	0.025
N70023	REC700-0.375-D2-C025.3-Z4	3/8	3/8	3/4	2-1/2	4		0.025
N88866	REC700-0.375-D2-C025.3-Z4	3/8	3/8	3/4	2-1/2	4	TiCN	0.025
N70025	REC700-0.375-D4-C025.3-Z4	3/8	3/8	1-1/2	3-1/4	4		0.025
N88867	REC700-0.375-D4-C025.3-Z4	3/8	3/8	1-1/2	3-1/4	4	TiCN	0.025
N70027	REC700-0.438-P2-C025.3-Z4	7/16	3/8	1	2-11/16	4		0.025
N88868	REC700-0.438-P2-C025.3-Z4	7/16	3/8	1	2-11/16	4	TiCN	0.025
N70216	REC700-0.500-D1-C025.3-Z4	1/2	1/2	5/8	2-5/8	4		0.025
N70218	REC700-0.500-D1-C025.3-Z4	1/2	1/2	5/8	2-5/8	4	TiCN	0.025
N70129	REC700-0.500-D2-C025.3-Z4	1/2	1/2	1	3	4		0.025
N88869	REC700-0.500-D2-C025.3-Z4	1/2	1/2	1	3	4	TiCN	0.025
N70031	REC700-0.500-D3-C025.3-Z4	1/2	1/2	1-1/4	3-1/4	4		0.025
N88870	REC700-0.500-D3-C025.3-Z4	1/2	1/2	1-1/4	3-1/4	4	TiCN	0.025
N70033	REC700-0.500-D4-C025.3-Z4	1/2	1/2	1-5/8	3-5/8	4		0.025
N79526	REC700-0.500-D4-C025.3-Z4	1/2	1/2	1-5/8	3-5/8	4	TiCN	0.025
N70035	REC700-0.500-D5-C025.3-Z4	1/2	1/2	2	4	4		0.025
N88871	REC700-0.500-D5-C025.3-Z4	1/2	1/2	2	4	4	TiCN	0.025
N70137	REC700-0.500-D6-C025.3-Z4	1/2	1/2	2-1/2	4-1/2	4		0.025
N79527	REC700-0.500-D6-C025.3-Z4	1/2	1/2	2-1/2	4-1/2	4	TiCN	0.025
N70139	REC700-0.500-D7-C025.3-Z4	1/2	1/2	3	5	4		0.025
N79528	REC700-0.500-D7-C025.3-Z4	1/2	1/2	3	5	4	TiCN	0.025
N70037	REC700-0.563-P2-C025.3-Z4	9/16	1/2	1-3/8	3-3/8	4		0.025
N88872	REC700-0.563-P2-C025.3-Z4	9/16	1/2	1-3/8	3-3/8	4	TiCN	0.025
N70029	REC700-0.625-D3-C030.3-Z4	5/8	5/8	1-1/4	3-3/8	4		0.030
N79530	REC700-0.625-D3-C030.3-Z4	5/8	5/8	1-1/4	3-3/8	4	TiCN	0.030
N70039	REC700-0.625-D4-C030.3-Z4	5/8	5/8	1-5/8	3-3/4	4		0.030
N88873	REC700-0.625-D4-C030.3-Z4	5/8	5/8	1-5/8	3-3/4	4	TiCN	0.030
N70043	REC700-0.625-D6-C030.3-Z4	5/8	5/8	2-1/2	4-5/8	4		0.030

DISCOUNT CODE D41

Niagara Cutter

GENERAL PURPOSE- REC700

M42
8% COBALT

HELIX


CHAMFER


CENTER CUTTING

COARSE PITCH

- Weldon flat standard
- Designed for profiling and slotting in all materials

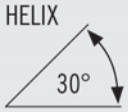
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N88874	REC700-0.625-D6-C030.3-Z4	5/8	5/8	2-1/2	4-5/8	4	TiCN	0.030
N70045	REC700-0.625-D7-C030.3-Z4	5/8	5/8	3-1/8	5-1/4	4		0.030
N79532	REC700-0.625-D7-C030.3-Z4	5/8	5/8	3-1/8	5-1/4	4	TiCN	0.030
N70053	REC700-0.750-P2-C030.3-Z4	3/4	5/8	1-5/8	3-3/4	4		0.030
N88878	REC700-0.750-P2-C030.3-Z4	3/4	5/8	1-5/8	3-3/4	4	TiCN	0.030
N70049	REC700-0.750-D1-C030.3-Z4	3/4	3/4	3/4	3	4		0.030
N88876	REC700-0.750-D1-C030.3-Z4	3/4	3/4	3/4	3	4	TiCN	0.030
N70151	REC700-0.750-D2-C030.3-Z4	3/4	3/4	1-1/4	3-1/2	4		0.030
N79534	REC700-0.750-D2-C030.3-Z4	3/4	3/4	1-1/4	3-1/2	4	TiCN	0.030
N70153	REC700-0.750-D3-C030.3-Z4	3/4	3/4	1-1/2	3-3/4	4		0.030
N79535	REC700-0.750-D3-C030.3-Z4	3/4	3/4	1-1/2	3-3/4	4	TiCN	0.030
N70047	REC700-0.750-D4-C030.3-Z4	3/4	3/4	1-5/8	3-7/8	4		0.030
N88875	REC700-0.750-D4-C030.3-Z4	3/4	3/4	1-5/8	3-7/8	4	TiCN	0.030
N70149	REC700-0.750-D5-C030.3-Z4	3/4	3/4	2	4-1/4	4		0.030
N79536	REC700-0.750-D5-C030.3-Z4	3/4	3/4	2	4-1/4	4	TiCN	0.030
N70155	REC700-0.750-D6-C030.3-Z4	3/4	3/4	2-1/2	4-3/4	4		0.030
N79537	REC700-0.750-D6-C030.3-Z4	3/4	3/4	2-1/2	4-3/4	4	TiCN	0.030
N70051	REC700-0.750-D7-C030.3-Z4	3/4	3/4	3	5-1/4	4		0.030
N88877	REC700-0.750-D7-C030.3-Z4	3/4	3/4	3	5-1/4	4	TiCN	0.030
N70157	REC700-0.750-D8-C030.3-Z4	3/4	3/4	4-1/8	6-3/8	4		0.030
N79538	REC700-0.750-D8-C030.3-Z4	3/4	3/4	4-1/8	6-3/8	4	TiCN	0.030
N70055	REC700-0.875-P3-C030.3-Z5	7/8	3/4	1-7/8	4-1/8	5		0.030
N88879	REC700-0.875-P3-C030.3-Z5	7/8	3/4	1-7/8	4-1/8	5	TiCN	0.030
N70059	REC700-0.875-P4-C030.3-Z5	7/8	3/4	3-1/2	5-3/4	5		0.030
N88880	REC700-0.875-P4-C030.3-Z5	7/8	3/4	3-1/2	5-3/4	5	TiCN	0.030
N70063	REC700-0.875-D2-C030.3-Z5	7/8	7/8	1-7/8	4-1/8	5		0.030
N88881	REC700-0.875-D2-C030.3-Z5	7/8	7/8	1-7/8	4-1/8	5	TiCN	0.030
N70079	REC700-1.000-P3-C030.3-Z5	1	3/4	1-1/2	3-3/4	5		0.030
N88887	REC700-1.000-P3-C030.3-Z5	1	3/4	1-1/2	3-3/4	5	TiCN	0.030
N70081	REC700-1.000-P4-C030.3-Z5	1	3/4	2	4-1/4	5		0.030
N88888	REC700-1.000-P4-C030.3-Z5	1	3/4	2	4-1/4	5	TiCN	0.030
N70083	REC700-1.000-P5-C030.3-Z5	1	3/4	3	5-1/4	5		0.030
N79545	REC700-1.000-P5-C030.3-Z5	1	3/4	3	5-1/4	5	TiCN	0.030
N70224	REC700-1.000-D1-C030.3-Z5	1	1	1	3-1/2	5		0.030
N70226	REC700-1.000-D1-C030.3-Z5	1	1	1	3-1/2	5	TiCN	0.030
N70167	REC700-1.000-D2-C030.3-Z5	1	1	1-1/8	3-5/8	5		0.030
N79547	REC700-1.000-D2-C030.3-Z5	1	1	1-1/8	3-5/8	5	TiCN	0.030

DISCOUNT CODE D41

Niagara Cutter

GENERAL PURPOSE- REC700

M42
8% COBALT

HELIX


CHAMFER


CENTER CUTTING

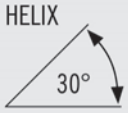
COARSE PITCH

- Weldon flat standard
- Designed for profiling and slotting in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N70067	REC700-1.000-D4-C030.3-Z5	1	1	2	4-1/2	5		0.030
N88883	REC700-1.000-D4-C030.3-Z5	1	1	2	4-1/2	5	TiCN	0.030
N70071	REC700-1.000-D5-C030.3-Z5	1	1	3	5-1/2	5		0.030
N88884	REC700-1.000-D5-C030.3-Z5	1	1	3	5-1/2	5	TiCN	0.030
N70075	REC700-1.000-D6-C030.3-Z5	1	1	4	6-1/2	5		0.030
N88885	REC700-1.000-D6-C030.3-Z5	1	1	4	6-1/2	5	TiCN	0.030
N70077	REC700-1.000-D7-C030.3-Z5	1	1	6	8-1/2	5		0.030
N88886	REC700-1.000-D7-C030.3-Z5	1	1	6	8-1/2	5	TiCN	0.030
N70087	REC700-1.250-D3-C040.3-Z6	1-1/4	1-1/4	2	4-1/2	6		0.040
N88889	REC700-1.250-D3-C040.3-Z6	1-1/4	1-1/4	2	4-1/2	6	TiCN	0.040
N70089	REC700-1.250-D4-C040.3-Z6	1-1/4	1-1/4	3	5-1/2	6		0.040
N79558	REC700-1.250-D4-C040.3-Z6	1-1/4	1-1/4	3	5-1/2	6	TiCN	0.040
N70091	REC700-1.250-D5-C040.3-Z6	1-1/4	1-1/4	4	6-1/2	6		0.040
N88890	REC700-1.250-D5-C040.3-Z6	1-1/4	1-1/4	4	6-1/2	6	TiCN	0.040
N70093	REC700-1.250-D6-C040.3-Z6	1-1/4	1-1/4	6	8-1/2	6		0.040
N79559	REC700-1.250-D6-C040.3-Z6	1-1/4	1-1/4	6	8-1/2	6	TiCN	0.040
N70099	REC700-1.500-P5-C040.3-Z6	1-1/2	1-1/4	2	4-1/2	6		0.040
N88891	REC700-1.500-P5-C040.3-Z6	1-1/2	1-1/4	2	4-1/2	6	TiCN	0.040
N70101	REC700-1.500-P6-C040.3-Z6	1-1/2	1-1/4	3	5-1/2	6		0.040
N79566	REC700-1.500-P6-C040.3-Z6	1-1/2	1-1/4	3	5-1/2	6	TiCN	0.040
N70103	REC700-1.500-P7-C040.3-Z6	1-1/2	1-1/4	4	6-1/2	6		0.040
N88892	REC700-1.500-P7-C040.3-Z6	1-1/2	1-1/4	4	6-1/2	6	TiCN	0.040
N70135	REC700-2.000-P5-C040.3-Z8	2	1-1/4	4	6-1/2	8		0.040
N79577	REC700-2.000-P5-C040.3-Z8	2	1-1/4	4	6-1/2	8	TiCN	0.040
N70145	REC700-2.000-D4-C040.7-Z8	2	2	5	8-3/4	8		0.040
N79580	REC700-2.000-D4-C040.7-Z8	2	2	5	8-3/4	8	TiCN	0.040
N70119	REC700-2.000-D5-C040.7-Z8	2	2	6	9-3/4	8		0.040
N88895	REC700-2.000-D5-C040.7-Z8	2	2	6	9-3/4	8	TiCN	0.040

GENERAL PURPOSE- RMB700

M42
8% COBALT

HELIX


BALL END


CENTER CUTTING

COARSE PITCH

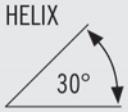
- Weldon flat standard
- Designed for profiling, slotting and contouring in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N70162	RMB700-0.500-D3-B.3-Z4	1/2	1/2	1-1/4	3-1/4	4	
N88897	RMB700-0.500-D3-B.3-Z4	1/2	1/2	1-1/4	3-1/4	4	TiCN
N70203	RMB700-0.625-D3-B.3-Z4	5/8	5/8	1-5/8	3-3/4	4	
N88898	RMB700-0.625-D3-B.3-Z4	5/8	5/8	1-5/8	3-3/4	4	TiCN
N70223	RMB700-0.625-D4-B.3-Z4	5/8	5/8	2-1/2	4-5/8	4	
N79586	RMB700-0.625-D4-B.3-Z4	5/8	5/8	2-1/2	4-5/8	4	TiCN
N70244	RMB700-0.750-D2-B.3-Z4	3/4	3/4	1-5/8	3-7/8	4	
N88899	RMB700-0.750-D2-B.3-Z4	3/4	3/4	1-5/8	3-7/8	4	TiCN
N70326	RMB700-1.000-D2-B.3-Z5	1	1	2	4-1/2	5	
N88900	RMB700-1.000-D2-B.3-Z5	1	1	2	4-1/2	5	TiCN

Niagara Cutter

GENERAL PURPOSE- RXC753

M42
8% COBALT

HELIX


CHAMFER


CENTER CUTTING

COARSE PITCH

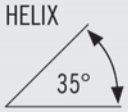
- Weldon flat standard
- Designed for profiling and slotting in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	REACH	CHAMFER
N75341	RXC753-1.000-E2-C030.3-Z5	1	1	2-1/2	6-1/2	5		4	0.030
N89100	RXC753-1.000-E2-C030.3-Z5	1	1	2-1/2	6-1/2	5	TiCN	4	0.030
N75345	RXC753-1.000-E3-C030.3-Z5	1	1	2-1/2	8-1/2	5		6	0.030
N89101	RXC753-1.000-E3-C030.3-Z5	1	1	2-1/2	8-1/2	5	TiCN	6	0.030
N75353	RXC753-1.250-E3-C040.3-Z6	1-1/4	1-1/4	2-1/2	8-1/2	6		6	0.040
N89103	RXC753-1.250-E3-C040.3-Z6	1-1/4	1-1/4	2-1/2	8-1/2	6	TiCN	6	0.040
N75365	RXC753-1.500-P4-C040.3-Z6	1-1/2	1-1/4	2-1/2	10-1/2	6		8	0.040
N89106	RXC753-1.500-P4-C040.3-Z6	1-1/2	1-1/4	2-1/2	10-1/2	6	TiCN	8	0.040

Niagara Cutter

EXCEL SERIES- EXR350

PREMIUM PARTICLE METAL
8.5% COBALT

HELIX


CHAMFER


CENTER CUTTING

FINE PITCH

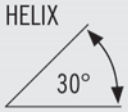
- Weldon flat standard
- Designed for pocketing, profiling and slotting applications

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N53809	EXR350-0.375-D2-C025.3-Z4	3/8	3/8	3/4	2-1/2	4		0.025
N53911	EXR350-0.375-D2-C025.3-Z4	3/8	3/8	3/4	2-1/2	4	TiAlN	0.025
N53810	EXR350-0.375-D4-C025.3-Z4	3/8	3/8	1-1/2	3-1/4	4		0.025
N53912	EXR350-0.375-D4-C025.3-Z4	3/8	3/8	1-1/2	3-1/4	4	TiAlN	0.025
N53811	EXR350-0.500-D1-C025.3-Z4	1/2	1/2	1/2	2-9/16	4		0.025
N53913	EXR350-0.500-D1-C025.3-Z4	1/2	1/2	1/2	2-9/16	4	TiAlN	0.025
N53812	EXR350-0.500-D3-C025.3-Z4	1/2	1/2	1-1/4	3-1/4	4		0.025
N53914	EXR350-0.500-D3-C025.3-Z4	1/2	1/2	1-1/4	3-1/4	4	TiAlN	0.025
N53813	EXR350-0.500-D4-C025.3-Z4	1/2	1/2	2	4	4		0.025
N53915	EXR350-0.500-D4-C025.3-Z4	1/2	1/2	2	4	4	TiAlN	0.025
N53815	EXR350-0.625-D3-C030.3-Z4	5/8	5/8	1-5/8	3-3/4	4		0.030
N53917	EXR350-0.625-D3-C030.3-Z4	5/8	5/8	1-5/8	3-3/4	4	TiAlN	0.030
N53818	EXR350-0.750-D2-C030.3-Z4	3/4	3/4	1-5/8	3-3/4	4		0.030
N53920	EXR350-0.750-D2-C030.3-Z4	3/4	3/4	1-5/8	3-3/4	4	TiAlN	0.030
N53819	EXR350-0.750-D4-C030.3-Z4	3/4	3/4	3	5-1/4	4		0.030
N53921	EXR350-0.750-D4-C030.3-Z4	3/4	3/4	3	5-1/4	4	TiAlN	0.030
N53820	EXR350-1.000-D1-C030.3-Z5	1	1	1	3-7/8	5		0.030
N53922	EXR350-1.000-D1-C030.3-Z5	1	1	1	3-7/8	5	TiAlN	0.030
N53821	EXR350-1.000-D2-C030.3-Z5	1	1	2	4-1/2	5		0.030
N53923	EXR350-1.000-D2-C030.3-Z5	1	1	2	4-1/2	5	TiAlN	0.030
N53822	EXR350-1.000-D3-C030.3-Z5	1	1	3	5-1/2	5		0.030
N53924	EXR350-1.000-D3-C030.3-Z5	1	1	3	5-1/2	5	TiAlN	0.030
N53823	EXR350-1.000-D4-C030.3-Z5	1	1	4	6-1/2	5		0.030
N53925	EXR350-1.000-D4-C030.3-Z5	1	1	4	6-1/2	5	TiAlN	0.030
N53826	EXR350-1.250-D2-C040.3-Z6	1-1/4	1-1/4	2	4-1/2	6		0.040
N53928	EXR350-1.250-D2-C040.3-Z6	1-1/4	1-1/4	2	4-1/2	6	TiAlN	0.040
N53828	EXR350-1.250-D4-C040.3-Z6	1-1/4	1-1/4	4	6-1/2	6		0.040
N53930	EXR350-1.250-D4-C040.3-Z6	1-1/4	1-1/4	4	6-1/2	6	TiAlN	0.040
N53833	EXR350-1.500-P4-C040.3-Z6	1-1/2	1-1/4	6	8-1/2	6		0.040
N53935	EXR350-1.500-P4-C040.3-Z6	1-1/2	1-1/4	6	8-1/2	6	TiAlN	0.040

Niagara Cutter

GENERAL PURPOSE- REM445

M42
8% COBALT

HELIX


CHAMFER


NON CENTER CUTTING

FINE PITCH

- Weldon flat standard
- Designed for profiling and slotting in all materials including high temperature alloys

