

# HIGH PERFORMANCE TOOL CATALOG

AEROSPACE • MEDICAL • DIE & MOLD • ENGINEERING



## 2016



## 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](http://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.

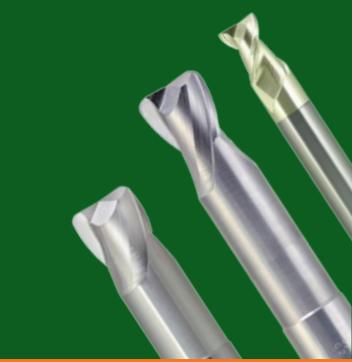
At Melin Tool Company, It is understood that we will not prosper without COMPLETE customer satisfaction. Success at Melin is measured by how well we serve the customers who distribute and use our products.

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

*Pages 15-44*

Product Index Page: **2**



## TITANIUM & HIGH TEMP ALLOYS

*Pages 46-77*

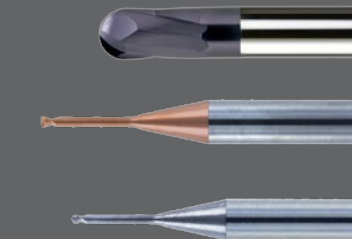
Product Index Page: **3**



## FERROUS MATERIALS

*Pages 78-99*

Product Index Page: **4**



## DIE & MOLD - HARDENED STEELS

*Pages 100-105*

Product Index Page: **5**



## GRAPHITE & COMPOSITES

*Pages 106-113*

Product Index Page: **6**



## VARIOUS MATERIALS

*Pages 114-135*

Product Index Page: **7**

**TECHNICAL INFO:**  
Speed & Feed Information Start  
on Page 136

# 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



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



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



2 Flute, Ball Nose for Z-Axis Machining - Rib Cutting  
**Series: HMG1-\_\_SF-B - New**



2 Flute, Ball Nose for Z-Axis Machining - Rib Cutting  
**Series: HMG1-M\_\_SF-B (metric) - New**



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



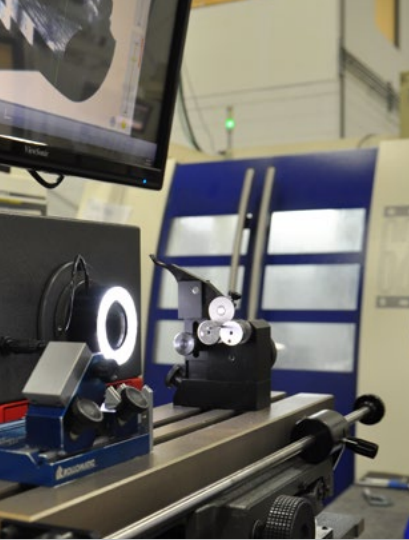
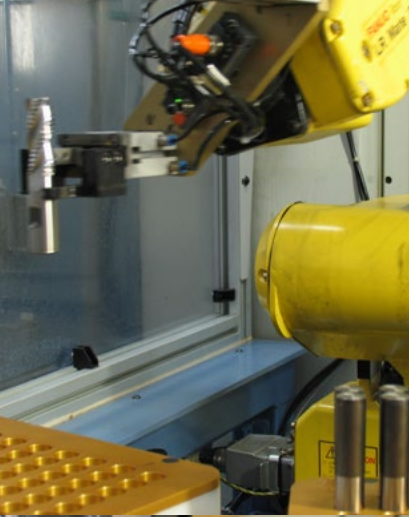
2 Flute, Ball Nose for Hard Milling in Die & Mold Application  
**Series: HMG-M\_M\_-B (metric)**



6 Flute, 45° Profiling End Mill  
**Series: CCMG45**



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 Coating**  
**Series: AMG-\_\_-B-DIA**

107   
4 Flute, **CVD Diamond Coating**  
**Series: CCMG-\_\_-DIA**

107   
4 Flute, Ball Nose **CVD Diamond Coating**  
**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 Diamond**  
**Series: AMG-\_\_-B-DLC**

111   
3 Flute, **DLC Amorphous Diamond**  
**Series: EMG-\_\_-DLC**


111   
3 Flute, Ball Nose **DLC Amorphous Diamond**  
**Series: EMG-\_\_-B-DLC**

112   
4 Flute, **DLC Amorphous Diamond**  
**Series: CCMG-\_\_-DLC**

113   
4 Flute, Ball Nose **DLC Amorphous Diamond**  
**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***



## Spherical Ball



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



2 Flute, 220° Spherical Ball End Mill  
Series: **VBMG2-M\_M\_ (metric)**



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



4 Flute, 220° Spherical Ball End Mill  
Series: **VBMG4-M\_M\_ (metric)**



Multi Flute, 270° Spherical Ball End Mill  
Series: **VBMG\_-\_-270 - New**



Multi Flute, 300° Spherical Ball End Mill  
Series: **VBMG\_-\_-300 - New**

## High Feed Cutters



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



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



4 Flute, High Feed Carbide End Mills  
Series: **HXMG4-M\_M\_ (metric) - New**



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



4 Flute, High Feed Carbide End Mills  
Series: **HXMG4-M\_M\_-HM (hard milling) - New**

# VARIOUS MATERIAL

## Drills



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

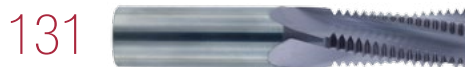


2 Flute, 140° Pt Carbide Drill without Coolant Hole  
Series: **MDR**

## Thread Mills



Multi Flute, 60° Straight Flute, UN Thread  
Series: **TM-\_-S**



Multi Flute, 60° Helical Flute, UN Thread  
Series: **TM-\_-H**



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



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



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



Multi Flute, Single Form Thread  
Series: **TM**

**TECHNICAL INFO:**  
Speed & Feed Information Start  
on Page 136

**QUICK REFERENCE:**  
Page 167

○ HIGH PERFORMANCE COATINGS:

- TiCN
- AlTiN
- nACo
- nACRo
- ZrN
- DLC Diamond
- CVD Diamond
- TiB<sub>2</sub>
- 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 n311, 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

		<b>Hardness</b>	<b>Coefficient of Friction</b>	<b>Thermal Stability</b>	<b>1st Digit of Coated EDP</b>
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 <sub>2</sub>	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







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.

## TiCN



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.** **AlTiN** 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.

## AlTiN

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.

## nACo

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.

## nACRo



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.

## ZrN

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.**

## CVD 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).

## DLC Diamond

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.

## TiB<sub>2</sub>

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.**

## TiXCo



## High Performance

### Coatings:

- TiCN
- AlTiN
- nACo
- nACRo
- ZrN
- DLC Diamond
- CVD Diamond
- TiB<sub>2</sub>
- 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



Light Copper

TiB<sub>2</sub> - Zirconium Nitride



Copper

TiXCo - TiN-nACo-TiSiN



White-gold

ZrN - Zirconium Nitride

Material	Hardness	TiCN	AlTiN	nACo	nACRo	ZrN	DIA	DLC	TiB <sub>2</sub>	TiXCo
Austenitic Stainless Steel	< 35 HRc	*	*		X					
Martensitic Stainless Steel	< 35 HRc	*	*		X					
Martensitic 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<sub>2</sub>, 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:

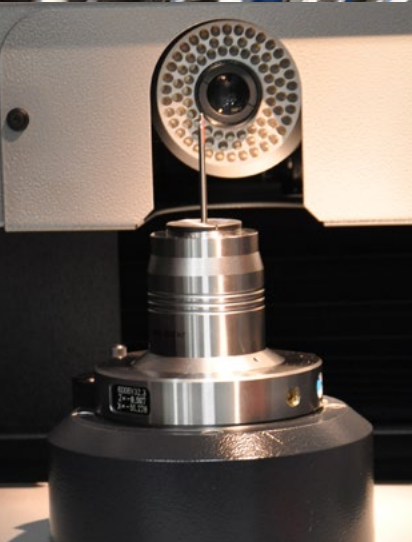
**Bright Part & EDP - EXMG-1616 = EDP 11779**

**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<sub>2</sub> & 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 -0.002 +.0005 -0.0005 <1/8 +.000 -0.002 ≥1/8 +.000mm -0.050mm +.013 -0.013 <3mm +.000 -0.05 ≥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 HRC HRC - Range of work piece material hardness

<40 <48 <54 <70

## ISO MATERIAL GROUP

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

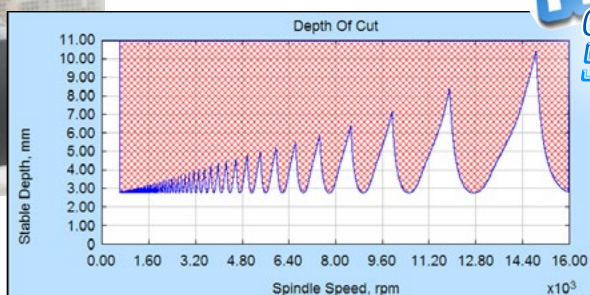
Melin continues to provide our customers with the latest technology to enhance the benefits our high performance tools already provide. Listed below are specialized and customizable services and features Melin can ADD to our standard high performance offering

## 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](http://www.melintool.com)



# METALMAX™



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!**

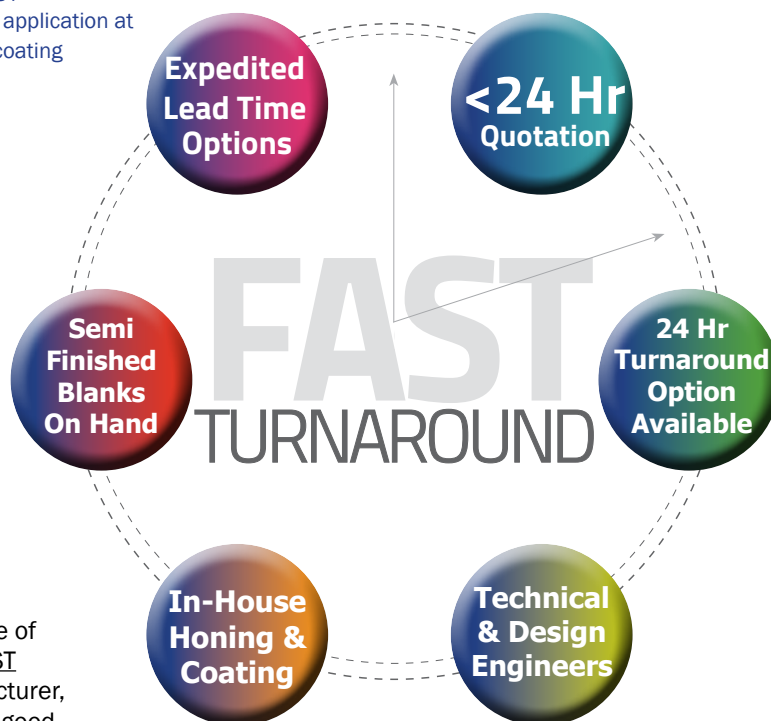
### QUOTATIONS GUARANTEED WITHIN 24 HOURS

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

STANDARD

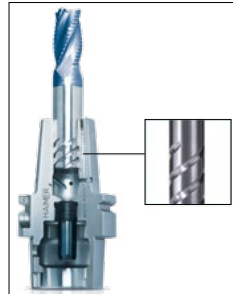
A flat ground into the shank for locking methods of tool holders, that fully complies with industry specifications of the dimensions and positioning location

WELDON FLAT

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.

ROUGH GRIP

WELDON FLAT



This licensed system offers the pull out protection for your round shank

HAIMER SAFE LOCK™

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.

ROUGH GRIP



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**

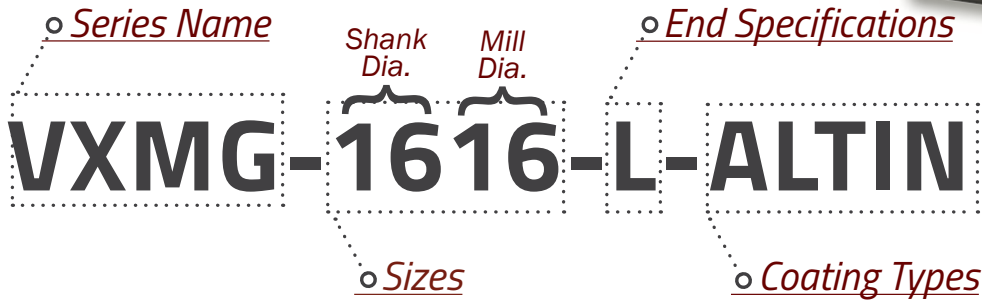
HAIMER SAFE LOCK



○ HIGH PERFORMANCE  
PART NAME:

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

# Melin Part Number



### 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<sub>2</sub>-** 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	1/8	11	1 1/8
1	1/8	12	3/8
2	1/8	13	13/8
3	3/8	14	7/8
4	1/2	15	1 5/8
5	5/8	16	1 1/2
6	3/4	17	1 7/8
7	7/8	18	9/8
8	1	20	5/8
9	9/8	24	3/4
10	5/4	28	7/8
11	1 1/8	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

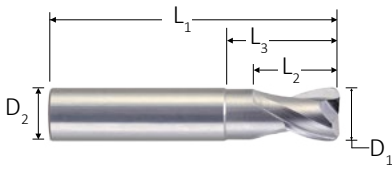
**RADIUS STYLE:**

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

**NECK STYLE:**

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



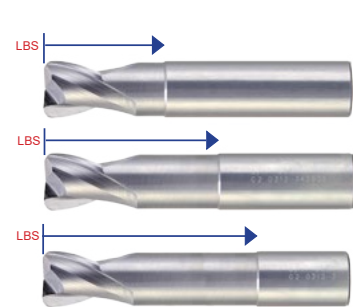


2 FLUTE • 30° FOR HIGH VELOCITY MACHINING

Carbide | 2 | Center Cutting | 30° | Bright TiCN ZrN | +.000 / -.002 | Radius | [Images of various end mill geometries] | HRC <40 | N

Additional coatings - nACRo, DLC & TiB<sub>2</sub> 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



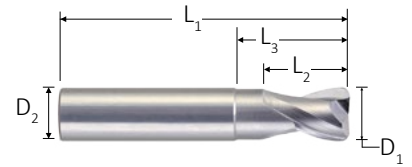
No Neck Options Allow You To Order the specific LBS Size You Need!



SERIES: HVMG2 ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price
1/4	1/4	1/2	1-1/2	4	0.030	HVMG2-808-R030	15007	45007	65007	72.54	77.50
1/4	1/4	1/2	1-1/2	4	0.060	HVMG2-808-R060	12154	42154	62154	72.54	77.5
1/4	1/4	1/2	no neck	4	0.030	HVMG2-808-NNR030	15000	45000	65000	72.54	77.5
1/4	1/4	1/2	no neck	4	0.060	HVMG2-808-NNR060	12158	42158	62158	72.54	77.5
1/4	1/4	5/8	1-1/2	4	0.030	HVMG2-808-L1R030	15006	45006	65006	72.54	77.5
1/4	1/4	5/8	1-1/2	4	0.060	HVMG2-808-L1R060	12162	42162	62162	72.54	77.5
3/8	3/8	1/2	1-1/4	3	0.030	HVMG2-1212-R030	15010	45010	65010	74.68	80.50
3/8	3/8	1/2	1-1/4	3	0.060	HVMG2-1212-R060	12166	42166	62166	74.68	80.5
3/8	3/8	1/2	2-1/8	4	0.030	HVMG2-1212-L1R030	15011	45011	65011	77.05	84.81
3/8	3/8	1/2	2-1/8	4	0.060	HVMG2-1212-L1R060	12170	42170	62170	77.05	84.81
3/8	3/8	1/2	no neck	4	0.030	HVMG2-1212-NNR030	15009	45009	65009	77.05	84.81
3/8	3/8	1/2	no neck	4	0.060	HVMG2-1212-NNR060	12174	42174	62174	77.05	84.81
1/2	1/2	5/8	1-1/4	3	0.030	HVMG2-1616-R030	15013	45013	65013	89.49	97.39
1/2	1/2	5/8	1-1/4	3	0.060	HVMG2-1616-R060	12180	42180	62180	89.49	97.39
1/2	1/2	5/8	1-1/4	3	0.090	HVMG2-1616-R090	12188	42188	62188	89.49	97.39
1/2	1/2	5/8	2-1/8	4	0.030	HVMG2-1616-L1R030	15001	45001	65001	102.54	113.07
1/2	1/2	5/8	2-1/8	4	0.060	HVMG2-1616-L1R060	15002	45002	65002	102.54	113.07
1/2	1/2	5/8	2-1/8	4	0.090	HVMG2-1616-L1R090	12190	42190	62190	102.54	113.07
1/2	1/2	5/8	2-1/8	4	0.120	HVMG2-1616-L1R120	12194	42194	62194	102.54	113.07
1/2	1/2	5/8	3-1/8	5	0.030	HVMG2-1616-L2R030	12205	42205	62205	117.86	131.03
1/2	1/2	5/8	3-1/8	5	0.060	HVMG2-1616-L2R060	12206	42206	62206	117.86	131.03
1/2	1/2	5/8	3-1/8	5	0.090	HVMG2-1616-L2R090	12207	42207	62207	117.86	131.03
1/2	1/2	5/8	3-1/8	5	0.120	HVMG2-1616-L2R120	12208	42208	62208	117.86	131.03
1/2	1/2	5/8	no neck	5	0.030	HVMG2-1616-NNR030	15012	45012	65012	117.86	131.03
1/2	1/2	5/8	no neck	5	0.060	HVMG2-1616-NNR060	12209	42209	62209	117.86	131.03
1/2	1/2	5/8	no neck	5	0.090	HVMG2-1616-NNR090	12210	42210	62210	117.86	131.03
1/2	1/2	5/8	no neck	5	0.120	HVMG2-1616-NNR120	12211	42211	62211	117.86	131.03
5/8	5/8	3/4	3-1/8	5	0.030	HVMG2-2020-R030	14792	44792	64792	175.04	191.40
5/8	5/8	3/4	3-1/8	5	0.060	HVMG2-2020-R060	12212	42212	62212	175.04	191.40
5/8	5/8	3/4	3-1/8	5	0.090	HVMG2-2020-R090	15015	45015	65015	175.04	191.40
5/8	5/8	3/4	3-1/8	5	0.120	HVMG2-2020-R120	12213	42213	62213	175.04	191.40





## 2 FLUTE • 30° FOR HIGH VELOCITY MACHINING

✓ **Check Stock Online**

SERIES: HVMG2

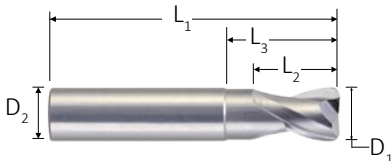


DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price
5/8	5/8	3/4	no neck	5	0.030	HVMG2-2020-NNR030	15014	45014	65014	175.04	191.40
5/8	5/8	3/4	no neck	5	0.060	HVMG2-2020-NNR060	12214	42214	62214	175.04	191.40
5/8	5/8	3/4	no neck	5	0.090	HVMG2-2020-NNR090	12215	42215	62215	175.04	191.40
5/8	5/8	3/4	no neck	5	0.120	HVMG2-2020-NNR120	12218	42218	62218	175.04	191.40
3/4	3/4	3/4	2	4	0.030	HVMG2-2424-R030	15016	45016	65016	192.58	208.73
3/4	3/4	3/4	2	4	0.060	HVMG2-2424-R060	15003	45003	65003	192.58	208.73
3/4	3/4	3/4	2	4	0.090	HVMG2-2424-R090	12219	42219	62219	192.58	208.73
3/4	3/4	3/4	2	4	0.120	HVMG2-2424-R120	15004	45004	65004	192.58	208.73
3/4	3/4	1	3	5	0.030	HVMG2-2424-L1R030	14798	44798	64798	229.88	250.07
3/4	3/4	1	3	5	0.060	HVMG2-2424-L1R060	15008	45008	65008	229.88	250.07
3/4	3/4	1	3	5	0.090	HVMG2-2424-L1R090	12225	42225	62225	229.88	250.07
3/4	3/4	1	3	5	0.120	HVMG2-2424-L1R120	12226	42226	62226	229.88	250.07
3/4	3/4	1	no neck	6	0.030	HVMG2-2424-NNR030	14543	44543	64543	268.65	292.88
3/4	3/4	1	no neck	6	0.060	HVMG2-2424-NNR060	14669	44669	64669	268.65	292.88
3/4	3/4	1	no neck	6	0.090	HVMG2-2424-NNR090	12227	42227	62227	268.65	292.88
3/4	3/4	1	no neck	6	0.120	HVMG2-2424-NNR120	12228	42228	62228	268.65	292.88
1	1	3/4	2	4	0.030	HVMG2-3232-R030	12229	42229	62229	307.21	338.81
1	1	3/4	2	4	0.060	HVMG2-3232-R060	14797	44797	64797	307.21	338.81
1	1	3/4	2	4	0.090	HVMG2-3232-R090	15201	45201	65201	307.21	338.81
1	1	3/4	2	4	0.120	HVMG2-3232-R120	15005	45005	65005	307.21	338.81
1	1	1-1/4	2-3/4	5	0.030	HVMG2-3232-L1R030	12234	42234	62234	354.56	394.06
1	1	1-1/4	2-3/4	5	0.060	HVMG2-3232-L1R060	15018	45018	65018	354.56	394.06
1	1	1-1/4	2-3/4	5	0.090	HVMG2-3232-L1R090	15203	45203	65203	354.56	394.06
1	1	1-1/4	2-3/4	5	0.120	HVMG2-3232-L1R120	12237	42237	62237	354.56	394.06
1	1	1-1/4	no neck	6	0.030	HVMG2-3232-NNR030	15017	45017	65017	402.59	449.99
1	1	1-1/4	no neck	6	0.060	HVMG2-3232-NNR060	14840	44840	64840	402.59	449.99
1	1	1-1/4	no neck	6	0.090	HVMG2-3232-NNR090	12364	42364	62364	402.59	449.99
1	1	1-1/4	no neck	6	0.120	HVMG2-3232-NNR120	12367	42367	62367	402.59	449.99
1-1/4	1-1/4	1-1/4	2	4-1/2	0.030	HVMG2-4040-R030	12369	42369	62369	525.47	565.12
1-1/4	1-1/4	1-1/4	2	4-1/2	0.060	HVMG2-4040-R060	12496	42496	62496	525.47	565.12
1-1/4	1-1/4	1-1/4	2	4-1/2	0.090	HVMG2-4040-R090	12510	42510	62510	525.47	565.12
1-1/4	1-1/4	1-1/4	2	4-1/2	0.120	HVMG2-4040-R120	12514	42514	62514	525.47	565.12
1-1/4	1-1/4	1-1/4	2-5/8	6	0.030	HVMG2-4040-L1R030	12522	42522	62522	646.12	693.70
1-1/4	1-1/4	1-1/4	2-5/8	6	0.060	HVMG2-4040-L1R060	14161	44161	64161	646.12	693.70
1-1/4	1-1/4	1-1/4	2-5/8	6	0.090	HVMG2-4040-L1R090	14163	44163	64163	646.12	693.70
1-1/4	1-1/4	1-1/4	2-5/8	6	0.120	HVMG2-4040-L1R120	14165	44165	64165	646.12	693.70

\*No Neck - Customize your LBS length

Speed & Feed: page 136





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<sub>2</sub> 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

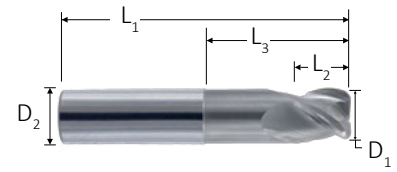
SERIES: HVMG2-M\_M\_ ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price
10mm	10mm	12mm	36mm	80mm	1mm	HVMG2-M10M10-R1.0	14167	44167	64167	81.45	90.35
10mm	10mm	12mm	36mm	80mm	1.5mm	HVMG2-M10M10-R1.5	14169	44169	64169	81.45	90.35
10mm	10mm	12mm	50mm	100mm	1mm	HVMG2-M10M10-L1R1.0	14171	44171	64171	88.11	98.28
10mm	10mm	12mm	50mm	100mm	1.5mm	HVMG2-M10M10-L1R1.5	14173	44173	64173	88.11	98.28
12mm	12mm	14mm	40mm	90mm	1mm	HVMG2-M12M12-R1.0	14175	44175	64175	116.07	125.29
12mm	12mm	14mm	40mm	90mm	1.5mm	HVMG2-M12M12-R1.5	14672	44672	64672	116.07	125.29
12mm	12mm	14mm	70mm	125mm	1mm	HVMG2-M12M12-L1R1.0	14673	44673	64673	159.21	172.38
12mm	12mm	14mm	70mm	125mm	1.5mm	HVMG2-M12M12-L1R1.5	14674	44674	64674	159.21	172.38
16mm	16mm	18mm	31mm	100mm	1mm	HVMG2-M16M16-R1.0	14675	44675	64675	176.39	192.54
16mm	16mm	18mm	31mm	100mm	1.5mm	HVMG2-M16M16-R1.5	14676	44676	64676	176.39	192.54
16mm	16mm	18mm	31mm	100mm	3mm	HVMG2-M16M16-R3.0	14689	44689	64689	176.39	192.54
16mm	16mm	18mm	80mm	150mm	1mm	HVMG2-M16M16-L1R1.0	14690	44690	64690	204.80	229.03
16mm	16mm	18mm	80mm	150mm	1.5mm	HVMG2-M16M16-L1R1.5	14691	44691	64691	204.80	229.03
16mm	16mm	18mm	80mm	150mm	3mm	HVMG2-M16M16-L1R3.0	14692	44692	64692	204.80	229.03
20mm	20mm	24mm	45mm	100mm	1mm	HVMG2-M20M20-R1.0	14693	44693	64693	214.71	240.36
20mm	20mm	24mm	45mm	100mm	1.5mm	HVMG2-M20M20-R1.5	14694	44694	64694	214.71	240.36
20mm	20mm	24mm	45mm	100mm	3mm	HVMG2-M20M20-R3.0	14695	44695	64695	214.71	240.36
20mm	20mm	24mm	100mm	145mm	1mm	HVMG2-M20M20-L1R1.0	14696	44696	64696	270.41	308.89
20mm	20mm	24mm	100mm	145mm	1.5mm	HVMG2-M20M20-L1R1.5	14697	44697	64697	270.41	308.89
20mm	20mm	24mm	100mm	145mm	3mm	HVMG2-M20M20-L1R3.0	14698	44698	64698	270.41	308.89
25mm	25mm	26mm	30mm	110mm	1mm	HVMG2-M25M25-R1.0	14699	44699	64699	336.01	371.56
25mm	25mm	26mm	30mm	110mm	1.5mm	HVMG2-M25M25-R1.5	14834	44834	64834	336.01	371.56
25mm	25mm	26mm	30mm	110mm	3mm	HVMG2-M25M25-R3.0	14835	44835	64835	336.01	371.56
25mm	25mm	26mm	80mm	145mm	1mm	HVMG2-M25M25-L1R1.0	14837	44837	64837	385.46	432.86
25mm	25mm	26mm	80mm	145mm	1.5mm	HVMG2-M25M25-L1R1.5	14838	44838	64838	385.46	432.86
25mm	25mm	26mm	80mm	145mm	3mm	HVMG2-M25M25-L1R3.0	14839	44839	64839	385.46	432.86

Speed & Feed: page 136



## 3 FLUTE • 37° FOR HIGH VELOCITY MACHINING

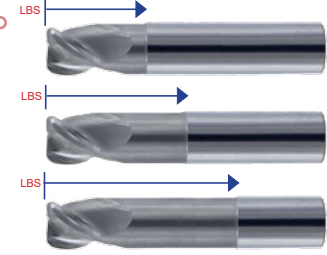


Carbide	3	Center Cutting	37°	Bright TiCN ZrN	+0.000 -0.002	Radius									Hrc <40	N
---------	---	----------------	-----	-----------------------	------------------	--------	--	--	--	--	--	--	--	--	---------	---

Additional coatings - nACRo, DLC & TiB<sub>2</sub> 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 [✓ Check Stock Online](#)

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price
1/4	1/4	1/2	1-1/2	4	0.030	HVMG3-808-R030	14853	44853	64853	72.54	77.50
1/4	1/4	1/2	1-1/2	4	0.060	HVMG3-808-R060	14854	44854	64854	72.54	77.50
1/4	1/4	1/2	no neck	4	0.030	HVMG3-808-NNR030	14855	44855	64855	72.54	77.50
1/4	1/4	1/2	no neck	4	0.060	HVMG3-808-NNR060	14856	44856	64856	72.54	77.50
1/4	1/4	5/8	1-1/2	4	0.030	HVMG3-808-L1R030	14857	44857	64857	72.54	77.50
1/4	1/4	5/8	1-1/2	4	0.060	HVMG3-808-L1R060	14858	44858	64858	72.54	77.50
3/8	3/8	1/2	1-1/4	3	0.030	HVMG3-1212-R030	14859	44859	64859	74.68	80.50
3/8	3/8	1/2	1-1/4	3	0.060	HVMG3-1212-R060	14860	44860	64860	74.68	80.50
3/8	3/8	1/2	2-1/8	4	0.030	HVMG3-1212-L1R030	14861	44861	64861	77.05	84.81
3/8	3/8	1/2	2-1/8	4	0.060	HVMG3-1212-L1R060	14862	44862	64862	77.05	84.81
3/8	3/8	1/2	no neck	4	0.030	HVMG3-1212-NNR030	14863	44863	64863	77.05	84.81
3/8	3/8	1/2	no neck	4	0.060	HVMG3-1212-NNR060	14864	44864	64864	77.05	84.81
1/2	1/2	5/8	1-1/4	3	0.030	HVMG3-1616-R030	14865	44865	64865	89.49	97.39
1/2	1/2	5/8	1-1/4	3	0.060	HVMG3-1616-R060	14866	44866	64866	89.49	97.39
1/2	1/2	5/8	1-1/4	3	0.090	HVMG3-1616-R090	14867	44867	64867	89.49	97.39
1/2	1/2	5/8	2-1/8	4	0.030	HVMG3-1616-L1R030	14868	44868	64868	102.54	113.07
1/2	1/2	5/8	2-1/8	4	0.060	HVMG3-1616-L1R060	14870	44870	64870	102.54	113.07
1/2	1/2	5/8	2-1/8	4	0.090	HVMG3-1616-L1R090	14871	44871	64871	102.54	113.07
1/2	1/2	5/8	2-1/8	4	0.120	HVMG3-1616-L1R120	14872	44872	64872	102.54	113.07
1/2	1/2	5/8	3-1/8	5	0.030	HVMG3-1616-L2R030	14873	44873	64873	117.86	131.03
1/2	1/2	5/8	3-1/8	5	0.060	HVMG3-1616-L2R060	14874	44874	64874	117.86	131.03
1/2	1/2	5/8	3-1/8	5	0.090	HVMG3-1616-L2R090	14876	44876	64876	117.86	131.03
1/2	1/2	5/8	3-1/8	5	0.120	HVMG3-1616-L2R120	14877	44877	64877	117.86	131.03
1/2	1/2	5/8	no neck	5	0.030	HVMG3-1616-NNR030	14878	44878	64878	117.86	131.03
1/2	1/2	5/8	no neck	5	0.060	HVMG3-1616-NNR060	14879	44879	64879	117.86	131.03
1/2	1/2	5/8	no neck	5	0.090	HVMG3-1616-NNR090	14880	44880	64880	117.86	131.03
1/2	1/2	5/8	no neck	5	0.120	HVMG3-1616-NNR120	14881	44881	64881	117.86	131.03
5/8	5/8	3/4	3-1/8	5	0.030	HVMG3-2020-R030	14882	44882	64882	175.04	16.985
5/8	5/8	3/4	3-1/8	5	0.060	HVMG3-2020-R060	14883	44883	64883	175.04	16.985
5/8	5/8	3/4	3-1/8	5	0.090	HVMG3-2020-R090	14884	44884	64884	175.04	16.985
5/8	5/8	3/4	3-1/8	5	0.120	HVMG3-2020-R120	14885	44885	64885	175.04	16.985
5/8	5/8	3/4	no neck	5	0.030	HVMG3-2020-NNR030	14886	44886	64886	175.04	16.985
5/8	5/8	3/4	no neck	5	0.060	HVMG3-2020-NNR060	14887	44887	64887	175.04	16.985
5/8	5/8	3/4	no neck	5	0.090	HVMG3-2020-NNR090	14888	44888	64888	175.04	16.985
5/8	5/8	3/4	no neck	5	0.120	HVMG3-2020-NNR120	14889	44889	64889	175.04	16.985

Speed & Feed: page 136

sizes continued on next page

3 FLUTE • 37° FOR HIGH VELOCITY MACHINING

SERIES: HVMG3 **✓ Check Stock Online**

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price
3/4	3/4	3/4	2	4	0.030	HVMG3-2424-R030	14890	44890	64890	192.58	208.73
3/4	3/4	3/4	2	4	0.060	HVMG3-2424-R060	14891	44891	64891	192.58	208.73
3/4	3/4	3/4	2	4	0.090	HVMG3-2424-R090	14892	44892	64892	192.58	208.73
3/4	3/4	3/4	2	4	0.120	HVMG3-2424-R120	14893	44893	64893	192.58	208.73
3/4	3/4	1	3	5	0.030	HVMG3-2424-L1R030	14894	44894	64894	229.88	250.07
3/4	3/4	1	3	5	0.060	HVMG3-2424-L1R060	14895	44895	64895	229.88	250.07
3/4	3/4	1	3	5	0.090	HVMG3-2424-L1R090	14896	44896	64896	229.88	250.07
3/4	3/4	1	3	5	0.120	HVMG3-2424-L1R120	14897	44897	64897	229.88	250.07
3/4	3/4	1	no neck	6	0.030	HVMG3-2424-NNR030	14898	44898	64898	268.65	292.88
3/4	3/4	1	no neck	6	0.060	HVMG3-2424-NNR060	14899	44899	64899	268.65	292.88
3/4	3/4	1	no neck	6	0.090	HVMG3-2424-NNR090	15810	45810	65810	268.65	292.88
3/4	3/4	1	no neck	6	0.120	HVMG3-2424-NNR120	14932	44932	64932	268.65	292.88
1	1	3/4	2	4	0.030	HVMG3-3232-R030	14933	44933	64933	307.21	338.81
1	1	3/4	2	4	0.060	HVMG3-3232-R060	14934	44934	64934	307.21	338.81
1	1	3/4	2	4	0.090	HVMG3-3232-R090	14935	44935	64935	307.21	338.81
1	1	3/4	2	4	0.120	HVMG3-3232-R120	14936	44936	64936	307.21	338.81
1	1	1-1/4	2-3/4	5	0.030	HVMG3-3232-L1R030	14937	44937	64937	354.56	394.06
1	1	1-1/4	2-3/4	5	0.060	HVMG3-3232-L1R060	14938	44938	64938	354.56	394.06
1	1	1-1/4	2-3/4	5	0.090	HVMG3-3232-L1R090	14939	44939	64939	354.56	394.06
1	1	1-1/4	2-3/4	5	0.120	HVMG3-3232-L1R120	14940	44940	64940	354.56	394.06
1	1	1-1/4	no neck	6	0.030	HVMG3-3232-NNR030	14941	44941	64941	402.59	449.99
1	1	1-1/4	no neck	6	0.060	HVMG3-3232-NNR060	14942	44942	64942	402.59	449.99
1	1	1-1/4	no neck	6	0.090	HVMG3-3232-NNR090	14943	44943	64943	402.59	449.99
1	1	1-1/4	no neck	6	0.120	HVMG3-3232-NNR120	14944	44944	64944	402.59	449.99
1-1/4	1-1/4	1-1/4	2	4-1/2	0.030	HVMG3-4040-R030	14945	44945	64945	525.47	565.12
1-1/4	1-1/4	1-1/4	2	4-1/2	0.060	HVMG3-4040-R060	14946	44946	64946	525.47	565.12
1-1/4	1-1/4	1-1/4	2	4-1/2	0.090	HVMG3-4040-R090	14947	44947	64947	525.47	565.12
1-1/4	1-1/4	1-1/4	2	4-1/2	0.120	HVMG3-4040-R120	14948	44948	64948	525.47	565.12
1-1/4	1-1/4	1-1/4	2-5/8	6	0.030	HVMG3-4040-L1R030	14949	44949	64949	646.12	693.70
1-1/4	1-1/4	1-1/4	2-5/8	6	0.060	HVMG3-4040-L1R060	14950	44950	64950	646.12	693.70
1-1/4	1-1/4	1-1/4	2-5/8	6	0.090	HVMG3-4040-L1R090	14951	44951	64951	646.12	693.70
1-1/4	1-1/4	1-1/4	2-5/8	6	0.120	HVMG3-4040-L1R120	14952	44952	64952	646.12	693.70



\*No Neck - Customize your LBS length

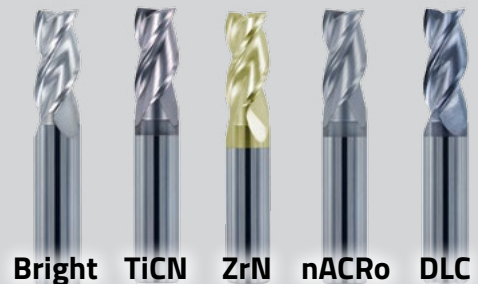
Speed & Feed: page 136

## RECOMMENDED ALUMINUM COATINGS

Melin provides SEVERAL coated options to fit your every need!

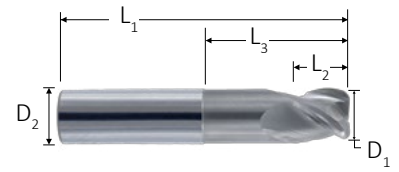
Order any of our tools with a Conventional or High Performance Coating

- ▶ TiCN
- ▶ ZrN
- ▶ nACRo
- ▶ DLC
- ▶ TiB<sub>2</sub>



CONVENTIONAL COATINGS & HIGH PERFORMANCE COATINGS

## 3 FLUTE • 37° FOR HIGH VELOCITY MACHINING



Carbide	3	Center Cutting	37°	Bright TiCN ZrN	+0.00mm -0.05mm	Radius								HRC <40	N
---------	---	----------------	-----	-----------------------	--------------------	--------	--	--	--	--	--	--	--	------------	---

Additional coatings - nACRo, DLC & TiB<sub>2</sub> 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

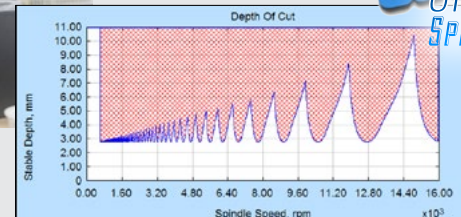
### SERIES: HVMG3-M\_M\_ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price
10mm	10mm	12mm	36mm	80mm	1mm	HVMG3-M10M10-R1.0	14953	44953	64953	81.45	90.35
10mm	10mm	12mm	36mm	80mm	1.5mm	HVMG3-M10M10-R1.5	14954	44954	64954	81.45	90.35
10mm	10mm	12mm	50mm	100mm	1mm	HVMG3-M10M10-L1R1.0	14955	44955	64955	88.11	98.28
10mm	10mm	12mm	50mm	100mm	1.5mm	HVMG3-M10M10-L1R1.5	14956	44956	64956	88.11	98.28
12mm	12mm	14mm	40mm	90mm	1mm	HVMG3-M12M12-R1.0	14957	44957	64957	116.07	125.29
12mm	12mm	14mm	40mm	90mm	1.5mm	HVMG3-M12M12-R1.5	14958	44958	64958	116.07	125.29
12mm	12mm	14mm	70mm	125mm	1mm	HVMG3-M12M12-L1R1.0	14959	44959	64959	159.21	172.38
12mm	12mm	14mm	70mm	125mm	1.5mm	HVMG3-M12M12-L1R1.5	14960	44960	64960	159.21	172.38
16mm	16mm	18mm	31mm	100mm	1mm	HVMG3-M16M16-R1.0	14961	44961	64961	176.39	192.54
16mm	16mm	18mm	31mm	100mm	1.5mm	HVMG3-M16M16-R1.5	14962	44962	64962	176.39	192.54
16mm	16mm	18mm	31mm	100mm	3mm	HVMG3-M16M16-R3.0	14963	44963	64963	176.39	192.54
16mm	16mm	18mm	80mm	150mm	1mm	HVMG3-M16M16-L1R1.0	14964	44964	64964	204.80	229.03
16mm	16mm	18mm	80mm	150mm	1.5mm	HVMG3-M16M16-L1R1.5	14965	44965	64965	204.80	229.03
16mm	16mm	18mm	80mm	150mm	3mm	HVMG3-M16M16-L1R3.0	14966	44966	64966	204.80	229.03
20mm	20mm	24mm	45mm	100mm	1mm	HVMG3-M20M20-R1.0	14967	44967	64967	214.71	240.36
20mm	20mm	24mm	45mm	100mm	1.5mm	HVMG3-M20M20-R1.5	14968	44968	64968	214.71	240.36
20mm	20mm	24mm	45mm	100mm	3mm	HVMG3-M20M20-R3.0	14969	44969	64969	214.71	240.36
20mm	20mm	24mm	100mm	145mm	1mm	HVMG3-M20M20-L1R1.0	14970	44970	64970	270.41	308.89
20mm	20mm	24mm	100mm	145mm	1.5mm	HVMG3-M20M20-L1R1.5	14971	44971	64971	270.41	308.89
20mm	20mm	24mm	100mm	145mm	3mm	HVMG3-M20M20-L1R3.0	14972	44972	64972	270.41	308.89
25mm	25mm	26mm	30mm	110mm	1mm	HVMG3-M25M25-R1.0	14973	44973	64973	336.01	371.56
25mm	25mm	26mm	30mm	110mm	1.5mm	HVMG3-M25M25-R1.5	14974	44974	64974	336.01	371.56
25mm	25mm	26mm	30mm	110mm	3mm	HVMG3-M25M25-R3.0	14975	44975	64975	336.01	371.56
25mm	25mm	26mm	80mm	145mm	1mm	HVMG3-M25M25-L1R1.0	14976	44976	64976	385.46	432.86
25mm	25mm	26mm	80mm	145mm	1.5mm	HVMG3-M25M25-L1R1.5	14977	44977	64977	385.46	432.86
25mm	25mm	26mm	80mm	145mm	3mm	HVMG3-M25M25-L1R3.0	14978	44978	64978	385.46	432.86

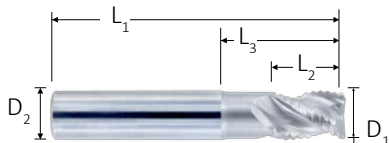
Speed & Feed: page 136

### 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](http://www.melintool.com)





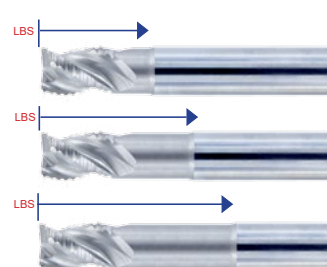


3 FLUTE • ROUGHER FOR HIGH VELOCITY MACHINING

Carbide	3	Center Cutting	37°	Bright TiCN ZrN	+0.000 -0.002	Radius	Rougher							HRC <40	N
---------	---	----------------	-----	-----------------------	------------------	--------	---------	--	--	--	--	--	--	---------	---

Additional coatings - nACRo, DLC & TiB<sub>2</sub> 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!

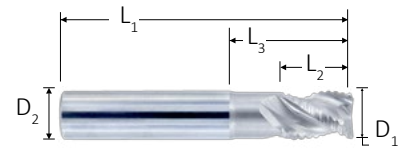


SERIES: HVRMG3 ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price
1/4	1/4	1/2	1-1/2	4	0.030	HVRMG3-808-R030	14979	44979	64979	87.42	92.38
1/4	1/4	1/2	1-1/2	4	0.060	HVRMG3-808-R060	14981	44981	64981	87.42	92.38
3/8	3/8	1/2	2-1/8	4	0.030	HVRMG3-1212-L1R030	14982	44982	64982	92.61	100.37
3/8	3/8	1/2	2-1/8	4	0.060	HVRMG3-1212-L1R060	14983	44983	64983	92.61	100.37
1/2	1/2	5/8	1-1/4	3	0.030	HVRMG3-1616-R030	14851	44851	64851	106.91	114.81
1/2	1/2	5/8	1-1/4	3	0.060	HVRMG3-1616-R060	14984	44984	64984	106.91	114.81
1/2	1/2	5/8	1-1/4	3	0.090	HVRMG3-1616-R090	14985	44985	64985	106.91	114.81
1/2	1/2	5/8	2-1/8	4	0.030	HVRMG3-1616-L1R030	14986	44986	64986	121.92	132.45
1/2	1/2	5/8	2-1/8	4	0.060	HVRMG3-1616-L1R060	14987	44987	64987	121.92	132.45
1/2	1/2	5/8	2-1/8	4	0.090	HVRMG3-1616-L1R090	14988	44988	64988	121.92	132.45
1/2	1/2	5/8	2-1/8	4	0.120	HVRMG3-1616-L1R120	14989	44989	64989	121.92	132.45
5/8	5/8	3/4	no neck	5	0.030	HVRMG3-2020-NNR030	14994	44994	64994	205.30	221.66
5/8	5/8	3/4	no neck	5	0.060	HVRMG3-2020-NNR060	14995	44995	64995	205.30	221.66
5/8	5/8	3/4	no neck	5	0.090	HVRMG3-2020-NNR090	14996	44996	64996	205.30	221.66
5/8	5/8	3/4	no neck	5	0.120	HVRMG3-2020-NNR120	14997	44997	64997	205.30	221.66
3/4	3/4	3/4	2	4	0.030	HVRMG3-2424-R030	14998	44998	64998	225.47	241.62
3/4	3/4	3/4	2	4	0.060	HVRMG3-2424-R060	14999	44999	64999	225.47	241.62
3/4	3/4	3/4	2	4	0.090	HVRMG3-2424-R090	15019	45019	65019	225.47	241.62
3/4	3/4	3/4	2	4	0.120	HVRMG3-2424-R120	15020	45020	65020	225.47	241.62
3/4	3/4	1	3	5	0.030	HVRMG3-2424-L1R030	15021	45021	65021	268.36	288.55
3/4	3/4	1	3	5	0.060	HVRMG3-2424-L1R060	15022	45022	65022	268.36	288.55
3/4	3/4	1	3	5	0.090	HVRMG3-2424-L1R090	15023	45023	65023	268.36	288.55
3/4	3/4	1	3	5	0.120	HVRMG3-2424-L1R120	15024	45024	65024	268.36	288.55
1	1	3/4	2	4	0.030	HVRMG3-3232-R030	15025	45025	65025	357.29	388.89
1	1	3/4	2	4	0.060	HVRMG3-3232-R060	15026	45026	65026	357.29	388.89
1	1	3/4	2	4	0.090	HVRMG3-3232-R090	15027	45027	65027	357.29	388.89
1	1	3/4	2	4	0.120	HVRMG3-3232-R120	15028	45028	65028	357.29	388.89
1	1	1-1/4	2-3/4	5	0.030	HVRMG3-3232-L1R030	15029	45029	65029	411.74	451.24
1	1	1-1/4	2-3/4	5	0.060	HVRMG3-3232-L1R060	15030	45030	65030	411.74	451.24
1	1	1-1/4	2-3/4	5	0.090	HVRMG3-3232-L1R090	15031	45031	65031	411.74	451.24
1	1	1-1/4	2-3/4	5	0.120	HVRMG3-3232-L1R120	15032	45032	65032	411.74	451.24

\*No Neck - Customize your LBS length

Speed & Feed: page 136



## 3 FLUTE • ROUGHER FOR HIGH VELOCITY MACHINING

Carbide	3	Center Cutting	37°	Bright TiCN ZrN	+0.00mm -0.050mm	Radius	Rougher								HRC <40	N
---------	---	----------------	-----	-----------------------	---------------------	--------	---------	--	--	--	--	--	--	--	------------	---

Additional coatings - nACRo, DLC & TiB<sub>2</sub> 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\_ ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price
10mm	10mm	12mm	36mm	80mm	1mm	HVRMG3-M10M10-R1.0	15033	45033	65033	97.67	106.57
10mm	10mm	12mm	36mm	80mm	1.5mm	HVRMG3-M10M10-R1.5	15034	45034	65034	97.67	106.57
12mm	12mm	14mm	40mm	90mm	1mm	HVRMG3-M12M12-R1.0	15035	45035	65035	137.48	146.70
12mm	12mm	14mm	40mm	90mm	1.5mm	HVRMG3-M12M12-R1.5	15036	45036	65036	137.48	146.70
16mm	16mm	18mm	31mm	100mm	1mm	HVRMG3-M16M16-R1.0	15037	45037	65037	206.85	223.00
16mm	16mm	18mm	31mm	100mm	1.5mm	HVRMG3-M16M16-R1.5	15038	45038	65038	206.85	223.00
16mm	16mm	18mm	31mm	100mm	3mm	HVRMG3-M16M16-R3.0	15039	45039	65039	206.85	223.00
20mm	20mm	24mm	45mm	100mm	1mm	HVRMG3-M20M20-R1.0	15040	45040	65040	250.92	276.57
20mm	20mm	24mm	45mm	100mm	1.5mm	HVRMG3-M20M20-R1.5	15041	45041	65041	250.92	276.57
20mm	20mm	24mm	45mm	100mm	3mm	HVRMG3-M20M20-R3.0	15042	45042	65042	250.92	276.57
25mm	25mm	26mm	30mm	110mm	1mm	HVRMG3-M25M25-R1.0	15043	45043	65043	447.28	482.83
25mm	25mm	26mm	30mm	110mm	1.5mm	HVRMG3-M25M25-R1.5	15044	45044	65044	447.28	482.83
25mm	25mm	26mm	30mm	110mm	3mm	HVRMG3-M25M25-R3.0	15045	45045	65045	447.28	482.83

Speed & Feed: page 136

## RECOMMENDED ALUMINUM COATINGS

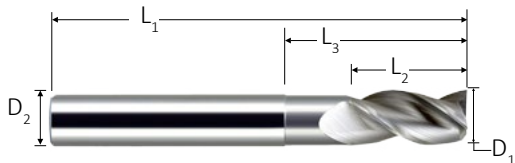
Melin provides SEVERAL coated options to fit your every need!

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

- ▶ TiCN
- ▶ ZrN
- ▶ nACRo
- ▶ DLC
- ▶ TiB<sub>2</sub>



CONVENTIONAL COATINGS & HIGH PERFORMANCE COATINGS



3 FLUTE • 37° END MILL

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

Additional coatings - nACRo, DLC & TiB<sub>2</sub> 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 ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price	
1/8	1/8	3/16		1-1/2	SQ*	0.005	EXMG-404-S	12418	42418	62418	12.28	15.20
1/8	1/8	1/4	1/2	1-1/2	SQ*	0.005	EXMG-404	12419	42419	62419	12.44	15.36
1/8	1/8	3/16	11/16	2	SQ*	0.005	EXMG-404-N	12420	42420	62420	15.74	18.54
1/8	1/8	3/8		1-1/2	SQ*	0.005	EXMG-404-L1	14326	44326	64326	12.28	14.38
1/8	1/8	3/8		1-1/2	radius	0.010	EXMG-404-L1R010	14330	44330	64330	12.28	14.38
1/8	1/8	3/8		1-1/2	radius	0.020	EXMG-404-L1R020	14334	44334	64334	12.28	14.38
1/8	1/8	3/8		1-1/2	radius	0.030	EXMG-404-L1R030	14335	44335	64335	12.28	14.38
3/16	3/16	9/32		2	SQ*	0.005	EXMG-606-S	12421	42421	62421	17.18	19.78
3/16	3/16	9/32		2	radius	0.010	EXMG-606-R010S	12553	42553	62553	17.18	19.78
3/16	3/16	9/32	25/32	3	SQ*	0.005	EXMG-606-N	12423	42423	62423	22.31	27.60
3/16	3/16	9/32	25/32	3	radius	0.010	EXMG-606-R010N	12555	42555	62555	22.31	27.60
3/16	3/16	3/8	5/8	2	SQ*	0.005	EXMG-606	12422	42422	62422	17.50	21.00
3/16	3/16	3/8	5/8	2	radius	0.010	EXMG-606-R010	12554	42554	62554	17.50	21.00
3/16	3/16	5/8		2-1/2	SQ*	0.005	EXMG-606-L1	14336	44336	64336	25.92	29.17
3/16	3/16	5/8		2-1/2	radius	0.010	EXMG-606-L1R010	14337	44337	64337	25.92	29.17
3/16	3/16	5/8		2-1/2	radius	0.020	EXMG-606-L1R020	14338	44338	64338	25.92	29.17
3/16	3/16	5/8		2-1/2	radius	0.030	EXMG-606-L1R030	14339	44339	64339	25.92	29.17
1/4	1/4	3/8		2	SQ*	0.007	EXMG-808-S	12424	42424	62424	19.51	24.40
1/4	1/4	3/8		2	radius	0.015	EXMG-808-R015S	12556	42556	62556	19.51	24.40
1/4	1/4	3/8	1-1/8	3	SQ*	0.007	EXMG-808-N	12425	42425	62425	27.49	31.21
1/4	1/4	3/8	1-1/8	3	radius	0.015	EXMG-808-R015N	12558	42558	62558	27.49	31.21
1/4	1/4	3/8	1-1/8	3	radius	0.030	EXMG-808-R030N	14344	44344	64344	27.49	31.21
1/4	1/4	3/8	1-1/8	3	radius	0.060	EXMG-808-R060N	14349	44349	64349	27.49	31.21
1/4	1/4	1/2	3/4	2-1/2	SQ*	0.007	EXMG-808	11775	41775	61775	21.80	26.64
1/4	1/4	1/2	3/4	2-1/2	radius	0.015	EXMG-808-R015	12557	42557	62557	21.80	26.64
1/4	1/4	1/2	3/4	2-1/2	radius	0.030	EXMG-808-R030	14354	44354	64354	21.8	26.64
1/4	1/4	1/2	3/4	2-1/2	radius	0.060	EXMG-808-R060	14359	44359	64359	21.8	26.64
1/4	1/4	1-1/4		3	SQ*	0.007	EXMG-808-L1	14364	44364	64364	31.60	35.32
1/4	1/4	1-1/4		3	radius	0.015	EXMG-808-L1R015	14369	44369	64369	31.60	35.32
1/4	1/4	1-1/4		3	radius	0.030	EXMG-808-L1R030	14370	44370	64370	31.60	35.32
1/4	1/4	1-1/4		3	radius	0.060	EXMG-808-L1R060	14371	44371	64371	31.60	35.32
5/16	5/16	1/2		2	SQ*	0.007	EXMG-1010-S	12426	42426	62426	24.51	28.99
5/16	5/16	1/2		2	radius	0.015	EXMG-1010-R015S	12559	42559	62559	24.51	28.99
5/16	5/16	1/2	1-1/2	3	SQ*	0.007	EXMG-1010-N	12443	42443	62443	34.02	39.40
5/16	5/16	1/2	1-1/2	3	radius	0.015	EXMG-1010-R015N	12561	42561	62561	34.02	39.40
5/16	5/16	5/8	7/8	2-1/2	SQ*	0.007	EXMG-1010	12427	42427	62427	27.15	33.70
5/16	5/16	5/8	7/8	2-1/2	radius	0.015	EXMG-1010-R015	12560	42560	62560	27.15	33.70
3/8	3/8	1/2	1-1/4	2-1/2	SQ*	0.007	EXMG-1212-S1	14372	44372	64372	34.14	38.99
3/8	3/8	1/2	1-1/4	2-1/2	radius	0.015	EXMG-1212-R015S1	14373	44373	64373	34.14	38.99
3/8	3/8	1/2	1-1/4	2-1/2	radius	0.030	EXMG-1212-R030S1	14374	44374	64374	34.14	38.99
3/8	3/8	1/2	1-1/4	2-1/2	radius	0.060	EXMG-1212-R060S1	14375	44375	64375	34.14	38.99
3/8	3/8	1/2	1-1/4	2-1/2	radius	0.090	EXMG-1212-R090S1	11887	41887	61887	34.14	38.99

SQ\* = minimal radius for corner protection.

Speed & Feed: page 137

sizes continued on next page



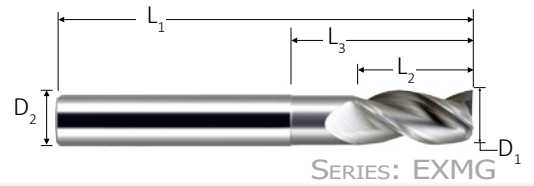
CHIP BREAKER geometry available upon request.

(Several sizes stocked)

Call Customer Service Today

## 3 FLUTE • 37° END MILL

✓ [Check Stock Online](#)



DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price	
3/8	3/8	9/16		2	SQ*	0.007	EXMG-1212-S	12453	42453	62453	29.32	34.17
3/8	3/8	9/16		2	radius	0.020	EXMG-1212-R020S	12562	42562	62562	29.32	34.17
3/8	3/8	9/16	1-15/16	4	SQ*	0.007	EXMG-1212-N	12513	42513	62513	49.72	61.20
3/8	3/8	9/16	1-15/16	4	radius	0.020	EXMG-1212-R020N	12570	42570	62570	49.72	61.20
3/8	3/8	3/4	1	2-1/2	SQ*	0.007	EXMG-1212	11777	41777	61777	34.14	41.35
3/8	3/8	3/4	1	2-1/2	radius	0.020	EXMG-1212-R020	12563	42563	62563	34.14	41.35
3/8	3/8	1		2-1/2	SQ*	0.007	EXMG-1212-M	12502	42502	62502	34.14	41.40
3/8	3/8	1		2-1/2	radius	0.020	EXMG-1212-R020M	12569	42569	62569	34.14	41.40
3/8	3/8	1-1/2		3	SQ*	0.007	EXMG-1212-L1	14376	44376	64376	44.96	50.78
3/8	3/8	1-1/2		3	radius	0.015	EXMG-1212-L1R015	14377	44377	64377	44.96	50.78
3/8	3/8	1-1/2		3	radius	0.030	EXMG-1212-L1R030	14378	44378	64378	44.96	50.78
3/8	3/8	1-1/2		3	radius	0.060	EXMG-1212-L1R060	14379	44379	64379	44.96	50.78
3/8	3/8	1-1/2		3	radius	0.090	EXMG-1212-L1R090	11889	41889	61889	44.96	50.78
7/16	7/16	5/8		2-1/2	SQ*	0.007	EXMG-1414-S	12515	42515	62515	38.62	46.25
7/16	7/16	5/8		2-1/2	radius	0.020	EXMG-1414-R020S	12571	42571	62571	38.62	46.25
7/16	7/16	5/8	2	4	SQ*	0.007	EXMG-1414-N	12517	42517	62517	63.32	73.49
7/16	7/16	5/8	2	4	radius	0.020	EXMG-1414-R020N	12579	42579	62579	63.32	73.49
7/16	7/16	7/8		2-3/4	SQ*	0.007	EXMG-1414	12516	42516	62516	46.17	54.90
7/16	7/16	7/8		2-3/4	radius	0.020	EXMG-1414-R020	12575	42575	62575	46.17	54.90
1/2	1/2	5/8		2-1/2	SQ*	0.010	EXMG-1616-S	12518	42518	62518	46.02	56.50
1/2	1/2	5/8		2-1/2	radius	0.030	EXMG-1616-R030S	12583	42583	62583	46.02	56.50
1/2	1/2	5/8	1-1/4	3	SQ*	0.010	EXMG-1616-L1	14380	44380	64380	53.75	61.65
1/2	1/2	5/8	1-1/4	3	radius	0.030	EXMG-1616-L1R030	14381	44381	64381	53.75	61.65
1/2	1/2	5/8	1-1/4	3	radius	0.060	EXMG-1616-L1R060	14386	44386	64386	53.75	61.65
1/2	1/2	5/8	1-1/4	3	radius	0.090	EXMG-1616-L1R090	14391	44391	64391	53.75	61.65
1/2	1/2	5/8	1-1/4	3	radius	0.120	EXMG-1616-L1R120	14397	44397	64397	53.75	61.65
1/2	1/2	5/8	2	4	SQ*	0.010	EXMG-1616-N	12521	42521	62521	71.07	85.10
1/2	1/2	5/8	2	4	radius	0.030	EXMG-1616-R030N	12662	42662	62662	71.07	85.10
1/2	1/2	5/8	2	4	radius	0.060	EXMG-1616-R060N	14403	44403	64403	71.07	85.10
1/2	1/2	5/8	2	4	radius	0.090	EXMG-1616-R090N	14422	44422	64422	71.07	85.10
1/2	1/2	5/8	4-1/4	6	SQ*	0.010	EXMG-1616-N1	16544	46544	66544	132.16	147.96
1/2	1/2	5/8	4-1/4	6	radius	0.030	EXMG-1616-R030N1	16545	46545	66545	132.16	147.96
1/2	1/2	5/8	4-1/4	6	radius	0.060	EXMG-1616-R060N1	16546	46546	66546	132.16	147.96
1/2	1/2	5/8	4-1/4	6	radius	0.090	EXMG-1616-R090N1	16547	46547	66547	132.16	147.96
1/2	1/2	1	1-1/4	3	SQ*	0.010	EXMG-1616	11779	41779	61779	55.58	69.77
1/2	1/2	1	1-1/4	3	radius	0.030	EXMG-1616-R030	12660	42660	62660	55.58	69.77
1/2	1/2	1	1-1/4	3	radius	0.060	EXMG-1616-R060	14427	44427	64427	55.58	69.77
1/2	1/2	1	1-1/4	3	radius	0.090	EXMG-1616-R090	14428	44428	64428	55.58	69.77
1/2	1/2	1	1-1/4	3	radius	0.120	EXMG-1616-R120	11891	41891	61891	55.58	69.77
1/2	1/2	1-1/4		3	SQ*	0.010	EXMG-1616-M	12520	42520	62520	55.58	69.80
1/2	1/2	1-1/4		3	radius	0.030	EXMG-1616-R030M	12661	42661	62661	55.58	69.80
1/2	1/2	2		4	SQ*	0.010	EXMG-1616-L2	14429	44429	64429	78.45	88.65
1/2	1/2	2		4	radius	0.030	EXMG-1616-L2R030	14430	44430	64430	78.45	88.65
1/2	1/2	2		4	radius	0.060	EXMG-1616-L2R060	14431	44431	64431	78.45	88.65
1/2	1/2	2		4	radius	0.090	EXMG-1616-L2R090	14432	44432	64432	78.45	88.65
5/8	5/8	3/4		3	SQ*	0.010	EXMG-2020-S	12523	42523	62523	94.20	111.90
5/8	5/8	3/4		3	radius	0.030	EXMG-2020-R030S	12676	42676	62676	94.20	111.90
5/8	5/8	3/4	1-1/2	3-1/2	SQ*	0.010	EXMG-2020-L1	14433	44433	64433	99.22	110.67
5/8	5/8	3/4	1-1/2	3-1/2	radius	0.030	EXMG-2020-L1R030	14435	44435	64435	99.22	110.67
5/8	5/8	3/4	1-1/2	3-1/2	radius	0.060	EXMG-2020-L1R060	14441	44441	64441	99.22	110.67
5/8	5/8	3/4	1-1/2	3-1/2	radius	0.090	EXMG-2020-L1R090	14442	44442	64442	99.22	110.67
5/8	5/8	3/4	1-1/2	3-1/2	radius	0.120	EXMG-2020-L1R120	14443	44443	64443	99.22	110.67

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



3 FLUTE • 37° END MILL

SERIES: EXMG **✓ Check Stock Online**

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER		PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price
5/8	5/8	3/4	2-3/8	5	SQ*	0.010	EXMG-2020-N	12527	42527	62527	131.92	148.28
5/8	5/8	3/4	2-3/8	5	radius	0.030	EXMG-2020-R030N	12733	42733	62733	131.92	148.28
5/8	5/8	1-1/4	1-1/2	3-1/2	SQ*	0.010	EXMG-2020	12525	42525	62525	99.22	116.88
5/8	5/8	1-1/4	1-1/2	3-1/2	radius	0.030	EXMG-2020-R030	12729	42729	62729	99.22	116.88
3/4	3/4	7/8		3	SQ*	0.010	EXMG-2424-S	12528	42528	62528	128.10	144.25
3/4	3/4	7/8		3	radius	0.030	EXMG-2424-R030S	12735	42735	62735	128.10	144.25
3/4	3/4	7/8	2-1/2	5	SQ*	0.010	EXMG-2424-N	12531	42531	62531	154.60	189.90
3/4	3/4	7/8	2-1/2	5	radius	0.030	EXMG-2424-R030N	12768	42768	62768	154.60	189.90
3/4	3/4	1	1-5/8	4	SQ*	0.010	EXMG-2424-L1	14444	44444	64444	146.06	162.21
3/4	3/4	1	1-5/8	4	radius	0.030	EXMG-2424-L1R030	14445	44445	64445	146.06	162.21
3/4	3/4	1	1-5/8	4	radius	0.060	EXMG-2424-L1R060	14446	44446	64446	146.06	162.21
3/4	3/4	1	1-5/8	4	radius	0.090	EXMG-2424-L1R090	14447	44447	64447	146.06	162.21
3/4	3/4	1	1-5/8	4	radius	0.120	EXMG-2424-L1R120	14567	44567	64567	146.06	162.21
3/4	3/4	1	3-3/8	6	SQ*	0.010	EXMG-2424-N1	16548	46548	66548	224.72	248.95
3/4	3/4	1	3-3/8	6	radius	0.030	EXMG-2424-R030N1	16549	46549	66549	224.72	248.95
3/4	3/4	1	3-3/8	6	radius	0.060	EXMG-2424-R060N1	16550	46550	66550	224.72	248.95
3/4	3/4	1	3-3/8	6	radius	0.090	EXMG-2424-R090N1	16551	46551	66551	224.72	248.95
3/4	3/4	1	3-3/8	6	radius	0.120	EXMG-2424-R120N1	16552	46552	66552	224.72	248.95
3/4	3/4	1-1/2	1-3/4	4	SQ*	0.010	EXMG-2424	12529	42529	62529	146.06	174.30
3/4	3/4	1-1/2	1-3/4	4	radius	0.030	EXMG-2424-R030	12764	42764	62764	146.06	174.30
3/4	3/4	2-1/4		5	SQ*	0.010	EXMG-2424-L2	14573	44573	64573	201.85	224.66
3/4	3/4	2-1/4		5	radius	0.030	EXMG-2424-L2R030	14574	44574	64574	201.85	224.66
3/4	3/4	2-1/4		5	radius	0.060	EXMG-2424-L2R060	14575	44575	64575	201.85	224.66
3/4	3/4	2-1/4		5	radius	0.090	EXMG-2424-L2R090	14576	44576	64576	201.85	224.66
3/4	3/4	2-1/4		5	radius	0.120	EXMG-2424-L2R120	14577	44577	64577	201.85	224.66
1	1	1-1/4		3	SQ*	0.015	EXMG-3232-S	12532	42532	62532	204.65	236.25
1	1	1-1/4		3	radius	0.030	EXMG-3232-R030S	12785	42785	62785	204.65	236.25
1	1	1-1/4		4	SQ*	0.015	EXMG-3232-L1	14578	44578	64578	246.40	278.00
1	1	1-1/4		4	radius	0.030	EXMG-3232-L1R030	14579	44579	64579	246.40	278.00
1	1	1-1/4		4	radius	0.060	EXMG-3232-L1R060	14581	44581	64581	246.40	278.00
1	1	1-1/4		4	radius	0.090	EXMG-3232-L1R090	14587	44587	64587	246.40	278.00
1	1	1-1/4		4	radius	0.120	EXMG-3232-L1R120	14588	44588	64588	246.40	278.00
1	1	1-1/4	3-1/4	6	SQ*	0.015	EXMG-3232-N	12535	42535	62535	382.74	430.14
1	1	1-1/4	3-1/4	6	radius	0.030	EXMG-3232-R030N	12788	42788	62788	382.74	430.14
1	1	1-1/4	3-1/4	6	radius	0.060	EXMG-3232-R060N	14589	44589	64589	382.74	430.14
1	1	1-1/4	3-1/4	6	radius	0.090	EXMG-3232-R090N	14590	44590	64590	382.74	430.14
1	1	1-1/4	3-1/4	6	radius	0.120	EXMG-3232-R120N	14591	44591	64591	382.74	430.14
1	1	1-1/4	4-3/8	7	SQ*	0.015	EXMG-3232-N1	16553	46553	66553	418.88	474.18
1	1	1-1/4	4-3/8	7	radius	0.030	EXMG-3232-R030N1	16554	46554	66554	418.88	474.18
1	1	1-1/4	4-3/8	7	radius	0.060	EXMG-3232-R060N1	16540	46540	66540	418.88	474.18
1	1	1-1/4	4-3/8	7	radius	0.090	EXMG-3232-R090N1	16541	46541	66541	418.88	474.18
1	1	1-1/4	4-3/8	7	radius	0.120	EXMG-3232-R120N1	16542	46542	66542	418.88	474.18
1	1	1-1/2	1-3/4	4	SQ*	0.015	EXMG-3232	12533	42533	62533	250.34	288.93
1	1	1-1/2	1-3/4	4	radius	0.030	EXMG-3232-R030	12787	42787	62787	250.34	288.93
1	1	3-1/4		6	SQ*	0.015	EXMG-3232-L2	14592	44592	64592	388.80	436.20
1	1	3-1/4		6	radius	0.030	EXMG-3232-L2R030	14593	44593	64593	388.80	436.20
1	1	3-1/4		6	radius	0.060	EXMG-3232-L2R060	14597	44597	64597	388.80	436.20
1	1	3-1/4		6	radius	0.090	EXMG-3232-L2R090	14603	44603	64603	388.80	436.20
1	1	3-1/4		6	radius	0.120	EXMG-3232-L2R120	14604	44604	64604	388.80	436.20

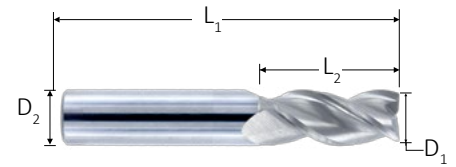


**CHIP BREAKER**  
geometry available  
upon request.  
(Several sizes stocked)  
Call Customer Service Today

SQ\* = minimal radius for corner protection.

Speed & Feed: page 137

## 3 FLUTE • 37° END MILL



Carbide	3	Center Cutting	37°	Bright TiCN ZrN	+0.000mm -0.050mm	Square	Radius					HRC <40	N
---------	---	----------------	-----	-----------------	----------------------	--------	--------	--	--	--	--	---------	---

Additional coatings - nACRo, DLC & TiB<sub>2</sub> 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\_ ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	CORNER		PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price
3mm	3mm	12mm	38mm	radius	0.25mm	EXMG-M3M3-R0.25	14670	44670	64670	18.64	20.74
3mm	3mm	12mm	38mm	radius	0.5mm	EXMG-M3M3-R0.5	14671	44671	64671	18.64	20.74
3mm	6mm	12mm	63mm	radius	0.25mm	EXMG-M6M3-R0.25	14800	44800	64800	26.60	31.52
3mm	6mm	12mm	63mm	radius	0.5mm	EXMG-M6M3-R0.5	14801	44801	64801	26.60	31.52
4mm	4mm	14mm	51mm	radius	0.25mm	EXMG-M4M4-R0.25	14802	44802	64802	19.10	22.35
4mm	4mm	14mm	51mm	radius	0.5mm	EXMG-M4M4-R0.5	14803	44803	64803	19.10	22.35
5mm	5mm	20mm	51mm	radius	0.25mm	EXMG-M5M5-R0.25	14804	44804	64804	21.30	24.88
5mm	5mm	20mm	51mm	radius	0.5mm	EXMG-M5M5-R0.5	14805	44805	64805	21.30	24.88
6mm	6mm	20mm	63mm	SQ*	0.15mm	EXMG-M6M6	11980	41980	61980	21.80	26.64
6mm	6mm	20mm	63mm	radius	0.25mm	EXMG-M6M6-R0.25	14806	44806	64806	21.80	26.64
6mm	6mm	20mm	63mm	radius	0.5mm	EXMG-M6M6-R0.5	11985	41985	61985	21.80	26.64
6mm	6mm	30mm	75mm	radius	0.25mm	EXMG-M6M6-L1R0.25	16543	46543	66543	31.60	35.32
6mm	6mm	30mm	75mm	radius	0.5mm	EXMG-M6M6-L1R0.5	14651	44651	64651	31.60	35.32
8mm	8mm	20mm	63mm	SQ*	0.15mm	EXMG-M8M8	11986	41986	61986	27.15	33.70
8mm	8mm	20mm	63mm	radius	0.5mm	EXMG-M8M8-R0.5	11987	41987	61987	27.15	33.70
8mm	8mm	20mm	63mm	radius	1.0mm	EXMG-M8M8-R1.0	14809	44809	64809	27.15	33.70
8mm	8mm	20mm	63mm	radius	1.5mm	EXMG-M8M8-R1.5	14810	44810	64810	27.15	33.70
8mm	8mm	20mm	63mm	radius	2.0mm	EXMG-M8M8-R2.0	14811	44811	64811	27.15	33.70
8mm	8mm	30mm	75mm	radius	0.5mm	EXMG-M8M8-L1R0.5	14658	44658	64658	33.55	39.37
8mm	8mm	30mm	75mm	radius	1.0mm	EXMG-M8M8-L1R1.0	14663	44663	64663	33.55	39.37
10mm	10mm	24mm	70mm	SQ*	0.2mm	EXMG-M10M10	11981	41981	61981	39.79	47.00
10mm	10mm	24mm	70mm	radius	0.5mm	EXMG-M10M10-R0.5	11988	41988	61988	39.79	47.00
10mm	10mm	24mm	70mm	radius	1.0mm	EXMG-M10M10-R1.0	14813	44813	64813	39.79	47.00
10mm	10mm	24mm	70mm	radius	1.5mm	EXMG-M10M10-R1.5	14814	44814	64814	39.79	47.00
10mm	10mm	24mm	70mm	radius	2.0mm	EXMG-M10M10-R2.0	14815	44815	64815	41.78	47.00
10mm	10mm	40mm	100mm	radius	0.5mm	EXMG-M10M10-L1R0.5	15812	45812	65812	50.33	60.50
10mm	10mm	40mm	100mm	radius	1.0mm	EXMG-M10M10-L1R1.0	15814	45814	65814	50.33	60.50
12mm	12mm	25mm	76mm	SQ*	0.2mm	EXMG-M12M12	11982	41982	61982	55.58	66.09
12mm	12mm	25mm	76mm	radius	0.5mm	EXMG-M12M12-R0.5	11989	41989	61989	55.58	66.09
12mm	12mm	25mm	76mm	radius	1.0mm	EXMG-M12M12-R1.0	14817	44817	64817	55.58	66.09
12mm	12mm	25mm	76mm	radius	1.5mm	EXMG-M12M12-R1.5	14832	44832	64832	55.58	66.09
12mm	12mm	25mm	76mm	radius	2.0mm	EXMG-M12M12-R2.0	14819	44819	64819	55.58	66.09
12mm	12mm	25mm	76mm	radius	3.0mm	EXMG-M12M12-R3.0	14820	44820	64820	55.58	66.09
12mm	12mm	50mm	100mm	radius	0.5mm	EXMG-M12M12-L1R0.5	15816	45816	65816	78.45	88.98
12mm	12mm	50mm	100mm	radius	2.0mm	EXMG-M12M12-L1R2.0	15818	45818	65818	78.45	88.98

SQ\* = minimal radius for corner protection.

