HIGH PERFORMANCE TOOL CATALOG

Aerospace • Medical • Die & Mold • Engineering

MELIN TOOL COMPANY

SPT SUNCOAST INC. PRECISION TOOLS ESTABLISHED 1963

2016

manufactured in USA

Melin High Performance Catalog

- Aluminum Alloys
- Titanium Alloys
- Stainless & Steel Alloys
- Nickel & Cobalt Based Alloys
- Hardened Material > 45 HRc
- Graphite & Composite Materials

www.melintool.com

MELIN TOOL HIGH PERFORMANCE TOOL CATALOG 2016

About Us

Family owned and operated since 1940, Melin Tool began as one of the early manufacturers of end mills. Today, Melin Tool continues to be a leader in offering an ever-expanding product line of our high quality High Performance end mills and other cutting tools such as Drills, Thread Mills, Countersinks, & Specialty Tools.

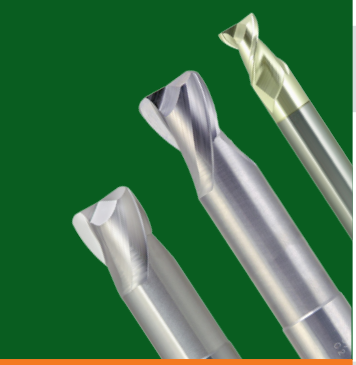
Our strategy is to manufacture precision rotary shank cutting tools, provide technical solutions, be easy to do business with and exceed all customer expectations.

We are committed to market and support our products and services through industrial distributor partners.

At Melin Tool Company, It is understood that we will not prosper without COMPLETE customer satisfaction. Success at Melin is measured by how well we serve the customers who distribute and use our products.

Quality is an attitude at Melin. It is an every day, every tool, every order commitment to supply products which meet or exceed ALL of the detailed specifications of our customers. Another major quality goal is to monitor and , where possible, improve upon the processes used to achieve this HIGH QUALITY.

Melin Is Committed To Our Customers



ALUMINUM ALLOYS

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TITANIUM & HIGH TEMP ALLOYS

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FERROUS MATERIALS

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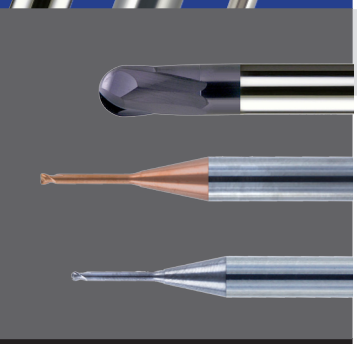

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VARIOUS MATERIALS

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TECHNICAL INFO:
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Aluminum Alloys

Aluminum Alloys

15

2 Flute, 30° for High Velocity Machining
Series: HVMG2

17

2 Flute, 30° for High Velocity Machining
Series: HVMG2-M_M_ *(metric)*

18

3 Flute, 37° for High Velocity Machining
Series: HVMG3

20

3 Flute, 37° for High Velocity Machining
Series: HVMG3-M_M_ *(metric)*

21

3 Flute, Rougher for High Velocity Machining
Series: HVRMG3 *- New*

22

3 Flute, Rougher for High Velocity Machining
Series: HVRMG3-M_M_ *(metric)- New*

23

3 Flute, 37° End Mill
Series: EXMG

26

3 Flute, 37° End Mill
Series: EXMG-M_M_ *(metric)*

28

2 Flute, 45° End Mill
Series: AXMG45

34

2 Flute, 45° End Mill
Series: AXMG45-M_M *(metric)*

Aluminum Alloys

36

2 Flute, 45° Ball Nose
Series: AXMG45-__-B

37

5 Flute, 45° for Trochoidal Toolpathing
Series: GXMG5

39

5 Flute, 45° for Trochoidal Toolpathing
Series: GXMG5-M_M_ *(metric)*

40

2 Flute, 35° for light duty CNC Machines
Series: ALMG

40

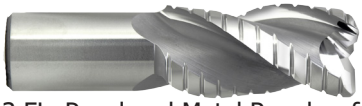
2 Flute, 35° for light duty CNC Machines
Series: ALMG-M_M_ *(metric)*

41

3 Flute, 35° for light duty CNC Machines
Series: ELMG

41

3 Flute, 35° for light duty CNC Machines
Series: ELMG-M_M_ *(metric)*

42

3 FL, Powdered Metal Rougher for Aggressive Machining
Series: ERFPM

43

2 Flute, 38° Helix Cobalt End Mills
Series: AA

44

2 Flute, Ball Nose 38° Helix Cobalt End Mills
Series: AA-__-B

Titanium & High Temp Alloys

Titanium & High Temp Alloys

46

3 Flute - Variable FL, HP Roughing & Finishing Applications
Series: VXMG3T - *New*

47

3 Flute - Variable FL, HP Roughing & Finishing Applications
Series: VXMG3T-M__ *(metric)* - *New*

48

4 Flute - Variable FL, High Performance Roughing Applications
Series: VXMG4T

53

4 Flute - Variable FL, HP Roughing Applications- SAFE LOCK
Series: VXMG4T-__-SL

54

4 Flute - Variable FL, High Performance Roughing Applications
Series: VXMG4T-M_M_ *(metric)*

57

4 Flute - Variable FL, Ball Nose HP Roughing Applications
Series: VXMG4T-__-B

58

4 Flute - Variable FL, Ball Nose HP Roughing Applications
Series: VXMG4T-M_M_-B *(metric)*

59

5 Flute - Variable FL, High Performance Roughing Applications
Series: VXMG5T

63

5 Flute - Variable FL, High Performance Roughing Applications
Series: VXMG5T-__-SL -SAFE LOCK

64

5 Flute - Variable FL, High Performance Roughing Applications
Series: VXMG5T-M_M *(metric)*

65

6 Flute - Variable FL, Roughing & Finishing Applications
Series: VXMG6T-__-nACRo - *New*

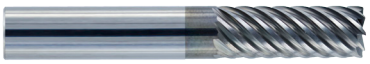
Titanium & High Temp Alloys

66

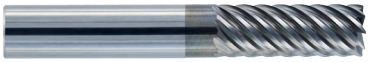
7 Flute - Variable FL, Light to Med Finishing Applications
Series: VXMG7-__-nACRo

67

7 Flute - Variable FL, Light to Med Finishing Applications
Series: VXMG7-M_M_-nACRo *(metric)*

68 

9 Flute - Variable FL, Fine Finishing Applications
Series: VXMG9-__-nACRo

69 

9 Flute - Variable FL, Fine Finishing Applications
Series: VXMG9-M_M_-nACRo *(metric)*

70

10 Flute, Variable FL for Ultra Fine-Finishing Applications
Series: VXMG10 - *New*

72

3 Flute, 35° End Mill for Stainless Steel
Series: EMG35

72

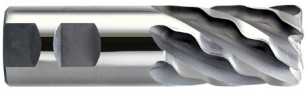
3 Flute, 35° End Mill for Stainless Steel
Series: EMG35-M_M_ *(metric)*

73

5 Flute, 45° for Stainless Steel/Nickel Base Alloys
Series: GMG

74

5 Flute, 45° for Stainless Steel/Nickel Base Alloys
Series: GMG-M_M_ *(metric)*

75 

Multi Flute, Cobalt Aerocut Roughing End Mill
Series: CCAC4 & CCAC6

Ferrous Materials

Ferrous Alloys

78
4 Flute, Variable FL for High Performance roughing applications
Series: VXMG4

83
4 Flute, Variable FL for High Performance roughing applications
Series: VXMG4-M_M_ *(metric)*

86
5 Flute, Variable FL for High Performance roughing applications
Series: VXMG5

89
5 Flute, Variable FL for High Performance roughing applications
Series: VXMG5-M_M_ *(metric)*

90
7 Flute, Variable FL for semi roughing & finishing applications
Series: VXMG7

91
7 Flute, Variable FL for semi roughing & finishing applications
Series: VXMG7-M_M_ *(metric)*

92
9 Flute, Variable FL for optimum fine finish profiling applications
Series: VXMG9

93
9 Flute, Variable FL for optimum fine finish profiling applications
Series: VXMG9-M_M_ *(metric)*

Ferrous Alloys

94
4 Flute, Variable FL for general machining applications
Series: VHMG

95
4 Flute, Variable FL for general machining applications
Series: VHMG-M_M_ *(metric)*

96
4 FL, Ball Nose Variable FL for general machining applications
Series: VHMG-_-B

96
5 Flute, Variable FL for general machining applications
Series: GVHMG

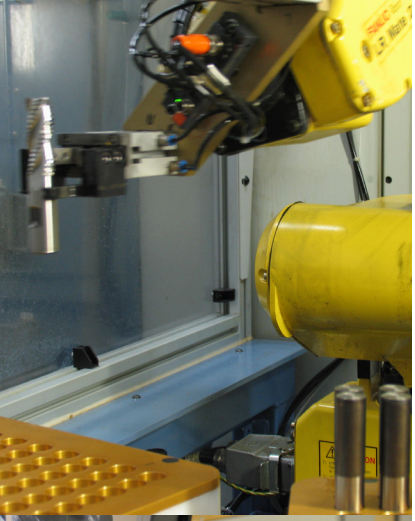
97
3 FL, 60° general machining application in Stainless Steels
Series: EMG60

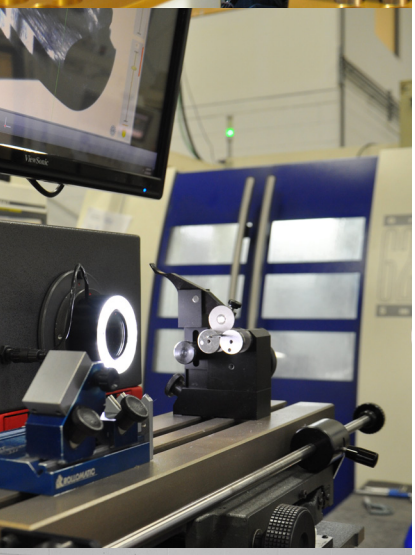
98
Multi Flute, Fine Profile Carbide Roughing End Mill
Series: CRMG

98
Multi Flute, Fine Profile Carbide Roughing End Mill
Series: CRMG-M_M_ *(metric)*

99
Multi Flute, Rougher Finisher
Series: CRFMG

99
4 Flute, Rougher Finisher
Series: CRFMG-M_M_ *(metric)*

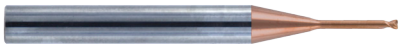




Die & Mold Steels

For Hard Materials

100



2 Flute, Corner Rad for Multi Axis Machining - Rib Cutting
Series: HMG1-__SF-R *- New*

101

2 Flute, Corner Rad for Multi Axis Machining- Rib Cutting
Series: HMG1-M__SF-R *(metric)- New*

102

2 Flute, Ball Nose for Z-Axis Machining- Rib Cutting
Series: HMG1-__-SF-B *- New*

103

2 Flute, Ball Nose for Z-Axis Machining - Rib Cutting
Series: HMG1-M__-SF-B *(metric)- New*

104

2 Flute, Ball Nose for Hard Milling in Die & Mold Application
Series: HMG-__-B

104

2 Flute, Ball Nose for Hard Milling in Die & Mold Application
Series: HMG-M_M_-B *(metric)*

105

6 Flute, 45° Profiling End Mill
Series: CCMG45

105

6 Flute, 45° Profiling End Mill
Series: CCMG45-M_M_ *(metric)*

Graphites & Composites

CVD Diamond Coating

106

2 Flute, **CVD** Diamond Coating
Series: AMG-__-DIA

106

2 Flute, Ball Nose **CVD** Diamond
Series: AMG-__-B-DIA

107

4 Flute, **CVD** Diamond Coating
Series: CCMG-__-DIA

107

4 Flute, Ball Nose **CVD** Diamond
Series: CCMG-___B-DIA

108

Multi FL, Composite Router
Series: CRMGD - *New*

108

Multi FL, Composite Router
Series: CRMGD-M_M_ *(metric)* - *New*

DLC Amorphous Coating

110

2 Flute, **DLC** Amorphous Diamond
Series: AMG-__-DLC

110

2 Flute, Ball Nose **DLC** Amorphous
Series: AMG-__-B-DLC

111

3 Flute, **DLC** Amorphous Diamond
Series: EMG-__-DLC

111

3 Flute, Ball Nose **DLC** Amorphous
Series: EMG-__-B-DLC

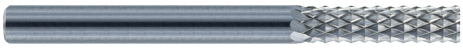
112

4 Flute, **DLC** Amorphous Diamond
Series: CCMG-__-DLC

113

4 Flute, Ball Nose **DLC** Amorphous
Series: CCMG-__-B-DLC

Fiberglass Routers

109 

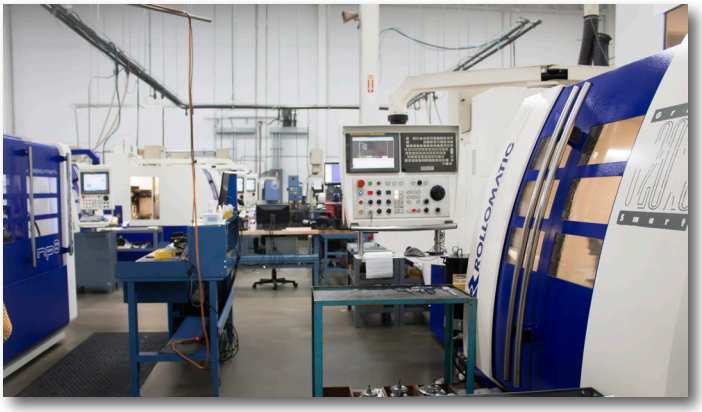
Multi FL, Fiberglass Routers - No End Cut
Series: FRMG-__NE - *New*

109

Multi FL, Fiberglass Routers - Sq End Cut
Series: FRMG - *New*

109

Multi FL, Fiberglass Routers - Drill Point End Cut
Series: FRMG-__-DP - *New*



Various Material

Spherical Ball

114

2 Flute, 220° Spherical Ball End Mill
Series: VBMG2

114

2 Flute, 220° Spherical Ball End Mill
Series: VBMG2-M_M_ *(metric)*

115

4 Flute, 220° Spherical Ball End Mill
Series: VBMG4

115

4 Flute, 220° Spherical Ball End Mill
Series: VBMG4-M_M_ *(metric)*

116

Multi Flute, 270° Spherical Ball End Mill
Series: VBMG_-__-270 - *New*

117

Multi Flute, 300° Spherical Ball End Mill
Series: VBMG_-__-300 - *New*

High Feed Cutters

118

2 Flute, High Feed Carbide End Mills
Series: HXMG2 *(inch & metric)* - *New*

119

4 Flute, High Feed Carbide End Mills
Series: HXMG4 - *New*

119

4 Flute, High Feed Carbide End Mills
Series: HXMG4-M_M_ *(metric)* - *New*

120

4 Flute, High Feed Carbide End Mills
Series: HXMG4-__-HM (hard milling) - *New*

120

4 Flute, High Feed Carbide End Mills
Series: HXMG4-M_M_-HM (hard milling) - *New*

Drills

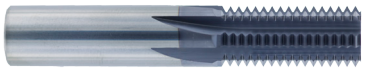
121

2 Flute, 140° Pt Carbide Drill Coolant Hole
Series: CDR

126

2 Flute, 140° Pt Carbide Drill without Coolant hole
Series: MDR

Thread Mills

130 

Multi Flute, 60° Straight Flute, UN Thread
Series: TM-__-S

131

Multi Flute, 60° Helical Flute, UN Thread
Series: TM-__-H

132

Multi Flute, 60° Helical Flute, UN Thread
Series: TM-M__-H *(metric)*

133

Multi Flute, NPT Thread , Straight & Helical FL
Series: TM-__-NPT-_

134

Multi Flute, NPTF Thread , Straight & Helical FL
Series: TM-__-NPTF-_

135

Multi Flute, Single Form Thread
Series: TM

Technical Info:
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HIGH PERFORMANCE COATINGS:

-TiCN
-AlTiN
-nACo
-nACRo
-ZrN
-DLC Diamond
-CVD Diamond
-TiB2
-TiXCo

COATING

IN HOUSE coating allows us to provide you with the best coating for your applications. We can put any coating, EVEN DIAMOND on any tool style and size you need!

Melin Tool operates our own, **IN-HOUSE** PVD (Physical Vapor Deposition) coating work center in order to provide our customers with the highest level of consistency in coating composition and the most FLEXIBILITY in coating selection. We've chosen Platit coating centers because of the superior performance their coating process provides for Melin's solid round cutting tools. With Platit's revolutionary and patented LARC® (Lateral Rotating Cathodes) and CERC® (Central Rotating Cathodes) technologies, Melin is able to provide far greater consistency from batch to batch and superior adhesion for its conventional coatings, as well as unique, specially tailored coatings designed for enhancing performance in specific applications.

We currently house several **PLATIT** machines, including the π311, which has more than 3 times the chamber capacity of our other units. We now have the ability to do next generation high performance triple coatings. Our equipment enables us to coat more tools, provide more coating types and to do so with shorter setups and changeover time. Equally important, we can provide our customers with unique coatings for their specific application to truly maximize the performance achievable with Melin cutting tools.

THE MANUFACTURER ADVANTAGE -

Melin's highest quality manufacturing on state-of-the-art CNC equipment ensures superior performance with reliable, as well as consistent quality!

Test Melin PVD Coatings and prove to yourself…

Not all coatings are the same.

COATING PROPERTIES

		Hardness	Coefficient of Friction	Thermal Stability	1st Digit of Coated EDP
TiN	Titanium Nitride	24GPa	0.40	1112F (600C)	2
TiCN	Titanium Carbonitride	37GPa	0.25	752F (400C)	4
AlTiN	Aluminum Titanium Nitride	38GPa	0.60	1472F (800C)	5
nACo	Aluminum Titanium Nitride + Silicon Nitride	45GPa	0.40	2192F (1200C)	8
nACRo	Aluminum Chrome Nitride + Silicon Nitride	40GPa	0.45	2012F (1100C)	3
ZrN	Zirconium Nitride	25GPa	0.40	1049F (565C)	6
TiXCo	Titanium Silicon Nitride + nACo	45GPa	0.35	1832F (1000C)	-
TiB_2	Titanium DiBoride	39GPa	0.45	1562F (850C)	-
DIA	CVD Diamond	80-100GPa	0.10	1094F (590C)	-
DLC	DLC Amorphous Diamond	50GPa	0.10	932F (500C)	7

TiCN

Titanium Carbonitride has an exceptional high hardness & low coefficient of friction coating which provides excellent wear resistance. **TiCN** performs well cutting **Alloy Steels, Stainless Steels, and in high speed cutting where moderate temperatures are generated at the cutting edge**. High lubricity facilitates chip flow, prevents build up and reduces cutting forces & temperature. Provides excellent surface quality on machined components. Also, excellent in applications which require high feed & speed rates.

AlTiN

Aluminum Titanium Nitride is ideal for high temperature cutting operation in many materials such as **Titanium & Nickel Alloys, Co-Cr-Mo, Stainless Steel, Alloy Steels & Cast Iron.** When exposed to higher temperatures, it forms a HARD aluminum oxide layer and, as temperatures increase, the coating insulates the tool transferring heat into the chips. It is an EXTREMELY TOUGH coating that will hold up in heavy and interrupted cuts. Contains a higher aluminum content than the similar TiAlN coating which makes it harder & smoother than TiAlN. **AlTiN** is ideal for smaller depths of cut and excels in high speed and dry machining applications and when machining hardened steel.

nACo

Aluminum Titanium Nitride + Silicon Nitride coating is extremely well suited for high performance DRILLING and MILLING applications. It has a great ability to resist high heat up to 1200°C before it starts to oxidize and break down. It has a tough core with HIGH wear and heat resistance. A top layer with extreme high Nanohardness. A very low coefficient of friction for less resistance. Up to (1-7) µm thickness in coating layers for the most protection against heat and tool breakdown.

nACRo

Aluminum Chrome Nitride + Silicon Nitride coating is an excellent coating for high ABRASIVE wear and HEAT resistance. A top layer with high hardness and toughness. Heat resistance of up to 1100°C before it starts to oxidize and break down. It has a wide application range and is good in **Super Alloys** applications. It has a very low coefficient of friction for less resistance (0.35). Best in very tough operations. Up to (1-7) µm thickness in coating layers. A premium coating for those difficult applications.

ZrN

Zirconium Nitride coating is a coating developed specifically for machining **ALUMINUM, yet** excellent when **machining all Non-Ferrous materials**. **ZrN** is also highly recommended for machining **Fiberglass, Nylon and most Polymer** materials. The Maximum working temperature = 600°C/1110°F. It has a coating thickness of 1 to 2 microns. The coefficient of friction against steel (dry) is 0.55 and the micro hardness (HV 0.05) is equal to 3000.

CVD Diamond

CVD diamond coating takes place in a vacuum chamber using a hot-filament, chemical vapor deposition (**CVD**) process. Carbon gases are introduced into the vacuum chamber where high temperatures cause carbon atoms to re-bond into a 100% pure crystalline diamond structure. The crystalline diamond slowly grows on the surface of cutting tools, forming a continuous coating of up to 20 microns in thickness. **CVD diamond** coated end mills are a standard choice among **Mold and Die shops for Machining Graphite**, and among manufacturers machining component parts made of **Hard Carbon, High-Silicon Aluminum and other Non-Ferrous materials.**

DLC Diamond

DLC amorphous diamond coating is a less expensive alternative to CVD Diamond. This PVD process of applying **DLC** coating produces hard, smooth, hydrogen free diamond like carbon **(DLC)** film. This coating can be applied to any uncoated carbide tool (CVD Diamond requires a special carbide substrate).

TiB_2

Titanium DiBoride is well suited for high performance drilling and milling. It is a tough coating with a high hardness that works well in **Titanium, Magnesium Alloys and Aluminum** (>10% Si). It is a very smooth coating with a very low affinity to aluminum which prevents edge build up.

TiXCo

TiXCo is a nACo based coating with a top layer of Titanium Silicon Nitride. It is a very hard coating with a low coefficient of friction. It is best suited for **Super Hard Drilling and milling of Die and Mold Steels**. It can also be used in **Graphite and some Composites**.

High Performance Coatings:
- TICN
- AlTiN
- nACo
- nACRo
- ZrN
- DLC Diamond
- CVD Diamond
- TiB_2
-TiXCo

COATING

Conventional Coatings

TiCN -
Titanium Carbonitride

AlTiN -
Aluminum Titanium Nitride

High Performance Coatings

nACo -
Aluminum
Titanium Nitride +
Silicon Nitride

nACRo -
Aluminum
Chrome Nitride +
Silicon Nitride

Diamond -
CVD Diamond

Amorphous Diamond-
DLC

TiB_2-
Zirconium Nitride

TiXCo -
TiN-nACo-TiSiN

ZrN -
Zirconium Nitride

Material	Hardness	TiCN	AlTiN	nACo	nACRo	ZrN	DIA	DLC	TiB_2	TiXCo
Austenitic Stainless Steel	< 35 HRc	*	*		X					
Martinsitic Stainless Steel	< 35 HRc	*	*		X					
Martinsitic Stainless Steel	>= 35 HRc	*	*		X					
PH Stainless Steel	< 35 HRc	*	*		X					
PH Stainless Steel	>= 35 HRc	*	*		X					
Ni, Co, Fe Based Super Alloys		*	*		X					
Titanium		*	*		X				*	
Alloy Steel	16-23 HRc	*	*	X						
Alloy Steel	23-38 HRc	*	*	X						
Alloy Steel	> 38 HRc	*	*	X						X
Carbon Steel	16-23 HRc	*	*	X						
Carbon Steel	23-38 HRc	*	*	X						
Carbon Steel	> 38 HRc	*	*	X						
Low Carbon Steel	13-23 HRc	*	*	X						
Low Carbon Steel	23-38 HRc	*	*	X						
Low Carbon Steel	> 38 HRc	*	*	X						X
Gray Cast Iron	18-22 HRc	X		*	*					
Nodular Cast Iron	22-32 HRc	X		*	*					
Aluminium <10% Si		*				X		X	X	
Aluminium >10% Si		*			*		X			
Graphite							X	*		*
Composites							X	*		*
Hardened Steel	>45 HRc			X						X

X = For BEST performance
* = Additional recommended coating options

How To Order A Tool With A Non-Standard Coating

How To Order Coating:

2 ways to order a coating on a bright tool

1 Add the coating term, -TiCN, -AlTiN, -nACo, -nACRo, -ZrN, TiB_2, or -DLC after the tool name and diameter.

Example: Bright Part - GMG-1616
AlTiN Part - GMG-1616-**ALTIN**

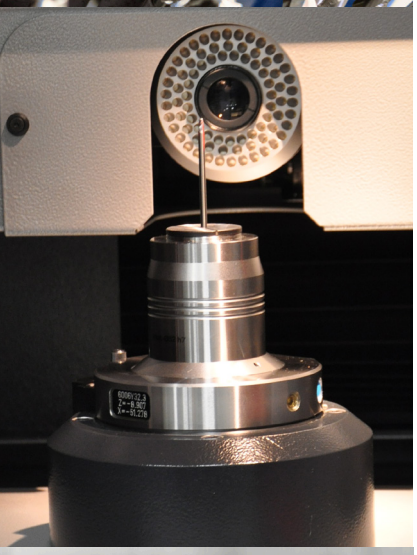
2 Change first digit of the EDP to the specific number designated for each coating. See chart below.

Example: **Bright** Part & EDP - EXMG-1616 = EDP 11779
nACo Part & EDP - EXMG-1616-nACo = EDP 81779

NOTE: *EDPs with "H" as the leading digit: DO NOT change the EDP structure. - Please call customer service for a new "H" coated EDP or add the desired coating to the end of the part name. Also, TiB_2 & CVD Diamond is only offered on specific series throughout this catalog or by special request.*

Leading Digit of EDP	Coating Designation
3____	-nACRo
4____	-TiCN
5____	-AlTiN
6____	-ZrN
7____	-DLC
8____	-nACo

Preferred Coating: Melin has listed what we believe to be the most efficient coating throughout the High Performance Catalog. Our preferred coating is our recommended and stocked coating. You can always order any of the Melin coatings on our bright parts, these are our suggestions.



Icon Glossary

Icon Glossary:

- -Tool Characteristics
- -Coating
- -Target Workpiece Mat.
- -ISO Material Group
- -Machining Operations

Tool Characteristics

SUBSTRATE: CARBIDE | HSSCo PM | HSSCo M42 | HSS — Tool substrate for each tool series

FLUTES: 2 | 3 | 4 | 5 | 6 | 7 | 9 | 10 — # of flutes for each series.

HELIX: 30° | 40° | 45° | VARIABLE | 30° — Helix angle for each series.

TOLERANCE: +.000 -.002 | +.0005 -.0005 <1/8 | +.000 -.002 ≥1/8 | +.000mm -.050mm | +.013 -.013 <3mm | +.000 -.05 ≥3mm — Cutting diameter tolerance

CORNER: SQUARE | BALL END | CHAMFER | RADIUS | SPHERICAL BALL | CORNER ROUND | DRILL POINT — Corner style for each series.

PROFILE: Coarse Pitch | Fine Pitch | Rough/Finish | Rougher | 60° — Profile of cutting edge

MISC.: Center Cutting | Non - Center Cutting

Coatings

COATING TYPES: Bright | TiCN | AlTiN | nACo | nACRo | ZrN | CVD Diamond | DLC Diamond | TiB2 | TiXCo — Coated icon when series comes coated as standard

Bright TiCN | Bright AlTiN | Bright nACo | Bright nACRo | Bright ZrN | Bright TiCN ZrN | TiXCo nACo — Coated icon when series comes standard bright/or coated with a recommended preferred coating or additional stocked coating option

Targeted Workpiece Hardness

HRC: HRc <40 | HRc <48 | HRc <54 | HRc <70 — Range of work piece material hardness

ISO Material Group

CODE	MATERIAL GROUP	MATERIAL SELECTION	CODE	MATERIAL GROUP	MATERIAL SELECTION
P	Steels	Carbon Steel, Alloy Steels, Die Steels 1018, 1045, 4140,D-2	K	Cast Iron	Grey-Cast Iron & Ductile Iron Class-20, (60-40-18)
M	Stainless	Martensitic & Austenitic 304, 316, 312, 316L, 421, 420, 17-4PH	S	Special Alloys	Inconel, Hastelloy,Titanium,etc Inconel 718, Hastello B, 6Al-4V
H	Hardened Steels	D-2, 4340, H-13	N	Non-Ferrous	Aluminum-6060-T6, 7075, Plastics, Delron, Graphite, Fiberglass

Machining Operations

SLOT | PROFILE | PLUNGING | RAMPING | PROFILE CUTTING | DRILLING | CHAMFER | DEEP CAVITY

RADIUS | UNDERCUT | SLOT WITH RADIUS | TROCHOIDAL MILLING | HELICAL INTERPOLATION | FACE MILLING | 3D PROFILE MILLING | THREAD MILLING

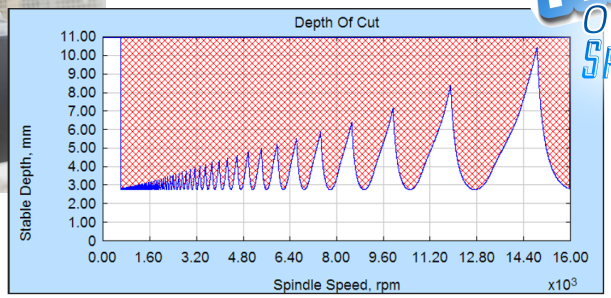
Melin Features
-Metal Max Testing
-FAST TurnAround SPL
-Second Look Quoting

FEATURES

Melin continues to provide our customers with the latest technology to enhance the benefits our high performance tools already provide. Listed below are specialized and customizable services and features Melin can ADD to our standard high performance offering

MetalMax Testing

Melin's EXPERT technical field application engineers are available to provide FREE on-site, *"tap testing"* analysis of your machine, for fine tuning cutting parameters to dramatically reduce vibration and optimize productivity. Contact your local distributor, our regional sales rep, Melin customer service, or visit us Online to submit a request. www.melintool.com



Free On The Spindle

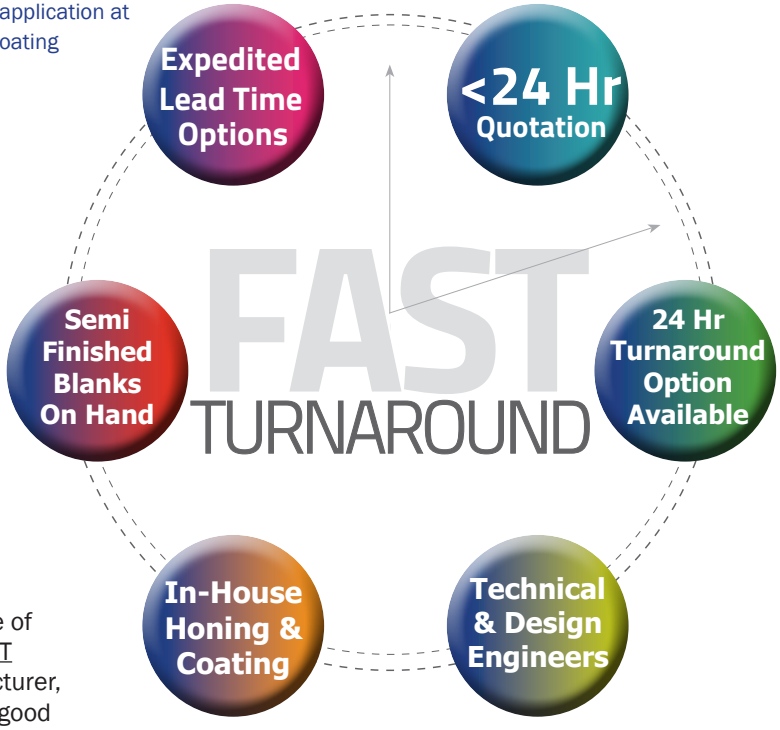
FAST Delivery On Specials

Melin Now Offers Expedited Special Solutions

Get your special QUICKLY! Getting the MOST from your tooling & maximizing performance, requires completely aligned tooling & set up process' tailored to the specific application at hand. Many times, that requires customizing the cutting tool geometry and coating to provide the least amount of machining time.

- Melin Tool is set up to deliver what you need... FAST!

- **Quotations Guaranteed within 24 Hours**
  Most often "SAME DAY"
- **Expedited Delivery Option on Specials Available By Request**
- **Simple, Complex & Custom Design Included**
- **24 Hour Turn Around Is Available On Certain Series**



Need A Second Look?

Sometimes the job **can't wait.** We understand... and can take care of you. Our manufacturing processes are highly flexible to enable FAST priority adjustments just for this purpose. We're a LARGE manufacturer, with small business maneuverability. If our quoted lead time isn't good enough.. **Call us. We'll surprise you at how often we can help!**

Call Customer Service to get your quote with expedited lead times: 216-362-4200

Shank Options

All Carbide Melin Tools come standard with our cylindrically ground shanks with H6 fit specifications, unless stated as different on an individual series basis.

Our options for shank styles are listed below

Standard

A plain shank with a matted finish and H6 tolerance specifications, particular to the tool diameter

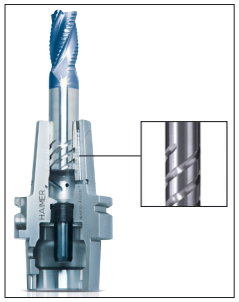
Weldon Flat

A flat ground into the shank for locking methods of tool holders, that fully complies with industry specifications of the dimensions and positioning location

Rough Grip

Blasted shank aids in further assisting in the prevention of slippage inside the tool holder while still maintaining H6 tolerance, some customers prefer to have the shank sand-blasted, which reduces the surface finish of the tool's shank and helps to reduce pull out.

Haimer Safe Lock™



This licensed system offers the pull out protection for your round shank tools! The shanks have helical grooves ground into our shanks. Combined with the proper tool holding system, this technology prevents the tool from pulling out or spinning while undergoing extreme machining applications. The advantages are that it offers positive form locking mechanism, a NON-SLIP holding solution, a VIBRATION-FREE machining process and extended tool life. Ideal for cutting costly material found in the Aerospace, Energy, and Automotive markets.

Additional Customization Options

Melin Tool provides a variety of additional *customization options*, enabling a user to get faster deliveries, when he needs a customization to maximize the performance our tools can provide in his spindles. Some features can be provided within the same week, *(as long as we have the base tool in stock.)* Others are simply "added features" that are easily and quickly within our standard manufacturing processes, requiring no extra time. Listed below are the customization options our customer service personnel are prepared to quote.

- Coolant Thru Single Hole
- Coolant Thru Double Hole
- Coolant Grooves
- Whistle Notch
- Combination Shank

How To Order Customization Options

Melin Tool makes it easy to order tools with these options. Simply send us an order or quotation request for the base tool you want and add the appropriate characters at the end of the part name or EDP# of that standard tool. You also can simply write a specific note identifying the desired option. Our customer service will advise the price and fastest delivery time for your request - usually within a couple of hours.

How To Order Shank Customization:

Example:

STANDARD: VXMG7-1616

1. **Weldon Flat** - add -WF to end of part name or EDP
   VXMG7-1616-**WF**
2. **Rough Grip**- add -RG to end of part name or EDP
   VXMG7-1616-**RG**
3. **Haimer Safe Lock**- add -SL to end of part name or EDP
   VXMG7-1616-**SL**

HIGH PERFORMANCE PART NAME:

- -Series Name
- -Mill Diameter
- -Shank Diameter
- -End Specifications
- -Coating

Melin Part Number

Series Name — Shank Dia. — Mill Dia. — End Specifications

VXMG-1616-L-ALTIN

Sizes — Coating Types

Series Name:

The series name is a code that references the number of flutes, the material, machining applications, and being either high performance or a general purpose cutting tool.

(miscellaneous series may not reference every product detail in series name)

EXAMPLES:

C- General Purpose / Cobalt / 4 Flute

E- General Purpose / Cobalt / 3 Flute

EMG- General Purpose / Carbide / 3 Flute

EXMG- High Performance / Carbide / 3 Flute

Coating Types:

TICN- Titanium Carbonitride

ALTIN- Aluminum Titanium Nitride

NACO- Aluminum Titanium Nitride + Silicon Nitride

NACRO- Aluminum Chrome Nitride +Silicon Nitride

ZRN- Zirconium Nitride

TiB_2- Titanium DiBoride

TiXCo- Titanium Silicon Nitride + nACo

DIA- CVD Diamond

DLC- Amorphous Diamond

Sizes (Mill & Shank Diameter):

CODES & FRACTIONAL EQUIVALENTS			
code	fraction	code	fraction
0	1/	11	11/
1	1/	12	3/
2	1/	13	13/
3	3/	14	7/
4	1/	15	15/
5	5/	16	1/
6	3/	17	17/
7	7/	18	9/
8	1/	20	5/
9	9/	24	3/
10	5/	28	7/
11	11/	32	1

EXAMPLES:

Metric- 7mm DIA x 8mm SHK = CCMG- M8M7

End Specifications:

FLUTE LENGTH:

- **-S:** Stub
- **-M:** Medium
- **-MM:** Medium/Medium
- **-ML:** Medium/Long
- **-L:** Long
- **-LL:** Long/Long
- **-LF:** Long Flute
- **-E:** Extra Long
- **-EL:** Extra Long
- **-EE:** Extra/Extra Long
- **-3X:** 3x Length Drill
- **-5X:** 5x Length Drill
- **-7X:** 7x Length Drill
- **-SF:** Short Flute
- **-LF:** Long Flute
- **-HM:** Hard Material

END STYLE:

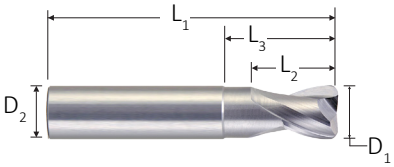
- **-B:** Ball End
- **-H:** Helical
- **-DP:** Drill Point
- **-NE:** No End

RADIUS STYLE:

- **-NR:** No Radius
- **-R:** Radius

NECK STYLE:

- **-NN:** No Neck
- **-N:** Extended Neck

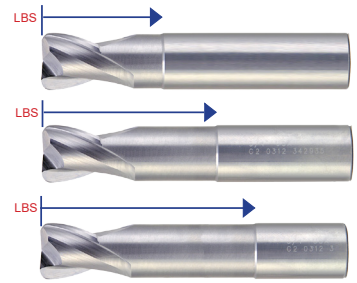


2 FLUTE • 30° FOR HIGH VELOCITY MACHINING

Carbide | 2 | Center Cutting | 30° | Bright TiCN ZrN | +.000 -.002 | Radius | HRc <40 | N

Additional coatings - nACRo, DLC & TiB_2 available upon request

- Designed for aggressive machining
- Unique geometry reduces cutting pressures and vibration at high feed rates
- Highly polished OD and flute face prevents chip build-up



No Neck Options Allow You To Order the specific LBS Size You Need!

SERIES: HVMG2

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
1/4	1/4	1/2	1-1/2	4	0.030	HVMG2-808-R030	15007	45007	65007
1/4	1/4	1/2	1-1/2	4	0.060	HVMG2-808-R060	12154	42154	62154
1/4	1/4	1/2	no neck	4	0.030	HVMG2-808-NNR030	15000	45000	65000
1/4	1/4	1/2	no neck	4	0.060	HVMG2-808-NNR060	12158	42158	62158
1/4	1/4	5/8	1-1/2	4	0.030	HVMG2-808-L1R030	15006	45006	65006
1/4	1/4	5/8	1-1/2	4	0.060	HVMG2-808-L1R060	12162	42162	62162
3/8	3/8	1/2	1-1/4	3	0.030	HVMG2-1212-R030	15010	45010	65010
3/8	3/8	1/2	1-1/4	3	0.060	HVMG2-1212-R060	12166	42166	62166
3/8	3/8	1/2	2-1/8	4	0.030	HVMG2-1212-L1R030	15011	45011	65011
3/8	3/8	1/2	2-1/8	4	0.060	HVMG2-1212-L1R060	12170	42170	62170
3/8	3/8	1/2	no neck	4	0.030	HVMG2-1212-NNR030	15009	45009	65009
3/8	3/8	1/2	no neck	4	0.060	HVMG2-1212-NNR060	12174	42174	62174
1/2	1/2	5/8	1-1/4	3	0.030	HVMG2-1616-R030	15013	45013	65013
1/2	1/2	5/8	1-1/4	3	0.060	HVMG2-1616-R060	12180	42180	62180
1/2	1/2	5/8	1-1/4	3	0.090	HVMG2-1616-R090	12188	42188	62188
1/2	1/2	5/8	2-1/8	4	0.030	HVMG2-1616-L1R030	15001	45001	65001
1/2	1/2	5/8	2-1/8	4	0.060	HVMG2-1616-L1R060	15002	45002	65002
1/2	1/2	5/8	2-1/8	4	0.090	HVMG2-1616-L1R090	12190	42190	62190
1/2	1/2	5/8	2-1/8	4	0.120	HVMG2-1616-L1R120	12194	42194	62194
1/2	1/2	5/8	3-1/8	5	0.030	HVMG2-1616-L2R030	12205	42205	62205
1/2	1/2	5/8	3-1/8	5	0.060	HVMG2-1616-L2R060	12206	42206	62206
1/2	1/2	5/8	3-1/8	5	0.090	HVMG2-1616-L2R090	12207	42207	62207
1/2	1/2	5/8	3-1/8	5	0.120	HVMG2-1616-L2R120	12208	42208	62208
1/2	1/2	5/8	no neck	5	0.030	HVMG2-1616-NNR030	15012	45012	65012
1/2	1/2	5/8	no neck	5	0.060	HVMG2-1616-NNR060	12209	42209	62209
1/2	1/2	5/8	no neck	5	0.090	HVMG2-1616-NNR090	12210	42210	62210
1/2	1/2	5/8	no neck	5	0.120	HVMG2-1616-NNR120	12211	42211	62211
5/8	5/8	3/4	3-1/8	5	0.030	HVMG2-2020-R030	14792	44792	64792
5/8	5/8	3/4	3-1/8	5	0.060	HVMG2-2020-R060	12212	42212	62212
5/8	5/8	3/4	3-1/8	5	0.090	HVMG2-2020-R090	15015	45015	65015
5/8	5/8	3/4	3-1/8	5	0.120	HVMG2-2020-R120	12213	42213	62213

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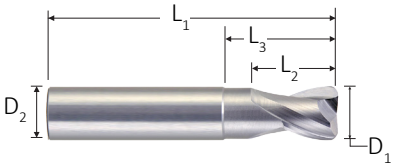
sizes continued on next page

Aluminum Alloys

2 Flute • 30° for high velocity machining



Series: HVMG2

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
5/8	5/8	3/4	no neck	5	0.030	HVMG2-2020-NNR030	15014	45014	65014
5/8	5/8	3/4	no neck	5	0.060	HVMG2-2020-NNR060	12214	42214	62214
5/8	5/8	3/4	no neck	5	0.090	HVMG2-2020-NNR090	12215	42215	62215
5/8	5/8	3/4	no neck	5	0.120	HVMG2-2020-NNR120	12218	42218	62218
3/4	3/4	3/4	2	4	0.030	HVMG2-2424-R030	15016	45016	65016
3/4	3/4	3/4	2	4	0.060	HVMG2-2424-R060	15003	45003	65003
3/4	3/4	3/4	2	4	0.090	HVMG2-2424-R090	12219	42219	62219
3/4	3/4	3/4	2	4	0.120	HVMG2-2424-R120	15004	45004	65004
3/4	3/4	1	3	5	0.030	HVMG2-2424-L1R030	14798	44798	64798
3/4	3/4	1	3	5	0.060	HVMG2-2424-L1R060	15008	45008	65008
3/4	3/4	1	3	5	0.090	HVMG2-2424-L1R090	12225	42225	62225
3/4	3/4	1	3	5	0.120	HVMG2-2424-L1R120	12226	42226	62226
3/4	3/4	1	no neck	6	0.030	HVMG2-2424-NNR030	14543	44543	64543
3/4	3/4	1	no neck	6	0.060	HVMG2-2424-NNR060	14669	44669	64669
3/4	3/4	1	no neck	6	0.090	HVMG2-2424-NNR090	12227	42227	62227
3/4	3/4	1	no neck	6	0.120	HVMG2-2424-NNR120	12228	42228	62228
1	1	3/4	2	4	0.030	HVMG2-3232-R030	12229	42229	62229
1	1	3/4	2	4	0.060	HVMG2-3232-R060	14797	44797	64797
1	1	3/4	2	4	0.090	HVMG2-3232-R090	15201	45201	65201
1	1	3/4	2	4	0.120	HVMG2-3232-R120	15005	45005	65005
1	1	1-1/4	2-3/4	5	0.030	HVMG2-3232-L1R030	12234	42234	62234
1	1	1-1/4	2-3/4	5	0.060	HVMG2-3232-L1R060	15018	45018	65018
1	1	1-1/4	2-3/4	5	0.090	HVMG2-3232-L1R090	15203	45203	65203
1	1	1-1/4	2-3/4	5	0.120	HVMG2-3232-L1R120	12237	42237	62237
1	1	1-1/4	no neck	6	0.030	HVMG2-3232-NNR030	15017	45017	65017
1	1	1-1/4	no neck	6	0.060	HVMG2-3232-NNR060	14840	44840	64840
1	1	1-1/4	no neck	6	0.090	HVMG2-3232-NNR090	12364	42364	62364
1	1	1-1/4	no neck	6	0.120	HVMG2-3232-NNR120	12367	42367	62367
1-1/4	1-1/4	1-1/4	2	4-1/2	0.030	HVMG2-4040-R030	12369	42369	62369
1-1/4	1-1/4	1-1/4	2	4-1/2	0.060	HVMG2-4040-R060	12496	42496	62496
1-1/4	1-1/4	1-1/4	2	4-1/2	0.090	HVMG2-4040-R090	12510	42510	62510
1-1/4	1-1/4	1-1/4	2	4-1/2	0.120	HVMG2-4040-R120	12514	42514	62514
1-1/4	1-1/4	1-1/4	2-5/8	6	0.030	HVMG2-4040-L1R030	12522	42522	62522
1-1/4	1-1/4	1-1/4	2-5/8	6	0.060	HVMG2-4040-L1R060	14161	44161	64161
1-1/4	1-1/4	1-1/4	2-5/8	6	0.090	HVMG2-4040-L1R090	14163	44163	64163
1-1/4	1-1/4	1-1/4	2-5/8	6	0.120	HVMG2-4040-L1R120	14165	44165	64165

*No Neck - Customize your LBS length

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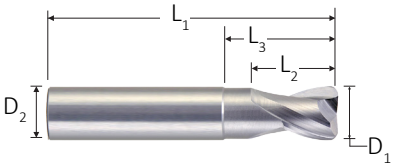


2 FLUTE • 30° FOR HIGH VELOCITY MACHINING

Carbide | 2 | Center Cutting | 30° | Bright TiCN ZrN | +.000mm -.050mm | Radius | HRc <40 | N

Additional coatings - nACRo, DLC & TiB_2 available upon request

- Designed for aggressive machining
- Unique geometry reduces cutting pressures and vibration at high feed rates
- Highly polished OD and flute face prevents chip build-up

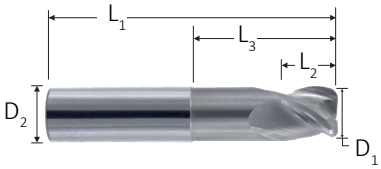
SERIES: HVMG2-M_M_

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
10mm	10mm	12mm	36mm	80mm	1mm	HVMG2-M10M10-R1.0	14167	44167	64167
10mm	10mm	12mm	36mm	80mm	1.5mm	HVMG2-M10M10-R1.5	14169	44169	64169
10mm	10mm	12mm	50mm	100mm	1mm	HVMG2-M10M10-L1R1.0	14171	44171	64171
10mm	10mm	12mm	50mm	100mm	1.5mm	HVMG2-M10M10-L1R1.5	14173	44173	64173
12mm	12mm	14mm	40mm	90mm	1mm	HVMG2-M12M12-R1.0	14175	44175	64175
12mm	12mm	14mm	40mm	90mm	1.5mm	HVMG2-M12M12-R1.5	14672	44672	64672
12mm	12mm	14mm	70mm	125mm	1mm	HVMG2-M12M12-L1R1.0	14673	44673	64673
12mm	12mm	14mm	70mm	125mm	1.5mm	HVMG2-M12M12-L1R1.5	14674	44674	64674
16mm	16mm	18mm	31mm	100mm	1mm	HVMG2-M16M16-R1.0	14675	44675	64675
16mm	16mm	18mm	31mm	100mm	1.5mm	HVMG2-M16M16-R1.5	14676	44676	64676
16mm	16mm	18mm	31mm	100mm	3mm	HVMG2-M16M16-R3.0	14689	44689	64689
16mm	16mm	18mm	80mm	150mm	1mm	HVMG2-M16M16-L1R1.0	14690	44690	64690
16mm	16mm	18mm	80mm	150mm	1.5mm	HVMG2-M16M16-L1R1.5	14691	44691	64691
16mm	16mm	18mm	80mm	150mm	3mm	HVMG2-M16M16-L1R3.0	14692	44692	64692
20mm	20mm	24mm	45mm	100mm	1mm	HVMG2-M20M20-R1.0	14693	44693	64693
20mm	20mm	24mm	45mm	100mm	1.5mm	HVMG2-M20M20-R1.5	14694	44694	64694
20mm	20mm	24mm	45mm	100mm	3mm	HVMG2-M20M20-R3.0	14695	44695	64695
20mm	20mm	24mm	100mm	145mm	1mm	HVMG2-M20M20-L1R1.0	14696	44696	64696
20mm	20mm	24mm	100mm	145mm	1.5mm	HVMG2-M20M20-L1R1.5	14697	44697	64697
20mm	20mm	24mm	100mm	145mm	3mm	HVMG2-M20M20-L1R3.0	14698	44698	64698
25mm	25mm	26mm	30mm	110mm	1mm	HVMG2-M25M25-R1.0	14699	44699	64699
25mm	25mm	26mm	30mm	110mm	1.5mm	HVMG2-M25M25-R1.5	14834	44834	64834
25mm	25mm	26mm	30mm	110mm	3mm	HVMG2-M25M25-R3.0	14835	44835	64835
25mm	25mm	26mm	80mm	145mm	1mm	HVMG2-M25M25-L1R1.0	14837	44837	64837
25mm	25mm	26mm	80mm	145mm	1.5mm	HVMG2-M25M25-L1R1.5	14838	44838	64838
25mm	25mm	26mm	80mm	145mm	3mm	HVMG2-M25M25-L1R3.0	14839	44839	64839

Speed & Feed: page 136

Aluminum Alloys

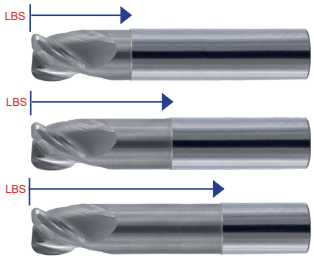
3 Flute • 37° for high velocity machining



Carbide | 3 | Center Cutting | 37° | Bright | TiCN | ZrN | +.000 -.002 | Radius | HRc <40 | N

Additional coatings - nACRo, DLC & TiB_2 available upon request

- Designed for aggressive machining
- Unique geometry reduces cutting pressures and vibration at high feed rates
- Highly polished OD and flute face prevents chip build-up
- Wiper flat for improved floor finishes



No Neck Options Allow You To Order the specific LBS Size You Need!

Series: HVMG3

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
1/4	1/4	1/2	1-1/2	4	0.030	HVMG3-808-R030	14853	44853	64853
1/4	1/4	1/2	1-1/2	4	0.060	HVMG3-808-R060	14854	44854	64854
1/4	1/4	1/2	no neck	4	0.030	HVMG3-808-NNR030	14855	44855	64855
1/4	1/4	1/2	no neck	4	0.060	HVMG3-808-NNR060	14856	44856	64856
1/4	1/4	5/8	1-1/2	4	0.030	HVMG3-808-L1R030	14857	44857	64857
1/4	1/4	5/8	1-1/2	4	0.060	HVMG3-808-L1R060	14858	44858	64858
3/8	3/8	1/2	1-1/4	3	0.030	HVMG3-1212-R030	14859	44859	64859
3/8	3/8	1/2	1-1/4	3	0.060	HVMG3-1212-R060	14860	44860	64860
3/8	3/8	1/2	2-1/8	4	0.030	HVMG3-1212-L1R030	14861	44861	64861
3/8	3/8	1/2	2-1/8	4	0.060	HVMG3-1212-L1R060	14862	44862	64862
3/8	3/8	1/2	no neck	4	0.030	HVMG3-1212-NNR030	14863	44863	64863
3/8	3/8	1/2	no neck	4	0.060	HVMG3-1212-NNR060	14864	44864	64864
1/2	1/2	5/8	1-1/4	3	0.030	HVMG3-1616-R030	14865	44865	64865
1/2	1/2	5/8	1-1/4	3	0.060	HVMG3-1616-R060	14866	44866	64866
1/2	1/2	5/8	1-1/4	3	0.090	HVMG3-1616-R090	14867	44867	64867
1/2	1/2	5/8	2-1/8	4	0.030	HVMG3-1616-L1R030	14868	44868	64868
1/2	1/2	5/8	2-1/8	4	0.060	HVMG3-1616-L1R060	14870	44870	64870
1/2	1/2	5/8	2-1/8	4	0.090	HVMG3-1616-L1R090	14871	44871	64871
1/2	1/2	5/8	2-1/8	4	0.120	HVMG3-1616-L1R120	14872	44872	64872
1/2	1/2	5/8	3-1/8	5	0.030	HVMG3-1616-L2R030	14873	44873	64873
1/2	1/2	5/8	3-1/8	5	0.060	HVMG3-1616-L2R060	14874	44874	64874
1/2	1/2	5/8	3-1/8	5	0.090	HVMG3-1616-L2R090	14876	44876	64876
1/2	1/2	5/8	3-1/8	5	0.120	HVMG3-1616-L2R120	14877	44877	64877
1/2	1/2	5/8	no neck	5	0.030	HVMG3-1616-NNR030	14878	44878	64878
1/2	1/2	5/8	no neck	5	0.060	HVMG3-1616-NNR060	14879	44879	64879
1/2	1/2	5/8	no neck	5	0.090	HVMG3-1616-NNR090	14880	44880	64880
1/2	1/2	5/8	no neck	5	0.120	HVMG3-1616-NNR120	14881	44881	64881
5/8	5/8	3/4	3-1/8	5	0.030	HVMG3-2020-R030	14882	44882	64882
5/8	5/8	3/4	3-1/8	5	0.060	HVMG3-2020-R060	14883	44883	64883
5/8	5/8	3/4	3-1/8	5	0.090	HVMG3-2020-R090	14884	44884	64884
5/8	5/8	3/4	3-1/8	5	0.120	HVMG3-2020-R120	14885	44885	64885
5/8	5/8	3/4	no neck	5	0.030	HVMG3-2020-NNR030	14886	44886	64886
5/8	5/8	3/4	no neck	5	0.060	HVMG3-2020-NNR060	14887	44887	64887
5/8	5/8	3/4	no neck	5	0.090	HVMG3-2020-NNR090	14888	44888	64888
5/8	5/8	3/4	no neck	5	0.120	HVMG3-2020-NNR120	14889	44889	64889

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sizes continued on next page

3 FLUTE • 37° FOR HIGH VELOCITY MACHINING

SERIES: HVMG3

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
3/4	3/4	3/4	2	4	0.030	HVMG3-2424-R030	14890	44890	64890
3/4	3/4	3/4	2	4	0.060	HVMG3-2424-R060	14891	44891	64891
3/4	3/4	3/4	2	4	0.090	HVMG3-2424-R090	14892	44892	64892
3/4	3/4	3/4	2	4	0.120	HVMG3-2424-R120	14893	44893	64893
3/4	3/4	1	3	5	0.030	HVMG3-2424-L1R030	14894	44894	64894
3/4	3/4	1	3	5	0.060	HVMG3-2424-L1R060	14895	44895	64895
3/4	3/4	1	3	5	0.090	HVMG3-2424-L1R090	14896	44896	64896
3/4	3/4	1	3	5	0.120	HVMG3-2424-L1R120	14897	44897	64897
3/4	3/4	1	no neck	6	0.030	HVMG3-2424-NNR030	14898	44898	64898
3/4	3/4	1	no neck	6	0.060	HVMG3-2424-NNR060	14899	44899	64899
3/4	3/4	1	no neck	6	0.090	HVMG3-2424-NNR090	15810	45810	65810
3/4	3/4	1	no neck	6	0.120	HVMG3-2424-NNR120	14932	44932	64932
1	1	3/4	2	4	0.030	HVMG3-3232-R030	14933	44933	64933
1	1	3/4	2	4	0.060	HVMG3-3232-R060	14934	44934	64934
1	1	3/4	2	4	0.090	HVMG3-3232-R090	14935	44935	64935
1	1	3/4	2	4	0.120	HVMG3-3232-R120	14936	44936	64936
1	1	1-1/4	2-3/4	5	0.030	HVMG3-3232-L1R030	14937	44937	64937
1	1	1-1/4	2-3/4	5	0.060	HVMG3-3232-L1R060	14938	44938	64938
1	1	1-1/4	2-3/4	5	0.090	HVMG3-3232-L1R090	14939	44939	64939
1	1	1-1/4	2-3/4	5	0.120	HVMG3-3232-L1R120	14940	44940	64940
1	1	1-1/4	no neck	6	0.030	HVMG3-3232-NNR030	14941	44941	64941
1	1	1-1/4	no neck	6	0.060	HVMG3-3232-NNR060	14942	44942	64942
1	1	1-1/4	no neck	6	0.090	HVMG3-3232-NNR090	14943	44943	64943
1	1	1-1/4	no neck	6	0.120	HVMG3-3232-NNR120	14944	44944	64944
1-1/4	1-1/4	1-1/4	2	4-1/2	0.030	HVMG3-4040-R030	14945	44945	64945
1-1/4	1-1/4	1-1/4	2	4-1/2	0.060	HVMG3-4040-R060	14946	44946	64946
1-1/4	1-1/4	1-1/4	2	4-1/2	0.090	HVMG3-4040-R090	14947	44947	64947
1-1/4	1-1/4	1-1/4	2	4-1/2	0.120	HVMG3-4040-R120	14948	44948	64948
1-1/4	1-1/4	1-1/4	2-5/8	6	0.030	HVMG3-4040-L1R030	14949	44949	64949
1-1/4	1-1/4	1-1/4	2-5/8	6	0.060	HVMG3-4040-L1R060	14950	44950	64950
1-1/4	1-1/4	1-1/4	2-5/8	6	0.090	HVMG3-4040-L1R090	14951	44951	64951
1-1/4	1-1/4	1-1/4	2-5/8	6	0.120	HVMG3-4040-L1R120	14952	44952	64952

*No Neck - Customize your LBS length

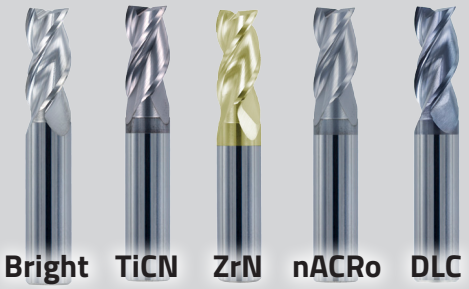
Speed & Feed: page 136

RECOMMENDED ALUMINUM COATINGS

Melin provides SEVERAL coated options to fit your every need!

Order any of our tools with a Conventional or High Performance Coating

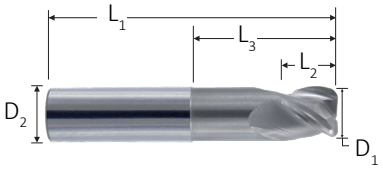
- TiCN
- ZrN
- nACRo
- DLC
- TiB_2



CONVENTIONAL COATINGS & HIGH PERFORMANCE COATINGS

Aluminum Alloys

3 Flute • 37° for high velocity machining



Carbide | 3 | Center Cutting | 37° | Bright TiCN ZrN | +.000mm -.050mm | Radius | HRc <40 | N

Additional coatings - nACRo, DLC & TiB_2 available upon request

- Designed for aggressive machining
- Unique geometry reduces cutting pressures and vibration at high feed rates
- Highly polished OD and flute face prevents chip build-up
- Wiper flat for improved floor finishes

Series: HVMG3-M_M_

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
10mm	10mm	12mm	36mm	80mm	1mm	HVMG3-M10M10-R1.0	14953	44953	64953
10mm	10mm	12mm	36mm	80mm	1.5mm	HVMG3-M10M10-R1.5	14954	44954	64954
10mm	10mm	12mm	50mm	100mm	1mm	HVMG3-M10M10-L1R1.0	14955	44955	64955
10mm	10mm	12mm	50mm	100mm	1.5mm	HVMG3-M10M10-L1R1.5	14956	44956	64956
12mm	12mm	14mm	40mm	90mm	1mm	HVMG3-M12M12-R1.0	14957	44957	64957
12mm	12mm	14mm	40mm	90mm	1.5mm	HVMG3-M12M12-R1.5	14958	44958	64958
12mm	12mm	14mm	70mm	125mm	1mm	HVMG3-M12M12-L1R1.0	14959	44959	64959
12mm	12mm	14mm	70mm	125mm	1.5mm	HVMG3-M12M12-L1R1.5	14960	44960	64960
16mm	16mm	18mm	31mm	100mm	1mm	HVMG3-M16M16-R1.0	14961	44961	64961
16mm	16mm	18mm	31mm	100mm	1.5mm	HVMG3-M16M16-R1.5	14962	44962	64962
16mm	16mm	18mm	31mm	100mm	3mm	HVMG3-M16M16-R3.0	14963	44963	64963
16mm	16mm	18mm	80mm	150mm	1mm	HVMG3-M16M16-L1R1.0	14964	44964	64964
16mm	16mm	18mm	80mm	150mm	1.5mm	HVMG3-M16M16-L1R1.5	14965	44965	64965
16mm	16mm	18mm	80mm	150mm	3mm	HVMG3-M16M16-L1R3.0	14966	44966	64966
20mm	20mm	24mm	45mm	100mm	1mm	HVMG3-M20M20-R1.0	14967	44967	64967
20mm	20mm	24mm	45mm	100mm	1.5mm	HVMG3-M20M20-R1.5	14968	44968	64968
20mm	20mm	24mm	45mm	100mm	3mm	HVMG3-M20M20-R3.0	14969	44969	64969
20mm	20mm	24mm	100mm	145mm	1mm	HVMG3-M20M20-L1R1.0	14970	44970	64970
20mm	20mm	24mm	100mm	145mm	1.5mm	HVMG3-M20M20-L1R1.5	14971	44971	64971
20mm	20mm	24mm	100mm	145mm	3mm	HVMG3-M20M20-L1R3.0	14972	44972	64972
25mm	25mm	26mm	30mm	110mm	1mm	HVMG3-M25M25-R1.0	14973	44973	64973
25mm	25mm	26mm	30mm	110mm	1.5mm	HVMG3-M25M25-R1.5	14974	44974	64974
25mm	25mm	26mm	30mm	110mm	3mm	HVMG3-M25M25-R3.0	14975	44975	64975
25mm	25mm	26mm	80mm	145mm	1mm	HVMG3-M25M25-L1R1.0	14976	44976	64976
25mm	25mm	26mm	80mm	145mm	1.5mm	HVMG3-M25M25-L1R1.5	14977	44977	64977
25mm	25mm	26mm	80mm	145mm	3mm	HVMG3-M25M25-L1R3.0	14978	44978	64978

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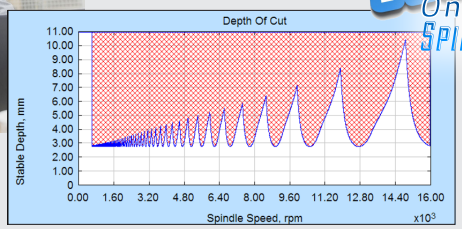
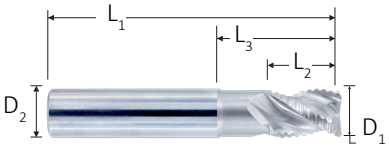
MetalMax Testing

Melin's EXPERT technical field application engineers are available to provide FREE on-site, *"tap testing"* analysis of your machine, for fine tuning cutting parameters to dramatically reduce vibration and optimize productivity. Contact your local distributor, our regional sales rep, Melin customer service, or visit us Online to submit a request. www.melintool.com



Free On The Spindle

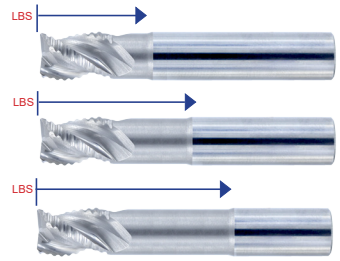


3 FLUTE • ROUGHER FOR HIGH VELOCITY MACHINING

Carbide | 3 | Center Cutting | 37° | Bright TiCN ZrN | +.000 -.002 | Radius | Rougher | HRc <40 | N

Additional coatings - nACRo, DLC & TiB_2 available upon request

- For roughing operations
- Unique geometry reduces cutting pressures and vibration at high feed rates
- Highly polished OD and flute face prevents chip build-up
- Knuckles shorten chip length aiding in chip evacuation



No Neck Options Allow You To Order the specific LBS Size You Need!

SERIES: HVRMG3

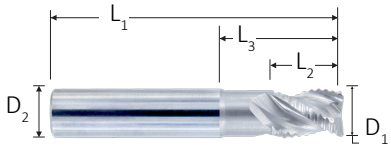
DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
1/4	1/4	1/2	1-1/2	4	0.030	HVRMG3-808-R030	14979	44979	64979
1/4	1/4	1/2	1-1/2	4	0.060	HVRMG3-808-R060	14981	44981	64981
3/8	3/8	1/2	2-1/8	4	0.030	HVRMG3-1212-L1R030	14982	44982	64982
3/8	3/8	1/2	2-1/8	4	0.060	HVRMG3-1212-L1R060	14983	44983	64983
1/2	1/2	5/8	1-1/4	3	0.030	HVRMG3-1616-R030	14851	44851	64851
1/2	1/2	5/8	1-1/4	3	0.060	HVRMG3-1616-R060	14984	44984	64984
1/2	1/2	5/8	1-1/4	3	0.090	HVRMG3-1616-R090	14985	44985	64985
1/2	1/2	5/8	2-1/8	4	0.030	HVRMG3-1616-L1R030	14986	44986	64986
1/2	1/2	5/8	2-1/8	4	0.060	HVRMG3-1616-L1R060	14987	44987	64987
1/2	1/2	5/8	2-1/8	4	0.090	HVRMG3-1616-L1R090	14988	44988	64988
1/2	1/2	5/8	2-1/8	4	0.120	HVRMG3-1616-L1R120	14989	44989	64989
5/8	5/8	3/4	no neck	5	0.030	HVRMG3-2020-NNR030	14994	44994	64994
5/8	5/8	3/4	no neck	5	0.060	HVRMG3-2020-NNR060	14995	44995	64995
5/8	5/8	3/4	no neck	5	0.090	HVRMG3-2020-NNR090	14996	44996	64996
5/8	5/8	3/4	no neck	5	0.120	HVRMG3-2020-NNR120	14997	44997	64997
3/4	3/4	3/4	2	4	0.030	HVRMG3-2424-R030	14998	44998	64998
3/4	3/4	3/4	2	4	0.060	HVRMG3-2424-R060	14999	44999	64999
3/4	3/4	3/4	2	4	0.090	HVRMG3-2424-R090	15019	45019	65019
3/4	3/4	3/4	2	4	0.120	HVRMG3-2424-R120	15020	45020	65020
3/4	3/4	1	3	5	0.030	HVRMG3-2424-L1R030	15021	45021	65021
3/4	3/4	1	3	5	0.060	HVRMG3-2424-L1R060	15022	45022	65022
3/4	3/4	1	3	5	0.090	HVRMG3-2424-L1R090	15023	45023	65023
3/4	3/4	1	3	5	0.120	HVRMG3-2424-L1R120	15024	45024	65024
1	1	3/4	2	4	0.030	HVRMG3-3232-R030	15025	45025	65025
1	1	3/4	2	4	0.060	HVRMG3-3232-R060	15026	45026	65026
1	1	3/4	2	4	0.090	HVRMG3-3232-R090	15027	45027	65027
1	1	3/4	2	4	0.120	HVRMG3-3232-R120	15028	45028	65028
1	1	1-1/4	2-3/4	5	0.030	HVRMG3-3232-L1R030	15029	45029	65029
1	1	1-1/4	2-3/4	5	0.060	HVRMG3-3232-L1R060	15030	45030	65030
1	1	1-1/4	2-3/4	5	0.090	HVRMG3-3232-L1R090	15031	45031	65031
1	1	1-1/4	2-3/4	5	0.120	HVRMG3-3232-L1R120	15032	45032	65032

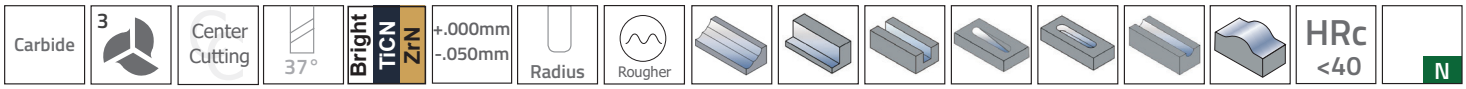
*No Neck - Customize your LBS length

Speed & Feed: page 136

Aluminum Alloys

3 Flute • Rougher for High Velocity Machining





Additional coatings - nACRo, DLC & TiB_2 available upon request

- For roughing operations
- Unique geometry reduces cutting pressures and vibration at high feed rates
- Highly polished OD and flute face prevents chip build-up
- Knuckles shorten chip length aiding in chip evacuation

Series: HVRMG3-M_M_

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
10mm	10mm	12mm	36mm	80mm	1mm	HVRMG3-M10M10-R1.0	15033	45033	65033
10mm	10mm	12mm	36mm	80mm	1.5mm	HVRMG3-M10M10-R1.5	15034	45034	65034
12mm	12mm	14mm	40mm	90mm	1mm	HVRMG3-M12M12-R1.0	15035	45035	65035
12mm	12mm	14mm	40mm	90mm	1.5mm	HVRMG3-M12M12-R1.5	15036	45036	65036
16mm	16mm	18mm	31mm	100mm	1mm	HVRMG3-M16M16-R1.0	15037	45037	65037
16mm	16mm	18mm	31mm	100mm	1.5mm	HVRMG3-M16M16-R1.5	15038	45038	65038
16mm	16mm	18mm	31mm	100mm	3mm	HVRMG3-M16M16-R3.0	15039	45039	65039
20mm	20mm	24mm	45mm	100mm	1mm	HVRMG3-M20M20-R1.0	15040	45040	65040
20mm	20mm	24mm	45mm	100mm	1.5mm	HVRMG3-M20M20-R1.5	15041	45041	65041
20mm	20mm	24mm	45mm	100mm	3mm	HVRMG3-M20M20-R3.0	15042	45042	65042
25mm	25mm	26mm	30mm	110mm	1mm	HVRMG3-M25M25-R1.0	15043	45043	65043
25mm	25mm	26mm	30mm	110mm	1.5mm	HVRMG3-M25M25-R1.5	15044	45044	65044
25mm	25mm	26mm	30mm	110mm	3mm	HVRMG3-M25M25-R3.0	15045	45045	65045

Speed & Feed: page 136

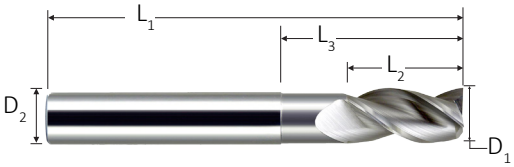
Recommended Aluminum Coatings

Melin provides SEVERAL coated options to fit your every need!

Order any of our tools with a Conventional or High Performance Coating

- TiCN
- ZrN
- nACRo
- DLC
- TiB_2

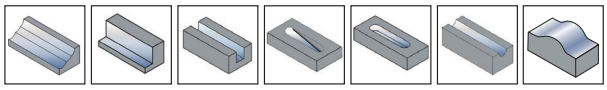
Conventional Coatings & High Performance Coatings



Aluminum Alloys

3 Flute • 37° End Mill

Carbide | 3 | Center Cutting | 37° | Bright TiCN ZrN | +.000 -.002 | Square | Radius | HRc <40 | N



- Higher chip load per revolution over 2 flute HP tool
- Outstanding in heavy slotting and pocketing operations
- Wiper flat and polish grinds produce superior surface finishes on both walls and floor
- Polished flute face optimizes chip evacuation and avoids chip nesting
- H6 Tolerance shank for use in shrink fit holders

Additional coatings - nACRo, DLC & TiB_2 available upon request

Series: EXMG

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER		PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
1/8	1/8	3/16		1-1/2	SQ*	0.005	EXMG-404-S	12418	42418	62418
1/8	1/8	1/4	1/2	1-1/2	SQ*	0.005	EXMG-404	12419	42419	62419
1/8	1/8	3/16	11/16	2	SQ*	0.005	EXMG-404-N	12420	42420	62420
1/8	1/8	3/8		1-1/2	SQ*	0.005	EXMG-404-L1	14326	44326	64326
1/8	1/8	3/8		1-1/2	radius	0.010	EXMG-404-L1R010	14330	44330	64330
1/8	1/8	3/8		1-1/2	radius	0.020	EXMG-404-L1R020	14334	44334	64334
1/8	1/8	3/8		1-1/2	radius	0.030	EXMG-404-L1R030	14335	44335	64335
3/16	3/16	9/32		2	SQ*	0.005	EXMG-606-S	12421	42421	62421
3/16	3/16	9/32		2	radius	0.010	EXMG-606-R010S	12553	42553	62553
3/16	3/16	9/32	25/32	3	SQ*	0.005	EXMG-606-N	12423	42423	62423
3/16	3/16	9/32	25/32	3	radius	0.010	EXMG-606-R010N	12555	42555	62555
3/16	3/16	3/8	5/8	2	SQ*	0.005	EXMG-606	12422	42422	62422
3/16	3/16	3/8	5/8	2	radius	0.010	EXMG-606-R010	12554	42554	62554
3/16	3/16	5/8		2-1/2	SQ*	0.005	EXMG-606-L1	14336	44336	64336
3/16	3/16	5/8		2-1/2	radius	0.010	EXMG-606-L1R010	14337	44337	64337
3/16	3/16	5/8		2-1/2	radius	0.020	EXMG-606-L1R020	14338	44338	64338
3/16	3/16	5/8		2-1/2	radius	0.030	EXMG-606-L1R030	14339	44339	64339
1/4	1/4	3/8		2	SQ*	0.007	EXMG-808-S	12424	42424	62424
1/4	1/4	3/8		2	radius	0.015	EXMG-808-R015S	12556	42556	62556
1/4	1/4	3/8	1-1/8	3	SQ*	0.007	EXMG-808-N	12425	42425	62425
1/4	1/4	3/8	1-1/8	3	radius	0.015	EXMG-808-R015N	12558	42558	62558
1/4	1/4	3/8	1-1/8	3	radius	0.030	EXMG-808-R030N	14344	44344	64344
1/4	1/4	3/8	1-1/8	3	radius	0.060	EXMG-808-R060N	14349	44349	64349
1/4	1/4	1/2	3/4	2-1/2	SQ*	0.007	EXMG-808	11775	41775	61775
1/4	1/4	1/2	3/4	2-1/2	radius	0.015	EXMG-808-R015	12557	42557	62557
1/4	1/4	1/2	3/4	2-1/2	radius	0.030	EXMG-808-R030	14354	44354	64354
1/4	1/4	1/2	3/4	2-1/2	radius	0.060	EXMG-808-R060	14359	44359	64359
1/4	1/4	1-1/4		3	SQ*	0.007	EXMG-808-L1	14364	44364	64364
1/4	1/4	1-1/4		3	radius	0.015	EXMG-808-L1R015	14369	44369	64369
1/4	1/4	1-1/4		3	radius	0.030	EXMG-808-L1R030	14370	44370	64370
1/4	1/4	1-1/4		3	radius	0.060	EXMG-808-L1R060	14371	44371	64371
5/16	5/16	1/2		2	SQ*	0.007	EXMG-1010-S	12426	42426	62426
5/16	5/16	1/2		2	radius	0.015	EXMG-1010-R015S	12559	42559	62559
5/16	5/16	1/2	1-1/2	3	SQ*	0.007	EXMG-1010-N	12443	42443	62443
5/16	5/16	1/2	1-1/2	3	radius	0.015	EXMG-1010-R015N	12561	42561	62561
5/16	5/16	5/8	7/8	2-1/2	SQ*	0.007	EXMG-1010	12427	42427	62427
5/16	5/16	5/8	7/8	2-1/2	radius	0.015	EXMG-1010-R015	12560	42560	62560
3/8	3/8	1/2	1-1/4	2-1/2	SQ*	0.007	EXMG-1212-S1	14372	44372	64372
3/8	3/8	1/2	1-1/4	2-1/2	radius	0.015	EXMG-1212-R015S1	14373	44373	64373
3/8	3/8	1/2	1-1/4	2-1/2	radius	0.030	EXMG-1212-R030S1	14374	44374	64374
3/8	3/8	1/2	1-1/4	2-1/2	radius	0.060	EXMG-1212-R060S1	14375	44375	64375
3/8	3/8	1/2	1-1/4	2-1/2	radius	0.090	EXMG-1212-R090S1	11887	41887	61887

SQ* = minimal radius for corner protection.

sizes continued on next page

Chip Breaker geometry available upon request.

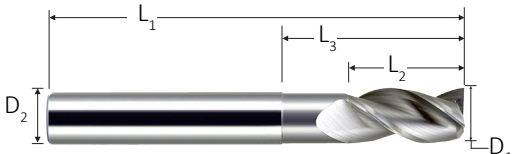
(Several sizes stocked)

Call Customer Service Today

Speed & Feed: page 137

Aluminum Alloys

3 Flute • 37° End Mill



Series: EXMG

Chip Breaker geometry available upon request.

(Several sizes stocked)

Call Customer Service Today

Speed & Feed: page 137

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER		PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
3/8	3/8	9/16		2	SQ*	0.007	EXMG-1212-S	12453	42453	62453
3/8	3/8	9/16		2	radius	0.020	EXMG-1212-R020S	12562	42562	62562
3/8	3/8	9/16	1-15/16	4	SQ*	0.007	EXMG-1212-N	12513	42513	62513
3/8	3/8	9/16	1-15/16	4	radius	0.020	EXMG-1212-R020N	12570	42570	62570
3/8	3/8	3/4	1	2-1/2	SQ*	0.007	EXMG-1212	11777	41777	61777
3/8	3/8	3/4	1	2-1/2	radius	0.020	EXMG-1212-R020	12563	42563	62563
3/8	3/8	1		2-1/2	SQ*	0.007	EXMG-1212-M	12502	42502	62502
3/8	3/8	1		2-1/2	radius	0.020	EXMG-1212-R020M	12569	42569	62569
3/8	3/8	1-1/2		3	SQ*	0.007	EXMG-1212-L1	14376	44376	64376
3/8	3/8	1-1/2		3	radius	0.015	EXMG-1212-L1R015	14377	44377	64377
3/8	3/8	1-1/2		3	radius	0.030	EXMG-1212-L1R030	14378	44378	64378
3/8	3/8	1-1/2		3	radius	0.060	EXMG-1212-L1R060	14379	44379	64379
3/8	3/8	1-1/2		3	radius	0.090	EXMG-1212-L1R090	11889	41889	61889
7/16	7/16	5/8		2-1/2	SQ*	0.007	EXMG-1414-S	12515	42515	62515
7/16	7/16	5/8		2-1/2	radius	0.020	EXMG-1414-R020S	12571	42571	62571
7/16	7/16	5/8	2	4	SQ*	0.007	EXMG-1414-N	12517	42517	62517
7/16	7/16	5/8	2	4	radius	0.020	EXMG-1414-R020N	12579	42579	62579
7/16	7/16	7/8		2-3/4	SQ*	0.007	EXMG-1414	12516	42516	62516
7/16	7/16	7/8		2-3/4	radius	0.020	EXMG-1414-R020	12575	42575	62575
1/2	1/2	5/8		2-1/2	SQ*	0.010	EXMG-1616-S	12518	42518	62518
1/2	1/2	5/8		2-1/2	radius	0.030	EXMG-1616-R030S	12583	42583	62583
1/2	1/2	5/8	1-1/4	3	SQ*	0.010	EXMG-1616-L1	14380	44380	64380
1/2	1/2	5/8	1-1/4	3	radius	0.030	EXMG-1616-L1R030	14381	44381	64381
1/2	1/2	5/8	1-1/4	3	radius	0.060	EXMG-1616-L1R060	14386	44386	64386
1/2	1/2	5/8	1-1/4	3	radius	0.090	EXMG-1616-L1R090	14391	44391	64391
1/2	1/2	5/8	1-1/4	3	radius	0.120	EXMG-1616-L1R120	14397	44397	64397
1/2	1/2	5/8	2	4	SQ*	0.010	EXMG-1616-N	12521	42521	62521
1/2	1/2	5/8	2	4	radius	0.030	EXMG-1616-R030N	12662	42662	62662
1/2	1/2	5/8	2	4	radius	0.060	EXMG-1616-R060N	14403	44403	64403
1/2	1/2	5/8	2	4	radius	0.090	EXMG-1616-R090N	14422	44422	64422
1/2	1/2	5/8	4-1/4	6	SQ*	0.010	EXMG-1616-N1	16544	46544	66544
1/2	1/2	5/8	4-1/4	6	radius	0.030	EXMG-1616-R030N1	16545	46545	66545
1/2	1/2	5/8	4-1/4	6	radius	0.060	EXMG-1616-R060N1	16546	46546	66546
1/2	1/2	5/8	4-1/4	6	radius	0.090	EXMG-1616-R090N1	16547	46547	66547
1/2	1/2	1	1-1/4	3	SQ*	0.010	EXMG-1616	11779	41779	61779
1/2	1/2	1	1-1/4	3	radius	0.030	EXMG-1616-R030	12660	42660	62660
1/2	1/2	1	1-1/4	3	radius	0.060	EXMG-1616-R060	14427	44427	64427
1/2	1/2	1	1-1/4	3	radius	0.090	EXMG-1616-R090	14428	44428	64428
1/2	1/2	1	1-1/4	3	radius	0.120	EXMG-1616-R120	11891	41891	61891
1/2	1/2	1-1/4		3	SQ*	0.010	EXMG-1616-M	12520	42520	62520
1/2	1/2	1-1/4		3	radius	0.030	EXMG-1616-R030M	12661	42661	62661
1/2	1/2	2		4	SQ*	0.010	EXMG-1616-L2	14429	44429	64429
1/2	1/2	2		4	radius	0.030	EXMG-1616-L2R030	14430	44430	64430
1/2	1/2	2		4	radius	0.060	EXMG-1616-L2R060	14431	44431	64431
1/2	1/2	2		4	radius	0.090	EXMG-1616-L2R090	14432	44432	64432
5/8	5/8	3/4		3	SQ*	0.010	EXMG-2020-S	12523	42523	62523
5/8	5/8	3/4		3	radius	0.030	EXMG-2020-R030S	12676	42676	62676
5/8	5/8	3/4	1-1/2	3-1/2	SQ*	0.010	EXMG-2020-L1	14433	44433	64433
5/8	5/8	3/4	1-1/2	3-1/2	radius	0.030	EXMG-2020-L1R030	14435	44435	64435
5/8	5/8	3/4	1-1/2	3-1/2	radius	0.060	EXMG-2020-L1R060	14441	44441	64441
5/8	5/8	3/4	1-1/2	3-1/2	radius	0.090	EXMG-2020-L1R090	14442	44442	64442
5/8	5/8	3/4	1-1/2	3-1/2	radius	0.120	EXMG-2020-L1R120	14443	44443	64443

SQ* = minimal radius for corner protection.

sizes continued on next page

3 FLUTE • 37° END MILL

SERIES: EXMG

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER		PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
5/8	5/8	3/4	2-3/8	5	SQ*	0.010	EXMG-2020-N	12527	42527	62527
5/8	5/8	3/4	2-3/8	5	radius	0.030	EXMG-2020-R030N	12733	42733	62733
5/8	5/8	1-1/4	1-1/2	3-1/2	SQ*	0.010	EXMG-2020	12525	42525	62525
5/8	5/8	1-1/4	1-1/2	3-1/2	radius	0.030	EXMG-2020-R030	12729	42729	62729
3/4	3/4	7/8		3	SQ*	0.010	EXMG-2424-S	12528	42528	62528
3/4	3/4	7/8		3	radius	0.030	EXMG-2424-R030S	12735	42735	62735
3/4	3/4	7/8	2-1/2	5	SQ*	0.010	EXMG-2424-N	12531	42531	62531
3/4	3/4	7/8	2-1/2	5	radius	0.030	EXMG-2424-R030N	12768	42768	62768
3/4	3/4	1	1-5/8	4	SQ*	0.010	EXMG-2424-L1	14444	44444	64444
3/4	3/4	1	1-5/8	4	radius	0.030	EXMG-2424-L1R030	14445	44445	64445
3/4	3/4	1	1-5/8	4	radius	0.060	EXMG-2424-L1R060	14446	44446	64446
3/4	3/4	1	1-5/8	4	radius	0.090	EXMG-2424-L1R090	14447	44447	64447
3/4	3/4	1	1-5/8	4	radius	0.120	EXMG-2424-L1R120	14567	44567	64567
3/4	3/4	1	3-3/8	6	SQ*	0.010	EXMG-2424-N1	16548	46548	66548
3/4	3/4	1	3-3/8	6	radius	0.030	EXMG-2424-R030N1	16549	46549	66549
3/4	3/4	1	3-3/8	6	radius	0.060	EXMG-2424-R060N1	16550	46550	66550
3/4	3/4	1	3-3/8	6	radius	0.090	EXMG-2424-R090N1	16551	46551	66551
3/4	3/4	1	3-3/8	6	radius	0.120	EXMG-2424-R120N1	16552	46552	66552
3/4	3/4	1-1/2	1-3/4	4	SQ*	0.010	EXMG-2424	12529	42529	62529
3/4	3/4	1-1/2	1-3/4	4	radius	0.030	EXMG-2424-R030	12764	42764	62764
3/4	3/4	2-1/4		5	SQ*	0.010	EXMG-2424-L2	14573	44573	64573
3/4	3/4	2-1/4		5	radius	0.030	EXMG-2424-L2R030	14574	44574	64574
3/4	3/4	2-1/4		5	radius	0.060	EXMG-2424-L2R060	14575	44575	64575
3/4	3/4	2-1/4		5	radius	0.090	EXMG-2424-L2R090	14576	44576	64576
3/4	3/4	2-1/4		5	radius	0.120	EXMG-2424-L2R120	14577	44577	64577
1	1	1-1/4		3	SQ*	0.015	EXMG-3232-S	12532	42532	62532
1	1	1-1/4		3	radius	0.030	EXMG-3232-R030S	12785	42785	62785
1	1	1-1/4		4	SQ*	0.015	EXMG-3232-L1	14578	44578	64578
1	1	1-1/4		4	radius	0.030	EXMG-3232-L1R030	14579	44579	64579
1	1	1-1/4		4	radius	0.060	EXMG-3232-L1R060	14581	44581	64581
1	1	1-1/4		4	radius	0.090	EXMG-3232-L1R090	14587	44587	64587
1	1	1-1/4		4	radius	0.120	EXMG-3232-L1R120	14588	44588	64588
1	1	1-1/4	3-1/4	6	SQ*	0.015	EXMG-3232-N	12535	42535	62535
1	1	1-1/4	3-1/4	6	radius	0.030	EXMG-3232-R030N	12788	42788	62788
1	1	1-1/4	3-1/4	6	radius	0.060	EXMG-3232-R060N	14589	44589	64589
1	1	1-1/4	3-1/4	6	radius	0.090	EXMG-3232-R090N	14590	44590	64590
1	1	1-1/4	3-1/4	6	radius	0.120	EXMG-3232-R120N	14591	44591	64591
1	1	1-1/4	4-3/8	7	SQ*	0.015	EXMG-3232-N1	16553	46553	66553
1	1	1-1/4	4-3/8	7	radius	0.030	EXMG-3232-R030N1	16554	46554	66554
1	1	1-1/4	4-3/8	7	radius	0.060	EXMG-3232-R060N1	16540	46540	66540
1	1	1-1/4	4-3/8	7	radius	0.090	EXMG-3232-R090N1	16541	46541	66541
1	1	1-1/4	4-3/8	7	radius	0.120	EXMG-3232-R120N1	16542	46542	66542
1	1	1-1/2	1-3/4	4	SQ*	0.015	EXMG-3232	12533	42533	62533
1	1	1-1/2	1-3/4	4	radius	0.030	EXMG-3232-R030	12787	42787	62787
1	1	3-1/4		6	SQ*	0.015	EXMG-3232-L2	14592	44592	64592
1	1	3-1/4		6	radius	0.030	EXMG-3232-L2R030	14593	44593	64593
1	1	3-1/4		6	radius	0.060	EXMG-3232-L2R060	14597	44597	64597
1	1	3-1/4		6	radius	0.090	EXMG-3232-L2R090	14603	44603	64603
1	1	3-1/4		6	radius	0.120	EXMG-3232-L2R120	14604	44604	64604

CHIP BREAKER geometry available upon request.

(Several sizes stocked)

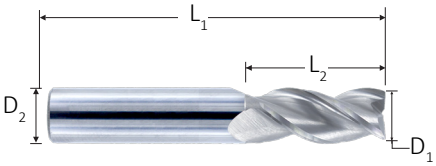
Call Customer Service Today

SQ* = minimal radius for corner protection.