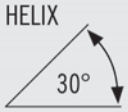
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N44501	REM445-0.188-F3-C020.3-Z4	3/16	3/8	1/2	2-3/8	4		0.020
N75655	REM445-0.188-F3-C020.3-Z4	3/16	3/8	1/2	2-3/8	4	TiAlN	0.020
N44503	REM445-0.250-F3-C020.3-Z4	1/4	3/8	5/8	2-7/16	4		0.020
N75656	REM445-0.250-F3-C020.3-Z4	1/4	3/8	5/8	2-7/16	4	TiAlN	0.020
N44505	REM445-0.250-F5-C020.3-Z4	1/4	3/8	1-1/4	3-1/16	4		0.020
N75657	REM445-0.250-F5-C020.3-Z4	1/4	3/8	1-1/4	3-1/16	4	TiAlN	0.020
N44507	REM445-0.313-F2-C025.3-Z4	5/16	3/8	3/4	2-1/2	4		0.025
N75658	REM445-0.313-F2-C025.3-Z4	5/16	3/8	3/4	2-1/2	4	TiAlN	0.025
N44509	REM445-0.313-F4-C025.3-Z4	5/16	3/8	1-3/8	3-1/8	4		0.025
N75659	REM445-0.313-F4-C025.3-Z4	5/16	3/8	1-3/8	3-1/8	4	TiAlN	0.025
N44511	REM445-0.375-D2-C025.3-Z4	3/8	3/8	3/4	2-1/2	4		0.025
N75660	REM445-0.375-D2-C025.3-Z4	3/8	3/8	3/4	2-1/2	4	TiAlN	0.025
N44513	REM445-0.375-D4-C025.3-Z4	3/8	3/8	1-1/2	3-1/4	4		0.025
N75661	REM445-0.375-D4-C025.3-Z4	3/8	3/8	1-1/2	3-1/4	4	TiAlN	0.025
N44515	REM445-0.438-P2-C025.3-Z4	7/16	3/8	1	2-11/16	4		0.025
N75662	REM445-0.438-P2-C025.3-Z4	7/16	3/8	1	2-11/16	4	TiAlN	0.025
N45415	REM445-0.500-D2-C025.3-Z4	1/2	1/2	1	3	4		0.025
N75663	REM445-0.500-D2-C025.3-Z4	1/2	1/2	1	3	4	TiAlN	0.025
N44517	REM445-0.500-D3-C025.3-Z4	1/2	1/2	1-1/4	3-1/4	4		0.025
N75664	REM445-0.500-D3-C025.3-Z4	1/2	1/2	1-1/4	3-1/4	4	TiAlN	0.025
N45417	REM445-0.500-D5-C025.3-Z4	1/2	1/2	1-5/8	3-5/8	4		0.025
N75665	REM445-0.500-D5-C025.3-Z4	1/2	1/2	1-5/8	3-5/8	4	TiAlN	0.025
N44519	REM445-0.500-D4-C025.3-Z4	1/2	1/2	2	4	4		0.025
N75666	REM445-0.500-D4-C025.3-Z4	1/2	1/2	2	4	4	TiAlN	0.025
N45419	REM445-0.500-D6-C025.3-Z4	1/2	1/2	2-1/2	4-1/2	4		0.025
N75667	REM445-0.500-D6-C025.3-Z4	1/2	1/2	2-1/2	4-1/2	4	TiAlN	0.025
N45421	REM445-0.500-D7-C025.3-Z4	1/2	1/2	3	5	4		0.025
N75668	REM445-0.500-D7-C025.3-Z4	1/2	1/2	3	5	4	TiAlN	0.025
N45423	REM445-0.625-D1-C030.3-Z4	5/8	5/8	3/4	2-7/8	4		0.030
N75670	REM445-0.625-D1-C030.3-Z4	5/8	5/8	3/4	2-7/8	4	TiAlN	0.030
N45425	REM445-0.625-D2-C030.3-Z4	5/8	5/8	1-1/4	3-3/8	4		0.030
N75671	REM445-0.625-D2-C030.3-Z4	5/8	5/8	1-1/4	3-3/8	4	TiAlN	0.030
N44523	REM445-0.625-D3-C030.3-Z4	5/8	5/8	1-5/8	3-3/4	4		0.030
N75672	REM445-0.625-D3-C030.3-Z4	5/8	5/8	1-5/8	3-3/4	4	TiAlN	0.030
N45427	REM445-0.625-D5-C030.3-Z4	5/8	5/8	2-1/8	4-1/4	4		0.030

DISCOUNT CODE D41

Niagara Cutter

GENERAL PURPOSE- REM445

M42
8% COBALT

HELIX


CHAMFER


NON CENTER CUTTING

FINE PITCH

- Weldon flat standard
- Designed for profiling and slotting in all materials including high temperature alloys

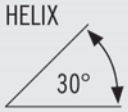
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N75673	REM445-0.625-D5-C030.3-Z4	5/8	5/8	2-1/8	4-1/4	4	TiAlN	0.030
N44525	REM445-0.625-D4-C030.3-Z4	5/8	5/8	2-1/2	4-5/8	4		0.030
N75674	REM445-0.625-D4-C030.3-Z4	5/8	5/8	2-1/2	4-5/8	4	TiAlN	0.030
N45429	REM445-0.625-D6-C030.3-Z4	5/8	5/8	3-1/8	5-1/4	4		0.030
N75675	REM445-0.625-D6-C030.3-Z4	5/8	5/8	3-1/8	5-1/4	4	TiAlN	0.030
N44531	REM445-0.750-D1-C030.3-Z4	3/4	3/4	3/4	3	4		0.030
N75678	REM445-0.750-D1-C030.3-Z4	3/4	3/4	3/4	3	4	TiAlN	0.030
N45433	REM445-0.750-D2-C030.3-Z4	3/4	3/4	1-1/4	3-1/2	4		0.030
N75679	REM445-0.750-D2-C030.3-Z4	3/4	3/4	1-1/4	3-1/2	4	TiAlN	0.030
N45435	REM445-0.750-D3-C030.3-Z4	3/4	3/4	1-1/2	3-3/4	4		0.030
N75680	REM445-0.750-D3-C030.3-Z4	3/4	3/4	1-1/2	3-3/4	4	TiAlN	0.030
N44527	REM445-0.750-D4-C030.3-Z4	3/4	3/4	1-5/8	3-7/8	4		0.030
N75681	REM445-0.750-D4-C030.3-Z4	3/4	3/4	1-5/8	3-7/8	4	TiAlN	0.030
N45437	REM445-0.750-D5-C030.3-Z4	3/4	3/4	2	4-1/4	4		0.030
N75682	REM445-0.750-D5-C030.3-Z4	3/4	3/4	2	4-1/4	4	TiAlN	0.030
N45439	REM445-0.750-D6-C030.3-Z4	3/4	3/4	2-1/2	4-3/4	4		0.030
N75683	REM445-0.750-D6-C030.3-Z4	3/4	3/4	2-1/2	4-3/4	4	TiAlN	0.030
N44529	REM445-0.750-D7-C030.3-Z4	3/4	3/4	3	5-1/4	4		0.030
N75684	REM445-0.750-D7-C030.3-Z4	3/4	3/4	3	5-1/4	4	TiAlN	0.030
N45441	REM445-0.750-D8-C030.3-Z4	3/4	3/4	4-1/8	6-3/8	4		0.030
N75685	REM445-0.750-D8-C030.3-Z4	3/4	3/4	4-1/8	6-3/8	4	TiAlN	0.030
N44551	REM445-1.000-P3-C030.3-Z5	1	3/4	1-1/2	3-3/4	5		0.030
N75696	REM445-1.000-P3-C030.3-Z5	1	3/4	1-1/2	3-3/4	5	TiAlN	0.030
N45453	REM445-1.000-P4-C030.3-Z5	1	3/4	2	4-1/4	5		0.030
N75697	REM445-1.000-P4-C030.3-Z5	1	3/4	2	4-1/4	5	TiAlN	0.030
N45459	REM445-1.000-D1-C030.3-Z5	1	1	1-1/8	3-5/8	5		0.030
N75700	REM445-1.000-D1-C030.3-Z5	1	1	1-1/8	3-5/8	5	TiAlN	0.030
N44543	REM445-1.000-D3-C030.3-Z5	1	1	2	4-1/2	5		0.030
N75702	REM445-1.000-D3-C030.3-Z5	1	1	2	4-1/2	5	TiAlN	0.030
N44545	REM445-1.000-D4-C030.3-Z5	1	1	3	5-1/2	5		0.030
N75703	REM445-1.000-D4-C030.3-Z5	1	1	3	5-1/2	5	TiAlN	0.030
N44547	REM445-1.000-D5-C030.3-Z5	1	1	4	6-1/2	5		0.030
N75704	REM445-1.000-D5-C030.3-Z5	1	1	4	6-1/2	5	TiAlN	0.030
N44549	REM445-1.000-D6-C030.3-Z5	1	1	6	8-1/2	5		0.030
N75705	REM445-1.000-D6-C030.3-Z5	1	1	6	8-1/2	5	TiAlN	0.030

DISCOUNT CODE D41

Niagara Cutter

GENERAL PURPOSE- REM445

M42
8% COBALT

HELIX


CHAMFER


NON CENTER CUTTING

FINE PITCH

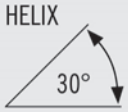
- Weldon flat standard
- Designed for profiling and slotting in all materials including high temperature alloys

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N44557	REM445-1.250-D2-C040.3-Z6	1-1/4	1-1/4	2	4-1/2	6		0.040
N75715	REM445-1.250-D2-C040.3-Z6	1-1/4	1-1/4	2	4-1/2	6	TiAlN	0.040
N44559	REM445-1.250-D3-C040.3-Z6	1-1/4	1-1/4	3	5-1/2	6		0.040
N75716	REM445-1.250-D3-C040.3-Z6	1-1/4	1-1/4	3	5-1/2	6	TiAlN	0.040
N44561	REM445-1.250-D4-C040.3-Z6	1-1/4	1-1/4	4	6-1/2	6		0.040
N75717	REM445-1.250-D4-C040.3-Z6	1-1/4	1-1/4	4	6-1/2	6	TiAlN	0.040
N44563	REM445-1.250-D5-C040.3-Z6	1-1/4	1-1/4	6	8-1/2	6		0.040
N75718	REM445-1.250-D5-C040.3-Z6	1-1/4	1-1/4	6	8-1/2	6	TiAlN	0.040
N44569	REM445-1.500-P5-C040.3-Z6	1-1/2	1-1/4	2	4-1/2	6		0.040
N75725	REM445-1.500-P5-C040.3-Z6	1-1/2	1-1/4	2	4-1/2	6	TiAlN	0.040
N44577	REM445-1.500-P9-C040.3-Z6	1-1/2	1-1/4	6	8-1/2	6		0.040
N75729	REM445-1.500-P9-C040.3-Z6	1-1/2	1-1/4	6	8-1/2	6	TiAlN	0.040
N44591	REM445-2.000-P4-C040.3-Z8	2	1-1/4	2	4-1/2	8		0.040
N75740	REM445-2.000-P4-C040.3-Z8	2	1-1/4	2	4-1/2	8	TiAlN	0.040
N44599	REM445-2.000-D3-C040.7-Z8	2	2	4	7-3/4	8		0.040
N75745	REM445-2.000-D3-C040.7-Z8	2	2	4	7-3/4	8	TiAlN	0.040
N44603	REM445-2.000-D5-C040.7-Z8	2	2	6	9-3/4	8		0.040
N75747	REM445-2.000-D5-C040.7-Z8	2	2	6	9-3/4	8	TiAlN	0.040

Niagara Cutter

GENERAL PURPOSE- REC448

M42
8% COBALT

HELIX


CHAMFER


CENTER CUTTING

FINE PITCH

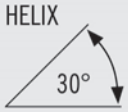
- Weldon flat standard
- Designed for profiling and slotting in all materials including high temperature alloys

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N44839	REC448-0.188-F3-C020.3-Z4	3/16	3/8	1/2	2-3/8	4		0.020
N14554	REC448-0.188-F3-C020.3-Z4	3/16	3/8	1/2	2-3/8	4	TiAlN	0.020
N44841	REC448-0.250-F3-C020.3-Z4	1/4	3/8	5/8	2-7/16	4		0.020
N14555	REC448-0.250-F3-C020.3-Z4	1/4	3/8	5/8	2-7/16	4	TiAlN	0.020
N44843	REC448-0.250-F5-C020.3-Z4	1/4	3/8	1-1/4	3-1/16	4		0.020
N14556	REC448-0.250-F5-C020.3-Z4	1/4	3/8	1-1/4	3-1/16	4	TiAlN	0.020
N44845	REC448-0.313-F2-C025.3-Z4	5/16	3/8	3/4	2-1/2	4		0.025
N14558	REC448-0.313-F2-C025.3-Z4	5/16	3/8	3/4	2-1/2	4	TiAlN	0.025
N44873	REC448-0.375-D1-C025.3-Z4	3/8	3/8	1/2	2-1/4	4		0.025
N14560	REC448-0.375-D1-C025.3-Z4	3/8	3/8	1/2	2-1/4	4	TiAlN	0.025
N44849	REC448-0.375-D2-C025.3-Z4	3/8	3/8	3/4	2-1/2	4		0.025
N14561	REC448-0.375-D2-C025.3-Z4	3/8	3/8	3/4	2-1/2	4	TiAlN	0.025
N44876	REC448-0.500-D1-C025.3-Z4	1/2	1/2	5/8	2-5/8	4		0.025
N14564	REC448-0.500-D1-C025.3-Z4	1/2	1/2	5/8	2-5/8	4	TiAlN	0.025
N44801	REC448-0.500-D3-C025.3-Z4	1/2	1/2	1-1/4	3-1/4	4		0.025
N14565	REC448-0.500-D3-C025.3-Z4	1/2	1/2	1-1/4	3-1/4	4	TiAlN	0.025
N44803	REC448-0.500-D4-C025.3-Z4	1/2	1/2	2	4	4		0.025
N14566	REC448-0.500-D4-C025.3-Z4	1/2	1/2	2	4	4	TiAlN	0.025
N44879	REC448-0.625-D1-C030.3-Z4	5/8	5/8	5/8	2-3/4	4		0.030
N14568	REC448-0.625-D1-C030.3-Z4	5/8	5/8	5/8	2-3/4	4	TiAlN	0.030
N44805	REC448-0.625-D3-C030.3-Z4	5/8	5/8	1-5/8	3-3/4	4		0.030
N14570	REC448-0.625-D3-C030.3-Z4	5/8	5/8	1-5/8	3-3/4	4	TiAlN	0.030
N44807	REC448-0.625-D4-C030.3-Z4	5/8	5/8	2-1/2	4-5/8	4		0.030
N14571	REC448-0.625-D4-C030.3-Z4	5/8	5/8	2-1/2	4-5/8	4	TiAlN	0.030
N44859	REC448-0.750-D1-C030.3-Z4	3/4	3/4	3/4	3	4		0.030
N14573	REC448-0.750-D1-C030.3-Z4	3/4	3/4	3/4	3	4	TiAlN	0.030
N44809	REC448-0.750-D2-C030.3-Z4	3/4	3/4	1-5/8	3-7/8	4		0.030
N14574	REC448-0.750-D2-C030.3-Z4	3/4	3/4	1-5/8	3-7/8	4	TiAlN	0.030
N44811	REC448-0.750-D4-C030.3-Z4	3/4	3/4	3	5-1/4	4		0.030
N14575	REC448-0.750-D4-C030.3-Z4	3/4	3/4	3	5-1/4	4	TiAlN	0.030
N44882	REC448-1.000-D1-C030.3-Z5	1	1	1	3-1/2	5		0.030
N14582	REC448-1.000-D1-C030.3-Z5	1	1	1	3-1/2	5	TiAlN	0.030
N44819	REC448-1.000-D2-C030.3-Z5	1	1	2	4-1/2	5		0.030
N14583	REC448-1.000-D2-C030.3-Z5	1	1	2	4-1/2	5	TiAlN	0.030
N44821	REC448-1.000-D3-C030.3-Z5	1	1	3	5-1/2	5		0.030

DISCOUNT CODE D41

GENERAL PURPOSE- REC448

M42
8% COBALT

HELIX


CHAMFER


CENTER CUTTING

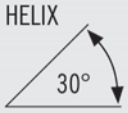
FINE PITCH

- Weldon flat standard
- Designed for profiling and slotting in all materials including high temperature alloys

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N14584	REC448-1.000-D3-C030.3-Z5	1	1	3	5-1/2	5	TiAlN	0.030
N44823	REC448-1.000-D4-C030.3-Z5	1	1	4	6-1/2	5		0.030
N14585	REC448-1.000-D4-C030.3-Z5	1	1	4	6-1/2	5	TiAlN	0.030
N44825	REC448-1.250-D2-C040.3-Z6	1-1/4	1-1/4	2	4-1/2	6		0.040
N14588	REC448-1.250-D2-C040.3-Z6	1-1/4	1-1/4	2	4-1/2	6	TiAlN	0.040
N44827	REC448-1.250-D4-C040.3-Z6	1-1/4	1-1/4	4	6-1/2	6		0.040
N14590	REC448-1.250-D4-C040.3-Z6	1-1/4	1-1/4	4	6-1/2	6	TiAlN	0.040
N44829	REC448-1.500-P1-C040.3-Z6	1-1/2	1-1/4	2	4-1/2	6		0.040
N14591	REC448-1.500-P1-C040.3-Z6	1-1/2	1-1/4	2	4-1/2	6	TiAlN	0.040

GENERAL PURPOSE- RMB449

M42
8% COBALT

HELIX


BALL END


CENTER CUTTING

FINE PITCH

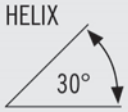
- Weldon flat standard
- Designed for profiling, slotting and contouring in all materials including high temperature alloys

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N44901	RMB449-0.500-D3-B.3-Z4	1/2	1/2	1-1/4	3-1/4	4	
N75764	RMB449-0.500-D3-B.3-Z4	1/2	1/2	1-1/4	3-1/4	4	TiAlN
N45903	RMB449-0.625-D4-B.3-Z4	5/8	5/8	2-1/2	4-5/8	4	
N75767	RMB449-0.625-D4-B.3-Z4	5/8	5/8	2-1/2	4-5/8	4	TiAlN
N44905	RMB449-0.750-D2-B.3-Z4	3/4	3/4	1-5/8	3-7/8	4	
N75768	RMB449-0.750-D2-B.3-Z4	3/4	3/4	1-5/8	3-7/8	4	TiAlN
N45905	RMB449-0.750-D4-B.3-Z4	3/4	3/4	3	5-1/4	4	
N75769	RMB449-0.750-D4-B.3-Z4	3/4	3/4	3	5-1/4	4	TiAlN
N45907	RMB449-1.000-D4-B.3-Z5	1	1	4	6-1/2	5	
N75771	RMB449-1.000-D4-B.3-Z5	1	1	4	6-1/2	5	TiAlN