Speed & Feed: page 137

sizes continued on next page

SERIES: EXMG-M\_M\_ [✓ Check Stock Online](#)

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	CORNER		PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price
16mm	16mm	32mm	100mm	SQ*	0.25mm	EXMG-M16M16	11983	41983	61983	115.57	135.60
16mm	16mm	32mm	100mm	radius	0.5mm	EXMG-M16M16-R0.5	11991	41991	61991	115.57	135.60
16mm	16mm	32mm	100mm	radius	1.0mm	EXMG-M16M16-R1.0	14822	44822	64822	115.57	135.60
16mm	16mm	32mm	100mm	radius	1.5mm	EXMG-M16M16-R1.5	14823	44823	64823	115.57	135.60
16mm	16mm	32mm	100mm	radius	2.0mm	EXMG-M16M16-R2.0	14824	44824	64824	115.57	135.60
16mm	16mm	32mm	100mm	radius	3.0mm	EXMG-M16M16-R3.0	14825	44825	64825	115.57	135.60
16mm	16mm	50mm	127mm	radius	0.5mm	EXMG-M16M16-L1R0.5	19543	49543	69543	134.24	154.43
16mm	16mm	50mm	127mm	radius	2.0mm	EXMG-M16M16-L1R2.0	19544	49544	69544	134.24	154.43
20mm	20mm	38mm	100mm	SQ*	0.25mm	EXMG-M20M20	11917	41917	61917	183.41	211.60
20mm	20mm	38mm	100mm	radius	0.5mm	EXMG-M20M20-R0.5	11995	41995	61995	183.41	211.60
20mm	20mm	38mm	100mm	radius	1.0mm	EXMG-M20M20-R1.0	14827	44827	64827	183.41	211.60
20mm	20mm	38mm	100mm	radius	1.5mm	EXMG-M20M20-R1.5	14828	44828	64828	183.41	211.60
20mm	20mm	38mm	100mm	radius	2.0mm	EXMG-M20M20-R2.0	14829	44829	64829	183.41	211.60
20mm	20mm	38mm	100mm	radius	3.0mm	EXMG-M20M20-R3.0	14831	44831	64831	183.41	211.60
20mm	20mm	55mm	127mm	radius	0.5mm	EXMG-M20M20-L1R0.5	19545	49545	69545	211.20	243.26
20mm	20mm	55mm	127mm	radius	2.0mm	EXMG-M20M20-L1R2.0	12368	42368	62368	211.20	243.26
25mm	25mm	38mm	100mm	radius	1.0mm	EXMG-M25M25-R1.0	19540	49540	69540	246.40	278.00
25mm	25mm	38mm	100mm	radius	3.0mm	EXMG-M25M25-R3.0	19539	49539	69539	246.40	278.00
25mm	25mm	75mm	150mm	radius	1.0mm	EXMG-M25M25-L1R1.0	19533	49533	69533	388.80	436.20
25mm	25mm	75mm	150mm	radius	3.0mm	EXMG-M25M25-L1R3.0	19532	49532	69532	388.80	436.20



SQ\* = minimal radius for corner protection.

**Speed & Feed:** page 137

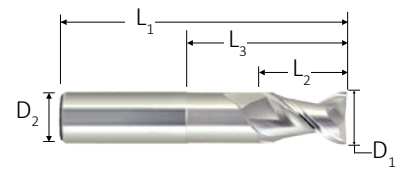


CHIP BREAKER geometry available upon request.  
(Several sizes stocked)  
[Call Customer Service Today](#)

Don't see what you need? We offer solutions to get you a special Faster! Call Today



## 2 FLUTE • 45° END MILL



Carbide	2	Center Cutting	45°	Bright TiCN ZrN	+0.000 -0.002	+0.0005 -0.0005 <1/8	Square	Radius									HRC <40	N
---------	---	----------------	-----	-----------------------	------------------	----------------------------	--------	--------	--	--	--	--	--	--	--	--	------------	---

Additional coatings - nACRo, DLC & TiB<sub>2</sub> 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 ✓ [Check Stock Online](#)



DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price	
1/16	1/8	3/16		1-1/2	SQ*	0.005	AXMG45-402	15806	45806	65806	19.54	21.64
3/32	1/8	1/4		1-1/2	SQ*	0.005	AXMG45-403	15808	45808	65808	19.54	21.64
1/8	1/8	1/4		1-1/2	SQ*	0.005	AXMG45-404-L1	15267	45267	65267	16.85	18.95
1/8	1/8	1/4		1-1/2	radius	0.010	AXMG45-404-L1R010	15269	45269	65269	16.85	18.95
1/8	1/8	1/4		1-1/2	radius	0.020	AXMG45-404-L1R020	15271	45271	65271	16.85	18.95
1/8	1/8	1/4		1-1/2	radius	0.030	AXMG45-404-L1R030	15273	45273	65273	16.85	18.95
1/8	1/8	1/4	1/2	1-1/2	SQ*	0.005	AXMG45-404-L2	15275	45275	65275	20.16	22.26
1/8	1/8	1/4	1/2	1-1/2	radius	0.010	AXMG45-404-L2R010	15277	45277	65277	20.16	22.26
1/8	1/8	1/4	1/2	1-1/2	radius	0.020	AXMG45-404-L2R020	15279	45279	65279	20.16	22.26
1/8	1/8	1/4	1/2	1-1/2	radius	0.030	AXMG45-404-L2R030	15280	45280	65280	20.16	22.26
1/8	1/8	1/4		3	SQ*	0.005	AXMG45-404-L3	15281	45281	65281	20.16	25.02
1/8	1/8	3/8		1-1/2	SQ*	0.005	AXMG45-404-L4	15282	45282	65282	18.14	20.24
1/8	1/8	3/8		1-1/2	radius	0.010	AXMG45-404-L4R010	15283	45283	65283	18.14	20.24
1/8	1/8	3/8		1-1/2	radius	0.020	AXMG45-404-L4R020	15284	45284	65284	18.14	20.24
1/8	1/8	3/8		1-1/2	radius	0.030	AXMG45-404-L4R030	15285	45285	65285	18.14	20.24
1/8	1/8	1/2		1-1/2	SQ*	0.005	AXMG45-404-L5	15287	45287	65287	18.14	20.24
1/8	1/8	1/2		1-1/2	radius	0.010	AXMG45-404-L5R010	15288	45288	65288	18.14	20.24
1/8	1/8	1/2		1-1/2	radius	0.020	AXMG45-404-L5R020	15289	45289	65289	18.14	20.24
1/8	1/8	1/2		1-1/2	radius	0.030	AXMG45-404-L5R030	15290	45290	65290	18.14	20.24
1/8	1/8	3/4		2	SQ*	0.005	AXMG45-404-L6	15291	45291	65291	18.14	20.94
5/32	3/16	5/16		2	SQ*	0.005	AXMG45-605-L1	15295	45295	65295	20.16	22.76
5/32	3/16	9/16		2	SQ*	0.005	AXMG45-605-L2	15296	45296	65296	20.16	22.76
3/16	3/16	1/4		2	SQ*	0.005	AXMG45-606-L1	15297	45297	65297	19.94	22.54
3/16	3/16	1/4		2	radius	0.010	AXMG45-606-L1R010	15298	45298	65298	19.94	22.54
3/16	3/16	1/4		2	radius	0.020	AXMG45-606-L1R020	15299	45299	65299	19.94	22.54
3/16	3/16	1/4		2	radius	0.030	AXMG45-606-L1R030	15301	45301	65301	19.94	22.54
3/16	3/16	1/4	5/8	2	SQ*	0.005	AXMG45-606-L2	15303	45303	65303	24.64	27.24
3/16	3/16	1/4	5/8	2	radius	0.010	AXMG45-606-L2R010	15305	45305	65305	24.64	27.24
3/16	3/16	1/4	5/8	2	radius	0.020	AXMG45-606-L2R020	15307	45307	65307	24.64	27.24
3/16	3/16	1/4	5/8	2	radius	0.030	AXMG45-606-L2R030	15309	45309	65309	24.64	27.24
3/16	3/16	1/4		3	SQ*	0.005	AXMG45-606-L3	15311	45311	65311	24.64	28.54
3/16	3/16	1/4	1-1/8	3	SQ*	0.005	AXMG45-606-L4	15313	45313	65313	35.84	39.74
3/16	3/16	5/8		2-1/2	SQ*	0.005	AXMG45-606-L6	15323	45323	65323	25.92	30.34
3/16	3/16	5/8		2-1/2	radius	0.010	AXMG45-606-L6R010	15325	45325	65325	25.92	30.34
3/16	3/16	5/8		2-1/2	radius	0.020	AXMG45-606-L6R020	15327	45327	65327	25.92	30.34
3/16	3/16	5/8		2-1/2	radius	0.030	AXMG45-606-L6R030	15329	45329	65329	25.92	30.34
7/32	1/4	3/8		2	SQ*	0.007	AXMG45-807-L1	15331	45331	65331	26.88	29.98
7/32	1/4	3/4		2-1/2	SQ*	0.007	AXMG45-807-L2	15333	45333	65333	33.60	36.70

Speed & Feed:  
page 138

SQ\* = minimal radius for corner protection.

sizes continued on next page



SERIES: AXMG45 **Check Stock Online**

2 FLUTE • 45° END MILL

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price	
1/4	1/4	3/8		2-1/2	SQ*	0.007	AXMG45-808-L1	15335	45335	65335	24.64	27.74
1/4	1/4	3/8		2-1/2	radius	0.015	AXMG45-808-L1R015	15337	45337	65337	24.64	27.74
1/4	1/4	3/8		2-1/2	radius	0.030	AXMG45-808-L1R030	15339	45339	65339	24.64	27.74
1/4	1/4	3/8		2-1/2	radius	0.060	AXMG45-808-L1R060	15341	45341	65341	24.64	27.74
1/4	1/4	3/8	1-1/8	2-1/2	SQ*	0.007	AXMG45-808-L2	15343	45343	65343	33.60	36.70
1/4	1/4	3/8	1-1/8	2-1/2	radius	0.015	AXMG45-808-L2R015	15345	45345	65345	33.60	36.70
1/4	1/4	3/8	1-1/8	2-1/2	radius	0.030	AXMG45-808-L2R030	15347	45347	65347	33.60	36.70
1/4	1/4	3/8	1-1/8	2-1/2	radius	0.060	AXMG45-808-L2R060	15349	45349	65349	33.60	36.70
1/4	1/4	3/8		4	SQ*	0.007	AXMG45-808-L3	15351	45351	65351	49.28	54.24
1/4	1/4	3/8		4	radius	0.015	AXMG45-808-L3R015	15353	45353	65353	49.28	54.24
1/4	1/4	3/8		4	radius	0.030	AXMG45-808-L3R030	15355	45355	65355	49.28	54.24
1/4	1/4	3/8		4	radius	0.060	AXMG45-808-L3R060	15357	45357	65357	49.28	54.24
1/4	1/4	3/8	2-1/4	4	SQ*	0.007	AXMG45-808-L4	15359	45359	65359	62.72	70.47
1/4	1/4	3/8	2-1/4	4	radius	0.015	AXMG45-808-L4R015	15363	45363	65363	62.72	70.47
1/4	1/4	3/8	2-1/4	4	radius	0.030	AXMG45-808-L4R030	15365	45365	65365	62.72	70.47
1/4	1/4	3/8	2-1/4	4	radius	0.060	AXMG45-808-L4R060	15367	45367	65367	62.72	70.47
1/4	1/4	3/4		2-1/2	SQ*	0.007	AXMG45-808-L6	15371	45371	65371	26.35	31.19
1/4	1/4	3/4		2-1/2	radius	0.015	AXMG45-808-L6R015	15373	45373	65373	26.35	31.19
1/4	1/4	3/4		2-1/2	radius	0.030	AXMG45-808-L6R030	15375	45375	65375	26.35	31.19
1/4	1/4	3/4		2-1/2	radius	0.060	AXMG45-808-L6R060	15377	45377	65377	26.35	31.19
1/4	1/4	1-1/4		3-1/4	SQ*	0.007	AXMG45-808-L8	15381	45381	65381	33.60	37.94
9/32	5/16	7/16		2-1/2	SQ*	0.007	AXMG45-1009-L1	15383	45383	65383	31.36	37.91
9/32	5/16	13/16		2-1/2	SQ*	0.007	AXMG45-1009-L3	15387	45387	65387	38.08	42.56
5/16	5/16	7/16		2-1/2	SQ*	0.007	AXMG45-1010-L1	15389	45389	65389	28.56	33.04
5/16	5/16	7/16		2-1/2	radius	0.015	AXMG45-1010-L1R015	15391	45391	65391	28.56	33.04
5/16	5/16	7/16		2-1/2	radius	0.030	AXMG45-1010-L1R030	15393	45393	65393	28.56	33.04
5/16	5/16	7/16		2-1/2	radius	0.060	AXMG45-1010-L1R060	15395	45395	65395	28.56	33.04
5/16	5/16	7/16	1-1/8	2-1/2	SQ*	0.007	AXMG45-1010-L2	15397	45397	65397	35.28	39.76
5/16	5/16	7/16	1-1/8	2-1/2	radius	0.015	AXMG45-1010-L2R015	15399	45399	65399	35.28	39.76
5/16	5/16	7/16	1-1/8	2-1/2	radius	0.030	AXMG45-1010-L2R030	15401	45401	65401	35.28	39.76
5/16	5/16	7/16	1-1/8	2-1/2	radius	0.060	AXMG45-1010-L2R060	15403	45403	65403	35.28	39.76
5/16	5/16	7/16	2-1/8	4	SQ*	0.007	AXMG45-1010-L4	15413	45413	65413	60.48	67.65
5/16	5/16	7/16	2-1/8	4	radius	0.015	AXMG45-1010-L4R015	15415	45415	65415	60.48	67.65
5/16	5/16	7/16	2-1/8	4	radius	0.030	AXMG45-1010-L4R030	15417	45417	65417	60.48	67.65
5/16	5/16	7/16	2-1/8	4	radius	0.060	AXMG45-1010-L4R060	15419	45419	65419	60.48	67.65
5/16	5/16	13/16		2-1/2	SQ*	0.007	AXMG45-1010-L5	15421	45421	65421	31.10	35.58
5/16	5/16	13/16		2-1/2	radius	0.015	AXMG45-1010-L5R015	15423	45423	65423	31.10	35.58
5/16	5/16	13/16		2-1/2	radius	0.030	AXMG45-1010-L5R030	15425	45425	65425	31.10	35.58
5/16	5/16	13/16		2-1/2	radius	0.060	AXMG45-1010-L5R060	15427	45427	65427	31.10	35.58
5/16	5/16	1-1/4		3	SQ*	0.007	AXMG45-1010-L6	15429	45429	65429	38.19	43.57
11/32	3/8	1/2		2-1/2	SQ*	0.007	AXMG45-1211-L1	15431	45431	65431	40.32	45.17
11/32	3/8	1		2-1/2	SQ*	0.007	AXMG45-1211-L3	15435	45435	65435	49.28	54.13
3/8	3/8	1/2		2-1/2	SQ*	0.007	AXMG45-1212-L1	15437	45437	65437	32.62	37.47
3/8	3/8	1/2		2-1/2	radius	0.015	AXMG45-1212-L1R015	15439	45439	65439	32.62	37.47
3/8	3/8	1/2		2-1/2	radius	0.030	AXMG45-1212-L1R030	15441	45441	65441	32.62	37.47
3/8	3/8	1/2		2-1/2	radius	0.060	AXMG45-1212-L1R060	15443	45443	65443	32.62	37.47
3/8	3/8	1/2	1-1/8	2-1/2	SQ*	0.007	AXMG45-1212-L2	15445	45445	65445	47.04	51.89
3/8	3/8	1/2	1-1/8	2-1/2	radius	0.015	AXMG45-1212-L2R015	15447	45447	65447	47.04	51.89
3/8	3/8	1/2	1-1/8	2-1/2	radius	0.030	AXMG45-1212-L2R030	15449	45449	65449	47.04	51.89
3/8	3/8	1/2	1-1/8	2-1/2	radius	0.060	AXMG45-1212-L2R060	15451	45451	65451	47.04	51.89

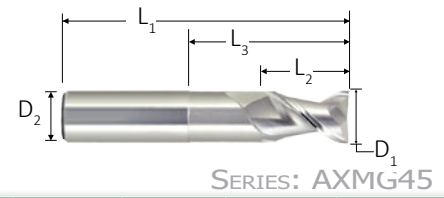


Speed & Feed: page 138

SQ\* = minimal radius for corner protection.

sizes continued on next page

## 2 FLUTE • 45° END MILL ✓ Check Stock Online



DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER		PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price
3/8	3/8	1/2		4	SQ*	0.007	AXMG45-1212-L3	15453	45453	65453	49.68	53.43
3/8	3/8	1/2		4	radius	0.015	AXMG45-1212-L3R015	15455	45455	65455	49.68	53.43
3/8	3/8	1/2		4	radius	0.030	AXMG45-1212-L3R030	15457	45457	65457	49.68	53.43
3/8	3/8	1/2		4	radius	0.060	AXMG45-1212-L3R060	15459	45459	65459	49.68	53.43
3/8	3/8	1/2	2-1/8	4	SQ*	0.007	AXMG45-1212-L4	15461	45461	65461	64.80	68.55
3/8	3/8	1/2	2-1/8	4	radius	0.015	AXMG45-1212-L4R015	15463	45463	65463	64.80	68.55
3/8	3/8	1/2	2-1/8	4	radius	0.030	AXMG45-1212-L4R030	15465	45465	65465	64.80	68.55
3/8	3/8	1/2	2-1/8	4	radius	0.060	AXMG45-1212-L4R060	15467	45467	65467	64.80	68.55
3/8	3/8	1/2		6	SQ*	0.007	AXMG45-1212-L5	15469	45469	65469	82.88	94.52
3/8	3/8	1		2-1/2	SQ*	0.007	AXMG45-1212-L6	19330	49330	69330	38.02	43.19
3/8	3/8	1		2-1/2	radius	0.015	AXMG45-1212-L6R015	15473	45473	65473	38.02	43.19
3/8	3/8	1		2-1/2	radius	0.030	AXMG45-1212-L6R030	15475	45475	65475	38.02	43.19
3/8	3/8	1		2-1/2	radius	0.060	AXMG45-1212-L6R060	15477	45477	65477	38.02	43.19
3/8	3/8	1		4	SQ*	0.007	AXMG45-1212-L8	15479	45479	65479	53.76	65.29
3/8	3/8	1		6	SQ*	0.007	AXMG45-1212-L10	15482	45482	65482	66.96	78.60
3/8	3/8	1		6	radius	0.015	AXMG45-1212-L10R015	15483	45483	65483	66.96	78.60
3/8	3/8	1		6	radius	0.030	AXMG45-1212-L10R030	15484	45484	65484	66.96	78.60
3/8	3/8	1		6	radius	0.060	AXMG45-1212-L10R060	15485	45485	65485	66.96	78.60
3/8	3/8	1-1/4		3	SQ*	0.007	AXMG45-1212-L11	15487	45487	65487	43.42	49.24
3/8	3/8	1-1/2		4	SQ*	0.007	AXMG45-1212-L12	15489	45489	65489	56.16	59.91
13/32	7/16	9/16		2-3/4	SQ*	0.007	AXMG45-1413-L1	15490	45490	65490	49.28	56.91
13/32	7/16	9/16		4	SQ*	0.007	AXMG45-1413-L2	15491	45491	65491	69.44	79.61
7/16	7/16	9/16		2-3/4	SQ*	0.007	AXMG45-1414-L1	15493	45493	65493	42.11	49.74
7/16	7/16	9/16		2-3/4	radius	0.015	AXMG45-1414-L1R015	15494	45494	65494	42.11	49.74
7/16	7/16	9/16		2-3/4	radius	0.030	AXMG45-1414-L1R030	15495	45495	65495	42.11	49.74
7/16	7/16	9/16		2-3/4	radius	0.060	AXMG45-1414-L1R060	15496	45496	65496	42.11	49.74
7/16	7/16	9/16	1-1/4	2-3/4	SQ*	0.007	AXMG45-1414-L2	15497	45497	65497	51.41	59.04
7/16	7/16	9/16	1-1/4	2-3/4	radius	0.015	AXMG45-1414-L2R015	15499	45499	65499	51.41	59.04
7/16	7/16	9/16	1-1/4	2-3/4	radius	0.030	AXMG45-1414-L2R030	15501	45501	65501	51.41	59.04
7/16	7/16	9/16	1-1/4	2-3/4	radius	0.060	AXMG45-1414-L2R060	15503	45503	65503	51.41	59.04
7/16	7/16	1		2-3/4	SQ*	0.007	AXMG45-1414-L4	15509	45509	65509	45.90	53.53
7/16	7/16	1		2-3/4	radius	0.015	AXMG45-1414-L4R015	15511	45511	65511	45.90	53.53
7/16	7/16	1		2-3/4	radius	0.030	AXMG45-1414-L4R030	15513	45513	65513	45.90	53.53
7/16	7/16	1		2-3/4	radius	0.060	AXMG45-1414-L4R060	15515	45515	65515	45.90	53.53
15/32	1/2	5/8		3	SQ*	0.010	AXMG45-1615-L1	15521	45521	65521	64.96	72.86
15/32	1/2	5/8		4	SQ*	0.010	AXMG45-1615-L2	15523	45523	65523	87.36	97.89
1/2	1/2	5/8		2-1/2	SQ*	0.010	AXMG45-1616-L1	15527	45527	65527	47.52	56.28
1/2	1/2	5/8		2-1/2	radius	0.030	AXMG45-1616-L1R030	15529	45529	65529	47.52	56.28
1/2	1/2	5/8		2-1/2	radius	0.060	AXMG45-1616-L1R060	15531	45531	65531	47.52	56.28
1/2	1/2	5/8		2-1/2	radius	0.090	AXMG45-1616-L1R090	15533	45533	65533	47.52	56.28
1/2	1/2	5/8		2-1/2	radius	0.120	AXMG45-1616-L1R120	15535	45535	65535	47.52	56.28
1/2	1/2	5/8		3	SQ*	0.010	AXMG45-1616-L2	15537	45537	65537	51.84	62.35
1/2	1/2	5/8		3	radius	0.030	AXMG45-1616-L2R030	15539	45539	65539	51.84	62.35
1/2	1/2	5/8		3	radius	0.060	AXMG45-1616-L2R060	15541	45541	65541	51.84	62.35
1/2	1/2	5/8		3	radius	0.090	AXMG45-1616-L2R090	15543	45543	65543	51.84	62.35
1/2	1/2	5/8		3	radius	0.120	AXMG45-1616-L2R120	15551	45551	65551	51.84	62.35

SQ\* = minimal radius for corner protection.

sizes continued on next page

Speed & Feed: page 138

2 FLUTE • 45° END MILL

SERIES: AXMG45 ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER		PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price
1/2	1/2	5/8	1-1/4	3	SQ*	0.010	AXMG45-1616-L3	15553	45553	65553	69.12	77.02
1/2	1/2	5/8	1-1/4	3	radius	0.030	AXMG45-1616-L3R030	15555	45555	65555	69.12	77.02
1/2	1/2	5/8	1-1/4	3	radius	0.060	AXMG45-1616-L3R060	15557	45557	65557	69.12	77.02
1/2	1/2	5/8	1-1/4	3	radius	0.090	AXMG45-1616-L3R090	15559	45559	65559	69.12	77.02
1/2	1/2	5/8	1-1/4	3	radius	0.120	AXMG45-1616-L3R120	15561	45561	65561	69.12	77.02
1/2	1/2	5/8		4	SQ*	0.010	AXMG45-1616-L4	19331	49331	69331	71.28	81.81
1/2	1/2	5/8		4	radius	0.030	AXMG45-1616-L4R030	15563	45563	65563	71.28	81.81
1/2	1/2	5/8		4	radius	0.060	AXMG45-1616-L4R060	15565	45565	65565	71.28	81.81
1/2	1/2	5/8		4	radius	0.090	AXMG45-1616-L4R090	15567	45567	65567	71.28	81.81
1/2	1/2	5/8		4	radius	0.120	AXMG45-1616-L4R120	15569	45569	65569	71.28	81.81
1/2	1/2	5/8	2-1/4	4	SQ*	0.010	AXMG45-1616-L5	15571	45571	65571	84.24	94.77
1/2	1/2	5/8	2-1/4	4	radius	0.030	AXMG45-1616-L5R030	15573	45573	65573	84.24	94.77
1/2	1/2	5/8	2-1/4	4	radius	0.060	AXMG45-1616-L5R060	15575	45575	65575	84.24	94.77
1/2	1/2	5/8	2-1/4	4	radius	0.090	AXMG45-1616-L5R090	15577	45577	65577	84.24	94.77
1/2	1/2	5/8	2-1/4	4	radius	0.120	AXMG45-1616-L5R120	15579	45579	65579	84.24	94.77
1/2	1/2	5/8	3-3/8	6	SQ*	0.010	AXMG45-1616-L8	15593	45593	65593	132.16	147.96
1/2	1/2	1		3	SQ*	0.010	AXMG45-1616-L9	15595	45595	65595	54.76	62.66
1/2	1/2	1		5	SQ*	0.010	AXMG45-1616-L11	15601	45601	65601	89.60	102.77
1/2	1/2	1-1/4		3	SQ*	0.010	AXMG45-1616-L13	14219	44219	64219	58.10	66.00
1/2	1/2	1-1/4		3	radius	0.030	AXMG45-1616-L13R030	15611	45611	65611	58.10	66.00
1/2	1/2	1-1/4		3	radius	0.060	AXMG45-1616-L13R060	15613	45613	65613	58.10	66.00
1/2	1/2	1-1/4		3	radius	0.090	AXMG45-1616-L13R090	15615	45615	65615	58.10	66.00
1/2	1/2	1-1/4		3	radius	0.120	AXMG45-1616-L13R120	15617	45617	65617	58.10	66.00
1/2	1/2	1-1/4		4	SQ*	0.010	AXMG45-1616-L14	14221	44221	64221	75.60	86.13
1/2	1/2	1-1/4	2-1/4	4	SQ*	0.010	AXMG45-1616-L15	14223	44223	64223	92.88	103.41
1/2	1/2	1-1/4		6	SQ*	0.010	AXMG45-1616-L16	15619	45619	65619	105.84	121.64
1/2	1/2	2		4	SQ*	0.010	AXMG45-1616-L17	15621	45621	65621	86.40	96.93
1/2	1/2	2		4	radius	0.030	AXMG45-1616-L17R030	15623	45623	65623	86.40	96.93
1/2	1/2	2		4	radius	0.060	AXMG45-1616-L17R060	15625	45625	65625	86.40	96.93
1/2	1/2	2		4	radius	0.090	AXMG45-1616-L17R090	15627	45627	65627	86.40	96.93
1/2	1/2	2		4	radius	0.120	AXMG45-1616-L17R120	15629	45629	65629	86.40	96.93
1/2	1/2	3-1/8		6	SQ*	0.010	AXMG45-1616-L18	15631	45631	65631	138.24	159.25
5/8	5/8	3/4		3-1/2	SQ*	0.010	AXMG45-2020-L1	15633	45633	65633	90.72	102.17
5/8	5/8	3/4		3-1/2	radius	0.030	AXMG45-2020-L1R030	15635	45635	65635	90.72	102.17
5/8	5/8	3/4		3-1/2	radius	0.060	AXMG45-2020-L1R060	15637	45637	65637	90.72	102.17
5/8	5/8	3/4		3-1/2	radius	0.090	AXMG45-2020-L1R090	15639	45639	65639	90.72	102.17
5/8	5/8	3/4		3-1/2	radius	0.120	AXMG45-2020-L1R120	15641	45641	65641	90.72	102.17
5/8	5/8	3/4	1-1/2	3-1/2	SQ*	0.010	AXMG45-2020-L2	15643	45643	65643	114.24	125.69
5/8	5/8	3/4	1-1/2	3-1/2	radius	0.030	AXMG45-2020-L2R030	15645	45645	65645	114.24	125.69
5/8	5/8	3/4	1-1/2	3-1/2	radius	0.060	AXMG45-2020-L2R060	15647	45647	65647	114.24	125.69
5/8	5/8	3/4	1-1/2	3-1/2	radius	0.090	AXMG45-2020-L2R090	15649	45649	65649	114.24	125.69
5/8	5/8	3/4	1-1/2	3-1/2	radius	0.120	AXMG45-2020-L2R120	15651	45651	65651	114.24	125.69
5/8	5/8	3/4	2-3/8	5	SQ*	0.010	AXMG45-2020-L4	15663	45663	65663	151.20	167.56
5/8	5/8	3/4	2-3/8	5	radius	0.030	AXMG45-2020-L4R030	15665	45665	65665	151.20	167.56
5/8	5/8	3/4	2-3/8	5	radius	0.060	AXMG45-2020-L4R060	15667	45667	65667	151.20	167.56
5/8	5/8	3/4	2-3/8	5	radius	0.090	AXMG45-2020-L4R090	15669	45669	65669	151.20	167.56
5/8	5/8	3/4	2-3/8	5	radius	0.120	AXMG45-2020-L4R120	15670	45670	65670	151.20	167.56



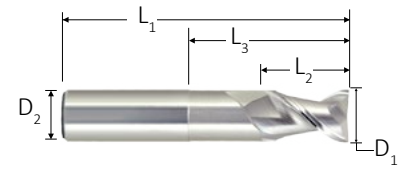
SQ\* = minimal radius for corner protection.

sizes continued on next page

Speed & Feed: page 138

## 2 FLUTE • 45° END MILL

✓ **Check Stock Online**



SERIES: AXMG45



DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER		PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price
5/8	5/8	3/4	3-3/8	6	SQ*	0.010	AXMG45-2020-L6	15703	45703	65703	168.00	187.63
5/8	5/8	1-1/4		3-1/2	SQ*	0.010	AXMG45-2020-L7	15705	45705	65705	98.56	110.01
5/8	5/8	1-1/4		3-1/2	radius	0.030	AXMG45-2020-L7R030	15707	45707	65707	98.56	110.01
5/8	5/8	1-1/4		3-1/2	radius	0.060	AXMG45-2020-L7R060	15709	45709	65709	98.56	110.01
5/8	5/8	1-1/4		3-1/2	radius	0.090	AXMG45-2020-L7R090	15711	45711	65711	98.56	110.01
5/8	5/8	1-1/4		3-1/2	radius	0.120	AXMG45-2020-L7R120	15713	45713	65713	98.56	110.01
5/8	5/8	1-1/4		6	SQ*	0.010	AXMG45-2020-L8	16023	46023	66023	163.08	182.71
5/8	5/8	1-5/8		3-1/2	SQ*	0.010	AXMG45-2020-L9	16050	46050	66050	103.04	114.49
5/8	5/8	1-5/8		3-1/2	radius	0.030	AXMG45-2020-L9R030	16055	46055	66055	103.04	114.49
5/8	5/8	1-5/8		3-1/2	radius	0.060	AXMG45-2020-L9R060	12967	42967	62967	103.04	114.49
5/8	5/8	1-5/8		3-1/2	radius	0.090	AXMG45-2020-L9R090	16082	46082	66082	103.04	114.49
5/8	5/8	1-5/8		3-1/2	radius	0.120	AXMG45-2020-L9R120	16333	46333	66333	103.04	114.49
5/8	5/8	1-5/8		6	SQ*	0.010	AXMG45-2020-L11	16866	46866	66866	168.00	203.30
5/8	5/8	2-1/2		5	SQ*	0.010	AXMG45-2020-L12	16868	46868	66868	140.40	156.76
5/8	5/8	2-1/2		5	radius	0.030	AXMG45-2020-L12R030	16869	46869	66869	140.40	156.76
5/8	5/8	3-3/4		6	SQ*	0.010	AXMG45-2020-L13	16885	46885	66885	212.80	232.43
3/4	3/4	1		3	SQ*	0.010	AXMG45-2424-L1	16887	46887	66887	128.52	153.21
3/4	3/4	1		3	radius	0.030	AXMG45-2424-L1R030	16888	46888	66888	128.52	153.21
3/4	3/4	1		3	radius	0.060	AXMG45-2424-L1R060	19140	49140	69140	128.52	153.21
3/4	3/4	1		3	radius	0.090	AXMG45-2424-L1R090	19155	49155	69155	128.52	153.21
3/4	3/4	1		3	radius	0.120	AXMG45-2424-L1R120	19156	49156	69156	128.52	153.21
3/4	3/4	1		4	SQ*	0.010	AXMG45-2424-L2	19157	49157	69157	140.40	156.55
3/4	3/4	1	1-5/8	4	SQ*	0.010	AXMG45-2424-L3	19158	49158	69158	168.00	184.15
3/4	3/4	1	1-5/8	4	radius	0.030	AXMG45-2424-L3R030	19159	49159	69159	168.00	184.15
3/4	3/4	1	1-5/8	4	radius	0.060	AXMG45-2424-L3R060	19161	49161	69161	168.00	184.15
3/4	3/4	1	1-5/8	4	radius	0.090	AXMG45-2424-L3R090	19164	49164	69164	168.00	184.15
3/4	3/4	1	1-5/8	4	radius	0.120	AXMG45-2424-L3R120	19256	49256	69256	168.00	184.15
3/4	3/4	1	2-1/4	4	SQ*	0.010	AXMG45-2424-L4	11700	41700	61700	166.32	182.47
3/4	3/4	1	2-1/2	5	SQ*	0.010	AXMG45-2424-L6	19332	49332	69332	199.36	219.55
3/4	3/4	1	2-1/2	5	radius	0.030	AXMG45-2424-L6R030	19281	49281	69281	199.36	219.55
3/4	3/4	1	2-1/2	5	radius	0.060	AXMG45-2424-L6R060	19282	49282	69282	199.36	219.55
3/4	3/4	1	2-1/2	5	radius	0.090	AXMG45-2424-L6R090	19283	49283	69283	199.36	219.55
3/4	3/4	1	2-1/2	5	radius	0.120	AXMG45-2424-L6R120	19284	49284	69284	199.36	219.55
3/4	3/4	1	3-3/8	6	SQ*	0.010	AXMG45-2424-L8	19287	49287	69287	230.72	254.95
3/4	3/4	1	4-3/8	7	SQ*	0.010	AXMG45-2424-L10	19289	49289	69289	268.80	297.06
3/4	3/4	1-1/2		4	SQ*	0.010	AXMG45-2424-L11	19291	49291	69291	145.80	174.02
3/4	3/4	1-1/2		4	radius	0.030	AXMG45-2424-L11R030	19292	49292	69292	145.80	174.02
3/4	3/4	1-1/2		4	radius	0.060	AXMG45-2424-L11R060	19293	49293	69293	145.80	174.02
3/4	3/4	1-1/2		4	radius	0.090	AXMG45-2424-L11R090	19295	49295	69295	145.80	174.02
3/4	3/4	1-1/2		4	radius	0.120	AXMG45-2424-L11R120	19296	49296	69296	145.80	174.02
3/4	3/4	1-1/2	2-1/4	5	SQ*	0.010	AXMG45-2424-L12	19297	49297	69297	199.80	219.99
3/4	3/4	1-5/8		4	SQ*	0.010	AXMG45-2424-L14	11701	41701	61701	151.20	167.35
3/4	3/4	1-5/8		4	radius	0.030	AXMG45-2424-L14R030	19300	49300	69300	151.20	167.35
3/4	3/4	1-5/8		4	radius	0.060	AXMG45-2424-L14R060	19301	49301	69301	151.20	167.35
3/4	3/4	1-5/8		4	radius	0.090	AXMG45-2424-L14R090	19302	49302	69302	151.20	167.35
3/4	3/4	1-5/8		4	radius	0.120	AXMG45-2424-L14R120	19303	49303	69303	151.20	167.35
3/4	3/4	1-5/8		6	SQ*	0.010	AXMG45-2424-L15	19304	49304	69304	218.40	242.63
3/4	3/4	2-1/4		5	SQ*	0.010	AXMG45-2424-L16	19305	49305	69305	192.24	212.43
3/4	3/4	3-1/4		6	SQ*	0.010	AXMG45-2424-L17	19306	49306	69306	224.64	266.96

SQ\* = minimal radius for corner protection.

sizes continued on next page

Speed & Feed:  
page 138



2 FLUTE • 45° END MILL

SERIES: AXMG45 **✓ Check Stock Online**

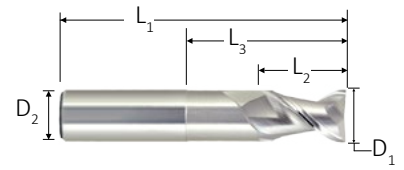
DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price	
1	1	1-1/4		4	SQ*	0.015	AXMG45-3232-L1	19307	49307	69307	246.40	278.00
1	1	1-1/4		4	radius	0.030	AXMG45-3232-L1R030	19308	49308	69308	246.40	278.00
1	1	1-1/4		4	radius	0.060	AXMG45-3232-L1R060	19309	49309	69309	246.40	278.00
1	1	1-1/4		4	radius	0.090	AXMG45-3232-L1R090	19322	49322	69322	246.40	278.00
1	1	1-1/4		4	radius	0.120	AXMG45-3232-L1R120	19323	49323	69323	246.40	278.00
1	1	1-1/4	2-1/4	4	SQ*	0.015	AXMG45-3232-L2	19324	49324	69324	268.80	300.40
1	1	1-1/4	2-1/4	4	radius	0.030	AXMG45-3232-L2R030	19325	49325	69325	268.80	300.40
1	1	1-1/4	2-1/4	4	radius	0.060	AXMG45-3232-L2R060	19326	49326	69326	268.80	300.40
1	1	1-1/4	2-1/4	4	radius	0.090	AXMG45-3232-L2R090	19327	49327	69327	268.80	300.40
1	1	1-1/4	2-1/4	4	radius	0.120	AXMG45-3232-L2R120	19328	49328	69328	268.80	300.40
1	1	1-1/4	2-5/8	5	SQ*	0.015	AXMG45-3232-L4	19337	49337	69337	303.20	342.70
1	1	1-1/4	2-5/8	5	radius	0.030	AXMG45-3232-L4R030	19338	49338	69338	303.20	342.70
1	1	1-1/4	2-5/8	5	radius	0.060	AXMG45-3232-L4R060	19339	49339	69339	303.20	342.70
1	1	1-1/4	2-5/8	5	radius	0.090	AXMG45-3232-L4R090	19340	49340	69340	303.20	342.70
1	1	1-1/4	2-5/8	5	radius	0.120	AXMG45-3232-L4R120	19341	49341	69341	303.20	342.70
1	1	1-1/4		6	SQ*	0.015	AXMG45-3232-L5	19342	49342	69342	319.68	367.08
1	1	1-1/4		6	radius	0.030	AXMG45-3232-L5R030	19343	49343	69343	319.68	367.08
1	1	1-1/4		6	radius	0.060	AXMG45-3232-L5R060	19344	49344	69344	319.68	367.08
1	1	1-1/4		6	radius	0.090	AXMG45-3232-L5R090	19387	49387	69387	319.68	367.08
1	1	1-1/4		6	radius	0.120	AXMG45-3232-L5R120	19391	49391	69391	319.68	367.08
1	1	1-1/4	3-3/8	6	SQ*	0.015	AXMG45-3232-L6	19394	49394	69394	345.60	393.00
1	1	1-1/4	4-3/8	7	SQ*	0.015	AXMG45-3232-L8	19523	49523	69523	418.88	474.18
1	1	1-1/2		4	SQ*	0.015	AXMG45-3232-L10	19582	49582	69582	248.40	280.00
1	1	1-1/2		4	radius	0.030	AXMG45-3232-L10R030	19583	49583	69583	248.40	280.00
1	1	1-1/2		4	radius	0.060	AXMG45-3232-L10R060	19732	49732	69732	248.40	280.00
1	1	1-1/2		4	radius	0.090	AXMG45-3232-L10R090	19733	49733	69733	248.40	280.00
1	1	1-1/2		4	radius	0.120	AXMG45-3232-L10R120	19734	49734	69734	248.40	280.00
1	1	1-1/2	2-1/4	5	SQ*	0.015	AXMG45-3232-L12	19736	49736	69736	291.60	331.10
1	1	1-1/2	3-1/4	6	SQ*	0.015	AXMG45-3232-L14	19738	49738	69738	353.16	400.56
1	1	2-1/4		5	SQ*	0.015	AXMG45-3232-L15	19740	49740	69740	313.20	352.70
1	1	2-1/4		5	radius	0.030	AXMG45-3232-L15R030	19782	49782	69782	313.20	352.70
1	1	2-1/4		5	radius	0.060	AXMG45-3232-L15R060	19786	49786	69786	313.20	352.70
1	1	2-1/4		5	radius	0.090	AXMG45-3232-L15R090	19788	49788	69788	313.20	352.70
1	1	2-1/4		5	radius	0.120	AXMG45-3232-L15R120	19789	49789	69789	313.20	352.70
1	1	3-1/4		6	SQ*	0.015	AXMG45-3232-L18	19865	49865	69865	388.80	436.20
1	1	3-1/4		6	radius	0.060	AXMG45-3232-L18R060	19867	49867	69867	388.80	436.20
1	1	4-1/8		7	SQ*	0.015	AXMG45-3232-L19	19888	49888	69888	476.00	531.30
1-1/4	1-1/4	1-1/4		4-1/2	SQ*	0.015	AXMG45-4040-L1	19927	49927	69927	492.80	532.45
1-1/4	1-1/4	1-1/4		4-1/2	radius	0.030	AXMG45-4040-L1R030	19940	49940	69940	492.80	532.45
1-1/4	1-1/4	1-1/4		4-1/2	radius	0.060	AXMG45-4040-L1R060	19951	49951	69951	492.80	532.45
1-1/4	1-1/4	1-1/4		4-1/2	radius	0.090	AXMG45-4040-L1R090	19956	49956	69956	492.80	532.45
1-1/4	1-1/4	1-1/4		4-1/2	radius	0.120	AXMG45-4040-L1R120	19299	49299	69299	492.80	532.45
1-1/4	1-1/4	1-1/4	2-5/8	6	SQ*	0.015	AXMG45-4040-L3	19987	49987	69987	649.60	697.18
1-1/4	1-1/4	1-1/4	2-5/8	6	radius	0.030	AXMG45-4040-L3R030	19988	49988	69988	649.60	697.18
1-1/4	1-1/4	1-1/4	2-5/8	6	radius	0.060	AXMG45-4040-L3R060	19989	49989	69989	649.60	697.18
1-1/4	1-1/4	1-1/4	2-5/8	6	radius	0.090	AXMG45-4040-L3R090	19990	49990	69990	649.60	697.18
1-1/4	1-1/4	1-1/4	2-5/8	6	radius	0.120	AXMG45-4040-L3R120	19991	49991	69991	649.60	697.18



SQ\* = minimal radius for corner protection.

Speed & Feed: page 138

## 2 FLUTE • 45° END MILL



Carbide	2	Center Cutting	45°	Bright TICN ZrN	+0.00mm -0.05mm	Square	Radius										HRC <40	N
---------	---	----------------	-----	-----------------------	--------------------	--------	--------	--	--	--	--	--	--	--	--	--	------------	---

Additional coatings - nACRo, DLC & TiB<sub>2</sub> 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\_ ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price
3mm	3mm	8mm		51mm	SQ* 0.10mm	AXMG45-M3M3-L1	13305	43305	63305	19.38	22.18
4mm	4mm	11mm		63mm	SQ* 0.15mm	AXMG45-M4M4-L1	13306	43306	63306	21.32	24.57
5mm	5mm	13mm		63mm	SQ* 0.15mm	AXMG45-M5M5-L1	13307	43307	63307	23.06	26.16
6mm	6mm	13mm		63mm	SQ* 0.20mm	AXMG45-M6M6-L1	13308	43308	63308	24.18	27.28
8mm	8mm	19mm		63mm	SQ* 0.20mm	AXMG45-M8M8-L1	13309	43309	63309	29.44	34.29
10mm	10mm	22mm		70mm	SQ* 0.25mm	AXMG45-M10M10-L1	13310	43310	63310	29.44	37.07
10mm	10mm	22mm		70mm	radius 0.50mm	AXMG45-M10M10-L1R0.5	13311	43311	63311	41.51	49.14
10mm	10mm	22mm		70mm	radius 1.00mm	AXMG45-M10M10-L1R1.0	13312	43312	63312	41.51	49.14
10mm	10mm	22mm		70mm	radius 1.50mm	AXMG45-M10M10-L1R1.5	13313	43313	63313	41.51	49.14
10mm	10mm	22mm	34mm	76mm	SQ* 0.25mm	AXMG45-M10M10-L2	13314	43314	63314	54.05	61.68
10mm	10mm	22mm	34mm	76mm	radius 0.50mm	AXMG45-M10M10-L2R0.5	13315	43315	63315	54.05	61.68
10mm	10mm	22mm	34mm	76mm	radius 1.00mm	AXMG45-M10M10-L2R1.0	13317	43317	63317	54.05	61.68
10mm	10mm	22mm	34mm	76mm	radius 1.50mm	AXMG45-M10M10-L2R1.5	13318	43318	63318	54.05	61.68
10mm	10mm	22mm	48mm	100mm	SQ* 0.25mm	AXMG45-M10M10-L3	13319	43319	63319	66.32	76.49
10mm	10mm	22mm	48mm	100mm	radius 0.50mm	AXMG45-M10M10-L3R0.5	13320	43320	63320	66.32	76.49
10mm	10mm	22mm	48mm	100mm	radius 1.00mm	AXMG45-M10M10-L3R1.0	13321	43321	63321	66.32	76.49
10mm	10mm	22mm	48mm	100mm	radius 1.50mm	AXMG45-M10M10-L3R1.5	13322	43322	63322	66.32	76.49
12mm	12mm	26mm		76mm	SQ* 0.25mm	AXMG45-M12M12-L1	13323	43323	63323	53.05	60.95
12mm	12mm	26mm		76mm	radius 1.00mm	AXMG45-M12M12-L1R1.0	13324	43324	63324	53.05	60.95
12mm	12mm	26mm		76mm	radius 1.50mm	AXMG45-M12M12-L1R1.5	13325	43325	63325	53.05	60.95
12mm	12mm	26mm		76mm	radius 2.00mm	AXMG45-M12M12-L1R2.0	13326	43326	63326	53.05	60.95
12mm	12mm	26mm	52mm	100mm	SQ* 0.25mm	AXMG45-M12M12-L2	13327	43327	63327	85.77	96.30
12mm	12mm	26mm	52mm	100mm	radius 1.00mm	AXMG45-M12M12-L2R1.0	13328	43328	63328	85.77	96.30
12mm	12mm	26mm	52mm	100mm	radius 1.50mm	AXMG45-M12M12-L2R1.5	13329	43329	63329	85.77	96.30
12mm	12mm	26mm	52mm	100mm	radius 2.00mm	AXMG45-M12M12-L2R2.0	13330	43330	63330	85.77	96.30
12mm	12mm	26mm	76mm	125mm	SQ* 0.25mm	AXMG45-M12M12-L3	13331	43331	63331	91.22	104.39
12mm	12mm	26mm	76mm	125mm	radius 1.00mm	AXMG45-M12M12-L3R1.0	13332	43332	63332	91.22	104.39
12mm	12mm	26mm	76mm	125mm	radius 1.50mm	AXMG45-M12M12-L3R1.5	13333	43333	63333	91.22	104.39
12mm	12mm	26mm	76mm	125mm	radius 2.00mm	AXMG45-M12M12-L3R2.0	13334	43334	63334	91.22	104.39
14mm	14mm	26mm		89mm	SQ* 0.25mm	AXMG45-M14M14-L1	13335	43335	63335	91.66	101.86
14mm	14mm	26mm		89mm	radius 1.00mm	AXMG45-M14M14-L1R1.0	13336	43336	63336	91.66	101.86
14mm	14mm	26mm		89mm	radius 1.50mm	AXMG45-M14M14-L1R1.5	13345	43345	63345	91.66	101.86
14mm	14mm	26mm		89mm	radius 2.00mm	AXMG45-M14M14-L1R2.0	13346	43346	63346	91.66	101.86

SQ\* = minimal radius for corner protection.

sizes continued on next page

Speed & Feed: page 138

2 FLUTE • 45° END MILL

SERIES: AXMG45-M\_M\_

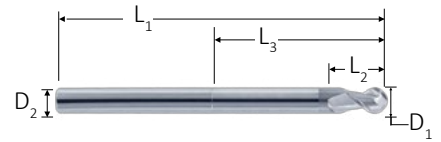
✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price	
14mm	14mm	26mm	52mm	100mm	SQ*	0.25mm	AXMG45-M14M14-L2	13347	43347	63347	99.75	111.41
14mm	14mm	26mm	52mm	100mm	radius	1.00mm	AXMG45-M14M14-L2R1.0	13348	43348	63348	99.75	111.41
14mm	14mm	26mm	52mm	100mm	radius	1.50mm	AXMG45-M14M14-L2R1.5	13360	43360	63360	99.75	111.41
14mm	14mm	26mm	52mm	100mm	radius	2.00mm	AXMG45-M14M14-L2R2.0	13361	43361	63361	99.75	111.41
14mm	14mm	26mm	76mm	127mm	SQ*	0.25mm	AXMG45-M14M14-L3	13403	43403	63403	137.48	152.05
14mm	14mm	26mm	76mm	127mm	radius	1.00mm	AXMG45-M14M14-L3R1.0	13412	43412	63412	137.48	152.05
14mm	14mm	26mm	76mm	127mm	radius	1.50mm	AXMG45-M14M14-L3R1.5	13414	43414	63414	137.48	152.05
14mm	14mm	26mm	76mm	127mm	radius	2.00mm	AXMG45-M14M14-L3R2.0	13442	43442	63442	137.48	152.05
16mm	16mm	32mm		89mm	SQ*	0.25mm	AXMG45-M16M16-L1	13444	43444	63444	102.70	118.85
16mm	16mm	32mm		89mm	radius	1.00mm	AXMG45-M16M16-L1R1.0	13451	43451	63451	102.70	118.85
16mm	16mm	32mm		89mm	radius	1.50mm	AXMG45-M16M16-L1R1.5	13453	43453	63453	102.70	118.85
16mm	16mm	32mm		89mm	radius	2.00mm	AXMG45-M16M16-L1R2.0	13622	43622	63622	102.70	118.85
16mm	16mm	32mm	76mm	127mm	SQ*	0.25mm	AXMG45-M16M16-L2	13623	43623	63623	147.93	168.12
16mm	16mm	32mm	76mm	127mm	radius	1.00mm	AXMG45-M16M16-L2R1.0	13624	43624	63624	147.93	168.12
16mm	16mm	32mm	76mm	127mm	radius	1.50mm	AXMG45-M16M16-L2R1.5	13625	43625	63625	147.93	168.12
16mm	16mm	32mm	76mm	127mm	radius	2.00mm	AXMG45-M16M16-L2R2.0	13626	43626	63626	147.93	168.12
18mm	18mm	32mm		100mm	SQ*	0.25mm	AXMG45-M18M18-L1	13627	43627	63627	173.41	189.56
18mm	18mm	32mm		100mm	radius	1.00mm	AXMG45-M18M18-L1R1.0	13628	43628	63628	173.41	189.56
18mm	18mm	32mm		100mm	radius	1.50mm	AXMG45-M18M18-L1R1.5	13629	43629	63629	173.41	189.56
18mm	18mm	32mm		100mm	radius	2.00mm	AXMG45-M18M18-L1R2.0	13630	43630	63630	173.41	189.56
18mm	18mm	32mm	75mm	127mm	SQ*	0.25mm	AXMG45-M18M18-L2	13631	43631	63631	190.35	210.54
18mm	18mm	32mm	75mm	127mm	radius	1.00mm	AXMG45-M18M18-L2R1.0	13657	43657	63657	190.35	210.54
18mm	18mm	32mm	75mm	127mm	radius	1.50mm	AXMG45-M18M18-L2R1.5	13671	43671	63671	190.35	210.54
18mm	18mm	32mm	75mm	127mm	radius	2.00mm	AXMG45-M18M18-L2R2.0	13685	43685	63685	190.35	210.54
20mm	20mm	38mm		100mm	SQ*	0.25mm	AXMG45-M20M20-L1	13699	43699	63699	189.74	215.39
20mm	20mm	38mm		100mm	radius	1.00mm	AXMG45-M20M20-L1R1.0	13711	43711	63711	189.74	215.39
20mm	20mm	38mm		100mm	radius	1.50mm	AXMG45-M20M20-L1R1.5	13712	43712	63712	189.74	215.39
20mm	20mm	38mm		100mm	radius	2.00mm	AXMG45-M20M20-L1R2.0	13713	43713	63713	189.74	215.39
20mm	20mm	38mm	75mm	127mm	SQ*	0.25mm	AXMG45-M20M20-L2	13714	43714	63714	226.95	259.01
20mm	20mm	38mm	75mm	127mm	radius	1.00mm	AXMG45-M20M20-L2R1.0	13715	43715	63715	226.95	259.01
20mm	20mm	38mm	75mm	127mm	radius	1.50mm	AXMG45-M20M20-L2R1.5	13716	43716	63716	226.95	259.01
20mm	20mm	38mm	75mm	127mm	radius	2.00mm	AXMG45-M20M20-L2R2.0	14111	44111	64111	226.95	259.01
20mm	20mm	38mm	90mm	150mm	SQ*	0.25mm	AXMG45-M20M20-L3	14113	44113	64113	271.20	309.68
20mm	20mm	38mm	90mm	150mm	radius	1.00mm	AXMG45-M20M20-L3R1.0	14115	44115	64115	271.20	309.68
20mm	20mm	38mm	90mm	150mm	radius	1.50mm	AXMG45-M20M20-L3R1.5	14117	44117	64117	271.20	309.68
20mm	20mm	38mm	90mm	150mm	radius	2.00mm	AXMG45-M20M20-L3R2.0	14119	44119	64119	271.20	309.68
25mm	25mm	38mm		100mm	SQ*	0.25mm	AXMG45-M25M25-L1	14123	44123	64123	246.40	278.00
25mm	25mm	38mm		100mm	radius	1.00mm	AXMG45-M25M25-L1R1.0	14125	44125	64125	246.40	278.00
25mm	25mm	38mm		100mm	radius	1.50mm	AXMG45-M25M25-L1R1.5	14127	44127	64127	246.40	278.00
25mm	25mm	38mm		100mm	radius	2.00mm	AXMG45-M25M25-L1R2.0	14129	44129	64129	246.40	278.00
25mm	25mm	38mm	90mm	150mm	SQ*	0.25mm	AXMG45-M25M25-L2	14131	44131	64131	353.16	400.56
25mm	25mm	38mm	90mm	150mm	radius	1.00mm	AXMG45-M25M25-L2R1.0	14133	44133	64133	353.16	400.56
25mm	25mm	38mm	90mm	150mm	radius	1.50mm	AXMG45-M25M25-L2R1.5	14135	44135	64135	353.16	400.56
25mm	25mm	38mm	90mm	150mm	radius	2.00mm	AXMG45-M25M25-L2R2.0	14137	44137	64137	353.16	400.56

SQ\* = minimal radius for corner protection.

Speed & Feed: page 138





## 2 FLUTE • 45° BALL NOSE END MILL

Carbide	2	Center Cutting	45°	Bright TiCN ZrN	+0.00 -0.02	Ball						HRC <40	N
---------	---	----------------	-----	-----------------------	----------------	------	--	--	--	--	--	------------	---

Additional coatings - nACRo, DLC & TiB<sub>2</sub> 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** ✓ **Check Stock Online**

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price
1/8	1/8	1/4		1-1/2	AXMG45-404-L1-B	11890	41890	61890	20.22	23.14
1/8	1/8	3/8		1-1/2	AXMG45-404-L2-B	11893	41893	61893	21.77	23.87
1/4	1/4	3/8		2-1/2	AXMG45-808-L1-B	14605	44605	64605	29.57	34.41
1/4	1/4	3/8	1-1/8	2-1/2	AXMG45-808-L2-B	14606	44606	64606	40.32	43.42
1/4	1/4	3/8	no neck	6	AXMG45-808-NN-B	14607	44607	64607	63.87	68.83
1/4	1/4	3/4		2-1/2	AXMG45-808-L3-B	14608	44608	64608	31.62	34.72
3/8	3/8	1/2		2-1/2	AXMG45-1212-L1-B	14609	44609	64609	39.14	43.99
3/8	3/8	1/2	2-1/8	4	AXMG45-1212-L2-B	14611	44611	64611	77.76	81.51
3/8	3/8	1/2	no neck	6	AXMG45-1212-NN-B	14615	44615	64615	99.46	111.10
3/8	3/8	1		2-1/2	AXMG45-1212-L3-B	14616	44616	64616	45.62	50.47
3/8	3/8	1-1/2		4	AXMG45-1212-L4-B	14617	44617	64617	67.39	71.14
1/2	1/2	5/8		2-1/2	AXMG45-1616-L1-B	14618	44618	64618	57.02	64.92
1/2	1/2	5/8	2-1/4	4	AXMG45-1616-L2-B	14619	44619	64619	101.09	111.62
1/2	1/2	5/8	no neck	6	AXMG45-1616-NN-B	14620	44620	64620	158.59	174.39
1/2	1/2	1-1/4		3	AXMG45-1616-L3-B	14621	44621	64621	69.72	77.62
1/2	1/2	2		4	AXMG45-1616-L4-B	14622	44622	64622	103.68	114.21
5/8	5/8	3/4	1-1/2	3-1/2	AXMG45-2020-L1-B	14623	44623	64623	137.09	148.54
5/8	5/8	1-1/4		3-1/2	AXMG45-2020-L2-B	14624	44624	64624	118.27	129.72
5/8	5/8	1-5/8		4	AXMG45-2020-L3-B	14630	44630	64630	135.16	148.25
3/4	3/4	1		3	AXMG45-2424-L1-B	14632	44632	64632	154.22	170.37
3/4	3/4	1	2-1/2	5	AXMG45-2424-L2-B	14633	44633	64633	239.23	259.42
3/4	3/4	1	no neck	6	AXMG45-2424-NN-B	14634	44634	64634	276.86	301.09
3/4	3/4	1-5/8		4	AXMG45-2424-L3-B	14635	44635	64635	181.44	197.59
3/4	3/4	2-1/4		5	AXMG45-2424-L4-B	14636	44636	64636	230.69	250.88
1	1	1-1/4		4	AXMG45-3232-L1-B	14637	44637	64637	295.68	327.28
1	1	1-1/4	3-3/8	6	AXMG45-3232-L2-B	14638	44638	64638	414.72	462.12
1	1	2-1/4		5	AXMG45-3232-L3-B	14644	44644	64644	375.84	415.34

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

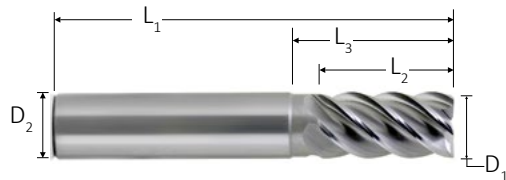
- › TiCN
- › ZrN
- › nACRo
- › DLC
- › TiB<sub>2</sub>



**CONVENTIONAL COATINGS & HIGH PERFORMANCE COATINGS**



**5 FLUTE • 45° FOR TROCHOIDAL TOOLPATHING**



Carbide	5	Center Cutting	45°	Bright TiCN ZrN	+0.000 -0.002	Square	Radius		HRC <40	N
---------	---	----------------	-----	-----------------------	------------------	--------	--------	--	------------	---

Additional coatings - nACRo, DLC & TiB<sub>2</sub> 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 ✓ Check Stock Online**

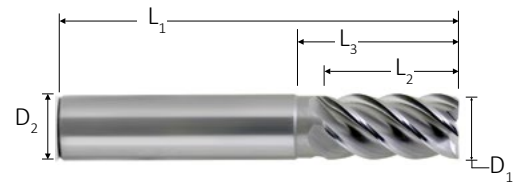
DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER		PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price
1/8	1/8	3/16		1-1/2	SQ*	0.005	GXMG5-404-S	15047	45047	65047	14.74	16.84
1/8	1/8	3/16		1-1/2	radius	0.010	GXMG5-404-R010S	15049	45049	65049	14.74	16.84
1/8	1/8	3/16	11/16	2	SQ*	0.005	GXMG5-404-N	15051	45051	65051	18.89	21.69
1/8	1/8	3/16	11/16	2	radius	0.010	GXMG5-404-R010N	15052	45052	65052	20.62	23.42
1/8	1/8	1/4	1/2	1-1/2	SQ*	0.005	GXMG5-404	15053	45053	65053	14.93	17.03
1/8	1/8	1/4	1/2	1-1/2	radius	0.010	GXMG5-404-R010	15055	45055	65055	14.93	17.03
3/16	3/16	9/32		2	SQ*	0.005	GXMG5-606-S	15057	45057	65057	20.62	23.22
3/16	3/16	9/32		2	radius	0.010	GXMG5-606-R010S	15056	45056	65056	20.62	23.22
3/16	3/16	9/32	25/32	3	SQ*	0.005	GXMG5-606-N	15059	45059	65059	26.77	30.67
3/16	3/16	9/32	25/32	3	radius	0.010	GXMG5-606-R010N	15061	45061	65061	26.77	30.67
3/16	3/16	3/8	5/8	2	SQ*	0.005	GXMG5-606	15063	45063	65063	21.00	23.60
3/16	3/16	3/8	5/8	2	radius	0.010	GXMG5-606-R010	15064	45064	65064	21.00	23.60
1/4	1/4	3/8		2	SQ*	0.007	GXMG5-808-S	15065	45065	65065	23.41	26.51
1/4	1/4	3/8		2	radius	0.015	GXMG5-808-R015S	15067	45067	65067	23.41	26.51
1/4	1/4	3/8	1-1/8	3	SQ*	0.007	GXMG5-808-N	15069	45069	65069	32.99	36.71
1/4	1/4	3/8	1-1/8	3	radius	0.015	GXMG5-808-R015N	15071	45071	65071	32.99	36.71
1/4	1/4	1/2	3/4	2-1/2	SQ*	0.007	GXMG5-808	14247	44247	64247	26.16	29.26
1/4	1/4	1/2	3/4	2-1/2	radius	0.015	GXMG5-808-R015	14990	44990	64990	26.16	29.26
5/16	5/16	1/2		2	SQ*	0.007	GXMG5-1010-S	15073	45073	65073	29.41	33.89
5/16	5/16	1/2		2	radius	0.015	GXMG5-1010-R015S	15075	45075	65075	29.41	33.89
5/16	5/16	1/2	1-1/2	3	SQ*	0.007	GXMG5-1010-N	15077	45077	65077	40.82	46.20
5/16	5/16	1/2	1-1/2	3	radius	0.015	GXMG5-1010-R015N	15079	45079	65079	40.82	46.20
5/16	5/16	5/8	7/8	2-1/2	SQ*	0.007	GXMG5-1010	15081	45081	65081	32.58	37.06
5/16	5/16	5/8	7/8	2-1/2	radius	0.015	GXMG5-1010-R015	15083	45083	65083	32.58	37.06
3/8	3/8	9/16		2	SQ*	0.007	GXMG5-1212-S	15085	45085	65085	35.18	40.03
3/8	3/8	9/16		2	radius	0.020	GXMG5-1212-R020S	15087	45087	65087	35.18	40.03
3/8	3/8	9/16	1-15/16	4	SQ*	0.007	GXMG5-1212-N	14799	44799	64799	59.66	63.41
3/8	3/8	9/16	1-15/16	4	radius	0.020	GXMG5-1212-R020N	15089	45089	65089	59.66	63.41
3/8	3/8	3/4	1	2-1/2	SQ*	0.007	GXMG5-1212	14249	44249	64249	40.97	45.82
3/8	3/8	3/4	1	2-1/2	radius	0.020	GXMG5-1212-R020	14991	44991	64991	40.97	45.82
3/8	3/8	1		2-1/2	SQ*	0.007	GXMG5-1212-M	15091	45091	65091	40.97	45.82
3/8	3/8	1		2-1/2	radius	0.020	GXMG5-1212-R020M	15093	45093	65093	40.97	45.82
7/16	7/16	5/8		2-1/2	SQ*	0.007	GXMG5-1414-S	15095	45095	65095	46.34	53.97
7/16	7/16	5/8		2-1/2	radius	0.020	GXMG5-1414-R020S	15097	45097	65097	46.34	53.97
7/16	7/16	5/8	2	4	SQ*	0.007	GXMG5-1414-N	15099	45099	65099	75.98	86.15
7/16	7/16	5/8	2	4	radius	0.020	GXMG5-1414-R020N	15191	45191	65191	75.98	86.15

SQ\* = minimal radius for corner protection.

sizes continued on next page

Speed & Feed: page 139

## 5 FLUTE • 45° FOR TROCHOIDAL TOOLPATHING



SERIES: GXMG5

✓ **Check Stock Online**



DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER		PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price
7/16	7/16	7/8		2-3/4	SQ*	0.007	GXMG5-1414	15193	45193	65193	55.40	63.03
7/16	7/16	7/8		2-3/4	radius	0.020	GXMG5-1414-R020	15195	45195	65195	55.40	63.03
1/2	1/2	5/8		2-1/2	SQ*	0.010	GXMG5-1616-S	15197	45197	65197	55.22	63.12
1/2	1/2	5/8		2-1/2	radius	0.030	GXMG5-1616-R030S	15199	45199	65199	55.22	63.12
1/2	1/2	5/8	2	4	SQ*	0.010	GXMG5-1616-N	15205	45205	65205	85.28	95.81
1/2	1/2	5/8	2	4	radius	0.030	GXMG5-1616-R030N	15207	45207	65207	85.28	95.81
1/2	1/2	1	1-1/4	3	SQ*	0.010	GXMG5-1616	14243	44243	64243	66.70	77.21
1/2	1/2	1	1-1/4	3	radius	0.030	GXMG5-1616-R030	14992	44992	64992	66.70	77.21
1/2	1/2	1-1/4		3	SQ*	0.010	GXMG5-1616-M	14796	44796	64796	66.70	77.21
1/2	1/2	1-1/4		3	radius	0.030	GXMG5-1616-R030M	15209	45209	65209	66.70	77.21
5/8	5/8	3/4		3	SQ*	0.010	GXMG5-2020-S	15211	45211	65211	113.04	124.49
5/8	5/8	3/4		3	radius	0.030	GXMG5-2020-R030S	15213	45213	65213	113.04	124.49
5/8	5/8	3/4	2-3/8	5	SQ*	0.010	GXMG5-2020-N	15215	45215	65215	158.30	174.66
5/8	5/8	3/4	2-3/8	5	radius	0.030	GXMG5-2020-R030N	15217	45217	65217	158.30	174.66
5/8	5/8	1-1/4	1-1/2	3-1/2	SQ*	0.010	GXMG5-2020	15219	45219	65219	119.06	130.51
5/8	5/8	1-1/4	1-1/2	3-1/2	radius	0.030	GXMG5-2020-R030	14151	44151	64151	119.06	130.51
3/4	3/4	7/8		3	SQ*	0.010	GXMG5-2424-S	15221	45221	65221	153.72	169.87
3/4	3/4	7/8		3	radius	0.030	GXMG5-2424-R030S	15223	45223	65223	153.72	169.87
3/4	3/4	7/8	2-1/2	5	SQ*	0.010	GXMG5-2424-N	14833	44833	64833	185.52	205.71
3/4	3/4	7/8	2-1/2	5	radius	0.030	GXMG5-2424-R030N	15225	45225	65225	185.52	205.71
3/4	3/4	1-1/2	1-3/4	4	SQ*	0.010	GXMG5-2424	14155	44155	64155	175.27	191.42
3/4	3/4	1-1/2	1-3/4	4	radius	0.030	GXMG5-2424-R030	14993	44993	64993	175.27	191.42
1	1	1-1/4		3	SQ*	0.015	GXMG5-3232-S	15227	45227	65227	245.58	277.18
1	1	1-1/4		3	radius	0.030	GXMG5-3232-R030S	15229	45229	65229	245.58	277.18
1	1	1-1/4	3-1/4	6	SQ*	0.015	GXMG5-3232-N	15231	45231	65231	459.29	506.69
1	1	1-1/4	3-1/4	6	radius	0.030	GXMG5-3232-R030N	15233	45233	65233	459.29	506.69
1	1	1-1/2	1-3/4	4	SQ*	0.015	GXMG5-3232	15235	45235	65235	300.41	332.01
1	1	1-1/2	1-3/4	4	radius	0.030	GXMG5-3232-R030	15237	45237	65237	300.41	332.01

SQ\* = minimal radius for corner protection.

**Speed & Feed:** page 139

### RECOMMENDED ALUMINUM COATINGS

Melin provides SEVERAL coated options to fit your every need!

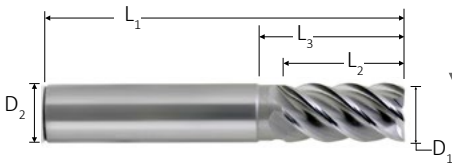
Order any of our tools with a Conventional or High Performance Coating

- > TiCN
- > ZrN
- > nACRo
- > DLC
- > TiB<sub>2</sub>



**CONVENTIONAL COATINGS & HIGH PERFORMANCE COATINGS**

5 FLUTE • 45° FOR TROCHOIDAL TOOLPATHING



Carbide	5	Center Cutting	45°	Bright TiCN ZrN	+0.00mm -0.050mm	Square	Radius		HRC <40	N
---------	---	----------------	-----	-----------------	---------------------	--------	--------	--	---------	---

Additional coatings - TiCN, ZrN, nACRo, DLC & TiB<sub>2</sub> 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\_ ✓ Check Stock Online

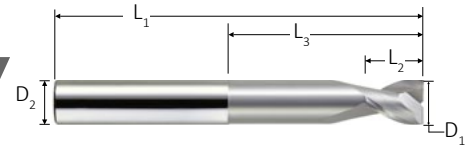


DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	CORNER		PART NAME	BRIGHT EDP	Bright Price
3mm	3mm	12mm	38mm	radius	0.25mm	GXMG5-M3M3-R0.25	H6699	15.49
3mm	3mm	12mm	38mm	radius	0.50mm	GXMG5-M3M3-R0.5	H6700	15.49
4mm	4mm	14mm	50mm	radius	0.25mm	GXMG5-M4M4-R0.25	12549	22.92
4mm	4mm	14mm	51mm	radius	0.50mm	GXMG5-M4M4-R0.5	H6696	22.92
5mm	5mm	20mm	51mm	radius	0.25mm	GXMG5-M5M5-R0.25	H6697	25.56
5mm	5mm	20mm	51mm	radius	0.50mm	GXMG5-M5M5-R0.5	H6698	25.56
6mm	6mm	20mm	63mm	SQ*	0.15mm	GXMG5-M6M6	H6701	26.16
6mm	6mm	20mm	63mm	radius	0.25mm	GXMG5-M6M6-R0.25	H6702	31.92
6mm	6mm	20mm	63mm	radius	0.05mm	GXMG5-M6M6-R0.5	H6703	26.16
8mm	8mm	20mm	63mm	SQ*	0.15mm	GXMG5-M8M8	H6704	32.58
8mm	8mm	20mm	63mm	radius	0.5mm	GXMG5-M8M8-R0.5	H6705	32.58
8mm	8mm	20mm	63mm	radius	1.0mm	GXMG5-M8M8-R1.0	H6706	40.44
8mm	8mm	20mm	63mm	radius	1.5mm	GXMG5-M8M8-R1.5	H6707	40.44
8mm	8mm	20mm	63mm	radius	2.0mm	GXMG5-M8M8-R2.0	H6708	40.44
10mm	10mm	24mm	70mm	SQ*	0.2mm	GXMG5-M10M10	H6709	47.75
10mm	10mm	24mm	70mm	radius	0.5mm	GXMG5-M10M10-R0.5	H6710	47.75
10mm	10mm	24mm	70mm	radius	1.0mm	GXMG5-M10M10-R1.0	H6711	56.40
10mm	10mm	24mm	70mm	radius	1.5mm	GXMG5-M10M10-R1.5	H6712	56.40
10mm	10mm	24mm	70mm	radius	2.0mm	GXMG5-M10M10-R2.0	H6713	56.40
12mm	12mm	25mm	76mm	SQ*	0.2mm	GXMG5-M12M12	H6714	66.70
12mm	12mm	25mm	76mm	radius	0.5mm	GXMG5-M12M12-R0.5	H6715	66.70
12mm	12mm	25mm	76mm	radius	1.0mm	GXMG5-M12M12-R1.0	H6716	79.32
12mm	12mm	25mm	76mm	radius	1.5mm	GXMG5-M12M12-R1.5	H6717	79.32
12mm	12mm	25mm	76mm	radius	2.0mm	GXMG5-M12M12-R2.0	H6718	79.32
12mm	12mm	25mm	76mm	radius	3.0mm	GXMG5-M12M12-R3.0	H6719	79.32
16mm	16mm	32mm	100mm	SQ*	0.25mm	GXMG5-M16M16	H6720	138.68
16mm	16mm	32mm	100mm	radius	0.5mm	GXMG5-M16M16-R0.5	H6721	138.68
16mm	16mm	32mm	100mm	radius	1.0mm	GXMG5-M16M16-R1.0	H6722	162.72
16mm	16mm	32mm	100mm	radius	1.5mm	GXMG5-M16M16-R1.5	H6723	162.72
16mm	16mm	32mm	100mm	radius	2.0mm	GXMG5-M16M16-R2.0	H6724	162.72
16mm	16mm	32mm	100mm	radius	3.0mm	GXMG5-M16M16-R3.0	H6725	162.72
20mm	20mm	38mm	100mm	SQ*	0.25mm	GXMG5-M20M20	H6726	220.09
20mm	20mm	38mm	100mm	radius	0.5mm	GXMG5-M20M20-R0.5	H6727	220.09
20mm	20mm	38mm	100mm	radius	1.0mm	GXMG5-M20M20-R1.0	H6728	253.92
20mm	20mm	38mm	100mm	radius	1.5mm	GXMG5-M20M20-R1.5	H6729	253.92
20mm	20mm	38mm	100mm	radius	2.0mm	GXMG5-M20M20-R2.0	H6730	253.92
20mm	20mm	38mm	100mm	radius	3.0mm	GXMG5-M20M20-R3.0	H6731	253.92

SQ\* = minimal radius for corner protection.