Speed & Feed: page 137

Aluminum Alloys

3 Flute • 37° End Mill



Carbide | 3 | Center Cutting | 37° | Bright | TiCN | ZrN | +.000mm -.050mm | Square | Radius | HRc <40 | N

Additional coatings - nACRo, DLC & TiB_2 available upon request

- Higher chip load per revolution over 2 flute HP tool
- Outstanding in heavy slotting and pocketing operations
- Wiper flat and polish grinds produce superior surface finishes on both walls and floor
- Polished flute face optimizes chip evacuation and avoids chip nesting
- H6 Tolerance shank for use in shrink fit holders

Series: EXMG-M_M_

DIA D_1	SHK D_2	LOC L_2	OAL L_1	CORNER		PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
3mm	3mm	12mm	38mm	radius	0.25mm	EXMG-M3M3-R0.25	14670	44670	64670
3mm	3mm	12mm	38mm	radius	0.5mm	EXMG-M3M3-R0.5	14671	44671	64671
3mm	6mm	12mm	63mm	radius	0.25mm	EXMG-M6M3-R0.25	14800	44800	64800
3mm	6mm	12mm	63mm	radius	0.5mm	EXMG-M6M3-R0.5	14801	44801	64801
4mm	4mm	14mm	51mm	radius	0.25mm	EXMG-M4M4-R0.25	14802	44802	64802
4mm	4mm	14mm	51mm	radius	0.5mm	EXMG-M4M4-R0.5	14803	44803	64803
5mm	5mm	20mm	51mm	radius	0.25mm	EXMG-M5M5-R0.25	14804	44804	64804
5mm	5mm	20mm	51mm	radius	0.5mm	EXMG-M5M5-R0.5	14805	44805	64805
6mm	6mm	20mm	63mm	SQ*	0.15mm	EXMG-M6M6	11980	41980	61980
6mm	6mm	20mm	63mm	radius	0.25mm	EXMG-M6M6-R0.25	14806	44806	64806
6mm	6mm	20mm	63mm	radius	0.5mm	EXMG-M6M6-R0.5	11985	41985	61985
6mm	6mm	30mm	75mm	radius	0.25mm	EXMG-M6M6-L1R0.25	16543	46543	66543
6mm	6mm	30mm	75mm	radius	0.5mm	EXMG-M6M6-L1R0.5	14651	45651	65651
8mm	8mm	20mm	63mm	SQ*	0.15mm	EXMG-M8M8	11986	41986	61986
8mm	8mm	20mm	63mm	radius	0.5mm	EXMG-M8M8-R0.5	11987	41987	61987
8mm	8mm	20mm	63mm	radius	1.0mm	EXMG-M8M8-R1.0	14809	44809	64809
8mm	8mm	20mm	63mm	radius	1.5mm	EXMG-M8M8-R1.5	14810	44810	64810
8mm	8mm	20mm	63mm	radius	2.0mm	EXMG-M8M8-R2.0	14811	44811	64811
8mm	8mm	30mm	75mm	radius	0.5mm	EXMG-M8M8-L1R0.5	14658	44658	64658
8mm	8mm	30mm	75mm	radius	1.0mm	EXMG-M8M8-L1R1.0	14663	44663	64663
10mm	10mm	24mm	70mm	SQ*	0.2mm	EXMG-M10M10	11981	41981	61981
10mm	10mm	24mm	70mm	radius	0.5mm	EXMG-M10M10-R0.5	11988	41988	61988
10mm	10mm	24mm	70mm	radius	1.0mm	EXMG-M10M10-R1.0	14813	44813	64813
10mm	10mm	24mm	70mm	radius	1.5mm	EXMG-M10M10-R1.5	14814	44814	64814
10mm	10mm	24mm	70mm	radius	2.0mm	EXMG-M10M10-R2.0	14815	44815	64815
10mm	10mm	40mm	100mm	radius	0.5mm	EXMG-M10M10-L1R0.5	15812	45812	65812
10mm	10mm	40mm	100mm	radius	1.0mm	EXMG-M10M10-L1R1.0	15814	45814	65814
12mm	12mm	25mm	76mm	SQ*	0.2mm	EXMG-M12M12	11982	41982	61982
12mm	12mm	25mm	76mm	radius	0.5mm	EXMG-M12M12-R0.5	11989	41989	61989
12mm	12mm	25mm	76mm	radius	1.0mm	EXMG-M12M12-R1.0	14817	44817	64817
12mm	12mm	25mm	76mm	radius	1.5mm	EXMG-M12M12-R1.5	14832	44832	64832
12mm	12mm	25mm	76mm	radius	2.0mm	EXMG-M12M12-R2.0	14819	44819	64819
12mm	12mm	25mm	76mm	radius	3.0mm	EXMG-M12M12-R3.0	14820	44820	64820
12mm	12mm	50mm	100mm	radius	0.5mm	EXMG-M12M12-L1R0.5	15816	45816	65816
12mm	12mm	50mm	100mm	radius	2.0mm	EXMG-M12M12-L1R2.0	15818	45818	65818

Chip Breaker geometry available upon request.

(Several sizes stocked)

Call Customer Service Today

SQ* = minimal radius for corner protection.

Speed & Feed: page 137

sizes continued on next page

3 FLUTE • 37° END MILL

SERIES: EXMG-M_M_

DIA D_1	SHK D_2	LOC L_2	OAL L_1	CORNER		PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
16mm	16mm	32mm	100mm	SQ*	0.25mm	EXMG-M16M16	11983	41983	61983
16mm	16mm	32mm	100mm	radius	0.5mm	EXMG-M16M16-R0.5	11991	41991	61991
16mm	16mm	32mm	100mm	radius	1.0mm	EXMG-M16M16-R1.0	14822	44822	64822
16mm	16mm	32mm	100mm	radius	1.5mm	EXMG-M16M16-R1.5	14823	44823	64823
16mm	16mm	32mm	100mm	radius	2.0mm	EXMG-M16M16-R2.0	14824	44824	64824
16mm	16mm	32mm	100mm	radius	3.0mm	EXMG-M16M16-R3.0	14825	44825	64825
16mm	16mm	50mm	127mm	radius	0.5mm	EXMG-M16M16-L1R0.5	19543	49543	69543
16mm	16mm	50mm	127mm	radius	2.0mm	EXMG-M16M16-L1R2.0	19544	49544	69544
20mm	20mm	38mm	100mm	SQ*	0.25mm	EXMG-M20M20	11917	41917	61917
20mm	20mm	38mm	100mm	radius	0.5mm	EXMG-M20M20-R0.5	11995	41995	61995
20mm	20mm	38mm	100mm	radius	1.0mm	EXMG-M20M20-R1.0	14827	44827	64827
20mm	20mm	38mm	100mm	radius	1.5mm	EXMG-M20M20-R1.5	14828	44828	64828
20mm	20mm	38mm	100mm	radius	2.0mm	EXMG-M20M20-R2.0	14829	44829	64829
20mm	20mm	38mm	100mm	radius	3.0mm	EXMG-M20M20-R3.0	14831	44831	64831
20mm	20mm	55mm	127mm	radius	0.5mm	EXMG-M20M20-L1R0.5	19545	49545	69545
20mm	20mm	55mm	127mm	radius	2.0mm	EXMG-M20M20-L1R2.0	12368	42368	62368
25mm	25mm	38mm	100mm	radius	1.0mm	EXMG-M25M25-R1.0	19540	49540	69540
25mm	25mm	38mm	100mm	radius	3.0mm	EXMG-M25M25-R3.0	19539	49539	69539
25mm	25mm	75mm	150mm	radius	1.0mm	EXMG-M25M25-L1R1.0	19533	49533	69533
25mm	25mm	75mm	150mm	radius	3.0mm	EXMG-M25M25-L1R3.0	19532	49532	69532

SQ* = minimal radius for corner protection.

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CHIP BREAKER geometry available upon request.

(Several sizes stocked)

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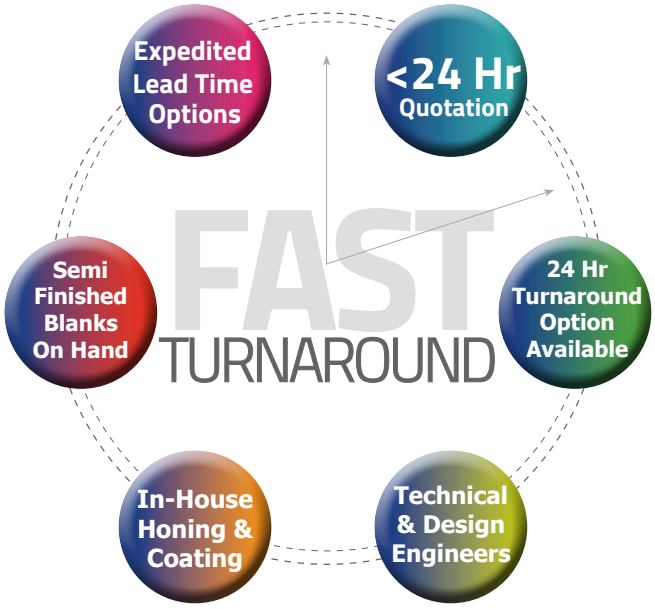
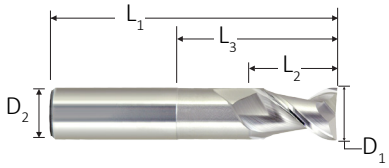


Aluminum Alloys

2 Flute • 45° End Mill



Carbide | 2 | Center Cutting | 45° | Bright | TiCN | ZrN | +.000 -.002 | +.0005 -.0005 <1/8 | Square | Radius | HRc <40 | N

Additional coatings - nACRo, DLC & TiB_2 available upon request

- For universal operations on Aluminum and Cast Aluminum Alloys
- Edge prep provides superior edge strength and faster chip flow
- Wiper Flats and polish grinding produce superior surface finishes on walls and floors
- Polished flute face and edge prep optimizes chip evacuation and avoids chip nesting
- H6 Tolerance shank for use in shrink fit holders

Series: AXMG45

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER		PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
1/16	1/8	3/16		1-1/2	SQ*	0.005	AXMG45-402	15806	45806	65806
3/32	1/8	1/4		1-1/2	SQ*	0.005	AXMG45-403	15808	45808	65808
1/8	1/8	1/4		1-1/2	SQ*	0.005	AXMG45-404-L1	15267	45267	65267
1/8	1/8	1/4		1-1/2	radius	0.010	AXMG45-404-L1R010	15269	45269	65269
1/8	1/8	1/4		1-1/2	radius	0.020	AXMG45-404-L1R020	15271	45271	65271
1/8	1/8	1/4		1-1/2	radius	0.030	AXMG45-404-L1R030	15273	45273	65273
1/8	1/8	1/4	1/2	1-1/2	SQ*	0.005	AXMG45-404-L2	15275	45275	65275
1/8	1/8	1/4	1/2	1-1/2	radius	0.010	AXMG45-404-L2R010	15277	45277	65277
1/8	1/8	1/4	1/2	1-1/2	radius	0.020	AXMG45-404-L2R020	15279	45279	65279
1/8	1/8	1/4	1/2	1-1/2	radius	0.030	AXMG45-404-L2R030	15280	45280	65280
1/8	1/8	1/4		3	SQ*	0.005	AXMG45-404-L3	15281	45281	65281
1/8	1/8	3/8		1-1/2	SQ*	0.005	AXMG45-404-L4	15282	45282	65282
1/8	1/8	3/8		1-1/2	radius	0.010	AXMG45-404-L4R010	15283	45283	65283
1/8	1/8	3/8		1-1/2	radius	0.020	AXMG45-404-L4R020	15284	45284	65284
1/8	1/8	3/8		1-1/2	radius	0.030	AXMG45-404-L4R030	15285	45285	65285
1/8	1/8	1/2		1-1/2	SQ*	0.005	AXMG45-404-L5	15287	45287	65287
1/8	1/8	1/2		1-1/2	radius	0.010	AXMG45-404-L5R010	15288	45288	65288
1/8	1/8	1/2		1-1/2	radius	0.020	AXMG45-404-L5R020	15289	45289	65289
1/8	1/8	1/2		1-1/2	radius	0.030	AXMG45-404-L5R030	15290	45290	65290
1/8	1/8	3/4		2	SQ*	0.005	AXMG45-404-L6	15291	45291	65291
5/32	3/16	5/16		2	SQ*	0.005	AXMG45-605-L1	15295	45295	65295
5/32	3/16	9/16		2	SQ*	0.005	AXMG45-605-L2	15296	45296	65296
3/16	3/16	1/4		2	SQ*	0.005	AXMG45-606-L1	15297	45297	65297
3/16	3/16	1/4		2	radius	0.010	AXMG45-606-L1R010	15298	45298	65298
3/16	3/16	1/4		2	radius	0.020	AXMG45-606-L1R020	15299	45299	65299
3/16	3/16	1/4		2	radius	0.030	AXMG45-606-L1R030	15301	45301	65301
3/16	3/16	1/4	5/8	2	SQ*	0.005	AXMG45-606-L2	15303	45303	65303
3/16	3/16	1/4	5/8	2	radius	0.010	AXMG45-606-L2R010	15305	45305	65305
3/16	3/16	1/4	5/8	2	radius	0.020	AXMG45-606-L2R020	15307	45307	65307
3/16	3/16	1/4	5/8	2	radius	0.030	AXMG45-606-L2R030	15309	45309	65309
3/16	3/16	1/4		3	SQ*	0.005	AXMG45-606-L3	15311	45311	65311
3/16	3/16	1/4	1-1/8	3	SQ*	0.005	AXMG45-606-L4	15313	45313	65313
3/16	3/16	5/8		2-1/2	SQ*	0.005	AXMG45-606-L6	15323	45323	65323
3/16	3/16	5/8		2-1/2	radius	0.010	AXMG45-606-L6R010	15325	45325	65325
3/16	3/16	5/8		2-1/2	radius	0.020	AXMG45-606-L6R020	15327	45327	65327
3/16	3/16	5/8		2-1/2	radius	0.030	AXMG45-606-L6R030	15329	45329	65329
7/32	1/4	3/8		2	SQ*	0.007	AXMG45-807-L1	15331	45331	65331
7/32	1/4	3/4		2-1/2	SQ*	0.007	AXMG45-807-L2	15333	45333	65333

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SQ* = minimal radius for corner protection.

sizes continued on next page

SERIES: AXMG45

2 FLUTE • 45° END MILL

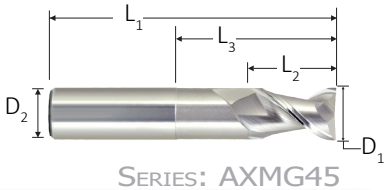
DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER		PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
1/4	1/4	3/8		2-1/2	SQ*	0.007	AXMG45-808-L1	15335	45335	65335
1/4	1/4	3/8		2-1/2	radius	0.015	AXMG45-808-L1R015	15337	45337	65337
1/4	1/4	3/8		2-1/2	radius	0.030	AXMG45-808-L1R030	15339	45339	65339
1/4	1/4	3/8		2-1/2	radius	0.060	AXMG45-808-L1R060	15341	45341	65341
1/4	1/4	3/8	1-1/8	2-1/2	SQ*	0.007	AXMG45-808-L2	15343	45343	65343
1/4	1/4	3/8	1-1/8	2-1/2	radius	0.015	AXMG45-808-L2R015	15345	45345	65345
1/4	1/4	3/8	1-1/8	2-1/2	radius	0.030	AXMG45-808-L2R030	15347	45347	65347
1/4	1/4	3/8	1-1/8	2-1/2	radius	0.060	AXMG45-808-L2R060	15349	45349	65349
1/4	1/4	3/8		4	SQ*	0.007	AXMG45-808-L3	15351	45351	65351
1/4	1/4	3/8		4	radius	0.015	AXMG45-808-L3R015	15353	45353	65353
1/4	1/4	3/8		4	radius	0.030	AXMG45-808-L3R030	15355	45355	65355
1/4	1/4	3/8		4	radius	0.060	AXMG45-808-L3R060	15357	45357	65357
1/4	1/4	3/8	2-1/4	4	SQ*	0.007	AXMG45-808-L4	15359	45359	65359
1/4	1/4	3/8	2-1/4	4	radius	0.015	AXMG45-808-L4R015	15363	45363	65363
1/4	1/4	3/8	2-1/4	4	radius	0.030	AXMG45-808-L4R030	15365	45365	65365
1/4	1/4	3/8	2-1/4	4	radius	0.060	AXMG45-808-L4R060	15367	45367	65367
1/4	1/4	3/4		2-1/2	SQ*	0.007	AXMG45-808-L6	15371	45371	65371
1/4	1/4	3/4		2-1/2	radius	0.015	AXMG45-808-L6R015	15373	45373	65373
1/4	1/4	3/4		2-1/2	radius	0.030	AXMG45-808-L6R030	15375	45375	65375
1/4	1/4	3/4		2-1/2	radius	0.060	AXMG45-808-L6R060	15377	45377	65377
1/4	1/4	1-1/4		3-1/4	SQ*	0.007	AXMG45-808-L8	15381	45381	65381
9/32	5/16	7/16		2-1/2	SQ*	0.007	AXMG45-1009-L1	15383	45383	65383
9/32	5/16	13/16		2-1/2	SQ*	0.007	AXMG45-1009-L3	15387	45387	65387
5/16	5/16	7/16		2-1/2	SQ*	0.007	AXMG45-1010-L1	15389	45389	65389
5/16	5/16	7/16		2-1/2	radius	0.015	AXMG45-1010-L1R015	15391	45391	65391
5/16	5/16	7/16		2-1/2	radius	0.030	AXMG45-1010-L1R030	15393	45393	65393
5/16	5/16	7/16		2-1/2	radius	0.060	AXMG45-1010-L1R060	15395	45395	65395
5/16	5/16	7/16	1-1/8	2-1/2	SQ*	0.007	AXMG45-1010-L2	15397	45397	65397
5/16	5/16	7/16	1-1/8	2-1/2	radius	0.015	AXMG45-1010-L2R015	15399	45399	65399
5/16	5/16	7/16	1-1/8	2-1/2	radius	0.030	AXMG45-1010-L2R030	15401	45401	65401
5/16	5/16	7/16	1-1/8	2-1/2	radius	0.060	AXMG45-1010-L2R060	15403	45403	65403
5/16	5/16	7/16	2-1/8	4	SQ*	0.007	AXMG45-1010-L4	15413	45413	65413
5/16	5/16	7/16	2-1/8	4	radius	0.015	AXMG45-1010-L4R015	15415	45415	65415
5/16	5/16	7/16	2-1/8	4	radius	0.030	AXMG45-1010-L4R030	15417	45417	65417
5/16	5/16	7/16	2-1/8	4	radius	0.060	AXMG45-1010-L4R060	15419	45419	65419
5/16	5/16	13/16		2-1/2	SQ*	0.007	AXMG45-1010-L5	15421	45421	65421
5/16	5/16	13/16		2-1/2	radius	0.015	AXMG45-1010-L5R015	15423	45423	65423
5/16	5/16	13/16		2-1/2	radius	0.030	AXMG45-1010-L5R030	15425	45425	65425
5/16	5/16	13/16		2-1/2	radius	0.060	AXMG45-1010-L5R060	15427	45427	65427
5/16	5/16	1-1/4		3	SQ*	0.007	AXMG45-1010-L6	15429	45429	65429
11/32	3/8	1/2		2-1/2	SQ*	0.007	AXMG45-1211-L1	15431	45431	65431
11/32	3/8	1		2-1/2	SQ*	0.007	AXMG45-1211-L3	15435	45435	65435
3/8	3/8	1/2		2-1/2	SQ*	0.007	AXMG45-1212-L1	15437	45437	65437
3/8	3/8	1/2		2-1/2	radius	0.015	AXMG45-1212-L1R015	15439	45439	65439
3/8	3/8	1/2		2-1/2	radius	0.030	AXMG45-1212-L1R030	15441	45441	65441
3/8	3/8	1/2		2-1/2	radius	0.060	AXMG45-1212-L1R060	15443	45443	65443
3/8	3/8	1/2	1-1/8	2-1/2	SQ*	0.007	AXMG45-1212-L2	15445	45445	65445
3/8	3/8	1/2	1-1/8	2-1/2	radius	0.015	AXMG45-1212-L2R015	15447	45447	65447
3/8	3/8	1/2	1-1/8	2-1/2	radius	0.030	AXMG45-1212-L2R030	15449	45449	65449
3/8	3/8	1/2	1-1/8	2-1/2	radius	0.060	AXMG45-1212-L2R060	15451	45451	65451

Speed & Feed: page 138

SQ* = minimal radius for corner protection.

sizes continued on next page

2 FLUTE • 45° END MILL



SERIES: AXMG45

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER		PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
3/8	3/8	1/2		4	SQ*	0.007	AXMG45-1212-L3	15453	45453	65453
3/8	3/8	1/2		4	radius	0.015	AXMG45-1212-L3R015	15455	45455	65455
3/8	3/8	1/2		4	radius	0.030	AXMG45-1212-L3R030	15457	45457	65457
3/8	3/8	1/2		4	radius	0.060	AXMG45-1212-L3R060	15459	45459	65459
3/8	3/8	1/2	2-1/8	4	SQ*	0.007	AXMG45-1212-L4	15461	45461	65461
3/8	3/8	1/2	2-1/8	4	radius	0.015	AXMG45-1212-L4R015	15463	45463	65463
3/8	3/8	1/2	2-1/8	4	radius	0.030	AXMG45-1212-L4R030	15465	45465	65465
3/8	3/8	1/2	2-1/8	4	radius	0.060	AXMG45-1212-L4R060	15467	45467	65467
3/8	3/8	1/2		6	SQ*	0.007	AXMG45-1212-L5	15469	45469	65469
3/8	3/8	1		2-1/2	SQ*	0.007	AXMG45-1212-L6	19330	49330	69330
3/8	3/8	1		2-1/2	radius	0.015	AXMG45-1212-L6R015	15473	45473	65473
3/8	3/8	1		2-1/2	radius	0.030	AXMG45-1212-L6R030	15475	45475	65475
3/8	3/8	1		2-1/2	radius	0.060	AXMG45-1212-L6R060	15477	45477	65477
3/8	3/8	1		4	SQ*	0.007	AXMG45-1212-L8	15479	45479	65479
3/8	3/8	1		6	SQ*	0.007	AXMG45-1212-L10	15482	45482	65482
3/8	3/8	1		6	radius	0.015	AXMG45-1212-L10R015	15483	45483	65483
3/8	3/8	1		6	radius	0.030	AXMG45-1212-L10R030	15484	45484	65484
3/8	3/8	1		6	radius	0.060	AXMG45-1212-L10R060	15485	45485	65485
3/8	3/8	1-1/4		3	SQ*	0.007	AXMG45-1212-L11	15487	45487	65487
3/8	3/8	1-1/2		4	SQ*	0.007	AXMG45-1212-L12	15489	45489	65489
13/32	7/16	9/16		2-3/4	SQ*	0.007	AXMG45-1413-L1	15490	45490	65490
13/32	7/16	9/16		4	SQ*	0.007	AXMG45-1413-L2	15491	45491	65491
7/16	7/16	9/16		2-3/4	SQ*	0.007	AXMG45-1414-L1	15493	45493	65493
7/16	7/16	9/16		2-3/4	radius	0.015	AXMG45-1414-L1R015	15494	45494	65494
7/16	7/16	9/16		2-3/4	radius	0.030	AXMG45-1414-L1R030	15495	45495	65495
7/16	7/16	9/16		2-3/4	radius	0.060	AXMG45-1414-L1R060	15496	45496	65496
7/16	7/16	9/16	1-1/4	2-3/4	SQ*	0.007	AXMG45-1414-L2	15497	45497	65497
7/16	7/16	9/16	1-1/4	2-3/4	radius	0.015	AXMG45-1414-L2R015	15499	45499	65499
7/16	7/16	9/16	1-1/4	2-3/4	radius	0.030	AXMG45-1414-L2R030	15501	45501	65501
7/16	7/16	9/16	1-1/4	2-3/4	radius	0.060	AXMG45-1414-L2R060	15503	45503	65503
7/16	7/16	1		2-3/4	SQ*	0.007	AXMG45-1414-L4	15509	45509	65509
7/16	7/16	1		2-3/4	radius	0.015	AXMG45-1414-L4R015	15511	45511	65511
7/16	7/16	1		2-3/4	radius	0.030	AXMG45-1414-L4R030	15513	45513	65513
7/16	7/16	1		2-3/4	radius	0.060	AXMG45-1414-L4R060	15515	45515	65515
15/32	1/2	5/8		3	SQ*	0.010	AXMG45-1615-L1	15521	45521	65521
15/32	1/2	5/8		4	SQ*	0.010	AXMG45-1615-L2	15523	45523	65523
1/2	1/2	5/8		2-1/2	SQ*	0.010	AXMG45-1616-L1	15527	45527	65527
1/2	1/2	5/8		2-1/2	radius	0.030	AXMG45-1616-L1R030	15529	45529	65529
1/2	1/2	5/8		2-1/2	radius	0.060	AXMG45-1616-L1R060	15531	45531	65531
1/2	1/2	5/8		2-1/2	radius	0.090	AXMG45-1616-L1R090	15533	45533	65533
1/2	1/2	5/8		2-1/2	radius	0.120	AXMG45-1616-L1R120	15535	45535	65535
1/2	1/2	5/8		3	SQ*	0.010	AXMG45-1616-L2	15537	45537	65537
1/2	1/2	5/8		3	radius	0.030	AXMG45-1616-L2R030	15539	45539	65539
1/2	1/2	5/8		3	radius	0.060	AXMG45-1616-L2R060	15541	45541	65541
1/2	1/2	5/8		3	radius	0.090	AXMG45-1616-L2R090	15543	45543	65543
1/2	1/2	5/8		3	radius	0.120	AXMG45-1616-L2R120	15551	45551	65551

SQ* = minimal radius for corner protection.

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SERIES: AXMG45

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER		PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
1/2	1/2	5/8	1-1/4	3	SQ*	0.010	AXMG45-1616-L3	15553	45553	65553
1/2	1/2	5/8	1-1/4	3	radius	0.030	AXMG45-1616-L3R030	15555	45555	65555
1/2	1/2	5/8	1-1/4	3	radius	0.060	AXMG45-1616-L3R060	15557	45557	65557
1/2	1/2	5/8	1-1/4	3	radius	0.090	AXMG45-1616-L3R090	15559	45559	65559
1/2	1/2	5/8	1-1/4	3	radius	0.120	AXMG45-1616-L3R120	15561	45561	65561
1/2	1/2	5/8		4	SQ*	0.010	AXMG45-1616-L4	19331	49331	69331
1/2	1/2	5/8		4	radius	0.030	AXMG45-1616-L4R030	15563	45563	65563
1/2	1/2	5/8		4	radius	0.060	AXMG45-1616-L4R060	15565	45565	65565
1/2	1/2	5/8		4	radius	0.090	AXMG45-1616-L4R090	15567	45567	65567
1/2	1/2	5/8		4	radius	0.120	AXMG45-1616-L4R120	15569	45569	65569
1/2	1/2	5/8	2-1/4	4	SQ*	0.010	AXMG45-1616-L5	15571	45571	65571
1/2	1/2	5/8	2-1/4	4	radius	0.030	AXMG45-1616-L5R030	15573	45573	65573
1/2	1/2	5/8	2-1/4	4	radius	0.060	AXMG45-1616-L5R060	15575	45575	65575
1/2	1/2	5/8	2-1/4	4	radius	0.090	AXMG45-1616-L5R090	15577	45577	65577
1/2	1/2	5/8	2-1/4	4	radius	0.120	AXMG45-1616-L5R120	15579	45579	65579
1/2	1/2	5/8	3-3/8	6	SQ*	0.010	AXMG45-1616-L8	15593	45593	65593
1/2	1/2	1		3	SQ*	0.010	AXMG45-1616-L9	15595	45595	65595
1/2	1/2	1		5	SQ*	0.010	AXMG45-1616-L11	15601	45601	65601
1/2	1/2	1-1/4		3	SQ*	0.010	AXMG45-1616-L13	14219	44219	64219
1/2	1/2	1-1/4		3	radius	0.030	AXMG45-1616-L13R030	15611	45611	65611
1/2	1/2	1-1/4		3	radius	0.060	AXMG45-1616-L13R060	15613	45613	65613
1/2	1/2	1-1/4		3	radius	0.090	AXMG45-1616-L13R090	15615	45615	65615
1/2	1/2	1-1/4		3	radius	0.120	AXMG45-1616-L13R120	15617	45617	65617
1/2	1/2	1-1/4		4	SQ*	0.010	AXMG45-1616-L14	14221	44221	64221
1/2	1/2	1-1/4	2-1/4	4	SQ*	0.010	AXMG45-1616-L15	14223	44223	64223
1/2	1/2	1-1/4		6	SQ*	0.010	AXMG45-1616-L16	15619	45619	65619
1/2	1/2	2		4	SQ*	0.010	AXMG45-1616-L17	15621	45621	65621
1/2	1/2	2		4	radius	0.030	AXMG45-1616-L17R030	15623	45623	65623
1/2	1/2	2		4	radius	0.060	AXMG45-1616-L17R060	15625	45625	65625
1/2	1/2	2		4	radius	0.090	AXMG45-1616-L17R090	15627	45627	65627
1/2	1/2	2		4	radius	0.120	AXMG45-1616-L17R120	15629	45629	65629
1/2	1/2	3-1/8		6	SQ*	0.010	AXMG45-1616-L18	15631	45631	65631
5/8	5/8	3/4		3-1/2	SQ*	0.010	AXMG45-2020-L1	15633	45633	65633
5/8	5/8	3/4		3-1/2	radius	0.030	AXMG45-2020-L1R030	15635	45635	65635
5/8	5/8	3/4		3-1/2	radius	0.060	AXMG45-2020-L1R060	15637	45637	65637
5/8	5/8	3/4		3-1/2	radius	0.090	AXMG45-2020-L1R090	15639	45639	65639
5/8	5/8	3/4		3-1/2	radius	0.120	AXMG45-2020-L1R120	15641	45641	65641
5/8	5/8	3/4	1-1/2	3-1/2	SQ*	0.010	AXMG45-2020-L2	15643	45643	65643
5/8	5/8	3/4	1-1/2	3-1/2	radius	0.030	AXMG45-2020-L2R030	15645	45645	65645
5/8	5/8	3/4	1-1/2	3-1/2	radius	0.060	AXMG45-2020-L2R060	15647	45647	65647
5/8	5/8	3/4	1-1/2	3-1/2	radius	0.090	AXMG45-2020-L2R090	15649	45649	65649
5/8	5/8	3/4	1-1/2	3-1/2	radius	0.120	AXMG45-2020-L2R120	15651	45651	65651
5/8	5/8	3/4	2-3/8	5	SQ*	0.010	AXMG45-2020-L4	15663	45663	65663
5/8	5/8	3/4	2-3/8	5	radius	0.030	AXMG45-2020-L4R030	15665	45665	65665
5/8	5/8	3/4	2-3/8	5	radius	0.060	AXMG45-2020-L4R060	15667	45667	65667
5/8	5/8	3/4	2-3/8	5	radius	0.090	AXMG45-2020-L4R090	15669	45669	65669
5/8	5/8	3/4	2-3/8	5	radius	0.120	AXMG45-2020-L4R120	15670	45670	65670

SQ* = minimal radius for corner protection.

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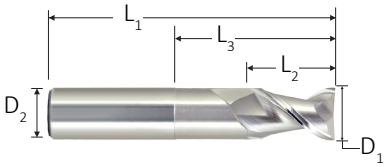

SERIES: AXMG45

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER		PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
5/8	5/8	3/4	3-3/8	6	SQ*	0.010	AXMG45-2020-L6	15703	45703	65703
5/8	5/8	1-1/4		3-1/2	SQ*	0.010	AXMG45-2020-L7	15705	45705	65705
5/8	5/8	1-1/4		3-1/2	radius	0.030	AXMG45-2020-L7R030	15707	45707	65707
5/8	5/8	1-1/4		3-1/2	radius	0.060	AXMG45-2020-L7R060	15709	45709	65709
5/8	5/8	1-1/4		3-1/2	radius	0.090	AXMG45-2020-L7R090	15711	45711	65711
5/8	5/8	1-1/4		3-1/2	radius	0.120	AXMG45-2020-L7R120	15713	45713	65713
5/8	5/8	1-1/4		6	SQ*	0.010	AXMG45-2020-L8	16023	46023	66023
5/8	5/8	1-5/8		3-1/2	SQ*	0.010	AXMG45-2020-L9	16050	46050	66050
5/8	5/8	1-5/8		3-1/2	radius	0.030	AXMG45-2020-L9R030	16055	46055	66055
5/8	5/8	1-5/8		3-1/2	radius	0.060	AXMG45-2020-L9R060	12967	42967	62967
5/8	5/8	1-5/8		3-1/2	radius	0.090	AXMG45-2020-L9R090	16082	46082	66082
5/8	5/8	1-5/8		3-1/2	radius	0.120	AXMG45-2020-L9R120	16333	46333	66333
5/8	5/8	1-5/8		6	SQ*	0.010	AXMG45-2020-L11	16866	46866	66866
5/8	5/8	2-1/2		5	SQ*	0.010	AXMG45-2020-L12	16868	46868	66868
5/8	5/8	2-1/2		5	radius	0.030	AXMG45-2020-L12R030	16869	46869	66869
5/8	5/8	3-3/4		6	SQ*	0.010	AXMG45-2020-L13	16885	46885	66885
3/4	3/4	1		3	SQ*	0.010	AXMG45-2424-L1	16887	46887	66887
3/4	3/4	1		3	radius	0.030	AXMG45-2424-L1R030	16888	46888	66888
3/4	3/4	1		3	radius	0.060	AXMG45-2424-L1R060	19140	49140	69140
3/4	3/4	1		3	radius	0.090	AXMG45-2424-L1R090	19155	49155	69155
3/4	3/4	1		3	radius	0.120	AXMG45-2424-L1R120	19156	49156	69156
3/4	3/4	1		4	SQ*	0.010	AXMG45-2424-L2	19157	49157	69157
3/4	3/4	1	1-5/8	4	SQ*	0.010	AXMG45-2424-L3	19158	49158	69158
3/4	3/4	1	1-5/8	4	radius	0.030	AXMG45-2424-L3R030	19159	49159	69159
3/4	3/4	1	1-5/8	4	radius	0.060	AXMG45-2424-L3R060	19161	49161	69161
3/4	3/4	1	1-5/8	4	radius	0.090	AXMG45-2424-L3R090	19164	49164	69164
3/4	3/4	1	1-5/8	4	radius	0.120	AXMG45-2424-L3R120	19256	49256	69256
3/4	3/4	1	2-1/4	4	SQ*	0.010	AXMG45-2424-L4	11700	41700	61700
3/4	3/4	1	2-1/2	5	SQ*	0.010	AXMG45-2424-L6	19332	49332	69332
3/4	3/4	1	2-1/2	5	radius	0.030	AXMG45-2424-L6R030	19281	49281	69281
3/4	3/4	1	2-1/2	5	radius	0.060	AXMG45-2424-L6R060	19282	49282	69282
3/4	3/4	1	2-1/2	5	radius	0.090	AXMG45-2424-L6R090	19283	49283	69283
3/4	3/4	1	2-1/2	5	radius	0.120	AXMG45-2424-L6R120	19284	49284	69284
3/4	3/4	1	3-3/8	6	SQ*	0.010	AXMG45-2424-L8	19287	49287	69287
3/4	3/4	1	4-3/8	7	SQ*	0.010	AXMG45-2424-L10	19289	49289	69289
3/4	3/4	1-1/2		4	SQ*	0.010	AXMG45-2424-L11	19291	49291	69291
3/4	3/4	1-1/2		4	radius	0.030	AXMG45-2424-L11R030	19292	49292	69292
3/4	3/4	1-1/2		4	radius	0.060	AXMG45-2424-L11R060	19293	49293	69293
3/4	3/4	1-1/2		4	radius	0.090	AXMG45-2424-L11R090	19295	49295	69295
3/4	3/4	1-1/2		4	radius	0.120	AXMG45-2424-L11R120	19296	49296	69296
3/4	3/4	1-1/2	2-1/4	5	SQ*	0.010	AXMG45-2424-L12	19297	49297	69297
3/4	3/4	1-5/8		4	SQ*	0.010	AXMG45-2424-L14	11701	41701	61701
3/4	3/4	1-5/8		4	radius	0.030	AXMG45-2424-L14R030	19300	49300	69300
3/4	3/4	1-5/8		4	radius	0.060	AXMG45-2424-L14R060	19301	49301	69301
3/4	3/4	1-5/8		4	radius	0.090	AXMG45-2424-L14R090	19302	49302	69302
3/4	3/4	1-5/8		4	radius	0.120	AXMG45-2424-L14R120	19303	49303	69303
3/4	3/4	1-5/8		6	SQ*	0.010	AXMG45-2424-L15	19304	49304	69304
3/4	3/4	2-1/4		5	SQ*	0.010	AXMG45-2424-L16	19305	49305	69305
3/4	3/4	3-1/4		6	SQ*	0.010	AXMG45-2424-L17	19306	49306	69306

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SQ* = minimal radius for corner protection.

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SERIES: AXMG45

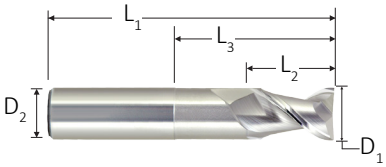
DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER		PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
1	1	1-1/4		4	SQ*	0.015	AXMG45-3232-L1	19307	49307	69307
1	1	1-1/4		4	radius	0.030	AXMG45-3232-L1R030	19308	49308	69308
1	1	1-1/4		4	radius	0.060	AXMG45-3232-L1R060	19309	49309	69309
1	1	1-1/4		4	radius	0.090	AXMG45-3232-L1R090	19322	49322	69322
1	1	1-1/4		4	radius	0.120	AXMG45-3232-L1R120	19323	49323	69323
1	1	1-1/4	2-1/4	4	SQ*	0.015	AXMG45-3232-L2	19324	49324	69324
1	1	1-1/4	2-1/4	4	radius	0.030	AXMG45-3232-L2R030	19325	49325	69325
1	1	1-1/4	2-1/4	4	radius	0.060	AXMG45-3232-L2R060	19326	49326	69326
1	1	1-1/4	2-1/4	4	radius	0.090	AXMG45-3232-L2R090	19327	49327	69327
1	1	1-1/4	2-1/4	4	radius	0.120	AXMG45-3232-L2R120	19328	49328	69328
1	1	1-1/4	2-5/8	5	SQ*	0.015	AXMG45-3232-L4	19337	49337	69337
1	1	1-1/4	2-5/8	5	radius	0.030	AXMG45-3232-L4R030	19338	49338	69338
1	1	1-1/4	2-5/8	5	radius	0.060	AXMG45-3232-L4R060	19339	49339	69339
1	1	1-1/4	2-5/8	5	radius	0.090	AXMG45-3232-L4R090	19340	49340	69340
1	1	1-1/4	2-5/8	5	radius	0.120	AXMG45-3232-L4R120	19341	49341	69341
1	1	1-1/4		6	SQ*	0.015	AXMG45-3232-L5	19342	49342	69342
1	1	1-1/4		6	radius	0.030	AXMG45-3232-L5R030	19343	49343	69343
1	1	1-1/4		6	radius	0.060	AXMG45-3232-L5R060	19344	49344	69344
1	1	1-1/4		6	radius	0.090	AXMG45-3232-L5R090	19387	49387	69387
1	1	1-1/4		6	radius	0.120	AXMG45-3232-L5R120	19391	49391	69391
1	1	1-1/4	3-3/8	6	SQ*	0.015	AXMG45-3232-L6	19394	49394	69394
1	1	1-1/4	4-3/8	7	SQ*	0.015	AXMG45-3232-L8	19523	49523	69523
1	1	1-1/2		4	SQ*	0.015	AXMG45-3232-L10	19582	49582	69582
1	1	1-1/2		4	radius	0.030	AXMG45-3232-L10R030	19583	49583	69583
1	1	1-1/2		4	radius	0.060	AXMG45-3232-L10R060	19732	49732	69732
1	1	1-1/2		4	radius	0.090	AXMG45-3232-L10R090	19733	49733	69733
1	1	1-1/2		4	radius	0.120	AXMG45-3232-L10R120	19734	49734	69734
1	1	1-1/2	2-1/4	5	SQ*	0.015	AXMG45-3232-L12	19736	49736	69736
1	1	1-1/2	3-1/4	6	SQ*	0.015	AXMG45-3232-L14	19738	49738	69738
1	1	2-1/4		5	SQ*	0.015	AXMG45-3232-L15	19740	49740	69740
1	1	2-1/4		5	radius	0.030	AXMG45-3232-L15R030	19782	49782	69782
1	1	2-1/4		5	radius	0.060	AXMG45-3232-L15R060	19786	49786	69786
1	1	2-1/4		5	radius	0.090	AXMG45-3232-L15R090	19788	49788	69788
1	1	2-1/4		5	radius	0.120	AXMG45-3232-L15R120	19789	49789	69789
1	1	3-1/4		6	SQ*	0.015	AXMG45-3232-L18	19865	49865	69865
1	1	3-1/4		6	radius	0.060	AXMG45-3232-L18R060	19867	49867	69867
1	1	4-1/8		7	SQ*	0.015	AXMG45-3232-L19	19888	49888	69888
1-1/4	1-1/4	1-1/4		4-1/2	SQ*	0.015	AXMG45-4040-L1	19927	49927	69927
1-1/4	1-1/4	1-1/4		4-1/2	radius	0.030	AXMG45-4040-L1R030	19940	49940	69940
1-1/4	1-1/4	1-1/4		4-1/2	radius	0.060	AXMG45-4040-L1R060	19951	49951	69951
1-1/4	1-1/4	1-1/4		4-1/2	radius	0.090	AXMG45-4040-L1R090	19956	49956	69956
1-1/4	1-1/4	1-1/4		4-1/2	radius	0.120	AXMG45-4040-L1R120	19299	49299	69299
1-1/4	1-1/4	1-1/4	2-5/8	6	SQ*	0.015	AXMG45-4040-L3	19987	49987	69987
1-1/4	1-1/4	1-1/4	2-5/8	6	radius	0.030	AXMG45-4040-L3R030	19988	49988	69988
1-1/4	1-1/4	1-1/4	2-5/8	6	radius	0.060	AXMG45-4040-L3R060	19989	49989	69989
1-1/4	1-1/4	1-1/4	2-5/8	6	radius	0.090	AXMG45-4040-L3R090	19990	49990	69990
1-1/4	1-1/4	1-1/4	2-5/8	6	radius	0.120	AXMG45-4040-L3R120	19991	49991	69991

SQ* = minimal radius for corner protection.

Speed & Feed: page 138

Aluminum Alloys

2 Flute • 45° end mill



Carbide | 2 | Center Cutting | 45° | Bright TiCN ZrN | +.000mm -.050mm | Square | Radius | HRc <40 | N

Additional coatings - nACRo, DLC & TiB_2 available upon request

- For universal operations on Aluminum and Cast Aluminum Alloys
- Edge prep provides superior edge strength and faster chip flow
- Wiper Flats and polish grinding produce superior surface finishes on walls and floors
- Polished flute face and edge prep optimizes chip evacuation and avoids chip nesting
- H6 Tolerance shank for use in shrink fit holders

Series: AXMG45-M_M_

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER		PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
3mm	3mm	8mm		51mm	SQ*	0.10mm	AXMG45-M3M3-L1	13305	43305	63305
4mm	4mm	11mm		63mm	SQ*	0.15mm	AXMG45-M4M4-L1	13306	43306	63306
5mm	5mm	13mm		63mm	SQ*	0.15mm	AXMG45-M5M5-L1	13307	43307	63307
6mm	6mm	13mm		63mm	SQ*	0.20mm	AXMG45-M6M6-L1	13308	43308	63308
8mm	8mm	19mm		63mm	SQ*	0.20mm	AXMG45-M8M8-L1	13309	43309	63309
10mm	10mm	22mm		70mm	SQ*	0.25mm	AXMG45-M10M10-L1	13310	43310	63310
10mm	10mm	22mm		70mm	radius	0.50mm	AXMG45-M10M10-L1R0.5	13311	43311	63311
10mm	10mm	22mm		70mm	radius	1.00mm	AXMG45-M10M10-L1R1.0	13312	43312	63312
10mm	10mm	22mm		70mm	radius	1.50mm	AXMG45-M10M10-L1R1.5	13313	43313	63313
10mm	10mm	22mm	34mm	76mm	SQ*	0.25mm	AXMG45-M10M10-L2	13314	43314	63314
10mm	10mm	22mm	34mm	76mm	radius	0.50mm	AXMG45-M10M10-L2R0.5	13315	43315	63315
10mm	10mm	22mm	34mm	76mm	radius	1.00mm	AXMG45-M10M10-L2R1.0	13317	43317	63317
10mm	10mm	22mm	34mm	76mm	radius	1.50mm	AXMG45-M10M10-L2R1.5	13318	43318	63318
10mm	10mm	22mm	48mm	100mm	SQ*	0.25mm	AXMG45-M10M10-L3	13319	43319	63319
10mm	10mm	22mm	48mm	100mm	radius	0.50mm	AXMG45-M10M10-L3R0.5	13320	43320	63320
10mm	10mm	22mm	48mm	100mm	radius	1.00mm	AXMG45-M10M10-L3R1.0	13321	43321	63321
10mm	10mm	22mm	48mm	100mm	radius	1.50mm	AXMG45-M10M10-L3R1.5	13322	43322	63322
12mm	12mm	26mm		76mm	SQ*	0.25mm	AXMG45-M12M12-L1	13323	43323	63323
12mm	12mm	26mm		76mm	radius	1.00mm	AXMG45-M12M12-L1R1.0	13324	43324	63324
12mm	12mm	26mm		76mm	radius	1.50mm	AXMG45-M12M12-L1R1.5	13325	43325	63325
12mm	12mm	26mm		76mm	radius	2.00mm	AXMG45-M12M12-L1R2.0	13326	43326	63326
12mm	12mm	26mm	52mm	100mm	SQ*	0.25mm	AXMG45-M12M12-L2	13327	43327	63327
12mm	12mm	26mm	52mm	100mm	radius	1.00mm	AXMG45-M12M12-L2R1.0	13328	43328	63328
12mm	12mm	26mm	52mm	100mm	radius	1.50mm	AXMG45-M12M12-L2R1.5	13329	43329	63329
12mm	12mm	26mm	52mm	100mm	radius	2.00mm	AXMG45-M12M12-L2R2.0	13330	43330	63330
12mm	12mm	26mm	76mm	125mm	SQ*	0.25mm	AXMG45-M12M12-L3	13331	43331	63331
12mm	12mm	26mm	76mm	125mm	radius	1.00mm	AXMG45-M12M12-L3R1.0	13332	43332	63332
12mm	12mm	26mm	76mm	125mm	radius	1.50mm	AXMG45-M12M12-L3R1.5	13333	43333	63333
12mm	12mm	26mm	76mm	125mm	radius	2.00mm	AXMG45-M12M12-L3R2.0	13334	43334	63334
14mm	14mm	26mm		89mm	SQ*	0.25mm	AXMG45-M14M14-L1	13335	43335	63335
14mm	14mm	26mm		89mm	radius	1.00mm	AXMG45-M14M14-L1R1.0	13336	43336	63336
14mm	14mm	26mm		89mm	radius	1.50mm	AXMG45-M14M14-L1R1.5	13345	43345	63345
14mm	14mm	26mm		89mm	radius	2.00mm	AXMG45-M14M14-L1R2.0	13346	43346	63346

SQ* = minimal radius for corner protection.

Speed & Feed: page 138

sizes continued on next page

2 FLUTE • 45° END MILL

SERIES: AXMG45-M_M_

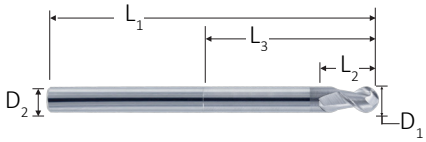
DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER		PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
14mm	14mm	26mm	52mm	100mm	SQ*	0.25mm	AXMG45-M14M14-L2	13347	43347	63347
14mm	14mm	26mm	52mm	100mm	radius	1.00mm	AXMG45-M14M14-L2R1.0	13348	43348	63348
14mm	14mm	26mm	52mm	100mm	radius	1.50mm	AXMG45-M14M14-L2R1.5	13360	43360	63360
14mm	14mm	26mm	52mm	100mm	radius	2.00mm	AXMG45-M14M14-L2R2.0	13361	43361	63361
14mm	14mm	26mm	76mm	127mm	SQ*	0.25mm	AXMG45-M14M14-L3	13403	43403	63403
14mm	14mm	26mm	76mm	127mm	radius	1.00mm	AXMG45-M14M14-L3R1.0	13412	43412	63412
14mm	14mm	26mm	76mm	127mm	radius	1.50mm	AXMG45-M14M14-L3R1.5	13414	43414	63414
14mm	14mm	26mm	76mm	127mm	radius	2.00mm	AXMG45-M14M14-L3R2.0	13442	43442	63442
16mm	16mm	32mm		89mm	SQ*	0.25mm	AXMG45-M16M16-L1	13444	43444	63444
16mm	16mm	32mm		89mm	radius	1.00mm	AXMG45-M16M16-L1R1.0	13451	43451	63451
16mm	16mm	32mm		89mm	radius	1.50mm	AXMG45-M16M16-L1R1.5	13453	43453	63453
16mm	16mm	32mm		89mm	radius	2.00mm	AXMG45-M16M16-L1R2.0	13622	43622	63622
16mm	16mm	32mm	76mm	127mm	SQ*	0.25mm	AXMG45-M16M16-L2	13623	43623	63623
16mm	16mm	32mm	76mm	127mm	radius	1.00mm	AXMG45-M16M16-L2R1.0	13624	43624	63624
16mm	16mm	32mm	76mm	127mm	radius	1.50mm	AXMG45-M16M16-L2R1.5	13625	43625	63625
16mm	16mm	32mm	76mm	127mm	radius	2.00mm	AXMG45-M16M16-L2R2.0	13626	43626	63626
18mm	18mm	32mm		100mm	SQ*	0.25mm	AXMG45-M18M18-L1	13627	43627	63627
18mm	18mm	32mm		100mm	radius	1.00mm	AXMG45-M18M18-L1R1.0	13628	43628	63628
18mm	18mm	32mm		100mm	radius	1.50mm	AXMG45-M18M18-L1R1.5	13629	43629	63629
18mm	18mm	32mm		100mm	radius	2.00mm	AXMG45-M18M18-L1R2.0	13630	43630	63630
18mm	18mm	32mm	75mm	127mm	SQ*	0.25mm	AXMG45-M18M18-L2	13631	43631	63631
18mm	18mm	32mm	75mm	127mm	radius	1.00mm	AXMG45-M18M18-L2R1.0	13657	43657	63657
18mm	18mm	32mm	75mm	127mm	radius	1.50mm	AXMG45-M18M18-L2R1.5	13671	43671	63671
18mm	18mm	32mm	75mm	127mm	radius	2.00mm	AXMG45-M18M18-L2R2.0	13685	43685	63685
20mm	20mm	38mm		100mm	SQ*	0.25mm	AXMG45-M20M20-L1	13699	43699	63699
20mm	20mm	38mm		100mm	radius	1.00mm	AXMG45-M20M20-L1R1.0	13711	43711	63711
20mm	20mm	38mm		100mm	radius	1.50mm	AXMG45-M20M20-L1R1.5	13712	43712	63712
20mm	20mm	38mm		100mm	radius	2.00mm	AXMG45-M20M20-L1R2.0	13713	43713	63713
20mm	20mm	38mm	75mm	127mm	SQ*	0.25mm	AXMG45-M20M20-L2	13714	43714	63714
20mm	20mm	38mm	75mm	127mm	radius	1.00mm	AXMG45-M20M20-L2R1.0	13715	43715	63715
20mm	20mm	38mm	75mm	127mm	radius	1.50mm	AXMG45-M20M20-L2R1.5	13716	43716	63716
20mm	20mm	38mm	75mm	127mm	radius	2.00mm	AXMG45-M20M20-L2R2.0	14111	44111	64111
20mm	20mm	38mm	90mm	150mm	SQ*	0.25mm	AXMG45-M20M20-L3	14113	44113	64113
20mm	20mm	38mm	90mm	150mm	radius	1.00mm	AXMG45-M20M20-L3R1.0	14115	44115	64115
20mm	20mm	38mm	90mm	150mm	radius	1.50mm	AXMG45-M20M20-L3R1.5	14117	44117	64117
20mm	20mm	38mm	90mm	150mm	radius	2.00mm	AXMG45-M20M20-L3R2.0	14119	44119	64119
25mm	25mm	38mm		100mm	SQ*	0.25mm	AXMG45-M25M25-L1	14123	44123	64123
25mm	25mm	38mm		100mm	radius	1.00mm	AXMG45-M25M25-L1R1.0	14125	44125	64125
25mm	25mm	38mm		100mm	radius	1.50mm	AXMG45-M25M25-L1R1.5	14127	44127	64127
25mm	25mm	38mm		100mm	radius	2.00mm	AXMG45-M25M25-L1R2.0	14129	44129	64129
25mm	25mm	38mm	90mm	150mm	SQ*	0.25mm	AXMG45-M25M25-L2	14131	44131	64131
25mm	25mm	38mm	90mm	150mm	radius	1.00mm	AXMG45-M25M25-L2R1.0	14133	44133	64133
25mm	25mm	38mm	90mm	150mm	radius	1.50mm	AXMG45-M25M25-L2R1.5	14135	44135	64135
25mm	25mm	38mm	90mm	150mm	radius	2.00mm	AXMG45-M25M25-L2R2.0	14137	44137	64137

SQ* = minimal radius for corner protection.

Speed & Feed: page 138

Aluminum Alloys

2 Flute • 45° Ball Nose End Mill



Carbide | 2 | Center Cutting | 45° | Bright TiCN ZrN | +.000 -.002 | Ball | HRc <40 | N

Additional coatings - nACRo, DLC & TiB_2 available upon request

- For universal operations on Aluminum and Cast Aluminum Alloys
- Edge prep provides superior edge strength and faster chip flow
- Polished Primary produces superior surface finishes on walls and floors
- Polished flute face and edge prep optimizes chip evacuation and avoids chip nesting
- H6 Tolerance shank for use in shrink fit holders

Series: AXMG45-__-B

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
1/8	1/8	1/4		1-1/2	AXMG45-404-L1-B	11890	41890	61890
1/8	1/8	3/8		1-1/2	AXMG45-404-L2-B	11893	41893	61893
1/4	1/4	3/8		2-1/2	AXMG45-808-L1-B	14605	44605	64605
1/4	1/4	3/8	1-1/8	2-1/2	AXMG45-808-L2-B	14606	44606	64606
1/4	1/4	3/8	no neck	6	AXMG45-808-NN-B	14607	44607	64607
1/4	1/4	3/4		2-1/2	AXMG45-808-L3-B	14608	44608	64608
3/8	3/8	1/2		2-1/2	AXMG45-1212-L1-B	14609	44609	64609
3/8	3/8	1/2	2-1/8	4	AXMG45-1212-L2-B	14611	44611	64611
3/8	3/8	1/2	no neck	6	AXMG45-1212-NN-B	14615	44615	64615
3/8	3/8	1		2-1/2	AXMG45-1212-L3-B	14616	44616	64616
3/8	3/8	1-1/2		4	AXMG45-1212-L4-B	14617	44617	64617
1/2	1/2	5/8		2-1/2	AXMG45-1616-L1-B	14618	44618	64618
1/2	1/2	5/8	2-1/4	4	AXMG45-1616-L2-B	14619	44619	64619
1/2	1/2	5/8	no neck	6	AXMG45-1616-NN-B	14620	44620	64620
1/2	1/2	1-1/4		3	AXMG45-1616-L3-B	14621	44621	64621
1/2	1/2	2		4	AXMG45-1616-L4-B	14622	44622	64622
5/8	5/8	3/4	1-1/2	3-1/2	AXMG45-2020-L1-B	14623	44623	64623
5/8	5/8	1-1/4		3-1/2	AXMG45-2020-L2-B	14624	44624	64624
5/8	5/8	1-5/8		4	AXMG45-2020-L3-B	14630	44630	64630
3/4	3/4	1		3	AXMG45-2424-L1-B	14632	44632	64632
3/4	3/4	1	2-1/2	5	AXMG45-2424-L2-B	14633	44633	64633
3/4	3/4	1	no neck	6	AXMG45-2424-NN-B	14634	44634	64634
3/4	3/4	1-5/8		4	AXMG45-2424-L3-B	14635	44635	64635
3/4	3/4	2-1/4		5	AXMG45-2424-L4-B	14636	44636	64636
1	1	1-1/4		4	AXMG45-3232-L1-B	14637	44637	64637
1	1	1-1/4	3-3/8	6	AXMG45-3232-L2-B	14638	44638	64638
1	1	2-1/4		5	AXMG45-3232-L3-B	14644	44644	64644

Speed & Feed: page 138

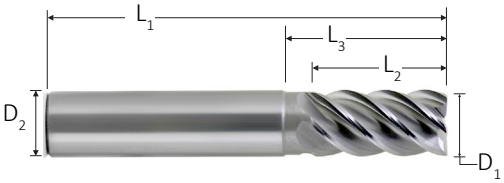
Recommended Aluminum Coatings

Melin provides SEVERAL coated options to fit your every need!

Order any of our tools with a Conventional or High Performance Coating

- TiCN
- ZrN
- nACRo
- DLC
- TiB_2

Conventional Coatings & High Performance Coatings



5 FLUTE • 45° FOR TROCHOIDAL TOOLPATHING

Carbide | 5 | Center Cutting | 45° | Bright TiCN ZrN | +.000 -.002 | Square | Radius | HRc <40 | N

Additional coatings - nACRo, DLC & TiB_2 available upon request

- Outstanding performance for High Feed Finishing of Aerospace wing spars
- Effective on all CNC machines 5-35 HP
- Generates 50-60% higher metal removal rates over 3 flute HP tools
- Unique Edge Prep minimizes chatter, extends tool life
- Wiper flat and polish grinds produce superior surface finishes on both walls and floor

SERIES: GXMG5

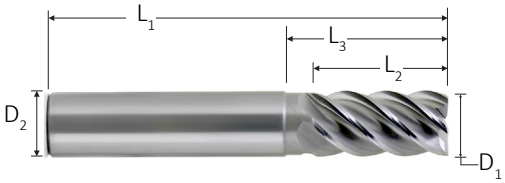
DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER		PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
1/8	1/8	3/16		1-1/2	SQ*	0.005	GXMG5-404-S	15047	45047	65047
1/8	1/8	3/16		1-1/2	radius	0.010	GXMG5-404-R010S	15049	45049	65049
1/8	1/8	3/16	11/16	2	SQ*	0.005	GXMG5-404-N	15051	45051	65051
1/8	1/8	3/16	11/16	2	radius	0.010	GXMG5-404-R010N	15052	45052	65052
1/8	1/8	1/4	1/2	1-1/2	SQ*	0.005	GXMG5-404	15053	45053	65053
1/8	1/8	1/4	1/2	1-1/2	radius	0.010	GXMG5-404-R010	15055	45055	65055
3/16	3/16	9/32		2	SQ*	0.005	GXMG5-606-S	15057	45057	65057
3/16	3/16	9/32		2	radius	0.010	GXMG5-606-R010S	15056	45056	65056
3/16	3/16	9/32	25/32	3	SQ*	0.005	GXMG5-606-N	15059	45059	65059
3/16	3/16	9/32	25/32	3	radius	0.010	GXMG5-606-R010N	15061	45061	65061
3/16	3/16	3/8	5/8	2	SQ*	0.005	GXMG5-606	15063	45063	65063
3/16	3/16	3/8	5/8	2	radius	0.010	GXMG5-606-R010	15064	45064	65064
1/4	1/4	3/8		2	SQ*	0.007	GXMG5-808-S	15065	45065	65065
1/4	1/4	3/8		2	radius	0.015	GXMG5-808-R015S	15067	45067	65067
1/4	1/4	3/8	1-1/8	3	SQ*	0.007	GXMG5-808-N	15069	45069	65069
1/4	1/4	3/8	1-1/8	3	radius	0.015	GXMG5-808-R015N	15071	45071	65071
1/4	1/4	1/2	3/4	2-1/2	SQ*	0.007	GXMG5-808	14247	44247	64247
1/4	1/4	1/2	3/4	2-1/2	radius	0.015	GXMG5-808-R015	14990	44990	64990
5/16	5/16	1/2		2	SQ*	0.007	GXMG5-1010-S	15073	45073	65073
5/16	5/16	1/2		2	radius	0.015	GXMG5-1010-R015S	15075	45075	65075
5/16	5/16	1/2	1-1/2	3	SQ*	0.007	GXMG5-1010-N	15077	45077	65077
5/16	5/16	1/2	1-1/2	3	radius	0.015	GXMG5-1010-R015N	15079	45079	65079
5/16	5/16	5/8	7/8	2-1/2	SQ*	0.007	GXMG5-1010	15081	45081	65081
5/16	5/16	5/8	7/8	2-1/2	radius	0.015	GXMG5-1010-R015	15083	45083	65083
3/8	3/8	9/16		2	SQ*	0.007	GXMG5-1212-S	15085	45085	65085
3/8	3/8	9/16		2	radius	0.020	GXMG5-1212-R020S	15087	45087	65087
3/8	3/8	9/16	1-15/16	4	SQ*	0.007	GXMG5-1212-N	14799	44799	64799
3/8	3/8	9/16	1-15/16	4	radius	0.020	GXMG5-1212-R020N	15089	45089	65089
3/8	3/8	3/4	1	2-1/2	SQ*	0.007	GXMG5-1212	14249	44249	64249
3/8	3/8	3/4	1	2-1/2	radius	0.020	GXMG5-1212-R020	14991	44991	64991
3/8	3/8	1		2-1/2	SQ*	0.007	GXMG5-1212-M	15091	45091	65091
3/8	3/8	1		2-1/2	radius	0.020	GXMG5-1212-R020M	15093	45093	65093
7/16	7/16	5/8		2-1/2	SQ*	0.007	GXMG5-1414-S	15095	45095	65095
7/16	7/16	5/8		2-1/2	radius	0.020	GXMG5-1414-R020S	15097	45097	65097
7/16	7/16	5/8	2	4	SQ*	0.007	GXMG5-1414-N	15099	45099	65099
7/16	7/16	5/8	2	4	radius	0.020	GXMG5-1414-R020N	15191	45191	65191

SQ* = minimal radius for corner protection.

sizes continued on next page

Speed & Feed: page 139

5 FLUTE • 45° FOR TROCHOIDAL TOOLPATHING



SERIES: GXMG5

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER		PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
7/16	7/16	7/8		2-3/4	SQ*	0.007	GXMG5-1414	15193	45193	65193
7/16	7/16	7/8		2-3/4	radius	0.020	GXMG5-1414-R020	15195	45195	65195
1/2	1/2	5/8		2-1/2	SQ*	0.010	GXMG5-1616-S	15197	45197	65197
1/2	1/2	5/8		2-1/2	radius	0.030	GXMG5-1616-R030S	15199	45199	65199
1/2	1/2	5/8	2	4	SQ*	0.010	GXMG5-1616-N	15205	45205	65205
1/2	1/2	5/8	2	4	radius	0.030	GXMG5-1616-R030N	15207	45207	65207
1/2	1/2	1	1-1/4	3	SQ*	0.010	GXMG5-1616	14243	44243	64243
1/2	1/2	1	1-1/4	3	radius	0.030	GXMG5-1616-R030	14992	44992	64992
1/2	1/2	1-1/4		3	SQ*	0.010	GXMG5-1616-M	14796	44796	64796
1/2	1/2	1-1/4		3	radius	0.030	GXMG5-1616-R030M	15209	45209	65209
5/8	5/8	3/4		3	SQ*	0.010	GXMG5-2020-S	15211	45211	65211
5/8	5/8	3/4		3	radius	0.030	GXMG5-2020-R030S	15213	45213	65213
5/8	5/8	3/4	2-3/8	5	SQ*	0.010	GXMG5-2020-N	15215	45215	65215
5/8	5/8	3/4	2-3/8	5	radius	0.030	GXMG5-2020-R030N	15217	45217	65217
5/8	5/8	1-1/4	1-1/2	3-1/2	SQ*	0.010	GXMG5-2020	15219	45219	65219
5/8	5/8	1-1/4	1-1/2	3-1/2	radius	0.030	GXMG5-2020-R030	14151	44151	64151
3/4	3/4	7/8		3	SQ*	0.010	GXMG5-2424-S	15221	45221	65221
3/4	3/4	7/8		3	radius	0.030	GXMG5-2424-R030S	15223	45223	65223
3/4	3/4	7/8	2-1/2	5	SQ*	0.010	GXMG5-2424-N	14833	44833	64833
3/4	3/4	7/8	2-1/2	5	radius	0.030	GXMG5-2424-R030N	15225	45225	65225
3/4	3/4	1-1/2	1-3/4	4	SQ*	0.010	GXMG5-2424	14155	44155	64155
3/4	3/4	1-1/2	1-3/4	4	radius	0.030	GXMG5-2424-R030	14993	44993	64993
1	1	1-1/4		3	SQ*	0.015	GXMG5-3232-S	15227	45227	65227
1	1	1-1/4		3	radius	0.030	GXMG5-3232-R030S	15229	45229	65229
1	1	1-1/4	3-1/4	6	SQ*	0.015	GXMG5-3232-N	15231	45231	65231
1	1	1-1/4	3-1/4	6	radius	0.030	GXMG5-3232-R030N	15233	45233	65233
1	1	1-1/2	1-3/4	4	SQ*	0.015	GXMG5-3232	15235	45235	65235
1	1	1-1/2	1-3/4	4	radius	0.030	GXMG5-3232-R030	15237	45237	65237

SQ* = minimal radius for corner protection.

Speed & Feed: page 139

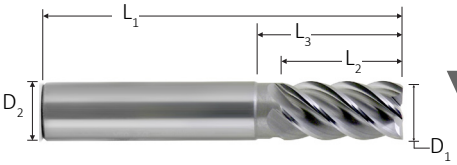
RECOMMENDED ALUMINUM COATINGS

Melin provides SEVERAL coated options to fit your every need!

Order any of our tools with a Conventional or High Performance Coating

- TiCN
- ZrN
- nACRo
- DLC
- TiB_2

CONVENTIONAL COATINGS & HIGH PERFORMANCE COATINGS



5 FLUTE • 45° FOR TROCHOIDAL TOOLPATHING

Carbide | 5 | Center Cutting | 45° | Bright TiCN ZrN | +.000mm -.050mm | Square | Radius | HRc <40 | N

Additional coatings - TiCn, ZrN, nACRo, DLC & TiB_2 available upon request - Please call customer service for SPL coated EDP

- Outstanding performance for High Feed Finishing of Aerospace wing spars
- Effective on all CNC machines 5-35 HP
- Generates 50-60% higher metal removal rates over 3 flute HP tools
- Unique Edge Prep minimizes chatter, extends tool life
- Wiper flat and polish grinds produce superior surface finishes on both walls and floor

SERIES: GXMG5-M_M_

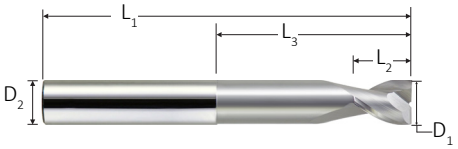
DIA D_1	SHK D_2	LOC L_2	OAL L_1	CORNER		PART NAME	BRIGHT EDP
3mm	3mm	12mm	38mm	radius	0.25mm	GXMG5-M3M3-R0.25	H6699
3mm	3mm	12mm	38mm	radius	0.50mm	GXMG5-M3M3-R0.5	H6700
4mm	4mm	14mm	50mm	radius	0.25mm	GXMG5-M4M4-R0.25	12549
4mm	4mm	14mm	51mm	radius	0.50mm	GXMG5-M4M4-R0.5	H6696
5mm	5mm	20mm	51mm	radius	0.25mm	GXMG5-M5M5-R0.25	H6697
5mm	5mm	20mm	51mm	radius	0.50mm	GXMG5-M5M5-R0.5	H6698
6mm	6mm	20mm	63mm	SQ*	0.15mm	GXMG5-M6M6	H6701
6mm	6mm	20mm	63mm	radius	0.25mm	GXMG5-M6M6-R0.25	H6702
6mm	6mm	20mm	63mm	radius	0.05mm	GXMG5-M6M6-R0.5	H6703
8mm	8mm	20mm	63mm	SQ*	0.15mm	GXMG5-M8M8	H6704
8mm	8mm	20mm	63mm	radius	0.5mm	GXMG5-M8M8-R0.5	H6705
8mm	8mm	20mm	63mm	radius	1.0mm	GXMG5-M8M8-R1.0	H6706
8mm	8mm	20mm	63mm	radius	1.5mm	GXMG5-M8M8-R1.5	H6707
8mm	8mm	20mm	63mm	radius	2.0mm	GXMG5-M8M8-R2.0	H6708
10mm	10mm	24mm	70mm	SQ*	0.2mm	GXMG5-M10M10	H6709
10mm	10mm	24mm	70mm	radius	0.5mm	GXMG5-M10M10-R0.5	H6710
10mm	10mm	24mm	70mm	radius	1.0mm	GXMG5-M10M10-R1.0	H6711
10mm	10mm	24mm	70mm	radius	1.5mm	GXMG5-M10M10-R1.5	H6712
10mm	10mm	24mm	70mm	radius	2.0mm	GXMG5-M10M10-R2.0	H6713
12mm	12mm	25mm	76mm	SQ*	0.2mm	GXMG5-M12M12	H6714
12mm	12mm	25mm	76mm	radius	0.5mm	GXMG5-M12M12-R0.5	H6715
12mm	12mm	25mm	76mm	radius	1.0mm	GXMG5-M12M12-R1.0	H6716
12mm	12mm	25mm	76mm	radius	1.5mm	GXMG5-M12M12-R1.5	H6717
12mm	12mm	25mm	76mm	radius	2.0mm	GXMG5-M12M12-R2.0	H6718
12mm	12mm	25mm	76mm	radius	3.0mm	GXMG5-M12M12-R3.0	H6719
16mm	16mm	32mm	100mm	SQ*	0.25mm	GXMG5-M16M16	H6720
16mm	16mm	32mm	100mm	radius	0.5mm	GXMG5-M16M16-R0.5	H6721
16mm	16mm	32mm	100mm	radius	1.0mm	GXMG5-M16M16-R1.0	H6722
16mm	16mm	32mm	100mm	radius	1.5mm	GXMG5-M16M16-R1.5	H6723
16mm	16mm	32mm	100mm	radius	2.0mm	GXMG5-M16M16-R2.0	H6724
16mm	16mm	32mm	100mm	radius	3.0mm	GXMG5-M16M16-R3.0	H6725
20mm	20mm	38mm	100mm	SQ*	0.25mm	GXMG5-M20M20	H6726
20mm	20mm	38mm	100mm	radius	0.5mm	GXMG5-M20M20-R0.5	H6727
20mm	20mm	38mm	100mm	radius	1.0mm	GXMG5-M20M20-R1.0	H6728
20mm	20mm	38mm	100mm	radius	1.5mm	GXMG5-M20M20-R1.5	H6729
20mm	20mm	38mm	100mm	radius	2.0mm	GXMG5-M20M20-R2.0	H6730
20mm	20mm	38mm	100mm	radius	3.0mm	GXMG5-M20M20-R3.0	H6731

SQ* = minimal radius for corner protection.

Speed & Feed: page 139

Aluminum Alloys

2 Flute • 35° for light duty CNC machines



Carbide | 2 | Center Cutting | 35° | Bright TiCN ZrN | +.000 -.002 | Radius | N

Additional coatings - nACRo, DLC & TiB_2 available upon request

- For universal machining in non-ferrous materials
- Small corner radius for added strength and smoother cutting action
- Excellent cost value for small production runs

Series: ALMG

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
1/8	1/8	3/8		1-1/2	0.010	ALMG-404	17737	47737	67737
3/16	3/16	1/4	9/16	2	0.010	ALMGN-606	12463	42463	62463
3/16	3/16	5/8		2	0.010	ALMG-606	17739	47739	67739
1/4	1/4	5/16	3/4	2-1/2	0.010	ALMGN-808	12465	42465	62465
1/4	1/4	1/2	7/8	2-1/2	0.010	ALMGS-808	10837	40837	60837
1/4	1/4	3/4		2-1/2	0.010	ALMG-808	17741	47741	67741
1/4	1/4	1-1/8		3	0.010	ALMG-808-L	17755	47755	67755
5/16	5/16	13/16		2-1/2	0.010	ALMG-1010	17743	47743	67743
5/16	5/16	1-1/8		3	0.010	ALMG-1010-L	17756	47756	67756
3/8	3/8	1/2	7/8	2-1/2	0.015	ALMGS-1212	10839	40839	60839
3/8	3/8	1/2	1-3/8	3	0.015	ALMGN-1212-1	12467	42467	62467
3/8	3/8	1/2	2-3/8	4	0.015	ALMGN-1212-2	12469	42469	62469
3/8	3/8	1		2-1/2	0.015	ALMG-1212	17745	47745	67745
3/8	3/8	1-1/8		3	0.015	ALMG-1212-L	17757	47757	67757
7/16	7/16	1		2-3/4	0.015	ALMG-1414	17747	47747	67747
1/2	1/2	5/8	1-1/8	3	0.020	ALMGS-1616	10841	40841	60841
1/2	1/2	5/8	2-1/8	4	0.020	ALMGN-1616-1	12471	42471	62471
1/2	1/2	5/8	3-1/8	5	0.020	ALMGN-1616-2	12473	42473	62473
1/2	1/2	1		3	0.020	ALMG-1616	17749	47749	67749
1/2	1/2	2		4	0.020	ALMG-1616-L	17759	47759	67759
5/8	5/8	1-1/4		3-1/2	0.020	ALMG-2020	17751	47751	67751
5/8	5/8	2-1/4		5	0.020	ALMG-2020-L	17760	47760	67760
3/4	3/4	1	1-7/8	4	0.030	ALMGS-2424	10843	40843	60843
3/4	3/4	1	2-7/8	5	0.030	ALMGN-2424-1	12475	42475	62475
3/4	3/4	1	3-7/8	6	0.030	ALMGN-2424-2	12477	42477	62477
3/4	3/4	1-1/2		4	0.030	ALMG-2424	17752	47752	67752
3/4	3/4	2-1/4		5	0.030	ALMG-2424-L	17761	47761	67761
1	1	1-1/2		4	0.030	ALMG-3232	17754	47754	67754
1	1	2-1/4		5	0.030	ALMG-3232-L	17762	47762	67762

Speed & Feed: page 140

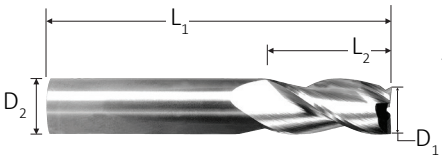
2 Flute • 35° for light duty CNC machines

Carbide | 2 | Center Cutting | 35° | Bright TiCN ZrN | +.000mm -.050mm | Radius | N

Series: ALMG-M_M_

DIA D_1	SHK D_2	LOC L_2	OAL L_1	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
4mm	4mm	14mm	51mm	0.3mm	ALMG-M4M4	11431	41431	61431
6mm	6mm	20mm	63mm	0.3mm	ALMG-M6M6	11435	41435	61435
8mm	8mm	20mm	63mm	0.3mm	ALMG-M8M8	11437	41437	61437
10mm	10mm	25mm	70mm	0.4mm	ALMG-M10M10	11439	41439	61439
12mm	12mm	25mm	76mm	0.4mm	ALMG-M12M12	11443	41443	61443
14mm	14mm	32mm	89mm	0.5mm	ALMG-M14M14	11445	41445	61445
16mm	16mm	32mm	89mm	0.5mm	ALMG-M16M16	11447	41447	61447
20mm	20mm	38mm	100mm	0.7mm	ALMG-M20M20	11451	41451	61451

Speed & Feed: page 140



3 FLUTE • 35° FOR LIGHT DUTY CNC MACHINES

Carbide | 3 | Center Cutting | 35° | Bright TiCN ZrN | +.000 -.002 | Radius | N

Additional coatings - nACRo, DLC & TiB_2 available upon request

- For universal machining in non-ferrous materials
- Small corner radius for added strength and smoother cutting action
- Excellent cost value for small production runs

SERIES: ELMG

DIA D_1	SHK D_2	LOC L_2	OAL L_1	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
1/8	1/8	3/8	1-1/2	0.005	ELMG-404	17764	47764	67764
3/16	3/16	5/8	2	0.005	ELMG-606	17766	47766	67766
1/4	1/4	3/4	2-1/2	0.005	ELMG-808	17768	47768	67768
1/4	1/4	1-1/8	3	0.005	ELMG-808-L	17782	47782	67782
5/16	5/16	13/16	2-1/2	0.005	ELMG-1010	17770	47770	67770
5/16	5/16	1-1/8	3	0.005	ELMG-1010-L	17783	47783	67783
3/8	3/8	1	2-1/2	0.005	ELMG-1212	17772	47772	67772
3/8	3/8	1-1/8	3	0.005	ELMG-1212-L	17784	47784	67784
7/16	7/16	1	2-3/4	0.005	ELMG-1414	17774	47774	67774
1/2	1/2	1-1/4	3	0.005	ELMG-1616	17776	47776	67776
1/2	1/2	1-1/2	4	0.005	ELMG-1616-M	10811	40811	60811
1/2	1/2	2	4	0.005	ELMG-1616-L	17786	47786	67786
5/8	5/8	1-5/8	3-1/2	0.005	ELMG-2020	17778	47778	67778
5/8	5/8	2-1/4	5	0.005	ELMG-2020-L	17787	47787	67787
3/4	3/4	1-5/8	4	0.005	ELMG-2424	17779	47779	67779
3/4	3/4	2-1/4	5	0.005	ELMG-2424-L	17788	47788	67788
1	1	1-1/2	4	0.005	ELMG-3232	17781	47781	67781
1	1	2-1/4	5	0.005	ELMG-3232-L	17789	47789	67789

Speed & Feed: page 141

3 FLUTE • 35° FOR LIGHT DUTY CNC MACHINES

Carbide | 3 | Center Cutting | 35° | Bright TiCN ZrN | +.000mm -.050mm | Radius | N

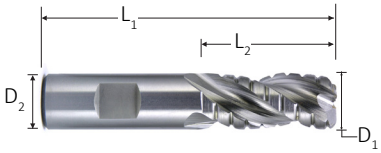
Additional coatings - nACRo, DLC & TiB_2 available upon request

SERIES: ELMG-M_M_

DIA D_1	SHK D_2	LOC L_2	OAL L_1	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
3mm	6mm	12mm	63mm	0.125mm	ELMG-M6M3	11680	41680	61680
4mm	4mm	14mm	51mm	0.125mm	ELMG-M4M4	11455	41455	61455
4mm	6mm	14mm	63mm	0.125mm	ELMG-M6M4	11681	41681	61681
5mm	5mm	20mm	51mm	0.125mm	ELMG-M5M5	11457	41457	61457
6mm	6mm	20mm	63mm	0.125mm	ELMG-M6M6	11459	41459	61459
8mm	8mm	20mm	63mm	0.125mm	ELMG-M8M8	11461	41461	61461
10mm	10mm	25mm	70mm	0.125mm	ELMG-M10M10	11463	41463	61463
12mm	12mm	25mm	76mm	0.125mm	ELMG-M12M12	11465	41465	61465
14mm	14mm	32mm	89mm	0.125mm	ELMG-M14M14	11467	41467	61467
16mm	16mm	32mm	89mm	0.125mm	ELMG-M16M16	11469	41469	61469
18mm	18mm	38mm	100mm	0.125mm	ELMG-M18M18	11471	41471	61471
20mm	20mm	38mm	100mm	0.125mm	ELMG-M20M20	11473	41473	61473
25mm	25mm	38mm	100mm	0.125mm	ELMG-M25M25	11475	41475	61475

Speed & Feed: page 141

3 FLUTE • POWDERED METAL ROUGHER FOR AGGRESSIVE MACHINING



HSSCo PM | 3 | Center Cutting | 37° | Bright | TiCN | ZrN | +.000 -.002 | Radius | Chamfer | Rough Finish | N

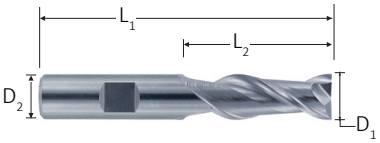
Additional coatings - nACRo, DLC & TiB_2 available upon request

- Outstanding performance in large diameter work
- Truncated, ground profile enables optimum chip evacuation
- Enables heavy cutting while still leaving good finishes
- Polished flute face eliminates chip build-up

SERIES: ERFPM

DIA D_1	SHK D_2	LOC L_2	OAL L_1	CORNER		LENGTH	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
3/8	3/8	3/4	2-1/2	chamfer	0.02 X 45°	std	ERFPM-1212	14489	44489	64489
3/8	3/8	1-1/2	3-1/4	chamfer	0.02 X 45°	long	ERFPM-1212-L	14475	44475	64475
1/2	1/2	1-1/4	3-1/4	chamfer	0.02 X 45°	std	ERFPM-1616	14492	44492	64492
1/2	1/2	1-1/4	3-1/4	radius	0.125	std	ERFPM-1616-R	14498	44498	64498
1/2	1/2	1-1/2	3-1/2	chamfer	0.02 X 45°	med	ERFPM-1616-M	14478	44478	64478
1/2	1/2	1-1/2	3-1/2	radius	0.125	med	ERFPM-1616-MR	14480	44480	64480
1/2	1/2	2	4	chamfer	0.02 X 45°	long	ERFPM-1616-L	14476	44476	64476
1/2	1/2	2	4	radius	0.125	long	ERFPM-1616-LR	14477	44477	64477
5/8	5/8	1-5/8	3-3/4	chamfer	0.02 X 45°	std	ERFPM-2020	11645	41645	61645
5/8	5/8	1-5/8	3-3/4	radius	0.125	std	ERFPM-2020-R	14499	44499	64499
5/8	5/8	2-1/8	4-1/4	chamfer	0.02 X 45°	med	ERFPM-2020-M	14493	44493	64493
5/8	5/8	2-1/2	4-5/8	chamfer	0.02 X 45°	long	ERFPM-2020-L	14494	44494	64494
3/4	3/4	1-5/8	3-7/8	chamfer	0.04 X 45°	std	ERFPM-2424	14481	44481	64481
3/4	3/4	1-5/8	3-7/8	radius	0.125	std	ERFPM-2424-R	14484	44484	64484
3/4	3/4	2-1/4	4-1/2	chamfer	0.04 X 45°	med	ERFPM-2424-M	14482	44482	64482
3/4	3/4	2-1/4	4-1/2	radius	0.125	med	ERFPM-2424-MR	14483	44483	64483
3/4	3/4	3	5-1/4	chamfer	0.04 X 45°	long	ERFPM-2424-L	11646	41646	61646
1	1	2	4-1/2	chamfer	0.04 X 45°	std	ERFPM-3232	14485	44485	64485
1	1	2	4-1/2	radius	0.125	std	ERFPM-3232-R	14488	44488	64488
1	1	3	5-1/2	chamfer	0.04 X 45°	med	ERFPM-3232-M	14495	44495	64495
1	1	3	5-1/2	radius	0.125	med	ERFPM-3232-MR	14487	44487	64487
1	1	4	6-1/2	chamfer	0.04 X 45°	long	ERFPM-3232-L	14486	44486	64486
1-1/4	1-1/4	2	4-1/2	chamfer	0.04 X 45°	std	ERFPM-4040	14496	44496	64496
1-1/4	1-1/4	4	6-1/2	radius	0.125	std	ERFPM-4040-R	14449	44449	64449
1-1/4	1-1/4	4	6-1/2	chamfer	0.04 X 45°	long	ERFPM-4040-L	14497	44497	64497

Speed & Feed: page 144



2 FLUTE • 38° HELIX COBALT END MILLS

HSSCo M42 | 2 | Center Cutting | 37° | Bright TiCN ZrN | +.0015 -.0000 | Square | N

Additional coatings - nACRo, DLC & TiB_2 available upon request

- Designed for conventional machining of Aluminum Alloys
- Excellent for use in large diameter work
- Requires less horsepower and speed than carbide cutters
- Polished flutes
- Fully compliant with NAS 986

SERIES: AA

DIA D_1	SHK D_2	LOC L_2	OAL L_1	LENGTH	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
1/4	3/8	1/2	2-5/16	std	AA-1208	10616	40616	60616
1/4	3/8	5/8	2-7/16	med	AA-1208-M	10648	40648	60648
1/4	3/8	1	2-7/8	med/long	AA-1208-ML	10652	40652	60652
1/4	3/8	1-1/4	3-1/16	long	AA-1208-L	10654	40654	60654
1/4	3/8	1-3/4	3-9/16	xl	AA-1208-E	10700	40700	60700
5/16	3/8	9/16	2-5/16	std	AA-1210	10618	40618	60618
5/16	3/8	3/4	2-1/2	med	AA-1210-M	10658	40658	60658
5/16	3/8	1-3/8	3-1/8	long	AA-1210-L	10662	40662	60662
5/16	3/8	2	3-3/4	xl	AA-1210-E	10702	40702	60702
3/8	3/8	9/16	2-5/16	std	AA-1212	10620	40620	60620
3/8	3/8	3/4	2-1/2	med	AA-1212-M	10664	40664	60664
3/8	3/8	1-1/2	3-1/4	long	AA-1212-L	10668	40668	60668
3/8	3/8	2-1/2	4-1/4	xl	AA-1212-E	10704	40704	60704
7/16	3/8	1	2-11/16	std	AA-1214	10622	40622	60622
1/2	1/2	1	3	std	AA-1616	10624	40624	60624
1/2	1/2	1-1/4	3-1/4	med	AA-1616-M	10674	40674	60674
1/2	1/2	2	4	long	AA-1616-L	10678	40678	60678
1/2	1/2	3	5	xl	AA-1616-E	10708	40708	60708
5/8	5/8	1-5/8	3-3/4	std	AA-2020	10626	40626	60626
5/8	5/8	2-1/2	4-5/8	long	AA-2020-L	10682	40682	60682
5/8	5/8	4	6-1/8	xl	AA-2020-E	10710	40710	60710
3/4	3/4	1-5/8	3-7/8	std	AA-2424	10630	40630	60630
3/4	3/4	2	4-1/4	med	AA-2424-M	10684	40684	60684
3/4	3/4	3	5-1/4	long	AA-2424-L	10686	40686	60686
3/4	3/4	4	6-1/4	xl	AA-2424-E	10712	40712	60712
7/8	7/8	1-7/8	4-1/8	std	AA-2828	10634	40634	60634
1	3/4	1-7/8	4-1/8	std	AA-2432	10632	40632	60632
1	1	2	4-1/2	std	AA-3232	10636	40636	60636
1	1	4	6-1/2	long	AA-3232-L	10690	40690	60690
1	1	6	8-1/2	xl	AA-3232-E	10716	40716	60716

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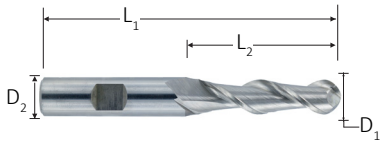
Aluminum Alloys

2 Flute • Ball Nose 38° Helix Cobalt End Mills



HSSCo M42 | 2 | Center Cutting | 37° | Bright | TiCN | ZrN | +.0005 -.0005 ≤5/8 | +.001 -.001 >5/8 | Ball | N

Additional coatings - nACRo, DLC & TiB_2 available upon request

- Designed for conventional machining of Aluminum Alloys
- Excellent for use in large diameter work
- Requires less horsepower and speed than carbide cutters
- Polished flutes
- Fully compliant with NAS 986

Series: AA-__-B

DIA D_1	SHK D_2	LOC L_2	OAL L_1	LENGTH	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP
1/4	3/8	1/2	2-5/16	std	AA-1208-B	12842	42842	62842
1/4	3/8	1-1/4	3-1/16	long	AA-1208-LB	12844	42844	62844
5/16	3/8	9/16	2-5/16	std	AA-1210-B	12848	42848	62848
5/16	3/8	1-3/8	3-1/8	long	AA-1210-LB	12850	42850	62850
3/8	3/8	9/16	2-5/16	std	AA-1212-B	12854	42854	62854
3/8	3/8	1-1/2	3-1/4	long	AA-1212-LB	12856	42856	62856
7/16	3/8	1	2-11/16	std	AA-1214-B	12860	42860	62860
1/2	1/2	1	3	std	AA-1616-B	12866	42866	62866
1/2	1/2	2	4	long	AA-1616-LB	12868	42868	62868
1/2	1/2	3	5	xl	AA-1616-EB	12870	42870	62870
5/8	5/8	1-5/8	3-3/4	std	AA-2020-B	12872	42872	62872
5/8	5/8	2-1/2	4-5/8	long	AA-2020-LB	12874	42874	62874
5/8	5/8	4	6-1/8	xl	AA-2020-EB	12876	42876	62876
3/4	3/4	1-5/8	3-7/8	std	AA-2424-B	12878	42878	62878
3/4	3/4	3	5-1/4	long	AA-2424-LB	12880	42880	62880
3/4	3/4	4	6-1/4	xl	AA-2424-EB	12882	42882	62882
7/8	7/8	1-7/8	4-1/8	std	AA-2828-B	12886	42886	62886
7/8	7/8	3-1/2	5-3/4	long	AA-2828-LB	12888	42888	62888
1	3/4	1-7/8	4-1/8	std	AA-2432-B	12884	42884	62884
1	1	2	4-1/2	std	AA-3232-B	12892	42892	62892
1	1	4	6-1/2	long	AA-3232-LB	12894	42894	62894
1	1	6	8-1/2	xl	AA-3232-EB	12896	42896	62896

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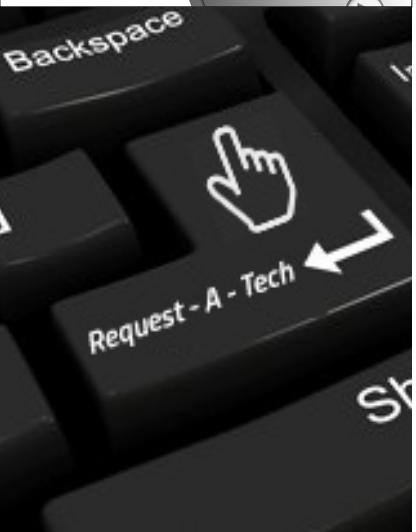

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Application Optimization

- Reduce Manufacturing Costs
- Eliminate Steps
- Evaluate Alternative Processes
- Optimize Tool Design
- Significantly Reduce Chatter & Vibrations

3 Flute • variable flute - HP roughing & finishing applications

Carbide | 3 | Center Cutting | variable | nACRo | +.0005 -.0005 | Square | Radius | HRc <54 | M S

- Geometry designed to reduce chatter, universal machining operations
- Unique titanium focused geometry and edge prep enables efficient cutting action
- Eccentric relief provides an exceptionally strong cutting edge
- Proprietary nACRo coating allows for higher SFM and is especially effective in extending tool life

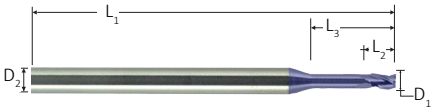
Series: VXMG3T

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	PART NAME	nACRo EDP
.031 *(1/32)*	1/8	0.046		1-1/2	0.005	VXMG3T-.031-SF	H6917
.031 *(1/32)*	1/8	0.046	0.156	2-1/2	0.005	VXMG3T-.031-SF5	H6918
.031 *(1/32)*	1/8	0.046	0.250	2-1/2	0.005	VXMG3T-.031-SF8	H6919
.031 *(1/32)*	1/8	0.093		1-1/2	SQ	VXMG3T-.031-NR	H6920
.031 *(1/32)*	1/8	0.093		1-1/2	0.005	VXMG3T-.031-LF3	H6921
.031 *(1/32)*	1/8	0.156		2-1/2	0.005	VXMG3T-.031-LF5	H6922
.047 *(3/64)*	1/8	0.070		1-1/2	0.005	VXMG3T-.047-SF	H6923
.047 *(3/64)*	1/8	0.070	0.250	2-1/2	0.005	VXMG3T-.047-SF5	H6924
.047 *(3/64)*	1/8	0.070	0.375	2-1/2	0.005	VXMG3T-.047-SF8	H6925
.047 *(3/64)*	1/8	0.141		1-1/2	SQ	VXMG3T-.047-NR	H6926
.047 *(3/64)*	1/8	0.141		1-1/2	0.005	VXMG3T-.047-LF3	H6927
.047 *(3/64)*	1/8	0.250		2-1/2	0.005	VXMG3T-.047-LF5	H6928
.055	1/8	0.083		1-1/2	0.005	VXMG3T-.055-SF	H6929
.055	1/8	0.165		1-1/2	0.005	VXMG3T-.055-LF3	H6930
.055	1/8	0.275		1-1/2	0.005	VXMG3T-.055-LF5	H6931
.062 *(1/16)*	1/8	0.093		1-1/2	0.010	VXMG3T-.062-SF	H6932
.062 *(1/16)*	1/8	0.093	0.312	2-1/2	0.010	VXMG3T-.062-SF5	H6933
.062 *(1/16)*	1/8	0.093	0.500	2-1/2	0.010	VXMG3T-.062-SF8	H6934
.062 *(1/16)*	1/8	0.186		1-1/2	SQ	VXMG3T-.062-NR	H6935
.062 *(1/16)*	1/8	0.186		1-1/2	0.010	VXMG3T-.062-LF3	H6936
.062 *(1/16)*	1/8	0.312		2-1/2	0.010	VXMG3T-.062-LF5	H6937
.078 *(5/64)*	1/8	0.177		1-1/2	0.010	VXMG3T-.078-SF	H6938
.078 *(5/64)*	1/8	0.234		1-1/2	SQ	VXMG3T-.078-NR	H6939
.078 *(5/64)*	1/8	0.234		1-1/2	0.010	VXMG3T-.078-LF3	H6940
.093 *(3/32)*	1/8	0.140		1-1/2	0.010	VXMG3T-.093-SF	H6941
.093 *(3/32)*	1/8	0.140	0.500	2-1/2	0.010	VXMG3T-.093-SF5	H6942
.093 *(3/32)*	1/8	0.140	0.750	2-1/2	0.010	VXMG3T-.093-SF8	H6943
.093 *(3/32)*	1/8	0.279		1-1/2	SQ	VXMG3T-.093-NR	H6944
.093 *(3/32)*	1/8	0.279		1-1/2	0.010	VXMG3T-.093-LF3	H6945
.093 *(3/32)*	1/8	0.500		2-1/2	0.010	VXMG3T-.093-LF5	H6946