Niagara Cutter

GENERAL PURPOSE- RFM440

M42
8% COBALT

HELIX


CHAMFER


NON CENTER CUTTING

TRUNCATED

- Weldon flat standard
- Designed for profiling and slotting in all materials

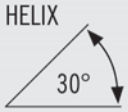
EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N44063	RFM440-0.188-F3-C020.3-Z4	3/16	3/8	1/2	2-3/8	4		0.020
N43700	RFM440-0.188-F3-C020.3-Z4	3/16	3/8	1/2	2-3/8	4	TiCN	0.020
N44083	RFM440-0.250-F3-C020.3-Z4	1/4	3/8	5/8	2-7/16	4		0.020
N43701	RFM440-0.250-F3-C020.3-Z4	1/4	3/8	5/8	2-7/16	4	TiCN	0.020
N44085	RFM440-0.250-F5-C020.3-Z4	1/4	3/8	1-1/4	3-1/16	4		0.020
N43702	RFM440-0.250-F5-C020.3-Z4	1/4	3/8	1-1/4	3-1/16	4	TiCN	0.020
N44103	RFM440-0.313-F2-C025.3-Z4	5/16	3/8	3/4	2-1/2	4		0.025
N43703	RFM440-0.313-F2-C025.3-Z4	5/16	3/8	3/4	2-1/2	4	TiCN	0.025
N44123	RFM440-0.375-D2-C025.3-Z4	3/8	3/8	3/4	2-1/2	4		0.025
N43705	RFM440-0.375-D2-C025.3-Z4	3/8	3/8	3/4	2-1/2	4	TiCN	0.025
N44125	RFM440-0.375-D4-C025.3-Z4	3/8	3/8	1-1/2	3-1/4	4		0.025
N43706	RFM440-0.375-D4-C025.3-Z4	3/8	3/8	1-1/2	3-1/4	4	TiCN	0.025
N43163	RFM440-0.500-D3-C025.3-Z4	1/2	1/2	1-1/4	3-1/4	4		0.025
N43709	RFM440-0.500-D3-C025.3-Z4	1/2	1/2	1-1/4	3-1/4	4	TiCN	0.025
N44163	RFM440-0.500-D4-C025.3-Z4	1/2	1/2	1-5/8	3-5/8	4		0.025
N43710	RFM440-0.500-D4-C025.3-Z4	1/2	1/2	1-5/8	3-5/8	4	TiCN	0.025
N44167	RFM440-0.500-D6-C025.3-Z4	1/2	1/2	2-1/2	4-1/2	4		0.025
N43712	RFM440-0.500-D6-C025.3-Z4	1/2	1/2	2-1/2	4-1/2	4	TiCN	0.025
N44204	RFM440-0.625-D3-C030.3-Z4	5/8	5/8	1-5/8	3-3/4	4		0.030
N43717	RFM440-0.625-D3-C030.3-Z4	5/8	5/8	1-5/8	3-3/4	4	TiCN	0.030
N43241	RFM440-0.750-P2-C030.3-Z4	3/4	5/8	1-5/8	3-3/4	4		0.030
N43722	RFM440-0.750-P2-C030.3-Z4	3/4	5/8	1-5/8	3-3/4	4	TiCN	0.030
N44242	RFM440-0.750-D2-C030.3-Z4	3/4	3/4	1-1/4	3-1/2	4		0.030
N43724	RFM440-0.750-D2-C030.3-Z4	3/4	3/4	1-1/4	3-1/2	4	TiCN	0.030
N44245	RFM440-0.750-D4-C030.3-Z4	3/4	3/4	1-5/8	3-7/8	4		0.030
N43726	RFM440-0.750-D4-C030.3-Z4	3/4	3/4	1-5/8	3-7/8	4	TiCN	0.030
N44248	RFM440-0.750-D7-C030.3-Z4	3/4	3/4	3	5-1/4	4		0.030
N43729	RFM440-0.750-D7-C030.3-Z4	3/4	3/4	3	5-1/4	4	TiCN	0.030
N44323	RFM440-1.000-P3-C030.3-Z5	1	3/4	1-1/2	3-3/4	5		0.030
N43741	RFM440-1.000-P3-C030.3-Z5	1	3/4	1-1/2	3-3/4	5	TiCN	0.030
N43322	RFM440-1.000-D3-C030.3-Z5	1	1	2	4-1/2	5		0.030
N43747	RFM440-1.000-D3-C030.3-Z5	1	1	2	4-1/2	5	TiCN	0.030
N44362	RFM440-1.125-P1-C040.3-Z6	1-1/8	3/4	1-1/8	3-3/8	6		0.040
N43751	RFM440-1.125-P1-C040.3-Z6	1-1/8	3/4	1-1/8	3-3/8	6	TiCN	0.040
N44368	RFM440-1.125-P4-C040.3-Z6	1-1/8	1	3-1/2	6	6		0.040
N43754	RFM440-1.125-P4-C040.3-Z6	1-1/8	1	3-1/2	6	6	TiCN	0.040
N43562	RFM440-1.750-P1-C040.3-Z6	1-3/4	3/4	1-1/8	3-3/8	6		0.040
N43775	RFM440-1.750-P1-C040.3-Z6	1-3/4	3/4	1-1/8	3-3/8	6	TiCN	0.040
N44653	RFM440-2.000-D7-C040.7-Z8	2	2	8	11-3/4	8		0.040
N43791	RFM440-2.000-D7-C040.7-Z8	2	2	8	11-3/4	8	TiCN	0.040

DISCOUNT CODE D41

Niagara Cutter

GENERAL PURPOSE- RFM441

M42
8% COBALT

HELIX


CHAMFER


CENTER CUTTING

TRUNCATED

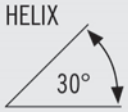
- Weldon flat standard
- Designed for profiling and slotting in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N41667	RFM441-0.250-F3-C020.3-Z4	1/4	3/8	5/8	2-7/16	4		0.020
N41669	RFM441-0.250-F3-C020.3-Z4	1/4	3/8	5/8	2-7/16	4	TiCN	0.020
N41670	RFM441-0.375-D2-C025.3-Z4	3/8	3/8	3/4	2-1/2	4		0.025
N41672	RFM441-0.375-D2-C025.3-Z4	3/8	3/8	3/4	2-1/2	4	TiCN	0.025
N41673	RFM441-0.500-D3-C025.3-Z4	1/2	1/2	1-1/4	3-1/4	4		0.025
N41675	RFM441-0.500-D3-C025.3-Z4	1/2	1/2	1-1/4	3-1/4	4	TiCN	0.025
N41679	RFM441-0.500-D4-C025.3-Z4	1/2	1/2	2	4	4		0.025
N41681	RFM441-0.500-D4-C025.3-Z4	1/2	1/2	2	4	4	TiCN	0.025
N41682	RFM441-0.500-D6-C025.3-Z4	1/2	1/2	3	5	4		0.025
N41684	RFM441-0.500-D6-C025.3-Z4	1/2	1/2	3	5	4	TiCN	0.025
N41694	RFM441-0.625-D6-C030.3-Z4	5/8	5/8	4	6-1/8	4		0.030
N41696	RFM441-0.625-D6-C030.3-Z4	5/8	5/8	4	6-1/8	4	TiCN	0.030
N41697	RFM441-0.750-D2-C030.3-Z4	3/4	3/4	1-5/8	3-7/8	4		0.030
N41699	RFM441-0.750-D2-C030.3-Z4	3/4	3/4	1-5/8	3-7/8	4	TiCN	0.030
N41703	RFM441-0.750-D3-C030.3-Z4	3/4	3/4	2	4-1/4	4		0.030
N41705	RFM441-0.750-D3-C030.3-Z4	3/4	3/4	2	4-1/4	4	TiCN	0.030
N41709	RFM441-0.750-D4-C030.3-Z4	3/4	3/4	3	5-1/4	4		0.030
N41711	RFM441-0.750-D4-C030.3-Z4	3/4	3/4	3	5-1/4	4	TiCN	0.030
N41715	RFM441-0.750-D5-C030.3-Z4	3/4	3/4	4	6-1/4	4		0.030
N41717	RFM441-0.750-D5-C030.3-Z4	3/4	3/4	4	6-1/4	4	TiCN	0.030
N41724	RFM441-1.000-D2-C030.3-Z5	1	1	2	4-1/2	5		0.030
N41726	RFM441-1.000-D2-C030.3-Z5	1	1	2	4-1/2	5	TiCN	0.030
N41730	RFM441-1.000-D3-C030.3-Z5	1	1	3	5-1/2	5		0.030
N41732	RFM441-1.000-D3-C030.3-Z5	1	1	3	5-1/2	5	TiCN	0.030
N41760	RFM441-1.500-P1-C040.3-Z6	1-1/2	1-1/4	2	4-1/2	6		0.040
N41762	RFM441-1.500-P1-C040.3-Z6	1-1/2	1-1/4	2	4-1/2	6	TiCN	0.040
N41766	RFM441-2.000-P1-C040.3-Z8	2	1-1/4	2	4-1/2	8		0.040
N41768	RFM441-2.000-P1-C040.3-Z8	2	1-1/4	2	4-1/2	8	TiCN	0.040

Niagara Cutter

GENERAL PURPOSE- RFCB444

M42
8% COBALT

HELIX


CHAMFER


CENTER CUTTING

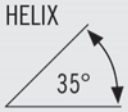
CHIPBREAKER

- Weldon flat standard
- Designed for profiling and slotting in all materials

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING
N44918	RFCB444-0.500-D3-S.3-Z4	1/2	1/2	1-1/4	3-1/4	4	
N44920	RFCB444-0.500-D3-S.3-Z4	1/2	1/2	1-1/4	3-1/4	4	TiCN
N44939	RFCB444-0.625-D6-S.3-Z4	5/8	5/8	4	6-1/8	4	
N44941	RFCB444-0.625-D6-S.3-Z4	5/8	5/8	4	6-1/8	4	TiCN
N44948	RFCB444-0.750-D3-S.3-Z4	3/4	3/4	2	4-1/4	4	
N44950	RFCB444-0.750-D3-S.3-Z4	3/4	3/4	2	4-1/4	4	TiCN
N44969	RFCB444-1.000-D2-S.3-Z4	1	1	2	4-1/2	4	
N44971	RFCB444-1.000-D2-S.3-Z4	1	1	2	4-1/2	4	TiCN
N44972	RFCB444-1.000-D2-S.3-Z6	1	1	2	4-1/2	6	
N44974	RFCB444-1.000-D2-S.3-Z6	1	1	2	4-1/2	6	TiCN
N44996	RFCB444-1.250-D2-S.3-Z6	1-1/4	1-1/4	3	5-1/2	6	
N44998	RFCB444-1.250-D2-S.3-Z6	1-1/4	1-1/4	3	5-1/2	6	TiCN

GENERAL PURPOSE- VFP435 / VFP635

M42
8% COBALT

HELIX


CHAMFER

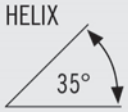

CENTER CUTTING

- Optimal chip formation and evacuation
- Polished rake face
- Weldon flat standard
- Designed for stainless steel and titanium

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N68948	VFP435-0.750-D2-C030.3-Z4	3/4	3/4	1-5/8	3-7/8	4		0.030
N68949	VFP435-0.750-D3-C030.3-Z4	3/4	3/4	2-1/4	4-1/2	4		0.030
N68952	VFP435-1.000-D2-C030.3-Z4	1	1	2	4-1/2	4		0.030
N68953	VFP635-1.000-D2-C030.3-Z6	1	1	2	4-1/2	6		0.030
N68954	VFP435-1.000-D3-C030.3-Z4	1	1	3	5-1/2	4		0.030
N68955	VFP635-1.000-D3-C030.3-Z6	1	1	3	5-1/2	6		0.030
N68956	VFP435-1.000-D4-C030.3-Z4	1	1	4	6-1/2	4		0.030
N68957	VFP635-1.000-D4-C030.3-Z6	1	1	4	6-1/2	6		0.030
N68958	VFP435-1.250-D2-C040.3-Z4	1-1/4	1-1/4	2	4-1/2	4		0.040
N68959	VFP635-1.250-D2-C040.3-Z6	1-1/4	1-1/4	2	4-1/2	6		0.040
N68960	VFP435-1.250-D3-C040.3-Z4	1-1/4	1-1/4	3	5-1/2	4		0.040
N68961	VFP635-1.250-D3-C040.3-Z6	1-1/4	1-1/4	3	5-1/2	6		0.040
N68962	VFP435-1.250-D4-C040.3-Z4	1-1/4	1-1/4	4	6-1/2	4		0.040
N68963	VFP635-1.250-D4-C040.3-Z6	1-1/4	1-1/4	4	6-1/2	6		0.040
N68965	VFP635-1.500-P1-C040.3-Z6	1-1/2	1-1/4	2	4-1/2	6		0.040
N68966	VFP635-1.500-P2-C040.3-Z6	1-1/2	1-1/4	3	5-1/2	6		0.040
N68967	VFP635-1.500-P3-C040.3-Z6	1-1/2	1-1/4	4	6-1/2	6		0.040
N68968	VFP635-1.500-P4-C040.3-Z6	1-1/2	1-1/4	6	8-1/2	6		0.040
N68969	VFP635-2.000-D1-C040.3-Z6	2	2	2	5-3/4	6		0.040
N68970	VFP635-2.000-D2-C040.3-Z6	2	2	3	6-3/4	6		0.040
N68971	VFP635-2.000-D3-C040.3-Z6	2	2	4	7-3/4	6		0.040
N68972	VFP635-2.000-D4-C040.3-Z6	2	2	6	9-3/4	6		0.040

GENERAL PURPOSE- VFP²435 / VFP²635

M42
8% COBALT

HELIX


CHAMFER

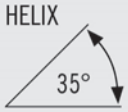

CENTER CUTTING

- For less rigid setups
- Optimal chip formation and evacuation
- Polished rake face
- Weldon flat standard
- Designed for stainless steel and titanium

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N68974	VFP2435-0.750-D2-C030.3-Z4	3/4	3/4	1-5/8	3-7/8	4		0.030
N68975	VFP2435-0.750-D3-C030.3-Z4	3/4	3/4	2-1/4	4-1/2	4		0.030
N68978	VFP2435-1.000-D2-C030.3-Z4	1	1	2	4-1/2	4		0.030
N68979	VFP2635-1.000-D2-C030.3-Z6	1	1	2	4-1/2	6		0.030
N68980	VFP2435-1.000-D3-C030.3-Z4	1	1	3	5-1/2	4		0.030
N68981	VFP2635-1.000-D3-C030.3-Z6	1	1	3	5-1/2	6		0.030
N68983	VFP2635-1.000-D4-C030.3-Z6	1	1	4	6-1/2	6		0.030
N68985	VFP2635-1.250-D2-C040.3-Z6	1-1/4	1-1/4	2	4-1/2	6		0.040
N68987	VFP2635-1.250-D3-C040.3-Z6	1-1/4	1-1/4	3	5-1/2	6		0.040
N68989	VFP2635-1.250-D4-C040.3-Z6	1-1/4	1-1/4	4	6-1/2	6		0.040
N68996	VFP2635-2.000-D2-C040.3-Z6	2	2	3	6-3/4	6		0.040

COBALT END MILLS- VFP435SB / VFP635SB

M42
8% COBALT

HELIX


CHAMFER


CENTER CUTTING

- Optimal chip formation and evacuation
- Polished rake face
- Weldon flat standard
- Up to .250" corner radius through modification
- Designed for stainless steel and titanium

EDP	DESCRIPTION	FLUTE DIA	SHANK DIA	LENGTH OF CUT	OVERALL LENGTH	NO. OF FLUTES	COATING	CHAMFER
N69387	VFP435SB-1.250-D2-C030.3-Z4	1-1/4	1-1/4	2	4-1/2	4		0.030
N69388	VFP635SB-1.250-D1-C030.3-Z6	1-1/4	1-1/4	2	4-1/2	6		0.030
N69390	VFP635SB-1.250-D2-C030.3-Z6	1-1/4	1-1/4	3	5-1/2	6		0.030
N69391	VFP435SB-1.250-D4-C030.3-Z4	1-1/4	1-1/4	4	6-1/2	4		0.030
N69392	VFP635SB-1.250-D3-C030.3-Z6	1-1/4	1-1/4	4	6-1/2	6		0.030
N69393	VFP635SB-1.250-D5-C030.3-Z6	1-1/4	1-1/4	6	8-1/2	6		0.030
N69394	VFP635SB-2.000-D1-C040.3-Z6	2	2	2	5-3/4	6		0.040
N69395	VFP635SB-2.000-D2-C040.3-Z6	2	2	3	6-3/4	6		0.040
N69396	VFP635SB-2.000-D3-C040.3-Z6	2	2	4	7-3/4	6		0.040
N69397	VFP635SB-2.000-D4-C040.3-Z6	2	2	6	9-3/4	6		0.040
N69398	VFP635SB-2.000-D5-C040.3-Z6	2	2	8	11-3/4	6		0.040

DP530 / SP205

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 2$	1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	1 3/4	2
				SLOTTING												
P	E 1 - 2	1.00	1.00	110		n (rev/min)	1681	1121	840	672	560	420	336	280	240	210
						f_z (in)	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045	0.0056	0.0068	0.0079	0.0090
				80	- 140	v_f (in/min)	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
	E 3 - 4	1.00	1.00	50		n (rev/min)	764	509	382	306	255	191	153	127	109	96
						f_z (in)	0.0009	0.0013	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0061	0.0070
				40	- 60	v_f (in/min)	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
	E 5 - 6	1.00	1.00	35		n (rev/min)	535	357	267	214	178	134	107	89	76	67
						f_z (in)	0.0009	0.0013	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0061	0.0070
				25	- 45	v_f (in/min)	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
M	E 8 - 9	1.00	1.00	50		n (rev/min)	764	509	382	306	255	191	153	127	109	96
						f_z (in)	0.0009	0.0013	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0061	0.0070
				40	- 60	v_f (in/min)	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
	E 10 - 11	1.00	1.00	40		n (rev/min)	611	407	306	244	204	153	122	102	87	76
						f_z (in)	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030	0.0038	0.0045	0.0053	0.0060
				30	- 50	v_f (in/min)	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
K	E 12 - 13	1.00	1.00	50		n (rev/min)	764	509	382	306	255	191	153	127	109	96
						f_z (in)	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045	0.0056	0.0068	0.0079	0.0090
				40	- 60	v_f (in/min)	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
	E 14 - 15	1.00	1.00	40		n (rev/min)	611	407	306	244	204	153	122	102	87	76
						f_z (in)	0.0009	0.0013	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0061	0.0070
				30	- 50	v_f (in/min)	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
N	E 18	1.00	1.00	240		n (rev/min)	3667	2445	1834	1467	1222	917	733	611	524	458
						f_z (in)	0.0013	0.0019	0.0025	0.0031	0.0038	0.0050	0.0063	0.0075	0.0088	0.0100
				200	- 280	v_f (in/min)	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2
S	E 20	1.00	1.00	8		n (rev/min)	122	81	61	49	41	31	24	20	17	15
						f_z (in)	0.0004	0.0006	0.0008	0.0009	0.0011	0.0015	0.0019	0.0023	0.0026	0.0030
				6	- 10	v_f (in/min)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	E 21	1.00	1.00	8		n (rev/min)	122	81	61	49	41	31	24	20	17	15
						f_z (in)	0.0006	0.0009	0.0013	0.0016	0.0019	0.0025	0.0031	0.0038	0.0044	0.0050
				6	- 10	v_f (in/min)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	E 22	1.00	1.00	40		n (rev/min)	611	407	306	244	204	153	122	102	87	76
						f_z (in)	0.0009	0.0013	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0061	0.0070
				20	- 60	v_f (in/min)	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