Speed & Feed: page 139

## 2 FLUTE • 35° FOR LIGHT DUTY CNC MACHINES



Carbide Center Cutting Bright +.000 Radius

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

Additional coatings - nACRo, DLC & TiB<sub>2</sub> available upon request

### SERIES: ALMG [Check Stock Online](#)



DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price
1/8	1/8	3/8		1-1/2	0.010	ALMG-404	17737	47737	67737	10.56	13.10
3/16	3/16	1/4	9/16	2	0.010	ALMGN-606	12463	42463	62463	26.00	28.60
3/16	3/16	5/8		2	0.010	ALMG-606	17739	47739	67739	14.99	17.74
1/4	1/4	5/16	3/4	2-1/2	0.010	ALMGN-808	12465	42465	62465	29.98	36.20
1/4	1/4	1/2	7/8	2-1/2	0.010	ALMGS-808	10837	40837	60837	26.18	29.28
1/4	1/4	3/4		2-1/2	0.010	ALMG-808	17741	47741	67741	19.35	23.99
1/4	1/4	1-1/8		3	0.010	ALMG-808-L	17755	47755	67755	25.18	31.23
5/16	5/16	13/16		2-1/2	0.010	ALMG-1010	17743	47743	67743	25.55	31.68
5/16	5/16	1-1/8		3	0.010	ALMG-1010-L	17756	47756	67756	28.51	33.89
3/8	3/8	1/2	7/8	2-1/2	0.015	ALMGS-1212	10839	40839	60839	37.83	42.68
3/8	3/8	1/2	1-3/8	3	0.015	ALMGN-1212-1	12467	42467	62467	49.94	55.76
3/8	3/8	1/2	2-3/8	4	0.015	ALMGN-1212-2	12469	42469	62469	45.53	49.28
3/8	3/8	1		2-1/2	0.015	ALMG-1212	17745	47745	67745	29.39	36.44
3/8	3/8	1-1/8		3	0.015	ALMG-1212-L	17757	47757	67757	40.52	48.00
7/16	7/16	1		2-3/4	0.015	ALMG-1414	17747	47747	67747	42.21	50.77
1/2	1/2	5/8	1-1/8	3	0.020	ALMGS-1616	10841	40841	60841	61.63	69.53
1/2	1/2	5/8	2-1/8	4	0.020	ALMGN-1616-1	12471	42471	62471	69.89	80.42
1/2	1/2	5/8	3-1/8	5	0.020	ALMGN-1616-2	12473	42473	62473	84.14	97.31
1/2	1/2	1		3	0.020	ALMG-1616	17749	47749	67749	50.06	58.63
1/2	1/2	2		4	0.020	ALMG-1616-L	17759	47759	67759	62.02	73.29
5/8	5/8	1-1/4		3-1/2	0.020	ALMG-2020	17751	47751	67751	94.40	107.62
5/8	5/8	2-1/4		5	0.020	ALMG-2020-L	17760	47760	67760	123.32	144.14
3/4	3/4	1	1-7/8	4	0.030	ALMGS-2424	10843	40843	60843	166.76	182.91
3/4	3/4	1	2-7/8	5	0.030	ALMGN-2424-1	12475	42475	62475	196.84	217.03
3/4	3/4	1	3-7/8	6	0.030	ALMGN-2424-2	12477	42477	62477	214.74	238.97
3/4	3/4	1-1/2		4	0.030	ALMG-2424	17752	47752	67752	144.14	165.88
3/4	3/4	2-1/4		5	0.030	ALMG-2424-L	17761	47761	67761	182.90	225.35
1	1	1-1/2		4	0.030	ALMG-3232	17754	47754	67754	219.42	251.02
1	1	2-1/4		5	0.030	ALMG-3232-L	17762	47762	67762	270.68	310.18

Speed & Feed: page 140

## 2 FLUTE • 35° FOR LIGHT DUTY CNC MACHINES

Carbide Center Cutting Bright +.000mm Radius

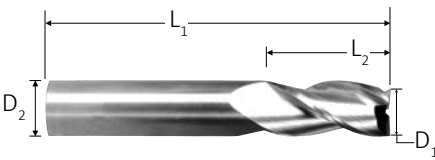
[Check Stock Online](#)

### SERIES: ALMG-M\_M\_

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price
4mm	4mm	14mm	51mm	0.3mm	ALMG-M4M4	11431	41431	61431	15.79	18.39
6mm	6mm	20mm	63mm	0.3mm	ALMG-M6M6	11435	41435	61435	20.14	25.00
8mm	8mm	20mm	63mm	0.3mm	ALMG-M8M8	11437	41437	61437	24.44	30.30
10mm	10mm	25mm	70mm	0.4mm	ALMG-M10M10	11439	41439	61439	39.79	47.00
12mm	12mm	25mm	76mm	0.4mm	ALMG-M12M12	11443	41443	61443	50.26	58.16
14mm	14mm	32mm	89mm	0.5mm	ALMG-M14M14	11445	41445	61445	88.57	106.23
16mm	16mm	32mm	89mm	0.5mm	ALMG-M16M16	11447	41447	61447	96.65	112.80
20mm	20mm	38mm	100mm	0.7mm	ALMG-M20M20	11451	41451	61451	183.41	209.06

Speed & Feed: page 140





[BACK TO INDEX](#)

# ALUMINUM ALLOYS

## 3 FLUTE • 35° FOR LIGHT DUTY CNC MACHINES

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

Additional coatings - nACRo, DLC & TiB<sub>2</sub> 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 ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price
1/8	1/8	3/8	1-1/2	0.005	ELMG-404	17764	47764	67764	10.56	12.66
3/16	3/16	5/8	2	0.005	ELMG-606	17766	47766	67766	14.99	17.59
1/4	1/4	3/4	2-1/2	0.005	ELMG-808	17768	47768	67768	19.35	22.45
1/4	1/4	1-1/8	3	0.005	ELMG-808-L	17782	47782	67782	25.18	28.90
5/16	5/16	13/16	2-1/2	0.005	ELMG-1010	17770	47770	67770	25.55	31.68
5/16	5/16	1-1/8	3	0.005	ELMG-1010-L	17783	47783	67783	28.51	39.14
3/8	3/8	1	2-1/2	0.005	ELMG-1212	17772	47772	67772	29.39	40.37
3/8	3/8	1-1/8	3	0.005	ELMG-1212-L	17784	47784	67784	40.52	48.00
7/16	7/16	1	2-3/4	0.005	ELMG-1414	17774	47774	67774	42.21	50.77
1/2	1/2	1-1/4	3	0.005	ELMG-1616	17776	47776	67776	50.06	64.25
1/2	1/2	1-1/2	4	0.005	ELMG-1616-M	10811	40811	60811	62.02	71.44
1/2	1/2	2	4	0.005	ELMG-1616-L	17786	47786	67786	62.02	80.33
5/8	5/8	1-5/8	3-1/2	0.005	ELMG-2020	17778	47778	67778	94.40	107.62
5/8	5/8	2-1/4	5	0.005	ELMG-2020-L	17787	47787	67787	123.32	157.94
3/4	3/4	1-5/8	4	0.005	ELMG-2424	17779	47779	67779	143.37	165.12
3/4	3/4	2-1/4	5	0.005	ELMG-2424-L	17788	47788	67788	182.90	208.51
1	1	1-1/2	4	0.005	ELMG-3232	17781	47781	67781	219.42	242.88
1	1	2-1/4	5	0.005	ELMG-3232-L	17789	47789	67789	270.68	308.56



Speed & Feed: page 141

## 3 FLUTE • 35° FOR LIGHT DUTY CNC MACHINES

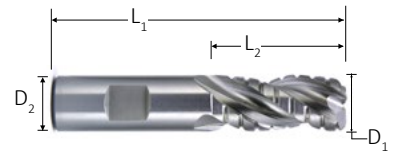
Carbide 3 Center Cutting 35° Bright TiCN ZrN +.000mm -.050mm Radius

### SERIES: ELMG-M\_M\_ ✓ Check Stock Online Additional coatings - nACRo, DLC & TiB<sub>2</sub> available upon request

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	CORNER	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price
3mm	6mm	12mm	63mm	0.125mm	ELMG-M6M3	11680	41680	61680	20.14	23.64
4mm	4mm	14mm	51mm	0.125mm	ELMG-M4M4	11455	41455	61455	15.79	18.39
4mm	6mm	14mm	63mm	0.125mm	ELMG-M6M4	11681	41681	61681	17.99	21.09
5mm	5mm	20mm	51mm	0.125mm	ELMG-M5M5	11457	41457	61457	20.14	23.39
6mm	6mm	20mm	63mm	0.125mm	ELMG-M6M6	11459	41459	61459	20.14	23.24
8mm	8mm	20mm	63mm	0.125mm	ELMG-M8M8	11461	41461	61461	24.44	29.29
10mm	10mm	25mm	70mm	0.125mm	ELMG-M10M10	11463	41463	61463	39.79	47.42
12mm	12mm	25mm	76mm	0.125mm	ELMG-M12M12	11465	41465	61465	50.26	58.16
14mm	14mm	32mm	89mm	0.125mm	ELMG-M14M14	11467	41467	61467	88.57	98.77
16mm	16mm	32mm	89mm	0.125mm	ELMG-M16M16	11469	41469	61469	96.65	112.80
18mm	18mm	38mm	100mm	0.125mm	ELMG-M18M18	11471	41471	61471	147.37	163.52
20mm	20mm	38mm	100mm	0.125mm	ELMG-M20M20	11473	41473	61473	183.41	209.06
25mm	25mm	38mm	100mm	0.125mm	ELMG-M25M25	11475	41475	61475	241.96	273.56



Speed & Feed: page 141



## 3 FLUTE • POWDERED METAL ROUGHER FOR AGGRESSIVE MACHINING

HSSCo PM	3	Center Cutting	37°	Bright TiCN ZrN	+0.000 -0.002	Radius	Chamfer	Rough Finish					N
----------	---	----------------	-----	-----------------	------------------	--------	---------	--------------	--	--	--	--	---

Additional coatings - nACRo, DLC & TiB<sub>2</sub> available upon request



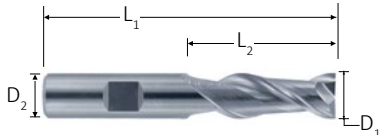
- Outstanding performance in large diameter work
- Truncated, ground profile enables optimum chip evacuation
- Enables heavy cutting while still leaving good finishes
- Polished flute face eliminates chip build-up

### SERIES: ERFPM ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	CORNER		LENGTH	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price
3/8	3/8	3/4	2-1/2	chamfer	0.02 X 45°	std	ERFPM-1212	14489	44489	64489	22.61	27.46
3/8	3/8	1-1/2	3-1/4	chamfer	0.02 X 45°	long	ERFPM-1212-L	14475	44475	64475	39.64	46.43
1/2	1/2	1-1/4	3-1/4	chamfer	0.02 X 45°	std	ERFPM-1616	14492	44492	64492	31.79	41.01
1/2	1/2	1-1/4	3-1/4	radius	0.125	std	ERFPM-1616-R	14498	44498	64498	35.76	44.98
1/2	1/2	1-1/2	3-1/2	chamfer	0.02 X 45°	med	ERFPM-1616-M	14478	44478	64478	47.04	56.26
1/2	1/2	1-1/2	3-1/2	radius	0.125	med	ERFPM-1616-MR	14480	44480	64480	53.16	62.38
1/2	1/2	2	4	chamfer	0.02 X 45°	long	ERFPM-1616-L	14476	44476	64476	47.78	58.31
1/2	1/2	2	4	radius	0.125	long	ERFPM-1616-LR	14477	44477	64477	55.38	65.91
5/8	5/8	1-5/8	3-3/4	chamfer	0.02 X 45°	std	ERFPM-2020	11645	41645	61645	54.08	67.17
5/8	5/8	1-5/8	3-3/4	radius	0.125	std	ERFPM-2020-R	14499	44499	64499	60.84	73.93
5/8	5/8	2-1/8	4-1/4	chamfer	0.02 X 45°	med	ERFPM-2020-M	14493	44493	64493	54.97	69.69
5/8	5/8	2-1/2	4-5/8	chamfer	0.02 X 45°	long	ERFPM-2020-L	14494	44494	64494	65.81	82.17
3/4	3/4	1-5/8	3-7/8	chamfer	0.04 X 45°	std	ERFPM-2424	14481	44481	64481	54.44	70.59
3/4	3/4	1-5/8	3-7/8	radius	0.125	std	ERFPM-2424-R	14484	44484	64484	63.33	79.48
3/4	3/4	2-1/4	4-1/2	chamfer	0.04 X 45°	med	ERFPM-2424-M	14482	44482	64482	62.22	80.39
3/4	3/4	2-1/4	4-1/2	radius	0.125	med	ERFPM-2424-MR	14483	44483	64483	70.62	88.79
3/4	3/4	3	5-1/4	chamfer	0.04 X 45°	long	ERFPM-2424-L	11646	41646	61646	79.00	101.21
1	1	2	4-1/2	chamfer	0.04 X 45°	std	ERFPM-3232	14485	44485	64485	82.89	118.44
1	1	2	4-1/2	radius	0.125	std	ERFPM-3232-R	14488	44488	64488	91.22	126.77
1	1	3	5-1/2	chamfer	0.04 X 45°	med	ERFPM-3232-M	14495	44495	64495	101.85	145.30
1	1	3	5-1/2	radius	0.125	med	ERFPM-3232-MR	14487	44487	64487	109.78	158.00
1	1	4	6-1/2	chamfer	0.04 X 45°	long	ERFPM-3232-L	14486	44486	64486	131.44	186.74
1-1/4	1-1/4	2	4-1/2	chamfer	0.04 X 45°	std	ERFPM-4040	14496	44496	64496	110.92	150.57
1-1/4	1-1/4	4	6-1/2	radius	0.125	std	ERFPM-4040-R	14449	44449	64449	124.79	180.30
1-1/4	1-1/4	4	6-1/2	chamfer	0.04 X 45°	long	ERFPM-4040-L	14497	44497	64497	170.16	225.67

Speed & Feed: page 144

2 FLUTE • 38° HELIX COBALT END MILLS



HSSCo M42	2	Center Cutting	37°	Bright TICN ZrN	+0.0015 -0.0000	Square					N
-----------	---	----------------	-----	-----------------------	--------------------	--------	--	--	--	--	---

Additional coatings - nACRo, DLC & TiB<sub>2</sub> available upon request

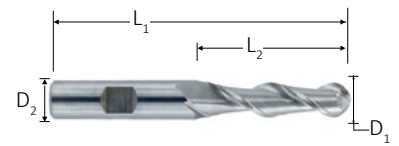
- › Designed for conventional machining of Aluminum Alloys
- › Excellent for use in large diameter work
- › Requires less horsepower and speed than carbide cutters
- › Polished flutes
- › Fully compliant with NAS 986

**SERIES: AA** ✓ **Check Stock Online**

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	LENGTH	PART NAME	BRIGHT EDP	TICN EDP	ZrN EDP	Bright Price	Coated Price
1/4	3/8	1/2	2-5/16	std	AA-1208	10616	40616	60616	17.41	21.13
1/4	3/8	5/8	2-7/16	med	AA-1208-M	10648	40648	60648	20.08	23.18
1/4	3/8	1	2-7/8	med/long	AA-1208-ML	10652	40652	60652	20.22	23.94
1/4	3/8	1-1/4	3-1/16	long	AA-1208-L	10654	40654	60654	21.27	25.61
1/4	3/8	1-3/4	3-9/16	xl	AA-1208-E	10700	40700	60700	32.07	37.03
5/16	3/8	9/16	2-5/16	std	AA-1210	10618	40618	60618	17.41	22.79
5/16	3/8	3/4	2-1/2	med	AA-1210-M	10658	40658	60658	20.08	24.56
5/16	3/8	1-3/8	3-1/8	long	AA-1210-L	10662	40662	60662	20.29	26.56
5/16	3/8	2	3-3/4	xl	AA-1210-E	10702	40702	60702	31.93	39.10
3/8	3/8	9/16	2-5/16	std	AA-1212	10620	40620	60620	17.41	23.23
3/8	3/8	3/4	2-1/2	med	AA-1212-M	10664	40664	60664	20.08	24.93
3/8	3/8	1-1/2	3-1/4	long	AA-1212-L	10668	40668	60668	21.27	28.06
3/8	3/8	2-1/2	4-1/4	xl	AA-1212-E	10704	40704	60704	29.52	38.25
7/16	3/8	1	2-11/16	std	AA-1214	10622	40622	60622	22.34	29.97
1/2	1/2	1	3	std	AA-1616	10624	40624	60624	25.48	33.38
1/2	1/2	1-1/4	3-1/4	med	AA-1616-M	10674	40674	60674	28.75	36.12
1/2	1/2	2	4	long	AA-1616-L	10678	40678	60678	32.24	42.77
1/2	1/2	3	5	xl	AA-1616-E	10708	40708	60708	39.57	52.74
5/8	5/8	1-5/8	3-3/4	std	AA-2020	10626	40626	60626	32.66	41.98
5/8	5/8	2-1/2	4-5/8	long	AA-2020-L	10682	40682	60682	46.94	63.30
5/8	5/8	4	6-1/8	xl	AA-2020-E	10710	40710	60710	58.63	81.53
3/4	3/4	1-5/8	3-7/8	std	AA-2424	10630	40630	60630	48.39	60.13
3/4	3/4	2	4-1/4	med	AA-2424-M	10684	40684	60684	59.93	78.10
3/4	3/4	3	5-1/4	long	AA-2424-L	10686	40686	60686	71.65	93.86
3/4	3/4	4	6-1/4	xl	AA-2424-E	10712	40712	60712	88.34	116.60
7/8	7/8	1-7/8	4-1/8	std	AA-2828	10634	40634	60634	62.97	91.83
1	3/4	1-7/8	4-1/8	std	AA-2432	10632	40632	60632	75.30	93.41
1	1	2	4-1/2	std	AA-3232	10636	40636	60636	76.64	95.00
1	1	4	6-1/2	long	AA-3232-L	10690	40690	60690	117.46	172.76
1	1	6	8-1/2	xl	AA-3232-E	10716	40716	60716	149.22	220.32



Speed & Feed: page 142



## 2 FLUTE • BALL NOSE 38° HELIX COBALT END MILLS

HSSCo M42	2	Center Cutting	37°	Bright TICN ZrN	+0.0005 -0.0005 ≤5/8	+0.001 -0.001 >5/8	Ball					N
--------------	---	-------------------	-----	-----------------------	----------------------------	--------------------------	------	--	--	--	--	---

Additional coatings - nACRo, DLC & TiB<sub>2</sub> 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** ✓ **Check Stock Online**



DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	LENGTH	PART NAME	BRIGHT EDP	TICN EDP	ZRN EDP	Bright Price	Coated Price
1/4	3/8	1/2	2-5/16	std	AA-1208-B	12842	42842	62842	20.89	24.61
1/4	3/8	1-1/4	3-1/16	long	AA-1208-LB	12844	42844	62844	25.52	29.86
5/16	3/8	9/16	2-5/16	std	AA-1210-B	12848	42848	62848	20.89	26.27
5/16	3/8	1-3/8	3-1/8	long	AA-1210-LB	12850	42850	62850	24.35	30.62
3/8	3/8	9/16	2-5/16	std	AA-1212-B	12854	42854	62854	20.89	26.71
3/8	3/8	1-1/2	3-1/4	long	AA-1212-LB	12856	42856	62856	25.52	32.31
7/16	3/8	1	2-11/16	std	AA-1214-B	12860	42860	62860	26.81	34.44
1/2	1/2	1	3	std	AA-1616-B	12866	42866	62866	30.58	38.48
1/2	1/2	2	4	long	AA-1616-LB	12868	42868	62868	38.69	49.22
1/2	1/2	3	5	xl	AA-1616-EB	12870	42870	62870	47.48	60.65
5/8	5/8	1-5/8	3-3/4	std	AA-2020-B	12872	42872	62872	39.19	52.28
5/8	5/8	2-1/2	4-5/8	long	AA-2020-LB	12874	42874	62874	56.33	72.69
5/8	5/8	4	6-1/8	xl	AA-2020-EB	12876	42876	62876	70.36	93.26
3/4	3/4	1-5/8	3-7/8	std	AA-2424-B	12878	42878	62878	58.07	74.22
3/4	3/4	3	5-1/4	long	AA-2424-LB	12880	42880	62880	85.98	108.19
3/4	3/4	4	6-1/4	xl	AA-2424-EB	12882	42882	62882	106.01	131.86
7/8	7/8	1-7/8	4-1/8	std	AA-2828-B	12886	42886	62886	75.56	104.42
7/8	7/8	3-1/2	5-3/4	long	AA-2828-LB	12888	42888	62888	103.47	141.95
1	3/4	1-7/8	4-1/8	std	AA-2432-B	12884	42884	62884	90.36	125.91
1	1	2	4-1/2	std	AA-3232-B	12892	42892	62892	91.97	127.52
1	1	4	6-1/2	long	AA-3232-LB	12894	42894	62894	140.95	196.25
1	1	6	8-1/2	xl	AA-3232-EB	12896	42896	62896	179.06	250.16

Speed & Feed: page 142



www.melintool.com

MELIN TOOL COMPANY

VXMG4T-1616-B

HOME COMPANY PRODUCTS

Melin Tool Search

- Stock: 15
- Delivery: --
- Tool Info: VXMG4T-1616-B
- EDP: H6374
- Dia: 1/2
- Shk: 1/2
- Loc: 1
- OAL: 3
- Coating: nACRo

Fast • Stock Levels • Pricing • Lead Time

# Search Product & Pricing

**Quick Search** - Search our live inventory **Online 24 hours a day.** Search with EDP, Part Name, or Tool Descriptions.

You can find...

- Pricing
- Dimensional Information
- Availability & More



# Specials/Custom Tools

**WE LOVE SPECIALS!!!** Getting the very most from your tooling and truly maximizing performance requires completely aligned tooling, set up and process tailored to the specific machine and application at hand. Many times, that requires customizing the cutting tool geometry and even the coating recipe so the least amount of machining time is required. That **LOWERS** manufacturing costs! But it also requires **SPEED OF SUPPLY**. Melin Tool is set up to deliver what you need... **FAST!**



Your Performance Supplier

www.melintool.com

INSIGHTS OF THE MONTH

Melin Inventory Browse Catalog Find a Distributor

**THE MELIN REFRESHER**

Enhance Your Results Reduce Manufacturing Costs

**FASTER MATERIAL REMOVAL**

VXMG variable flute carbide end mills provide extreme performance with fastest metal removal and longest tool life of ANY brand in the business

Variable Flute RESOURCES

VXMG stock VXMG literature

Application Advice

Productivity Tips of the Month

Use Trochoidal Milling for efficient machining in pocketing operations. Use a constant circular interpolation movement at full axial depth.

nACO and nACRo coatings have higher heat resistance and provide higher lubricity than ALTiN, TiAlN, & TiCN. Proven to deliver longer tool life on Titanium Alloys, Stainless & Steel Alloys and Nickel Based Alloys.

www.melintool.com

Speed & Feed info

# Latest News

## SIGN UP TODAY!

Get the latest news from MELIN Tool.

Melin distributes a monthly email providing the latest information on what is happening at Melin Tool and in the manufacturing world. We also provide application advice, technical support, and product videos to help make machining easier.

SIGN UP with us today online at

[www.melintool.com](http://www.melintool.com)

to get REFRESHED!



# Technical Blog & Support

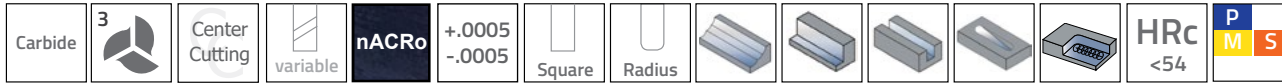
Our field engineers are available for real time AND face-to-face application work. Most applications can be made more productive, with our help. Our field engineers can be a valuable resource for you and your company. Visit our Technical Blog today at [www.melintool.com](http://www.melintool.com) or contact a specialist direct at 216-362-4200.

## 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



- ▶ 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 [✓ Check Stock Online](#)

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	PART NAME	nACRo EDP	nACRo Price
.031 (1/32)	1/8	0.046		1-1/2	0.005	VXMG3T-.031-SF	H6917	31.98
.031 (1/32)	1/8	0.046	0.156	2-1/2	0.005	VXMG3T-.031-SF5	H6918	50.04
.031 (1/32)	1/8	0.046	0.250	2-1/2	0.005	VXMG3T-.031-SF8	H6919	51.23
.031 (1/32)	1/8	0.093		1-1/2	SQ	VXMG3T-.031-NR	H6920	31.38
.031 (1/32)	1/8	0.093		1-1/2	0.005	VXMG3T-.031-LF3	H6921	31.98
.031 (1/32)	1/8	0.156		2-1/2	0.005	VXMG3T-.031-LF5	H6922	39.70
.047 (3/64)	1/8	0.070		1-1/2	0.005	VXMG3T-.047-SF	H6923	31.98
.047 (3/64)	1/8	0.070	0.250	2-1/2	0.005	VXMG3T-.047-SF5	H6924	50.04
.047 (3/64)	1/8	0.070	0.375	2-1/2	0.005	VXMG3T-.047-SF8	H6925	51.23
.047 (3/64)	1/8	0.141		1-1/2	SQ	VXMG3T-.047-NR	H6926	31.38
.047 (3/64)	1/8	0.141		1-1/2	0.005	VXMG3T-.047-LF3	H6927	31.98
.047 (3/64)	1/8	0.250		2-1/2	0.005	VXMG3T-.047-LF5	H6928	39.70
.055	1/8	0.083		1-1/2	0.005	VXMG3T-.055-SF	H6929	31.98
.055	1/8	0.165		1-1/2	0.005	VXMG3T-.055-LF3	H6930	31.98
.055	1/8	0.275		1-1/2	0.005	VXMG3T-.055-LF5	H6931	39.70
.062 (1/16)	1/8	0.093		1-1/2	0.010	VXMG3T-.062-SF	H6932	29.95
.062 (1/16)	1/8	0.093	0.312	2-1/2	0.010	VXMG3T-.062-SF5	H6933	50.04
.062 (1/16)	1/8	0.093	0.500	2-1/2	0.010	VXMG3T-.062-SF8	H6934	51.23
.062 (1/16)	1/8	0.186		1-1/2	SQ	VXMG3T-.062-NR	H6935	29.36
.062 (1/16)	1/8	0.186		1-1/2	0.010	VXMG3T-.062-LF3	H6936	29.95
.062 (1/16)	1/8	0.312		2-1/2	0.010	VXMG3T-.062-LF5	H6937	38.16
.078 (5/64)	1/8	0.177		1-1/2	0.010	VXMG3T-.078-SF	H6938	29.95
.078 (5/64)	1/8	0.234		1-1/2	SQ	VXMG3T-.078-NR	H6939	29.36
.078 (5/64)	1/8	0.234		1-1/2	0.010	VXMG3T-.078-LF3	H6940	29.95
.093 (3/32)	1/8	0.140		1-1/2	0.010	VXMG3T-.093-SF	H6941	29.95
.093 (3/32)	1/8	0.140	0.500	2-1/2	0.010	VXMG3T-.093-SF5	H6942	50.04
.093 (3/32)	1/8	0.140	0.750	2-1/2	0.010	VXMG3T-.093-SF8	H6943	51.23
.093 (3/32)	1/8	0.279		1-1/2	SQ	VXMG3T-.093-NR	H6944	29.36
.093 (3/32)	1/8	0.279		1-1/2	0.010	VXMG3T-.093-LF3	H6945	29.95
.093 (3/32)	1/8	0.500		2-1/2	0.010	VXMG3T-.093-LF5	H6946	38.04

Speed & Feed: page 145

## 3 FLUTE • VARIABLE FLUTE - HP ROUGHING & FINISHING APPLICATIONS

Carbide	3	Center Cutting	variable	nACRo	+0.012mm -0.012mm <3mm	+0.000mm -0.050mm 3mm	Radius						HRC <54	P 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\_\_ ✓ Check Stock Online

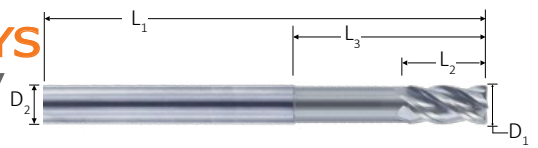
DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	PART NAME	nACRo EDP	nACRo Price
1.0mm	4mm	1.5mm		50mm	0.10mm	VXMG3T-M1.0-SF	H6947	35.42
1.0mm	4mm	1.5mm	5mm	50mm	0.10mm	VXMG3T-M1.0-SF5	H6948	52.78
1.0mm	4mm	1.5mm	8mm	50mm	0.10mm	VXMG3T-M1.0-SF8	H6949	53.97
1.0mm	4mm	3.0mm		50mm	0.10mm	VXMG3T-M1.0-LF3	H6950	35.42
1.5mm	4mm	2.2mm		50mm	0.20mm	VXMG3T-M1.5-SF	H6951	33.40
1.5mm	4mm	2.2mm	7.5mm	50mm	0.20mm	VXMG3T-M1.5-SF5	H6952	52.78
1.5mm	4mm	2.2mm	12mm	50mm	0.20mm	VXMG3T-M1.5-SF8	H6953	54.20
1.5mm	4mm	4.5mm		50mm	0.20mm	VXMG3T-M1.5-LF3	H6954	33.40
1.6mm	4mm	2.4mm		50mm	0.20mm	VXMG3T-M1.6-SF	H2074	33.40
1.6mm	4mm	5.0mm		50mm	0.20mm	VXMG3T-M1.6-LF3	H6915	33.40
2.0mm	4mm	3.0mm		50mm	0.20mm	VXMG3T-M2.0-SF	H6955	33.40
2.0mm	4mm	3.0mm	10mm	50mm	0.20mm	VXMG3T-M2.0-SF5	H6956	52.78
2.0mm	4mm	3.0mm	16mm	50mm	0.20mm	VXMG3T-M2.0-SF8	H6957	53.97
2.0mm	4mm	6.0mm		50mm	0.20mm	VXMG3T-M2.0-LF3	H6958	33.40
2.5mm	4mm	3.8mm		50mm	0.20mm	VXMG3T-M2.5-SF	H6916	33.40
2.5mm	4mm	7.5mm		50mm	0.20mm	VXMG3T-M2.5-LF3	H6959	33.40
3.0mm	4mm	4.5mm		50mm	0.20mm	VXMG3T-M3.0-SF	H6960	33.40
3.0mm	4mm	4.5mm	15mm	50mm	0.20mm	VXMG3T-M3.0-SF5	H6961	50.04
3.0mm	4mm	9.0mm		50mm	0.20mm	VXMG3T-M3.0-LF3	H6962	33.40



Speed & Feed: page 145

# TITANIUM ALLOYS & HIGH TEMP ALLOYS

## 4 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS



Carbide	4	Center Cutting	variable	nACRo	+0.000 -0.002	+0.0005 -0.0005 <1/8	Square	Radius	Chamfer		HRC <54	P 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

[BACK TO INDEX](#)



### SERIES: VXMG4T ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nACRo EDP	nACRo Price
1/16	1/8	1/8		1-1/2	SQ	std	VXMG4T-402-NR	H6062	23.15
1/16	1/8	1/8		1-1/2	0.010	std	VXMG4T-402-R010	H6063	23.91
3/32	1/8	3/16		1-1/2	SQ	std	VXMG4T-403-NR	H6064	23.15
3/32	1/8	3/16		1-1/2	0.010	std	VXMG4T-403-R010	H6065	23.91
1/8	1/8	3/16	3/8	2	0.015	ext neck	VXMG4T-404-R015N1	11709	25.67
1/8	1/8	3/16	7/8	2	0.015	ext neck	VXMG4T-404-R015N2	H6066	25.67
1/8	1/8	3/16	no neck	2	0.015	no neck	VXMG4T-404-R015NN	H6067	19.98
1/8	1/8	1/4		1-1/2	SQ	stub	VXMG4T-404-NRS	H6068	18.71
1/8	1/8	1/4		1-1/2	0.015	stub	VXMG4T-404-R015S	H6069	18.71
1/8	1/8	3/8		1-1/2	0.015	stub	VXMG4T-404-R015S1	H6912	19.98
1/8	1/8	1/2		1-1/2	.011 X 45°	std	VXMG4T-404	H6070	19.98
1/8	1/8	1/2		1-1/2	SQ	std	VXMG4T-404-NR	H6071	19.98
1/8	1/8	1/2		1-1/2	0.015	std	VXMG4T-404-R015	H6072	19.98
3/16	3/16	1/4		1-1/2	SQ	stub	VXMG4T-606-NRS	H6073	21.59
3/16	3/16	1/4		1-1/2	0.015	stub	VXMG4T-606-R015S	H6074	21.59
3/16	3/16	1/4	1/2	3	0.015	ext neck	VXMG4T-606-R015N1	H6075	31.30
3/16	3/16	1/4	3/4	3	0.015	ext neck	VXMG4T-606-R015N2	H6076	31.30
3/16	3/16	1/4	no neck	3	0.015	no neck	VXMG4T-606-R015NN	H6077	28.62
3/16	3/16	5/8		2	SQ	std	VXMG4T-606-NR	H6079	24.10
3/16	3/16	5/8		2	.011 X 45°	std	VXMG4T-606	H6078	24.10
3/16	3/16	5/8		2	0.015	std	VXMG4T-606-R015	14793	24.10
1/4	1/4	3/8		2	SQ	stub	VXMG4T-808-NRS	H6080	26.92
1/4	1/4	3/8		2	0.015	stub	VXMG4T-808-R015S	H6081	26.92
1/4	1/4	3/8		2	0.030	stub	VXMG4T-808-R030S	H6082	26.92
1/4	1/4	3/8		2	0.060	stub	VXMG4T-808-R060S	H7307	26.92
1/4	1/4	3/8	3/4	3	0.015	ext neck	VXMG4T-808-R015N1	H6083	44.01
1/4	1/4	3/8	3/4	3	0.030	ext neck	VXMG4T-808-R030N1	H6084	44.01
1/4	1/4	3/8	1-1/8	3	0.015	ext neck	VXMG4T-808-R015N2	H6085	44.01
1/4	1/4	3/8	1-1/8	3	0.030	ext neck	VXMG4T-808-R030N2	H6086	44.01
1/4	1/4	3/8	2-1/8	4	0.015	ext neck	VXMG4T-808-R015N3	H6087	50.61
1/4	1/4	3/8	2-1/8	4	0.030	ext neck	VXMG4T-808-R030N3	H6088	50.61
1/4	1/4	3/8	no neck	4	0.015	no neck	VXMG4T-808-R015NN	H6089	40.44
1/4	1/4	3/8	no neck	4	0.030	no neck	VXMG4T-808-R030NN	H6090	40.44
1/4	1/4	1/2		2	.011 X 45°	stub	VXMG4T-808-S	H6091	26.92
1/4	1/4	3/4		2-1/2	SQ	std	VXMG4T-808-NR	H6092	31.38
1/4	1/4	3/4		2-1/2	.011 X 45°	std	VXMG4T-808	33719	31.38
1/4	1/4	3/4		2-1/2	0.015	std	VXMG4T-808-R015	14718	31.38
1/4	1/4	3/4		2-1/2	0.030	std	VXMG4T-808-R030	H6093	31.38
1/4	1/4	3/4		2-1/2	0.060	std	VXMG4T-808-R060	H7308	31.38

Speed & Feed:  
page 146

sizes continued on next page



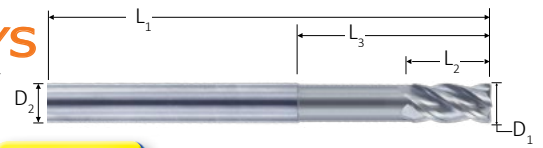
SERIES: VXMG4T **✓ Check Stock Online**

4 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nACRo EDP	nACRo Price
1/4	1/4	1-1/8		3	SQ	long	VXMG4T-808-NRL	H6094	36.66
1/4	1/4	1-1/8		3	0.015	long	VXMG4T-808-R015L	H6095	36.66
1/4	1/4	1-1/8		3	0.030	long	VXMG4T-808-R030L	H6096	36.66
5/16	5/16	1/2		2	SQ	stub	VXMG4T-1010-NRS	H6097	39.70
5/16	5/16	1/2		2	0.015	stub	VXMG4T-1010-R015S	H6098	39.70
5/16	5/16	1/2		2	0.030	stub	VXMG4T-1010-R030S	H6099	39.70
5/16	5/16	13/16		2-1/2	SQ	std	VXMG4T-1010-NR	H6101	41.30
5/16	5/16	13/16		2-1/2	.011 X 45°	std	VXMG4T-1010	H6100	41.30
5/16	5/16	13/16		2-1/2	0.015	std	VXMG4T-1010-R015	H6102	41.30
5/16	5/16	13/16		2-1/2	0.030	std	VXMG4T-1010-R030	H6103	41.30
5/16	5/16	1-1/8		3	SQ	long	VXMG4T-1010-NRL	H6104	47.62
5/16	5/16	1-1/8		3	0.015	long	VXMG4T-1010-R015L	H6105	47.62
5/16	5/16	1-1/8		3	0.030	long	VXMG4T-1010-R030L	H6106	47.62
3/8	3/8	1/2		2	SQ	stub	VXMG4T-1212-NRS	H6107	45.99
3/8	3/8	1/2		2	0.015	stub	VXMG4T-1212-R015S	H6108	45.99
3/8	3/8	1/2		2	0.030	stub	VXMG4T-1212-R030S	H6109	45.99
3/8	3/8	1/2		2	0.060	stub	VXMG4T-1212-R060S	H7309	45.99
3/8	3/8	1/2	1-1/8	3	0.015	ext neck	VXMG4T-1212-R015N1	H6110	62.09
3/8	3/8	1/2	1-1/8	3	0.030	ext neck	VXMG4T-1212-R030N1	H6111	62.09
3/8	3/8	1/2	2-1/8	4	0.015	ext neck	VXMG4T-1212-R015N2	H6112	71.38
3/8	3/8	1/2	2-1/8	4	0.030	ext neck	VXMG4T-1212-R030N2	H6113	71.38
3/8	3/8	1/2	3-1/8	6	0.015	ext neck	VXMG4T-1212-R015N3	H6114	88.92
3/8	3/8	1/2	3-1/8	6	0.030	ext neck	VXMG4T-1212-R030N3	H6115	88.92
3/8	3/8	1/2	no neck	6	0.015	no neck	VXMG4T-1212-R015NN	H6116	74.19
3/8	3/8	1/2	no neck	6	0.030	no neck	VXMG4T-1212-R030NN	H6117	74.19
3/8	3/8	5/8		2	.011 X 45°	stub	VXMG4T-1212-S	H6118	45.99
3/8	3/8	1		2-1/2	SQ	std	VXMG4T-1212-NR	H6120	48.83
3/8	3/8	1		2-1/2	.011 X 45°	std	VXMG4T-1212	H6119	48.83
3/8	3/8	1		2-1/2	0.015	std	VXMG4T-1212-R015	14782	48.83
3/8	3/8	1		2-1/2	0.030	std	VXMG4T-1212-R030	H6121	48.83
3/8	3/8	1		2-1/2	0.060	std	VXMG4T-1212-R060	H7310	48.83
3/8	3/8	1-1/8		3	SQ	long	VXMG4T-1212-NRL	H6122	58.27
3/8	3/8	1-1/8		3	0.015	long	VXMG4T-1212-R015L	H6123	58.27
3/8	3/8	1-1/8		3	0.030	long	VXMG4T-1212-R030L	H6124	58.27
7/16	7/16	1		2-3/4	0.015	std	VXMG4T-1414-R015	H6125	65.28
7/16	7/16	1		2-3/4	0.030	std	VXMG4T-1414-R030	H6126	65.28
1/2	1/2	5/8		2-1/2	SQ	stub	VXMG4T-1616-NRS	14719	71.58
1/2	1/2	5/8		2-1/2	.011 X 45°	stub	VXMG4T-1616-S	H6130	71.58
1/2	1/2	5/8		2-1/2	0.015	stub	VXMG4T-1616-R015S	H6127	71.58
1/2	1/2	5/8		2-1/2	0.030	stub	VXMG4T-1616-R030S	H6128	71.58
1/2	1/2	5/8		2-1/2	0.060	stub	VXMG4T-1616-R060S	H6129	71.58
1/2	1/2	5/8	1-1/2	4	0.015	ext neck	VXMG4T-1616-R015N1	H6131	130.52
1/2	1/2	5/8	1-1/2	4	0.030	ext neck	VXMG4T-1616-R030N1	H6132	130.52
1/2	1/2	5/8	1-1/2	4	0.060	ext neck	VXMG4T-1616-R060N1	H6133	130.52
1/2	1/2	5/8	2-1/4	4	0.015	ext neck	VXMG4T-1616-R015N2	H6134	130.52
1/2	1/2	5/8	2-1/4	4	0.030	ext neck	VXMG4T-1616-R030N2	H6135	130.52
1/2	1/2	5/8	2-1/4	4	0.060	ext neck	VXMG4T-1616-R060N2	H6136	130.52



# TITANIUM ALLOYS & HIGH TEMP ALLOYS



## 4 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS

✓ **Check Stock Online**

[BACK TO INDEX](#)

SERIES: VXMG4T



DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nACRo EDP	nACRo Price
1/2	1/2	5/8	3-3/8	6	0.015	ext neck	VXMG4T-1616-R015N3	H6137	160.91
1/2	1/2	5/8	3-3/8	6	0.030	ext neck	VXMG4T-1616-R030N3	H6138	160.91
1/2	1/2	5/8	3-3/8	6	0.060	ext neck	VXMG4T-1616-R060N3	H6139	160.91
1/2	1/2	5/8	no neck	6	0.015	no neck	VXMG4T-1616-R015NN	H6140	130.38
1/2	1/2	5/8	no neck	6	0.030	no neck	VXMG4T-1616-R030NN	H6141	130.38
1/2	1/2	5/8	no neck	6	0.060	no neck	VXMG4T-1616-R060NN	H6142	130.38
1/2	1/2	1		3	SQ	std	VXMG4T-1616-NR	H6144	78.58
1/2	1/2	1		3	.011 X 45°	std	VXMG4T-1616	H6143	78.58
1/2	1/2	1		3	0.015	std	VXMG4T-1616-R015	H6145	78.58
1/2	1/2	1		3	0.030	std	VXMG4T-1616-R030	14790	78.58
1/2	1/2	1		3	0.060	std	VXMG4T-1616-R060	H6146	78.58
1/2	1/2	1		3	0.090	std	VXMG4T-1616-R090	H7311	78.58
1/2	1/2	1		3	0.120	std	VXMG4T-1616-R120	H7312	78.58
1/2	1/2	1-1/4		3	SQ	med	VXMG4T-1616-NRM	H6148	94.10
1/2	1/2	1-1/4		3	.011 X 45°	med	VXMG4T-1616-M	H6147	78.58
1/2	1/2	1-1/4		3	0.015	med	VXMG4T-1616-R015M	H6149	78.58
1/2	1/2	1-1/4		3	0.030	med	VXMG4T-1616-R030M	H6150	78.58
1/2	1/2	1-1/4		3	0.060	med	VXMG4T-1616-R060M	H6151	78.58
1/2	1/2	1-1/4		3	0.090	med	VXMG4T-1616-R090M	H7313	78.58
1/2	1/2	1-1/4		3	0.120	med	VXMG4T-1616-R120M	H6152	87.14
1/2	1/2	1-1/2		4	SQ	med/long	VXMG4T-1616-NRML	H6154	100.17
1/2	1/2	1-1/2		4	.011 X 45°	med/long	VXMG4T-1616-ML	H6153	100.17
1/2	1/2	1-1/2		4	0.030	med/long	VXMG4T-1616-R030ML	H6155	100.17
1/2	1/2	1-1/2		4	0.060	med/long	VXMG4T-1616-R060ML	H6156	100.17
1/2	1/2	2		4	0.000	long	VXMG4T-1616-NRL	H6157	100.17
1/2	1/2	2		4	0.015	long	VXMG4T-1616-R015L	H6158	100.17
1/2	1/2	2		4	0.030	long	VXMG4T-1616-R030L	H6159	100.17
1/2	1/2	2		4	0.060	long	VXMG4T-1616-R060L	H6160	100.17
5/8	5/8	3/4		3	SQ	stub	VXMG4T-2020-NRS	H6162	129.79
5/8	5/8	3/4		3	.022 X 45°	stub	VXMG4T-2020-S	H6161	129.79
5/8	5/8	3/4		3	0.030	stub	VXMG4T-2020-R030S	H6163	129.79
5/8	5/8	3/4		3	0.060	stub	VXMG4T-2020-R060S	H6164	129.79
5/8	5/8	3/4		3	0.090	stub	VXMG4T-2020-R090S	H6165	129.79
5/8	5/8	3/4	1-5/8	5	0.030	ext neck	VXMG4T-2020-R030N1	H6166	223.70
5/8	5/8	3/4	1-5/8	5	0.060	ext neck	VXMG4T-2020-R060N1	H6167	223.70
5/8	5/8	3/4	1-5/8	5	0.090	ext neck	VXMG4T-2020-R090N1	H6168	223.70
5/8	5/8	3/4	2-3/8	5	0.060	ext neck	VXMG4T-2020-R060N2	H6169	223.70
5/8	5/8	3/4	3-3/8	6	0.060	ext neck	VXMG4T-2020-R060N3	H6170	201.87
5/8	5/8	3/4	no neck	6	0.060	no neck	VXMG4T-2020-R060NN	H6171	201.87
5/8	5/8	1-1/4		3-1/2	SQ	std	VXMG4T-2020-NR	H6173	136.94
5/8	5/8	1-1/4		3-1/2	.022 X 45°	std	VXMG4T-2020	H6172	136.94
5/8	5/8	1-1/4		3-1/2	0.030	std	VXMG4T-2020-R030	14791	136.94
5/8	5/8	1-1/4		3-1/2	0.060	std	VXMG4T-2020-R060	H6174	136.94
5/8	5/8	1-1/4		3-1/2	0.090	std	VXMG4T-2020-R090	H6175	136.94
5/8	5/8	2-1/4		5	0.000	long	VXMG4T-2020-NRL	H6176	172.48
5/8	5/8	2-1/4		5	0.030	long	VXMG4T-2020-R030L	H6177	172.48
5/8	5/8	2-1/4		5	0.060	long	VXMG4T-2020-R060L	H6178	172.48

Speed & Feed: page 146

sizes continued on next page

## 4 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS

SERIES: VXMG4T

✓ **Check Stock Online**

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nACRo EDP	nACRo Price
5/8	5/8	3-1/4		6	0.030	xl	VXMG4T-2020-R030E	H6179	201.87
5/8	5/8	3-1/4		6	0.060	xl	VXMG4T-2020-R060E	H6180	201.87
3/4	3/4	7/8		3	SQ	stub	VXMG4T-2424-NRS	H6181	191.96
3/4	3/4	7/8		3	.022 X 45°	stub	VXMG4T-2424-S	H6186	191.96
3/4	3/4	7/8		3	0.030	stub	VXMG4T-2424-R030S	H6182	191.96
3/4	3/4	7/8		3	0.060	stub	VXMG4T-2424-R060S	H6183	191.96
3/4	3/4	7/8		3	0.090	stub	VXMG4T-2424-R090S	H6184	191.96
3/4	3/4	7/8		3	0.120	stub	VXMG4T-2424-R120S	H6185	206.08
3/4	3/4	7/8	2	5	0.030	ext neck	VXMG4T-2424-R030N1	H6187	261.94
3/4	3/4	7/8	2	5	0.060	ext neck	VXMG4T-2424-R060N1	H6188	261.94
3/4	3/4	7/8	2	5	0.090	ext neck	VXMG4T-2424-R090N1	H6189	261.94
3/4	3/4	7/8	2	5	0.120	ext neck	VXMG4T-2424-R120N1	H6190	261.94
3/4	3/4	7/8	2-1/2	5	0.030	ext neck	VXMG4T-2424-R030N2	H6191	261.94
3/4	3/4	7/8	2-1/2	5	0.060	ext neck	VXMG4T-2424-R060N2	H6192	261.94
3/4	3/4	7/8	2-1/2	5	0.090	ext neck	VXMG4T-2424-R090N2	H6193	261.94
3/4	3/4	7/8	2-1/2	5	0.120	ext neck	VXMG4T-2424-R120N2	H6194	261.94
3/4	3/4	7/8	3-3/8	6	0.030	ext neck	VXMG4T-2424-R030N3	H6195	284.97
3/4	3/4	7/8	3-3/8	6	0.060	ext neck	VXMG4T-2424-R060N3	H6196	284.97
3/4	3/4	7/8	3-3/8	6	0.090	ext neck	VXMG4T-2424-R090N3	H6197	284.97
3/4	3/4	7/8	3-3/8	6	0.120	ext neck	VXMG4T-2424-R120N3	H6198	284.97
3/4	3/4	7/8	no neck	6	0.030	no neck	VXMG4T-2424-R030NN	H6199	269.68
3/4	3/4	7/8	no neck	6	0.060	no neck	VXMG4T-2424-R060NN	H6200	269.68
3/4	3/4	7/8	no neck	6	0.090	no neck	VXMG4T-2424-R090NN	H6201	269.68
3/4	3/4	7/8	no neck	6	0.120	no neck	VXMG4T-2424-R120NN	H6202	269.68
3/4	3/4	1-1/2		4	SQ	std	VXMG4T-2424-NR	H6204	206.08
3/4	3/4	1-1/2		4	.022 X 45°	std	VXMG4T-2424	H6203	206.08
3/4	3/4	1-1/2		4	0.030	std	VXMG4T-2424-R030	H6205	206.08
3/4	3/4	1-1/2		4	0.060	std	VXMG4T-2424-R060	34931	206.08
3/4	3/4	1-1/2		4	0.090	std	VXMG4T-2424-R090	H6206	206.08
3/4	3/4	1-1/2		4	0.120	std	VXMG4T-2424-R120	H6207	206.08
3/4	3/4	2-1/4		5	SQ	long	VXMG4T-2424-NRL	H6208	244.69
3/4	3/4	2-1/4		5	0.030	long	VXMG4T-2424-R030L	H6209	244.69
3/4	3/4	2-1/4		5	0.060	long	VXMG4T-2424-R060L	H6210	244.69
3/4	3/4	2-1/4		5	0.090	long	VXMG4T-2424-R090L	H6211	244.69
3/4	3/4	2-1/4		5	0.120	long	VXMG4T-2424-R120L	H6212	244.69
3/4	3/4	3		6	SQ	xl	VXMG4T-2424-NRE	H6213	286.83
3/4	3/4	3		6	0.030	xl	VXMG4T-2424-R030E	H6214	286.83
3/4	3/4	3		6	0.060	xl	VXMG4T-2424-R060E	H6215	286.83
3/4	3/4	3		6	0.090	xl	VXMG4T-2424-R090E	H6216	286.83
3/4	3/4	3		6	0.120	xl	VXMG4T-2424-R120E	H6217	286.83
1	1	1-1/2		4	SQ	std	VXMG4T-3232-NR	H6219	315.10
1	1	1-1/2		4	.022 X 45°	std	VXMG4T-3232	H6218	315.10
1	1	1-1/2		4	0.030	std	VXMG4T-3232-R030	H6220	315.10
1	1	1-1/2		4	0.060	std	VXMG4T-3232-R060	H6221	315.10
1	1	1-1/2		4	0.090	std	VXMG4T-3232-R090	H6222	315.10
1	1	1-1/2		4	0.120	std	VXMG4T-3232-R120	H6223	315.10

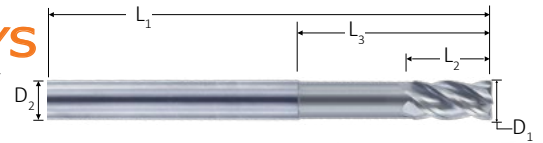


Speed & Feed: page 146

sizes continued on next page

# TITANIUM ALLOYS & HIGH TEMP ALLOYS

## 4 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS



[BACK TO INDEX](#)

SERIES: VXMG4T

✓ **Check Stock Online**



DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nACRo EDP	nACRo Price
1	1	1-1/2	2-1/4	5	0.030	ext neck	VXMG4T-3232-R030N1	H6224	374.76
1	1	1-1/2	2-1/4	5	0.060	ext neck	VXMG4T-3232-R060N1	H6225	374.76
1	1	1-1/2	2-1/4	5	0.090	ext neck	VXMG4T-3232-R090N1	H6226	374.76
1	1	1-1/2	2-1/4	5	0.120	ext neck	VXMG4T-3232-R120N1	H6227	374.76
1	1	1-1/2	2-5/8	5	0.030	ext neck	VXMG4T-3232-R030N2	H6228	374.76
1	1	1-1/2	2-5/8	5	0.060	ext neck	VXMG4T-3232-R060N2	H6229	374.76
1	1	1-1/2	2-5/8	5	0.090	ext neck	VXMG4T-3232-R090N2	H6230	374.76
1	1	1-1/2	2-5/8	5	0.120	ext neck	VXMG4T-3232-R120N2	H6231	374.76
1	1	1-1/2	3-3/8	6	0.030	ext neck	VXMG4T-3232-R030N3	H6232	449.31
1	1	1-1/2	3-3/8	6	0.060	ext neck	VXMG4T-3232-R060N3	H6233	449.31
1	1	1-1/2	3-3/8	6	0.090	ext neck	VXMG4T-3232-R090N3	H6234	449.31
1	1	1-1/2	3-3/8	6	0.120	ext neck	VXMG4T-3232-R120N3	H6235	449.31
1	1	1-1/2	4-1/8	6	0.030	ext neck	VXMG4T-3232-R030N4	H6236	449.31
1	1	1-1/2	4-1/8	6	0.060	ext neck	VXMG4T-3232-R060N4	H6237	449.31
1	1	1-1/2	4-1/8	6	0.090	ext neck	VXMG4T-3232-R090N4	H6238	449.31
1	1	1-1/2	4-1/8	6	0.120	ext neck	VXMG4T-3232-R120N4	H6239	449.31
1	1	1-1/2	no neck	6	0.030	no neck	VXMG4T-3232-R030NN	H6240	419.95
1	1	1-1/2	no neck	6	0.060	no neck	VXMG4T-3232-R060NN	H6241	419.95
1	1	1-1/2	no neck	6	0.090	no neck	VXMG4T-3232-R090NN	H6242	419.95
1	1	1-1/2	no neck	6	0.120	no neck	VXMG4T-3232-R120NN	H6243	419.95
1	1	2-1/4		5	SQ	long	VXMG4T-3232-NRL	H6244	356.03
1	1	2-1/4		5	0.030	long	VXMG4T-3232-R030L	H6245	356.03
1	1	2-1/4		5	0.060	long	VXMG4T-3232-R060L	H6246	356.03
1	1	2-1/4		5	0.090	long	VXMG4T-3232-R090L	H6247	356.03
1	1	2-1/4		5	0.120	long	VXMG4T-3232-R120L	H6248	356.03
1	1	3		6	0.030	xl	VXMG4T-3232-R030E	H6249	458.54
1	1	3		6	0.060	xl	VXMG4T-3232-R060E	H6250	458.54
1	1	3		6	0.090	xl	VXMG4T-3232-R090E	H6251	458.54
1	1	3		6	0.120	xl	VXMG4T-3232-R120E	H6252	458.54

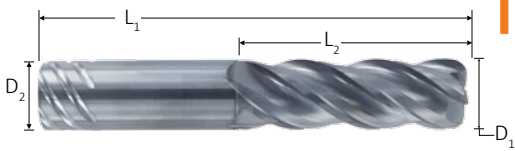
Speed & Feed: page 146

Don't see what you need? We offer solutions to get you a special Faster!





# TITANIUM ALLOYS & HIGH TEMP ALLOYS



4 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS

[BACK TO INDEX](#)

Carbide	4	Center Cutting	variable	nACRo	+0.000 -0.002	Radius						HRC <54	P 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

✓ [Check Stock Online](#)

## SERIES: VXMG4T-\_\_-SL (SAFE LOCK SHANK)

DIA D <sub>1</sub>		LOC L <sub>2</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nACRo EDP	nACRo Price
1/2	1/2	1	3	0.015	std	VXMG4T-1616-R015-SL	H6862	99.22
1/2	1/2	1	3	0.030	std	VXMG4T-1616-R030-SL	H6863	99.22
1/2	1/2	1	3	0.060	std	VXMG4T-1616-R060-SL	H6864	99.22
1/2	1/2	2	4	0.015	long	VXMG4T-1616-R015L-SL	H6865	123.19
1/2	1/2	2	4	0.030	long	VXMG4T-1616-R030L-SL	H6866	123.19
1/2	1/2	2	4	0.060	long	VXMG4T-1616-R060L-SL	H6867	123.19
5/8	5/8	1-1/4	3-1/2	0.030	std	VXMG4T-2020-R030-SL	H6868	164.00
5/8	5/8	1-1/4	3-1/2	0.060	std	VXMG4T-2020-R060-SL	H6869	164.00
5/8	5/8	1-1/4	3-1/2	0.090	std	VXMG4T-2020-R090-SL	H6870	164.00
3/4	3/4	1-1/2	4	0.030	std	VXMG4T-2424-R030-SL	H6871	240.75
3/4	3/4	1-1/2	4	0.060	std	VXMG4T-2424-R060-SL	H6872	240.75
3/4	3/4	1-1/2	4	0.090	std	VXMG4T-2424-R090-SL	H6873	240.75
3/4	3/4	1-1/2	4	0.120	std	VXMG4T-2424-R120-SL	H6874	240.75
3/4	3/4	2-1/4	5	0.030	long	VXMG4T-2424-R030L-SL	H6875	283.60
3/4	3/4	2-1/4	5	0.060	long	VXMG4T-2424-R060L-SL	H6876	283.60
3/4	3/4	2-1/4	5	0.090	long	VXMG4T-2424-R090L-SL	H6877	283.60
3/4	3/4	2-1/4	5	0.120	long	VXMG4T-2424-R120L-SL	H6878	283.60
1	1	1-1/2	4	0.030	std	VXMG4T-3232-R030-SL	H6879	361.77
1	1	1-1/2	4	0.060	std	VXMG4T-3232-R060-SL	H6880	361.77
1	1	1-1/2	4	0.090	std	VXMG4T-3232-R090-SL	H6881	361.77
1	1	1-1/2	4	0.120	std	VXMG4T-3232-R120-SL	H6882	361.77
1	1	2-1/4	5	0.030	long	VXMG4T-3232-R030L-SL	H6883	407.20
1	1	2-1/4	5	0.060	long	VXMG4T-3232-R060L-SL	H6884	407.20
1	1	2-1/4	5	0.090	long	VXMG4T-3232-R090L-SL	H6885	407.20
1	1	2-1/4	5	0.120	long	VXMG4T-3232-R120L-SL	H6886	407.20



Speed & Feed: page 146

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.

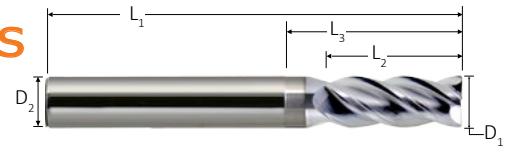
**HAIMER SAFE LOCK™**

**AVAILABLE ON ALL HIGH PERFORMANCE END MILLS**

(CALL FOR PRICING AND AVAILABILITY)

# TITANIUM ALLOYS & HIGH TEMP ALLOYS

## 4 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS



Carbide	4	Center Cutting	variable	nACRo	+0.000mm -0.050mm	+0.012mm -0.012mm <3mm	Square	Radius	Chamfer		HRC <54	P 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

[BACK TO INDEX](#)

### SERIES: VXMG4T-M\_M\_ ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nACRo EDP	nACRo Price
1.5mm	3mm	3mm		38mm	SQ	std	VXMG4T-M3M1.5-NR	H6253	23.15
1.5mm	3mm	3mm		38mm	0.25mm	std	VXMG4T-M3M1.5-R0.25	H6254	23.91
2mm	3mm	4mm		38mm	SQ	std	VXMG4T-M3M2-NR	H6255	23.15
2mm	3mm	4mm		38mm	0.25mm	std	VXMG4T-M3M2-R0.25	H6256	23.91
2.5mm	3mm	5mm		38mm	SQ	std	VXMG4T-M3M2.5-NR	H6257	23.15
2.5mm	3mm	5mm		38mm	0.25mm	std	VXMG4T-M3M2.5-R0.25	H6258	23.91
3mm	3mm	6mm		38mm	SQ	stub	VXMG4T-M3M3-NRS	H6259	18.71
3mm	3mm	6mm		38mm	0.25mm	stub	VXMG4T-M3M3-R0.25S	H6260	19.36
3mm	3mm	12mm		38mm	SQ	std	VXMG4T-M3M3-NR	H6261	19.98
3mm	3mm	12mm		38mm	0.25mm	std	VXMG4T-M3M3-R0.25	H6262	20.62
3mm	6mm	12mm		63mm	SQ	std	VXMG4T-M6M3-NR	H6263	34.35
3mm	6mm	12mm		63mm	0.25mm x 45°	std	VXMG4T-M6M3	H6264	34.35
3mm	6mm	12mm		63mm	0.25mm	std	VXMG4T-M6M3-R0.25	H6265	34.35
3mm	6mm	12mm		63mm	0.5mm	std	VXMG4T-M6M3-R0.5	H6266	34.35
4mm	4mm	14mm		51mm	SQ	std	VXMG4T-M4M4-NR	H6267	23.98
4mm	4mm	14mm		51mm	0.25mm x 45°	std	VXMG4T-M4M4	H6268	23.98
4mm	4mm	14mm		51mm	0.25mm	std	VXMG4T-M4M4-R0.25	H6269	23.98
4mm	6mm	14mm		63mm	0.25mm x 45°	std	VXMG4T-M6M4	H6270	34.35
4mm	6mm	14mm		63mm	0.25mm	std	VXMG4T-M6M4-R0.25	H6271	34.35
4mm	6mm	14mm		63mm	0.50mm	std	VXMG4T-M6M4-R0.50	H6272	34.35
5mm	5mm	20mm		51mm	SQ	std	VXMG4T-M5M5-NR	H6273	28.69
5mm	5mm	20mm		51mm	0.25mm x 45°	std	VXMG4T-M5M5	H6274	28.69
5mm	5mm	20mm		51mm	0.25mm	std	VXMG4T-M5M5-R0.25	H6275	27.57
5mm	5mm	20mm		51mm	0.5mm	std	VXMG4T-M5M5-R0.5	H6276	27.57
6mm	6mm	12mm	30mm	100mm	0.25mm	ext neck	VXMG4T-M6M6-R0.25N1	H6277	50.61
6mm	6mm	12mm	30mm	100mm	0.5mm	ext neck	VXMG4T-M6M6-R0.5N1	H6278	50.61
6mm	6mm	12mm	30mm	100mm	1.0mm	ext neck	VXMG4T-M6M6-R1.0N1	H6279	50.61
6mm	6mm	20mm		63mm	SQ	std	VXMG4T-M6M6-NR	H6280	34.34
6mm	6mm	20mm		63mm	0.25mm x 45°	std	VXMG4T-M6M6	H6281	34.34
6mm	6mm	20mm		63mm	0.25mm	std	VXMG4T-M6M6-R0.25	H6282	34.34
6mm	6mm	20mm		63mm	0.5mm	std	VXMG4T-M6M6-R0.5	H6283	34.34
6mm	6mm	20mm		63mm	1.0mm	std	VXMG4T-M6M6-R1.0	H6284	34.34
6mm	6mm	20mm	32mm	75mm	0.5mm	ext neck	VXMG4T-M6M6-R0.5N	H6285	39.11
6mm	6mm	24mm		75mm	0.5mm	long	VXMG4T-M6M6-R0.5L	H6286	39.11

Speed & Feed: page 146

sizes continued on next page

## 4 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS

SERIES: VXMG4T-M\_M\_ **✓ Check Stock Online**

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nACRo EDP	nACRo Price
8mm	8mm	16mm	40mm	100mm	0.5mm	ext neck	VXMG4T-M8M8-R0.5N1	H6287	63.11
8mm	8mm	16mm	40mm	100mm	1.0mm	ext neck	VXMG4T-M8M8-R1.0N1	H6288	63.11
8mm	8mm	16mm	40mm	100mm	2.0mm	ext neck	VXMG4T-M8M8-R2.0N1	H6289	63.11
8mm	8mm	20mm		63mm	SQ	std	VXMG4T-M8M8-NR	H6290	42.65
8mm	8mm	20mm		63mm	0.25mm x 45°	std	VXMG4T-M8M8	H6291	42.65
8mm	8mm	20mm		63mm	0.5mm	std	VXMG4T-M8M8-R0.5	H6292	42.65
8mm	8mm	20mm		63mm	1.0mm	std	VXMG4T-M8M8-R1.0	H6293	42.65
8mm	8mm	20mm		63mm	1.5mm	std	VXMG4T-M8M8-R1.5	H6294	42.65
8mm	8mm	20mm		63mm	2.0mm	std	VXMG4T-M8M8-R2.0	H6295	42.65
8mm	8mm	20mm	32mm	75mm	0.5mm	ext neck	VXMG4T-M8M8-R0.5N	H6296	48.59
8mm	8mm	32mm		75mm	0.5mm	long	VXMG4T-M8M8-R0.5L	H6297	48.59
10mm	10mm	20mm	50mm	127mm	0.5mm	ext neck	VXMG4T-M10M10-R0.5N2	12120	76.39
10mm	10mm	20mm	50mm	127mm	1.0mm	ext neck	VXMG4T-M10M10-R1.0N2	H6298	76.39
10mm	10mm	20mm	50mm	127mm	2.0mm	ext neck	VXMG4T-M10M10-R2.0N2	H6299	76.39
10mm	10mm	25mm		70mm	SQ	std	VXMG4T-M10M10-NR	H6300	58.00
10mm	10mm	25mm		70mm	0.25mm x 45°	std	VXMG4T-M10M10	H6301	58.00
10mm	10mm	25mm		70mm	0.5mm	std	VXMG4T-M10M10-R0.5	H6302	58.00
10mm	10mm	25mm		70mm	1.0mm	std	VXMG4T-M10M10-R1.0	H6303	58.00
10mm	10mm	25mm		70mm	1.5mm	std	VXMG4T-M10M10-R1.5	H6304	58.00
10mm	10mm	25mm		70mm	2.0mm	std	VXMG4T-M10M10-R2.0	H6305	58.00
10mm	10mm	25mm	50mm	100mm	0.5mm	ext neck	VXMG4T-M10M10-R0.5N	H6306	68.20
10mm	10mm	40mm		100mm	0.5mm	long	VXMG4T-M10M10-R0.5L	H6307	68.20
12mm	12mm	25mm		76mm	SQ	std	VXMG4T-M12M12-NR	H6308	80.03
12mm	12mm	25mm		76mm	0.25mm x 45°	std	VXMG4T-M12M12	H6309	80.03
12mm	12mm	25mm		76mm	0.5mm	std	VXMG4T-M12M12-R0.5	H6310	80.03
12mm	12mm	25mm		76mm	1.0mm	std	VXMG4T-M12M12-R1.0	H6311	80.03
12mm	12mm	25mm		76mm	1.5mm	std	VXMG4T-M12M12-R1.5	H6312	80.03
12mm	12mm	25mm		76mm	2.0mm	std	VXMG4T-M12M12-R2.0	H6313	80.03
12mm	12mm	25mm		76mm	3.0mm	std	VXMG4T-M12M12-R3.0	H6314	80.03
12mm	12mm	25mm	50mm	100mm	0.5mm	ext neck	VXMG4T-M12M12-R0.5N	H6315	101.56
12mm	12mm	25mm	60mm	150mm	0.5mm	ext neck	VXMG4T-M12M12-R0.5N1	H6316	158.61
12mm	12mm	25mm	60mm	150mm	1.0mm	ext neck	VXMG4T-M12M12-R1.0N1	H6317	158.61
12mm	12mm	25mm	60mm	150mm	2.0mm	ext neck	VXMG4T-M12M12-R2.0N1	H6318	158.61
12mm	12mm	25mm	60mm	150mm	3.0mm	ext neck	VXMG4T-M12M12-R3.0N1	H6319	158.61
12mm	12mm	48mm		100mm	0.5mm	long	VXMG4T-M12M12-R0.5L	H6320	101.56
14mm	14mm	32mm		89mm	0.5mm x 45°	std	VXMG4T-M14M14	H6321	133.39
14mm	14mm	32mm		89mm	0.5mm	std	VXMG4T-M14M14-R0.5	H6322	133.39
14mm	14mm	32mm		89mm	1.0mm	std	VXMG4T-M14M14-R1.0	H6323	133.39
14mm	14mm	32mm		89mm	2.0mm	std	VXMG4T-M14M14-R2.0	H6324	133.39
16mm	16mm	32mm		89mm	SQ	std	VXMG4T-M16M16-NR	H6325	144.25
16mm	16mm	32mm		89mm	0.5mm x 45°	std	VXMG4T-M16M16	H6326	144.25
16mm	16mm	32mm		89mm	0.5mm	std	VXMG4T-M16M16-R0.5	H6327	144.25
16mm	16mm	32mm		89mm	1.0mm	std	VXMG4T-M16M16-R1.0	H6328	144.25
16mm	16mm	32mm		89mm	1.5mm	std	VXMG4T-M16M16-R1.5	H6329	144.25
16mm	16mm	32mm		89mm	2.0mm	std	VXMG4T-M16M16-R2.0	H6330	144.25
16mm	16mm	32mm		89mm	3.0mm	std	VXMG4T-M16M16-R3.0	H6331	144.25

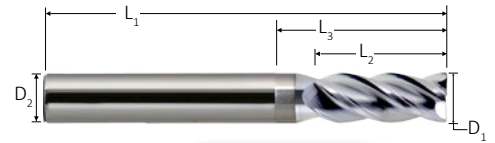


Speed & Feed: page 146

sizes continued on next page

# TITANIUM ALLOYS & HIGH TEMP ALLOYS

4 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS



[BACK TO INDEX](#)

SERIES: VXMG4T-M\_M\_

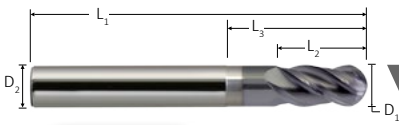
✓ **Check Stock Online**



DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nAcRo EDP	nAcRo Price
16mm	16mm	32mm	65mm	127mm	0.5mm	ext neck	VXMG4T-M16M16-R0.5N	H6332	179.79
16mm	16mm	32mm	80mm	150mm	0.5mm	ext neck	VXMG4T-M16M16-R0.5N1	H6333	210.66
16mm	16mm	32mm	80mm	150mm	1.0mm	ext neck	VXMG4T-M16M16-R1.0N1	H6334	210.66
16mm	16mm	32mm	80mm	150mm	2.0mm	ext neck	VXMG4T-M16M16-R2.0N1	H6335	210.66
16mm	16mm	32mm	80mm	150mm	3.0mm	ext neck	VXMG4T-M16M16-R3.0N1	H6336	210.66
16mm	16mm	48mm		127mm	0.5mm	long	VXMG4T-M16M16-R0.5L	H6337	179.79
18mm	18mm	38mm		100mm	0.5mm x 45°	std	VXMG4T-M18M18	H6338	211.24
18mm	18mm	38mm		100mm	0.5mm	std	VXMG4T-M18M18-R0.5	H6339	211.24
18mm	18mm	38mm		100mm	1.0mm	std	VXMG4T-M18M18-R1.0	H6340	211.24
18mm	18mm	38mm		100mm	2.0mm	std	VXMG4T-M18M18-R2.0	H6341	211.24
20mm	20mm	38mm		100mm	SQ	std	VXMG4T-M20M20-NR	H6342	243.99
20mm	20mm	38mm		100mm	0.5mm x 45°	std	VXMG4T-M20M20	H6343	243.99
20mm	20mm	38mm		100mm	0.5mm	std	VXMG4T-M20M20-R0.5	H6344	243.99
20mm	20mm	38mm		100mm	1.0mm	std	VXMG4T-M20M20-R1.0	H6345	243.99
20mm	20mm	38mm		100mm	1.5mm	std	VXMG4T-M20M20-R1.5	H6346	243.99
20mm	20mm	38mm		100mm	2.0mm	std	VXMG4T-M20M20-R2.0	H6347	243.99
20mm	20mm	38mm		100mm	3.0mm	std	VXMG4T-M20M20-R3.0	H6348	243.99
20mm	20mm	38mm	65mm	127mm	0.5mm	ext neck	VXMG4T-M20M20-R0.5N	H6349	282.60
20mm	20mm	38mm	100mm	150mm	0.5mm	ext neck	VXMG4T-M20M20-R0.5N1	H6350	312.04
20mm	20mm	38mm	100mm	150mm	1.0mm	ext neck	VXMG4T-M20M20-R1.0N1	H6351	312.04
20mm	20mm	38mm	100mm	150mm	3.0mm	ext neck	VXMG4T-M20M20-R3.0N1	H6352	312.04
20mm	20mm	60mm		127mm	0.5mm	long	VXMG4T-M20M20-R0.5L	H6353	282.60
25mm	25mm	38mm		100mm	0.5mm x 45°	std	VXMG4T-M25M25	H6354	339.25
25mm	25mm	38mm		100mm	0.5mm	std	VXMG4T-M25M25-R0.5	H6355	339.25
25mm	25mm	38mm		100mm	1.0mm	std	VXMG4T-M25M25-R1.0	H6356	339.25
25mm	25mm	38mm		100mm	2.0mm	std	VXMG4T-M25M25-R2.0	H6357	339.25

Speed & Feed: page 146





# TITANIUM ALLOYS & HIGH TEMP ALLOYS

## 4 FLUTE • VARIABLE FLUTE - BALL NOSE HP ROUGHING APPLICATIONS

[BACK TO INDEX](#)



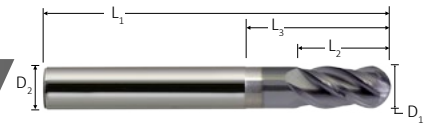
- Geometry designed to reduce chatter; universal and Z-axis machining operations
- Unique titanium focused geometry and edge prep enables efficient cutting action
- Eccentric relief provides an exceptionally strong cutting edge
- Proprietary nACRo coating allows for higher SFM and is especially effective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