Speed & Feed: page 145

3 Flute • variable flute - HP roughing & finishing applications

Carbide | 3 | Center Cutting | variable | nACRo | +.012mm -.012mm <3mm | +.000mm -.050mm 3mm | Radius | HRc <54 | M S



- Geometry designed to reduce chatter, universal machining operations
- Unique titanium focused geometry and edge prep enables efficient cutting action
- Eccentric relief provides an exceptionally strong cutting edge
- Proprietary nACRo coating allows for higher SFM and is especially effective in extending tool life

Series: VXMG3T-M___

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	PART NAME	nACRo EDP
1.0mm	4mm	1.5mm		50mm	0.10mm	VXMG3T-M1.0-SF	H6947
1.0mm	4mm	1.5mm	5mm	50mm	0.10mm	VXMG3T-M1.0-SF5	H6948
1.0mm	4mm	1.5mm	8mm	50mm	0.10mm	VXMG3T-M1.0-SF8	H6949
1.0mm	4mm	3.0mm		50mm	0.10mm	VXMG3T-M1.0-LF3	H6950
1.5mm	4mm	2.2mm		50mm	0.20mm	VXMG3T-M1.5-SF	H6951
1.5mm	4mm	2.2mm	7.5mm	50mm	0.20mm	VXMG3T-M1.5-SF5	H6952
1.5mm	4mm	2.2mm	12mm	50mm	0.20mm	VXMG3T-M1.5-SF8	H6953
1.5mm	4mm	4.5mm		50mm	0.20mm	VXMG3T-M1.5-LF3	H6954
1.6mm	4mm	2.4mm		50mm	0.20mm	VXMG3T-M1.6-SF	H2074
1.6mm	4mm	5.0mm		50mm	0.20mm	VXMG3T-M1.6-LF3	H6915
2.0mm	4mm	3.0mm		50mm	0.20mm	VXMG3T-M2.0-SF	H6955
2.0mm	4mm	3.0mm	10mm	50mm	0.20mm	VXMG3T-M2.0-SF5	H6956
2.0mm	4mm	3.0mm	16mm	50mm	0.20mm	VXMG3T-M2.0-SF8	H6957
2.0mm	4mm	6.0mm		50mm	0.20mm	VXMG3T-M2.0-LF3	H6958
2.5mm	4mm	3.8mm		50mm	0.20mm	VXMG3T-M2.5-SF	H6916
2.5mm	4mm	7.5mm		50mm	0.20mm	VXMG3T-M2.5-LF3	H6959
3.0mm	4mm	4.5mm		50mm	0.20mm	VXMG3T-M3.0-SF	H6960
3.0mm	4mm	4.5mm	15mm	50mm	0.20mm	VXMG3T-M3.0-SF5	H6961
3.0mm	4mm	9.0mm		50mm	0.20mm	VXMG3T-M3.0-LF3	H6962

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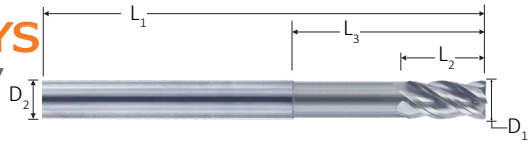
Titanium Alloys & High Temp Alloys

4 Flute • variable flute - HP roughing applications



Carbide | 4 | Center Cutting | variable | nACRo | +.000 -.002 | +.0005 -.0005 <1/8 | Square | Radius | Chamfer | HRc <54 | M S

- Geometry designed to reduce chatter, universal machining operations
- Unique titanium focused geometry and edge prep enables efficient cutting action
- Eccentric relief provides an exceptionally strong cutting edge
- Proprietary nACRo coating allows for higher SFM and is especially effective in extending tool life
- Excellent for heavy cuts, deep slotting and long axial depth profiling

Series: VXMG4T

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACRo EDP
1/16	1/8	1/8		1-1/2	SQ	std	VXMG4T-402-NR	H6062
1/16	1/8	1/8		1-1/2	0.010	std	VXMG4T-402-R010	H6063
3/32	1/8	3/16		1-1/2	SQ	std	VXMG4T-403-NR	H6064
3/32	1/8	3/16		1-1/2	0.010	std	VXMG4T-403-R010	H6065
1/8	1/8	3/16	3/8	2	0.015	ext neck	VXMG4T-404-R015N1	11709
1/8	1/8	3/16	7/8	2	0.015	ext neck	VXMG4T-404-R015N2	H6066
1/8	1/8	3/16	no neck	2	0.015	no neck	VXMG4T-404-R015NN	H6067
1/8	1/8	1/4		1-1/2	SQ	stub	VXMG4T-404-NRS	H6068
1/8	1/8	1/4		1-1/2	0.015	stub	VXMG4T-404-R015S	H6069
1/8	1/8	3/8		1-1/2	0.015	stub	VXMG4T-404-R015S1	H6912
1/8	1/8	1/2		1-1/2	.011 X 45°	std	VXMG4T-404	H6070
1/8	1/8	1/2		1-1/2	SQ	std	VXMG4T-404-NR	H6071
1/8	1/8	1/2		1-1/2	0.015	std	VXMG4T-404-R015	H6072
3/16	3/16	1/4		1-1/2	SQ	stub	VXMG4T-606-NRS	H6073
3/16	3/16	1/4		1-1/2	0.015	stub	VXMG4T-606-R015S	H6074
3/16	3/16	1/4	1/2	3	0.015	ext neck	VXMG4T-606-R015N1	H6075
3/16	3/16	1/4	3/4	3	0.015	ext neck	VXMG4T-606-R015N2	H6076
3/16	3/16	1/4	no neck	3	0.015	no neck	VXMG4T-606-R015NN	H6077
3/16	3/16	5/8		2	SQ	std	VXMG4T-606-NR	H6079
3/16	3/16	5/8		2	.011 X 45°	std	VXMG4T-606	H6078
3/16	3/16	5/8		2	0.015	std	VXMG4T-606-R015	14793
1/4	1/4	3/8		2	SQ	stub	VXMG4T-808-NRS	H6080
1/4	1/4	3/8		2	0.015	stub	VXMG4T-808-R015S	H6081
1/4	1/4	3/8		2	0.030	stub	VXMG4T-808-R030S	H6082
1/4	1/4	3/8		2	0.060	stub	VXMG4T-808-R060S	H7307
1/4	1/4	3/8	3/4	3	0.015	ext neck	VXMG4T-808-R015N1	H6083
1/4	1/4	3/8	3/4	3	0.030	ext neck	VXMG4T-808-R030N1	H6084
1/4	1/4	3/8	1-1/8	3	0.015	ext neck	VXMG4T-808-R015N2	H6085
1/4	1/4	3/8	1-1/8	3	0.030	ext neck	VXMG4T-808-R030N2	H6086
1/4	1/4	3/8	2-1/8	4	0.015	ext neck	VXMG4T-808-R015N3	H6087
1/4	1/4	3/8	2-1/8	4	0.030	ext neck	VXMG4T-808-R030N3	H6088
1/4	1/4	3/8	no neck	4	0.015	no neck	VXMG4T-808-R015NN	H6089
1/4	1/4	3/8	no neck	4	0.030	no neck	VXMG4T-808-R030NN	H6090
1/4	1/4	1/2		2	.011 X 45°	stub	VXMG4T-808-S	H6091
1/4	1/4	3/4		2-1/2	SQ	std	VXMG4T-808-NR	H6092
1/4	1/4	3/4		2-1/2	.011 X 45°	std	VXMG4T-808	33719
1/4	1/4	3/4		2-1/2	0.015	std	VXMG4T-808-R015	14718
1/4	1/4	3/4		2-1/2	0.030	std	VXMG4T-808-R030	H6093
1/4	1/4	3/4		2-1/2	0.060	std	VXMG4T-808-R060	H7308

Speed & Feed: page 146

sizes continued on next page

4 Flute • variable flute - HP roughing applications

Series: VXMG4T

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACRo EDP
1/4	1/4	1-1/8		3	SQ	long	VXMG4T-808-NRL	H6094
1/4	1/4	1-1/8		3	0.015	long	VXMG4T-808-R015L	H6095
1/4	1/4	1-1/8		3	0.030	long	VXMG4T-808-R030L	H6096
5/16	5/16	1/2		2	SQ	stub	VXMG4T-1010-NRS	H6097
5/16	5/16	1/2		2	0.015	stub	VXMG4T-1010-R015S	H6098
5/16	5/16	1/2		2	0.030	stub	VXMG4T-1010-R030S	H6099
5/16	5/16	13/16		2-1/2	SQ	std	VXMG4T-1010-NR	H6101
5/16	5/16	13/16		2-1/2	.011 X 45°	std	VXMG4T-1010	H6100
5/16	5/16	13/16		2-1/2	0.015	std	VXMG4T-1010-R015	H6102
5/16	5/16	13/16		2-1/2	0.030	std	VXMG4T-1010-R030	H6103
5/16	5/16	1-1/8		3	SQ	long	VXMG4T-1010-NRL	H6104
5/16	5/16	1-1/8		3	0.015	long	VXMG4T-1010-R015L	H6105
5/16	5/16	1-1/8		3	0.030	long	VXMG4T-1010-R030L	H6106
3/8	3/8	1/2		2	SQ	stub	VXMG4T-1212-NRS	H6107
3/8	3/8	1/2		2	0.015	stub	VXMG4T-1212-R015S	H6108
3/8	3/8	1/2		2	0.030	stub	VXMG4T-1212-R030S	H6109
3/8	3/8	1/2		2	0.060	stub	VXMG4T-1212-R060S	H7309
3/8	3/8	1/2	1-1/8	3	0.015	ext neck	VXMG4T-1212-R015N1	H6110
3/8	3/8	1/2	1-1/8	3	0.030	ext neck	VXMG4T-1212-R030N1	H6111
3/8	3/8	1/2	2-1/8	4	0.015	ext neck	VXMG4T-1212-R015N2	H6112
3/8	3/8	1/2	2-1/8	4	0.030	ext neck	VXMG4T-1212-R030N2	H6113
3/8	3/8	1/2	3-1/8	6	0.015	ext neck	VXMG4T-1212-R015N3	H6114
3/8	3/8	1/2	3-1/8	6	0.030	ext neck	VXMG4T-1212-R030N3	H6115
3/8	3/8	1/2	no neck	6	0.015	no neck	VXMG4T-1212-R015NN	H6116
3/8	3/8	1/2	no neck	6	0.030	no neck	VXMG4T-1212-R030NN	H6117
3/8	3/8	5/8		2	.011 X 45°	stub	VXMG4T-1212-S	H6118
3/8	3/8	1		2-1/2	SQ	std	VXMG4T-1212-NR	H6120
3/8	3/8	1		2-1/2	.011 X 45°	std	VXMG4T-1212	H6119
3/8	3/8	1		2-1/2	0.015	std	VXMG4T-1212-R015	14782
3/8	3/8	1		2-1/2	0.030	std	VXMG4T-1212-R030	H6121
3/8	3/8	1		2-1/2	0.060	std	VXMG4T-1212-R060	H7310
3/8	3/8	1-1/8		3	SQ	long	VXMG4T-1212-NRL	H6122
3/8	3/8	1-1/8		3	0.015	long	VXMG4T-1212-R015L	H6123
3/8	3/8	1-1/8		3	0.030	long	VXMG4T-1212-R030L	H6124
7/16	7/16	1		2-3/4	0.015	std	VXMG4T-1414-R015	H6125
7/16	7/16	1		2-3/4	0.030	std	VXMG4T-1414-R030	H6126
1/2	1/2	5/8		2-1/2	SQ	stub	VXMG4T-1616-NRS	14719
1/2	1/2	5/8		2-1/2	.011 X 45°	stub	VXMG4T-1616-S	H6130
1/2	1/2	5/8		2-1/2	0.015	stub	VXMG4T-1616-R015S	H6127
1/2	1/2	5/8		2-1/2	0.030	stub	VXMG4T-1616-R030S	H6128
1/2	1/2	5/8		2-1/2	0.060	stub	VXMG4T-1616-R060S	H6129
1/2	1/2	5/8	1-1/2	4	0.015	ext neck	VXMG4T-1616-R015N1	H6131
1/2	1/2	5/8	1-1/2	4	0.030	ext neck	VXMG4T-1616-R030N1	H6132
1/2	1/2	5/8	1-1/2	4	0.060	ext neck	VXMG4T-1616-R060N1	H6133
1/2	1/2	5/8	2-1/4	4	0.015	ext neck	VXMG4T-1616-R015N2	H6134
1/2	1/2	5/8	2-1/4	4	0.030	ext neck	VXMG4T-1616-R030N2	H6135
1/2	1/2	5/8	2-1/4	4	0.060	ext neck	VXMG4T-1616-R060N2	H6136

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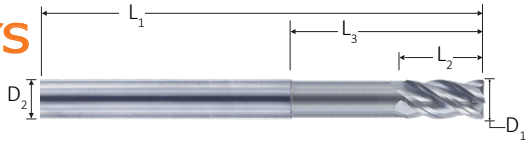

4 Flute • variable flute - HP roughing applications

Series: VXMG4T

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACRo EDP
1/2	1/2	5/8	3-3/8	6	0.015	ext neck	VXMG4T-1616-R015N3	H6137
1/2	1/2	5/8	3-3/8	6	0.030	ext neck	VXMG4T-1616-R030N3	H6138
1/2	1/2	5/8	3-3/8	6	0.060	ext neck	VXMG4T-1616-R060N3	H6139
1/2	1/2	5/8	no neck	6	0.015	no neck	VXMG4T-1616-R015NN	H6140
1/2	1/2	5/8	no neck	6	0.030	no neck	VXMG4T-1616-R030NN	H6141
1/2	1/2	5/8	no neck	6	0.060	no neck	VXMG4T-1616-R060NN	H6142
1/2	1/2	1		3	SQ	std	VXMG4T-1616-NR	H6144
1/2	1/2	1		3	.011 X 45°	std	VXMG4T-1616	H6143
1/2	1/2	1		3	0.015	std	VXMG4T-1616-R015	H6145
1/2	1/2	1		3	0.030	std	VXMG4T-1616-R030	14790
1/2	1/2	1		3	0.060	std	VXMG4T-1616-R060	H6146
1/2	1/2	1		3	0.090	std	VXMG4T-1616-R090	H7311
1/2	1/2	1		3	0.120	std	VXMG4T-1616-R120	H7312
1/2	1/2	1-1/4		3	SQ	med	VXMG4T-1616-NRM	H6148
1/2	1/2	1-1/4		3	.011 X 45°	med	VXMG4T-1616-M	H6147
1/2	1/2	1-1/4		3	0.015	med	VXMG4T-1616-R015M	H6149
1/2	1/2	1-1/4		3	0.030	med	VXMG4T-1616-R030M	H6150
1/2	1/2	1-1/4		3	0.060	med	VXMG4T-1616-R060M	H6151
1/2	1/2	1-1/4		3	0.090	med	VXMG4T-1616-R090M	H7313
1/2	1/2	1-1/4		3	0.120	med	VXMG4T-1616-R120M	H6152
1/2	1/2	1-1/2		4	SQ	med/long	VXMG4T-1616-NRML	H6154
1/2	1/2	1-1/2		4	.011 X 45°	med/long	VXMG4T-1616-ML	H6153
1/2	1/2	1-1/2		4	0.030	med/long	VXMG4T-1616-R030ML	H6155
1/2	1/2	1-1/2		4	0.060	med/long	VXMG4T-1616-R060ML	H6156
1/2	1/2	2		4	0.000	long	VXMG4T-1616-NRL	H6157
1/2	1/2	2		4	0.015	long	VXMG4T-1616-R015L	H6158
1/2	1/2	2		4	0.030	long	VXMG4T-1616-R030L	H6159
1/2	1/2	2		4	0.060	long	VXMG4T-1616-R060L	H6160
5/8	5/8	3/4		3	SQ	stub	VXMG4T-2020-NRS	H6162
5/8	5/8	3/4		3	.022 X 45°	stub	VXMG4T-2020-S	H6161
5/8	5/8	3/4		3	0.030	stub	VXMG4T-2020-R030S	H6163
5/8	5/8	3/4		3	0.060	stub	VXMG4T-2020-R060S	H6164
5/8	5/8	3/4		3	0.090	stub	VXMG4T-2020-R090S	H6165
5/8	5/8	3/4	1-5/8	5	0.030	ext neck	VXMG4T-2020-R030N1	H6166
5/8	5/8	3/4	1-5/8	5	0.060	ext neck	VXMG4T-2020-R060N1	H6167
5/8	5/8	3/4	1-5/8	5	0.090	ext neck	VXMG4T-2020-R090N1	H6168
5/8	5/8	3/4	2-3/8	5	0.060	ext neck	VXMG4T-2020-R060N2	H6169
5/8	5/8	3/4	3-3/8	6	0.060	ext neck	VXMG4T-2020-R060N3	H6170
5/8	5/8	3/4	no neck	6	0.060	no neck	VXMG4T-2020-R060NN	H6171
5/8	5/8	1-1/4		3-1/2	SQ	std	VXMG4T-2020-NR	H6173
5/8	5/8	1-1/4		3-1/2	.022 X 45°	std	VXMG4T-2020	H6172
5/8	5/8	1-1/4		3-1/2	0.030	std	VXMG4T-2020-R030	14791
5/8	5/8	1-1/4		3-1/2	0.060	std	VXMG4T-2020-R060	H6174
5/8	5/8	1-1/4		3-1/2	0.090	std	VXMG4T-2020-R090	H6175
5/8	5/8	2-1/4		5	0.000	long	VXMG4T-2020-NRL	H6176
5/8	5/8	2-1/4		5	0.030	long	VXMG4T-2020-R030L	H6177
5/8	5/8	2-1/4		5	0.060	long	VXMG4T-2020-R060L	H6178

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4 Flute • variable flute - HP roughing applications

Series: VXMG4T

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACRo EDP
5/8	5/8	3-1/4		6	0.030	xl	VXMG4T-2020-R030E	H6179
5/8	5/8	3-1/4		6	0.060	xl	VXMG4T-2020-R060E	H6180
3/4	3/4	7/8		3	SQ	stub	VXMG4T-2424-NRS	H6181
3/4	3/4	7/8		3	.022 X 45°	stub	VXMG4T-2424-S	H6186
3/4	3/4	7/8		3	0.030	stub	VXMG4T-2424-R030S	H6182
3/4	3/4	7/8		3	0.060	stub	VXMG4T-2424-R060S	H6183
3/4	3/4	7/8		3	0.090	stub	VXMG4T-2424-R090S	H6184
3/4	3/4	7/8		3	0.120	stub	VXMG4T-2424-R120S	H6185
3/4	3/4	7/8	2	5	0.030	ext neck	VXMG4T-2424-R030N1	H6187
3/4	3/4	7/8	2	5	0.060	ext neck	VXMG4T-2424-R060N1	H6188
3/4	3/4	7/8	2	5	0.090	ext neck	VXMG4T-2424-R090N1	H6189
3/4	3/4	7/8	2	5	0.120	ext neck	VXMG4T-2424-R120N1	H6190
3/4	3/4	7/8	2-1/2	5	0.030	ext neck	VXMG4T-2424-R030N2	H6191
3/4	3/4	7/8	2-1/2	5	0.060	ext neck	VXMG4T-2424-R060N2	H6192
3/4	3/4	7/8	2-1/2	5	0.090	ext neck	VXMG4T-2424-R090N2	H6193
3/4	3/4	7/8	2-1/2	5	0.120	ext neck	VXMG4T-2424-R120N2	H6194
3/4	3/4	7/8	3-3/8	6	0.030	ext neck	VXMG4T-2424-R030N3	H6195
3/4	3/4	7/8	3-3/8	6	0.060	ext neck	VXMG4T-2424-R060N3	H6196
3/4	3/4	7/8	3-3/8	6	0.090	ext neck	VXMG4T-2424-R090N3	H6197
3/4	3/4	7/8	3-3/8	6	0.120	ext neck	VXMG4T-2424-R120N3	H6198
3/4	3/4	7/8	no neck	6	0.030	no neck	VXMG4T-2424-R030NN	H6199
3/4	3/4	7/8	no neck	6	0.060	no neck	VXMG4T-2424-R060NN	H6200
3/4	3/4	7/8	no neck	6	0.090	no neck	VXMG4T-2424-R090NN	H6201
3/4	3/4	7/8	no neck	6	0.120	no neck	VXMG4T-2424-R120NN	H6202
3/4	3/4	1-1/2		4	SQ	std	VXMG4T-2424-NR	H6204
3/4	3/4	1-1/2		4	.022 X 45°	std	VXMG4T-2424	H6203
3/4	3/4	1-1/2		4	0.030	std	VXMG4T-2424-R030	H6205
3/4	3/4	1-1/2		4	0.060	std	VXMG4T-2424-R060	34931
3/4	3/4	1-1/2		4	0.090	std	VXMG4T-2424-R090	H6206
3/4	3/4	1-1/2		4	0.120	std	VXMG4T-2424-R120	H6207
3/4	3/4	2-1/4		5	SQ	long	VXMG4T-2424-NRL	H6208
3/4	3/4	2-1/4		5	0.030	long	VXMG4T-2424-R030L	H6209
3/4	3/4	2-1/4		5	0.060	long	VXMG4T-2424-R060L	H6210
3/4	3/4	2-1/4		5	0.090	long	VXMG4T-2424-R090L	H6211
3/4	3/4	2-1/4		5	0.120	long	VXMG4T-2424-R120L	H6212
3/4	3/4	3		6	SQ	xl	VXMG4T-2424-NRE	H6213
3/4	3/4	3		6	0.030	xl	VXMG4T-2424-R030E	H6214
3/4	3/4	3		6	0.060	xl	VXMG4T-2424-R060E	H6215
3/4	3/4	3		6	0.090	xl	VXMG4T-2424-R090E	H6216
3/4	3/4	3		6	0.120	xl	VXMG4T-2424-R120E	H6217
1	1	1-1/2		4	SQ	std	VXMG4T-3232-NR	H6219
1	1	1-1/2		4	.022 X 45°	std	VXMG4T-3232	H6218
1	1	1-1/2		4	0.030	std	VXMG4T-3232-R030	H6220
1	1	1-1/2		4	0.060	std	VXMG4T-3232-R060	H6221
1	1	1-1/2		4	0.090	std	VXMG4T-3232-R090	H6222
1	1	1-1/2		4	0.120	std	VXMG4T-3232-R120	H6223

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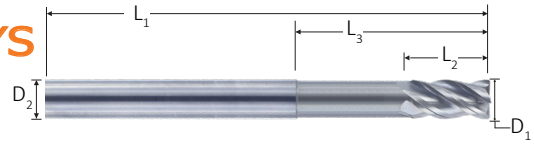

4 Flute • variable flute - HP roughing applications

Series: VXMG4T

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACRo EDP
1	1	1-1/2	2-1/4	5	0.030	ext neck	VXMG4T-3232-R030N1	H6224
1	1	1-1/2	2-1/4	5	0.060	ext neck	VXMG4T-3232-R060N1	H6225
1	1	1-1/2	2-1/4	5	0.090	ext neck	VXMG4T-3232-R090N1	H6226
1	1	1-1/2	2-1/4	5	0.120	ext neck	VXMG4T-3232-R120N1	H6227
1	1	1-1/2	2-5/8	5	0.030	ext neck	VXMG4T-3232-R030N2	H6228
1	1	1-1/2	2-5/8	5	0.060	ext neck	VXMG4T-3232-R060N2	H6229
1	1	1-1/2	2-5/8	5	0.090	ext neck	VXMG4T-3232-R090N2	H6230
1	1	1-1/2	2-5/8	5	0.120	ext neck	VXMG4T-3232-R120N2	H6231
1	1	1-1/2	3-3/8	6	0.030	ext neck	VXMG4T-3232-R030N3	H6232
1	1	1-1/2	3-3/8	6	0.060	ext neck	VXMG4T-3232-R060N3	H6233
1	1	1-1/2	3-3/8	6	0.090	ext neck	VXMG4T-3232-R090N3	H6234
1	1	1-1/2	3-3/8	6	0.120	ext neck	VXMG4T-3232-R120N3	H6235
1	1	1-1/2	4-1/8	6	0.030	ext neck	VXMG4T-3232-R030N4	H6236
1	1	1-1/2	4-1/8	6	0.060	ext neck	VXMG4T-3232-R060N4	H6237
1	1	1-1/2	4-1/8	6	0.090	ext neck	VXMG4T-3232-R090N4	H6238
1	1	1-1/2	4-1/8	6	0.120	ext neck	VXMG4T-3232-R120N4	H6239
1	1	1-1/2	no neck	6	0.030	no neck	VXMG4T-3232-R030NN	H6240
1	1	1-1/2	no neck	6	0.060	no neck	VXMG4T-3232-R060NN	H6241
1	1	1-1/2	no neck	6	0.090	no neck	VXMG4T-3232-R090NN	H6242
1	1	1-1/2	no neck	6	0.120	no neck	VXMG4T-3232-R120NN	H6243
1	1	2-1/4		5	SQ	long	VXMG4T-3232-NRL	H6244
1	1	2-1/4		5	0.030	long	VXMG4T-3232-R030L	H6245
1	1	2-1/4		5	0.060	long	VXMG4T-3232-R060L	H6246
1	1	2-1/4		5	0.090	long	VXMG4T-3232-R090L	H6247
1	1	2-1/4		5	0.120	long	VXMG4T-3232-R120L	H6248
1	1	3		6	0.030	xl	VXMG4T-3232-R030E	H6249
1	1	3		6	0.060	xl	VXMG4T-3232-R060E	H6250
1	1	3		6	0.090	xl	VXMG4T-3232-R090E	H6251
1	1	3		6	0.120	xl	VXMG4T-3232-R120E	H6252

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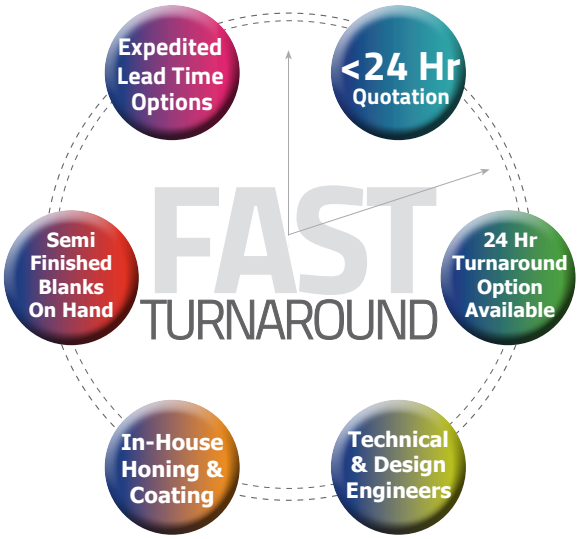
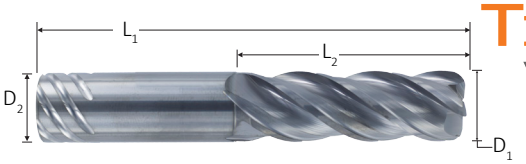
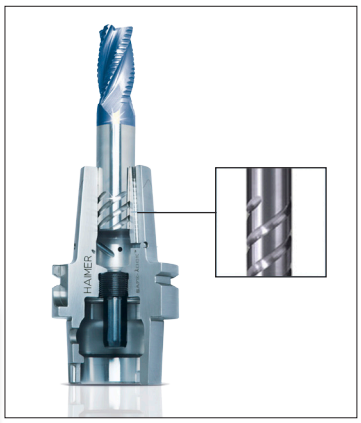




4 Flute • Variable Flute - HP Roughing Applications

Carbide | 4 | Center Cutting | variable | nACRo | +.000 -.002 | Radius | HRc <54 | M S

- Geometry designed to reduce chatter, universal machining operations
- Unique titanium focused geometry and edge prep enables efficient cutting action
- Eccentric relief provides an exceptionally strong cutting edge
- Proprietary nACRo coating allows for higher SFM and is especially effective in extending tool life
- Excellent for heavy cuts, deep slotting and long axial depth profiling
- Haimer Safe Lock™ pull out protection on shank
- Stocked for immediate delivery



Series: VXMG4T-__-SL (Safe Lock Shank)

DIA D_1	SHK D_2	LOC L_2	OAL L_1	CORNER	LENGTH	PART NAME	nACRo EDP
1/2	1/2	1	3	0.015	std	VXMG4T-1616-R015-SL	H6862
1/2	1/2	1	3	0.030	std	VXMG4T-1616-R030-SL	H6863
1/2	1/2	1	3	0.060	std	VXMG4T-1616-R060-SL	H6864
1/2	1/2	2	4	0.015	long	VXMG4T-1616-R015L-SL	H6865
1/2	1/2	2	4	0.030	long	VXMG4T-1616-R030L-SL	H6866
1/2	1/2	2	4	0.060	long	VXMG4T-1616-R060L-SL	H6867
5/8	5/8	1-1/4	3-1/2	0.030	std	VXMG4T-2020-R030-SL	H6868
5/8	5/8	1-1/4	3-1/2	0.060	std	VXMG4T-2020-R060-SL	H6869
5/8	5/8	1-1/4	3-1/2	0.090	std	VXMG4T-2020-R090-SL	H6870
3/4	3/4	1-1/2	4	0.030	std	VXMG4T-2424-R030-SL	H6871
3/4	3/4	1-1/2	4	0.060	std	VXMG4T-2424-R060-SL	H6872
3/4	3/4	1-1/2	4	0.090	std	VXMG4T-2424-R090-SL	H6873
3/4	3/4	1-1/2	4	0.120	std	VXMG4T-2424-R120-SL	H6874
3/4	3/4	2-1/4	5	0.030	long	VXMG4T-2424-R030L-SL	H6875
3/4	3/4	2-1/4	5	0.060	long	VXMG4T-2424-R060L-SL	H6876
3/4	3/4	2-1/4	5	0.090	long	VXMG4T-2424-R090L-SL	H6877
3/4	3/4	2-1/4	5	0.120	long	VXMG4T-2424-R120L-SL	H6878
1	1	1-1/2	4	0.030	std	VXMG4T-3232-R030-SL	H6879
1	1	1-1/2	4	0.060	std	VXMG4T-3232-R060-SL	H6880
1	1	1-1/2	4	0.090	std	VXMG4T-3232-R090-SL	H6881
1	1	1-1/2	4	0.120	std	VXMG4T-3232-R120-SL	H6882
1	1	2-1/4	5	0.030	long	VXMG4T-3232-R030L-SL	H6883
1	1	2-1/4	5	0.060	long	VXMG4T-3232-R060L-SL	H6884
1	1	2-1/4	5	0.090	long	VXMG4T-3232-R090L-SL	H6885
1	1	2-1/4	5	0.120	long	VXMG4T-3232-R120L-SL	H6886

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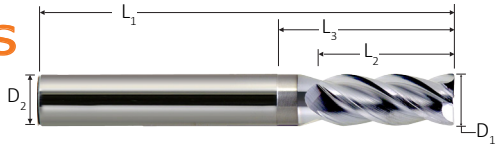
This licensed system offers the pull out protection for your round shank tools! The shanks have helical grooves ground into our shanks. Combined with the proper tool holding system, this technology prevents the tool from pulling out or spinning while undergoing extreme machining applications.

Haimer Safe Lock™

Available On All High Performance End Mills

(Call For Pricing and Availability)



4 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS

Carbide | 4 | Center Cutting | variable | nACRo | +.000mm -.050mm | +.012mm -.012mm <3mm | Square | Radius | Chamfer | HRc <54 | M S

- Geometry designed to reduce chatter, universal machining operations
- Unique titanium focused geometry and edge prep enables efficient cutting action
- Eccentric relief provides an exceptionally strong cutting edge
- Proprietary nACRo coating allows for higher SFM and is especially effective in extending tool life
- Excellent for heavy cuts, deep slotting and long axial depth profiling

SERIES: VXMG4T-M_M_

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACRo EDP
1.5mm	3mm	3mm		38mm	SQ	std	VXMG4T-M3M1.5-NR	H6253
1.5mm	3mm	3mm		38mm	0.25mm	std	VXMG4T-M3M1.5-R0.25	H6254
2mm	3mm	4mm		38mm	SQ	std	VXMG4T-M3M2-NR	H6255
2mm	3mm	4mm		38mm	0.25mm	std	VXMG4T-M3M2-R0.25	H6256
2.5mm	3mm	5mm		38mm	SQ	std	VXMG4T-M3M2.5-NR	H6257
2.5mm	3mm	5mm		38mm	0.25mm	std	VXMG4T-M3M2.5-R0.25	H6258
3mm	3mm	6mm		38mm	SQ	stub	VXMG4T-M3M3-NRS	H6259
3mm	3mm	6mm		38mm	0.25mm	stub	VXMG4T-M3M3-R0.25S	H6260
3mm	3mm	12mm		38mm	SQ	std	VXMG4T-M3M3-NR	H6261
3mm	3mm	12mm		38mm	0.25mm	std	VXMG4T-M3M3-R0.25	H6262
3mm	6mm	12mm		63mm	SQ	std	VXMG4T-M6M3-NR	H6263
3mm	6mm	12mm		63mm	0.25mm x 45°	std	VXMG4T-M6M3	H6264
3mm	6mm	12mm		63mm	0.25mm	std	VXMG4T-M6M3-R0.25	H6265
3mm	6mm	12mm		63mm	0.5mm	std	VXMG4T-M6M3-R0.5	H6266
4mm	4mm	14mm		51mm	SQ	std	VXMG4T-M4M4-NR	H6267
4mm	4mm	14mm		51mm	0.25mm x 45°	std	VXMG4T-M4M4	H6268
4mm	4mm	14mm		51mm	0.25mm	std	VXMG4T-M4M4-R0.25	H6269
4mm	6mm	14mm		63mm	0.25mm x 45°	std	VXMG4T-M6M4	H6270
4mm	6mm	14mm		63mm	0.25mm	std	VXMG4T-M6M4-R0.25	H6271
4mm	6mm	14mm		63mm	0.50mm	std	VXMG4T-M6M4-R0.50	H6272
5mm	5mm	20mm		51mm	SQ	std	VXMG4T-M5M5-NR	H6273
5mm	5mm	20mm		51mm	0.25mm x 45°	std	VXMG4T-M5M5	H6274
5mm	5mm	20mm		51mm	0.25mm	std	VXMG4T-M5M5-R0.25	H6275
5mm	5mm	20mm		51mm	0.5mm	std	VXMG4T-M5M5-R0.5	H6276
6mm	6mm	12mm	30mm	100mm	0.25mm	ext neck	VXMG4T-M6M6-R0.25N1	H6277
6mm	6mm	12mm	30mm	100mm	0.5mm	ext neck	VXMG4T-M6M6-R0.5N1	H6278
6mm	6mm	12mm	30mm	100mm	1.0mm	ext neck	VXMG4T-M6M6-R1.0N1	H6279
6mm	6mm	20mm		63mm	SQ	std	VXMG4T-M6M6-NR	H6280
6mm	6mm	20mm		63mm	0.25mm x 45°	std	VXMG4T-M6M6	H6281
6mm	6mm	20mm		63mm	0.25mm	std	VXMG4T-M6M6-R0.25	H6282
6mm	6mm	20mm		63mm	0.5mm	std	VXMG4T-M6M6-R0.5	H6283
6mm	6mm	20mm		63mm	1.0mm	std	VXMG4T-M6M6-R1.0	H6284
6mm	6mm	20mm	32mm	75mm	0.5mm	ext neck	VXMG4T-M6M6-R0.5N	H6285
6mm	6mm	24mm		75mm	0.5mm	long	VXMG4T-M6M6-R0.5L	H6286

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4 Flute • variable flute - HP roughing applications

Series: VXMG4T-M_M_

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACRo EDP
8mm	8mm	16mm	40mm	100mm	0.5mm	ext neck	VXMG4T-M8M8-R0.5N1	H6287
8mm	8mm	16mm	40mm	100mm	1.0mm	ext neck	VXMG4T-M8M8-R1.0N1	H6288
8mm	8mm	16mm	40mm	100mm	2.0mm	ext neck	VXMG4T-M8M8-R2.0N1	H6289
8mm	8mm	20mm		63mm	SQ	std	VXMG4T-M8M8-NR	H6290
8mm	8mm	20mm		63mm	0.25mm x 45°	std	VXMG4T-M8M8	H6291
8mm	8mm	20mm		63mm	0.5mm	std	VXMG4T-M8M8-R0.5	H6292
8mm	8mm	20mm		63mm	1.0mm	std	VXMG4T-M8M8-R1.0	H6293
8mm	8mm	20mm		63mm	1.5mm	std	VXMG4T-M8M8-R1.5	H6294
8mm	8mm	20mm		63mm	2.0mm	std	VXMG4T-M8M8-R2.0	H6295
8mm	8mm	20mm	32mm	75mm	0.5mm	ext neck	VXMG4T-M8M8-R0.5N	H6296
8mm	8mm	32mm		75mm	0.5mm	long	VXMG4T-M8M8-R0.5L	H6297
10mm	10mm	20mm	50mm	127mm	0.5mm	ext neck	VXMG4T-M10M10-R0.5N2	12120
10mm	10mm	20mm	50mm	127mm	1.0mm	ext neck	VXMG4T-M10M10-R1.0N2	H6298
10mm	10mm	20mm	50mm	127mm	2.0mm	ext neck	VXMG4T-M10M10-R2.0N2	H6299
10mm	10mm	25mm		70mm	SQ	std	VXMG4T-M10M10-NR	H6300
10mm	10mm	25mm		70mm	0.25mm x 45°	std	VXMG4T-M10M10	H6301
10mm	10mm	25mm		70mm	0.5mm	std	VXMG4T-M10M10-R0.5	H6302
10mm	10mm	25mm		70mm	1.0mm	std	VXMG4T-M10M10-R1.0	H6303
10mm	10mm	25mm		70mm	1.5mm	std	VXMG4T-M10M10-R1.5	H6304
10mm	10mm	25mm		70mm	2.0mm	std	VXMG4T-M10M10-R2.0	H6305
10mm	10mm	25mm	50mm	100mm	0.5mm	ext neck	VXMG4T-M10M10-R0.5N	H6306
10mm	10mm	40mm		100mm	0.5mm	long	VXMG4T-M10M10-R0.5L	H6307
12mm	12mm	25mm		76mm	SQ	std	VXMG4T-M12M12-NR	H6308
12mm	12mm	25mm		76mm	0.25mm x 45°	std	VXMG4T-M12M12	H6309
12mm	12mm	25mm		76mm	0.5mm	std	VXMG4T-M12M12-R0.5	H6310
12mm	12mm	25mm		76mm	1.0mm	std	VXMG4T-M12M12-R1.0	H6311
12mm	12mm	25mm		76mm	1.5mm	std	VXMG4T-M12M12-R1.5	H6312
12mm	12mm	25mm		76mm	2.0mm	std	VXMG4T-M12M12-R2.0	H6313
12mm	12mm	25mm		76mm	3.0mm	std	VXMG4T-M12M12-R3.0	H6314
12mm	12mm	25mm	50mm	100mm	0.5mm	ext neck	VXMG4T-M12M12-R0.5N	H6315
12mm	12mm	25mm	60mm	150mm	0.5mm	ext neck	VXMG4T-M12M12-R0.5N1	H6316
12mm	12mm	25mm	60mm	150mm	1.0mm	ext neck	VXMG4T-M12M12-R1.0N1	H6317
12mm	12mm	25mm	60mm	150mm	2.0mm	ext neck	VXMG4T-M12M12-R2.0N1	H6318
12mm	12mm	25mm	60mm	150mm	3.0mm	ext neck	VXMG4T-M12M12-R3.0N1	H6319
12mm	12mm	48mm		100mm	0.5mm	long	VXMG4T-M12M12-R0.5L	H6320
14mm	14mm	32mm		89mm	0.5mm x 45°	std	VXMG4T-M14M14	H6321
14mm	14mm	32mm		89mm	0.5mm	std	VXMG4T-M14M14-R0.5	H6322
14mm	14mm	32mm		89mm	1.0mm	std	VXMG4T-M14M14-R1.0	H6323
14mm	14mm	32mm		89mm	2.0mm	std	VXMG4T-M14M14-R2.0	H6324
16mm	16mm	32mm		89mm	SQ	std	VXMG4T-M16M16-NR	H6325
16mm	16mm	32mm		89mm	0.5mm x 45°	std	VXMG4T-M16M16	H6326
16mm	16mm	32mm		89mm	0.5mm	std	VXMG4T-M16M16-R0.5	H6327
16mm	16mm	32mm		89mm	1.0mm	std	VXMG4T-M16M16-R1.0	H6328
16mm	16mm	32mm		89mm	1.5mm	std	VXMG4T-M16M16-R1.5	H6329
16mm	16mm	32mm		89mm	2.0mm	std	VXMG4T-M16M16-R2.0	H6330
16mm	16mm	32mm		89mm	3.0mm	std	VXMG4T-M16M16-R3.0	H6331

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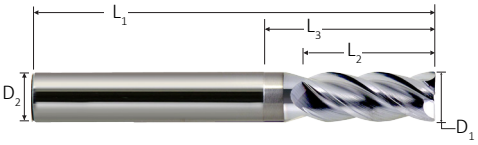

4 Flute • variable flute - HP roughing applications

Series: VXMG4T-M_M_

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACRo EDP
16mm	16mm	32mm	65mm	127mm	0.5mm	ext neck	VXMG4T-M16M16-R0.5N	H6332
16mm	16mm	32mm	80mm	150mm	0.5mm	ext neck	VXMG4T-M16M16-R0.5N1	H6333
16mm	16mm	32mm	80mm	150mm	1.0mm	ext neck	VXMG4T-M16M16-R1.0N1	H6334
16mm	16mm	32mm	80mm	150mm	2.0mm	ext neck	VXMG4T-M16M16-R2.0N1	H6335
16mm	16mm	32mm	80mm	150mm	3.0mm	ext neck	VXMG4T-M16M16-R3.0N1	H6336
16mm	16mm	48mm		127mm	0.5mm	long	VXMG4T-M16M16-R0.5L	H6337
18mm	18mm	38mm		100mm	0.5mm x 45°	std	VXMG4T-M18M18	H6338
18mm	18mm	38mm		100mm	0.5mm	std	VXMG4T-M18M18-R0.5	H6339
18mm	18mm	38mm		100mm	1.0mm	std	VXMG4T-M18M18-R1.0	H6340
18mm	18mm	38mm		100mm	2.0mm	std	VXMG4T-M18M18-R2.0	H6341
20mm	20mm	38mm		100mm	SQ	std	VXMG4T-M20M20-NR	H6342
20mm	20mm	38mm		100mm	0.5mm x 45°	std	VXMG4T-M20M20	H6343
20mm	20mm	38mm		100mm	0.5mm	std	VXMG4T-M20M20-R0.5	H6344
20mm	20mm	38mm		100mm	1.0mm	std	VXMG4T-M20M20-R1.0	H6345
20mm	20mm	38mm		100mm	1.5mm	std	VXMG4T-M20M20-R1.5	H6346
20mm	20mm	38mm		100mm	2.0mm	std	VXMG4T-M20M20-R2.0	H6347
20mm	20mm	38mm		100mm	3.0mm	std	VXMG4T-M20M20-R3.0	H6348
20mm	20mm	38mm	65mm	127mm	0.5mm	ext neck	VXMG4T-M20M20-R0.5N	H6349
20mm	20mm	38mm	100mm	150mm	0.5mm	ext neck	VXMG4T-M20M20-R0.5N1	H6350
20mm	20mm	38mm	100mm	150mm	1.0mm	ext neck	VXMG4T-M20M20-R1.0N1	H6351
20mm	20mm	38mm	100mm	150mm	3.0mm	ext neck	VXMG4T-M20M20-R3.0N1	H6352
20mm	20mm	60mm		127mm	0.5mm	long	VXMG4T-M20M20-R0.5L	H6353
25mm	25mm	38mm		100mm	0.5mm x 45°	std	VXMG4T-M25M25	H6354
25mm	25mm	38mm		100mm	0.5mm	std	VXMG4T-M25M25-R0.5	H6355
25mm	25mm	38mm		100mm	1.0mm	std	VXMG4T-M25M25-R1.0	H6356
25mm	25mm	38mm		100mm	2.0mm	std	VXMG4T-M25M25-R2.0	H6357

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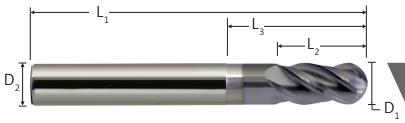

4 Flute • variable flute - ball nose HP roughing applications

- Geometry designed to reduce chatter, universal and Z-axis machining operations
- Unique titanium focused geometry and edge prep enables efficient cutting action
- Eccentric relief provides an exceptionally strong cutting edge
- Proprietary nACRo coating allows for higher SFM and is especially effective in extending tool life
- Excellent for heavy cuts, deep slotting and long axial depth profiling

Series: VXMG4T-__-B

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	LENGTH	PART NAME	nACRo EDP
1/16	1/8	3/16		1-1/2	std	VXMG4T-402-B	14724
3/32	1/8	9/32		1-1/2	std	VXMG4T-403-B	H6358
1/8	1/8	3/16	3/8	2	ext neck	VXMG4T-404-N1B	H6359
1/8	1/8	1/4		1-1/2	stub	VXMG4T-404-SB	H6360
1/8	1/8	1/2		1-1/2	std	VXMG4T-404-B	H6361
3/16	3/16	1/4		1-1/2	stub	VXMG4T-606-SB	H6362
3/16	3/16	1/4	1/2	3	ext neck	VXMG4T-606-N1B	H6363
3/16	3/16	5/8		2	std	VXMG4T-606-B	H6364
1/4	1/4	3/8		2	stub	VXMG4T-808-SB	H6365
1/4	1/4	3/8	3/4	3	ext neck	VXMG4T-808-N1B	H6366
1/4	1/4	3/4		2-1/2	std	VXMG4T-808-B	14740
5/16	5/16	1/2		2	stub	VXMG4T-1010-SB	H6367
5/16	5/16	13/16		2-1/2	std	VXMG4T-1010-B	H6368
3/8	3/8	1/2		2	stub	VXMG4T-1212-SB	H6369
3/8	3/8	1/2	1-1/8	3	ext neck	VXMG4T-1212-N1B	H6370
3/8	3/8	1		2-1/2	std	VXMG4T-1212-B	H6371
1/2	1/2	5/8		2-1/2	stub	VXMG4T-1616-SB	H6372
1/2	1/2	5/8	1-1/2	4	ext neck	VXMG4T-1616-N1B	H6373
1/2	1/2	1		3	std	VXMG4T-1616-B	H6374
1/2	1/2	1	1-3/4	4	ext neck	VXMG4T-1616-N2B	H7314
5/8	5/8	3/4		3	stub	VXMG4T-2020-SB	H6375
5/8	5/8	3/4	1-5/8	5	ext neck	VXMG4T-2020-N1B	H6376
5/8	5/8	1-1/4		3-1/2	std	VXMG4T-2020-B	H6377
3/4	3/4	7/8		3	stub	VXMG4T-2424-SB	H6378
3/4	3/4	7/8	2	5	ext neck	VXMG4T-2424-N1B	H6379
3/4	3/4	1-1/2		4	std	VXMG4T-2424-B	H6380
1	1	1-1/2		4	std	VXMG4T-3232-B	H6381

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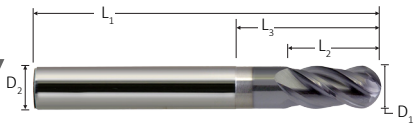

4 Flute • Variable Flute - Ball Nose HP Roughing Applications

- Geometry designed to reduce chatter, universal and Z-axis machining operations
- Unique titanium focused geometry and edge prep enables efficient cutting action
- Eccentric relief provides an exceptionally strong cutting edge
- Proprietary nACRo coating allows for higher SFM and is especially effective in extending tool life
- Excellent for heavy cuts, deep slotting and long axial depth profiling

Series: VXMG4T-M_M_-B

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	LENGTH	PART NAME	nACRo EDP
2mm	3mm	4mm		38mm	std	VXMG4T-M3M2-B	H6382
3mm	3mm	12mm		38mm	std	VXMG4T-M3M3-B	14725
4mm	4mm	14mm		51mm	std	VXMG4T-M4M4-B	H6383
5mm	5mm	20mm		51mm	std	VXMG4T-M5M5-B	H6384
6mm	6mm	20mm		63mm	std	VXMG4T-M6M6-B	H6385
6mm	6mm	20mm	32mm	75mm	ext neck	VXMG4T-M6M6-NB	H6386
8mm	8mm	20mm		63mm	std	VXMG4T-M8M8-B	H6387
8mm	8mm	20mm	32mm	75mm	ext neck	VXMG4T-M8M8-NB	H6388
10mm	10mm	25mm		70mm	std	VXMG4T-M10M10-B	H6389
10mm	10mm	25mm	50mm	100mm	ext neck	VXMG4T-M10M10-NB	H6390
12mm	12mm	25mm		76mm	std	VXMG4T-M12M12-B	H6391
12mm	12mm	25mm	50mm	100mm	ext neck	VXMG4T-M12M12-NB	H6392
16mm	16mm	32mm		89mm	std	VXMG4T-M16M16-B	H6393
16mm	16mm	32mm	65mm	127mm	ext neck	VXMG4T-M16M16-NB	H6394
20mm	20mm	38mm		100mm	std	VXMG4T-M20M20-B	H6395
20mm	20mm	38mm	65mm	127mm	ext neck	VXMG4T-M20M20-NB	H6396

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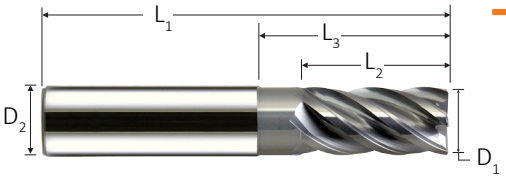

Titanium Alloys & High Temp Alloys

5 Flute • variable flute - HP roughing applications

Carbide | 5 | Center Cutting | variable | nACRo | +.000 -.002 | Square | Radius | HRc <54 | M S

- Geometry designed to reduce chatter, universal machining operations
- Unique titanium focused geometry and edge prep enables efficient cutting action
- Eccentric relief provides an exceptionally strong cutting edge
- Proprietary nACRo coating allows for higher SFM and is especially effective in extending tool life
- Excellent for heavy cuts, deep slotting and long axial depth profiling

Series: VXMG5T

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACRo EDP
1/16	1/8	1/8		1-1/2	SQ	std	VXMG5T-402-NR	H6427
1/16	1/8	1/8		1-1/2	0.010	std	VXMG5T-402-R010	H6428
3/32	1/8	3/16		1-1/2	SQ	std	VXMG5T-403-NR	H6429
3/32	1/8	3/16		1-1/2	0.010	std	VXMG5T-403-R010	H6430
1/8	1/8	3/16	no neck	2	0.015	no neck	VXMG5T-404-R015NN	H6431
1/8	1/8	1/4		1-1/2	SQ	stub	VXMG5T-404-NRS	H6432
1/8	1/8	1/4		1-1/2	0.015	stub	VXMG5T-404-R015S	H6433
1/8	1/8	1/2	3/4	2	SQ	std	VXMG5T-404-NR	H6434
1/8	1/8	1/2	3/4	2	0.015	std	VXMG5T-404-R015	H6435
3/16	3/16	1/4		1-1/2	SQ	stub	VXMG5T-606-NRS	H6436
3/16	3/16	1/4		1-1/2	0.015	stub	VXMG5T-606-R015S	H6437
3/16	3/16	1/4	no neck	3	0.015	no neck	VXMG5T-606-R015NN	H6438
3/16	3/16	5/8	7/8	2	SQ	std	VXMG5T-606-NR	11882
3/16	3/16	5/8	7/8	2	0.015	std	VXMG5T-606-R015	14794
1/4	1/4	3/8		2	SQ	stub	VXMG5T-808-NRS	H6439
1/4	1/4	3/8		2	0.015	stub	VXMG5T-808-R015S	H6440
1/4	1/4	3/8		2	0.030	stub	VXMG5T-808-R030S	H6441
1/4	1/4	3/8		2	0.060	stub	VXMG5T-808-R060S	H7259
1/4	1/4	3/8	1-1/8	3	0.015	ext neck	VXMG5T-808-R015N2	H6442
1/4	1/4	3/8	1-1/8	3	0.030	ext neck	VXMG5T-808-R030N2	H6443
1/4	1/4	3/8	no neck	4	0.015	no neck	VXMG5T-808-R015NN	H6444
1/4	1/4	3/8	no neck	4	0.030	no neck	VXMG5T-808-R030NN	H6445
1/4	1/4	3/4	1	2-1/2	SQ	std	VXMG5T-808-NR	H6446
1/4	1/4	3/4	1	2-1/2	0.015	std	VXMG5T-808-R015	H6447
1/4	1/4	3/4	1	2-1/2	0.030	std	VXMG5T-808-R030	H6448
1/4	1/4	3/4	1	2-1/2	0.060	std	VXMG5T-808-R060	H7260
5/16	5/16	1/2		2	SQ	stub	VXMG5T-1010-NRS	H6449
5/16	5/16	1/2		2	0.015	stub	VXMG5T-1010-R015S	H6450
5/16	5/16	1/2		2	0.030	stub	VXMG5T-1010-R030S	H6451
5/16	5/16	13/16	1-1/16	2-1/2	SQ	std	VXMG5T-1010-NR	H6452
5/16	5/16	13/16	1-1/16	2-1/2	0.015	std	VXMG5T-1010-R015	H6453
5/16	5/16	13/16	1-1/16	2-1/2	0.030	std	VXMG5T-1010-R030	H6454
3/8	3/8	1/2		2	SQ	stub	VXMG5T-1212-NRS	H6455
3/8	3/8	1/2		2	0.015	stub	VXMG5T-1212-R015S	14722
3/8	3/8	1/2		2	0.030	stub	VXMG5T-1212-R030S	14153
3/8	3/8	1/2		2	0.060	stub	VXMG5T-1212-R060S	H7261
3/8	3/8	1/2	1-7/8	3	0.015	ext neck	VXMG5T-1212-R015N1	H6456
3/8	3/8	1/2	1-7/8	3	0.030	ext neck	VXMG5T-1212-R030N1	H6457

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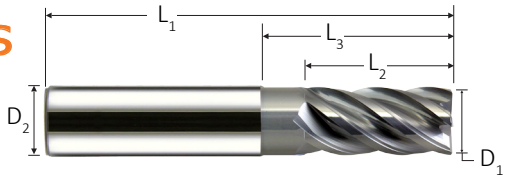

Series: VXMG5T

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACRo EDP
3/8	3/8	1/2	no neck	6	0.015	no neck	VXMG5T-1212-R015NN	H6458
3/8	3/8	1/2	no neck	6	0.030	no neck	VXMG5T-1212-R030NN	H6459
3/8	3/8	1		2-1/2	SQ	std	VXMG5T-1212-NR	H6460
3/8	3/8	1		2-1/2	0.015	std	VXMG5T-1212-R015	14717
3/8	3/8	1		2-1/2	0.030	std	VXMG5T-1212-R030	14716
3/8	3/8	1		2-1/2	0.060	std	VXMG5T-1212-R060	H7262
1/2	1/2	5/8		2-1/2	SQ	stub	VXMG5T-1616-NRS	H6461
1/2	1/2	5/8		2-1/2	0.015	stub	VXMG5T-1616-R015S	H6462
1/2	1/2	5/8		2-1/2	0.030	stub	VXMG5T-1616-R030S	H6463
1/2	1/2	5/8		2-1/2	0.060	stub	VXMG5T-1616-R060S	H6464
1/2	1/2	5/8		2-1/2	0.090	stub	VXMG5T-1616-R090S	H7263
1/2	1/2	5/8		2-1/2	0.120	stub	VXMG5T-1616-R120S	H7264
1/2	1/2	5/8	1-1/2	4	0.015	ext neck	VXMG5T-1616-R015N1	H6465
1/2	1/2	5/8	1-1/2	4	0.030	ext neck	VXMG5T-1616-R030N1	H6466
1/2	1/2	5/8	1-1/2	4	0.060	ext neck	VXMG5T-1616-R060N1	H6467
1/2	1/2	5/8	2-1/4	4	0.015	ext neck	VXMG5T-1616-R015N2	H6468
1/2	1/2	5/8	2-1/4	4	0.030	ext neck	VXMG5T-1616-R030N2	H6469
1/2	1/2	5/8	2-1/4	4	0.060	ext neck	VXMG5T-1616-R060N2	H6470
1/2	1/2	5/8	no neck	6	0.015	no neck	VXMG5T-1616-R015NN	H6471
1/2	1/2	5/8	no neck	6	0.030	no neck	VXMG5T-1616-R030NN	H6472
1/2	1/2	5/8	no neck	6	0.060	no neck	VXMG5T-1616-R060NN	H6473
1/2	1/2	1	1-1/4	3	SQ	std	VXMG5T-1616-NR	H6474
1/2	1/2	1	1-1/4	3	0.015	std	VXMG5T-1616-R015	H6475
1/2	1/2	1	1-1/4	3	0.030	std	VXMG5T-1616-R030	H6476
1/2	1/2	1	1-1/4	3	0.060	std	VXMG5T-1616-R060	H6477
1/2	1/2	1	1-1/4	3	0.090	std	VXMG5T-1616-R090	H7265
1/2	1/2	1	1-1/4	3	0.120	std	VXMG5T-1616-R120	H7266
1/2	1/2	1-1/4		3	SQ	med	VXMG5T-1616-NRM	H6478
1/2	1/2	1-1/4		3	0.015	med	VXMG5T-1616-R015M	H6479
1/2	1/2	1-1/4		3	0.030	med	VXMG5T-1616-R030M	14544
1/2	1/2	1-1/4		3	0.060	med	VXMG5T-1616-R060M	H6480
1/2	1/2	1-5/8		4	SQ	med/long	VXMG5T-1616-NRML	H6765
1/2	1/2	1-5/8		4	0.030	med/long	VXMG5T-1616-R030ML	H2059
1/2	1/2	1-5/8		4	0.060	med/long	VXMG5T-1616-R060ML	H6766
1/2	1/2	2		4	SQ	long	VXMG5T-1616-NRL	H6767
1/2	1/2	2		4	0.015	long	VXMG5T-1616-R015L	H6768
1/2	1/2	2		4	0.030	long	VXMG5T-1616-R030L	H2060
1/2	1/2	2		4	0.060	stub	VXMG5T-1616-R060L	H6769
5/8	5/8	3/4		3	SQ	stub	VXMG5T-2020-NRS	H6481
5/8	5/8	3/4		3	0.030	stub	VXMG5T-2020-R030S	H6482
5/8	5/8	3/4		3	0.060	stub	VXMG5T-2020-R060S	H6483
5/8	5/8	3/4		3	0.090	stub	VXMG5T-2020-R090S	H6484
5/8	5/8	3/4	1-5/8	5	0.030	ext neck	VXMG5T-2020-R030N1	H6485
5/8	5/8	3/4	1-5/8	5	0.060	ext neck	VXMG5T-2020-R060N1	H6486
5/8	5/8	3/4	1-5/8	5	0.090	ext neck	VXMG5T-2020-R090N1	H6487

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Series: VXMG5T

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACRo EDP
5/8	5/8	3/4	2-3/8	5	0.060	ext neck	VXMG5T-2020-R060N2	14710
5/8	5/8	3/4	no neck	6	0.060	no neck	VXMG5T-2020-R060NN	H6488
5/8	5/8	1-1/4	1-1/2	3-1/2	0.000	std	VXMG5T-2020-NR	H6489
5/8	5/8	1-1/4	1-1/2	3-1/2	0.015	std	VXMG5T-2020-R015	14545
5/8	5/8	1-1/4	1-1/2	3-1/2	0.030	std	VXMG5T-2020-R030	14241
5/8	5/8	1-1/4	1-1/2	3-1/2	0.060	std	VXMG5T-2020-R060	H6490
5/8	5/8	1-1/4	1-1/2	3-1/2	0.090	std	VXMG5T-2020-R090	H6491
5/8	5/8	1-1/4	1-1/2	3-1/2	0.120	std	VXMG5T-2020-R120	H7267
3/4	3/4	7/8		3	SQ	stub	VXMG5T-2424-NRS	H6492
3/4	3/4	7/8		3	0.030	stub	VXMG5T-2424-R030S	H6493
3/4	3/4	7/8		3	0.060	stub	VXMG5T-2424-R060S	H6494
3/4	3/4	7/8		3	0.090	stub	VXMG5T-2424-R090S	H6495
3/4	3/4	7/8		3	0.120	stub	VXMG5T-2424-R120S	H6496
3/4	3/4	7/8	2	5	0.030	ext neck	VXMG5T-2424-R030N1	H6497
3/4	3/4	7/8	2	5	0.060	ext neck	VXMG5T-2424-R060N1	H6498
3/4	3/4	7/8	2	5	0.090	ext neck	VXMG5T-2424-R090N1	H6499
3/4	3/4	7/8	2	5	0.120	ext neck	VXMG5T-2424-R120N1	H6500
3/4	3/4	7/8	2-3/4	5	0.120	ext neck	VXMG5T-2424-R120N4	11074
3/4	3/4	7/8	3-3/8	6	0.030	ext neck	VXMG5T-2424-R030N3	H6501
3/4	3/4	7/8	3-3/8	6	0.060	ext neck	VXMG5T-2424-R060N3	H6502
3/4	3/4	7/8	3-3/8	6	0.090	ext neck	VXMG5T-2424-R090N3	H6503
3/4	3/4	7/8	3-3/8	6	0.120	ext neck	VXMG5T-2424-R120N3	14711
3/4	3/4	7/8	no neck	6	0.030	no neck	VXMG5T-2424-R030NN	H6504
3/4	3/4	7/8	no neck	6	0.060	no neck	VXMG5T-2424-R060NN	H6505
3/4	3/4	7/8	no neck	6	0.090	no neck	VXMG5T-2424-R090NN	H6506
3/4	3/4	7/8	no neck	6	0.120	no neck	VXMG5T-2424-R120NN	H6507
3/4	3/4	1-1/2	1-3/4	4	SQ	std	VXMG5T-2424-NR	H6508
3/4	3/4	1-1/2	1-3/4	4	0.015	std	VXMG5T-2424-R015	H6509
3/4	3/4	1-1/2	1-3/4	4	0.030	std	VXMG5T-2424-R030	14191
3/4	3/4	1-1/2	1-3/4	4	0.060	std	VXMG5T-2424-R060	H6510
3/4	3/4	1-1/2	1-3/4	4	0.090	std	VXMG5T-2424-R090	H6511
3/4	3/4	1-1/2	1-3/4	4	0.120	std	VXMG5T-2424-R120	H6512
3/4	3/4	2-1/4		5	SQ	long	VXMG5T-2424-NRL	H6770
3/4	3/4	2-1/4		5	0.030	long	VXMG5T-2424-R030L	H2062
3/4	3/4	2-1/4		5	0.060	long	VXMG5T-2424-R060L	H6771
3/4	3/4	2-1/4		5	0.090	long	VXMG5T-2424-R090L	H6772
3/4	3/4	2-1/4		5	0.120	long	VXMG5T-2424-R120L	H6773
1	1	1-1/2	1-3/4	4	SQ	std	VXMG5T-3232-NR	H6513
1	1	1-1/2	1-3/4	4	0.030	std	VXMG5T-3232-R030	H6514
1	1	1-1/2	1-3/4	4	0.060	std	VXMG5T-3232-R060	H6515
1	1	1-1/2	1-3/4	4	0.090	std	VXMG5T-3232-R090	H6516
1	1	1-1/2	1-3/4	4	0.120	std	VXMG5T-3232-R120	H6517
1	1	1-1/2	1-3/4	4	0.250	std	VXMG5T-3232-R250	H7268
1	1	1-1/2	2-1/4	5	0.030	ext neck	VXMG5T-3232-R030N1	H6518
1	1	1-1/2	2-1/4	5	0.060	ext neck	VXMG5T-3232-R060N1	H6519
1	1	1-1/2	2-1/4	5	0.090	ext neck	VXMG5T-3232-R090N1	H6520
1	1	1-1/2	2-1/4	5	0.120	ext neck	VXMG5T-3232-R120N1	14712

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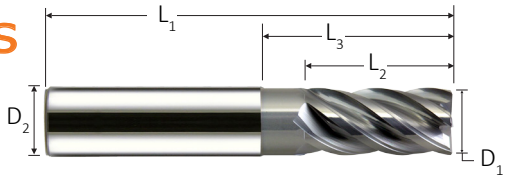

Series: VXMG5T

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACRo EDP
1	1	1-1/2	3-3/8	6	0.030	ext neck	VXMG5T-3232-R030N3	H6521
1	1	1-1/2	3-3/8	6	0.060	ext neck	VXMG5T-3232-R060N3	H6522
1	1	1-1/2	3-3/8	6	0.090	ext neck	VXMG5T-3232-R090N3	H6523
1	1	1-1/2	3-3/8	6	0.120	ext neck	VXMG5T-3232-R120N3	H6524
1	1	1-1/2	no neck	6	0.030	no neck	VXMG5T-3232-R030NN	H6525
1	1	1-1/2	no neck	6	0.060	no neck	VXMG5T-3232-R060NN	H6526
1	1	1-1/2	no neck	6	0.090	no neck	VXMG5T-3232-R090NN	H6527
1	1	1-1/2	no neck	6	0.120	no neck	VXMG5T-3232-R120NN	H6528
1	1	2-1/4		5	SQ	long	VXMG5T-3232-NRL	H6774
1	1	2-1/4		5	0.030	long	VXMG5T-3232-R030L	H6775
1	1	2-1/4		5	0.060	long	VXMG5T-3232-R060L	H2063
1	1	2-1/4		5	0.090	long	VXMG5T-3232-R090L	H6776
1	1	2-1/4		5	0.120	long	VXMG5T-3232-R120L	H6777
1-1/4	1-1/4	2-1/4		5	0.030	std	VXMG5T-4040-R030	H7269
1-1/4	1-1/4	2-1/4		5	0.060	std	VXMG5T-4040-R060	H7270
1-1/4	1-1/4	2-1/4		5	0.120	std	VXMG5T-4040-R120	H7271

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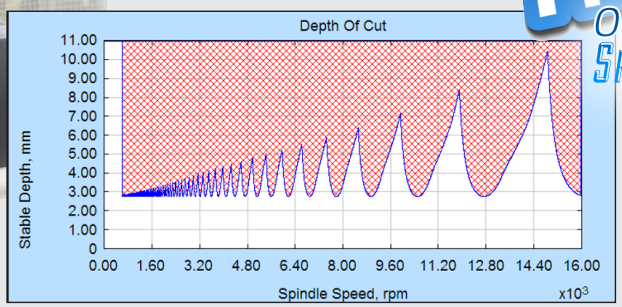
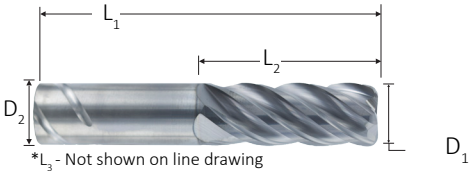
MetalMax Testing

Melin's EXPERT technical field application engineers are available to provide FREE on-site, *"tap testing"* analysis of your machine, for fine tuning cutting parameters to dramatically reduce vibration and optimize productivity. Contact your local distributor, our regional sales rep, Melin customer service, or visit us Online to submit a request. www.melintool.com



Free On The Spindle

MetalMax™

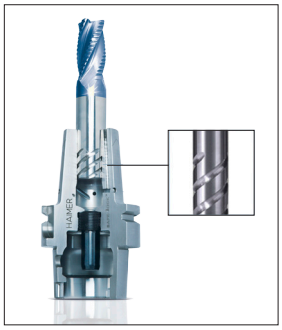


Titanium Alloys & High Temp Alloys

5 Flute • variable flute - HP roughing applications

Carbide | 5 | Center Cutting | variable | nACRo | +.000 -.002 | Radius | HRc <54 | M S

- Geometry designed to reduce chatter, universal machining operations
- Unique titanium focused geometry and edge prep enables efficient cutting action
- Eccentric relief provides an exceptionally strong cutting edge
- Proprietary nACRo coating allows for higher SFM and is especially effective in extending tool life
- Excellent for heavy cuts, deep slotting and long axial depth profiling
- Haimer Safe Lock™ pull out protection on shank
- Stocked for immediate delivery



Series: VXMG5T-__-SL (Safe Lock Shank)

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACRo EDP
1/2	1/2	1		3	0.015	std	VXMG5T-1616-R015-SL	H6887
1/2	1/2	1		3	0.030	std	VXMG5T-1616-R030-SL	H6888
1/2	1/2	1		3	0.060	std	VXMG5T-1616-R060-SL	H6889
1/2	1/2	2		4	0.015	long	VXMG5T-1616-R015L-SL	H6890
1/2	1/2	2		4	0.030	long	VXMG5T-1616-R030L-SL	H6891
1/2	1/2	2		4	0.060	long	VXMG5T-1616-R060L-SL	H6892
5/8	5/8	1-1/4	1-1/2	3-1/2	0.030	std	VXMG5T-2020-R030-SL	H6893
5/8	5/8	1-1/4	1-1/2	3-1/2	0.060	std	VXMG5T-2020-R060-SL	H6894
5/8	5/8	1-1/4	1-1/2	3-1/2	0.090	std	VXMG5T-2020-R090-SL	H6895
3/4	3/4	1-1/2	1-3/4	4	0.030	std	VXMG5T-2424-R030-SL	H6896
3/4	3/4	1-1/2	1-3/4	4	0.060	std	VXMG5T-2424-R060-SL	H6897
3/4	3/4	1-1/2	1-3/4	4	0.090	std	VXMG5T-2424-R090-SL	H6898
3/4	3/4	1-1/2	1-3/4	4	0.120	std	VXMG5T-2424-R120-SL	H6899
3/4	3/4	2-1/4		5	0.030	long	VXMG5T-2424-R030L-SL	H6900
3/4	3/4	2-1/4		5	0.060	long	VXMG5T-2424-R060L-SL	H6901
3/4	3/4	2-1/4		5	0.090	long	VXMG5T-2424-R090L-SL	H6902
3/4	3/4	2-1/4		5	0.120	long	VXMG5T-2424-R120L-SL	H6903
1	1	1-1/2		4	0.030	std	VXMG5T-3232-R030-SL	H6904
1	1	1-1/2		4	0.060	std	VXMG5T-3232-R060-SL	H6905
1	1	1-1/2		4	0.090	std	VXMG5T-3232-R090-SL	H6906
1	1	1-1/2		4	0.120	std	VXMG5T-3232-R120-SL	H6907
1	1	2-1/4		5	0.030	long	VXMG5T-3232-R030L-SL	H6908
1	1	2-1/4		5	0.060	long	VXMG5T-3232-R060L-SL	H6909
1	1	2-1/4		5	0.090	long	VXMG5T-3232-R090L-SL	H6910
1	1	2-1/4		5	0.120	long	VXMG5T-3232-R120L-SL	H6911

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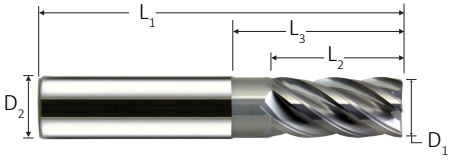
This licensed system offers the pull out protection for your round shank tools! The shanks have helical grooves ground into our shanks. Combined with the proper tool holding system, this technology prevents the tool from pulling out or spinning while undergoing extreme machining applications.

Haimer Safe Lock™

Available On All High Performance End Mills

(Call For Pricing and Availability)

Titanium Alloys & High Temp Alloys



5 Flute • variable flute - HP roughing applications

Carbide | 5 | Center Cutting | variable | nACRo | +.000mm -.050mm | Square | Radius | HRc <54 | M S

- Geometry designed to reduce chatter, universal machining operations
- Unique titanium focused geometry and edge prep enables efficient cutting action
- Eccentric relief provides an exceptionally strong cutting edge
- Proprietary nACRo coating allows for higher SFM and is especially effective in extending tool life
- Excellent for heavy cuts, deep slotting and long axial depth profiling

Series: VXMG5T-M_M_

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACRo EDP
1.5mm	3mm	3mm		38mm	SQ	std	VXMG5T-M3M1.5-NR	H6529
1.5mm	3mm	3mm		38mm	0.25mm	std	VXMG5T-M3M1.5-R0.25	H6530
2mm	3mm	4mm		38mm	SQ	std	VXMG5T-M3M2-NR	H6531
2mm	3mm	4mm		38mm	0.25mm	std	VXMG5T-M3M2-R0.25	H6532
2.5mm	3mm	5mm		38mm	SQ	std	VXMG5T-M3M2.5-NR	H6533
2.5mm	3mm	5mm		38mm	0.25mm	std	VXMG5T-M3M2.5-R0.25	H6534
3mm	3mm	6mm		38mm	SQ	stub	VXMG5T-M3M3-NRS	H6535
3mm	3mm	6mm		38mm	0.25mm	stub	VXMG5T-M3M3-R0.25S	H6536
3mm	3mm	12mm		38mm	SQ	std	VXMG5T-M3M3-NR	H6537
3mm	3mm	12mm		38mm	0.25mm	std	VXMG5T-M3M3-R0.25	H6538
4mm	4mm	14mm	20mm	51mm	SQ	std	VXMG5T-M4M4-NR	H6539
4mm	4mm	14mm	20mm	51mm	0.25mm	std	VXMG5T-M4M4-R0.25	H6540
4mm	4mm	14mm	20mm	51mm	0.5mm	std	VXMG5T-M4M4-R0.5	H6541
5mm	5mm	16mm	22mm	51mm	0.25mm	std	VXMG5T-M5M5-R0.25	H6542
5mm	5mm	16mm	22mm	51mm	0.5mm	std	VXMG5T-M5M5-R0.5	H6543
6mm	6mm	20mm	26mm	63mm	0.5mm	std	VXMG5T-M6M6-R0.5	H6544
6mm	6mm	20mm	26mm	63mm	1.0mm	std	VXMG5T-M6M6-R1.0	H6545
6mm	6mm	20mm	no neck	100mm	0.5mm	no neck	VXMG5T-M6M6-NN	H6546
8mm	8mm	20mm	26mm	63mm	0.5mm	std	VXMG5T-M8M8-R0.5	H6547
8mm	8mm	20mm	26mm	63mm	1.0mm	std	VXMG5T-M8M8-R1.0	H6548
8mm	8mm	20mm	no neck	100mm	0.5mm	no neck	VXMG5T-M8M8-NN	H6549
10mm	10mm	24mm	30mm	70mm	0.5mm	std	VXMG5T-M10M10-R0.5	H6550
10mm	10mm	24mm	30mm	70mm	1.0mm	std	VXMG5T-M10M10-R1.0	H6551
10mm	10mm	24mm	no neck	100mm	0.5mm	no neck	VXMG5T-M10M10-NN	H6552
12mm	12mm	25mm	31mm	76mm	0.5mm	std	VXMG5T-M12M12-R0.5	H6553
12mm	12mm	25mm	31mm	76mm	1.0mm	std	VXMG5T-M12M12-R1.0	H6554
12mm	12mm	25mm	31mm	76mm	2.0mm	std	VXMG5T-M12M12-R2.0	H6555
12mm	12mm	25mm	no neck	100mm	0.5mm	no neck	VXMG5T-M12M12-NN	H6556
14mm	14mm	32mm	38mm	89mm	0.5mm	std	VXMG5T-M14M14-R0.5	H6557
14mm	14mm	32mm	38mm	89mm	1.0mm	std	VXMG5T-M14M14-R1.0	H6558
14mm	14mm	32mm	38mm	89mm	2.0mm	std	VXMG5T-M14M14-R2.0	H6559
16mm	16mm	32mm	38mm	89mm	0.5mm	std	VXMG5T-M16M16-R0.5	H6560
16mm	16mm	32mm	38mm	89mm	1.0mm	std	VXMG5T-M16M16-R1.0	H6561
16mm	16mm	32mm	38mm	89mm	2.0mm	std	VXMG5T-M16M16-R2.0	H6562
16mm	16mm	32mm	no neck	100mm	0.5mm	no neck	VXMG5T-M16M16-NN	H6563
18mm	18mm	36mm	42mm	100mm	0.5mm	std	VXMG5T-M18M18-R0.5	H6564
18mm	18mm	36mm	42mm	100mm	1.0mm	std	VXMG5T-M18M18-R1.0	H6565
18mm	18mm	36mm	42mm	100mm	2.0mm	std	VXMG5T-M18M18-R2.0	H6566
20mm	20mm	36mm	42mm	100mm	1.0mm	std	VXMG5T-M20M20-R1.0	H6567
20mm	20mm	36mm	42mm	100mm	2.0mm	std	VXMG5T-M20M20-R2.0	H6568
25mm	25mm	36mm	42mm	100mm	1.0mm	std	VXMG5T-M25M25-R1.0	H6569
25mm	25mm	36mm	42mm	100mm	2.0mm	std	VXMG5T-M25M25-R2.0	H6570

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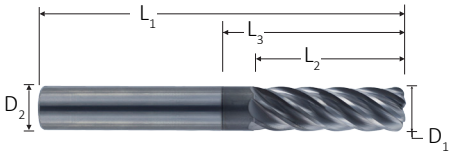

Titanium Alloys & High Temp Alloys

6 Flute • variable fl- roughing & finishing applications

Carbide | 6 | Center Cutting | variable | nACRo | +.000mm -.050mm | Square | Radius | HRc <54 | M S

- Geometry designed to reduce chatter, universal machining operations
- Unique titanium focused geometry and edge prep enables efficient cutting action
- Eccentric relief provides an exceptionally strong cutting edge
- Proprietary nACRo coating allows for higher SFM and is especially effective in extending tool life
- Excellent for roughing & finishing applications

Series: VXMG6T

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACRo EDP
3/8	3/8	1		3	SQ	std	VXMG6T-1212-NR	H7191
3/8	3/8	1		3	0.015	std	VXMG6T-1212-R015	H7192
3/8	3/8	1		3	0.030	std	VXMG6T-1212-R030	H7196
3/8	3/8	1		3	0.060	std	VXMG6T-1212-R060	H7193
3/8	3/8	1	1-7/8	4	0.015	ext neck	VXMG6T-1212-R015N1	H7194
3/8	3/8	1	1-7/8	4	0.030	ext neck	VXMG6T-1212-R030N1	H7195
1/2	1/2	1-1/4		3	SQ	std	VXMG6T-1616-NR	H7201
1/2	1/2	1-1/4		3	0.015	std	VXMG6T-1616-R015	H7197
1/2	1/2	1-1/4		3	0.030	std	VXMG6T-1616-R030	H7198
1/2	1/2	1-1/4		3	0.060	std	VXMG6T-1616-R060	H7199
1/2	1/2	1-1/4		3	0.120	std	VXMG6T-1616-R120	H7200
1/2	1/2	1-1/4	2-1/4	4	0.030	ext neck	VXMG6T-1616-R030N1	H7202
1/2	1/2	1-1/4	2-1/4	4	0.060	ext neck	VXMG6T-1616-R060N1	H7203
5/8	5/8	1-1/4		3-1/2	SQ	std	VXMG6T-2020-NR	H7206
5/8	5/8	1-1/4		3-1/2	0.030	std	VXMG6T-2020-R030	H7204
5/8	5/8	1-1/4		3-1/2	0.060	std	VXMG6T-2020-R060	H7205
5/8	5/8	1-1/4	2-1/4	4	0.030	ext neck	VXMG6T-2020-R030N1	H7207
5/8	5/8	1-1/4	2-1/4	4	0.060	ext neck	VXMG6T-2020-R060N1	H7208
3/4	3/4	1-5/8		4	SQ	std	VXMG6T-2424-NR	H7209
3/4	3/4	1-5/8		4	0.030	std	VXMG6T-2424-R030	H7210
3/4	3/4	1-5/8		4	0.060	std	VXMG6T-2424-R060	H7215
3/4	3/4	1-5/8		4	0.090	std	VXMG6T-2424-R090	H7211
3/4	3/4	1-5/8		4	0.120	std	VXMG6T-2424-R120	H7212
3/4	3/4	1-5/8	3	5	0.030	ext neck	VXMG6T-2424-R030N1	H7213
3/4	3/4	1-5/8	3	5	0.060	ext neck	VXMG6T-2424-R060N1	H7214
1	1	1-3/4		4-1/2	SQ	std	VXMG6T-3232-NR	H7220
1	1	1-3/4		4-1/2	0.030	std	VXMG6T-3232-R030	H7216
1	1	1-3/4		4-1/2	0.060	std	VXMG6T-3232-R060	H7217
1	1	1-3/4		4-1/2	0.120	std	VXMG6T-3232-R120	H7218
1	1	1-3/4		4-1/2	0.250	std	VXMG6T-3232-R250	H7219
1	1	1-3/4	3-1/4	5-1/2	0.030	ext neck	VXMG6T-3232-R030N1	H7221
1	1	1-3/4	3-1/4	5-1/2	0.060	ext neck	VXMG6T-3232-R060N1	H7222
1-1/4	1-1/4	2-1/4		5	SQ	std	VXMG6T-4040-NR	H7225
1-1/4	1-1/4	2-1/4		5	0.030	std	VXMG6T-4040-R030	H7223
1-1/4	1-1/4	2-1/4		5	0.120	std	VXMG6T-4040-R120	H7224

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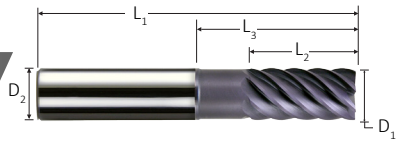
7 Flute • variable fl - light to medium finishing applications



Carbide | 7 | Center Cutting | variable | nACRo | +.000 -.002 | Square | Radius | HRc <54 | P M K S

- Geometry designed to reduce chatter, utilizing maximum metal removal rates
- Unique titanium focused geometry and edge prep enables efficient cutting action
- Additional flutes provide over 40% higher metal removal rates over 4 & 5 flute tools
- Extreme metal removal rates delivered at full flute length & 15% x D radial depth
- Excellent for high feed machining processes

Series: VXMG7-__-NACRO

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACRo EDP
1/8	1/8	3/16		1-1/2	SQ	stub	VXMG7-404-NRS-NACRO	H6614
1/8	1/8	3/16		1-1/2	0.010	stub	VXMG7-404-R010S-NACRO	H6615
1/8	1/8	3/8		1-1/2	SQ	std	VXMG7-404-NR-NACRO	H6616
1/8	1/8	3/8		1-1/2	0.010	std	VXMG7-404-R010-NACRO	H6617
3/16	3/16	9/32		1-1/2	SQ	stub	VXMG7-606-NRS-NACRO	34720
3/16	3/16	9/32		1-1/2	0.010	stub	VXMG7-606-R010S-NACRO	H6618
3/16	3/16	9/16		2	SQ	std	VXMG7-606-NR-NACRO	H6619
3/16	3/16	9/16		2	0.010	std	VXMG7-606-R010-NACRO	H6620
1/4	1/4	3/8		2	SQ	stub	VXMG7-808-NRS-NACRO	32241
1/4	1/4	3/8		2	0.015	stub	VXMG7-808-R015S-NACRO	32242
1/4	1/4	3/8	2-1/8	4	0.015	ext neck	VXMG7-808-R015N3-NACRO	32246
1/4	1/4	3/8	no neck	4	0.015	no neck	VXMG7-808-R015NN-NACRO	32247
1/4	1/4	3/4	1	2-1/2	SQ	std	VXMG7-808-NR-NACRO	32244
1/4	1/4	3/4	1	2-1/2	0.015	std	VXMG7-808-R015-NACRO	32245
3/8	3/8	1/2		2	SQ	stub	VXMG7-1212-NRS-NACRO	32248
3/8	3/8	1/2		2	0.015	stub	VXMG7-1212-R015S-NACRO	32249
3/8	3/8	1/2	1-1/8	3	0.015	ext neck	VXMG7-1212-R015N1-NACRO	32252
3/8	3/8	1/2	2-1/8	4	0.015	ext neck	VXMG7-1212-R015N2-NACRO	32253
3/8	3/8	1		2-1/2	SQ	std	VXMG7-1212-NR-NACRO	32250
3/8	3/8	1		2-1/2	0.015	std	VXMG7-1212-R015-NACRO	32251
1/2	1/2	5/8		2-1/2	SQ	stub	VXMG7-1616-NRS-NACRO	32254
1/2	1/2	5/8		2-1/2	0.015	stub	VXMG7-1616-R015S-NACRO	32255
1/2	1/2	5/8	1-1/2	4	0.015	ext neck	VXMG7-1616-R015N1-NACRO	32260
1/2	1/2	5/8	2-1/4	4	0.015	ext neck	VXMG7-1616-R015N2-NACRO	32261
1/2	1/2	1	1-1/4	3	SQ	std	VXMG7-1616-NR-NACRO	32256
1/2	1/2	1	1-1/4	3	0.015	std	VXMG7-1616-R015-NACRO	31805
1/2	1/2	1	1-1/4	3	0.030	std	VXMG7-1616-R030-NACRO	31797
1/2	1/2	1-1/4		3	SQ	med	VXMG7-1616-NRM-NACRO	32257
1/2	1/2	1-1/4		3	0.015	med	VXMG7-1616-R015M-NACRO	32258
1/2	1/2	1-1/4		3	0.030	med	VXMG7-1616-R030M-NACRO	32259
5/8	5/8	3/4		3	SQ	stub	VXMG7-2020-NRS-NACRO	32262
5/8	5/8	3/4		3	0.030	stub	VXMG7-2020-R030S-NACRO	32263
5/8	5/8	3/4	1-5/8	5	0.030	ext neck	VXMG7-2020-R030N1-NACRO	32267
5/8	5/8	1-1/4	1-1/2	3-1/2	SQ	std	VXMG7-2020-NR-NACRO	32264
5/8	5/8	1-1/4	1-1/2	3-1/2	0.030	std	VXMG7-2020-R030-NACRO	32265
3/4	3/4	7/8		3	SQ	stub	VXMG7-2424-NRS-NACRO	32269
3/4	3/4	7/8		3	0.030	stub	VXMG7-2424-R030S-NACRO	32271
3/4	3/4	7/8	2	5	0.030	ext neck	VXMG7-2424-R030N1-NACRO	32277
3/4	3/4	1-1/2	1-3/4	4	SQ	std	VXMG7-2424-NR-NACRO	32273
3/4	3/4	1-1/2	1-3/4	4	0.030	std	VXMG7-2424-R030-NACRO	32275
1	1	1-1/2	1-3/4	4	SQ	std	VXMG7-3232-NR-NACRO	32283
1	1	1-1/2	1-3/4	4	0.030	std	VXMG7-3232-R030-NACRO	32287

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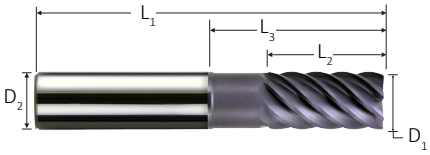
7 Flute • variable fl - light to medium finishing applications

Carbide | 7 | Center Cutting | variable | nACRo | +.000mm -.050mm | Square | Radius | HRc <54 | P K M S



- Geometry designed to reduce chatter, utilizing maximum metal removal rates
- Unique titanium focused geometry and edge prep enables efficient cutting action
- Additional flutes provide over 40% higher metal removal rates over 4 & 5 flute tools
- Extreme metal removal rates delivered at full flute length & 15% x D radial depth
- Excellent for high feed machining processes