DP530 / SP205

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	1 3/4	2
						SIDE MILLING - ROUGHING									
						$Z_n = 2$									
P	E 1 - 2	1.50	0.25	160	n (rev/min)	2445	1630	1222	978	815	611	489	407	349	306
					f_z (in)	0.0014	0.0021	0.0028	0.0035	0.0042	0.0056	0.0070	0.0084	0.0098	0.0113
				120 - 200	v_f (in/min)	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
	E 3 - 4	1.50	0.25	80	n (rev/min)	1222	815	611	489	407	306	244	204	175	153
					f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				60 - 100	v_f (in/min)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
	E 5 - 6	1.50	0.25	50	n (rev/min)	764	509	382	306	255	191	153	127	109	96
					f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				30 - 70	v_f (in/min)	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
M	E 8 - 9	1.50	0.25	80	n (rev/min)	1222	815	611	489	407	306	244	204	175	153
					f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				60 - 100	v_f (in/min)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
	E 10 - 11	1.50	0.25	60	n (rev/min)	917	611	458	367	306	229	183	153	131	115
					f_z (in)	0.0009	0.0014	0.0019	0.0023	0.0028	0.0038	0.0047	0.0056	0.0066	0.0075
				40 - 80	v_f (in/min)	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
K	E 12 - 13	1.50	0.25	95	n (rev/min)	1452	968	726	581	484	363	290	242	207	181
					f_z (in)	0.0014	0.0021	0.0028	0.0035	0.0042	0.0056	0.0070	0.0084	0.0098	0.0113
				75 - 115	v_f (in/min)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
	E 14 - 15	1.50	0.25	65	n (rev/min)	993	662	497	397	331	248	199	166	142	124
					f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				45 - 85	v_f (in/min)	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
N	E 18	1.50	0.25	350	n (rev/min)	5348	3565	2674	2139	1783	1337	1070	891	764	669
					f_z (in)	0.0016	0.0023	0.0031	0.0039	0.0047	0.0063	0.0078	0.0094	0.0109	0.0125
				300 - 400	v_f (in/min)	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7
S	E 20	1.50	0.25	10	n (rev/min)	153	102	76	61	51	38	31	25	22	19
					f_z (in)	0.0006	0.0009	0.0013	0.0016	0.0019	0.0025	0.0031	0.0038	0.0044	0.0050
				8 - 12	v_f (in/min)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	E 21	1.50	0.25	12	n (rev/min)	183	122	92	73	61	46	37	31	26	23
					f_z (in)	0.0008	0.0012	0.0016	0.0020	0.0023	0.0031	0.0039	0.0047	0.0055	0.0063
				10 - 14	v_f (in/min)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	E 22	1.50	0.25	60	n (rev/min)	917	611	458	367	306	229	183	153	131	115
					f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				40 - 80	v_f (in/min)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

SMM835

SLOTTING																
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (m / min)				$Z_n = 2$								
								6	10	12	16	20	25	32	38	45	50
P	E 1 - 2	1.00	1.00	34			n (rev/min)	1800	1080	900	680	540	430	340	280	240	220
							f_z (mm)	0.027	0.045	0.054	0.072	0.090	0.113	0.144	0.171	0.203	0.225
				24	-	43	v_f (mm/min)	97	97	97	98	97	97	98	96	97	99
	E 3 - 4	1.00	1.00	15			n (rev/min)	800	480	400	300	240	190	150	130	110	100
							f_z (mm)	0.021	0.035	0.042	0.056	0.070	0.088	0.112	0.133	0.158	0.175
				12	-	18	v_f (mm/min)	34	34	34	34	34	33	34	35	35	35
	E 5 - 6	1.00	1.00	11			n (rev/min)	580	350	290	220	180	140	110	90	80	70
							f_z (mm)	0.021	0.035	0.042	0.056	0.070	0.088	0.112	0.133	0.158	0.175
				8	-	14	v_f (mm/min)	24	25	24	25	25	25	25	24	25	25
M	E 8 - 9	1.00	1.00	15			n (rev/min)	800	480	400	300	240	190	150	130	110	100
							f_z (mm)	0.021	0.035	0.042	0.056	0.070	0.088	0.112	0.133	0.158	0.175
				12	-	18	v_f (mm/min)	34	34	34	34	34	33	34	35	35	35
	E 10 - 11	1.00	1.00	12			n (rev/min)	640	380	320	240	190	150	120	100	80	80
							f_z (mm)	0.018	0.030	0.036	0.048	0.060	0.075	0.096	0.114	0.135	0.150
				9	-	15	v_f (mm/min)	23	23	23	23	23	23	23	23	22	24
K	E 12 - 13	1.00	1.00	15			n (rev/min)	800	480	400	300	240	190	150	130	110	100
							f_z (mm)	0.027	0.045	0.054	0.072	0.090	0.113	0.144	0.171	0.203	0.225
				12	-	18	v_f (mm/min)	43	43	43	43	43	43	43	44	45	45
	E 14 - 15	1.00	1.00	12			n (rev/min)	640	380	320	240	190	150	120	100	80	80
							f_z (mm)	0.021	0.035	0.042	0.056	0.070	0.088	0.112	0.133	0.158	0.175
				9	-	15	v_f (mm/min)	27	27	27	27	27	26	27	27	25	28
N	E 18	1.00	1.00	73			n (rev/min)	3870	2320	1940	1450	1160	930	730	610	520	460
							f_z (mm)	0.030	0.050	0.060	0.080	0.100	0.125	0.160	0.190	0.225	0.250
				61	-	85	v_f (mm/min)	232	232	233	232	232	233	234	232	234	230
S	E 20	1.00	1.00	2			n (rev/min)	110	60	50	40	30	30	20	20	10	10
							f_z (mm)	0.009	0.015	0.018	0.024	0.030	0.038	0.048	0.057	0.068	0.075
				2	-	3	v_f (mm/min)	2.0	1.8	1.8	1.9	1.8	2.3	1.9	2.3	1.4	1.5
	E 21	1.00	1.00	2			n (rev/min)	110	60	50	40	30	30	20	20	10	10
							f_z (mm)	0.015	0.025	0.030	0.040	0.050	0.063	0.080	0.095	0.113	0.125
				2	-	3	v_f (mm/min)	3	3	3	3	3	4	3	4	2	3
	E 22	1.00	1.00	12			n (rev/min)	640	380	320	240	190	150	120	100	80	80
							f_z (mm)	0.021	0.035	0.042	0.056	0.070	0.088	0.112	0.133	0.158	0.175
				6	-	18	v_f (mm/min)	27	27	27	27	27	26	27	27	25	28

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

SMM835

SIDE MILLING - ROUGHING																
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (m / min)		Zn = 2										
						6	10	12	16	20	25	32	38	45	50
P	E 1 - 2	1.50	0.25	160	n (rev/min)	102	61	51	38	31	24	19	16	14	12
					f_z (mm)	0.0338	0.0563	0.0675	0.0900	0.1125	0.1406	0.1800	0.2138	0.2531	0.2813
				120 - 200	v_f (mm/min)	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
	E 3 - 4	1.50	0.25	80	n (rev/min)	51	31	25	19	15	12	10	8	7	6
					f_z (mm)	0.0263	0.0438	0.0525	0.0700	0.0875	0.1094	0.1400	0.1663	0.1969	0.2188
				60 - 100	v_f (mm/min)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
	E 5 - 6	1.50	0.25	50	n (rev/min)	32	19	16	12	10	8	6	5	4	4
					f_z (mm)	0.0263	0.0438	0.0525	0.0700	0.0875	0.1094	0.1400	0.1663	0.1969	0.2188
				30 - 70	v_f (mm/min)	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
M	E 8 - 9	1.50	0.25	80	n (rev/min)	51	31	25	19	15	12	10	8	7	6
					f_z (mm)	0.0263	0.0438	0.0525	0.0700	0.0875	0.1094	0.1400	0.1663	0.1969	0.2188
				60 - 100	v_f (mm/min)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
	E 10 - 11	1.50	0.25	60	n (rev/min)	38	23	19	14	11	9	7	6	5	5
					f_z (mm)	0.0225	0.0375	0.0450	0.0600	0.0750	0.0938	0.1200	0.1425	0.1688	0.1875
				40 - 80	v_f (mm/min)	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
K	E 12 - 13	1.50	0.25	95	n (rev/min)	60	36	30	23	18	15	11	10	8	7
					f_z (mm)	0.0338	0.0563	0.0675	0.0900	0.1125	0.1406	0.1800	0.2138	0.2531	0.2813
				75 - 115	v_f (mm/min)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
	E 14 - 15	1.50	0.25	65	n (rev/min)	41	25	21	16	12	10	8	7	6	5
					f_z (mm)	0.0263	0.0438	0.0525	0.0700	0.0875	0.1094	0.1400	0.1663	0.1969	0.2188
				45 - 85	v_f (mm/min)	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
N	E 18	1.50	0.25	350	n (rev/min)	223	134	111	84	67	53	42	35	30	27
					f_z (mm)	0.0375	0.0625	0.0750	0.1000	0.1250	0.1563	0.2000	0.2375	0.2813	0.3125
				300 - 400	v_f (mm/min)	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7
S	E 20	1.50	0.25	10	n (rev/min)	6	4	3	2	2	2	1	1	1	1
					f_z (mm)	0.0150	0.0250	0.0300	0.0400	0.0500	0.0625	0.0800	0.0950	0.1125	0.1250
				8 - 12	v_f (mm/min)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	E 21	1.50	0.25	12	n (rev/min)	8	5	4	3	2	2	1	1	1	1
					f_z (mm)	0.0188	0.0313	0.0375	0.0500	0.0625	0.0781	0.1000	0.1188	0.1406	0.1563
				10 - 14	v_f (mm/min)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	E 22	1.50	0.25	60	n (rev/min)	38	23	19	14	11	9	7	6	5	5
					f_z (mm)	0.0263	0.0438	0.0525	0.0700	0.0875	0.1094	0.1400	0.1663	0.1969	0.2188
				40 - 80	v_f (mm/min)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

EX350

SLOTTING														
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 2$				$Z_n = 5$	$Z_n = 6$	
								3/8	1/2	5/8	3/4	1	1 1/4	1 1/2
M	E 8 - 9	1.00	1.00		80		n (rev/min)	815	611	489	407	306	244	204
							f_z (in)	0.0011	0.0015	0.0019	0.0023	0.0030	0.0038	0.0045
				70	-	90	v_f (in/min)	3.7	3.7	3.7	3.7	4.6	5.5	5.5
	E 10 - 11	1.00	1.00		60		n (rev/min)	611	458	367	306	229	183	153
							f_z (in)	0.0011	0.0015	0.0019	0.0023	0.0030	0.0038	0.0045
				50	-	70	v_f (in/min)	2.8	2.8	2.8	2.8	3.4	4.1	4.1
S	E 20	1.00	1.00		8		n (rev/min)	81	61	49	41	31	24	20
							f_z (in)	0.0006	0.0008	0.0009	0.0011	0.0015	0.0019	0.0023
				6	-	10	v_f (in/min)	0.2	0.2	0.2	0.2	0.2	0.3	0.3
	E 21	1.00	1.00		8		n (rev/min)	81	61	49	41	31	24	20
							f_z (in)	0.0009	0.0013	0.0016	0.0019	0.0025	0.0031	0.0038
				6	-	10	v_f (in/min)	0.3	0.3	0.3	0.3	0.4	0.5	0.5
	E 22	1.00	1.00		40		n (rev/min)	407	306	244	204	153	122	102
							f_z (in)	0.0013	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053
				30	-	50	v_f (in/min)	2.1	2.1	2.1	2.1	2.7	3.2	3.2

EX350

SLOTTING								
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 8$
								2
M	E 8 - 9	0.50	1.00		80		n (rev/min)	153
							f_z (in)	0.0060
				70	-	90	v_f (in/min)	7.3
	E 10 - 11	0.50	1.00		60		n (rev/min)	115
							f_z (in)	0.0060
				50	-	70	v_f (in/min)	5.5
S	E 20	0.50	1.00		8		n (rev/min)	15
							f_z (in)	0.0030
				6	-	10	v_f (in/min)	0.4
	E 21	0.50	1.00		8		n (rev/min)	15
							f_z (in)	0.0050
				6	-	10	v_f (in/min)	0.6
	E 22	0.50	1.00		40		n (rev/min)	76
							f_z (in)	0.0070
				30	-	50	v_f (in/min)	4.3

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

EX350

SIDE MILLING - ROUGHING														
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 4$				$Z_n = 5$	$Z_n = 6$	
								3/8	1/2	5/8	3/4	1	1 1/4	1 1/2
M	E 8 - 9	1.50	0.25		96		n (rev/min)	978	733	587	489	367	293	244
							f_z (in)	0.0014	0.0019	0.0023	0.0028	0.0038	0.0047	0.0056
				86	-	106	v_f (in/min)	5.5	5.5	5.5	5.5	6.9	8.3	8.3
	E 10 - 11	1.50	0.25		72		n (rev/min)	733	550	440	367	275	220	183
							f_z (in)	0.0014	0.0019	0.0023	0.0028	0.0038	0.0047	0.0056
				62	-	82	v_f (in/min)	4.1	4.1	4.1	4.1	5.2	6.2	6.2
S	E 20	1.50	0.25		10		n (rev/min)	98	73	59	49	37	29	24
							f_z (in)	0.0007	0.0009	0.0012	0.0014	0.0019	0.0023	0.0028
				8	-	12	v_f (in/min)	0.3	0.3	0.3	0.3	0.3	0.4	0.4
	E 21	1.50	0.25		10		n (rev/min)	98	73	59	49	37	29	24
							f_z (in)	0.0012	0.0016	0.0020	0.0023	0.0031	0.0039	0.0047
				8	-	12	v_f (in/min)	0.5	0.5	0.5	0.5	0.6	0.7	0.7
	E 22	1.50	0.25		48		n (rev/min)	489	367	293	244	183	147	122
							f_z (in)	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066
				38	-	58	v_f (in/min)	3.2	3.2	3.2	3.2	4.0	4.8	4.8

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

SP408 / SPC408 / SPB540 / DPC560

SLOTTING																
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 4$	1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	1 3/4	2
P	E 1 - 2	1.00	1.00	110		n (rev/min)	1681	1121	840	672	560	420	336	280	240	210
						f_z (in)	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045	0.0056	0.0068	0.0079	0.0090
				80	- 140	v_f (in/min)	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
	E 3 - 4	1.00	1.00	50		n (rev/min)	764	509	382	306	255	191	153	127	109	96
						f_z (in)	0.0009	0.0013	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0061	0.0070
				40	- 60	v_f (in/min)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
	E 5 - 6	1.00	1.00	35		n (rev/min)	535	357	267	214	178	134	107	89	76	67
						f_z (in)	0.0009	0.0013	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0061	0.0070
				25	- 45	v_f (in/min)	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
M	E 8 - 9	1.00	1.00	50		n (rev/min)	764	509	382	306	255	191	153	127	109	96
						f_z (in)	0.0009	0.0013	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0061	0.0070
				40	- 60	v_f (in/min)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
	E 10 - 11	1.00	1.00	40		n (rev/min)	611	407	306	244	204	153	122	102	87	76
						f_z (in)	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030	0.0038	0.0045	0.0053	0.0060
				30	- 50	v_f (in/min)	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
K	E 12 - 13	1.00	1.00	50		n (rev/min)	764	509	382	306	255	191	153	127	109	96
						f_z (in)	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045	0.0056	0.0068	0.0079	0.0090
				40	- 60	v_f (in/min)	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
	E 14 - 15	1.00	1.00	40		n (rev/min)	611	407	306	244	204	153	122	102	87	76
						f_z (in)	0.0009	0.0013	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0061	0.0070
				30	- 50	v_f (in/min)	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
N	E 18	1.00	1.00	240		n (rev/min)	3667	2445	1834	1467	1222	917	733	611	524	458
						f_z (in)	0.0013	0.0019	0.0025	0.0031	0.0038	0.0050	0.0063	0.0075	0.0088	0.0100
				200	- 280	v_f (in/min)	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3
S	E 20	1.00	1.00	8		n (rev/min)	122	81	61	49	41	31	24	20	17	15
						f_z (in)	0.0004	0.0006	0.0008	0.0009	0.0011	0.0015	0.0019	0.0023	0.0026	0.0030
				6	- 10	v_f (in/min)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	E 21	1.00	1.00	8		n (rev/min)	122	81	61	49	41	31	24	20	17	15
						f_z (in)	0.0006	0.0009	0.0013	0.0016	0.0019	0.0025	0.0031	0.0038	0.0044	0.0050
				6	- 10	v_f (in/min)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	E 22	1.00	1.00	40		n (rev/min)	611	407	306	244	204	153	122	102	87	76
						f_z (in)	0.0009	0.0013	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0061	0.0070
				20	- 60	v_f (in/min)	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

SP408 / SPC408 / SPB540 / DPC560

SIDE MILLING - ROUGHING																
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 4$	1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	1 3/4	2
P	E 1 - 2	1.50	0.25	160	n (rev/min)		2445	1630	1222	978	815	611	489	407	349	306
					f_z (in)		0.0014	0.0021	0.0028	0.0035	0.0042	0.0056	0.0070	0.0084	0.0098	0.0113
				120 - 200	v_f (in/min)		13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8
	E 3 - 4	1.50	0.25	80	n (rev/min)		1222	815	611	489	407	306	244	204	175	153
					f_z (in)		0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				60 - 100	v_f (in/min)		5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
	E 5 - 6	1.50	0.25	50	n (rev/min)		764	509	382	306	255	191	153	127	109	96
					f_z (in)		0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				30 - 70	v_f (in/min)		3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
M	E 8 - 9	1.50	0.25	80	n (rev/min)		1222	815	611	489	407	306	244	204	175	153
					f_z (in)		0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				60 - 100	v_f (in/min)		5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
	E 10 - 11	1.50	0.25	60	n (rev/min)		917	611	458	367	306	229	183	153	131	115
					f_z (in)		0.0009	0.0014	0.0019	0.0023	0.0028	0.0038	0.0047	0.0056	0.0066	0.0075
				40 - 80	v_f (in/min)		3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
K	E 12 - 13	1.50	0.25	95	n (rev/min)		1452	968	726	581	484	363	290	242	207	181
					f_z (in)		0.0014	0.0021	0.0028	0.0035	0.0042	0.0056	0.0070	0.0084	0.0098	0.0113
				75 - 115	v_f (in/min)		8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2
	E 14 - 15	1.50	0.25	65	n (rev/min)		993	662	497	397	331	248	199	166	142	124
					f_z (in)		0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				45 - 85	v_f (in/min)		4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
N	E 18	1.50	0.25	350	n (rev/min)		5348	3565	2674	2139	1783	1337	1070	891	764	669
					f_z (in)		0.0016	0.0023	0.0031	0.0039	0.0047	0.0063	0.0078	0.0094	0.0109	0.0125
				300 - 400	v_f (in/min)		33.4	33.4	33.4	33.4	33.4	33.4	33.4	33.4	33.4	33.4
S	E 20	1.50	0.25	10	n (rev/min)		153	102	76	61	51	38	31	25	22	19
					f_z (in)		0.0006	0.0009	0.0013	0.0016	0.0019	0.0025	0.0031	0.0038	0.0044	0.0050
				8 - 12	v_f (in/min)		0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
	E 21	1.50	0.25	12	n (rev/min)		183	122	92	73	61	46	37	31	26	23
					f_z (in)		0.0008	0.0012	0.0016	0.0020	0.0023	0.0031	0.0039	0.0047	0.0055	0.0063
				10 - 14	v_f (in/min)		0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	E 22	1.50	0.25	60	n (rev/min)		917	611	458	367	306	229	183	153	131	115
					f_z (in)		0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				40 - 80	v_f (in/min)		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