### SERIES: VXMG4T-\_\_-B ✓ [Check Stock Online](#)

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	LENGTH	PART NAME	nACRo EDP	nACRo Price
1/16	1/8	3/16		1-1/2	std	VXMG4T-402-B	14724	24.11
3/32	1/8	9/32		1-1/2	std	VXMG4T-403-B	H6358	24.11
1/8	1/8	3/16	3/8	2	ext neck	VXMG4T-404-N1B	H6359	28.79
1/8	1/8	1/4		1-1/2	stub	VXMG4T-404-SB	H6360	20.99
1/8	1/8	1/2		1-1/2	std	VXMG4T-404-B	H6361	22.40
3/16	3/16	1/4		1-1/2	stub	VXMG4T-606-SB	H6362	24.22
3/16	3/16	1/4	1/2	3	ext neck	VXMG4T-606-N1B	H6363	35.10
3/16	3/16	5/8		2	std	VXMG4T-606-B	H6364	27.02
1/4	1/4	3/8		2	stub	VXMG4T-808-SB	H6365	30.19
1/4	1/4	3/8	3/4	3	ext neck	VXMG4T-808-N1B	H6366	49.36
1/4	1/4	3/4		2-1/2	std	VXMG4T-808-B	14740	35.20
5/16	5/16	1/2		2	stub	VXMG4T-1010-SB	H6367	44.52
5/16	5/16	13/16		2-1/2	std	VXMG4T-1010-B	H6368	46.32
3/8	3/8	1/2		2	stub	VXMG4T-1212-SB	H6369	51.58
3/8	3/8	1/2	1-1/8	3	ext neck	VXMG4T-1212-N1B	H6370	69.64
3/8	3/8	1		2-1/2	std	VXMG4T-1212-B	H6371	54.77
1/2	1/2	5/8		2-1/2	stub	VXMG4T-1616-SB	H6372	80.28
1/2	1/2	5/8	1-1/2	4	ext neck	VXMG4T-1616-N1B	H6373	146.38
1/2	1/2	1		3	std	VXMG4T-1616-B	H6374	88.13
1/2	1/2	1	1-3/4	4	ext neck	VXMG4T-1616-N2B	H7314	146.38
5/8	5/8	3/4		3	stub	VXMG4T-2020-SB	H6375	145.56
5/8	5/8	3/4	1-5/8	5	ext neck	VXMG4T-2020-N1B	H6376	250.88
5/8	5/8	1-1/4		3-1/2	std	VXMG4T-2020-B	H6377	153.58
3/4	3/4	7/8		3	stub	VXMG4T-2424-SB	H6378	215.28
3/4	3/4	7/8	2	5	ext neck	VXMG4T-2424-N1B	H6379	293.76
3/4	3/4	1-1/2		4	std	VXMG4T-2424-B	H6380	231.12
1	1	1-1/2		4	std	VXMG4T-3232-B	H6381	353.39

Speed & Feed: page 146



## 4 FLUTE • VARIABLE FLUTE - BALL NOSE HP ROUGHING APPLICATIONS

Carbide	4	Center Cutting	variable	nACRo	+0.000mm -0.050mm	+0.012mm -0.012mm <3mm	Ball						HRC <54	P M S
---------	---	----------------	----------	-------	----------------------	------------------------------	------	--	--	--	--	--	------------	-------------



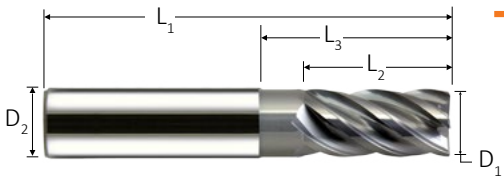
- ▶ Geometry designed to reduce chatter, universal and Z-axis machining operations
- ▶ Unique titanium focused geometry and edge prep enables efficient cutting action
- ▶ Eccentric relief provides an exceptionally strong cutting edge
- ▶ Proprietary nACRo coating allows for higher SFM and is especially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

### SERIES: VXMG4T-M\_M\_-B ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	LENGTH	PART NAME	nACRo EDP	nACRo Price
2mm	3mm	4mm		38mm	std	VXMG4T-M3M2-B	H6382	24.11
3mm	3mm	12mm		38mm	std	VXMG4T-M3M3-B	14725	21.47
4mm	4mm	14mm		51mm	std	VXMG4T-M4M4-B	H6383	26.89
5mm	5mm	20mm		51mm	std	VXMG4T-M5M5-B	H6384	32.17
6mm	6mm	20mm		63mm	std	VXMG4T-M6M6-B	H6385	38.51
6mm	6mm	20mm	32mm	75mm	ext neck	VXMG4T-M6M6-NB	H6386	43.86
8mm	8mm	20mm		63mm	std	VXMG4T-M8M8-B	H6387	47.83
8mm	8mm	20mm	32mm	75mm	ext neck	VXMG4T-M8M8-NB	H6388	54.49
10mm	10mm	25mm		70mm	std	VXMG4T-M10M10-B	H6389	65.05
10mm	10mm	25mm	50mm	100mm	ext neck	VXMG4T-M10M10-NB	H6390	76.49
12mm	12mm	25mm		76mm	std	VXMG4T-M12M12-B	H6391	89.75
12mm	12mm	25mm	50mm	100mm	ext neck	VXMG4T-M12M12-NB	H6392	113.90
16mm	16mm	32mm		89mm	std	VXMG4T-M16M16-B	H6393	161.77
16mm	16mm	32mm	65mm	127mm	ext neck	VXMG4T-M16M16-NB	H6394	201.64
20mm	20mm	38mm		100mm	std	VXMG4T-M20M20-B	H6395	273.64
20mm	20mm	38mm	65mm	127mm	ext neck	VXMG4T-M20M20-NB	H6396	316.93

Speed & Feed: page 146

# TITANIUM ALLOYS & HIGH TEMP ALLOYS



5 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS

[BACK TO INDEX](#)

Carbide	5	Center Cutting	variable	nACRo	+0.000 -0.002	Square	Radius						HRC <54	P 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

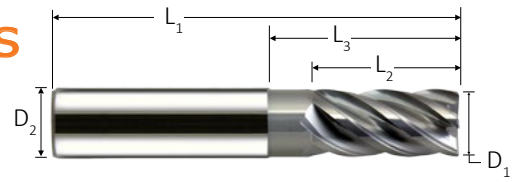
## SERIES: VXMGT5T ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nACRo EDP	nACRo Price
1/16	1/8	1/8		1-1/2	SQ	std	VXMGT5-402-NR	H6427	23.80
1/16	1/8	1/8		1-1/2	0.010	std	VXMGT5-402-R010	H6428	24.59
3/32	1/8	3/16		1-1/2	SQ	std	VXMGT5-403-NR	H6429	23.80
3/32	1/8	3/16		1-1/2	0.010	std	VXMGT5-403-R010	H6430	24.59
1/8	1/8	3/16	no neck	2	0.015	no neck	VXMGT5-404-R015NN	H6431	20.54
1/8	1/8	1/4		1-1/2	SQ	stub	VXMGT5-404-NRS	H6432	19.24
1/8	1/8	1/4		1-1/2	0.015	stub	VXMGT5-404-R015S	H6433	19.24
1/8	1/8	1/2	3/4	2	SQ	std	VXMGT5-404-NR	H6434	20.54
1/8	1/8	1/2	3/4	2	0.015	std	VXMGT5-404-R015	H6435	20.54
3/16	3/16	1/4		1-1/2	SQ	stub	VXMGT5-606-NRS	H6436	22.20
3/16	3/16	1/4		1-1/2	0.015	stub	VXMGT5-606-R015S	H6437	22.20
3/16	3/16	1/4	no neck	3	0.015	no neck	VXMGT5-606-R015NN	H6438	29.43
3/16	3/16	5/8	7/8	2	SQ	std	VXMGT5-606-NR	11882	24.77
3/16	3/16	5/8	7/8	2	0.015	std	VXMGT5-606-R015	14794	24.77
1/4	1/4	3/8		2	SQ	stub	VXMGT5-808-NRS	H6439	27.68
1/4	1/4	3/8		2	0.015	stub	VXMGT5-808-R015S	H6440	27.68
1/4	1/4	3/8		2	0.030	stub	VXMGT5-808-R030S	H6441	27.68
1/4	1/4	3/8		2	0.060	stub	VXMGT5-808-R060S	H7259	27.676
1/4	1/4	3/8	1-1/8	3	0.015	ext neck	VXMGT5-808-R015N2	H6442	45.24
1/4	1/4	3/8	1-1/8	3	0.030	ext neck	VXMGT5-808-R030N2	H6443	45.24
1/4	1/4	3/8	no neck	4	0.015	no neck	VXMGT5-808-R015NN	H6444	41.57
1/4	1/4	3/8	no neck	4	0.030	no neck	VXMGT5-808-R030NN	H6445	41.57
1/4	1/4	3/4	1	2-1/2	SQ	std	VXMGT5-808-NR	H6446	32.26
1/4	1/4	3/4	1	2-1/2	0.015	std	VXMGT5-808-R015	H6447	32.26
1/4	1/4	3/4	1	2-1/2	0.030	std	VXMGT5-808-R030	H6448	32.26
1/4	1/4	3/4	1	2-1/2	0.060	std	VXMGT5-808-R060	H7260	32.263
5/16	5/16	1/2		2	SQ	stub	VXMGT5-1010-NRS	H6449	40.81
5/16	5/16	1/2		2	0.015	stub	VXMGT5-1010-R015S	H6450	40.81
5/16	5/16	1/2		2	0.030	stub	VXMGT5-1010-R030S	H6451	40.81
5/16	5/16	13/16	1-1/16	2-1/2	SQ	std	VXMGT5-1010-NR	H6452	42.46
5/16	5/16	13/16	1-1/16	2-1/2	0.015	std	VXMGT5-1010-R015	H6453	42.46
5/16	5/16	13/16	1-1/16	2-1/2	0.030	std	VXMGT5-1010-R030	H6454	42.46
3/8	3/8	1/2		2	SQ	stub	VXMGT5-1212-NRS	H6455	47.28
3/8	3/8	1/2		2	0.015	stub	VXMGT5-1212-R015S	14722	47.28
3/8	3/8	1/2		2	0.030	stub	VXMGT5-1212-R030S	14153	47.28
3/8	3/8	1/2		2	0.060	stub	VXMGT5-1212-R060S	H7261	47.28
3/8	3/8	1/2	1-7/8	3	0.015	ext neck	VXMGT5-1212-R015N1	H6456	63.83
3/8	3/8	1/2	1-7/8	3	0.030	ext neck	VXMGT5-1212-R030N1	H6457	63.83



# TITANIUM ALLOYS & HIGH TEMP ALLOYS

5 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS



✓ Check Stock Online

BACK TO INDEX

SERIES: VXMG5T

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nACRo EDP	nACRo Price
3/8	3/8	1/2	no neck	6	0.015	no neck	VXMG5T-1212-R015NN	H6458	76.27
3/8	3/8	1/2	no neck	6	0.030	no neck	VXMG5T-1212-R030NN	H6459	76.27
3/8	3/8	1		2-1/2	SQ	std	VXMG5T-1212-NR	H6460	50.20
3/8	3/8	1		2-1/2	0.015	std	VXMG5T-1212-R015	14717	50.20
3/8	3/8	1		2-1/2	0.030	std	VXMG5T-1212-R030	14716	50.20
3/8	3/8	1		2-1/2	0.060	std	VXMG5T-1212-R060	H7262	50.20
1/2	1/2	5/8		2-1/2	SQ	stub	VXMG5T-1616-NRS	H6461	73.59
1/2	1/2	5/8		2-1/2	0.015	stub	VXMG5T-1616-R015S	H6462	73.59
1/2	1/2	5/8		2-1/2	0.030	stub	VXMG5T-1616-R030S	H6463	73.59
1/2	1/2	5/8		2-1/2	0.060	stub	VXMG5T-1616-R060S	H6464	73.59
1/2	1/2	5/8		2-1/2	0.090	stub	VXMG5T-1616-R090S	H7263	73.59
1/2	1/2	5/8		2-1/2	0.120	stub	VXMG5T-1616-R120S	H7264	73.59
1/2	1/2	5/8	1-1/2	4	0.015	ext neck	VXMG5T-1616-R015N1	H6465	134.18
1/2	1/2	5/8	1-1/2	4	0.030	ext neck	VXMG5T-1616-R030N1	H6466	134.18
1/2	1/2	5/8	1-1/2	4	0.060	ext neck	VXMG5T-1616-R060N1	H6467	134.18
1/2	1/2	5/8	2-1/4	4	0.015	ext neck	VXMG5T-1616-R015N2	H6468	134.18
1/2	1/2	5/8	2-1/4	4	0.030	ext neck	VXMG5T-1616-R030N2	H6469	134.18
1/2	1/2	5/8	2-1/4	4	0.060	ext neck	VXMG5T-1616-R060N2	H6470	134.18
1/2	1/2	5/8	no neck	6	0.015	no neck	VXMG5T-1616-R015NN	H6471	134.04
1/2	1/2	5/8	no neck	6	0.030	no neck	VXMG5T-1616-R030NN	H6472	134.04
1/2	1/2	5/8	no neck	6	0.060	no neck	VXMG5T-1616-R060NN	H6473	134.04
1/2	1/2	1	1-1/4	3	SQ	std	VXMG5T-1616-NR	H6474	80.78
1/2	1/2	1	1-1/4	3	0.015	std	VXMG5T-1616-R015	H6475	80.78
1/2	1/2	1	1-1/4	3	0.030	std	VXMG5T-1616-R030	H6476	80.78
1/2	1/2	1	1-1/4	3	0.060	std	VXMG5T-1616-R060	H6477	80.78
1/2	1/2	1	1-1/4	3	0.090	std	VXMG5T-1616-R090	H7265	80.78
1/2	1/2	1	1-1/4	3	0.120	std	VXMG5T-1616-R120	H7266	80.78
1/2	1/2	1-1/4		3	SQ	med	VXMG5T-1616-NRM	H6478	80.78
1/2	1/2	1-1/4		3	0.015	med	VXMG5T-1616-R015M	H6479	80.78
1/2	1/2	1-1/4		3	0.030	med	VXMG5T-1616-R030M	14544	80.78
1/2	1/2	1-1/4		3	0.060	med	VXMG5T-1616-R060M	H6480	80.78
1/2	1/2	1-5/8		4	SQ	med/long	VXMG5T-1616-NRML	H6765	102.96
1/2	1/2	1-5/8		4	0.030	med/long	VXMG5T-1616-R030ML	H2059	102.96
1/2	1/2	1-5/8		4	0.060	med/long	VXMG5T-1616-R060ML	H6766	102.96
1/2	1/2	2		4	SQ	long	VXMG5T-1616-NRL	H6767	102.98
1/2	1/2	2		4	0.015	long	VXMG5T-1616-R015L	H6768	102.98
1/2	1/2	2		4	0.030	long	VXMG5T-1616-R030L	H2060	102.98
1/2	1/2	2		4	0.060	stub	VXMG5T-1616-R060L	H6769	102.98
5/8	5/8	3/4		3	SQ	stub	VXMG5T-2020-NRS	H6481	133.43
5/8	5/8	3/4		3	0.030	stub	VXMG5T-2020-R030S	H6482	133.43
5/8	5/8	3/4		3	0.060	stub	VXMG5T-2020-R060S	H6483	133.43
5/8	5/8	3/4		3	0.090	stub	VXMG5T-2020-R090S	H6484	133.43
5/8	5/8	3/4	1-5/8	5	0.030	ext neck	VXMG5T-2020-R030N1	H6485	229.98
5/8	5/8	3/4	1-5/8	5	0.060	ext neck	VXMG5T-2020-R060N1	H6486	229.98
5/8	5/8	3/4	1-5/8	5	0.090	ext neck	VXMG5T-2020-R090N1	H6487	229.98

Speed & Feed: page 147

sizes continued on next page



## 5 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS

SERIES: VXMG5T

✓ **Check Stock Online**

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nACRo EDP	nACRo Price
5/8	5/8	3/4	2-3/8	5	0.060	ext neck	VXMG5T-2020-R060N2	14710	229.98
5/8	5/8	3/4	no neck	6	0.060	no neck	VXMG5T-2020-R060NN	H6488	207.53
5/8	5/8	1-1/4	1-1/2	3-1/2	0.000	std	VXMG5T-2020-NR	H6489	140.78
5/8	5/8	1-1/4	1-1/2	3-1/2	0.015	std	VXMG5T-2020-R015	14545	149.78
5/8	5/8	1-1/4	1-1/2	3-1/2	0.030	std	VXMG5T-2020-R030	14241	140.78
5/8	5/8	1-1/4	1-1/2	3-1/2	0.060	std	VXMG5T-2020-R060	H6490	140.78
5/8	5/8	1-1/4	1-1/2	3-1/2	0.090	std	VXMG5T-2020-R090	H6491	140.78
5/8	5/8	1-1/4	1-1/2	3-1/2	0.120	std	VXMG5T-2020-R120	H7267	140.78
3/4	3/4	7/8		3	SQ	stub	VXMG5T-2424-NRS	H6492	197.34
3/4	3/4	7/8		3	0.030	stub	VXMG5T-2424-R030S	H6493	197.34
3/4	3/4	7/8		3	0.060	stub	VXMG5T-2424-R060S	H6494	197.34
3/4	3/4	7/8		3	0.090	stub	VXMG5T-2424-R090S	H6495	197.34
3/4	3/4	7/8		3	0.120	stub	VXMG5T-2424-R120S	H6496	197.34
3/4	3/4	7/8	2	5	0.030	ext neck	VXMG5T-2424-R030N1	H6497	269.28
3/4	3/4	7/8	2	5	0.060	ext neck	VXMG5T-2424-R060N1	H6498	269.28
3/4	3/4	7/8	2	5	0.090	ext neck	VXMG5T-2424-R090N1	H6499	269.28
3/4	3/4	7/8	2	5	0.120	ext neck	VXMG5T-2424-R120N1	H6500	269.28
3/4	3/4	7/8	2-3/4	5	0.120	ext neck	VXMG5T-2424-R120N4	11074	269.28
3/4	3/4	7/8	3-3/8	6	0.030	ext neck	VXMG5T-2424-R030N3	H6501	292.96
3/4	3/4	7/8	3-3/8	6	0.060	ext neck	VXMG5T-2424-R060N3	H6502	292.96
3/4	3/4	7/8	3-3/8	6	0.090	ext neck	VXMG5T-2424-R090N3	H6503	292.96
3/4	3/4	7/8	3-3/8	6	0.120	ext neck	VXMG5T-2424-R120N3	14711	292.96
3/4	3/4	7/8	no neck	6	0.030	no neck	VXMG5T-2424-R030NN	H6504	277.24
3/4	3/4	7/8	no neck	6	0.060	no neck	VXMG5T-2424-R060NN	H6505	277.24
3/4	3/4	7/8	no neck	6	0.090	no neck	VXMG5T-2424-R090NN	H6506	277.24
3/4	3/4	7/8	no neck	6	0.120	no neck	VXMG5T-2424-R120NN	H6507	277.24
3/4	3/4	1-1/2	1-3/4	4	SQ	std	VXMG5T-2424-NR	H6508	211.86
3/4	3/4	1-1/2	1-3/4	4	0.015	std	VXMG5T-2424-R015	H6509	211.86
3/4	3/4	1-1/2	1-3/4	4	0.030	std	VXMG5T-2424-R030	14191	211.86
3/4	3/4	1-1/2	1-3/4	4	0.060	std	VXMG5T-2424-R060	H6510	211.86
3/4	3/4	1-1/2	1-3/4	4	0.090	std	VXMG5T-2424-R090	H6511	211.86
3/4	3/4	1-1/2	1-3/4	4	0.120	std	VXMG5T-2424-R120	H6512	211.86
3/4	3/4	2-1/4		5	SQ	long	VXMG5T-2424-NRL	H6770	251.55
3/4	3/4	2-1/4		5	0.030	long	VXMG5T-2424-R030L	H2062	251.55
3/4	3/4	2-1/4		5	0.060	long	VXMG5T-2424-R060L	H6771	251.55
3/4	3/4	2-1/4		5	0.090	long	VXMG5T-2424-R090L	H6772	251.55
3/4	3/4	2-1/4		5	0.120	long	VXMG5T-2424-R120L	H6773	251.55
1	1	1-1/2	1-3/4	4	SQ	std	VXMG5T-3232-NR	H6513	323.94
1	1	1-1/2	1-3/4	4	0.030	std	VXMG5T-3232-R030	H6514	323.94
1	1	1-1/2	1-3/4	4	0.060	std	VXMG5T-3232-R060	H6515	323.94
1	1	1-1/2	1-3/4	4	0.090	std	VXMG5T-3232-R090	H6516	323.94
1	1	1-1/2	1-3/4	4	0.120	std	VXMG5T-3232-R120	H6517	323.94
1	1	1-1/2	1-3/4	4	0.250	std	VXMG5T-3232-R250	H7268	323.94
1	1	1-1/2	2-1/4	5	0.030	ext neck	VXMG5T-3232-R030N1	H6518	385.26
1	1	1-1/2	2-1/4	5	0.060	ext neck	VXMG5T-3232-R060N1	H6519	385.26
1	1	1-1/2	2-1/4	5	0.090	ext neck	VXMG5T-3232-R090N1	H6520	385.26
1	1	1-1/2	2-1/4	5	0.120	ext neck	VXMG5T-3232-R120N1	14712	385.26

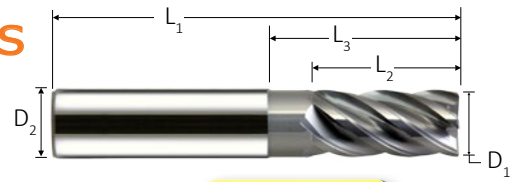


Speed & Feed: page 147

sizes continued on next page

# TITANIUM ALLOYS & HIGH TEMP ALLOYS

5 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS



BACK TO INDEX

SERIES: VXMG5T



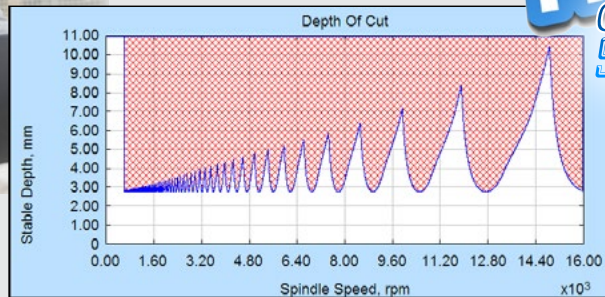
✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nACRo EDP	nACRo Price
1	1	1-1/2	3-3/8	6	0.030	ext neck	VXMG5T-3232-R030N3	H6521	461.91
1	1	1-1/2	3-3/8	6	0.060	ext neck	VXMG5T-3232-R060N3	H6522	461.91
1	1	1-1/2	3-3/8	6	0.090	ext neck	VXMG5T-3232-R090N3	H6523	461.91
1	1	1-1/2	3-3/8	6	0.120	ext neck	VXMG5T-3232-R120N3	H6524	461.91
1	1	1-1/2	no neck	6	0.030	no neck	VXMG5T-3232-R030NN	H6525	431.73
1	1	1-1/2	no neck	6	0.060	no neck	VXMG5T-3232-R060NN	H6526	431.73
1	1	1-1/2	no neck	6	0.090	no neck	VXMG5T-3232-R090NN	H6527	431.73
1	1	1-1/2	no neck	6	0.120	no neck	VXMG5T-3232-R120NN	H6528	431.73
1	1	2-1/4		5	SQ	long	VXMG5T-3232-NRL	H6774	366.01
1	1	2-1/4		5	0.030	long	VXMG5T-3232-R030L	H6775	366.01
1	1	2-1/4		5	0.060	long	VXMG5T-3232-R060L	H2063	366.01
1	1	2-1/4		5	0.090	long	VXMG5T-3232-R090L	H6776	366.01
1	1	2-1/4		5	0.120	long	VXMG5T-3232-R120L	H6777	366.01
1-1/4	1-1/4	2-1/4		5	0.030	std	VXMG5T-4040-R030	H7269	569.35
1-1/4	1-1/4	2-1/4		5	0.060	std	VXMG5T-4040-R060	H7270	569.35
1-1/4	1-1/4	2-1/4		5	0.120	std	VXMG5T-4040-R120	H7271	569.35

Speed & Feed: page 147

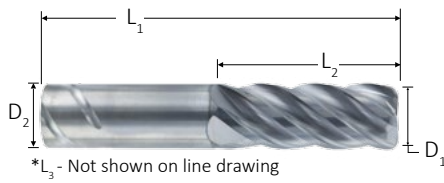
## METALMAX TESTING

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](http://www.melintool.com)



Free  
OnThe  
SPINDLE

# TITANIUM ALLOYS & HIGH TEMP ALLOYS



5 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS

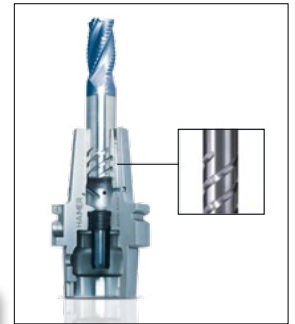
[BACK TO INDEX](#)

Carbide	5	Center Cutting	variable	nACRo	+.000 -.002	Radius		HRC <54	P 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

✓ **Check Stock Online**

## SERIES: VXMG5T-\_\_-SL (SAFE LOCK SHANK)



DIA D <sub>1</sub>	SHK D <sub>2</sub>	LBS L <sub>3</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nACRo EDP	nACRo Price
1/2	1/2		1	3	0.015	std	VXMG5T-1616-R015-SL	H6887	101.67
1/2	1/2		1	3	0.030	std	VXMG5T-1616-R030-SL	H6888	101.67
1/2	1/2		1	3	0.060	std	VXMG5T-1616-R060-SL	H6889	101.67
1/2	1/2		2	4	0.015	long	VXMG5T-1616-R015L-SL	H6890	126.31
1/2	1/2		2	4	0.030	long	VXMG5T-1616-R030L-SL	H6891	126.31
1/2	1/2		2	4	0.060	long	VXMG5T-1616-R060L-SL	H6892	126.31
5/8	5/8	1-1/2	1-1/4	3-1/2	0.030	std	VXMG5T-2020-R030-SL	H6893	168.27
5/8	5/8	1-1/2	1-1/4	3-1/2	0.060	std	VXMG5T-2020-R060-SL	H6894	168.26
5/8	5/8	1-1/2	1-1/4	3-1/2	0.090	std	VXMG5T-2020-R090-SL	H6895	168.26
3/4	3/4	1-3/4	1-1/2	4	0.030	std	VXMG5T-2424-R030-SL	H6896	247.16
3/4	3/4	1-3/4	1-1/2	4	0.060	std	VXMG5T-2424-R060-SL	H6897	247.16
3/4	3/4	1-3/4	1-1/2	4	0.090	std	VXMG5T-2424-R090-SL	H6898	247.16
3/4	3/4	1-3/4	1-1/2	4	0.120	std	VXMG5T-2424-R120-SL	H6899	247.16
3/4	3/4		2-1/4	5	0.030	long	VXMG5T-2424-R030L-SL	H6900	291.22
3/4	3/4		2-1/4	5	0.060	long	VXMG5T-2424-R060L-SL	H6901	291.22
3/4	3/4		2-1/4	5	0.090	long	VXMG5T-2424-R090L-SL	H6902	291.22
3/4	3/4		2-1/4	5	0.120	long	VXMG5T-2424-R120L-SL	H6903	291.22
1	1		1-1/2	4	0.030	std	VXMG5T-3232-R030-SL	H6904	371.57
1	1		1-1/2	4	0.060	std	VXMG5T-3232-R060-SL	H6905	371.57
1	1		1-1/2	4	0.090	std	VXMG5T-3232-R090-SL	H6906	371.57
1	1		1-1/2	4	0.120	std	VXMG5T-3232-R120-SL	H6907	371.57
1	1		2-1/4	5	0.030	long	VXMG5T-3232-R030L-SL	H6908	418.27
1	1		2-1/4	5	0.060	long	VXMG5T-3232-R060L-SL	H6909	418.27
1	1		2-1/4	5	0.090	long	VXMG5T-3232-R090L-SL	H6910	418.27
1	1		2-1/4	5	0.120	long	VXMG5T-3232-R120L-SL	H6911	418.27



Speed & Feed: page 147

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.

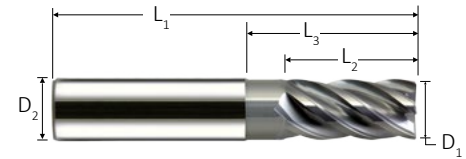
**HAIMER SAFE LOCK™**

**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	+0.000mm -0.050mm	Square	Radius		HRC <54	P M S
---------	---	----------------	----------	-------	----------------------	--------	--------	--	---------	-------------

[BACK TO INDEX](#)



- ▶ 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

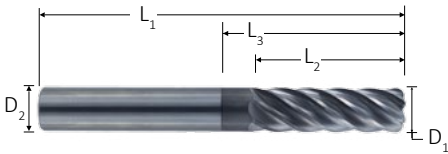
▶ **SERIES: VXMG5T-M\_M\_ ✓ Check Stock Online**

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nACRo EDP	nACRo Price
1.5mm	3mm	3mm		38mm	SQ	std	VXMG5T-M3M1.5-NR	H6529	23.80
1.5mm	3mm	3mm		38mm	0.25mm	std	VXMG5T-M3M1.5-R0.25	H6530	24.59
2mm	3mm	4mm		38mm	SQ	std	VXMG5T-M3M2-NR	H6531	23.80
2mm	3mm	4mm		38mm	0.25mm	std	VXMG5T-M3M2-R0.25	H6532	24.59
2.5mm	3mm	5mm		38mm	SQ	std	VXMG5T-M3M2.5-NR	H6533	23.80
2.5mm	3mm	5mm		38mm	0.25mm	std	VXMG5T-M3M2.5-R0.25	H6534	24.59
3mm	3mm	6mm		38mm	SQ	stub	VXMG5T-M3M3-NRS	H6535	19.24
3mm	3mm	6mm		38mm	0.25mm	stub	VXMG5T-M3M3-R0.25S	H6536	19.90
3mm	3mm	12mm		38mm	SQ	std	VXMG5T-M3M3-NR	H6537	20.54
3mm	3mm	12mm		38mm	0.25mm	std	VXMG5T-M3M3-R0.25	H6538	21.20
4mm	4mm	14mm	20mm	51mm	SQ	std	VXMG5T-M4M4-NR	H6539	24.65
4mm	4mm	14mm	20mm	51mm	0.25mm	std	VXMG5T-M4M4-R0.25	H6540	24.65
4mm	4mm	14mm	20mm	51mm	0.5mm	std	VXMG5T-M4M4-R0.5	H6541	24.65
5mm	5mm	16mm	22mm	51mm	0.25mm	std	VXMG5T-M5M5-R0.25	H6542	28.35
5mm	5mm	16mm	22mm	51mm	0.5mm	std	VXMG5T-M5M5-R0.5	H6543	28.35
6mm	6mm	20mm	26mm	63mm	0.5mm	std	VXMG5T-M6M6-R0.5	H6544	35.30
6mm	6mm	20mm	26mm	63mm	1.0mm	std	VXMG5T-M6M6-R1.0	H6545	35.30
6mm	6mm	20mm	no neck	100mm	0.5mm	no neck	VXMG5T-M6M6-NN	H6546	50.22
8mm	8mm	20mm	26mm	63mm	0.5mm	std	VXMG5T-M8M8-R0.5	H6547	43.85
8mm	8mm	20mm	26mm	63mm	1.0mm	std	VXMG5T-M8M8-R1.0	H6548	43.85
8mm	8mm	20mm	no neck	100mm	0.5mm	no neck	VXMG5T-M8M8-NN	H6549	60.28
10mm	10mm	24mm	30mm	70mm	0.5mm	std	VXMG5T-M10M10-R0.5	H6550	59.63
10mm	10mm	24mm	30mm	70mm	1.0mm	std	VXMG5T-M10M10-R1.0	H6551	59.63
10mm	10mm	24mm	no neck	100mm	0.5mm	no neck	VXMG5T-M10M10-NN	H6552	70.11
12mm	12mm	25mm	31mm	76mm	0.5mm	std	VXMG5T-M12M12-R0.5	H6553	82.27
12mm	12mm	25mm	31mm	76mm	1.0mm	std	VXMG5T-M12M12-R1.0	H6554	82.27
12mm	12mm	25mm	31mm	76mm	2.0mm	std	VXMG5T-M12M12-R2.0	H6555	82.27
12mm	12mm	25mm	no neck	100mm	0.5mm	no neck	VXMG5T-M12M12-NN	H6556	104.41
14mm	14mm	32mm	38mm	89mm	0.5mm	std	VXMG5T-M14M14-R0.5	H6557	137.13
14mm	14mm	32mm	38mm	89mm	1.0mm	std	VXMG5T-M14M14-R1.0	H6558	137.13
14mm	14mm	32mm	38mm	89mm	2.0mm	std	VXMG5T-M14M14-R2.0	H6559	137.13
16mm	16mm	32mm	38mm	89mm	0.5mm	std	VXMG5T-M16M16-R0.5	H6560	148.29
16mm	16mm	32mm	38mm	89mm	1.0mm	std	VXMG5T-M16M16-R1.0	H6561	148.29
16mm	16mm	32mm	38mm	89mm	2.0mm	std	VXMG5T-M16M16-R2.0	H6562	148.29
16mm	16mm	32mm	no neck	100mm	0.5mm	no neck	VXMG5T-M16M16-NN	H6563	184.83
18mm	18mm	36mm	42mm	100mm	0.5mm	std	VXMG5T-M18M18-R0.5	H6564	217.16
18mm	18mm	36mm	42mm	100mm	1.0mm	std	VXMG5T-M18M18-R1.0	H6565	217.16
18mm	18mm	36mm	42mm	100mm	2.0mm	std	VXMG5T-M18M18-R2.0	H6566	217.16
20mm	20mm	36mm	42mm	100mm	1.0mm	std	VXMG5T-M20M20-R1.0	H6567	250.83
20mm	20mm	36mm	42mm	100mm	2.0mm	std	VXMG5T-M20M20-R2.0	H6568	250.83
25mm	25mm	36mm	42mm	100mm	1.0mm	std	VXMG5T-M25M25-R1.0	H6569	348.77
25mm	25mm	36mm	42mm	100mm	2.0mm	std	VXMG5T-M25M25-R2.0	H6570	348.77



Speed & Feed:  
page 147

# TITANIUM ALLOYS & HIGH TEMP ALLOYS



## 6 FLUTE • VARIABLE FL- ROUGHING & FINISHING APPLICATIONS

[BACK TO INDEX](#)



- ▶ 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 ✓ [Check Stock Online](#)

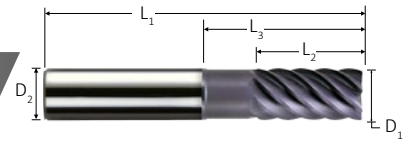
DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nACRo EDP	nACRo Price
3/8	3/8	1		3	SQ	std	VXMG6T-1212-NR	H7191	50.20
3/8	3/8	1		3	0.015	std	VXMG6T-1212-R015	H7192	50.20
3/8	3/8	1		3	0.030	std	VXMG6T-1212-R030	H7196	50.20
3/8	3/8	1		3	0.060	std	VXMG6T-1212-R060	H7193	50.20
3/8	3/8	1	1-7/8	4	0.015	ext neck	VXMG6T-1212-R015N1	H7194	63.83
3/8	3/8	1	1-7/8	4	0.030	ext neck	VXMG6T-1212-R030N1	H7195	63.83
1/2	1/2	1-1/4		3	SQ	std	VXMG6T-1616-NR	H7201	80.78
1/2	1/2	1-1/4		3	0.015	std	VXMG6T-1616-R015	H7197	80.78
1/2	1/2	1-1/4		3	0.030	std	VXMG6T-1616-R030	H7198	80.78
1/2	1/2	1-1/4		3	0.060	std	VXMG6T-1616-R060	H7199	80.78
1/2	1/2	1-1/4		3	0.120	std	VXMG6T-1616-R120	H7200	80.78
1/2	1/2	1-1/4	2-1/4	4	0.030	ext neck	VXMG6T-1616-R030N1	H7202	134.18
1/2	1/2	1-1/4	2-1/4	4	0.060	ext neck	VXMG6T-1616-R060N1	H7203	134.18
5/8	5/8	1-1/4		3-1/2	SQ	std	VXMG6T-2020-NR	H7206	140.78
5/8	5/8	1-1/4		3-1/2	0.030	std	VXMG6T-2020-R030	H7204	140.78
5/8	5/8	1-1/4		3-1/2	0.060	std	VXMG6T-2020-R060	H7205	140.78
5/8	5/8	1-1/4	2-1/4	4	0.030	ext neck	VXMG6T-2020-R030N1	H7207	229.98
5/8	5/8	1-1/4	2-1/4	4	0.060	ext neck	VXMG6T-2020-R060N1	H7208	229.98
3/4	3/4	1-5/8		4	SQ	std	VXMG6T-2424-NR	H7209	211.86
3/4	3/4	1-5/8		4	0.030	std	VXMG6T-2424-R030	H7210	211.86
3/4	3/4	1-5/8		4	0.060	std	VXMG6T-2424-R060	H7215	211.86
3/4	3/4	1-5/8		4	0.090	std	VXMG6T-2424-R090	H7211	211.86
3/4	3/4	1-5/8		4	0.120	std	VXMG6T-2424-R120	H7212	211.86
3/4	3/4	1-5/8	3	5	0.030	ext neck	VXMG6T-2424-R030N1	H7213	269.28
3/4	3/4	1-5/8	3	5	0.060	ext neck	VXMG6T-2424-R060N1	H7214	269.28
1	1	1-3/4		4-1/2	SQ	std	VXMG6T-3232-NR	H7220	333.75
1	1	1-3/4		4-1/2	0.030	std	VXMG6T-3232-R030	H7216	333.75
1	1	1-3/4		4-1/2	0.060	std	VXMG6T-3232-R060	H7217	333.75
1	1	1-3/4		4-1/2	0.120	std	VXMG6T-3232-R120	H7218	333.75
1	1	1-3/4		4-1/2	0.250	std	VXMG6T-3232-R250	H7219	333.75
1	1	1-3/4	3-1/4	5-1/2	0.030	ext neck	VXMG6T-3232-R030N1	H7221	375.90
1	1	1-3/4	3-1/4	5-1/2	0.060	ext neck	VXMG6T-3232-R060N1	H7222	375.90
1-1/4	1-1/4	2-1/4		5	SQ	std	VXMG6T-4040-NR	H7225	569.35
1-1/4	1-1/4	2-1/4		5	0.030	std	VXMG6T-4040-R030	H7223	569.35
1-1/4	1-1/4	2-1/4		5	0.120	std	VXMG6T-4040-R120	H7224	569.35

Speed & Feed: page 147



# TITANIUM ALLOYS & HIGH TEMP ALLOYS

## 7 FLUTE • VARIABLE FL - LIGHT TO MEDIUM FINISHING APPLICATIONS



Carbide Center Cutting nACRo +.000 / -.002 HRC <54

[BACK TO INDEX](#)



- 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 [Check Stock Online](#)

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nACRo EDP	nACRo Price
1/8	1/8	3/16		1-1/2	SQ	stub	VXMg7-404-NRS-NACRO	H6614	20.98
1/8	1/8	3/16		1-1/2	0.010	stub	VXMg7-404-R010S-NACRO	H6615	20.98
1/8	1/8	3/8		1-1/2	SQ	std	VXMg7-404-NR-NACRO	H6616	22.40
1/8	1/8	3/8		1-1/2	0.010	std	VXMg7-404-R010-NACRO	H6617	22.40
3/16	3/16	9/32		1-1/2	SQ	stub	VXMg7-606-NRS-NACRO	34720	24.22
3/16	3/16	9/32		1-1/2	0.010	stub	VXMg7-606-R010S-NACRO	H6618	24.22
3/16	3/16	9/16		2	SQ	std	VXMg7-606-NR-NACRO	H6619	27.02
3/16	3/16	9/16		2	0.010	std	VXMg7-606-R010-NACRO	H6620	27.02
1/4	1/4	3/8		2	SQ	stub	VXMg7-808-NRS-NACRO	32241	30.19
1/4	1/4	3/8		2	0.015	stub	VXMg7-808-R015S-NACRO	32242	30.19
1/4	1/4	3/8	2-1/8	4	0.015	ext neck	VXMg7-808-R015N3-NACRO	32246	56.76
1/4	1/4	3/8	no neck	4	0.015	no neck	VXMg7-808-R015NN-NACRO	32247	45.35
1/4	1/4	3/4	1	2-1/2	SQ	std	VXMg7-808-NR-NACRO	32244	35.20
1/4	1/4	3/4	1	2-1/2	0.015	std	VXMg7-808-R015-NACRO	32245	35.20
3/8	3/8	1/2		2	SQ	stub	VXMg7-1212-NRS-NACRO	32248	51.58
3/8	3/8	1/2		2	0.015	stub	VXMg7-1212-R015S-NACRO	32249	51.58
3/8	3/8	1/2	1-1/8	3	0.015	ext neck	VXMg7-1212-R015N1-NACRO	32252	69.64
3/8	3/8	1/2	2-1/8	4	0.015	ext neck	VXMg7-1212-R015N2-NACRO	32253	80.05
3/8	3/8	1		2-1/2	SQ	std	VXMg7-1212-NR-NACRO	32250	54.77
3/8	3/8	1		2-1/2	0.015	std	VXMg7-1212-R015-NACRO	32251	54.77
1/2	1/2	5/8		2-1/2	SQ	stub	VXMg7-1616-NRS-NACRO	32254	80.28
1/2	1/2	5/8		2-1/2	0.015	stub	VXMg7-1616-R015S-NACRO	32255	80.28
1/2	1/2	5/8	1-1/2	4	0.015	ext neck	VXMg7-1616-R015N1-NACRO	32260	146.38
1/2	1/2	5/8	2-1/4	4	0.015	ext neck	VXMg7-1616-R015N2-NACRO	32261	146.38
1/2	1/2	1	1-1/4	3	SQ	std	VXMg7-1616-NR-NACRO	32256	88.13
1/2	1/2	1	1-1/4	3	0.015	std	VXMg7-1616-R015-NACRO	31805	88.13
1/2	1/2	1	1-1/4	3	0.030	std	VXMg7-1616-R030-NACRO	31797	88.13
1/2	1/2	1-1/4		3	SQ	med	VXMg7-1616-NRM-NACRO	32257	88.13
1/2	1/2	1-1/4		3	0.015	med	VXMg7-1616-R015M-NACRO	32258	88.13
1/2	1/2	1-1/4		3	0.030	med	VXMg7-1616-R030M-NACRO	32259	88.13
5/8	5/8	3/4		3	SQ	stub	VXMg7-2020-NRS-NACRO	32262	145.56
5/8	5/8	3/4		3	0.030	stub	VXMg7-2020-R030S-NACRO	32263	145.56
5/8	5/8	3/4	1-5/8	5	0.030	ext neck	VXMg7-2020-R030N1-NACRO	32267	250.88
5/8	5/8	1-1/4	1-1/2	3-1/2	SQ	std	VXMg7-2020-NR-NACRO	32264	153.58
5/8	5/8	1-1/4	1-1/2	3-1/2	0.030	std	VXMg7-2020-R030-NACRO	32265	153.58
3/4	3/4	7/8		3	SQ	stub	VXMg7-2424-NRS-NACRO	32269	215.28
3/4	3/4	7/8		3	0.030	stub	VXMg7-2424-R030S-NACRO	32271	215.28
3/4	3/4	7/8	2	5	0.030	ext neck	VXMg7-2424-R030N1-NACRO	32277	293.76
3/4	3/4	1-1/2	1-3/4	4	SQ	std	VXMg7-2424-NR-NACRO	32273	231.12
3/4	3/4	1-1/2	1-3/4	4	0.030	std	VXMg7-2424-R030-NACRO	32275	231.12
1	1	1-1/2	1-3/4	4	SQ	std	VXMg7-3232-NR-NACRO	32283	353.39
1	1	1-1/2	1-3/4	4	0.030	std	VXMg7-3232-R030-NACRO	32287	353.39

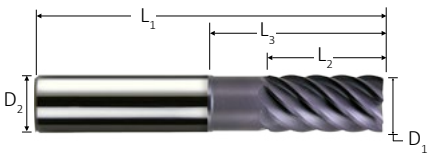
Speed & Feed:  
page 152

# TITANIUM ALLOYS & HIGH TEMP ALLOYS

## 7 FLUTE • VARIABLE FL - LIGHT TO MEDIUM FINISHING APPLICATIONS

[BACK TO INDEX](#)

Carbide	7	Center Cutting	variable	nACRo	+0.000mm -0.050mm	Square	Radius		HRC <54	<table border="1"><tr><td>P</td><td>M</td><td>S</td></tr></table>	P	M	S
P	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



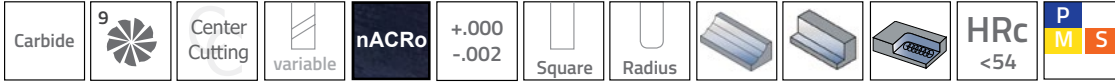
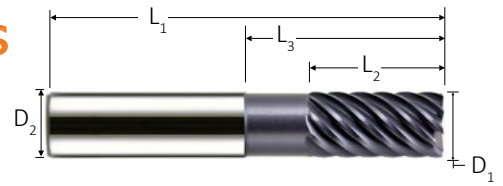
### SERIES: VXMG7-M\_M\_-NACRO ✓ [Check Stock Online](#)

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nACRo EDP	nACRo Price
3mm	3mm	6mm		38mm	SQ	stub	VXMG7-M3M3-NRS-NACRO	H6621	20.99
3mm	3mm	6mm		38mm	0.25mm	stub	VXMG7-M3M3-R0.25S-NACRO	H6622	21.71
3mm	3mm	12mm		38mm	SQ	std	VXMG7-M3M3-NR-NACRO	H6623	22.40
3mm	3mm	12mm		38mm	0.25mm	std	VXMG7-M3M3-R0.25-NACRO	H6624	23.12
4mm	4mm	12mm		51mm	SQ	std	VXMG7-M4M4-NR-NACRO	H6625	26.89
4mm	4mm	12mm		51mm	0.25mm	std	VXMG7-M4M4-R0.25-NACRO	H6626	26.89
6mm	6mm	20mm	26mm	63mm	SQ	std	VXMG7-M6M6-NR-NACRO	35169	38.51
6mm	6mm	20mm	26mm	63mm	0.5mm	std	VXMG7-M6M6-R0.5-NACRO	35120	38.51
6mm	6mm	20mm	no neck	100mm	0.5mm	no neck	VXMG7-M6M6-NN-NACRO	35121	54.78
8mm	8mm	20mm	26mm	63mm	SQ	std	VXMG7-M8M8-NR-NACRO	35171	47.83
8mm	8mm	20mm	26mm	63mm	0.5mm	std	VXMG7-M8M8-R0.5-NACRO	35122	47.83
8mm	8mm	20mm	26mm	63mm	1.0mm	std	VXMG7-M8M8-R1.0-NACRO	H6627	47.83
8mm	8mm	20mm	no neck	100mm	0.5mm	no neck	VXMG7-M8M8-NN-NACRO	35123	65.76
10mm	10mm	24mm	30mm	70mm	SQ	std	VXMG7-M10M10-NR-NACRO	35173	65.05
10mm	10mm	24mm	30mm	70mm	0.5mm	std	VXMG7-M10M10-R0.5-NACRO	35124	65.05
10mm	10mm	24mm	30mm	70mm	1.0mm	std	VXMG7-M10M10-R1.0-NACRO	H6628	65.05
10mm	10mm	24mm	30mm	70mm	2.0mm	std	VXMG7-M10M10-R2.0-NACRO	H6659	65.05
10mm	10mm	24mm	no neck	100mm	0.5mm	no neck	VXMG7-M10M10-NN-NACRO	35125	76.49
12mm	12mm	25mm	31mm	76mm	SQ	std	VXMG7-M12M12-NR-NACRO	35175	89.75
12mm	12mm	25mm	31mm	76mm	0.5mm	std	VXMG7-M12M12-R0.5-NACRO	35126	89.75
12mm	12mm	25mm	31mm	76mm	1.0mm	std	VXMG7-M12M12-R1.0-NACRO	35605	89.75
12mm	12mm	25mm	31mm	76mm	2.0mm	std	VXMG7-M12M12-R2.0-NACRO	H6629	89.75
12mm	12mm	25mm	no neck	100mm	0.5mm	no neck	VXMG7-M12M12-NN-NACRO	35127	113.90
14mm	14mm	32mm	38mm	89mm	SQ	std	VXMG7-M14M14-NR-NACRO	35177	149.59
14mm	14mm	32mm	38mm	89mm	0.5mm	std	VXMG7-M14M14-R0.5-NACRO	35128	149.59
14mm	14mm	32mm	38mm	89mm	1.0mm	std	VXMG7-M14M14-R1.0-NACRO	H6630	149.59
16mm	16mm	32mm	38mm	89mm	SQ	std	VXMG7-M16M16-NR-NACRO	35179	161.77
16mm	16mm	32mm	38mm	89mm	0.5mm	std	VXMG7-M16M16-R0.5-NACRO	35129	161.77
16mm	16mm	32mm	38mm	89mm	1.0mm	std	VXMG7-M16M16-R1.0-NACRO	H6631	161.77
16mm	16mm	32mm	38mm	89mm	2.0mm	std	VXMG7-M16M16-R2.0-NACRO	H6632	161.77
16mm	16mm	32mm	no neck	100mm	0.5mm	no neck	VXMG7-M16M16-NN-NACRO	35130	201.64
18mm	18mm	36mm	42mm	100mm	SQ	std	VXMG7-M18M18-NR-NACRO	35181	236.90
18mm	18mm	36mm	42mm	100mm	0.5mm	std	VXMG7-M18M18-R0.5-NACRO	35131	236.90
18mm	18mm	36mm	42mm	100mm	1.0mm	std	VXMG7-M18M18-R1.0-NACRO	H6633	236.90
20mm	20mm	36mm	42mm	100mm	SQ	std	VXMG7-M20M20-NR-NACRO	35183	273.64
20mm	20mm	36mm	42mm	100mm	0.5mm	std	VXMG7-M20M20-R0.5-NACRO	H6634	273.64
20mm	20mm	36mm	42mm	100mm	1.0mm	std	VXMG7-M20M20-R1.0-NACRO	35132	273.64
20mm	20mm	36mm	42mm	100mm	2.0mm	std	VXMG7-M20M20-R2.0-NACRO	H6635	273.64
20mm	20mm	36mm	42mm	100mm	3.0mm	std	VXMG7-M20M20-R3.0-NACRO	H6636	273.64
25mm	25mm	36mm	42mm	100mm	SQ	std	VXMG7-M25M25-NR-NACRO	35185	380.47
25mm	25mm	36mm	42mm	100mm	0.5mm	std	VXMG7-M25M25-R0.5-NACRO	H6637	380.47
25mm	25mm	36mm	42mm	100mm	1.0mm	std	VXMG7-M25M25-R1.0-NACRO	35133	380.47
25mm	25mm	36mm	42mm	100mm	3.0mm	std	VXMG7-M25M25-R3.0-NACRO	H6638	380.47

Speed & Feed: page 152

# TITANIUM ALLOYS & HIGH TEMP ALLOYS

## 9 FLUTE • VARIABLE FL - FINE-FINISHING APPLICATIONS



[BACK TO INDEX](#)

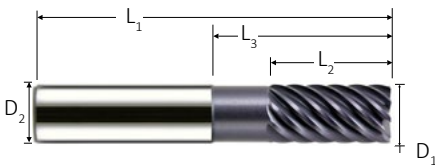


- › Designed to deliver outstanding surface finishes, utilizing maximum metal removal rates
- › Unique titanium focused geometry and edge prep enables efficient cutting action
- › Extreme metal removal rates delivered at full flute length & 5% x D radial depth
- › Proprietary nACRo coating allows for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

### SERIES: VXM9-\_\_-NACRO ✓ [Check Stock Online](#)

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nACRo EDP	nACRo Price
3/16	3/16	9/32		1-1/2	SQ	stub	VXM9-606-NRS-NACRO	H6639	26.24
3/16	3/16	9/32		1-1/2	0.010	stub	VXM9-606-R010S-NACRO	H6640	26.24
3/16	3/16	9/16		2	SQ	std	VXM9-606-NR-NACRO	H6641	29.28
3/16	3/16	9/16		2	0.010	std	VXM9-606-R010-NACRO	H6642	29.29
1/4	1/4	3/8		2	SQ	stub	VXM9-808-NRS-NACRO	32288	32.71
1/4	1/4	3/8		2	0.015	stub	VXM9-808-R015S-NACRO	32289	32.71
1/4	1/4	3/8	2-1/8	4	0.015	ext neck	VXM9-808-R015N3-NACRO	32302	61.49
1/4	1/4	3/8	no neck	4	0.015	no neck	VXM9-808-R015NN-NACRO	32303	49.13
1/4	1/4	3/4	1	2-1/2	SQ	std	VXM9-808-NR-NACRO	32290	38.13
1/4	1/4	3/4	1	2-1/2	0.015	std	VXM9-808-R015-NACRO	32291	38.13
3/8	3/8	1/2		2	SQ	stub	VXM9-1212-NRS-NACRO	32304	55.87
3/8	3/8	1/2		2	0.015	stub	VXM9-1212-R015S-NACRO	32305	55.87
3/8	3/8	1/2	1-1/8	3	0.015	ext neck	VXM9-1212-R015N1-NACRO	32317	75.44
3/8	3/8	1/2	2-1/8	4	0.015	ext neck	VXM9-1212-R015N2-NACRO	32325	86.72
3/8	3/8	1		2-1/2	SQ	std	VXM9-1212-NR-NACRO	32315	59.33
3/8	3/8	1		2-1/2	0.015	std	VXM9-1212-R015-NACRO	32316	59.33
1/2	1/2	5/8		2-1/2	SQ	stub	VXM9-1616-NRS-NACRO	32327	86.97
1/2	1/2	5/8		2-1/2	0.015	stub	VXM9-1616-R015S-NACRO	32328	86.97
1/2	1/2	5/8	1-1/2	4	0.015	ext neck	VXM9-1616-R015N1-NACRO	32377	158.57
1/2	1/2	5/8	2-1/4	4	0.015	ext neck	VXM9-1616-R015N2-NACRO	32405	158.57
1/2	1/2	1	1-1/4	3	SQ	std	VXM9-1616-NR-NACRO	32329	95.47
1/2	1/2	1	1-1/4	3	0.015	std	VXM9-1616-R015-NACRO	31801	95.47
1/2	1/2	1	1-1/4	3	0.030	std	VXM9-1616-R030-NACRO	31799	95.47
1/2	1/2	1-1/4		3	SQ	med	VXM9-1616-NRM-NACRO	32330	95.47
1/2	1/2	1-1/4		3	0.015	med	VXM9-1616-R015M-NACRO	32373	95.47
1/2	1/2	1-1/4		3	0.030	med	VXM9-1616-R030M-NACRO	32376	95.47
5/8	5/8	3/4		3	SQ	stub	VXM9-2020-NRS-NACRO	32406	157.69
5/8	5/8	3/4		3	0.030	stub	VXM9-2020-R030S-NACRO	32407	157.69
5/8	5/8	3/4	1-5/8	5	0.030	ext neck	VXM9-2020-R030N1-NACRO	32410	271.79
5/8	5/8	1-1/4	1-1/2	3-1/2	SQ	std	VXM9-2020-NR-NACRO	32408	166.37
5/8	5/8	1-1/4	1-1/2	3-1/2	0.030	std	VXM9-2020-R030-NACRO	32409	166.37
3/4	3/4	7/8		3	SQ	stub	VXM9-2424-NRS-NACRO	32411	233.22
3/4	3/4	7/8		3	0.030	stub	VXM9-2424-R030S-NACRO	32412	233.22
3/4	3/4	7/8	2	5	0.030	ext neck	VXM9-2424-R030N1-NACRO	32415	318.24
3/4	3/4	1-1/2	1-3/4	4	SQ	std	VXM9-2424-NR-NACRO	32413	250.38
3/4	3/4	1-1/2	1-3/4	4	0.030	std	VXM9-2424-R030-NACRO	32414	250.38
1	1	1-1/2	1-3/4	4	SQ	std	VXM9-3232-NR-NACRO	32416	382.84
1	1	1-1/2	1-3/4	4	0.030	std	VXM9-3232-R030-NACRO	32417	382.84

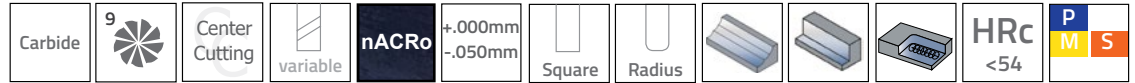
Speed & Feed: page 153



# TITANIUM ALLOYS & HIGH TEMP ALLOYS

## 9 FLUTE • VARIABLE FL - FINE-FINISHING APPLICATIONS

[BACK TO INDEX](#)



- › 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

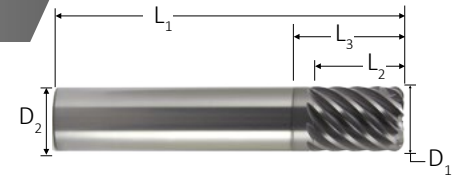


### SERIES: VXMG9-M\_M\_-NACRO ✓ [Check Stock Online](#)

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nACRo EDP	nACRo Price
4mm	4mm	12mm		51mm	SQ	std	VXMG9-M4M4-NR-NACRO	H6643	29.14
4mm	4mm	12mm		51mm	0.25mm	std	VXMG9-M4M4-R0.25-NACRO	H6644	29.14
6mm	6mm	20mm	26mm	63mm	SQ	std	VXMG9-M6M6-NR-NACRO	35151	41.72
6mm	6mm	20mm	26mm	63mm	0.5mm	std	VXMG9-M6M6-R0.5-NACRO	35134	41.72
6mm	6mm	20mm	no neck	100mm	0.5mm	no neck	VXMG9-M6M6-NN-NACRO	35135	59.35
8mm	8mm	20mm	26mm	63mm	SQ	std	VXMG9-M8M8-NR-NACRO	35153	51.82
8mm	8mm	20mm	26mm	63mm	0.5mm	std	VXMG9-M8M8-R0.5-NACRO	35136	51.82
8mm	8mm	20mm	26mm	63mm	1.0mm	std	VXMG9-M8M8-R1.0-NACRO	H6645	51.82
8mm	8mm	20mm	no neck	100mm	0.5mm	no neck	VXMG9-M8M8-NN-NACRO	35137	71.24
10mm	10mm	24mm	30mm	70mm	SQ	std	VXMG9-M10M10-NR-NACRO	35155	70.47
10mm	10mm	24mm	30mm	70mm	0.5mm	std	VXMG9-M10M10-R0.5-NACRO	35138	70.47
10mm	10mm	24mm	30mm	70mm	1.0mm	std	VXMG9-M10M10-R1.0-NACRO	H6646	70.47
10mm	10mm	24mm	no neck	100mm	0.5mm	no neck	VXMG9-M10M10-NN-NACRO	35139	82.86
12mm	12mm	25mm	31mm	76mm	SQ	std	VXMG9-M12M12-NR-NACRO	35157	97.23
12mm	12mm	25mm	31mm	76mm	0.5mm	std	VXMG9-M12M12-R0.5-NACRO	35140	97.23
12mm	12mm	25mm	31mm	76mm	1.0mm	std	VXMG9-M12M12-R1.0-NACRO	H6647	97.23
12mm	12mm	25mm	31mm	76mm	2.0mm	std	VXMG9-M12M12-R2.0-NACRO	H6648	97.23
12mm	12mm	25mm	no neck	100mm	0.5mm	no neck	VXMG9-M12M12-NN-NACRO	35141	123.40
14mm	14mm	32mm	38mm	89mm	SQ	std	VXMG9-M14M14-NR-NACRO	35159	162.06
14mm	14mm	32mm	38mm	89mm	0.5mm	std	VXMG9-M14M14-R0.5-NACRO	35142	162.06
14mm	14mm	32mm	38mm	89mm	1.0mm	std	VXMG9-M14M14-R1.0-NACRO	H6649	162.06
16mm	16mm	32mm	38mm	89mm	SQ	std	VXMG9-M16M16-NR-NACRO	35161	175.25
16mm	16mm	32mm	38mm	89mm	0.5mm	std	VXMG9-M16M16-R0.5-NACRO	35143	175.25
16mm	16mm	32mm	38mm	89mm	1.0mm	std	VXMG9-M16M16-R1.0-NACRO	H6650	175.25
16mm	16mm	32mm	38mm	89mm	2.0mm	std	VXMG9-M16M16-R2.0-NACRO	H6651	175.25
16mm	16mm	32mm	no neck	100mm	0.5mm	no neck	VXMG9-M16M16-NN-NACRO	35144	218.44
18mm	18mm	36mm	42mm	100mm	SQ	std	VXMG9-M18M18-NR-NACRO	35163	256.65
18mm	18mm	36mm	42mm	100mm	0.5mm	std	VXMG9-M18M18-R0.5-NACRO	35145	256.65
18mm	18mm	36mm	42mm	100mm	1.0mm	std	VXMG9-M18M18-R1.0-NACRO	H6652	256.65
20mm	20mm	36mm	42mm	100mm	SQ	std	VXMG9-M20M20-NR-NACRO	35165	296.44
20mm	20mm	36mm	42mm	100mm	0.5mm	std	VXMG9-M20M20-R0.5-NACRO	H6653	296.44
20mm	20mm	36mm	42mm	100mm	1.0mm	std	VXMG9-M20M20-R1.0-NACRO	35147	296.44
20mm	20mm	36mm	42mm	100mm	2.0mm	std	VXMG9-M20M20-R2.0-NACRO	H6654	296.44
20mm	20mm	36mm	42mm	100mm	3.0mm	std	VXMG9-M20M20-R3.0-NACRO	H6655	296.44
25mm	25mm	36mm	42mm	100mm	SQ	std	VXMG9-M25M25-NR-NACRO	35167	412.18
25mm	25mm	36mm	42mm	100mm	0.5mm	std	VXMG9-M25M25-R0.5-NACRO	H6656	412.18
25mm	25mm	36mm	42mm	100mm	1.0mm	std	VXMG9-M25M25-R1.0-NACRO	35149	412.18
25mm	25mm	36mm	42mm	100mm	3.0mm	std	VXMG9-M25M25-R3.0-NACRO	H6657	412.18

Speed & Feed: page 153

## 10 FLUTE • VARIABLE FL - ULTRA FINE-FINISHING APPLICATION



- 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 <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	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

## 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!**

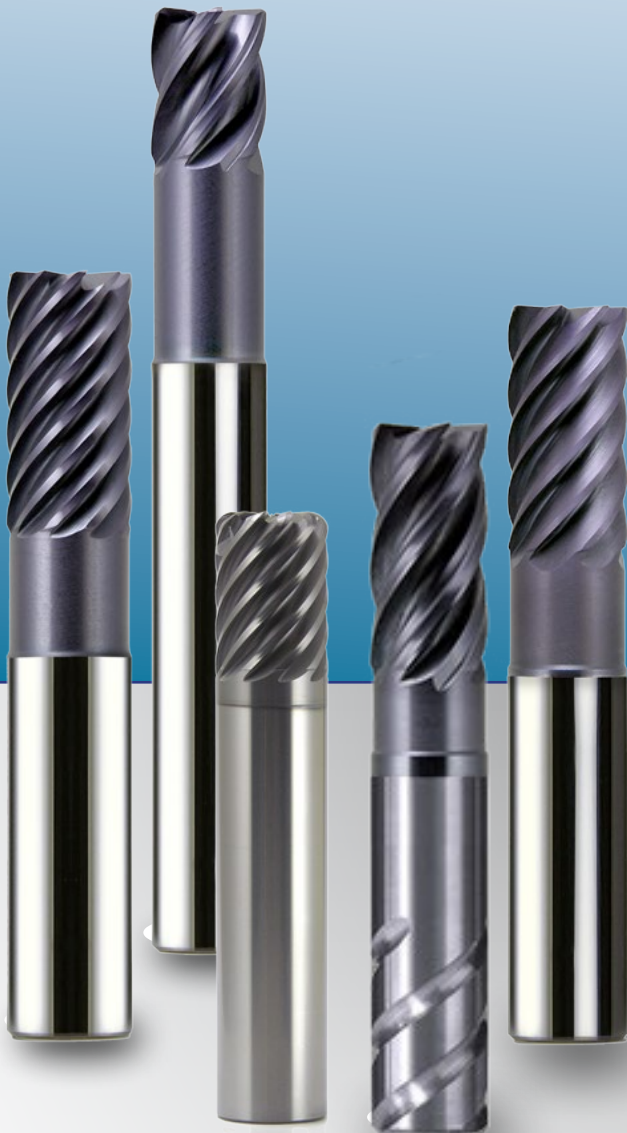
**PHONE:** 1-800-521-1078 or 216-362-4200

**FAX:** 1-800-521-1558 or 216-362-4230



# 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:**

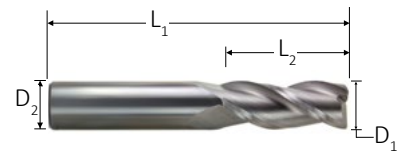
- **4- & 5-Flute Tools** - Designed for heavy-slotting & long depth profiling
- **6-Flute Tools** - Designed for roughing and finishing applications
- **7-Flute Tools** - Designed for semi-finishing & medium depth profiling
- **9-Flute Tools** - Ideal for fine finish and profiling
- **10+-Flute Tools**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



[BACK TO INDEX](#)

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 ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	BRIGHT EDP	ALTiN EDP	BRIGHT Price	ALTiN Price
1/8	1/8	1/4	1-1/2	.008-.010	stub	EMGS35-404	17658	57658	17.02	20.30
1/8	1/8	1/2	1-1/2	.008-.010	std	EMG35-404	16709	56709	17.02	20.30
5/32	3/16	5/16	2	.008-.010	stub	EMGS35-605	17659	57659	22.75	27.10
5/32	3/16	9/16	2	.008-.010	std	EMG35-605	17722	57722	22.75	25.96
3/16	3/16	5/16	2	.008-.010	stub	EMGS35-606	17660	57660	21.62	25.70
3/16	3/16	9/16	2	.008-.010	std	EMG35-606	17723	57723	21.62	25.70
7/32	1/4	3/8	2	.015-.020	stub	EMGS35-807	17661	57661	26.20	31.20
7/32	1/4	3/4	2-1/2	.015-.020	std	EMG35-807	17724	57724	27.14	32.30
1/4	1/4	3/8	2	.015-.020	stub	EMGS35-808	17662	57662	24.73	29.40
1/4	1/4	3/4	2-1/2	.015-.020	std	EMG35-808	16702	56702	25.66	30.50
5/16	5/16	7/16	2	.015-.020	stub	EMGS35-1010	17664	57664	31.49	37.50
5/16	5/16	13/16	2-1/2	.015-.020	std	EMG35-1010	17727	57727	33.16	39.50
3/8	3/8	1/2	2	.015-.020	stub	EMGS35-1212	17666	57666	36.78	43.80
3/8	3/8	1	2-1/2	.015-.020	std	EMG35-1212	17729	57729	37.69	44.80
7/16	7/16	9/16	2-1/2	.015-.020	stub	EMGS35-1414	17667	57667	47.64	56.69
7/16	7/16	1	2-3/4	.015-.020	std	EMG35-1414	17730	57730	49.42	58.80
1/2	1/2	5/8	2-1/2	.030-.035	stub	EMGS35-1616	17668	57668	59.55	70.90
1/2	1/2	1-1/4	3	.030-.035	std	EMG35-1616	16708	56708	61.22	72.90
5/8	5/8	3/4	3	.030-.035	stub	EMGS35-2020	17669	57669	109.24	130.00
5/8	5/8	1-5/8	3-1/2	.030-.035	std	EMG35-2020	17732	57732	114.10	135.80
3/4	3/4	1	3	.030-.035	stub	EMGS35-2424	17670	57670	155.10	184.60
3/4	3/4	1-5/8	4	.030-.035	std	EMG35-2424	17733	57733	170.86	203.30

Speed & Feed:  
page 149

## 3 FLUTE • 35° FOR STAINLESS STEEL

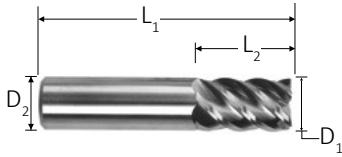
### SERIES: EMG35-M\_M\_ ✓ Check Stock Online



DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	CORNER	PART NAME	BRIGHT EDP	ALTiN EDP	BRIGHT Price	ALTiN Price
3mm	3mm	12mm	38mm	0.23mm	EMG35-M3M3	13394	53394	10.95	13.05
4mm	4mm	14mm	51mm	0.23mm	EMG35-M4M4	13395	53395	15.79	18.39
5mm	5mm	20mm	51mm	0.23mm	EMG35-M5M5	13396	53396	17.99	21.09
6mm	6mm	20mm	63mm	0.45mm	EMG35-M6M6	13397	53397	20.14	23.24
8mm	8mm	20mm	63mm	0.45mm	EMG35-M8M8	13398	53398	24.44	29.29
10mm	10mm	25mm	70mm	0.45mm	EMG35-M10M10	13399	53399	39.79	47.42
12mm	12mm	25mm	76mm	0.45mm	EMG35-M12M12	13400	53400	50.26	58.16
14mm	14mm	32mm	89mm	0.82mm	EMG35-M14M14	13401	53401	88.57	98.77
16mm	16mm	32mm	89mm	0.82mm	EMG35-M16M16	13402	53402	96.65	112.80
20mm	20mm	38mm	100mm	0.82mm	EMG35-M20M20	13404	53404	183.41	209.06

Speed & Feed: page 149

# TITANIUM ALLOYS & HIGH TEMP ALLOYS



5 FLUTE • 45° FOR STAINLESS STEELS/NICKEL BASED ALLOYS

[BACK TO INDEX](#)

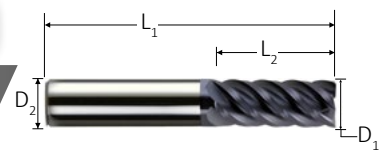
Carbide	5	Center Cutting	45°	Bright AlTiN	+0.000 -0.002	Square	Radius		HRC <54	P M S
---------	---	----------------	-----	-----------------	------------------	--------	--------	--	------------	-------------

- 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** ✓ **Check Stock Online**



DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	BRIGHT EDP	AlTiN EDP	BRIGHT Price	AlTiN Price
1/16	1/8	3/16	1-1/2	SQ	std	GMG-402	14707	54707	16.96	31.29
3/32	1/8	9/32	1-1/2	SQ	std	GMG-403	14708	54708	16.96	29.91
1/8	1/8	1/4	1-1/2	SQ	stub	GMGS-404	17698	57698	12.28	14.60
1/8	1/8	1/4	1-1/2	0.010	stub	GMGS-404-R010	10232	50232	13.82	15.92
1/8	1/8	1/2	1-1/2	SQ	std	GMG-404	15942	55942	12.44	14.80
1/8	1/8	1/2	1-1/2	0.010	std	GMG-404-R010	11350	51350	14.00	16.10
5/32	3/16	5/16	2	SQ	stub	GMGS-605	17699	57699	17.40	20.70
5/32	3/16	9/16	2	SQ	std	GMG-605	15943	55943	17.67	21.00
3/16	3/16	5/16	2	SQ	stub	GMGS-606	17700	57700	17.18	20.50
3/16	3/16	9/16	2	SQ	std	GMG-606	15944	55944	17.50	20.80
3/16	3/16	9/16	2	0.010	std	GMG-606-R010	11571	51571	19.69	22.29
7/32	1/4	3/8	2	SQ	stub	GMGS-807	17701	57701	21.11	25.10
7/32	1/4	3/4	2-1/2	SQ	std	GMG-807	15945	55945	22.22	26.40
1/4	1/4	3/8	2	SQ	stub	GMGS-808	17702	57702	19.51	23.20
1/4	1/4	3/8	2	.015	stub	GMGS-808-R015	11648	51648	21.95	26.05
1/4	1/4	3/4	2-1/2	SQ	std	GMG-808	15946	55946	21.88	26.00
1/4	1/4	3/4	2-1/2	0.015	std	GMG-808-R015	11704	51704	24.62	27.72
1/4	1/4	1-1/2	4	SQ	xl	GMG-808-E	15947	55947	35.64	42.40
5/16	5/16	7/16	2	SQ	stub	GMGS-1010	17703	57703	24.51	29.20
5/16	5/16	13/16	2-1/2	SQ	std	GMG-1010	15948	55948	27.15	32.30
5/16	5/16	13/16	2-1/2	0.015	std	GMG-1010-R015	11705	51705	30.54	35.02
3/8	3/8	1/2	2	SQ	stub	GMGS-1212	17704	57704	29.32	34.90
3/8	3/8	1/2	2	0.015	stub	GMGS-1212-R015	11706	51706	32.99	37.84
3/8	3/8	1/2	2	0.030	stub	GMGS-1212-R030	11707	51707	32.99	37.84
3/8	3/8	1	2-1/2	SQ	std	GMG-1212	15949	55949	34.14	40.60
3/8	3/8	1	2-1/2	0.015	std	GMG-1212-R015	11708	51708	38.41	43.26
3/8	3/8	1	2-1/2	0.015	std	GMG-1212-R030	11710	51710	38.41	43.26
3/8	3/8	1-3/4	4	SQ	xl	GMG-1212-E	15950	55950	56.22	66.90
13/32	7/16	9/16	2-1/2	SQ	stub	GMGS-1413	10739	50739	53.17	63.30
7/16	7/16	9/16	2-1/2	SQ	stub	GMGS-1414	17705	57705	38.62	46.00
7/16	7/16	1	2-3/4	SQ	std	GMG-1414	15951	55951	46.17	55.00
1/2	1/2	5/8	2-1/2	SQ	stub	GMGS-1616	17706	57706	46.02	54.80
1/2	1/2	5/8	2-1/2	0.030	stub	GMGS-1616-R030	11711	51711	51.77	59.67
1/2	1/2	5/8	2-1/2	0.060	stub	GMGS-1616-R060	11716	51716	51.77	59.67
1/2	1/2	1-1/4	3	SQ	std	GMG-1616	15952	55952	55.58	66.20
1/2	1/2	1-1/4	3	0.030	std	GMG-1616-R030	11978	51978	62.53	70.43
1/2	1/2	1-1/4	3	0.060	std	GMG-1616-R060	11781	51781	62.53	70.43
1/2	1/2	2	4	SQ	std	GMG-1616-M	11886	51886	71.61	82.14
1/2	1/2	2	4	0.030	std	GMG-1616-R030M	15241	55241	80.56	91.09
1/2	1/2	3	6	SQ	xl	GMG-1616-E	15953	55953	114.80	136.60
9/16	9/16	1-1/2	3-1/2	SQ	std	GMG-1818	15954	55954	88.31	105.10
5/8	5/8	3/4	3	SQ	stub	GMGS-2020	17707	57707	94.20	112.10
5/8	5/8	3/4	3	0.030	stub	GMGS-2020-R030	15243	55243	105.98	117.43