Series: VXMG7-M_M_-NACRO

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACRo EDP
3mm	3mm	6mm		38mm	SQ	stub	VXMG7-M3M3-NRS-NACRO	H6621
3mm	3mm	6mm		38mm	0.25mm	stub	VXMG7-M3M3-R0.25S-NACRO	H6622
3mm	3mm	12mm		38mm	SQ	std	VXMG7-M3M3-NR-NACRO	H6623
3mm	3mm	12mm		38mm	0.25mm	std	VXMG7-M3M3-R0.25-NACRO	H6624
4mm	4mm	12mm		51mm	SQ	std	VXMG7-M4M4-NR-NACRO	H6625
4mm	4mm	12mm		51mm	0.25mm	std	VXMG7-M4M4-R0.25-NACRO	H6626
6mm	6mm	20mm	26mm	63mm	SQ	std	VXMG7-M6M6-NR-NACRO	35169
6mm	6mm	20mm	26mm	63mm	0.5mm	std	VXMG7-M6M6-R0.5-NACRO	35120
6mm	6mm	20mm	no neck	100mm	0.5mm	no neck	VXMG7-M6M6-NN-NACRO	35121
8mm	8mm	20mm	26mm	63mm	SQ	std	VXMG7-M8M8-NR-NACRO	35171
8mm	8mm	20mm	26mm	63mm	0.5mm	std	VXMG7-M8M8-R0.5-NACRO	35122
8mm	8mm	20mm	26mm	63mm	1.0mm	std	VXMG7-M8M8-R1.0-NACRO	H6627
8mm	8mm	20mm	no neck	100mm	0.5mm	no neck	VXMG7-M8M8-NN-NACRO	35123
10mm	10mm	24mm	30mm	70mm	SQ	std	VXMG7-M10M10-NR-NACRO	35173
10mm	10mm	24mm	30mm	70mm	0.5mm	std	VXMG7-M10M10-R0.5-NACRO	35124
10mm	10mm	24mm	30mm	70mm	1.0mm	std	VXMG7-M10M10-R1.0-NACRO	H6628
10mm	10mm	24mm	30mm	70mm	2.0mm	std	VXMG7-M10M10-R2.0-NACRO	H6659
10mm	10mm	24mm	no neck	100mm	0.5mm	no neck	VXMG7-M10M10-NN-NACRO	35125
12mm	12mm	25mm	31mm	76mm	SQ	std	VXMG7-M12M12-NR-NACRO	35175
12mm	12mm	25mm	31mm	76mm	0.5mm	std	VXMG7-M12M12-R0.5-NACRO	35126
12mm	12mm	25mm	31mm	76mm	1.0mm	std	VXMG7-M12M12-R1.0-NACRO	35605
12mm	12mm	25mm	31mm	76mm	2.0mm	std	VXMG7-M12M12-R2.0-NACRO	H6629
12mm	12mm	25mm	no neck	100mm	0.5mm	no neck	VXMG7-M12M12-NN-NACRO	35127
14mm	14mm	32mm	38mm	89mm	SQ	std	VXMG7-M14M14-NR-NACRO	35177
14mm	14mm	32mm	38mm	89mm	0.5mm	std	VXMG7-M14M14-R0.5-NACRO	35128
14mm	14mm	32mm	38mm	89mm	1.0mm	std	VXMG7-M14M14-R1.0-NACRO	H6630
16mm	16mm	32mm	38mm	89mm	SQ	std	VXMG7-M16M16-NR-NACRO	35179
16mm	16mm	32mm	38mm	89mm	0.5mm	std	VXMG7-M16M16-R0.5-NACRO	35129
16mm	16mm	32mm	38mm	89mm	1.0mm	std	VXMG7-M16M16-R1.0-NACRO	H6631
16mm	16mm	32mm	38mm	89mm	2.0mm	std	VXMG7-M16M16-R2.0-NACRO	H6632
16mm	16mm	32mm	no neck	100mm	0.5mm	no neck	VXMG7-M16M16-NN-NACRO	35130
18mm	18mm	36mm	42mm	100mm	SQ	std	VXMG7-M18M18-NR-NACRO	35181
18mm	18mm	36mm	42mm	100mm	0.5mm	std	VXMG7-M18M18-R0.5-NACRO	35131
18mm	18mm	36mm	42mm	100mm	1.0mm	std	VXMG7-M18M18-R1.0-NACRO	H6633
20mm	20mm	36mm	42mm	100mm	SQ	std	VXMG7-M20M20-NR-NACRO	35183
20mm	20mm	36mm	42mm	100mm	0.5mm	std	VXMG7-M20M20-R0.5-NACRO	H6634
20mm	20mm	36mm	42mm	100mm	1.0mm	std	VXMG7-M20M20-R1.0-NACRO	35132
20mm	20mm	36mm	42mm	100mm	2.0mm	std	VXMG7-M20M20-R2.0-NACRO	H6635
20mm	20mm	36mm	42mm	100mm	3.0mm	std	VXMG7-M20M20-R3.0-NACRO	H6636
25mm	25mm	36mm	42mm	100mm	SQ	std	VXMG7-M25M25-NR-NACRO	35185
25mm	25mm	36mm	42mm	100mm	0.5mm	std	VXMG7-M25M25-R0.5-NACRO	H6637
25mm	25mm	36mm	42mm	100mm	1.0mm	std	VXMG7-M25M25-R1.0-NACRO	35133
25mm	25mm	36mm	42mm	100mm	3.0mm	std	VXMG7-M25M25-R3.0-NACRO	H6638

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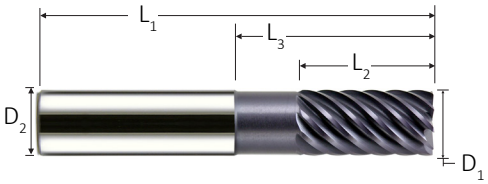
Titanium Alloys & High Temp Alloys

9 Flute • variable fl - fine-finishing applications



Carbide | 9 | Center Cutting | variable | nACRo | +.000 -.002 | Square | Radius | HRc <54 | P M K S

- Designed to deliver outstanding surface finishes, utilizing maximum metal removal rates
- Unique titanium focused geometry and edge prep enables efficient cutting action
- Extreme metal removal rates delivered at full flute length & 5% x D radial depth
- Proprietary nACRo coating allows for higher SFM and is especially effective in extending tool life
- Ideal for finishing tight tolerance walls

Series: VXMG9-__-NACRO

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACRo EDP
3/16	3/16	9/32		1-1/2	SQ	stub	VXMG9-606-NRS-NACRO	H6639
3/16	3/16	9/32		1-1/2	0.010	stub	VXMG9-606-R010S-NACRO	H6640
3/16	3/16	9/16		2	SQ	std	VXMG9-606-NR-NACRO	H6641
3/16	3/16	9/16		2	0.010	std	VXMG9-606-R010-NACRO	H6642
1/4	1/4	3/8		2	SQ	stub	VXMG9-808-NRS-NACRO	32288
1/4	1/4	3/8		2	0.015	stub	VXMG9-808-R015S-NACRO	32289
1/4	1/4	3/8	2-1/8	4	0.015	ext neck	VXMG9-808-R015N3-NACRO	32302
1/4	1/4	3/8	no neck	4	0.015	no neck	VXMG9-808-R015NN-NACRO	32303
1/4	1/4	3/4	1	2-1/2	SQ	std	VXMG9-808-NR-NACRO	32290
1/4	1/4	3/4	1	2-1/2	0.015	std	VXMG9-808-R015-NACRO	32291
3/8	3/8	1/2		2	SQ	stub	VXMG9-1212-NRS-NACRO	32304
3/8	3/8	1/2		2	0.015	stub	VXMG9-1212-R015S-NACRO	32305
3/8	3/8	1/2	1-1/8	3	0.015	ext neck	VXMG9-1212-R015N1-NACRO	32317
3/8	3/8	1/2	2-1/8	4	0.015	ext neck	VXMG9-1212-R015N2-NACRO	32325
3/8	3/8	1		2-1/2	SQ	std	VXMG9-1212-NR-NACRO	32315
3/8	3/8	1		2-1/2	0.015	std	VXMG9-1212-R015-NACRO	32316
1/2	1/2	5/8		2-1/2	SQ	stub	VXMG9-1616-NRS-NACRO	32327
1/2	1/2	5/8		2-1/2	0.015	stub	VXMG9-1616-R015S-NACRO	32328
1/2	1/2	5/8	1-1/2	4	0.015	ext neck	VXMG9-1616-R015N1-NACRO	32377
1/2	1/2	5/8	2-1/4	4	0.015	ext neck	VXMG9-1616-R015N2-NACRO	32405
1/2	1/2	1	1-1/4	3	SQ	std	VXMG9-1616-NR-NACRO	32329
1/2	1/2	1	1-1/4	3	0.015	std	VXMG9-1616-R015-NACRO	31801
1/2	1/2	1	1-1/4	3	0.030	std	VXMG9-1616-R030-NACRO	31799
1/2	1/2	1-1/4		3	SQ	med	VXMG9-1616-NRM-NACRO	32330
1/2	1/2	1-1/4		3	0.015	med	VXMG9-1616-R015M-NACRO	32373
1/2	1/2	1-1/4		3	0.030	med	VXMG9-1616-R030M-NACRO	32376
5/8	5/8	3/4		3	SQ	stub	VXMG9-2020-NRS-NACRO	32406
5/8	5/8	3/4		3	0.030	stub	VXMG9-2020-R030S-NACRO	32407
5/8	5/8	3/4	1-5/8	5	0.030	ext neck	VXMG9-2020-R030N1-NACRO	32410
5/8	5/8	1-1/4	1-1/2	3-1/2	SQ	std	VXMG9-2020-NR-NACRO	32408
5/8	5/8	1-1/4	1-1/2	3-1/2	0.030	std	VXMG9-2020-R030-NACRO	32409
3/4	3/4	7/8		3	SQ	stub	VXMG9-2424-NRS-NACRO	32411
3/4	3/4	7/8		3	0.030	stub	VXMG9-2424-R030S-NACRO	32412
3/4	3/4	7/8	2	5	0.030	ext neck	VXMG9-2424-R030N1-NACRO	32415
3/4	3/4	1-1/2	1-3/4	4	SQ	std	VXMG9-2424-NR-NACRO	32413
3/4	3/4	1-1/2	1-3/4	4	0.030	std	VXMG9-2424-R030-NACRO	32414
1	1	1-1/2	1-3/4	4	SQ	std	VXMG9-3232-NR-NACRO	32416
1	1	1-1/2	1-3/4	4	0.030	std	VXMG9-3232-R030-NACRO	32417

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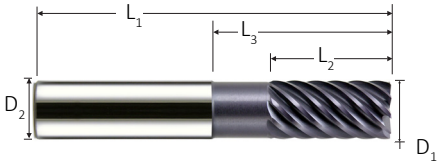

Titanium Alloys & High Temp Alloys

9 Flute • variable fl - fine-finishing applications

Carbide | 9 | Center Cutting | variable | nACRo | +.000mm -.050mm | Square | Radius | HRc <54 | P K M S

- Designed to deliver outstanding surface finishes, utilizing maximum metal removal rates
- Unique titanium focused geometry and edge prep enables efficient cutting action
- Extreme metal removal rates delivered at full flute length & 5% x D radial depth
- Proprietary nACRo coating allows for higher SFM and is especially effective in extending tool life
- Ideal for finishing tight tolerance walls

Series: VXMG9-M_M_-NACRO

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACRo EDP
4mm	4mm	12mm		51mm	SQ	std	VXMG9-M4M4-NR-NACRO	H6643
4mm	4mm	12mm		51mm	0.25mm	std	VXMG9-M4M4-R0.25-NACRO	H6644
6mm	6mm	20mm	26mm	63mm	SQ	std	VXMG9-M6M6-NR-NACRO	35151
6mm	6mm	20mm	26mm	63mm	0.5mm	std	VXMG9-M6M6-R0.5-NACRO	35134
6mm	6mm	20mm	no neck	100mm	0.5mm	no neck	VXMG9-M6M6-NN-NACRO	35135
8mm	8mm	20mm	26mm	63mm	SQ	std	VXMG9-M8M8-NR-NACRO	35153
8mm	8mm	20mm	26mm	63mm	0.5mm	std	VXMG9-M8M8-R0.5-NACRO	35136
8mm	8mm	20mm	26mm	63mm	1.0mm	std	VXMG9-M8M8-R1.0-NACRO	H6645
8mm	8mm	20mm	no neck	100mm	0.5mm	no neck	VXMG9-M8M8-NN-NACRO	35137
10mm	10mm	24mm	30mm	70mm	SQ	std	VXMG9-M10M10-NR-NACRO	35155
10mm	10mm	24mm	30mm	70mm	0.5mm	std	VXMG9-M10M10-R0.5-NACRO	35138
10mm	10mm	24mm	30mm	70mm	1.0mm	std	VXMG9-M10M10-R1.0-NACRO	H6646
10mm	10mm	24mm	no neck	100mm	0.5mm	no neck	VXMG9-M10M10-NN-NACRO	35139
12mm	12mm	25mm	31mm	76mm	SQ	std	VXMG9-M12M12-NR-NACRO	35157
12mm	12mm	25mm	31mm	76mm	0.5mm	std	VXMG9-M12M12-R0.5-NACRO	35140
12mm	12mm	25mm	31mm	76mm	1.0mm	std	VXMG9-M12M12-R1.0-NACRO	H6647
12mm	12mm	25mm	31mm	76mm	2.0mm	std	VXMG9-M12M12-R2.0-NACRO	H6648
12mm	12mm	25mm	no neck	100mm	0.5mm	no neck	VXMG9-M12M12-NN-NACRO	35141
14mm	14mm	32mm	38mm	89mm	SQ	std	VXMG9-M14M14-NR-NACRO	35159
14mm	14mm	32mm	38mm	89mm	0.5mm	std	VXMG9-M14M14-R0.5-NACRO	35142
14mm	14mm	32mm	38mm	89mm	1.0mm	std	VXMG9-M14M14-R1.0-NACRO	H6649
16mm	16mm	32mm	38mm	89mm	SQ	std	VXMG9-M16M16-NR-NACRO	35161
16mm	16mm	32mm	38mm	89mm	0.5mm	std	VXMG9-M16M16-R0.5-NACRO	35143
16mm	16mm	32mm	38mm	89mm	1.0mm	std	VXMG9-M16M16-R1.0-NACRO	H6650
16mm	16mm	32mm	38mm	89mm	2.0mm	std	VXMG9-M16M16-R2.0-NACRO	H6651
16mm	16mm	32mm	no neck	100mm	0.5mm	no neck	VXMG9-M16M16-NN-NACRO	35144
18mm	18mm	36mm	42mm	100mm	SQ	std	VXMG9-M18M18-NR-NACRO	35163
18mm	18mm	36mm	42mm	100mm	0.5mm	std	VXMG9-M18M18-R0.5-NACRO	35145
18mm	18mm	36mm	42mm	100mm	1.0mm	std	VXMG9-M18M18-R1.0-NACRO	H6652
20mm	20mm	36mm	42mm	100mm	SQ	std	VXMG9-M20M20-NR-NACRO	35165
20mm	20mm	36mm	42mm	100mm	0.5mm	std	VXMG9-M20M20-R0.5-NACRO	H6653
20mm	20mm	36mm	42mm	100mm	1.0mm	std	VXMG9-M20M20-R1.0-NACRO	35147
20mm	20mm	36mm	42mm	100mm	2.0mm	std	VXMG9-M20M20-R2.0-NACRO	H6654
20mm	20mm	36mm	42mm	100mm	3.0mm	std	VXMG9-M20M20-R3.0-NACRO	H6655
25mm	25mm	36mm	42mm	100mm	SQ	std	VXMG9-M25M25-NR-NACRO	35167
25mm	25mm	36mm	42mm	100mm	0.5mm	std	VXMG9-M25M25-R0.5-NACRO	H6656
25mm	25mm	36mm	42mm	100mm	1.0mm	std	VXMG9-M25M25-R1.0-NACRO	35149
25mm	25mm	36mm	42mm	100mm	3.0mm	std	VXMG9-M25M25-R3.0-NACRO	H6657

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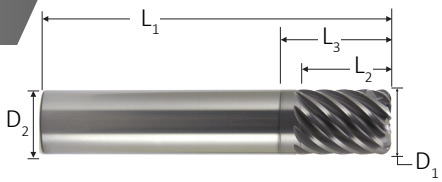
10 FLUTE • VARIABLE FL - ULTRA FINE-FINISHING APPLICATION

Carbide | 10 | variable | nACRo | +.000 -.002 | Square | Radius | HRc <54 | P M K S



- Designed to deliver best possible surface finish, at highest metal removal rates
- Proprietary nACo coating provides extended tool life over conventional coatings
- Ideal for finishing tight tolerance walls
- Excellent for high feed machining processes

SERIES: VXMG10

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACo EDP
3/16	3/16	9/32	-	1-1/2	0.000	stub	VXMG10-606-NRS	HHHHH
3/16	3/16	9/32	-	1-1/2	0.010	stub	VXMG10-606-R010S	HHHHH
3/16	3/16	9/16	-	2	0.000	std	VXMG10-606-NR	HHHHH
3/16	3/16	9/16	-	2	0.010	std	VXMG10-606-R010	HHHHH
1/4	1/4	3/8	-	2	0.000	stub	VXMG10-808-NRS	HHHHH
1/4	1/4	3/8	-	2	0.015	stub	VXMG10-808-R015S	HHHHH
1/4	1/4	3/8	2-1/8	4	0.015	ext neck	VXMG10-808-R015N3	HHHHH
1/4	1/4	3/8	no neck	4	0.015	no neck	VXMG10-808-R015NN	HHHHH
1/4	1/4	3/4	-	2-1/2	0.000	std	VXMG10-808-NR	HHHHH
1/4	1/4	3/4	-	2-1/2	0.015	std	VXMG10-808-R015	HHHHH
3/8	3/8	1/2	-	2	0.000	stub	VXMG10-1212-NRS	HHHHH
3/8	3/8	1/2	-	2	0.015	stub	VXMG10-1212-R015S	HHHHH
3/8	3/8	1/2	1-1/8	3	0.015	ext neck	VXMG10-1212-R015N1	HHHHH
3/8	3/8	1/2	2-1/8	4	0.015	ext neck	VXMG10-1212-R015N2	HHHHH
3/8	3/8	1	-	2-1/2	0.000	std	VXMG10-1212-NR	HHHHH
3/8	3/8	1	-	2-1/2	0.015	std	VXMG10-1212-R015	HHHHH
1/2	1/2	5/8	-	2-1/2	0.000	stub	VXMG10-1616-NRS	HHHHH
1/2	1/2	5/8	-	2-1/2	0.015	stub	VXMG10-1616-R015S	HHHHH
1/2	1/2	5/8	1-1/2	4	0.015	ext neck	VXMG10-1616-R015N1	HHHHH
1/2	1/2	5/8	2-1/4	4	0.015	ext neck	VXMG10-1616-R015N2	HHHHH
1/2	1/2	1	1-1/4	3	0.000	std	VXMG10-1616-NR	HHHHH
1/2	1/2	1	1-1/4	3	0.015	std	VXMG10-1616-R015	HHHHH
1/2	1/2	1	1-1/4	3	0.030	std	VXMG10-1616-R030	HHHHH
1/2	1/2	1-1/4	-	3	0.000	med	VXMG10-1616-NRM	HHHHH
1/2	1/2	1-1/4	-	3	0.015	med	VXMG10-1616-R015M	HHHHH
1/2	1/2	1-1/4	-	3	0.030	med	VXMG10-1616-R030M	HHHHH

COMING SOON

10+ FLUTE ▪ VARIABLE FLUTE SQUARE & RADIUS

Special end mills with 10 or more flutes are available with specific geometries. These best suited for particular workpiece material and machining operations.

Contact Customer Service Today with your Requests!

PHONE: 1-800-521-1078 or 216-362-4200
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Less is More

Less Vibration, Less Machining Time, More Productivity!

VXMG Family of Variable Flute End Mills are available in 4-, 5-, 6-, 7-, 9- & 10+ -flute styles. These high performance carbide end mills are ideal for:

- Maximizing metal removal rates
- **Titanium**, **Stainless Steels** & **all ferrous materials** up to 50 HRc
- Roughing, semi-finishing and finishing applications

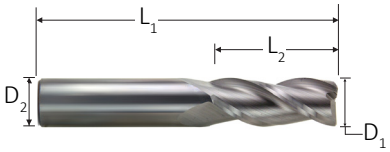
The unique combination of variable helix angles and unequal flute division enables chatter-less machining and the use of heavier feed rates for:

- **4- & 5-Flute Tools** - Designed for heavy-slotting & long depth profiling
- **6-Flute Tools** - Designed for roughing and finishing applications
- **7-Flute Tools** - Designed for semi-finishing & medium depth profiling
- **9-Flute Tools** - Ideal for fine finish and profiling
- **10+-Flute Tools** - Ideal for ULTRA fine finish & profiling

Our special nACo nanocomposite PVD coating provides maximum tool life for end mills in a wide range of sizes, lengths, neck styles and corner radius. That's why you can depend on Melin for tooling that matches your specific applications

For enhanced performance in **Titanium & Nickel based alloys**, try our "T" series with nACRo coating. (page 8)

Titanium Alloys & High Temp Alloys



3 Flute • 35° for stainless steel

Carbide | 3 | Center Cutting | 35° | Bright ALTIN | +.000 -.002 | Radius | HRc <54 | P M K S

Additional coatings available upon request

- Unique geometry and higher helix maximizes heat & wear resistance
- Outstanding performance in single pass slotting applications
- Cost effective for use on older, NC machines on short run production

Series: EMG35

DIA D_1	SHK D_2	LOC L_2	OAL L_1	CORNER	LENGTH	PART NAME	BRIGHT EDP	ALTIN EDP
1/8	1/8	1/4	1-1/2	.008-.010	stub	EMGS35-404	17658	57658
1/8	1/8	1/2	1-1/2	.008-.010	std	EMG35-404	16709	56709
5/32	3/16	5/16	2	.008-.010	stub	EMGS35-605	17659	57659
5/32	3/16	9/16	2	.008-.010	std	EMG35-605	17722	57722
3/16	3/16	5/16	2	.008-.010	stub	EMGS35-606	17660	57660
3/16	3/16	9/16	2	.008-.010	std	EMG35-606	17723	57723
7/32	1/4	3/8	2	.015-.020	stub	EMGS35-807	17661	57661
7/32	1/4	3/4	2-1/2	.015-.020	std	EMG35-807	17724	57724
1/4	1/4	3/8	2	.015-.020	stub	EMGS35-808	17662	57662
1/4	1/4	3/4	2-1/2	.015-.020	std	EMG35-808	16702	56702
5/16	5/16	7/16	2	.015-.020	stub	EMGS35-1010	17664	57664
5/16	5/16	13/16	2-1/2	.015-.020	std	EMG35-1010	17727	57727
3/8	3/8	1/2	2	.015-.020	stub	EMGS35-1212	17666	57666
3/8	3/8	1	2-1/2	.015-.020	std	EMG35-1212	17729	57729
7/16	7/16	9/16	2-1/2	.015-.020	stub	EMGS35-1414	17667	57667
7/16	7/16	1	2-3/4	.015-.020	std	EMG35-1414	17730	57730
1/2	1/2	5/8	2-1/2	.030-.035	stub	EMGS35-1616	17668	57668
1/2	1/2	1-1/4	3	.030-.035	std	EMG35-1616	16708	56708
5/8	5/8	3/4	3	.030-.035	stub	EMGS35-2020	17669	57669
5/8	5/8	1-5/8	3-1/2	.030-.035	std	EMG35-2020	17732	57732
3/4	3/4	1	3	.030-.035	stub	EMGS35-2424	17670	57670
3/4	3/4	1-5/8	4	.030-.035	std	EMG35-2424	17733	57733

Speed & Feed: page 149

3 Flute • 35° for stainless steel

Series: EMG35-M_M_

DIA D_1	SHK D_2	LOC L_2	OAL L_1	CORNER	PART NAME	BRIGHT EDP	ALTIN EDP
3mm	3mm	12mm	38mm	0.23mm	EMG35-M3M3	13394	53394
4mm	4mm	14mm	51mm	0.23mm	EMG35-M4M4	13395	53395
5mm	5mm	20mm	51mm	0.23mm	EMG35-M5M5	13396	53396
6mm	6mm	20mm	63mm	0.45mm	EMG35-M6M6	13397	53397
8mm	8mm	20mm	63mm	0.45mm	EMG35-M8M8	13398	53398
10mm	10mm	25mm	70mm	0.45mm	EMG35-M10M10	13399	53399
12mm	12mm	25mm	76mm	0.45mm	EMG35-M12M12	13400	53400
14mm	14mm	32mm	89mm	0.82mm	EMG35-M14M14	13401	53401
16mm	16mm	32mm	89mm	0.82mm	EMG35-M16M16	13402	53402
20mm	20mm	38mm	100mm	0.82mm	EMG35-M20M20	13404	53404

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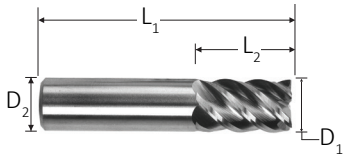

Titanium Alloys & High Temp Alloys

5 Flute • 45° for stainless steels/nickel based alloys

Carbide | 5 | Center Cutting | 45° | Bright AlTiN | +.000 -.002 | Square | Radius | HRc <54 | P K M S

- Unique geometry and higher helix maximizes resistance to heat and wear
- Outstanding performance in heavy profiling applications
- Cost effective for use on short run production

Series: GMG

DIA D_1	SHK D_2	LOC L_2	OAL L_1	CORNER	LENGTH	PART NAME	BRIGHT EDP	AlTiN EDP
1/16	1/8	3/16	1-1/2	SQ	std	GMG-402	14707	54707
3/32	1/8	9/32	1-1/2	SQ	std	GMG-403	14708	54708
1/8	1/8	1/4	1-1/2	SQ	stub	GMGS-404	17698	57698
1/8	1/8	1/4	1-1/2	0.010	stub	GMGS-404-R010	10232	50232
1/8	1/8	1/2	1-1/2	SQ	std	GMG-404	15942	55942
1/8	1/8	1/2	1-1/2	0.010	std	GMG-404-R010	11350	51350
5/32	3/16	5/16	2	SQ	stub	GMGS-605	17699	57699
5/32	3/16	9/16	2	SQ	std	GMG-605	15943	55943
3/16	3/16	5/16	2	SQ	stub	GMGS-606	17700	57700
3/16	3/16	9/16	2	SQ	std	GMG-606	15944	55944
3/16	3/16	9/16	2	0.010	std	GMG-606-R010	11571	51571
7/32	1/4	3/8	2	SQ	stub	GMGS-807	17701	57701
7/32	1/4	3/4	2-1/2	SQ	std	GMG-807	15945	55945
1/4	1/4	3/8	2	SQ	stub	GMGS-808	17702	57702
1/4	1/4	3/8	2	.015	stub	GMGS-808-R015	11648	51648
1/4	1/4	3/4	2-1/2	SQ	std	GMG-808	15946	55946
1/4	1/4	3/4	2-1/2	0.015	std	GMG-808-R015	11704	51704
1/4	1/4	1-1/2	4	SQ	xl	GMG-808-E	15947	55947
5/16	5/16	7/16	2	SQ	stub	GMGS-1010	17703	57703
5/16	5/16	13/16	2-1/2	SQ	std	GMG-1010	15948	55948
5/16	5/16	13/16	2-1/2	0.015	std	GMG-1010-R015	11705	51705
3/8	3/8	1/2	2	SQ	stub	GMGS-1212	17704	57704
3/8	3/8	1/2	2	0.015	stub	GMGS-1212-R015	11706	51706
3/8	3/8	1/2	2	0.030	stub	GMGS-1212-R030	11707	51707
3/8	3/8	1	2-1/2	SQ	std	GMG-1212	15949	55949
3/8	3/8	1	2-1/2	0.015	std	GMG-1212-R015	11708	51708
3/8	3/8	1	2-1/2	0.015	std	GMG-1212-R030	11710	51710
3/8	3/8	1-3/4	4	SQ	xl	GMG-1212-E	15950	55950
13/32	7/16	9/16	2-1/2	SQ	stub	GMGS-1413	10739	50739
7/16	7/16	9/16	2-1/2	SQ	stub	GMGS-1414	17705	57705
7/16	7/16	1	2-3/4	SQ	std	GMG-1414	15951	55951
1/2	1/2	5/8	2-1/2	SQ	stub	GMGS-1616	17706	57706
1/2	1/2	5/8	2-1/2	0.030	stub	GMGS-1616-R030	11711	51711
1/2	1/2	5/8	2-1/2	0.060	stub	GMGS-1616-R060	11716	51716
1/2	1/2	1-1/4	3	SQ	std	GMG-1616	15952	55952
1/2	1/2	1-1/4	3	0.030	std	GMG-1616-R030	11978	51978
1/2	1/2	1-1/4	3	0.060	std	GMG-1616-R060	11781	51781
1/2	1/2	2	4	SQ	std	GMG-1616-M	11886	51886
1/2	1/2	2	4	0.030	std	GMG-1616-R030M	15241	55241
1/2	1/2	3	6	SQ	xl	GMG-1616-E	15953	55953
9/16	9/16	1-1/2	3-1/2	SQ	std	GMG-1818	15954	55954
5/8	5/8	3/4	3	SQ	stub	GMGS-2020	17707	57707
5/8	5/8	3/4	3	0.030	stub	GMGS-2020-R030	15243	55243

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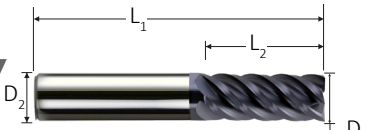
sizes continued on next page

5 Flute • 45° for Stainless Steels/Nickel Based Alloys



Series: GMG

DIA D_1	SHK D_2	LOC L_2	OAL L_1	CORNER	LENGTH	PART NAME	BRIGHT EDP	AlTiN EDP
5/8	5/8	3/4	3	0.060	stub	GMGS-2020-R060	15245	55245
5/8	5/8	1-5/8	3-1/2	SQ	std	GMG-2020	15955	55955
5/8	5/8	1-5/8	3-1/2	0.030	std	GMG-2020-R030	15247	55247
5/8	5/8	1-5/8	3-1/2	0.060	std	GMG-2020-R060	H6836	H6837
5/8	5/8	3	6	SQ	xl	GMG-2020-E	11203	51203
3/4	3/4	1	3	SQ	stub	GMGS-2424	17708	57708
3/4	3/4	1	3	0.030	stub	GMGS-2424-R030	15249	55249
3/4	3/4	1	3	.060	stub	GMGS-2424-R060	15253	55253
3/4	3/4	1-5/8	4	SQ	std	GMG-2424	15956	55956
3/4	3/4	1-5/8	4	0.030	std	GMG-2424-R030	15257	55257
3/4	3/4	1-5/8	4	0.060	std	GMG-2424-R060	15259	55259
3/4	3/4	3	6	SQ	xl	GMG-2424-E	15957	55957
1	1	1-1/4	3	SQ	stub	GMGS-3232	17709	57709
1	1	1-1/2	4	SQ	std	GMG-3232	15958	55958
1	1	1-1/2	4	0.030	std	GMG-3232-R030	15261	55261
1	1	1-1/2	4	0.060	std	GMG-3232-R060	15263	55263
1	1	3	6	SQ	xl	GMG-3232-E	15959	55959
1-1/4	1-1/4	2	4-1/2	SQ	std	GMG-4040	15265	55265
1-1/4	1-1/4	2	4-1/2	0.030	std	GMG-4040-R030	10000	50000
1-1/4	1-1/4	2	4-1/2	0.060	std	GMG-4040-R060	H6816	H6817

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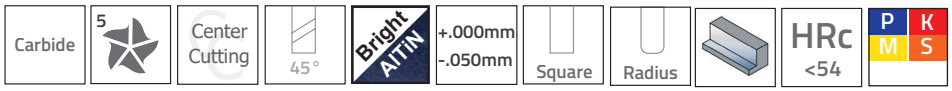
5 Flute • 45° for Stainless Steels/Nickel Based Alloys



Series: GMG-M_M_

DIA D_1	SHK D_2	LOC L_2	OAL L_1	CORNER	LENGTH	PART NAME	BRIGHT EDP	AlTiN EDP
3mm	3mm	12mm	38mm	SQ	std	GMG-M3M3	13405	53405
4mm	4mm	14mm	51mm	SQ	std	GMG-M4M4	13406	53406
5mm	5mm	20mm	51mm	SQ	std	GMG-M5M5	13407	53407
6mm	6mm	20mm	63mm	SQ	std	GMG-M6M6	13408	53408
6mm	6mm	20mm	63mm	0.5mm	std	GMG-M6M6-R0.5	H6818	H6827
6mm	6mm	25mm	75mm	SQ	med	GMG-M6M6-M	H6819	H6828
8mm	8mm	20mm	63mm	SQ	std	GMG-M8M8	13409	53409
8mm	8mm	20mm	63mm	0.5mm	std	GMG-M8M8-R0.5	H6820	H6829
8mm	8mm	25mm	75mm	SQ	med	GMG-M8M8-M	H6821	H6830
10mm	10mm	25mm	70mm	SQ	std	GMG-M10M10	13410	53410
10mm	10mm	25mm	70mm	0.5mm	std	GMG-M10M10-R0.5	H6822	H6831
10mm	10mm	38mm	100mm	SQ	long	GMG-M10M10-L	H6823	H6832
12mm	12mm	25mm	76mm	SQ	std	GMG-M12M12	13411	53411
12mm	12mm	25mm	76mm	1.0mm	std	GMG-M12M12-R1.0	H6824	H6833
12mm	12mm	50mm	100mm	SQ	long	GMG-M12M12-L	H6825	H6834
16mm	16mm	32mm	89mm	SQ	std	GMG-M16M16	13413	53413
16mm	16mm	32mm	89mm	1.0mm	std	GMG-M16M16-R1.0	H6826	H6835
20mm	20mm	38mm	100mm	SQ	std	GMG-M20M20	13415	53415

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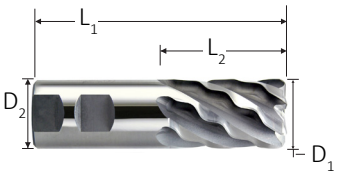

Titanium Alloys & High Temp Alloys

4 or 6 Flute • Cobalt AeroCut Roughing End Mill

HSSCo M42 | 4 | 6 | Center Cutting | 35° | Bright nACRo | +.003 -.003 | Radius | Chamfer | HRc <48 | S

Additional coatings available upon request

- Designed for high volume removal of Titanium Alloys
- Unique sinusoidal wave along flute provides ideal chip evacuation
- Enables heavy cuts at high feed rates while eliminating chip nesting
- Outstanding performance on large Gantry-style machines

Series: CCAC

DIA D_1	SHK D_2	LOC L_2	OAL L_1	CORNER	LENGTH	Flutes	PART NAME	Bright EDP	nACRo EDP
3/4	3/4	1-5/8	3-7/8	.022 x 45°	std	4	CCAC4-2424	13124	33124
3/4	3/4	1-5/8	3-7/8	0.060	std	4	CCAC4-2424-R060	14327	34327
3/4	3/4	1-5/8	3-7/8	0.090	std	4	CCAC4-2424-R090	14328	34328
3/4	3/4	1-5/8	3-7/8	0.120	std	4	CCAC4-2424-R120	14329	34329
3/4	3/4	3	5-1/4	.022 x 45°	long	4	CCAC4-2424-L	13125	33125
3/4	3/4	3	5-1/4	0.060	long	4	CCAC4-2424-R060L	14331	34331
3/4	3/4	3	5-1/4	0.090	long	4	CCAC4-2424-R090L	14332	34332
3/4	3/4	3	5-1/4	0.120	long	4	CCAC4-2424-R120L	14333	34333
1	1	2	4-1/2	.022 x 45°	std	4	CCAC4-3232	13126	33126
1	1	2	4-1/2	0.060	std	4	CCAC4-3232-R060	14340	34340
1	1	2	4-1/2	0.090	std	4	CCAC4-3232-R090	14341	34341
1	1	2	4-1/2	0.120	std	4	CCAC4-3232-R120	13127	33127
1	1	2	4-1/2	0.250	std	4	CCAC4-3232-R250	14342	34342
1	1	2	4-1/2	.022 x 45°	std	6	CCAC6-3232	14343	34343
1	1	2	4-1/2	0.060	std	6	CCAC6-3232-R060	14345	34345
1	1	2	4-1/2	0.090	std	6	CCAC6-3232-R090	14346	34346
1	1	2	4-1/2	0.120	std	6	CCAC6-3232-R120	14347	34347
1	1	2	4-1/2	0.250	std	6	CCAC6-3232-R250	14348	34348
1	1	3	5-1/2	.022 x 45°	med	4	CCAC4-3232-M	13128	33128
1	1	3	5-1/2	0.060	med	4	CCAC4-3232-R060M	14350	34350
1	1	3	5-1/2	0.090	med	4	CCAC4-3232-R090M	14351	34351
1	1	3	5-1/2	0.120	med	4	CCAC4-3232-R120M	14352	34352
1	1	3	5-1/2	.022 x 45°	med	6	CCAC6-3232-M	14353	34353
1	1	3	5-1/2	0.060	med	6	CCAC6-3232-R060M	14355	34355
1	1	3	5-1/2	0.090	med	6	CCAC6-3232-R090M	14356	34356
1	1	3	5-1/2	0.120	med	6	CCAC6-3232-R120M	14357	34357
1	1	3	5-1/2	0.250	med	6	CCAC6-3232-R250M	14358	34358
1	1	4	6-1/2	.022 x 45°	long	4	CCAC4-3232-L	13129	33129
1	1	4	6-1/2	0.060	long	4	CCAC4-3232-R060L	14360	34360
1	1	4	6-1/2	0.090	long	4	CCAC4-3232-R090L	14361	34361
1	1	4	6-1/2	0.120	long	4	CCAC4-3232-R120L	13132	33132
1	1	4	6-1/2	0.250	long	4	CCAC4-3232-R250L	14362	34362
1	1	4	6-1/2	.022 x 45°	long	6	CCAC6-3232-L	14363	34363
1	1	4	6-1/2	0.060	long	6	CCAC6-3232-R060L	14365	34365
1	1	4	6-1/2	0.090	long	6	CCAC6-3232-R090L	14366	34366
1	1	4	6-1/2	0.120	long	6	CCAC6-3232-R120L	14367	34367
1	1	4	6-1/2	0.250	long	6	CCAC6-3232-R250L	14368	34368

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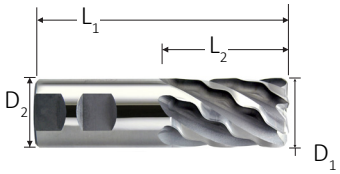
4 or 6 Flute • Cobalt AEROCUT Roughing End Mill



Series: CCAC

DIA D_1	SHK D_2	LOC L_2	OAL L_1	CORNER	LENGTH	Flutes	PART NAME	Bright EDP	nACRo EDP
1-1/4	1-1/4	2	4-1/2	.022 x 45°	std	4	CCAC4-4040	13133	33133
1-1/4	1-1/4	2	4-1/2	0.060	std	4	CCAC4-4040-R060	14382	34382
1-1/4	1-1/4	2	4-1/2	0.090	std	4	CCAC4-4040-R090	14383	34383
1-1/4	1-1/4	2	4-1/2	0.120	std	4	CCAC4-4040-R120	13134	33134
1-1/4	1-1/4	2	4-1/2	0.190	std	4	CCAC4-4040-R190	14384	34384
1-1/4	1-1/4	2	4-1/2	0.250	std	4	CCAC4-4040-R250	14385	34385
1-1/4	1-1/4	2	4-1/2	.022 x 45°	std	6	CCAC6-4040	13135	33135
1-1/4	1-1/4	2	4-1/2	0.060	std	6	CCAC6-4040-R060	14387	34387
1-1/4	1-1/4	2	4-1/2	0.090	std	6	CCAC6-4040-R090	14388	34388
1-1/4	1-1/4	2	4-1/2	0.120	std	6	CCAC6-4040-R120	13304	33304
1-1/4	1-1/4	2	4-1/2	0.190	std	6	CCAC6-4040-R190	14389	34389
1-1/4	1-1/4	2	4-1/2	0.250	std	6	CCAC6-4040-R250	14390	34390
1-1/4	1-1/4	3	5-1/2	.022 x 45°	med	4	CCAC4-4040-M	13337	33337
1-1/4	1-1/4	3	5-1/2	0.060	med	4	CCAC4-4040-R060M	14392	34392
1-1/4	1-1/4	3	5-1/2	0.090	med	4	CCAC4-4040-R090M	14393	34393
1-1/4	1-1/4	3	5-1/2	0.120	med	4	CCAC4-4040-R120M	14394	34394
1-1/4	1-1/4	3	5-1/2	0.190	med	4	CCAC4-4040-R190M	14395	34395
1-1/4	1-1/4	3	5-1/2	0.250	med	4	CCAC4-4040-R250M	14396	34396
1-1/4	1-1/4	3	5-1/2	.022 x 45°	med	6	CCAC6-4040-M	13338	33338
1-1/4	1-1/4	3	5-1/2	0.060	med	6	CCAC6-4040-R060M	14398	34398
1-1/4	1-1/4	3	5-1/2	0.090	med	6	CCAC6-4040-R090M	14399	34399
1-1/4	1-1/4	3	5-1/2	0.120	med	6	CCAC6-4040-R120M	13339	33339
1-1/4	1-1/4	3	5-1/2	0.190	med	6	CCAC6-4040-R190M	14400	34400
1-1/4	1-1/4	3	5-1/2	0.250	med	6	CCAC6-4040-R250M	14401	34401
1-1/4	1-1/4	4	6-1/2	.022 x 45°	long	4	CCAC4-4040-L	14402	34402
1-1/4	1-1/4	4	6-1/2	0.060	long	4	CCAC4-4040-R060L	14404	34404
1-1/4	1-1/4	4	6-1/2	0.090	long	4	CCAC4-4040-R090L	14405	34405
1-1/4	1-1/4	4	6-1/2	0.120	long	4	CCAC4-4040-R120L	14406	34406
1-1/4	1-1/4	4	6-1/2	0.190	long	4	CCAC4-4040-R190L	14407	34407
1-1/4	1-1/4	4	6-1/2	0.250	long	4	CCAC4-4040-R250L	14408	34408
1-1/4	1-1/4	4	6-1/2	.022 x 45°	long	6	CCAC6-4040-L	13340	33340
1-1/4	1-1/4	4	6-1/2	0.060	long	6	CCAC6-4040-R060L	14423	34423
1-1/4	1-1/4	4	6-1/2	0.090	long	6	CCAC6-4040-R090L	14424	34424
1-1/4	1-1/4	4	6-1/2	0.120	long	6	CCAC6-4040-R120L	13341	33341
1-1/4	1-1/4	4	6-1/2	0.190	long	6	CCAC6-4040-R190L	14425	34425
1-1/4	1-1/4	4	6-1/2	0.250	long	6	CCAC6-4040-R250L	14426	34426
1-1/4	1-1/4	6	8-1/2	.022 x 45°	xl	6	CCAC6-4040-E	14434	34434
1-1/4	1-1/4	6	8-1/2	0.060	xl	6	CCAC6-4040-R060E	14436	34436
1-1/4	1-1/4	6	8-1/2	0.090	xl	6	CCAC6-4040-R090E	14437	34437
1-1/4	1-1/4	6	8-1/2	0.120	xl	6	CCAC6-4040-R120E	14438	34438
1-1/4	1-1/4	6	8-1/2	0.190	xl	6	CCAC6-4040-R190E	14439	34439
1-1/4	1-1/4	6	8-1/2	0.250	xl	6	CCAC6-4040-R250E	14440	34440
1-1/2	1-1/4	2	4-1/2	.040 x 45°	std	6	CCAC6-4048	14448	34448
1-1/2	1-1/4	2	4-1/2	0.060	std	6	CCAC6-4048-R060	14568	34568
1-1/2	1-1/4	2	4-1/2	0.090	std	6	CCAC6-4048-R090	14569	34569
1-1/2	1-1/4	2	4-1/2	0.120	std	6	CCAC6-4048-R120	14570	34570

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4 or 6 Flute • Cobalt AeroCut Roughing End Mill

Series: CCAC

DIA D_1	SHK D_2	LOC L_2	OAL L_1	CORNER	LENGTH	Flutes	PART NAME	Bright EDP	nACRo EDP
1-1/2	1-1/4	2	4-1/2	0.190	std	6	CCAC6-4048-R190	14571	34571
1-1/2	1-1/4	2	4-1/2	0.250	std	6	CCAC6-4048-R250	14572	34572
1-1/2	1-1/4	3	5-1/2	.040 x 45°	med	6	CCAC6-4048-M	14580	34580
1-1/2	1-1/4	3	5-1/2	0.060	med	6	CCAC6-4048-R060M	14582	34582
1-1/2	1-1/4	3	5-1/2	0.090	med	6	CCAC6-4048-R090M	14583	34583
1-1/2	1-1/4	3	5-1/2	0.120	med	6	CCAC6-4048-R120M	14584	34584
1-1/2	1-1/4	3	5-1/2	0.190	med	6	CCAC6-4048-R190M	14585	34585
1-1/2	1-1/4	3	5-1/2	0.250	med	6	CCAC6-4048-R250M	14586	34586
1-1/2	1-1/4	4	6-1/2	.040 x 45°	long	6	CCAC6-4048-L	14596	34596
1-1/2	1-1/4	4	6-1/2	0.060	long	6	CCAC6-4048-R060L	14598	34598
1-1/2	1-1/4	4	6-1/2	0.090	long	6	CCAC6-4048-R090L	14599	34599
1-1/2	1-1/4	4	6-1/2	0.120	long	6	CCAC6-4048-R120L	14600	34600
1-1/2	1-1/4	4	6-1/2	0.190	long	6	CCAC6-4048-R190L	14601	34601
1-1/2	1-1/4	4	6-1/2	0.250	long	6	CCAC6-4048-R250L	14602	34602
1-1/2	1-1/4	6	8-1/2	.040 x 45°	xl	6	CCAC6-4048-E	14610	34610
1-1/2	1-1/4	6	8-1/2	0.060	xl	6	CCAC6-4048-R060E	14612	34612
1-1/2	1-1/4	6	8-1/2	0.090	xl	6	CCAC6-4048-R090E	14613	34613
1-1/2	1-1/4	6	8-1/2	0.120	xl	6	CCAC6-4048-R120E	14614	34614
2	2	2	5-3/4	.040 x 45°	std	6	CCAC6-6464	13718	33718
2	2	2	5-3/4	0.060	std	6	CCAC6-6464-R060	14645	34645
2	2	2	5-3/4	0.090	std	6	CCAC6-6464-R090	14646	34646
2	2	2	5-3/4	0.120	std	6	CCAC6-6464-R120	15187	35187
2	2	3	6-3/4	.040 x 45°	med	6	CCAC6-6464-M	13342	33342
2	2	3	6-3/4	0.060	med	6	CCAC6-6464-R060M	14625	34625
2	2	3	6-3/4	0.090	med	6	CCAC6-6464-R090M	14626	34626
2	2	3	6-3/4	0.120	med	6	CCAC6-6464-R120M	14627	34627
2	2	3	6-3/4	0.190	med	6	CCAC6-6464-R190M	14628	34628
2	2	3	6-3/4	0.250	med	6	CCAC6-6464-R250M	14629	34629
2	2	4	7-3/4	.040 x 45°	long	6	CCAC6-6464-L	13343	33343
2	2	4	7-3/4	0.060	long	6	CCAC6-6464-R060L	14639	34639
2	2	4	7-3/4	0.090	long	6	CCAC6-6464-R090L	14640	34640
2	2	4	7-3/4	0.120	long	6	CCAC6-6464-R120L	14641	34641
2	2	4	7-3/4	0.190	long	6	CCAC6-6464-R190L	14642	34642
2	2	4	7-3/4	0.250	long	6	CCAC6-6464-R250L	14643	34643
2	2	6	9-3/4	.040 x 45°	xl	6	CCAC6-6464-E	13344	33344
2	2	6	9-3/4	0.060	xl	6	CCAC6-6464-R060E	14652	34652
2	2	6	9-3/4	0.090	xl	6	CCAC6-6464-R090E	14653	34653
2	2	6	9-3/4	0.120	xl	6	CCAC6-6464-R120E	14654	34654
2	2	6	9-3/4	0.190	xl	6	CCAC6-6464-R190E	14655	34655
2	2	6	9-3/4	0.250	xl	6	CCAC6-6464-R250E	14656	34656
2	2	8	11-3/4	.040 x 45°	xx-long	6	CCAC6-6464-EE	14657	34657
2	2	8	11-3/4	0.060	xx-long	6	CCAC6-6464-R060EE	14659	34659
2	2	8	11-3/4	0.090	xx-long	6	CCAC6-6464-R090EE	14660	34660
2	2	8	11-3/4	0.120	xx-long	6	CCAC6-6464-R120EE	14661	34661
2	2	8	11-3/4	0.190	xx-long	6	CCAC6-6464-R190EE	14662	34662

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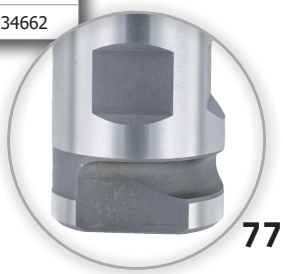
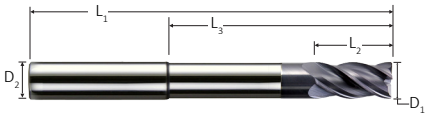
Combination Shank can be requested on any of our large diameter CCAC cutters. Call customer service for pricing, lead time, and availability. 216.362.4200





4 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS

Carbide | 4 | Center Cutting | variable | nACo | +.000 -.002 | +.0005 -.0005 <1/8 | Square | Radius | Chamfer | HRc <54 | P K M S

- Geometry designed for reducing chatter, universal machining operations
- Ideal for use on Steel and Stainless Alloys and Cast Iron
- Proprietary nACo coating provides extended tool life over conventional coatings
- Excellent for heavy cuts, deep slotting and long axial depth profiling

SERIES: VXMG4

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACo EDP
1/16	1/8	1/8		1-1/2	SQ	std	VXMG4-402-NR	H6001
1/16	1/8	1/8		1-1/2	0.010	std	VXMG4-402-R010	H6002
3/32	1/8	3/16		1-1/2	SQ	std	VXMG4-403-NR	H6003
3/32	1/8	3/16		1-1/2	0.010	std	VXMG4-403-R010	H6004
1/8	1/8	3/16	3/8	2	0.015	ext neck	VXMG4-404-R015N1	15733
1/8	1/8	3/16	7/8	2	0.015	ext neck	VXMG4-404-R015N2	15735
1/8	1/8	3/16	no neck	2	0.015	no neck	VXMG4-404-R015NN	15715
1/8	1/8	1/4		1-1/2	SQ	stub	VXMG4-404-NRS	15697
1/8	1/8	1/4		1-1/2	0.015	stub	VXMG4-404-R015S	15699
1/8	1/8	1/2		1-1/2	SQ	std	VXMG4-404-NR	15729
1/8	1/8	1/2		1-1/2	.011 X 45°	std	VXMG4-404	13105
1/8	1/8	1/2		1-1/2	0.015	std	VXMG4-404-R015	15731
3/16	3/16	1/4		1-1/2	SQ	stub	VXMG4-606-NRS	15737
3/16	3/16	1/4		1-1/2	0.015	stub	VXMG4-606-R015S	15739
3/16	3/16	1/4	1/2	3	0.015	ext neck	VXMG4-606-R015N1	15745
3/16	3/16	1/4	3/4	3	0.015	ext neck	VXMG4-606-R015N2	15747
3/16	3/16	1/4	no neck	3	0.015	no neck	VXMG4-606-R015NN	15717
3/16	3/16	5/8		2	SQ	std	VXMG4-606-NR	15741
3/16	3/16	5/8		2	.011 X 45°	std	VXMG4-606	13106
3/16	3/16	5/8		2	0.015	std	VXMG4-606-R015	15743
1/4	1/4	3/8		2	SQ	stub	VXMG4-808-NRS	15749
1/4	1/4	3/8		2	0.015	stub	VXMG4-808-R015S	15751
1/4	1/4	3/8		2	0.030	stub	VXMG4-808-R030S	15753
1/4	1/4	3/8	3/4	3	0.015	ext neck	VXMG4-808-R015N1	15765
1/4	1/4	3/8	3/4	3	0.030	ext neck	VXMG4-808-R030N1	15767
1/4	1/4	3/8	1-1/8	3	0.015	ext neck	VXMG4-808-R015N2	15768
1/4	1/4	3/8	1-1/8	3	0.030	ext neck	VXMG4-808-R030N2	15769
1/4	1/4	3/8	2-1/8	4	0.015	ext neck	VXMG4-808-R015N3	15770
1/4	1/4	3/8	2-1/8	4	0.030	ext neck	VXMG4-808-R030N3	15771
1/4	1/4	3/8	no neck	4	0.015	no neck	VXMG4-808-R015NN	15719
1/4	1/4	3/8	no neck	4	0.030	no neck	VXMG4-808-R030NN	15721
1/4	1/4	1/2		2	.011 X 45°	stub	VXMG4-808-S	13107
1/4	1/4	3/4		2-1/2	SQ	std	VXMG4-808-NR	15755
1/4	1/4	3/4		2-1/2	.011 X 45°	std	VXMG4-808	13108
1/4	1/4	3/4		2-1/2	0.015	std	VXMG4-808-R015	15757
1/4	1/4	3/4		2-1/2	0.030	std	VXMG4-808-R030	15759
1/4	1/4	1-1/8		3	0.000	long	VXMG4-808-NRL	15761
1/4	1/4	1-1/8		3	0.015	long	VXMG4-808-R015L	15762
1/4	1/4	1-1/8		3	0.030	long	VXMG4-808-R030L	15763

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4 Flute • Variable Flute - HP Roughing Applications

Series: VXMG4

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACo EDP
5/16	5/16	1/2		2	0.000	stub	VXMG4-1010-NRS	15772
5/16	5/16	1/2		2	0.015	stub	VXMG4-1010-R015S	15773
5/16	5/16	1/2		2	0.030	stub	VXMG4-1010-R030S	15774
5/16	5/16	13/16		2-1/2	SQ	std	VXMG4-1010-NR	15775
5/16	5/16	13/16		2-1/2	.011 X 45°	std	VXMG4-1010	13109
5/16	5/16	13/16		2-1/2	0.015	std	VXMG4-1010-R015	15777
5/16	5/16	13/16		2-1/2	0.030	std	VXMG4-1010-R030	15779
5/16	5/16	1-1/8		3	0.000	long	VXMG4-1010-NRL	15781
5/16	5/16	1-1/8		3	0.015	long	VXMG4-1010-R015L	15783
5/16	5/16	1-1/8		3	0.030	long	VXMG4-1010-R030L	15785
3/8	3/8	1/2		2	SQ	stub	VXMG4-1212-NRS	15787
3/8	3/8	1/2		2	0.015	stub	VXMG4-1212-R015S	15789
3/8	3/8	1/2		2	0.030	stub	VXMG4-1212-R030S	15791
3/8	3/8	1/2	1-1/8	3	0.015	ext neck	VXMG4-1212-R015N1	15803
3/8	3/8	1/2	1-1/8	3	0.030	ext neck	VXMG4-1212-R030N1	15804
3/8	3/8	1/2	2-1/8	4	0.015	ext neck	VXMG4-1212-R015N2	15805
3/8	3/8	1/2	2-1/8	4	0.030	ext neck	VXMG4-1212-R030N2	15807
3/8	3/8	1/2	3-1/8	6	0.015	ext neck	VXMG4-1212-R015N3	15809
3/8	3/8	1/2	3-1/8	6	0.030	ext neck	VXMG4-1212-R030N3	15811
3/8	3/8	1/2	no neck	6	0.015	no neck	VXMG4-1212-R015NN	19112
3/8	3/8	1/2	no neck	6	0.030	no neck	VXMG4-1212-R030NN	19113
3/8	3/8	5/8		2	.011 X 45°	stub	VXMG4-1212-S	13110
3/8	3/8	1		2-1/2	SQ	std	VXMG4-1212-NR	15793
3/8	3/8	1		2-1/2	.011 X 45°	std	VXMG4-1212	13111
3/8	3/8	1		2-1/2	0.015	std	VXMG4-1212-R015	15795
3/8	3/8	1		2-1/2	0.030	std	VXMG4-1212-R030	15797
3/8	3/8	1-1/8		3	SQ	long	VXMG4-1212-NRL	15799
3/8	3/8	1-1/8		3	0.015	long	VXMG4-1212-R015L	15800
3/8	3/8	1-1/8		3	0.030	long	VXMG4-1212-R030L	15801
7/16	7/16	1		2-3/4	0.015	std	VXMG4-1414-R015	15813
7/16	7/16	1		2-3/4	0.030	std	VXMG4-1414-R030	15815
1/2	1/2	5/8		2-1/2	SQ	stub	VXMG4-1616-NRS	15817
1/2	1/2	5/8		2-1/2	.011 X 45°	stub	VXMG4-1616-S	13112
1/2	1/2	5/8		2-1/2	0.015	stub	VXMG4-1616-R015S	15819
1/2	1/2	5/8		2-1/2	0.030	stub	VXMG4-1616-R030S	15821
1/2	1/2	5/8		2-1/2	0.060	stub	VXMG4-1616-R060S	15822
1/2	1/2	5/8	1-1/2	4	0.015	ext neck	VXMG4-1616-R015N1	15847
1/2	1/2	5/8	1-1/2	4	0.030	ext neck	VXMG4-1616-R030N1	15849
1/2	1/2	5/8	1-1/2	4	0.060	ext neck	VXMG4-1616-R060N1	15851
1/2	1/2	5/8	2-1/4	4	0.015	ext neck	VXMG4-1616-R015N2	15853
1/2	1/2	5/8	2-1/4	4	0.030	ext neck	VXMG4-1616-R030N2	15855
1/2	1/2	5/8	2-1/4	4	0.060	ext neck	VXMG4-1616-R060N2	15857
1/2	1/2	5/8	3-3/8	6	0.015	ext neck	VXMG4-1616-R015N3	15858
1/2	1/2	5/8	3-3/8	6	0.030	ext neck	VXMG4-1616-R030N3	15859
1/2	1/2	5/8	3-3/8	6	0.060	ext neck	VXMG4-1616-R060N3	15860
1/2	1/2	5/8	no neck	6	0.015	no neck	VXMG4-1616-R015NN	19114
1/2	1/2	5/8	no neck	6	0.030	no neck	VXMG4-1616-R030NN	19115
1/2	1/2	5/8	no neck	6	0.060	no neck	VXMG4-1616-R060NN	19116

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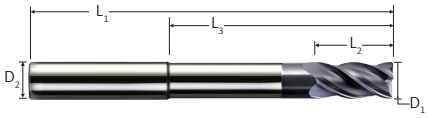

4 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS

SERIES: VXMG4

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACo EDP
1/2	1/2	1		3	SQ	std	VXMG4-1616-NR	15823
1/2	1/2	1		3	.011 X 45°	std	VXMG4-1616	13113
1/2	1/2	1		3	0.015	std	VXMG4-1616-R015	15825
1/2	1/2	1		3	0.030	std	VXMG4-1616-R030	15827
1/2	1/2	1		3	0.060	std	VXMG4-1616-R060	15829
1/2	1/2	1-1/4		3	SQ	med	VXMG4-1616-NRM	15831
1/2	1/2	1-1/4		3	.011 X 45°	med	VXMG4-1616-M	19787
1/2	1/2	1-1/4		3	0.015	med	VXMG4-1616-R015M	15833
1/2	1/2	1-1/4		3	0.030	med	VXMG4-1616-R030M	15835
1/2	1/2	1-1/4		3	0.060	med	VXMG4-1616-R060M	15837
1/2	1/2	1-1/4		3	0.120	med	VXMG4-1616-R120M	11819
1/2	1/2	1-1/2		4	SQ	med/long	VXMG4-1616-NRML	19345
1/2	1/2	1-1/2		4	.011 X 45°	med/long	VXMG4-1616-ML	11657
1/2	1/2	1-1/2		4	0.030	med/long	VXMG4-1616-R030ML	19346
1/2	1/2	1-1/2		4	0.060	med/long	VXMG4-1616-R060ML	19347
1/2	1/2	2		4	0.000	long	VXMG4-1616-NRL	15839
1/2	1/2	2		4	0.015	long	VXMG4-1616-R015L	15841
1/2	1/2	2		4	0.030	long	VXMG4-1616-R030L	15843
1/2	1/2	2		4	0.060	long	VXMG4-1616-R060L	15845
5/8	5/8	3/4		3	SQ	stub	VXMG4-2020-NRS	15861
5/8	5/8	3/4		3	.022 X 45°	stub	VXMG4-2020-S	13114
5/8	5/8	3/4		3	0.030	stub	VXMG4-2020-R030S	15862
5/8	5/8	3/4		3	0.060	stub	VXMG4-2020-R060S	15863
5/8	5/8	3/4		3	0.090	stub	VXMG4-2020-R090S	15864
5/8	5/8	3/4	1-5/8	5	0.030	ext neck	VXMG4-2020-R030N1	15874
5/8	5/8	3/4	1-5/8	5	0.060	ext neck	VXMG4-2020-R060N1	15875
5/8	5/8	3/4	1-5/8	5	0.090	ext neck	VXMG4-2020-R090N1	15876
5/8	5/8	3/4	2-3/8	5	0.060	ext neck	VXMG4-2020-R060N2	15877
5/8	5/8	3/4	3-3/8	6	0.060	ext neck	VXMG4-2020-R060N3	15878
5/8	5/8	3/4	no neck	6	0.060	no neck	VXMG4-2020-R060NN	19117
5/8	5/8	1-1/4		3-1/2	SQ	std	VXMG4-2020-NR	15865
5/8	5/8	1-1/4		3-1/2	.022 X 45°	std	VXMG4-2020	13115
5/8	5/8	1-1/4		3-1/2	0.030	std	VXMG4-2020-R030	15866
5/8	5/8	1-1/4		3-1/2	0.060	std	VXMG4-2020-R060	15867
5/8	5/8	1-1/4		3-1/2	0.090	std	VXMG4-2020-R090	15868
5/8	5/8	2-1/4		5	SQ	long	VXMG4-2020-NRL	15869
5/8	5/8	2-1/4		5	0.030	long	VXMG4-2020-R030L	15870
5/8	5/8	2-1/4		5	0.060	long	VXMG4-2020-R060L	15871
5/8	5/8	3-1/4		6	0.030	xl	VXMG4-2020-R030E	15872
5/8	5/8	3-1/4		6	0.060	xl	VXMG4-2020-R060E	15873
3/4	3/4	7/8		3	SQ	stub	VXMG4-2424-NRS	15879
3/4	3/4	7/8		3	.022 X 45°	stub	VXMG4-2424-S	13116
3/4	3/4	7/8		3	0.030	stub	VXMG4-2424-R030S	15880
3/4	3/4	7/8		3	0.060	stub	VXMG4-2424-R060S	15881
3/4	3/4	7/8		3	0.090	stub	VXMG4-2424-R090S	15883
3/4	3/4	7/8		3	0.120	stub	VXMG4-2424-R120S	15885

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4 Flute • Variable Flute - HP Roughing Applications

Series: VXMG4

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACo EDP
3/4	3/4	7/8	2	5	0.030	ext neck	VXMG4-2424-R030N1	16051
3/4	3/4	7/8	2	5	0.060	ext neck	VXMG4-2424-R060N1	16052
3/4	3/4	7/8	2	5	0.090	ext neck	VXMG4-2424-R090N1	16053
3/4	3/4	7/8	2	5	0.120	ext neck	VXMG4-2424-R120N1	16054
3/4	3/4	7/8	2-1/2	5	0.030	ext neck	VXMG4-2424-R030N2	16056
3/4	3/4	7/8	2-1/2	5	0.060	ext neck	VXMG4-2424-R060N2	16057
3/4	3/4	7/8	2-1/2	5	0.090	ext neck	VXMG4-2424-R090N2	16058
3/4	3/4	7/8	2-1/2	5	0.120	ext neck	VXMG4-2424-R120N2	16059
3/4	3/4	7/8	3-3/8	6	0.030	ext neck	VXMG4-2424-R030N3	16106
3/4	3/4	7/8	3-3/8	6	0.060	ext neck	VXMG4-2424-R060N3	16107
3/4	3/4	7/8	3-3/8	6	0.090	ext neck	VXMG4-2424-R090N3	16108
3/4	3/4	7/8	3-3/8	6	0.120	ext neck	VXMG4-2424-R120N3	16109
3/4	3/4	7/8	no neck	6	0.030	no neck	VXMG4-2424-R030NN	19118
3/4	3/4	7/8	no neck	6	0.060	no neck	VXMG4-2424-R060NN	19119
3/4	3/4	7/8	no neck	6	0.090	no neck	VXMG4-2424-R090NN	19120
3/4	3/4	7/8	no neck	6	0.120	no neck	VXMG4-2424-R120NN	19121
3/4	3/4	1-1/2		4	SQ	std	VXMG4-2424-NR	15887
3/4	3/4	1-1/2		4	.022 X 45°	std	VXMG4-2424	13117
3/4	3/4	1-1/2		4	0.030	std	VXMG4-2424-R030	15889
3/4	3/4	1-1/2		4	0.060	std	VXMG4-2424-R060	15891
3/4	3/4	1-1/2		4	0.090	std	VXMG4-2424-R090	16014
3/4	3/4	1-1/2		4	0.120	std	VXMG4-2424-R120	16015
3/4	3/4	2-1/4		5	SQ	long	VXMG4-2424-NRL	16016
3/4	3/4	2-1/4		5	0.030	long	VXMG4-2424-R030L	16018
3/4	3/4	2-1/4		5	0.060	long	VXMG4-2424-R060L	16019
3/4	3/4	2-1/4		5	0.090	long	VXMG4-2424-R090L	16020
3/4	3/4	2-1/4		5	0.120	long	VXMG4-2424-R120L	16021
3/4	3/4	3		6	SQ	xl	VXMG4-2424-NRE	16022
3/4	3/4	3		6	0.030	xl	VXMG4-2424-R030E	16024
3/4	3/4	3		6	0.060	xl	VXMG4-2424-R060E	16030
3/4	3/4	3		6	0.090	xl	VXMG4-2424-R090E	16048
3/4	3/4	3		6	0.120	xl	VXMG4-2424-R120E	16049
1	1	1-1/2		4	SQ	std	VXMG4-3232-NR	16280
1	1	1-1/2		4	.022 X 45°	std	VXMG4-3232	13118
1	1	1-1/2		4	0.030	std	VXMG4-3232-R030	16313
1	1	1-1/2		4	0.060	std	VXMG4-3232-R060	16314
1	1	1-1/2		4	0.090	std	VXMG4-3232-R090	16316
1	1	1-1/2		4	0.120	std	VXMG4-3232-R120	16431
1	1	1-1/2	2-1/4	5	0.030	ext neck	VXMG4-3232-R030N1	16538
1	1	1-1/2	2-1/4	5	0.060	ext neck	VXMG4-3232-R060N1	16539
1	1	1-1/2	2-1/4	5	0.090	ext neck	VXMG4-3232-R090N1	16589
1	1	1-1/2	2-1/4	5	0.120	ext neck	VXMG4-3232-R120N1	16598
1	1	1-1/2	2-5/8	5	0.030	ext neck	VXMG4-3232-R030N2	16599
1	1	1-1/2	2-5/8	5	0.060	ext neck	VXMG4-3232-R060N2	16604
1	1	1-1/2	2-5/8	5	0.090	ext neck	VXMG4-3232-R090N2	16612
1	1	1-1/2	2-5/8	5	0.120	ext neck	VXMG4-3232-R120N2	16616

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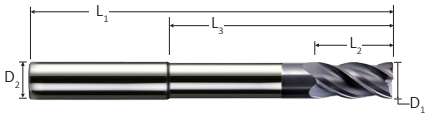

4 Flute • Variable Flute - HP Roughing Applications

Series: VXMG4

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACo EDP
1	1	1-1/2	3-3/8	6	0.030	ext neck	VXMG4-3232-R030N3	16617
1	1	1-1/2	3-3/8	6	0.060	ext neck	VXMG4-3232-R060N3	16622
1	1	1-1/2	3-3/8	6	0.090	ext neck	VXMG4-3232-R090N3	16623
1	1	1-1/2	3-3/8	6	0.120	ext neck	VXMG4-3232-R120N3	16624
1	1	1-1/2	4-1/8	6	0.030	ext neck	VXMG4-3232-R030N4	16625
1	1	1-1/2	4-1/8	6	0.060	ext neck	VXMG4-3232-R060N4	16626
1	1	1-1/2	4-1/8	6	0.090	ext neck	VXMG4-3232-R090N4	16627
1	1	1-1/2	4-1/8	6	0.120	ext neck	VXMG4-3232-R120N4	16628
1	1	1-1/2	no neck	6	0.030	no neck	VXMG4-3232-R030NN	19122
1	1	1-1/2	no neck	6	0.060	no neck	VXMG4-3232-R060NN	19123
1	1	1-1/2	no neck	6	0.090	no neck	VXMG4-3232-R090NN	19124
1	1	1-1/2	no neck	6	0.120	no neck	VXMG4-3232-R120NN	19125
1	1	2-1/4		5	SQ	long	VXMG4-3232-NRL	16437
1	1	2-1/4		5	0.030	long	VXMG4-3232-R030L	16438
1	1	2-1/4		5	0.060	long	VXMG4-3232-R060L	16439
1	1	2-1/4		5	0.090	long	VXMG4-3232-R090L	16457
1	1	2-1/4		5	0.120	long	VXMG4-3232-R120L	16459
1	1	3		6	0.030	xl	VXMG4-3232-R030E	16464
1	1	3		6	0.060	xl	VXMG4-3232-R060E	16467
1	1	3		6	0.090	xl	VXMG4-3232-R090E	16468
1	1	3		6	0.120	xl	VXMG4-3232-R120E	16469

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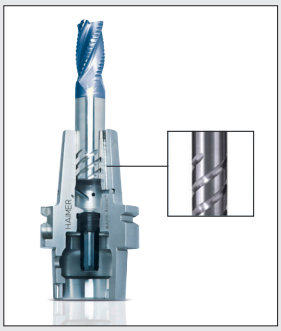
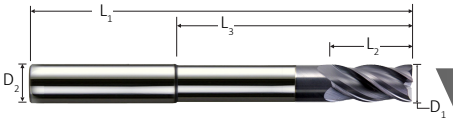
Haimer Safe Lock™

This licensed system offers the pull out protection for your round shank tools! The shanks have helical grooves ground into our shanks. Combined with the proper tool holding system, this technology prevents the tool from pulling out or spinning while undergoing extreme machining applications.



Available Feature On All High Performance End Mills

(Call For Pricing and Availability)



4 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS

Carbide | 4 | Center Cutting | variable | nACo | +.000mm -.050mm | +.012mm -.012mm <3mm | Square | Radius | Chamfer | HRc <54 | P K M S

- Geometry designed for reducing chatter, universal machining operations
- Ideal for use on Steel and Stainless Alloys and Cast Iron
- Proprietary nACo coating provides extended tool life over conventional coatings
- Excellent for heavy cuts, deep slotting and long axial depth profiling

SERIES: VXMG4-M_M_

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACo EDP
1.5mm	3mm	3mm		38mm	SQ	std	VXMG4-M3M1.5-NR	H6005
1.5mm	3mm	3mm		38mm	0.25mm	std	VXMG4-M3M1.5-R0.25	H6006
2mm	3mm	4mm		38mm	SQ	std	VXMG4-M3M2-NR	H6007
2mm	3mm	4mm		38mm	0.25mm	std	VXMG4-M3M2-R0.25	H6008
2.5mm	3mm	5mm		38mm	SQ	std	VXMG4-M3M2.5-NR	H6009
2.5mm	3mm	5mm		38mm	0.25mm	std	VXMG4-M3M2.5-R0.25	H6010
3mm	3mm	6mm		38mm	SQ	stub	VXMG4-M3M3-NRS	H6011
3mm	3mm	6mm		38mm	0.25mm	stub	VXMG4-M3M3-R0.25S	H6012
3mm	3mm	12mm		38mm	SQ	std	VXMG4-M3M3-NR	H6013
3mm	3mm	12mm		38mm	0.25mm	std	VXMG4-M3M3-R0.25	H6014
3mm	6mm	12mm		63mm	SQ	std	VXMG4-M6M3-NR	14680
3mm	6mm	12mm		63mm	0.25mm x 45°	std	VXMG4-M6M3	11682
3mm	6mm	12mm		63mm	0.25mm	std	VXMG4-M6M3-R0.25	H6015
3mm	6mm	12mm		63mm	0.5mm	std	VXMG4-M6M3-R0.5	H6016
4mm	4mm	14mm		51mm	SQ	std	VXMG4-M4M4-NR	14681
4mm	4mm	14mm		51mm	0.25mm x 45°	std	VXMG4-M4M4	13416
4mm	4mm	14mm		51mm	0.25mm	std	VXMG4-M4M4-R0.25	H6017
4mm	4mm	14mm		51mm	0.25mm	std	VXMG4-M4M4-R0.5	14450
4mm	6mm	14mm		63mm	0.25mm x 45°	std	VXMG4-M6M4	11683
4mm	6mm	14mm		63mm	0.25mm	std	VXMG4-M6M4-R0.25	H6018
4mm	6mm	14mm		63mm	0.5mm	std	VXMG4-M6M4-R0.5	H6019
5mm	5mm	20mm		51mm	SQ	std	VXMG4-M5M5-NR	14682
5mm	5mm	20mm		51mm	0.25mm x 45°	std	VXMG4-M5M5	13417
5mm	5mm	20mm		51mm	0.25mm	std	VXMG4-M5M5-R0.25	H6020
5mm	5mm	20mm		51mm	0.5mm	std	VXMG4-M5M5-R0.5	14451
6mm	6mm	12mm	30mm	100mm	0.25mm	ext neck	VXMG4-M6M6-R0.25N1	H6021
6mm	6mm	12mm	30mm	100mm	0.50mm	ext neck	VXMG4-M6M6-R0.5N1	H6022
6mm	6mm	12mm	30mm	100mm	1.0mm	ext neck	VXMG4-M6M6-R1.0N1	H6023
6mm	6mm	20mm		63mm	SQ	std	VXMG4-M6M6-NR	14683
6mm	6mm	20mm		63mm	0.25mm x 45°	std	VXMG4-M6M6	13418
6mm	6mm	20mm		63mm	0.25mm	std	VXMG4-M6M6-R0.25	H6024
6mm	6mm	20mm		63mm	0.5mm	std	VXMG4-M6M6-R0.5	14452
6mm	6mm	20mm		63mm	1.0mm	std	VXMG4-M6M6-R1.0	H6025
6mm	6mm	20mm	32mm	75mm	0.5mm	ext neck	VXMG4-M6M6-R0.5N	14453
6mm	6mm	24mm		75mm	0.5mm	long	VXMG4-M6M6-R0.5L	14454

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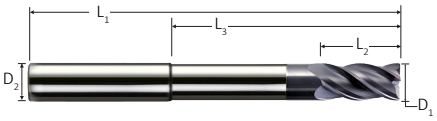
4 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS



SERIES: VXMG4-M_M_

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACo EDP
8mm	8mm	16mm	40mm	100mm	0.5mm	ext neck	VXMG4-M8M8-R0.5N1	H6026
8mm	8mm	16mm	40mm	100mm	1.0mm	ext neck	VXMG4-M8M8-R1.0N1	H6027
8mm	8mm	16mm	40mm	100mm	2.0mm	ext neck	VXMG4-M8M8-R2.0N1	H6028
8mm	8mm	20mm		63mm	SQ	std	VXMG4-M8M8-NR	14684
8mm	8mm	20mm		63mm	0.25mm x 45°	std	VXMG4-M8M8	13419
8mm	8mm	20mm		63mm	0.5mm	std	VXMG4-M8M8-R0.5	14455
8mm	8mm	20mm		63mm	1.0mm	std	VXMG4-M8M8-R1.0	H6029
8mm	8mm	20mm		63mm	1.5mm	std	VXMG4-M8M8-R1.5	H6030
8mm	8mm	20mm		63mm	2.0mm	std	VXMG4-M8M8-R2.0	H6031
8mm	8mm	20mm	32mm	75mm	0.5mm	ext neck	VXMG4-M8M8-R0.5N	14456
8mm	8mm	32mm		75mm	0.5mm	long	VXMG4-M8M8-R0.5L	14457
10mm	10mm	20mm		127mm	0.5mm	ext neck	VXMG4-M10M10-R0.5N1	H6032
10mm	10mm	20mm		127mm	1.0mm	ext neck	VXMG4-M10M10-R1.0N1	H6033
10mm	10mm	20mm		127mm	2.0mm	ext neck	VXMG4-M10M10-R2.0N1	H6034
10mm	10mm	25mm		70mm	SQ	std	VXMG4-M10M10-NR	14685
10mm	10mm	25mm		70mm	0.25mm x 45°	std	VXMG4-M10M10	13420
10mm	10mm	25mm		70mm	0.5mm	std	VXMG4-M10M10-R0.5	14458
10mm	10mm	25mm		70mm	1.0mm	std	VXMG4-M10M10-R1.0	H6035
10mm	10mm	25mm		70mm	1.5mm	std	VXMG4-M10M10-R1.5	H6036
10mm	10mm	25mm		70mm	2.0mm	std	VXMG4-M10M10-R2.0	H6037
10mm	10mm	25mm	50mm	100mm	0.5mm	ext neck	VXMG4-M10M10-R0.5N	14459
10mm	10mm	40mm		100mm	0.5mm	long	VXMG4-M10M10-R0.5L	14460
12mm	12mm	25mm		76mm	SQ	std	VXMG4-M12M12-NR	14686
12mm	12mm	25mm		76mm	0.25mm x 45°	std	VXMG4-M12M12	13421
12mm	12mm	25mm		76mm	0.5mm	std	VXMG4-M12M12-R0.5	14461
12mm	12mm	25mm		76mm	1.0mm	std	VXMG4-M12M12-R1.0	14462
12mm	12mm	25mm		76mm	1.5mm	std	VXMG4-M12M12-R1.5	H6038
12mm	12mm	25mm		76mm	2.0mm	std	VXMG4-M12M12-R2.0	H6039
12mm	12mm	25mm		76mm	3.0mm	std	VXMG4-M12M12-R3.0	H6040
12mm	12mm	25mm	50mm	100mm	0.5mm	ext neck	VXMG4-M12M12-R0.5N	14463
12mm	12mm	25mm	60mm	150mm	0.5mm	ext neck	VXMG4-M12M12-R0.5N1	H6041
12mm	12mm	25mm	60mm	150mm	1.0mm	ext neck	VXMG4-M12M12-R1.0N1	H6042
12mm	12mm	25mm	60mm	150mm	2.0mm	ext neck	VXMG4-M12M12-R2.0N1	H6043
12mm	12mm	25mm	60mm	150mm	3.0mm	ext neck	VXMG4-M12M12-R3.0N1	H6044
12mm	12mm	48mm		100mm	0.5mm	long	VXMG4-M12M12-R0.5L	14464
14mm	14mm	32mm		89mm	0.5mm x 45°	std	VXMG4-M14M14	13422
14mm	14mm	32mm		89mm	0.5mm	std	VXMG4-M14M14-R0.5	14465
14mm	14mm	32mm		89mm	1.0mm	std	VXMG4-M14M14-R1.0	H6045
14mm	14mm	32mm		89mm	2.0mm	std	VXMG4-M14M14-R2.0	H6046
16mm	16mm	32mm		89mm	SQ	std	VXMG4-M16M16-NR	14687
16mm	16mm	32mm		89mm	0.5mm x 45°	std	VXMG4-M16M16	13423
16mm	16mm	32mm		89mm	0.5mm	std	VXMG4-M16M16-R0.5	14466
16mm	16mm	32mm		89mm	1.0mm	std	VXMG4-M16M16-R1.0	14467
16mm	16mm	32mm		89mm	1.5mm	std	VXMG4-M16M16-R1.5	14677
16mm	16mm	32mm		89mm	2.0mm	std	VXMG4-M16M16-R2.0	14678
16mm	16mm	32mm		89mm	3.0mm	std	VXMG4-M16M16-R3.0	14679

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4 Flute • variable flute - HP roughing applications

Series: VXMG4-M_M_

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACo EDP
16mm	16mm	32mm	65mm	127mm	0.5mm	ext neck	VXMG4-M16M16-R0.5N	14468
16mm	16mm	32mm	80mm	150mm	0.5mm	ext neck	VXMG4-M16M16-R0.5N1	H6047
16mm	16mm	32mm	80mm	150mm	1.0mm	ext neck	VXMG4-M16M16-R1.0N1	H6048
16mm	16mm	32mm	80mm	150mm	2.0mm	ext neck	VXMG4-M16M16-R2.0N1	H6049
16mm	16mm	32mm	80mm	150mm	3.0mm	ext neck	VXMG4-M16M16-R3.0N1	H6050
16mm	16mm	48mm		127mm	0.5mm	long	VXMG4-M16M16-R0.5L	14469
18mm	18mm	38mm		100mm	0.5mm x 45°	std	VXMG4-M18M18	13424
18mm	18mm	38mm		100mm	0.5mm	std	VXMG4-M18M18-R0.5	14470
18mm	18mm	38mm		100mm	1.0mm	std	VXMG4-M18M18-R1.0	H6051
18mm	18mm	38mm		100mm	2.0mm	std	VXMG4-M18M18-R2.0	H6052
20mm	20mm	38mm		100mm	SQ	std	VXMG4-M20M20-NR	14688
20mm	20mm	38mm		100mm	0.5mm x 45°	std	VXMG4-M20M20	13425
20mm	20mm	38mm		100mm	0.5mm	std	VXMG4-M20M20-R0.5	14471
20mm	20mm	38mm		100mm	1.0mm	std	VXMG4-M20M20-R1.0	H6053
20mm	20mm	38mm		100mm	1.5mm	std	VXMG4-M20M20-R1.5	H6054
20mm	20mm	38mm		100mm	2.0mm	std	VXMG4-M20M20-R2.0	H6055
20mm	20mm	38mm		100mm	3.0mm	std	VXMG4-M20M20-R3.0	H6056
20mm	20mm	38mm	65mm	127mm	0.5mm	ext neck	VXMG4-M20M20-R0.5N	14472
20mm	20mm	38mm	100mm	150mm	0.5mm	ext neck	VXMG4-M20M20-R0.5N1	H6057
20mm	20mm	38mm	100mm	150mm	1.00mm	ext neck	VXMG4-M20M20-R1.0N1	H6058
20mm	20mm	38mm	100mm	150mm	3.0mm	ext neck	VXMG4-M20M20-R3.0N1	H6059
20mm	20mm	60mm		127mm	0.5mm	long	VXMG4-M20M20-R0.5L	14473
25mm	25mm	38mm		100mm	0.5mm x 45°	std	VXMG4-M25M25	13426
25mm	25mm	38mm		100mm	0.5mm	std	VXMG4-M25M25-R0.5	14474
25mm	25mm	38mm		100mm	1.0mm	std	VXMG4-M25M25-R1.0	H6060
25mm	25mm	38mm		100mm	2.0mm	std	VXMG4-M25M25-R2.0	H6061

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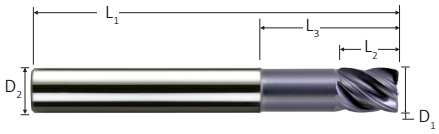

5 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS

Carbide | 5 | Non - Center Cutting | variable | nACo | +.000 -.002 | +.0005 -.0005 <1/8 | Square | Radius | HRc <54 | P K M S

- Geometry designed for reducing chatter, universal machining operations
- Ideal for use on Steel and Stainless Alloys and Cast Iron
- Proprietary nACo coating provides extended tool life over conventional coatings
- Excellent for heavy cuts, deep slotting and long axial depth profiling

SERIES: VXMG5

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACo EDP
1/16	1/8	1/8		1-1/2	SQ	std	VXMG5-402-NR	H6397
1/16	1/8	1/8		1-1/2	0.010	std	VXMG5-402-R010	H6398
3/32	1/8	3/16		1-1/2	SQ	std	VXMG5-403-NR	H6399
3/32	1/8	3/16		1-1/2	0.010	std	VXMG5-403-R010	H6400
1/8	1/8	3/16	no neck	2	0.015	no neck	VXMG5-404-R015NN	19352
1/8	1/8	1/4		1-1/2	SQ	stub	VXMG5-404-NRS	19348
1/8	1/8	1/4		1-1/2	0.015	stub	VXMG5-404-R015S	19349
1/8	1/8	1/2	3/4	2	SQ	std	VXMG5-404-NR	19350
1/8	1/8	1/2	3/4	2	0.015	std	VXMG5-404-R015	19351
3/16	3/16	1/4		1-1/2	SQ	stub	VXMG5-606-NRS	19353
3/16	3/16	1/4		1-1/2	0.015	stub	VXMG5-606-R015S	19354
3/16	3/16	1/4	no neck	3	0.015	no neck	VXMG5-606-R015NN	19357
3/16	3/16	5/8	7/8	2	SQ	std	VXMG5-606-NR	19355
3/16	3/16	5/8	7/8	2	0.015	std	VXMG5-606-R015	19356
1/4	1/4	3/8		2	SQ	stub	VXMG5-808-NRS	19358
1/4	1/4	3/8		2	0.015	stub	VXMG5-808-R015S	19359
1/4	1/4	3/8		2	0.030	stub	VXMG5-808-R030S	19361
1/4	1/4	3/8	1-1/8	3	0.015	ext neck	VXMG5-808-R015N2	19365
1/4	1/4	3/8	1-1/8	3	0.030	ext neck	VXMG5-808-R030N2	19366
1/4	1/4	3/8	no neck	4	0.015	no neck	VXMG5-808-R015NN	19367
1/4	1/4	3/8	no neck	4	0.030	no neck	VXMG5-808-R030NN	19368
1/4	1/4	3/4	1	2-1/2	SQ	std	VXMG5-808-NR	19362
1/4	1/4	3/4	1	2-1/2	0.015	std	VXMG5-808-R015	19363
1/4	1/4	3/4	1	2-1/2	0.030	std	VXMG5-808-R030	19364
5/16	5/16	1/2		2	SQ	stub	VXMG5-1010-NRS	19369
5/16	5/16	1/2		2	0.015	stub	VXMG5-1010-R015S	19370
5/16	5/16	1/2		2	0.030	stub	VXMG5-1010-R030S	19371
5/16	5/16	13/16	1-1/16	2-1/2	0.000	std	VXMG5-1010-NR	19372
5/16	5/16	13/16	1-1/16	2-1/2	0.015	std	VXMG5-1010-R015	19373
5/16	5/16	13/16	1-1/16	2-1/2	0.030	std	VXMG5-1010-R030	19374
3/8	3/8	1/2		2	SQ	stub	VXMG5-1212-NRS	19375
3/8	3/8	1/2		2	0.015	stub	VXMG5-1212-R015S	19376
3/8	3/8	1/2		2	0.030	stub	VXMG5-1212-R030S	19377
3/8	3/8	1/2	1-7/8	3	0.015	ext neck	VXMG5-1212-R015N1	19381
3/8	3/8	1/2	1-7/8	3	0.030	ext neck	VXMG5-1212-R030N1	19382
3/8	3/8	1/2	no neck	6	0.015	no neck	VXMG5-1212-R015NN	19383
3/8	3/8	1/2	no neck	6	0.030	no neck	VXMG5-1212-R030NN	19384

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5 Flute • variable flute - HP roughing applications

Series: VXMG5

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACo EDP
3/8	3/8	1		2-1/2	SQ	std	VXMG5-1212-NR	19378
3/8	3/8	1		2-1/2	0.015	std	VXMG5-1212-R015	19379
3/8	3/8	1		2-1/2	0.030	std	VXMG5-1212-R030	19380
1/2	1/2	5/8		2-1/2	SQ	stub	VXMG5-1616-NRS	19385
1/2	1/2	5/8		2-1/2	0.015	stub	VXMG5-1616-R015S	19386
1/2	1/2	5/8		2-1/2	0.030	stub	VXMG5-1616-R030S	11653
1/2	1/2	5/8		2-1/2	0.060	stub	VXMG5-1616-R060S	19388
1/2	1/2	5/8	1-1/2	4	0.015	ext neck	VXMG5-1616-R015N1	19397
1/2	1/2	5/8	1-1/2	4	0.030	ext neck	VXMG5-1616-R030N1	19398
1/2	1/2	5/8	1-1/2	4	0.060	ext neck	VXMG5-1616-R060N1	19399
1/2	1/2	5/8	2-1/4	4	0.015	ext neck	VXMG5-1616-R015N2	19400
1/2	1/2	5/8	2-1/4	4	0.030	ext neck	VXMG5-1616-R030N2	19401
1/2	1/2	5/8	2-1/4	4	0.060	ext neck	VXMG5-1616-R060N2	19402
1/2	1/2	5/8	no neck	6	0.015	no neck	VXMG5-1616-R015NN	19403
1/2	1/2	5/8	no neck	6	0.030	no neck	VXMG5-1616-R030NN	19404
1/2	1/2	5/8	no neck	6	0.060	no neck	VXMG5-1616-R060NN	19405
1/2	1/2	1	1-1/4	3	SQ	std	VXMG5-1616-NR	19389
1/2	1/2	1	1-1/4	3	0.015	std	VXMG5-1616-R015	19390
1/2	1/2	1	1-1/4	3	0.030	std	VXMG5-1616-R030	11654
1/2	1/2	1	1-1/4	3	0.060	std	VXMG5-1616-R060	19392
1/2	1/2	1-1/4		3	SQ	med	VXMG5-1616-NRM	19393
1/2	1/2	1-1/4		3	0.015	med	VXMG5-1616-R015M	11809
1/2	1/2	1-1/4		3	0.030	med	VXMG5-1616-R030M	19395
1/2	1/2	1-1/4		3	0.060	med	VXMG5-1616-R060M	19396
5/8	5/8	3/4		3	SQ	stub	VXMG5-2020-NRS	19406
5/8	5/8	3/4		3	0.030	stub	VXMG5-2020-R030S	19407
5/8	5/8	3/4		3	0.060	stub	VXMG5-2020-R060S	19408
5/8	5/8	3/4		3	0.090	stub	VXMG5-2020-R090S	19409
5/8	5/8	3/4	1-5/8	5	0.030	ext neck	VXMG5-2020-R030N1	19414
5/8	5/8	3/4	1-5/8	5	0.060	ext neck	VXMG5-2020-R060N1	19415
5/8	5/8	3/4	1-5/8	5	0.090	ext neck	VXMG5-2020-R090N1	19416
5/8	5/8	3/4	2-3/8	5	0.060	ext neck	VXMG5-2020-R060N2	19417
5/8	5/8	3/4	no neck	6	0.060	no neck	VXMG5-2020-R060NN	19418
5/8	5/8	1-1/4	1-1/2	3-1/2	SQ	std	VXMG5-2020-NR	19410
5/8	5/8	1-1/4	1-1/2	3-1/2	0.030	std	VXMG5-2020-R030	19411
5/8	5/8	1-1/4	1-1/2	3-1/2	0.060	std	VXMG5-2020-R060	19412
5/8	5/8	1-1/4	1-1/2	3-1/2	0.090	std	VXMG5-2020-R090	19413
3/4	3/4	7/8		3	SQ	stub	VXMG5-2424-NRS	19419
3/4	3/4	7/8		3	0.030	stub	VXMG5-2424-R030S	19421
3/4	3/4	7/8		3	0.060	stub	VXMG5-2424-R060S	19422
3/4	3/4	7/8		3	0.090	stub	VXMG5-2424-R090S	19423
3/4	3/4	7/8		3	0.120	stub	VXMG5-2424-R120S	19424
3/4	3/4	7/8	2	5	0.030	ext neck	VXMG5-2424-R030N1	19432
3/4	3/4	7/8	2	5	0.060	ext neck	VXMG5-2424-R060N1	19433
3/4	3/4	7/8	2	5	0.090	ext neck	VXMG5-2424-R090N1	19434
3/4	3/4	7/8	2	5	0.120	ext neck	VXMG5-2424-R120N1	19435

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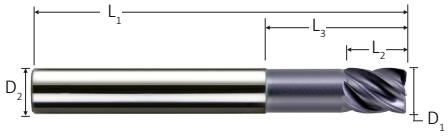
5 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS



SERIES: VXMG5

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACo EDP
3/4	3/4	7/8	3-3/8	6	0.030	ext neck	VXMG5-2424-R030N3	19436
3/4	3/4	7/8	3-3/8	6	0.060	ext neck	VXMG5-2424-R060N3	19437
3/4	3/4	7/8	3-3/8	6	0.090	ext neck	VXMG5-2424-R090N3	19438
3/4	3/4	7/8	3-3/8	6	0.120	ext neck	VXMG5-2424-R120N3	19439
3/4	3/4	7/8	no neck	6	0.030	no neck	VXMG5-2424-R030NN	19440
3/4	3/4	7/8	no neck	6	0.060	no neck	VXMG5-2424-R060NN	19441
3/4	3/4	7/8	no neck	6	0.090	no neck	VXMG5-2424-R090NN	19442
3/4	3/4	7/8	no neck	6	0.120	no neck	VXMG5-2424-R120NN	19443
3/4	3/4	1-1/2	1-3/4	4	SQ	std	VXMG5-2424-NR	19425
3/4	3/4	1-1/2	1-3/4	4	0.015	std	VXMG5-2424-R015	12811
3/4	3/4	1-1/2	1-3/4	4	0.030	std	VXMG5-2424-R030	19426
3/4	3/4	1-1/2	1-3/4	4	0.060	std	VXMG5-2424-R060	19427
3/4	3/4	1-1/2	1-3/4	4	0.090	std	VXMG5-2424-R090	19428
3/4	3/4	1-1/2	1-3/4	4	0.120	std	VXMG5-2424-R120	19429
1	1	1-1/2	1-3/4	4	SQ	std	VXMG5-3232-NR	19444
1	1	1-1/2	1-3/4	4	0.030	std	VXMG5-3232-R030	19445
1	1	1-1/2	1-3/4	4	0.060	std	VXMG5-3232-R060	19446
1	1	1-1/2	1-3/4	4	0.090	std	VXMG5-3232-R090	19447
1	1	1-1/2	1-3/4	4	0.120	std	VXMG5-3232-R120	19448
1	1	1-1/2	2-1/4	5	0.030	ext neck	VXMG5-3232-R030N1	19449
1	1	1-1/2	2-1/4	5	0.060	ext neck	VXMG5-3232-R060N1	19450
1	1	1-1/2	2-1/4	5	0.090	ext neck	VXMG5-3232-R090N1	19451
1	1	1-1/2	2-1/4	5	0.120	ext neck	VXMG5-3232-R120N1	19452
1	1	1-1/2	3-3/8	6	0.030	ext neck	VXMG5-3232-R030N3	19453
1	1	1-1/2	3-3/8	6	0.060	ext neck	VXMG5-3232-R060N3	19454
1	1	1-1/2	3-3/8	6	0.090	ext neck	VXMG5-3232-R090N3	19455
1	1	1-1/2	3-3/8	6	0.120	ext neck	VXMG5-3232-R120N3	19456
1	1	1-1/2	no neck	6	0.030	no neck	VXMG5-3232-R030NN	19457
1	1	1-1/2	no neck	6	0.060	no neck	VXMG5-3232-R060NN	19458
1	1	1-1/2	no neck	6	0.090	no neck	VXMG5-3232-R090NN	19459
1	1	1-1/2	no neck	6	0.120	no neck	VXMG5-3232-R120NN	19460

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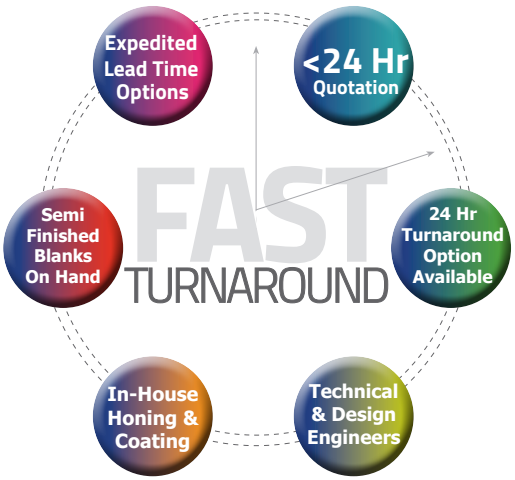

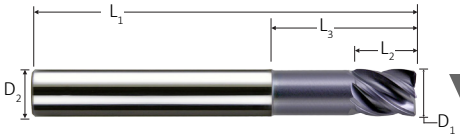

5 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS

Carbide | 5 | Non - Center Cutting | variable | nACo | +.000mm -.050mm | +.012mm -.012mm <3mm | Square | Radius | HRc <54 | P K M S

- Geometry designed for reducing chatter, universal machining operations
- Ideal for use on Steel and Stainless Alloys and Cast Iron
- Proprietary nACo coating provides extended tool life over conventional coatings
- Excellent for heavy cuts, deep slotting and long axial depth profiling

SERIES: VXMG5-M_M_

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACo EDP
1.5mm	3mm	3mm		38mm	SQ	std	VXMG5-M3M1.5-NR	H6401
1.5mm	3mm	3mm		38mm	0.25mm	std	VXMG5-M3M1.5-R0.25	H6402
2mm	3mm	4mm		38mm	SQ	std	VXMG5-M3M2-NR	H6403
2mm	3mm	4mm		38mm	0.25mm	std	VXMG5-M3M2-R0.25	H6404
2.5mm	3mm	5mm		38mm	SQ	std	VXMG5-M3M2.5-NR	H6405
2.5mm	3mm	5mm		38mm	0.25mm	std	VXMG5-M3M2.5-R0.25	H6406
3mm	3mm	6mm		38mm	SQ	stub	VXMG5-M3M3-NRS	H6407
3mm	3mm	6mm		38mm	0.25mm	stub	VXMG5-M3M3-R0.25S	H6408
3mm	3mm	12mm		38mm	SQ	std	VXMG5-M3M3-NR	H6409
3mm	3mm	12mm		38mm	0.25mm	std	VXMG5-M3M3-R0.25	H6410
4mm	4mm	14mm	20mm	51mm	SQ	std	VXMG5-M4M4-NR	H6411
4mm	4mm	14mm	20mm	51mm	0.25mm	std	VXMG5-M4M4-R0.25	15100
4mm	4mm	14mm	20mm	51mm	0.5mm	std	VXMG5-M4M4-R0.5	H6412
5mm	5mm	16mm	22mm	51mm	0.25mm	std	VXMG5-M5M5-R0.25	15101
5mm	5mm	16mm	22mm	51mm	0.5mm	std	VXMG5-M5M5-R0.5	H6413
6mm	6mm	20mm	26mm	63mm	0.5mm	std	VXMG5-M6M6-R0.5	15103
6mm	6mm	20mm	26mm	63mm	1.0mm	std	VXMG5-M6M6-R1.0	H6414
6mm	6mm	20mm	no neck	100mm	0.5mm	no neck	VXMG5-M6M6-NN	15104
8mm	8mm	20mm	26mm	63mm	0.5mm	std	VXMG5-M8M8-R0.5	15105
8mm	8mm	20mm	26mm	63mm	1.0mm	std	VXMG5-M8M8-R1.0	H6415
8mm	8mm	20mm	no neck	100mm	0.5mm	no neck	VXMG5-M8M8-NN	15107
10mm	10mm	24mm	30mm	70mm	0.5mm	std	VXMG5-M10M10-R0.5	15109
10mm	10mm	24mm	30mm	70mm	1.0mm	std	VXMG5-M10M10-R1.0	H6416
10mm	10mm	24mm	no neck	100mm	0.5mm	no neck	VXMG5-M10M10-NN	15110
12mm	12mm	25mm	31mm	76mm	0.5mm	std	VXMG5-M12M12-R0.5	15111
12mm	12mm	25mm	31mm	76mm	1.0mm	std	VXMG5-M12M12-R1.0	H6417
12mm	12mm	25mm	31mm	76mm	2.0mm	std	VXMG5-M12M12-R2.0	H6418
12mm	12mm	25mm	no neck	100mm	0.5mm	no neck	VXMG5-M12M12-NN	15112
14mm	14mm	32mm	38mm	89mm	0.5mm	std	VXMG5-M14M14-R0.5	15113
14mm	14mm	32mm	38mm	89mm	1.0mm	std	VXMG5-M14M14-R1.0	H6419
14mm	14mm	32mm	38mm	89mm	2.0mm	std	VXMG5-M14M14-R2.0	H6420
16mm	16mm	32mm	38mm	89mm	0.5mm	std	VXMG5-M16M16-R0.5	15114
16mm	16mm	32mm	38mm	89mm	1.0mm	std	VXMG5-M16M16-R1.0	H6421
16mm	16mm	32mm	38mm	89mm	2.0mm	std	VXMG5-M16M16-R2.0	H6422
16mm	16mm	32mm	no neck	100mm	0.5mm	no neck	VXMG5-M16M16-NN	15115
18mm	18mm	36mm	42mm	100mm	0.5mm	std	VXMG5-M18M18-R0.5	15117
18mm	18mm	36mm	42mm	100mm	1.0mm	std	VXMG5-M18M18-R1.0	H6423
18mm	18mm	36mm	42mm	100mm	2.0mm	std	VXMG5-M18M18-R2.0	H6424
20mm	20mm	36mm	42mm	100mm	1.0mm	std	VXMG5-M20M20-R1.0	15118
20mm	20mm	36mm	42mm	100mm	2.0mm	std	VXMG5-M20M20-R2.0	H6425
25mm	25mm	36mm	42mm	100mm	1.0mm	std	VXMG5-M25M25-R1.0	15119
25mm	25mm	36mm	42mm	100mm	2.0mm	std	VXMG5-M25M25-R2.0	H6426

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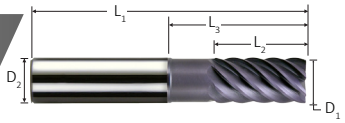
7 FLUTE • VARIABLE FL-SEMI ROUGHING & FINISHING APPLICATIONS



Carbide | 7 | Non - Center Cutting | variable | nACo | +.000 -.002 | Square | Radius | HRc <54 | P M K S

- Geometry designed for reducing chatter, utilizing maximum metal removal rates
- Additional flutes provide over 40% higher metal removal rates over 4 & 5 flute tools
- Extreme metal removal rates delivered at full flute length & 15% x D radial depth
- Proprietary nACo coating provides extended tool life over conventional coatings

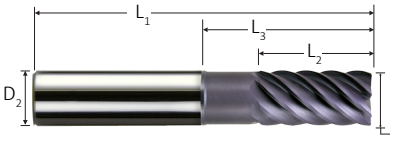
SERIES: VXMG7

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACo EDP
1/8	1/8	3/16		1-1/2	SQ	stub	VXMG7-404-NRS	H6571
1/8	1/8	3/16		1-1/2	0.010	stub	VXMG7-404-R010S	H6572
1/8	1/8	3/8		1-1/2	0.000	std	VXMG7-404-NR	H6573
1/8	1/8	3/8		1-1/2	0.010	std	VXMG7-404-R010	H6574
3/16	3/16	9/32		1-1/2	SQ	stub	VXMG7-606-NRS	14720
3/16	3/16	9/32		1-1/2	0.010	stub	VXMG7-606-R010S	H6575
3/16	3/16	9/16		2	0.000	std	VXMG7-606-NR	H6576
3/16	3/16	9/16		2	0.010	std	VXMG7-606-R010	H6577
1/4	1/4	3/8		2	SQ	stub	VXMG7-808-NRS	12241
1/4	1/4	3/8		2	0.015	stub	VXMG7-808-R015S	12242
1/4	1/4	3/8	2-1/8	4	0.015	ext neck	VXMG7-808-R015N3	12246
1/4	1/4	3/8	no neck	4	0.015	no neck	VXMG7-808-R015NN	12247
1/4	1/4	3/4	1	2-1/2	SQ	std	VXMG7-808-NR	12244
1/4	1/4	3/4	1	2-1/2	0.015	std	VXMG7-808-R015	12245
3/8	3/8	1/2		2	SQ	stub	VXMG7-1212-NRS	12248
3/8	3/8	1/2		2	0.015	stub	VXMG7-1212-R015S	12249
3/8	3/8	1/2	1-1/8	3	0.015	ext neck	VXMG7-1212-R015N1	12252
3/8	3/8	1/2	2-1/8	4	0.015	ext neck	VXMG7-1212-R015N2	12253
3/8	3/8	1		2-1/2	SQ	std	VXMG7-1212-NR	12250
3/8	3/8	1		2-1/2	0.015	std	VXMG7-1212-R015	12251
1/2	1/2	5/8		2-1/2	SQ	stub	VXMG7-1616-NRS	12254
1/2	1/2	5/8		2-1/2	0.015	stub	VXMG7-1616-R015S	12255
1/2	1/2	5/8	1-1/2	4	0.015	ext neck	VXMG7-1616-R015N1	12260
1/2	1/2	5/8	2-1/4	4	0.015	ext neck	VXMG7-1616-R015N2	12261
1/2	1/2	1	1-1/4	3	SQ	std	VXMG7-1616-NR	12256
1/2	1/2	1	1-1/4	3	0.015	std	VXMG7-1616-R015	11805
1/2	1/2	1	1-1/4	3	0.030	std	VXMG7-1616-R030	11797
1/2	1/2	1-1/4		3	SQ	med	VXMG7-1616-NRM	12257
1/2	1/2	1-1/4		3	0.015	med	VXMG7-1616-R015M	12258
1/2	1/2	1-1/4		3	0.030	med	VXMG7-1616-R030M	12259
5/8	5/8	3/4		3	SQ	stub	VXMG7-2020-NRS	12262
5/8	5/8	3/4		3	0.030	stub	VXMG7-2020-R030S	12263
5/8	5/8	3/4	1-5/8	5	0.030	ext neck	VXMG7-2020-R030N1	12267
5/8	5/8	1-1/4	1-1/2	3-1/2	SQ	std	VXMG7-2020-NR	12264
5/8	5/8	1-1/4	1-1/2	3-1/2	0.030	std	VXMG7-2020-R030	12265
3/4	3/4	7/8		3	SQ	stub	VXMG7-2424-NRS	12269
3/4	3/4	7/8		3	0.030	stub	VXMG7-2424-R030S	12271
3/4	3/4	7/8	2	5	0.030	ext neck	VXMG7-2424-R030N1	12277
3/4	3/4	1-1/2	1-3/4	4	SQ	std	VXMG7-2424-NR	12273
3/4	3/4	1-1/2	1-3/4	4	0.030	std	VXMG7-2424-R030	12275
1	1	1-1/2	1-3/4	4	SQ	std	VXMG7-3232-NR	12283
1	1	1-1/2	1-3/4	4	0.030	std	VXMG7-3232-R030	12287

Speed & Feed: page 152

7 FLUTE • VARIABLE FL-SEMI ROUGHING & FINISHING APPLICATIONS

Carbide | 7 | Non - Center Cutting | variable | nACo | +.000mm -.050mm | Square | Radius | HRc <54 | P K M S



- Geometry designed for reducing chatter, utilizing maximum metal removal rates
- Additional flutes provide over 40% higher metal removal rates over 4 & 5 flute tools
- Extreme metal removal rates delivered at full flute length & 15% x D radial depth
- Proprietary nACo coating provides extended tool life over conventional coatings

SERIES: VXMG7-M_M_

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACo EDP
3mm	3mm	6mm		38mm	SQ	stub	VXMG7-M3M3-NRS	H6578
3mm	3mm	6mm		38mm	0.25mm	stub	VXMG7-M3M3-R0.25S	H6579
3mm	3mm	12mm		38mm	SQ	std	VXMG7-M3M3-NR	H6580
3mm	3mm	12mm		38mm	0.25mm	std	VXMG7-M3M3-R0.25	H6581
4mm	4mm	12mm		51mm	0.0mm	std	VXMG7-M4M4-NR	H6582
4mm	4mm	12mm		51mm	0.25mm	std	VXMG7-M4M4-R0.25	H6583
6mm	6mm	20mm	26mm	63mm	SQ	std	VXMG7-M6M6-NR	15169
6mm	6mm	20mm	26mm	63mm	0.5mm	std	VXMG7-M6M6-R0.5	15120
6mm	6mm	20mm	no neck	100mm	0.5mm	no neck	VXMG7-M6M6-NN	15121
8mm	8mm	20mm	26mm	63mm	SQ	std	VXMG7-M8M8-NR	15171
8mm	8mm	20mm	26mm	63mm	0.5mm	std	VXMG7-M8M8-R0.5	15122
8mm	8mm	20mm	26mm	63mm	1.0mm	std	VXMG7-M8M8-R1.0	H6584
8mm	8mm	20mm	no neck	100mm	0.5mm	no neck	VXMG7-M8M8-NN	15123
10mm	10mm	24mm	30mm	70mm	SQ	std	VXMG7-M10M10-NR	15173
10mm	10mm	24mm	30mm	70mm	0.5mm	std	VXMG7-M10M10-R0.5	15124
10mm	10mm	24mm	30mm	70mm	1.0mm	std	VXMG7-M10M10-R1.0	H6585
10mm	10mm	24mm	30mm	70mm	2.0mm	std	VXMG7-M10M10-R2.0	H6658
10mm	10mm	24mm	no neck	100mm	0.5mm	no neck	VXMG7-M10M10-NN	15125
12mm	12mm	25mm	31mm	76mm	SQ	std	VXMG7-M12M12-NR	15175
12mm	12mm	25mm	31mm	76mm	0.5mm	std	VXMG7-M12M12-R0.5	15126
12mm	12mm	25mm	31mm	76mm	1.0mm	std	VXMG7-M12M12-R1.0	15605
12mm	12mm	25mm	31mm	76mm	2.0mm	std	VXMG7-M12M12-R2.0	14795
12mm	12mm	25mm	no neck	100mm	0.5mm	no neck	VXMG7-M12M12-NN	15127
14mm	14mm	32mm	38mm	89mm	SQ	std	VXMG7-M14M14-NR	15177
14mm	14mm	32mm	38mm	89mm	0.5mm	std	VXMG7-M14M14-R0.5	15128
14mm	14mm	32mm	38mm	89mm	1.0mm	std	VXMG7-M14M14-R1.0	H6586
16mm	16mm	32mm	38mm	89mm	SQ	std	VXMG7-M16M16-NR	15179
16mm	16mm	32mm	38mm	89mm	0.5mm	std	VXMG7-M16M16-R0.5	15129
16mm	16mm	32mm	38mm	89mm	1.0mm	std	VXMG7-M16M16-R1.0	H6587
16mm	16mm	32mm	38mm	89mm	2.0mm	std	VXMG7-M16M16-R2.0	H6588
16mm	16mm	32mm	no neck	100mm	0.5mm	no neck	VXMG7-M16M16-NN	15130
18mm	18mm	36mm	42mm	100mm	SQ	std	VXMG7-M18M18-NR	15181
18mm	18mm	36mm	42mm	100mm	0.5mm	std	VXMG7-M18M18-R0.5	15131
18mm	18mm	36mm	42mm	100mm	1.0mm	std	VXMG7-M18M18-R1.0	H6589
20mm	20mm	36mm	42mm	100mm	SQ	std	VXMG7-M20M20-NR	15183
20mm	20mm	36mm	42mm	100mm	0.5mm	std	VXMG7-M20M20-R0.5	H6590
20mm	20mm	36mm	42mm	100mm	1.0mm	std	VXMG7-M20M20-R1.0	15132
20mm	20mm	36mm	42mm	100mm	2.0mm	std	VXMG7-M20M20-R2.0	H6591
20mm	20mm	36mm	42mm	100mm	3.0mm	std	VXMG7-M20M20-R3.0	H6592
25mm	25mm	36mm	42mm	100mm	SQ	std	VXMG7-M25M25-NR	15185
25mm	25mm	36mm	42mm	100mm	0.5mm	std	VXMG7-M25M25-R0.5	H6593
25mm	25mm	36mm	42mm	100mm	1.0mm	std	VXMG7-M25M25-R1.0	15133
25mm	25mm	36mm	42mm	100mm	3.0mm	std	VXMG7-M25M25-R3.0	H6594

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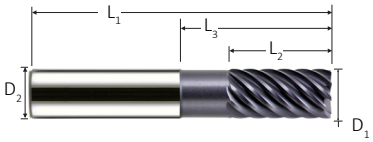
9 FLUTE • VARIABLE FL - OPTIMUM FINE FINISH PROFILING APPLICATION

Carbide | 9 | Non - Center Cutting | variable | nACo | +.000 -.002 | Square | Radius | HRc <54 | P M K S

- Designed to deliver outstanding surface finishes, utilizing maximum metal removal rates
- Extreme metal removal rates delivered at full flute length & 5% x D radial depth
- Proprietary nACo coating provides extended tool life over conventional coatings
- Ideal for finishing tight tolerance walls



SERIES: VXMG9

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACo EDP
3/16	3/16	9/32		1-1/2	SQ	stub	VXMG9-606-NRS	H6595
3/16	3/16	9/32		1-1/2	0.010	stub	VXMG9-606-R010S	H6596
3/16	3/16	9/16		2	SQ	std	VXMG9-606-NR	H6597
3/16	3/16	9/16		2	0.010	std	VXMG9-606-R010	H6598
1/4	1/4	3/8		2	SQ	stub	VXMG9-808-NRS	12288
1/4	1/4	3/8		2	0.015	stub	VXMG9-808-R015S	12289
1/4	1/4	3/8	2-1/8	4	0.015	ext neck	VXMG9-808-R015N3	12302
1/4	1/4	3/8	no neck	4	0.015	no neck	VXMG9-808-R015NN	12303
1/4	1/4	3/4	1	2-1/2	SQ	std	VXMG9-808-NR	12290
1/4	1/4	3/4	1	2-1/2	0.015	std	VXMG9-808-R015	12291
3/8	3/8	1/2		2	SQ	stub	VXMG9-1212-NRS	12304
3/8	3/8	1/2		2	0.015	stub	VXMG9-1212-R015S	12305
3/8	3/8	1/2	1-1/8	3	0.015	ext neck	VXMG9-1212-R015N1	12317
3/8	3/8	1/2	2-1/8	4	0.015	ext neck	VXMG9-1212-R015N2	12325
3/8	3/8	1		2-1/2	SQ	std	VXMG9-1212-NR	12315
3/8	3/8	1		2-1/2	0.015	std	VXMG9-1212-R015	12316
1/2	1/2	5/8		2-1/2	SQ	stub	VXMG9-1616-NRS	12327
1/2	1/2	5/8		2-1/2	0.015	stub	VXMG9-1616-R015S	12328
1/2	1/2	5/8	1-1/2	4	0.015	ext neck	VXMG9-1616-R015N1	12377
1/2	1/2	5/8	2-1/4	4	0.015	ext neck	VXMG9-1616-R015N2	12405
1/2	1/2	1	1-1/4	3	SQ	std	VXMG9-1616-NR	12329
1/2	1/2	1	1-1/4	3	0.015	std	VXMG9-1616-R015	11801
1/2	1/2	1	1-1/4	3	0.030	std	VXMG9-1616-R030	11799
1/2	1/2	1-1/4		3	SQ	med	VXMG9-1616-NRM	12330
1/2	1/2	1-1/4		3	0.015	med	VXMG9-1616-R015M	12373
1/2	1/2	1-1/4		3	0.030	med	VXMG9-1616-R030M	12376
5/8	5/8	3/4		3	SQ	stub	VXMG9-2020-NRS	12406
5/8	5/8	3/4		3	0.030	stub	VXMG9-2020-R030S	12407
5/8	5/8	3/4	1-5/8	5	0.030	ext neck	VXMG9-2020-R030N1	12410
5/8	5/8	1-1/4	1-1/2	3-1/2	SQ	std	VXMG9-2020-NR	12408
5/8	5/8	1-1/4	1-1/2	3-1/2	0.030	std	VXMG9-2020-R030	12409
3/4	3/4	7/8		3	SQ	stub	VXMG9-2424-NRS	12411
3/4	3/4	7/8		3	0.030	stub	VXMG9-2424-R030S	12412
3/4	3/4	7/8	2	5	0.030	ext neck	VXMG9-2424-R030N1	12415
3/4	3/4	1-1/2	1-3/4	4	SQ	std	VXMG9-2424-NR	12413
3/4	3/4	1-1/2	1-3/4	4	0.030	std	VXMG9-2424-R030	12414
1	1	1-1/2	1-3/4	4	SQ	std	VXMG9-3232-NR	12416
1	1	1-1/2	1-3/4	4	0.030	std	VXMG9-3232-R030	12417

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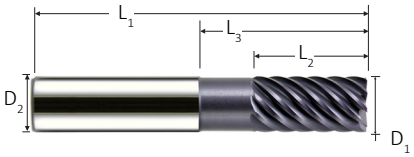
9 FLUTE • VARIABLE FL - OPTIMUM FINE FINISH PROFILING APPLICATION

Carbide | 9 | Non - Center Cutting | variable | nACo | +.000mm -.050mm | Square | Radius | HRc <54 | P K M S



- Designed to deliver outstanding surface finishes, utilizing maximum metal removal rates
- Extreme metal removal rates delivered at full flute length & 5% x D radial depth
- Proprietary nACo coating provides extended tool life over conventional coatings
- Ideal for finishing tight tolerance walls

SERIES: VXMG9-M_M_

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACo EDP
4mm	4mm	12mm		51mm	SQ	std	VXMG9-M4M4-NR	H6599
4mm	4mm	12mm		51mm	0.25mm	std	VXMG9-M4M4-R0.25	H6600
6mm	6mm	20mm	26mm	63mm	SQ	std	VXMG9-M6M6-NR	15151
6mm	6mm	20mm	26mm	63mm	0.5mm	std	VXMG9-M6M6-R0.5	15134
6mm	6mm	20mm	*no neck	100mm	0.5mm	no neck	VXMG9-M6M6-NN	15135
8mm	8mm	20mm	26mm	63mm	SQ	std	VXMG9-M8M8-NR	15153
8mm	8mm	20mm	26mm	63mm	0.5mm	std	VXMG9-M8M8-R0.5	15136
8mm	8mm	20mm	26mm	63mm	1.0mm	std	VXMG9-M8M8-R1.0	H6601
8mm	8mm	20mm	no neck	100mm	0.5mm	no neck	VXMG9-M8M8-NN	15137
10mm	10mm	24mm	30mm	70mm	SQ	std	VXMG9-M10M10-NR	15155
10mm	10mm	24mm	30mm	70mm	0.5mm	std	VXMG9-M10M10-R0.5	15138
10mm	10mm	24mm	30mm	70mm	1.0mm	std	VXMG9-M10M10-R1.0	H6602
10mm	10mm	24mm	no neck	100mm	0.5mm	no neck	VXMG9-M10M10-NN	15139
12mm	12mm	25mm	31mm	76mm	SQ	std	VXMG9-M12M12-NR	15157
12mm	12mm	25mm	31mm	76mm	0.5mm	std	VXMG9-M12M12-R0.5	15140
12mm	12mm	25mm	31mm	76mm	1.0mm	std	VXMG9-M12M12-R1.0	H6603
12mm	12mm	25mm	31mm	76mm	2.0mm	std	VXMG9-M12M12-R2.0	H6604
12mm	12mm	25mm	no neck	100mm	0.5mm	no neck	VXMG9-M12M12-NN	15141
14mm	14mm	32mm	38mm	89mm	SQ	std	VXMG9-M14M14-NR	15159
14mm	14mm	32mm	38mm	89mm	0.5mm	std	VXMG9-M14M14-R0.5	15142
14mm	14mm	32mm	38mm	89mm	1.0mm	std	VXMG9-M14M14-R1.0	H6605
16mm	16mm	32mm	38mm	89mm	SQ	std	VXMG9-M16M16-NR	15161
16mm	16mm	32mm	38mm	89mm	0.5mm	std	VXMG9-M16M16-R0.5	15143
16mm	16mm	32mm	38mm	89mm	1.0mm	std	VXMG9-M16M16-R1.0	H6606
16mm	16mm	32mm	38mm	89mm	2.0mm	std	VXMG9-M16M16-R2.0	H6607
16mm	16mm	32mm	no neck	100mm	0.5mm	no neck	VXMG9-M16M16-NN	15144
18mm	18mm	36mm	42mm	100mm	SQ	std	VXMG9-M18M18-NR	15163
18mm	18mm	36mm	42mm	100mm	0.5mm	std	VXMG9-M18M18-R0.5	15145
18mm	18mm	36mm	42mm	100mm	1.0mm	std	VXMG9-M18M18-R1.0	H6608
20mm	20mm	36mm	42mm	100mm	SQ	std	VXMG9-M20M20-NR	15165
20mm	20mm	36mm	42mm	100mm	0.5mm	std	VXMG9-M20M20-R0.5	H6609
20mm	20mm	36mm	42mm	100mm	1.0mm	std	VXMG9-M20M20-R1.0	15147
20mm	20mm	36mm	42mm	100mm	2.0mm	std	VXMG9-M20M20-R2.0	H6610
20mm	20mm	36mm	42mm	100mm	3.0mm	std	VXMG9-M20M20-R3.0	H6611
25mm	25mm	36mm	42mm	100mm	SQ	std	VXMG9-M25M25-NR	15167
25mm	25mm	36mm	42mm	100mm	0.5mm	std	VXMG9-M25M25-R0.5	H6612
25mm	25mm	36mm	42mm	100mm	1.0mm	std	VXMG9-M25M25-R1.0	15149
25mm	25mm	36mm	42mm	100mm	3.0mm	std	VXMG9-M25M25-R3.0	H6613

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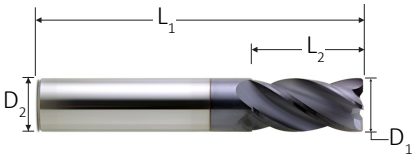
4 FLUTE • VARIABLE FL - GENERAL MACHINING APPLICATIONS



Carbide | 4 | Center Cutting | variable | nACo | +.000 -.002 | Square | Radius | HRc <54 | P M K S

- Designed to reduce vibration in heavier cuts
- Effective on all medium hardness Ferrous Materials
- Proprietary nACo coating provides extended tool life over conventional coatings

SERIES: VHMG

DIA D_1	SHK D_2	LOC L_2	OAL L_1	CORNER	LENGTH	PART NAME	nACo EDP
1/8	1/8	1/4	1-1/2	.010-.015	stub	VHMGS-404	12176
1/8	1/8	1/2	1-1-2	SQ	std	VHMG-404-NR	10590
1/8	1/8	1/2	1-1/2	.010-.015	std	VHMG-404	10813
3/16	3/16	3/8	1-1/2	.010-.015	stub	VHMGS-606	12375
3/16	3/16	5/8	2	SQ	std	VHMG-606-NR	10592
3/16	3/16	5/8	2	.010-.015	std	VHMG-606	10981
1/4	1/4	1/2	2	SQ	stub	VHMGS-808-NR	10594
1/4	1/4	1/2	2	.010-.015	stub	VHMGS-808	10003
1/4	1/4	3/4	2-1/2	SQ	std	VHMG-808-NR	10596
1/4	1/4	3/4	2-1/2	.010-.015	std	VHMG-808	10005
1/4	1/4	1-1/8	3	SQ	long	VHMG-808-L-NR	10598
1/4	1/4	1-1/8	3	.010-.015	long	VHMG-808-L	10007
5/16	5/16	1/2	2	SQ	stub	VHMGS-1010-NR	10600
5/16	5/16	1/2	2	.010-.015	stub	VHMGS-1010	10009
5/16	5/16	13/16	2-1/2	SQ	std	VHMG-1010-NR	10602
5/16	5/16	13/16	2-1/2	.010-.015	std	VHMG-1010	10011
5/16	5/16	1-1/8	3	SQ	long	VHMG-1010-LNR	10604
5/16	5/16	1-1/8	3	.010-.015	long	VHMG-1010-L	10013
3/8	3/8	5/8	2	SQ	stub	VHMGS-1212-NR	10606
3/8	3/8	5/8	2	.010-.015	stub	VHMGS-1212	10015
3/8	3/8	1	2-1/2	SQ	std	VHMG-1212-NR	10608
3/8	3/8	1	2-1/2	.010-.015	std	VHMG-1212	10017
3/8	3/8	1-1/8	3	SQ	long	VHMG-1212-LNR	10609
3/8	3/8	1-1/8	3	.010-.015	long	VHMG-1212-L	10019
7/16	7/16	1	2-3/4	SQ	std	VHMG-1414-NR	10610
7/16	7/16	1	2-3/4	.010-.015	std	VHMG-1414	10021
1/2	1/2	5/8	2-1/2	SQ	stub	VHMGS-1616-NR	10612
1/2	1/2	5/8	2-1/2	.025-.030	stub	VHMGS-1616	10023
1/2	1/2	1	3	SQ	std	VHMG-1616-NR	10642
1/2	1/2	1	3	.025-.030	std	VHMG-1616	10025
1/2	1/2	1-1/4	3	SQ	med	VHMG-1616-MNR	12051
1/2	1/2	1-1/4	3	.025-.030	med	VHMG-1616-M	12371
1/2	1/2	1-1/2	3-1/2	.025-.030	med/long	VHMG-1616-ML	11656
1/2	1/2	2	4	SQ	long	VHMG-1616-LNR	10644
1/2	1/2	2	4	.025-.030	long	VHMG-1616-L	10027
5/8	5/8	3/4	3	SQ	stub	VHMGS-2020-NR	10688
5/8	5/8	3/4	3	.030-.035	stub	VHMGS-2020	10029
5/8	5/8	1-1/4	3-1/2	SQ	std	VHMG-2020-NR	10692
5/8	5/8	1-1/4	3-1/2	.030-.035	std	VHMG-2020	10031
5/8	5/8	2-1/4	5	SQ	long	VHMG-2020-LNR	10696
5/8	5/8	2-1/4	5	.030-.035	long	VHMG-2020-L	10033

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sizes continued on next page

4 Flute • Variable FL - General Machining Applications

Series: VHMG

DIA D_1	SHK D_2	LOC L_2	OAL L_1	CORNER	LENGTH	PART NAME	nACo EDP
3/4	3/4	1	3	SQ	stub	VHMGS-2424-NR	10706
3/4	3/4	1	3	.030-.035	stub	VHMGS-2424	10035
3/4	3/4	1-1/2	4	SQ	std	VHMG-2424-NR	10714
3/4	3/4	1-1/2	4	.030-.035	std	VHMG-2424	10037
3/4	3/4	2-1/4	5	SQ	long	VHMG-2424-LNR	10718
3/4	3/4	2-1/4	5	.030-.035	long	VHMG-2424-L	10039
1	1	1-1/2	4	SQ	std	VHMG-3232-NR	10720
1	1	1-1/2	4	.030-.035	std	VHMG-3232	10985
1	1	2-1/4	5	SQ	long	VHMG-3232-LNR	10578
1	1	2-1/4	5	.030-.035	long	VHMG-3232-L	13049
1-1/4	1-1/4	2-1/4	5	.030-.035	std	VHMG-4040	13051

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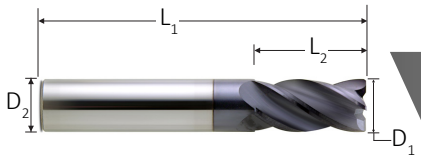

4 Flute • Variable FL - General Machining Applications

Carbide | 4 | Center Cutting | variable | nACo | +.000mm -.050mm | Radius | HRc <54 | P M K S

- Designed to reduce vibration in heavier cuts
- Effective on all medium hardness Ferrous Materials
- Proprietary nACo coating provides extended tool life over conventional coatings

Series: VHMG-M_M_

DIA D_1	SHK D_2	LOC L_2	OAL L_1	CORNER	LENGTH	PART NAME	nACo EDP
4mm	4mm	14mm	51mm	0.4mm	std	VHMG-M4M4	11401
5mm	5mm	20mm	51mm	0.4mm	std	VHMG-M5M5	11403
6mm	6mm	20mm	63mm	0.4mm	std	VHMG-M6M6	11405
8mm	8mm	20mm	63mm	0.4mm	std	VHMG-M8M8	11407
10mm	10mm	25mm	70mm	0.4mm	std	VHMG-M10M10	11409
12mm	12mm	25mm	76mm	0.6mm	std	VHMG-M12M12	11411
14mm	14mm	32mm	89mm	0.6mm	std	VHMG-M14M14	11413
16mm	16mm	32mm	89mm	0.7mm	std	VHMG-M16M16	11415
18mm	18mm	38mm	100mm	0.7mm	std	VHMG-M18M18	11417
20mm	20mm	38mm	100mm	0.8mm	std	VHMG-M20M20	11419
25mm	25mm	38mm	100mm	0.8mm	std	VHMG-M25M25	11421

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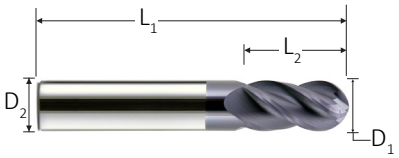
4 Flute • Variable FL - Ball Nose General Machining Applications

Carbide | 4 | Center Cutting | variable | nACo | +.000 -.002 | Ball | HRc <54 | P M K S



- Designed to reduce vibration in heavier cuts
- Effective on all medium hardness Ferrous Materials
- Proprietary nACo coating provides extended tool life over conventional coatings

Series: VHMG-__-B

DIA D_1	SHK D_2	LOC L_2	OAL L_1	LENGTH	PART NAME	nACo EDP
1/4	1/4	3/4	2-1/2	std	VHMG-808-B	12279
3/8	3/8	1	2-1/2	std	VHMG-1010-B	12297
1/2	1/2	1	3	std	VHMG-1212-B	12298
5/8	5/8	1-1/4	3-1/2	std	VHMG-1616-B	12299
3/4	3/4	1-1/2	4	std	VHMG-2020-B	12300
1	1	1-1/2	4	std	VHMG-2424-B	12301

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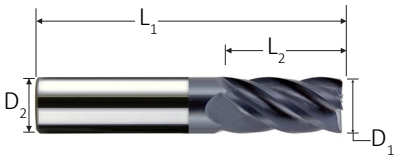

5 Flute • Variable FL - General Machining Applications

Carbide | 5 | Center Cutting | variable | nACo | +.000 -.002 | Radius | HRc <54 | P M K S

Additional coatings available upon request

- Designed to reduce vibration in heavier cuts, with higher metal removal rates
- Effective on all medium hardness Ferrous Materials
- Proprietary nACo coating provides extended tool life over conventional coatings

Series: GVHMG

DIA D_1	SHK D_2	LOC L_2	OAL L_1	CORNER	LENGTH	PART NAME	nACo EDP
1/4	1/4	3/4	2-1/2	.015-.020	std	GVHMG-808	12221
3/8	3/8	1	2-1/2	.015-.020	std	GVHMG-1212	12222
1/2	1/2	1	3	.025-.030	std	GVHMG-1616	12192
5/8	5/8	1-1/4	3-1/2	.030-.035	std	GVHMG-2020	12223
3/4	3/4	1-1/2	4	.030-.035	std	GVHMG-2424	12224
1	1	1-1/2	4	.030-.035	std	GVHMG-3232	12285

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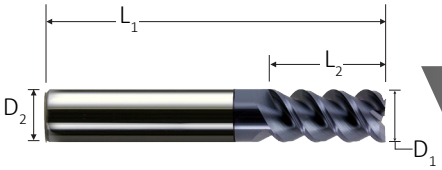

3 FLUTE • 60° GENERAL MACHINING APPLICATION IN STAINLESS STEELS

Carbide | 3 | Center Cutting | 60° | Bright AlTiN | +.000 -.002 | Square | HRc <54 | P K M S

Additional coatings available upon request

- Extra High Helix keeps a cutting edge in the material throughout the machining process
- Produces outstanding surface finishes
- Requires minimum horsepower

SERIES: EMG60

DIA D_1	SHK D_2	LOC L_2	OAL L_1	PART NAME	BRIGHT EDP	ALTIN EDP
1/8	1/8	1/2	1-1/2	EMG60-404	10256	50256
3/16	3/16	5/8	2	EMG60-606	10797	50797
1/4	1/4	3/4	2-1/2	EMG60-808	14238	54238
5/16	5/16	13/16	2-1/2	EMG60-1010	14240	54240
3/8	3/8	1	2-1/2	EMG60-1212	14242	54242
7/16	7/16	1	3	EMG60-1414	14246	54246
1/2	1/2	1	3	EMG60-1616	14248	54248
9/16	9/16	1-1/4	3-1/2	EMG60-1818	14250	54250
5/8	5/8	1-1/4	3-1/2	EMG60-2020	14252	54252
3/4	3/4	1-1/2	4	EMG60-2424	14254	54254
1	1	1-1/2	4	EMG60-3232	14256	54256

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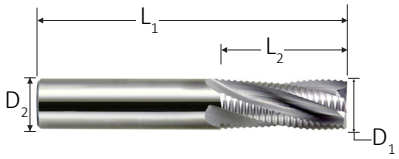
Melin Product Portfolio

- Easy to Use
- Easy to find and select the BEST tool for the application at hand
- Easy to see the features and benefits of the design and the various styles available
- Ideal for effective tool selections

Call your local distributors, our customer service team, or visit our website to order your copy today!



MULTI FLUTE • FINE PROFILE ROUGHING END MILL

Carbide | 4 | 5 | Center Cutting | 20° | Bright AlTiN | +.000 -.004 | Chamfer | Fine Pitch | HRc <48 | P M K S

Additional coatings available upon request

- Sinusoidal ground profile enables maximum metal removal rates
- Provides outstanding heat resistance and minimum tool wear
- Effective on all medium hardness Ferrous Materials

SERIES: CRMG

DIA D_1	SHK D_2	LOC L_2	OAL L_1	LENGTH	FLUTES	PART NAME	BRIGHT EDP	ALTIN EDP
3/16	3/16	5/8	2	std	4	CRMG-606	10276	50276
1/4	1/4	3/4	2-1/2	std	4	CRMG-808	15960	55960
1/4	1/4	1-1/8	3	long	4	CRMG-808-L	13751	53751
5/16	5/16	13/16	2-1/2	std	4	CRMG-1010	15961	55961
3/8	3/8	1/2	2	stub	4	CRMGS-1212	14205	54205
3/8	3/8	1	2-1/2	std	4	CRMG-1212	15962	55962
3/8	3/8	1-1/8	3	long	4	CRMG-1212-L	10234	50234
1/2	1/2	5/8	2-1/2	stub	4	CRMGS-1616	14201	54201
1/2	1/2	1-1/4	3	std	4	CRMG-1616	15963	55963
1/2	1/2	2	4	long	4	CRMG-1616-L	13750	53750
5/8	5/8	1-1/4	3-1/2	std	4	CRMG-2020	15964	55964
5/8	5/8	2-1/4	5	long	4	CRMG-2020-L	15725	55725
3/4	3/4	3/4	3	stub	4	CRMGS-2424	14203	54203
3/4	3/4	1-1/2	4	std	4	CRMG-2424	15965	55965
3/4	3/4	2-1/4	5	long	4	CRMG-2424-L	15727	55727
1	1	1-1/2	4	std	5	CRMG-3232	15966	55966
1	1	2-1/4	5	long	5	CRMG-3232-L	13960	53960

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MULTI FLUTE • FINE PROFILE ROUGHING END MILL

Carbide | 4 | 5 | Center Cutting | 20° | Bright AlTiN | +.000mm -.100mm | Chamfer | Fine Pitch | HRc <48 | P M K S

Additional coatings available upon request

SERIES: CRMG-M_M_

DIA D_1	SHK D_2	LOC L_2	OAL L_1	LENGTH	FLUTES	PART NAME	BRIGHT EDP	ALTIN EDP
4mm	4mm	14mm	50mm	std	4	CRMG-M4M4	14841	54841
6mm	6mm	20mm	63mm	std	4	CRMG-M6M6	13427	53427
8mm	8mm	20mm	63mm	std	4	CRMG-M8M8	13428	53428
10mm	10mm	25mm	70mm	std	4	CRMG-M10M10	13429	53429
12mm	12mm	25mm	76mm	std	4	CRMG-M12M12	13430	53430
14mm	14mm	32mm	89mm	std	4	CRMG-M14M14	13431	53431
16mm	16mm	32mm	89mm	std	4	CRMG-M16M16	13432	53432
18mm	18mm	38mm	100mm	std	4	CRMG-M18M18	13433	53433
20mm	20mm	38mm	100mm	std	4	CRMG-M20M20	13434	53434
25mm	25mm	38mm	100mm	std	5	CRMG-M25M25	13435	53435

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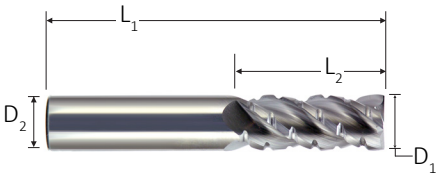

MULTI FLUTE • ROUGHER FINISHER

Carbide | 4 | 5 | Center Cutting | 40° | Bright ALTiN | +.000 -.002 | Radius | Rough/Finish | HRc <48 | P M K S

Additional coatings available upon request

- A single tool for roughing and semi-finishing in a single pass
- Truncated, ground profile enables optimum chip evacuation
- Enables heavy cutting while still leaving good finishes

SERIES: CRFMG

DIA D_1	SHK D_2	LOC L_2	OAL L_1	CORNER	FLUTES	PART NAME	BRIGHT EDP	ALTIN EDP
3/16	3/16	5/8	2	.0225	4	CRFMG-606	10280	50280
1/4	1/4	3/4	2-1/2	.0225	4	CRFMG-808	13477	53477
1/4	1/4	1	3	.0225	4	CRFMG-808-L	15832	55832
5/16	5/16	13/16	2-1/2	.0225	4	CRFMG-1010	13478	53478
3/8	3/8	1	2-1/2	.0225	4	CRFMG-1212	13479	53479
3/8	3/8	1-1/4	3	.0225	4	CRFMG-1212-L	15834	55834
1/2	1/2	1-1/4	3	.0225	4	CRFMG-1616	13480	53480
1/2	1/2	1-5/8	4	.0225	4	CRFMG-1616-M	15836	55836
5/8	5/8	1-1/4	3-1/2	.0325	4	CRFMG-2020	13481	53481
5/8	5/8	1-5/8	4	.0325	4	CRFMG-2020-M	15838	55838
3/4	3/4	1-1/2	4	.0325	4	CRFMG-2424	13482	53482
3/4	3/4	2-1/4	5	.0325	4	CRFMG-2424-L	15802	55802
1	1	1-1/2	4	.0325	5	CRFMG-3232	13483	53483

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4 FLUTE • ROUGHER FINISHER

Carbide | 4 | Center Cutting | 40° | Bright ALTiN | +.000mm -.050mm | Radius | Rough/Finish | HRc <48 | P M K S

Additional coatings available upon request

SERIES: CRFMG-M_M_

DIA D_1	SHK D_2	LOC L_2	OAL L_1	CORNER	PART NAME	BRIGHT EDP	ALTIN EDP
6mm	6mm	20mm	63mm	0.50mm	CRFMG-M6M6	13436	53436
8mm	8mm	20mm	63mm	0.50mm	CRFMG-M8M8	13437	53437
10mm	10mm	25mm	70mm	0.50mm	CRFMG-M10M10	13438	53438
12mm	12mm	25mm	76mm	0.50mm	CRFMG-M12M12	13439	53439
14mm	14mm	32mm	89mm	0.75mm	CRFMG-M14M14	13440	53440
16mm	16mm	32mm	89mm	0.75mm	CRFMG-M16M16	13441	53441
20mm	20mm	38mm	100mm	0.75mm	CRFMG-M20M20	13443	53443

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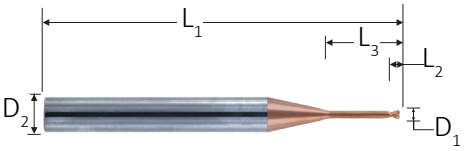
2 FLUTE • CORNER RADIUS FOR MULTI AXIS MACHINING



Carbide | 2 | Center Cutting | 30° | TiXCo nACo | +.0004 -.0004 <1/4 | +.000 -.001 =1/4 | Radius | HRc TiXCo > 56 | HRc nACo < 56 | P M H

- Designed for use with multi axis machines on die & mold steels
- Short Flute and reinforced core provide added strength
- Proprietary coatings provide extended tool life over conventional coatings
- Shank tolerance is h5

SERIES: HMG1-__-SF-R____

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	PART NAME	TiXCo EDP	nACo EDP
0.0313 *(1/32)*	1/4	0.025	0.093	2-1/2	.005	HMG1-.031-SF3-R005	H7114	H6789
0.0313 *(1/32)*	1/4	0.025	0.156	2-1/2	.005	HMG1-.031-SF5-R005	H7115	H6790
0.0313 *(1/32)*	1/4	0.025	0.250	2-1/2	.005	HMG1-.031-SF8-R005	H7116	H6791
0.0313 *(1/32)*	1/4	0.025	0.375	2-1/2	.005	HMG1-.031-SF12-R005	H7177	H7184
0.0394 *(1mm)*	1/4	0.031	0.117	2-1/2	.005	HMG1-.039-SF3-R005	H7117	H6792
0.0394 *(1mm)*	1/4	0.031	0.203	2-1/2	.005	HMG1-.039-SF5-R005	H7118	H6793
0.0394 *(1mm)*	1/4	0.031	0.312	2-1/2	.005	HMG1-.039-SF8-R005	H7119	H6794
0.0469 *(3/64)*	1/4	0.038	0.141	2-1/2	.008	HMG1-.047-SF3-R008	H7120	H6795
0.0469 *(3/64)*	1/4	0.038	0.250	2-1/2	.008	HMG1-.047-SF5-R008	H7121	H6796
0.0469 *(3/64)*	1/4	0.038	0.375	2-1/2	.008	HMG1-.047-SF8-R008	H7122	H6797
0.0469 *(3/64)*	1/4	0.038	0.564	2-1/2	.008	HMG1-.047-SF12-R008	H7178	H7185
0.0625 *(1/16)*	1/4	0.050	0.187	2-1/2	.010	HMG1-.062-SF3-R010	H7123	H6798
0.0625 *(1/16)*	1/4	0.050	0.312	2-1/2	.010	HMG1-.062-SF5-R010	H7124	H6799
0.0625 *(1/16)*	1/4	0.050	0.500	2-1/2	.010	HMG1-.062-SF8-R010	H7125	H6801
0.0625 *(1/16)*	1/4	0.050	0.750	3	.010	HMG1-.062-SF12-R010	H7179	H7186
0.0781 *(5/64)*	1/4	0.062	0.234	2-1/2	.010	HMG1-.078-SF3-R010	H7126	H6803
0.0781 *(5/64)*	1/4	0.062	0.406	2-1/2	.010	HMG1-.078-SF5-R010	H7127	H6804
0.0781 *(5/64)*	1/4	0.062	0.625	2-1/2	.010	HMG1-.078-SF8-R010	H7128	H6805
0.0938 *(3/32)*	1/4	0.074	0.281	2-1/2	.015	HMG1-.093-SF3-R015	H7129	H6806
0.0938 *(3/32)*	1/4	0.074	0.500	2-1/2	.015	HMG1-.093-SF5-R015	H7130	H6807
0.0938 *(3/32)*	1/4	0.074	0.750	2-1/2	.015	HMG1-.093-SF8-R015	H7131	H6808
0.0938 *(3/32)*	1/4	0.074	0.750	3	.015	HMG1-.093-SF12-R015	H7303	H7304
0.1250 *(1/8)*	1/4	0.100	0.375	2-1/2	.015	HMG1-.125-SF3-R015	H7132	H6809
0.1250 *(1/8)*	1/4	0.100	0.625	2-1/2	.015	HMG1-.125-SF5-R015	H7133	H6810
0.1250 *(1/8)*	1/4	0.100	1.000	2-1/2	.015	HMG1-.125-SF8-R015	H7134	H6811
0.1875 *(3/16)*	1/4	0.150	0.570	2-1/2	.015	HMG1-.187-SF3-R015	H7135	H6812
0.1875 *(3/16)*	1/4	0.150	1.000	2-1/2	.015	HMG1-.187-SF5-R015	H7136	H6813
0.2500 *(1/4)*	1/4	0.200	0.750	2-1/2	.015	HMG1-.250-SF3-R015	H7137	H6814
0.2500 *(1/4)*	1/4	0.200	1.250	2-1/2	.015	HMG1-.250-SF5-R015	H7138	H6815

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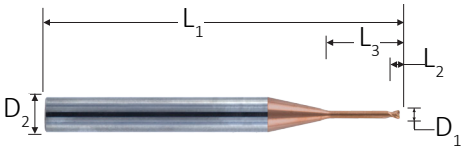
CORNER RADIUS



2 FLUTE • CORNER RADIUS FOR MULTI AXIS MACHINING

Carbide | 2 | Center Cutting | 30° | TiXCo nACo | +.01mm -.01mm | +.000mm -.025mm =6mm | Radius | HRc TiXCo > 56 | HRc nACo < 56 | P M H

- Designed for use with multi axis machines on die & mold steels
- Short Flute and reinforced core provide added strength
- Proprietary coatings provide extended tool life over conventional coatings
- Shank tolerance is h5

SERIES: HMG1-M__-SF-R___

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	PART NAME	TiXCo EDP	nACo EDP
0.5mm	4mm	0.35mm	1.5mm	50mm	0.1mm	HMG1-M0.5-SF3-R0.1	H7246	H7252
0.5mm	4mm	0.35mm	2.5mm	50mm	0.1mm	HMG1-M0.5-SF5-R0.1	H7247	H7253
0.5mm	4mm	0.35mm	6mm	50mm	0.1mm	HMG1-M0.5-SF12-R0.1	H7248	H7254
0.6mm	4mm	0.4mm	1.8mm	50mm	0.1mm	HMG1-M0.6-SF3-R0.1	H7139	H7018
0.6mm	4mm	0.4mm	3mm	50mm	0.1mm	HMG1-M0.6-SF5-R0.1	H7140	H7019
0.6mm	4mm	0.4mm	4.8mm	50mm	0.1mm	HMG1-M0.6-SF8-R0.1	H7141	H7020
0.6mm	4mm	0.4mm	7.2mm	50mm	0.1mm	HMG1-M0.6-SF12-R0.1	H7142	H7021
0.8mm	4mm	0.5mm	2.4mm	50mm	0.1mm	HMG1-M0.8-SF3-R0.1	H7249	H7255
0.8mm	4mm	0.5mm	4mm	50mm	0.1mm	HMG1-M0.8-SF5-R0.1	H7250	H7256
0.8mm	4mm	0.5mm	9.6mm	50mm	0.1mm	HMG1-M0.8-SF12-R0.1	H7251	H7257
1mm	4mm	0.8mm	3mm	50mm	0.2mm	HMG1-M1-SF3-R0.2	H7143	H7022
1mm	4mm	0.8mm	5mm	50mm	0.2mm	HMG1-M1-SF5-R0.2	H7144	H7023
1mm	4mm	0.8mm	8mm	50mm	0.2mm	HMG1-M1-SF8-R0.2	H7145	H7024
1mm	4mm	0.8mm	12mm	63mm	0.2mm	HMG1-M1-SF12-R0.2	H7146	H7025
1.5mm	4mm	1.35mm	4.5mm	50mm	0.2mm	HMG1-M1.5-SF3-R0.2	H7147	H7026
1.5mm	4mm	1.35mm	7.5mm	50mm	0.2mm	HMG1-M1.5-SF5-R0.2	H7148	H7027
1.5mm	4mm	1.35mm	12mm	63mm	0.2mm	HMG1-M1.5-SF8-R0.2	H7149	H7028
1.5mm	4mm	1.35mm	18mm	63mm	0.2mm	HMG1-M1.5-SF12-R0.2	H7150	H7029
2mm	4mm	1.7mm	6mm	50mm	0.3mm	HMG1-M2-SF3-R0.3	H7151	H7030
2mm	4mm	1.7mm	10mm	50mm	0.3mm	HMG1-M2-SF5-R0.3	H7152	H7031
2mm	4mm	1.7mm	16mm	63mm	0.3mm	HMG1-M2-SF8-R0.3	H7153	H7032
2mm	4mm	1.7mm	24mm	63mm	0.3mm	HMG1-M2-SF12-R0.3	H7154	H7033
2.5mm	4mm	2mm	7.5mm	50mm	0.5mm	HMG1-M2.5-SF3-R0.5	H7155	H7034
2.5mm	4mm	2mm	12.5mm	63mm	0.5mm	HMG1-M2.5-SF5-R0.5	H7156	H7035
2.5mm	4mm	2mm	20mm	63mm	0.5mm	HMG1-M2.5-SF8-R0.5	H7157	H7036
2.5mm	4mm	2mm	30mm	63mm	0.5mm	HMG1-M2.5-SF12-R0.5	H7158	H7037
3mm	6mm	2.5mm	9mm	63mm	0.5mm	HMG1-M3-SF3-R0.5	H7159	H7038
3mm	6mm	2.5mm	15mm	63mm	0.5mm	HMG1-M3-SF5-R0.5	H7160	H7039
3mm	6mm	2.5mm	24mm	75mm	0.5mm	HMG1-M3-SF8-R0.5	H7161	H7040
4mm	6mm	3mm	12mm	63mm	0.5mm	HMG1-M4-SF3-R0.5	H7162	H7041
4mm	6mm	3mm	20mm	63mm	0.5mm	HMG1-M4-SF5-R0.5	H7163	H7042
4mm	6mm	3mm	32mm	75mm	0.5mm	HMG1-M4-SF8-R0.5	H7164	H7043
6mm	6mm	5mm	18mm	63mm	0.5mm	HMG1-M6-SF3-R0.5	H7165	H7044
6mm	6mm	5mm	30mm	75mm	0.5mm	HMG1-M6-SF5-R0.5	H7166	H7045

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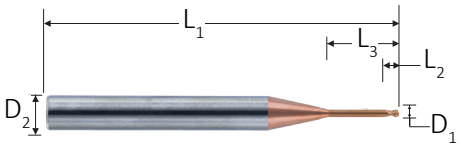
CORNER RADIUS

2 FLUTE • BALL NOSE FOR Z-AXIS MACHINING



Carbide | 2 | Center Cutting | 30° | TiXCo nACo | +.0004 -.0004 <1/4 | +.000 -.001 =1/4 | Ball | HRc TiXCo > 56 | HRc nACo < 56 | P M H

- Designed for use with multi axis machines on die & mold steels
- Short Flute and reinforced core provide added strength
- Proprietary coatings provide extended tool life over conventional coatings
- Shank tolerance is h5

SERIES: HMG1-__-SF-B

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	PART NAME	TiXCo EDP	nACo EDP
0.0156 *(1/64)*	1/4	0.012	0.047	2-1/2	HMG1-.015-SF3-B	H6845	H6747
0.0156 *(1/64)*	1/4	0.012	0.078	2-1/2	HMG1-.015-SF5-B	H6846	H6748
0.0156 *(1/64)*	1/4	0.012	0.187	2-1/2	HMG1-.015-SF8-B	H7180	H7187
0.0200	1/4	0.016	0.062	2-1/2	HMG1-.020-SF3-B	H6847	H6749
0.0200	1/4	0.016	0.100	2-1/2	HMG1-.020-SF5-B	H6848	H6750
0.0313 *(1/32)*	1/4	0.025	0.093	2-1/2	HMG1-.031-SF3-B	H6849	H6751
0.0313 *(1/32)*	1/4	0.025	0.156	2-1/2	HMG1-.031-SF5-B	H6851	H6752
0.0313 *(1/32)*	1/4	0.025	0.250	2-1/2	HMG1-.031-SF8-B	H6853	H6753
0.0313 *(1/32)*	1/4	0.025	0.375	2-1/2	HMG1-.031-SF12-B	H7181	H7188
0.0394 *(1mm)*	1/4	0.031	0.117	2-1/2	HMG1-.039-SF3-B	H6855	H6754
0.0394 *(1mm)*	1/4	0.031	0.203	2-1/2	HMG1-.039-SF5-B	H6856	H6755
0.0394 *(1mm)*	1/4	0.031	0.312	2-1/2	HMG1-.039-SF8-B	H6857	H6756
0.0469 *(3/64)*	1/4	0.038	0.141	2-1/2	HMG1-.047-SF3-B	H6858	H6757
0.0469 *(3/64)*	1/4	0.038	0.250	2-1/2	HMG1-.047-SF5-B	H6859	H6759
0.0469 *(3/64)*	1/4	0.038	0.375	2-1/2	HMG1-.047-SF8-B	H6860	H6760
0.0469 *(3/64)*	1/4	0.038	0..564	2-1/2	HMG1-.047-SF12-B	H7182	H7189
0.0625 *(1/16)*	1/4	0.050	0.187	2-1/2	HMG1-.062-SF3-B	H6861	H6761
0.0625 *(1/16)*	1/4	0.050	0.312	2-1/2	HMG1-.062-SF5-B	H7175	H6762
0.0625 *(1/16)*	1/4	0.050	0.500	2-1/2	HMG1-.062-SF8-B	H7176	H6763
0.0625 *(1/16)*	1/4	0.050	0.750	3	HMG1-.062-SF12-B	H7183	H7190
0.0781 *(5/64)*	1/4	0.062	0.234	2-1/2	HMG1-.078-SF3-B	H6986	H6778
0.0781 *(5/64)*	1/4	0.062	0.406	2-1/2	HMG1-.078-SF5-B	H6987	H6779
0.0781 *(5/64)*	1/4	0.062	0.625	2-1/2	HMG1-.078-SF8-B	H6988	H6780
0.0938 *(3/32)*	1/4	0.074	0.281	2-1/2	HMG1-.093-SF3-B	H6989	H6781
0.0938 *(3/32)*	1/4	0.074	0.500	2-1/2	HMG1-.093-SF5-B	H7046	H6782
0.0938 *(3/32)*	1/4	0.074	0.750	2-1/2	HMG1-.093-SF8-B	H7047	H6783
0.0938 *(3/32)*	1/4	0.074	0.750	3	HMG1-.093-SF12-B	H7305	H7306
0.1181 *(3mm)*	1/4	0.094	0.354	2-1/2	HMG1-.118-SF3-B	H7048	H6784
0.1181 *(3mm)*	1/4	0.094	0.625	2-1/2	HMG1-.118-SF5-B	H7049	H6785
0.1250 *(1/8)*	1/4	0.100	0.375	2-1/2	HMG1-.125-SF3-B	H7050	H6786
0.1250 *(1/8)*	1/4	0.100	0.625	2-1/2	HMG1-.125-SF5-B	H7051	H6787
0.1250 *(1/8)*	1/4	0.100	1.000	2-1/2	HMG1-.125-SF8-B	H7052	H6788
0.1875 *(3/16)*	1/4	0.150	0.570	2-1/2	HMG1-.187-SF3-B	H7272	H7276
0.1875 *(3/16)*	1/4	0.150	1.000	2-1/2	HMG1-.187-SF5-B	H7273	H7277
0.2500 *(1/4)*	1/4	0.200	0.750	2-1/2	HMG1-.250-SF3-B	H7274	H7278
0.2500 *(1/4)*	1/4	0.200	1.250	2-1/2	HMG1-.250-SF5-B	H7275	H7279

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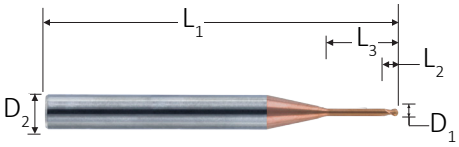
BALL NOSE



2 FLUTE • BALL NOSE FOR Z-AXIS MACHINING

Carbide | 2 | Center Cutting | 30° | TiXCo nACo | +.01mm -.01mm | +.000mm -.025mm =6mm | Ball | HRc TiXCo > 56 | HRc nACo < 56 | P M H

- Designed for use with multi axis machines on die & mold steels
- Short Flute and reinforced core provide added strength
- Proprietary coatings provide extended tool life over conventional coatings
- Shank tolerance is h5

SERIES: HMG1-M__-SF-B

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	PART NAME	TiXCo EDP	nACo EDP
0.5mm	4mm	0.35mm	1.5mm	50mm	HMG1-M0.5-SF3-B	H7234	H7240
0.5mm	4mm	0.35mm	2.5mm	50mm	HMG1-M0.5-SF5-B	H7235	H7241
0.5mm	4mm	0.35mm	6mm	50mm	HMG1-M0.5-SF12-B	H7236	H7242
0.6mm	4mm	0.4mm	1.8mm	50mm	HMG1-M0.6-SF3-B	H7053	H6990
0.6mm	4mm	0.4mm	3mm	50mm	HMG1-M0.6-SF5-B	H7054	H6991
0.6mm	4mm	0.4mm	4.8mm	50mm	HMG1-M0.6-SF8-B	H7055	H6992
0.6mm	4mm	0.4mm	7.2mm	50mm	HMG1-M0.6-SF12-B	H7056	H6993
0.8mm	4mm	0.5mm	2.4mm	50mm	HMG1-M0.8-SF3-B	H7237	H7243
0.8mm	4mm	0.5mm	4mm	50mm	HMG1-M0.8-SF5-B	H7238	H7244
0.8mm	4mm	0.5mm	9.6mm	50mm	HMG1-M0.8-SF12-B	H7236	H7245
1mm	4mm	0.8mm	3mm	50mm	HMG1-M1-SF3-B	H7057	H6994
1mm	4mm	0.8mm	5mm	50mm	HMG1-M1-SF5-B	H7058	H6995
1mm	4mm	0.8mm	8mm	50mm	HMG1-M1-SF8-B	H7059	H6996
1mm	4mm	0.8mm	12mm	63mm	HMG1-M1-SF12-B	H7093	H6997
1.5mm	4mm	1.35mm	4.5mm	50mm	HMG1-M1.5-SF3-B	H7094	H6998
1.5mm	4mm	1.35mm	7.5mm	50mm	HMG1-M1.5-SF5-B	H7095	H6999
1.5mm	4mm	1.35mm	12mm	63mm	HMG1-M1.5-SF8-B	H7096	H7000
1.5mm	4mm	1.35mm	18mm	63mm	HMG1-M1.5-SF12-B	H7097	H7001
2mm	4mm	1.7mm	6mm	50mm	HMG1-M2-SF3-B	H7098	H7002
2mm	4mm	1.7mm	10mm	50mm	HMG1-M2-SF5-B	H7099	H7003
2mm	4mm	1.7mm	16mm	63mm	HMG1-M2-SF8-B	H7100	H7004
2mm	4mm	1.7mm	24mm	63mm	HMG1-M2-SF12-B	H7101	H7005
2.5mm	4mm	2mm	7.5mm	50mm	HMG1-M2.5-SF3-B	H7102	H7006
2.5mm	4mm	2mm	12.5mm	63mm	HMG1-M2.5-SF5-B	H7103	H7007
2.5mm	4mm	2mm	20mm	63mm	HMG1-M2.5-SF8-B	H7104	H7008
2.5mm	4mm	2mm	30mm	63mm	HMG1-M2.5-SF12-B	H7105	H7009
3mm	6mm	2.5mm	9mm	63mm	HMG1-M3-SF3-B	H7106	H7010
3mm	6mm	2.5mm	15mm	63mm	HMG1-M3-SF5-B	H7107	H7011
3mm	6mm	2.5mm	24mm	75mm	HMG1-M3-SF8-B	H7108	H7012
4mm	6mm	3mm	12mm	63mm	HMG1-M4-SF3-B	H7109	H7013
4mm	6mm	3mm	20mm	63mm	HMG1-M4-SF5-B	H7110	H7014
4mm	6mm	3mm	32mm	75mm	HMG1-M4-SF8-B	H7111	H7015
5mm	6mm	4mm	15mm	63mm	HMG1-M5-SF3-B	H7173	H7171
5mm	6mm	4mm	25mm	75mm	HMG1-M5-SF5-B	H7174	H7172
6mm	6mm	5mm	18mm	63mm	HMG1-M6-SF3-B	H7112	H7016
6mm	6mm	5mm	30mm	75mm	HMG1-M6-SF5-B	H7113	H7017

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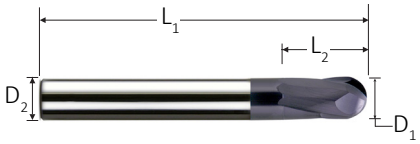
BALL NOSE

2 Fl • Ball Nose for Hard Milling in Die & Mold Applications

Carbide	2	Center Cutting	15°	nACo	+.0005 -.0005 <1/8	+.000 -.002 ≥1/8	Ball				HRc >56	P M H

- Designed for use with multi axis machines on hardened materials
- Short Flute and reinforced core provide added strength
- Proprietary nACo coating provides extended tool life over conventional coatings



Series: HMG-__-B

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	PART NAME	nACo EDP
1/32	1/8	1/32	1/16	3	HMG-401-B	13484
1/16	1/8	1/16	1/8	3	HMG-402-B	13485
3/32	1/8	3/32	3/16	3	HMG-403-B	13486
1/8	1/8	1/8	1/4	1-1/2	HMGS-404-B	H6672
1/8	1/8	1/8	1/4	3	HMG-404-B	13136
3/16	3/16	3/16	3/8	2	HMGS-606-B	H6673
3/16	3/16	3/16	3/8	3	HMG-606-B	13137
1/4	1/4	1/4	1/2	2-1/2	HMGS-808-B	H6674
1/4	1/4	1/4	1/2	3	HMG-808-B	13138
5/16	5/16	5/16	5/8	3	HMG-1010-B	13139
3/8	3/8	3/8	3/4	2-1/2	HMGS-1212-B	H6676
3/8	3/8	3/8	3/4	4	HMG-1212-B	13140
1/2	1/2	1/2	1	3	HMGS-1616-B	H6677
1/2	1/2	1/2	1	4	HMG-1616-B	13141

Speed & Feed: page 160

2 Fl • Ball Nose for Hard Milling in Die & Mold Applications

Carbide	2	Center Cutting	15°	nACo	+.013 -.013mm ≥3mm	+.000 -.050mm <3mm	Ball				HRc >56	P M H

- Designed for use with multi axis machines on hardened materials
- Short Flute and reinforced core provide added strength
- Proprietary nACo coating provides extended tool life over conventional coatings

Series: HMG-M_M_-B

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	LENGTH	PART NAME	nACo EDP
1mm	3mm	1mm	2mm	75mm	std	HMG-M3M1-B	13455
2mm	3mm	2mm	4mm	75mm	std	HMG-M3M2-B	13456
3mm	3mm	3mm	6mm	75mm	std	HMG-M3M3-B	13457
4mm	4mm	4mm	8mm	75mm	std	HMG-M4M4-B	13458
6mm	6mm	6mm	12mm	89mm	std	HMG-M6M6-B	13459
8mm	8mm	8mm	16mm	100mm	std	HMG-M8M8-B	13460
10mm	10mm	10mm	20mm	100mm	std	HMG-M10M10-B	13461
12mm	12mm	12mm	24mm	100mm	std	HMG-M12M12-B	13462

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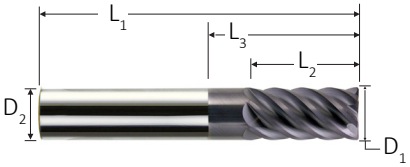

6 Flute • 45° profiling end mill

Carbide | 6 | Center Cutting | 45° | nACo | +.000 -.002 | Radius | HRc >56 | P M H

- Designed for machining at high metal removal rates in light to medium finishing applications
- Maximized core diameter provides exceptional rigidity and strength
- Proprietary nACo coating provides extended tool life over conventional coatings

Series: CCMG45

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	LENGTH	PART NAME	nACo EDP
1/8	1/8	1/4	1/2	1-1/2	.010	stub	CCMG45-404-S	H6840
1/8	1/8	1/2		1-1/2	.010	std	CCMG45-404	16794
3/16	3/16	5/8		2	.010	std	CCMG45-606	16786
1/4	1/4	3/8	3/4	2-1/2	.015	stub	CCMG45-808-S	H6841
1/4	1/4	3/4		2-1/2	.015	std	CCMG45-808	16787
5/16	5/16	13/16		2-1/2	.020	std	CCMG45-1010	16788
3/8	3/8	1/2	1	2-1/2	.020	stub	CCMG45-1212-S	H6842
3/8	3/8	1		2-1/2	.020	std	CCMG45-1212	16789
1/2	1/2	5/8	1	3	.025	stub	CCMG45-1616-S	H6843
1/2	1/2	1		3	.025	std	CCMG45-1616	16790
5/8	5/8	1-1/4		3-1/2	.030	std	CCMG45-2020	16791
3/4	3/4	1	1-1/2	4	.035	stub	CCMG45-2424-S	H6844
3/4	3/4	1-1/2		4	.035	std	CCMG45-2424	16792
1	1	1-1/2		4	.035	std	CCMG45-3232	16793

Speed & Feed: page 160

6 Flute • 45° profiling end mill

Carbide | 6 | Center Cutting | 45° | nACo | +.000mm -.050mm | Radius | HRc >56 | P M H

Series: CCMG45-M_M_

DIA D_1	SHK D_2	LOC L_2	OAL L_1	CORNER	LENGTH	PART NAME	nACo EDP
3mm	3mm	12mm	38mm	0.25mm	std	CCMG45-M3M3	13445
4mm	4mm	14mm	51mm	0.25mm	std	CCMG45-M4M4	13446
6mm	6mm	20mm	63mm	0.40mm	std	CCMG45-M6M6	13447
8mm	8mm	20mm	63mm	0.50mm	std	CCMG45-M8M8	13448
10mm	10mm	25mm	70mm	0.50mm	std	CCMG45-M10M10	13449
12mm	12mm	25mm	76mm	0.60mm	std	CCMG45-M12M12	13450
16mm	16mm	32mm	89mm	0.75mm	std	CCMG45-M16M16	13452
20mm	20mm	38mm	100mm	0.90mm	std	CCMG45-M20M20	13454

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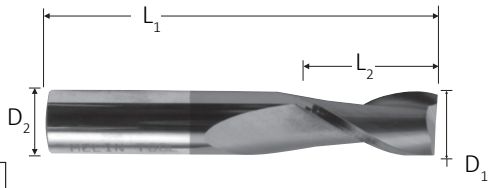
2 FLUTE • CVD DIAMOND COATING



Carbide | 2 | Center Cutting | 30° | CVD Diamond | Square | +.0005 -.0005 <1/8 | +.000 -.002 ≥1/8 | N

- For optimum productivity in machining Graphite, Hi Silicon Aluminum & Composite Materials
- Ideal for slotting, pocketing, Z-axis machining and taking heavy radial depth of cuts
- Special carbide substrate with 6% cobalt binder enables proper adhesion of coating
- Up to 20 micron thickness of pure crystalline diamond structure provides maximum tool life

SERIES: AMG-__-DIA

DIA D_1	SHK D_2	LOC L_2	OAL L_1	PART NAME	DIAMOND EDP
1/32	1/8	3/32	1-1/2	AMG-401-DIA	10093
1/16	1/8	3/16	1-1/2	AMG-402-DIA	10095
3/32	1/8	3/8	1-1/2	AMG-403-DIA	10097
1/8	1/8	1/2	1-1/2	AMG-404-DIA	10099
3/16	3/16	5/8	2	AMG-606-DIA	10101
1/4	1/4	3/4	2-1/2	AMG-808-DIA	10103
5/16	5/16	13/16	2-1/2	AMG-1010-DIA	10105
3/8	3/8	1	2-1/2	AMG-1212-DIA	10107

Speed & Feed: page 161

2 FLUTE • BALL NOSE CVD DIAMOND COATING

Carbide | 2 | Center Cutting | 30° | CVD Diamond | Ball | +.0005 -.0005 <1/8 | +.000 -.002 ≥1/8 | N

SERIES: AMG-__-B-DIA

DIA D_1	SHK D_2	LOC L_2	OAL L_1	PART NAME	DIAMOND EDP
1/32	1/8	3/32	1-1/2	AMG-401-B-DIA	10109
1/16	1/8	3/16	1-1/2	AMG-402-B-DIA	10111
3/32	1/8	3/8	1-1/2	AMG-403-B-DIA	10113
1/8	1/8	1/2	1-1/2	AMG-404-B-DIA	10115
3/16	3/16	5/8	2	AMG-606-B-DIA	10117
1/4	1/4	3/4	2-1/2	AMG-808-B-DIA	10119
5/16	5/16	13/16	2-1/2	AMG-1010-B-DIA	10121
3/8	3/8	1	2-1/2	AMG-1212-B-DIA	10123

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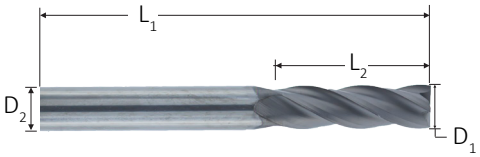


4 Flute • CVD Diamond Coating

Carbide | 4 | Center Cutting | 30° | CVD Diamond | Square | +.0005 -.0005 <1/8 | +.000 -.002 ≥1/8 | N

Series: CCMG-__-DIA

DIA D_1	SHK D_2	LOC L_2	OAL L_1	PART NAME	DIAMOND EDP
0.015	1/8	.045	1-1/2	CCMG-.015-DIA	H6678
0.02	1/8	.060	1-1/2	CCMG-.020-DIA	H6679
1/32	1/8	3/32	1-1/2	CCMG-401-DIA	10061
0.04	1/8	.120	1-1/2	CCMG-.040-DIA	H6680
0.047	1/8	.141	1-1/2	CCMG-.047-DIA	H6681
0.05	1/8	.150	1-1/2	CCMG-.050-DIA	H6682
0.06	1/8	.180	1-1/2	CCMG-.060-DIA	H6683
1/16	1/8	3/16	1-1/2	CCMG-402-DIA	10063
0.078	1/8	.234	1-1/2	CCMG-.078-DIA	H6684
3/32	1/8	3/8	1-1/2	CCMG-403-DIA	10065
0.10	1/8	.300	1-1/2	CCMG-.100-DIA	H6685
1/8	1/8	1/2	1-1/2	CCMG-404-DIA	10067
0.156	3/16	.470	2	CCMG-.156-DIA	H6686
3/16	3/16	5/8	2	CCMG-606-DIA	10069
1/4	1/4	3/4	2-1/2	CCMG-808-DIA	10071
5/16	5/16	13/16	2-1/2	CCMG-1010-DIA	10073
3/8	3/8	1	2-1/2	CCMG-1212-DIA	10075
1/2	1/2	1	3	CCMG-1616-DIA	14594

Speed & Feed: page 161

- For optimum productivity in machining Graphite, High Silicon Aluminum & Composite Materials
- Ideal for finishing applications and long axial depths of cut
- Special carbide substrate with 6% cobalt binder enables proper adhesion of coating
- Up to 20 micron thickness of pure crystalline diamond structure provides maximum tool life

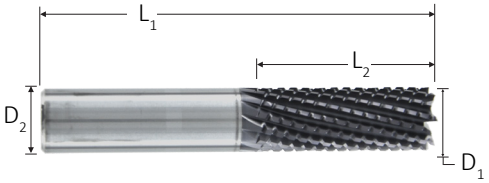
4 Flute • Ball Nose CVD Diamond Coating

Carbide | 4 | Center Cutting | 30° | CVD Diamond | Ball | +.0005 -.0005 <1/8 | +.000 -.002 ≥1/8 | N

Series: CCMG-__-B-DIA

DIA D_1	SHK D_2	LOC L_2	OAL L_1	PART NAME	DIAMOND EDP
.015	1/8	.045	1-1/2	CCMG-.015-B-DIA	H6687
.020	1/8	.060	1-1/2	CCMG-.020-B-DIA	H6688
1/32	1/8	3/32	1-1/2	CCMG-401-B-DIA	10077
.040	1/8	.120	1-1/2	CCMG-.040-B-DIA	H6689
.047	1/8	.141	1-1/2	CCMG-.047-B-DIA	H6690
.050	1/8	.150	1-1/2	CCMG-.050-B-DIA	H6691
.060	1/8	.180	1-1/2	CCMG-.060-B-DIA	H6692
1/16	1/8	3/16	1-1/2	CCMG-402-B-DIA	10079
.078	1/8	.234	1-1/2	CCMG-.078-B-DIA	H6693
3/32	1/8	3/8	1-1/2	CCMG-403-B-DIA	10081
.100	1/8	.300	1-1/2	CCMG-.100-B-DIA	H6694
1/8	1/8	1/2	1-1/2	CCMG-404-B-DIA	10083
.156	3/16	.470	2	CCMG-.156-B-DIA	H6695
3/16	3/16	5/8	2	CCMG-606-B-DIA	10085
1/4	1/4	3/4	2-1/2	CCMG-808-B-DIA	10087
5/16	5/16	13/16	2-1/2	CCMG-1010-B-DIA	10089
3/8	3/8	1	2-1/2	CCMG-1212-B-DIA	10091

Speed & Feed: page 161



Multi Flute • Composite Router for Carbon Fiber

Carbide | MULTI FLUTES | Non - Center Cutting | 15° | Diamond DLC | Square | +.000 -.002 | Rough/Finish | N

- Designed for high productivity results in machining CRFP composite materials
- Eliminates fiber breakout and delamination
- Provides improved edge finishes
- Ideal for work on airplane skins and other honeycomb work pieces

Series: CRMGD

DIA D_1	SHK D_2	LOC L_2	OAL L_1	FLUTES	PART NAME	DIAMOND EDP	DLC EDP
1/8	1/8	1/4	1-1/2	6	CRMGD-404-S	H6963	H7280
1/8	1/8	1/2	1-1/2	6	CRMGD-404	H6964	H7281
3/16	3/16	3/8	2	8	CRMGD-606-S	H6965	H7282
3/16	3/16	3/4	2	8	CRMGD-606	H6966	H7283
1/4	1/4	1/2	2-1/2	10	CRMGD-808-S	H6967	H7284
1/4	1/4	3/4	2-1/2	10	CRMGD-808	H6968	H7285
1/4	1/4	1	3	10	CRMGD-808-L	H6969	H7286
5/16	5/16	1	2-1/2	10	CRMGD-1010	H6970	H7287
3/8	3/8	3/4	2-1/2	12	CRMGD-1212	H6971	H7288
3/8	3/8	1-1/8	3	12	CRMGD-1212-L	H6972	H7289
1/2	1/2	1	3	14	CRMGD-1616	H6973	H7290
1/2	1/2	2	4	14	CRMGD-1616-L	H6974	H7291

Speed & Feed: page 161

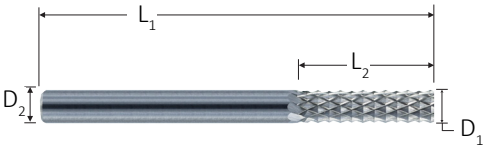
Multi Flute • Composite Router for Carbon Fiber

Carbide | MULTI FLUTES | Non - Center Cutting | 15° | Diamond DLC | Square | +.000mm -.050mm | Rough/Finish | N

Series: CRMGD-M_M_

DIA D_1	SHK D_2	LOC L_2	OAL L_1	FLUTES	PART NAME	DIAMOND EDP	DLC EDP
3mm	3mm	6mm	38mm	6	CRMGD-M3M3-S	H6975	H7292
3mm	3mm	12mm	38mm	6	CRMGD-M3M3	H6976	H7293
5mm	5mm	10mm	50mm	8	CRMGD-M5M5-S	H6977	H7294
5mm	5mm	20mm	50mm	8	CRMGD-M5M5	H6978	H7295
6mm	6mm	12mm	63mm	10	CRMGD-M6M6-S	H6979	H7296
6mm	6mm	20mm	63mm	10	CRMGD-M6M6	H6980	H7297
8mm	8mm	20mm	63mm	10	CRMGD-M8M8	H6981	H7298
10mm	10mm	20mm	70mm	12	CRMGD-M10M10	H6982	H7299
10mm	10mm	30mm	70mm	12	CRMGD-M10M10-L	H6983	H7300
12mm	12mm	25mm	75mm	14	CRMGD-M12M12	H6984	H7301
12mm	12mm	50mm	100mm	14	CRMGD-M12M12-L	H6985	H7302

Speed & Feed: page 161



FIBERGLASS ROUTERS • NO END CUT

Carbide | MULTI FLUTES | Non - Center Cutting | Bright DLC | Square | +.000 -.002 | N

- Designed for machining composites, graphite, carbon fiber, honeycomb & fiberglass materials
- NE - No End Cut: For use where end of fiberglass router is not in contact with work piece
- SQ - Square Cut: For use where square corners or smooth surfaces are required for work piece
- DP- Drill Point Cut: For use where plunging applications are required before routing operations

SERIES: FRMG-__-NE

DIA D_1	SHK D_2	LOC L_2	OAL L_1	CORNER	PART NAME	BRIGHT EDP	DLC EDP
1/8	1/8	1/2	1-1/2	No End	FRMG-404-NE	16465	76465
3/16	3/16	5/8	2	No End	FRMG-606-NE	19534	79534
1/4	1/4	3/4	2-1/2	No End	FRMG-808-NE	19531	79531
1/4	1/4	1	3	No End	FRMG-808-LNE	15526	75526
3/8	3/8	1	2-1/2	No End	FRMG-1212-NE	11921	71921
1/2	1/2	1	3	No End	FRMG-1616-NE	11923	71923

Speed & Feed: Available online

FIBERGLASS ROUTERS • SQUARE END CUT

Carbide | MULTI FLUTES | Center Cutting | Bright DLC | Square | +.000 -.002 | N

SERIES: FRMG

DIA D_1	SHK D_2	LOC L_2	OAL L_1	CORNER	PART NAME	BRIGHT EDP	DLC EDP
1/8	1/8	1/2	1-1/2	SQ	FRMG-404	11924	71924
3/16	3/16	5/8	2	SQ	FRMG-606	11925	71925
1/4	1/4	3/4	2-1/2	SQ	FRMG-808	11926	71926
1/4	1/4	1	3	SQ	FRMG-808-L	11927	71927
3/8	3/8	1	2-1/2	SQ	FRMG-1212	11928	71928
1/2	1/2	1	3	SQ	FRMG-1616	11929	71929

Speed & Feed: Available online

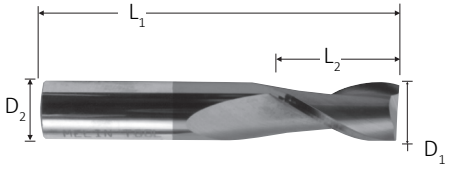
FIBERGLASS ROUTERS • 135° DRILL POINT END CUT

Carbide | MULTI FLUTES | Center Cutting | Bright DLC | 135° | +.000 -.002 | N

SERIES: FRMG-__-DP

DIA D_1	SHK D_2	LOC L_2	OAL L_1	CORNER	PART NAME	BRIGHT EDP	DLC EDP
1/8	1/8	1/2	1-1/2	drill point	FRMG-404-DP	11930	71930
3/16	3/16	5/8	2	drill point	FRMG-606-DP	11931	71931
1/4	1/4	3/4	2-1/2	drill point	FRMG-808-DP	11932	71932
1/4	1/4	1	3	drill point	FRMG-808-LDP	12069	72069
3/8	3/8	1	2-1/2	drill point	FRMG-1212-DP	12071	72071
1/2	1/2	1	3	drill point	FRMG-1616-DP	12178	72178

Speed & Feed: Available online



2 FLUTE • DLC AMORPHOUS DIAMOND COATING

Carbide	2	Center Cutting	30°	DLC Diamond	Square	+.0005 -.0005 <1/8	+.000 -.002 ≥1/8				N

- For enhanced productivity in machining Graphite, Hi Silicon Aluminum & Composite Materials
- Ideal for slotting, pocketing and taking heavy radial depth of cuts
- Hydrogen free diamond-like carbon (DLC) provides extended tool life at lower tool cost

SERIES: AMG-__-DLC

DIA D_1	SHK D_2	LOC L_2	OAL L_1	PART NAME	DLC EDP
1/32	1/8	3/32	1-1/2	AMG-401-DLC	13587
1/16	1/8	3/16	1-1/2	AMG-402-DLC	13588
3/32	1/8	3/8	1-1/2	AMG-403-DLC	13589
1/8	1/8	1/2	1-1/2	AMG-404-DLC	13590
5/32	3/16	9/16	2	AMG-605-DLC	74020
3/16	3/16	5/8	2	AMG-606-DLC	13591
7/32	1/4	5/8	2-1/2	AMG-807-DLC	74024
1/4	1/4	3/4	2-1/2	AMG-808-DLC	13592
9/32	5/16	3/4	2-1/2	AMG-1009-DLC	75898
5/16	5/16	13/16	2-1/2	AMG-1010-DLC	13593
11/32	3/8	7/8	2-1/2	AMG-1211-DLC	75900
3/8	3/8	1	2-1/2	AMG-1212-DLC	13594
7/16	7/16	1	2-3/4	AMG-1414-DLC	74040
1/2	1/2	1	3	AMG-1616-DLC	74042

DLC Coating can be applied to ANY Melin End Mill! You will find THOUSANDS of options in our new MICRO Catalog!

Speed & Feed: available online

2 FLUTE • BALL NOSE DLC AMORPHOUS DIAMOND COATING

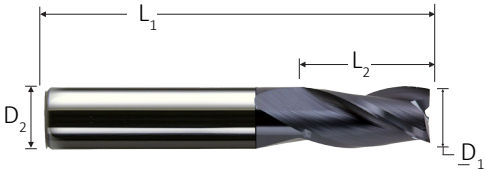
Carbide	2	Center Cutting	30°	DLC Diamond	Ball	+.0005 -.0005 <1/8	+.000 -.002 ≥1/8					N

- For enhanced productivity in machining Graphite, Hi Silicon Aluminum & Composite Materials
- Ideal for slotting, pocketing, Z-axis machining and taking heavy radial depth of cuts

SERIES: AMG-__-B-DLC

DIA D_1	SHK D_2	LOC L_2	OAL L_1	PART NAME	DLC EDP
1/32	1/8	3/32	1-1/2	AMG-401-B-DLC	13604
1/16	1/8	3/16	1-1/2	AMG-402-B-DLC	13605
3/32	1/8	3/8	1-1/2	AMG-403-B-DLC	13606
1/8	1/8	1/2	1-1/2	AMG-404-B-DLC	13607
5/32	3/16	9/16	2	AMG-605-B-DLC	75910
3/16	3/16	5/8	2	AMG-606-B-DLC	13608
7/32	1/4	5/8	2-1/2	AMG-807-B-DLC	75911
1/4	1/4	3/4	2-1/2	AMG-808-B-DLC	13609
9/32	5/16	3/4	2-1/2	AMG-1009-B-DLC	75912
5/16	5/16	13/16	2-1/2	AMG-1010-B-DLC	13610
11/32	3/8	7/8	2-1/2	AMG-1211-B-DLC	76133
3/8	3/8	1	2-1/2	AMG-1212-B-DLC	13611
7/16	7/16	1	2-3/4	AMG-1414-B-DLC	75913
1/2	1/2	1	3	AMG-1616-B-DLC	74068

Speed & Feed: available online



3 FLUTE • DLC AMORPHOUS DIAMOND COATING

Carbide | 3 | Center Cutting | 30° | DLC Diamond | Square | +.000 -.002 ≥1/8 | N

- For enhanced productivity in machining Graphite, Hi Silicon Aluminum & Composite Materials
- Ideal for finishing applications and long axial depths of cut
- Hydrogen free diamond-like carbon (DLC) provides extended tool life at lower tool cost

SERIES: EMG-__-DLC

DIA D_1	SHK D_2	LOC L_2	OAL L_1	PART NAME	DLC EDP
1/8	1/8	1/2	1-1/2	EMG-404-DLC	77640
5/32	3/16	9/16	2	EMG-605-DLC	77641
3/16	3/16	5/8	2	EMG-606-DLC	77642
7/32	1/4	5/8	2-1/2	EMG-807-DLC	73744
1/4	1/4	3/4	2-1/2	EMG-808-DLC	77644
9/32	5/16	3/4	2-1/2	EMG-1009-DLC	73746
5/16	5/16	13/16	2-1/2	EMG-1010-DLC	77646
3/8	3/8	1	2-1/2	EMG-1212-DLC	77648
7/16	7/16	1	2-3/4	EMG-1414-DLC	77650
1/2	1/2	1	3	EMG-1616-DLC	77652

Speed & Feed: available online

DLC Coating can be applied to ANY Melin End Mill! You will find THOUSANDS of options in our new MICRO Catalog!