SP408 / SPC408 / SPB540 / DPC560

SIDE MILLING - ROUGHING																
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		Zn = 6	1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	1 3/4	2
P	E 1 - 2	1.50	0.25	160	n (rev/min)		2445	1630	1222	978	815	611	489	407	349	306
					f_z (mm)		0.0014	0.0021	0.0028	0.0035	0.0042	0.0056	0.0070	0.0084	0.0098	0.0113
				120 - 200	v_f (m/min)		20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6
	E 3 - 4	1.50	0.25	80	n (rev/min)		1222	815	611	489	407	306	244	204	175	153
					f_z (mm)		0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				60 - 100	v_f (m/min)		8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
	E 5 - 6	1.50	0.25	50	n (rev/min)		764	509	382	306	255	191	153	127	109	96
					f_z (mm)		0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				30 - 70	v_f (m/min)		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
M	E 8 - 9	1.50	0.25	80	n (rev/min)		1222	815	611	489	407	306	244	204	175	153
					f_z (mm)		0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				60 - 100	v_f (m/min)		8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
	E 10 - 11	1.50	0.25	60	n (rev/min)		917	611	458	367	306	229	183	153	131	115
					f_z (mm)		0.0009	0.0014	0.0019	0.0023	0.0028	0.0038	0.0047	0.0056	0.0066	0.0075
				40 - 80	v_f (m/min)		5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
K	E 12 - 13	1.50	0.25	95	n (rev/min)		1452	968	726	581	484	363	290	242	207	181
					f_z (mm)		0.0014	0.0021	0.0028	0.0035	0.0042	0.0056	0.0070	0.0084	0.0098	0.0113
				75 - 115	v_f (m/min)		12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2
	E 14 - 15	1.50	0.25	65	n (rev/min)		993	662	497	397	331	248	199	166	142	124
					f_z (mm)		0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				45 - 85	v_f (m/min)		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
N	E 18	1.50	0.25	350	n (rev/min)		5348	3565	2674	2139	1783	1337	1070	891	764	669
					f_z (mm)		0.0016	0.0023	0.0031	0.0039	0.0047	0.0063	0.0078	0.0094	0.0109	0.0125
				300 - 400	v_f (m/min)		50.1	50.1	50.1	50.1	50.1	50.1	50.1	50.1	50.1	50.1
S	E 20	1.50	0.25	10	n (rev/min)		153	102	76	61	51	38	31	25	22	19
					f_z (mm)		0.0006	0.0009	0.0013	0.0016	0.0019	0.0025	0.0031	0.0038	0.0044	0.0050
				8 - 12	v_f (m/min)		0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	E 21	1.50	0.25	12	n (rev/min)		183	122	92	73	61	46	37	31	26	23
					f_z (mm)		0.0008	0.0012	0.0016	0.0020	0.0023	0.0031	0.0039	0.0047	0.0055	0.0063
				10 - 14	v_f (m/min)		0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
	E 22	1.50	0.25	60	n (rev/min)		917	611	458	367	306	229	183	153	131	115
					f_z (mm)		0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				40 - 80	v_f (m/min)		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

HDP890

SIDE MILLING - ROUGHING								
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				Z_n = 8 2
P	E 1 - 2	2.00	0.25		160		n (rev/min)	306
							f_z (mm)	0.0112
				120	-	200	v_f (m/min)	20.5
	E 3 - 4	2.00	0.25		80		n (rev/min)	153
							f_z (mm)	0.0088
				60	-	100	v_f (m/min)	8.1
	E 5 - 6	2.00	0.25		50		n (rev/min)	96
							f_z (mm)	0.0088
				30	-	70	v_f (m/min)	5.0
M	E 8 - 9	2.00	0.25		80		n (rev/min)	153
							f_z (mm)	0.0088
				60	-	100	v_f (m/min)	8.1
	E 10 - 11	2.00	0.25		60		n (rev/min)	115
							f_z (mm)	0.0760
				40	-	80	v_f (m/min)	52.3
K	E 12 - 13	2.00	0.25		95		n (rev/min)	181
							f_z (mm)	0.0112
				75	-	115	v_f (m/min)	12.2
	E 14 - 15	2.00	0.25		65		n (rev/min)	124
							f_z (mm)	0.0088
				45	-	85	v_f (m/min)	6.6
N	E 18	2.00	0.25		350		n (rev/min)	669
							f_z (mm)	0.0126
				300	-	400	v_f (m/min)	50.5
S	E 20	2.00	0.25		10		n (rev/min)	19
							f_z (mm)	0.0050
				8	-	12	v_f (m/min)	0.6
	E 21	2.00	0.25		12		n (rev/min)	23
							f_z (mm)	0.0062
				10	-	14	v_f (m/min)	0.9
	E 22	2.00	0.25		60		n (rev/min)	115
							f_z (mm)	0.0088
				40	-	80	v_f (m/min)	6.1

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

SMM845

SLOTTING												
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (m / min)			$Z_n = 4$	6	10	12	16	20	25
P	E 1 - 2	1.00	1.00	34			n (rev/min)	1800	1080	900	680	540	430
							f_z (mm)	0.027	0.045	0.054	0.072	0.090	0.113
				24	-	43	v_f (m/min)	194	194	194	196	194	194
	E 3 - 4	1.00	1.00	15			n (rev/min)	800	480	400	300	240	190
							f_z (mm)	0.021	0.035	0.042	0.056	0.070	0.088
				12	-	18	v_f (m/min)	67	67	67	67	67	67
	E 5 - 6	1.00	1.00	11			n (rev/min)	580	350	290	220	180	140
							f_z (mm)	0.021	0.035	0.042	0.056	0.070	0.088
				8	-	14	v_f (m/min)	49	49	49	49	50	49
M	E 8 - 9	1.00	1.00	15			n (rev/min)	800	480	400	300	240	190
							f_z (mm)	0.021	0.035	0.042	0.056	0.070	0.088
				12	-	18	v_f (m/min)	67	67	67	67	67	67
	E 10 - 11	1.00	1.00	12			n (rev/min)	640	380	320	240	190	150
							f_z (mm)	0.018	0.030	0.036	0.048	0.060	0.075
				9	-	15	v_f (m/min)	46	46	46	46	46	45
K	E 12 - 13	1.00	1.00	15			n (rev/min)	800	480	400	300	240	190
							f_z (mm)	0.027	0.045	0.054	0.072	0.090	0.113
				12	-	18	v_f (m/min)	86	86	86	86	86	86
	E 14 - 15	1.00	1.00	12			n (rev/min)	640	380	320	240	190	150
							f_z (mm)	0.0210	0.0350	0.0420	0.0560	0.0700	0.0875
				9	-	15	v_f (m/min)	53.8	53.2	53.8	53.8	53.2	52.5
N	E 18	1.00	1.00	73			n (rev/min)	3870	2320	1940	1450	1160	930
							f_z (mm)	0.030	0.050	0.060	0.080	0.100	0.125
				61	-	85	v_f (m/min)	464	464	466	464	464	465
S	E 20	1.00	1.00	2			n (rev/min)	110	60	50	40	30	30
							f_z (mm)	0.009	0.015	0.018	0.024	0.030	0.038
				2	-	3	v_f (m/min)	4.0	3.6	3.6	3.8	3.6	4.5
	E 21	1.00	1.00	2			n (rev/min)	110	60	50	40	30	30
							f_z (mm)	0.015	0.025	0.030	0.040	0.050	0.063
				2	-	3	v_f (m/min)	6.6	6.0	6.0	6.4	6.0	7.5
	E 22	1.00	1.00	12			n (rev/min)	640	380	320	240	190	150
							f_z (mm)	0.021	0.035	0.042	0.056	0.070	0.088
				6	-	18	v_f (m/min)	54	53	54	54	53	53

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

SMM845

SIDE MILLING - ROUGHING													
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (m / min)				$Z_n = 4$ 6	10	12	16	20	25
P	E 1 - 2	1.50	0.25		49		n (rev/min)	2600	1560	1300	970	780	620
							f_z (mm)	0.034	0.056	0.068	0.090	0.113	0.141
				37	-	61	v_f (m/min)	351	351	351	349	351	349
	E 3 - 4	1.50	0.25		24		n (rev/min)	1270	760	640	480	380	310
							f_z (mm)	0.026	0.044	0.053	0.070	0.088	0.109
				18	-	30	v_f (m/min)	133	133	134	134	133	136
	E 5 - 6	1.50	0.25		15		n (rev/min)	800	480	400	300	240	190
							f_z (mm)	0.026	0.044	0.053	0.070	0.088	0.109
				9	-	21	v_f (m/min)	84	84	84	84	84	83
M	E 8 - 9	1.50	0.25		24		n (rev/min)	1270	760	640	480	380	310
							f_z (mm)	0.026	0.044	0.053	0.070	0.088	0.109
				18	-	30	v_f (m/min)	133	133	134	134	133	136
	E 10 - 11	1.50	0.25		18		n (rev/min)	950	570	480	360	290	230
							f_z (mm)	0.023	0.038	0.045	0.060	0.075	0.094
				12	-	24	v_f (m/min)	86	86	86	86	87	86
K	E 12 - 13	1.50	0.25		29		n (rev/min)	1540	920	770	580	460	370
							f_z (mm)	0.034	0.056	0.068	0.090	0.113	0.141
				23	-	35	v_f (m/min)	208	207	208	209	207	208
	E 14 - 15	1.50	0.25		20		n (rev/min)	1060	640	530	400	320	250
							f_z (mm)	0.026	0.044	0.053	0.070	0.088	0.109
				14	-	26	v_f (m/min)	111	112	111	112	112	109
N	E 18	1.50	0.25		107		n (rev/min)	5680	3410	2840	2130	1700	1360
							f_z (mm)	0.038	0.063	0.075	0.100	0.125	0.156
				91	-	122	v_f (m/min)	852	853	852	852	850	850
S	E 20	1.50	0.25		3		n (rev/min)	160	100	80	60	50	40
							f_z (mm)	0.015	0.025	0.030	0.040	0.050	0.063
				2	-	4	v_f (m/min)	9.6	10.0	9.6	9.6	10.0	10.0
	E 21	1.50	0.25		4		n (rev/min)	210	130	110	80	60	50
							f_z (mm)	0.019	0.031	0.038	0.050	0.063	0.078
				3	-	4	v_f (m/min)	15.8	16.3	16.5	16.0	15.0	15.6
	E 22	1.50	0.25		18		n (rev/min)	950	570	480	360	290	230
							f_z (mm)	0.026	0.044	0.053	0.070	0.088	0.109
				12	-	24	v_f (m/min)	100	100	101	101	102	101

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

SMM845

SIDE MILLING - ROUGHING												
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (m / min)		$Z_n = 6$	6	10	12	16	20	25
P	E 1 - 2	1.50	0.25	49		n (rev/min)	2600	1560	1300	970	780	620
						f_z (mm)	0.034	0.056	0.068	0.090	0.113	0.141
				37	61	v_f (m/min)	527	527	527	524	527	523
	E 3 - 4	1.50	0.25	24		n (rev/min)	1270	760	640	480	380	310
						f_z (mm)	0.026	0.044	0.053	0.070	0.088	0.109
				18	30	v_f (m/min)	200	200	202	202	200	203
	E 5 - 6	1.50	0.25	15		n (rev/min)	800	480	400	300	240	190
						f_z (mm)	0.026	0.044	0.053	0.070	0.088	0.109
				9	21	v_f (m/min)	126	126	126	126	126	125
M	E 8 - 9	1.50	0.25	24		n (rev/min)	1270	760	640	480	380	310
						f_z (mm)	0.026	0.044	0.053	0.070	0.088	0.109
				18	30	v_f (m/min)	200	200	202	202	200	203
	E 10 - 11	1.50	0.25	18		n (rev/min)	950	570	480	360	290	230
						f_z (mm)	0.023	0.038	0.045	0.060	0.075	0.094
				12	24	v_f (m/min)	128	128	130	130	131	129
K	E 12 - 13	1.50	0.25	29		n (rev/min)	1540	920	770	580	460	370
						f_z (mm)	0.034	0.056	0.068	0.090	0.113	0.141
				23	35	v_f (m/min)	312	311	312	313	311	312
	E 14 - 15	1.50	0.25	20		n (rev/min)	1060	640	530	400	320	250
						f_z (mm)	0.026	0.044	0.053	0.070	0.088	0.109
				14	26	v_f (m/min)	167	168	167	168	168	164
N	E 18	1.50	0.25	107		n (rev/min)	5680	3410	2840	2130	1700	1360
						f_z (mm)	0.038	0.063	0.075	0.100	0.125	0.156
				91	122	v_f (m/min)	1278	1279	1278	1278	1275	1275
S	E 20	1.50	0.25	3		n (rev/min)	160	100	80	60	50	40
						f_z (mm)	0.015	0.025	0.030	0.040	0.050	0.063
				2	4	v_f (m/min)	14	15	14	14	15	15
	E 21	1.50	0.25	4		n (rev/min)	210	130	110	80	60	50
						f_z (mm)	0.019	0.031	0.038	0.050	0.063	0.078
				3	4	v_f (m/min)	24	24	25	24	23	23
	E 22	1.50	0.25	18		n (rev/min)	950	570	480	360	290	230
						f_z (mm)	0.026	0.044	0.053	0.070	0.088	0.109
				12	24	v_f (m/min)	150	150	151	151	152	151

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

RTM713

SLOTTING

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 3$ 1/4	3/8	1/2	5/8	3/4	1	1 1/4
P	E 1 - 2	1.00	1.00	132	n (rev/min)	2017	1345	1008	807	672	504	403
					f_z (in)	0.0014	0.0021	0.0028	0.0035	0.0042	0.0056	0.0070
				102 - 162	v_f (in/min)	8.5	8.5	8.5	8.5	8.5	8.5	8.5
	E 3 - 4	1.00	1.00	60	n (rev/min)	917	611	458	367	306	229	183
					f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055
				50 - 70	v_f (in/min)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
K	E 12 - 13	1.00	1.00	60	n (rev/min)	917	611	458	367	306	229	183
					f_z (in)	0.0014	0.0021	0.0028	0.0035	0.0042	0.0056	0.0070
				50 - 70	v_f (in/min)	3.9	3.9	3.9	3.9	3.9	3.9	3.9
N	E 18	1.00	1.00	288	n (rev/min)	4401	2934	2200	1760	1467	1100	880
					f_z (in)	0.0016	0.0023	0.0031	0.0039	0.0047	0.0063	0.0078
				248 - 328	v_f (in/min)	20.6	20.6	20.6	20.6	20.6	20.6	20.6

SIDE MILLING - ROUGHING

P	E 1 - 2	1.50	0.25	192	n (rev/min)	2934	1956	1467	1174	978	733	587
					f_z (in)	0.0018	0.0026	0.0035	0.0044	0.0053	0.0070	0.0088
				152 - 232	v_f (in/min)	15.5	15.5	15.5	15.5	15.5	15.5	15.5
	E 3 - 4	1.50	0.25	96	n (rev/min)	1467	978	733	587	489	367	293
					f_z (in)	0.0014	0.0021	0.0027	0.0034	0.0041	0.0055	0.0068
				76 - 116	v_f (in/min)	6.0	6.0	6.0	6.0	6.0	6.0	6.0
K	E 12 - 13	1.50	0.25	114	n (rev/min)	1742	1161	871	697	581	435	348
					f_z (in)	0.0018	0.0026	0.0035	0.0044	0.0053	0.0070	0.0088
				94 - 134	v_f (in/min)	9.2	9.2	9.2	9.2	9.2	9.2	9.2
N	E 18	1.50	0.25	420	n (rev/min)	6418	4278	3209	2567	2139	1604	1284
					f_z (in)	0.0020	0.0029	0.0039	0.0049	0.0059	0.0078	0.0098
				370 - 470	v_f (in/min)	37.6	37.6	37.6	37.6	37.6	37.6	37.6

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

RHC752

SLOTTING																
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 3$ 1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	1 3/4	2
N	E 16	1.00	1.00	600	n (rev/min)	9168	6112	4584	3667	3056	2292	1834	1528	1310	1146
					f_z (in)	0.0031	0.0047	0.0063	0.0078	0.0094	0.0125	0.0156	0.0188	0.0219	0.0250
				300 - 900	v_f (in/min)	86.0	86.0	86.0	85.9	86.0	86.0	86.0	86.0	86.0	86.0
	E 17	1.00	1.00	600	n (rev/min)	9168	6112	4584	3667	3056	2292	1834	1528	1310	1146
					f_z (in)	0.0031	0.0047	0.0063	0.0078	0.0094	0.0125	0.0156	0.0188	0.0219	0.0250
				300 - 900	v_f (in/min)	86.0	86.0	86.0	85.9	86.0	86.0	86.0	86.0	86.0	86.0

SIDE MILLING - ROUGHING																
N	E 16	1.50	0.25	900	n (rev/min)	13752	9168	6876	5501	4584	3438	2750	2292	1965	1719
					f_z (in)	0.0039	0.0059	0.0078	0.0098	0.0117	0.0156	0.0195	0.0234	0.0273	0.0313
				600 - 1200	v_f (in/min)	161.2	161.2	161.2	161.2	161.2	161.2	161.1	161.2	161.2	161.2
	E 17	1.50	0.25	900	n (rev/min)	13752	9168	6876	5501	4584	3438	2750	2292	1965	1719
					f_z (in)	0.0039	0.0059	0.0078	0.0098	0.0117	0.0156	0.0195	0.0234	0.0273	0.0313
				600 - 1200	v_f (in/min)	161.2	161.2	161.2	161.2	161.2	161.2	161.1	161.2	161.2	161.2

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

RHLC754

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 3$ 1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	1 3/4	2
SLOTTING															
N	E 16	1.00	1.00	500	n (rev/min)	7640	5093	3820	3056	2547	1910	1528	1273	1091	955
					f_z (in)	0.0025	0.0038	0.0050	0.0063	0.0075	0.0100	0.0125	0.0150	0.0175	0.0200
				200 - 800	v_f (in/min)	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3
	E 17	1.00	1.00	500	n (rev/min)	7640	5093	3820	3056	2547	1910	1528	1273	1091	955
					f_z (in)	0.0025	0.0038	0.0050	0.0063	0.0075	0.0100	0.0125	0.0150	0.0175	0.0200
				200 - 800	v_f (in/min)	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3
SIDE MILLING - ROUGHING															
N	E 16	1.50	0.25	750	n (rev/min)	11460	7640	5730	4584	3820	2865	2292	1910	1637	1433
					f_z (in)	0.0031	0.0047	0.0063	0.0078	0.0094	0.0125	0.0156	0.0188	0.0219	0.0250
				450 - 1050	v_f (in/min)	107.4	107.4	107.4	107.4	107.4	107.4	107.4	107.4	107.4	107.5
	E 17	1.50	0.25	750	n (rev/min)	11460	7640	5730	4584	3820	2865	2292	1910	1637	1433
					f_z (in)	0.0031	0.0047	0.0063	0.0078	0.0094	0.0125	0.0156	0.0188	0.0219	0.0250
				450 - 1050	v_f (in/min)	107.4	107.4	107.4	107.4	107.4	107.4	107.4	107.4	107.4	107.5