## 5 FLUTE • 45° FOR STAINLESS STEELS/NICKEL BASED ALLOYS

✓ **Check Stock Online**

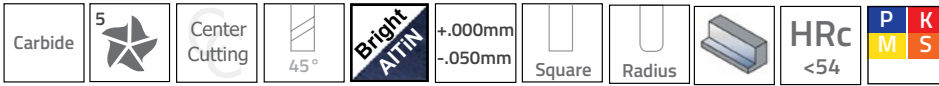
SERIES: GMG



DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	BRIGHT EDP	AITiN EDP	BRIGHT Price	ALTIN Price
5/8	5/8	3/4	3	0.060	stub	GMGS-2020-R060	15245	55245	105.98	117.43
5/8	5/8	1-5/8	3-1/2	SQ	std	GMG-2020	15955	55955	99.22	118.10
5/8	5/8	1-5/8	3-1/2	0.030	std	GMG-2020-R030	15247	55247	111.62	123.07
5/8	5/8	1-5/8	3-1/2	0.060	std	GMG-2020-R060	H6836	H6837	111.62	123.07
5/8	5/8	3	6	SQ	xl	GMG-2020-E	11203	51203	155.42	184.94
3/4	3/4	1	3	SQ	stub	GMGS-2424	17708	57708	128.10	152.40
3/4	3/4	1	3	0.030	stub	GMGS-2424-R030	15249	55249	144.11	160.26
3/4	3/4	1	3	.060	stub	GMGS-2424-R060	15253	55253	144.11	160.26
3/4	3/4	1-5/8	4	SQ	std	GMG-2424	15956	55956	146.06	173.80
3/4	3/4	1-5/8	4	0.030	std	GMG-2424-R030	15257	55257	164.32	180.47
3/4	3/4	1-5/8	4	0.060	std	GMG-2424-R060	15259	55259	164.32	180.47
3/4	3/4	3	6	SQ	xl	GMG-2424-E	15957	55957	246.14	292.90
1	1	1-1/4	3	SQ	stub	GMGS-3232	17709	57709	204.65	243.50
1	1	1-1/2	4	SQ	std	GMG-3232	15958	55958	250.34	297.90
1	1	1-1/2	4	0.030	std	GMG-3232-R030	15261	55261	281.63	313.23
1	1	1-1/2	4	0.060	std	GMG-3232-R060	15263	55263	281.63	313.23
1	1	3	6	SQ	xl	GMG-3232-E	15959	55959	403.83	480.60
1-1/4	1-1/4	2	4-1/2	SQ	std	GMG-4040	15265	55265	439.48	479.13
1-1/4	1-1/4	2	4-1/2	0.030	std	GMG-4040-R030	10000	50000	493.79	533.44
1-1/4	1-1/4	2	4-1/2	0.060	std	GMG-4040-R060	H6816	H6817	493.79	533.44

Speed & Feed:  
page 149

## 5 FLUTE • 45° FOR STAINLESS STEELS/NICKEL BASED ALLOYS



SERIES: GMG-M\_M\_ ✓ **Check Stock Online**



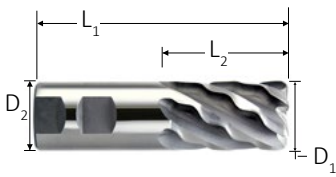
DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	BRIGHT EDP	AITiN EDP	BRIGHT Price	ALTIN Price
3mm	3mm	12mm	38mm	SQ	std	GMG-M3M3	13405	53405	10.95	13.58
4mm	4mm	14mm	51mm	SQ	std	GMG-M4M4	13406	53406	15.79	18.50
5mm	5mm	20mm	51mm	SQ	std	GMG-M5M5	13407	53407	17.99	20.80
6mm	6mm	20mm	63mm	SQ	std	GMG-M6M6	13408	53408	20.14	25.00
6mm	6mm	20mm	63mm	0.5mm	std	GMG-M6M6-R0.5	H6818	H6827	22.66	
6mm	6mm	25mm	75mm	SQ	med	GMG-M6M6-M	H6819	H6828	24.98	
8mm	8mm	20mm	63mm	SQ	std	GMG-M8M8	13409	53409	24.44	30.30
8mm	8mm	20mm	63mm	0.5mm	std	GMG-M8M8-R0.5	H6820	H6829	27.50	
8mm	8mm	25mm	75mm	SQ	med	GMG-M8M8-M	H6821	H6830	30.12	
10mm	10mm	25mm	70mm	SQ	std	GMG-M10M10	13410	53410	39.79	48.20
10mm	10mm	25mm	70mm	0.5mm	std	GMG-M10M10-R0.5	H6822	H6831	44.76	
10mm	10mm	38mm	100mm	SQ	long	GMG-M10M10-L	H6823	H6832	58.84	
12mm	12mm	25mm	76mm	SQ	std	GMG-M12M12	13411	53411	50.26	58.80
12mm	12mm	25mm	76mm	1.0mm	std	GMG-M12M12-R1.0	H6824	H6833	56.54	
12mm	12mm	50mm	100mm	SQ	long	GMG-M12M12-L	H6825	H6834	69.13	
16mm	16mm	32mm	89mm	SQ	std	GMG-M16M16	13413	53413	96.65	96.65
16mm	16mm	32mm	89mm	1.0mm	std	GMG-M16M16-R1.0	H6826	H6835	108.73	
20mm	20mm	38mm	100mm	SQ	std	GMG-M20M20	13415	53415	183.41	209.06

Speed & Feed:  
page 149



# TITANIUM ALLOYS & HIGH TEMP ALLOYS

## 4 OR 6 FLUTE • COBALT AEROCUT ROUGHING END MILL



[BACK TO INDEX](#)

HSSCo M42	4	6	Center Cutting	35°	Bright nACRO	+0.03 -0.03	Radius	Chamfer		HRC <48	M 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 ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	FL	PART NAME	Bright EDP	nACRo EDP	BRIGHT Price	ALTIN Price
3/4	3/4	1-5/8	3-7/8	.022 x 45°	std	4	CCAC4-2424	13124	33124	68.00	81.96
3/4	3/4	1-5/8	3-7/8	0.060	std	4	CCAC4-2424-R060	14327	34327	74.00	87.96
3/4	3/4	1-5/8	3-7/8	0.090	std	4	CCAC4-2424-R090	14328	34328	74.00	87.96
3/4	3/4	1-5/8	3-7/8	0.120	std	4	CCAC4-2424-R120	14329	34329	74.00	87.96
3/4	3/4	3	5-1/4	.022 x 45°	long	4	CCAC4-2424-L	13125	33125	96.00	113.45
3/4	3/4	3	5-1/4	0.060	long	4	CCAC4-2424-R060L	14331	34331	105.00	122.45
3/4	3/4	3	5-1/4	0.090	long	4	CCAC4-2424-R090L	14332	34332	105.00	122.45
3/4	3/4	3	5-1/4	0.120	long	4	CCAC4-2424-R120L	14333	34333	105.00	122.45
1	1	2	4-1/2	.022 x 45°	std	4	CCAC4-3232	13126	33126	98.00	128.32
1	1	2	4-1/2	0.060	std	4	CCAC4-3232-R060	14340	34340	108.00	138.32
1	1	2	4-1/2	0.090	std	4	CCAC4-3232-R090	14341	34341	108.00	138.32
1	1	2	4-1/2	0.120	std	4	CCAC4-3232-R120	13127	33127	108.00	138.32
1	1	2	4-1/2	0.250	std	4	CCAC4-3232-R250	14342	34342	108.00	138.32
1	1	2	4-1/2	.022 x 45°	std	6	CCAC6-3232	14343	34343	98.00	128.32
1	1	2	4-1/2	0.060	std	6	CCAC6-3232-R060	14345	34345	108.00	138.32
1	1	2	4-1/2	0.090	std	6	CCAC6-3232-R090	14346	34346	108.00	138.32
1	1	2	4-1/2	0.120	std	6	CCAC6-3232-R120	14347	34347	108.00	138.32
1	1	2	4-1/2	0.250	std	6	CCAC6-3232-R250	14348	34348	108.00	138.32
1	1	3	5-1/2	.022 x 45°	med	4	CCAC4-3232-M	13128	33128	135.00	172.05
1	1	3	5-1/2	0.060	med	4	CCAC4-3232-R060M	14350	34350	148.00	185.05
1	1	3	5-1/2	0.090	med	4	CCAC4-3232-R090M	14351	34351	148.00	185.05
1	1	3	5-1/2	0.120	med	4	CCAC4-3232-R120M	14352	34352	148.00	185.05
1	1	3	5-1/2	.022 x 45°	med	6	CCAC6-3232-M	14353	34353	135.00	172.05
1	1	3	5-1/2	0.060	med	6	CCAC6-3232-R060M	14355	34355	148.00	185.05
1	1	3	5-1/2	0.090	med	6	CCAC6-3232-R090M	14356	34356	148.00	185.05
1	1	3	5-1/2	0.120	med	6	CCAC6-3232-R120M	14357	34357	148.00	185.05
1	1	3	5-1/2	0.250	med	6	CCAC6-3232-R250M	14358	34358	148.00	185.05
1	1	4	6-1/2	.022 x 45°	long	4	CCAC4-3232-L	13129	33129	145.00	188.79
1	1	4	6-1/2	0.060	long	4	CCAC4-3232-R060L	14360	34360	145.00	201.79
1	1	4	6-1/2	0.090	long	4	CCAC4-3232-R090L	14361	34361	145.00	201.79
1	1	4	6-1/2	0.120	long	4	CCAC4-3232-R120L	13132	33132	158.00	201.79
1	1	4	6-1/2	0.250	long	4	CCAC4-3232-R250L	14362	34362	158.00	201.79
1	1	4	6-1/2	.022 x 45°	long	6	CCAC6-3232-L	14363	34363	135.00	188.79
1	1	4	6-1/2	0.060	long	6	CCAC6-3232-R060L	14365	34365	158.00	201.79
1	1	4	6-1/2	0.090	long	6	CCAC6-3232-R090L	14366	34366	158.00	201.79
1	1	4	6-1/2	0.120	long	6	CCAC6-3232-R120L	14367	34367	158.00	201.79
1	1	4	6-1/2	0.250	long	6	CCAC6-3232-R250L	14368	34368	158.00	201.79

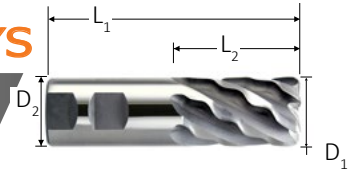


Speed & Feed: page 144

sizes continued on next page



## 4 OR 6 FLUTE • COBALT AEROCUT ROUGHING END MILL



✓ **Check Stock Online**

SERIES: CCAC



DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	FL	PART NAME	Bright EDP	nACRo EDP	BRIGHT Price	ALTIN Price
1-1/4	1-1/4	2	4-1/2	.022 x 45°	std	4	CCAC4-4040	13133	33133	148.00	186.06
1-1/4	1-1/4	2	4-1/2	0.060	std	4	CCAC4-4040-R060	14382	34382	163.00	201.06
1-1/4	1-1/4	2	4-1/2	0.090	std	4	CCAC4-4040-R090	14383	34383	163.00	201.06
1-1/4	1-1/4	2	4-1/2	0.120	std	4	CCAC4-4040-R120	13134	33134	163.00	201.06
1-1/4	1-1/4	2	4-1/2	0.190	std	4	CCAC4-4040-R190	14384	34384	163.00	201.06
1-1/4	1-1/4	2	4-1/2	0.250	std	4	CCAC4-4040-R250	14385	34385	163.00	201.06
1-1/4	1-1/4	2	4-1/2	.022 x 45°	std	6	CCAC6-4040	13135	33135	148.00	186.06
1-1/4	1-1/4	2	4-1/2	0.060	std	6	CCAC6-4040-R060	14387	34387	163.00	201.06
1-1/4	1-1/4	2	4-1/2	0.090	std	6	CCAC6-4040-R090	14388	34388	163.00	201.06
1-1/4	1-1/4	2	4-1/2	0.120	std	6	CCAC6-4040-R120	13304	33304	163.00	201.06
1-1/4	1-1/4	2	4-1/2	0.190	std	6	CCAC6-4040-R190	14389	34389	163.00	201.06
1-1/4	1-1/4	2	4-1/2	0.250	std	6	CCAC6-4040-R250	14390	34390	163.00	201.06
1-1/4	1-1/4	3	5-1/2	.022 x 45°	med	4	CCAC4-4040-M	13337	33337	180.00	226.51
1-1/4	1-1/4	3	5-1/2	0.060	med	4	CCAC4-4040-R060M	14392	34392	195.00	241.51
1-1/4	1-1/4	3	5-1/2	0.090	med	4	CCAC4-4040-R090M	14393	34393	195.00	241.51
1-1/4	1-1/4	3	5-1/2	0.120	med	4	CCAC4-4040-R120M	14394	34394	195.00	241.51
1-1/4	1-1/4	3	5-1/2	0.190	med	4	CCAC4-4040-R190M	14395	34395	195.00	241.51
1-1/4	1-1/4	3	5-1/2	0.250	med	4	CCAC4-4040-R250M	14396	34396	195.00	241.51
1-1/4	1-1/4	3	5-1/2	.022 x 45°	med	6	CCAC6-4040-M	13338	33338	180.00	226.51
1-1/4	1-1/4	3	5-1/2	0.060	med	6	CCAC6-4040-R060M	14398	34398	195.00	241.51
1-1/4	1-1/4	3	5-1/2	0.090	med	6	CCAC6-4040-R090M	14399	34399	195.00	241.51
1-1/4	1-1/4	3	5-1/2	0.120	med	6	CCAC6-4040-R120M	13339	33339	195.00	241.51
1-1/4	1-1/4	3	5-1/2	0.190	med	6	CCAC6-4040-R190M	14400	34400	195.00	241.51
1-1/4	1-1/4	3	5-1/2	0.250	med	6	CCAC6-4040-R250M	14401	34401	195.00	241.51
1-1/4	1-1/4	4	6-1/2	.022 x 45°	long	4	CCAC4-4040-L	14402	34402	205.00	259.97
1-1/4	1-1/4	4	6-1/2	0.060	long	4	CCAC4-4040-R060L	14404	34404	225.00	279.97
1-1/4	1-1/4	4	6-1/2	0.090	long	4	CCAC4-4040-R090L	14405	34405	225.00	279.97
1-1/4	1-1/4	4	6-1/2	0.120	long	4	CCAC4-4040-R120L	14406	34406	225.00	279.97
1-1/4	1-1/4	4	6-1/2	0.190	long	4	CCAC4-4040-R190L	14407	34407	225.00	279.97
1-1/4	1-1/4	4	6-1/2	0.250	long	4	CCAC4-4040-R250L	14408	34408	225.00	279.97
1-1/4	1-1/4	4	6-1/2	.022 x 45°	long	6	CCAC6-4040-L	13340	33340	205.00	259.97
1-1/4	1-1/4	4	6-1/2	0.060	long	6	CCAC6-4040-R060L	14423	34423	225.00	279.97
1-1/4	1-1/4	4	6-1/2	0.090	long	6	CCAC6-4040-R090L	14424	34424	225.00	279.97
1-1/4	1-1/4	4	6-1/2	0.120	long	6	CCAC6-4040-R120L	13341	33341	225.00	279.97
1-1/4	1-1/4	4	6-1/2	0.190	long	6	CCAC6-4040-R190L	14425	34425	225.00	279.97
1-1/4	1-1/4	4	6-1/2	0.250	long	6	CCAC6-4040-R250L	14426	34426	225.00	279.97
1-1/4	1-1/4	6	8-1/2	.022 x 45°	xl	6	CCAC6-4040-E	14434	34434	280.00	343.43
1-1/4	1-1/4	6	8-1/2	0.060	xl	6	CCAC6-4040-R060E	14436	34436	305.00	368.43
1-1/4	1-1/4	6	8-1/2	0.090	xl	6	CCAC6-4040-R090E	14437	34437	305.00	368.43
1-1/4	1-1/4	6	8-1/2	0.120	xl	6	CCAC6-4040-R120E	14438	34438	305.00	368.43
1-1/4	1-1/4	6	8-1/2	0.190	xl	6	CCAC6-4040-R190E	14439	34439	305.00	368.43
1-1/4	1-1/4	6	8-1/2	0.250	xl	6	CCAC6-4040-R250E	14440	34440	305.00	368.43
1-1/2	1-1/4	2	4-1/2	.040 x 45°	std	6	CCAC6-4048	14448	34448	180.00	230.31
1-1/2	1-1/4	2	4-1/2	0.060	std	6	CCAC6-4048-R060	14568	34568	195.00	245.31
1-1/2	1-1/4	2	4-1/2	0.090	std	6	CCAC6-4048-R090	14569	34569	195.00	245.31
1-1/2	1-1/4	2	4-1/2	0.120	std	6	CCAC6-4048-R120	14570	34570	195.00	245.31

Speed & Feed: page 144

sizes continued on next page

SERIES: CCAC

✓ Check Stock Online

4 OR 6 FLUTE • COBALT AEROCUT ROUGHING END MILL

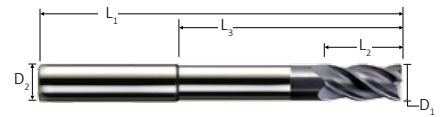
DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	FL	PART NAME	Bright EDP	nACRo EDP	BRIGHT Price	ALTiN Price
1-1/2	1-1/4	2	4-1/2	0.190	std	6	CCAC6-4048-R190	14571	34571	195.00	245.31
1-1/2	1-1/4	2	4-1/2	0.250	std	6	CCAC6-4048-R250	14572	34572	195.00	245.31
1-1/2	1-1/4	3	5-1/2	.040 x 45°	med	6	CCAC6-4048-M	14580	34580	255.00	316.49
1-1/2	1-1/4	3	5-1/2	0.060	med	6	CCAC6-4048-R060M	14582	34582	275.00	336.49
1-1/2	1-1/4	3	5-1/2	0.090	med	6	CCAC6-4048-R090M	14583	34583	275.00	336.49
1-1/2	1-1/4	3	5-1/2	0.120	med	6	CCAC6-4048-R120M	14584	34584	275.00	336.49
1-1/2	1-1/4	3	5-1/2	0.190	med	6	CCAC6-4048-R190M	14585	34585	275.00	336.49
1-1/2	1-1/4	3	5-1/2	0.250	med	6	CCAC6-4048-R250M	14586	34586	275.00	336.49
1-1/2	1-1/4	4	6-1/2	.040 x 45°	long	6	CCAC6-4048-L	14596	34596	295.00	367.67
1-1/2	1-1/4	4	6-1/2	0.060	long	6	CCAC6-4048-R060L	14598	34598	320.00	392.67
1-1/2	1-1/4	4	6-1/2	0.090	long	6	CCAC6-4048-R090L	14599	34599	320.00	392.67
1-1/2	1-1/4	4	6-1/2	0.120	long	6	CCAC6-4048-R120L	14600	34600	320.00	392.67
1-1/2	1-1/4	4	6-1/2	0.190	long	6	CCAC6-4048-R190L	14601	34601	320.00	392.67
1-1/2	1-1/4	4	6-1/2	0.250	long	6	CCAC6-4048-R250L	14602	34602	320.00	392.67
1-1/2	1-1/4	6	8-1/2	.040 x 45°	xl	6	CCAC6-4048-E	14610	34610	395.00	478.85
1-1/2	1-1/4	6	8-1/2	0.060	xl	6	CCAC6-4048-R060E	14612	34612	430.00	513.85
1-1/2	1-1/4	6	8-1/2	0.090	xl	6	CCAC6-4048-R090E	14613	34613	430.00	513.85
1-1/2	1-1/4	6	8-1/2	0.120	xl	6	CCAC6-4048-R120E	14614	34614	430.00	513.85
2	2	2	5-3/4	.040 x 45°	std	6	CCAC6-6464	13718	33718	341.55	419.81
2	2	2	5-3/4	0.060	std	6	CCAC6-6464-R060	14645	34645	369.55	447.81
2	2	2	5-3/4	0.090	std	6	CCAC6-6464-R090	14646	34646	369.55	447.81
2	2	2	5-3/4	0.120	std	6	CCAC6-6464-R120	15187	35187	369.55	447.81
2	2	3	6-3/4	.040 x 45°	med	6	CCAC6-6464-M	13342	33342	375.00	459.78
2	2	3	6-3/4	0.060	med	6	CCAC6-6464-R060M	14625	34625	405.00	489.78
2	2	3	6-3/4	0.090	med	6	CCAC6-6464-R090M	14626	34626	405.00	489.78
2	2	3	6-3/4	0.120	med	6	CCAC6-6464-R120M	14627	34627	405.00	489.78
2	2	3	6-3/4	0.190	med	6	CCAC6-6464-R190M	14628	34628	405.00	489.78
2	2	3	6-3/4	0.250	med	6	CCAC6-6464-R250M	14629	34629	405.00	489.78
2	2	4	7-3/4	.040 x 45°	long	6	CCAC6-6464-L	13343	33343	398.00	489.29
2	2	4	7-3/4	0.060	long	6	CCAC6-6464-R060L	14639	34639	428.00	519.3
2	2	4	7-3/4	0.090	long	6	CCAC6-6464-R090L	14640	34640	428.00	519.3
2	2	4	7-3/4	0.120	long	6	CCAC6-6464-R120L	14641	34641	428.00	519.3
2	2	4	7-3/4	0.190	long	6	CCAC6-6464-R190L	14642	34642	428.00	519.3
2	2	4	7-3/4	0.250	long	6	CCAC6-6464-R250L	14643	34643	428.00	519.3
2	2	6	9-3/4	.040 x 45°	xl	6	CCAC6-6464-E	13344	33344	470.00	574.35
2	2	6	9-3/4	0.060	xl	6	CCAC6-6464-R060E	14652	34652	510.00	614.35
2	2	6	9-3/4	0.090	xl	6	CCAC6-6464-R090E	14653	34653	510.00	614.35
2	2	6	9-3/4	0.120	xl	6	CCAC6-6464-R120E	14654	34654	510.00	614.35
2	2	6	9-3/4	0.190	xl	6	CCAC6-6464-R190E	14655	34655	510.00	614.35
2	2	6	9-3/4	0.250	xl	6	CCAC6-6464-R250E	14656	34656	510.00	614.35
2	2	8	11-3/4	.040 x 45°	xx-long	6	CCAC6-6464-EE	14657	34657	580.00	697.39
2	2	8	11-3/4	0.060	xx-long	6	CCAC6-6464-R060EE	14659	34659	635.00	752.39
2	2	8	11-3/4	0.090	xx-long	6	CCAC6-6464-R090EE	14660	34660	635.00	752.39
2	2	8	11-3/4	0.120	xx-long	6	CCAC6-6464-R120EE	14661	34661	635.00	752.39
2	2	8	11-3/4	0.190	xx-long	6	CCAC6-6464-R190EE	14662	34662	635.00	752.39



Speed & Feed: page 144

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	+0.000 -0.002	+0.0005 -0.0005 <1/8	Square	Radius	Chamfer		HRC <54	P M K 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 ✓ [Check Stock Online](#)

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nAco EDP	nAco Price
1/16	1/8	1/8		1-1/2	SQ	std	VXMG4-402-NR	H6001	21.64
1/16	1/8	1/8		1-1/2	0.010	std	VXMG4-402-R010	H6002	22.35
3/32	1/8	3/16		1-1/2	SQ	std	VXMG4-403-NR	H6003	21.64
3/32	1/8	3/16		1-1/2	0.010	std	VXMG4-403-R010	H6004	22.35
1/8	1/8	3/16	3/8	2	0.015	ext neck	VXMG4-404-R015N1	15733	23.99
1/8	1/8	3/16	7/8	2	0.015	ext neck	VXMG4-404-R015N2	15735	23.99
1/8	1/8	3/16	no neck	2	0.015	no neck	VXMG4-404-R015NN	15715	18.67
1/8	1/8	1/4		1-1/2	SQ	stub	VXMG4-404-NRS	15697	17.49
1/8	1/8	1/4		1-1/2	0.015	stub	VXMG4-404-R015S	15699	17.49
1/8	1/8	1/2		1-1/2	SQ	std	VXMG4-404-NR	15729	18.67
1/8	1/8	1/2		1-1/2	.011 X 45°	std	VXMG4-404	13105	18.67
1/8	1/8	1/2		1-1/2	0.015	std	VXMG4-404-R015	15731	18.67
3/16	3/16	1/4		1-1/2	SQ	stub	VXMG4-606-NRS	15737	20.18
3/16	3/16	1/4		1-1/2	0.015	stub	VXMG4-606-R015S	15739	20.18
3/16	3/16	1/4	1/2	3	0.015	ext neck	VXMG4-606-R015N1	15745	29.25
3/16	3/16	1/4	3/4	3	0.015	ext neck	VXMG4-606-R015N2	15747	29.25
3/16	3/16	1/4	no neck	3	0.015	no neck	VXMG4-606-R015NN	15717	26.75
3/16	3/16	5/8		2	SQ	std	VXMG4-606-NR	15741	22.52
3/16	3/16	5/8		2	.011 X 45°	std	VXMG4-606	13106	22.52
3/16	3/16	5/8		2	0.015	std	VXMG4-606-R015	15743	22.52
1/4	1/4	3/8		2	SQ	stub	VXMG4-808-NRS	15749	25.16
1/4	1/4	3/8		2	0.015	stub	VXMG4-808-R015S	15751	25.16
1/4	1/4	3/8		2	0.030	stub	VXMG4-808-R030S	15753	25.16
1/4	1/4	3/8	3/4	3	0.015	ext neck	VXMG4-808-R015N1	15765	41.13
1/4	1/4	3/8	3/4	3	0.030	ext neck	VXMG4-808-R030N1	15767	41.13
1/4	1/4	3/8	1-1/8	3	0.015	ext neck	VXMG4-808-R015N2	15768	41.13
1/4	1/4	3/8	1-1/8	3	0.030	ext neck	VXMG4-808-R030N2	15769	41.13
1/4	1/4	3/8	2-1/8	4	0.015	ext neck	VXMG4-808-R015N3	15770	47.30
1/4	1/4	3/8	2-1/8	4	0.030	ext neck	VXMG4-808-R030N3	15771	47.30
1/4	1/4	3/8	no neck	4	0.015	no neck	VXMG4-808-R015NN	15719	37.79
1/4	1/4	3/8	no neck	4	0.030	no neck	VXMG4-808-R030NN	15721	37.79
1/4	1/4	1/2		2	.011 X 45°	stub	VXMG4-808-S	13107	25.16
1/4	1/4	3/4		2-1/2	SQ	std	VXMG4-808-NR	15755	29.33
1/4	1/4	3/4		2-1/2	.011 X 45°	std	VXMG4-808	13108	29.33
1/4	1/4	3/4		2-1/2	0.015	std	VXMG4-808-R015	15757	29.33
1/4	1/4	3/4		2-1/2	0.030	std	VXMG4-808-R030	15759	29.33
1/4	1/4	1-1/8		3	0.000	long	VXMG4-808-NRL	15761	34.26
1/4	1/4	1-1/8		3	0.015	long	VXMG4-808-R015L	15762	34.26
1/4	1/4	1-1/8		3	0.030	long	VXMG4-808-R030L	15763	34.26

Speed & Feed: page 150

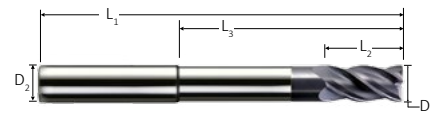
sizes continued on next page

4 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS

SERIES: VXMG4 ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nACo EDP	nACo Price
5/16	5/16	1/2		2	0.000	stub	VXMG4-1010-NRS	15772	37.10
5/16	5/16	1/2		2	0.015	stub	VXMG4-1010-R015S	15773	37.10
5/16	5/16	1/2		2	0.030	stub	VXMG4-1010-R030S	15774	37.10
5/16	5/16	13/16		2-1/2	SQ	std	VXMG4-1010-NR	15775	38.60
5/16	5/16	13/16		2-1/2	.011 X 45°	std	VXMG4-1010	13109	38.60
5/16	5/16	13/16		2-1/2	0.015	std	VXMG4-1010-R015	15777	38.60
5/16	5/16	13/16		2-1/2	0.030	std	VXMG4-1010-R030	15779	38.60
5/16	5/16	1-1/8		3	0.000	long	VXMG4-1010-NRL	15781	44.50
5/16	5/16	1-1/8		3	0.015	long	VXMG4-1010-R015L	15783	44.50
5/16	5/16	1-1/8		3	0.030	long	VXMG4-1010-R030L	15785	44.50
3/8	3/8	1/2		2	SQ	stub	VXMG4-1212-NRS	15787	42.98
3/8	3/8	1/2		2	0.015	stub	VXMG4-1212-R015S	15789	42.98
3/8	3/8	1/2		2	0.030	stub	VXMG4-1212-R030S	15791	42.98
3/8	3/8	1/2	1-1/8	3	0.015	ext neck	VXMG4-1212-R015N1	15803	58.03
3/8	3/8	1/2	1-1/8	3	0.030	ext neck	VXMG4-1212-R030N1	15804	58.03
3/8	3/8	1/2	2-1/8	4	0.015	ext neck	VXMG4-1212-R015N2	15805	66.71
3/8	3/8	1/2	2-1/8	4	0.030	ext neck	VXMG4-1212-R030N2	15807	66.71
3/8	3/8	1/2	3-1/8	6	0.015	ext neck	VXMG4-1212-R015N3	15809	83.10
3/8	3/8	1/2	3-1/8	6	0.030	ext neck	VXMG4-1212-R030N3	15811	83.10
3/8	3/8	1/2	no neck	6	0.015	no neck	VXMG4-1212-R015NN	19112	69.34
3/8	3/8	1/2	no neck	6	0.030	no neck	VXMG4-1212-R030NN	19113	69.34
3/8	3/8	5/8		2	.011 X 45°	stub	VXMG4-1212-S	13110	42.98
3/8	3/8	1		2-1/2	SQ	std	VXMG4-1212-NR	15793	45.64
3/8	3/8	1		2-1/2	.011 X 45°	std	VXMG4-1212	13111	45.64
3/8	3/8	1		2-1/2	0.015	std	VXMG4-1212-R015	15795	45.64
3/8	3/8	1		2-1/2	0.030	std	VXMG4-1212-R030	15797	45.64
3/8	3/8	1-1/8		3	SQ	long	VXMG4-1212-NRL	15799	54.46
3/8	3/8	1-1/8		3	0.015	long	VXMG4-1212-R015L	15800	54.46
3/8	3/8	1-1/8		3	0.030	long	VXMG4-1212-R030L	15801	54.46
7/16	7/16	1		2-3/4	0.015	std	VXMG4-1414-R015	15813	61.01
7/16	7/16	1		2-3/4	0.030	std	VXMG4-1414-R030	15815	61.01
1/2	1/2	5/8		2-1/2	SQ	stub	VXMG4-1616-NRS	15817	66.90
1/2	1/2	5/8		2-1/2	.011 X 45°	stub	VXMG4-1616-S	13112	66.90
1/2	1/2	5/8		2-1/2	0.015	stub	VXMG4-1616-R015S	15819	66.90
1/2	1/2	5/8		2-1/2	0.030	stub	VXMG4-1616-R030S	15821	66.90
1/2	1/2	5/8		2-1/2	0.060	stub	VXMG4-1616-R060S	15822	66.90
1/2	1/2	5/8	1-1/2	4	0.015	ext neck	VXMG4-1616-R015N1	15847	121.98
1/2	1/2	5/8	1-1/2	4	0.030	ext neck	VXMG4-1616-R030N1	15849	121.98
1/2	1/2	5/8	1-1/2	4	0.060	ext neck	VXMG4-1616-R060N1	15851	121.98
1/2	1/2	5/8	2-1/4	4	0.015	ext neck	VXMG4-1616-R015N2	15853	121.98
1/2	1/2	5/8	2-1/4	4	0.030	ext neck	VXMG4-1616-R030N2	15855	121.98
1/2	1/2	5/8	2-1/4	4	0.060	ext neck	VXMG4-1616-R060N2	15857	121.98
1/2	1/2	5/8	3-3/8	6	0.015	ext neck	VXMG4-1616-R015N3	15858	150.38
1/2	1/2	5/8	3-3/8	6	0.030	ext neck	VXMG4-1616-R030N3	15859	150.38
1/2	1/2	5/8	3-3/8	6	0.060	ext neck	VXMG4-1616-R060N3	15860	150.38
1/2	1/2	5/8	no neck	6	0.015	no neck	VXMG4-1616-R015NN	19114	121.85
1/2	1/2	5/8	no neck	6	0.030	no neck	VXMG4-1616-R030NN	19115	121.85
1/2	1/2	5/8	no neck	6	0.060	no neck	VXMG4-1616-R060NN	19116	121.85





## 4 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS

**Check Stock Online**

SERIES: VXMG4



DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nACo EDP	nACo Price
1/2	1/2	1		3	SQ	std	VXMG4-1616-NR	15823	73.44
1/2	1/2	1		3	.011 X 45°	std	VXMG4-1616	13113	73.44
1/2	1/2	1		3	0.015	std	VXMG4-1616-R015	15825	73.44
1/2	1/2	1		3	0.030	std	VXMG4-1616-R030	15827	73.44
1/2	1/2	1		3	0.060	std	VXMG4-1616-R060	15829	73.44
1/2	1/2	1-1/4		3	SQ	med	VXMG4-1616-NRM	15831	87.94
1/2	1/2	1-1/4		3	.011 X 45°	med	VXMG4-1616-M	19787	73.44
1/2	1/2	1-1/4		3	0.015	med	VXMG4-1616-R015M	15833	73.44
1/2	1/2	1-1/4		3	0.030	med	VXMG4-1616-R030M	15835	73.44
1/2	1/2	1-1/4		3	0.060	med	VXMG4-1616-R060M	15837	73.44
1/2	1/2	1-1/4		3	0.120	med	VXMG4-1616-R120M	11819	81.44
1/2	1/2	1-1/2		4	SQ	med/long	VXMG4-1616-NRML	19345	93.62
1/2	1/2	1-1/2		4	.011 X 45°	med/long	VXMG4-1616-ML	11657	93.62
1/2	1/2	1-1/2		4	0.030	med/long	VXMG4-1616-R030ML	19346	93.62
1/2	1/2	1-1/2		4	0.060	med/long	VXMG4-1616-R060ML	19347	93.62
1/2	1/2	2		4	0.000	long	VXMG4-1616-NRL	15839	93.62
1/2	1/2	2		4	0.015	long	VXMG4-1616-R015L	15841	93.62
1/2	1/2	2		4	0.030	long	VXMG4-1616-R030L	15843	93.62
1/2	1/2	2		4	0.060	long	VXMG4-1616-R060L	15845	93.62
5/8	5/8	3/4		3	SQ	stub	VXMG4-2020-NRS	15861	121.30
5/8	5/8	3/4		3	.022 X 45°	stub	VXMG4-2020-S	13114	121.30
5/8	5/8	3/4		3	0.030	stub	VXMG4-2020-R030S	15862	121.30
5/8	5/8	3/4		3	0.060	stub	VXMG4-2020-R060S	15863	121.30
5/8	5/8	3/4		3	0.090	stub	VXMG4-2020-R090S	15864	121.30
5/8	5/8	3/4	1-5/8	5	0.030	ext neck	VXMG4-2020-R030N1	15874	209.07
5/8	5/8	3/4	1-5/8	5	0.060	ext neck	VXMG4-2020-R060N1	15875	209.07
5/8	5/8	3/4	1-5/8	5	0.090	ext neck	VXMG4-2020-R090N1	15876	209.07
5/8	5/8	3/4	2-3/8	5	0.060	ext neck	VXMG4-2020-R060N2	15877	209.07
5/8	5/8	3/4	3-3/8	6	0.060	ext neck	VXMG4-2020-R060N3	15878	188.66
5/8	5/8	3/4	no neck	6	0.060	no neck	VXMG4-2020-R060NN	19117	188.66
5/8	5/8	1-1/4		3-1/2	SQ	std	VXMG4-2020-NR	15865	127.98
5/8	5/8	1-1/4		3-1/2	.022 X 45°	std	VXMG4-2020	13115	127.98
5/8	5/8	1-1/4		3-1/2	0.030	std	VXMG4-2020-R030	15866	127.98
5/8	5/8	1-1/4		3-1/2	0.060	std	VXMG4-2020-R060	15867	127.98
5/8	5/8	1-1/4		3-1/2	0.090	std	VXMG4-2020-R090	15868	127.98
5/8	5/8	2-1/4		5	SQ	long	VXMG4-2020-NRL	15869	161.20
5/8	5/8	2-1/4		5	0.030	long	VXMG4-2020-R030L	15870	161.20
5/8	5/8	2-1/4		5	0.060	long	VXMG4-2020-R060L	15871	161.20
5/8	5/8	3-1/4		6	0.030	xl	VXMG4-2020-R030E	15872	188.66
5/8	5/8	3-1/4		6	0.060	xl	VXMG4-2020-R060E	15873	188.66
3/4	3/4	7/8		3	SQ	stub	VXMG4-2424-NRS	15879	192.60
3/4	3/4	7/8		3	.022 X 45°	stub	VXMG4-2424-S	13116	179.40
3/4	3/4	7/8		3	0.030	stub	VXMG4-2424-R030S	15880	179.40
3/4	3/4	7/8		3	0.060	stub	VXMG4-2424-R060S	15881	179.40
3/4	3/4	7/8		3	0.090	stub	VXMG4-2424-R090S	15883	179.40
3/4	3/4	7/8		3	0.120	stub	VXMG4-2424-R120S	15885	179.40

Speed & Feed: page 150

sizes continued on next page



4 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS

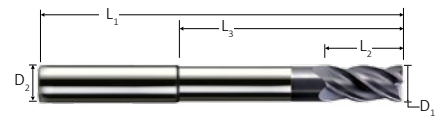
SERIES: VXM4 **✓ Check Stock Online**

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nAcO EDP	nAcO Price
3/4	3/4	7/8	2	5	0.030	ext neck	VXM4-2424-R030N1	16051	244.80
3/4	3/4	7/8	2	5	0.060	ext neck	VXM4-2424-R060N1	16052	244.80
3/4	3/4	7/8	2	5	0.090	ext neck	VXM4-2424-R090N1	16053	244.80
3/4	3/4	7/8	2	5	0.120	ext neck	VXM4-2424-R120N1	16054	244.80
3/4	3/4	7/8	2-1/2	5	0.030	ext neck	VXM4-2424-R030N2	16056	244.80
3/4	3/4	7/8	2-1/2	5	0.060	ext neck	VXM4-2424-R060N2	16057	244.80
3/4	3/4	7/8	2-1/2	5	0.090	ext neck	VXM4-2424-R090N2	16058	244.80
3/4	3/4	7/8	2-1/2	5	0.120	ext neck	VXM4-2424-R120N2	16059	244.80
3/4	3/4	7/8	3-3/8	6	0.030	ext neck	VXM4-2424-R030N3	16106	266.33
3/4	3/4	7/8	3-3/8	6	0.060	ext neck	VXM4-2424-R060N3	16107	266.33
3/4	3/4	7/8	3-3/8	6	0.090	ext neck	VXM4-2424-R090N3	16108	266.33
3/4	3/4	7/8	3-3/8	6	0.120	ext neck	VXM4-2424-R120N3	16109	266.33
3/4	3/4	7/8	no neck	6	0.030	no neck	VXM4-2424-R030NN	19118	252.04
3/4	3/4	7/8	no neck	6	0.060	no neck	VXM4-2424-R060NN	19119	252.04
3/4	3/4	7/8	no neck	6	0.090	no neck	VXM4-2424-R090NN	19120	252.04
3/4	3/4	7/8	no neck	6	0.120	no neck	VXM4-2424-R120NN	19121	252.04
3/4	3/4	1-1/2		4	SQ	std	VXM4-2424-NR	15887	192.60
3/4	3/4	1-1/2		4	.022 X 45°	std	VXM4-2424	13117	192.60
3/4	3/4	1-1/2		4	0.030	std	VXM4-2424-R030	15889	192.60
3/4	3/4	1-1/2		4	0.060	std	VXM4-2424-R060	15891	192.60
3/4	3/4	1-1/2		4	0.090	std	VXM4-2424-R090	16014	192.60
3/4	3/4	1-1/2		4	0.120	std	VXM4-2424-R120	16015	192.60
3/4	3/4	2-1/4		5	SQ	long	VXM4-2424-NRL	16016	228.68
3/4	3/4	2-1/4		5	0.030	long	VXM4-2424-R030L	16018	228.68
3/4	3/4	2-1/4		5	0.060	long	VXM4-2424-R060L	16019	228.68
3/4	3/4	2-1/4		5	0.090	long	VXM4-2424-R090L	16020	228.68
3/4	3/4	2-1/4		5	0.120	long	VXM4-2424-R120L	16021	228.68
3/4	3/4	3		6	SQ	xl	VXM4-2424-NRE	16022	268.07
3/4	3/4	3		6	0.030	xl	VXM4-2424-R030E	16024	268.07
3/4	3/4	3		6	0.060	xl	VXM4-2424-R060E	16030	268.07
3/4	3/4	3		6	0.090	xl	VXM4-2424-R090E	16048	268.07
3/4	3/4	3		6	0.120	xl	VXM4-2424-R120E	16049	268.07
1	1	1-1/2		4	SQ	std	VXM4-3232-NR	16280	294.49
1	1	1-1/2		4	.022 X 45°	std	VXM4-3232	13118	294.49
1	1	1-1/2		4	0.030	std	VXM4-3232-R030	16313	294.49
1	1	1-1/2		4	0.060	std	VXM4-3232-R060	16314	294.49
1	1	1-1/2		4	0.090	std	VXM4-3232-R090	16316	294.49
1	1	1-1/2		4	0.120	std	VXM4-3232-R120	16431	294.49
1	1	1-1/2	2-1/4	5	0.030	ext neck	VXM4-3232-R030N1	16538	350.24
1	1	1-1/2	2-1/4	5	0.060	ext neck	VXM4-3232-R060N1	16539	350.24
1	1	1-1/2	2-1/4	5	0.090	ext neck	VXM4-3232-R090N1	16589	350.24
1	1	1-1/2	2-1/4	5	0.120	ext neck	VXM4-3232-R120N1	16598	350.24
1	1	1-1/2	2-5/8	5	0.030	ext neck	VXM4-3232-R030N2	16599	350.24
1	1	1-1/2	2-5/8	5	0.060	ext neck	VXM4-3232-R060N2	16604	350.24
1	1	1-1/2	2-5/8	5	0.090	ext neck	VXM4-3232-R090N2	16612	350.24
1	1	1-1/2	2-5/8	5	0.120	ext neck	VXM4-3232-R120N2	16616	350.24



Speed & Feed: page 150

sizes continued on next page



## 4 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS

✓ **Check Stock Online**

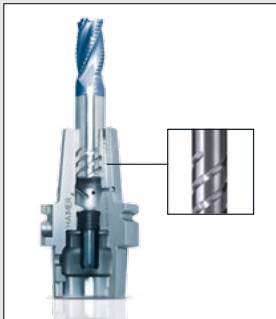
SERIES: VXMG4



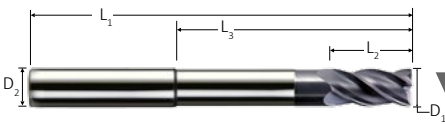
DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nACo EDP	nACo Price
1	1	1-1/2	3-3/8	6	0.030	ext neck	VXMG4-3232-R030N3	16617	419.92
1	1	1-1/2	3-3/8	6	0.060	ext neck	VXMG4-3232-R060N3	16622	419.92
1	1	1-1/2	3-3/8	6	0.090	ext neck	VXMG4-3232-R090N3	16623	419.92
1	1	1-1/2	3-3/8	6	0.120	ext neck	VXMG4-3232-R120N3	16624	419.92
1	1	1-1/2	4-1/8	6	0.030	ext neck	VXMG4-3232-R030N4	16625	419.92
1	1	1-1/2	4-1/8	6	0.060	ext neck	VXMG4-3232-R060N4	16626	419.92
1	1	1-1/2	4-1/8	6	0.090	ext neck	VXMG4-3232-R090N4	16627	419.92
1	1	1-1/2	4-1/8	6	0.120	ext neck	VXMG4-3232-R120N4	16628	419.92
1	1	1-1/2	no neck	6	0.030	no neck	VXMG4-3232-R030NN	19122	392.48
1	1	1-1/2	no neck	6	0.060	no neck	VXMG4-3232-R060NN	19123	392.48
1	1	1-1/2	no neck	6	0.090	no neck	VXMG4-3232-R090NN	19124	392.48
1	1	1-1/2	no neck	6	0.120	no neck	VXMG4-3232-R120NN	19125	392.48
1	1	2-1/4		5	SQ	long	VXMG4-3232-NRL	16437	332.74
1	1	2-1/4		5	0.030	long	VXMG4-3232-R030L	16438	332.74
1	1	2-1/4		5	0.060	long	VXMG4-3232-R060L	16439	332.74
1	1	2-1/4		5	0.090	long	VXMG4-3232-R090L	16457	332.74
1	1	2-1/4		5	0.120	long	VXMG4-3232-R120L	16459	332.74
1	1	3		6	0.030	xl	VXMG4-3232-R030E	16464	428.54
1	1	3		6	0.060	xl	VXMG4-3232-R060E	16467	428.54
1	1	3		6	0.090	xl	VXMG4-3232-R090E	16468	428.54
1	1	3		6	0.120	xl	VXMG4-3232-R120E	16469	428.54

Speed & Feed: page 150

**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 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



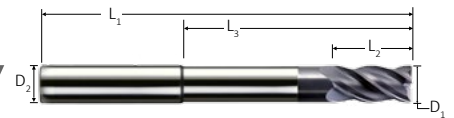
SERIES: VXMG4-M\_M\_ ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nAco EDP	nAco Price
1.5mm	3mm	3mm		38mm	SQ	std	VXMG4-M3M1.5-NR	H6005	21.64
1.5mm	3mm	3mm		38mm	0.25mm	std	VXMG4-M3M1.5-R0.25	H6006	22.35
2mm	3mm	4mm		38mm	SQ	std	VXMG4-M3M2-NR	H6007	21.64
2mm	3mm	4mm		38mm	0.25mm	std	VXMG4-M3M2-R0.25	H6008	22.35
2.5mm	3mm	5mm		38mm	SQ	std	VXMG4-M3M2.5-NR	H6009	21.64
2.5mm	3mm	5mm		38mm	0.25mm	std	VXMG4-M3M2.5-R0.25	H6010	22.35
3mm	3mm	6mm		38mm	SQ	stub	VXMG4-M3M3-NRS	H6011	17.49
3mm	3mm	6mm		38mm	0.25mm	stub	VXMG4-M3M3-R0.25S	H6012	18.09
3mm	3mm	12mm		38mm	SQ	std	VXMG4-M3M3-NR	H6013	18.67
3mm	3mm	12mm		38mm	0.25mm	std	VXMG4-M3M3-R0.25	H6014	19.27
3mm	6mm	12mm		63mm	SQ	std	VXMG4-M6M3-NR	14680	32.10
3mm	6mm	12mm		63mm	0.25mm x 45°	std	VXMG4-M6M3	11682	32.10
3mm	6mm	12mm		63mm	0.25mm	std	VXMG4-M6M3-R0.25	H6015	32.10
3mm	6mm	12mm		63mm	0.5mm	std	VXMG4-M6M3-R0.5	H6016	32.10
4mm	4mm	14mm		51mm	SQ	std	VXMG4-M4M4-NR	14681	22.41
4mm	4mm	14mm		51mm	0.25mm x 45°	std	VXMG4-M4M4	13416	22.41
4mm	4mm	14mm		51mm	0.25mm	std	VXMG4-M4M4-R0.25	H6017	22.41
4mm	4mm	14mm		51mm	0.25mm	std	VXMG4-M4M4-R0.5	14450	22.41
4mm	6mm	14mm		63mm	0.25mm x 45°	std	VXMG4-M6M4	11683	32.10
4mm	6mm	14mm		63mm	0.25mm	std	VXMG4-M6M4-R0.25	H6018	32.10
4mm	6mm	14mm		63mm	0.5mm	std	VXMG4-M6M4-R0.5	H6019	32.10
5mm	5mm	20mm		51mm	SQ	std	VXMG4-M5M5-NR	14682	26.81
5mm	5mm	20mm		51mm	0.25mm x 45°	std	VXMG4-M5M5	13417	26.81
5mm	5mm	20mm		51mm	0.25mm	std	VXMG4-M5M5-R0.25	H6020	25.77
5mm	5mm	20mm		51mm	0.5mm	std	VXMG4-M5M5-R0.5	14451	25.77
6mm	6mm	12mm	30mm	100mm	0.25mm	ext neck	VXMG4-M6M6-R0.25N1	H6021	47.30
6mm	6mm	12mm	30mm	100mm	0.50mm	ext neck	VXMG4-M6M6-R0.5N1	H6022	47.30
6mm	6mm	12mm	30mm	100mm	1.0mm	ext neck	VXMG4-M6M6-R1.0N1	H6023	47.30
6mm	6mm	20mm		63mm	SQ	std	VXMG4-M6M6-NR	14683	32.09
6mm	6mm	20mm		63mm	0.25mm x 45°	std	VXMG4-M6M6	13418	32.09
6mm	6mm	20mm		63mm	0.25mm	std	VXMG4-M6M6-R0.25	H6024	32.09
6mm	6mm	20mm		63mm	0.5mm	std	VXMG4-M6M6-R0.5	14452	32.09
6mm	6mm	20mm		63mm	1.0mm	std	VXMG4-M6M6-R1.0	H6025	32.09
6mm	6mm	20mm	32mm	75mm	0.5mm	ext neck	VXMG4-M6M6-R0.5N	14453	36.55
6mm	6mm	24mm		75mm	0.5mm	long	VXMG4-M6M6-R0.5L	14454	36.55



Speed & Feed: page 150

sizes continued on next page



## 4 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS

✓ **Check Stock Online**

SERIES: VXMG4-M\_M



DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nAco EDP	nAco Price
8mm	8mm	16mm	40mm	100mm	0.5mm	ext neck	VXMG4-M8M8-R0.5N1	H6026	58.98
8mm	8mm	16mm	40mm	100mm	1.0mm	ext neck	VXMG4-M8M8-R1.0N1	H6027	58.98
8mm	8mm	16mm	40mm	100mm	2.0mm	ext neck	VXMG4-M8M8-R2.0N1	H6028	58.98
8mm	8mm	20mm		63mm	SQ	std	VXMG4-M8M8-NR	14684	39.86
8mm	8mm	20mm		63mm	0.25mm x 45°	std	VXMG4-M8M8	13419	39.86
8mm	8mm	20mm		63mm	0.5mm	std	VXMG4-M8M8-R0.5	14455	39.86
8mm	8mm	20mm		63mm	1.0mm	std	VXMG4-M8M8-R1.0	H6029	39.86
8mm	8mm	20mm		63mm	1.5mm	std	VXMG4-M8M8-R1.5	H6030	39.86
8mm	8mm	20mm		63mm	2.0mm	std	VXMG4-M8M8-R2.0	H6031	39.86
8mm	8mm	20mm	32mm	75mm	0.5mm	ext neck	VXMG4-M8M8-R0.5N	14456	45.41
8mm	8mm	32mm		75mm	0.5mm	long	VXMG4-M8M8-R0.5L	14457	45.41
10mm	10mm	20mm		127mm	0.5mm	ext neck	VXMG4-M10M10-R0.5N1	H6032	71.39
10mm	10mm	20mm		127mm	1.0mm	ext neck	VXMG4-M10M10-R1.0N1	H6033	71.39
10mm	10mm	20mm		127mm	2.0mm	ext neck	VXMG4-M10M10-R2.0N1	H6034	71.39
10mm	10mm	25mm		70mm	SQ	std	VXMG4-M10M10-NR	14685	54.21
10mm	10mm	25mm		70mm	0.25mm x 45°	std	VXMG4-M10M10	13420	54.21
10mm	10mm	25mm		70mm	0.5mm	std	VXMG4-M10M10-R0.5	14458	54.21
10mm	10mm	25mm		70mm	1.0mm	std	VXMG4-M10M10-R1.0	H6035	54.21
10mm	10mm	25mm		70mm	1.5mm	std	VXMG4-M10M10-R1.5	H6036	54.21
10mm	10mm	25mm		70mm	2.0mm	std	VXMG4-M10M10-R2.0	H6037	54.21
10mm	10mm	25mm	50mm	100mm	0.5mm	ext neck	VXMG4-M10M10-R0.5N	14459	63.74
10mm	10mm	40mm		100mm	0.5mm	long	VXMG4-M10M10-R0.5L	14460	63.74
12mm	12mm	25mm		76mm	SQ	std	VXMG4-M12M12-NR	14686	74.79
12mm	12mm	25mm		76mm	0.25mm x 45°	std	VXMG4-M12M12	13421	74.79
12mm	12mm	25mm		76mm	0.5mm	std	VXMG4-M12M12-R0.5	14461	74.79
12mm	12mm	25mm		76mm	1.0mm	std	VXMG4-M12M12-R1.0	14462	74.79
12mm	12mm	25mm		76mm	1.5mm	std	VXMG4-M12M12-R1.5	H6038	74.79
12mm	12mm	25mm		76mm	2.0mm	std	VXMG4-M12M12-R2.0	H6039	74.79
12mm	12mm	25mm		76mm	3.0mm	std	VXMG4-M12M12-R3.0	H6040	74.79
12mm	12mm	25mm	50mm	100mm	0.5mm	ext neck	VXMG4-M12M12-R0.5N	14463	94.92
12mm	12mm	25mm	60mm	150mm	0.5mm	ext neck	VXMG4-M12M12-R0.5N1	H6041	148.23
12mm	12mm	25mm	60mm	150mm	1.0mm	ext neck	VXMG4-M12M12-R1.0N1	H6042	148.23
12mm	12mm	25mm	60mm	150mm	2.0mm	ext neck	VXMG4-M12M12-R2.0N1	H6043	148.23
12mm	12mm	25mm	60mm	150mm	3.0mm	ext neck	VXMG4-M12M12-R3.0N1	H6044	148.23
12mm	12mm	48mm		100mm	0.5mm	long	VXMG4-M12M12-R0.5L	14464	94.92
14mm	14mm	32mm		89mm	0.5mm x 45°	std	VXMG4-M14M14	13422	124.66
14mm	14mm	32mm		89mm	0.5mm	std	VXMG4-M14M14-R0.5	14465	124.66
14mm	14mm	32mm		89mm	1.0mm	std	VXMG4-M14M14-R1.0	H6045	124.66
14mm	14mm	32mm		89mm	2.0mm	std	VXMG4-M14M14-R2.0	H6046	124.66
16mm	16mm	32mm		89mm	SQ	std	VXMG4-M16M16-NR	14687	134.81
16mm	16mm	32mm		89mm	0.5mm x 45°	std	VXMG4-M16M16	13423	134.81
16mm	16mm	32mm		89mm	0.5mm	std	VXMG4-M16M16-R0.5	14466	134.81
16mm	16mm	32mm		89mm	1.0mm	std	VXMG4-M16M16-R1.0	14467	134.81
16mm	16mm	32mm		89mm	1.5mm	std	VXMG4-M16M16-R1.5	14677	134.81
16mm	16mm	32mm		89mm	2.0mm	std	VXMG4-M16M16-R2.0	14678	134.81
16mm	16mm	32mm		89mm	3.0mm	std	VXMG4-M16M16-R3.0	14679	134.81

Speed & Feed: page 150

sizes continued on next page

4 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS

SERIES: VXMG4-M\_M\_

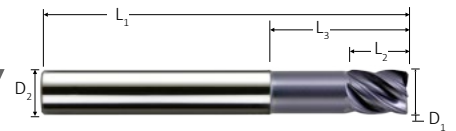
✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nACo EDP	nACo Price
16mm	16mm	32mm	65mm	127mm	0.5mm	ext neck	VXMG4-M16M16-R0.5N	14468	168.03
16mm	16mm	32mm	80mm	150mm	0.5mm	ext neck	VXMG4-M16M16-R0.5N1	H6047	196.88
16mm	16mm	32mm	80mm	150mm	1.0mm	ext neck	VXMG4-M16M16-R1.0N1	H6048	196.88
16mm	16mm	32mm	80mm	150mm	2.0mm	ext neck	VXMG4-M16M16-R2.0N1	H6049	196.88
16mm	16mm	32mm	80mm	150mm	3.0mm	ext neck	VXMG4-M16M16-R3.0N1	H6050	196.88
16mm	16mm	48mm		127mm	0.5mm	long	VXMG4-M16M16-R0.5L	14469	168.03
18mm	18mm	38mm		100mm	0.5mm x 45°	std	VXMG4-M18M18	13424	197.42
18mm	18mm	38mm		100mm	0.5mm	std	VXMG4-M18M18-R0.5	14470	197.42
18mm	18mm	38mm		100mm	1.0mm	std	VXMG4-M18M18-R1.0	H6051	197.42
18mm	18mm	38mm		100mm	2.0mm	std	VXMG4-M18M18-R2.0	H6052	197.42
20mm	20mm	38mm		100mm	SQ	std	VXMG4-M20M20-NR	14688	228.03
20mm	20mm	38mm		100mm	0.5mm x 45°	std	VXMG4-M20M20	13425	228.03
20mm	20mm	38mm		100mm	0.5mm	std	VXMG4-M20M20-R0.5	14471	228.03
20mm	20mm	38mm		100mm	1.0mm	std	VXMG4-M20M20-R1.0	H6053	228.03
20mm	20mm	38mm		100mm	1.5mm	std	VXMG4-M20M20-R1.5	H6054	228.03
20mm	20mm	38mm		100mm	2.0mm	std	VXMG4-M20M20-R2.0	H6055	228.03
20mm	20mm	38mm		100mm	3.0mm	std	VXMG4-M20M20-R3.0	H6056	228.03
20mm	20mm	38mm	65mm	127mm	0.5mm	ext neck	VXMG4-M20M20-R0.5N	14472	264.11
20mm	20mm	38mm	100mm	150mm	0.5mm	ext neck	VXMG4-M20M20-R0.5N1	H6057	291.63
20mm	20mm	38mm	100mm	150mm	1.00mm	ext neck	VXMG4-M20M20-R1.0N1	H6058	291.63
20mm	20mm	38mm	100mm	150mm	3.0mm	ext neck	VXMG4-M20M20-R3.0N1	H6059	291.63
20mm	20mm	60mm		127mm	0.5mm	long	VXMG4-M20M20-R0.5L	14473	264.11
25mm	25mm	38mm		100mm	0.5mm x 45°	std	VXMG4-M25M25	13426	317.06
25mm	25mm	38mm		100mm	0.5mm	std	VXMG4-M25M25-R0.5	14474	317.06
25mm	25mm	38mm		100mm	1.0mm	std	VXMG4-M25M25-R1.0	H6060	317.06
25mm	25mm	38mm		100mm	2.0mm	std	VXMG4-M25M25-R2.0	H6061	317.06



Speed & Feed: page 150





## 5 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS

Carbide	5	Non - Center Cutting	variable	nACo	+0.000 -0.002	+0.0005 -0.0005 <1/8	Square	Radius							HRC <54	P M	K 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 ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nACo EDP	nACo Price
1/16	1/8	1/8		1-1/2	SQ	std	VXMG5-402-NR	H6397	21.64
1/16	1/8	1/8		1-1/2	0.010	std	VXMG5-402-R010	H6398	22.35
3/32	1/8	3/16		1-1/2	SQ	std	VXMG5-403-NR	H6399	21.64
3/32	1/8	3/16		1-1/2	0.010	std	VXMG5-403-R010	H6400	22.35
1/8	1/8	3/16	no neck	2	0.015	no neck	VXMG5-404-R015NN	19352	18.67
1/8	1/8	1/4		1-1/2	SQ	stub	VXMG5-404-NRS	19348	17.49
1/8	1/8	1/4		1-1/2	0.015	stub	VXMG5-404-R015S	19349	17.49
1/8	1/8	1/2	3/4	2	SQ	std	VXMG5-404-NR	19350	18.67
1/8	1/8	1/2	3/4	2	0.015	std	VXMG5-404-R015	19351	18.67
3/16	3/16	1/4		1-1/2	SQ	stub	VXMG5-606-NRS	19353	20.18
3/16	3/16	1/4		1-1/2	0.015	stub	VXMG5-606-R015S	19354	20.18
3/16	3/16	1/4	no neck	3	0.015	no neck	VXMG5-606-R015NN	19357	26.75
3/16	3/16	5/8	7/8	2	SQ	std	VXMG5-606-NR	19355	22.52
3/16	3/16	5/8	7/8	2	0.015	std	VXMG5-606-R015	19356	22.52
1/4	1/4	3/8		2	SQ	stub	VXMG5-808-NRS	19358	25.16
1/4	1/4	3/8		2	0.015	stub	VXMG5-808-R015S	19359	25.16
1/4	1/4	3/8		2	0.030	stub	VXMG5-808-R030S	19361	25.16
1/4	1/4	3/8	1-1/8	3	0.015	ext neck	VXMG5-808-R015N2	19365	41.13
1/4	1/4	3/8	1-1/8	3	0.030	ext neck	VXMG5-808-R030N2	19366	41.13
1/4	1/4	3/8	no neck	4	0.015	no neck	VXMG5-808-R015NN	19367	37.79
1/4	1/4	3/8	no neck	4	0.030	no neck	VXMG5-808-R030NN	19368	37.79
1/4	1/4	3/4	1	2-1/2	SQ	std	VXMG5-808-NR	19362	29.33
1/4	1/4	3/4	1	2-1/2	0.015	std	VXMG5-808-R015	19363	29.33
1/4	1/4	3/4	1	2-1/2	0.030	std	VXMG5-808-R030	19364	29.33
5/16	5/16	1/2		2	SQ	stub	VXMG5-1010-NRS	19369	37.10
5/16	5/16	1/2		2	0.015	stub	VXMG5-1010-R015S	19370	37.10
5/16	5/16	1/2		2	0.030	stub	VXMG5-1010-R030S	19371	37.10
5/16	5/16	13/16	1-1/16	2-1/2	0.000	std	VXMG5-1010-NR	19372	38.60
5/16	5/16	13/16	1-1/16	2-1/2	0.015	std	VXMG5-1010-R015	19373	38.60
5/16	5/16	13/16	1-1/16	2-1/2	0.030	std	VXMG5-1010-R030	19374	38.60
3/8	3/8	1/2		2	SQ	stub	VXMG5-1212-NRS	19375	42.98
3/8	3/8	1/2		2	0.015	stub	VXMG5-1212-R015S	19376	42.98
3/8	3/8	1/2		2	0.030	stub	VXMG5-1212-R030S	19377	42.98
3/8	3/8	1/2	1-7/8	3	0.015	ext neck	VXMG5-1212-R015N1	19381	58.03
3/8	3/8	1/2	1-7/8	3	0.030	ext neck	VXMG5-1212-R030N1	19382	58.03
3/8	3/8	1/2	no neck	6	0.015	no neck	VXMG5-1212-R015NN	19383	69.34
3/8	3/8	1/2	no neck	6	0.030	no neck	VXMG5-1212-R030NN	19384	69.34



Speed & Feed: page 151

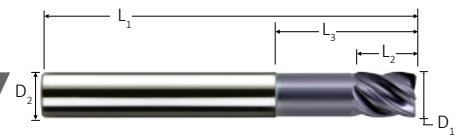
sizes continued on next page

5 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS

SERIES: VXMG5 **✓ Check Stock Online**

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nACo EDP	nACo Price
3/8	3/8	1		2-1/2	SQ	std	VXMG5-1212-NR	19378	45.64
3/8	3/8	1		2-1/2	0.015	std	VXMG5-1212-R015	19379	45.64
3/8	3/8	1		2-1/2	0.030	std	VXMG5-1212-R030	19380	45.64
1/2	1/2	5/8		2-1/2	SQ	stub	VXMG5-1616-NRS	19385	66.90
1/2	1/2	5/8		2-1/2	0.015	stub	VXMG5-1616-R015S	19386	66.90
1/2	1/2	5/8		2-1/2	0.030	stub	VXMG5-1616-R030S	11653	66.90
1/2	1/2	5/8		2-1/2	0.060	stub	VXMG5-1616-R060S	19388	66.90
1/2	1/2	5/8	1-1/2	4	0.015	ext neck	VXMG5-1616-R015N1	19397	121.98
1/2	1/2	5/8	1-1/2	4	0.030	ext neck	VXMG5-1616-R030N1	19398	121.98
1/2	1/2	5/8	1-1/2	4	0.060	ext neck	VXMG5-1616-R060N1	19399	121.98
1/2	1/2	5/8	2-1/4	4	0.015	ext neck	VXMG5-1616-R015N2	19400	121.98
1/2	1/2	5/8	2-1/4	4	0.030	ext neck	VXMG5-1616-R030N2	19401	121.98
1/2	1/2	5/8	2-1/4	4	0.060	ext neck	VXMG5-1616-R060N2	19402	121.98
1/2	1/2	5/8	no neck	6	0.015	no neck	VXMG5-1616-R015NN	19403	121.85
1/2	1/2	5/8	no neck	6	0.030	no neck	VXMG5-1616-R030NN	19404	121.85
1/2	1/2	5/8	no neck	6	0.060	no neck	VXMG5-1616-R060NN	19405	121.85
1/2	1/2	1	1-1/4	3	SQ	std	VXMG5-1616-NR	19389	73.44
1/2	1/2	1	1-1/4	3	0.015	std	VXMG5-1616-R015	19390	73.44
1/2	1/2	1	1-1/4	3	0.030	std	VXMG5-1616-R030	11654	73.44
1/2	1/2	1	1-1/4	3	0.060	std	VXMG5-1616-R060	19392	73.44
1/2	1/2	1-1/4		3	SQ	med	VXMG5-1616-NRM	19393	73.44
1/2	1/2	1-1/4		3	0.015	med	VXMG5-1616-R015M	11809	73.44
1/2	1/2	1-1/4		3	0.030	med	VXMG5-1616-R030M	19395	73.44
1/2	1/2	1-1/4		3	0.060	med	VXMG5-1616-R060M	19396	73.44
5/8	5/8	3/4		3	SQ	stub	VXMG5-2020-NRS	19406	121.30
5/8	5/8	3/4		3	0.030	stub	VXMG5-2020-R030S	19407	121.30
5/8	5/8	3/4		3	0.060	stub	VXMG5-2020-R060S	19408	121.30
5/8	5/8	3/4		3	0.090	stub	VXMG5-2020-R090S	19409	121.30
5/8	5/8	3/4	1-5/8	5	0.030	ext neck	VXMG5-2020-R030N1	19414	209.07
5/8	5/8	3/4	1-5/8	5	0.060	ext neck	VXMG5-2020-R060N1	19415	209.07
5/8	5/8	3/4	1-5/8	5	0.090	ext neck	VXMG5-2020-R090N1	19416	209.07
5/8	5/8	3/4	2-3/8	5	0.060	ext neck	VXMG5-2020-R060N2	19417	209.07
5/8	5/8	3/4	no neck	6	0.060	no neck	VXMG5-2020-R060NN	19418	188.66
5/8	5/8	1-1/4	1-1/2	3-1/2	SQ	std	VXMG5-2020-NR	19410	127.98
5/8	5/8	1-1/4	1-1/2	3-1/2	0.030	std	VXMG5-2020-R030	19411	127.98
5/8	5/8	1-1/4	1-1/2	3-1/2	0.060	std	VXMG5-2020-R060	19412	127.98
5/8	5/8	1-1/4	1-1/2	3-1/2	0.090	std	VXMG5-2020-R090	19413	127.98
3/4	3/4	7/8		3	SQ	stub	VXMG5-2424-NRS	19419	179.40
3/4	3/4	7/8		3	0.030	stub	VXMG5-2424-R030S	19421	179.40
3/4	3/4	7/8		3	0.060	stub	VXMG5-2424-R060S	19422	179.40
3/4	3/4	7/8		3	0.090	stub	VXMG5-2424-R090S	19423	179.40
3/4	3/4	7/8		3	0.120	stub	VXMG5-2424-R120S	19424	179.40
3/4	3/4	7/8	2	5	0.030	ext neck	VXMG5-2424-R030N1	19432	244.80
3/4	3/4	7/8	2	5	0.060	ext neck	VXMG5-2424-R060N1	19433	244.80
3/4	3/4	7/8	2	5	0.090	ext neck	VXMG5-2424-R090N1	19434	244.80
3/4	3/4	7/8	2	5	0.120	ext neck	VXMG5-2424-R120N1	19435	244.80





## 5 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS

✓ **Check Stock Online**

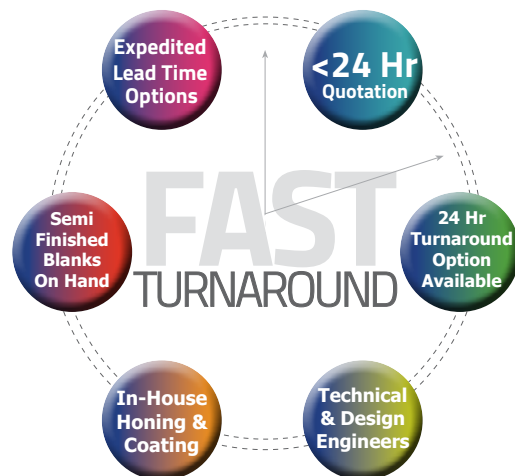
SERIES: VXMG5

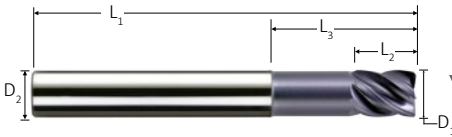


DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nAcO EDP	nAcO Price
3/4	3/4	7/8	3-3/8	6	0.030	ext neck	VXMG5-2424-R030N3	19436	266.33
3/4	3/4	7/8	3-3/8	6	0.060	ext neck	VXMG5-2424-R060N3	19437	266.33
3/4	3/4	7/8	3-3/8	6	0.090	ext neck	VXMG5-2424-R090N3	19438	266.33
3/4	3/4	7/8	3-3/8	6	0.120	ext neck	VXMG5-2424-R120N3	19439	266.33
3/4	3/4	7/8	no neck	6	0.030	no neck	VXMG5-2424-R030NN	19440	252.04
3/4	3/4	7/8	no neck	6	0.060	no neck	VXMG5-2424-R060NN	19441	252.04
3/4	3/4	7/8	no neck	6	0.090	no neck	VXMG5-2424-R090NN	19442	252.04
3/4	3/4	7/8	no neck	6	0.120	no neck	VXMG5-2424-R120NN	19443	252.04
3/4	3/4	1-1/2	1-3/4	4	SQ	std	VXMG5-2424-NR	19425	192.60
3/4	3/4	1-1/2	1-3/4	4	0.015	std	VXMG5-2424-R015	12811	192.60
3/4	3/4	1-1/2	1-3/4	4	0.030	std	VXMG5-2424-R030	19426	192.60
3/4	3/4	1-1/2	1-3/4	4	0.060	std	VXMG5-2424-R060	19427	192.60
3/4	3/4	1-1/2	1-3/4	4	0.090	std	VXMG5-2424-R090	19428	192.60
3/4	3/4	1-1/2	1-3/4	4	0.120	std	VXMG5-2424-R120	19429	192.60
1	1	1-1/2	1-3/4	4	SQ	std	VXMG5-3232-NR	19444	294.49
1	1	1-1/2	1-3/4	4	0.030	std	VXMG5-3232-R030	19445	294.49
1	1	1-1/2	1-3/4	4	0.060	std	VXMG5-3232-R060	19446	294.49
1	1	1-1/2	1-3/4	4	0.090	std	VXMG5-3232-R090	19447	294.49
1	1	1-1/2	1-3/4	4	0.120	std	VXMG5-3232-R120	19448	294.49
1	1	1-1/2	2-1/4	5	0.030	ext neck	VXMG5-3232-R030N1	19449	350.24
1	1	1-1/2	2-1/4	5	0.060	ext neck	VXMG5-3232-R060N1	19450	350.24
1	1	1-1/2	2-1/4	5	0.090	ext neck	VXMG5-3232-R090N1	19451	350.24
1	1	1-1/2	2-1/4	5	0.120	ext neck	VXMG5-3232-R120N1	19452	350.24
1	1	1-1/2	3-3/8	6	0.030	ext neck	VXMG5-3232-R030N3	19453	419.92
1	1	1-1/2	3-3/8	6	0.060	ext neck	VXMG5-3232-R060N3	19454	419.92
1	1	1-1/2	3-3/8	6	0.090	ext neck	VXMG5-3232-R090N3	19455	419.92
1	1	1-1/2	3-3/8	6	0.120	ext neck	VXMG5-3232-R120N3	19456	419.92
1	1	1-1/2	no neck	6	0.030	no neck	VXMG5-3232-R030NN	19457	392.48
1	1	1-1/2	no neck	6	0.060	no neck	VXMG5-3232-R060NN	19458	392.48
1	1	1-1/2	no neck	6	0.090	no neck	VXMG5-3232-R090NN	19459	392.48
1	1	1-1/2	no neck	6	0.120	no neck	VXMG5-3232-R120NN	19460	392.48

Speed & Feed: page 151

Don't see what you need? We offer solutions to get you a special Faster!