3 FLUTE • BALL NOSE DLC AMORPHOUS DIAMOND COATING

Carbide | 3 | Center Cutting | 30° | DLC Diamond | Ball | +.000 -.002 ≥1/8 | N

- For enhanced productivity in machining Graphite, Hi Silicon Aluminum & Composite Materials
- Ideal for slotting, pocketing, Z-axis machining and taking heavy radial depth of cuts

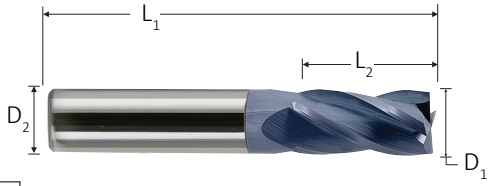
SERIES: EMG-__-B-DLC

DIA D_1	SHK D_2	LOC L_2	OAL L_1	PART NAME	DLC EDP
1/8	1/8	1/2	1-1/2	EMG-404-B-DLC	77825
5/32	3/16	9/16	2	EMG-605-B-DLC	77827
3/16	3/16	5/8	2	EMG-606-B-DLC	77829
7/32	1/4	5/8	2-1/2	EMG-807-B-DLC	74061
1/4	1/4	3/4	2-1/2	EMG-808-B-DLC	77832
9/32	5/16	3/4	2-1/2	EMG-1009-B-DLC	79587
5/16	5/16	13/16	2-1/2	EMG-1010-B-DLC	77835
11/32	3/8	7/8	2-1/2	EMG-1211-B-DLC	79591
3/8	3/8	1	2-1/2	EMG-1212-B-DLC	77838
7/16	7/16	1	2-3/4	EMG-1414-B-DLC	77840
1/2	1/2	1	3	EMG-1616-B-DLC	77842

Speed & Feed: available online

Graphite & Composites

4 Flute • DLC amorphous diamond coating



Carbide | 4 | Center Cutting | 30° | DLC Diamond | Square | +.0005 -.0005 <1/8 | +.000 -.002 ≥1/8 | N

- For enhanced productivity in machining Graphite, Hi Silicon Aluminum & Composite Materials
- Ideal for finishing applications and long axial depths of cut
- Hydrogen free diamond-like carbon (DLC) provides extended tool life at lower tool cost

Series: CCMG-__-DLC

DIA D_1	SHK D_2	LOC L_2	OAL L_1	PART NAME	DLC EDP
1/32	1/8	3/32	1-1/2	CCMG-401-DLC	13595
1/16	1/8	3/16	1-1/2	CCMG-402-DLC	13596
3/32	1/8	3/8	1-1/2	CCMG-403-DLC	13597
1/8	1/8	1/2	1-1/2	CCMG-404-DLC	13598
5/32	3/16	9/16	2	CCMG-605-DLC	74136
3/16	3/16	5/8	2	CCMG-606-DLC	13599
7/32	1/4	5/8	2-1/2	CCMG-807-DLC	74140
1/4	1/4	3/4	2-1/2	CCMG-808-DLC	13600
9/32	5/16	3/4	2-1/2	CCMG-1009-DLC	74148
5/16	5/16	13/16	2-1/2	CCMG-1010-DLC	13601
11/32	3/8	7/8	2-1/2	CCMG-1211-DLC	75924
3/8	3/8	1	2-1/2	CCMG-1212-DLC	13602
7/16	7/16	1	2-3/4	CCMG-1414-DLC	74158
1/2	1/2	1	3	CCMG-1616-DLC	74160

Speed & Feed: available online

DLC Coating can be applied to ANY Melin End Mill! You will find THOUSANDS of options in our new MICRO Catalog!

Melin Tool Micro Catalog

Melin recently launched a wide range of styles and sizes of micro carbide end mills. The new micro carbide end mills target applications found in mold shops, medical, and EDM departments.

- Cutting diameters offered as small as 0.005" and lengths up to 30xD.
- Outstanding performance in Titanium, Aluminum Alloys, Graphites, Steels, and Stainless Alloys.
- All coating options available
- Stocked DLC coated tools
- Order your catalog today for the latest info

manufactured in USA

4 FLUTE • BALL NOSE DLC AMORPHOUS DIAMOND COATING

Carbide | 4 | Center Cutting | 30° | DLC Diamond | Ball | +.0005 -.0005 <1/8 | +.000 -.002 ≥1/8 | N

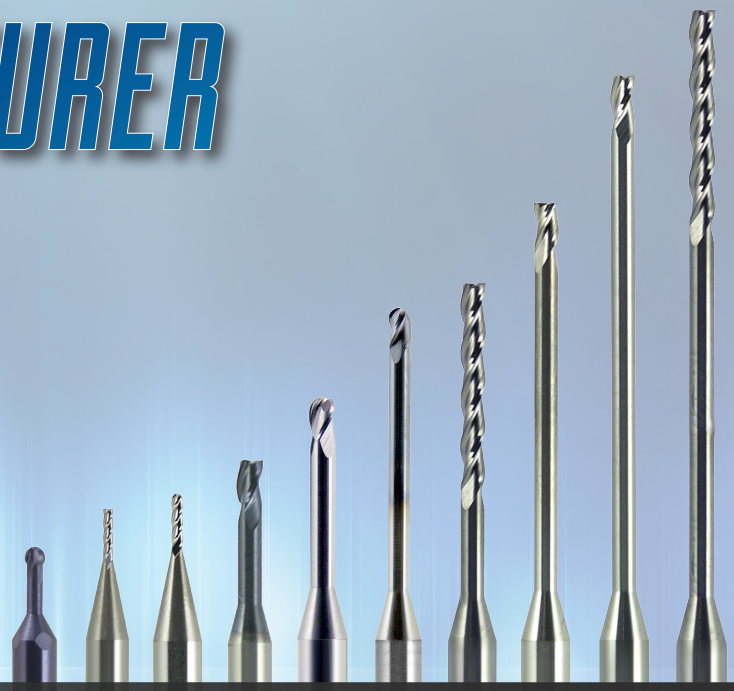
- For enhanced productivity in machining Graphite, Hi Silicon Aluminum & Composite Materials
- Ideal for finishing applications and long axial depths of cut
- Hydrogen free diamond-like carbon (DLC) provides extended tool life at lower tool cost

SERIES: CCMG-__-B-DLC

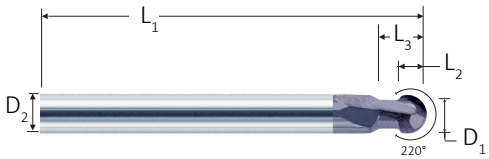
DIA D_1	SHK D_2	LOC L_2	OAL L_1	PART NAME	DLC EDP
1/32	1/8	3/32	1-1/2	CCMG-401-B-DLC	13612
1/16	1/8	3/16	1-1/2	CCMG-402-B-DLC	13613
3/32	1/8	3/8	1-1/2	CCMG-403-B-DLC	13614
1/8	1/8	1/2	1-1/2	CCMG-404-B-DLC	13615
5/32	3/16	9/16	2	CCMG-605-B-DLC	75852
3/16	3/16	5/8	2	CCMG-606-B-DLC	13616
7/32	1/4	5/8	2-1/2	CCMG-807-B-DLC	75934
1/4	1/4	3/4	2-1/2	CCMG-808-B-DLC	13617
9/32	5/16	3/4	2-1/2	CCMG-1009-B-DLC	75935
5/16	5/16	13/16	2-1/2	CCMG-1010-B-DLC	13618
11/32	3/8	7/8	2-1/2	CCMG-1211-B-DLC	76211
3/8	3/8	1	2-1/2	CCMG-1212-B-DLC	13619
7/16	7/16	1	2-3/4	CCMG-1414-B-DLC	75936
1/2	1/2	1	3	CCMG-1616-B-DLC	74186

Speed & Feed: available online

THE MANUFACTURER ADVANTAGE—
GET TO KNOW WHO MAKES YOUR MICROS



2 FLUTE • 220° SPHERICAL BALL END MILLS



Carbide | 2 | Center Cutting | 15° | nACo | +.000 -.002 | +.0005 -.0005 <1/8 | SPHERICAL BALL | HRc <54 | P K M S

- Designed for multi axis cavity work in die & mold applications
- For undercutting & deburring applications on multi-axis CNC machines
- Effective on hardened materials
- Available with 220°, 270° or 300° arc cutting capacity (see next page)

SERIES: VBMG2

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL	FLUTE	PART NAME	nACo EDP
1/16	1/8	0.040	0.190	1-1/2	2	VBMG2-402	12231
3/32	1/8	0.060	0.210	1-1/2	2	VBMG2-403	12233
1/8	1/8	3/32	0.244	1-1/2	2	VBMG2-404	10041
1/8	1/8	3/32	0.244	3	2	VBMG2-404-L	10321
3/16	3/16	9/64	0.291	2	2	VBMG2-606	10043
3/16	3/16	9/64	0.291	3	2	VBMG2-606-L	10323
1/4	1/4	3/16	0.388	2-1/2	2	VBMG2-808	10045
1/4	1/4	3/16	0.388	4	2	VBMG2-808-L	10325
3/8	3/8	9/32	0.481	2-1/2	2	VBMG2-1212	10047
3/8	3/8	9/32	0.481	4	2	VBMG2-1212-L	10327
1/2	1/2	3/8	0.625	3	2	VBMG2-1616	10049
1/2	1/2	3/8	0.625	6	2	VBMG2-1616-L	10329

Speed & Feed: page 162

2 FLUTE • 220° SPHERICAL BALL END MILLS

Carbide | 2 | Center Cutting | 15° | nACo | +.000mm -.050mm | SPHERICAL BALL | HRc <54 | P K M S

SERIES: VBMG2-M_M_

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL	FLUTE	PART NAME	nACo EDP
4mm	4mm	3mm	6.8mm	51mm	2	VBMG2-M4M4	11477
6mm	6mm	5mm	8.8mm	63mm	2	VBMG2-M6M6	11479
8mm	8mm	6mm	11.1mm	63mm	2	VBMG2-M8M8	11481
10mm	10mm	8mm	13.1mm	70mm	2	VBMG2-M10M10	11483
12mm	12mm	9mm	15.3mm	76mm	2	VBMG2-M12M12	11485

Speed & Feed: page 162

4 FLUTE • 220° SPHERICAL BALL END MILLS

Carbide | 4 | Center Cutting | 15° | nACo | +.000 -.002 | +.0005 -.0005 <1/8 | SPHERICAL BALL | HRc <54 | P M K S

- Designed for multi axis cavity work in die & mold applications
- For undercutting & deburring applications on multi-axis CNC machines
- Effective on hardened materials
- Available with 220°, 270° or 300° arc cutting capacity (see next page)

SERIES: VBMG4

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL	FLUTE	PART NAME	nACo EDP
1/16	1/8	0.040	0.190	1-1/2	4	VBMG4-402	11942
3/32	1/8	0.060	0.210	1-1/2	4	VBMG4-403	11943
1/8	1/8	0.094	0.244	1-1/2	4	VBMG4-404	10051
1/8	1/8	0.094	0.594	1-1/2	4	VBMG4-404-M	H7167
1/8	1/8	0.094	0.244	3	4	VBMG4-404-L	10331
3/16	3/16	0.141	0.291	2	4	VBMG4-606	10053
3/16	3/16	0.141	0.641	2	4	VBMG4-606-M	H7168
3/16	3/16	0.141	0.291	3	4	VBMG4-606-L	10333
1/4	1/4	0.188	0.388	2-1/2	4	VBMG4-808	10055
1/4	1/4	0.188	0.938	2-1/2	4	VBMG4-808-M	H7169
1/4	1/4	0.188	0.388	4	4	VBMG4-808-L	10335
3/8	3/8	0.281	0.481	2-1/2	4	VBMG4-1212	10057
3/8	3/8	0.281	1.031	2-1/2	4	VBMG4-1212-M	H7170
3/8	3/8	0.281	0.481	4	4	VBMG4-1212-L	10337
1/2	1/2	0.375	0.625	3	4	VBMG4-1616	10059
1/2	1/2	0.375	0.625	6	4	VBMG4-1616-L	10339

Speed & Feed: page 162

4 FLUTE • 220° SPHERICAL BALL END MILLS

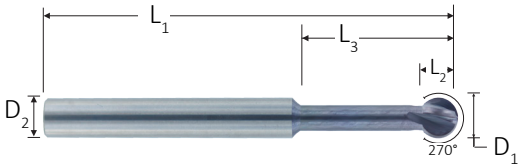
Carbide | 4 | Center Cutting | 15° | nACo | +.000mm -.050mm | SPHERICAL BALL | HRc <54 | P M K S

SERIES: VBMG4-M_M_

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL	FLUTE	PART NAME	nACo EDP
4mm	4mm	3mm	6.8mm	51mm	4	VBMG4-M4M4	11423
6mm	6mm	5mm	8.8mm	63mm	4	VBMG4-M6M6	11425
8mm	8mm	6mm	11.1mm	63mm	4	VBMG4-M8M8	11427
10mm	10mm	8mm	13.1mm	70mm	4	VBMG4-M10M10	11428
12mm	12mm	9mm	15.3mm	76mm	4	VBMG4-M12M12	11429

Speed & Feed: page 162

MULTI FLUTE • 270° SPHERICAL BALL END MILLS



Carbide | 2 | Center Cutting | 15° | nACo | +.000 -.002 | +.0005 -.0005 <1/8 | SPHERICAL BALL | HRc <54 | P K M S

- Designed for multi axis cavity work in die & mold applications
- For undercutting & deburring applications on multi-axis CNC machines
- Effective on hardened materials

SERIES: VBMG2-__-270

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL	FLUTE	PART NAME	nACo EDP
3/64	1/8	.040	0.133	1-1/2	2	VBMG2-401-1/2-270	H7060
1/16	1/8	.053	0.146	1-1/2	2	VBMG2-402-270	H7061
1/16	1/8	.053	0.303	1-1/2	2	VBMG2-402-270L1	H7062
5/64	1/8	.067	0.192	1-1/2	2	VBMG2-402-1/2-270	H7063
3/32	1/8	.079	0.204	1-1/2	2	VBMG2-403-270	H7064
3/32	1/8	.079	0.329	1-1/2	2	VBMG2-403-270L1	H7065
3/32	1/8	.079	0.454	1-1/2	2	VBMG2-403-270L2	H7066

Speed & Feed: page 162

SERIES: VBMG4-__-270

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL	FLUTE	PART NAME	nACo EDP
1/8	1/8	.107	0.232	1-1/2	4	VBMG4-404-270	H7067
1/8	1/8	.107	0.607	1-1/2	4	VBMG4-404-270L1	H7068
1/8	1/8	.107	1.107	3	4	VBMG4-404-270L2	H7069
3/16	3/16	.160	0.285	2	4	VBMG4-606-270	H7070
3/16	3/16	.160	0.660	2	4	VBMG4-606-270L1	H7071
1/4	1/4	.213	0.588	2-1/2	4	VBMG4-808-270	H6850
1/4	1/4	.213	0.963	2-1/2	4	VBMG4-808-270L1	H6852
1/4	1/4	.213	1.713	4	4	VBMG4-808-270L2	H6854
5/16	5/16	.266	0.641	2-1/2	4	VBMG4-1010-270	H7072
5/16	5/16	.266	1.766	4	4	VBMG4-1010-270L1	H7073
3/8	3/8	.320	0.507	2-1/2	4	VBMG4-1212-270	H7074
3/8	3/8	.320	1.070	2-1/2	4	VBMG4-1212-270L1	H7075
3/8	3/8	.320	1.820	4	4	VBMG4-1212-270L2	H7076
1/2	1/2	.427	0.927	3	4	VBMG4-1616-270	H7077
1/2	1/2	.427	1.427	6	4	VBMG4-1616-270L1	H7078

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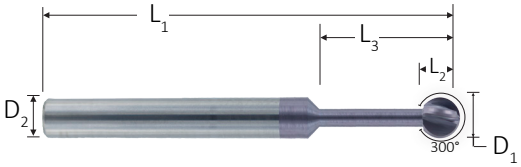


MULTI FLUTE • 300° SPHERICAL BALL END MILLS

Carbide | 2 | Center Cutting | 15° | nACo | +.000 -.002 | +.0005 -.0005 <1/8 | SPHERICAL BALL | HRc <54 | P K M S

- Designed for multi axis cavity work in die & mold applications
- For undercutting & deburring applications on multi-axis CNC machines
- Effective on hardened materials

SERIES: VBMG2-__-300

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL	FLUTE	PART NAME	nACo EDP
1/16	1/8	.057	0.135	1-1/2	2	VBMG2-402-300	H7079
5/64	1/8	.072	0.165	1-1/2	2	VBMG2-402-1/2-300	H7080
3/32	1/8	.086	0.211	1-1/2	2	VBMG2-403-300	H7081

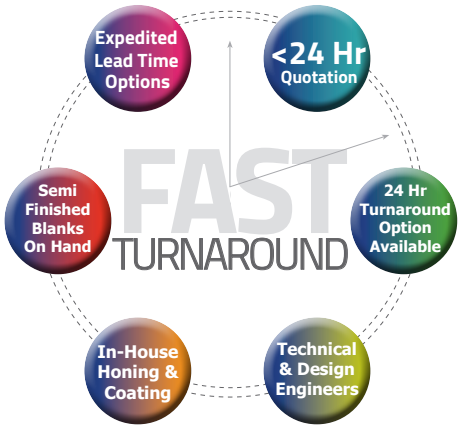
Speed & Feed: page 162

SERIES: VBMG4-__-300

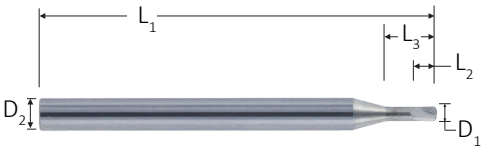
DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL	FLUTE	PART NAME	nACo EDP
1/8	1/8	.116	0.209	1-1/2	4	VBMG4-404-300	H7082
1/8	1/8	.116	0.397	1-1/2	4	VBMG4-404-300L1	H7083
5/32	3/16	.145	0.395	2	4	VBMG4-605-300	H7084
3/16	3/16	.174	0.299	2	4	VBMG4-606-300	H7085
3/16	3/16	.174	0.611	2	4	VBMG4-606-300L1	H7086
1/4	1/4	.233	0.420	2-1/2	4	VBMG4-808-300	H6800
1/4	1/4	.233	0.858	2-1/2	4	VBMG4-808-300L1	H6802
5/16	5/16	.291	0.541	2-1/2	4	VBMG4-1010-300	H7087
5/16	5/16	.291	0.728	2-1/2	4	VBMG4-1010-300L1	H7088
3/8	3/8	.349	0.599	2-1/2	4	VBMG4-1212-300	H7089
3/8	3/8	.349	1.349	3	4	VBMG4-1212-300L1	H7090
1/2	1/2	.466	0.778	3	4	VBMG4-1616-300	H7091
1/2	1/2	.466	1.716	4	4	VBMG4-1616-300L1	H7092

Speed & Feed: page 162

Don't see the extended NECK size you need? We offer a FAST TurnAround option on ALL spherical ball series. Call to get the size you need!



2 FLUTE • HIGH FEED CARBIDE END MILL



Carbide | 2 | Center Cutting | 0° | nACRo | +.000 -.002 | Radius | HRc <56 | P M K S

- Designed for use in High Feed milling processes that reduce total machining time by 3-4 times over conventional methods.
- Enables high feed per tooth with shallow depth of cut for highest metal removal rates
- Cutting forces are directed at the machine spindle in the axial direction which means less vibration and greater tool life.
- Especially suited for small molds and medical work

SERIES: HXMG2

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	FLUTE	PART NAME	nACRo EDP
3/32	1/4	0.09	0.500	3	0.023	2	HXMG2-803	14553
1/8	1/4	0.095	0.650	3	0.031	2	HXMG2-804	14555
3/16	1/4	0.125	0.750	3	0.047	2	HXMG2-806	14557
1/4	1/4	0.150	1.000	3	0.062	2	HXMG2-808	H7226
5/16	5/16	0.155	1.187	3	0.078	2	HXMG2-1010	H7227
3/8	3/8	0.175	1.250	4	0.094	2	HXMG2-1212	H7228
1/2	1/2	0.200	1.500	4	0.125	2	HXMG2-1616	H7229

Speed & Feed: page 163

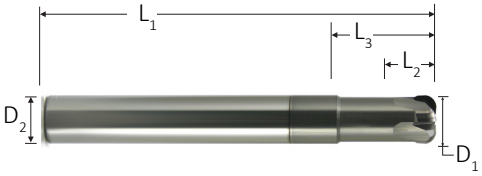
2 FLUTE • HIGH FEED CARBIDE END MILL

Carbide | 2 | Center Cutting | 0° | nACRo | +.000mm -.050mm | Radius | HRc <56 | P M K S

SERIES: HXMG2-M_M_ (metric)

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	FLUTE	PART NAME	nACRo EDP
2mm	6mm	2.2mm	12mm	75mm	0.5mm	2	HXMG2-M6M2	14558
3mm	6mm	2.8mm	16mm	75mm	0.75mm	2	HXMG2-M6M3	14559
4mm	6mm	3.5mm	20mm	75mm	1mm	2	HXMG2-M6M4	14560
5mm	6mm	3.5mm	20mm	75mm	1.25mm	2	HXMG2-M6M5	H7230
6mm	6mm	3.8mm	25mm	75mm	1.5mm	2	HXMG2-M6M6	H7231
8mm	8mm	4mm	30mm	75mm	2mm	2	HXMG2-M8M8	H7232
10mm	10mm	4.3mm	33mm	100mm	2.5mm	2	HXMG2-M10M10	H7233

Speed & Feed: page 163



4 FLUTE • HIGH FEED CARBIDE END MILL

Carbide | 4 | Center Cutting | variable | nACRo | +.000 -.002 | Radius | HRc <56 | P M K S

- Designed for use in High Feed milling processes that reduce total machining time by 3-4 times over conventional methods.
- Enables high feed per tooth with shallow depth of cut for highest metal removal rates
- Cutting forces are directed at the machine spindle in the axial direction which means less vibration and greater tool life.
- Especially suited for small molds and medical work

SERIES: HXMG4

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	FLUTE	PART NAME	nACRo EDP
3/32	1/4	0.090	0.500	3	0.023	4	HXMG4-803	14550
1/8	1/4	0.095	0.650	3	0.031	4	HXMG4-804	14551
3/16	1/4	0.125	0.750	3	0.047	4	HXMG4-806	14552
1/4	1/4	0.150	1.000	3	0.062	4	HXMG4-808	14546
5/16	5/16	0.155	1.187	3	0.078	4	HXMG4-1010	14554
3/8	3/8	0.175	1.250	4	0.094	4	HXMG4-1212	14548
1/2	1/2	0.200	1.500	4	0.125	4	HXMG4-1616	14549
5/8	5/8	0.250	1.500	4	0.156	4	HXMG4-2020	14852

Speed & Feed: page 163

4 FLUTE • HIGH FEED CARBIDE END MILL

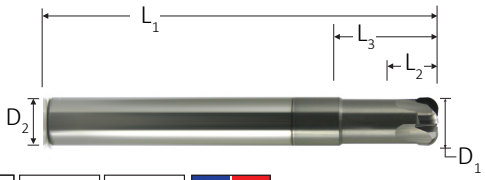
Carbide | 4 | Center Cutting | variable | nACRo | +.000mm -.050mm | Radius | HRc <56 | P M K S

SERIES: HXMG4-M_M_ (metric)

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	FLUTE	PART NAME	nACRo EDP
2mm	6mm	2mm	12mm	75mm	0.5mm	4	HXMG4-M6M2	14843
3mm	6mm	2.8mm	16mm	75mm	0.75mm	4	HXMG4-M6M3	14844
4mm	6mm	3.5mm	20mm	75mm	1mm	4	HXMG4-M6M4	14845
5mm	6mm	3.5mm	20mm	75mm	1.25mm	4	HXMG4-M6M5	14846
6mm	6mm	3.8mm	25mm	75mm	1.5mm	4	HXMG4-M6M6	14847
8mm	8mm	4mm	30mm	75mm	2mm	4	HXMG4-M8M8	14848
10mm	10mm	4.3mm	33mm	100mm	2.5mm	4	HXMG4-M10M10	14849
12mm	12mm	4.6mm	38mm	100mm	3mm	4	HXMG4-M12M12	14850

Speed & Feed: page 163

4 FLUTE • HIGH FEED CARBIDE END MILL



Carbide | 4 | Center Cutting | variable | nACRo | +.000 -.002 | Radius | HRc <56 | P K M S

- Designed for use in High Feed milling processes that reduce total machining time by 3-4 times over conventional methods.
- Enables high feed per tooth with shallow depth of cut for highest metal removal rates
- Cutting forces are directed at the machine spindle in the axial direction which means less vibration and greater tool life.
- Especially suited for small molds and medical work

SERIES: HXMG4-__-HM

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	FLUTE	PART NAME	nACRo EDP
1/8	1/4	0.095	0.625	2-1/2	0.031	4	HXMG4-804-HM	H6732
3/16	1/4	0.125	0.650	2-1/2	0.047	4	HXMG4-806-HM	H6733
1/4	1/4	0.150	0.750	2-1/2	0.062	4	HXMG4-808-HM	H6734
5/16	5/16	0.155	0.800	2-1/2	0.078	4	HXMG4-1010-HM	H6735
3/8	3/8	0.175	1.000	2-1/2	0.094	4	HXMG4-1212-HM	H6736
1/2	1/2	0.200	1.250	3	0.125	4	HXMG4-1616-HM	H6737
5/8	5/8	0.250	1.250	3-1/2	0.156	4	HXMG4-2020-HM	H6738

Speed & Feed: page 163

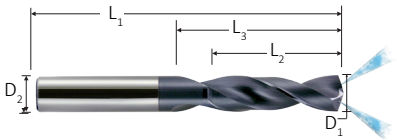
4 FLUTE • HIGH FEED CARBIDE END MILL

Carbide | 4 | Center Cutting | variable | nACRo | +.000mm -.050mm | HRc <56 | P K M S

SERIES: HXMG4-M_M_-HM (metric)

DIA D_1	SHK D_2	LOC L_2	LBS L_3	OAL L_1	CORNER	FLUTE	PART NAME	nACRo EDP
3mm	6mm	2.8mm	14mm	63mm	0.75mm	4	HXMG4-M6M3-HM	H6739
4mm	6mm	3.5mm	16mm	63mm	1mm	4	HXMG4-M6M4-HM	H6740
5mm	6mm	3.5mm	18mm	63mm	1.25mm	4	HXMG4-M6M5-HM	H6741
6mm	6mm	3.8mm	20mm	63mm	1.5mm	4	HXMG4-M6M6-HM	H6742
8mm	8mm	4mm	20mm	63mm	2mm	4	HXMG4-M8M8-HM	H6743
10mm	10mm	4.3mm	25mm	70mm	2.5mm	4	HXMG4-M10M10-HM	H6744
12mm	12mm	4.6mm	25mm	76mm	3mm	4	HXMG4-M12M12-HM	H6745

Speed & Feed: page 163



2 FLUTE • 140° POINT COOLANT HOLE DRILL

Carbide | 2 | Center Cutting | 30° | nACo | +.0000 -.0005 | DRILL POINT | HRc <48 | P K M S

- Designed for use in Steel & Stainless Alloys and Cast Iron
- Available with 3x, 5x & 7x diameter drill depths
- Coolant hole is centered in the helix through each flute
- Has a Self-Centering drill point
- Unique geometry & honed edge prep minimizes need for pecking
- Proprietary nACo coating provides extended tool life over conventional coatings

SERIES: CDR

DIAMETER D_1		SHK D_2	DRILL LENGTH L_2	FLUTE LENGTH L_3	OAL L_1	PART NAME	nACo EDP
1/16	0.0625	3mm	0.188	0.234	2.362	CDR-1/16-3X	13166
1/16	0.0625	3mm	0.313	0.391	2.677	CDR-1/16-5X	13212
1/16	0.0625	3mm	0.438	0.547	2.992	CDR-1/16-7X	13258
50	0.0700	3mm	0.394	0.492	2.677	CDR-50-5X	19420
2mm	0.0787	3mm	6.0mm	7.5mm	60mm	CDR-2mm-3X	13167
2mm	0.0787	3mm	10.0mm	12.5mm	68mm	CDR-2mm-5X	13213
2mm	0.0787	3mm	14.0mm	17.5mm	76mm	CDR-2mm-7X	13259
2.1mm	0.0827	3mm	10.5mm	13.1mm	68mm	CDR-2.1mm-5X	14500
2.2mm	0.0866	3mm	11.0mm	13.8mm	68mm	CDR-2.2mm-5X	14501
# 43	0.0890	3mm	0.445	0.556	2.670	CDR-43-5X	19510
2.3mm	0.0906	3mm	11.5mm	14.4mm	68mm	CDR-2.3mm-5X	14502
3/32	0.0938	3mm	0.281	0.352	2.362	CDR-3/32-3X	13168
3/32	0.0938	3mm	0.469	0.586	2.677	CDR-3/32-5X	13214
3/32	0.0938	3mm	0.657	0.821	2.992	CDR-3/32-7X	13260
2.4mm	0.0945	3mm	12.0mm	15.0mm	68mm	CDR-2.4mm-5X	14503
# 40	0.0980	3mm	0.294	0.368	2.362	CDR-40-3X	13169
# 40	0.0980	3mm	0.490	0.613	2.677	CDR-40-5X	13215
# 40	0.0980	3mm	0.686	0.858	2.992	CDR-40-7X	13261
2.5mm	0.0984	3mm	7.5mm	9.4mm	60mm	CDR-2.5mm-3X	13170
2.5mm	0.0984	3mm	12.5mm	15.6mm	68mm	CDR-2.5mm-5X	13216
2.5mm	0.0984	3mm	17.5mm	21.9mm	76mm	CDR-2.5mm-7X	13262
# 38	0.1015	3mm	0.508	0.634	2.677	CDR-38-5X	19511
2.6mm	0.1024	3mm	13.0mm	16.3mm	68mm	CDR-2.6mm-5X	14504
2.7mm	0.1063	3mm	13.5mm	16.9mm	68mm	CDR-2.7mm-5X	14505
# 36	0.1065	3mm	0.320	0.399	2.362	CDR-36-3X	13171
# 36	0.1065	3mm	0.533	0.666	2.677	CDR-36-5X	13217
# 36	0.1065	3mm	0.746	0.932	2.992	CDR-36-7X	13263
7/64	0.1094	3mm	0.328	0.410	2.362	CDR-7/64-3X	13172
7/64	0.1094	3mm	0.547	0.684	2.677	CDR-7/64-5X	13218
7/64	0.1094	3mm	0.766	0.957	2.992	CDR-7/64-7X	13264
2.8mm	0.1102	3mm	14.0mm	17.5mm	68mm	CDR-2.8mm-5X	14506
2.9mm	0.1142	3mm	14.5mm	18.1mm	68mm	CDR-2.9mm-5X	14507
# 32	0.1160	3mm	0.348	0.435	2.362	CDR-32-3X	13173
# 32	0.1160	3mm	0.580	0.725	2.677	CDR-32-5X	13219
# 32	0.1160	3mm	0.812	1.015	2.992	CDR-32-7X	13265
3mm	0.1181	3mm	9.0mm	11.3mm	60mm	CDR-3mm-3X	13174
3mm	0.1181	3mm	15.0mm	18.8mm	68mm	CDR-3mm-5X	13220
3mm	0.1181	3mm	21.0mm	26.3mm	76mm	CDR-3mm-7X	13266

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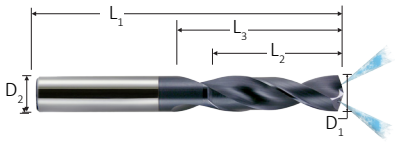
2 FLUTE • 140° POINT COOLANT HOLE DRILL



SERIES: CDR

DIAMETER D_1		SHK D_2	DRILL LENGTH L_2	FLUTE LENGTH L_3	OAL L_1	PART NAME	nACo EDP
# 31	0.1200	1/8	0.358	0.407	2.362	CDR-31-3X	13175
# 31	0.1200	1/8	0.600	0.750	2.677	CDR-31-5X	13221
# 31	0.1200	1/8	0.990	1.050	2.992	CDR-31-7X	13267
3.1mm	0.1220	4mm	15.5mm	19.4mm	68mm	CDR-3.1mm-5X	14508
1/8	0.1250	1/8	0.375	0.469	2.362	CDR-1/8-3X	13176
1/8	0.1250	1/8	0.625	0.781	2.677	CDR-1/8-5X	13222
1/8	0.1250	1/8	0.875	1.094	2.992	CDR-1/8-7X	13268
3.2mm	0.1260	4mm	16.0mm	20.0mm	72mm	CDR-3.2mm-5X	14509
# 30	0.1285	4mm	0.386	0.482	2.441	CDR-30-3X	13177
# 30	0.1285	4mm	0.643	0.803	2.835	CDR-30-5X	13223
# 30	0.1285	4mm	0.900	1.124	3.189	CDR-30-7X	13269
3.3mm	0.1299	4mm	16.5mm	20.6mm	72mm	CDR-3.3mm-5X	14510
3.4mm	0.1339	4mm	17.0mm	21.3mm	72mm	CDR-3.4mm-5X	14511
# 29	0.1360	4mm	0.409	0.512	2.441	CDR-29-3X	13178
# 29	0.1360	4mm	0.782	0.850	2.835	CDR-29-5X	13224
# 29	0.1360	4mm	0.952	1.190	3.189	CDR-29-7X	13270
3.5mm	0.1378	4mm	17.5mm	21.9mm	72mm	CDR-3.5mm-5X	19512
9/64	0.1406	4mm	0.422	0.527	2.441	CDR-9/64-3X	13179
9/64	0.1406	4mm	0.703	0.879	2.835	CDR-9/64-5X	13225
9/64	0.1406	4mm	0.984	1.230	3.189	CDR-9/64-7X	13271
3.6mm	0.1417	4mm	18.0mm	22.5mm	72mm	CDR-3.6mm-5X	14512
3.7mm	0.1457	4mm	18.5mm	23.1mm	72mm	CDR-3.7mm-5X	14513
# 25	0.1495	4mm	0.748	0.934	2.835	CDR-25-5X	19513
3.8mm	0.1496	4mm	19.0mm	23.8mm	72mm	CDR-3.8mm-5X	14514
3.9mm	0.1535	4mm	19.5mm	24.4mm	72mm	CDR-3.9mm-5X	14515
5/32	0.1563	4mm	0.469	0.586	2.441	CDR-5/32-3X	13180
5/32	0.1563	4mm	0.781	0.977	2.835	CDR-5/32-5X	13226
5/32	0.1563	4mm	1.094	1.367	3.189	CDR-5/32-7X	13272
4mm	0.1575	4mm	12.0mm	15.0mm	62mm	CDR-4mm-3X	13181
4mm	0.1575	4mm	20.0mm	25.0mm	72mm	CDR-4mm-5X	13227
4mm	0.1575	4mm	28.0mm	35.0mm	81mm	CDR-4mm-7X	13273
# 21	0.1590	5mm	0.795	0.994	3.189	CDR-21-5X	19514
4.1mm	0.1614	5mm	20.5mm	25.6mm	81mm	CDR-4.1mm-5X	14516
4.2mm	0.1654	5mm	21.0mm	26.3mm	81mm	CDR-4.2mm-5X	14517
4.3mm	0.1693	5mm	21.5mm	26.9mm	81mm	CDR-4.3mm-5X	14518
11/64	0.1719	5mm	0.516	0.630	2.520	CDR-11/64-3X	19790
11/64	0.1719	5mm	0.860	1.074	3.189	CDR-11/64-5X	19791
11/64	0.1719	5mm	1.203	1.530	3.780	CDR-11/64-7X	19792
4.4mm	0.1732	5mm	22.0mm	27.5mm	81mm	CDR-4.4mm-5X	14520
# 16	0.1770	5mm	0.885	1.106	3.189	CDR-16-5X	19515
4.5mm	0.1772	5mm	13.5mm	16.9mm	64mm	CDR-4.5mm-3X	13182
4.5mm	0.1772	5mm	22.5mm	25.0mm	81mm	CDR-4.5mm-5X	13228
4.5mm	0.1772	5mm	31.5mm	35.0mm	96mm	CDR-4.5mm-7X	13274
4.6mm	0.1811	5mm	23.0mm	28.8mm	81mm	CDR-4.6mm-5X	14521
4.7mm	0.1850	5mm	23.5mm	29.4mm	81mm	CDR-4.7mm-5X	14522

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2 FLUTE • 140° POINT COOLANT HOLE DRILL

SERIES: CDR

DIAMETER D_1		SHK D_2	DRILL LENGTH L_2	FLUTE LENGTH L_3	OAL L_1	PART NAME	nACo EDP
3/16	0.1875	5mm	0.563	0.703	2.520	CDR-3/16-3X	13183
3/16	0.1875	5mm	0.938	1.172	3.189	CDR-3/16-5X	13229
3/16	0.1875	5mm	1.313	1.641	3.780	CDR-3/16-7X	13275
4.8mm	0.1890	5mm	24.0mm	30.0mm	81mm	CDR-4.8mm-5X	14523
4.9mm	0.1929	5mm	24.5mm	30.6mm	81mm	CDR-4.9mm-5X	14524
5mm	0.1969	5mm	15.0mm	18.8mm	64mm	CDR-5mm-3X	13184
5mm	0.1969	5mm	25.0mm	31.3mm	81mm	CDR-5mm-5X	13230
5mm	0.1969	5mm	35.0mm	43.8mm	96mm	CDR-5mm-7X	13276
5.1mm	0.2008	6mm	25.5mm	31.9mm	81mm	CDR-5.1mm-5X	14525
# 7	0.2010	6mm	1.004	1.256	3.189	CDR-7-5X	19516
13/64	0.2031	6mm	0.609	0.762	2.559	CDR-13/64-3X	13185
13/64	0.2031	6mm	1.016	1.270	3.189	CDR-13/64-5X	13231
13/64	0.2031	6mm	1.422	1.777	3.780	CDR-13/64-7X	13277
5.2mm	0.2047	6mm	26.0mm	32.5mm	81mm	CDR-5.2mm-5X	14526
5.3mm	0.2087	6mm	26.5mm	33.1mm	81mm	CDR-5.3mm-5X	14527
5.4mm	0.2126	6mm	27.0mm	33.8mm	81mm	CDR-5.4mm-5X	14528
# 3	0.2130	6mm	1.065	1.331	3.189	CDR-3-5X	19517
5.5mm	0.2165	6mm	27.5mm	34.4mm	81mm	CDR-5.5mm-5X	14529
7/32	0.2188	6mm	0.656	0.820	2.559	CDR-7/32-3X	13186
7/32	0.2188	6mm	1.094	1.367	3.189	CDR-7/32-5X	13232
7/32	0.2188	6mm	1.531	1.914	3.780	CDR-7/32-7X	13278
5.6mm	0.2205	6mm	28.0mm	35.0mm	81mm	CDR-5.6mm-5X	14530
5.7mm	0.2244	6mm	28.5mm	35.6mm	81mm	CDR-5.7mm-5X	14531
5.8mm	0.2283	6mm	33.4mm	36.3mm	81mm	CDR-5.8mm-5X	14532
5.9mm	0.2323	6mm	34mm	36.9mm	81mm	CDR-5.9mm-5X	14533
6mm	0.2362	6mm	18.0mm	22.5mm	65mm	CDR-6mm-3X	13187
6mm	0.2362	6mm	30.0mm	37.5mm	81mm	CDR-6mm-5X	13233
6mm	0.2362	6mm	42.0mm	52.5mm	96mm	CDR-6mm-7X	13279
6.1mm	0.2402	8mm	30.5mm	38.1mm	96mm	CDR-6.1mm-5X	14534
6.2mm	0.2441	8mm	31.0mm	38.8mm	96mm	CDR-6.2mm-5X	14535
6.3mm	0.2480	8mm	31.5mm	39.4mm	96mm	CDR-6.3mm-5X	14536
1/4	0.2500	8mm	0.750	0.938	2.992	CDR-1/4-3X	13188
1/4	0.2500	8mm	1.250	1.563	3.780	CDR-1/4-5X	13234
1/4	0.2500	8mm	1.750	2.188	4.567	CDR-1/4-7X	13280
6.4mm	0.2520	8mm	32.0mm	40.0mm	96mm	CDR-6.4mm-5X	14537
6.5mm	0.2559	8mm	32.5mm	40.6mm	96mm	CDR-6.5mm-5X	14538
F	0.2570	8mm	1.285	1.606	3.780	CDR-F-5X	19518
6.6mm	0.2598	8mm	33.0mm	41.3mm	96mm	CDR-6.6mm-5X	14539
6.7mm	0.2638	8mm	33.5mm	41.9mm	96mm	CDR-6.7mm-5X	14540
6.8mm	0.2677	8mm	34.0mm	42.5mm	96mm	CDR-6.8mm-5X	14541
6.9mm	0.2717	8mm	34.5mm	43.1mm	96mm	CDR-6.9mm-5X	14542
I	0.2720	8mm	1.360	1.700	3.780	CDR-I-5X	19519
7mm	0.2756	8mm	21.0mm	26.3mm	76mm	CDR-7mm-3X	13189
7mm	0.2756	8mm	35.0mm	43.8mm	96mm	CDR-7mm-5X	13235
7mm	0.2756	8mm	49.0mm	61.3mm	116mm	CDR-7mm-7X	13281

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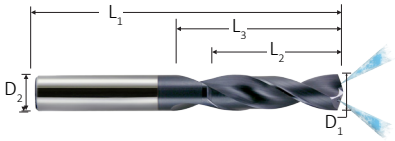
2 FLUTE • 140° POINT COOLANT HOLE DRILL



SERIES: CDR

DIAMETER D_1		SHK D_2	DRILL LENGTH L_2	FLUTE LENGTH L_3	OAL L_1	PART NAME	nACo EDP
9/32	0.2813	8mm	0.844	1.055	2.992	CDR-9/32-3X	13190
9/32	0.2813	8mm	1.406	1.758	3.780	CDR-9/32-5X	13236
9/32	0.2813	8mm	1.969	2.461	4.567	CDR-9/32-7X	13282
7.5mm	0.2953	8mm	37.5mm	46.9mm	96mm	CDR-7.5mm-5X	14547
5/16	0.3125	8mm	0.938	1.172	2.992	CDR-5/16-3X	13191
5/16	0.3125	8mm	1.563	1.953	3.780	CDR-5/16-5X	13237
5/16	0.3125	8mm	2.188	2.734	4.567	CDR-5/16-7X	13283
8mm	0.3150	8mm	24.0mm	30.0mm	76mm	CDR-8mm-3X	13192
8mm	0.3150	8mm	40.0mm	50.0mm	96mm	CDR-8mm-5X	13238
8mm	0.3150	8mm	56.0mm	70.0mm	116mm	CDR-8mm-7X	13284
Q	0.3320	10mm	1.660	2.075	4.252	CDR-Q-5X	19520
8.5mm	0.3346	10mm	42.5mm	53.1mm	108mm	CDR-8.5mm-5X	14556
11/32	0.3438	10mm	1.031	1.289	3.504	CDR-11/32-3X	13193
11/32	0.3438	10mm	1.719	2.148	4.252	CDR-11/32-5X	13239
11/32	0.3438	10mm	2.406	3.008	5.512	CDR-11/32-7X	13285
9mm	0.3543	10mm	27.0mm	33.8mm	89mm	CDR-9mm-3X	13194
9mm	0.3543	10mm	45.0mm	56.3mm	108mm	CDR-9mm-5X	13240
9mm	0.3543	10mm	63.0mm	78.8mm	140mm	CDR-9mm-7X	13286
U	0.3680	10mm	1.84	2.300	4.252	CDR-U-5X	19521
9.5mm	0.3740	10mm	47.5mm	59.4mm	108mm	CDR-9.5mm-5X	14561
3/8	0.375	10mm	1.125	1.406	3.504	CDR-3/8-3X	13195
3/8	0.375	10mm	1.875	2.344	4.252	CDR-3/8-5X	13241
3/8	0.375	10mm	2.625	3.281	5.512	CDR-3/8-7X	13287
25/64	0.3906	10mm	1.953	2.441	4.252	CDR-25/64-5X	19522
10mm	0.3937	10mm	30.0mm	37.5mm	89mm	CDR-10mm-3X	13196
10mm	0.3937	10mm	50.0mm	62.5mm	108mm	CDR-10mm-5X	13242
10mm	0.3937	10mm	70.0mm	87.5mm	140mm	CDR-10mm-7X	13288
10.5mm	0.4134	12mm	52.5mm	65.6mm	132mm	CDR-10.5mm-5X	14562
27/64	0.4219	12mm	2.110	2.707	5.197	CDR-27/64-5X	14563
11mm	0.4331	12mm	33.0mm	41.3mm	102mm	CDR-11mm-3X	13197
11mm	0.4331	12mm	55.0mm	68.8mm	132mm	CDR-11mm-5X	13243
11mm	0.4331	12mm	77.0mm	96.3mm	162mm	CDR-11mm-7X	13289
7/16	0.4375	12mm	1.313	1.641	4.016	CDR-7/16-3X	13198
7/16	0.4375	12mm	2.188	2.734	5.197	CDR-7/16-5X	13244
7/16	0.4375	12mm	3.063	3.828	6.378	CDR-7/16-7X	13290
11.5mm	0.4528	12mm	57.5mm	71.9mm	132mm	CDR-11.5mm-5X	14564
29/64	0.4621	12mm	2.311	2.888	5.197	CDR-29/64-5X	19524
12mm	0.4724	12mm	36.0mm	45mm	102mm	CDR-12mm-3X	13199
12mm	0.4724	12mm	60.0mm	75mm	132mm	CDR-12mm-5X	13245
12mm	0.4724	12mm	84.0mm	105mm	162mm	CDR-12mm-7X	13291
12.5mm	0.4921	14mm	37.5mm	46.9mm	102mm	CDR-12.5mm-3X	11773
12.5mm	0.4921	14mm	62.5mm	78.1mm	138mm	CDR-12.5mm-5X	14565
1/2	0.5000	14mm	1.500	1.875	4.016	CDR-1/2-3X	13200
1/2	0.5000	14mm	2.500	3.125	5.433	CDR-1/2-5X	13246
1/2	0.5000	14mm	3.500	4.375	6.457	CDR-1/2-7X	13292

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2 Flute • 140° point Coolant hole drill

Series: CDR

DIAMETER D_1		SHK D_2	DRILL LENGTH L_2	FLUTE LENGTH L_3	OAL L_1	PART NAME	nACo EDP
13mm	0.5118	14mm	39.0mm	48.8mm	102mm	CDR-13mm-3X	13201
13mm	0.5118	14mm	65.0mm	81.3mm	138mm	CDR-13mm-5X	13247
13mm	0.5118	14mm	91.0mm	113.8mm	164mm	CDR-13mm-7X	13293
14mm	0.5512	14mm	39.0mm	52.5mm	102mm	CDR-14mm-3X	13202
14mm	0.5512	14mm	70.0mm	87.5mm	138mm	CDR-14mm-5X	13248
14mm	0.5512	14mm	98.0mm	122.5mm	175mm	CDR-14mm-7X	13294
9/16	0.5625	16mm	1.688	2.109	4.252	CDR-9/16-3X	13203
9/16	0.5625	16mm	2.813	3.516	5.906	CDR-9/16-5X	13249
9/16	0.5625	16mm	3.938	4.922	7.480	CDR-9/16-7X	13295
15mm	0.5906	16mm	45.0mm	56.3mm	108mm	CDR-15mm-3X	13204
15mm	0.5906	16mm	75.0mm	93.8mm	150mm	CDR-15mm-5X	13250
15mm	0.5906	16mm	105.0mm	131.3mm	190mm	CDR-15mm-7X	13296
5/8	0.6250	16mm	1.875	2.344	4.252	CDR-5/8-3X	13205
5/8	0.6250	16mm	3.125	3.906	5.906	CDR-5/8-5X	13251
5/8	0.6250	16mm	4.375	5.469	7.480	CDR-5/8-7X	13297
16mm	0.6299	16mm	48.0mm	60mm	108mm	CDR-16mm-3X	13206
16mm	0.6299	16mm	80.0mm	100mm	150mm	CDR-16mm-5X	13252
16mm	0.6299	16mm	112.0mm	140mm	190mm	CDR-16mm-7X	13298
17mm	0.6693	18mm	51.0mm	63.8mm	124mm	CDR-17mm-3X	13207
17mm	0.6693	18mm	85.0mm	106.3mm	164mm	CDR-17mm-5X	13253
17mm	0.6693	18mm	119.0mm	148.8mm	215mm	CDR-17mm-7X	13299
18mm	0.7087	18mm	54.0mm	67.5mm	124mm	CDR-18mm-3X	13208
18mm	0.7087	18mm	90.0mm	112.5mm	164mm	CDR-18mm-5X	13254
18mm	0.7087	18mm	126.0mm	157.5mm	215mm	CDR-18mm-7X	13300
19mm	0.7480	20mm	57.0mm	71.3mm	128mm	CDR-19mm-3X	13209
19mm	0.7480	20mm	95.0mm	118.8mm	178mm	CDR-19mm-5X	13255
19mm	0.7480	20mm	133.0mm	166.3mm	228mm	CDR-19mm-7X	13301
3/4	0.7500	20mm	2.250	2.813	5.039	CDR-3/4-3X	13210
3/4	0.7500	20mm	3.750	4.688	7.008	CDR-3/4-5X	13256
3/4	0.7500	20mm	5.250	6.563	8.976	CDR-3/4-7X	13302
20mm	0.7874	20mm	60.0mm	75mm	128mm	CDR-20mm-3X	13211
20mm	0.7874	20mm	100.0mm	125mm	178mm	CDR-20mm-5X	13257
20mm	0.7874	20mm	140.0mm	175mm	228mm	CDR-20mm-7X	13303

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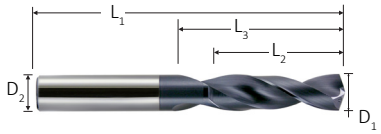
Various Material

2 Flute • 140° point without coolant hole drill



Carbide | 2 | Center Cutting | 25° | nACo | +.0000 -.0005 | DRILL POINT | HRc <48 | P M K S

- Designed for use most Ferrous Materials
- Has a Self-Centering drill point
- Unique geometry & honed edge prep minimizes need for pecking
- Proprietary nACo coating provides extended tool life over conventional coatings

Series: MDR

DIAMETER D_1		SHK D_2	DRILL LENGTH L_2	FLUTE LENGTH L_3	OAL L_1	PART NAME	nACo EDP
3/64	0.0469	1/8	0.2810	0.3520	1-1/2	MDR-3/64	14257
# 55	0.0520	1/8	0.3090	0.3870	1-1/2	MDR-55	14258
# 54	0.0550	1/8	0.3250	0.4060	1-1/2	MDR-54	14259
1.5mm	0.0591	3mm	8.8mm	11mm	38mm	MDR-1.5MM	14309
# 53	0.0595	1/8	0.3480	0.4350	1-1/2	MDR-53	14260
1/16	0.0625	1/8	0.3630	0.4530	1-1/2	MDR-1/16	10292
# 52	0.0635	1/8	0.3650	0.4560	1-1/2	MDR-52	14261
# 50	0.0700	1/8	0.3990	0.4990	2	MDR-50	14262
# 49	0.0730	1/8	0.4120	0.5160	2	MDR-49	14263
# 48	0.0760	1/8	0.4260	0.5320	2	MDR-48	14264
5/64	0.0781	1/8	0.4330	0.5420	2	MDR-5/64	14265
2mm	0.0787	3mm	10.9mm	13.5mm	38mm	MDR-2MM	14310
# 46	0.0810	1/8	0.4460	0.5570	2	MDR-46	14266
# 45	0.0820	1/8	0.4470	0.5590	2	MDR-45	14267
# 44	0.0860	1/8	0.4640	0.5810	2	MDR-44	14268
# 43	0.0890	1/8	0.4760	0.5950	2	MDR-43	14269
# 42	0.0935	1/8	0.4960	0.6190	2	MDR-42	14270
3/32	0.0938	1/8	0.4920	0.6160	2	MDR-3/32	10294
# 41	0.0960	1/8	0.4990	0.6240	2	MDR-41	14271
# 40	0.0980	1/8	0.5050	0.6310	2	MDR-40	14272
2.5mm	0.0984	3mm	12.5mm	15.5mm	38mm	MDR-2.5MM	14311
# 39	0.0995	1/8	0.5070	0.6340	2	MDR-39	14273
# 38	0.1015	1/8	0.5130	0.6410	2	MDR-38	14274
# 37	0.1040	1/8	0.5200	0.6500	2	MDR-37	14275
# 36	0.1065	1/8	0.5270	0.6590	2	MDR-36	14276
7/64	0.1094	1/8	0.5360	0.6700	2	MDR-7/64	14277
#32	0.1160	1/8	0.5630	0.7040	2	MDR-32	14566
3mm	0.1181	3mm	14.1mm	17.5mm	38mm	MDR-3MM	10290
# 31	0.1200	1/8	0.5820	0.7280	2	MDR-31	14278
1/8	0.1250	1/8	0.6000	0.7500	2	MDR-1/8	14279
# 30	0.1285	3/16	0.6100	0.7630	2	MDR-30	14280
# 29	0.1360	3/16	0.6390	0.7990	2	MDR-29	14281
3.5mm	0.1378	4mm	15.6mm	19.5mm	50mm	MDR-3.5MM	14312
# 28	0.1405	3/16	0.6530	0.8170	2	MDR-28	14282
9/64	0.1406	3/16	0.6470	0.8080	2	MDR-9/64	14283
# 25	0.1495	3/16	0.6800	0.8500	2.5	MDR-25	14284
5/32	0.1562	3/16	0.7030	0.8790	2.5	MDR-5/32	14285
4mm	0.1575	4mm	16.8mm	21mm	50mm	MDR-4MM	14313
# 21	0.1590	3/16	0.7080	0.8840	2.5	MDR-21	14286

Speed & Feed: page 164

sizes continued on next page

2 FLUTE • 140° POINT WITHOUT COOLANT HOLE DRILL

SERIES: MDR

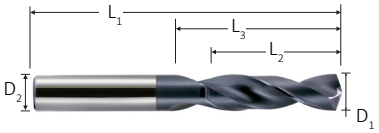
DIAMETER D_1		SHK D_2	DRILL LENGTH L_2	FLUTE LENGTH L_3	OAL L_1	PART NAME	nACo EDP
# 20	0.1610	3/16	0.6440	0.8050	2.5	MDR-20	14287
11/64	0.1719	3/16	0.6880	0.8600	2.5	MDR-11/64	14288
16	0.1770	3/16	0.7080	0.8850	2.5	MDR-16	14289
4.5mm	0.1772	5mm	18mm	22.5mm	50mm	MDR-4.5MM	14314
3/16	0.1875	3/16	0.7500	0.9380	2.5	MDR-3/16	14290
11	0.1910	1/4	0.7640	0.9550	2.5	MDR-11	14291
10	0.1935	1/4	0.7740	0.9680	2.5	MDR-10	14292
5mm	0.1969	5mm	20mm	25mm	50mm	MDR-5MM	14315
7	0.2010	1/4	0.8040	1.0050	2.5	MDR-7	14293
13/64	0.2031	1/4	0.8120	1.0160	2.5	MDR-13/64	14294
5	0.2055	1/4	0.8220	1.0280	2.5	MDR-5	14295
3	0.2130	1/4	0.8520	1.0650	2.5	MDR-3	14296
7/32	0.2188	1/4	0.8750	1.0940	2.5	MDR-7/32	14297
15/64	0.2344	1/4	0.9380	1.1720	2.5	MDR-15/64	14298
6mm	0.2362	6mm	24mm	30mm	63mm	MDR-6MM	14316
1/4	0.2500	1/4	1	1.25	2.5	MDR-1/4	10296
6.5mm	0.2559	8mm	26mm	33mm	75mm	MDR-6.5MM	19810
F	0.2570	5/16	1.0280	1.2850	3	MDR-F	14299
17/64	0.2656	5/16	1.0620	1.3280	3	MDR-17/64	14300
I	0.2720	5/16	1.0880	1.3600	3	MDR-I	14301
7mm	0.2756	8mm	28mm	35mm	75mm	MDR-7MM	14317
9/32	0.2812	5/16	1.1250	1.4060	3	MDR-9/32	14302
7.5mm	0.2953	8mm	30mm	38mm	75mm	MDR-7.5MM	19811
19/64	0.2969	5/16	1.1880	1.4840	3	MDR-19/64	19793
5/16	0.3125	5/16	1.2500	1.5630	3	MDR-5/16	10298
8mm	0.3150	8mm	32mm	40mm	75mm	MDR-8MM	14318
21/64	0.3281	3/8	1.3130	1.5750	3	MDR-21/64	19794
Q	0.3320	3/8	1.3280	1.5940	3	MDR-Q	19795
8.5mm	0.3346	10mm	34mm	41mm	100mm	MDR-8.5MM	19812
11/32	0.3438	3/8	1.3750	1.6500	3	MDR-11/32	14303
9mm	0.3543	10mm	36mm	43mm	100mm	MDR-9MM	14319
23/64	0.3594	3/8	1.4380	1.7250	3	MDR-23/64	19796
U	0.3680	3/8	1.4720	1.7660	3	MDR-U	19797
9.5mm	0.3740	10mm	38mm	45mm	100mm	MDR-9.5MM	19813
3/8	0.3750	3/8	1.5000	1.8	3	MDR-3/8	10302
25/64	0.3906	7/16	1.5630	1.9	4	MDR-25/64	19798
10mm	0.3937	10mm	40mm	47mm	100mm	MDR-10MM	14320
13/32	0.4063	7/16	1.6250	1.8690	4	MDR-13/32	19799
10.5mm	0.4134	12mm	42mm	48mm	100mm	MDR-10.5MM	19814
27/64	0.4219	7/16	1.6880	1.9410	4	MDR-27/64	19800
11mm	0.4331	12mm	44mm	49mm	100mm	MDR-11MM	19815
7/16	0.4375	7/16	1.7500	2.0130	4	MDR-7/16	14304
11.5mm	0.4528	12mm	46mm	51mm	100mm	MDR-11.5MM	19816
29/64	0.4531	1/2	1.8130	1.9940	4	MDR-29/64	19801
12mm	0.4724	12mm	48mm	53mm	100mm	MDR-12MM	14321
31/64	0.4844	1/2	1.9380	2.1310	4	MDR-31/64	19802

Speed & Feed: page 164

sizes continued on next page

Various Material

2 Flute • 140° point <u>without</u> coolant hole drill



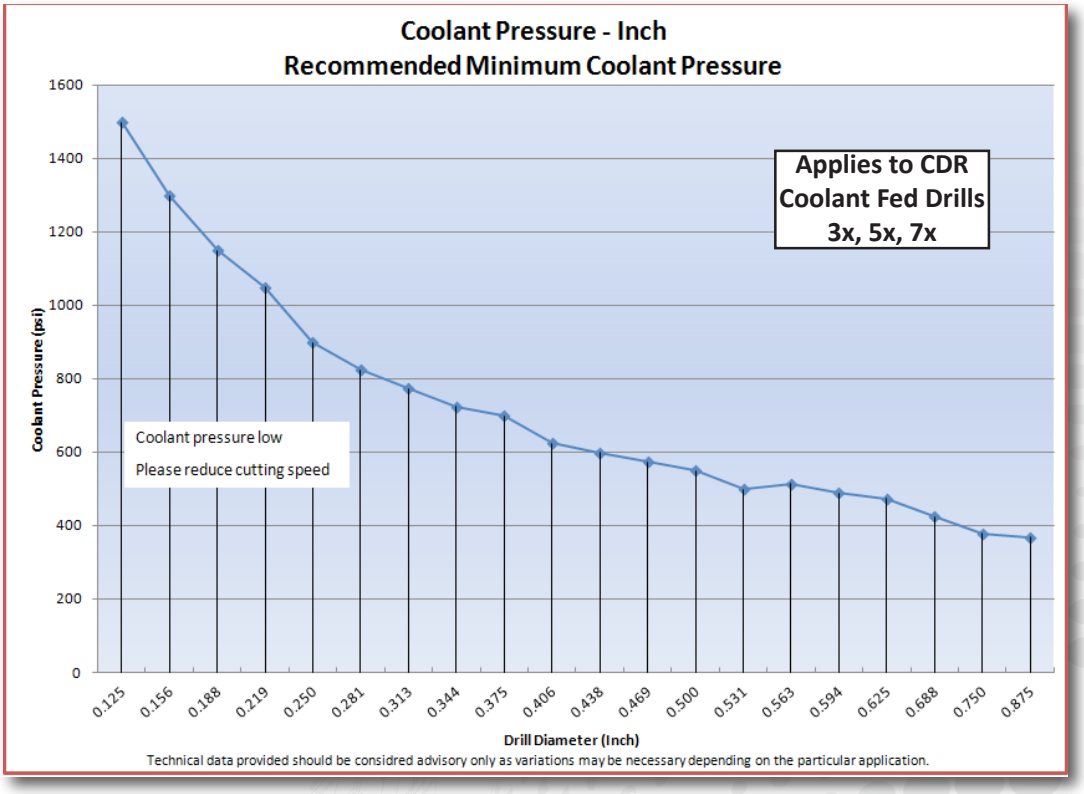
Series: MDR

DIAMETER D_1		SHK D_2	DRILL LENGTH L_2	FLUTE LENGTH L_3	OAL L_1	PART NAME	nACo EDP
12.5mm	0.4921	14mm	50mm	56mm	100mm	MDR-12.5MM	19817
1/2	0.5000	1/2	2.0000	2.2	4	MDR-1/2	14305
13mm	0.5118	14mm	52mm	58mm	100mm	MDR-13MM	19818
33/64	0.5156	9/16	2.0630	2.2690	4	MDR-33/64	19803
17/32	0.5313	9/16	2.1250	2.3380	4	MDR-17/32	19804
13.5mm	0.5315	14mm	54mm	60mm	100mm	MDR-13.5MM	19819
35/64	0.5469	9/16	2.1880	2.4060	4	MDR-35/64	19805
14mm	0.5512	14mm	56mm	62mm	100mm	MDR-14MM	19151
9/16	0.5625	9/16	2.2500	2.4750	4	MDR-9/16	14306
37/64	0.5781	5/8	2.3130	2.5440	5	MDR-37/64	19806
15mm	0.5906	16mm	60mm	66mm	127mm	MDR-15MM	19152
19/32	0.5938	5/8	2.3750	2.6130	5	MDR-19/32	19807
5/8	0.6250	5/8	2.5000	2.7500	5	MDR-5/8	14307
16mm	0.6299	16mm	64mm	70mm	127mm	MDR-16MM	19153
21/32	0.6563	3/4	2.4280	2.6710	5	MDR-21/32	19808
11/16	0.6875	3/4	2.5440	2.7980	5	MDR-11/16	19809
3/4	0.7500	3/4	2.7750	3.0530	5	MDR-3/4	14308

Speed & Feed: page 164

High Performance drills don't have to "break your bank!" Melin's MDR Series delivers the volume and accuracy of holes you want at a lower cost per tool!

Coolant Pressure Rating for CDR Drills



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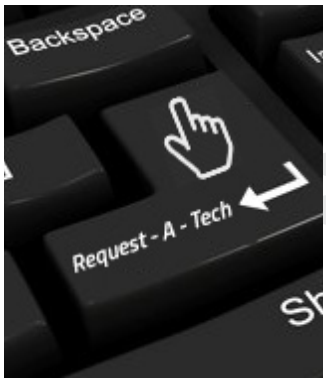
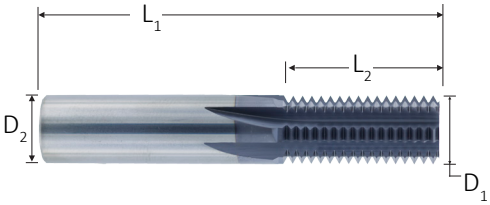
- Eliminate Steps
- Evaluate Alternative Processes
- Optimize Tool Design
- Significantly Reduce Chatter & Vibrations



Various Material

Multi Flute • 60° straight flute, un thread mills



Carbide | MULTI FLUTES | 0° | AlTiN | 60° | HRc <52 | P K M S H N

- Threads large diameter holes faster and more accurately than conventional or high performance taps
- Reduces chatter

Series: TM-__-S

MIN THREAD DIA./PITCH	CUTTER DIA D_1	SHK D_2	LOC L_2	OAL L_1	FLUTE	PART NAME	AlTiN EDP
6-32	0.085	1/8	7/32	2	2	TM-6-32-S	17500
8-32	0.120	1/8	1/4	2	3	TM-8-32-S	17501
10-24	0.140	3/16	5/16	2-1/2	3	TM-10-24-S	17502
10-28	0.140	3/16	5/16	2-1/2	3	TM-10-28-S	17503
10-32	0.140	3/16	5/16	2-1/2	3	TM-10-32-S	17504
1/4-20	0.180	3/16	1/2	2-1/2	3	TM-1/4-20-S	17505
1/4-28	0.180	3/16	1/2	2-1/2	3	TM-1/4-28-S	17506
1/4-32	0.180	3/16	1/2	2-1/2	3	TM-1/4-32-S	17507
5/16-18	0.235	1/4	5/8	2-1/2	3	TM-5/16-18-S	17508
5/16-24	0.235	1/4	5/8	2-1/2	3	TM-5/16-24-S	17509
5/16-32	0.235	1/4	5/8	2-1/2	3	TM-5/16-32-S	17510
3/8-16	0.300	5/16	3/4	3	4	TM-3/8-16-S	17511
3/8-24	0.300	5/16	3/4	3	4	TM-3/8-24-S	17512
7/16-14	0.345	3/8	3/4	3-1/2	4	TM-7/16-14-S	17513
7/16-20	0.345	3/8	3/4	3-1/2	4	TM-7/16-20-S	17514
1/2-13	0.370	3/8	7/8	3-1/2	4	TM-1/2-13-S	17515
1/2-20	0.370	3/8	7/8	3-1/2	4	TM-1/2-20-S	17516
1/2-28	0.370	3/8	7/8	3-1/2	4	TM-1/2-28-S	17517
9/16-12	0.450	1/2	7/8	3-1/2	4	TM-9/16-12-S	17518
9/16-18	0.450	1/2	7/8	3-1/2	4	TM-9/16-18-S	17519
5/8-10	0.490	1/2	1-1/4	3-1/2	6	TM-5/8-10-S	17520
5/8-11	0.490	1/2	1-1/4	3-1/2	6	TM-5/8-11-S	17521
5/8-12	0.490	1/2	1-1/4	3-1/2	6	TM-5/8-12-S	17522
5/8-18	0.490	1/2	1-1/4	3-1/2	6	TM-5/8-18-S	17523
3/4-12	0.600	5/8	1-1/4	3-1/2	6	TM-3/4-12-S	17524
3/4-16	0.600	5/8	1-1/4	3-1/2	6	TM-3/4-16-S	17525
3/4-20	0.600	5/8	1-1/4	3-1/2	6	TM-3/4-20-S	17526
7/8-9	0.620	5/8	1-1/4	3-1/2	6	TM-7/8-9-S	17527
7/8-12	0.620	5/8	1-1/4	3-1/2	6	TM-7/8-12-S	17528
7/8-14	0.620	5/8	1-1/4	3-1/2	6	TM-7/8-14-S	17529
7/8-16	0.620	5/8	1-1/4	3-1/2	6	TM-7/8-16-S	17530
7/8-20	0.620	5/8	1-1/4	3-1/2	6	TM-7/8-20-S	17531
1-8	0.735	3/4	1-3/8	5	4	TM-1-8-S	17532
1-12	0.735	3/4	1-3/8	5	4	TM-1-12-S	17533
1-16	0.735	3/4	1-3/8	5	4	TM-1-16-S	17534
1-20	0.735	3/4	1-3/8	5	4	TM-1-20-S	17535

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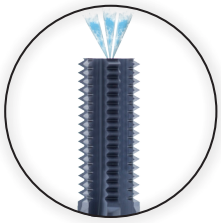
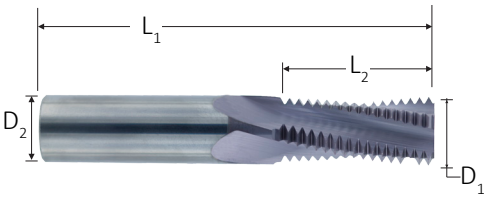


Coolant Hole option available upon request.

(Several sizes stocked)

Call Customer Service Today



MULTI FLUTE • 60° HELICAL FLUTE, UN THREAD MILLS

Carbide | MULTI FLUTES | 15° | AlTiN | 60° | HRc <52 | P K M S H N

- Threads large diameter holes faster and more accurately than conventional or high performance taps
- Reduces chatter

SERIES: TM-__-H

MIN THREAD DIA./PITCH	CUTTER DIA D_1	SHK D_2	LOC L_2	OAL L_1	FLUTE	PART NAME	AlTiN EDP
2-56	0.065	1/8	0.125	2	3	TM-2-56-H	14647
3-48	0.075	1/8	0.167	2	3	TM-3-48-H	14649
4-40	0.085	1/8	0.175	2	3	TM-4-40-H	14650
6-32	0.085	1/8	7/32	2	3	TM-6-32-H	17536
8-32	0.120	1/8	1/4	2	3	TM-8-32-H	17537
10-24	0.140	3/16	5/16	2-1/2	3	TM-10-24-H	17538
10-28	0.140	3/16	5/16	2-1/2	3	TM-10-28-H	17539
10-32	0.140	3/16	5/16	2-1/2	3	TM-10-32-H	17540
1/4-20	0.180	3/16	1/2	2-1/2	3	TM-1/4-20-H	17541
1/4-28	0.180	3/16	1/2	2-1/2	3	TM-1/4-28-H	17542
1/4-32	0.180	3/16	1/2	2-1/2	3	TM-1/4-32-H	17543
5/16-18	0.235	1/4	5/8	2-1/2	3	TM-5/16-18-H	17544
5/16-24	0.235	1/4	5/8	2-1/2	3	TM-5/16-24-H	17545
5/16-32	0.235	1/4	5/8	2-1/2	3	TM-5/16-32-H	17546
3/8-16	0.300	5/16	3/4	3	4	TM-3/8-16-H	17547
3/8-24	0.300	5/16	3/4	3	4	TM-3/8-24-H	17548
7/16-14	0.345	3/8	3/4	3-1/2	4	TM-7/16-14-H	17549
7/16-20	0.345	3/8	3/4	3-1/2	4	TM-7/16-20-H	17550
1/2-13	0.370	3/8	7/8	3-1/2	4	TM-1/2-13-H	17551
1/2-20	0.370	3/8	7/8	3-1/2	4	TM-1/2-20-H	17552
1/2-28	0.370	3/8	7/8	3-1/2	4	TM-1/2-28-H	17553
9/16-12	0.450	1/2	7/8	3-1/2	4	TM-9/16-12-H	17554
9/16-18	0.450	1/2	7/8	3-1/2	4	TM-9/16-18-H	17555
5/8-10	0.490	1/2	1-1/4	3-1/2	4	TM-5/8-10-H	17556
5/8-11	0.490	1/2	1-1/4	3-1/2	4	TM-5/8-11-H	17557
5/8-12	0.490	1/2	1-1/4	3-1/2	4	TM-5/8-12-H	17558
5/8-18	0.490	1/2	1-1/4	3-1/2	4	TM-5/8-18-H	17559
3/4-12	0.600	5/8	1-1/4	3-1/2	4	TM-3/4-12-H	17560
3/4-16	0.600	5/8	1-1/4	3-1/2	4	TM-3/4-16-H	17561
3/4-20	0.600	5/8	1-1/4	3-1/2	4	TM-3/4-20-H	17562
7/8-9	0.620	5/8	1-1/4	3-1/2	4	TM-7/8-9-H	17563
7/8-12	0.620	5/8	1-1/4	3-1/2	4	TM-7/8-12-H	17564
7/8-14	0.620	5/8	1-1/4	3-1/2	4	TM-7/8-14-H	17565
7/8-16	0.620	5/8	1-1/4	3-1/2	4	TM-7/8-16-H	17566
7/8-20	0.620	5/8	1-1/4	3-1/2	4	TM-7/8-20-H	17567
1-8	0.735	3/4	1-3/8	5	4	TM-1-8-H	17568
1-12	0.735	3/4	1-3/8	5	4	TM-1-12-H	17569
1-16	0.735	3/4	1-3/8	5	4	TM-1-16-H	17570
1-20	0.735	3/4	1-3/8	5	4	TM-1-20-H	17571

Speed & Feed: page 166

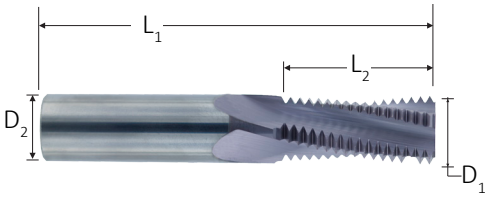
COOLANT HOLE option available upon request.

(Several sizes stocked)

Call Customer Service Today

Various Material

Multi Flute • 60° helical flute, un thread mills



Carbide | MULTI FLUTES | 15° | AlTiN | 60° | HRc <52 | P K M S H N

- Threads large diameter holes faster and more accurately than conventional or high performance taps
- Reduces chatter

Series: TM-M__-H

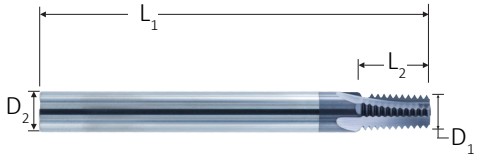
MIN THREAD DIA./PITCH	CUTTER DIA D_1	SHK D_2	LOC L_2	OAL L_1	FLUTE	PART NAME	AlTiN EDP
m3-.5	2.2mm	3mm	6mm	57mm	2	TM-M3-.5-H	17585
m3.5-.6	2.4mm	3mm	6mm	57mm	2	TM-M3.5-.6-H	17586
m4-.7	2.9mm	3mm	6.5mm	57mm	2	TM-M4-.7-H	17587
m4.5-.75	3.1mm	4mm	6.5mm	63mm	2	TM-M4.5-.75-H	17588
m5-.8	3.7mm	6mm	8mm	63mm	3	TM-M5-.8-H	17589
m6-1	4.3mm	6mm	12mm	63mm	3	TM-M6-1-H	17590
m8-1	5.9mm	6mm	16mm	63mm	3	TM-M8-1-H	17591
m8-1.25	5.9mm	6mm	16mm	63mm	3	TM-M8-1.25-H	17592
m10-1.25	7.6mm	8mm	19mm	63mm	4	TM-M10-1.25-H	17593
m10-.1.5	7.6mm	8mm	19mm	63mm	4	TM-M10-1.5-H	17594
m12-1.25	9.4mm	10mm	22mm	70mm	4	TM-M12-1.25-H	17595
m12-1.75	9.4mm	10mm	22mm	70mm	4	TM-M12-1.75-H	17596
m14-1.25	11.4mm	12mm	24mm	76mm	4	TM-M14-1.25-H	17597
m14-1.5	11.4mm	12mm	24mm	76mm	4	TM-M14-1.5-H	17598
m14-2	11.4mm	12mm	24mm	76mm	4	TM-M14-2-H	17599
m18-2.5	12.7mm	16mm	30mm	89mm	4	TM-M18-2.5-H	17600
m20-1.5	15.7mm	16mm	30mm	89mm	4	TM-M20-1.5-H	17601
m20-2	15.7mm	16mm	30mm	89mm	4	TM-M20-2-H	17602
m24-1.5	19.1mm	20mm	40mm	100mm	4	TM-M24-1.5-H	17603
m24-2	19.1mm	20mm	40mm	100mm	4	TM-M24-2-H	17604
m24-2.5	19.1mm	20mm	40mm	100mm	4	TM-M24-2.5-H	17605
m24-3	19.1mm	20mm	40mm	100mm	4	TM-M24-3-H	17606

Coolant Hole option available upon request.
(Several sizes stocked)
Call Customer Service Today

Speed & Feed: page 166

Thread Mill Software Program

Melin offers a stand alone software program designed to assist you in programming when using our Thread Mills Series. Visit www.melintool.com/threadmills to download our software.



MULTI FLUTE • STRAIGHT FLUTE, NPT THREAD MILLS

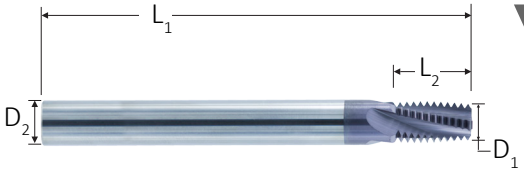
Carbide | MULTI FLUTES | 0° | AlTiN | 60° | HRc <52 | P K M S H N

SERIES: TM-__-NPT-S

MIN THREAD DIA./PITCH	CUTTER DIA D_1	SHK D_2	LOC L_2	OAL L_1	FLUTE	PART NAME	AlTiN EDP
1/16-27NPT	0.218	1/4	1/2	2-1/2	4	TM-1/16-27NPT-S	17572
1/8-27NPT	0.300	5/16	19/32	3	4	TM-1/8-27NPT-S	17573
1/4-18NPT	0.360	3/8	5/8	3-1/2	4	TM-1/4-18NPT-S	17574
3/8-18NPT	0.425	7/16	3/4	4	4	TM-3/8-18NPT-S	17575
1/2-14NPT	0.490	1/2	1	4	6	TM-1/2-14NPT-S	17576
1-11.5NPT	0.620	5/8	1-1/8	4	6	TM-1-11.5NPT-S	17577
2.5-8NPT	0.990	1	1-1/2	5	6	TM-2.5-8NPT-S	17578

Speed & Feed: page 166

COOLANT HOLE option available upon request.
(Several sizes stocked)
Call Customer Service Today



MULTI FLUTE • HELICAL FLUTE, NPT THREAD MILLS

Carbide | MULTI FLUTES | 15° | AlTiN | 60° | HRc <52 | P K M S H N

SERIES: TM-__NPT-H

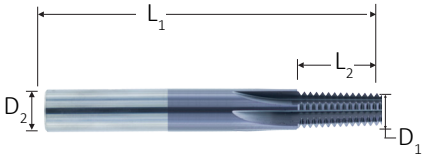
MIN THREAD DIA./PITCH	CUTTER DIA D_1	SHK D_2	LOC L_2	OAL L_1	FLUTE	PART NAME	AlTiN EDP
1/16-27NPT	0.218	1/4	1/2	2-1/2	3	TM-1/16-27NPT-H	17579
1/8-27NPT	0.300	5/16	19/32	3	3	TM-1/8-27NPT-H	17580
1/4-18NPT	0.360	3/8	5/8	3-1/2	4	TM-1/4-18NPT-H	17581
3/8-18NPT	0.425	7/16	3/4	4	4	TM-3/8-18NPT-H	17582
1/2-14NPT	0.490	1/2	1	4	4	TM-1/2-14NPT-H	17583
1-11.5NPT	0.620	5/8	1-1/8	4	4	TM-1-11.5NPT-H	17584

Speed & Feed: page 166

COOLANT HOLE option available upon request.
(Several sizes stocked)
Call Customer Service Today

Various Material

Multi Flute • Straight Flute, NPTF Thread Mills



Carbide | MULTI FLUTES | 0° | AlTiN | 60° | HRc <52 | P K M S H N

Series: TM-__-NPTF-S

MIN THREAD DIA./PITCH	CUTTER DIA D_1	SHK D_2	LOC L_2	OAL L_1	FLUTE	PART NAME	AlTiN EDP
1/8-27NPTF	0.300	5/16	19/32	3	3	TM-1/8-27NPTF-S	11607
1/4-18NPTF	0.360	3/8	5/8	3-1/2	4	TM-1/4-18NPTF-S	11609
1/2-14NPTF	0.490	1/2	1	4	6	TM-1/2-14NPTF-S	11611
1-11.5NPTF	0.620	5/8	1-1/8	4	6	TM-1-11.5NPTF-S	11613

Speed & Feed: page 166

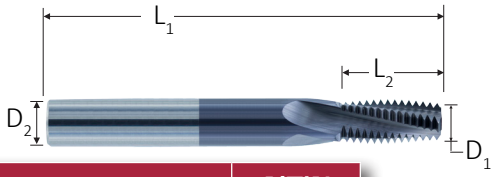
Coolant Hole option available upon request.

(Several sizes stocked)

Call Customer Service Today

Multi Flute • Helical Flute, NPTF Thread Mills

Carbide | MULTI FLUTES | 15° | AlTiN | 60° | HRc <52 | P K M S H N



Series: TM-__NPTF-H

MIN THREAD DIA./PITCH	CUTTER DIA D_1	SHK D_2	LOC L_2	OAL L_1	FLUTE	PART NAME	AlTiN EDP
1/8-27NPTF	0.300	5/16	19/32	3	3	TM-1/8-27NPTF-H	11615
1/4-18NPTF	0.360	3/8	5/8	3-1/2	4	TM-1/4-18NPTF-H	11616
1/2-14NPTF	0.490	1/2	1	4	4	TM-1/2-14NPTF-H	11617
1-11.5NPTF	0.620	5/8	1-1/8	4	4	TM-1-11.5NPTF-H	11619

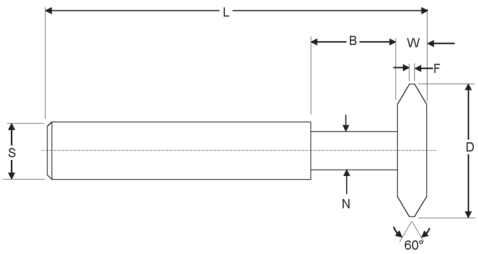
Speed & Feed: page 166

Coolant Hole option available upon request.