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

RTM447

SLOTTING													
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 3$	1/4	3/8	1/2	5/8	3/4	1	1 1/4
P	E 5 - 6	1.00	1.00	42	n (rev/min)		642	428	321	257	214	160	128
					f_z (in)		0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055
				32 - 52	v_f (in/min)		2.1	2.1	2.1	2.1	2.1	2.1	2.1
M	E 8 - 9	1.00	1.00	60	n (rev/min)		917	611	458	367	306	229	183
					f_z (in)		0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055
				50 - 70	v_f (in/min)		3.0	3.0	3.0	3.0	3.0	3.0	3.0
	E 10 - 11	1.00	1.00	48	n (rev/min)		733	489	367	293	244	183	147
					f_z (in)		0.0009	0.0014	0.0019	0.0023	0.0028	0.0038	0.0047
				38 - 58	v_f (in/min)		2.1	2.1	2.1	2.1	2.1	2.1	2.1
K	E 14 - 15	1.00	1.00	48	n (rev/min)		733	489	367	293	244	183	147
					f_z (in)		0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055
				38 - 58	v_f (in/min)		2.4	2.4	2.4	2.4	2.4	2.4	2.4
S	E 20	1.00	1.00	9.6	n (rev/min)		147	98	73	59	49	37	29
					f_z (in)		0.0005	0.0007	0.0009	0.0012	0.0014	0.0019	0.0023
				7.6 - 11.6	v_f (in/min)		0.2	0.2	0.2	0.2	0.2	0.2	0.2
	E 21	1.00	1.00	9.6	n (rev/min)		147	98	73	59	49	37	29
					f_z (in)		0.0008	0.0012	0.0016	0.0020	0.0023	0.0031	0.0039
				7.6 - 11.6	v_f (in/min)		0.3	0.3	0.3	0.3	0.3	0.3	0.3
	E 22	1.00	1.00	48	n (rev/min)		733	489	367	293	244	183	147
					f_z (in)		0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055
				38 - 58	v_f (in/min)		2.4	2.4	2.4	2.4	2.4	2.4	2.4

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

RTM447

SIDE MILLING - ROUGHING														
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 3$ 1/4	3/8	1/2	5/8	3/4	1	1 1/4
P	E 5 - 6	1.50	0.25	63			n (rev/min)	955	637	478	382	318	239	191
							f_z (in)	0.0014	0.0021	0.0027	0.0034	0.0041	0.0055	0.0068
				53	-	73	v_f (in/min)	3.9	3.9	3.9	3.9	3.9	3.9	3.9
M	E 8 - 9	1.50	0.25	96			n (rev/min)	1467	978	733	587	489	367	293
							f_z (in)	0.0014	0.0018	0.0023	0.0029	0.0035	0.0047	0.0059
				86	-	106	v_f (in/min)	6.0	5.2	5.2	5.2	5.2	5.2	5.2
	E 10 - 11	1.50	0.25	72			n (rev/min)	1100	733	550	440	367	275	220
							f_z (in)	0.0012	0.0018	0.0023	0.0029	0.0035	0.0047	0.0059
				62	-	82	v_f (in/min)	3.9	3.9	3.9	3.9	3.9	3.9	3.9
K	E 14 - 15	1.50	0.25	78			n (rev/min)	1192	795	596	477	397	298	238
							f_z (in)	0.0014	0.0021	0.0027	0.0034	0.0041	0.0055	0.0068
				68	-	88	v_f (in/min)	4.9	4.9	4.9	4.9	4.9	4.9	4.9
S	E 20	1.50	0.25	12			n (rev/min)	183	122	92	73	61	46	37
							f_z (in)	0.0006	0.0009	0.0012	0.0015	0.0018	0.0023	0.0029
				10	-	14	v_f (in/min)	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	E 21	1.50	0.25	14			n (rev/min)	220	147	110	88	73	55	44
							f_z (in)	0.0010	0.0015	0.0020	0.0024	0.0029	0.0039	0.0049
				12	-	16	v_f (in/min)	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	E 22	1.50	0.25	72			n (rev/min)	1100	733	550	440	367	275	220
							f_z (in)	0.0014	0.0021	0.0027	0.0034	0.0041	0.0055	0.0068
				62	-	82	v_f (in/min)	4.5	4.5	4.5	4.5	4.5	4.5	4.5

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

REM710 / REC700 / RMB700

SLOTTING															
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)			$Z_n = 4$					$Z_n = 5$	$Z_n = 6$		
							1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	1 3/4
P	E 1 - 2	1.00	1.00	132		n (rev/min)	2017	1345	1008	807	672	504	403	336	288
						f_z (in)	0.0014	0.0021	0.0028	0.0035	0.0042	0.0056	0.0070	0.0084	0.0098
				102	- 162	v_f (in/min)	11.3	11.3	11.3	11.3	11.3	14.2	17.0	17.0	17.0
	E 3 - 4	1.00	1.00	60		n (rev/min)	917	611	458	367	306	229	183	153	131
						f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077
				50	- 70	v_f (in/min)	4.0	4.0	4.0	4.0	4.0	5.0	6.0	6.0	6.0
K	E 12 - 13	1.00	1.00	60		n (rev/min)	917	611	458	367	306	229	183	153	131
						f_z (in)	0.0014	0.0021	0.0028	0.0035	0.0042	0.0056	0.0070	0.0084	0.0098
				50	- 70	v_f (in/min)	5.2	5.2	5.2	5.2	5.2	6.4	7.7	7.7	7.7
N	E 18	1.00	1.00	288		n (rev/min)	4401	2934	2200	1760	1467	1100	880	733	629
						f_z (in)	0.0016	0.0023	0.0031	0.0039	0.0047	0.0063	0.0078	0.0094	0.0109
				248	- 328	v_f (in/min)	27.5	27.5	27.5	27.5	27.5	34.4	41.3	41.3	41.3

REM710 / REC700 / RMB700

SLOTTING									
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)			$Z_n = 8$		$Z_n = 10$
							2	2 1/2	3
P	E 1 - 2	0.50	1.00	132		n (rev/min)	252	202	168
						f_z (in)	0.0113	0.0141	0.0169
				102	- 162	v_f (in/min)	22.7	22.7	28.4
	E 3 - 4	0.50	1.00	60		n (rev/min)	115	92	76
						f_z (in)	0.0088	0.0109	0.0131
				50	- 70	v_f (in/min)	8.0	8.0	10.0
K	E 12 - 13	0.50	1.00	60		n (rev/min)	115	92	76
						f_z (in)	0.0113	0.0141	0.0169
				50	- 70	v_f (in/min)	10.3	10.3	12.9
N	E 18	0.50	1.00	288		n (rev/min)	550	440	367
						f_z (in)	0.0125	0.0156	0.0188
				248	- 328	v_f (in/min)	55.0	55.0	68.8

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

REM710 / REC700 / RMB700

SIDE MILLING - ROUGHING																		
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 4$ 1/4	3/8	1/2	5/8	3/4	$Z_n = 5$ 1	$Z_n = 6$ 1 1/4	1 1/2	1 3/4	$Z_n = 8$ 2	2 1/2	$Z_n = 10$ 3
P	E 1 - 2	1.50	0.25	192	n (rev/min)	2934	1956	1467	1174	978	733	587	489	419	367	293	244
					f_z (in)	0.0018	0.0026	0.0035	0.0044	0.0053	0.0070	0.0088	0.0105	0.0123	0.0141	0.0176	0.0211
				152 - 232	v_f (in/min)	20.6	20.6	20.6	20.6	20.6	25.8	30.9	30.9	30.9	41.3	41.3	51.6
	E 3 - 4	1.50	0.25	96	n (rev/min)	1467	978	733	587	489	367	293	244	210	183	147	122
					f_z (in)	0.0014	0.0021	0.0027	0.0034	0.0041	0.0055	0.0068	0.0082	0.0096	0.0109	0.0137	0.0164
				76 - 116	v_f (in/min)	8.0	8.0	8.0	8.0	8.0	10.0	12.0	12.0	12.0	16.0	16.0	20.1
K	E 12 - 13	1.50	0.25	114	n (rev/min)	1742	1161	871	697	581	435	348	290	249	218	174	145
					f_z (in)	0.0018	0.0026	0.0035	0.0044	0.0053	0.0070	0.0088	0.0105	0.0123	0.0141	0.0176	0.0211
				94 - 134	v_f (in/min)	12.2	12.2	12.2	12.2	12.2	15.3	18.4	18.4	18.4	24.5	24.5	30.6
N	E 18	1.50	0.25	420	n (rev/min)	6418	4278	3209	2567	2139	1604	1284	1070	917	802	642	535
					f_z (in)	0.0020	0.0029	0.0039	0.0049	0.0059	0.0078	0.0098	0.0117	0.0137	0.0156	0.0195	0.0234
				370 - 470	v_f (in/min)	50.1	50.1	50.1	50.1	50.1	62.7	75.2	75.2	75.2	100.3	100.3	125.3

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

RXC753

SLOTTING									
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 5$	$Z_n = 6$		
						1	1 1/4	1 1/2	
P	E 1 - 2	1.00	1.00	110	n (rev/min)	420	336	280	
					f_z (in)	0.0045	0.0056	0.0068	
				80 - 140	v_f (in/min)	9.5	11.3	11.3	
	E 3 - 4	1.00	1.00	50	n (rev/min)	191	153	127	
					f_z (in)	0.0035	0.0044	0.0053	
				40 - 60	v_f (in/min)	3.3	4.0	4.0	
K	E 12 - 13	1.00	1.00	50	n (rev/min)	191	153	127	
					f_z (in)	0.0045	0.0056	0.0068	
				40 - 60	v_f (in/min)	4.3	5.2	5.2	
N	E 18	1.00	1.00	240	n (rev/min)	917	733	611	
					f_z (in)	0.0050	0.0063	0.0075	
				200 - 280	v_f (in/min)	22.9	27.5	27.5	

RXC753

SLOTTING						
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 8$
						2
P	E 1 - 2	0.50	1.00	110	n (rev/min)	210
					f_z (in)	0.0090
				80 - 140	v_f (in/min)	15.1
	E 3 - 4	0.50	1.00	50	n (rev/min)	96
					f_z (in)	0.0070
				40 - 60	v_f (in/min)	5.3
K	E 12 - 13	0.50	1.00	50	n (rev/min)	96
					f_z (in)	0.0090
				40 - 60	v_f (in/min)	6.9
N	E 18	0.50	1.00	240	n (rev/min)	458
					f_z (in)	0.0100
				200 - 280	v_f (in/min)	36.7

RXC753

SIDE MILLING - ROUGHING									
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 5$	$Z_n = 6$		$Z_n = 8$
						1	1 1/4	1 1/2	2
P	E 1 - 2	1.50	0.25	192	n (rev/min)	733	587	489	367
					f_z (in)	0.0056	0.0070	0.0084	0.0113
				152 - 232	v_f (in/min)	20.6	24.8	24.8	33.0
	E 3 - 4	1.50	0.25	96	n (rev/min)	367	293	244	183
					f_z (in)	0.0044	0.0055	0.0066	0.0088
				76 - 116	v_f (in/min)	8.0	9.6	9.6	12.8
K	E 12 - 13	1.50	0.25	114	n (rev/min)	435	348	290	218
					f_z (in)	0.0056	0.0070	0.0084	0.0113
				94 - 134	v_f (in/min)	12.2	14.7	14.7	19.6
N	E 18	1.50	0.25	420	n (rev/min)	1604	1284	1070	802
					f_z (in)	0.0063	0.0078	0.0094	0.0125
				370 - 470	v_f (in/min)	50.1	60.2	60.2	80.2

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

EXR350

SLOTTING														
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 4$ 3/8	1/2	5/8	3/4	$Z_n = 5$ 1	$Z_n = 6$ 1 1/4	1 1/2
M	E 8 - 9	1.00	1.00	96	n (rev/min)	978	733	587	489	367	293	244
					f_z (in)	0.0014	0.0019	0.0023	0.0028	0.0038	0.0047	0.0056
				86 - 106	v_f (in/min)	5.5	5.5	5.5	5.5	6.9	8.3	8.3
	E 10 - 11	1.00	1.00	72	n (rev/min)	733	550	440	367	275	220	183
					f_z (in)	0.0014	0.0019	0.0023	0.0028	0.0038	0.0047	0.0056
				62 - 82	v_f (in/min)	4.1	4.1	4.1	4.1	5.2	6.2	6.2
S	E 20	1.00	1.00	10	n (rev/min)	98	73	59	49	37	29	24
					f_z (in)	0.0007	0.0009	0.0012	0.0014	0.0019	0.0023	0.0028
				8 - 12	v_f (in/min)	0.3	0.3	0.3	0.3	0.3	0.4	0.4
	E 21	1.00	1.00	10	n (rev/min)	98	73	59	49	37	29	24
					f_z (in)	0.0012	0.0016	0.0020	0.0023	0.0031	0.0039	0.0047
				8 - 12	v_f (in/min)	0.5	0.5	0.5	0.5	0.6	0.7	0.7
	E 22	1.00	1.00	48	n (rev/min)	489	367	293	244	183	147	122
					f_z (in)	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066
				38 - 58	v_f (in/min)	3.2	3.2	3.2	3.2	4.0	4.8	4.8

EXR350

SLOTTING						
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 8$ 2
M	E 8 - 9	0.50	1.00	96	n (rev/min)	183
					f_z (in)	0.0075
				86 - 106	v_f (in/min)	11.0
	E 10 - 11	0.50	1.00	72	n (rev/min)	138
					f_z (in)	0.0075
				62 - 82	v_f (in/min)	8.3
S	E 20	0.50	1.00	10	n (rev/min)	18
					f_z (in)	0.0038
				8 - 12	v_f (in/min)	0.6
	E 21	0.50	1.00	10	n (rev/min)	18
					f_z (in)	0.0063
				8 - 12	v_f (in/min)	0.9
	E 22	0.50	1.00	48	n (rev/min)	92
					f_z (in)	0.0088
				38 - 58	v_f (in/min)	6.4

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

EXR350

SIDE MILLING - ROUGHING															
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 4$				$Z_n = 5$	$Z_n = 6$		$Z_n = 8$
								3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	2
M	E 8 - 9	1.50	0.25	115			n (rev/min)	1174	880	704	587	440	352	293	220
							f_z (in)	0.0018	0.0023	0.0029	0.0035	0.0047	0.0059	0.0070	0.0094
				105	-	125	v_f (in/min)	8.3	8.3	8.3	8.3	10.3	12.4	12.4	16.5
	E 10 - 11	1.50	0.25	86			n (rev/min)	880	660	528	440	330	264	220	165
							f_z (in)	0.0018	0.0023	0.0029	0.0035	0.0047	0.0059	0.0070	0.0094
				76	-	96	v_f (in/min)	6.2	6.2	6.2	6.2	7.7	9.3	9.3	12.4
S	E 20	1.50	0.25	12			n (rev/min)	122	92	73	61	46	37	31	23
							f_z (in)	0.0009	0.0012	0.0015	0.0018	0.0023	0.0029	0.0035	0.0047
				10	-	14	v_f (in/min)	0.4	0.4	0.4	0.4	0.5	0.6	0.6	0.9
	E 21	1.50	0.25	12			n (rev/min)	122	92	73	61	46	37	31	23
							f_z (in)	0.0015	0.0020	0.0024	0.0029	0.0039	0.0049	0.0059	0.0078
				10	-	14	v_f (in/min)	0.7	0.7	0.7	0.7	0.9	1.1	1.1	1.4
	E 22	1.50	0.25	57.6			n (rev/min)	587	440	352	293	220	176	147	110
							f_z (in)	0.0021	0.0027	0.0034	0.0041	0.0055	0.0068	0.0082	0.0109
				47.6	-	67.6	v_f (in/min)	4.8	4.8	4.8	4.8	6.0	7.2	7.2	9.6

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

REM445 / REC448 / RMB449

				SLOTTING											
								$Z_n = 4$					$Z_n = 5$	$Z_n = 6$	
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	1 3/4
P	E 5 - 6	1.00	1.00		42		n (rev/min)	642	428	321	257	214	160	128	107	92
							f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077
				32	-	52	v_f (in/min)	2.8	2.8	2.8	2.8	2.8	3.5	4.2	4.2	4.2
M	E 8 - 9	1.00	1.00		96		n (rev/min)	1467	978	733	587	489	367	293	244	210
							f_z (in)	0.0009	0.0014	0.0019	0.0023	0.0028	0.0038	0.0047	0.0056	0.0066
				86	-	106	v_f (in/min)	5.5	5.5	5.5	5.5	5.5	6.9	8.3	8.3	8.3
	E 10 - 11	1.00	1.00		72		n (rev/min)	1100	733	550	440	367	275	220	183	157
							f_z (in)	0.0009	0.0014	0.0019	0.0023	0.0028	0.0038	0.0047	0.0056	0.0066
				62	-	82	v_f (in/min)	4.1	4.1	4.1	4.1	4.1	5.2	6.2	6.2	6.2
S	E 20	1.00	1.00		9.6		n (rev/min)	147	98	73	59	49	37	29	24	21
							f_z (in)	0.0005	0.0007	0.0009	0.0012	0.0014	0.0019	0.0023	0.0028	0.0033
				7.6	-	11.6	v_f (in/min)	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4
	E 21	1.00	1.00		9.6		n (rev/min)	147	98	73	59	49	37	29	24	21
							f_z (in)	0.0008	0.0012	0.0016	0.0020	0.0023	0.0031	0.0039	0.0047	0.0055
				7.6	-	11.6	v_f (in/min)	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.7	0.7
	E 22	1.00	1.00		48		n (rev/min)	733	489	367	293	244	183	147	122	105
							f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077
				38	-	58	v_f (in/min)	3.2	3.2	3.2	3.2	3.2	4.0	4.8	4.8	4.8

REM445 / REC448 / RMB449

				SLOTTING						
								$Z_n = 8$		$Z_n = 10$
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				2	2 1/2	3
P	E 5 - 6	0.50	1.00		42		n (rev/min)	80	64	53
							f_z (in)	0.0088	0.0109	0.0131
				32	-	52	v_f (in/min)	5.6	5.6	7.0
M	E 8 - 9	0.50	1.00		96		n (rev/min)	183	147	122
							f_z (in)	0.0075	0.0094	0.0113
				86	-	106	v_f (in/min)	11.0	11.0	13.8
	E 10 - 11	0.50	1.00		72		n (rev/min)	138	110	92
							f_z (in)	0.0075	0.0094	0.0113
				62	-	82	v_f (in/min)	8.3	8.3	10.3
S	E 20	0.50	1.00		9.6		n (rev/min)	18	15	12
							f_z (in)	0.0038	0.0047	0.0056
				7.6	-	11.6	v_f (in/min)	0.6	0.6	0.7
	E 21	0.50	1.00		9.6		n (rev/min)	18	15	12
							f_z (in)	0.0063	0.0078	0.0094
				7.6	-	11.6	v_f (in/min)	0.9	0.9	1.1
	E 22	0.50	1.00		48		n (rev/min)	92	73	61
							f_z (in)	0.0088	0.0109	0.0131
				38	-	58	v_f (in/min)	6.4	6.4	8.0