5 FLUTE • VARIABLE FLUTE - HP ROUGHING APPLICATIONS

Carbide	5	Non - Center Cutting	variable	nAco	+0.00mm -0.050mm	+0.012mm -0.012mm <3mm	Square	Radius						HRC <54	P M S
---------	---	----------------------	----------	------	---------------------	------------------------------	--------	--------	--	--	--	--	--	---------	-------------

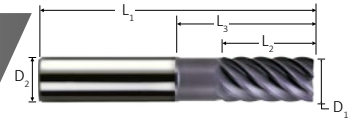
- Geometry designed for reducing chatter, universal machining operations
- Ideal for use on Steel and Stainless Alloys and Cast Iron
- Proprietary nAco coating provides extended tool life over conventional coatings
- Excellent for heavy cuts, deep slotting and long axial depth profiling

SERIES: VXMG5-M\_M\_ ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nAco EDP	nAco Price
1.5mm	3mm	3mm		38mm	SQ	std	VXMG5-M3M1.5-NR	H6401	21.64
1.5mm	3mm	3mm		38mm	0.25mm	std	VXMG5-M3M1.5-R0.25	H6402	22.35
2mm	3mm	4mm		38mm	SQ	std	VXMG5-M3M2-NR	H6403	21.64
2mm	3mm	4mm		38mm	0.25mm	std	VXMG5-M3M2-R0.25	H6404	22.35
2.5mm	3mm	5mm		38mm	SQ	std	VXMG5-M3M2.5-NR	H6405	21.64
2.5mm	3mm	5mm		38mm	0.25mm	std	VXMG5-M3M2.5-R0.25	H6406	22.35
3mm	3mm	6mm		38mm	SQ	stub	VXMG5-M3M3-NRS	H6407	17.49
3mm	3mm	6mm		38mm	0.25mm	stub	VXMG5-M3M3-R0.25S	H6408	18.09
3mm	3mm	12mm		38mm	SQ	std	VXMG5-M3M3-NR	H6409	18.67
3mm	3mm	12mm		38mm	0.25mm	std	VXMG5-M3M3-R0.25	H6410	19.27
4mm	4mm	14mm	20mm	51mm	SQ	std	VXMG5-M4M4-NR	H6411	22.41
4mm	4mm	14mm	20mm	51mm	0.25mm	std	VXMG5-M4M4-R0.25	15100	22.41
4mm	4mm	14mm	20mm	51mm	0.5mm	std	VXMG5-M4M4-R0.5	H6412	22.41
5mm	5mm	16mm	22mm	51mm	0.25mm	std	VXMG5-M5M5-R0.25	15101	25.77
5mm	5mm	16mm	22mm	51mm	0.5mm	std	VXMG5-M5M5-R0.5	H6413	25.77
6mm	6mm	20mm	26mm	63mm	0.5mm	std	VXMG5-M6M6-R0.5	15103	32.09
6mm	6mm	20mm	26mm	63mm	1.0mm	std	VXMG5-M6M6-R1.0	H6414	32.09
6mm	6mm	20mm	no neck	100mm	0.5mm	no neck	VXMG5-M6M6-NN	15104	45.65
8mm	8mm	20mm	26mm	63mm	0.5mm	std	VXMG5-M8M8-R0.5	15105	39.86
8mm	8mm	20mm	26mm	63mm	1.0mm	std	VXMG5-M8M8-R1.0	H6415	39.86
8mm	8mm	20mm	no neck	100mm	0.5mm	no neck	VXMG5-M8M8-NN	15107	54.80
10mm	10mm	24mm	30mm	70mm	0.5mm	std	VXMG5-M10M10-R0.5	15109	54.21
10mm	10mm	24mm	30mm	70mm	1.0mm	std	VXMG5-M10M10-R1.0	H6416	54.21
10mm	10mm	24mm	no neck	100mm	0.5mm	no neck	VXMG5-M10M10-NN	15110	63.74
12mm	12mm	25mm	31mm	76mm	0.5mm	std	VXMG5-M12M12-R0.5	15111	74.79
12mm	12mm	25mm	31mm	76mm	1.0mm	std	VXMG5-M12M12-R1.0	H6417	74.79
12mm	12mm	25mm	31mm	76mm	2.0mm	std	VXMG5-M12M12-R2.0	H6418	74.79
12mm	12mm	25mm	no neck	100mm	0.5mm	no neck	VXMG5-M12M12-NN	15112	94.92
14mm	14mm	32mm	38mm	89mm	0.5mm	std	VXMG5-M14M14-R0.5	15113	124.66
14mm	14mm	32mm	38mm	89mm	1.0mm	std	VXMG5-M14M14-R1.0	H6419	124.66
14mm	14mm	32mm	38mm	89mm	2.0mm	std	VXMG5-M14M14-R2.0	H6420	124.66
16mm	16mm	32mm	38mm	89mm	0.5mm	std	VXMG5-M16M16-R0.5	15114	134.81
16mm	16mm	32mm	38mm	89mm	1.0mm	std	VXMG5-M16M16-R1.0	H6421	134.81
16mm	16mm	32mm	38mm	89mm	2.0mm	std	VXMG5-M16M16-R2.0	H6422	134.81
16mm	16mm	32mm	no neck	100mm	0.5mm	no neck	VXMG5-M16M16-NN	15115	168.03
18mm	18mm	36mm	42mm	100mm	0.5mm	std	VXMG5-M18M18-R0.5	15117	197.42
18mm	18mm	36mm	42mm	100mm	1.0mm	std	VXMG5-M18M18-R1.0	H6423	197.42
18mm	18mm	36mm	42mm	100mm	2.0mm	std	VXMG5-M18M18-R2.0	H6424	197.42
20mm	20mm	36mm	42mm	100mm	1.0mm	std	VXMG5-M20M20-R1.0	15118	228.03
20mm	20mm	36mm	42mm	100mm	2.0mm	std	VXMG5-M20M20-R2.0	H6425	228.03
25mm	25mm	36mm	42mm	100mm	1.0mm	std	VXMG5-M25M25-R1.0	15119	317.06
25mm	25mm	36mm	42mm	100mm	2.0mm	std	VXMG5-M25M25-R2.0	H6426	317.06



## 7 FLUTE • VARIABLE FL-SEMI ROUGHING & FINISHING APPLICATIONS



Carbide	7	Non-Center Cutting	variable	nAco	+0.000 -0.002	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

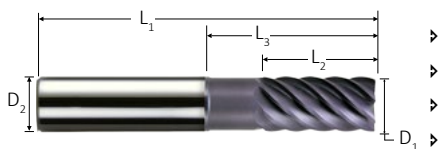
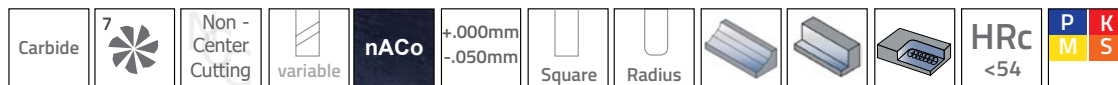
### SERIES: VXMG7 ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nAco EDP	nAco Price
1/8	1/8	3/16		1-1/2	SQ	stub	VXMG7-404-NRS	H6571	20.98
1/8	1/8	3/16		1-1/2	0.010	stub	VXMG7-404-R010S	H6572	20.98
1/8	1/8	3/8		1-1/2	0.000	std	VXMG7-404-NR	H6573	22.40
1/8	1/8	3/8		1-1/2	0.010	std	VXMG7-404-R010	H6574	22.40
3/16	3/16	9/32		1-1/2	SQ	stub	VXMG7-606-NRS	14720	24.22
3/16	3/16	9/32		1-1/2	0.010	stub	VXMG7-606-R010S	H6575	24.22
3/16	3/16	9/16		2	0.000	std	VXMG7-606-NR	H6576	27.02
3/16	3/16	9/16		2	0.010	std	VXMG7-606-R010	H6577	27.02
1/4	1/4	3/8		2	SQ	stub	VXMG7-808-NRS	12241	30.19
1/4	1/4	3/8		2	0.015	stub	VXMG7-808-R015S	12242	30.19
1/4	1/4	3/8	2-1/8	4	0.015	ext neck	VXMG7-808-R015N3	12246	56.76
1/4	1/4	3/8	no neck	4	0.015	no neck	VXMG7-808-R015NN	12247	45.35
1/4	1/4	3/4	1	2-1/2	SQ	std	VXMG7-808-NR	12244	35.20
1/4	1/4	3/4	1	2-1/2	0.015	std	VXMG7-808-R015	12245	35.20
3/8	3/8	1/2		2	SQ	stub	VXMG7-1212-NRS	12248	51.58
3/8	3/8	1/2		2	0.015	stub	VXMG7-1212-R015S	12249	51.58
3/8	3/8	1/2	1-1/8	3	0.015	ext neck	VXMG7-1212-R015N1	12252	69.64
3/8	3/8	1/2	2-1/8	4	0.015	ext neck	VXMG7-1212-R015N2	12253	80.05
3/8	3/8	1		2-1/2	SQ	std	VXMG7-1212-NR	12250	54.77
3/8	3/8	1		2-1/2	0.015	std	VXMG7-1212-R015	12251	54.77
1/2	1/2	5/8		2-1/2	SQ	stub	VXMG7-1616-NRS	12254	80.28
1/2	1/2	5/8		2-1/2	0.015	stub	VXMG7-1616-R015S	12255	80.28
1/2	1/2	5/8	1-1/2	4	0.015	ext neck	VXMG7-1616-R015N1	12260	146.38
1/2	1/2	5/8	2-1/4	4	0.015	ext neck	VXMG7-1616-R015N2	12261	146.38
1/2	1/2	1	1-1/4	3	SQ	std	VXMG7-1616-NR	12256	88.13
1/2	1/2	1	1-1/4	3	0.015	std	VXMG7-1616-R015	11805	88.13
1/2	1/2	1	1-1/4	3	0.030	std	VXMG7-1616-R030	11797	88.13
1/2	1/2	1-1/4		3	SQ	med	VXMG7-1616-NRM	12257	88.13
1/2	1/2	1-1/4		3	0.015	med	VXMG7-1616-R015M	12258	88.13
1/2	1/2	1-1/4		3	0.030	med	VXMG7-1616-R030M	12259	88.13
5/8	5/8	3/4		3	SQ	stub	VXMG7-2020-NRS	12262	145.56
5/8	5/8	3/4		3	0.030	stub	VXMG7-2020-R030S	12263	145.56
5/8	5/8	3/4	1-5/8	5	0.030	ext neck	VXMG7-2020-R030N1	12267	250.88
5/8	5/8	1-1/4	1-1/2	3-1/2	SQ	std	VXMG7-2020-NR	12264	153.58
5/8	5/8	1-1/4	1-1/2	3-1/2	0.030	std	VXMG7-2020-R030	12265	153.58
3/4	3/4	7/8		3	SQ	stub	VXMG7-2424-NRS	12269	215.28
3/4	3/4	7/8		3	0.030	stub	VXMG7-2424-R030S	12271	215.28
3/4	3/4	7/8	2	5	0.030	ext neck	VXMG7-2424-R030N1	12277	293.76
3/4	3/4	1-1/2	1-3/4	4	SQ	std	VXMG7-2424-NR	12273	231.12
3/4	3/4	1-1/2	1-3/4	4	0.030	std	VXMG7-2424-R030	12275	231.12
1	1	1-1/2	1-3/4	4	SQ	std	VXMG7-3232-NR	12283	353.39
1	1	1-1/2	1-3/4	4	0.030	std	VXMG7-3232-R030	12287	353.39

Speed & Feed:  
page 152



7 FLUTE • VARIABLE FL-SEMI ROUGHING & FINISHING APPLICATIONS



- 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\_ ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nAco EDP	nAco Price
3mm	3mm	6mm		38mm	SQ	stub	VXMG7-M3M3-NRS	H6578	20.99
3mm	3mm	6mm		38mm	0.25mm	stub	VXMG7-M3M3-R0.255	H6579	21.71
3mm	3mm	12mm		38mm	SQ	std	VXMG7-M3M3-NR	H6580	22.40
3mm	3mm	12mm		38mm	0.25mm	std	VXMG7-M3M3-R0.25	H6581	23.12
4mm	4mm	12mm		51mm	0.0mm	std	VXMG7-M4M4-NR	H6582	26.89
4mm	4mm	12mm		51mm	0.25mm	std	VXMG7-M4M4-R0.25	H6583	26.89
6mm	6mm	20mm	26mm	63mm	SQ	std	VXMG7-M6M6-NR	15169	38.51
6mm	6mm	20mm	26mm	63mm	0.5mm	std	VXMG7-M6M6-R0.5	15120	38.51
6mm	6mm	20mm	no neck	100mm	0.5mm	no neck	VXMG7-M6M6-NN	15121	54.78
8mm	8mm	20mm	26mm	63mm	SQ	std	VXMG7-M8M8-NR	15171	47.83
8mm	8mm	20mm	26mm	63mm	0.5mm	std	VXMG7-M8M8-R0.5	15122	47.83
8mm	8mm	20mm	26mm	63mm	1.0mm	std	VXMG7-M8M8-R1.0	H6584	47.83
8mm	8mm	20mm	no neck	100mm	0.5mm	no neck	VXMG7-M8M8-NN	15123	65.76
10mm	10mm	24mm	30mm	70mm	SQ	std	VXMG7-M10M10-NR	15173	65.05
10mm	10mm	24mm	30mm	70mm	0.5mm	std	VXMG7-M10M10-R0.5	15124	65.05
10mm	10mm	24mm	30mm	70mm	1.0mm	std	VXMG7-M10M10-R1.0	H6585	65.05
10mm	10mm	24mm	30mm	70mm	2.0mm	std	VXMG7-M10M10-R2.0	H6658	65.05
10mm	10mm	24mm	no neck	100mm	0.5mm	no neck	VXMG7-M10M10-NN	15125	76.49
12mm	12mm	25mm	31mm	76mm	SQ	std	VXMG7-M12M12-NR	15175	89.75
12mm	12mm	25mm	31mm	76mm	0.5mm	std	VXMG7-M12M12-R0.5	15126	89.75
12mm	12mm	25mm	31mm	76mm	1.0mm	std	VXMG7-M12M12-R1.0	15605	89.75
12mm	12mm	25mm	31mm	76mm	2.0mm	std	VXMG7-M12M12-R2.0	14795	89.75
12mm	12mm	25mm	no neck	100mm	0.5mm	no neck	VXMG7-M12M12-NN	15127	113.90
14mm	14mm	32mm	38mm	89mm	SQ	std	VXMG7-M14M14-NR	15177	149.59
14mm	14mm	32mm	38mm	89mm	0.5mm	std	VXMG7-M14M14-R0.5	15128	149.59
14mm	14mm	32mm	38mm	89mm	1.0mm	std	VXMG7-M14M14-R1.0	H6586	149.59
16mm	16mm	32mm	38mm	89mm	SQ	std	VXMG7-M16M16-NR	15179	161.77
16mm	16mm	32mm	38mm	89mm	0.5mm	std	VXMG7-M16M16-R0.5	15129	161.77
16mm	16mm	32mm	38mm	89mm	1.0mm	std	VXMG7-M16M16-R1.0	H6587	161.77
16mm	16mm	32mm	38mm	89mm	2.0mm	std	VXMG7-M16M16-R2.0	H6588	161.77
16mm	16mm	32mm	no neck	100mm	0.5mm	no neck	VXMG7-M16M16-NN	15130	201.64
18mm	18mm	36mm	42mm	100mm	SQ	std	VXMG7-M18M18-NR	15181	236.90
18mm	18mm	36mm	42mm	100mm	0.5mm	std	VXMG7-M18M18-R0.5	15131	236.90
18mm	18mm	36mm	42mm	100mm	1.0mm	std	VXMG7-M18M18-R1.0	H6589	236.90
20mm	20mm	36mm	42mm	100mm	SQ	std	VXMG7-M20M20-NR	15183	273.64
20mm	20mm	36mm	42mm	100mm	0.5mm	std	VXMG7-M20M20-R0.5	H6590	273.64
20mm	20mm	36mm	42mm	100mm	1.0mm	std	VXMG7-M20M20-R1.0	15132	273.64
20mm	20mm	36mm	42mm	100mm	2.0mm	std	VXMG7-M20M20-R2.0	H6591	273.64
20mm	20mm	36mm	42mm	100mm	3.0mm	std	VXMG7-M20M20-R3.0	H6592	273.64
25mm	25mm	36mm	42mm	100mm	SQ	std	VXMG7-M25M25-NR	15185	380.47
25mm	25mm	36mm	42mm	100mm	0.5mm	std	VXMG7-M25M25-R0.5	H6593	380.47
25mm	25mm	36mm	42mm	100mm	1.0mm	std	VXMG7-M25M25-R1.0	15133	380.47
25mm	25mm	36mm	42mm	100mm	3.0mm	std	VXMG7-M25M25-R3.0	H6594	380.47

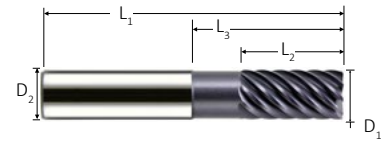
Speed & Feed: page 152

## 9 FLUTE • VARIABLE FL - OPTIMUM FINE FINISH PROFILING APPLICATION

Carbide	9	Non - Center Cutting	variable	nACo	+0.000 -0.002	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



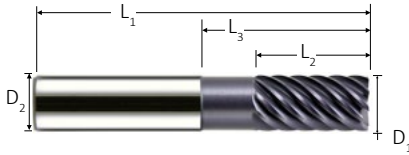
### SERIES: VXMG9 [✓ Check Stock Online](#)

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nACo EDP	nACo Price
3/16	3/16	9/32		1-1/2	SQ	stub	VXMG9-606-NRS	H6595	26.24
3/16	3/16	9/32		1-1/2	0.010	stub	VXMG9-606-R010S	H6596	26.24
3/16	3/16	9/16		2	SQ	std	VXMG9-606-NR	H6597	29.28
3/16	3/16	9/16		2	0.010	std	VXMG9-606-R010	H6598	29.29
1/4	1/4	3/8		2	SQ	stub	VXMG9-808-NRS	12288	32.71
1/4	1/4	3/8		2	0.015	stub	VXMG9-808-R015S	12289	32.71
1/4	1/4	3/8	2-1/8	4	0.015	ext neck	VXMG9-808-R015N3	12302	61.49
1/4	1/4	3/8	no neck	4	0.015	no neck	VXMG9-808-R015NN	12303	49.13
1/4	1/4	3/4	1	2-1/2	SQ	std	VXMG9-808-NR	12290	38.13
1/4	1/4	3/4	1	2-1/2	0.015	std	VXMG9-808-R015	12291	38.13
3/8	3/8	1/2		2	SQ	stub	VXMG9-1212-NRS	12304	55.87
3/8	3/8	1/2		2	0.015	stub	VXMG9-1212-R015S	12305	55.87
3/8	3/8	1/2	1-1/8	3	0.015	ext neck	VXMG9-1212-R015N1	12317	75.44
3/8	3/8	1/2	2-1/8	4	0.015	ext neck	VXMG9-1212-R015N2	12325	86.72
3/8	3/8	1		2-1/2	SQ	std	VXMG9-1212-NR	12315	59.33
3/8	3/8	1		2-1/2	0.015	std	VXMG9-1212-R015	12316	59.33
1/2	1/2	5/8		2-1/2	SQ	stub	VXMG9-1616-NRS	12327	86.97
1/2	1/2	5/8		2-1/2	0.015	stub	VXMG9-1616-R015S	12328	86.97
1/2	1/2	5/8	1-1/2	4	0.015	ext neck	VXMG9-1616-R015N1	12377	158.57
1/2	1/2	5/8	2-1/4	4	0.015	ext neck	VXMG9-1616-R015N2	12405	158.57
1/2	1/2	1	1-1/4	3	SQ	std	VXMG9-1616-NR	12329	95.47
1/2	1/2	1	1-1/4	3	0.015	std	VXMG9-1616-R015	11801	95.47
1/2	1/2	1	1-1/4	3	0.030	std	VXMG9-1616-R030	11799	95.47
1/2	1/2	1-1/4		3	SQ	med	VXMG9-1616-NRM	12330	95.47
1/2	1/2	1-1/4		3	0.015	med	VXMG9-1616-R015M	12373	95.47
1/2	1/2	1-1/4		3	0.030	med	VXMG9-1616-R030M	12376	95.47
5/8	5/8	3/4		3	SQ	stub	VXMG9-2020-NRS	12406	157.69
5/8	5/8	3/4		3	0.030	stub	VXMG9-2020-R030S	12407	157.69
5/8	5/8	3/4	1-5/8	5	0.030	ext neck	VXMG9-2020-R030N1	12410	271.79
5/8	5/8	1-1/4	1-1/2	3-1/2	SQ	std	VXMG9-2020-NR	12408	166.37
5/8	5/8	1-1/4	1-1/2	3-1/2	0.030	std	VXMG9-2020-R030	12409	166.37
3/4	3/4	7/8		3	SQ	stub	VXMG9-2424-NRS	12411	233.22
3/4	3/4	7/8		3	0.030	stub	VXMG9-2424-R030S	12412	233.22
3/4	3/4	7/8	2	5	0.030	ext neck	VXMG9-2424-R030N1	12415	318.24
3/4	3/4	1-1/2	1-3/4	4	SQ	std	VXMG9-2424-NR	12413	250.38
3/4	3/4	1-1/2	1-3/4	4	0.030	std	VXMG9-2424-R030	12414	250.38
1	1	1-1/2	1-3/4	4	SQ	std	VXMG9-3232-NR	12416	382.84
1	1	1-1/2	1-3/4	4	0.030	std	VXMG9-3232-R030	12417	382.84

Speed & Feed: page 153

9 FLUTE • VARIABLE FL - OPTIMUM FINE FINISH PROFILING APPLICATION

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



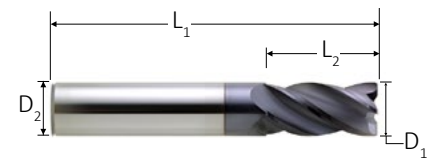
- Designed to deliver outstanding surface finishes, utilizing maximum metal removal rates
- Extreme metal removal rates delivered at full flute length & 5% x D radial depth
- Proprietary nAco coating provides extended tool life over conventional coatings
- Ideal for finishing tight tolerance walls



SERIES: VXM9-M\_M\_ ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nAco EDP	nAco Price
4mm	4mm	12mm		51mm	SQ	std	VXM9-M4M4-NR	H6599	29.14
4mm	4mm	12mm		51mm	0.25mm	std	VXM9-M4M4-R0.25	H6600	29.14
6mm	6mm	20mm	26mm	63mm	SQ	std	VXM9-M6M6-NR	15151	41.72
6mm	6mm	20mm	26mm	63mm	0.5mm	std	VXM9-M6M6-R0.5	15134	41.72
6mm	6mm	20mm	*no neck	100mm	0.5mm	no neck	VXM9-M6M6-NN	15135	59.35
8mm	8mm	20mm	26mm	63mm	SQ	std	VXM9-M8M8-NR	15153	51.82
8mm	8mm	20mm	26mm	63mm	0.5mm	std	VXM9-M8M8-R0.5	15136	51.82
8mm	8mm	20mm	26mm	63mm	1.0mm	std	VXM9-M8M8-R1.0	H6601	51.82
8mm	8mm	20mm	no neck	100mm	0.5mm	no neck	VXM9-M8M8-NN	15137	71.24
10mm	10mm	24mm	30mm	70mm	SQ	std	VXM9-M10M10-NR	15155	70.47
10mm	10mm	24mm	30mm	70mm	0.5mm	std	VXM9-M10M10-R0.5	15138	70.47
10mm	10mm	24mm	30mm	70mm	1.0mm	std	VXM9-M10M10-R1.0	H6602	70.47
10mm	10mm	24mm	no neck	100mm	0.5mm	no neck	VXM9-M10M10-NN	15139	82.86
12mm	12mm	25mm	31mm	76mm	SQ	std	VXM9-M12M12-NR	15157	97.23
12mm	12mm	25mm	31mm	76mm	0.5mm	std	VXM9-M12M12-R0.5	15140	97.23
12mm	12mm	25mm	31mm	76mm	1.0mm	std	VXM9-M12M12-R1.0	H6603	97.23
12mm	12mm	25mm	31mm	76mm	2.0mm	std	VXM9-M12M12-R2.0	H6604	97.23
12mm	12mm	25mm	no neck	100mm	0.5mm	no neck	VXM9-M12M12-NN	15141	123.40
14mm	14mm	32mm	38mm	89mm	SQ	std	VXM9-M14M14-NR	15159	162.06
14mm	14mm	32mm	38mm	89mm	0.5mm	std	VXM9-M14M14-R0.5	15142	162.06
14mm	14mm	32mm	38mm	89mm	1.0mm	std	VXM9-M14M14-R1.0	H6605	162.06
16mm	16mm	32mm	38mm	89mm	SQ	std	VXM9-M16M16-NR	15161	175.25
16mm	16mm	32mm	38mm	89mm	0.5mm	std	VXM9-M16M16-R0.5	15143	175.25
16mm	16mm	32mm	38mm	89mm	1.0mm	std	VXM9-M16M16-R1.0	H6606	175.25
16mm	16mm	32mm	38mm	89mm	2.0mm	std	VXM9-M16M16-R2.0	H6607	175.25
16mm	16mm	32mm	no neck	100mm	0.5mm	no neck	VXM9-M16M16-NN	15144	218.44
18mm	18mm	36mm	42mm	100mm	SQ	std	VXM9-M18M18-NR	15163	256.65
18mm	18mm	36mm	42mm	100mm	0.5mm	std	VXM9-M18M18-R0.5	15145	256.65
18mm	18mm	36mm	42mm	100mm	1.0mm	std	VXM9-M18M18-R1.0	H6608	256.65
20mm	20mm	36mm	42mm	100mm	SQ	std	VXM9-M20M20-NR	15165	296.44
20mm	20mm	36mm	42mm	100mm	0.5mm	std	VXM9-M20M20-R0.5	H6609	296.44
20mm	20mm	36mm	42mm	100mm	1.0mm	std	VXM9-M20M20-R1.0	15147	296.44
20mm	20mm	36mm	42mm	100mm	2.0mm	std	VXM9-M20M20-R2.0	H6610	296.44
20mm	20mm	36mm	42mm	100mm	3.0mm	std	VXM9-M20M20-R3.0	H6611	296.44
25mm	25mm	36mm	42mm	100mm	SQ	std	VXM9-M25M25-NR	15167	412.18
25mm	25mm	36mm	42mm	100mm	0.5mm	std	VXM9-M25M25-R0.5	H6612	412.18
25mm	25mm	36mm	42mm	100mm	1.0mm	std	VXM9-M25M25-R1.0	15149	412.18
25mm	25mm	36mm	42mm	100mm	3.0mm	std	VXM9-M25M25-R3.0	H6613	412.18

Speed & Feed: page 153



## 4 FLUTE • VARIABLE FL - GENERAL MACHINING APPLICATIONS

Carbide	4	Center Cutting	variable	nAco	+0.000 -0.002	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: VHMGS ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nAco EDP	nAco Price
1/8	1/8	1/4	1-1/2	.010-.015	stub	VHMGS-404	12176	16.27
1/8	1/8	1/2	1-1-2	SQ	std	VHMG-404-NR	10590	16.27
1/8	1/8	1/2	1-1/2	.010-.015	std	VHMG-404	10813	16.27
3/16	3/16	3/8	1-1/2	.015-.020	stub	VHMGS-606	12375	21.53
3/16	3/16	5/8	2	SQ	std	VHMG-606-NR	10592	22.33
3/16	3/16	5/8	2	.015-.020	std	VHMG-606	10981	22.33
1/4	1/4	1/2	2	SQ	stub	VHMGS-808-NR	10594	26.40
1/4	1/4	1/2	2	.015-.020	stub	VHMGS-808	10003	26.40
1/4	1/4	3/4	2-1/2	SQ	std	VHMG-808-NR	10596	32.71
1/4	1/4	3/4	2-1/2	.015-.020	std	VHMG-808	10005	32.71
1/4	1/4	1-1/8	3	SQ	long	VHMG-808-L-NR	10598	41.62
1/4	1/4	1-1/8	3	.015-.020	long	VHMG-808-L	10007	41.62
5/16	5/16	1/2	2	SQ	stub	VHMGS-1010-NR	10600	39.25
5/16	5/16	1/2	2	.015-.020	stub	VHMGS-1010	10009	39.25
5/16	5/16	13/16	2-1/2	SQ	std	VHMG-1010-NR	10602	40.39
5/16	5/16	13/16	2-1/2	.015-.020	std	VHMG-1010	10011	40.39
5/16	5/16	1-1/8	3	SQ	long	VHMG-1010-LNR	10604	45.06
5/16	5/16	1-1/8	3	.015-.020	long	VHMG-1010-L	10013	45.06
3/8	3/8	5/8	2	SQ	stub	VHMGS-1212-NR	10606	45.69
3/8	3/8	5/8	2	.015-.020	stub	VHMGS-1212	10015	45.69
3/8	3/8	1	2-1/2	SQ	std	VHMG-1212-NR	10608	48.37
3/8	3/8	1	2-1/2	.015-.020	std	VHMG-1212	10017	46.06
3/8	3/8	1-1/8	3	SQ	long	VHMG-1212-LNR	10609	62.52
3/8	3/8	1-1/8	3	.015-.020	long	VHMG-1212-L	10019	62.52
7/16	7/16	1	2-3/4	SQ	std	VHMG-1414-NR	10610	62.63
7/16	7/16	1	2-3/4	.015-.020	std	VHMG-1414	10021	62.63
1/2	1/2	5/8	2-1/2	SQ	stub	VHMGS-1616-NR	10612	72.04
1/2	1/2	5/8	2-1/2	.025-.030	stub	VHMGS-1616	10023	72.04
1/2	1/2	1	3	SQ	std	VHMG-1616-NR	10642	73.24
1/2	1/2	1	3	.025-.030	std	VHMG-1616	10025	73.24
1/2	1/2	1-1/4	3	SQ	med	VHMG-1616-MNR	12051	81.57
1/2	1/2	1-1/4	3	.025-.030	med	VHMG-1616-M	12371	76.59
1/2	1/2	1-1/2	3-1/2	.025-.030	med/long	VHMG-1616-ML	11656	90.85
1/2	1/2	2	4	SQ	long	VHMG-1616-LNR	10644	90.85
1/2	1/2	2	4	.025-.030	long	VHMG-1616-L	10027	90.85
5/8	5/8	3/4	3	SQ	stub	VHMGS-2020-NR	10688	127.27
5/8	5/8	3/4	3	.030-.035	stub	VHMGS-2020	10029	127.27
5/8	5/8	1-1/4	3-1/2	SQ	std	VHMG-2020-NR	10692	143.88
5/8	5/8	1-1/4	3-1/2	.030-.035	std	VHMG-2020	10031	135.09
5/8	5/8	2-1/4	5	SQ	long	VHMG-2020-LNR	10696	176.95
5/8	5/8	2-1/4	5	.030-.035	long	VHMG-2020-L	10033	176.95

Speed & Feed:  
page 154

sizes continued on next page

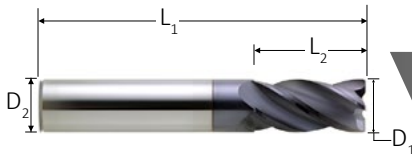
4 FLUTE • VARIABLE FL - GENERAL MACHINING APPLICATIONS

SERIES: VHMG ✓ **Check Stock Online**

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nACo EDP	nACo Price
3/4	3/4	1	3	SQ	stub	VHMGS-2424-NR	10706	191.71
3/4	3/4	1	3	.030-.035	stub	VHMGS-2424	10035	191.71
3/4	3/4	1-1/2	4	SQ	std	VHMG-2424-NR	10714	205.47
3/4	3/4	1-1/2	4	.030-.035	std	VHMG-2424	10037	205.47
3/4	3/4	2-1/4	5	SQ	long	VHMG-2424-LNR	10718	274.27
3/4	3/4	2-1/4	5	.030-.035	long	VHMG-2424-L	10039	256.33
1	1	1-1/2	4	SQ	std	VHMG-3232-NR	10720	299.95
1	1	1-1/2	4	.030-.035	std	VHMG-3232	10985	299.95
1	1	2-1/4	5	SQ	long	VHMG-3232-LNR	10578	342.12
1	1	2-1/4	5	.030-.035	long	VHMG-3232-L	13049	319.73
1-1/4	1-1/4	2-1/4	5	.030-.035	std	VHMG-4040	13051	666.45



Speed & Feed: page 154



4 FLUTE • VARIABLE FL - GENERAL MACHINING APPLICATIONS

Carbide	4	Center Cutting	variable	nACo	+ .000mm - .050mm	Radius		HRC <54	
---------	---	----------------	----------	------	----------------------	--------	--	---------	--

- 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\_ ✓ **Check Stock Online**

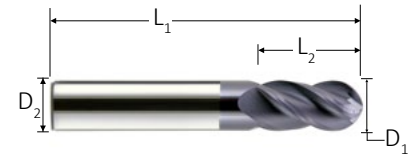
DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nACo EDP	nACo Price
4mm	4mm	14mm	51mm	0.4mm	std	VHMG-M4M4	11401	24.03
5mm	5mm	20mm	51mm	0.4mm	std	VHMG-M5M5	11403	26.81
6mm	6mm	20mm	63mm	0.4mm	std	VHMG-M6M6	11405	34.67
8mm	8mm	20mm	63mm	0.4mm	std	VHMG-M8M8	11407	42.06
10mm	10mm	25mm	70mm	0.4mm	std	VHMG-M10M10	11409	62.79
12mm	12mm	25mm	76mm	0.6mm	std	VHMG-M12M12	11411	76.14
14mm	14mm	32mm	89mm	0.6mm	std	VHMG-M14M14	11413	131.41
16mm	16mm	32mm	89mm	0.7mm	std	VHMG-M16M16	11415	141.64
18mm	18mm	38mm	100mm	0.7mm	std	VHMG-M18M18	11417	205.38
20mm	20mm	38mm	100mm	0.8mm	std	VHMG-M20M20	11419	263.46
25mm	25mm	38mm	100mm	0.8mm	std	VHMG-M25M25	11421	339.63



Speed & Feed: page 155



## 4 FLUTE • VARIABLE FL - BALL NOSE GENERAL MACHINING APPLICATIONS



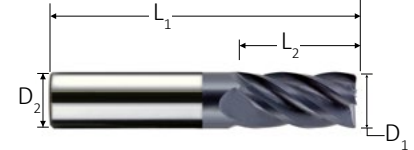
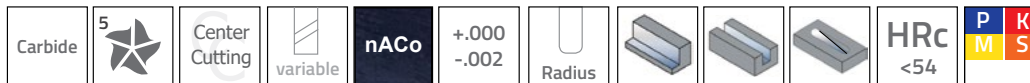
- Designed to reduce vibration in heavier cuts
- Effective on all medium hardness Ferrous Materials
- Proprietary nACo coating provides extended tool life over conventional coatings

### SERIES: VHMG-\_\_-B ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	LENGTH	PART NAME	nACo EDP	nACo Price
1/4	1/4	3/4	2-1/2	std	VHMG-808-B	12279	36.68
5/16	5/16	13/16	2-1/2	std	VHMG-1010-B	12297	45.31
3/8	3/8	1	2-1/2	std	VHMG-1212-B	12298	51.67
1/2	1/2	1	3	std	VHMG-1616-B	12299	82.12
5/8	5/8	1-1/4	3-1/2	std	VHMG-2020-B	12300	151.51
3/4	3/4	1-1/2	4	std	VHMG-2424-B	12301	230.43

Speed & Feed: page 154

## 5 FLUTE • VARIABLE FL - GENERAL MACHINING APPLICATIONS



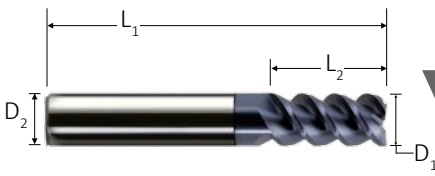
Additional coatings available upon request

- 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 ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nACo EDP	nACo Price
1/4	1/4	3/4	2-1/2	.015-.020	std	GVHMG-808	12221	36.57
3/8	3/8	1	2-1/2	.015-.020	std	GVHMG-1212	12222	52.24
1/2	1/2	1	3	.025-.030	std	GVHMG-1616	12192	84.23
5/8	5/8	1-1/4	3-1/2	.030-.035	std	GVHMG-2020	12223	155.38
3/4	3/4	1-1/2	4	.030-.035	std	GVHMG-2424	12224	237.43
1	1	1-1/2	4	.030-.035	std	GVHMG-3232	12285	346.63

Speed & Feed: page 156



3 FLUTE • 60° GENERAL MACHINING APPLICATION IN STAINLESS STEELS

Carbide	3	Center Cutting	60°	Bright ALTiN	+0.000 -0.002	Square			HRC <54	<table border="1"><tr><td>P</td><td>K</td></tr><tr><td>M</td><td>S</td></tr></table>	P	K	M	S
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** ✓ **Check Stock Online**

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	PART NAME	BRIGHT EDP	ALTiN EDP	BRIGHT Price	ALTiN Price
1/8	1/8	1/2	1-1/2	EMG60-404	10256	50256	10.57	13.20
3/16	3/16	5/8	2	EMG60-606	10797	50797	14.99	18.60
1/4	1/4	3/4	2-1/2	EMG60-808	14238	54238	19.84	24.60
5/16	5/16	13/16	2-1/2	EMG60-1010	14240	54240	26.52	32.90
3/8	3/8	1	2-1/2	EMG60-1212	14242	54242	32.63	40.10
7/16	7/16	1	3	EMG60-1414	14246	54246	44.74	53.29
1/2	1/2	1	3	EMG60-1616	14248	54248	54.92	63.50
9/16	9/16	1-1/4	3-1/2	EMG60-1818	14250	54250	118.57	135.17
5/8	5/8	1-1/4	3-1/2	EMG60-2020	14252	54252	102.44	116.80
3/4	3/4	1-1/2	4	EMG60-2424	14254	54254	140.18	161.90
1	1	1-1/2	4	EMG60-3232	14256	54256	224.30	255.90

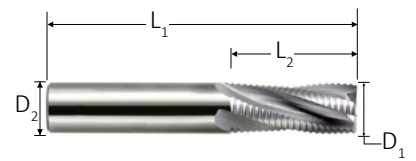
Speed & Feed: page 149

## 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	+0.000 -0.004	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 ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	LENGTH	FLUTES	PART NAME	BRIGHT EDP	ALTiN EDP	BRIGHT Price	ALTiN Price
3/16	3/16	5/8	2	std	4	CRMG-606	10276	50276	25.42	28.60
1/4	1/4	3/4	2-1/2	std	4	CRMG-808	15960	55960	35.43	41.60
1/4	1/4	1-1/8	3	long	4	CRMG-808-L	13751	53751	43.96	50.10
5/16	5/16	13/16	2-1/2	std	4	CRMG-1010	15961	55961	43.14	50.60
3/8	3/8	1/2	2	stub	4	CRMGS-1212	14205	54205	49.58	55.35
3/8	3/8	1	2-1/2	std	4	CRMG-1212	15962	55962	50.60	58.10
3/8	3/8	1-1/8	3	long	4	CRMG-1212-L	10234	50234	69.60	77.10
1/2	1/2	5/8	2-1/2	stub	4	CRMGS-1616	14201	54201	75.43	94.30
1/2	1/2	1-1/4	3	std	4	CRMG-1616	15963	55963	76.52	87.20
1/2	1/2	2	4	long	4	CRMG-1616-L	13750	53750	106.28	117.40
5/8	5/8	1-1/4	3-1/2	std	4	CRMG-2020	15964	55964	138.94	158.40
5/8	5/8	2-1/4	5	long	4	CRMG-2020-L	15725	55725	188.08	211.00
3/4	3/4	3/4	3	stub	4	CRMGS-2424	14203	54203	175.44	213.90
3/4	3/4	1-1/2	4	std	4	CRMG-2424	15965	55965	181.54	218.19
3/4	3/4	2-1/4	5	long	4	CRMG-2424-L	15727	55727	232.05	264.10
1	1	1-1/2	4	std	5	CRMG-3232	15966	55966	284.11	323.90
1	1	2-1/4	5	long	5	CRMG-3232-L	13960	53960	314.41	358.30

Speed & Feed: page 157

## MULTI FLUTE • FINE PROFILE ROUGHING END MILL

Carbide	4	5	Center Cutting	20°	Bright ALTiN	+0.000mm -0.100mm	Chamfer	Fine Pitch				HRC <48	P M	K S
---------	---	---	----------------	-----	--------------	----------------------	---------	------------	--	--	--	---------	--------	--------

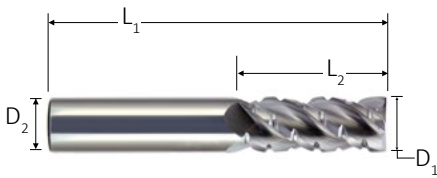
Additional coatings available upon request



### SERIES: CRMG-M\_M\_ ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	LENGTH	FLUTES	PART NAME	BRIGHT EDP	ALTiN EDP	BRIGHT Price	ALTiN Price
4mm	4mm	14mm	50mm	std	4	CRMG-M4M4	14841	54841	25.42	28.6
6mm	6mm	20mm	63mm	std	4	CRMG-M6M6	13427	53427	33.52	39.70
8mm	8mm	20mm	63mm	std	4	CRMG-M8M8	13428	53428	39.21	46.70
10mm	10mm	25mm	70mm	std	4	CRMG-M10M10	13429	53429	58.60	66.80
12mm	12mm	25mm	76mm	std	4	CRMG-M12M12	13430	53430	71.42	81.42
14mm	14mm	32mm	89mm	std	4	CRMG-M14M14	13431	53431	119.15	129.35
16mm	16mm	32mm	89mm	std	4	CRMG-M16M16	13432	53432	129.54	147.70
18mm	18mm	38mm	100mm	std	4	CRMG-M18M18	13433	53433	192.69	208.84
20mm	20mm	38mm	100mm	std	4	CRMG-M20M20	13434	53434	238.41	264.06
25mm	25mm	38mm	100mm	std	5	CRMG-M25M25	13435	53435	297.05	328.65

Speed & Feed: page 157



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 ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	CORNER	FLUTES	PART NAME	BRIGHT EDP	ALTiN EDP	BRIGHT Price	ALTiN Price
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	30.02	36.20
1/4	1/4	1	3	.0225	4	CRFMG-808-L	15832	55832	34.85	38.57
5/16	5/16	13/16	2-1/2	.0225	4	CRFMG-1010	13478	53478	36.57	44.00
3/8	3/8	1	2-1/2	.0225	4	CRFMG-1212	13479	53479	42.87	50.40
3/8	3/8	1-1/4	3	.0225	4	CRFMG-1212-L	15834	55834	49.33	58.15
1/2	1/2	1-1/4	3	.0225	4	CRFMG-1616	13480	53480	64.84	75.90
1/2	1/2	1-5/8	4	.0225	4	CRFMG-1616-M	15836	55836	72.75	83.28
5/8	5/8	1-1/4	3-1/2	.0325	4	CRFMG-2020	13481	53481	117.76	134.20
5/8	5/8	1-5/8	4	.0325	4	CRFMG-2020-M	15838	55838	126.90	139.99
3/4	3/4	1-1/2	4	.0325	4	CRFMG-2424	13482	53482	153.84	186.20
3/4	3/4	2-1/4	5	.0325	4	CRFMG-2424-L	15802	55802	171.60	191.79
1	1	1-1/2	4	.0325	5	CRFMG-3232	13483	53483	240.78	275.80



Speed & Feed: page 158

4 FLUTE • ROUGHER FINISHER

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

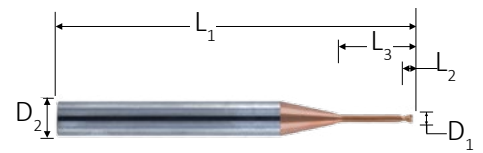
Additional coatings available upon request

SERIES: CRFMG-M\_M\_ ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	CORNER	PART NAME	BRIGHT EDP	ALTiN EDP	BRIGHT Price	ALTiN Price
6mm	6mm	20mm	63mm	0.50mm	CRFMG-M6M6	13436	53436	28.39	34.60
8mm	8mm	20mm	63mm	0.50mm	CRFMG-M8M8	13437	53437	33.23	40.70
10mm	10mm	25mm	70mm	0.50mm	CRFMG-M10M10	13438	53438	49.66	58.11
12mm	12mm	25mm	76mm	0.50mm	CRFMG-M12M12	13439	53439	60.53	69.00
14mm	14mm	32mm	89mm	0.75mm	CRFMG-M14M14	13440	53440	100.98	115.11
16mm	16mm	32mm	89mm	0.75mm	CRFMG-M16M16	13441	53441	109.78	125.20
20mm	20mm	38mm	100mm	0.75mm	CRFMG-M20M20	13443	53443	202.04	230.33



Speed & Feed: page 158



## 2 FLUTE • CORNER RADIUS FOR MULTI AXIS MACHINING

Carbide	2	Center Cutting	30°	TiXCo nACo	+0.0004 -0.0004 <1/4	+0.000 -0.001 =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\_\_ ✓ [Check Stock Online](#)

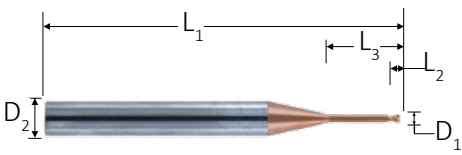
DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	PART NAME	TiXCo EDP	nACo EDP	TiXCo Price	nACo Price
0.0313 (1/32)	1/4	0.025	0.093	2-1/2	.005	HMG1-.031-SF3-R005	H7114	H6789	66.93	66.93
0.0313 (1/32)	1/4	0.025	0.156	2-1/2	.005	HMG1-.031-SF5-R005	H7115	H6790	72.98	72.98
0.0313 (1/32)	1/4	0.025	0.250	2-1/2	.005	HMG1-.031-SF8-R005	H7116	H6791	76.66	76.66
0.0313 (1/32)	1/4	0.025	0.375	2-1/2	.005	HMG1-.031-SF12-R005	H7177	H7184	83.77	83.77
0.0394 (1mm)	1/4	0.031	0.117	2-1/2	.005	HMG1-.039-SF3-R005	H7117	H6792	66.93	66.93
0.0394 (1mm)	1/4	0.031	0.203	2-1/2	.005	HMG1-.039-SF5-R005	H7118	H6793	72.98	72.98
0.0394 (1mm)	1/4	0.031	0.312	2-1/2	.005	HMG1-.039-SF8-R005	H7119	H6794	76.66	76.66
0.0469 (3/64)	1/4	0.038	0.141	2-1/2	.008	HMG1-.047-SF3-R008	H7120	H6795	66.93	66.93
0.0469 (3/64)	1/4	0.038	0.250	2-1/2	.008	HMG1-.047-SF5-R008	H7121	H6796	72.98	72.98
0.0469 (3/64)	1/4	0.038	0.375	2-1/2	.008	HMG1-.047-SF8-R008	H7122	H6797	76.66	76.66
0.0469 (3/64)	1/4	0.038	0.564	2-1/2	.008	HMG1-.047-SF12-R008	H7178	H7185	83.77	83.77
0.0625 (1/16)	1/4	0.050	0.187	2-1/2	.010	HMG1-.062-SF3-R010	H7123	H6798	66.93	66.93
0.0625 (1/16)	1/4	0.050	0.312	2-1/2	.010	HMG1-.062-SF5-R010	H7124	H6799	72.98	72.98
0.0625 (1/16)	1/4	0.050	0.500	2-1/2	.010	HMG1-.062-SF8-R010	H7125	H6801	76.66	76.66
0.0625 (1/16)	1/4	0.050	0.750	3	.010	HMG1-.062-SF12-R010	H7179	H7186	83.50	83.50
0.0781 (5/64)	1/4	0.062	0.234	2-1/2	.010	HMG1-.078-SF3-R010	H7126	H6803	66.93	66.93
0.0781 (5/64)	1/4	0.062	0.406	2-1/2	.010	HMG1-.078-SF5-R010	H7127	H6804	72.98	72.98
0.0781 (5/64)	1/4	0.062	0.625	2-1/2	.010	HMG1-.078-SF8-R010	H7128	H6805	76.66	76.66
0.0938 (3/32)	1/4	0.074	0.281	2-1/2	.015	HMG1-.093-SF3-R015	H7129	H6806	66.93	66.93
0.0938 (3/32)	1/4	0.074	0.500	2-1/2	.015	HMG1-.093-SF5-R015	H7130	H6807	72.98	72.98
0.0938 (3/32)	1/4	0.074	0.750	2-1/2	.015	HMG1-.093-SF8-R015	H7131	H6808	76.66	76.66
0.0938 (3/32)	1/4	0.074	0.750	3	.015	HMG1-.093-SF12-R015	H7303	H7304	83.50	83.50
0.1250 (1/8)	1/4	0.100	0.375	2-1/2	.015	HMG1-.125-SF3-R015	H7132	H6809	74.82	74.82
0.1250 (1/8)	1/4	0.100	0.625	2-1/2	.015	HMG1-.125-SF5-R015	H7133	H6810	85.21	85.21
0.1250 (1/8)	1/4	0.100	1.000	2-1/2	.015	HMG1-.125-SF8-R015	H7134	H6811	89.55	89.55
0.1875 (3/16)	1/4	0.150	0.570	2-1/2	.015	HMG1-.187-SF3-R015	H7135	H6812	74.82	74.82
0.1875 (3/16)	1/4	0.150	1.000	2-1/2	.015	HMG1-.187-SF5-R015	H7136	H6813	85.21	85.21
0.2500 (1/4)	1/4	0.200	0.750	2-1/2	.015	HMG1-.250-SF3-R015	H7137	H6814	85.21	85.21
0.2500 (1/4)	1/4	0.200	1.250	2-1/2	.015	HMG1-.250-SF5-R015	H7138	H6815	85.21	85.21

Speed & Feed: page 159



CORNER RADIUS





## 2 FLUTE • CORNER RADIUS FOR MULTI AXIS MACHINING

Carbide	2	Center Cutting	30°	TiXCo nAco	+0.01mm -0.01mm	+0.000mm -0.025mm =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

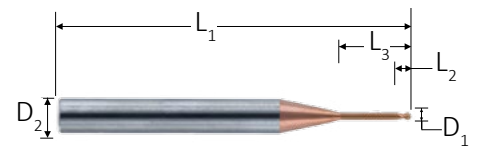
### SERIES: HMG1-M\_\_-SF-R\_\_ [✓ Check Stock Online](#)

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	PART NAME	TiXCo EDP	nAco EDP	TiXCo Price	nAco Price
0.5mm	4mm	0.35mm	1.5mm	50mm	0.1mm	HMG1-M0.5-SF3-R0.1	H7246	H7252	78.11	78.11
0.5mm	4mm	0.35mm	2.5mm	50mm	0.1mm	HMG1-M0.5-SF5-R0.1	H7247	H7253	81.00	81.00
0.5mm	4mm	0.35mm	6mm	50mm	0.1mm	HMG1-M0.5-SF12-R0.1	H7248	H7254	88.25	88.25
0.6mm	4mm	0.4mm	1.8mm	50mm	0.1mm	HMG1-M0.6-SF3-R0.1	H7139	H7018	69.61	69.61
0.6mm	4mm	0.4mm	3mm	50mm	0.1mm	HMG1-M0.6-SF5-R0.1	H7140	H7019	75.90	75.90
0.6mm	4mm	0.4mm	4.8mm	50mm	0.1mm	HMG1-M0.6-SF8-R0.1	H7141	H7020	79.73	79.73
0.6mm	4mm	0.4mm	7.2mm	50mm	0.1mm	HMG1-M0.6-SF12-R0.1	H7142	H7021	87.12	87.12
0.8mm	4mm	0.5mm	2.4mm	50mm	0.1mm	HMG1-M0.8-SF3-R0.1	H7249	H7255	66.93	66.93
0.8mm	4mm	0.5mm	4mm	50mm	0.1mm	HMG1-M0.8-SF5-R0.1	H7250	H7256	72.98	72.98
0.8mm	4mm	0.5mm	9.6mm	50mm	0.1mm	HMG1-M0.8-SF12-R0.1	H7251	H7257	83.77	83.77
1mm	4mm	0.8mm	3mm	50mm	0.2mm	HMG1-M1-SF3-R0.2	H7143	H7022	66.93	66.93
1mm	4mm	0.8mm	5mm	50mm	0.2mm	HMG1-M1-SF5-R0.2	H7144	H7023	72.98	72.98
1mm	4mm	0.8mm	8mm	50mm	0.2mm	HMG1-M1-SF8-R0.2	H7145	H7024	76.66	76.66
1mm	4mm	0.8mm	12mm	63mm	0.2mm	HMG1-M1-SF12-R0.2	H7146	H7025	85.77	85.77
1.5mm	4mm	1.35mm	4.5mm	50mm	0.2mm	HMG1-M1.5-SF3-R0.2	H7147	H7026	66.93	66.93
1.5mm	4mm	1.35mm	7.5mm	50mm	0.2mm	HMG1-M1.5-SF5-R0.2	H7148	H7027	72.98	72.98
1.5mm	4mm	1.35mm	12mm	63mm	0.2mm	HMG1-M1.5-SF8-R0.2	H7149	H7028	79.66	79.66
1.5mm	4mm	1.35mm	18mm	63mm	0.2mm	HMG1-M1.5-SF12-R0.2	H7150	H7029	83.50	83.50
2mm	4mm	1.7mm	6mm	50mm	0.3mm	HMG1-M2-SF3-R0.3	H7151	H7030	66.93	66.93
2mm	4mm	1.7mm	10mm	50mm	0.3mm	HMG1-M2-SF5-R0.3	H7152	H7031	72.98	72.98
2mm	4mm	1.7mm	16mm	63mm	0.3mm	HMG1-M2-SF8-R0.3	H7153	H7032	79.66	79.66
2mm	4mm	1.7mm	24mm	63mm	0.3mm	HMG1-M2-SF12-R0.3	H7154	H7033	83.50	83.50
2.5mm	4mm	2mm	7.5mm	50mm	0.5mm	HMG1-M2.5-SF3-R0.5	H7155	H7034	66.93	66.93
2.5mm	4mm	2mm	12.5mm	63mm	0.5mm	HMG1-M2.5-SF5-R0.5	H7156	H7035	75.98	75.98
2.5mm	4mm	2mm	20mm	63mm	0.5mm	HMG1-M2.5-SF8-R0.5	H7157	H7036	79.66	79.66
2.5mm	4mm	2mm	30mm	63mm	0.5mm	HMG1-M2.5-SF12-R0.5	H7158	H7037	84.50	84.50
3mm	6mm	2.5mm	9mm	63mm	0.5mm	HMG1-M3-SF3-R0.5	H7159	H7038	74.82	74.82
3mm	6mm	2.5mm	15mm	63mm	0.5mm	HMG1-M3-SF5-R0.5	H7160	H7039	85.21	85.21
3mm	6mm	2.5mm	24mm	75mm	0.5mm	HMG1-M3-SF8-R0.5	H7161	H7040	92.55	92.55
4mm	6mm	3mm	12mm	63mm	0.5mm	HMG1-M4-SF3-R0.5	H7162	H7041	74.82	74.82
4mm	6mm	3mm	20mm	63mm	0.5mm	HMG1-M4-SF5-R0.5	H7163	H7042	85.21	85.21
4mm	6mm	3mm	32mm	75mm	0.5mm	HMG1-M4-SF8-R0.5	H7164	H7043	92.55	92.55
6mm	6mm	5mm	18mm	63mm	0.5mm	HMG1-M6-SF3-R0.5	H7165	H7044	85.21	85.21
6mm	6mm	5mm	30mm	75mm	0.5mm	HMG1-M6-SF5-R0.5	H7166	H7045	88.50	88.50



CORNER RADIUS

Speed & Feed: page 159



## 2 FLUTE • BALL NOSE FOR Z-AXIS MACHINING

Carbide	2	Center Cutting	30°	TiXCo nAco	+0.004 -.0004 <1/4	+0.000 -.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** ✓ **Check Stock Online**

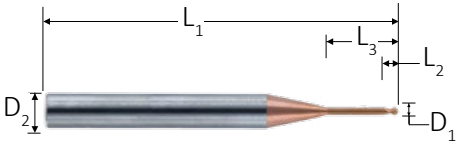
DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	PART NAME	TiXCo EDP	nAco EDP	TiXCo Price	nAco Price
0.0156 (1/64)	1/4	0.012	0.047	2-1/2	HMG1-.015-SF3-B	H6845	H6747	78.11	78.11
0.0156 (1/64)	1/4	0.012	0.078	2-1/2	HMG1-.015-SF5-B	H6846	H6748	81.00	81.00
0.0156 (1/64)	1/4	0.012	0.187	2-1/2	HMG1-.015-SF8-B	H7180	H7187	85.08	85.08
0.0200	1/4	0.016	0.062	2-1/2	HMG1-.020-SF3-B	H6847	H6749	78.11	78.11
0.0200	1/4	0.016	0.100	2-1/2	HMG1-.020-SF5-B	H6848	H6750	81.00	81.00
0.0313 (1/32)	1/4	0.025	0.093	2-1/2	HMG1-.031-SF3-B	H6849	H6751	66.93	66.93
0.0313 (1/32)	1/4	0.025	0.156	2-1/2	HMG1-.031-SF5-B	H6851	H6752	72.98	72.98
0.0313 (1/32)	1/4	0.025	0.250	2-1/2	HMG1-.031-SF8-B	H6853	H6753	76.66	76.66
0.0313 (1/32)	1/4	0.025	0.375	2-1/2	HMG1-.031-SF12-B	H7181	H7188	83.77	83.77
0.0394 (1mm)	1/4	0.031	0.117	2-1/2	HMG1-.039-SF3-B	H6855	H6754	66.93	66.93
0.0394 (1mm)	1/4	0.031	0.203	2-1/2	HMG1-.039-SF5-B	H6856	H6755	72.98	72.98
0.0394 (1mm)	1/4	0.031	0.312	2-1/2	HMG1-.039-SF8-B	H6857	H6756	76.66	76.66
0.0469 (3/64)	1/4	0.038	0.141	2-1/2	HMG1-.047-SF3-B	H6858	H6757	66.93	66.93
0.0469 (3/64)	1/4	0.038	0.250	2-1/2	HMG1-.047-SF5-B	H6859	H6759	72.98	72.98
0.0469 (3/64)	1/4	0.038	0.375	2-1/2	HMG1-.047-SF8-B	H6860	H6760	76.66	76.66
0.0469 (3/64)	1/4	0.038	0.564	2-1/2	HMG1-.047-SF12-B	H7182	H7189	83.77	83.77
0.0625 (1/16)	1/4	0.050	0.187	2-1/2	HMG1-.062-SF3-B	H6861	H6761	66.93	66.93
0.0625 (1/16)	1/4	0.050	0.312	2-1/2	HMG1-.062-SF5-B	H7175	H6762	72.98	72.98
0.0625 (1/16)	1/4	0.050	0.500	2-1/2	HMG1-.062-SF8-B	H7176	H6763	76.66	76.66
0.0625 (1/16)	1/4	0.050	0.750	3	HMG1-.062-SF12-B	H7183	H7190	83.50	83.50
0.0781 (5/64)	1/4	0.062	0.234	2-1/2	HMG1-.078-SF3-B	H6986	H6778	66.93	66.93
0.0781 (5/64)	1/4	0.062	0.406	2-1/2	HMG1-.078-SF5-B	H6987	H6779	72.98	72.98
0.0781 (5/64)	1/4	0.062	0.625	2-1/2	HMG1-.078-SF8-B	H6988	H6780	76.66	76.66
0.0938 (3/32)	1/4	0.074	0.281	2-1/2	HMG1-.093-SF3-B	H6989	H6781	66.93	66.93
0.0938 (3/32)	1/4	0.074	0.500	2-1/2	HMG1-.093-SF5-B	H7046	H6782	72.98	72.98
0.0938 (3/32)	1/4	0.074	0.750	2-1/2	HMG1-.093-SF8-B	H7047	H6783	76.66	76.66
0.0938 (3/32)	1/4	0.074	0.750	3	HMG1-.093-SF12-B	H7305	H7306	83.50	83.50
0.1181 (3mm)	1/4	0.094	0.354	2-1/2	HMG1-.118-SF3-B	H7048	H6784	74.82	74.82
0.1181 (3mm)	1/4	0.094	0.625	2-1/2	HMG1-.118-SF5-B	H7049	H6785	85.21	85.21
0.1250 (1/8)	1/4	0.100	0.375	2-1/2	HMG1-.125-SF3-B	H7050	H6786	74.82	74.82
0.1250 (1/8)	1/4	0.100	0.625	2-1/2	HMG1-.125-SF5-B	H7051	H6787	85.21	85.21
0.1250 (1/8)	1/4	0.100	1.000	2-1/2	HMG1-.125-SF8-B	H7052	H6788	89.55	89.55
0.1875 (3/16)	1/4	0.150	0.570	2-1/2	HMG1-.187-SF3-B	H7272	H7276	74.82	74.82
0.1875 (3/16)	1/4	0.150	1.000	2-1/2	HMG1-.187-SF5-B	H7273	H7277	85.21	85.21
0.2500 (1/4)	1/4	0.200	0.750	2-1/2	HMG1-.250-SF3-B	H7274	H7278	85.21	85.21
0.2500 (1/4)	1/4	0.200	1.250	2-1/2	HMG1-.250-SF5-B	H7275	H7279	85.21	85.21



Speed & Feed: page 159

BALL NOSE

## 2 FLUTE • BALL NOSE FOR Z-AXIS MACHINING



Carbide	2	Center Cutting	30°	TiXCo nAco	+0.01mm -0.01mm	+0.000mm -0.025mm =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 ✓ [Check Stock Online](#)

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	PART NAME	TiXCo EDP	nAco EDP	TiXCo Price	nAco Price
0.5mm	4mm	0.35mm	1.5mm	50mm	HMG1-M0.5-SF3-B	H7234	H7240	78.11	78.11
0.5mm	4mm	0.35mm	2.5mm	50mm	HMG1-M0.5-SF5-B	H7235	H7241	81.00	81.00
0.5mm	4mm	0.35mm	6mm	50mm	HMG1-M0.5-SF12-B	H7236	H7242	88.25	88.25
0.6mm	4mm	0.4mm	1.8mm	50mm	HMG1-M0.6-SF3-B	H7053	H6990	69.61	69.61
0.6mm	4mm	0.4mm	3mm	50mm	HMG1-M0.6-SF5-B	H7054	H6991	75.90	75.90
0.6mm	4mm	0.4mm	4.8mm	50mm	HMG1-M0.6-SF8-B	H7055	H6992	79.73	79.73
0.6mm	4mm	0.4mm	7.2mm	50mm	HMG1-M0.6-SF12-B	H7056	H6993	87.12	87.12
0.8mm	4mm	0.5mm	2.4mm	50mm	HMG1-M0.8-SF3-B	H7237	H7243	66.93	66.93
0.8mm	4mm	0.5mm	4mm	50mm	HMG1-M0.8-SF5-B	H7238	H7244	72.98	72.98
0.8mm	4mm	0.5mm	9.6mm	50mm	HMG1-M0.8-SF12-B	H7239	H7245	83.77	83.77
1mm	4mm	0.8mm	3mm	50mm	HMG1-M1-SF3-B	H7057	H6994	66.93	66.93
1mm	4mm	0.8mm	5mm	50mm	HMG1-M1-SF5-B	H7058	H6995	72.98	72.98
1mm	4mm	0.8mm	8mm	50mm	HMG1-M1-SF8-B	H7059	H6996	76.66	76.66
1mm	4mm	0.8mm	12mm	63mm	HMG1-M1-SF12-B	H7093	H6997	85.77	85.77
1.5mm	4mm	1.35mm	4.5mm	50mm	HMG1-M1.5-SF3-B	H7094	H6998	66.93	66.93
1.5mm	4mm	1.35mm	7.5mm	50mm	HMG1-M1.5-SF5-B	H7095	H6999	72.98	72.98
1.5mm	4mm	1.35mm	12mm	63mm	HMG1-M1.5-SF8-B	H7096	H7000	79.66	79.66
1.5mm	4mm	1.35mm	18mm	63mm	HMG1-M1.5-SF12-B	H7097	H7001	83.50	83.50
2mm	4mm	1.7mm	6mm	50mm	HMG1-M2-SF3-B	H7098	H7002	66.93	66.93
2mm	4mm	1.7mm	10mm	50mm	HMG1-M2-SF5-B	H7099	H7003	72.98	72.98
2mm	4mm	1.7mm	16mm	63mm	HMG1-M2-SF8-B	H7100	H7004	79.66	79.66
2mm	4mm	1.7mm	24mm	63mm	HMG1-M2-SF12-B	H7101	H7005	83.50	83.50
2.5mm	4mm	2mm	7.5mm	50mm	HMG1-M2.5-SF3-B	H7102	H7006	66.93	66.93
2.5mm	4mm	2mm	12.5mm	63mm	HMG1-M2.5-SF5-B	H7103	H7007	75.98	75.98
2.5mm	4mm	2mm	20mm	63mm	HMG1-M2.5-SF8-B	H7104	H7008	79.66	79.66
2.5mm	4mm	2mm	30mm	63mm	HMG1-M2.5-SF12-B	H7105	H7009	84.50	84.50
3mm	6mm	2.5mm	9mm	63mm	HMG1-M3-SF3-B	H7106	H7010	74.82	74.82
3mm	6mm	2.5mm	15mm	63mm	HMG1-M3-SF5-B	H7107	H7011	85.21	85.21
3mm	6mm	2.5mm	24mm	75mm	HMG1-M3-SF8-B	H7108	H7012	92.55	92.55
4mm	6mm	3mm	12mm	63mm	HMG1-M4-SF3-B	H7109	H7013	74.82	74.82
4mm	6mm	3mm	20mm	63mm	HMG1-M4-SF5-B	H7110	H7014	85.21	85.21
4mm	6mm	3mm	32mm	75mm	HMG1-M4-SF8-B	H7111	H7015	92.55	92.55
5mm	6mm	4mm	15mm	63mm	HMG1-M5-SF3-B	H7173	H7171	85.21	85.21
5mm	6mm	4mm	25mm	75mm	HMG1-M5-SF5-B	H7174	H7172	92.55	92.55
6mm	6mm	5mm	18mm	63mm	HMG1-M6-SF3-B	H7112	H7016	85.21	85.21
6mm	6mm	5mm	30mm	75mm	HMG1-M6-SF5-B	H7113	H7017	92.55	92.55



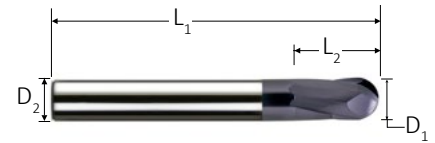
BALL NOSE

Speed & Feed: page 159

## 2 FL • BALL NOSE FOR HARD MILLING IN DIE & MOLD APPLICATIONS

Carbide		Center Cutting		nACo	+0.0005 -0.0005 <1/8	+0.000 -0.002 ≥1/8				HRC >56	<table border="1"><tr><td>P</td></tr><tr><td>M</td></tr><tr><td>H</td></tr></table>	P	M	H
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 ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	PART NAME	nACo EDP	nACo Price
1/32	1/8	1/32	1/16	3	HMG-401-B	13484	22.14
1/16	1/8	1/16	1/8	3	HMG-402-B	13485	20.78
3/32	1/8	3/32	3/16	3	HMG-403-B	13486	20.78
1/8	1/8	1/8	1/4	1-1/2	HMGS-404-B	H6672	19.35
1/8	1/8	1/8	1/4	3	HMG-404-B	13136	19.35
3/16	3/16	3/16	3/8	2	HMGS-606-B	H6673	25.38
3/16	3/16	3/16	3/8	3	HMG-606-B	13137	25.38
1/4	1/4	1/4	1/2	2-1/2	HMGS-808-B	H6674	34.79
1/4	1/4	1/4	1/2	3	HMG-808-B	13138	34.79
5/16	5/16	5/16	5/8	3	HMG-1010-B	13139	42.93
3/8	3/8	3/8	3/4	2-1/2	HMGS-1212-B	H6676	50.44
3/8	3/8	3/8	3/4	4	HMG-1212-B	13140	50.44
1/2	1/2	1/2	1	3	HMGS-1616-B	H6677	77.24
1/2	1/2	1/2	1	4	HMG-1616-B	13141	77.24

Speed & Feed: page 160

## 2 FL • BALL NOSE FOR HARD MILLING IN DIE & MOLD APPLICATIONS

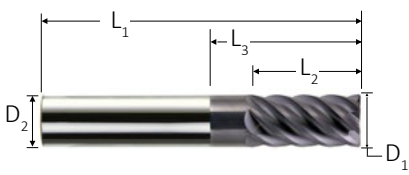
Carbide		Center Cutting		nACo	+0.013 -0.013mm ≥3mm	+0.000 -0.050mm <3mm				HRC >56	<table border="1"><tr><td>P</td></tr><tr><td>M</td></tr><tr><td>H</td></tr></table>	P	M	H
P														
M														
H														

- 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 ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	LENGTH	PART NAME	nACo EDP	nACo Price
1mm	3mm	1mm	2mm	75mm	std	HMG-M3M1-B	13455	22.78
2mm	3mm	2mm	4mm	75mm	std	HMG-M3M2-B	13456	21.48
3mm	3mm	3mm	6mm	75mm	std	HMG-M3M3-B	13457	21.48
4mm	4mm	4mm	8mm	75mm	std	HMG-M4M4-B	13458	25.52
6mm	6mm	6mm	12mm	89mm	std	HMG-M6M6-B	13459	36.29
8mm	8mm	8mm	16mm	100mm	std	HMG-M8M8-B	13460	44.00
10mm	10mm	10mm	20mm	100mm	std	HMG-M10M10-B	13461	66.08
12mm	12mm	12mm	24mm	100mm	std	HMG-M12M12-B	13462	80.94

Speed & Feed: page 160



## 6 FLUTE • 45° PROFILING END MILL

Carbide	6	Center Cutting	45°	nAco	+0.000 -0.002	Radius		HRC >56	<table border="1"><tr><td>P</td></tr><tr><td>M</td></tr><tr><td>H</td></tr></table>	P	M	H
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 ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nAco EDP	nAco Price
1/8	1/8	1/4	1/2	1-1/2	.010	stub	CCMG45-404-S	H6840	17.83
1/8	1/8	1/2		1-1/2	.010	std	CCMG45-404	16794	18.58
3/16	3/16	5/8		2	.010	std	CCMG45-606	16786	25.13
1/4	1/4	3/8	3/4	2-1/2	.015	stub	CCMG45-808-S	H6841	34.91
1/4	1/4	3/4		2-1/2	.015	std	CCMG45-808	16787	36.36
5/16	5/16	13/16		2-1/2	.020	std	CCMG45-1010	16788	45.49
3/8	3/8	1/2	1	2-1/2	.020	stub	CCMG45-1212-S	H6842	49.81
3/8	3/8	1		2-1/2	.020	std	CCMG45-1212	16789	51.89
1/2	1/2	5/8	1	3	.025	stub	CCMG45-1616-S	H6843	80.14
1/2	1/2	1		3	.025	std	CCMG45-1616	16790	83.48
5/8	5/8	1-1/4		3-1/2	.030	std	CCMG45-2020	16791	153.83
3/4	3/4	1	1-1/2	4	.035	stub	CCMG45-2424-S	H6844	225.73
3/4	3/4	1-1/2		4	.035	std	CCMG45-2424	16792	235.14
1	1	1-1/2		4	.035	std	CCMG45-3232	16793	348.30

Speed & Feed: page 160

## 6 FLUTE • 45° PROFILING END MILL

Carbide	6	Center Cutting	45°	nAco	+0.000mm -0.050mm	Radius		HRC >56	<table border="1"><tr><td>P</td></tr><tr><td>M</td></tr><tr><td>H</td></tr></table>	P	M	H
P												
M												
H												

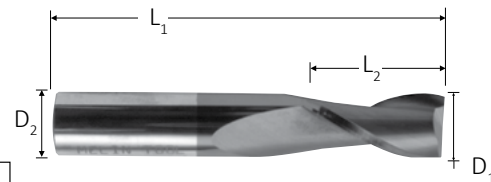
### SERIES: CCMG45-M\_M\_ ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	CORNER	LENGTH	PART NAME	nAco EDP	nAco Price
3mm	3mm	12mm	38mm	0.25mm	std	CCMG45-M3M3	13445	20.41
4mm	4mm	14mm	51mm	0.25mm	std	CCMG45-M4M4	13446	24.03
6mm	6mm	20mm	63mm	0.40mm	std	CCMG45-M6M6	13447	34.67
8mm	8mm	20mm	63mm	0.50mm	std	CCMG45-M8M8	13448	42.06
10mm	10mm	25mm	70mm	0.50mm	std	CCMG45-M10M10	13449	62.79
12mm	12mm	25mm	76mm	0.60mm	std	CCMG45-M12M12	13450	76.14
16mm	16mm	32mm	89mm	0.75mm	std	CCMG45-M16M16	13452	141.64
20mm	20mm	38mm	100mm	0.90mm	std	CCMG45-M20M20	13454	263.46

Speed & Feed: page 160







## 2 FLUTE • CVD DIAMOND COATING

Carbide	2	Center Cutting	30°	CVD Diamond	Square	+0.005 -0.005 <1/8	+0.00 -0.002 ≥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 ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	PART NAME	DIAMOND EDP	DIAMOND Price
1/32	1/8	3/32	1-1/2	AMG-401-DIA	10093	67.23
1/16	1/8	3/16	1-1/2	AMG-402-DIA	10095	65.18
3/32	1/8	3/8	1-1/2	AMG-403-DIA	10097	65.18
1/8	1/8	1/2	1-1/2	AMG-404-DIA	10099	64.83
3/16	3/16	5/8	2	AMG-606-DIA	10101	83.83
1/4	1/4	3/4	2-1/2	AMG-808-DIA	10103	110.10
5/16	5/16	13/16	2-1/2	AMG-1010-DIA	10105	167.48
3/8	3/8	1	2-1/2	AMG-1212-DIA	10107	172.40

Speed & Feed: page 161

## 2 FLUTE • BALL NOSE CVD DIAMOND COATING

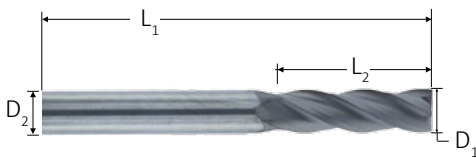
Carbide	2	Center Cutting	30°	CVD Diamond	Ball	+0.005 -0.005 <1/8	+0.00 -0.002 ≥1/8					N
---------	---	----------------	-----	-------------	------	--------------------------	-------------------------	--	--	--	--	---



### SERIES: AMG-\_\_-B-DIA ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	PART NAME	DIAMOND EDP	DIAMOND Price
1/32	1/8	3/32	1-1/2	AMG-401-B-DIA	10109	71.00
1/16	1/8	3/16	1-1/2	AMG-402-B-DIA	10111	68.83
3/32	1/8	3/8	1-1/2	AMG-403-B-DIA	10113	68.83
1/8	1/8	1/2	1-1/2	AMG-404-B-DIA	10115	67.93
3/16	3/16	5/8	2	AMG-606-B-DIA	10117	88.22
1/4	1/4	3/4	2-1/2	AMG-808-B-DIA	10119	115.77
5/16	5/16	13/16	2-1/2	AMG-1010-B-DIA	10121	174.95
3/8	3/8	1	2-1/2	AMG-1212-B-DIA	10123	181.23

Speed & Feed: page 161



## 4 FLUTE • CVD DIAMOND COATING

Carbide Center Cutting CVD Diamond  $+0.005$   $-0.005$   $<1/8$   $+0.000$   $-0.002$   $\geq 1/8$

**SERIES: CCMG-\_\_-DIA** ✓ **Check Stock Online**

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	PART NAME	DIAMOND EDP	DIAMOND Price
0.015	1/8	.045	1-1/2	CCMG-.015-DIA	H6678	68.50
0.02	1/8	.060	1-1/2	CCMG-.020-DIA	H6679	68.50
1/32	1/8	3/32	1-1/2	CCMG-401-DIA	10061	67.23
0.04	1/8	.120	1-1/2	CCMG-.040-DIA	H6680	67.23
0.047	1/8	.141	1-1/2	CCMG-.047-DIA	H6681	67.23
0.05	1/8	.150	1-1/2	CCMG-.050-DIA	H6682	67.23
0.06	1/8	.180	1-1/2	CCMG-.060-DIA	H6683	67.23
1/16	1/8	3/16	1-1/2	CCMG-402-DIA	10063	65.18
0.078	1/8	.234	1-1/2	CCMG-.078-DIA	H6684	65.18
3/32	1/8	3/8	1-1/2	CCMG-403-DIA	10065	65.18
0.10	1/8	.300	1-1/2	CCMG-.100-DIA	H6685	65.18
1/8	1/8	1/2	1-1/2	CCMG-404-DIA	10067	64.83
0.156	3/16	.470	2	CCMG-.156-DIA	H6686	83.83
3/16	3/16	5/8	2	CCMG-606-DIA	10069	83.83
1/4	1/4	3/4	2-1/2	CCMG-808-DIA	10071	110.10
5/16	5/16	13/16	2-1/2	CCMG-1010-DIA	10073	167.48
3/8	3/8	1	2-1/2	CCMG-1212-DIA	10075	172.40
1/2	1/2	1	3	CCMG-1616-DIA	14594	270.77