(Several sizes stocked)

Call Customer Service Today

MULTI FLUTE • SINGLE FORM THREAD MILLS



Carbide | MULTI FLUTES | 0° | Bright AlTiN | 60° | HRc <52 | P K M S H N

- Designed for milling precision I.D. & O.D threads in all types of steels, non-ferrous metals, & exotic metals
- Single form thread can be used for a wide range of thread pitches

SERIES: TM

CUTTER DIA (D)	SHK DIA (S)	OAL (L)	WIDTH (W)	FLAT (F)	NECK DIA (N)	NECK WIDTH (B)	FLUTE	MIN TPI	MAX PITCH	PART NAME	BRIGHT EDP	AlTiN EDP
0.080	0.1875	2	0.026	0.001	0.040	0.250	3	40	64	TM-4-L1	15820	55820
0.080	0.1875	2	0.026	0.001	0.040	0.375	3	40	64	TM-4-L2	15824	55824
0.098	0.1875	2	0.032	0.001	0.050	0.375	3	32	64	TM-6-L1	15826	55826
0.098	0.1875	2	0.032	0.001	0.050	0.500	3	32	64	TM-6-L2	15828	55828
0.250	0.2500	2.500	0.062	.0020	0.150	1.000	4	16	48	TM-1/4	12311	52311
0.375	0.2500	2.593	0.093	.0020	0.220	0.600	4	12	32	TM-3/8	12313	52313
0.500	0.3125	2.625	0.125	.0035	0.295	0.600	5	11	32	TM-1/2	12309	52309
0.750	0.3750	2.656	0.156	.0045	----	----	6	8	16	TM-3/4	12312	52312
1.000	0.5000	3.187	0.187	.0090	----	----	7	6	12	TM-1	12308	52308

Speed & Feed: page 166

Speed & Feed Information

Series: HVMG2

MATERIAL	CONDITION	CUTTING DIAMETER 3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"	1-1/4"
Aluminum+Aluminum Alloys	ISO-N	CHIP PER TOOTH							
2024-T4/T6, 2014, 6061-T6/T651, 7075-T6 4000-8000 SFM	Slotting	0.0027	0.0030	0.0044	0.0060	0.0076	0.0090	0.0120	0.0150
4000-8000 SFM	Profiling up to 35% of Dia	0.0040	0.0045	0.0066	0.0090	0.0114	0.0135	0.0180	0.0225

MATERIAL	CONDITION	CUTTING DIAMETER - METRIC 10mm	12mm	16mm	20mm	25mm
Aluminum+Aluminum Alloys	ISO-N	CHIP PER TOOTH				
2024-T4/T6, 2014, 6061-T6/T651, 7075-T6 4000-8000 SFM	Slotting	0.1118	0.1524	0.1930	0.2286	0.3048
4000-8000 SFM	Profiling up to 35% of Dia	0.1676	0.2286	0.2896	0.3429	0.4572

Note: These cutters can be used on 80 Kw and 120 Kw spindles

Series: HVMG3

MATERIAL	CONDITION	CUTTING DIAMETER 3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"	1-1/4"
Aluminum+Aluminum Alloys	ISO-N	CHIP PER TOOTH							
2024-T4/T6, 2014, 6061-T6/T651, 7075-T6 4000-8000 SFM	Slotting up to 50% of Dia. Deep	0.0027	0.0030	0.0044	0.0060	0.0076	0.0090	0.0120	0.0150
4000-8000 SFM	Profiling up to 60% of Dia	0.0040	0.0045	0.0066	0.0090	0.0114	0.0135	0.0180	0.0225

MATERIAL	CONDITION	CUTTING DIAMETER - METRIC 10mm	12mm	16mm	20mm	25mm
Aluminum+Aluminum Alloys	ISO-N	CHIP PER TOOTH				
2024-T4/T6, 2014, 6061-T6/T651, 7075-T6 4000-8000 SFM	Slotting up to 50% of Dia. Deep	0.1118	0.1524	0.1930	0.2286	0.3048
4000-8000 SFM	Profiling up to 60% of Dia	0.1676	0.2286	0.2896	0.3429	0.4572

Note: These cutters should be used on 120 Kw spindles only

Series: HVRMG3

MATERIAL	CONDITION	CUTTING DIAMETER 3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"	1-1/4"
Aluminum+Aluminum Alloys	ISO-N	CHIP PER TOOTH							
2024-T4/T6, 2014, 6061-T6/T651, 7075-T6 4000-8000 SFM	Slotting up to 5/8 of Dia. Deep	0.0032	0.0036	0.0053	0.0072	0.0091	0.0108	0.0144	0.0180
4000-8000 SFM	Profiling up to 70% of Dia	0.0048	0.0054	0.0079	0.0108	0.0137	0.0162	0.0216	0.0270

MATERIAL	CONDITION	CUTTING DIAMETER - METRIC 10mm	12mm	16mm	20mm	25mm
Aluminum+Aluminum Alloys	ISO-N	CHIP PER TOOTH				
2024-T4/T6, 2014, 6061-T6/T651, 7075-T6 4000-8000 SFM	Slotting up to 5/8 of Dia. Deep	0.1341	0.1829	0.2316	0.2743	0.3658
4000-8000 SFM	Profiling up to 70% of Dia	0.2012	0.2743	0.3475	0.4115	0.5486

Note: These cutters should be used on 120 Kw spindles only

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our Technical Service Team with questions

MATERIAL	CONDITION	CUTTING DIAMETER 1/8"	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"
Aluminum+Aluminum Alloys	ISO-N	CHIP PER TOOTH							
6061-T6/T651, 7075-T6, 2024-T4/T6, 2014,									
850-1400 SFM	Slotting	.0010	0.002	0.002	0.003	0.004	0.005	0.006	0.007
1700-2000 SFM	25-40% Dia. Profiling	.0025	0.003	0.004	0.006	0.008	0.010	0.012	0.014
Copper	ISO-N								
Red Brass, High Lead Brass, Yellow Brass									
C-17200, Navel Brass, A-17, High Silicon Bronze									
800-1100 SFM	Slotting	.0010	.0010	.0020	.0025	.0030	.0040	.0040	0.005
1000-1200 SFM	25-40% Dia. Profiling	.0014	.0014	.0028	.0035	.0042	.0056	.0056	0.007
Copper Alloys	ISO-N								
Low Silicon Bronze, Alum/Bronze									
Beryllium Copper, Nickel Silver, Oxygen-Free Copper									
500-800 SFM	Slotting	.0010	.0010	.0020	.0025	.0030	.0040	.0040	0.005
600-850 SFM	25-40% Dia. Profiling	.0014	.0014	.0028	.0035	.0042	.0056	.0056	0.007
Magnesium	ISO-N								
700-1000 SFM	Slotting	.0010	0.002	0.002	0.003	0.004	0.006	0.008	0.009
750-1300 SFM	25-40% Dia. Profiling	.0025	0.003	0.004	0.006	0.008	0.010	0.012	0.014
Plastics	ISO-N								
Acrylics, Polycarbonate, Phenolics									
350-600 SFM	Slotting	.0025	0.003	0.004	0.006	0.008	0.010	0.012	0.014
400-800 SFM	25-40% Dia. Profiling	.0010	0.002	0.003	0.004	0.006	0.008	0.010	0.015

MATERIAL	CONDITION	CUTTING DIAMETER - METRIC 3mm	4mm	6mm	8mm	10mm	12mm	16mm	20mm
Aluminum+Aluminum Alloys	ISO-N	CHIP PER TOOTH							
6061-T6/T651, 7075-T6, 2024-T4/T6, 2014,									
850-1400 SFM	Slotting	0.0254	0.0254	0.0508	0.0508	0.0762	0.1016	0.1270	0.1524
1700-2000 SFM	25-40% Dia. Profiling	0.0635	0.0635	0.1016	0.1270	0.1524	0.2032	0.2540	0.3048
Copper	ISO-N								
Red Brass, High Lead Brass, Yellow Brass									
C-17200, Navel Brass, A-17, High Silicon Bronze									
800-1100 SFM	Slotting	0.0254	0.0254	0.0508	0.0508	0.0635	0.0762	0.1016	0.1016
1000-1200 SFM	25-40% Dia. Profiling	0.0356	0.0356	0.0711	0.0787	0.0889	0.1067	0.1422	0.1422
Copper Alloys	ISO-N								
Low Silicon Bronze, Alum/Bronze									
Beryllium Copper, Nickel Silver, Oxygen-Free Copper									
500-800 SFM	Slotting	0.0254	0.0254	0.0508	0.0508	0.0635	0.0762	0.1016	0.1016
600-850 SFM	25-40% Dia. Profiling	0.0356	0.0356	0.0711	0.0787	0.0889	0.1067	0.1422	0.1422
Magnesium	ISO-N								
700-1000 SFM	Slotting	0.0254	0.0254	0.0508	0.0508	0.0762	0.1016	0.1524	0.2032
750-1300 SFM	25-40% Dia. Profiling	0.0635	0.0635	0.1016	0.1270	0.1524	0.2032	0.2540	0.3048
Plastics	ISO-N								
Acrylics, Polycarbonate, Phenolics									
350-600 SFM	Slotting	0.0254	0.0254	0.0762	0.0762	0.1016	0.1524	0.2032	0.2540
400-800 SFM	25-40% Dia. Profiling	0.0635	0.0635	0.1016	0.1016	0.1524	0.2032	0.2540	0.3048

METRIC

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our Technical Service Team with questions

Series: AXMG45 & AXMG45-__-B

MATERIAL	CONDITION	CUTTING DIAMETER 1/8"	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"	1-1/4"
Aluminum+Aluminum Alloys	ISO-N	CHIP PER TOOTH								
6061-T6/T651, 7075-T6, 2024-T4/T6, 2014,										
1200-2000 SFM	Slotting	0.001	0.002	0.002	0.003	0.004	0.005	0.006	0.007	0.008
1700-2000 SFM	10-25 % Dia. Profiling	.0025	0.003	0.004	0.006	0.008	0.010	0.012	0.014	0.016
Copper	ISO-N									
Red Brass, High Lead Brass, Yellow Brass										
C-17200, Navel Brass, A-17, High Silicon Bronze										
800-1500 SFM	Slotting	0.001	0.001	0.002	.0025	0.003	0.004	0.004	0.005	0.006
1000-1200 SFM	10-25 % Dia. Profiling	.0014	.0014	.0028	.0035	.0042	.0056	.0056	0.007	.0084
Copper Alloys	ISO-N									
Low Silicon Bronze, Alum/Bronze										
Beryllium Copper, Nickel Silver, Oxygen-Free Copper										
500-800 SFM	Slotting	0.001	0.001	0.002	.0025	0.003	0.004	0.004	0.005	0.006
600-850 SFM	10-25 % Dia. Profiling	.0014	.0014	.0028	.0035	.0042	.0056	.0056	0.007	.0084
Magnesium	ISO-N									
700-1000 SFM	Slotting	0.001	0.002	0.002	0.003	0.004	0.006	0.008	0.009	0.010
750-1300 SFM	10-25 % Dia. Profiling	.0025	0.003	0.004	0.006	0.008	0.010	0.012	0.014	0.016
Plastics	ISO-N									
Acrylics, Polycarbonate, Phenolics										
350-600 SFM	Slotting	.0025	0.003	0.004	0.006	0.008	0.010	0.012	0.014	0.016
400-800 SFM	10-25 % Dia. Profiling	0.001	0.002	0.003	0.004	0.006	0.008	0.010	0.015	0.020

MATERIAL	CONDITION	CUTTING DIAMETER - METRIC 3mm	4.5mm	6mm	10mm	12mm	16mm	20mm	25mm	32mm
Aluminum+Aluminum Alloys	ISO-N	CHIP PER TOOTH								
6061-T6/T651, 7075-T6, 2024-T4/T6, 2014,										
366-610 M/MIN	Slotting	0.0254	0.0508	0.0508	0.0762	0.1016	0.1270	0.1524	0.1778	0.2032
518-610 M/MIN	10-25 % Dia. Profiling	0.0635	0.0762	0.1016	0.1524	0.2032	0.2540	0.3048	0.3556	0.4064
Copper	ISO-N									
Red Brass, High Lead Brass, Yellow Brass										
C-17200, Navel Brass, A-17, High Silicon Bronze										
244-458 M/MIN	Slotting	0.0254	0.0254	0.0508	0.0635	0.0762	0.1016	0.1016	0.1270	0.1524
304-366 M/MIN	10-25 % Dia. Profiling	0.0356	0.0356	0.0711	0.0889	0.1067	0.1422	0.1422	0.1778	0.2134
Copper Alloys	ISO-N									
Low Silicon Bronze, Alum/Bronze										
Beryllium Copper, Nickel Silver, Oxygen-Free Copper										
152-244 M/MIN	Slotting	0.0254	0.0254	0.0508	0.0635	0.0762	0.1016	0.1016	0.1270	0.1524
182-259 M/MIN	10-25 % Dia. Profiling	0.0356	0.0356	0.0711	0.0889	0.1067	0.1422	0.1422	0.1778	0.2134
Magnesium	ISO-N									
213-305 M/MIN	Slotting	0.0254	0.0508	0.0508	0.0762	0.1016	0.1524	0.2032	0.2286	0.2540
228-396 M/MIN	10-25 % Dia. Profiling	0.0635	0.0762	0.1016	0.1524	0.2032	0.2540	0.3048	0.3556	0.4064
Plastics	ISO-N									
Acrylics, Polycarbonate, Phenolics										
106-182 M/MIN	Slotting	0.0254	0.0508	0.0762	0.1016	0.1524	0.2032	0.2540	0.3556	0.4064
122-244 M/MIN	10-25 % Dia. Profiling	0.0635	0.0762	0.1016	0.1524	0.2032	0.2540	0.3048	0.3810	0.5080

METRIC

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our Technical Service Team with questions

MATERIAL	CONDITION	CUTTING DIAMETER 1/8"	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"
Aluminum+Aluminum Alloys	ISO-N	CHIP PER TOOTH							
2024-T4/T6, 2014, 6061-T6/T651, 7075-T6 1200-2000 SFM	12 % Max Dia. Profiling	.0025	.0030	.0040	.0060	.0080	.0100	.0120	.0140
Copper	ISO-N								
Red Brass, High Lead Brass, Yellow Brass C-17200, Navel Brass, A-17, High Silicon Bronze 1000-12000 SFM	12 % Max Dia. Profiling	.0014	.0014	.0028	.0035	.0042	.0056	.0056	.0070
Copper Alloys	ISO-N								
Low Silicon Bronze, Alum/Bronze Beryllium Copper, Nickel Silver, Oxygen-Free Copper 600-850 SFM	12 % Max Dia. Profiling	.0014	.0014	.0028	.0035	.0042	.0056	.0056	.0070
Magnesium	ISO-N								
750-1300 SFM	12 % Max Dia. Profiling	.0025	.0030	.0040	.0060	.0080	.0100	.0120	.0140

MATERIAL	CONDITION	CUTTING DIAMETER - METRIC 3mm	4.5mm	6mm	10mm	12mm	16mm	20mm	25mm
Aluminum+Aluminum Alloys	ISO-N	CHIP PER TOOTH							
2024-T4/T6, 2014, 6061-T6/T651, 7075-T6 366-610 M/MIN	12 % Max Dia. Profiling	0.0635	0.0762	0.1016	0.1524	0.2032	0.2540	0.3048	0.3556
Copper	ISO-N								
Red Brass, High Lead Brass, Yellow Brass C-17200, Navel Brass, A-17, High Silicon Bronze 304-365 M/MIN	12 % Max Dia. Profiling	0.0356	0.0356	0.0711	0.0889	0.1067	0.1422	0.1422	0.1778
Copper Alloys	ISO-N								
Low Silicon Bronze, Alum/Bronze Beryllium Copper, Nickel Silver, Oxygen-Free Copper 182-25- M/MIN	12 % Max Dia. Profiling	0.0356	0.0356	0.0711	0.0889	0.1067	0.1422	0.1422	0.1778
Magnesium	ISO-N								
228-396 M/MIN	12 % Max Dia. Profiling	0.0635	0.0762	0.1016	0.1524	0.2032	0.2540	0.3048	0.3556

METRIC

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our Technical Service Team with questions

Series: ALMG

MATERIAL	CONDITION	CUTTING DIAMETER 1/8"	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"
Aluminum+Aluminum Alloys	ISO-N	CHIP PER TOOTH							
6061-T6/T651, 7075-T6, 2024-T4/T6, 2014,									
850-1400 SFM	Slotting	0.0008	0.0016	0.0016	0.0024	0.0032	0.0040	0.0048	0.0056
1700-2000 SFM	35 % Dia. Profiling	0.0020	0.0024	0.0032	0.0048	0.0064	0.0080	0.0096	0.0112
Copper	ISO-N								
Red Brass, High Lead Brass, Yellow Brass									
C-17200, Navel Brass, A-17, High Silicon Bronze									
800-1100 SFM	Slotting	0.0008	0.0008	0.0016	0.0020	0.0024	0.0032	0.0032	0.0040
1000-1200 SFM	35 % Dia. Profiling	0.0011	0.0011	0.0022	0.0028	0.0034	0.0045	0.0045	0.0056
Copper Alloys	ISO-N								
Low Silicon Bronze, Alum/Bronze									
Beryllium Copper, Nickel Silver, Oxygen-Free Copper									
500-800 SFM	Slotting	0.0008	0.0008	0.0016	0.0020	0.0024	0.0032	0.0032	0.0040
600-850 SFM	35 % Dia. Profiling	0.0011	0.0011	0.0022	0.0028	0.0034	0.0045	0.0045	0.0056
Magnesium	ISO-N								
700-1000 SFM	Slotting	0.0008	0.0016	0.0016	0.0024	0.0032	0.0048	0.0064	0.0072
750-1300 SFM	35 % Dia. Profiling	0.0020	0.0024	0.0032	0.0048	0.0064	0.0080	0.0096	0.0112
Plastics	ISO-N								
Acrylics, Polycarbonate, Phenolics									
350-600 SFM	Slotting	0.0020	0.0024	0.0032	0.0048	0.0064	0.0080	0.0096	0.0112
400-800 SFM	35% Dia. Profiling	0.0008	0.0016	0.0024	0.0032	0.0048	0.0064	0.0080	0.0120

MATERIAL	CONDITION	CUTTING DIAMETER - METRIC 3mm	4.5mm	6mm	10mm	12mm	16mm	20mm	25mm
Aluminum+Aluminum Alloys	ISO-N	CHIP PER TOOTH							
6061-T6/T651, 7075-T6, 2024-T4/T6, 2014,									
259-426 M/MIN	Slotting	0.0203	0.0406	0.0406	0.0610	0.0813	0.1016	0.1067	0.1422
518-610 M/MIN	35 % Dia. Profiling	0.0508	0.0610	0.0813	0.1219	0.1626	0.2032	0.2438	0.2845
Copper	ISO-N								
Red Brass, High Lead Brass, Yellow Brass									
C-17200, Navel Brass, A-17, High Silicon Bronze									
243-535 M/MIN	Slotting	0.0203	0.0203	0.0406	0.0508	0.0610	0.0813	0.0813	0.1016
305-366 M/MIN	35 % Dia. Profiling	0.0279	0.0279	0.0559	0.0711	0.0864	0.1143	0.1143	0.1422
Copper Alloys	ISO-N								
Low Silicon Bronze, Alum/Bronze									
Beryllium Copper, Nickel Silver, Oxygen-Free Copper									
152-243 M/MIN	Slotting	0.0203	0.0203	0.0406	0.0508	0.0610	0.0813	0.0813	0.1016
182-259 M/MIN	35 % Dia. Profiling	0.0279	0.0279	0.0559	0.0711	0.0864	0.1143	0.1143	0.1422
Magnesium	ISO-N								
213-305 M/MIN	Slotting	0.0203	0.0406	0.0406	0.0610	0.0813	0.1219	0.1626	0.1829
228-396 M/MIN	35 % Dia. Profiling	0.0508	0.0610	0.0813	0.1219	0.1626	0.2032	0.2438	0.2845
Plastics	ISO-N								
Acrylics, Polycarbonate, Phenolics									
106-182 M/MIN	Slotting	0.0203	0.0406	0.0610	0.0813	0.1219	0.1626	0.2032	0.2845
122-244 M/MIN	35% Dia. Profiling	0.0508	0.0610	0.0813	0.1219	0.1626	0.2032	0.2438	0.3048

METRIC

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our Technical Service Team with questions

MATERIAL	CONDITION	CUTTING DIAMETER 1/8"	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"
Aluminum+Aluminum Alloys	ISO-N	CHIP PER TOOTH							
6061-T6/T651, 7075-T6, 2024-T4/T6, 2014,									
850-1400 SFM	Slotting	0.0008	0.0016	0.0016	0.0024	0.0032	0.0040	0.0048	0.0056
1700-2000 SFM	10-25 % Dia. Profiling	0.0020	0.0024	0.0032	0.0048	0.0064	0.0080	0.0096	0.0112
Copper	ISO-N								
Red Brass, High Lead Brass, Yellow Brass									
C-17200, Navel Brass, A-17, High Silicon Bronze									
800-1100 SFM	Slotting	0.0008	0.0008	0.0016	0.0020	0.0024	0.0032	0.0032	0.0040
1000-1200 SFM	10-25 % Dia. Profiling	0.0011	0.0011	0.0022	0.0028	0.0034	0.0045	0.0045	0.0056
Copper Alloys	ISO-N								
Low Silicon Bronze, Alum/Bronze									
Beryllium Copper, Nickel Silver, Oxygen-Free Copper									
500-800 SFM	Slotting	0.0008	0.0008	0.0016	0.0020	0.0024	0.0032	0.0032	0.0040
600-850 SFM	10-25 % Dia. Profiling	0.0011	0.0011	0.0022	0.0028	0.0034	0.0045	0.0045	0.0056
Magnesium	ISO-N								
700-1000 SFM	Slotting	0.0008	0.0016	0.0016	0.0024	0.0032	0.0048	0.0064	0.0072
750-1300 SFM	10-25 % Dia. Profiling	0.0020	0.0024	0.0032	0.0048	0.0064	0.0080	0.0096	0.0112
Plastics	ISO-N								
Acrylics, Polycarbonate, Phenolics									
350-600 SFM	Slotting	0.0020	0.0024	0.0032	0.0048	0.0064	0.0080	0.0096	0.0112
400-800 SFM	10-25 % Dia. Profiling	0.0008	0.0016	0.0024	0.0032	0.0048	0.0064	0.0080	0.0120

MATERIAL	CONDITION	CUTTING DIAMETER - METRIC 4mm	6mm	8mm	10mm	12mm	16mm	18mm	20mm	25mm
Aluminum+Aluminum Alloys	ISO-N	CHIP PER TOOTH								
6061-T6/T651, 7075-T6, 2024-T4/T6, 2014,										
259-426 M/MIN	Slotting	0.0203	0.0406	0.0508	0.0610	0.0813	0.1016	0.1118	0.1219	0.1422
518-609 M/MIN	10-25 % Dia. Profiling	0.0508	0.0813	0.1016	0.1219	0.1626	0.2032	0.2184	0.2438	0.2845
Copper	ISO-N									
Red Brass, High Lead Brass, Yellow Brass										
C-17200, Navel Brass, A-17, High Silicon Bronze										
243-335 M/MIN	Slotting	0.0203	0.0406	0.0457	0.0508	0.0610	0.0813	0.0813	0.0813	0.1016
304-365 M/MIN	10-25 % Dia. Profiling	0.0284	0.0569	0.0635	0.0711	0.0853	0.1138	0.1143	0.1138	0.1422
Copper Alloys	ISO-N									
Low Silicon Bronze, Alum/Bronze										
Beryllium Copper, Nickel Silver, Oxygen-Free Copper										
152-243 M/MIN	Slotting	0.0203	0.0406	0.0457	0.0508	0.0610	0.0813	0.0813	0.0813	0.1016
182-259 M/MIN	10-25 % Dia. Profiling	0.0284	0.0569	0.0635	0.0711	0.0853	0.1138	0.1143	0.1138	0.1422
Magnesium	ISO-N									
213-304 M/MIN	Slotting	0.0203	0.0406	0.0508	0.0610	0.0813	0.1219	0.1422	0.1626	0.1829
228-396 M/MIN	10-25 % Dia. Profiling	0.0508	0.0813	0.1016	0.1219	0.1626	0.2032	0.2235	0.2438	0.2845
Plastics	ISO-N									
Acrylics, Polycarbonate, Phenolics										
106-182 M/MIN	Slotting	0.0203	0.0610	0.0914	0.0813	0.1219	0.1626	0.1829	0.2032	0.2845
122-244 M/MIN	10-25 % Dia. Profiling	0.0508	0.0813	0.1016	0.1219	0.1626	0.2032	0.2235	0.2438	0.3048

METRIC

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our Technical Service Team with questions

Series: AA

MATERIAL	HEAT-RESISTANT COBALT BASE ALLOYS. HIGH TENSILE STEELS (50-55 C)		HEAT-RESISTANT AUSTENITIC ALLOYS, HIGH TENSILE STEELS (46-50 C)		HEAT-RESISTANT NICKEL BASE ALLOYS, HIGH STRENGTH STAINLESS STEELS, HIGH STRENGTH TITANIUM ALLOYS		HIGH STRENGTH STAINLESS STEELS, HIGH TENSILE STEELS (40-60 C) MEDIUM STRENGTH TITANIUM ALLOYS		HEAT RESISTANT FERRITIC BASE ALLOYS MEDIUM STRENGTH STAINLESS STEELS UNALLOYED TITANIUM TOOL STEELS (30-40 C)	
	SPEED 5-10 SFM	FEED	SPEED 10-15 SFM	FEED	SPEED 15-20 SFM	FEED	SPEED 20-40 SFM	FEED	SPEED 40-60 SFM	FEED
DIA. OF END MILLS	RPM	CHIP LOAD PER TOOTH	RPM	CHIP LOAD PER TOOTH	RPM	CHIP LOAD PER TOOTH	RPM	CHIP LOAD PER TOOTH	RPM	CHIP LOAD PER TOOTH
1/16	-	-	-	-	-	-	1222-2444	.0002-.0005	2444-3667	.0002 -.005
3/32	-	-	-	-	611-815	.0002 -.0005	815-1629	.0002-.0005	1629-2750	.0002 -.005
1/8	-	-	-	-	456-611	.0002 -.0005	611-1222	.0002-.0005	1222-1833	.0002 -.005
3/16	-	-	204-306	.0002 -.0005	306-407	.0002 -.0005	407-815	.0002-.0005	815-1222	.0002 -.005
1/4	76-153	.0002 -.001	153-230	.0002 -.001	229-306	.0002 -.001	306-611	.0002 -.001	611-917	.0002 -.001
5/16	61-122	.0002 -.001	122-183	.0002 -.001	183-244	.0002 -.001	244-489	.0002 -.001	489-733	.0002 -.001
3/8	51-102	.0002 -.001	102-153	.0002 -.001	153-203	.0002 -.001	203-407	.0005 -.002	406-611	.0005 -.002
7/16	44-88	.0005 -.001	88-132	.0005 -.001	131-175	.0005 -.002	175-349	.0005 -.002	349-524	.0005 -.002
1/2	38-76	.0005 -.001	76-115	.0005 -.001	115-153	.0005 -.002	153-306	.0005 -.003	306-458	.001 -.003
9/16	34-68	.0005 -.002	68-104	.0005 -.002	104-136	.0005 -.002	136-272	.0005 -.003	272-412	.001 -.003
5/8	31-61	.0005 -.002	61-92	.0005 -.002	92-122	.0005 -.002	122-244	.001 -.004	244-367	.001 -.004
11/16	28-56	.0005 -.002	56-84	.0005 -.002	84-111	.0005 -.002	111-222	.001 -.004	222-337	.001 -.004
3/4	26-51	.0005 -.002	51-76	.0005 -.002	76-102	.001 -.004	102-203	.001 -.004	203-306	.001 -.004
13/16	24-47	.001 -.003	47-71	.001 -.003	71-94	.001 -.004	94-189	.001 -.004	189-284	.001 -.004
7/8	22-44	.001 -.003	44-65	.001 -.003	65-87	.001 -.004	87-175	.001 -.004	175-262	.002 -.006
15/16	20-40	.001 -.003	40-62	.001 -.003	62-81	.001 -.004	81-163	.001 -.004	163-246	.002 -.006
1	19-38	.001 -.003	38-58	.001 -.003	58-76	.001 -.004	76-153	.002 -.006	153-229	.002 -.006
1 1/8	34	.0015 -.004	34-51	.0015 -.004	51-68	.0015 -.005	68-136	.002 -.006	136-204	.002 -.006
1 1/4	31	.0015 -.004	31-46	.0015 -.004	46-61	.0015 -.005	61-122	.002 -.006	122-183	.002 -.006
1 3/8	28	.0015 -.004	28-42	.0015 -.004	42-55	.0015 -.005	55-111	.002 -.006	111-167	.003 UP
1 1/2	26	.0015 -.004	26-38	.0015 -.004	38-51	.002 UP	51-102	.003 UP	102-153	.003 UP
1 5/8	24	.002 UP	35	.002 UP	35-47	.002 UP	47-94	.003 UP	94-141	.003 UP
1 3/4	22	.002 UP	32	.002 UP	32-43	.002 UP	43-87	.003 UP	87-131	.003 UP
1 7/8	20	.002 UP	30	.002 UP	30-40	.003 UP	40-81	.003 UP	81-122	.003 UP
2	19	.002 UP	29	.003 UP	29-38	.003 UP	38-76	.003 UP	76-115	.003 UP
2 1/8	18	.003 UP	28	.003 UP	36	.003 UP	36-72	.003 UP	72-108	.003 UP
2 1/4	17	.003 UP	26	.003 UP	34	.003 UP	34-68	.003 UP	68-102	.003 UP
2 3/8	16	.003 UP	25	.003 UP	32	.003 UP	32-64	.003 UP	64-97	.003 UP
2 1/2	15	.003 UP	23	.003 UP	30	.003 UP	30-61	.003 UP	61-92	.003 UP
2 5/8	15	.003 UP	22	.003 UP	29	.003 UP	29-58	.003 UP	58-88	.003 UP
2 3/4	14	.003 UP	21	.003 UP	28	.003 UP	28-56	.003 UP	56-83	.003 UP
2 7/8	14	.003 UP	20	.003 UP	27	.003 UP	27-53	.003 UP	53-80	.003 UP
3	13	.003 UP	19	.003 UP	26	.003 UP	26-51	.003 UP	51-76	.003 UP

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our Technical Service Team with questions

SERIES: AA *(CONTINUED)*

MATERIAL	MACHINE STEEL, HARD BRASS AND BRONZE, ELECTROLYTIC COPPER MILD STEEL FORGINGS (20-30 C)		CAST IRON, MILD STEEL, HALF-HARD BRASS AND BRONZE		BRASS, BRONZE, ALLOYED ALUMINUM, ABRASIVE PLASTICS		ALUMINUM, PLASTICS, WOOD	
	SPEED 60-80 SFM	FEED	SPEED 80-100 SFM	FEED	SPEED 100-200 SFM	FEED	SPEED 200-600 SFM	FEED
DIA. OF END MILLS	RPM	CHIP LOAD PER TOOTH	RPM	CHIP LOAD PER TOOTH	RPM	CHIP LOAD PER TOOTH	RPM	CHIP LOAD PER TOOTH
1/16	3667-4888	.0002 -.0005	4888-6111	.0002 -.0005	611-1222	.0002 -.0005	1222 UP	.0002 -.0005
3/32	2750-3259	.0002 -.0005	3259-4073	.0002 -.0005	4073-8146	.0002 -.0005	8146 UP	.0002 -.0005
1/8	1833-2440	.0002 -.001	2440-3056	.0002 -.001	3056-6112	.0002 -.001	6112 UP	.0002 -.001
3/16	1222-1625	.0002 -.001	1625-2037	.0002 -.001	2037-4074	.0002 -.001	4074-12222	.0002 -.001
1/4	917-1222	.0005 -.002	1222-1528	.0005 -.002	1528-3056	.0005 -.002	3056-9168	.0005 -.002
5/16	733-978	.0005 -.002	978-1222	.0005 -.002	1222-2444	.0005 -.002	2444-7332	.0005 -.002
3/8	611-815	.001 -.003	815-1019	.001 -.003	1019-2038	.0005 -.003	2038-6114	.0005 -.002
7/16	524-698	.001 -.003	698-873	.001 -.003	873-1746	.0005 -.003	1746-5238	.0005 -.002
1/2	458-611	.001 -.003	611-764	.001 -.003	764-1528	.0005 -.003	1528-4584	.0005 -.002
9/16	412-543	.001 -.004	543-678	.001 -.004	678-1356	.0005 -.004	1356-4071	.0005 -.003
5/8	367-489	.001 -.004	489-611	.001 -.004	611-1222	.0005 -.004	1222-3666	.0005 -.003
11/16	337-444	.001 -.004	444-555	.001 -.004	555-1110	.0005 -.004	1110-3330	.0005 -.003
3/4	306-407	.001 -.004	407-509	.002 -.006	509-1018	.001 -.006	1018-3054	.001 -.004
13/16	284-379	.002 -.006	379-469	.002 -.006	469-938	.001 -.006	938-2814	.001 -.004
7/8	262-349	.002 -.006	349-436	.002 -.006	436-872	.001 -.006	872-2616	.001 -.004
15/16	246-326	.002 -.006	326-407	.002 -.006	407-814	.001 -.006	514-2442	.001 -.004
1	229-306	.002 -.006	306-382	.002 -.006	382-764	.002 UP	764-2292	.002 UP
1 1/8	204-272	.002 -.006	272-340	.003 UP	340-680	.002 UP	680-2040	.002 UP
1 1/4	183-244	.003 UP	244-306	.003 UP	306-612	.002 UP	612-1836	.002 UP
1 3/8	167-222	.003 UP	222-278	.003 UP	278-556	.002 UP	556-1668	.002 UP
1 1/2	153-204	.003 UP	204-255	.003 UP	255-510	.003 UP	510-1530	.002 UP
1 5/8	141-188	.003 UP	188-235	.003 UP	235-470	.003 UP	470-1410	.002 UP
1 3/4	131-175	.003 UP	175-218	.003 UP	218-436	.003 UP	436-1308	.002 UP
1 7/8	122-163	.003 UP	163-204	.003 UP	204-408	.003 UP	408-1224	.003 UP
2	115-153	.003 UP	153-191	.003 UP	191-382	.003 UP	382-1146	.003 UP
2 1/8	108-144	.003 UP	144-179	.003 UP	179-358	.003 UP	358-1074	.003 UP
2 1/4	103-136	.003 UP	136-170	.003 UP	170-340	.003 UP	340-1020	.003 UP
2 3/8	97-128	.003 UP	128-161	.003 UP	161-322	.003 UP	322-966	.003 UP
2 1/2	92-122	.003 UP	122-153	.003 UP	153-306	.003 UP	306-918	.003 UP
2 5/8	88-116	.003 UP	116-145	.003 UP	145-290	.003 UP	290-870	.003 UP
2 3/4	83-111	.003 UP	111-139	.003 UP	139-278	.003 UP	278-834	.003 UP
2 7/8	80-106	.003 UP	106-132	.003 UP	132-264	.003 UP	264-792	.003 UP
3	76-102	.003 UP	102-127	.003 UP	127-154	.003 UP	254-762	.003 UP

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our TECHNICAL SERVICE Team with questions

Speed & Feed Information

Series: ERFPM

MATERIAL	CONDITION	CUTTING DIAMETER 1/8"	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"	1-1/4"
Aluminum+Aluminum Alloys	ISO-N	CHIP PER TOOTH								
6061-T6/T651, 7075-T6, 2024-T4/T6, 2014,										
1200-2000 SFM	Slotting	0.0010	0.002	0.002	0.003	0.004	0.005	0.006	0.007	0.008
1700-2000 SFM	10-25 % Dia. Profiling	0.0025	0.003	0.004	0.006	0.008	0.010	0.012	0.014	0.016
Copper	ISO-N									
Red Brass, High Lead Brass, Yellow Brass										
C-17200, Navel Brass, A-17, High Silicon Bronze										
800-1500 SFM	Slotting	0.0010	0.0010	0.0020	.0025	0.0030	0.0040	0.0040	0.005	0.0060
1000-12000 SFM	10-25 % Dia. Profiling	0.0014	0.0014	0.0028	.0035	0.0042	0.0056	0.0056	0.007	0.0084
Copper Alloys	ISO-N									
Low Silicon Bronze, Alum/Bronze										
Beryllium Copper, Nickel Silver, Oxygen-Free Copper										
500-800 SFM	Slotting	0.0010	0.0010	0.0020	.0025	0.0030	0.0040	0.0040	0.005	0.0060
600-850 SFM	10-25 % Dia. Profiling	0.0014	0.0014	0.0028	.0035	0.0042	0.0056	0.0056	0.007	0.0084
Magnesium	ISO-N									
700-1000 SFM	Slotting	0.0010	0.002	0.002	0.003	0.004	0.006	0.008	0.009	0.010
750-1300 SFM	10-25 % Dia. Profiling	0.0025	0.003	0.004	0.006	0.008	0.010	0.012	0.014	0.016
Plastics	ISO-N									
Acrylics, Polycarbonate, Phenolics										
350-600 SFM	Slotting	0.0025	0.003	0.004	0.006	0.008	0.010	0.012	0.014	0.016
400-800 SFM	10-25 % Dia. Profiling	0.0010	0.002	0.003	0.004	0.006	0.008	0.010	0.015	0.020

Series: CCAC

MATERIAL	CONDITION	CUTTING DIAMETER 3/4"	1"	1-1/4"	1-1/2"	2"
STAINLESS STEELS ISO-M		CHIP PER TOOTH				
Stainless Steels < 28 HRc						
75 SFM	Slotting	0.0025	0.0030	0.0035	0.0035	0.0040
90 SFM	30-40 % Dia. Profiling	0.0035	0.0040	0.0050	0.0050	0.0055
Stainless Steels 30 - 40 HRc						
65 SFM	Slotting	0.0020	0.0025	0.0030	0.0035	0.0035
80 SFM	30-40 % Dia. Profiling	0.0030	0.0035	0.0040	0.0040	0.0045
Stainless Steels > 42 HRc						
45 SFM	Slotting	0.0020	0.0025	0.0030	0.0035	0.0035
60 SFM	30-40 % Dia. Profiling	0.0030	0.0035	0.0040	0.0040	0.0045
TITANIUM ALLOYS ISO-S						
Titanium < 28 HRc						
50 SFM	Slotting	0.0025	0.0030	0.0035	0.0035	0.0040
65 SFM	30-40 % Dia. Profiling	0.0035	0.0040	0.0050	0.0050	0.0055
Titanium 30 - 40 HRc						
40 SFM	Slotting	0.0020	0.0025	0.0030	0.0035	0.0035
50 SFM	30-40 % Dia. Profiling	0.0030	0.0035	0.0040	0.0040	0.0045
Titanium > 42 HRc						
35 SFM	Slotting	0.0020	0.0025	0.0030	0.0035	0.0035
45 SFM	30-40 % Dia. Profiling	0.0030	0.0035	0.0040	0.0040	0.0045

Note: Chip load Recommendations based upon Regular Flute Length Tools

Chip load Multiplier: Stub **increase** by 1.15, Med Length **decrease** by .95, Long Length **decrease** by .9, X-Long Length by .8
Extended Reach Chip load Multiplier: Med Reach **decrease** by 1.35, Long Reach **decrease** by 1.25. X-Long Reach **decrease** by 1.15

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our Technical Service Team with questions

SERIES: VXMG3T

MATERIAL	CONDITION	STARTING SFM	CUTTING DIAMETER 1/32"	3/64"	0.055"	1/16"	5/64"	3/32"
STAINLESS STEELS	**ISO-M**		**CHIP PER TOOTH**					
Precipitation								
13-8, 15-5, 17-4PH	Slotting @ ≤ .5 x D	250	0.00012	0.00019	0.00023	0.00025	0.00037	0.00042
	Profiling @ 2 x D Axial / ≤ .1 D Radial	325	0.00021	0.00030	0.00035	0.00040	0.00062	0.00071
Martensitic								
403, 410, 416	Slotting @ ≤ .5 x D	250	0.00012	0.00019	0.00023	0.00025	0.00037	0.00042
	Profiling @ 2 x D Axial / ≤ .1 D Radial	325	0.00021	0.00030	0.00035	0.00040	0.00062	0.00071
HIGH TEMP ALLOYS	**ISO-S**							
Nickel Base								
Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel 400, 405, K-Monel,	Slotting @ .5 x D	75	0.00008	0.00012	0.00015	0.00016	0.00024	0.00027
PermaNickel 300, Inconel 600	Profiling @ 2 x D Axial / ≤ .1 D Radial	115	0.00013	0.00019	0.00022	0.00026	0.00040	0.00045
STEELS	**ISO-P**							
High Alloy Steels - Mold & Die								
A-2, P20, 01, 02, D2, H-13	Slotting @ ≤ .5 x D	275	0.00010	0.00015	0.00018	0.00020	0.00030	0.00034
	Profiling @ 2 x D Axial / ≤ .1 D Radial	350	0.00017	0.00024	0.00028	0.00032	0.00050	0.00056
TITANIUM	**ISO-S**							
Titanium Alloys								
6AL-4V, ASTM 1, 2, 3, 6AL-2S	Slotting @ ≤ .5 x D	175	0.00012	0.00019	0.00023	0.00025	0.00037	0.00042
For 5553, decrease SFM and IPM by 25%	Profiling @ 2 x D Axial / ≤ .1 D Radial	275	0.00021	0.00030	0.00035	0.00040	0.00062	0.00070

Note: For length of cut 3x-5x reduce chip load by 20-

SERIES: VXMG3T (METRIC)

MATERIAL	CONDITION	STARTING M/MIN	CUTTING DIAMETER - METRIC 1mm	1.5mm	1.6mm	2mm	2.5mm	3mm
STAINLESS STEELS	**ISO-M**		**CHIP PER TOOTH**					
Precipitation								
13-8, 15-5, 17-4PH	Slotting @ ≤ .5 x D	76	0.00305	0.05635	0.05635	0.05635	0.01067	0.01067
	Profiling @ 2 x D Axial / ≤ .1 D Radial	99	0.00533	0.01016	0.09016	0.09016	0.01803	0.01803
Martensitic								
403, 410, 416	Slotting @ ≤ .5 x D	76	0.00305	0.05635	0.05635	0.05635	0.01067	0.01067
	Profiling @ 2 x D Axial / ≤ .1 D Radial	99	0.00533	0.01016	0.09016	0.09016	0.01803	0.01803
HIGH TEMP ALLOYS	**ISO-S**							
Nickel Base								
Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel 400, 405, K-Monel,	Slotting @ .5 x D	23	0.00195	0.03606	0.03606	0.03606	0.00686	0.00686
PermaNickel 300, Inconel 600	Profiling @ 2 x D Axial / ≤ .1 D Radial	35	0.00341	0.00650	0.05770	0.05770	0.01143	0.01143
STEELS	**ISO-P**							
High Alloy Steels - Mold & Die								
A-2, P20, 01, 02, D2, H-13	Slotting @ ≤ .5 x D	84	0.00244	0.04508	0.04508	0.04508	0.00864	0.00864
	Profiling @ 2 x D Axial / ≤ .1 D Radial	107	0.00427	0.00813	0.07213	0.07213	0.01422	0.01422
TITANIUM	**ISO-S**							
Titanium Alloys								
6AL-4V, ASTM 1, 2, 3, 6AL-2S	Slotting @ ≤ .5 x D	53	0.00305	0.05635	0.05635	0.05635	0.01067	0.01067
For 5553, decrease SFM and IPM by 25%	Profiling @ 2 x D Axial / ≤ .1 D Radial	84	0.00533	0.01016	0.09016	0.09016	0.01778	0.01778

METRIC

Note: For length of cut 3x-5x reduce chip load by 20-

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our TECHNICAL SERVICE Team with questions

Series: VXMG4T & VXMG4T-__-B

MATERIAL	MATERIAL ROCKWELL	CONDITION	SFM	CUTTING DIAMETER 1/32"	1/16"	1/8"	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"
STAINLESS STEELS ISO-M				CHIP PER TOOTH									
Precipitation 13-8, 15-5, 17-4PH	Less than 32 Rc	Slotting @ ≤ .5 to 1 x D	80-175	.0002	.0005	.0008	.0013	.0015	.0018	.0024	.0028	.0034	.0050
	Over 32 Rc	Profiling @ 1-1/2 to 2 x D Axial / ≤.2 to .5 D Radial	80-115	.0008	.0015	.0024	.0031	.0033	.0045	.0055	.0068	.0081	.0102
Austenitic 302, 303, 304L, 316L	Less than 32 Rc	Slotting @ ≤ .5 to 1 x Dia.	150-250	.0002	.0005	.0008	.0013	.0015	.0018	.0024	.0028	.0034	.0050
	Over 32 Rc	Profiling @ 1-1/2 to 2 x D Axial / ≤.2 to .5 D Radial	80-175	.0008	.0015	.0024	.0031	.0033	.0045	.0055	.0068	.0081	.0102
Martensitic 403, 410, 416	Less than 32 Rc	Slotting @ ≤ .5 to 1 x Dia.	200-350	.0002	.0005	.0008	.0013	.0015	.0018	.0024	.0028	.0034	.0050
	Over 32 Rc	Profiling @ 1-1/2 to 2 x D Axial / ≤.2 to .5 D Radial	100-200	.0008	.0015	.0024	.0031	.0033	.0045	.0055	.0068	.0081	.0102
HIGH TEMP ALLOYS ISO-S													
Cobalt Base Stellite, Haynes 25, 188, X-40, L-605	Less than 32 Rc	Slotting @ ≤ .5 to 1 x Dia.	175-165	.0003	.0005	.0007	.0009	.0011	.0015	.0018	.0022	.0028	.0035
	Over 32 Rc	Profiling @ 1-1/2 to 2 x D Axial / ≤.2 to .5 D Radial	50-120	.0006	.0012	.0021	.0023	.0025	.0045	.0047	.0066	.0080	.0085
Nickel Base - Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel 400, 405, K-Monel, PermaNickel 300, Inconel 600	Less than 32 Rc	Slotting @ ≤ .5 to 1 x Dia.	75-165	.0003	.0005	.0007	.0009	.0011	.0015	.0018	.0022	.0028	.0035
	Over 32 Rc	Profiling @ 1-1/2 to 2 x D Axial / ≤.2 to .5 D Radial	50-120	.0006	.0012	.0021	.0023	.0025	.0045	.0047	.0066	.0080	.0085
TITANIUM ISO-S													
Titanium Alloys 6AL-4V, ASTM 1, 2, 3, 6AL-2S	Less than 32 Rc	Slotting @ ≤ .5 to 1 x Dia.	175-225	.0003	.0006	.0010	.0013	.0013	.0018	.0022	.0030	.0035	.0050
	Over 32 Rc	Profiling @ 1-1/2 to 2 x D Axial / ≤.2 to .5 D Radial	100-165	.0010	.0016	.0025	.0031	.0038	.0045	.0063	.0072	.0086	.0105

For 5553, decrease SFM and IPM by 25%

MATERIAL	MATERIAL ROCKWELL	CONDITION	M/MIN	CUTTING DIAMETER - METRIC 1MM	1.5MM	3MM	4.5MM	6MM	10MM	12MM	16MM	20MM	25MM
STAINLESS STEELS ISO-M				CHIP PER TOOTH									
Precipitation 13-8, 15-5, 17-4PH	Less than 32 Rc	Slotting @ ≤ .5 to 1 x D	24-53	.0051	.0127	.0203	.0330	.0381	.0457	.0610	.0711	.0864	.1270
	Over 32 Rc	Profiling @ 1-1/2 to 2 x D Axial / ≤.2 to .5 D Radial	24-35	.0203	.0381	.0610	.0787	.0838	.1143	.1397	.1727	.2057	.2591
Austenitic 302, 303, 304L, 316L	Less than 32 Rc	Slotting @ ≤ .5 to 1 x Dia.	45-76	.0051	.0127	.0203	.0330	.0381	.0457	.0610	.0711	.0864	.1270
	Over 32 Rc	Profiling @ 1-1/2 to 2 x D Axial / ≤.2 to .5 D Radial	24-53	.0203	.0381	.0610	.0787	.0838	.1143	.1397	.1727	.2057	.2591
Martensitic 403, 410, 416	Less than 32 Rc	Slotting @ ≤ .5 to 1 x Dia.	60-106	.0051	.0127	.0203	.0330	.0381	.0457	.0610	.0711	.0864	.1270
	Over 32 Rc	Profiling @ 1-1/2 to 2 x D Axial / ≤.2 to .5 D Radial	30-60	.0203	.0381	.0610	.0787	.0838	.1143	.1397	.1727	.2057	.2591
HIGH TEMP ALLOYS ISO-S													
Cobalt Base Stellite, Haynes 25, 188, X-40, L-605	Less than 32 Rc	Slotting @ ≤ .5 to 1 x Dia.	22-50	.0076	.0127	.0178	.0229	.0279	.0381	.0457	.0559	.0711	.0889
	Over 32 Rc	Profiling @ 1-1/2 to 2 x D Axial / ≤.2 to .5 D Radial	15-36	.0152	.0305	.0533	.0584	.0635	.1143	.1194	.1676	.2032	.2159
Nickel Base - Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel 400, 405, K-Monel, PermaNickel 300, Inconel 600	Less than 32 Rc	Slotting @ ≤ .5 to 1 x Dia.	22-50	.0076	.0127	.0178	.0229	.0279	.0381	.0457	.0559	.0711	.0889
	Over 32 Rc	Profiling @ 1-1/2 to 2 x D Axial / ≤.2 to .5 D Radial	15-36	.0152	.0305	.0533	.0584	.0635	.1143	.1194	.1676	.2032	.2159
TITANIUM ISO-S													
Titanium Alloys 6AL-4V, ASTM 1, 2, 3, 6AL-2S	Less than 32 Rc	Slotting @ ≤ .5 to 1 x Dia.	53-68	.0076	.0152	.0254	.0330	.0330	.0457	.0559	.0762	.0889	.1270
	Over 32 Rc	Profiling @ 1-1/2 to 2 x D Axial / ≤.2 to .5 D Radial	30-50	.0254	.0406	.0635	.0787	.0965	.1143	.1600	.1829	.2184	.2667

For 5553, decrease SFM and IPM by 25%

METRIC

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our Technical Service Team with questions

SERIES: VXMG5T & VXMG6T

MATERIAL	MATERIAL ROCKWELL	CONDITION	SFM	CUTTING DIAMETER 1/16"	1/8"	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"
STAINLESS STEELS ISO-M				CHIP PER TOOTH								
Precipitation 13-8, 15-5, 17-4PH	Less than 32 Rc	Slotting @ ≤ .65 to 1 x Dia.	80-175	.0005	.0008	.0013	.0015	.0018	.0024	.0028	.0034	.0050
	Over 32 Rc	Profiling @ 1-1/2 to 2 x D Axial / ≤.1-1/2 to .3 D Radial	80-115	.0015	.0024	.0031	.0033	.0045	.0055	.0068	.0081	.0102
Austenitic 302, 303, 304L, 316L	Less than 32 Rc	Slotting @ ≤ .65 to 1 x Dia.	150-250	.0005	.0008	.0013	.0015	.0018	.0024	.0028	.0034	.0050
	Over 32 Rc	Profiling @ 1-1/2 to 2 x D Axial / ≤.1-1/2 to .3 D Radial	80-175	.0015	.0024	.0031	.0033	.0045	.0055	.0068	.0081	.0102
Martensitic 403, 410, 416	Less than 32 Rc	Slotting @ ≤ .65 to 1 x Dia.	200-350	.0005	.0008	.0013	.0015	.0018	.0024	.0028	.0034	.0050
	Over 32 Rc	Profiling @ 1-1/2 to 2 x D Axial / ≤.1-1/2 to .3 D Radial	100-200	.0015	.0024	.0031	.0033	.0045	.0055	.0068	.0081	.0102
HIGH TEMP ALLOYS ISO-S												
Cobalt Base Stellite, Haynes 25, 188, X-40, L-605	Less than 32 Rc	Slotting @ ≤ .65 to 1 x Dia.	175-165	.0005	.0007	.0009	.0011	.0015	.0018	.0022	.0028	.0035
	Over 32 Rc	Profiling @ 1-1/2 to 2 x D Axial / ≤.1-1/2 to .3 D Radial	50-120	.0012	.0021	.0023	.0025	.0045	.0047	.0066	.0080	.0085
Nickel Base Inconel 600, 625, 718, Nickel 200, 270, Invar,Monel 400, 405, K-Monel, PermaNickel 300, Inconel 600	Less than 32 Rc	Slotting @ ≤ .65 to 1 x Dia.	75-165	.0005	.0007	.0009	.0011	.0015	.0018	.0022	.0028	.0035
	Over 32 Rc	Profiling @ 1-1/2 to 2 x D Axial / ≤.1-1/2 to .3 D Radial	50-120	.0012	.0021	.0023	.0025	.0045	.0047	.0066	.0080	.0085
TITANIUM ISO-S												
Titanium Alloys 6AL-4V, ASTM 1, 2, 3, 6AL-2S	Less than 32 Rc	Slotting @ ≤ .65 to 1 x Dia.	175-225	.0006	.0010	.0013	.0013	.0018	.0022	.0030	.0035	.0050
	Over 32 Rc	Profiling @ 1-1/2 to 2 x D Axial / ≤.1-1/2 to .3 D Radial	100-165	.0016	.0025	.0031	.0038	.0045	.0063	.0072	.0086	.0105

For 5553, decrease SFM and IPM by 25%

MATERIAL	MATERIAL ROCKWELL	CONDITION	M/MIN	CUTTING DIAMETER - METRIC 1.5MM	3MM	4.5MM	6MM	10MM	12MM	16MM	20MM	25MM
STAINLESS STEELS ISO-M				CHIP PER TOOTH								
Precipitation 13-8, 15-5, 17-4PH	Less than 32 Rc	Slotting @ ≤ .65 to 1 x Dia.	24-53	.0127	.0203	.0330	.0381	.0457	.0610	.0711	.0864	.1270
	Over 32 Rc	Profiling @ 1-1/2 to 2 x D Axial / ≤.1-1/2 to .3 D Radial	24-35	.0381	.0610	.0787	.0838	.1143	.1397	.1727	.2057	.2591
Austenitic 302, 303, 304L, 316L	Less than 32 Rc	Slotting @ ≤ .65 to 1 x Dia.	45-76	.0127	.0203	.0330	.0381	.0457	.0610	.0711	.0864	.1270
	Over 32 Rc	Profiling @ 1-1/2 to 2 x D Axial / ≤.1-1/2 to .3 D Radial	24-53	.0381	.0610	.0787	.0838	.1143	.1397	.1727	.2057	.2591
Martensitic 403, 410, 416	Less than 32 Rc	Slotting @ ≤ .65 to 1 x Dia.	60-106	.0127	.0203	.0330	.0381	.0457	.0610	.0711	.0864	.1270
	Over 32 Rc	Profiling @ 1-1/2 to 2 x D Axial / ≤.1-1/2 to .3 D Radial	30-60	.0381	.0610	.0787	.0838	.1143	.1397	.1727	.2057	.2591
HIGH TEMP ALLOYS ISO-S												
Cobalt Base Stellite, Haynes 25, 188, X-40, L-605	Less than 32 Rc	Slotting @ ≤ .65 to 1 x Dia.	22-50	.0127	.0178	.0229	.0279	.0381	.0457	.0559	.0711	.0889
	Over 32 Rc	Profiling @ 1-1/2 to 2 x D Axial / ≤.1-1/2 to .3 D Radial	15-36	.0305	.0533	.0584	.0635	.1143	.1194	.1676	.2032	.2159
Nickel Base Inconel 600, 625, 718, Nickel 200, 270, Invar,Monel 400, 405, K-Monel, PermaNickel 300, Inconel 600	Less than 32 Rc	Slotting @ ≤ .65 to 1 x Dia.	22-50	.0127	.0178	.0229	.0279	.0381	.0457	.0559	.0711	.0889
	Over 32 Rc	Profiling @ 1-1/2 to 2 x D Axial / ≤.1-1/2 to .3 D Radial	15-36	.0305	.0533	.0584	.0635	.1143	.1194	.1676	.2032	.2159
TITANIUM ISO-S												
Titanium Alloys 6AL-4V, ASTM 1, 2, 3, 6AL-2S	Less than 32 Rc	Slotting @ ≤ .65 to 1 x Dia.	53-68	.0152	.0254	.0330	.0330	.0457	.0559	.0762	.0889	.1270
	Over 32 Rc	Profiling @ 1-1/2 to 2 x D Axial / ≤.1-1/2 to .3 D Radial	30-50	.0406	.0635	.0787	.0965	.1143	.1600	.1829	.2184	.2667

For 5553, decrease SFM and IPM by 25%

METRIC

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our TECHNICAL SERVICE Team with questions

Series: EMG35, EMG60, GMG

MATERIAL	CONDITION	STARTING SFM EMG35 / EMG60	STARTING SFM GMG	CUTTING DIAMETER 1/8"	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"
STAINLESS STEELS	**ISO-M**	**3 Flutes**	**5 Flutes**	**CHIP PER TOOTH**							
Precipitation											
13-8, 15-5, 17-4PH	Slotting @ ≤ .5 x D	175		0.0005	0.0007	0.0009	0.0014	0.0019	0.0024	0.0029	0.0039
	Profiling @ 2 x D Axial / ≤ .15 D Radial		225	0.0007	0.0010	0.0013	0.0019	0.0026	0.0033	0.0040	0.0054
Austenitic											
302, 303, 304L, 316L	Slotting @ ≤ .5 x D	225		0.0006	0.0008	0.0011	0.0017	0.0023	0.0029	0.0035	0.0047
	Profiling @ 2 x D Axial / ≤ .15 D Radial		275	0.0008	0.0011	0.0015	0.0024	0.0032	0.0040	0.0048	0.0064
Martensitic											
403, 410, 416	Slotting @ ≤ .5 x D	200		0.0006	0.0009	0.0012	0.0018	0.0025	0.0031	0.0037	0.0050
	Profiling @ 2 x D Axial / ≤ .15 D Radial		300	0.0009	0.0013	0.0016	0.0025	0.0034	0.0043	0.0051	0.0069
HIGH TEMP ALLOYS	**ISO-S**										
Cobalt Base											
Stellite, Haynes 25, 188, X-40, L-605	Slotting @ .5 x D	85		0.0003	0.0003	0.0004	0.0007	0.0010	0.0013	0.0015	0.0021
	Profiling @ 2 x D Axial / ≤ .15 D Radial		120	0.0003	0.0003	0.0006	0.0006	0.0012	0.0015	0.0019	0.0025
Nickel Base											
Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel 400, 405, K-Monel,	Slotting @ .5 x D	60		0.0004	0.0002	0.0006	0.0009	0.0016	0.0015	0.0025	0.0025
PermaNickel 300, Inconel 600	Profiling @ 2 x D Axial / ≤ .15 D Radial		95	0.0004	0.0003	0.0006	0.0010	0.0017	0.0017	0.0021	0.0021
Iron Base											
Incoloy 800-802, Multimet N-155,	Slotting @ ≤ .5 x D	70		0.0004	0.0004	0.0008	0.0013	0.0018	0.0022	0.0027	0.0036
Timken 16-26-6	Profiling @ 2 x D Axial / ≤ .15 D Radial		110	0.0004	0.0004	0.0009	0.0015	0.0020	0.0025	0.0030	0.0041
STEELS	**ISO-P**										
High Strength Steels											
4140, 4340, 52100	Slotting @ ≤ .5 x D	225		0.0006	0.0008	0.0012	0.0018	0.0025	0.0031	0.0037	0.0050
	Profiling @ 2 x D Axial / ≤ .15 D Radial		300	0.0009	0.0012	0.0016	0.0025	0.0034	0.0043	0.0051	0.0069
High Alloy Steels - Mold & Die											
A-2, P20, 01, 02, D2, H-13	Slotting @ ≤ .5 x D	200		0.0005	0.0007	0.0010	0.0015	0.0021	0.0026	0.0031	0.0042
	Profiling @ 2 x D Axial / ≤ .15 D Radial		290	0.0007	0.001	0.0014	0.0021	0.0028	0.0036	0.0043	0.0058
Medium Alloy Steels											
200, 250, 300	Slotting @ ≤ .5 x D	250		0.0005	0.0004	0.0011	0.0019	0.0024	0.0034	0.0039	0.0049
	Profiling @ 2 x D Axial / ≤ .15 D Radial		315	0.0005	0.0004	0.0014	0.0023	0.0029	0.0039	0.0049	0.0059
Low Alloy Steels-Maraging											
10XX, 11XX, 13XX	Slotting @ ≤ .5 x D	265		0.0007	0.0009	0.0013	0.0020	0.0027	0.0034	0.0041	0.0055
	Profiling @ 2 x D Axial / ≤ .15 D Radial		300	0.0010	0.0014	0.0018	0.0028	0.0037	0.0047	0.0056	0.0075
CAST IRONS	**ISO-K**										
Ductile Iron											
Ductile Cast Iron	Slotting @ ≤ .5 x D	300		0.0005	0.0007	0.0009	0.0014	0.0019	0.0024	0.0029	0.0039
	Profiling @ 2 x D Axial / ≤ .15 D Radial		425	0.0007	0.0009	0.0013	0.0019	0.0026	0.0033	0.0040	0.0054
Cast Iron											
Grey Cast Iron	Slotting @ ≤ .5 x D	375		0.0006	0.0009	0.0011	0.0017	0.0023	0.0029	0.0035	0.0047
	Profiling @ 2 x D Axial / ≤ .15 D Radial		475	0.0008	0.0011	0.0015	0.0024	0.0032	0.004	0.0048	0.0064
TITANIUM	**ISO-S**										
Titanium Alloys											
6AL-4V, ASTM 1, 2, 3, 6AL-2S	Slotting @ ≤ .5 x D	150		0.0005	0.0006	0.0008	0.0013	0.0017	0.0022	0.0027	0.0036
For 5553, decrease SFM and IPM by 25%	Profiling @ 2 x D Axial / ≤ .15 D Radial		225	0.0006	0.0009	0.0012	0.0018	0.0024	0.0030	0.0037	0.0049

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our Technical Service Team with questions

Series: EMG35, EMG60, GMG (metric)

MATERIAL	CONDITION	STARTING M/MIN EMG35 / EMG60	STARTING M/MIN GMG	CUTTING DIAMETER - METRIC 4mm	6mm	8mm	10mm	12mm	14mm	16mm	20mm
STAINLESS STEELS	**ISO-M**	**3 Flutes**	**5 Flutes**	**CHIP PER TOOTH**							
Precipitation											
13-8, 15-5, 17-4PH	Slotting @ ≤ .5 x D	53		0.0127	0.0229	0.0279	0.0356	0.0483	0.0559	0.0610	0.0737
	Profiling @ 2 x D Axial / ≤ .15 D Radial		68	0.0178	0.0330	0.0406	0.0483	0.0660	0.0762	0.0838	0.1016
Austenitic											
302, 303, 304L, 316L	Slotting @ ≤ .5 x D	68		0.0152	0.0279	0.0356	0.0432	0.0584	0.0660	0.0737	0.0889
	Profiling @ 2 x D Axial / ≤ .15 D Radial		83	0.0203	0.0381	0.0483	0.0610	0.0813	0.0914	0.1016	0.1219
Martensitic											
403, 410, 416	Slotting @ ≤ .5 x D	61		0.0152	0.0305	0.0381	0.0457	0.0635	0.0711	0.0787	0.0940
	Profiling @ 2 x D Axial / ≤ .15 D Radial		91	0.0229	0.0406	0.0508	0.0635	0.0864	0.0965	0.1092	0.1295
HIGH TEMP ALLOYS	**ISO-S**										
Cobalt Base											
Stellite, Haynes 25, 188, X-40, L-605	Slotting @ .5 x D	26		0.0076	0.0102	0.0127	0.0178	0.0254	0.0305	0.0330	0.0381
	Profiling @ 2 x D Axial / ≤ .15 D Radial		36	0.0076	0.0152	0.0152	0.0152	0.0305	0.0356	0.0381	0.0483
Nickel Base											
Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel 400, 405, K-Monel,	Slotting @ .5 x D	18		0.0102	0.0152	0.0178	0.0229	0.0406	0.0406	0.0406	0.0635
PermaNickel 300, Inconel 600	Profiling @ 2 x D Axial / ≤ .15 D Radial		30	0.0102	0.0152	0.0203	0.0254	0.0432	0.0043	0.0432	0.0533
Iron Base											
Incoloy 800-802, Multimet N-155,	Slotting @ ≤ .5 x D	21		0.0102	0.0203	0.0254	0.0330	0.0457	0.0508	0.0559	0.0686
Timken 16-26-6	Profiling @ 2 x D Axial / ≤ .15 D Radial		34	0.0102	0.0229	0.0305	0.0381	0.0508	0.0559	0.0635	0.0762
STEELS	**ISO-P**										
High Strength Steels											
4140, 4340, 52100	Slotting @ ≤ .5 x D	69		0.0152	0.0305	0.0381	0.0457	0.0635	0.0711	0.0787	0.0940
	Profiling @ 2 x D Axial / ≤ .15 D Radial		91	0.0229	0.0406	0.0508	0.0635	0.0864	0.0991	0.1092	0.1295
High Alloy Steels - Mold & Die											
A-2, P20, 01, 02, D2, H-13	Slotting @ ≤ .5 x D	61		0.0127	0.0254	0.0305	0.0381	0.0533	0.0584	0.0660	0.0787
	Profiling @ 2 x D Axial / ≤ .15 D Radial		88	0.0178	0.0356	0.0432	0.0533	0.0711	0.0813	0.0914	0.1092
Medium Alloy Steels											
200, 250, 300	Slotting @ ≤ .5 x D	76		0.0127	0.0279	0.0381	0.0483	0.0610	0.0660	0.0864	0.0991
	Profiling @ 2 x D Axial / ≤ .15 D Radial		96	0.0127	0.0356	0.0457	0.0584	0.0737	0.0864	0.0991	0.1245
Low Alloy Steels-Maraging											
10XX, 11XX, 13XX	Slotting @ ≤ .5 x D	81		0.0178	0.0330	0.0406	0.0508	0.0686	0.0762	0.0864	0.1041
	Profiling @ 2 x D Axial / ≤ .15 D Radial		91	0.0254	0.0457	0.0584	0.0711	0.0940	0.1067	0.1194	0.1422
CAST IRONS	**ISO-K**										
Ductile Iron											
Ductile Cast Iron	Slotting @ ≤ .5 x D	91		0.0127	0.0229	0.0305	0.0356	0.0483	0.0533	0.0610	0.0737
	Profiling @ 2 x D Axial / ≤ .15 D Radial		130	0.0178	0.0330	0.0381	0.0483	0.0660	0.0737	0.0838	0.1016
Cast Iron											
Grey Cast Iron	Slotting @ ≤ .5 x D	114		0.0152	0.0279	0.0356	0.0432	0.0584	0.0660	0.0737	0.0889
	Profiling @ 2 x D Axial / ≤ .15 D Radial		145	0.0203	0.0381	0.0483	0.0610	0.0813	0.0914	0.1016	0.1219
TITANIUM	**ISO-S**										
Titanium Alloys											
6AL-4V, ASTM 1, 2, 3, 6AL-2S	Slotting @ ≤ .5 x D	46		0.0127	0.0203	0.0254	0.0330	0.0432	0.0508	0.0559	0.0686
For 5553, decrease SFM and IPM by 25%	Profiling @ 2 x D Axial / ≤ .15 D Radial		69	0.0152	0.0305	0.0381	0.0457	0.0610	0.0686	0.0762	0.0940

METRIC

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our Technical Service Team with questions

Series: VXMG4

MATERIAL	CONDITION	SFM	FL	CUTTING DIAMETER 1/8"	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"
STAINLESS STEELS ISO-M				CHIP PER TOOTH							
Precipitation	Slotting @ ≤ .5 x D	250	4	0.0005	0.0008	0.0010	0.0015	0.0020	0.0025	0.0030	0.0040
13-8, 15-5, 17-4PH	Profiling @ 2 x D Axial / ≤ .3 D Radial	325	4	0.0007	0.0011	0.0014	0.0020	0.0027	0.0034	0.0041	0.0055
Austenitic	Slotting @ ≤ .5 x D	275	4	0.0006	0.0009	0.0012	0.0018	0.0024	0.0030	0.0036	0.0048
302, 303, 304L, 316L	Profiling @ 2 x D Axial /≤.3 D Radial	350	4	0.0008	0.0012	0.0016	0.0025	0.0033	0.0041	0.0049	0.0065
Martensitic	Slotting @ ≤ .5 x D	300	4	0.0006	0.0010	0.0013	0.0019	0.0026	0.0032	0.0038	0.0051
403, 410, 416	Profiling @ 2 x D Axial / ≤.3 D Radial	375	4	0.0009	0.0014	0.0017	0.0026	0.0035	0.0044	0.0052	0.0070
HIGH TEMP ALLOYS ISO-S											
Cobalt Base	Slotting @ .5 x D	110	4	0.0003	0.0004	0.0005	0.0008	0.0011	0.0014	0.0016	0.0022
Stellite, Haynes 25, 188, X-40, L-605	Profiling @ 2 x D Axial / ≤.3 D Radial	150	4	0.0003	0.0004	0.0007	0.0007	0.0013	0.0016	0.002	0.0026
Nickel Base - Inconel 600, 625, 718, Nickel 200, 270, Invar,	Slotting @ .5 x D	75	4	0.0004	0.0003	0.0007	0.0010	0.0017	0.0016	0.0026	0.0026
Monel 400, 405, K-Monel, PermaNickel 300, Inconel 600	Profiling @ 2 x D Axial / ≤.3 D Radial	115	4	0.0004	0.0004	0.0007	0.0011	0.0018	0.0018	0.0022	0.0022
Iron Base	Slotting @ .5 x D	95	4	0.0004	0.0005	0.0009	0.0014	0.0019	0.0023	0.0028	0.0037
Inconel 800-802, Multimet N-155, Timken 16-26-6	Profiling @ 2 x D Axial / ≤.3 D Radial	130	4	0.0004	0.0005	0.0010	0.0016	0.0021	0.0026	0.0031	0.0042
STEELS ISO-P											
High Strength Steels	Slotting @ ≤ .5 x D	300	4	0.0006	0.0009	0.0013	0.0019	0.0026	0.0032	0.0038	0.0051
4140, 4340, 52100	Profiling @ 2 x D Axial / ≤ .3 D Radial	375	4	0.0009	0.0013	0.0017	0.0026	0.0035	0.0044	0.0052	0.0070
High Alloy Steels - Mold & Die	Slotting @ ≤ .5 x D	275	4	0.0005	0.0008	0.0011	0.0016	0.0022	0.0027	0.0032	0.0043
A-2, P20, 01, 02, 06, D2, H-13	Profiling @ 2 x D Axial / ≤.3 D Radial	350	4	0.0007	0.0011	0.0015	0.0022	0.0029	0.0037	0.0044	0.0059
Medium Alloy Steels	Slotting @ ≤ .75 x D	325	4	0.0005	0.0005	0.0012	0.0020	0.0025	0.0035	0.0040	0.0050
200, 250, 300	Profiling @ 2 x D Axial / ≤ .3 D Radial	400	4	0.0005	0.0005	0.0015	0.0024	0.0030	0.0040	0.0050	0.0060
Low Alloy Steels-Maraging	Slotting @ ≤ .75 x D	325	4	0.0007	0.0010	0.0014	0.0021	0.0028	0.0035	0.0042	0.0056
10XX, 11XX, 13XX	Profiling @ 2 x D Axial / ≤ .3 D Radial	400	4	0.0010	0.0015	0.0019	0.0029	0.0038	0.0048	0.0057	0.0076
CAST IRONS ISO-K											
Ductile Iron	Slotting @ 1 x D	400	4	0.0005	0.0008	0.0010	0.0015	0.0020	0.0025	0.0030	0.0040
Ductile Cast Iron	Profiling @ 2 x D Axial /≤ .3 D Radial	550	4	0.0007	0.0010	0.0014	0.0020	0.0027	0.0034	0.0041	0.0055
Cast Iron	Slotting @ 1 x D	450	4	0.0006	0.0010	0.0012	0.0018	0.0024	0.0030	0.0036	0.0048
Grey Cast Iron	Profiling @ 2 x D Axial / ≤ .3 D Radial	600	4	0.0008	0.0012	0.0016	0.0025	0.0033	0.0041	0.0049	0.0065
TITANIUM ISO-S											
Titanium Alloys	Slotting @ ≤ .5 x D	175	4	0.0005	0.0007	0.0009	0.0014	0.0018	0.0023	0.0028	0.0037
6AL-4V, ASTM 1, 2, 3, 6AL-2S	Profiling @ 2 x D Axial / ≤.3 D Radial	275	4	0.0006	0.0010	0.0013	0.0019	0.0025	0.0031	0.0038	0.0050

For 5553, decrease SFM and IPM by 25%

MATERIAL	CONDITION	M/MIN	FL	CUTTING DIAMETER - METRIC 3MM	5MM	6MM	10MM	12MM	16MM	20MM	25MM
STAINLESS STEELS ISO-M				CHIP PER TOOTH							
Precipitation	Slotting @ ≤ .5 x D	76	4	0.0127	0.0203	0.0254	0.0381	0.0508	0.0635	0.0762	0.1016
13-8, 15-5, 17-4PH	Profiling @ 2 x D Axial / ≤ .3 D Radial	100	4	0.0178	0.0279	0.0356	0.0508	0.0685	0.0864	0.1041	0.1397
Austenitic	Slotting @ ≤ .5 x D	83	4	0.0152	0.0229	0.0305	0.0457	0.0610	0.0762	0.0914	0.1219
302, 303, 304L, 316L	Profiling @ 2 x D Axial /≤.3 D Radial	110	4	0.0203	0.0305	0.0406	0.0635	0.0838	0.1041	0.1214	0.1651
Martensitic	Slotting @ ≤ .5 x D	90	4	0.0152	0.0254	0.0330	0.0482	0.0660	0.0812	0.0965	0.1295
403, 410, 416	Profiling @ 2 x D Axial / ≤.3 D Radial	115	4	0.0229	0.0355	0.0431	0.0660	0.0889	0.1117	0.1320	0.1778
HIGH TEMP ALLOYS ISO-S											
Cobalt Base	Slotting @ .5 x D	34	4	0.0076	0.0102	0.0127	0.0203	0.0279	0.0355	0.0406	0.0558
Stellite, Haynes 25, 188, X-40, L-605	Profiling @ 2 x D Axial / ≤.3 D Radial	45	4	0.0076	0.0102	0.0178	0.0178	0.0330	0.0406	0.0508	0.0660
Nickel Base - Inconel 600, 625, 718, Nickel 200, 270	Slotting @ .5 x D	23	4	0.0102	0.0102	0.0178	0.0254	0.0431	0.0406	0.0660	0.0660
Invar, Monel 400, 405, K-Monel, PermaNickel 300, Inconel 600	Profiling @ 2 x D Axial / ≤.3 D Radial	35	4	0.0106	0.0102	0.0178	0.0279	0.0457	0.0457	0.0558	0.0558
Iron Base	Slotting @ .5 x D	30	4	0.0102	0.0127	0.0229	0.0355	0.0482	0.0584	0.0711	0.0939
Incoloy 800-802, Multimet N-155, Timken 16-26-6	Profiling @ 2 x D Axial / ≤.3 D Radial	40	4	0.0102	0.0127	0.0254	0.0406	0.0533	0.0660	0.0787	0.1066
STEELS ISO-P											
High Strength Steels	Slotting @ ≤ .5 x D	92	4	0.0152	0.0229	0.0330	0.0482	0.0660	0.0812	0.0965	0.1295
4140, 4340, 52100	Profiling @ 2 x D Axial / ≤ .3 D Radial	115	4	0.0229	0.0330	0.0431	0.0660	0.0889	0.1117	0.1320	0.1778
High Alloy Steels - Mold & Die	Slotting @ ≤ .5 x D	84	4	0.0127	0.0203	0.0279	0.0406	0.0558	0.0685	0.0812	0.1092
A-2, P20, 01, 02, 06, D2, H-13	Profiling @ 2 x D Axial / ≤.3 D Radial	110	4	0.0177	0.0279	0.0381	0.0558	0.0737	0.0939	0.1117	0.1498
Medium Alloy Steels	Slotting @ ≤ .75 x D	100	4	0.0127	0.0127	0.0304	0.0508	0.0635	0.0889	0.1016	0.1270
200, 250, 300	Profiling @ 2 x D Axial / ≤ .3 D Radial	122	4	0.0127	0.0127	0.0381	0.0609	0.0762	0.1016	0.1270	0.1524
Low Alloy Steels-Maraging	Slotting @ ≤ .75 x D	100	4	0.0178	0.0254	0.0355	0.0533	0.0711	0.0889	0.1066	0.1422
10XX, 11XX, 13XX	Profiling @ 2 x D Axial / ≤ .3 D Radial	122	4	0.0254	0.0381	0.0482	0.0736	0.0965	0.1219	0.1447	0.1930
CAST IRONS ISO-K											
Ductile Iron	Slotting @ 1 x D	122	4	0.0127	0.0203	0.0254	0.0381	0.0508	0.0635	0.0762	0.1016
Ductile Cast Iron	Profiling @ 2 x D Axial /≤ .3 D Radial	168	4	0.0178	0.0254	0.0355	0.0508	0.0685	0.0863	0.1041	0.1397
Cast Iron	Slotting @ 1 x D	137	4	0.0152	0.0254	0.0304	0.0457	0.0609	0.0762	0.0914	0.1219
Grey Cast Iron	Profiling @ 2 x D Axial / ≤ .3 D Radial	183	4	0.0203	0.0304	0.0406	0.0635	0.0838	0.1041	0.1244	0.1651
TITANIUM ISO-S											
Titanium Alloys	Slotting @ ≤ .5 x D	53	4	0.0127	0.0178	0.0229	0.0355	0.0457	0.0584	0.0711	0.0939
6AL-4V, ASTM 1, 2, 3, 6AL-2S	Profiling @ 2 x D Axial / ≤.3 D Radial	84	4	0.0152	0.0254	0.0330	0.0482	0.0635	0.0787	0.0965	0.1270

For 5553, decrease SFM and IPM by 25%

METRIC

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our Technical Service Team with questions

SERIES: VXMG5

MATERIAL	CONDITION	SFM	FL	CUTTING DIAMETER 1/8"	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"
STAINLESS STEELS ISO-M				**CHIP PER TOOTH**							
Precipitation	Slotting @ 1 x D	250	5	0.0005	0.0008	0.0010	0.0015	0.0020	0.0025	0.0030	0.0040
13-8, 15-5, 17-4PH	Profiling @ 2 x D Axial / ≤ .3 D Radial	325	5	0.0007	0.0011	0.0014	0.0020	0.0027	0.0034	0.0041	0.0055
Austenitic	Slotting @ 1 x D	275	5	0.0006	0.0009	0.0012	0.0018	0.0024	0.0030	0.0036	0.0048
302, 303, 304L, 316L	Profiling @ 2 x D Axial /≤.3 D Radial	350	5	0.0008	0.0012	0.0016	0.0025	0.0033	0.0041	0.0049	0.0065
Martensitic	Slotting @ 1 x D	300	5	0.0006	0.0010	0.0013	0.0019	0.0026	0.0032	0.0038	0.0051
403, 410, 416	Profiling @ 2 x D Axial / ≤.3 D Radial	375	5	0.0009	0.0014	0.0017	0.0026	0.0035	0.0044	0.0052	0.0070
HIGH TEMP ALLOYS ISO-S											
Cobalt Base	Slotting @ .5 x D	110	5	0.0003	0.0004	0.0005	0.0008	0.0011	0.0014	0.0016	0.0022
Stellite, Haynes 25, 188, X-40, L-605	Profiling @ 2 x D Axial / ≤.3 D Radial	150	5	0.0003	0.0004	0.0007	0.0007	0.0013	0.0016	0.0020	0.0026
Nickel Base - Inconel 600, 625, 718, Nickel 200, 270,	Slotting @ .5 x D	75	5	0.0004	0.0003	0.0007	0.0010	0.0017	0.0016	0.0026	0.0026
Invar, Monel 400, 405, K-Monel, PermaNickel 300, Inconel 600	Profiling @ 2 x D Axial / ≤.3 D Radial	115	5	0.0004	0.0004	0.0007	0.0011	0.0018	0.0018	0.0022	0.0022
Iron Base	Slotting @ .5 x D	95	5	0.0004	0.0005	0.0009	0.0014	0.0019	0.0023	0.0028	0.0037
Incoloy 800-802, Multimet N-155, Timken 16-26-6	Profiling @ 2 x D Axial / ≤.3 D Radial	130	5	0.0004	0.0005	0.0010	0.0016	0.0021	0.0026	0.0031	0.0042
STEELS ISO-P											
High Strength Steels	Slotting @ 1 x D	300	5	0.0006	0.0009	0.0013	0.0019	0.0026	0.0032	0.0038	0.0051
4140, 4340, 52100	Profiling @ 2 x D Axial / ≤ .3 D Radial	375	5	0.0009	0.0013	0.0017	0.0026	0.0035	0.0044	0.0052	0.0070
High Alloy Steels - Mold & Die	Slotting @ 1 x D	275	5	0.0005	0.0008	0.0011	0.0016	0.0022	0.0027	0.0032	0.0043
A-2, P20, 01, 02, D2, H-13	Profiling @ 2 x D Axial / ≤.3 D Radial	350	5	0.0007	0.0011	0.0015	0.0022	0.0029	0.0037	0.0044	0.0059
Medium Alloy Steels	Slotting @ 1 x D	325	5	0.0005	0.0005	0.0012	0.0020	0.0025	0.0035	0.0040	0.0050
200, 250, 300	Profiling @ 2 x D Axial / ≤ .3 D Radial	400	5	0.0005	0.0005	0.0015	0.0024	0.0030	0.0040	0.0050	0.0060
Low Alloy Steels-Maraging	Slotting @ 1 x D	325	5	0.0007	0.0010	0.0014	0.0021	0.0028	0.0035	0.0042	0.0056
10XX, 11XX, 13XX	Profiling @ 2 x D Axial / ≤ .3 D Radial	400	5	0.0010	0.0015	0.0019	0.0029	0.0038	0.0048	0.0057	0.0076
CAST IRONS ISO-K											
Ductile Iron	Slotting @ 1 x D	300	5	0.0005	0.0008	0.0010	0.0015	0.0020	0.0025	0.0030	0.0040
Ductile Cast Iron	Profiling @ 2 x D Axial /≤ .3 D Radial	375	5	0.0007	0.0010	0.0014	0.0020	0.0027	0.0034	0.0041	0.0055
Cast Iron	Slotting @ 1 x D	275	5	0.0006	0.0010	0.0012	0.0018	0.0024	0.0030	0.0036	0.0048
Grey Cast Iron	Profiling @ 2 x D Axial / ≤ .3 D Radial	350	5	0.0008	0.0012	0.0016	0.0025	0.0033	0.0041	0.0049	0.0065
TITANIUM ISO-S											
Titanium Alloys	Slotting @ 1 x D	250	5	0.0005	0.0007	0.0009	0.0014	0.0018	0.0023	0.0028	0.0037
6AL-4V, ASTM 1, 2, 3, 6AL-2S	Profiling @ 2 x D Axial / ≤.3 D Radial	300	5	0.0006	0.0010	0.0013	0.0019	0.0025	0.0031	0.0038	0.0050

For 5553, decrease SFM and IPM by 25%

MATERIAL	CONDITION	M/MIN	FL	CUTTING DIAMETER - METRIC 3MM	5MM	6MM	10MM	12MM	16MM	20MM	25MM
STAINLESS STEELS ISO-M				**CHIP PER TOOTH**							
Precipitation	Slotting @ 1 x D	76	5	0.0127	0.0203	0.0254	0.0381	0.0508	0.0635	0.0762	0.1016
13-8, 15-5, 17-4PH	Profiling @ 2 x D Axial / ≤ .3 D Radial	100	5	0.0178	0.0279	0.0355	0.0685	0.0685	0.0863	0.1041	0.1397
Austenitic	Slotting @ 1 x D	83	5	0.0152	0.0229	0.0304	0.0457	0.0609	0.0762	0.0914	0.1219
302, 303, 304L, 316L	Profiling @ 2 x D Axial /≤.3 D Radial	105	5	0.0203	0.0304	0.0406	0.0635	0.0838	0.1041	0.1244	0.1651
Martensitic	Slotting @ 1 x D	90	5	0.0152	0.0254	0.0330	0.0482	0.0660	0.0812	0.0965	0.1295
403, 410, 416	Profiling @ 2 x D Axial / ≤.3 D Radial	115	5	0.0229	0.0355	0.0431	0.0660	0.0889	0.1117	0.1320	0.1778
HIGH TEMP ALLOYS ISO-S											
Cobalt Base	Slotting @ .5 x D	35	5	0.0076	0.0102	0.0127	0.0203	0.0279	0.0355	0.0406	0.0558
Stellite, Haynes 25, 188, X-40, L-605	Profiling @ 2 x D Axial / ≤.3 D Radial	45	5	0.0076	0.0102	0.0178	0.0178	0.0330	0.0406	0.0508	0.0660
Nickel Base - Inconel 600, 625, 718, Nickel 200, 270, Invar,	Slotting @ .5 x D	23	5	0.0101	0.0101	0.0178	0.0254	0.0431	0.0406	0.0660	0.0660
Monel 400, 405, K-Monel, PermaNickel 300, Inconel 600	Profiling @ 2 x D Axial / ≤.3 D Radial	35	5	0.0102	0.0102	0.0178	0.0279	0.0457	0.0457	0.0558	0.0558
Iron Base - Incoloy 800-802, Multimet N-155,	Slotting @ .5 x D	30	5	0.0102	0.0127	0.0228	0.0355	0.0482	0.0584	0.0711	0.0939
Timken 16-26-6	Profiling @ 2 x D Axial / ≤.3 D Radial	40	5	0.0102	0.0127	0.0254	0.0406	0.0503	0.0660	0.0787	0.1066
STEELS ISO-P											
High Strength Steels	Slotting @ 1 x D	90	5	0.0152	0.0228	0.0330	0.0482	0.0660	0.0812	0.0905	0.1295
4140, 4340, 52100	Profiling @ 2 x D Axial / ≤ .3 D Radial	115	5	0.0228	0.0330	0.0431	0.0660	0.0889	0.1117	0.1320	0.1778
High Alloy Steels - Mold & Die	Slotting @ 1 x D	83	5	0.0127	0.0203	0.0279	0.0406	0.0558	0.0605	0.0812	0.1092
A-2, P20, 01, 02, D2, H-13	Profiling @ 2 x D Axial / ≤.3 D Radial	110	5	0.0178	0.0279	0.0308	0.0558	0.0736	0.0939	0.1117	0.1498
Medium Alloy Steels	Slotting @ 1 x D	100	5	0.0127	0.0127	0.0304	0.0508	0.0635	0.0889	0.1016	0.1270
200, 250, 300	Profiling @ 2 x D Axial / ≤ .3 D Radial	120	5	0.0127	0.0127	0.0381	0.0609	0.0762	0.1016	0.1270	0.1524
Low Alloy Steels-Maraging	Slotting @ 1 x D	100	5	0.0178	0.0254	0.0355	0.0533	0.0711	0.0889	0.1066	0.1422
10XX, 11XX, 13XX	Profiling @ 2 x D Axial / ≤ .3 D Radial	120	5	0.0254	0.0381	0.0482	0.0736	0.0965	0.1210	0.1447	0.1930
CAST IRONS ISO-K											
Ductile Iron	Slotting @ 1 x D	90	5	0.0127	0.0203	0.0254	0.0381	0.0508	0.0635	0.0762	0.1016
Ductile Cast Iron	Profiling @ 2 x D Axial /≤ .3 D Radial	115	5	0.0178	0.0254	0.0355	0.0508	0.0685	0.0863	0.1041	0.1397
Cast Iron	Slotting @ 1 x D	83	5	0.0152	0.0254	0.0304	0.0457	0.0609	0.0762	0.0194	0.1219
Grey Cast Iron	Profiling @ 2 x D Axial / ≤ .3 D Radial	110	5	0.0203	0.0304	0.0406	0.0635	0.0838	0.1041	0.1244	0.1651
TITANIUM ISO-S											
Titanium Alloys	Slotting @ 1 x D	75	5	0.0128	0.0178	0.0229	0.0355	0.0457	0.0584	0.0711	0.0939
6AL-4V, ASTM 1, 2, 3, 6AL-2S	Profiling @ 2 x D Axial / ≤.3 D Radial	90	5	0.0152	0.0254	0.0330	0.0482	0.0636	0.0787	0.0965	0.1270

For 5553, decrease SFM and IPM by 25%

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our TECHNICAL SERVICE Team with questions

Series: VXMG7

MATERIAL	CONDITION	SFM	FL	CUTTING DIAMETER 1/8"	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"
STAINLESS STEELS ISO-M				**CHIP PER TOOTH**							
Precipitation	High Speed Profiling @ Full Length Axial / < .1 D Radial	450	7	0.0012	0.0017	0.0023	0.0035	0.0047	0.0059	0.0070	0.0094
13-8, 15-5, 17-4PH	Profiling @ Full Length Axial / < .08 D Radial	325	7	0.0012	0.0016	0.0023	0.0034	0.0045	0.0057	0.0068	0.0091
Austenitic	High Speed Profiling @ Full Length Axial / < .1 D Radial	475	7	0.0014	0.0019	0.0028	0.0042	0.0057	0.0070	0.0085	0.0113
302, 303, 304L, 316L	Profiling @ Full Length Axial / < .08 D Radial	325	7	0.0014	0.0020	0.0027	0.0041	0.0054	0.0068	0.0081	0.0109
Martensitic	High Speed Profiling @ Full Length Axial / < .1 D Radial	500	7	0.0013	0.0019	0.0025	0.0038	0.0050	0.0063	0.0076	0.0101
403, 410, 416	Profiling @ Full Length Axial / < .08 D Radial	375	7	0.0014	0.0022	0.0029	0.0043	0.0058	0.0072	0.0086	0.0116
HIGH TEMP ALLOYS ISO-S											
Cobalt Base	High Speed Profiling @ Full Length Axial / < .1 D Radial	175	7	0.0003	0.0004	0.0005	0.0008	0.0011	0.0014	0.0016	0.0022
Stellite, Haynes 25, 188, X-40	Profiling @ Full Length Axial / < .08 D Radial	150	7	0.0003	0.0005	0.0007	0.0007	0.0013	0.0016	0.0020	0.0026
Nickel Base -Inconel 600, 625, 718, Nickel 200	High Speed Profiling @ Full Length Axial / < .1 D Radial	160	7	0.0004	0.0005	0.0007	0.0010	0.0017	0.0016	0.0026	0.0026
Monel 400, 405, K-Monel, Inconel 600	Profiling @ Full Length Axial / < .08 D Radial	145	7	0.0004	0.0005	0.0007	0.0011	0.0018	0.0018	0.0022	0.0022
Iron Base	High Speed Profiling @ Full Length Axial / < .1 D Radial	155	7	0.0004	0.0005	0.0008	0.0013	0.0017	0.0021	0.0025	0.0033
Incoloy 800-802, Multimet N-155	Profiling @ Full Length Axial / < .08 D Radial	130	7	0.0004	0.0006	0.0009	0.0014	0.0019	0.0023	0.0028	0.0038
STEELS ISO-P											
High Strength Steels	High Speed Profiling @ Full Length Axial / < .1 D Radial	500	7	0.0013	0.0019	0.0025	0.0038	0.0050	0.0063	0.0076	0.0101
4140, 4340, 52100	Profiling @ Full Length Axial / < .08 D Radial	375	7	0.0014	0.0023	0.0029	0.0043	0.0058	0.0072	0.0086	0.0116
High Alloy Steels - Mold & Die	High Speed Profiling @ Full Length Axial / < .1 D Radial	475	7	0.0011	0.0016	0.0022	0.0032	0.0042	0.0053	0.0064	0.0086
A-2, P20, 01, 02, D2, H-13	Profiling @ Full Length Axial / < .08 D Radial	350	7	0.0013	0.0018	0.0024	0.0037	0.0049	0.0061	0.0073	0.0098
Medium Alloy Steels	High Speed Profiling @ Full Length Axial / < .1 D Radial	425	7	0.0013	0.0019	0.0025	0.0038	0.0050	0.0063	0.0076	0.0101
200, 250, 300	Profiling @ Full Length Axial / < .08 D Radial	375	7	0.0014	0.0023	0.0029	0.0043	0.0058	0.0072	0.0086	0.0116
Low Alloy Steels-Maraging	High Speed Profiling @ Full Length Axial / < .1 D Radial	525	7	0.0014	0.0023	0.0028	0.0041	0.0055	0.0069	0.0083	0.0111
10XX, 11XX, 13XX	Profiling @ Full Length Axial / < .08 D Radial	400	7	0.0016	0.0024	0.0032	0.0057	0.0063	0.0079	0.0095	0.0127
CAST IRONS ISO-K											
Ductile Iron	High Speed Profiling @ Full Length Axial / < .1 D Radial	475	7	0.0010	0.0014	0.0020	0.0030	0.0040	0.0050	0.0059	0.0079
Ductile Cast Iron	Profiling @ Full Length Axial / < .08 D Radial	350	7	0.0012	0.0015	0.0023	0.0034	0.0045	0.0057	0.0068	0.0091
Cast Iron	High Speed Profiling @ Full Length Axial / < .1 D Radial	500	7	0.0012	0.0018	0.0023	0.0035	0.0048	0.0059	0.0071	0.0095
Grey Cast Iron	Profiling @ Full Length Axial / < .08 D Radial	375	7	0.0014	0.0022	0.0027	0.0041	0.0054	0.0068	0.0081	0.0109
TITANIUM ISO-S											
Titanium Alloys	High Speed Profiling @ Full Length Axial / < .1 D Radial	425	7	0.0011	0.0016	0.0022	0.0032	0.0043	0.0054	0.0065	0.0086
6AL-4V, ASTM 1, 2, 3, 6AL-2S	Profiling @ Full Length Axial / < .08 D Radial	300	7	0.0011	0.0016	0.0021	0.0032	0.0041	0.0052	0.0062	0.0083

For 5553, decrease SFM and IPM by 25%

MATERIAL	CONDITION	M/MIN M/MIN	FL	CUTTING DIAMETER - METRIC 3MM	4.5MM	6MM	10MM	12MM	16MM	20MM	25MM
STAINLESS STEELS ISO-M				**CHIP PER TOOTH**							
Precipitation	High Speed Profiling @ Full Length Axial / < .1 D Radial	137	7	0.0305	0.0432	0.0584	0.0889	0.1194	0.1499	0.1778	0.2388
13-8, 15-5, 17-4PH	Profiling @ Full Length Axial / < .08 D Radial	99	7	0.0305	0.0406	0.0584	0.0864	0.1143	0.1448	0.1727	0.2311
Austenitic	High Speed Profiling @ Full Length Axial / < .1 D Radial	145	7	0.0356	0.0483	0.0711	0.1067	0.1448	0.1778	0.2159	0.2870
302, 303, 304L, 316L	Profiling @ Full Length Axial / < .08 D Radial	99	7	0.0356	0.0508	0.0686	0.1041	0.1372	0.1727	0.2057	0.2769
Martensitic	High Speed Profiling @ Full Length Axial / < .1 D Radial	152	7	0.0330	0.0483	0.0635	0.0965	0.1270	0.1600	0.1930	0.2565
403, 410, 416	Profiling @ Full Length Axial / < .08 D Radial	114	7	0.0356	0.0559	0.0737	0.1092	0.1473	0.1829	0.2184	0.2946
HIGH TEMP ALLOYS ISO-S											
Cobalt Base	High Speed Profiling @ Full Length Axial / < .1 D Radial	53	7	0.0076	0.0102	0.0127	0.0203	0.0279	0.0356	0.0406	0.0559
Stellite, Haynes 25, 188, X-40	Profiling @ Full Length Axial / < .08 D Radial	46	7	0.0076	0.0127	0.0178	0.0178	0.0330	0.0406	0.0508	0.0660
Nickel Base -Inconel 600, 625, 718, Nickel 200	High Speed Profiling @ Full Length Axial / < .1 D Radial	49	7	0.0102	0.0127	0.0178	0.0254	0.0432	0.0406	0.0660	0.0660
Monel 400, 405, K-Monel, Inconel 600	Profiling @ Full Length Axial / < .08 D Radial	44	7	0.0102	0.0127	0.0178	0.0279	0.0457	0.0457	0.0559	0.0559
Iron Base	High Speed Profiling @ Full Length Axial / < .1 D Radial	47	7	0.0102	0.0127	0.0203	0.0330	0.0432	0.0533	0.0635	0.0838
Incoloy 800-802, Multimet N-155	Profiling @ Full Length Axial / < .08 D Radial	40	7	0.0102	0.0152	0.0229	0.0356	0.0483	0.0584	0.0711	0.0965
STEELS ISO-P											
High Strength Steels	High Speed Profiling @ Full Length Axial / < .1 D Radial	152	7	0.0330	0.0483	0.0635	0.0965	0.1270	0.1600	0.1930	0.2565
4140, 4340, 52100	Profiling @ Full Length Axial / < .08 D Radial	114	7	0.0356	0.0584	0.0737	0.1092	0.1473	0.1829	0.2184	0.2946
High Alloy Steels - Mold & Die	High Speed Profiling @ Full Length Axial / < .1 D Radial	145	7	0.0279	0.0406	0.0559	0.0813	0.1067	0.1346	0.1626	0.2184
A-2, P20, 01, 02, D2, H-13	Profiling @ Full Length Axial / < .08 D Radial	107	7	0.0330	0.0457	0.0610	0.0940	0.1245	0.1549	0.1854	0.2489
Medium Alloy Steels	High Speed Profiling @ Full Length Axial / < .1 D Radial	130	7	0.0330	0.0483	0.0635	0.0965	0.1270	0.1600	0.1930	0.2565
200, 250, 300	Profiling @ Full Length Axial / < .08 D Radial	114	7	0.0356	0.0584	0.0737	0.1092	0.1473	0.1829	0.2184	0.2946
Low Alloy Steels-Maraging	High Speed Profiling @ Full Length Axial / < .1 D Radial	160	7	0.0356	0.0584	0.0711	0.1041	0.1397	0.1753	0.2108	0.2819
10XX, 11XX, 13XX	Profiling @ Full Length Axial / < .08 D Radial	122	7	0.0406	0.0610	0.0813	0.1448	0.1600	0.2007	0.2413	0.3226
CAST IRONS ISO-K											
Ductile Iron	High Speed Profiling @ Full Length Axial / < .1 D Radial	145	7	0.0254	0.0356	0.0508	0.0762	0.1016	0.1270	0.1499	0.2007
Ductile Cast Iron	Profiling @ Full Length Axial / < .08 D Radial	107	7	0.0305	0.0381	0.0584	0.0864	0.1143	0.1448	0.1727	0.2311
Cast Iron	High Speed Profiling @ Full Length Axial / < .1 D Radial	152	7	0.0305	0.0457	0.0584	0.0889	0.1219	0.1499	0.1803	0.2413
Grey Cast Iron	Profiling @ Full Length Axial / < .08 D Radial	114	7	0.0356	0.0559	0.0686	0.1041	0.1372	0.1727	0.2057	0.2769
TITANIUM ISO-S											
Titanium Alloys	High Speed Profiling @ Full Length Axial / < .1 D Radial	130	7	0.0279	0.0406	0.0559	0.0813	0.1092	0.1372	0.1651	0.2184
6AL-4V, ASTM 1, 2, 3, 6AL-2S	Profiling @ Full Length Axial / < .08 D Radial	91	7	0.0279	0.0406	0.0533	0.0813	0.1041	0.1321	0.1575	0.2108

For 5553, decrease SFM and IPM by 25%

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our Technical Service Team with questions