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

REM445 / REC448 / RMB449

SIDE MILLING - ROUGHING																		
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 4$			$Z_n = 5$	$Z_n = 6$			$Z_n = 8$		$Z_n = 10$
						1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/2	3
P	E 5 - 6	1.50	0.25	63	n (rev/min)	955	637	478	382	318	239	191	159	136	119	96	80
					f_z (in)	0.0014	0.0021	0.0027	0.0034	0.0041	0.0055	0.0068	0.0082	0.0096	0.0109	0.0137	0.0164
				53 - 73	v_f (in/min)	5.2	5.2	5.2	5.2	5.2	6.5	7.8	7.8	7.8	10.4	10.4	13.1
M	E 8 - 9	1.50	0.25	115	n (rev/min)	1760	1174	880	704	587	440	352	293	251	220	176	147
					f_z (in)	0.0012	0.0018	0.0023	0.0029	0.0035	0.0047	0.0059	0.0070	0.0082	0.0094	0.0117	0.0141
				105 - 125	v_f (in/min)	8.3	8.3	8.3	8.3	8.3	10.3	12.4	12.4	12.4	16.5	16.5	20.6
	E 10 - 11	1.50	0.25	86	n (rev/min)	1320	880	660	528	440	330	264	220	189	165	132	110
					f_z (in)	0.0012	0.0018	0.0023	0.0029	0.0035	0.0047	0.0059	0.0070	0.0082	0.0094	0.0117	0.0141
				76 - 96	v_f (in/min)	6.2	6.2	6.2	6.2	6.2	7.7	9.3	9.3	9.3	12.4	12.4	15.5
S	E 20	1.50	0.25	12	n (rev/min)	183	122	92	73	61	46	37	31	26	23	18	15
					f_z (in)	0.0006	0.0009	0.0012	0.0015	0.0018	0.0023	0.0029	0.0035	0.0041	0.0047	0.0059	0.0070
				10 - 14	v_f (in/min)	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.6	0.6	0.9	0.9	1.1
	E 21	1.50	0.25	14	n (rev/min)	220	147	110	88	73	55	44	37	31	28	22	18
					f_z (in)	0.0010	0.0015	0.0020	0.0024	0.0029	0.0039	0.0049	0.0059	0.0068	0.0078	0.0098	0.0117
				12 - 16	v_f (in/min)	0.9	0.9	0.9	0.9	0.9	1.1	1.3	1.3	1.3	1.7	1.7	2.1
	E 22	1.50	0.25	72	n (rev/min)	1100	733	550	440	367	275	220	183	157	138	110	92
					f_z (in)	0.0014	0.0021	0.0027	0.0034	0.0041	0.0055	0.0068	0.0082	0.0096	0.0109	0.0137	0.0164
				62 - 82	v_f (in/min)	6.0	6.0	6.0	6.0	6.0	7.5	9.0	9.0	9.0	12.0	12.0	15.0

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

RFM440 / RFM441

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		SLOTTING									
								$Z_n = 4$			$Z_n = 5$	$Z_n = 6$			
						1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	1 3/4
P	E 1 - 2	1.00	1.00	132	n (rev/min)	2017	1345	1008	807	672	504	403	336	288
					f_z (in)	0.0014	0.0021	0.0028	0.0035	0.0042	0.0056	0.0070	0.0084	0.0098
				122 - 142	v_f (in/min)	11.3	11.3	11.3	11.3	11.3	14.2	17.0	17.0	17.0
	E 3 - 4	1.00	1.00	60	n (rev/min)	917	611	458	367	306	229	183	153	131
					f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077
				50 - 70	v_f (in/min)	4.0	4.0	4.0	4.0	4.0	5.0	6.0	6.0	6.0
	E 5 - 6	1.00	1.00	42	n (rev/min)	642	428	321	257	214	160	128	107	92
					f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077
				32 - 52	v_f (in/min)	2.8	2.8	2.8	2.8	2.8	3.5	4.2	4.2	4.2
M	E 8 - 9	1.00	1.00	96	n (rev/min)	1467	978	733	587	489	367	293	244	210
					f_z (in)	0.0009	0.0014	0.0019	0.0023	0.0028	0.0038	0.0047	0.0056	0.0066
				86 - 106	v_f (in/min)	5.5	5.5	5.5	5.5	5.5	6.9	8.3	8.3	8.3
	E 10 - 11	1.00	1.00	72	n (rev/min)	1100	733	550	440	367	275	220	183	157
					f_z (in)	0.0009	0.0014	0.0019	0.0023	0.0028	0.0038	0.0047	0.0056	0.0066
				62 - 82	v_f (in/min)	4.1	4.1	4.1	4.1	4.1	5.2	6.2	6.2	6.2
K	E 12 - 13	1.00	1.00	60	n (rev/min)	917	611	458	367	306	229	183	153	131
					f_z (in)	0.0014	0.0021	0.0028	0.0035	0.0042	0.0056	0.0070	0.0084	0.0098
				50 - 70	v_f (in/min)	5.2	5.2	5.2	5.2	5.2	6.4	7.7	7.7	7.7
	E 14 - 15	1.00	1.00	48	n (rev/min)	733	489	367	293	244	183	147	122	105
					f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077
				38 - 58	v_f (in/min)	3.2	3.2	3.2	3.2	3.2	4.0	4.8	4.8	4.8
N	E 18	1.00	1.00	288	n (rev/min)	4401	2934	2200	1760	1467	1100	880	733	629
					f_z (in)	0.0016	0.0023	0.0031	0.0039	0.0047	0.0063	0.0078	0.0094	0.0109
				286 - 290	v_f (in/min)	27.5	27.5	27.5	27.5	27.5	34.4	41.3	41.3	41.3
S	E 20	1.00	1.00	10	n (rev/min)	147	98	73	59	49	37	29	24	21
					f_z (in)	0.0005	0.0007	0.0009	0.0012	0.0014	0.0019	0.0023	0.0028	0.0033
				8 - 12	v_f (in/min)	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4
	E 21	1.00	1.00	10	n (rev/min)	147	98	73	59	49	37	29	24	21
					f_z (in)	0.0008	0.0012	0.0016	0.0020	0.0023	0.0031	0.0039	0.0047	0.0055
				8 - 12	v_f (in/min)	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.7	0.7
	E 22	1.00	1.00	48	n (rev/min)	733	489	367	293	244	183	147	122	105
					f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077
				38 - 58	v_f (in/min)	3.2	3.2	3.2	3.2	3.2	4.0	4.8	4.8	4.8

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

RFM440 / RFM441

SLOTTING							
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)			Z_n = 8 2
P	E 1 - 2	0.50	1.00	132		n (rev/min)	252
						f_z (in)	0.0113
				122	- 142	v_f (in/min)	22.7
	E 3 - 4	0.50	1.00	60		n (rev/min)	115
						f_z (in)	0.0088
				50	- 70	v_f (in/min)	8.0
	E 5 - 6	0.50	1.00	42		n (rev/min)	80
						f_z (in)	0.0088
				32	- 52	v_f (in/min)	5.6
M	E 8 - 9	0.50	1.00	96		n (rev/min)	183
						f_z (in)	0.0075
				86	- 106	v_f (in/min)	11.0
	E 10 - 11	0.50	1.00	72		n (rev/min)	138
						f_z (in)	0.0075
				62	- 82	v_f (in/min)	8.3
K	E 12 - 13	0.50	1.00	60		n (rev/min)	115
						f_z (in)	0.0113
				50	- 70	v_f (in/min)	10.3
	E 14 - 15	0.50	1.00	48		n (rev/min)	92
						f_z (in)	0.0088
				38	- 58	v_f (in/min)	6.4
N	E 18	0.50	1.00	288		n (rev/min)	550
						f_z (in)	0.0125
				286	- 290	v_f (in/min)	55.0
S	E 20	0.50	1.00	10		n (rev/min)	18
						f_z (in)	0.0038
				8	- 12	v_f (in/min)	0.6
	E 21	0.50	1.00	10		n (rev/min)	18
						f_z (in)	0.0063
				8	- 12	v_f (in/min)	0.9
	E 22	0.50	1.00	48		n (rev/min)	92
						f_z (in)	0.0088
				38	- 58	v_f (in/min)	6.4

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

RFM440 / RFM441

SIDE MILLING - ROUGHING																
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)			$Z_n = 4$					$Z_n = 5$	$Z_n = 6$			$Z_n = 8$
						1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	1 3/4	2
P	E 1 - 2	1.50	0.25	192	n (rev/min)	2934	1956	1467	1174	978	733	587	489	419	367
					f_z (in)	0.0018	0.0026	0.0035	0.0044	0.0053	0.0070	0.0088	0.0105	0.0123	0.0141
				152 - 232	v_f (in/min)	20.6	20.6	20.6	20.6	20.6	25.8	30.9	30.9	30.9	41.3
	E 3 - 4	1.50	0.25	96	n (rev/min)	1467	978	733	587	489	367	293	244	210	183
					f_z (in)	0.0014	0.0021	0.0027	0.0034	0.0041	0.0055	0.0068	0.0082	0.0096	0.0109
				76 - 116	v_f (in/min)	8.0	8.0	8.0	8.0	8.0	10.0	12.0	12.0	12.0	16.0
	E 5 - 6	1.50	0.25	63	n (rev/min)	955	637	478	382	318	239	191	159	136	119
					f_z (in)	0.0014	0.0021	0.0027	0.0034	0.0041	0.0055	0.0068	0.0082	0.0096	0.0109
				53 - 73	v_f (in/min)	5.2	5.2	5.2	5.2	5.2	6.5	7.8	7.8	7.8	10.4
M	E 8 - 9	1.50	0.25	115	n (rev/min)	1760	1174	880	704	587	440	352	293	251	220
					f_z (in)	0.0012	0.0018	0.0023	0.0029	0.0035	0.0047	0.0059	0.0070	0.0082	0.0094
				105 - 125	v_f (in/min)	8.3	8.3	8.3	8.3	8.3	10.3	12.4	12.4	12.4	16.5
	E 10 - 11	1.50	0.25	86	n (rev/min)	1320	880	660	528	440	330	264	220	189	165
					f_z (in)	0.0012	0.0018	0.0023	0.0029	0.0035	0.0047	0.0059	0.0070	0.0082	0.0094
				76 - 96	v_f (in/min)	6.2	6.2	6.2	6.2	6.2	7.7	9.3	9.3	9.3	12.4
K	E 12 - 13	1.50	0.25	114	n (rev/min)	1742	1161	871	697	581	435	348	290	249	218
					f_z (in)	0.0018	0.0026	0.0035	0.0044	0.0053	0.0070	0.0088	0.0105	0.0123	0.0141
				94 - 134	v_f (in/min)	12.2	12.2	12.2	12.2	12.2	15.3	18.4	18.4	18.4	24.5
	E 14 - 15	1.50	0.25	78	n (rev/min)	1192	795	596	477	397	298	238	199	170	149
					f_z (in)	0.0014	0.0021	0.0027	0.0034	0.0041	0.0055	0.0068	0.0082	0.0096	0.0109
				68 - 88	v_f (in/min)	6.5	6.5	6.5	6.5	6.5	8.1	9.8	9.8	9.8	13.0
N	E 18	1.50	0.25	420	n (rev/min)	6418	4278	3209	2567	2139	1604	1284	1070	917	802
					f_z (in)	0.0020	0.0029	0.0039	0.0049	0.0059	0.0078	0.0098	0.0117	0.0137	0.0156
				370 - 470	v_f (in/min)	50.1	50.1	50.1	50.1	50.1	62.7	75.2	75.2	75.2	100.3
S	E 20	1.50	0.25	12	n (rev/min)	183	122	92	73	61	46	37	31	26	23
					f_z (in)	0.0006	0.0009	0.0012	0.0015	0.0018	0.0023	0.0029	0.0035	0.0041	0.0047
				10 - 14	v_f (in/min)	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.6	0.6	0.9
	E 21	1.50	0.25	14	n (rev/min)	220	147	110	88	73	55	44	37	31	28
					f_z (in)	0.0010	0.0015	0.0020	0.0024	0.0029	0.0039	0.0049	0.0059	0.0068	0.0078
				12 - 16	v_f (in/min)	0.9	0.9	0.9	0.9	0.9	1.1	1.3	1.3	1.3	1.7
	E 22	1.50	0.25	72	n (rev/min)	1100	733	550	440	367	275	220	183	157	138
					f_z (in)	0.0014	0.0021	0.0027	0.0034	0.0041	0.0055	0.0068	0.0082	0.0096	0.0109
				62 - 82	v_f (in/min)	6.0	6.0	6.0	6.0	6.0	7.5	9.0	9.0	9.0	12.0

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

RFCB444

SLOTTING																
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 4$ 1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	1 3/4	2
P	E 1 - 2	1.00	1.00	110	n (rev/min)	1681	1121	840	672	560	420	336	280	240	210
					f_z (in)	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045	0.0056	0.0068	0.0079	0.0090
				80 - 140	v_f (in/min)	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
	E 3 - 4	1.00	1.00	50	n (rev/min)	764	509	382	306	255	191	153	127	109	96
					f_z (in)	0.0009	0.0013	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0061	0.0070
				40 - 60	v_f (in/min)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
	E 5 - 6	1.00	1.00	50	n (rev/min)	764	509	382	306	255	191	153	127	109	96
					f_z (in)	0.0009	0.0013	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0061	0.0070
				40 - 60	v_f (in/min)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
M	E 8 - 9	1.00	1.00	50	n (rev/min)	764	509	382	306	255	191	153	127	109	96
					f_z (in)	0.0009	0.0013	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0061	0.0070
				40 - 60	v_f (in/min)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
	E 10 - 11	1.00	1.00	40	n (rev/min)	611	407	306	244	204	153	122	102	87	76
					f_z (in)	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030	0.0038	0.0045	0.0053	0.0060
				30 - 50	v_f (in/min)	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
K	E 12 - 13	1.00	1.00	50	n (rev/min)	764	509	382	306	255	191	153	127	109	96
					f_z (in)	0.0011	0.0017	0.0023	0.0028	0.0034	0.0045	0.0056	0.0068	0.0079	0.0090
				40 - 60	v_f (in/min)	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
	E 14 - 15	1.00	1.00	40	n (rev/min)	611	407	306	244	204	153	122	102	87	76
					f_z (in)	0.0009	0.0013	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0061	0.0070
				30 - 50	v_f (in/min)	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
N	E 18	1.00	1.00	240	n (rev/min)	3667	2445	1834	1467	1222	917	733	611	524	458
					f_z (in)	0.0013	0.0019	0.0025	0.0031	0.0038	0.0050	0.0063	0.0075	0.0088	0.0100
				200 - 280	v_f (in/min)	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3
S	E 20	1.00	1.00	8	n (rev/min)	122	81	61	49	41	31	24	20	17	15
					f_z (in)	0.0004	0.0006	0.0008	0.0009	0.0011	0.0015	0.0019	0.0023	0.0026	0.0030
				6 - 10	v_f (in/min)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	E 21	1.00	1.00	8	n (rev/min)	122	81	61	49	41	31	24	20	17	15
					f_z (in)	0.0006	0.0009	0.0013	0.0016	0.0019	0.0025	0.0031	0.0038	0.0044	0.0050
				6 - 10	v_f (in/min)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	E 22	1.00	1.00	40	n (rev/min)	611	407	306	244	204	153	122	102	87	76
					f_z (in)	0.0009	0.0013	0.0018	0.0022	0.0026	0.0035	0.0044	0.0053	0.0061	0.0070
				20 - 60	v_f (in/min)	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

RFCB444

SIDE MILLING - ROUGHING																
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 4$										
						1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	1 3/4	2
P	E 1 - 2	1.50	0.25	160	n (rev/min)	2445	1630	1222	978	815	611	489	407	349	306
					f_z (in)	0.0014	0.0021	0.0028	0.0035	0.0042	0.0056	0.0070	0.0084	0.0098	0.0113
				120 - 200	v_f (in/min)	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8
	E 3 - 4	1.50	0.25	80	n (rev/min)	1222	815	611	489	407	306	244	204	175	153
					f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				60 - 100	v_f (in/min)	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
	E 5 - 6	1.50	0.25	50	n (rev/min)	764	509	382	306	255	191	153	127	109	96
					f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				30 - 70	v_f (in/min)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
M	E 8 - 9	1.50	0.25	80	n (rev/min)	1222	815	611	489	407	306	244	204	175	153
					f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				60 - 100	v_f (in/min)	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
	E 10 - 11	1.50	0.25	60	n (rev/min)	917	611	458	367	306	229	183	153	131	115
					f_z (in)	0.0009	0.0014	0.0019	0.0023	0.0028	0.0038	0.0047	0.0056	0.0066	0.0075
				40 - 80	v_f (in/min)	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
K	E 12 - 13	1.50	0.25	95	n (rev/min)	1452	968	726	581	484	363	290	242	207	181
					f_z (in)	0.0014	0.0021	0.0028	0.0035	0.0042	0.0056	0.0070	0.0084	0.0098	0.0113
				75 - 115	v_f (in/min)	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2
	E 14 - 15	1.50	0.25	65	n (rev/min)	993	662	497	397	331	248	199	166	142	124
					f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				45 - 85	v_f (in/min)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
N	E 18	1.50	0.25	350	n (rev/min)	5348	3565	2674	2139	1783	1337	1070	891	764	669
					f_z (in)	0.0016	0.0023	0.0031	0.0039	0.0047	0.0063	0.0078	0.0094	0.0109	0.0125
				300 - 400	v_f (in/min)	33.4	33.4	33.4	33.4	33.4	33.4	33.4	33.4	33.4	33.4
S	E 20	1.50	0.25	10	n (rev/min)	153	102	76	61	51	38	31	25	22	19
					f_z (in)	0.0006	0.0009	0.0013	0.0016	0.0019	0.0025	0.0031	0.0038	0.0044	0.0050
				8 - 12	v_f (in/min)	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
	E 21	1.50	0.25	12	n (rev/min)	183	122	92	73	61	46	37	31	26	23
					f_z (in)	0.0008	0.0012	0.0016	0.0020	0.0023	0.0031	0.0039	0.0047	0.0055	0.0063
				10 - 14	v_f (in/min)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	E 22	1.50	0.25	60	n (rev/min)	917	611	458	367	306	229	183	153	131	115
					f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				40 - 80	v_f (in/min)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