- 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



Speed & Feed: page 161

## 4 FLUTE • BALL NOSE CVD DIAMOND COATING

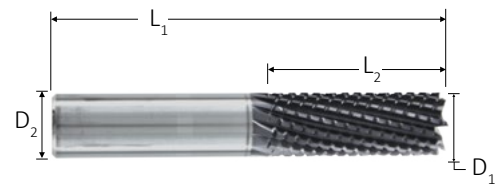
Carbide Center Cutting CVD Diamond  $+0.005$   $-0.005$   $<1/8$   $+0.000$   $-0.002$   $\geq 1/8$

**SERIES: CCMG-\_\_-B-DIA** ✓ **Check Stock Online**

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	PART NAME	DIAMOND EDP	DIAMOND Price
.015	1/8	.045	1-1/2	CCMG-.015-B-DIA	H6687	74.70
.020	1/8	.060	1-1/2	CCMG-.020-B-DIA	H6688	74.70
1/32	1/8	3/32	1-1/2	CCMG-401-B-DIA	10077	71.00
.040	1/8	.120	1-1/2	CCMG-.040-B-DIA	H6689	71.00
.047	1/8	.141	1-1/2	CCMG-.047-B-DIA	H6690	71.00
.050	1/8	.150	1-1/2	CCMG-.050-B-DIA	H6691	71.00
.060	1/8	.180	1-1/2	CCMG-.060-B-DIA	H6692	71.00
1/16	1/8	3/16	1-1/2	CCMG-402-B-DIA	10079	68.83
.078	1/8	.234	1-1/2	CCMG-.078-B-DIA	H6693	68.83
3/32	1/8	3/8	1-1/2	CCMG-403-B-DIA	10081	68.83
.100	1/8	.300	1-1/2	CCMG-.100-B-DIA	H6694	68.83
1/8	1/8	1/2	1-1/2	CCMG-404-B-DIA	10083	67.93
.156	3/16	.470	2	CCMG-.156-B-DIA	H6695	88.22
3/16	3/16	5/8	2	CCMG-606-B-DIA	10085	88.22
1/4	1/4	3/4	2-1/2	CCMG-808-B-DIA	10087	115.77
5/16	5/16	13/16	2-1/2	CCMG-1010-B-DIA	10089	174.95
3/8	3/8	1	2-1/2	CCMG-1212-B-DIA	10091	181.23



Speed & Feed: page 161



## MULTI FLUTE • COMPOSITE ROUTER FOR CARBON FIBER



- › 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 ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	FLUTES	PART NAME	DIAMOND EDP	DLC EDP	DIAMOND Price	DLC Price
1/8	1/8	1/4	1-1/2	6	CRMGD-404-S	H6963	H7280	88.04	64.42
1/8	1/8	1/2	1-1/2	6	CRMGD-404	H6964	H7281	90.22	66.60
3/16	3/16	3/8	2	8	CRMGD-606-S	H6965	H7282	113.84	84.58
3/16	3/16	3/4	2	8	CRMGD-606	H6966	H7283	115.55	86.29
1/4	1/4	1/2	2-1/2	10	CRMGD-808-S	H6967	H7284	151.88	109.84
1/4	1/4	3/4	2-1/2	10	CRMGD-808	H6968	H7285	153.22	111.18
1/4	1/4	1	3	10	CRMGD-808-L	H6969	H7286	159.35	117.31
5/16	5/16	1	2-1/2	10	CRMGD-1010	H6970	H7287	211.79	131.88
3/8	3/8	3/4	2-1/2	12	CRMGD-1212	H6971	H7288	226.97	147.06
3/8	3/8	1-1/8	3	12	CRMGD-1212-L	H6972	H7289	249.32	169.41
1/2	1/2	1	3	14	CRMGD-1616	H6973	H7290	376.04	221.95
1/2	1/2	2	4	14	CRMGD-1616-L	H6974	H7291	462.80	233.40

Speed & Feed: page 161

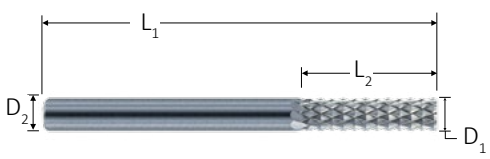
## MULTI FLUTE • COMPOSITE ROUTER FOR CARBON FIBER



### SERIES: CRMGD-M\_M\_ ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	FLUTES	PART NAME	DIAMOND EDP	DLC EDP	DIAMOND Price	DLC Price
3mm	3mm	6mm	38mm	6	CRMGD-M3M3-S	H6975	H7292	88.04	64.42
3mm	3mm	12mm	38mm	6	CRMGD-M3M3	H6976	H7293	90.22	66.60
5mm	5mm	10mm	50mm	8	CRMGD-M5M5-S	H6977	H7294	113.84	64.55
5mm	5mm	20mm	50mm	8	CRMGD-M5M5	H6978	H7295	115.55	66.26
6mm	6mm	12mm	63mm	10	CRMGD-M6M6-S	H6979	H7296	151.88	110.56
6mm	6mm	20mm	63mm	10	CRMGD-M6M6	H6980	H7297	153.22	111.90
8mm	8mm	20mm	63mm	10	CRMGD-M8M8	H6981	H7298	211.79	131.88
10mm	10mm	20mm	70mm	12	CRMGD-M10M10	H6982	H7299	226.97	114.90
10mm	10mm	30mm	70mm	12	CRMGD-M10M10-L	H6983	H7300	249.32	137.25
12mm	12mm	25mm	75mm	14	CRMGD-M12M12	H6984	H7301	376.04	221.95
12mm	12mm	50mm	100mm	14	CRMGD-M12M12-L	H6985	H7302	462.80	233.40

Speed & Feed: page 161



## FIBERGLASS ROUTERS • NO END CUT

Carbide 
 MULTI FLUTES 
 Non - Center Cutting 
 Bright DLC 
 Square 
 +.000 - .005 
 
 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 ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	CORNER	PART NAME	BRIGHT EDP	DLC EDP	BRIGHT Price	DLC Price
1/8	1/8	1/2	1-1/2	No End	FRMG-404-NE	16465	76465	9.39	20.96
3/16	3/16	5/8	2	No End	FRMG-606-NE	19534	79534	14.34	31.52
1/4	1/4	3/4	2-1/2	No End	FRMG-808-NE	19531	79531	20.53	50.58
1/4	1/4	1	3	No End	FRMG-808-LNE	15526	75526	23.96	54.01
3/8	3/8	1	2-1/2	No End	FRMG-1212-NE	11921	71921	35.33	68.76
1/2	1/2	1	3	No End	FRMG-1616-NE	11923	71923	61.88	103.09

Speed & Feed: Available online

## FIBERGLASS ROUTERS • SQUARE END CUT

Carbide 
 MULTI FLUTES 
 Center Cutting 
 Bright DLC 
 Square 
 +.000 - .005 
 
 N

### SERIES: FRMG ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	CORNER	PART NAME	BRIGHT EDP	DLC EDP	BRIGHT Price	DLC Price
1/8	1/8	1/2	1-1/2	SQ	FRMG-404	11924	71924	11.64	23.21
3/16	3/16	5/8	2	SQ	FRMG-606	11925	71925	16.59	33.77
1/4	1/4	3/4	2-1/2	SQ	FRMG-808	11926	71926	22.78	52.83
1/4	1/4	1	3	SQ	FRMG-808-L	11927	71927	26.21	56.26
3/8	3/8	1	2-1/2	SQ	FRMG-1212	11928	71928	37.58	71.01
1/2	1/2	1	3	SQ	FRMG-1616	11929	71929	64.13	105.34

Speed & Feed: Available online

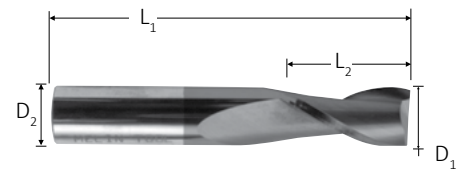
## FIBERGLASS ROUTERS • 135° DRILL POINT END CUT

Carbide 
 MULTI FLUTES 
 Center Cutting 
 Bright DLC 
 135° 
 +.000 - .005 
 
 N

### SERIES: FRMG-\_\_-DP ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	CORNER	PART NAME	BRIGHT EDP	DLC EDP	BRIGHT Price	DLC Price
1/8	1/8	1/2	1-1/2	drill point	FRMG-404-DP	11930	71930	11.64	23.21
3/16	3/16	5/8	2	drill point	FRMG-606-DP	11931	71931	16.59	33.77
1/4	1/4	3/4	2-1/2	drill point	FRMG-808-DP	11932	71932	22.78	52.83
1/4	1/4	1	3	drill point	FRMG-808-LDP	12069	72069	26.21	56.26
3/8	3/8	1	2-1/2	drill point	FRMG-1212-DP	12071	72071	37.58	71.01
1/2	1/2	1	3	drill point	FRMG-1616-DP	12178	72178	64.13	105.34

Speed & Feed: Available online



## 2 FLUTE • DLC AMORPHOUS DIAMOND COATING

Carbide Center Cutting **DLC Diamond**  $\begin{matrix} +.0005 \\ -.0005 \\ <1/8 \end{matrix}$   $\begin{matrix} +.000 \\ -.002 \\ \geq 1/8 \end{matrix}$



- 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** ✓ **Check Stock Online**

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	PART NAME	DLC EDP	DLC Price
1/32	1/8	3/32	1-1/2	AMG-401-DLC	13587	24.42
1/16	1/8	3/16	1-1/2	AMG-402-DLC	13588	22.48
3/32	1/8	3/8	1-1/2	AMG-403-DLC	13589	22.48
1/8	1/8	1/2	1-1/2	AMG-404-DLC	13590	22.20
5/32	3/16	9/16	2	AMG-605-DLC	74020	32.89
3/16	3/16	5/8	2	AMG-606-DLC	13591	32.27
7/32	1/4	5/8	2-1/2	AMG-807-DLC	74024	50.19
1/4	1/4	3/4	2-1/2	AMG-808-DLC	13592	49.18
9/32	5/16	3/4	2-1/2	AMG-1009-DLC	75898	58.83
5/16	5/16	13/16	2-1/2	AMG-1010-DLC	13593	57.82
11/32	3/8	7/8	2-1/2	AMG-1211-DLC	75900	63.30
3/8	3/8	1	2-1/2	AMG-1212-DLC	13594	61.71
7/16	7/16	1	2-3/4	AMG-1414-DLC	74040	78.59
1/2	1/2	1	3	AMG-1616-DLC	74042	84.82



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 Center Cutting **DLC Diamond**  $\begin{matrix} +.0005 \\ -.0005 \\ <1/8 \end{matrix}$   $\begin{matrix} +.000 \\ -.002 \\ \geq 1/8 \end{matrix}$



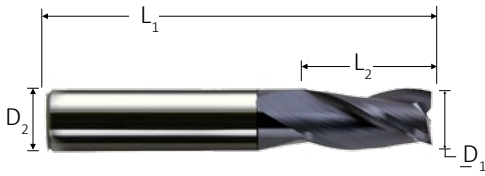
- For enhanced productivity in machining Graphite, Hi Silicon Aluminum & Composite Materials
- Ideal for slotting, pocketing, Z-axis machining and taking heavy radial depth of cuts

**SERIES: AMG-\_\_-B-DLC** ✓ **Check Stock Online**

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	PART NAME	DLC EDP	DLC Price
1/32	1/8	3/32	1-1/2	AMG-401-B-DLC	13604	26.62
1/16	1/8	3/16	1-1/2	AMG-402-B-DLC	13605	24.29
3/32	1/8	3/8	1-1/2	AMG-403-B-DLC	13606	24.29
1/8	1/8	1/2	1-1/2	AMG-404-B-DLC	13607	24.29
5/32	3/16	9/16	2	AMG-605-B-DLC	75910	35.52
3/16	3/16	5/8	2	AMG-606-B-DLC	13608	35.52
7/32	1/4	5/8	2-1/2	AMG-807-B-DLC	75911	53.83
1/4	1/4	3/4	2-1/2	AMG-808-B-DLC	13609	52.92
9/32	5/16	3/4	2-1/2	AMG-1009-B-DLC	75912	63.30
5/16	5/16	13/16	2-1/2	AMG-1010-B-DLC	13610	61.71
11/32	3/8	7/8	2-1/2	AMG-1211-B-DLC	76133	74.26
3/8	3/8	1	2-1/2	AMG-1212-B-DLC	13611	66.77
7/16	7/16	1	2-3/4	AMG-1414-B-DLC	75913	87.89
1/2	1/2	1	3	AMG-1616-B-DLC	74068	96.31

**Speed & Feed:** available online





[BACK TO INDEX](#)

# GRAPHITE & COMPOSITES

## 3 FLUTE • DLC AMORPHOUS DIAMOND COATING

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

- 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 ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	PART NAME	DLC EDP	DLC Price
1/8	1/8	1/2	1-1/2	EMG-404-DLC	77640	22.20
5/32	3/16	9/16	2	EMG-605-DLC	77641	32.89
3/16	3/16	5/8	2	EMG-606-DLC	77642	32.27
7/32	1/4	5/8	2-1/2	EMG-807-DLC	73744	50.19
1/4	1/4	3/4	2-1/2	EMG-808-DLC	77644	49.18
9/32	5/16	3/4	2-1/2	EMG-1009-DLC	73746	58.83
5/16	5/16	13/16	2-1/2	EMG-1010-DLC	77646	57.82
3/8	3/8	1	2-1/2	EMG-1212-DLC	77648	61.71
7/16	7/16	1	2-3/4	EMG-1414-DLC	77650	78.59
1/2	1/2	1	3	EMG-1616-DLC	77652	84.82



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

## 3 FLUTE • BALL NOSE DLC AMORPHOUS DIAMOND COATING

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

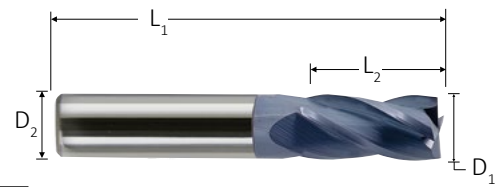
- For enhanced productivity in machining Graphite, Hi Silicon Aluminum & Composite Materials
- Ideal for slotting, pocketing, Z-axis machining and taking heavy radial depth of cuts

### SERIES: EMG-\_\_-B-DLC ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	PART NAME	DLC EDP	DLC Price
1/8	1/8	1/2	1-1/2	EMG-404-B-DLC	77825	24.29
5/32	3/16	9/16	2	EMG-605-B-DLC	77827	35.52
3/16	3/16	5/8	2	EMG-606-B-DLC	77829	35.52
7/32	1/4	5/8	2-1/2	EMG-807-B-DLC	74061	53.83
1/4	1/4	3/4	2-1/2	EMG-808-B-DLC	77832	52.92
9/32	5/16	3/4	2-1/2	EMG-1009-B-DLC	79587	63.30
5/16	5/16	13/16	2-1/2	EMG-1010-B-DLC	77835	61.71
11/32	3/8	7/8	2-1/2	EMG-1211-B-DLC	79591	74.26
3/8	3/8	1	2-1/2	EMG-1212-B-DLC	77838	66.77
7/16	7/16	1	2-3/4	EMG-1414-B-DLC	77840	87.89
1/2	1/2	1	3	EMG-1616-B-DLC	77842	96.31



Speed & Feed: available online



## 4 FLUTE • DLC AMORPHOUS DIAMOND COATING

Carbide	4	Center Cutting	30°	DLC Diamond	Square	+0.005 -0.005 <1/8	+0.000 -0.002 ≥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 ✓ **Check Stock Online**

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	PART NAME	DLC EDP	DLC Price
1/32	1/8	3/32	1-1/2	CCMG-401-DLC	13595	24.42
1/16	1/8	3/16	1-1/2	CCMG-402-DLC	13596	22.48
3/32	1/8	3/8	1-1/2	CCMG-403-DLC	13597	22.48
1/8	1/8	1/2	1-1/2	CCMG-404-DLC	13598	22.20
5/32	3/16	9/16	2	CCMG-605-DLC	74136	32.89
3/16	3/16	5/8	2	CCMG-606-DLC	13599	32.27
7/32	1/4	5/8	2-1/2	CCMG-807-DLC	74140	50.19
1/4	1/4	3/4	2-1/2	CCMG-808-DLC	13600	49.18
9/32	5/16	3/4	2-1/2	CCMG-1009-DLC	74148	58.83
5/16	5/16	13/16	2-1/2	CCMG-1010-DLC	13601	57.82
11/32	3/8	7/8	2-1/2	CCMG-1211-DLC	75924	63.30
3/8	3/8	1	2-1/2	CCMG-1212-DLC	13602	61.71
7/16	7/16	1	2-3/4	CCMG-1414-DLC	74158	78.59
1/2	1/2	1	3	CCMG-1616-DLC	74160	84.82

**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



4 FLUTE • BALL NOSE DLC AMORPHOUS DIAMOND COATING



- ▶ 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** ✓ **Check Stock Online**

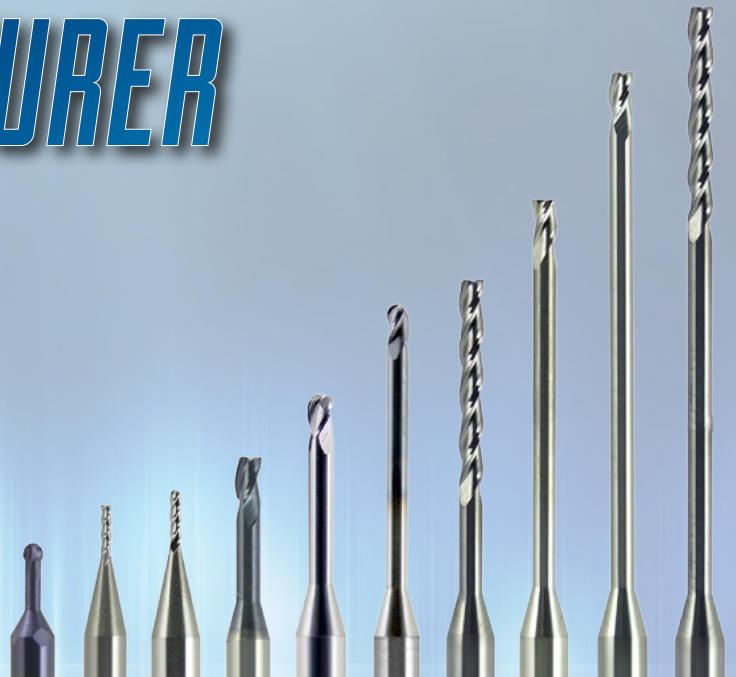


DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	PART NAME	DLC EDP	DLC Price
1/32	1/8	3/32	1-1/2	CCMG-401-B-DLC	13612	26.62
1/16	1/8	3/16	1-1/2	CCMG-402-B-DLC	13613	24.29
3/32	1/8	3/8	1-1/2	CCMG-403-B-DLC	13614	24.29
1/8	1/8	1/2	1-1/2	CCMG-404-B-DLC	13615	24.29
5/32	3/16	9/16	2	CCMG-605-B-DLC	75852	35.52
3/16	3/16	5/8	2	CCMG-606-B-DLC	13616	35.52
7/32	1/4	5/8	2-1/2	CCMG-807-B-DLC	75934	53.83
1/4	1/4	3/4	2-1/2	CCMG-808-B-DLC	13617	52.92
9/32	5/16	3/4	2-1/2	CCMG-1009-B-DLC	75935	63.30
5/16	5/16	13/16	2-1/2	CCMG-1010-B-DLC	13618	61.71
11/32	3/8	7/8	2-1/2	CCMG-1211-B-DLC	76211	74.26
3/8	3/8	1	2-1/2	CCMG-1212-B-DLC	13619	66.77
7/16	7/16	1	2-3/4	CCMG-1414-B-DLC	75936	87.89
1/2	1/2	1	3	CCMG-1616-B-DLC	74186	96.31

**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
+0.000
-0.002
+0.0005
-0.0005
<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: VBMG2 ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL	FLUTE	PART NAME	nACo EDP	nACo Price
1/16	1/8	0.040	0.190	1-1/2	2	VBMG2-402	12231	24.27
3/32	1/8	0.060	0.210	1-1/2	2	VBMG2-403	12233	24.27
1/8	1/8	3/32	0.244	1-1/2	2	VBMG2-404	10041	18.69
1/8	1/8	3/32	0.244	3	2	VBMG2-404-L	10321	20.70
3/16	3/16	9/64	0.291	2	2	VBMG2-606	10043	23.65
3/16	3/16	9/64	0.291	3	2	VBMG2-606-L	10323	26.29
1/4	1/4	3/16	0.388	2-1/2	2	VBMG2-808	10045	34.20
1/4	1/4	3/16	0.388	4	2	VBMG2-808-L	10325	37.43
3/8	3/8	9/32	0.481	2-1/2	2	VBMG2-1212	10047	49.06
3/8	3/8	9/32	0.481	4	2	VBMG2-1212-L	10327	54.46
1/2	1/2	3/8	0.625	3	2	VBMG2-1616	10049	72.69
1/2	1/2	3/8	0.625	6	2	VBMG2-1616-L	10329	104.31

Speed & Feed: page 162

## 2 FLUTE • 220° SPHERICAL BALL END MILLS

Carbide
2
Center Cutting
15°
nACo
+0.000mm
-0.050mm
SPHERICAL BALL
HRC <54
P M K S



### SERIES: VBMG2-M\_M\_ ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL	FLUTE	PART NAME	nACo EDP	nACo Price
4mm	4mm	3mm	6.8mm	51mm	2	VBMG2-M4M4	11477	24.03
6mm	6mm	5mm	8.8mm	63mm	2	VBMG2-M6M6	11479	34.67
8mm	8mm	6mm	11.1mm	63mm	2	VBMG2-M8M8	11481	42.06
10mm	10mm	8mm	13.1mm	70mm	2	VBMG2-M10M10	11483	62.79
12mm	12mm	9mm	15.3mm	76mm	2	VBMG2-M12M12	11485	76.14

Speed & Feed: page 162



[BACK TO INDEX](#)

# VARIOUS MATERIAL

## 4 FLUTE • 220° SPHERICAL BALL END MILLS

Carbide	4	Center Cutting	15°	nAco	+0.000 -0.002	+0.0005 -0.0005 <1/8	SPHERICAL BALL		HRC <54	P M S	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 ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL	FLUTE	PART NAME	nAco EDP	nAco Price
1/16	1/8	0.040	0.190	1-1/2	4	VBMG4-402	11942	24.27
3/32	1/8	0.060	0.210	1-1/2	4	VBMG4-403	11943	24.27
1/8	1/8	0.094	0.244	1-1/2	4	VBMG4-404	10051	18.69
1/8	1/8	0.094	0.594	1-1/2	4	VBMG4-404-M	H7167	0.00
1/8	1/8	0.094	0.244	3	4	VBMG4-404-L	10331	20.70
3/16	3/16	0.141	0.291	2	4	VBMG4-606	10053	23.65
3/16	3/16	0.141	0.641	2	4	VBMG4-606-M	H7168	0.00
3/16	3/16	0.141	0.291	3	4	VBMG4-606-L	10333	26.29
1/4	1/4	0.188	0.388	2-1/2	4	VBMG4-808	10055	34.20
1/4	1/4	0.188	0.938	2-1/2	4	VBMG4-808-M	H7169	0.00
1/4	1/4	0.188	0.388	4	4	VBMG4-808-L	10335	37.43
3/8	3/8	0.281	0.481	2-1/2	4	VBMG4-1212	10057	49.06
3/8	3/8	0.281	1.031	2-1/2	4	VBMG4-1212-M	H7170	0.00
3/8	3/8	0.281	0.481	4	4	VBMG4-1212-L	10337	54.46
1/2	1/2	0.375	0.625	3	4	VBMG4-1616	10059	72.69
1/2	1/2	0.375	0.625	6	4	VBMG4-1616-L	10339	104.31

Speed & Feed: page 162

## 4 FLUTE • 220° SPHERICAL BALL END MILLS

Carbide	4	Center Cutting	15°	nAco	+0.000mm -0.050mm	SPHERICAL BALL		HRC <54	P M S	K S
---------	---	----------------	-----	------	----------------------	----------------	--	---------	-------------	--------

### SERIES: VBMG4-M\_M\_ ✓ Check Stock Online

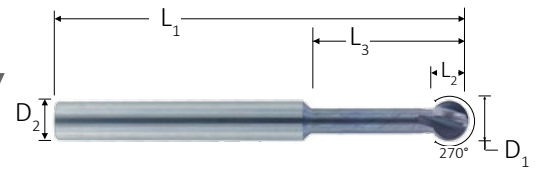
DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL	FLUTE	PART NAME	nAco EDP	nAco Price
4mm	4mm	3mm	6.8mm	51mm	4	VBMG4-M4M4	11423	24.03
6mm	6mm	5mm	8.8mm	63mm	4	VBMG4-M6M6	11425	34.67
8mm	8mm	6mm	11.1mm	63mm	4	VBMG4-M8M8	11427	42.06
10mm	10mm	8mm	13.1mm	70mm	4	VBMG4-M10M10	11428	62.79
12mm	12mm	9mm	15.3mm	76mm	4	VBMG4-M12M12	11429	76.14

Speed & Feed: page 162





## MULTI FLUTE • 270° SPHERICAL BALL END MILLS



Carbide	2	Center Cutting	15°	nAco	+0.000 -0.002	+0.0005 -0.0005 <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

### SERIES: VBMG2-\_\_-270 ✓ Check Stock Online

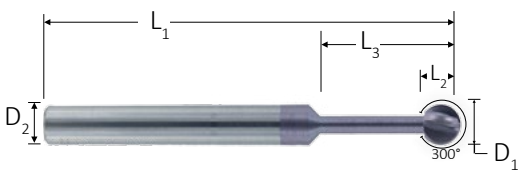
DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL	FLUTE	PART NAME	nAco EDP	nAco Price
3/64	1/8	.040	0.133	1-1/2	2	VBMG2-401-1/2-270	H7060	57.20
1/16	1/8	.053	0.146	1-1/2	2	VBMG2-402-270	H7061	38.49
1/16	1/8	.053	0.303	1-1/2	2	VBMG2-402-270L1	H7062	49.46
5/64	1/8	.067	0.192	1-1/2	2	VBMG2-402-1/2-270	H7063	38.97
3/32	1/8	.079	0.204	1-1/2	2	VBMG2-403-270	H7064	38.97
3/32	1/8	.079	0.329	1-1/2	2	VBMG2-403-270L1	H7065	38.97
3/32	1/8	.079	0.454	1-1/2	2	VBMG2-403-270L2	H7066	42.59

Speed & Feed: page 162

### SERIES: VBMG4-\_\_-270 ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL	FLUTE	PART NAME	nAco EDP	nAco Price
1/8	1/8	.107	0.232	1-1/2	4	VBMG4-404-270	H7067	33.60
1/8	1/8	.107	0.607	1-1/2	4	VBMG4-404-270L1	H7068	38.97
1/8	1/8	.107	1.107	3	4	VBMG4-404-270L2	H7069	45.08
3/16	3/16	.160	0.285	2	4	VBMG4-606-270	H7070	40.09
3/16	3/16	.160	0.660	2	4	VBMG4-606-270L1	H7071	47.58
1/4	1/4	.213	0.588	2-1/2	4	VBMG4-808-270	H6850	56.70
1/4	1/4	.213	0.963	2-1/2	4	VBMG4-808-270L1	H6852	62.07
1/4	1/4	.213	1.713	4	4	VBMG4-808-270L2	H6854	71.93
5/16	5/16	.266	0.641	2-1/2	4	VBMG4-1010-270	H7072	74.31
5/16	5/16	.266	1.766	4	4	VBMG4-1010-270L1	H7073	97.28
3/8	3/8	.320	0.507	2-1/2	4	VBMG4-1212-270	H7074	77.05
3/8	3/8	.320	1.070	2-1/2	4	VBMG4-1212-270L1	H7075	80.17
3/8	3/8	.320	1.820	4	4	VBMG4-1212-270L2	H7076	102.15
1/2	1/2	.427	0.927	3	4	VBMG4-1616-270	H7077	111.77
1/2	1/2	.427	1.427	6	4	VBMG4-1616-270L1	H7078	194.69

Speed & Feed: page 162



MULTI FLUTE • 300° SPHERICAL BALL END MILLS

Carbide 2 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

SERIES: VBMG2-\_\_-300 ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL	FLUTE	PART NAME	nAco EDP	nAco Price
1/16	1/8	.057	0.135	1-1/2	2	VBMG2-402-300	H7079	46.33
5/64	1/8	.072	0.165	1-1/2	2	VBMG2-402-1/2-300	H7080	46.33
3/32	1/8	.086	0.211	1-1/2	2	VBMG2-403-300	H7081	46.33



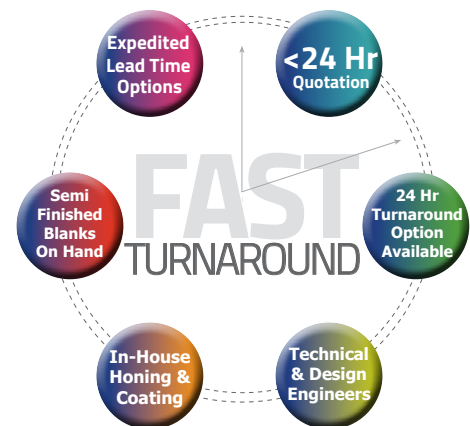
Speed & Feed: page 162

SERIES: VBMG4-\_\_-300 ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL	FLUTE	PART NAME	nAco EDP	nAco Price
1/8	1/8	.116	0.209	1-1/2	4	VBMG4-404-300	H7082	37.97
1/8	1/8	.116	0.397	1-1/2	4	VBMG4-404-300L1	H7083	49.21
5/32	3/16	.145	0.395	2	4	VBMG4-605-300	H7084	54.20
3/16	3/16	.174	0.299	2	4	VBMG4-606-300	H7085	47.71
3/16	3/16	.174	0.611	2	4	VBMG4-606-300L1	H7086	62.32
1/4	1/4	.233	0.420	2-1/2	4	VBMG4-808-300	H6800	63.82
1/4	1/4	.233	0.858	2-1/2	4	VBMG4-808-300L1	H6802	85.04
5/16	5/16	.291	0.541	2-1/2	4	VBMG4-1010-300	H7087	87.17
5/16	5/16	.291	0.728	2-1/2	4	VBMG4-1010-300L1	H7088	103.40
3/8	3/8	.349	0.599	2-1/2	4	VBMG4-1212-300	H7089	91.79
3/8	3/8	.349	1.349	3	4	VBMG4-1212-300L1	H7090	130.37
1/2	1/2	.466	0.778	3	4	VBMG4-1616-300	H7091	141.61
1/2	1/2	.466	1.716	4	4	VBMG4-1616-300L1	H7092	196.68

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 10° 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** ✓ [Check Stock Online](#)

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	FLUTE	PART NAME	nACRo EDP	nACRo Price
3/32	1/4	0.09	0.500	3	0.023	2	HXMG2-803	14553	65.31
1/8	1/4	0.095	0.650	3	0.031	2	HXMG2-804	14555	65.31
3/16	1/4	0.125	0.750	3	0.047	2	HXMG2-806	14557	65.31
1/4	1/4	0.150	1.000	3	0.062	2	HXMG2-808	H7226	57.31
5/16	5/16	0.155	1.187	3	0.078	2	HXMG2-1010	H7227	69.58
3/8	3/8	0.175	1.250	4	0.094	2	HXMG2-1212	H7228	104.06
1/2	1/2	0.200	1.500	4	0.125	2	HXMG2-1616	H7229	146.60

**Speed & Feed:** page 163

## 2 FLUTE • HIGH FEED CARBIDE END MILL

Carbide 2 Center Cutting 10° nACRo +.000mm / -.050mm Radius HRC <56 P M K S

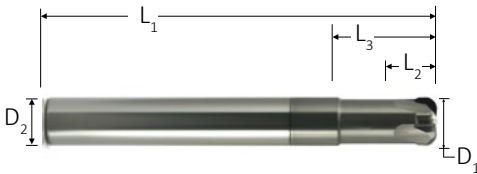


**SERIES: HXMG2-M\_M\_ (metric)** ✓ [Check Stock Online](#)

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	FLUTE	PART NAME	nACRo EDP	nACRo Price
2mm	6mm	2.2mm	12mm	75mm	0.5mm	2	HXMG2-M6M2	14558	65.31
3mm	6mm	2.8mm	16mm	75mm	0.75mm	2	HXMG2-M6M3	14559	65.31
4mm	6mm	3.5mm	20mm	75mm	1mm	2	HXMG2-M6M4	14560	65.31
5mm	6mm	3.5mm	20mm	75mm	1.25mm	2	HXMG2-M6M5	H7230	65.31
6mm	6mm	3.8mm	25mm	75mm	1.5mm	2	HXMG2-M6M6	H7231	57.31
8mm	8mm	4mm	30mm	75mm	2mm	2	HXMG2-M8M8	H7232	69.58
10mm	10mm	4.3mm	33mm	100mm	2.5mm	2	HXMG2-M10M10	H7233	109.25

**Speed & Feed:** page 163

4 FLUTE • HIGH FEED CARBIDE END MILL



Carbide 4 Center Cutting 10° 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 ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	FLUTE	PART NAME	nACRo EDP	nACRo Price
3/32	1/4	0.090	0.500	3	0.023	4	HXMG4-803	14550	65.31
1/8	1/4	0.095	0.650	3	0.031	4	HXMG4-804	14551	65.31
3/16	1/4	0.125	0.750	3	0.047	4	HXMG4-806	14552	65.31
1/4	1/4	0.150	1.000	3	0.062	4	HXMG4-808	14546	57.31
5/16	5/16	0.155	1.187	3	0.078	4	HXMG4-1010	14554	69.58
3/8	3/8	0.175	1.250	4	0.094	4	HXMG4-1212	14548	104.06
1/2	1/2	0.200	1.500	4	0.125	4	HXMG4-1616	14549	146.60
5/8	5/8	0.250	1.500	4	0.156	4	HXMG4-2020	14852	185.25

Speed & Feed: page 163

4 FLUTE • HIGH FEED CARBIDE END MILL

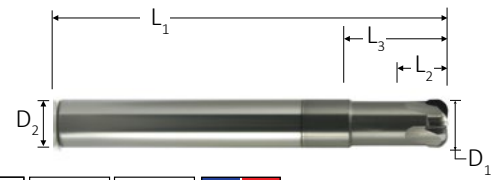
Carbide 4 Center Cutting 10° nACRo ±.000mm / -.050mm Radius HRC <56 P M K S

SERIES: HXMG4-M\_M\_ (metric) ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	FLUTE	PART NAME	nACRo EDP	nACRo Price
2mm	6mm	2mm	12mm	75mm	0.5mm	4	HXMG4-M6M2	14843	65.31
3mm	6mm	2.8mm	16mm	75mm	0.75mm	4	HXMG4-M6M3	14844	65.31
4mm	6mm	3.5mm	20mm	75mm	1mm	4	HXMG4-M6M4	14845	65.31
5mm	6mm	3.5mm	20mm	75mm	1.25mm	4	HXMG4-M6M5	14846	65.31
6mm	6mm	3.8mm	25mm	75mm	1.5mm	4	HXMG4-M6M6	14847	57.31
8mm	8mm	4mm	30mm	75mm	2mm	4	HXMG4-M8M8	14848	69.58
10mm	10mm	4.3mm	33mm	100mm	2.5mm	4	HXMG4-M10M10	14849	109.25
12mm	12mm	4.6mm	38mm	100mm	3mm	4	HXMG4-M12M12	14850	146.60

Speed & Feed: page 163





## 4 FLUTE • HIGH FEED CARBIDE END MILL

Carbide 4 Center Cutting 10° nACRo +.000 -0.002 Radius

HRC <56



- 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 ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	FLUTE	PART NAME	nACRo EDP	nACRo Price
1/8	1/4	0.095	0.625	2-1/2	0.031	4	HXMG4-804-HM	H6732	68.59
3/16	1/4	0.125	0.650	2-1/2	0.047	4	HXMG4-806-HM	H6733	68.59
1/4	1/4	0.150	0.750	2-1/2	0.062	4	HXMG4-808-HM	H6734	60.32
5/16	5/16	0.155	0.800	2-1/2	0.078	4	HXMG4-1010-HM	H6735	73.02
3/8	3/8	0.175	1.000	2-1/2	0.094	4	HXMG4-1212-HM	H6736	108.70
1/2	1/2	0.200	1.250	3	0.125	4	HXMG4-1616-HM	H6737	152.09
5/8	5/8	0.250	1.250	3-1/2	0.156	4	HXMG4-2020-HM	H6738	195.73

Speed & Feed: page 163

## 4 FLUTE • HIGH FEED CARBIDE END MILL

Carbide 4 Center Cutting 10° nACRo ±.000mm -0.050mm

HRC <56

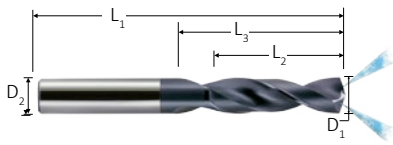


### SERIES: HXMG4-M\_M\_-HM (metric) ✓ Check Stock Online

DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	LBS L <sub>3</sub>	OAL L <sub>1</sub>	CORNER	FLUTE	PART NAME	nACRo EDP	nACRo Price
3mm	6mm	2.8mm	14mm	63mm	0.75mm	4	HXMG4-M6M3-HM	H6739	68.60
4mm	6mm	3.5mm	16mm	63mm	1mm	4	HXMG4-M6M4-HM	H6740	68.60
5mm	6mm	3.5mm	18mm	63mm	1.25mm	4	HXMG4-M6M5-HM	H6741	68.60
6mm	6mm	3.8mm	20mm	63mm	1.5mm	4	HXMG4-M6M6-HM	H6742	60.32
8mm	8mm	4mm	20mm	63mm	2mm	4	HXMG4-M8M8-HM	H6743	73.02
10mm	10mm	4.3mm	25mm	70mm	2.5mm	4	HXMG4-M10M10-HM	H6744	114.07
12mm	12mm	4.6mm	25mm	76mm	3mm	4	HXMG4-M12M12-HM	H6745	152.73

Speed & Feed: page 163





2 FLUTE • 140° POINT COOLANT HOLE DRILL



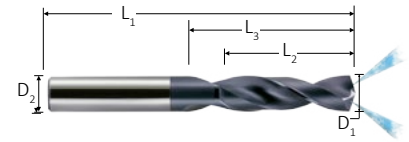
Carbide 2 Center Cutting 30° nACo +.0000 -.0005 DRILL POINT HRC <48 P M K S

- 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** ✓ **Check Stock Online**



DIAMETER D <sub>1</sub>	SHK D <sub>2</sub>	DRILL LENGTH L <sub>2</sub>	FLUTE LENGTH L <sub>3</sub>	OAL L <sub>1</sub>	PART NAME	nACo EDP	nACo Price	
1/16	0.0625	3mm	0.188	0.234	2.362	CDR-1/16-3X	13166	74.82
1/16	0.0625	3mm	0.313	0.391	2.677	CDR-1/16-5X	13212	86.14
1/16	0.0625	3mm	0.438	0.547	2.992	CDR-1/16-7X	13258	99.69
50	0.0700	3mm	0.394	0.492	2.677	CDR-50-5X	19420	86.14
2mm	0.0787	3mm	6.0mm	7.5mm	60mm	CDR-2mm-3X	13167	72.48
2mm	0.0787	3mm	10.0mm	12.5mm	68mm	CDR-2mm-5X	13213	83.02
2mm	0.0787	3mm	14.0mm	17.5mm	76mm	CDR-2mm-7X	13259	95.32
2.1mm	0.0827	3mm	10.5mm	13.1mm	68mm	CDR-2.1mm-5X	14500	83.02
2.2mm	0.0866	3mm	11.0mm	13.8mm	68mm	CDR-2.2mm-5X	14501	83.02
# 43	0.0890	3mm	0.445	0.556	2.670	CDR-43-5X	19510	83.02
2.3mm	0.0906	3mm	11.5mm	14.4mm	68mm	CDR-2.3mm-5X	14502	80.79
3/32	0.0938	3mm	0.281	0.352	2.362	CDR-3/32-3X	13168	70.80
3/32	0.0938	3mm	0.469	0.586	2.677	CDR-3/32-5X	13214	80.79
3/32	0.0938	3mm	0.657	0.821	2.992	CDR-3/32-7X	13260	92.19
2.4mm	0.0945	3mm	12.0mm	15.0mm	68mm	CDR-2.4mm-5X	14503	78.07
# 40	0.0980	3mm	0.294	0.368	2.362	CDR-40-3X	13169	68.77
# 40	0.0980	3mm	0.490	0.613	2.677	CDR-40-5X	13215	78.07
# 40	0.0980	3mm	0.686	0.858	2.992	CDR-40-7X	13261	88.39
2.5mm	0.0984	3mm	7.5mm	9.4mm	60mm	CDR-2.5mm-3X	13170	67.00
2.5mm	0.0984	3mm	12.5mm	15.6mm	68mm	CDR-2.5mm-5X	13216	75.72
2.5mm	0.0984	3mm	17.5mm	21.9mm	76mm	CDR-2.5mm-7X	13262	85.09
# 38	0.1015	3mm	0.508	0.634	2.677	CDR-38-5X	19511	63.06
2.6mm	0.1024	3mm	13.0mm	16.3mm	68mm	CDR-2.6mm-5X	14504	63.06
2.7mm	0.1063	3mm	13.5mm	16.9mm	68mm	CDR-2.7mm-5X	14505	63.06
# 36	0.1065	3mm	0.320	0.399	2.362	CDR-36-3X	13171	61.06
# 36	0.1065	3mm	0.533	0.666	2.677	CDR-36-5X	13217	63.06
# 36	0.1065	3mm	0.746	0.932	2.992	CDR-36-7X	13263	73.79
7/64	0.1094	3mm	0.328	0.410	2.362	CDR-7/64-3X	13172	60.25
7/64	0.1094	3mm	0.547	0.684	2.677	CDR-7/64-5X	13218	66.43
7/64	0.1094	3mm	0.766	0.957	2.992	CDR-7/64-7X	13264	72.28
2.8mm	0.1102	3mm	14.0mm	17.5mm	68mm	CDR-2.8mm-5X	14506	65.64
2.9mm	0.1142	3mm	14.5mm	18.1mm	68mm	CDR-2.9mm-5X	14507	65.64
# 32	0.1160	3mm	0.348	0.435	2.362	CDR-32-3X	13173	59.66
# 32	0.1160	3mm	0.580	0.725	2.677	CDR-32-5X	13219	65.64
# 32	0.1160	3mm	0.812	1.015	2.992	CDR-32-7X	13265	71.18
3mm	0.1181	3mm	9.0mm	11.3mm	60mm	CDR-3mm-3X	13174	55.83
3mm	0.1181	3mm	15.0mm	18.8mm	68mm	CDR-3mm-5X	13220	60.87
3mm	0.1181	3mm	21.0mm	26.3mm	76mm	CDR-3mm-7X	13266	64.94



## 2 FLUTE • 140° POINT COOLANT HOLE DRILL

✓ **Check Stock Online**

SERIES: CDR



DIAMETER D <sub>1</sub>	SHK D <sub>2</sub>	DRILL LENGTH L <sub>2</sub>	FLUTE LENGTH L <sub>3</sub>	OAL L <sub>1</sub>	PART NAME	nACo EDP	nACo Price	
# 31	0.1200	1/8	0.358	0.407	2.362	CDR-31-3X	13175	56.09
# 31	0.1200	1/8	0.600	0.750	2.677	CDR-31-5X	13221	61.22
# 31	0.1200	1/8	0.990	1.050	2.992	CDR-31-7X	13267	65.42
3.1mm	0.1220	4mm	15.5mm	19.4mm	68mm	CDR-3.1mm-5X	14508	72.51
1/8	0.1250	1/8	0.375	0.469	2.362	CDR-1/8-3X	13176	56.09
1/8	0.1250	1/8	0.625	0.781	2.677	CDR-1/8-5X	13222	61.22
1/8	0.1250	1/8	0.875	1.094	2.992	CDR-1/8-7X	13268	65.42
3.2mm	0.1260	4mm	16.0mm	20.0mm	72mm	CDR-3.2mm-5X	14509	72.51
# 30	0.1285	4mm	0.386	0.482	2.441	CDR-30-3X	13177	60.65
# 30	0.1285	4mm	0.643	0.803	2.835	CDR-30-5X	13223	72.51
# 30	0.1285	4mm	0.900	1.124	3.189	CDR-30-7X	13269	83.42
3.3mm	0.1299	4mm	16.5mm	20.6mm	72mm	CDR-3.3mm-5X	14510	72.51
3.4mm	0.1339	4mm	17.0mm	21.3mm	72mm	CDR-3.4mm-5X	14511	72.51
# 29	0.1360	4mm	0.409	0.512	2.441	CDR-29-3X	13178	60.65
# 29	0.1360	4mm	0.782	0.850	2.835	CDR-29-5X	13224	72.51
# 29	0.1360	4mm	0.952	1.190	3.189	CDR-29-7X	13270	83.42
3.5mm	0.1378	4mm	17.5mm	21.9mm	72mm	CDR-3.5mm-5X	19512	72.51
9/64	0.1406	4mm	0.422	0.527	2.441	CDR-9/64-3X	13179	60.65
9/64	0.1406	4mm	0.703	0.879	2.835	CDR-9/64-5X	13225	72.51
9/64	0.1406	4mm	0.984	1.230	3.189	CDR-9/64-7X	13271	83.42
3.6mm	0.1417	4mm	18.0mm	22.5mm	72mm	CDR-3.6mm-5X	14512	72.51
3.7mm	0.1457	4mm	18.5mm	23.1mm	72mm	CDR-3.7mm-5X	14513	72.51
# 25	0.1495	4mm	0.748	0.934	2.835	CDR-25-5X	19513	72.51
3.8mm	0.1496	4mm	19.0mm	23.8mm	72mm	CDR-3.8mm-5X	14514	72.51
3.9mm	0.1535	4mm	19.5mm	24.4mm	72mm	CDR-3.9mm-5X	14515	72.51
5/32	0.1563	4mm	0.469	0.586	2.441	CDR-5/32-3X	13180	60.65
5/32	0.1563	4mm	0.781	0.977	2.835	CDR-5/32-5X	13226	72.51
5/32	0.1563	4mm	1.094	1.367	3.189	CDR-5/32-7X	13272	83.42
4mm	0.1575	4mm	12.0mm	15.0mm	62mm	CDR-4mm-3X	13181	60.65
4mm	0.1575	4mm	20.0mm	25.0mm	72mm	CDR-4mm-5X	13227	72.51
4mm	0.1575	4mm	28.0mm	35.0mm	81mm	CDR-4mm-7X	13273	83.42
# 21	0.1590	5mm	0.795	0.994	3.189	CDR-21-5X	19514	77.12
4.1mm	0.1614	5mm	20.5mm	25.6mm	81mm	CDR-4.1mm-5X	14516	67.46
4.2mm	0.1654	5mm	21.0mm	26.3mm	81mm	CDR-4.2mm-5X	14517	67.46
4.3mm	0.1693	5mm	21.5mm	26.9mm	81mm	CDR-4.3mm-5X	14518	67.46
11/64	0.1719	5mm	0.516	0.630	2.520	CDR-11/64-3X	19790	67.46
11/64	0.1719	5mm	0.860	1.074	3.189	CDR-11/64-5X	19791	77.12
11/64	0.1719	5mm	1.203	1.530	3.780	CDR-11/64-7X	19792	95.95
4.4mm	0.1732	5mm	22.0mm	27.5mm	81mm	CDR-4.4mm-5X	14520	67.46
# 16	0.1770	5mm	0.885	1.106	3.189	CDR-16-5X	19515	77.12
4.5mm	0.1772	5mm	13.5mm	16.9mm	64mm	CDR-4.5mm-3X	13182	67.46
4.5mm	0.1772	5mm	22.5mm	25.0mm	81mm	CDR-4.5mm-5X	13228	77.12
4.5mm	0.1772	5mm	31.5mm	35.0mm	96mm	CDR-4.5mm-7X	13274	95.03
4.6mm	0.1811	5mm	23.0mm	28.8mm	81mm	CDR-4.6mm-5X	14521	77.13
4.7mm	0.1850	5mm	23.5mm	29.4mm	81mm	CDR-4.7mm-5X	14522	77.13

Speed & Feed: page 164

sizes continued on next page

2 FLUTE • 140° POINT COOLANT HOLE DRILL

SERIES: CDR

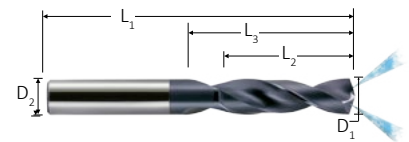
✓ Check Stock Online

DIAMETER D <sub>1</sub>	SHK D <sub>2</sub>	DRILL LENGTH L <sub>2</sub>	FLUTE LENGTH L <sub>3</sub>	OAL L <sub>1</sub>	PART NAME	nCo EDP	nCo Price	
3/16	0.1875	5mm	0.563	0.703	2.520	CDR-3/16-3X	13183	67.46
3/16	0.1875	5mm	0.938	1.172	3.189	CDR-3/16-5X	13229	77.13
3/16	0.1875	5mm	1.313	1.641	3.780	CDR-3/16-7X	13275	95.03
4.8mm	0.1890	5mm	24.0mm	30.0mm	81mm	CDR-4.8mm-5X	14523	77.13
4.9mm	0.1929	5mm	24.5mm	30.6mm	81mm	CDR-4.9mm-5X	14524	77.13
5mm	0.1969	5mm	15.0mm	18.8mm	64mm	CDR-5mm-3X	13184	67.46
5mm	0.1969	5mm	25.0mm	31.3mm	81mm	CDR-5mm-5X	13230	77.13
5mm	0.1969	5mm	35.0mm	43.8mm	96mm	CDR-5mm-7X	13276	95.03
5.1mm	0.2008	6mm	25.5mm	31.9mm	81mm	CDR-5.1mm-5X	14525	86.64
# 7	0.2010	6mm	1.004	1.256	3.189	CDR-7-5X	19516	86.64
13/64	0.2031	6mm	0.609	0.762	2.559	CDR-13/64-3X	13185	74.97
13/64	0.2031	6mm	1.016	1.270	3.189	CDR-13/64-5X	13231	86.64
13/64	0.2031	6mm	1.422	1.777	3.780	CDR-13/64-7X	13277	107.83
5.2mm	0.2047	6mm	26.0mm	32.5mm	81mm	CDR-5.2mm-5X	14526	86.64
5.3mm	0.2087	6mm	26.5mm	33.1mm	81mm	CDR-5.3mm-5X	14527	86.64
5.4mm	0.2126	6mm	27.0mm	33.8mm	81mm	CDR-5.4mm-5X	14528	86.64
# 3	0.2130	6mm	1.065	1.331	3.189	CDR-3-5X	19517	86.64
5.5mm	0.2165	6mm	27.5mm	34.4mm	81mm	CDR-5.5mm-5X	14529	86.64
7/32	0.2188	6mm	0.656	0.820	2.559	CDR-7/32-3X	13186	74.97
7/32	0.2188	6mm	1.094	1.367	3.189	CDR-7/32-5X	13232	86.64
7/32	0.2188	6mm	1.531	1.914	3.780	CDR-7/32-7X	13278	107.83
5.6mm	0.2205	6mm	28.0mm	35.0mm	81mm	CDR-5.6mm-5X	14530	86.64
5.7mm	0.2244	6mm	28.5mm	35.6mm	81mm	CDR-5.7mm-5X	14531	86.64
5.8mm	0.2283	6mm	33.4mm	36.3mm	81mm	CDR-5.8mm-5X	14532	86.64
5.9mm	0.2323	6mm	34mm	36.9mm	81mm	CDR-5.9mm-5X	14533	86.64
6mm	0.2362	6mm	18.0mm	22.5mm	65mm	CDR-6mm-3X	13187	74.97
6mm	0.2362	6mm	30.0mm	37.5mm	81mm	CDR-6mm-5X	13233	86.64
6mm	0.2362	6mm	42.0mm	52.5mm	96mm	CDR-6mm-7X	13279	107.83
6.1mm	0.2402	8mm	30.5mm	38.1mm	96mm	CDR-6.1mm-5X	14534	86.64
6.2mm	0.2441	8mm	31.0mm	38.8mm	96mm	CDR-6.2mm-5X	14535	86.64
6.3mm	0.2480	8mm	31.5mm	39.4mm	96mm	CDR-6.3mm-5X	14536	86.64
1/4	0.2500	8mm	0.750	0.938	2.992	CDR-1/4-3X	13188	99.94
1/4	0.2500	8mm	1.250	1.563	3.780	CDR-1/4-5X	13234	130.90
1/4	0.2500	8mm	1.750	2.188	4.567	CDR-1/4-7X	13280	157.80
6.4mm	0.2520	8mm	32.0mm	40.0mm	96mm	CDR-6.4mm-5X	14537	130.90
6.5mm	0.2559	8mm	32.5mm	40.6mm	96mm	CDR-6.5mm-5X	14538	130.90
F	0.2570	8mm	1.285	1.606	3.780	CDR-F-5X	19518	130.90
6.6mm	0.2598	8mm	33.0mm	41.3mm	96mm	CDR-6.6mm-5X	14539	130.90
6.7mm	0.2638	8mm	33.5mm	41.9mm	96mm	CDR-6.7mm-5X	14540	130.90
6.8mm	0.2677	8mm	34.0mm	42.5mm	96mm	CDR-6.8mm-5X	14541	130.90
6.9mm	0.2717	8mm	34.5mm	43.1mm	96mm	CDR-6.9mm-5X	14542	130.90
I	0.2720	8mm	1.360	1.700	3.780	CDR-I-5X	19519	130.90
7mm	0.2756	8mm	21.0mm	26.3mm	76mm	CDR-7mm-3X	13189	99.94
7mm	0.2756	8mm	35.0mm	43.8mm	96mm	CDR-7mm-5X	13235	130.90
7mm	0.2756	8mm	49.0mm	61.3mm	116mm	CDR-7mm-7X	13281	157.80



Speed & Feed: page 164

sizes continued on next page



## 2 FLUTE • 140° POINT COOLANT HOLE DRILL

✓ **Check Stock Online**

SERIES: CDR

DIAMETER D <sub>1</sub>	SHK D <sub>2</sub>	DRILL LENGTH L <sub>2</sub>	FLUTE LENGTH L <sub>3</sub>	OAL L <sub>1</sub>	PART NAME	nAco EDP	nAco Price	
9/32	0.2813	8mm	0.844	1.055	2.992	CDR-9/32-3X	13190	99.94
9/32	0.2813	8mm	1.406	1.758	3.780	CDR-9/32-5X	13236	130.90
9/32	0.2813	8mm	1.969	2.461	4.567	CDR-9/32-7X	13282	157.80
7.5mm	0.2953	8mm	37.5mm	46.9mm	96mm	CDR-7.5mm-5X	14547	130.90
5/16	0.3125	8mm	0.938	1.172	2.992	CDR-5/16-3X	13191	99.94
5/16	0.3125	8mm	1.563	1.953	3.780	CDR-5/16-5X	13237	130.90
5/16	0.3125	8mm	2.188	2.734	4.567	CDR-5/16-7X	13283	157.80
8mm	0.3150	8mm	24.0mm	30.0mm	76mm	CDR-8mm-3X	13192	99.94
8mm	0.3150	8mm	40.0mm	50.0mm	96mm	CDR-8mm-5X	13238	130.90
8mm	0.3150	8mm	56.0mm	70.0mm	116mm	CDR-8mm-7X	13284	157.80
Q	0.3320	10mm	1.660	2.075	4.252	CDR-Q-5X	19520	160.07
8.5mm	0.3346	10mm	42.5mm	53.1mm	108mm	CDR-8.5mm-5X	14556	160.07
11/32	0.3438	10mm	1.031	1.289	3.504	CDR-11/32-3X	13193	142.86
11/32	0.3438	10mm	1.719	2.148	4.252	CDR-11/32-5X	13239	160.07
11/32	0.3438	10mm	2.406	3.008	5.512	CDR-11/32-7X	13285	209.80
9mm	0.3543	10mm	27.0mm	33.8mm	89mm	CDR-9mm-3X	13194	142.86
9mm	0.3543	10mm	45.0mm	56.3mm	108mm	CDR-9mm-5X	13240	160.07
9mm	0.3543	10mm	63.0mm	78.8mm	140mm	CDR-9mm-7X	13286	209.80
U	0.3680	10mm	1.84	2.300	4.252	CDR-U-5X	19521	160.07
9.5mm	0.3740	10mm	47.5mm	59.4mm	108mm	CDR-9.5mm-5X	14561	160.07
3/8	0.375	10mm	1.125	1.406	3.504	CDR-3/8-3X	13195	142.86
3/8	0.375	10mm	1.875	2.344	4.252	CDR-3/8-5X	13241	160.07
3/8	0.375	10mm	2.625	3.281	5.512	CDR-3/8-7X	13287	209.80
25/64	0.3906	10mm	1.953	2.441	4.252	CDR-25/64-5X	19522	160.07
10mm	0.3937	10mm	30.0mm	37.5mm	89mm	CDR-10mm-3X	13196	142.86
10mm	0.3937	10mm	50.0mm	62.5mm	108mm	CDR-10mm-5X	13242	160.07
10mm	0.3937	10mm	70.0mm	87.5mm	140mm	CDR-10mm-7X	13288	209.80
10.5mm	0.4134	12mm	52.5mm	65.6mm	132mm	CDR-10.5mm-5X	14562	231.97
27/64	0.4219	12mm	2.110	2.707	5.197	CDR-27/64-5X	14563	231.97
11mm	0.4331	12mm	33.0mm	41.3mm	102mm	CDR-11mm-3X	13197	173.88
11mm	0.4331	12mm	55.0mm	68.8mm	132mm	CDR-11mm-5X	13243	231.97
11mm	0.4331	12mm	77.0mm	96.3mm	162mm	CDR-11mm-7X	13289	272.16
7/16	0.4375	12mm	1.313	1.641	4.016	CDR-7/16-3X	13198	173.88
7/16	0.4375	12mm	2.188	2.734	5.197	CDR-7/16-5X	13244	231.97
7/16	0.4375	12mm	3.063	3.828	6.378	CDR-7/16-7X	13290	272.16
11.5mm	0.4528	12mm	57.5mm	71.9mm	132mm	CDR-11.5mm-5X	14564	231.97
29/64	0.4621	12mm	2.311	2.888	5.197	CDR-29/64-5X	19524	231.97
12mm	0.4724	12mm	36.0mm	45mm	102mm	CDR-12mm-3X	13199	173.88
12mm	0.4724	12mm	60.0mm	75mm	132mm	CDR-12mm-5X	13245	231.97
12mm	0.4724	12mm	84.0mm	105mm	162mm	CDR-12mm-7X	13291	272.16
12.5mm	0.4921	14mm	37.5mm	46.9mm	102mm	CDR-12.5mm-3X	11773	227.93
12.5mm	0.4921	14mm	62.5mm	78.1mm	138mm	CDR-12.5mm-5X	14565	301.98
1/2	0.5000	14mm	1.500	1.875	4.016	CDR-1/2-3X	13200	227.93
1/2	0.5000	14mm	2.500	3.125	5.433	CDR-1/2-5X	13246	301.98
1/2	0.5000	14mm	3.500	4.375	6.457	CDR-1/2-7X	13292	335.96

Speed & Feed: page 164

sizes continued on next page

2 FLUTE • 140° POINT COOLANT HOLE DRILL

SERIES: CDR

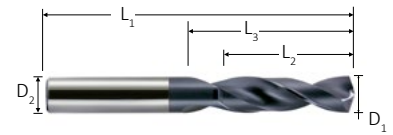
✓ Check Stock Online

DIAMETER D <sub>1</sub>		SHK D <sub>2</sub>	DRILL LENGTH L <sub>2</sub>	FLUTE LENGTH L <sub>3</sub>	OAL L <sub>1</sub>	PART NAME	nACo EDP	nACo Price
13mm	0.5118	14mm	39.0mm	48.8mm	102mm	CDR-13mm-3X	13201	227.93
13mm	0.5118	14mm	65.0mm	81.3mm	138mm	CDR-13mm-5X	13247	301.98
13mm	0.5118	14mm	91.0mm	113.8mm	164mm	CDR-13mm-7X	13293	335.96
14mm	0.5512	14mm	39.0mm	52.5mm	102mm	CDR-14mm-3X	13202	235.98
14mm	0.5512	14mm	70.0mm	87.5mm	138mm	CDR-14mm-5X	13248	301.98
14mm	0.5512	14mm	98.0mm	122.5mm	175mm	CDR-14mm-7X	13294	359.94
9/16	0.5625	16mm	1.688	2.109	4.252	CDR-9/16-3X	13203	275.88
9/16	0.5625	16mm	2.813	3.516	5.906	CDR-9/16-5X	13249	367.23
9/16	0.5625	16mm	3.938	4.922	7.480	CDR-9/16-7X	13295	506.53
15mm	0.5906	16mm	45.0mm	56.3mm	108mm	CDR-15mm-3X	13204	275.88
15mm	0.5906	16mm	75.0mm	93.8mm	150mm	CDR-15mm-5X	13250	367.23
15mm	0.5906	16mm	105.0mm	131.3mm	190mm	CDR-15mm-7X	13296	506.53
5/8	0.6250	16mm	1.875	2.344	4.252	CDR-5/8-3X	13205	275.88
5/8	0.6250	16mm	3.125	3.906	5.906	CDR-5/8-5X	13251	367.23
5/8	0.6250	16mm	4.375	5.469	7.480	CDR-5/8-7X	13297	506.53
16mm	0.6299	16mm	48.0mm	60mm	108mm	CDR-16mm-3X	13206	275.88
16mm	0.6299	16mm	80.0mm	100mm	150mm	CDR-16mm-5X	13252	367.23
16mm	0.6299	16mm	112.0mm	140mm	190mm	CDR-16mm-7X	13298	506.53
17mm	0.6693	18mm	51.0mm	63.8mm	124mm	CDR-17mm-3X	13207	403.89
17mm	0.6693	18mm	85.0mm	106.3mm	164mm	CDR-17mm-5X	13253	482.21
17mm	0.6693	18mm	119.0mm	148.8mm	215mm	CDR-17mm-7X	13299	699.51
18mm	0.7087	18mm	54.0mm	67.5mm	124mm	CDR-18mm-3X	13208	403.89
18mm	0.7087	18mm	90.0mm	112.5mm	164mm	CDR-18mm-5X	13254	482.21
18mm	0.7087	18mm	126.0mm	157.5mm	215mm	CDR-18mm-7X	13300	731.29
19mm	0.7480	20mm	57.0mm	71.3mm	128mm	CDR-19mm-3X	13209	487.88
19mm	0.7480	20mm	95.0mm	118.8mm	178mm	CDR-19mm-5X	13255	703.72
19mm	0.7480	20mm	133.0mm	166.3mm	228mm	CDR-19mm-7X	13301	874.37
3/4	0.7500	20mm	2.250	2.813	5.039	CDR-3/4-3X	13210	487.88
3/4	0.7500	20mm	3.750	4.688	7.008	CDR-3/4-5X	13256	703.72
3/4	0.7500	20mm	5.250	6.563	8.976	CDR-3/4-7X	13302	874.37
20mm	0.7874	20mm	60.0mm	75mm	128mm	CDR-20mm-3X	13211	487.88
20mm	0.7874	20mm	100.0mm	125mm	178mm	CDR-20mm-5X	13257	703.72
20mm	0.7874	20mm	140.0mm	175mm	228mm	CDR-20mm-7X	13303	874.37

Speed & Feed: page 164







## 2 FLUTE • 140° POINT WITHOUT COOLANT HOLE DRILL

Carbide	2	Center Cutting	25°	nAco	+0.000 -0.005	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** ✓ **Check Stock Online**

DIAMETER D <sub>1</sub>	SHK D <sub>2</sub>	DRILL LENGTH L <sub>2</sub>	FLUTE LENGTH L <sub>3</sub>	OAL L <sub>1</sub>	PART NAME	nAco EDP	nAco Price	
3/64	0.0469	1/8	0.2810	0.3520	1-1/2	MDR-3/64	14257	20.61
# 55	0.0520	1/8	0.3090	0.3870	1-1/2	MDR-55	14258	20.61
# 54	0.0550	1/8	0.3250	0.4060	1-1/2	MDR-54	14259	20.65
1.5mm	0.0591	3mm	8.8mm	11mm	38mm	MDR-1.5MM	14309	19.76
# 53	0.0595	1/8	0.3480	0.4350	1-1/2	MDR-53	14260	20.65
1/16	0.0625	1/8	0.3630	0.4530	1-1/2	MDR-1/16	10292	17.66
# 52	0.0635	1/8	0.3650	0.4560	1-1/2	MDR-52	14261	20.72
# 50	0.0700	1/8	0.3990	0.4990	2	MDR-50	14262	20.76
# 49	0.0730	1/8	0.4120	0.5160	2	MDR-49	14263	20.78
# 48	0.0760	1/8	0.4260	0.5320	2	MDR-48	14264	20.84
5/64	0.0781	1/8	0.4330	0.5420	2	MDR-5/64	14265	20.84
2mm	0.0787	3mm	10.9mm	13.5mm	38mm	MDR-2MM	14310	19.95
# 46	0.0810	1/8	0.4460	0.5570	2	MDR-46	14266	20.84
# 45	0.0820	1/8	0.4470	0.5590	2	MDR-45	14267	20.99
# 44	0.0860	1/8	0.4640	0.5810	2	MDR-44	14268	21.03
# 43	0.0890	1/8	0.4760	0.5950	2	MDR-43	14269	21.06
# 42	0.0935	1/8	0.4960	0.6190	2	MDR-42	14270	21.12
3/32	0.0938	1/8	0.4920	0.6160	2	MDR-3/32	10294	18.19
# 41	0.0960	1/8	0.4990	0.6240	2	MDR-41	14271	21.17
# 40	0.0980	1/8	0.5050	0.6310	2	MDR-40	14272	21.27
2.5mm	0.0984	3mm	12.5mm	15.5mm	38mm	MDR-2.5MM	14311	20.35
# 39	0.0995	1/8	0.5070	0.6340	2	MDR-39	14273	21.27
# 38	0.1015	1/8	0.5130	0.6410	2	MDR-38	14274	21.43
# 37	0.1040	1/8	0.5200	0.6500	2	MDR-37	14275	21.44
# 36	0.1065	1/8	0.5270	0.6590	2	MDR-36	14276	21.51
7/64	0.1094	1/8	0.5360	0.6700	2	MDR-7/64	14277	21.50
#32	0.1160	1/8	0.5630	0.7040	2	MDR-32	14566	21.50
3mm	0.1181	3mm	14.1mm	17.5mm	38mm	MDR-3MM	10290	20.79
# 31	0.1200	1/8	0.5820	0.7280	2	MDR-31	14278	21.75
1/8	0.1250	1/8	0.6000	0.7500	2	MDR-1/8	14279	21.50
# 30	0.1285	3/16	0.6100	0.7630	2	MDR-30	14280	29.01
# 29	0.1360	3/16	0.6390	0.7990	2	MDR-29	14281	29.08
3.5mm	0.1378	4mm	15.6mm	19.5mm	50mm	MDR-3.5MM	14312	29.20
# 28	0.1405	3/16	0.6530	0.8170	2	MDR-28	14282	29.31
9/64	0.1406	3/16	0.6470	0.8080	2	MDR-9/64	14283	28.87
# 25	0.1495	3/16	0.6800	0.8500	2.5	MDR-25	14284	29.49
5/32	0.1562	3/16	0.7030	0.8790	2.5	MDR-5/32	14285	29.01
4mm	0.1575	4mm	16.8mm	21mm	50mm	MDR-4MM	14313	29.82
# 21	0.1590	3/16	0.7080	0.8840	2.5	MDR-21	14286	29.98

Speed & Feed:  
page 164

sizes continued on next page

2 FLUTE • 140° POINT WITHOUT COOLANT HOLE DRILL

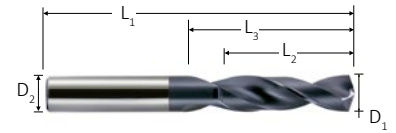
SERIES: MDR **✓ Check Stock Online**

DIAMETER D <sub>1</sub>	SHK D <sub>2</sub>	DRILL LENGTH L <sub>2</sub>	FLUTE LENGTH L <sub>3</sub>	OAL L <sub>1</sub>	PART NAME	nACo EDP	nACo Price	
# 20	0.1610	3/16	0.6440	0.8050	2.5	MDR-20	14287	30.28
11/64	0.1719	3/16	0.6880	0.8600	2.5	MDR-11/64	14288	30.24
16	0.1770	3/16	0.7080	0.8850	2.5	MDR-16	14289	30.87
4.5mm	0.1772	5mm	18mm	22.5mm	50mm	MDR-4.5MM	14314	30.76
3/16	0.1875	3/16	0.7500	0.9380	2.5	MDR-3/16	14290	30.24
11	0.1910	1/4	0.7640	0.9550	2.5	MDR-11	14291	37.01
10	0.1935	1/4	0.7740	0.9680	2.5	MDR-10	14292	37.01
5mm	0.1969	5mm	20mm	25mm	50mm	MDR-5MM	14315	38.56
7	0.2010	1/4	0.8040	1.0050	2.5	MDR-7	14293	37.53
13/64	0.2031	1/4	0.8120	1.0160	2.5	MDR-13/64	14294	37.14
5	0.2055	1/4	0.8220	1.0280	2.5	MDR-5	14295	37.87
3	0.2130	1/4	0.8520	1.0650	2.5	MDR-3	14296	38.27
7/32	0.2188	1/4	0.8750	1.0940	2.5	MDR-7/32	14297	37.14
15/64	0.2344	1/4	0.9380	1.1720	2.5	MDR-15/64	14298	38.99
6mm	0.2362	6mm	24mm	30mm	63mm	MDR-6MM	14316	40.47
1/4	0.2500	1/4	1	1.25	2.5	MDR-1/4	10296	38.48
6.5mm	0.2559	8mm	26mm	33mm	75mm	MDR-6.5MM	19810	54.91
F	0.2570	5/16	1.0280	1.2850	3	MDR-F	14299	54.58
17/64	0.2656	5/16	1.0620	1.3280	3	MDR-17/64	14300	55.15
I	0.2720	5/16	1.0880	1.3600	3	MDR-I	14301	55.40
7mm	0.2756	8mm	28mm	35mm	75mm	MDR-7MM	14317	54.91
9/32	0.2812	5/16	1.1250	1.4060	3	MDR-9/32	14302	55.59
7.5mm	0.2953	8mm	30mm	38mm	75mm	MDR-7.5MM	19811	70.87
19/64	0.2969	5/16	1.1880	1.4840	3	MDR-19/64	19793	55.59
5/16	0.3125	5/16	1.2500	1.5630	3	MDR-5/16	10298	51.11
8mm	0.3150	8mm	32mm	40mm	75mm	MDR-8MM	14318	70.87
21/64	0.3281	3/8	1.3130	1.5750	3	MDR-21/64	19794	73.74
Q	0.3320	3/8	1.3280	1.5940	3	MDR-Q	19795	73.74
8.5mm	0.3346	10mm	34mm	41mm	100mm	MDR-8.5MM	19812	74.67
11/32	0.3438	3/8	1.3750	1.6500	3	MDR-11/32	14303	73.74
9mm	0.3543	10mm	36mm	43mm	100mm	MDR-9MM	14319	74.67
23/64	0.3594	3/8	1.4380	1.7250	3	MDR-23/64	19796	77.48
U	0.3680	3/8	1.4720	1.7660	3	MDR-U	19797	77.48
9.5mm	0.3740	10mm	38mm	45mm	100mm	MDR-9.5MM	19813	103.01
3/8	0.3750	3/8	1.5000	1.8	3	MDR-3/8	10302	77.48
25/64	0.3906	7/16	1.5630	1.9	4	MDR-25/64	19798	104.26
10mm	0.3937	10mm	40mm	47mm	100mm	MDR-10MM	14320	103.01
13/32	0.4063	7/16	1.6250	1.8690	4	MDR-13/32	19799	104.26
10.5mm	0.4134	12mm	42mm	48mm	100mm	MDR-10.5MM	19814	132.34
27/64	0.4219	7/16	1.6880	1.9410	4	MDR-27/64	19800	104.26
11mm	0.4331	12mm	44mm	49mm	100mm	MDR-11MM	19815	132.34
7/16	0.4375	7/16	1.7500	2.0130	4	MDR-7/16	14304	104.26
11.5mm	0.4528	12mm	46mm	51mm	100mm	MDR-11.5MM	19816	132.34
29/64	0.4531	1/2	1.8130	1.9940	4	MDR-29/64	19801	121.43
12mm	0.4724	12mm	48mm	53mm	100mm	MDR-12MM	14321	132.34
31/64	0.4844	1/2	1.9380	2.1310	4	MDR-31/64	19802	121.43



Speed & Feed: page 164

sizes continued on next page



## 2 FLUTE • 140° POINT WITHOUT COOLANT HOLE DRILL

✓ **Check Stock Online**

SERIES: MDR

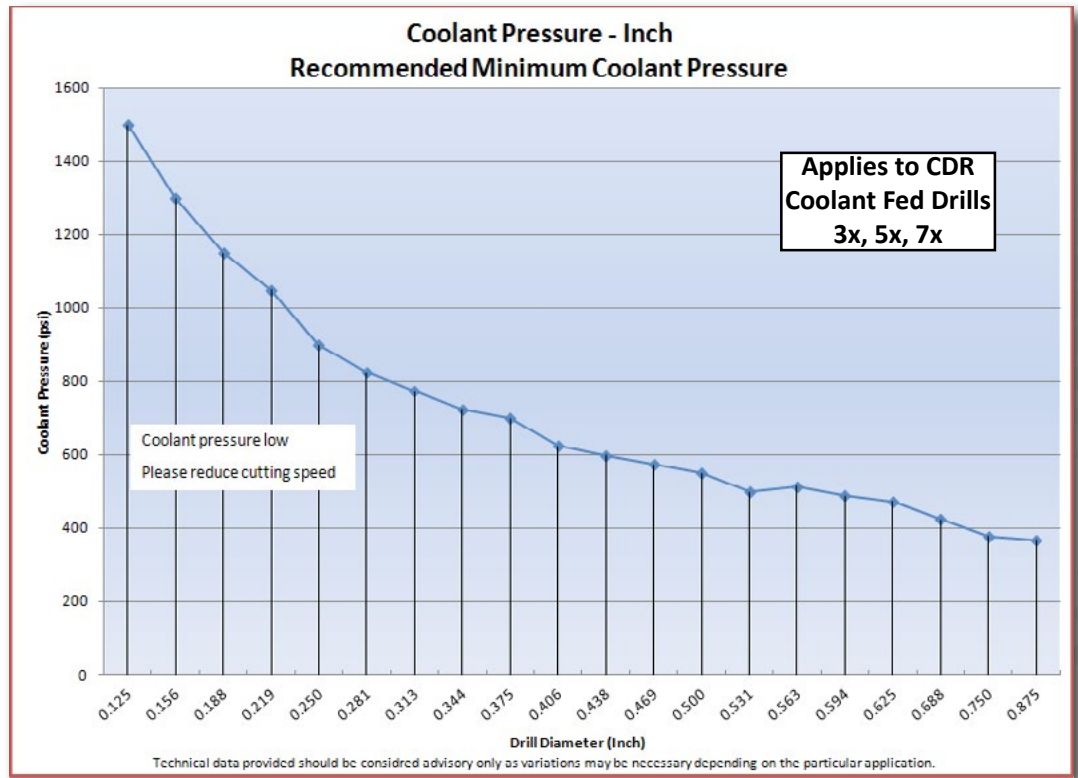


DIAMETER D <sub>1</sub>		SHK D <sub>2</sub>	DRILL LENGTH L <sub>2</sub>	FLUTE LENGTH L <sub>3</sub>	OAL L <sub>1</sub>	PART NAME	nACo EDP	nACo Price
12.5mm	0.4921	14mm	50mm	56mm	100mm	MDR-12.5MM	19817	169.03
1/2	0.5000	1/2	2.0000	2.2	4	MDR-1/2	14305	121.43
13mm	0.5118	14mm	52mm	58mm	100mm	MDR-13MM	19818	169.03
33/64	0.5156	9/16	2.0630	2.2690	4	MDR-33/64	19803	169.03
17/32	0.5313	9/16	2.1250	2.3380	4	MDR-17/32	19804	169.03
13.5mm	0.5315	14mm	54mm	60mm	100mm	MDR-13.5MM	19819	169.03
35/64	0.5469	9/16	2.1880	2.4060	4	MDR-35/64	19805	169.03
14mm	0.5512	14mm	56mm	62mm	100mm	MDR-14MM	19151	169.03
9/16	0.5625	9/16	2.2500	2.4750	4	MDR-9/16	14306	169.03
37/64	0.5781	5/8	2.3130	2.5440	5	MDR-37/64	19806	203.84
15mm	0.5906	16mm	60mm	66mm	127mm	MDR-15MM	19152	203.84
19/32	0.5938	5/8	2.3750	2.6130	5	MDR-19/32	19807	203.84
5/8	0.6250	5/8	2.5000	2.7500	5	MDR-5/8	14307	203.84
16mm	0.6299	16mm	64mm	70mm	127mm	MDR-16MM	19153	285.08
21/32	0.6563	3/4	2.4280	2.6710	5	MDR-21/32	19808	285.08
11/16	0.6875	3/4	2.5440	2.7980	5	MDR-11/16	19809	285.08
3/4	0.7500	3/4	2.7750	3.0530	5	MDR-3/4	14308	285.08

**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



## Technical Support

Our field engineers are available for real time AND face-to-face application work. Most applications can be made more productive, with our help. Our field engineers can be a valuable resource for you and your company. Visit our Technical Blog today at [www.melintool.com](http://www.melintool.com) or contact a specialist direct at 216-362-4200.