SERIES: VXMG9

MATERIAL	CONDITION	SFM	FL	CUTTING DIAMETER 1/4"	3/8"	1/2"	5/8"	3/4"	1"
STAINLESS STEELS ISO-M				**CHIP PER TOOTH**					
Precipitation	High Speed Profiling @ 1.5 x D Axial / < .025 D Radial	450	9	0.0023	0.0035	0.0047	0.0059	0.0070	0.0094
13-8, 15-5, 17-4PH	Profiling @ Full Length Axial / < .015 D Radial	325	9	0.0023	0.0034	0.0045	0.0057	0.0068	0.0091
Austenitic	High Speed Profiling @ 1.5 x D Axial / < .025 D Radial	475	9	0.0028	0.0042	0.0057	0.0070	0.0085	0.0113
302, 303, 304L, 316L	Profiling @ Full Length Axial / < .015 D Radial	350	9	0.0027	0.0041	0.0054	0.0068	0.0081	0.0109
Martensitic	High Speed Profiling @ 1.5 x D Axial / < .025 D Radial	500	9	0.0025	0.0038	0.0050	0.0063	0.0076	0.0101
403, 410, 416	Profiling @ Full Length Axial / < .015 D Radial	375	9	0.0029	0.0043	0.0058	0.0072	0.0086	0.0116
HIGH TEMP ALLOYS ISO-S									
Cobalt Base	High Speed Profiling @ .5 D Axial / < .02 D Radial	175	9	0.0005	0.0008	0.0011	0.0014	0.0016	0.0022
Stellite, Haynes 25, 188, X-40	Profiling @ Full Length Axial / < .01 D Radial	150	9	0.0007	0.0007	0.0013	0.0016	0.0020	0.0026
Nickel Base - Inconel 600, 625, 718, Nickel 200	High Speed Profiling @ .5 D Axial / < .02 D Radial	160	9	0.0007	0.0010	0.0017	0.0016	0.0026	0.0026
Monel 400, 405, K-Monel, Inconel 600	Profiling @ Full Length Axial / < .01 D Radial	145	9	0.0007	0.0011	0.0018	0.0018	0.0022	0.0022
Iron Base	High Speed Profiling @ .5 D Axial / < .02 D Radial	155	9	0.0008	0.0013	0.0017	0.0021	0.0025	0.0033
Incoloy 800-802, Multimet N-155	Profiling @ Full Length Axial / < .01 D Radial	130	9	0.0009	0.0014	0.0019	0.0023	0.0028	0.0038
STEELS ISO-P									
High Strength Steels	High Speed Profiling @ 1 x D Axial / < .025 D Radial	500	9	0.0025	0.0038	0.0050	0.0063	0.0076	0.0101
4140, 4340, 52100	Profiling @ Full Length Axial / < .015 D Radial	375	9	0.0029	0.0043	0.0058	0.0072	0.0086	0.0116
High Alloy Steels - Mold & Die	High Speed Profiling @ 1 x D Axial / < .025 D Radial	475	9	0.0022	0.0032	0.0042	0.0053	0.0064	0.0086
A-2, P20, 01, 02, D2, H-13	Profiling @ Full Length Axial / < .015 D Radial	350	9	0.0024	0.0037	0.0049	0.0061	0.0073	0.0098
Medium Alloy Steels	High Speed Profiling @ Full Length Axial / < .025 D Radial	425	9	0.0025	0.0038	0.0050	0.0063	0.0076	0.0101
200, 250, 300	Profiling @ Full Length Axial / < .015 D Radial	375	9	0.0029	0.0043	0.0058	0.0072	0.0086	0.0116
Low Alloy Steels-Maraging	High Speed Profiling @ Full Length Axial / < .025 D Radial	525	9	0.0028	0.0041	0.0055	0.0069	0.0083	0.0111
10XX, 11XX, 13XX	Profiling @ Full Length Axial / < .015 D Radial	400	9	0.0032	0.0057	0.0063	0.0079	0.0095	0.0127
CAST IRONS ISO-K									
Ductile Iron	High Speed Profiling @ Full Length Axial / < .025 D Radial	475	9	0.0020	0.0030	0.0040	0.0050	0.0059	0.0079
Ductile Cast Iron	Profiling @ Full Length Axial / < .015 D Radial	350	9	0.0023	0.0034	0.0045	0.0057	0.0068	0.0091
Cast Iron	High Speed Profiling @ Full Length Axial / < .025 D Radial	500	9	0.0023	0.0035	0.0048	0.0059	0.0071	0.0095
Grey Cast Iron	Profiling @ Full Length Axial / < .015 D Radial	375	9	0.0027	0.0041	0.0054	0.0068	0.0081	0.0109
TITANIUM ISO-S									
Titanium Alloys	High Speed Profiling @ 1.5 x D Axial / < .025 D Radial	425	9	0.0022	0.0032	0.0043	0.0054	0.0065	0.0086
6AL-4V, ASTM 1, 2, 3, 6AL-2S	Profiling @ Full Length Axial / < .015 D Radial	300	9	0.0021	0.0032	0.0041	0.0052	0.0062	0.0083

For 5553, decrease SFM and IPM by 25%

MATERIAL	CONDITION	M/MIN	FL	CUTTING DIAMETER - METRIC 6MM	10MM	12MM	16MM	20MM	25MM
STAINLESS STEELS ISO-M				**CHIP PER TOOTH**					
Precipitation	High Speed Profiling @ 1.5 x D Axial / < .025 D Radial	137	9	0.0584	0.0889	0.1194	0.1499	0.1778	0.2388
13-8, 15-5, 17-4PH	Profiling @ Full Length Axial / < .015 D Radial	99	9	0.0584	0.0864	0.1143	0.1448	0.1727	0.2311
Austenitic	High Speed Profiling @ 1.5 x D Axial / < .025 D Radial	145	9	0.0711	0.1067	0.1448	0.1778	0.2159	0.2870
302, 303, 304L, 316L	Profiling @ Full Length Axial / < .015 D Radial	107	9	0.0686	0.1041	0.1372	0.1727	0.2057	0.2769
Martensitic	High Speed Profiling @ 1.5 x D Axial / < .025 D Radial	152	9	0.0635	0.0965	0.1270	0.1600	0.1930	0.2565
403, 410, 416	Profiling @ Full Length Axial / < .015 D Radial	114	9	0.0737	0.1092	0.1473	0.1829	0.2184	0.2946
HIGH TEMP ALLOYS ISO-S									
Cobalt Base	High Speed Profiling @ .5 D Axial / < .02 D Radial	53	9	0.0127	0.0203	0.0279	0.0356	0.0406	0.0559
Stellite, Haynes 25, 188, X-40	Profiling @ Full Length Axial / < .01 D Radial	46	9	0.0178	0.0178	0.0330	0.0406	0.0508	0.0660
Nickel Base - Inconel 600, 625, 718, Nickel 200	High Speed Profiling @ .5 D Axial / < .02 D Radial	49	9	0.0178	0.0254	0.0432	0.0406	0.0660	0.0660
Monel 400, 405, K-Monel, Inconel 600	Profiling @ Full Length Axial / < .01 D Radial	44	9	0.0178	0.0279	0.0457	0.0457	0.0559	0.0559
Iron Base	High Speed Profiling @ .5 D Axial / < .02 D Radial	47	9	0.0203	0.0330	0.0432	0.0533	0.0635	0.0838
Incoloy 800-802, Multimet N-155	Profiling @ Full Length Axial / < .01 D Radial	40	9	0.0229	0.0356	0.0483	0.0584	0.0711	0.0965
STEELS ISO-P									
High Strength Steels	High Speed Profiling @ 1 x D Axial / < .025 D Radial	152	9	0.0635	0.0965	0.1270	0.1600	0.1930	0.2565
4140, 4340, 52100	Profiling @ Full Length Axial / < .015 D Radial	114	9	0.0737	0.1092	0.1473	0.1829	0.2184	0.2946
High Alloy Steels - Mold & Die	High Speed Profiling @ 1 x D Axial / < .025 D Radial	145	9	0.0559	0.0813	0.1067	0.1346	0.1626	0.2184
A-2, P20, 01, 02, D2, H-13	Profiling @ Full Length Axial / < .015 D Radial	107	9	0.0610	0.0940	0.1245	0.1549	0.1854	0.2489
Medium Alloy Steels	High Speed Profiling @ Full Length Axial / < .025 D Radial	130	9	0.0635	0.0965	0.1270	0.1600	0.1930	0.2565
200, 250, 300	Profiling @ Full Length Axial / < .015 D Radial	114	9	0.0737	0.1092	0.1473	0.1829	0.2184	0.2946
Low Alloy Steels-Maraging	High Speed Profiling @ Full Length Axial / < .025 D Radial	160	9	0.0711	0.1041	0.1397	0.1753	0.2108	0.2819
10XX, 11XX, 13XX	Profiling @ Full Length Axial / < .015 D Radial	122	9	0.0813	0.1448	0.1600	0.2007	0.2413	0.3226
CAST IRONS ISO-K									
Ductile Iron	High Speed Profiling @ Full Length Axial / < .025 D Radial	145	9	0.0508	0.0762	0.1016	0.1270	0.1499	0.2007
Ductile Cast Iron	Profiling @ Full Length Axial / < .015 D Radial	107	9	0.0584	0.0864	0.1143	0.1448	0.1727	0.2311
Cast Iron	High Speed Profiling @ Full Length Axial / < .025 D Radial	152	9	0.0584	0.0889	0.1219	0.1499	0.1803	0.2413
Grey Cast Iron	Profiling @ Full Length Axial / < .015 D Radial	114	9	0.0686	0.1041	0.1372	0.1727	0.2057	0.2769
TITANIUM ISO-S									
Titanium Alloys	High Speed Profiling @ 1.5 x D Axial / < .025 D Radial	130	9	0.0559	0.0813	0.1092	0.1372	0.1651	0.2184
6AL-4V, ASTM 1, 2, 3, 6AL-2S	Profiling @ Full Length Axial / < .015 D Radial	91	9	0.0533	0.0813	0.1041	0.1321	0.1575	0.2108

For 5553, decrease SFM and IPM by 25%

METRIC

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our TECHNICAL SERVICE Team with questions

Series: VHMG

MATERIAL	CONDITION	STARTING SFM	CUTTING DIAMETER 1/8"	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"
STAINLESS STEELS ISO-M			**CHIP PER TOOTH**							
Precipitation										
13-8, 15-5, 17-4PH	Slotting @ ≤ .5 x D	250	0.0004	0.0006	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
	Profiling @ 2 x D Axial / ≤ .3 D Radial	325	0.0005	0.0008	0.0011	0.0015	0.0020	0.0026	0.0031	0.0041
Austenitic										
302, 303, 304L, 316L	Slotting @ ≤ .5 x D	275	0.0005	0.0007	0.0009	0.0014	0.0018	0.0023	0.0027	0.0036
	Profiling @ 2 x D Axial / ≤ .3 D Radial	350	0.0006	0.0009	0.0012	0.0019	0.0025	0.0031	0.0037	0.0049
Martensitic										
403, 410, 416	Slotting @ ≤ .5 x D	300	0.0005	0.0008	0.0010	0.0014	0.0020	0.0024	0.0029	0.0038
	Profiling @ 2 x D Axial / ≤ .3 D Radial	375	0.0007	0.0011	0.0013	0.0020	0.0026	0.0033	0.0039	0.0053
HIGH TEMP ALLOYS ISO-S										
Cobalt Base										
Stellite, Haynes 25, 188, X-40, L-605	Slotting @ .5 x D	110	0.0002	0.0003	0.0004	0.0006	0.0008	0.0011	0.0012	0.0017
	Profiling @ 2 x D Axial / ≤ .3 D Radial	150	0.0002	0.0003	0.0005	0.0005	0.0010	0.0012	0.0015	0.0020
Nickel Base										
Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel	Slotting @ .5 x D	75	0.0003	0.0002	0.0005	0.0008	0.0013	0.0012	0.0020	0.0020
400, 405, K-Monel, PermaNickel 300, Inconel 600	Profiling @ 2 x D Axial / ≤ .3 D Radial	115	0.0003	0.0003	0.0005	0.0008	0.0014	0.0014	0.0017	0.0017
Iron Base										
Incoloy 800-802, Multimet N-155,	Slotting @ ≤ .5 x D	95	0.0003	0.0004	0.0007	0.0011	0.0014	0.0017	0.0021	0.0028
Timken 16-26-6	Profiling @ 2 x D Axial / ≤ .3 D Radial	130	0.0003	0.0004	0.0008	0.0012	0.0016	0.0020	0.0023	0.0032
STEELS ISO-P										
High Strength Steels										
4140, 4340, 52100	Slotting @ ≤ .5 x D	300	0.0005	0.0007	0.0010	0.0014	0.0020	0.0024	0.0029	0.0038
	Profiling @ 2 x D Axial / ≤ .3 D Radial	375	0.0007	0.0010	0.0013	0.0020	0.0026	0.0033	0.0039	0.0053
High Alloy Steels - Mold & Die										
A-2, P20, 01, 02, D2, H-13	Slotting @ ≤ .5 x D	275	0.0004	0.0006	0.0008	0.0012	0.0017	0.0020	0.0024	0.0032
	Profiling @ 2 x D Axial / ≤ .3 D Radial	350	0.0005	0.0008	0.0011	0.0017	0.0022	0.0028	0.0033	0.0044
Medium Alloy Steels										
200, 250, 300	Slotting @ ≤ .5 x D	325	0.0004	0.0004	0.0009	0.0015	0.0019	0.0026	0.0030	0.0038
	Profiling @ 2 x D Axial / ≤ .3 D Radial	400	0.0004	0.0004	0.0011	0.0018	0.0023	0.0030	0.0038	0.0045
Low Alloy Steels-Maraging										
10XX, 11XX, 13XX	Slotting @ ≤ .5 x D	325	0.0005	0.0008	0.0011	0.0016	0.0021	0.0026	0.0032	0.0042
	Profiling @ 2 x D Axial / ≤ .3 D Radial	400	0.0008	0.0011	0.0014	0.0022	0.0029	0.0036	0.0043	0.0057
CAST IRONS ISO-K										
Ductile Iron										
Ductile Cast Iron	Slotting @ ≤ .5 x D	400	0.0004	0.0006	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
	Profiling @ 2 x D Axial / ≤ .3 D Radial	550	0.0005	0.0008	0.0011	0.0015	0.0020	0.0026	0.0031	0.0041
Cast Iron										
Grey Cast Iron	Slotting @ ≤ .5 x D	450	0.0005	0.0008	0.0009	0.0014	0.0018	0.0023	0.0027	0.0036
	Profiling @ 2 x D Axial / ≤ .3 D Radial	600	0.0006	0.0009	0.0012	0.0019	0.0025	0.0031	0.0037	0.0049
TITANIUM ISO-S										
Titanium Alloys										
6AL-4V, ASTM 1, 2, 3, 6AL-2S	Slotting @ ≤ .5 x D	175	0.0004	0.0005	0.0007	0.0011	0.0014	0.0017	0.0021	0.0028
For 5553, decrease SFM and IPM by 25%	Profiling @ 2 x D Axial / ≤ .3 D Radial	275	0.0005	0.0008	0.0010	0.0014	0.0019	0.0023	0.0029	0.0038

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our Technical Service Team with questions

Series: VHMG (metric)

MATERIAL	CONDITION	STARTING M/MIN	CUTTING DIAMETER - METRIC 4mm	6mm	8mm	10mm	12mm	16mm	20mm	25mm
STAINLESS STEELS ISO-M						**CHIP PER TOOTH**				
Precipitation										
13-8, 15-5, 17-4PH	Slotting @ ≤ .5 x D	75	0.0102	0.0191	0.0229	0.0286	0.0381	0.0476	0.0572	0.0762
	Profiling @ 2 x D Axial / ≤ .3 D Radial	99	0.0127	0.0267	0.0330	0.0381	0.0514	0.0648	0.0781	0.1048
Austenitic										
302, 303, 304L, 316L	Slotting @ ≤ .5 x D	84	0.0114	0.0229	0.0279	0.0343	0.0457	0.0572	0.0686	0.0914
	Profiling @ 2 x D Axial / ≤ .3 D Radial	107	0.0152	0.0305	0.0381	0.0476	0.0629	0.0781	0.0933	0.1238
Martensitic										
403, 410, 416	Slotting @ ≤ .5 x D	91	0.0114	0.0248	0.0305	0.0362	0.0495	0.0610	0.0724	0.0972
	Profiling @ 2 x D Axial / ≤ .3 D Radial	114	0.0171	0.0324	0.0406	0.0495	0.0667	0.0838	0.0991	0.1334
HIGH TEMP ALLOYS ISO-S										
Cobalt Base										
Stellite, Haynes 25, 188, X-40, L-605	Slotting @ .5 x D	34	0.0057	0.0095	0.0102	0.0152	0.0210	0.0267	0.0305	0.0419
	Profiling @ 2 x D Axial / ≤ .3 D Radial	46	0.0057	0.0133	0.0127	0.0133	0.0248	0.0305	0.0381	0.0495
Nickel Base										
Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel	Slotting @ .5 x D	23	0.0076	0.0133	0.0152	0.0191	0.0324	0.0305	0.0495	0.0495
400, 405, K-Monel, PermaNickel 300, Inconel 600	Profiling @ 2 x D Axial / ≤ .3 D Radial	35	0.0076	0.0133	0.0178	0.0210	0.0343	0.0343	0.0419	0.0419
Iron Base										
Incoloy 800-802, Multimet N-155,	Slotting @ ≤ .5 x D	29	0.0076	0.0171	0.0229	0.0267	0.0362	0.0438	0.0533	0.0705
Timken 16-26-6	Profiling @ 2 x D Axial / ≤ .3 D Radial	40	0.0076	0.0191	0.0254	0.0305	0.0400	0.0495	0.0591	0.0800
STEELS ISO-P										
High Strength Steels										
4140, 4340, 52100	Slotting @ ≤ .5 x D	91	0.0114	0.0248	0.0305	0.0362	0.0495	0.0610	0.0724	0.0972
	Profiling @ 2 x D Axial / ≤ .3 D Radial	114	0.0171	0.0324	0.0406	0.0495	0.0667	0.0838	0.0991	0.1334
High Alloy Steels - Mold & Die										
A-2, P20, 01, 02, D2, H-13	Slotting @ ≤ .5 x D	84	0.0095	0.0210	0.0254	0.0305	0.0419	0.0514	0.0610	0.0819
	Profiling @ 2 x D Axial / ≤ .3 D Radial	107	0.0133	0.0286	0.0356	0.0419	0.0552	0.0705	0.0838	0.1124
Medium Alloy Steels										
200, 250, 300	Slotting @ ≤ .5 x D	99	0.0095	0.0229	0.0330	0.0381	0.0476	0.0667	0.0762	0.0953
	Profiling @ 2 x D Axial / ≤ .3 D Radial	122	0.0095	0.0286	0.0381	0.0457	0.0572	0.0762	0.0953	0.1143
Low Alloy Steels-Maraging										
10XX, 11XX, 13XX	Slotting @ ≤ .5 x D	99	0.0133	0.0267	0.0330	0.0400	0.0533	0.0667	0.0800	0.1067
	Profiling @ 2 x D Axial / ≤ .3 D Radial	122	0.0191	0.0362	0.0432	0.0552	0.0724	0.0914	0.1086	0.1448
CAST IRONS ISO-K										
Ductile Iron										
Ductile Cast Iron	Slotting @ ≤ .5 x D	122	0.0095	0.0191	0.0229	0.0286	0.0381	0.0476	0.0572	0.0762
	Profiling @ 2 x D Axial / ≤ .3 D Radial	168	0.0133	0.0267	0.0330	0.0381	0.0514	0.0648	0.0781	0.1048
Cast Iron										
Grey Cast Iron	Slotting @ ≤ .5 x D	140	0.0114	0.0229	0.0279	0.0343	0.0457	0.0572	0.0686	0.0914
	Profiling @ 2 x D Axial / ≤ .3 D Radial	183	0.0152	0.0305	0.0406	0.0476	0.0629	0.0781	0.0933	0.1238
TITANIUM ISO-S										
Titanium Alloys										
6AL-4V, ASTM 1, 2, 3, 6AL-2S	Slotting @ ≤ .5 x D	53	0.0095	0.0171	0.0229	0.0267	0.0343	0.0438	0.0533	0.0705
For 5553, decrease SFM and IPM by 25%	Profiling @ 2 x D Axial / ≤ .3 D Radial	84	0.0114	0.0248	0.0305	0.0362	0.0476	0.0591	0.0724	0.0953

METRIC

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our Technical Service Team with questions

Series: GVHMG

MATERIAL	CONDITION	STARTING SFM	CUTTING DIAMETER 1/8"	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"
STAINLESS STEELS ISO-M						**CHIP PER TOOTH**				
Precipitation										
13-8, 15-5, 17-4PH	Slotting @ ≤ .5 x D	250	0.0004	0.0006	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
	Profiling @ 2 x D Axial / ≤ .2 D Radial	325	0.0005	0.0008	0.0011	0.0015	0.0020	0.0026	0.0031	0.0041
Austenitic										
302, 303, 304L, 316L	Slotting @ ≤ .5 x D	275	0.0005	0.0007	0.0009	0.0014	0.0018	0.0023	0.0027	0.0036
	Profiling @ 2 x D Axial / ≤ .2 D Radial	350	0.0006	0.0009	0.0012	0.0019	0.0025	0.0031	0.0037	0.0049
Martensitic										
403, 410, 416	Slotting @ ≤ .5 x D	300	0.0005	0.0008	0.0010	0.0014	0.0020	0.0024	0.0029	0.0038
	Profiling @ 2 x D Axial / ≤ .2 D Radial	375	0.0007	0.0011	0.0013	0.0020	0.0026	0.0033	0.0039	0.0053
HIGH TEMP ALLOYS ISO-S										
Cobalt Base										
Stellite, Haynes 25, 188, X-40, L-605	Slotting @ .5 x D	110	0.0002	0.0003	0.0004	0.0006	0.0008	0.0011	0.0012	0.0017
	Profiling @ 2 x D Axial / ≤ .2 D Radial	150	0.0002	0.0003	0.0005	0.0005	0.0010	0.0012	0.0015	0.0020
Nickel Base										
Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel	Slotting @ .5 x D	75	0.0003	0.0002	0.0005	0.0008	0.0013	0.0012	0.0020	0.0020
400, 405, K-Monel, PermaNickel 300, Inconel 600	Profiling @ 2 x D Axial / ≤ .2 D Radial	115	0.0003	0.0003	0.0005	0.0008	0.0014	0.0014	0.0017	0.0017
Iron Base										
Incoloy 800-802, Multimet N-155,	Slotting @ ≤ .5 x D	95	0.0003	0.0004	0.0007	0.0011	0.0014	0.0017	0.0021	0.0028
Timken 16-26-6	Profiling @ 2 x D Axial / ≤ .2 D Radial	130	0.0003	0.0004	0.0008	0.0012	0.0016	0.0020	0.0023	0.0032
STEELS ISO-P										
High Strength Steels										
4140, 4340, 52100	Slotting @ ≤ .5 x D	300	0.0005	0.0007	0.0010	0.0014	0.0020	0.0024	0.0029	0.0038
	Profiling @ 2 x D Axial / ≤ .2 D Radial	375	0.0007	0.0010	0.0013	0.0020	0.0026	0.0033	0.0039	0.0053
High Alloy Steels - Mold & Die										
A-2, P20, 01, 02, D2, H-13	Slotting @ ≤ .5 x D	275	0.0004	0.0006	0.0008	0.0012	0.0017	0.0020	0.0024	0.0032
	Profiling @ 2 x D Axial / ≤ .2 D Radial	350	0.0005	0.0008	0.0011	0.0017	0.0022	0.0028	0.0033	0.0044
Medium Alloy Steels										
200, 250, 300	Slotting @ ≤ .5 x D	325	0.0004	0.0004	0.0009	0.0015	0.0019	0.0026	0.0030	0.0038
	Profiling @ 2 x D Axial / ≤ .2 D Radial	400	0.0004	0.0004	0.0011	0.0018	0.0023	0.0030	0.0038	0.0045
Low Alloy Steels-Maraging										
10XX, 11XX, 13XX	Slotting @ ≤ .5 x D	325	0.0005	0.0008	0.0011	0.0016	0.0021	0.0026	0.0032	0.0042
	Profiling @ 2 x D Axial / ≤ .2 D Radial	400	0.0008	0.0011	0.0014	0.0022	0.0029	0.0036	0.0043	0.0057
CAST IRONS ISO-K										
Ductile Iron										
Ductile Cast Iron	Slotting @ ≤ .5 x D	400	0.0004	0.0006	0.0008	0.0011	0.0015	0.0019	0.0023	0.0030
	Profiling @ 2 x D Axial / ≤ .2 D Radial	550	0.0005	0.0008	0.0011	0.0015	0.0020	0.0026	0.0031	0.0041
Cast Iron										
Grey Cast Iron	Slotting @ ≤ .5 x D	450	0.0005	0.0008	0.0009	0.0014	0.0018	0.0023	0.0027	0.0036
	Profiling @ 2 x D Axial / ≤ .2 D Radial	600	0.0006	0.0009	0.0012	0.0019	0.0025	0.0031	0.0037	0.0049
TITANIUM ISO-S										
Titanium Alloys										
6AL-4V, ASTM 1, 2, 3, 6AL-2S	Slotting @ ≤ .5 x D	175	0.0004	0.0005	0.0007	0.0011	0.0014	0.0017	0.0021	0.0028
For 5553, decrease SFM and IPM by 25%	Profiling @ 2 x D Axial / ≤ .2 D Radial	275	0.0005	0.0008	0.0010	0.0014	0.0019	0.0023	0.0029	0.0038

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our Technical Service Team with questions

MATERIAL	CONDITION	SFM	CUTTING DIAMETER 3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"
STAINLESS STEELS ISO-M			**CHIP PER TOOTH**						
Precipitation									
13-8, 15-5, 17-4PH	Slotting @ ≤ .5 x D	175	0.00063	0.00081	0.00126	0.00171	0.00216	0.00261	0.00351
	Profiling @ 2 x D Axial / ≤ .5 D Radial		0.00090	0.00117	0.00171	0.00234	0.00297	0.00360	0.00486
Austenitic									
302, 303, 304L, 316L	Slotting @ ≤ .5 x D	225	0.00072	0.00099	0.00153	0.00207	0.00261	0.00315	0.00423
	Profiling @ 2 x D Axial / ≤ .5 D Radial		0.00099	0.00135	0.00216	0.00288	0.0036	0.00432	0.00576
Martensitic									
403, 410, 416	Slotting @ ≤ .5 x D	200	0.00081	0.00108	0.00162	0.00225	0.00279	0.00333	0.00450
	Profiling @ 2 x D Axial / ≤ .5 D Radial		0.00117	0.00144	0.00225	0.00306	0.00387	0.00459	0.00621
HIGH TEMP ALLOYS ISO-S									
Cobalt Base									
Stellite, Haynes 25, 188, X-40, L-605	Slotting @ .5 x D	85	0.00027	0.00036	0.00063	0.0009	0.00117	0.00135	0.00189
	Profiling @ 2 x D Axial / ≤ .5 D Radial		0.00027	0.00054	0.00054	0.00108	0.00135	0.00171	0.00225
Nickel Base									
Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel 400, 405, K-Monel,	Slotting @ .5 x D	60	0.00018	0.00054	0.00081	0.00144	0.00135	0.00225	0.00225
PermaNickel 300, Inconel 600	Profiling @ 2 x D Axial / ≤ .5 D Radial		0.00027	0.00054	0.00090	0.00153	0.00153	0.00189	0.00189
Iron Base									
Incoloy 800-802, Multimet N-155,	Slotting @ ≤ .5 x D	70	0.00036	0.00072	0.00117	0.00162	0.00198	0.00243	0.00324
Timken 16-26-6	Profiling @ 2 x D Axial / ≤ .5 D Radial		0.00036	0.00081	0.00135	0.0018	0.00225	0.00270	0.00369
STEELS ISO-P									
High Strength Steels									
4140, 4340, 52100	Slotting @ ≤ .5 x D	225	0.00072	0.00108	0.00162	0.00225	0.00279	0.00333	0.00450
	Profiling @ 2 x D Axial / ≤ .5 D Radial		0.00108	0.00144	0.00225	0.00306	0.00387	0.00459	0.00621
High Alloy Steels - Mold & Die									
A-2, P20, 01, 02, D2, H-13	Slotting @ ≤ .5 x D	200	0.00063	0.00090	0.00135	0.00189	0.00234	0.00279	0.00378
	Profiling @ 2 x D Axial / ≤ .5 D Radial		0.00090	0.00126	0.00189	0.00252	0.00324	0.00387	0.00522
Medium Alloy Steels									
200, 250, 300	Slotting @ ≤ .5 x D	250	0.00036	0.00099	0.00171	0.00216	0.00306	0.00351	0.00441
	Profiling @ 2 x D Axial / ≤ .5 D Radial		0.00036	0.00126	0.00207	0.00261	0.00351	0.00441	0.00531
Low Alloy Steels-Maraging									
10XX, 11XX, 13XX	Slotting @ ≤ .5 x D	265	0.00081	0.00117	0.0018	0.00243	0.00306	0.00369	0.00495
	Profiling @ 2 x D Axial / ≤ .5 D Radial		0.00126	0.00162	0.00252	0.00333	0.00423	0.00504	0.00675

MATERIAL	CONDITION	M/MIN	CUTTING DIAMETER - METRIC 6mm	8mm	10mm	12mm	14mm	16mm	16mm	16mm	1"
STAINLESS STEELS ISO-M			**CHIP PER TOOTH**								
Precipitation											
13-8, 15-5, 17-4PH	Slotting @ ≤ .5 x D	53	0.0206	0.0254	0.0330	0.0432	0.0483	0.0549	0.0610	0.0663	0.1016
	Profiling @ 2 x D Axial / ≤ .5 D Radial		0.0297	0.0356	0.0432	0.0584	0.0660	0.0754	0.0838	0.0914	0.1397
Austenitic											
302, 303, 304L, 316L	Slotting @ ≤ .5 x D	68	0.0251	0.0305	0.0381	0.0533	0.0610	0.0663	0.0737	0.0800	0.1219
	Profiling @ 2 x D Axial / ≤ .5 D Radial		0.0343	0.0457	0.0559	0.0737	0.0838	0.0914	0.0838	0.1097	0.1651
Martensitic											
403, 410, 416	Slotting @ ≤ .5 x D	61	0.0274	0.0330	0.0406	0.0584	0.0660	0.0709	0.0787	0.0846	0.1295
	Profiling @ 2 x D Axial / ≤ .5 D Radial		0.0366	0.0483	0.0584	0.0787	0.0889	0.0983	0.1067	0.1166	0.1778
HIGH TEMP ALLOYS ISO-S											
Cobalt Base											
Stellite, Haynes 25, 188, X-40, L-605	Slotting @ .5 x D	26	0.0091	0.0127	0.0152	0.0229	0.0279	0.0297	0.0330	0.0343	0.0559
	Profiling @ 2 x D Axial / ≤ .5 D Radial		0.0137	0.0127	0.0127	0.0279	0.0330	0.0343	0.0381	0.0434	0.0660
Nickel Base											
Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel 400, 405, K-Monel,	Slotting @ .5 x D	18	0.0137	0.0152	0.0203	0.0356	0.0356	0.0343	0.0508	0.0572	0.0660
PermaNickel 300, Inconel 600	Profiling @ 2 x D Axial / ≤ .5 D Radial		0.0137	0.0178	0.0229	0.0381	0.0381	0.0389	0.0432	0.0480	0.0559
Iron Base											
Incoloy 800-802, Multimet N-155,	Slotting @ ≤ .5 x D	21	0.0183	0.0229	0.0305	0.0406	0.0457	0.0503	0.0559	0.0617	0.0940
Timken 16-26-6	Profiling @ 2 x D Axial / ≤ .5 D Radial		0.0206	0.0279	0.0356	0.0457	0.0508	0.0572	0.0635	0.0686	0.1067
STEELS ISO-P											
High Strength Steels											
4140, 4340, 52100	Slotting @ ≤ .5 x D	68	0.0274	0.0330	0.0406	0.0584	0.0635	0.0709	0.0762	0.0846	0.1295
	Profiling @ 2 x D Axial / ≤ .5 D Radial		0.0366	0.0483	0.0584	0.0787	0.0889	0.0983	0.1067	0.1166	0.1778
High Alloy Steels - Mold & Die											
A-2, P20, 01, 02, D2, H-13	Slotting @ ≤ .5 x D	61	0.0229	0.0254	0.0356	0.0483	0.0533	0.0594	0.0635	0.0709	0.1092
	Profiling @ 2 x D Axial / ≤ .5 D Radial		0.0320	0.0406	0.0483	0.0635	0.0711	0.0823	0.0914	0.0983	0.1499
Medium Alloy Steels											
200, 250, 300	Slotting @ ≤ .5 x D	76	0.0251	0.0330	0.0432	0.0559	0.0660	0.0777	0.0838	0.0892	0.1270
	Profiling @ 2 x D Axial / ≤ .5 D Radial		0.0320	0.0432	0.0533	0.0660	0.0762	0.0892	0.0991	0.1120	0.1524
Low Alloy Steels-Maraging											
10XX, 11XX, 13XX	Slotting @ ≤ .5 x D	80	0.0297	0.0381	0.0457	0.0610	0.0711	0.0777	0.0889	0.0937	0.1422
	Profiling @ 2 x D Axial / ≤ .5 D Radial		0.0406	0.0508	0.0635	0.0838	0.0965	0.1074	0.1168	0.1280	0.1930

METRIC

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our TECHNICAL SERVICE Team with questions

Series: CRFMG

MATERIAL	CONDITION	STARTING SFM	CUTTING DIAMETER 1/4"	3/8"	1/2"	5/8"	3/4"	1"
STAINLESS STEELS ISO-M			**CHIP PER TOOTH**					
Precipitation								
13-8, 15-5, 17-4PH	Slotting @ ≤ .5 x D	175	0.0007	0.0011	0.0014	0.0018	0.0022	0.0029
	Profiling @ 2 x D Axial / ≤ .35 D Radial		0.0010	0.0014	0.0020	0.0025	0.0030	0.0041
Austenitic								
302, 303, 304L, 316L	Slotting @ ≤ .5 x D	225	0.0008	0.0013	0.0017	0.0022	0.0026	0.0035
	Profiling @ 2 x D Axial / ≤ .35 D Radial		0.0011	0.0018	0.0024	0.0030	0.0036	0.0048
Martensitic								
403, 410, 416	Slotting @ ≤ .5 x D	200	0.0009	0.0014	0.0019	0.0023	0.0028	0.0038
	Profiling @ 2 x D Axial / ≤ .35 D Radial		0.0012	0.0019	0.0026	0.0032	0.0038	0.0052
HIGH TEMP ALLOYS ISO-S								
Cobalt Base								
Stellite, Haynes 25, 188, X-40, L-605	Slotting @ .5 x D	85	0.0003	0.0005	0.0008	0.0010	0.0011	0.0016
	Profiling @ 2 x D Axial / ≤ .35 D Radial		0.0005	0.0005	0.0009	0.0011	0.0014	0.0019
Nickel Base								
Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel 400, 405, K-Monel,	Slotting @ .5 x D	60	0.0005	0.0007	0.0012	0.0011	0.0019	0.0019
PermaNickel 300, Inconel 600	Profiling @ 2 x D Axial / ≤ .35 D Radial		0.0005	0.0008	0.0013	0.0013	0.0016	0.0016
Iron Base								
Incoloy 800-802, Multimet N-155,	Slotting @ ≤ .5 x D	70	0.0006	0.0010	0.0014	0.0017	0.0020	0.0027
Timken 16-26-6	Profiling @ 2 x D Axial / ≤ .35 D Radial		0.0007	0.0011	0.0015	0.0019	0.0023	0.0031
STEELS ISO-P								
High Strength Steels								
4140, 4340, 52100	Slotting @ ≤ .5 x D	225	0.0009	0.0014	0.0019	0.0023	0.0028	0.0038
	Profiling @ 2 x D Axial / ≤ .35 D Radial		0.0012	0.0019	0.0026	0.0032	0.0038	0.0052
High Alloy Steels - Mold & Die								
A-2, P20, 01, 02, D2, H-13	Slotting @ ≤ .5 x D	200	0.0008	0.0011	0.0016	0.0020	0.0023	0.0032
	Profiling @ 2 x D Axial / ≤ .35 D Radial		0.0011	0.0016	0.0021	0.0027	0.0032	0.0044
Medium Alloy Steels								
200, 250, 300	Slotting @ ≤ .5 x D	250	0.0008	0.0014	0.0018	0.0026	0.0029	0.0037
	Profiling @ 2 x D Axial / ≤ .35 D Radial		0.0011	0.0017	0.0022	0.0029	0.0037	0.0044
Low Alloy Steels-Maraging								
10XX, 11XX, 13XX	Slotting @ ≤ .5 x D	265	0.0010	0.0015	0.0020	0.0026	0.0031	0.0041
	Profiling @ 2 x D Axial / ≤ .35 D Radial		0.0014	0.0021	0.0028	0.0035	0.0042	0.0056

MATERIAL	CONDITION	STARTING M/MIN	CUTTING DIAMETER-METRIC 6mm	8mm	10mm	12mm	14mm	16mm	20mm
STAINLESS STEELS ISO-M			**CHIP PER TOOTH**						
Precipitation									
13-8, 15-5, 17-4PH	Slotting @ ≤ .5 x D	53	0.0171	0.0229	0.0267	0.0362	0.0406	0.0457	0.0552
	Profiling @ 2 x D Axial / ≤ .35 D Radial		0.0248	0.0305	0.0362	0.0495	0.0584	0.0629	0.0762
Austenitic									
302, 303, 304L, 316L	Slotting @ ≤ .5 x D	68	0.0210	0.0254	0.0324	0.0438	0.0508	0.0552	0.0667
	Profiling @ 2 x D Axial / ≤ .35 D Radial		0.0286	0.0356	0.0457	0.0610	0.0686	0.0762	0.0914
Martensitic									
403, 410, 416	Slotting @ ≤ .5 x D	61	0.0229	0.0305	0.0343	0.0476	0.0533	0.0591	0.0705
	Profiling @ 2 x D Axial / ≤ .35 D Radial		0.0305	0.0381	0.0476	0.0648	0.0737	0.0819	0.0972
HIGH TEMP ALLOYS ISO-S									
Cobalt Base									
Stellite, Haynes 25, 188, X-40, L-605	Slotting @ .5 x D	26	0.0076	0.0102	0.0133	0.0191	0.0229	0.0248	0.0286
	Profiling @ 2 x D Axial / ≤ .35 D Radial		0.0114	0.0127	0.0114	0.0229	0.0254	0.0286	0.0362
Nickel Base									
Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel 400, 405, K-Monel,	Slotting @ .5 x D	18	0.0114	0.0152	0.0171	0.0305	0.0305	0.0286	0.0476
PermaNickel 300, Inconel 600	Profiling @ 2 x D Axial / ≤ .35 D Radial		0.0114	0.0152	0.0191	0.0324	0.0330	0.0324	0.0400
Iron Base									
Incoloy 800-802, Multimet N-155,	Slotting @ ≤ .5 x D	21	0.0152	0.0203	0.0248	0.0343	0.0381	0.0419	0.0514
Timken 16-26-6	Profiling @ 2 x D Axial / ≤ .35 D Radial		0.0171	0.0229	0.0286	0.0381	0.0432	0.0476	0.0572
STEELS ISO-P									
High Strength Steels									
4140, 4340, 52100	Slotting @ ≤ .5 x D	68	0.0229	0.0305	0.0343	0.0476	0.0533	0.0591	0.0705
	Profiling @ 2 x D Axial / ≤ .35 D Radial		0.0305	0.0381	0.0476	0.0648	0.0737	0.0819	0.0972
High Alloy Steels - Mold & Die									
A-2, P20, 01, 02, D2, H-13	Slotting @ ≤ .5 x D	61	0.0191	0.0254	0.0286	0.0400	0.0457	0.0495	0.0591
	Profiling @ 2 x D Axial / ≤ .35 D Radial		0.0267	0.0330	0.0400	0.0533	0.0610	0.0686	0.0819
Medium Alloy Steels									
200, 250, 300	Slotting @ ≤ .5 x D	76	0.0210	0.0279	0.0362	0.0457	0.0559	0.0648	0.0743
	Profiling @ 2 x D Axial / ≤ .35 D Radial		0.0267	0.0356	0.0438	0.0552	0.0635	0.0743	0.0933
Low Alloy Steels-Maraging									
10XX, 11XX, 13XX	Slotting @ ≤ .5 x D	81	0.0248	0.0305	0.0381	0.0514	0.0584	0.0648	0.0781
	Profiling @ 2 x D Axial / ≤ .35 D Radial		0.0343	0.0432	0.0533	0.0705	0.0787	0.0895	0.1067

METRIC

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our Technical Service Team with questions

Series: HMG1-__-SF-R

MATERIAL	STANDARD MACHINING	CUTTING DIAMETER 1/32"	0.0394"	3/64"	1/16"	5/64"	3/32"	1/8"	3/16"	1/2"
HARDENED STEELS	**ISO-H**	**CHIP PER TOOTH**								
Hardened Steels 25-35 HRc	375 SFM	0.0004	0.0008	0.0008	0.0009	0.0015	0.0016	0.0019	0.0028	0.0038
Hardened Steels 35-45 HRc	300 SFM	0.0004	0.0007	0.0007	0.0008	0.0015	0.0016	0.0019	0.0028	0.0038
Hardened Steels 45-55 HRc	275 SFM	0.0003	0.0007	0.0007	0.0007	0.0012	0.0013	0.0015	0.0022	0.0030
Hardened Steels 55-65 HRc	250 SFM	0.0003	0.0006	0.0006	0.0006	0.0011	0.0012	0.0014	0.0021	0.0028

MATERIAL	STANDARD MACHINING	CUTTING DIAMETER-METRIC .8mm	1mm	1.2mm	1.5mm	2mm	2.5mm	3mm	4mm	6mm
HARDENED STEELS	**ISO-H**	**CHIP PER TOOTH**								
Hardened Steels 25-35 HRc	115 M/Min	0.0102	0.0203	0.0203	0.0229	0.0381	0.0406	0.0483	0.0711	0.0965
Hardened Steels 35-45 HRc	92 M/Min	0.0102	0.0178	0.0178	0.0203	0.0381	0.0406	0.0483	0.0711	0.0965
Hardened Steels 45-55 HRc	84 M/Min	0.0076	0.0178	0.0178	0.0178	0.0305	0.0330	0.0381	0.0559	0.0762
Hardened Steels 55-65 HRc	76 M/Min	0.0076	0.0152	0.0152	0.0152	0.0279	0.0305	0.0356	0.0533	0.0711

METRIC

Series: HMG1-__-SF-B

MATERIAL	STANDARD MACHINING	CUTTING DIAMETER 1/64"	0.0200"	1/32"	0.0394"	3/64"	1/16"	5/64"	3/32"	0.1181"	1/8"	3/16"	1/4"
HARDENED STEELS	**ISO-H**	**CHIP PER TOOTH**											
Hardened Steels 25-35 HRc	275 SFM	0.0010	0.0010	0.0010	0.0015	0.0020	0.0020	0.0030	0.0030	0.0030	0.0032	0.0040	0.0045
Hardened Steels 35-45 HRc	250 SFM	0.0010	0.0010	0.0010	0.0015	0.0020	0.0020	0.0030	0.0030	0.0030	0.0032	0.0040	0.0045
Hardened Steels 45-55 HRc	225 SFM	0.0010	0.0010	0.0010	0.0015	0.0020	0.0020	0.0030	0.0030	0.0030	0.0032	0.0040	0.0045
Hardened Steels 55-65 HRc	175 SFM	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0020	0.0020	0.0020	0.0022	0.0030	0.0035

MATERIAL	STANDARD MACHINING	CUTTING DIAMETER-METRIC .5mm	.6mm	.8mm	1mm	1.5mm	2mm	2.5mm	3mm	4mm	5mm	6mm
HARDENED STEELS	**ISO-H**	**CHIP PER TOOTH**										
Hardened Steels 25-35 HRc	84 M/Min	0.0254	0.0254	0.0254	0.0381	0.0508	0.0762	0.0762	0.0762	0.0813	0.1016	0.1143
Hardened Steels 35-45 HRc	76 M/Min	0.0254	0.0254	0.0254	0.0381	0.0508	0.0762	0.0762	0.0762	0.0813	0.1016	0.1143
Hardened Steels 45-55 HRc	68 M/Min	0.0254	0.0254	0.0254	0.0381	0.0508	0.0762	0.0762	0.0762	0.0813	0.1016	0.1143
Hardened Steels 55-65 HRc	53 M/Min	0.0254	0.0254	0.0254	0.0254	0.0254	0.0508	0.0508	0.0508	0.0559	0.0762	0.0889

METRIC

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our Technical Service Team with questions

Speed & Feed Information

Series: HMG-__-B

MATERIAL	CONDITION	HIGH SPEED MACHINING	STANDARD MACHINING	CUTTING DIAMETER 1/32"	3/32"	1/8"	3/16"	1/4"	5/16"	3/8"	1/2"
HARDENED STEELS	**ISO-H**			**CHIP PER TOOTH**							
Hardened Steels											
55-65 HRc	Roughing ≤ .04 x D doc and .25 x D woc	180-240 SFM		0.004	0.001	0.002	0.002	0.003	0.004	0.005	0.006
	Roughing ≤ .03 x D doc and .25 x D woc		60-120 SFM	0.004	0.001	0.002	0.002	0.003	0.004	0.005	0.005
Hardened Steels											
55-65 HRc	Roughing ≤ .02 x D doc and .2 x D woc	120-160 SFM		0.004	0.001	0.002	0.002	0.003	0.004	0.005	0.006
	Roughing ≤ .03 x D doc and .2 x D woc		50-80 SFM	0.004	0.001	0.001	0.002	0.003	0.004	0.005	0.005
Hardened Steels											
65 HRc and above	Finishing ≤ .04 x D doc and .4 x D woc	200-250 SFM		0.001	0.002	0.002	0.003	0.004	0.004	0.005	0.005
	Finishing ≤ .02 x D doc and .4 x D woc		60-150 SFM	0.001	0.002	0.002	0.003	0.004	0.004	0.005	0.005
Hardened Steels											
65 HRc and above	Finishing ≤ .03 x D doc and .02-.03 x D woc	150-200 SFM		0.001	0.002	0.002	0.003	0.004	0.004	0.005	0.005
	Finishing ≤ .03 x D doc and .02-.03 x D woc		60-120 SFM	0.001	0.002	0.002	0.003	0.004	0.004	0.005	0.005

MATERIAL	CONDITION	HIGH SPEED MACHINING	STANDARD MACHINING	CUTTING DIAMETER-METRIC 1mm	2mm	3mm	4mm	6mm	8mm	10mm	12mm
HARDENED STEELS	**ISO-H**			**CHIP PER TOOTH**							
Hardened Steels											
55-65 HRc	Roughing ≤ .04 x D doc and .25 x D woc	54 - 73 M/MIN		0.1016	0.0254	0.0254	0.0508	0.0762	0.1016	0.1270	0.1524
	Roughing ≤ .03 x D doc and .25 x D woc		18 - 36 M/MIN	0.1016	0.0254	0.0254	0.0508	0.0762	0.1016	0.1270	0.1270
Hardened Steels											
55-65 HRc	Roughing ≤ .02 x D doc and .2 x D woc	36 - 48 M/MIN		0.1016	0.0254	0.0254	0.0508	0.0762	0.1016	0.1270	0.1524
	Roughing ≤ .03 x D doc and .2 x D woc		15 - 24 M/MIN	0.1016	0.0254	0.0254	0.0508	0.0762	0.1016	0.1270	0.1270
Hardened Steels											
65 HRc and above	Finishing ≤ .04 x D doc and .4 x D woc	60 - 76 M/MIN		0.0254	0.0508	0.0508	0.0762	0.1016	0.1016	0.1270	0.1270
	Finishing ≤ .02 x D doc and .4 x D woc		18 - 45 M/MIN	0.0254	0.0508	0.0508	0.0762	0.1016	0.1016	0.1270	0.1270
Hardened Steels											
65 HRc and above	Finishing ≤ .03 x D doc and .02-.03 x D woc	45 - 60 M/MIN		0.0254	0.0508	0.0508	0.0762	0.1016	0.1016	0.1270	0.1270
	Finishing ≤ .03 x D doc and .02-.03 x D woc		60 - 36 M/MIN	0.0254	0.0508	0.0508	0.0762	0.1016	0.1016	0.1270	0.1270

METRIC

For light periphery profiling ≤ .005 x D increase above profiling chip load by 20-25%

Series: CCMG45

MATERIAL	CONDITION	HIGH SPEED MACHINING	STANDARD MACHINING	CUTTING DIAMETER 1/8"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"
HARDENED STEELS	**ISO-H**			**CHIP PER TOOTH**							
Hardened Steels											
55-65 HRc	Profiling ≤ 1.5 x D doc and .02 x D woc	150-180		0.001	0.002	0.002	0.003	0.003	0.004	0.005	0.0060
	Profiling ≤ 1.5 x D doc and .04 x D woc		60-80	0.001	0.001	0.002	0.002	0.002	0.003	0.003	0.0035
Hardened Steels											
65 HRc and above	Profiling ≤ 1.5 x D doc and .02 x D woc	100-130		0.001	0.002	0.002	0.003	0.003	0.003	0.004	0.0045
	Profiling ≤ 1.5 x D doc and .04 x D woc		40-60	0.001	0.001	0.002	0.002	0.002	0.002	0.003	0.0030

MATERIAL	CONDITION	HIGH SPEED MACHINING	STANDARD MACHINING	CUTTING DIAMETER - METRIC 3mm	6mm	8mm	10mm	12mm	16mm	20mm
HARDENED STEELS	**ISO-H**			**CHIP PER TOOTH**						
Hardened Steels										
55-65 HRc	Profiling ≤ 1.5 x D doc and .02 x D woc	46 - 60 M/MIN		0.0254	0.0508	0.0508	0.0762	0.0762	0.1016	0.1270
	Profiling ≤ 1.5 x D doc and .04 x D woc		18 - 24 M/MM	0.0254	0.0254	0.0508	0.0508	0.0508	0.0762	0.0762
Hardened Steels										
65 HRc and above	Profiling ≤ 1.5 x D doc and .02 x D woc	30 - 40 M/MIN		0.0254	0.0508	0.0508	0.0762	0.0762	0.0762	0.1016
	Profiling ≤ 1.5 x D doc and .04 x D woc		12 - 18 M/MIN	0.0254	0.0254	0.0508	0.0508	0.0508	0.0508	0.0762

For light periphery profiling ≤ .005 x D increase above profiling chip load by 20-35%

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our Technical Service Team with questions

Series: Diamond Coated

MATERIAL	CONDITION	STARTING SFM	CUTTING DIAMETER
Aluminum+Aluminum Alloys	ISO-N		CHIP PER TOOTH
Aluminum			
5-8% Si	Rough Milling	1500-3500	0.006-0.018
	Finish Milling	1500-4600	0.003-0.008
Aluminum Cast			
8-12% Si	Rough Milling	1200-2850	0.0055-0.013
	Finish Milling	1200-3600	0.003-0.0065
Carbon Fiber	ISO-N		
Carbon Fiber		500-1200	0.003-0.009
Glass Fiber	ISO-N		
Glass Fiber		500-1100	0.001-0.0075
Copper/Bronze	ISO-N		
Copper/Bronze		700-1300	0.001-0.0068
Graphite	ISO-N		
Graphite	Rough Milling	500-1600	0.003-0.005
	Finish Milling	500-2000	0.001-0.003
Green Ceramic	ISO-N		
Green Ceramic		750-1200	0.002-0.0076

Series: CRMGD

MATERIAL	CONDITION	CUTTING DIAMETER 1/8"	3/16"	1/4"	5/16"	3/8"	1/2"
Non- Ferrous	ISO-N	CHIP PER TOOTH					
Aramid Fiber / Carbon Fiber - CRFP & AFRP							
440 SFM	Slotting	0.0030	0.0050	0.0060	0.0075	0.0090	0.0120
525 SFM	Profiling	0.0030	0.0050	0.0060	0.0075	0.0090	0.0120
Fiberglass - GFRP							
340 SFM	Slotting	0.0030	0.0050	0.0060	0.0075	0.0090	0.0120
440 SFM	Profiling	0.0030	0.0050	0.0060	0.0075	0.0090	0.0120
Plastics							
525 SFM	Slotting	0.0050	0.0060	0.0075	0.0090	0.0110	0.0140
650 SFM	Profiling	0.0050	0.0060	0.0075	0.0090	0.0110	0.0140

MATERIAL	CONDITION	CUTTING DIAMETER - METRIC 3mm	5mm	6mm	8mm	10mm	12mm
Non- Ferrous	ISO-N	CHIP PER TOOTH					
Aramid Fiber / Carbon Fiber - CRFP & AFRP							
135 M/MIN	Slotting	0.0762	0.1270	0.1524	0.1905	0.2286	0.3048
160 M/MIN	Profiling	0.0762	0.1270	0.1524	0.1905	0.2286	0.3048
Fiberglass - GFRP							
104 M/MIN	Slotting	0.0762	0.1270	0.1524	0.1905	0.2286	0.3048
135 M/MIN	Profiling	0.0762	0.1270	0.1524	0.1905	0.2286	0.3048
Plastics							
160 M/MIN	Slotting	0.1270	0.1524	0.1905	0.2286	0.2794	0.3556
200 M/MIN	Profiling	0.1270	0.1524	0.1905	0.2286	0.2794	0.3556

METRIC

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our Technical Service Team with questions

Series: VBMG

MATERIAL	CONDITION	HIGH SPEED MACHINING	STANDARD MACHINING	CUTTING DIAMETER 1/16"	3/32"	1/8"	3/16"	1/4"	3/8"	1/2"
HARDENED STEELS	**ISO-H**			**CHIP PER TOOTH**						
Pre Hardened Steels										
25-45 HRc	Roughing ≤ .06 x D doc and .3 x D woc	250-340		0.0008	0.001	0.002	0.003	0.004	0.006	0.007
	Roughing ≤ .06 x D doc and .3 x D woc		60-180	0.0008	0.001	0.002	0.003	0.004	0.006	0.007
Pre Hardened Steels										
25-45 HRc	Finishing ≤ .07 x D doc and .02-.6 x D woc	250-350		0.002	0.002	0.003	0.004	0.004	0.005	0.006
	Finishing ≤ .07 x D doc and .02-.6 x D woc		60-200	0.002	0.002	0.003	0.004	0.004	0.005	0.006
HARDENED STEELS	**ISO-H**									
Hardened Steels										
65 HRc and above	Roughing ≤ .05 x D doc and .25 x D woc	240-280		0.004	0.001	0.002	0.004	0.004	0.006	0.006
	Roughing ≤ .05 x D doc and .25 x D woc		60-140	0.004	0.001	0.002	0.004	0.004	0.006	0.006
Hardened Steels										
65 HRc and above	Finishing ≤ .06 x D doc and .02-.4 x D woc	250-280		0.002	0.002	0.003	0.004	0.004	0.005	0.006
	Finishing ≤ .06 x D doc and .02-.4 x D woc		60-150	0.002	0.002	0.003	0.004	0.004	0.005	0.006

MATERIAL	CONDITION	HIGH SPEED MACHINING M/MIN	STANDARD MACHINING M/MIN	CUTTING DIAMETER - METRIC 4mm	6mm	8mm	10mm	12mm
HARDENED STEELS	**ISO-H**			**CHIP PER TOOTH**				
Pre Hardened Steels								
25-45 HRc	Roughing ≤ .06 x D doc and .3 x D woc	76-104		0.0508	0.1016	0.1270	0.1524	0.1778
	Roughing ≤ .06 x D doc and .3 x D woc		18-54	0.0508	0.1016	0.1270	0.1524	0.1778
Pre Hardened Steels								
25-45 HRc	Finishing ≤ .07 x D doc and .02-.6 x D woc	76-106		0.0762	0.1016	0.1270	0.1270	0.1524
	Finishing ≤ .07 x D doc and .02-.6 x D woc		18-60	0.0762	0.1016	0.1270	0.1270	0.1524
HARDENED STEELS	**ISO-H**							
Hardened Steels								
65 HRc and above	Roughing ≤ .05 x D doc and .25 x D woc	73-85		0.0508	0.1016	0.1270	0.1524	0.1524
	Roughing ≤ .05 x D doc and .25 x D woc		18-42	0.0508	0.1016	0.1270	0.1524	0.1524
Hardened Steels								
65 HRc and above	Finishing ≤ .06 x D doc and .02-.4 x D woc	76-85		0.0762	0.1016	0.1270	0.1270	0.1524
	Finishing ≤ .06 x D doc and .02-.4 x D woc		18-45	0.0762	0.1016	0.1270	0.1270	0.1524

METRIC

For light periphery profiling ≤ .005 x D increase above profiling chip load by 20%

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our Technical Service Team with questions

Series: HXMG2 & HXMG4

MATERIAL		AXIAL DEPTH MAX & 75% CUTTING WIDTH 1/8	1/4	3/8	1/2	5/8	SFM	CUTTING DIAMETER 1/8"	1/4"	3/8"	1/2"	5/8"
STAINLESS STEELS	**ISO-M**			**CONDITION**						**CHIP PER TOOTH**		
Precipitation <35 HRc												
13-8, 15-5, 17-4PH		0.007	0.011	0.018	0.022	0.026	600-900	.005-.008	.006-.012	.010-.018	.012-.024	.014-.026
Precipitation >35 HRc												
13-8, 15-5, 17-4PH		0.006	0.009	0.014	0.017	0.022	325-650	.003-.007	.006-.012	.010-.018	.012-.024	.012-.024
Austenitic < 28 HRc												
302, 303, 304L, 316L		0.007	0.010	0.015	0.022	0.026	275-400	.005-.009	.006-.014	.010-.019	.012-.026	.012-.026
STEELS	**ISO-P**											
High Strength Steels												
4140, 4340, 52100		0.007	0.011	0.018	0.022	0.026	600-1250	.005-.008	.006-.013	.010-.020	.012-.025	.014-.028
High Alloy Steels - Mold & Die <50 HRc												
A-2, P20, 01, 02, D2, H-13		0.007	0.010	0.017	0.020	0.022	600-1200	.005-.008	.006-.012	.010-.018	.012-.022	.014-.024
High Alloy Steels - Mold & Die >50 HRc												
A-2, P20, 01, 02, D2, H-13		0.006	0.009	0.013	0.018	0.020	275-675	.004-.006	.006-.012	.010-.018	.012-.022	.014-.024
Medium Alloy Steels												
200, 250, 300		0.008	0.012	0.019	0.025	0.028	800-1475	.005-.009	.006-.014	.010-.021	.012-.026	.014-.028
CAST IRONS	**ISO-K**											
Cast Iron <40 HRc		0.006	0.010	0.016	0.020	0.022	1000-3000	.003-.006	.006-.011	.009-.016	.012-.022	.012-.024
Cast Iron >40 HRc		0.006	0.010	0.016	0.020	0.022	800-1200	.003-.006	.006-.011	.009-.016	.012-.022	.012-.024
TITANIUM	**ISO-S**											
Titanium Alloys												
6AL-4V, ASTM 1, 2, 3, 6AL-2S		0.006	0.010	0.016	0.020	0.022	400-600	.003-.006	.006-.011	.009-.016	.012-.022	.012-.024

MATERIAL		AXIAL DEPTH MAX & 75% CUTTING WIDTH 3mm	6mm	8mm	10mm	12mm	M/MIN	CUTTING DIAMETER-METRIC 3mm	6mm	8mm	10mm	12mm
STAINLESS STEELS	**ISO-M**			**CONDITION**						**CHIP PER TOOTH**		
Precipitation <35 HRc												
13-8, 15-5, 17-4PH		0.170	0.260	0.370	0.480	0.530	180-275	.13-.20	.15-.30	.20-.46	.25-.46	.30-.61
Precipitation >35 HRc												
13-8, 15-5, 17-4PH		0.140	0.210	0.290	0.370	0.410	100-200	.08-.18	.15-.30	.20-.46	.25-.46	.30-.61
Austenitic < 28 HRc												
302, 303, 304L, 316L		0.170	0.240	0.320	0.400	0.530	85-120	.13-.23	.15-.36	.20-.50	.25-.48	.30-.63
STEELS	**ISO-P**											
High Strength Steels												
4140, 4340, 52100		0.170	0.260	0.370	0.480	0.530	185-380	.13-.20	.15-.33	.20-.48	.25-.50	.30-.63
High Alloy Steels - Mold & Die <50 HRc												
A-2, P20, 01, 02, D2, H-13		0.190	0.290	0.400	0.510	0.600	245-450	.13-.23	.15-.36	.20-.50	.25-.53	.30-.64
High Alloy Steels - Mold & Die >50 HRc												
A-2, P20, 01, 02, D2, H-13		0.170	0.240	0.350	0.450	0.480	185-360	.13-.20	.15-.30	.20-.43	.25-.46	.30-.56
Medium Alloy Steels												
200, 250, 300		0.140	0.210	0.280	0.350	0.430	85-205	.10-.15	.15-.30	.20-.43	.25-.46	.30-.56
CAST IRONS	**ISO-K**											
Cast Iron <40 HRc		0.140	0.240	0.330	0.430	0.480	300-900	.08-.15	.15-.25	.19-.41	.23-.41	.30-.56
Cast Iron >40 HRc		0.140	0.240	0.330	0.430	0.480	245-365	.08-.15	.15-.25	.19-.41	.23-.41	.30-.56
TITANIUM	**ISO-S**											
Titanium Alloys												
6AL-4V, ASTM 1, 2, 3, 6AL-2S		0.140	0.240	0.330	0.430	0.480	120-180	.08-.15	.15-.25	.19-.41	.23-.41	.30-.56

METRIC

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our Technical Service Team with questions

Series: CDR & MDR

MATERIAL	MATERIAL HARDNESS	RECOMMENDED SFM		CUTTING DIAMETER					
		NON-COOLANT	COOLANT FED	1/16" - 1/8"	1/8" -1/4"	1/4" - 3/8"	3/8" - 1/2"	1/2" - 5/8"	5/8" - 3/4"
				INCH PER REV (IPR)					
STAINLESS STEELS	**ISO-M**								
Precipitation									
13-8, 15-5, 17-4PH	Under 35 Rc	225	300	.0005 - .0015	.0015 - .0025	.0025 - .0030	.0030 - .0035	.0035 - .0045	.0040 - .0055
	Over 35 Rc	175	240	.0002 - .0005	.0005 - .0015	.0015 - .0025	.0025 - .0030	.0030 - .0035	.0035 - .0045
Austenitic									
302, 303, 304L, 316L	Under 35 Rc	125	175	.0005 - .0010	.0010 - .0015	.0015 - .0020	.0020 - .0030	.0030 - .0040	.0025 - .0040
	Over 35 Rc	80	100	.0001 - .0003	.0003 - .0010	.0010 - .0015	.0015 - .0025	.0025 - .0035	.0020 - .0040
Martensitic									
403, 410, 416	Under 35 Rc	225	300	.0007 - .0015	.0015 - .0025	.0025 - .0030	.0030 - .0035	.0035 - .0045	.0040 - .0055
	Over 35 Rc	175	240	.0002 - .0005	.0005 - .0015	.0015 - .0025	.0025 - .0030	.0030 - .0035	.0035 - .0045
HIGH TEMP ALLOYS	**ISO-S**								
Cobalt Base									
Stellite, Haynes 25, 188, X-40	Under 35 Rc	185	225	.0005 - .0010	.0010 - .0020	.0020 - .0030	.0025 - .0035	.0030 - .0040	.0035 - .0055
	Over 35 Rc	125	180	.0002 - .0005	.0005 - .0015	.0015 - .0025	.0020 - .0030	.0025 - .0035	.0030 - .0045
Nickel Base									
Inconel 600, 625, 718, Nickel 200	Under 35 Rc	150	225	.0005 - .0010	.0010 - .0020	.0020 - .0030	.0025 - .0035	.0030 - .0040	.0035 - .0055
Monel 400, 405, K-Monel, Inconel 600	Over 35 Rc	125	180	.0002 - .0005	.0005 - .0015	.0015 - .0025	.0020 - .0030	.0025 - .0035	.0030 - .0045
Iron Base									
Incoloy 800-802, Multimet N-155	Under 35 Rc	200	300	.0007 - .0015	.0015 - .0025	.0025 - .0030	.0025 - .0035	.0035 - .0045	.0035 - .0055
	Over 35 Rc	150	240	.0002 - .0005	.0005 - .0015	.0015 - .0025	.0025 - .0030	.0030 - .0035	.0030 - .0045
STEELS	**ISO-P**								
High Strength Steels									
4140, 4340, 52100	Under 35 Rc	200	300	.0007 - .0015	.0015 - .0025	.0025 - .0030	.0030 - .0035	.0035 - .0045	.0045 - .0055
	Over 35 Rc	175	240	.0002 - .0005	.0005 - .0015	.0015 - .0025	.0025 - .0030	.0030 - .0035	.0035 - .0045
High Alloy Steels - Mold & Die									
A-2, P20, 01, 02, D2, H-13	Under 35 Rc	200	300	.0005 - .0015	.0015 - .0025	.0025 - .0030	.0030 - .0035	.0035 - .0045	.0045 - .0055
	Over 35 Rc	175	240	.0002 - .0005	.0005 - .0015	.0015 - .0025	.0025 - .0030	.0030 - .0035	.0035 - .0045
Medium Alloy Steels									
200, 250, 300, 8620	Under 35 Rc	200	300	.0005 - .0015	.0015 - .0025	.0025 - .0030	.0030 - .0035	.0035 - .0045	.0045 - .0055
	Over 35 Rc	175	240	.0002 - .0005	.0005 - .0015	.0015 - .0025	.0025 - .0030	.0030 - .0035	.0035 - .0045
Low Alloy Steels-Maraging									
10XX, 11XX, 13XX	Under 35 Rc	200	300	.0007 - .0015	.0015 - .0025	.0025 - .0030	.0030 - .0035	.0035 - .0045	.0045 - .0055
	Over 35 Rc	175	240	.0002 - .0005	.0005 - .0015	.0015 - .0025	.0025 - .0030	.0030 - .0035	.0035 - .0045
CAST IRONS	**ISO-K**								
Ductile Iron									
Ductile Cast Iron		250	350	.0013 - .0025	.0025 - .0035	.0035 - .0045	.0035 - .0045	.0045 - .0055	.0065 - .0075
Cast Iron									
Grey Cast Iron		250	400	.0013 - .0025	.0025 - .0035	.0035 - .0045	.0035 - .0045	.0045 - .0055	.0065 - .0075
TITANIUM	**ISO-S**								
Titanium Alloys									
6AL-4V, ASTM 1, 2, 3, 6AL-2S									
For 5553, decrease SFM and IPM by 25%		225	350	.0005 - .0010	.0010 - .0020	.0020 - .0030	.0025 - .0035	.0030 - .0040	.0035 - .0055
COPPER	**ISO-N**								
Copper Alloys									
		300	400	.0015 - .0025	.0025 - .0035	.0035 - .0045	.0035 - .0045	.0045 - .0055	.0065 - .0075
BRASS	**ISO-N**								
Short Chips		300	400	.0015 - .0035	.0035 - .0045	.0045 - .0055	.0065 - .0075	.0085 - .0095	.0085 - .0095
Long Chips		200	300	.0015 - .0025	.0025 - .0035	.0035 - .0045	.0055 - .0065	.0075 - .0085	.0075 - .0085
BRONZE	**ISO-N**								
Short Chips		200	300	.0015 - .0025	.0025 - .0035	.0035 - .0045	.0035 - .0045	.0055 - .0065	.0075 - .0085
Long Chips		150	250	.0007 - .0015	.0015 - .0025	.0025 - .0035	.0025 - .0035	.0045 - .0055	.0065 - .0075
MAGNESIUM	**ISO-N**								
		300	400	.0020 - .0035	.0035 - .0045	.0045 - .0055	.0065 - .0075	.0085 - .0095	.0085 - .0095
ALUMINUM	**ISO-N**								
6061-T6, 7075		400	500	.0020 - .0035	.0035 - .0045	.0045 - .0055	.0065 - .0075	.0085 - .0095	.0085 - .0095
Die Cast		300	400	.0015 - .0025	.0025 - .0035	.0035 - .0045	.0055 - .0065	.0075 - .0085	.0075 - .0085

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our Technical Service Team with questions

SERIES: CDR & MDR (METRIC)

MATERIAL	MATERIAL HARDNESS	RECOMMENDED M/MIN		CUTTING DIAMETER - METRIC					
		NON-COOLANT	COOLANT FED	1.5MM-3MM	3MM-6.5MM	6.5MM-10MM	10MM-13MM	13MM-16MM	16MM-20MM
		(M/MIN)	(M/MIN)	MILLIMETERS PER REV (MMPR)					
STAINLESS STEELS	**ISO-M**								
Precipitation									
13-8, 15-5, 17-4PH	Under 35 Rc	68	90	.0127-.0381	.0381-.0635	.0635-.0762	.0762-.0889	.0889-1143	.1016-.1397
	Over 35 Rc	53	73	.0050-.0203	.0127-.0381	.0381-.0635	.0635-.0762	.0762-.0889	.0889-.1143
Austenitic									
302, 303, 304L, 316L	Under 35 Rc	38	53	.0127-.0254	.0254-.0381	.0381-.0508	.0508-.0762	.0762-.1016	.0635-.1016
	Over 35 Rc	24	30	.0025-.0076	.0076-.0254	.0254-.0381	.0381-.0635	.0635-.0889	.0508-.1016
Martensitic									
403, 410, 416	Under 35 Rc	67	90	.0177-.0381	.0381-.0635	.0635-.0762	.0762-.0889	.0889-.1016	.1016-.1397
	Over 35 Rc	53	73	.0058-.0127	.0127-.0381	.0381-.0635	.0635-.0762	.0762-.0889	.0889-.1143
HIGH TEMP ALLOYS	**ISO-S**								
Cobalt Base									
Stellite, Haynes 25, 188, X-40	Under 35 Rc	56	69	.0127-.0254	.0254-.0508	.0508-.0762	.0635-.0889	.0762-.1016	.0889-.1397
	Over 35 Rc	38	55	.0050-.0254	.0127-.0381	.0381-.0635	.0508-.0762	.0635-.0889	.0762-.1016
Nickel Base									
Inconel 600, 625, 718, Nickel 200	Under 35 Rc	45	69	.0127-.0254	.0254-.0508	.0508-.0762	.0635-.0889	.0762-.1143	.0889-.1397
Monel 400, 405, K-Monel, Inconel 600	Over 35 Rc	38	55	.0050-.0127	.0127-.0381	.0381-.0635	.0508-.0762	.0635-.0889	.0762-.1143
Iron Base									
Incoloy 800-802, Multimet N-155	Under 35 Rc	60	90	.0177-.0381	.0381-.0635	.0635-.0762	.0635-.0889	.0889-.1143	.0889-.1397
	Over 35 Rc	45	73	.0050-.0127	.0127-.0381	.0381-.0635	.0635-.0762	.0762-.0889	.0762-.1143
STEELS	**ISO-P**								
High Strength Steels									
4140, 4340, 52100	Under 35 Rc	60	90	.0177-.0381	.0381-.0635	.0635-.0762	.0762-.0889	.0889-.1143	.1143-.1397
	Over 35 Rc	53	73	.0050-.0127	.0127-.0381	.0381-.0635	.0635-.0762	.0762-.0889	.0889-.1143
High Alloy Steels - Mold & Die									
A-2, P20, 01, 02, D2, H-13	Under 35 Rc	60	90	.0127-.0381	.0381-.0635	.0635-.0762	.0762-.0889	.0889-.1143	.1143-.1397
	Over 35 Rc	53	73	.0050-.0127	.0127-.0381	.0281-.0635	.0635-.0762	.0762-.0889	.0889-.1143
Medium Alloy Steels									
200, 250, 300, 8620	Under 35 Rc	60	90	.0127-.0381	.0381-.0635	.0635-.0762	.0762-.0889	.0889-.1143	.1143-.1397
	Over 35 Rc	53	73	.0050-.0127	.0127-.0381	.0281-.0635	.0635-.0762	.0762-.0889	.0889-.1143
Low Alloy Steels-Maraging									
10XX, 11XX, 13XX	Under 35 Rc	60	90	.0177-.0381	.0381-.0635	.0635-.0762	.0762-.0889	.0889-.1143	.1143-.1397
	Over 35 Rc	53	73	.0050-.0127	.0127-.0381	.0281-.0635	.0635-.0762	.0762-.0889	.0889-.1143
CAST IRONS	**ISO-K**								
Ductile Iron									
Ductile Cast Iron		76	106	.0330-.0635	.0635-.0889	.0889-.1143	.0889-.1143	.1143-.1397	.1651-.1905
Cast Iron									
Grey Cast Iron		76	122	.0330-.0635	.0635-.0889	.0889-.1143	.0889-.1143	.1143-.1397	.1651-.1905
TITANIUM	**ISO-S**								
Titanium Alloys									
6AL-4V, ASTM 1, 2, 3, 6AL-2S									
For 5553, decrease SFM and IPM by 25%		68	106	.0127-.0254	.0254-.0508	.0508-.0672	.0635-.0889	.0762-.1016	.0889-.1397
COPPER	**ISO-N**								
Copper Alloys									
		90	122	.0381-.0635	.0635-.0889	.0889-.1143	.0889-1143	.1143-.1397	.1651-.1905
BRASS	**ISO-N**								
Short Chips		90	122	.0381-.0889	.0889-.1143	.1143-.1397	.1651-1905	.2159-.2413	.2519-.2413
Long Chips		60	90	.0254-.0635	.0635-.0889	.0889-.1143	.1397-.1651	.1905-.2159	.1905-.2159
BRONZE	**ISO-N**								
Short Chips		60	90	.0254-.0635	.0635-.0889	.0889-.1143	.0889-.1143	.1397-.1651	.1905-.2159
Long Chips		45	76	.0177-.0381	.0381-.0635	.0365-.0889	.0635-.0889	.1143-.1397	.1651-.1905
MAGNESIUM	**ISO-N**								
		90	122	.0580-.0889	.0889-.1143	.1143-.1397	.1651-1905	.2159-.2413	.2159-.2413
ALUMINUM	**ISO-N**								
6061-T6, 7075		122	152	.0580-.0889	.0889-.1143	.1143-.1397	.1651-.1905	.2159-.2431	.2159-.2413
Die Cast		90	122	.0254-.0635	.0635-.0889	.0889-.1143	.1397-.1651	.1905-.2159	1905-.2159

METRIC

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our TECHNICAL SERVICE Team with questions

Series: TM

MATERIAL	STARTING SFM	CUTTING DIAMETER								
		1/8"	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"
		CHIP PER TOOTH								
STAINLESS STEELS	**ISO-M**									
Precipitation 13-8, 15-5, 17-4PH	175	0.0050	0.0010	0.0015	0.0021	0.0025	0.0030	0.0035	0.0040	0.0045
Austenitic & Martensitic 303, 316, 321, 304, 410, 416, 422, 430	250-350	0.0005	0.0010	0.0015	0.0020	0.0030	0.0035	0.0040	0.0045	0.0050
HIGH TEMP ALLOYS	**ISO-S**									
Nickel Base Inconel, Hastelloy, Monel	80-130	0.0003	0.0005	0.0008	0.0010	0.0015	0.0020	0.0025	0.0030	0.0035
STEELS	**ISO-P**									
Medium Carbon Steel 1045, 4140, 4340, 52100, <46HrC	250	0.0003	0.0005	0.0008	0.0009	0.0010	0.0015	0.0020	0.0025	0.0030
Medium Carbon Steel 1030, 4130, 40140, 25-35HrC	300	0.0005	0.0010	0.0015	0.0020	0.0030	0.0035	0.0040	0.0045	0.0050
Low Carbon Steel 1018, 12L-14, <25 HrC	500	0.0005	0.0010	0.0015	0.0020	0.0030	0.0035	0.0040	0.0045	0.0050
CAST IRONS	**ISO-K**									
Ductile Iron Ductile Cast Iron	300	0.0006	0.0007	0.0010	0.0015	0.0020	0.0025	0.0030	0.0035	0.0040
Cast Iron Cast Iron	350-500	0.0005	0.0006	0.0009	0.0010	0.0015	0.0020	0.0025	0.0030	0.0035
TITANIUM	**ISO-S**									
Titanium Alloys 6AL-4V	200-250	0.0003	0.0005	0.0008	0.0010	0.0015	0.0020	0.0025	0.0030	0.0035
ALUMINUM	**ISO-N**									
T-6061, T7075	1000	0.0005	0.0010	0.0015	0.0020	0.0030	0.0035	0.0040	0.0045	0.0050
BRASS	**ISO-N**									
Free Machining	800	0.0005	0.0010	0.0015	0.0020	0.0030	0.0035	0.0040	0.0045	0.0050

MATERIAL	M/MIN	CUTTING DIAMETER - METRIC								
		3.5mm	5mm	6.5mm	8mm	9.5mm	13mm	16mm	19mm	24mm
		CHIP PER TOOTH								
STAINLESS STEELS	**ISO-M**									
Precipitation 13-8, 15-5, 17-4PH	53	0.01mm	0.03mm	0.04mm	0.05mm	0.06mm	0.08mm	0.09mm	0.10mm	0.11mm
Austenitic & Martensitic 303, 316, 321, 304, 410, 416, 422, 430	76-107	0.01mm	0.03mm	0.04mm	0.05mm	0.08mm	0.09mm	0.10mm	0.11mm	0.13mm
HIGH TEMP ALLOYS	**ISO-S**									
Nickel Base Inconel, Hastelloy, Monel	24-40	0.01mm	0.01mm	0.02mm	0.03mm	0.04mm	0.05mm	0.06mm	0.08mm	0.09mm
STEELS	**ISO-P**									
Medium Carbon Steel 1045, 4140, 4340, 52100, <46HrC	76	0.01mm	0.01mm	0.02mm	0.02mm	0.03mm	.04mm	0.05mm	0.06mm	0.08mm
Medium Carbon Steel 1030, 4130, 40140, 25-35HrC	90	0.01mm	0.03mm	0.04mm	0.05mm	0.08mm	0.09mm	0.10mm	0.11mm	0.13mm
Low Carbon Steel 1018, 12L-14, <25 HrC	152	0.01mm	0.03mm	0.04mm	0.05mm	0.08mm	0.09mm	0.10mm	0.11mm	0.13mm
CAST IRONS	**ISO-K**									
Ductile Iron Ductile Cast Iron	90	0.02mm	0.02mm	0.03mm	0.04mm	0.05mm	0.06mm	0.08mm	0.09mm	0.10mm
Cast Iron Cast Iron	107-152	0.01mm	0.02mm	0.02mm	0.03mm	0.04mm	0.05mm	0.06mm	0.08mm	0.09mm
TITANIUM	**ISO-S**									
Titanium Alloys 6AL-4V	60-76	0.01mm	0.01mm	0.02mm	0.03mm	0.04mm	0.05mm	0.06mm	0.08mm	0.09mm
ALUMINUM	**ISO-N**									
T-6061, T7075	305	0.01mm	0.03mm	0.04mm	0.05mm	0.08mm	0.09mm	0.10mm	0.11mm	0.13mm
BRASS	**ISO-N**									
Free Machining	244	0.01mm	0.03mm	0.04mm	0.05mm	0.08mm	0.09mm	0.10mm	0.11mm	0.13mm

METRIC

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Quick Reference Guide

SERIES NAME	DESCRIPTION	STARTING PAGE
AA	2 Flute, 38° Helix Cobalt End Mills	43
ALMG	2 Flute, 35° for light duty CNC Machines	40
AMG-__-DIA	2 Flute, CVD Diamond Coating	106
AMG-__-DLC	2 Flute, DLC Amorphous Diamond	110
AXMG45	2 Flute, 45° End Mill	28
CCAC	Multi Flute, Cobalt Aerocut Roughing End Mill	75
CCMG-__-DIA	4 Flute, CVD Diamond Coating	107
CCMG-__-DLC	4 Flute, DLC Amorphous Diamond	112
CCMG45	6 Flute, 45° Profiling End Mill	105
CDR	2 Flute, 140° Pt Carbide Drill Coolant Hole	121
CRFMG	Multi Flute, Rougher Finisher	99
CRMG	Multi Flute, Fine Profile Carbide Roughing End Mill	98
CRMGD	Multi FL, Composite Router	108
ELMG	3 Flute, 35° for light duty CNC Machines	41
EMG-__-DLC	3 Flute, DLC Amorphous Diamond	111
EMG35	3 Flute, 35° End Mill for Stainless Steel	72
EMG60	3 FL, 60° general machining application in Stainless Steels	97
ERFPM	3 FL, Powdered Metal Rougher for Aggressive Machining	42
EXMG	3 Flute, 37° End Mill	23
FRMG	Multi FL, Fiberglass Routers	109
GMG	5 Flute, 45° for Stainless Steel/Nickel Base Alloys	73
GVHMG	5 Flute, Variable FL for general machining applications	96
GXMG5	5 Flute, 45° for Trochoidal Toolpathing	37
HMG	2 Flute, Ball Nose for Hard Milling in Die & Mold Application	104
HMG1-__-SF-B	2 Flute, Ball Nose for Z-Axis Machining- Rib Cutting	102
HMG1-__-SF-R	2 Flute, Corner Rad for Multi Axis Machining - Rib Cutting	100
HVMG2	2 Flute, 30° for High Velocity Machining	15
HVMG3	3 Flute, 37° for High Velocity Machining	18
HVRMG3	3 Flute, Rougher for High Velocity Machining	21
HXMG2	2 Flute, High Feed Carbide End Mills	118
HXMG4	4 Flute, High Feed Carbide End Mills	119
HXMG4-__-HM	4 Flute, High Feed Carbide End Mills (Hard Material)	120
MDR	2 Flute, 140° Pt Carbide Drill without Coolant hole	126
TM	Multi Flute, Single Form Thread	135
TM-__-H/S	Multi Flute, 60° Straight/Helical Flute, UN Thread	130
TM-__-NPT-_	Multi Flute, NPT Thread , Straight & Helical FL	133
TM-__-NPTF-_	Multi Flute, NPTF Thread , Straight & Helical FL	134
VBMG_-__-270	Multi Flute, 270° Spherical Ball End Mill	116
VBMG_-__-300	Multi Flute, 300° Spherical Ball End Mill	117
VBMG2	2 Flute, 220° Spherical Ball End Mill	114
VBMG4	4 Flute, 220° Spherical Ball End Mill	115
VHMG	4 Flute, Variable FL for general machining applications	94
VXMG10	10 Flute, Variable FL for Ultra Fine-Finishing Applications	70
VXMG3T	3 Flute - Variable FL, HP Roughing & Finishing Applications	46
VXMG4	4 Flute, Variable FL for High Performance roughing applications	78
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VXMG5	5 Flute, Variable FL for High Performance roughing applications	86
VXMG5T	5 Flute - Variable FL, High Performance Roughing Applications	59
VXMG6T	6 Flute - Variable FL, Roughing & Finishing Applications	65
VXMG7	7 Flute, Variable FL for semi roughing & finishing Applications	90
VXMG7-nACRo	7 Flute - Variable FL, Light to Med Finishing Applications-nACRo	66
VXMG9	9 Flute, Variable FL for optimum fine finish profiling applications	92
VXMG9-nACRo	9 Flute - Variable FL, Fine Finishing Applications-nACRo	68

MELIN CATALOGS:

-High Performance
-Micro Catalog
-General Purpose

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Melin Catalogs

Melin High Performance Catalog

Melin Most recent catalog. This new catalog includes all High Performance Series, as well as all Technical Data.

Catalog Highlights:

- *Aluminum Alloys*
- *Titanium & High Temp Alloys*
- *Ferrous Materials*
- *Die & Mold Steels*
- *Graphite & Composites*
- *Various Cutting Materials*
- *Latest Expanded End Mill Offering*

Melin Tool Micro Catalog

Melin recently launched a wide range of styles and sizes of micro carbide end mills. The new Micro End Mills target applications found in mold shops, medical, and EDM departments.

Catalog Highlights:

- *Cutting diameters offered as small as 0.005" and lengths up to 30xD.*
- *Outstanding performance in Titanium, Aluminum Alloys, Graphites, Steels, and Stainless Alloys.*
- *All coating options available*
- *Stocked Bright, AlTiN, & DLC coated options*
- *Order your catalog today for the latest info*

General Purpose Catalog

Melin's general purpose offering for both Carbide and Cobalt HSS. Large product offering for all of your general purpose tooling needs.

Catalog Highlights:

- *Carbide, Cobalt, HSS, and Powdered Metal offering*
- *End Mills, Drills, Countersinks, and Burs*
- *Both Conventional and Specialty Coating options available*
- *Specialty Tooling & Technical Support Information*
- *Order your catalog today for the latest info*

Decimal Equivalent Chart

SIZE	DECIMAL	SIZE	DECIMAL	SIZE	DECIMAL	SIZE	DECIMAL	SIZE	DECIMAL
97	.0059	54	.0550	25	.1495	6.7mm	.2638	**7/16"**	**.4375**
96	.0063	1.4mm	.0551	3.8mm	.1496	**17/64"**	**.2656**	11.5mm	.4528
95	.0067	1.45mm	.0571	24	.1520	6.75mm	.2657	**29/64"**	**.4531**
94	.0071	1.5mm	.0591	3.9mm	.1535	H	.2660	**15/32"**	**.4688**
93	.0075	53	.0595	23	.1540	6.8mm	.2677	12mm	.4724
92	.0079	1.55m	.0610	**5/32"**	**.1562**	6.9mm	.2717	**31/64"**	**.4844**
.2mm	.0079	**1/16"**	**.0625**	22	.1570	I	.2720	12.5mm	.4921
91	.0083	1.6mm	.0630	4mm	.1575	7mm	.2756	**1/2"**	**.5000**
90	.0087	52	.0635	21	.1590	J	.2770	13mm	.5118
.22mm	.0087	1.65mm	.0650	20	.1610	7.1mm	.2795	**33/64"**	**.5156**
89	.0091	1.7mm	.0669	4.1mm	.1614	K	.2810	**17/32"**	**.5312**
88	.0095	51	.0670	4.2mm	.1654	**9/32"**	**.2812**	13.5mm	.5315
.25mm	.0098	1.75mm	.0689	19	.1660	7.2mm	.2835	**35/64"**	**.5469**
87	.0100	50	.0700	4.25mm	.1673	7.25mm	.2854	14mm	.5512
86	.0105	1.8mm	.0709	4.3mm	.1693	7.3mm	.2874	**9/16"**	**.5625**
85	.0110	1.85mm	.0728	18	.1695	L	.2900	14.5mm	.5709
.28mm	.0110	49	.0730	**11/64"**	**.1719**	7.4mm	.2913	**37/64"**	**.5781**
84	.0115	1.9mm	.0748	17	.1730	M	.2950	15mm	.5906
.3mm	.0118	48	.0760	4.4mm	.1732	7.5mm	.2953	**19/32"**	**.5938**
83	.0120	1.95mm	.0768	16	.1770	19/64"	.2969	**39/64"**	**.6094**
82	.0125	**5/64"**	**.0781**	4.5mm	.1772	**7.6mm**	**.2992**	15.5mm	.6102
.32mm	.0126	47	.0785	15	.1800	N	.3020	**5/8"**	**.6250**
81	.0130	2mm	.0787	4.6mm	.1811	7.7mm	.3031	16mm	.6299
80	.0135	2.05mm	.0807	14	.1820	7.75mm	.3051	**41/64"**	**.6406**
.35mm	.0138	46	.0810	13	.1850	7.8mm	.3071	16.5mm	.6496
79	.0145	45	.0820	4.7mm	.1850	7.9mm	.3110	**21/32"**	**.6562**
1/64"	**.0156**	2.1mm	.0827	4.75mm	.1870	**5/16"**	**.3125**	17mm	.6693
.4mm	.0157	2.15mm	.0846	**3/16"**	**.1875**	8mm	.3150	**43/64"**	**.6719**
78	.0160	44	.0860	4.8mm	.1890	O	.3160	**11/16"**	**.6875**
.45mm	.0177	2.2mm	.0866	12	.1890	8.1mm	.3189	17.5mm	.6890
77	.0180	2.25mm	.0886	11	.1910	8.2mm	.3228	**45/64"**	**.7031**
.5mm	.0197	43	.0890	4.9mm	.1929	P	.3230	18mm	.7087
76	.0200	2.3mm	.0906	10	.1935	8.25mm	.3248	**23/32"**	**.7188**
75	.0210	2.35mm	.0925	9	.1960	8.3mm	.3268	18.5mm	.7283
.55mm	.0217	42	.0935	5mm	.1969	**21/64"**	**.3281**	**47/64"**	**.7344**
74	.0225	**3/32"**	**.0938**	8	.1990	8.4mm	.3307	19mm	.7480
.6mm	.0236	2.4mm	.0945	5.1mm	.2008	Q	.3320	**3/4"**	**.7500**
73	.0240	41	.0960	7	.2010	8.5mm	.3346	**49/64"**	**.7656**
72	.0250	2.45mm	.0965	**13/64"**	**.2031**	8.6mm	.3386	19.5mm	.7677
.65mm	.0256	40	.0980	6	.2040	R	.3390	**25/32"**	**.7812**
71	.0260	2.5mm	.0984	5.2mm	.2047	8.7mm	.3425	20mm	.7874
.7mm	.0276	39	.0995	5	.2055	**11/32"**	**.3438**	**51/64"**	**.7969**
70	.0280	38	.1015	5.25mm	.2067	8.75mm	.3445	20.5mm	.8071
69	.0292	2.6mm	.1024	5.3mm	.2087	8.8mm	.3465	**13/16"**	**.8125**
.75mm	.0295	37	.1040	4	.2090	S	.3480	21mm	.8268
68	.0310	2.7mm	.1063	5.4mm	.2126	8.9mm	.3504	**53/64"**	**.8281**
1/32"	**.0312**	36	.1065	3	.2130	9mm	.3543	**27/32"**	**.8438**
.8mm	.0315	2.75mm	.1083	5.5mm	.2165	T	.3580	21.5mm	.8465
67	.0320	**7/64"**	**.1094**	**7/32"**	**.2188**	9.1mm	.3583	**55/64"**	**.8594**
66	.0330	35	.1100	5.6mm	.2205	**23/64"**	**.3594**	22mm	.8661
.85mm	.0335	2.8mm	.1102	2	.2210	9.2mm	.3622	**7/8"**	**.8750**
65	.0350	34	.1110	5.7mm	.2244	9.25mm	.3642	22.5mm	.8858
.9mm	.0354	33	.1130	5.75mm	.2264	9.3mm	.3661	**57/64"**	**.8906**
64	.0360	2.9mm	.1142	1	.2280	U	.3680	23mm	.9055
63	.0370	32	.1160	5.8mm	.2283	9.4mm	.3701	**29/32"**	**.9062**
.95mm	.0374	3mm	.1181	5.9mm	.2323	9.5mm	.3740	**59/64"**	**.9219**
62	.0380	31	.1200	A	.2340	**3/8"**	**.3750**	23.5mm	.9252
61	.0390	3.1mm	.1220	**15/64"**	**.2344**	V	.3770	**15/16"**	**.9375**
1mm	.0394	**1/8"**	**.1250**	6mm	.2362	9.6mm	.3780	24mm	.9449
60	.0400	3.2mm	.1260	B	.2380	9.7mm	.3819	**61/64"**	**.9531**
59	.0410	3.25mm	.1280	6.1mm	.2402	9.75mm	.3839	24.5mm	.9646
1.05mm	.0413	30	.1285	C	.2420	9.8mm	.3858	**31/32"**	**.9688**
58	.0420	3.3mm	.1299	6.2mm	.2441	W	.3860	25mm	.9843
57	.0430	3.4mm	.1339	D	.2460	9.9mm	.3898	**63/64"**	**.9844**
1.1mm	.0433	29	.1360	6.25mm	.2461	**25/64"**	**.3906**	**1"**	**1.0000**
1.15mm	.0453	3.5mm	.1378	6.3mm	.2480	10mm	.3937		
56	.0465	28	.1405	E	.2500	X	.3970		
3/64"	.0469	**9/64"**	**.1406**	**1/4"**	**.2500**	Y	.4040		
1.2mm	.0472	3.6mm	.1417	6.4mm	.2520	**13/32"**	**.4062**		
1.25mm	.0492	27	.1440	6.5mm	.2559	Z	.4130		
1.3mm	.0512	3.7mm	.1457	F	.2570	10.5mm	.4134		
55	.0520	26	.1470	6.6mm	.2598	**27/64"**	**.4219**		
1.35mm	.0531	3.75mm	.1476	G	.2610	11mm	.4331		

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