RFCB444

SIDE MILLING - ROUGHING																
ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)		$Z_n = 6$										
						1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	1 3/4	2
P	E 1 - 2	1.50	0.25	160	n (rev/min)	2445	1630	1222	978	815	611	489	407	349	306
					f_z (in)	0.0014	0.0021	0.0028	0.0035	0.0042	0.0056	0.0070	0.0084	0.0098	0.0113
				120 - 200	v_f (in/min)	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6
	E 3 - 4	1.50	0.25	80	n (rev/min)	1222	815	611	489	407	306	244	204	175	153
					f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				60 - 100	v_f (in/min)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
	E 5 - 6	1.50	0.25	50	n (rev/min)	764	509	382	306	255	191	153	127	109	96
					f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				30 - 70	v_f (in/min)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
M	E 8 - 9	1.50	0.25	80	n (rev/min)	1222	815	611	489	407	306	244	204	175	153
					f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				60 - 100	v_f (in/min)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
	E 10 - 11	1.50	0.25	60	n (rev/min)	917	611	458	367	306	229	183	153	131	115
					f_z (in)	0.0009	0.0014	0.0019	0.0023	0.0028	0.0038	0.0047	0.0056	0.0066	0.0075
				40 - 80	v_f (in/min)	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
K	E 12 - 13	1.50	0.25	95	n (rev/min)	1452	968	726	581	484	363	290	242	207	181
					f_z (in)	0.0014	0.0021	0.0028	0.0035	0.0042	0.0056	0.0070	0.0084	0.0098	0.0113
				75 - 115	v_f (in/min)	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2
	E 14 - 15	1.50	0.25	65	n (rev/min)	993	662	497	397	331	248	199	166	142	124
					f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				45 - 85	v_f (in/min)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
N	E 18	1.50	0.25	350	n (rev/min)	5348	3565	2674	2139	1783	1337	1070	891	764	669
					f_z (in)	0.0016	0.0023	0.0031	0.0039	0.0047	0.0063	0.0078	0.0094	0.0109	0.0125
				300 - 400	v_f (in/min)	50.1	50.1	50.1	50.1	50.1	50.1	50.1	50.1	50.1	50.1
S	E 20	1.50	0.25	10	n (rev/min)	153	102	76	61	51	38	31	25	22	19
					f_z (in)	0.0006	0.0009	0.0013	0.0016	0.0019	0.0025	0.0031	0.0038	0.0044	0.0050
				8 - 12	v_f (in/min)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	E 21	1.50	0.25	12	n (rev/min)	183	122	92	73	61	46	37	31	26	23
					f_z (in)	0.0008	0.0012	0.0016	0.0020	0.0023	0.0031	0.0039	0.0047	0.0055	0.0063
				10 - 14	v_f (in/min)	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
	E 22	1.50	0.25	60	n (rev/min)	917	611	458	367	306	229	183	153	131	115
					f_z (in)	0.0011	0.0016	0.0022	0.0027	0.0033	0.0044	0.0055	0.0066	0.0077	0.0088
				40 - 80	v_f (in/min)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

VFP435 / VFP635 / VFP²435 / VFP²635 / VFP435SB / VFP635SB

SLOTTING

ISO GROUP	SMG	a_p x Dc	a_e x Dc	v_c (sf / min)				$Z_n = 4$		$Z_n = 6$			
								3/4	1	1 1/4	1 1/4	1 1/2	2
M	E 8 - 9	1.00	1.00		65		n (rev/min)	331	248	199	199	166	124
							f_z (in)	0.0024	0.0032	0.0040	0.0040	0.0048	0.0064
				50	-	80	v_f (in/min)	3.2	3.2	3.2	4.8	4.8	4.8
	E 10 - 11	1.00	1.00		40		n (rev/min)	204	153	122	122	102	76
							f_z (in)	0.0024	0.0032	0.0040	0.0040	0.0048	0.0064
				20	-	60	v_f (in/min)	2.0	2.0	2.0	2.9	2.9	2.9
S	E 22	1.00	1.00		60		n (rev/min)	306	229	183	183	153	115
							f_z (in)	0.0021	0.0028	0.0035	0.0035	0.0042	0.0056
				50	-	70	v_f (in/min)	2.6	2.6	2.6	3.9	3.9	3.9

SIDE MILLING - ROUGHING

M	E 8 - 9	1.50	0.25		78		n (rev/min)	397	298	238	238	199	149
							f_z (in)	0.0030	0.0040	0.0050	0.0050	0.0060	0.0080
				68	-	88	v_f (in/min)	4.8	4.8	4.8	7.2	7.2	7.2
	E 10 - 11	1.50	0.25		48		n (rev/min)	244	183	147	147	122	92
							f_z (in)	0.0030	0.0040	0.0050	0.0050	0.0060	0.0080
				38	-	58	v_f (in/min)	2.9	2.9	2.9	4.4	4.4	4.4
S	E 22	1.50	0.25		72		n (rev/min)	367	275	220	220	183	138
							f_z (in)	0.0026	0.0035	0.0044	0.0044	0.0053	0.0070
				62	-	82	v_f (in/min)	3.9	3.9	3.9	5.8	5.8	5.8

A = Air D = Dry E = Emulsion (flood coolant) M = Mist

Please reference the Workpiece Material Classification chart located on page 12

CUTTING DIAMETER TOLERANCES SOLID CARBIDE END MILLS

END MILL STYLE	NUMBER OF FLUTES	NIAGARA TOLERANCE	CORRESPONDING LIST NUMBERS
SINGLE-END DOUBLE-END FINISHERS	ALL	+ .000 / - .002	STS430, STR430, STB430, STRN430, STBN430, STS430M, STR430M, STB430M, STR440, STB440, STRN440, STBN440, STR440M, STB440M, STS540, STR540, STS540M,STR540M, A245, A245R, AB245, AN245, AN245R, ANB245, A340, AN340, A345, A345R, AN345, AN345R, A345M, S335, SB335, SN335, S545, S545R, S335M, S545M, S645M, C230, C230R, C330, C360, C430, C430R, CB230, CB330, CB430, C230M, C430M, CB230M, CB430M, C330M, CN430M, CD230, CD430, CSD230, CSD430, CSDB230, CSDB430
SINGLE-END DOUBLE-END FINISHERS (FLUTE DIA <=7/64")	ALL	+ / - .0005"	C230, CB230, CSD230, CSDB230, C330, CB330, C430, CB430, CSD430, CSDB430, C230M, CB230M, C330M, C430M, CB430M
SINGLE-END FINISHERS NC TOLERANCE	2 & 4	+ .001 / - .000	CNC230, CNCB230, CNC430, CNCB430
SINGLE-END ROUGHERS	3, 4 & 5	+ .000 / - .003	AR330, SR420, SR545, SR420M
SINGLE-END MICRO DECIMAL	2 & 4	+ / - .0005	ME230, MES230, MEB230, MESB230, ME430, MES430, MEB430, MESB430
THREAD MILLS	ALL	+ .000 / - .002	NTM100UN, NTM120UN, NTM160UN, NTM200NPT, NTM300NPTF, NTM400MI
COMPOSITE CUTTING TOOLS	ALL	+ .000 / - .002	DIACC, DIAEPB, DIAPPB, DIABEB, DIAMFR
DIAMOND COATED END MILLS	2 & 4	+ / - .001	DIA230, DIA430, DIAB230, DIACR430, DIAL230, DIAL430, DIALB230, DIALB430, DIAXR430, DIAXRB430, DIAXRR430, DIAXS430, DIAXSB430, DIAXSR430, DIA230M, DIAB230M, DIA430M, DIAB430M, DIACR430M
MOLD AND DIE	6	+ .000 / - .002	M645, M645R, MZ645, MZ645R, MZ645M, MZR645M
MOLD AND DIE (FLUE DIA < SHANK DIA)	2	+ / - .0005	MB215, MB215M, MBZ215, MBZ215M
MOLD AND DIE (FLUE DIA = SHANK DIA)	2	+ .000 / - .001	MB215, MB215M, MBZ215, MBZ215M
BALL-END	ALL	BALL RADIUS TOLERANCE: FLUTE DIA TOLERANCE / 2	ALL
CORNER RADIUS	ALL	+ / - .001"	ALL SERIES

	END MILL STYLE	NIAGARA TOLERANCE
SHANK DIAMETER TOLERANCES	ALL INCH SHANK	- .0001 / - .0004
	ALL METRIC SHANK	h6

	END MILL STYLE	NIAGARA TOLERANCE
LENGTH OF CUT TOLERANCES	ALL EXCLUDING MICRO DECIMAL	+ .030 / -0
	MICRO DECIMAL	+ .010 / -0

	END MILL STYLE	NIAGARA TOLERANCE
OVERALL LENGTH TOLERANCES	ALL	+ / - .060

NOTE: ALL DIMENSIONS IN INCH UNLESS OTHERWISE NOTED

CUTTING DIAMETER TOLERANCES HIGH SPEED STEEL END MILLS

END MILL STYLE	NUMBER OF FLUTES	TYPE OR RANGE	ANSI* TOLERANCE	NIAGARA TOLERANCE	CORRESPONDING LIST NUMBERS
DOUBLE-END FINISHERS	2, 3 & 4	CENTER CUTTING	+ .0000 / - .0015	+ .0000 / -.0015	D201, D400, DA206, DB215, DB260, DBS217, DC402, DL213, DL418, DR209, DR416, DS211, DS420, DTF310
	4 FLUTE NON-CENTER CUTTING	FLUTE SMALLER THAN SHANK	+ .003 / - .000	+ .001 / - .000	D400
		SHANK & FLUTE SAME SIZE	+ .0000 / - .0025	+ .0000 / - .0015	
SINGLE-END FINISHERS	2	STUB LENGTH	+ .0000 / - .0015	+ .0000 / - .0015	A208 , A337, AB337, AB910, ACB337, AL337, S203, S404, SB207, SB470, SC406, SEB270, SEL250, SK204, SLRB601, SLRC602, SR208, SR414, STF320, SLR600
	2, 3, 4, 6 & 8	ALL EXCLUDING HEAVY DUTY	+ .003 / - .000	+ .001 / - .000	
METRIC FINISHERS WITH INCH SHANK	2 & 4	ALL SIZES	NO SPECIFICATION	+ .001 / - .000	SMM830, SMM850
BALL-END	ALL	ALL SIZES	NO SPECIFICATION	BALL RADIUS TOLERANCE: FLUTE DIA TOLERANCE / 2	

SHANK DIAMETER TOLERANCES	END MILL STYLE	ANSI* TOLERANCE	NIAGARA TOLERANCE
	ALL INCH SHANK	- .0001 / - .0005	- .0001 / - .0005

LENGTH OF CUT TOLERANCES	END MILL STYLE	ANSI* TOLERANCE	NIAGARA TOLERANCE
	ALL EXCLUDING HEAVY DUTY	+ .031 / - .031	+ .031 / - .000
	HEAVY DUTY	+ .062 / - .062	+ .062 / - .000

OVERALL LENGTH TOLERANCES	END MILL STYLE	ANSI* TOLERANCE	NIAGARA TOLERANCE
	ALL EXCEPT HEAVY DUTY 3" DIA FLUTE	+ .062 / - .062	+ .062 / - .000
	3" DIA HEAVY DUTY	+ .125 / - .125	+ .125 / - .000

*TAKEN FROM TABLE 77 OF THE USA STANDARDS FOR MILLING CUTTERS AND END MILLS, ANSI B94.19-1985 PUBLISHED BY THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS.

NOTE: ALL DIMENSIONS IN INCH UNLESS OTHERWISE NOTED.

CUTTING DIAMETER TOLERANCES COBALT END MILLS

END MILL STYLE	NUMBER OF FLUTES	TYPE OR RANGE	ANSI* TOLERANCE	NIAGARA TOLERANCE	CORRESPONDING LIST NUMBERS
DOUBLE-END FINISHERS	2 & 4	CENTER CUTTING	+ .0000 / - .0015	+ .0000 / -.0015	DP530, DPC560
SINGLE-END FINISHERS	2, 4, 6 & 8	ALL EXLUDING HEAVY DUTY	+ .003 / - .000	+ .001 / - .000	EX350, SP205 , SP408, SPC408, SPB540
HEAVY DUTY FINISHERS	4, 6 & 8	HEAVY DUTY WITH 2" & 2-1/2" DIA SHANKS	+ .005 / - .000	+ .005 / - .000	HDP890 (ALL SINGLE END FINISHERS WITH 2" & 2-1/2" DIA SHANKS)
MULTI FLUTE COARSE & FINE PITCH ROUGHERS	4, 5, 6, 8 & 10	1" FLUTE & UNDER	+ .025 / - .005	+ .003 / - .000	EXR350 , RMB700 , RMB449 , REM710 , REC700 , RXC753, REM445 , REC448
		1-1/8" FLUTE & OVER		+ .006 / - .000	
ALL 3 FLUTE COARSE & FINE PITCH ROUGHERS	3	ALL SIZES	+ .025 / - .005	+ .005 / - .000	RTM713, RHC752, RHLC754, RTM447
TRUNCATED ROUGHER/FINISHERS AND CHIPBREAKERS	3, 4, 5 6 & 8	ALL SIZES	NO SPECIFICATIONS	+ .001 / - .000	RFM440 , RFM441 , RFCB444
METRIC FINISHERS WITH INCH SHANK	2 & 4	ALL SIZES	NO SPECIFICATIONS	+ .001 / - .000	SMM835, SMM845
VFP	4 & 6	ALL SIZES	NO SPECIFICATIONS	+ .002 / - .000	VFP435, VFP635, VFP2435, VFP2635
BALL-END	ALL	ALL SIZES	NO SPECIFICATIONS	BALL RADIUS TOLERANCES: FLUTE DIA TOLERANCES / 2	

	END MILL STYLE	OTHER SPECIFICATION	ANSI* TOLERANCE	NIAGARA TOLERANCE
SHANK DIAMETER TOLERANCES	ALL INCH SHANK		- .0001 / - .0005	- .0001 / - .0005
	ALL METRIC SHANK	SPECIFICATION PER DIN 1835 FORM B	NO SPECIFICATION	DIN (h6)mm

	END MILL STYLE	OTHER SPECIFICATION	ANSI* TOLERANCE	NIAGARA TOLERANCE
LENGTH OF CUT TOLERANCES	ALL EXCLUDING HEAVY DUTY		+ .031 / - .031	+ .031 / - .000
	HEAVY DUTY		+ .062 / - .062	+ .062 / - .000
	ALL METRIC SHANK	SPECIFICATION PER DIN ANS	NO SPECIFICATION	+ 0.7mm / - 0

	END MILL STYLE	OTHER SPECIFICATION	ANSI* TOLERANCE	NIAGARA TOLERANCE
OVERALL LENGTH TOLERANCES	ALL EXCEPT HEAVY DUTY 3" DIA FLUTE		+ .062 / - .062	+ .062 / - .000
	3" DIA HEAVY DUTY		+ .125 / - .125	+ .125 / - .000
	ALL METRIC SHANK	SPECIFICATION PER DIN ANS	NO SPECIFICATION	+ 0.7mm / - 0

*TAKEN FROM TABLE 77 OF THE USA STANDARDS FOR MILLING CUTTERS AND END MILLS, ANSI B94.19-1985 PUBLISHED BY THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS.

NOTE: ALL DIMENSIONS IN INCH UNLESS OTHERWISE NOTED.

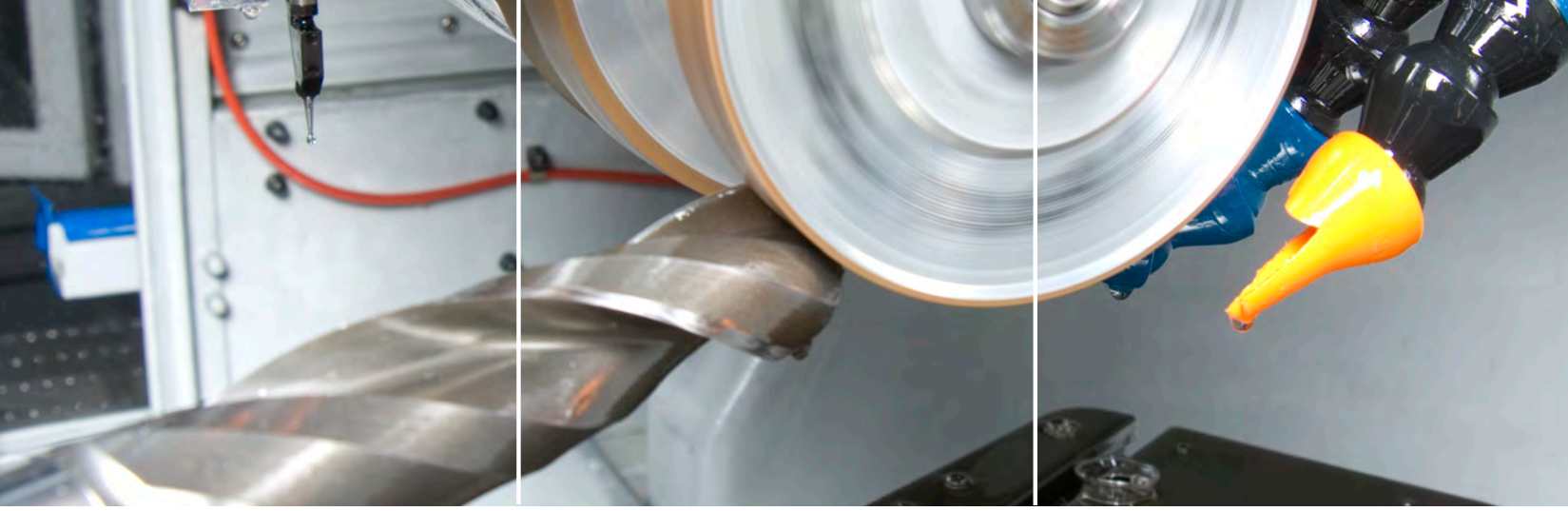
CEMENTED CARBIDE END MILLS

Cemented carbide end mills from Niagara Cutter are not included in the product range intended for the following requirements. Nevertheless Niagara Cutter can make the following declaration.

These products meet all requirements in RoHS (Restriction of the use of certain Hazardous Substances in electrical and electronic equipment), WEEE (Waste Electrical & Electronic Equipment) and ELV (End of Life Vehicles) requirements.
Products do not contain mercury, lead, hexavalent chromium, cadmium, CFC, HCFC, flame retardants or solvents in concentrations that exceed specifications in the regulations.

Regrinding:
Wet or dry grinding can produce potentially hazardous dusts or mists that can irritate skin, eyes, nose, throat and result in lung damage or disease. To avoid injury use proper safety precautions and protective equipment.

Disposal:
Niagara Cutter will buy back solid carbide tools for recycling. Solid carbide tools should be separated from other metal waste (steel, aluminium, copper etc).
All packing material is fully recyclable.



CUSTOMIZED TOOLING

A significant portion of Niagara´s offering is in the form of customized tools. Niagara engineers work in close cooperation with customers to provide the best possible solution to specific machining challenges where the demands stretch beyond standard tools. We also offer a quick delivery solution for standard tools requiring simple modifications to meet specific dimensional requirements. Fast turnaround from quotation to product delivery is a hallmark of our modified tool program.

RECONDITIONING CUTS COST AND TOOL INVENTORY

Niagara's modern carbide tools offer remarkable performance by utilizing the best combinations of carbide substrates with high wear resistant coatings, optimized cutting geometry and controlled edge preparation.

However good a tool is, as part of their function, they will eventually show signs of wear on the cutting edge. Controlling this wear and the timely replacement of the tool will allow the used tool to be reconditioned, thus reducing tool investment costs.

Your solid carbide tools are reconditioned using the same advanced technology and care that we use to manufacture our new products. These tools are remanufactured to our normal high standards with the original Niagara geometry, edge preparation and coating processes.

For futher information on custom, modified and reconditioned tools please contact your local Authorized Distributor.

RECYCLING

Tungsten carbide is a valuable and limited resource. Estimations of the existing reserves of tungsten suggest that with present consumption resources will be depleted within 40 - 100 years. For the last few years demand has been higher than production and a general trend towards higher consumption can clearly be seen.

Recycling of used material compared to the mining of virgin material reduces the environmental impact. By recycling we can prolong the time before the resources are at an end and reduce energy consumption by approximately 35%. At the same time the CO_2 emissions are reduced by approximately 40%.

Contact your local Authorized Distributor to set-up your recycling program.

For customer service, call:
1-248-528-5220

For technical assistance, call:
1-800-832-8326

P-1405-45000 GT14-506

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