### Application Optimization

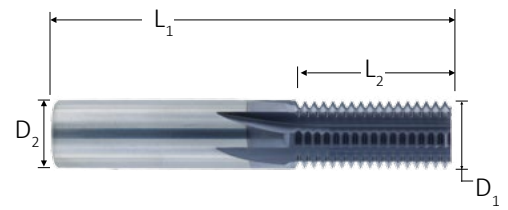
Melin wants to help you get the job done **FASTER, EASIER, & more ACCURATELY.** We are adding a valuable service by providing our users access to our field application **EXPERTS.** Contact your local Melin Distributor and let Melin help you

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





## MULTI FLUTE • 60° STRAIGHT FLUTE, UN THREAD MILLS



Carbide	MULTI FLUTES	0°	AlTiN	60°		HRC <52	<table border="1"> <tr> <td>P</td> <td>K</td> </tr> <tr> <td>M</td> <td>S</td> </tr> <tr> <td>H</td> <td>N</td> </tr> </table>	P	K	M	S	H	N
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 [✓ Check Stock Online](#)

MIN THREAD DIA./PITCH	CUTTER DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	FLUTE	PART NAME	AlTiN EDP	AlTiN Price
6-32	0.085	1/8	7/32	2	2	TM-6-32-S	17500	106.67
8-32	0.120	1/8	1/4	2	3	TM-8-32-S	17501	106.67
10-24	0.140	3/16	5/16	2-1/2	3	TM-10-24-S	17502	117.78
10-28	0.140	3/16	5/16	2-1/2	3	TM-10-28-S	17503	117.78
10-32	0.140	3/16	5/16	2-1/2	3	TM-10-32-S	17504	117.78
1/4-20	0.180	3/16	1/2	2-1/2	3	TM-1/4-20-S	17505	128.89
1/4-28	0.180	3/16	1/2	2-1/2	3	TM-1/4-28-S	17506	128.89
1/4-32	0.180	3/16	1/2	2-1/2	3	TM-1/4-32-S	17507	128.89
5/16-18	0.235	1/4	5/8	2-1/2	3	TM-5/16-18-S	17508	138.89
5/16-24	0.235	1/4	5/8	2-1/2	3	TM-5/16-24-S	17509	138.89
5/16-32	0.235	1/4	5/8	2-1/2	3	TM-5/16-32-S	17510	138.89
3/8-16	0.300	5/16	3/4	3	4	TM-3/8-16-S	17511	165.56
3/8-24	0.300	5/16	3/4	3	4	TM-3/8-24-S	17512	165.56
7/16-14	0.345	3/8	3/4	3-1/2	4	TM-7/16-14-S	17513	183.33
7/16-20	0.345	3/8	3/4	3-1/2	4	TM-7/16-20-S	17514	183.33
1/2-13	0.370	3/8	7/8	3-1/2	4	TM-1/2-13-S	17515	183.33
1/2-20	0.370	3/8	7/8	3-1/2	4	TM-1/2-20-S	17516	183.33
1/2-28	0.370	3/8	7/8	3-1/2	4	TM-1/2-28-S	17517	183.33
9/16-12	0.450	1/2	7/8	3-1/2	4	TM-9/16-12-S	17518	221.11
9/16-18	0.450	1/2	7/8	3-1/2	4	TM-9/16-18-S	17519	221.11
5/8-10	0.490	1/2	1-1/4	3-1/2	6	TM-5/8-10-S	17520	221.11
5/8-11	0.490	1/2	1-1/4	3-1/2	6	TM-5/8-11-S	17521	221.11
5/8-12	0.490	1/2	1-1/4	3-1/2	6	TM-5/8-12-S	17522	221.11
5/8-18	0.490	1/2	1-1/4	3-1/2	6	TM-5/8-18-S	17523	221.11
3/4-12	0.600	5/8	1-1/4	3-1/2	6	TM-3/4-12-S	17524	276.67
3/4-16	0.600	5/8	1-1/4	3-1/2	6	TM-3/4-16-S	17525	276.67
3/4-20	0.600	5/8	1-1/4	3-1/2	6	TM-3/4-20-S	17526	276.67
7/8-9	0.620	5/8	1-1/4	3-1/2	6	TM-7/8-9-S	17527	276.67
7/8-12	0.620	5/8	1-1/4	3-1/2	6	TM-7/8-12-S	17528	276.67
7/8-14	0.620	5/8	1-1/4	3-1/2	6	TM-7/8-14-S	17529	276.67
7/8-16	0.620	5/8	1-1/4	3-1/2	6	TM-7/8-16-S	17530	276.67
7/8-20	0.620	5/8	1-1/4	3-1/2	6	TM-7/8-20-S	17531	276.67
1-8	0.735	3/4	1-3/8	5	4	TM-1-8-S	17532	366.27
1-12	0.735	3/4	1-3/8	5	4	TM-1-12-S	17533	366.27
1-16	0.735	3/4	1-3/8	5	4	TM-1-16-S	17534	366.27
1-20	0.735	3/4	1-3/8	5	4	TM-1-20-S	17535	366.27



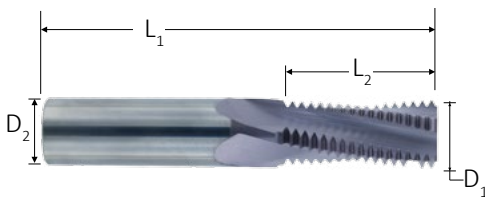
COOLANT HOLE option available upon request.

(Several sizes stocked)

Call Customer Service Today

Speed & Feed: page 166





MULTI FLUTE • 60° HELICAL FLUTE, UN THREAD MILLS

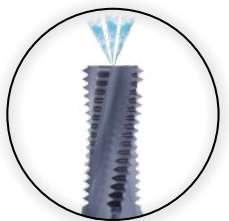
Carbide MULTI FLUTES 15° AITIN 60° HRC <52 P M H K S N

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

SERIES: TM-\_\_-H ✓ Check Stock Online



MIN THREAD DIA./PITCH	CUTTER DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	FLUTE	PART NAME	AITIN EDP	AITIN Price
2-56	0.065	1/8	0.125	2	3	TM-2-56-H	14647	112.54
3-48	0.075	1/8	0.167	2	3	TM-3-48-H	14649	111.47
4-40	0.085	1/8	0.175	2	3	TM-4-40-H	14650	110.40
6-32	0.085	1/8	7/32	2	3	TM-6-32-H	17536	106.67
8-32	0.120	1/8	1/4	2	3	TM-8-32-H	17537	106.67
10-24	0.140	3/16	5/16	2-1/2	3	TM-10-24-H	17538	117.78
10-28	0.140	3/16	5/16	2-1/2	3	TM-10-28-H	17539	117.78
10-32	0.140	3/16	5/16	2-1/2	3	TM-10-32-H	17540	117.78
1/4-20	0.180	3/16	1/2	2-1/2	3	TM-1/4-20-H	17541	128.89
1/4-28	0.180	3/16	1/2	2-1/2	3	TM-1/4-28-H	17542	128.89
1/4-32	0.180	3/16	1/2	2-1/2	3	TM-1/4-32-H	17543	128.89
5/16-18	0.235	1/4	5/8	2-1/2	3	TM-5/16-18-H	17544	138.89
5/16-24	0.235	1/4	5/8	2-1/2	3	TM-5/16-24-H	17545	138.89
5/16-32	0.235	1/4	5/8	2-1/2	3	TM-5/16-32-H	17546	138.89
3/8-16	0.300	5/16	3/4	3	4	TM-3/8-16-H	17547	165.56
3/8-24	0.300	5/16	3/4	3	4	TM-3/8-24-H	17548	165.56
7/16-14	0.345	3/8	3/4	3-1/2	4	TM-7/16-14-H	17549	183.33
7/16-20	0.345	3/8	3/4	3-1/2	4	TM-7/16-20-H	17550	183.33
1/2-13	0.370	3/8	7/8	3-1/2	4	TM-1/2-13-H	17551	183.33
1/2-20	0.370	3/8	7/8	3-1/2	4	TM-1/2-20-H	17552	183.33
1/2-28	0.370	3/8	7/8	3-1/2	4	TM-1/2-28-H	17553	183.33
9/16-12	0.450	1/2	7/8	3-1/2	4	TM-9/16-12-H	17554	221.11
9/16-18	0.450	1/2	7/8	3-1/2	4	TM-9/16-18-H	17555	221.11
5/8-10	0.490	1/2	1-1/4	3-1/2	4	TM-5/8-10-H	17556	221.11
5/8-11	0.490	1/2	1-1/4	3-1/2	4	TM-5/8-11-H	17557	221.11
5/8-12	0.490	1/2	1-1/4	3-1/2	4	TM-5/8-12-H	17558	221.11
5/8-18	0.490	1/2	1-1/4	3-1/2	4	TM-5/8-18-H	17559	221.11
3/4-12	0.600	5/8	1-1/4	3-1/2	4	TM-3/4-12-H	17560	276.67
3/4-16	0.600	5/8	1-1/4	3-1/2	4	TM-3/4-16-H	17561	276.67
3/4-20	0.600	5/8	1-1/4	3-1/2	4	TM-3/4-20-H	17562	276.67
7/8-9	0.620	5/8	1-1/4	3-1/2	4	TM-7/8-9-H	17563	276.67
7/8-12	0.620	5/8	1-1/4	3-1/2	4	TM-7/8-12-H	17564	276.67
7/8-14	0.620	5/8	1-1/4	3-1/2	4	TM-7/8-14-H	17565	276.67
7/8-16	0.620	5/8	1-1/4	3-1/2	4	TM-7/8-16-H	17566	276.67
7/8-20	0.620	5/8	1-1/4	3-1/2	4	TM-7/8-20-H	17567	276.67
1-8	0.735	3/4	1-3/8	5	4	TM-1-8-H	17568	366.27
1-12	0.735	3/4	1-3/8	5	4	TM-1-12-H	17569	366.27
1-16	0.735	3/4	1-3/8	5	4	TM-1-16-H	17570	366.27
1-20	0.735	3/4	1-3/8	5	4	TM-1-20-H	17571	366.27



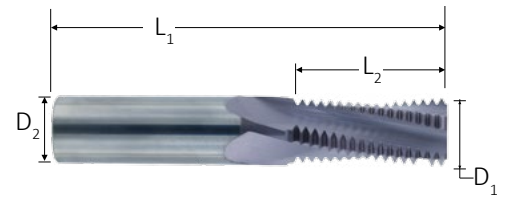
COOLANT HOLE option available upon request.

(Several sizes stocked)

Call Customer Service Today

Speed & Feed: page 166

## MULTI FLUTE • 60° HELICAL FLUTE, UN THREAD MILLS



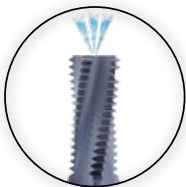
Carbide	MULTI FLUTES	 15°	AlTiN	 60°		HRC <52	<table border="1"><tr><td>P</td><td>K</td></tr><tr><td>M</td><td>S</td></tr><tr><td>H</td><td>N</td></tr></table>	P	K	M	S	H	N
P	K												
M	S												
H	N												



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

**SERIES: TM-M\_\_-H** ✓ **Check Stock Online**

MIN THREAD DIA./PITCH	CUTTER DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	FLUTE	PART NAME	AlTiN EDP	AlTiN Price
m3-.5	2.2mm	3mm	6mm	57mm	2	TM-M3-.5-H	17585	114.44
m3.5-.6	2.4mm	3mm	6mm	57mm	2	TM-M3.5-.6-H	17586	114.44
m4-.7	2.9mm	3mm	6.5mm	57mm	2	TM-M4-.7-H	17587	114.44
m4.5-.75	3.1mm	4mm	6.5mm	63mm	2	TM-M4.5-.75-H	17588	132.78
m5-.8	3.7mm	6mm	8mm	63mm	3	TM-M5-.8-H	17589	144.33
m6-1	4.3mm	6mm	12mm	63mm	3	TM-M6-1-H	17590	144.33
m8-1	5.9mm	6mm	16mm	63mm	3	TM-M8-1-H	17591	155.33
m8-1.25	5.9mm	6mm	16mm	63mm	3	TM-M8-1.25-H	17592	155.33
m10-1.25	7.6mm	8mm	19mm	63mm	4	TM-M10-1.25-H	17593	199.18
m10-1.5	7.6mm	8mm	19mm	63mm	4	TM-M10-1.5-H	17594	199.18
m12-1.25	9.4mm	10mm	22mm	70mm	4	TM-M12-1.25-H	17595	206.00
m12-1.75	9.4mm	10mm	22mm	70mm	4	TM-M12-1.75-H	17596	206.00
m14-1.25	11.4mm	12mm	24mm	76mm	4	TM-M14-1.25-H	17597	231.67
m14-1.5	11.4mm	12mm	24mm	76mm	4	TM-M14-1.5-H	17598	231.67
m14-2	11.4mm	12mm	24mm	76mm	4	TM-M14-2-H	17599	231.67
m18-2.5	12.7mm	16mm	30mm	89mm	4	TM-M18-2.5-H	17600	274.71
m20-1.5	15.7mm	16mm	30mm	89mm	4	TM-M20-1.5-H	17601	297.58
m20-2	15.7mm	16mm	30mm	89mm	4	TM-M20-2-H	17602	297.58
m24-1.5	19.1mm	20mm	40mm	100mm	4	TM-M24-1.5-H	17603	366.27
m24-2	19.1mm	20mm	40mm	100mm	4	TM-M24-2-H	17604	366.27
m24-2.5	19.1mm	20mm	40mm	100mm	4	TM-M24-2.5-H	17605	366.27
m24-3	19.1mm	20mm	40mm	100mm	4	TM-M24-3-H	17606	366.27



COOLANT HOLE option available upon request.

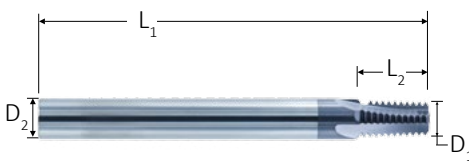
(Several sizes stocked)

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](http://www.melintool.com/threadmills) to download our software.



MULTI FLUTE • STRAIGHT FLUTE, NPT THREAD MILLS

SERIES: TM-\_\_-NPT-S ✓ Check Stock Online

Carbide MULTI FLUTES 0° AITiN 60° HRC <52

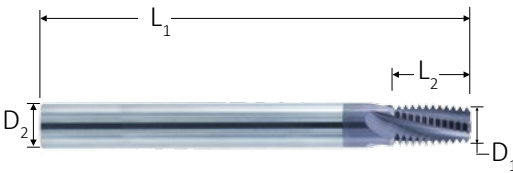
P	K
M	S
H	N

MIN THREAD DIA./PITCH	CUTTER DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	FLUTE	PART NAME	AITiN EDP	AITiN Price
1/16-27NPT	0.218	1/4	1/2	2-1/2	4	TM-1/16-27NPT-S	17572	141.09
1/8-27NPT	0.300	5/16	19/32	3	4	TM-1/8-27NPT-S	17573	176.53
1/4-18NPT	0.360	3/8	5/8	3-1/2	4	TM-1/4-18NPT-S	17574	194.29
3/8-18NPT	0.425	7/16	3/4	4	4	TM-3/8-18NPT-S	17575	215.44
1/2-14NPT	0.490	1/2	1	4	6	TM-1/2-14NPT-S	17576	264.89
1-11.5NPT	0.620	5/8	1-1/8	4	6	TM-1-11.5NPT-S	17577	450.19
2.5-8NPT	0.990	1	1-1/2	5	6	TM-2.5-8NPT-S	17578	450.19

Speed & Feed: page 166



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



MULTI FLUTE • HELICAL FLUTE, NPT THREAD MILLS

SERIES: TM-\_\_NPT-H ✓ Check Stock Online

Carbide MULTI FLUTES 15° AITiN 60° HRC <52

P	K
M	S
H	N

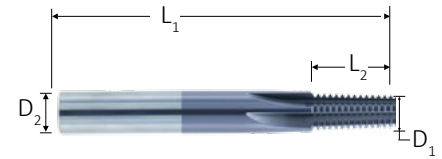
MIN THREAD DIA./PITCH	CUTTER DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	FLUTE	PART NAME	AITiN EDP	AITiN Price
1/16-27NPT	0.218	1/4	1/2	2-1/2	3	TM-1/16-27NPT-H	17579	141.09
1/8-27NPT	0.300	5/16	19/32	3	3	TM-1/8-27NPT-H	17580	176.53
1/4-18NPT	0.360	3/8	5/8	3-1/2	4	TM-1/4-18NPT-H	17581	194.29
3/8-18NPT	0.425	7/16	3/4	4	4	TM-3/8-18NPT-H	17582	215.44
1/2-14NPT	0.490	1/2	1	4	4	TM-1/2-14NPT-H	17583	264.89
1-11.5NPT	0.620	5/8	1-1/8	4	4	TM-1-11.5NPT-H	17584	450.19

Speed & Feed: page 166



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





## MULTI FLUTE • STRAIGHT FLUTE, NPTF THREAD MILLS

Carbide MULTI FLUTES AITiN 60° HRC <52 

P	K
M	S
H	N

### SERIES: TM-\_\_-NPTF-S ✓ [Check Stock Online](#)



MIN THREAD DIA./PITCH	CUTTER DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	FLUTE	PART NAME	AITiN EDP	AITiN Price
1/8-27NPTF	0.300	5/16	19/32	3	4	TM-1/8-27NPTF-S	11607	176.53
1/4-18NPTF	0.360	3/8	5/8	3-1/2	4	TM-1/4-18NPTF-S	11609	194.29
1/2-14NPTF	0.490	1/2	1	4	6	TM-1/2-14NPTF-S	11611	264.89
1-11.5NPTF	0.620	5/8	1-1/8	4	6	TM-1-11.5NPTF-S	11613	450.19

Speed & Feed: page 166



COOLANT HOLE option available upon request.

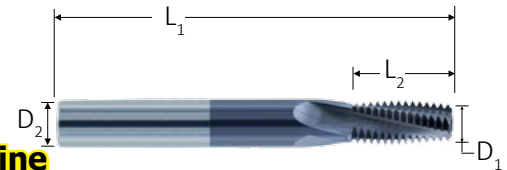
(Several sizes stocked)

[Call Customer Service Today](#)

## MULTI FLUTE • HELICAL FLUTE, NPTF THREAD MILLS

Carbide MULTI FLUTES AITiN 60° HRC <52 

P	K
M	S
H	N



### SERIES: TM-\_\_NPTF-H ✓ [Check Stock Online](#)



MIN THREAD DIA./PITCH	CUTTER DIA D <sub>1</sub>	SHK D <sub>2</sub>	LOC L <sub>2</sub>	OAL L <sub>1</sub>	FLUTE	PART NAME	AITiN EDP	AITiN Price
1/8-27NPTF	0.300	5/16	19/32	3	3	TM-1/8-27NPTF-H	11615	176.53
1/4-18NPTF	0.360	3/8	5/8	3-1/2	4	TM-1/4-18NPTF-H	11616	194.29
1/2-14NPTF	0.490	1/2	1	4	4	TM-1/2-14NPTF-H	11617	264.89
1-11.5NPTF	0.620	5/8	1-1/8	4	4	TM-1-11.5NPTF-H	11619	450.19

Speed & Feed: page 166

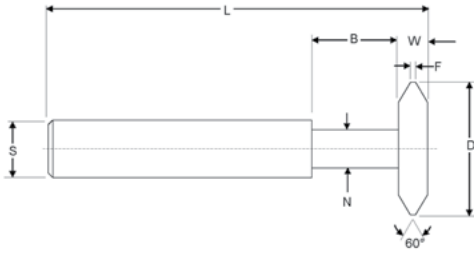


COOLANT HOLE option available upon request.

(Several sizes stocked)

[Call Customer Service Today](#)

MULTI FLUTE • SINGLE FORM THREAD MILLS



Carbide	MULTI FLUTES	0°	Bright AITiN	60°		HRC <52	P M H	K S 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 ✓ **Check Stock Online**

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	AITiN EDP	BRIGHT EDP	AITiN EDP
0.080	0.1875	2	0.026	0.001	0.040	0.250	3	40	64	TM-4-L1	15820	55820	44.12	46.92
0.080	0.1875	2	0.026	0.001	0.040	0.375	3	40	64	TM-4-L2	15824	55824	45.64	48.44
0.098	0.1875	2	0.032	0.001	0.050	0.375	3	32	64	TM-6-L1	15826	55826	42.33	45.13
0.098	0.1875	2	0.032	0.001	0.050	0.500	3	32	64	TM-6-L2	15828	55828	43.85	46.65
0.250	0.2500	2.500	0.062	.0020	0.150	1.000	4	16	48	TM-1/4	12311	52311	44.65	48.50
0.375	0.2500	2.593	0.093	.0020	0.220	0.600	4	12	32	TM-3/8	12313	52313	51.17	56.99
0.500	0.3125	2.625	0.125	.0035	0.295	0.600	5	11	32	TM-1/2	12309	52309	64.21	72.11
0.750	0.3750	2.656	0.156	.0045	----	----	6	8	16	TM-3/4	12312	52312	82.67	98.82
1.000	0.5000	3.187	0.187	.0090	----	----	7	6	12	TM-1	12308	52308	120.16	151.76

Speed & Feed: page 166



# SPEED & FEED INFORMATION

## SERIES: HVMG2

[BACK TO SERIES](#)

MATERIAL	CONDITION	CUTTING DIAMETER							
		3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"	1-1/4"
Aluminum+Aluminum Alloys		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		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

[BACK TO SERIES](#)

MATERIAL	CONDITION	CUTTING DIAMETER							
		3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"	1-1/4"
Aluminum+Aluminum Alloys		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		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

[BACK TO SERIES](#)

MATERIAL	CONDITION	CUTTING DIAMETER							
		3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"	1-1/4"
Aluminum+Aluminum Alloys		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		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

# SPEED & FEED INFORMATION

BACK TO SERIES

SERIES: EXMG

MATERIAL	CONDITION	CUTTING DIAMETER							
		1/8"	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"
<b>Aluminum+Aluminum Alloys</b>		<b>CHIP PER TOOTH</b>							
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
	25-40% Dia. Profiling	.0025	0.003	0.004	0.006	0.008	0.010	0.012	0.014
1700-2000 SFM	Slotting	.0010	0.001	.0020	.0025	.0030	.0040	.0040	0.005
	25-40% Dia. Profiling	.0014	.0014	.0028	.0035	.0042	.0056	.0056	0.007
<b>Copper</b>		<b>ISO-N</b>							
<i>Red Brass, High Lead Brass, Yellow Brass</i>									
<i>C-17200, Navel Brass, A-17, High Silicon Bronze</i>									
800-1100 SFM	Slotting	.0010	0.001	.0020	.0025	.0030	.0040	.0040	0.005
	25-40% Dia. Profiling	.0014	.0014	.0028	.0035	.0042	.0056	.0056	0.007
1000-1200 SFM	Slotting	.0010	0.001	.0020	.0025	.0030	.0040	.0040	0.005
	25-40% Dia. Profiling	.0014	.0014	.0028	.0035	.0042	.0056	.0056	0.007
<b>Copper Alloys</b>		<b>ISO-N</b>							
<i>Low Silicon Bronze, Alum/Bronze</i>									
<i>Beryllium Copper, Nickel Silver, Oxygen-Free Copper</i>									
500-800 SFM	Slotting	.0010	0.001	.0020	.0025	.0030	.0040	.0040	0.005
	25-40% Dia. Profiling	.0014	.0014	.0028	.0035	.0042	.0056	.0056	0.007
600-850 SFM	Slotting	.0010	0.002	0.002	0.003	0.004	0.006	0.008	0.009
	25-40% Dia. Profiling	.0025	0.003	0.004	0.006	0.008	0.010	0.012	0.014
<b>Magnesium</b>		<b>ISO-N</b>							
<i>700-1000 SFM</i>									
<i>750-1300 SFM</i>									
700-1000 SFM	Slotting	.0010	0.002	0.002	0.003	0.004	0.006	0.008	0.009
	25-40% Dia. Profiling	.0025	0.003	0.004	0.006	0.008	0.010	0.012	0.014
750-1300 SFM	Slotting	.0010	0.001	.0020	.0025	.0030	.0040	.0040	0.005
	25-40% Dia. Profiling	.0014	.0014	.0028	.0035	.0042	.0056	.0056	0.007
<b>Plastics</b>		<b>ISO-N</b>							
<i>Acrylics, Polycarbonate, Phenolics</i>									
350-600 SFM	Slotting	.0025	0.003	0.004	0.006	0.008	0.010	0.012	0.014
	25-40% Dia. Profiling	.0010	0.002	0.003	0.004	0.006	0.008	0.010	0.015
400-800 SFM	Slotting	.0010	0.001	.0020	.0025	.0030	.0040	.0040	0.005
	25-40% Dia. Profiling	.0014	.0014	.0028	.0035	.0042	.0056	.0056	0.007

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

**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: AXMG45 & AXMG45-\_\_-B

BACK TO SERIES 

MATERIAL	CONDITION	CUTTING DIAMETER								
		1/8"	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"	1-1/4"
<b>Aluminum+Aluminum Alloys</b>		<b>CHIP PER TOOTH</b>								
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
<b>Copper</b>		<b>CHIP PER TOOTH</b>								
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
1000-1200 SFM	10-25 % Dia. Profiling	0.0014	0.0014	0.0028	.0035	0.0042	0.0056	0.0056	0.007	0.0084
<b>Copper Alloys</b>		<b>CHIP PER TOOTH</b>								
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
<b>Magnesium</b>		<b>CHIP PER TOOTH</b>								
700-1000 SFM										
750-1300 SFM										
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
<b>Plastics</b>		<b>CHIP PER TOOTH</b>								
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

MATERIAL	CONDITION	CUTTING DIAMETER - METRIC								
		3mm	4.5mm	6mm	10mm	12mm	16mm	20mm	25mm	32mm
<b>Aluminum+Aluminum Alloys</b>		<b>CHIP PER TOOTH</b>								
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
<b>Copper</b>		<b>CHIP PER TOOTH</b>								
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
<b>Copper Alloys</b>		<b>CHIP PER TOOTH</b>								
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
<b>Magnesium</b>		<b>CHIP PER TOOTH</b>								
213-305 M/MIN										
228-396 M/MIN										
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
<b>Plastics</b>		<b>CHIP PER TOOTH</b>								
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

**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: GXM5

MATERIAL	CONDITION	CUTTING DIAMETER								
		1/8"	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"	
<b>Aluminum+Aluminum Alloys</b>		<b>CHIP PER TOOTH</b>								
2024-T4/T6, 2014, 6061-T6/T651, 7075-T6 1200-2000 SFM	12 % Max Dia. Profiling	.0025	.0030	.0040	.0060	.0080	.0100	.0120	.0140	
<b>Copper</b>		<b>CHIP PER TOOTH</b>								
Red Brass, High Lead Brass, Yellow Brass C-17200, Naval Brass, A-17, High Silicon Bronze 1000-12000 SFM	12 % Max Dia. Profiling	.0014	.0014	.0028	.0035	.0042	.0056	.0056	.0070	
<b>Copper Alloys</b>		<b>CHIP PER TOOTH</b>								
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	
<b>Magnesium</b>		<b>CHIP PER TOOTH</b>								
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	
<b>Aluminum+Aluminum Alloys</b>		<b>CHIP PER TOOTH</b>								
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	
<b>Copper</b>		<b>CHIP PER TOOTH</b>								
Red Brass, High Lead Brass, Yellow Brass C-17200, Naval 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	
<b>Copper Alloys</b>		<b>CHIP PER TOOTH</b>								
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	
<b>Magnesium</b>		<b>CHIP PER TOOTH</b>								
228-396 M/MIN	12 % Max Dia. Profiling	0.0635	0.0762	0.1016	0.1524	0.2032	0.2540	0.3048	0.3556	

**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: ALMG

BACK TO SERIES 

MATERIAL	CONDITION	CUTTING DIAMETER								
		1/8"	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"	
<b>Aluminum+Aluminum Alloys</b>		<b>CHIP PER TOOTH</b>								
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
<b>Copper</b>		<b>CHIP PER TOOTH</b>								
Red Brass, High Lead Brass, Yellow Brass		Slotting	0.0008	0.0008	0.0016	0.0020	0.0024	0.0032	0.0032	0.0040
C-17200, Navel Brass, A-17, High Silicon Bronze		35 % Dia. Profiling	0.0011	0.0011	0.0022	0.0028	0.0034	0.0045	0.0045	0.0056
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
<b>Copper Alloys</b>		<b>CHIP PER TOOTH</b>								
Low Silicon Bronze, Alum/Bronze		Slotting	0.0008	0.0008	0.0016	0.0020	0.0024	0.0032	0.0032	0.0040
Beryllium Copper, Nickel Silver, Oxygen-Free Copper		35 % Dia. Profiling	0.0011	0.0011	0.0022	0.0028	0.0034	0.0045	0.0045	0.0056
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
<b>Magnesium</b>		<b>CHIP PER TOOTH</b>								
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
<b>Plastics</b>		<b>CHIP PER TOOTH</b>								
Acrylics, Polycarbonate, Phenolics		Slotting	0.0020	0.0024	0.0032	0.0048	0.0064	0.0080	0.0096	0.0112
350-600 SFM		35% Dia. Profiling	0.0008	0.0016	0.0024	0.0032	0.0048	0.0064	0.0080	0.0120
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	
<b>Aluminum+Aluminum Alloys</b>		<b>CHIP PER TOOTH</b>								
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
<b>Copper</b>		<b>CHIP PER TOOTH</b>								
Red Brass, High Lead Brass, Yellow Brass		Slotting	0.0203	0.0203	0.0406	0.0508	0.0610	0.0813	0.0813	0.1016
C-17200, Navel Brass, A-17, High Silicon Bronze		35 % Dia. Profiling	0.0279	0.0279	0.0559	0.0711	0.0864	0.1143	0.1143	0.1422
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
<b>Copper Alloys</b>		<b>CHIP PER TOOTH</b>								
Low Silicon Bronze, Alum/Bronze		Slotting	0.0203	0.0203	0.0406	0.0508	0.0610	0.0813	0.0813	0.1016
Beryllium Copper, Nickel Silver, Oxygen-Free Copper		35 % Dia. Profiling	0.0279	0.0279	0.0559	0.0711	0.0864	0.1143	0.1143	0.1422
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
<b>Magnesium</b>		<b>CHIP PER TOOTH</b>								
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
<b>Plastics</b>		<b>CHIP PER TOOTH</b>								
Acrylics, Polycarbonate, Phenolics		Slotting	0.0203	0.0406	0.0610	0.0813	0.1219	0.1626	0.2032	0.2845
106-182 M/MIN		35% Dia. Profiling	0.0508	0.0610	0.0813	0.1219	0.1626	0.2032	0.2438	0.3048
122-244 M/MIN		35% Dia. Profiling	0.0508	0.0610	0.0813	0.1219	0.1626	0.2032	0.2438	0.3048

**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"
<b>Aluminum+Aluminum Alloys</b>		<b>CHIP PER TOOTH</b>							
ISO-N									
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
	10-25 % Dia. Profiling	0.0020	0.0024	0.0032	0.0048	0.0064	0.0080	0.0096	0.0112
1700-2000 SFM	Slotting	0.0008	0.0008	0.0016	0.0020	0.0024	0.0032	0.0032	0.0040
	10-25 % Dia. Profiling	0.0011	0.0011	0.0022	0.0028	0.0034	0.0045	0.0045	0.0056
<b>Copper</b>		<b>ISO-N</b>							
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
	10-25 % Dia. Profiling	0.0011	0.0011	0.0022	0.0028	0.0034	0.0045	0.0045	0.0056
1000-1200 SFM	Slotting	0.0008	0.0008	0.0016	0.0020	0.0024	0.0032	0.0032	0.0040
	10-25 % Dia. Profiling	0.0011	0.0011	0.0022	0.0028	0.0034	0.0045	0.0045	0.0056
<b>Copper Alloys</b>		<b>ISO-N</b>							
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
	10-25 % Dia. Profiling	0.0011	0.0011	0.0022	0.0028	0.0034	0.0045	0.0045	0.0056
600-850 SFM	Slotting	0.0008	0.0008	0.0016	0.0020	0.0024	0.0032	0.0032	0.0040
	10-25 % Dia. Profiling	0.0011	0.0011	0.0022	0.0028	0.0034	0.0045	0.0045	0.0056
<b>Magnesium</b>		<b>ISO-N</b>							
700-1000 SFM									
750-1300 SFM	Slotting	0.0008	0.0016	0.0016	0.0024	0.0032	0.0048	0.0064	0.0072
	10-25 % Dia. Profiling	0.0020	0.0024	0.0032	0.0048	0.0064	0.0080	0.0096	0.0112
<b>Plastics</b>		<b>ISO-N</b>							
Acrylics, Polycarbonate, Phenolics									
350-600 SFM	Slotting	0.0020	0.0024	0.0032	0.0048	0.0064	0.0080	0.0096	0.0112
	10-25 % Dia. Profiling	0.0008	0.0016	0.0024	0.0032	0.0048	0.0064	0.0080	0.0120
400-800 SFM	Slotting	0.0020	0.0024	0.0032	0.0048	0.0064	0.0080	0.0096	0.0112
	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
<b>Aluminum+Aluminum Alloys</b>		<b>CHIP PER TOOTH</b>								
ISO-N										
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
	10-25 % Dia. Profiling	0.0508	0.0813	0.1016	0.1219	0.1626	0.2032	0.2184	0.2438	0.2845
518-609 M/MIN	Slotting	0.0203	0.0406	0.0457	0.0508	0.0610	0.0813	0.0813	0.0813	0.1016
	10-25 % Dia. Profiling	0.0284	0.0569	0.0635	0.0711	0.0853	0.1138	0.1143	0.1138	0.1422
<b>Copper</b>		<b>ISO-N</b>								
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
	10-25 % Dia. Profiling	0.0284	0.0569	0.0635	0.0711	0.0853	0.1138	0.1143	0.1138	0.1422
304-365 M/MIN	Slotting	0.0203	0.0406	0.0457	0.0508	0.0610	0.0813	0.0813	0.0813	0.1016
	10-25 % Dia. Profiling	0.0284	0.0569	0.0635	0.0711	0.0853	0.1138	0.1143	0.1138	0.1422
<b>Copper Alloys</b>		<b>ISO-N</b>								
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
	10-25 % Dia. Profiling	0.0284	0.0569	0.0635	0.0711	0.0853	0.1138	0.1143	0.1138	0.1422
182-259 M/MIN	Slotting	0.0203	0.0406	0.0457	0.0508	0.0610	0.0813	0.0813	0.0813	0.1016
	10-25 % Dia. Profiling	0.0284	0.0569	0.0635	0.0711	0.0853	0.1138	0.1143	0.1138	0.1422
<b>Magnesium</b>		<b>ISO-N</b>								
213-304 M/MIN										
228-396 M/MIN	Slotting	0.0203	0.0406	0.0508	0.0610	0.0813	0.1219	0.1422	0.1626	0.1829
	10-25 % Dia. Profiling	0.0508	0.0813	0.1016	0.1219	0.1626	0.2032	0.2235	0.2438	0.2845
<b>Plastics</b>		<b>ISO-N</b>								
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
	10-25 % Dia. Profiling	0.0508	0.0813	0.1016	0.1219	0.1626	0.2032	0.2235	0.2438	0.3048
122-244 M/MIN	Slotting	0.0203	0.0610	0.0914	0.0813	0.1219	0.1626	0.1829	0.2032	0.2845
	10-25 % Dia. Profiling	0.0508	0.0813	0.1016	0.1219	0.1626	0.2032	0.2235	0.2438	0.3048

**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: 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	FEED	SPEED	FEED	SPEED	FEED	SPEED	FEED	SPEED	FEED
	5-10 SFM	CHIP LOAD PER TOOTH	10-15 SFM	CHIP LOAD PER TOOTH	15-20 SFM	CHIP LOAD PER TOOTH	20-40 SFM	CHIP LOAD PER TOOTH	40-60 SFM	CHIP LOAD PER TOOTH
DIA. OF END MILLS	RPM	PER TOOTH	RPM	PER TOOTH	RPM	PER TOOTH	RPM	PER TOOTH	RPM	PER TOOTH
1/16	-	-	-	-	-	-	1222-2444	.0002-.0005	2444-3667	.0002-.0005
3/32	-	-	-	-	611-815	.0002-.0005	815-1629	.0002-.0005	1629-2750	.0002-.0005
1/8	-	-	-	-	456-611	.0002-.0005	611-1222	.0002-.0005	1222-1833	.0002-.0005
3/16	-	-	204-306	.0002-.0005	306-407	.0002-.0005	407-815	.0002-.0005	815-1222	.0002-.0005
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

# SPEED & FEED INFORMATION



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

[BACK TO SERIES](#)

MATERIAL	CONDITION	CUTTING DIAMETER								
		1/8"	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"	1-1/4"
<b>Aluminum+Aluminum Alloys</b>		<b>CHIP PER TOOTH</b>								
ISO-N										
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
<b>Copper</b>		<b>CHIP PER TOOTH</b>								
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
<b>Copper Alloys</b>		<b>CHIP PER TOOTH</b>								
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
<b>Magnesium</b>		<b>CHIP PER TOOTH</b>								
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
<b>Plastics</b>		<b>CHIP PER TOOTH</b>								
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

[BACK TO SERIES](#)

MATERIAL	CONDITION	CUTTING DIAMETER				
		3/4"	1"	1-1/4"	1-1/2"	2"
<b>STAINLESS STEELS</b>		<b>CHIP PER TOOTH</b>				
ISO-M						
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
<b>TITANIUM ALLOYS</b>		<b>CHIP PER TOOTH</b>				
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

# SPEED & FEED INFORMATION



## SERIES: VXM3T

MATERIAL	CONDITION	STARTING SFM	CUTTING DIAMETER					
			1/32"	3/64"	0.055"	1/16"	5/64"	3/32"
<b>STAINLESS STEELS</b>		<b>ISO-M</b>	<b>CHIP PER TOOTH</b>					
<b>Precipitation</b> 13-8, 15-5, 17-4PH	Slotting @ $\leq .5 \times D$	250	0.00012	0.00019	0.00023	0.00025	0.00037	0.00042
	Profiling @ $2 \times D$ Axial / $\leq .1 D$ Radial	325	0.00021	0.00030	0.00035	0.00040	0.00062	0.00071
<b>Martensitic</b> 403, 410, 416	Slotting @ $\leq .5 \times D$	250	0.00012	0.00019	0.00023	0.00025	0.00037	0.00042
	Profiling @ $2 \times D$ Axial / $\leq .1 D$ Radial	325	0.00021	0.00030	0.00035	0.00040	0.00062	0.00071
<b>HIGH TEMP ALLOYS</b>		<b>ISO-S</b>						
<b>Nickel Base</b> Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel 400, 405, K-Monel, PermaNickel 300, Inconel 600	Slotting @ $.5 \times D$	75	0.00008	0.00012	0.00015	0.00016	0.00024	0.00027
	Profiling @ $2 \times D$ Axial / $\leq .1 D$ Radial	115	0.00013	0.00019	0.00022	0.00026	0.00040	0.00045
<b>STEELS</b>		<b>ISO-P</b>						
<b>High Alloy Steels - Mold &amp; Die</b> A-2, P20, 01, 02, D2, H-13	Slotting @ $\leq .5 \times D$	275	0.00010	0.00015	0.00018	0.00020	0.00030	0.00034
	Profiling @ $2 \times D$ Axial / $\leq .1 D$ Radial	350	0.00017	0.00024	0.00028	0.00032	0.00050	0.00056
<b>TITANIUM</b>		<b>ISO-S</b>						
<b>Titanium Alloys</b> 6AL-4V, ASTM 1, 2, 3, 6AL-2S <small>For 5553, decrease SFM and IPM by 25%</small>	Slotting @ $\leq .5 \times D$	175	0.00012	0.00019	0.00023	0.00025	0.00037	0.00042
	Profiling @ $2 \times D$ Axial / $\leq .1 D$ 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 20-40%

## SERIES: VXM3T (METRIC)

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

**Note:** For length of cut 3x-5x reduce chip load by 20-40%

**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: VXM4T & VXM4T-\_\_-B

BACK TO SERIES 

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"	
<b>STAINLESS STEELS</b>		<b>ISO-M</b>	<b>CHIP PER TOOTH</b>											
<b>Precipitation</b> 13-8, 15-5, 17-4PH	Less than 32 Rc	Slotting @ $\leq .5$ 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 / $\leq .2$ to .5 D Radial	80-115	.0008	.0015	.0024	.0031	.0033	.0045	.0055	.0068	.0081	.0102	
<b>Austenitic</b> 302, 303, 304L, 316L	Less than 32 Rc	Slotting @ $\leq .5$ 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 / $\leq .2$ to .5 D Radial	80-175	.0008	.0015	.0024	.0031	.0033	.0045	.0055	.0068	.0081	.0102	
<b>Martensitic</b> 403, 410, 416	Less than 32 Rc	Slotting @ $\leq .5$ 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 / $\leq .2$ to .5 D Radial	100-200	.0008	.0015	.0024	.0031	.0033	.0045	.0055	.0068	.0081	.0102	
<b>HIGH TEMP ALLOYS</b>		<b>ISO-S</b>	<b>CHIP PER TOOTH</b>											
<b>Cobalt Base</b> Stellite, Haynes 25, 188, X-40, L-605	Less than 32 Rc	Slotting @ $\leq .5$ 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 / $\leq .2$ to .5 D Radial	50-120	.0006	.0012	.0021	.0023	.0025	.0045	.0047	.0066	.0080	.0085	
<b>Nickel Base</b> - Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel 400, 405, K-Monel, PermaNickel 300, Inconel 600	Less than 32 Rc	Slotting @ $\leq .5$ 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 / $\leq .2$ to .5 D Radial	50-120	.0006	.0012	.0021	.0023	.0025	.0045	.0047	.0066	.0080	.0085	
<b>TITANIUM</b>		<b>ISO-S</b>	<b>CHIP PER TOOTH</b>											
<b>Titanium Alloys</b> 6AL-4V, ASTM 1, 2, 3, 6AL-2S	Less than 32 Rc	Slotting @ $\leq .5$ 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 / $\leq .2$ 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	
<b>STAINLESS STEELS</b>		<b>ISO-M</b>	<b>CHIP PER TOOTH</b>											
<b>Precipitation</b> 13-8, 15-5, 17-4PH	Less than 32 Rc	Slotting @ $\leq .5$ 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 / $\leq .2$ to .5 D Radial	24-35	.0203	.0381	.0610	.0787	.0838	.1143	.1397	.1727	.2057	.2591	
<b>Austenitic</b> 302, 303, 304L, 316L	Less than 32 Rc	Slotting @ $\leq .5$ 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 / $\leq .2$ to .5 D Radial	24-53	.0203	.0381	.0610	.0787	.0838	.1143	.1397	.1727	.2057	.2591	
<b>Martensitic</b> 403, 410, 416	Less than 32 Rc	Slotting @ $\leq .5$ 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 / $\leq .2$ to .5 D Radial	30-60	.0203	.0381	.0610	.0787	.0838	.1143	.1397	.1727	.2057	.2591	
<b>HIGH TEMP ALLOYS</b>		<b>ISO-S</b>	<b>CHIP PER TOOTH</b>											
<b>Cobalt Base</b> Stellite, Haynes 25, 188, X-40, L-605	Less than 32 Rc	Slotting @ $\leq .5$ 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 / $\leq .2$ to .5 D Radial	15-36	.0152	.0305	.0533	.0584	.0635	.1143	.1194	.1676	.2032	.2159	
<b>Nickel Base</b> - Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel 400, 405, K-Monel, PermaNickel 300, Inconel 600	Less than 32 Rc	Slotting @ $\leq .5$ 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 / $\leq .2$ to .5 D Radial	15-36	.0152	.0305	.0533	.0584	.0635	.1143	.1194	.1676	.2032	.2159	
<b>TITANIUM</b>		<b>ISO-S</b>	<b>CHIP PER TOOTH</b>											
<b>Titanium Alloys</b> 6AL-4V, ASTM 1, 2, 3, 6AL-2S	Less than 32 Rc	Slotting @ $\leq .5$ 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 / $\leq .2$ to .5 D Radial	30-50	.0254	.0406	.0635	.0787	.0965	.1143	.1600	.1829	.2184	.2667	

For 5553, decrease SFM and IPM by 25%

**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

BACK TO SERIES

## 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"	
<b>STAINLESS STEELS</b>		<b>ISO-M</b>	<b>CHIP PER TOOTH</b>										
<b>Precipitation</b> 13-8, 15-5, 17-4PH	Less than 32 Rc	Slotting @ $\leq .65$ 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 / $\leq .1-1/2$ to .3 D Radial	80-115	.0015	.0024	.0031	.0033	.0045	.0055	.0068	.0081	.0102	
<b>Austenitic</b> 302, 303, 304L, 316L	Less than 32 Rc	Slotting @ $\leq .65$ 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 / $\leq .1-1/2$ to .3 D Radial	80-175	.0015	.0024	.0031	.0033	.0045	.0055	.0068	.0081	.0102	
<b>Martensitic</b> 403, 410, 416	Less than 32 Rc	Slotting @ $\leq .65$ 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 / $\leq .1-1/2$ to .3 D Radial	100-200	.0015	.0024	.0031	.0033	.0045	.0055	.0068	.0081	.0102	
<b>HIGH TEMP ALLOYS</b>		<b>ISO-S</b>	<b>CHIP PER TOOTH</b>										
<b>Cobalt Base</b> Stellite, Haynes 25, 188, X-40, L-605	Less than 32 Rc	Slotting @ $\leq .65$ 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 / $\leq .1-1/2$ to .3 D Radial	50-120	.0012	.0021	.0023	.0025	.0045	.0047	.0066	.0080	.0085	
<b>Nickel Base</b> Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel 400, 405, K-Monel, PermaNickel 300, Inconel 600	Less than 32 Rc	Slotting @ $\leq .65$ 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 / $\leq .1-1/2$ to .3 D Radial	50-120	.0012	.0021	.0023	.0025	.0045	.0047	.0066	.0080	.0085	
<b>TITANIUM</b>		<b>ISO-S</b>	<b>CHIP PER TOOTH</b>										
<b>Titanium Alloys</b> 6AL-4V, ASTM 1, 2, 3, 6AL-2S	Less than 32 Rc	Slotting @ $\leq .65$ 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 / $\leq .1-1/2$ 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
<b>STAINLESS STEELS</b>		<b>ISO-M</b>	<b>CHIP PER TOOTH</b>									
<b>Precipitation</b> 13-8, 15-5, 17-4PH	Less than 32 Rc	Slotting @ $\leq .65$ 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 / $\leq .1-1/2$ to .3 D Radial	24-35	.0381	.0610	.0787	.0838	.1143	.1397	.1727	.2057	.2591
<b>Austenitic</b> 302, 303, 304L, 316L	Less than 32 Rc	Slotting @ $\leq .65$ 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 / $\leq .1-1/2$ to .3 D Radial	24-53	.0381	.0610	.0787	.0838	.1143	.1397	.1727	.2057	.2591
<b>Martensitic</b> 403, 410, 416	Less than 32 Rc	Slotting @ $\leq .65$ 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 / $\leq .1-1/2$ to .3 D Radial	30-60	.0381	.0610	.0787	.0838	.1143	.1397	.1727	.2057	.2591
<b>HIGH TEMP ALLOYS</b>		<b>ISO-S</b>	<b>CHIP PER TOOTH</b>									
<b>Cobalt Base</b> Stellite, Haynes 25, 188, X-40, L-605	Less than 32 Rc	Slotting @ $\leq .65$ 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 / $\leq .1-1/2$ to .3 D Radial	15-36	.0305	.0533	.0584	.0635	.1143	.1194	.1676	.2032	.2159
<b>Nickel Base</b> Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel 400, 405, K-Monel, PermaNickel 300, Inconel 600	Less than 32 Rc	Slotting @ $\leq .65$ 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 / $\leq .1-1/2$ to .3 D Radial	15-36	.0305	.0533	.0584	.0635	.1143	.1194	.1676	.2032	.2159
<b>TITANIUM</b>		<b>ISO-S</b>	<b>CHIP PER TOOTH</b>									
<b>Titanium Alloys</b> 6AL-4V, ASTM 1, 2, 3, 6AL-2S	Less than 32 Rc	Slotting @ $\leq .65$ 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 / $\leq .1-1/2$ to .3 D Radial	30-50	.0406	.0635	.0787	.0965	.1143	.1600	.1829	.2184	.2667

For 5553, decrease SFM and IPM by 25%

**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: EMG35, EMG60, GMG

BACK TO SERIES 

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

# SPEED & FEED INFORMATION

BACK TO SERIES 

## SERIES: EMG35, EMG60, GMG (METRIC)

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

**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: VXMG4

BACK TO SERIES 

MATERIAL	CONDITION	SFM	FL	CUTTING DIAMETER							
				1/8"	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"
<b>STAINLESS STEELS ISO-M</b>		<b>CHIP PER TOOTH</b>									
<b>Precipitation</b>	Slotting @ $\leq .5 \times D$	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 @ $2 \times D$ Axial / $\leq .3 D$ Radial	325	4	0.0007	0.0011	0.0014	0.0020	0.0027	0.0034	0.0041	0.0055
<b>Austenitic</b>	Slotting @ $\leq .5 \times D$	275	4	0.0006	0.0009	0.0012	0.0018	0.0024	0.0030	0.0036	0.0048
302, 303, 304L, 316L	Profiling @ $2 \times D$ Axial / $\leq .3 D$ Radial	350	4	0.0008	0.0012	0.0016	0.0025	0.0033	0.0041	0.0049	0.0065
<b>Martensitic</b>	Slotting @ $\leq .5 \times D$	300	4	0.0006	0.0010	0.0013	0.0019	0.0026	0.0032	0.0038	0.0051
403, 410, 416	Profiling @ $2 \times D$ Axial / $\leq .3 D$ Radial	375	4	0.0009	0.0014	0.0017	0.0026	0.0035	0.0044	0.0052	0.0070
<b>HIGH TEMP ALLOYS ISO-S</b>		<b>CHIP PER TOOTH</b>									
<b>Cobalt Base</b>	Slotting @ $.5 \times D$	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 @ $2 \times D$ Axial / $\leq .3 D$ Radial	150	4	0.0003	0.0004	0.0007	0.0007	0.0013	0.0016	0.002	0.0026
<b>Nickel Base - Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel 400, 405, K-Monel, PermaNickel 300, Inconel 600</b>	Slotting @ $.5 \times D$	75	4	0.0004	0.0003	0.0007	0.0010	0.0017	0.0016	0.0026	0.0026
	Profiling @ $2 \times D$ Axial / $\leq .3 D$ Radial	115	4	0.0004	0.0004	0.0007	0.0011	0.0018	0.0018	0.0022	0.0022
<b>Iron Base</b>	Slotting @ $.5 \times D$	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 @ $2 \times D$ Axial / $\leq .3 D$ Radial	130	4	0.0004	0.0005	0.0010	0.0016	0.0021	0.0026	0.0031	0.0042
<b>STEELS ISO-P</b>		<b>CHIP PER TOOTH</b>									
<b>High Strength Steels</b>	Slotting @ $\leq .5 \times D$	300	4	0.0006	0.0009	0.0013	0.0019	0.0026	0.0032	0.0038	0.0051
4140, 4340, 52100	Profiling @ $2 \times D$ Axial / $\leq .3 D$ Radial	375	4	0.0009	0.0013	0.0017	0.0026	0.0035	0.0044	0.0052	0.0070
<b>High Alloy Steels - Mold &amp; Die</b>	Slotting @ $\leq .5 \times D$	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 @ $2 \times D$ Axial / $\leq .3 D$ Radial	350	4	0.0007	0.0011	0.0015	0.0022	0.0029	0.0037	0.0044	0.0059
<b>Medium Alloy Steels</b>	Slotting @ $\leq .75 \times D$	325	4	0.0005	0.0005	0.0012	0.0020	0.0025	0.0035	0.0040	0.0050
200, 250, 300	Profiling @ $2 \times D$ Axial / $\leq .3 D$ Radial	400	4	0.0005	0.0005	0.0015	0.0024	0.0030	0.0040	0.0050	0.0060
<b>Low Alloy Steels-Maraging</b>	Slotting @ $\leq .75 \times D$	325	4	0.0007	0.0010	0.0014	0.0021	0.0028	0.0035	0.0042	0.0056
10XX, 11XX, 13XX	Profiling @ $2 \times D$ Axial / $\leq .3 D$ Radial	400	4	0.0010	0.0015	0.0019	0.0029	0.0038	0.0048	0.0057	0.0076
<b>CAST IRONS ISO-K</b>		<b>CHIP PER TOOTH</b>									
<b>Ductile Iron</b>	Slotting @ $1 \times D$	400	4	0.0005	0.0008	0.0010	0.0015	0.0020	0.0025	0.0030	0.0040
Ductile Cast Iron	Profiling @ $2 \times D$ Axial / $\leq .3 D$ Radial	550	4	0.0007	0.0010	0.0014	0.0020	0.0027	0.0034	0.0041	0.0055
<b>Cast Iron</b>	Slotting @ $1 \times D$	450	4	0.0006	0.0010	0.0012	0.0018	0.0024	0.0030	0.0036	0.0048
Grey Cast Iron	Profiling @ $2 \times D$ Axial / $\leq .3 D$ Radial	600	4	0.0008	0.0012	0.0016	0.0025	0.0033	0.0041	0.0049	0.0065
<b>TITANIUM ISO-S</b>		<b>CHIP PER TOOTH</b>									
<b>Titanium Alloys</b>	Slotting @ $\leq .5 \times D$	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 @ $2 \times D$ Axial / $\leq .3 D$ 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
<b>STAINLESS STEELS ISO-M</b>		<b>CHIP PER TOOTH</b>									
<b>Precipitation</b>	Slotting @ $\leq .5 \times D$	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 @ $2 \times D$ Axial / $\leq .3 D$ Radial	100	4	0.0178	0.0279	0.0356	0.0508	0.0685	0.0864	0.1041	0.1397
<b>Austenitic</b>	Slotting @ $\leq .5 \times D$	83	4	0.0152	0.0229	0.0305	0.0457	0.0610	0.0762	0.0914	0.1219
302, 303, 304L, 316L	Profiling @ $2 \times D$ Axial / $\leq .3 D$ Radial	110	4	0.0203	0.0305	0.0406	0.0635	0.0838	0.1041	0.1214	0.1651
<b>Martensitic</b>	Slotting @ $\leq .5 \times D$	90	4	0.0152	0.0254	0.0330	0.0482	0.0660	0.0812	0.0965	0.1295
403, 410, 416	Profiling @ $2 \times D$ Axial / $\leq .3 D$ Radial	115	4	0.0229	0.0355	0.0431	0.0660	0.0889	0.1117	0.1320	0.1778
<b>HIGH TEMP ALLOYS ISO-S</b>		<b>CHIP PER TOOTH</b>									
<b>Cobalt Base</b>	Slotting @ $.5 \times D$	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 @ $2 \times D$ Axial / $\leq .3 D$ Radial	45	4	0.0076	0.0102	0.0178	0.0178	0.0330	0.0406	0.0508	0.0660
<b>Nickel Base - Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel 400, 405, K-Monel, PermaNickel 300, Inconel 600</b>	Slotting @ $.5 \times D$	23	4	0.0102	0.0102	0.0178	0.0254	0.0431	0.0406	0.0660	0.0660
	Profiling @ $2 \times D$ Axial / $\leq .3 D$ Radial	35	4	0.0106	0.0102	0.0178	0.0279	0.0457	0.0457	0.0558	0.0558
<b>Iron Base</b>	Slotting @ $.5 \times D$	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 @ $2 \times D$ Axial / $\leq .3 D$ Radial	40	4	0.0102	0.0127	0.0254	0.0406	0.0533	0.0660	0.0787	0.1066
<b>STEELS ISO-P</b>		<b>CHIP PER TOOTH</b>									
<b>High Strength Steels</b>	Slotting @ $\leq .5 \times D$	92	4	0.0152	0.0229	0.0330	0.0482	0.0660	0.0812	0.0965	0.1295
4140, 4340, 52100	Profiling @ $2 \times D$ Axial / $\leq .3 D$ Radial	115	4	0.0229	0.0330	0.0431	0.0660	0.0889	0.1117	0.1320	0.1778
<b>High Alloy Steels - Mold &amp; Die</b>	Slotting @ $\leq .5 \times D$	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 @ $2 \times D$ Axial / $\leq .3 D$ Radial	110	4	0.0177	0.0279	0.0381	0.0558	0.0737	0.0939	0.1117	0.1498
<b>Medium Alloy Steels</b>	Slotting @ $\leq .75 \times D$	100	4	0.0127	0.0127	0.0304	0.0508	0.0635	0.0889	0.1016	0.1270
200, 250, 300	Profiling @ $2 \times D$ Axial / $\leq .3 D$ Radial	122	4	0.0127	0.0127	0.0381	0.0609	0.0762	0.1016	0.1270	0.1524
<b>Low Alloy Steels-Maraging</b>	Slotting @ $\leq .75 \times D$	100	4	0.0178	0.0254	0.0355	0.0533	0.0711	0.0889	0.1066	0.1422
10XX, 11XX, 13XX	Profiling @ $2 \times D$ Axial / $\leq .3 D$ Radial	122	4	0.0254	0.0381	0.0482	0.0736	0.0965	0.1219	0.1447	0.1930
<b>CAST IRONS ISO-K</b>		<b>CHIP PER TOOTH</b>									
<b>Ductile Iron</b>	Slotting @ $1 \times D$	122	4	0.0127	0.0203	0.0254	0.0381	0.0508	0.0635	0.0762	0.1016
Ductile Cast Iron	Profiling @ $2 \times D$ Axial / $\leq .3 D$ Radial	168	4	0.0178	0.0254	0.0355	0.0508	0.0685	0.0863	0.1041	0.1397
<b>Cast Iron</b>	Slotting @ $1 \times D$	137	4	0.0152	0.0254	0.0304	0.0457	0.0609	0.0762	0.0914	0.1219
Grey Cast Iron	Profiling @ $2 \times D$ Axial / $\leq .3 D$ Radial	183	4	0.0203	0.0304	0.0406	0.0635	0.0838	0.1041	0.1244	0.1651
<b>TITANIUM ISO-S</b>		<b>CHIP PER TOOTH</b>									
<b>Titanium Alloys</b>	Slotting @ $\leq .5 \times D$	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 @ $2 \times D$ Axial / $\leq .3 D$ 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%

**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									
		SFM	FL	1/8"	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"
<b>STAINLESS STEELS ISO-M</b>		<b>CHIP PER TOOTH</b>									
<b>Precipitation</b> 13-8, 15-5, 17-4PH	Slotting @ 1 x D	250	5	0.0005	0.0008	0.0010	0.0015	0.0020	0.0025	0.0030	0.0040
	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
<b>Austenitic</b> 302, 303, 304L, 316L	Slotting @ 1 x D	275	5	0.0006	0.0009	0.0012	0.0018	0.0024	0.0030	0.0036	0.0048
	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
<b>Martensitic</b> 403, 410, 416	Slotting @ 1 x D	300	5	0.0006	0.0010	0.0013	0.0019	0.0026	0.0032	0.0038	0.0051
	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
<b>HIGH TEMP ALLOYS ISO-S</b>											
<b>Cobalt Base</b> Stellite, Haynes 25, 188, X-40, L-605	Slotting @ .5 x D	110	5	0.0003	0.0004	0.0005	0.0008	0.0011	0.0014	0.0016	0.0022
	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
<b>Nickel Base</b> - Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel 400, 405, K-Monel, PermaNickel 300, Inconel 600	Slotting @ .5 x D	75	5	0.0004	0.0003	0.0007	0.0010	0.0017	0.0016	0.0026	0.0026
	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
<b>Iron Base</b> Incoloy 800-802, Multimet N-155, Timken 16-26-6	Slotting @ .5 x D	95	5	0.0004	0.0005	0.0009	0.0014	0.0019	0.0023	0.0028	0.0037
	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
<b>STEELS ISO-P</b>											
<b>High Strength Steels</b> 4140, 4340, 52100	Slotting @ 1 x D	300	5	0.0006	0.0009	0.0013	0.0019	0.0026	0.0032	0.0038	0.0051
	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
<b>High Alloy Steels - Mold &amp; Die</b> A-2, P20, 01, 02, D2, H-13	Slotting @ 1 x D	275	5	0.0005	0.0008	0.0011	0.0016	0.0022	0.0027	0.0032	0.0043
	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
<b>Medium Alloy Steels</b> 200, 250, 300	Slotting @ 1 x D	325	5	0.0005	0.0005	0.0012	0.0020	0.0025	0.0035	0.0040	0.0050
	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
<b>Low Alloy Steels-Maraging</b> 10XX, 11XX, 13XX	Slotting @ 1 x D	325	5	0.0007	0.0010	0.0014	0.0021	0.0028	0.0035	0.0042	0.0056
	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
<b>CAST IRONS ISO-K</b>											
<b>Ductile Iron</b> Ductile Cast Iron	Slotting @ 1 x D	300	5	0.0005	0.0008	0.0010	0.0015	0.0020	0.0025	0.0030	0.0040
	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
<b>Cast Iron</b> Grey Cast Iron	Slotting @ 1 x D	275	5	0.0006	0.0010	0.0012	0.0018	0.0024	0.0030	0.0036	0.0048
	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
<b>TITANIUM ISO-S</b>											
<b>Titanium Alloys</b> 6AL-4V, ASTM 1, 2, 3, 6AL-2S	Slotting @ 1 x D	250	5	0.0005	0.0007	0.0009	0.0014	0.0018	0.0023	0.0028	0.0037
	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	CUTTING DIAMETER - METRIC									
		M/MIN	FL	3MM	5MM	6MM	10MM	12MM	16MM	20MM	25MM
<b>STAINLESS STEELS ISO-M</b>		<b>CHIP PER TOOTH</b>									
<b>Precipitation</b> 13-8, 15-5, 17-4PH	Slotting @ 1 x D	76	5	0.0127	0.0203	0.0254	0.0381	0.0508	0.0635	0.0762	0.1016
	Profiling @ 2 x D Axial / ≤ .3 D Radial	100	5	0.0178	0.0279	0.0355	0.0685	0.0863	0.1041	0.1397	
<b>Austenitic</b> 302, 303, 304L, 316L	Slotting @ 1 x D	83	5	0.0152	0.0229	0.0304	0.0457	0.0609	0.0762	0.0914	0.1219
	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
<b>Martensitic</b> 403, 410, 416	Slotting @ 1 x D	90	5	0.0152	0.0254	0.0330	0.0482	0.0660	0.0812	0.0965	0.1295
	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
<b>HIGH TEMP ALLOYS ISO-S</b>											
<b>Cobalt Base</b> Stellite, Haynes 25, 188, X-40, L-605	Slotting @ .5 x D	35	5	0.0076	0.0102	0.0127	0.0203	0.0279	0.0355	0.0406	0.0558
	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
<b>Nickel Base</b> - Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel 400, 405, K-Monel, PermaNickel 300, Inconel 600	Slotting @ .5 x D	23	5	0.0101	0.0101	0.0178	0.0254	0.0431	0.0406	0.0660	0.0660
	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
<b>Iron Base</b> - Incoloy 800-802, Multimet N-155, Timken 16-26-6	Slotting @ .5 x D	30	5	0.0102	0.0127	0.0228	0.0355	0.0482	0.0584	0.0711	0.0939
	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
<b>STEELS ISO-P</b>											
<b>High Strength Steels</b> 4140, 4340, 52100	Slotting @ 1 x D	90	5	0.0152	0.0228	0.0330	0.0482	0.0660	0.0812	0.0905	0.1295
	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
<b>High Alloy Steels - Mold &amp; Die</b> A-2, P20, 01, 02, D2, H-13	Slotting @ 1 x D	83	5	0.0127	0.0203	0.0279	0.0406	0.0558	0.0605	0.0812	0.1092
	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
<b>Medium Alloy Steels</b> 200, 250, 300	Slotting @ 1 x D	100	5	0.0127	0.0127	0.0304	0.0508	0.0635	0.0889	0.1016	0.1270
	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
<b>Low Alloy Steels-Maraging</b> 10XX, 11XX, 13XX	Slotting @ 1 x D	100	5	0.0178	0.0254	0.0355	0.0533	0.0711	0.0889	0.1066	0.1422
	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
<b>CAST IRONS ISO-K</b>											
<b>Ductile Iron</b> Ductile Cast Iron	Slotting @ 1 x D	90	5	0.0127	0.0203	0.0254	0.0381	0.0508	0.0635	0.0762	0.1016
	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
<b>Cast Iron</b> Grey Cast Iron	Slotting @ 1 x D	83	5	0.0152	0.0254	0.0304	0.0457	0.0609	0.0762	0.0914	0.1219
	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
<b>TITANIUM ISO-S</b>											
<b>Titanium Alloys</b> 6AL-4V, ASTM 1, 2, 3, 6AL-2S	Slotting @ 1 x D	75	5	0.0128	0.0178	0.0229	0.0355	0.0457	0.0584	0.0711	0.0939
	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

# SPEED & FEED INFORMATION

## SERIES: VXM7

BACK TO SERIES 

MATERIAL	CONDITION	SFM	FL	CUTTING DIAMETER							
				1/8"	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"
<b>STAINLESS STEELS ISO-M</b>		<b>CHIP PER TOOTH</b>									
Precipitation 13-8, 15-5, 17-4PH	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
	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 302, 303, 304L, 316L	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
	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 403, 410, 416	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
	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
<b>HIGH TEMP ALLOYS ISO-S</b>											
Cobalt Base Stellite, Haynes 25, 188, X-40	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
	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 Monel 400, 405, K-Monel, Inconel 600	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
	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 Incoloy 800-802, Multimet N-155	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
	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
<b>STEELS ISO-P</b>											
High Strength Steels 4140, 4340, 52100	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
	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 A-2, P20, 01, 02, D2, H-13	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
	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 200, 250, 300	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
	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 10XX, 11XX, 13XX	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
	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
<b>CAST IRONS ISO-K</b>											
Ductile Iron Ductile Cast 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
	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 Grey 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
	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
<b>TITANIUM ISO-S</b>											
Titanium Alloys 6AL-4V, ASTM 1, 2, 3, 6AL-2S	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
	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	FL	CUTTING DIAMETER - METRIC							
				3MM	4.5MM	6MM	10MM	12MM	16MM	20MM	25MM
<b>STAINLESS STEELS ISO-M</b>		<b>CHIP PER TOOTH</b>									
Precipitation 13-8, 15-5, 17-4PH	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
	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 302, 303, 304L, 316L	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
	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 403, 410, 416	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
	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
<b>HIGH TEMP ALLOYS ISO-S</b>											
Cobalt Base Stellite, Haynes 25, 188, X-40	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
	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 Monel 400, 405, K-Monel, Inconel 600	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
	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 Incoloy 800-802, Multimet N-155	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
	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
<b>STEELS ISO-P</b>											
High Strength Steels 4140, 4340, 52100	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
	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 A-2, P20, 01, 02, D2, H-13	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
	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 200, 250, 300	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
	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 10XX, 11XX, 13XX	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
	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
<b>CAST IRONS ISO-K</b>											
Ductile Iron Ductile Cast 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
	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 Grey 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
	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
<b>TITANIUM ISO-S</b>											
Titanium Alloys 6AL-4V, ASTM 1, 2, 3, 6AL-2S	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
	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

# SPEED & FEED INFORMATION

BACK TO SERIES

SERIES: VXM9

MATERIAL	CONDITION	CUTTING DIAMETER							
		SFM	FL	1/4"	3/8"	1/2"	5/8"	3/4"	1"
<b>STAINLESS STEELS ISO-M</b>		<b>CHIP PER TOOTH</b>							
<b>Precipitation</b> 13-8, 15-5, 17-4PH	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
	Profiling @ Full Length Axial / < .015 D Radial	325	9	0.0023	0.0034	0.0045	0.0057	0.0068	0.0091
<b>Austenitic</b> 302, 303, 304L, 316L	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
	Profiling @ Full Length Axial / < .015 D Radial	350	9	0.0027	0.0041	0.0054	0.0068	0.0081	0.0109
<b>Martensitic</b> 403, 410, 416	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
	Profiling @ Full Length Axial / < .015 D Radial	375	9	0.0029	0.0043	0.0058	0.0072	0.0086	0.0116
<b>HIGH TEMP ALLOYS ISO-S</b>									
<b>Cobalt Base</b> Stellite, Haynes 25, 188, X-40	High Speed Profiling @ .5 D Axial / < .02 D Radial	175	9	0.0005	0.0008	0.0011	0.0014	0.0016	0.0022
	Profiling @ Full Length Axial / < .01 D Radial	150	9	0.0007	0.0007	0.0013	0.0016	0.0020	0.0026
<b>Nickel Base</b> - Inconel 600, 625, 718, Nickel 200 Monel 400, 405, K-Monel, Inconel 600	High Speed Profiling @ .5 D Axial / < .02 D Radial	160	9	0.0007	0.0010	0.0017	0.0016	0.0026	0.0026
	Profiling @ Full Length Axial / < .01 D Radial	145	9	0.0007	0.0011	0.0018	0.0018	0.0022	0.0022
<b>Iron Base</b> Incoloy 800-802, Multimet N-155	High Speed Profiling @ .5 D Axial / < .02 D Radial	155	9	0.0008	0.0013	0.0017	0.0021	0.0025	0.0033
	Profiling @ Full Length Axial / < .01 D Radial	130	9	0.0009	0.0014	0.0019	0.0023	0.0028	0.0038
<b>STEELS ISO-P</b>									
<b>High Strength Steels</b> 4140, 4340, 52100	High Speed Profiling @ 1 x D Axial / < .025 D Radial	500	9	0.0025	0.0038	0.0050	0.0063	0.0076	0.0101
	Profiling @ Full Length Axial / < .015 D Radial	375	9	0.0029	0.0043	0.0058	0.0072	0.0086	0.0116
<b>High Alloy Steels - Mold &amp; Die</b> A-2, P20, 01, 02, D2, H-13	High Speed Profiling @ 1 x D Axial / < .025 D Radial	475	9	0.0022	0.0032	0.0042	0.0053	0.0064	0.0086
	Profiling @ Full Length Axial / < .015 D Radial	350	9	0.0024	0.0037	0.0049	0.0061	0.0073	0.0098
<b>Medium Alloy Steels</b> 200, 250, 300	High Speed Profiling @ Full Length Axial / < .025 D Radial	425	9	0.0025	0.0038	0.0050	0.0063	0.0076	0.0101
	Profiling @ Full Length Axial / < .015 D Radial	375	9	0.0029	0.0043	0.0058	0.0072	0.0086	0.0116
<b>Low Alloy Steels-Maraging</b> 10XX, 11XX, 13XX	High Speed Profiling @ Full Length Axial / < .025 D Radial	525	9	0.0028	0.0041	0.0055	0.0069	0.0083	0.0111
	Profiling @ Full Length Axial / < .015 D Radial	400	9	0.0032	0.0057	0.0063	0.0079	0.0095	0.0127
<b>CAST IRONS ISO-K</b>									
<b>Ductile Iron</b> Ductile Cast Iron	High Speed Profiling @ Full Length Axial / < .025 D Radial	475	9	0.0020	0.0030	0.0040	0.0050	0.0059	0.0079
	Profiling @ Full Length Axial / < .015 D Radial	350	9	0.0023	0.0034	0.0045	0.0057	0.0068	0.0091
<b>Cast Iron</b> Grey 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
	Profiling @ Full Length Axial / < .015 D Radial	375	9	0.0027	0.0041	0.0054	0.0068	0.0081	0.0109
<b>TITANIUM ISO-S</b>									
<b>Titanium Alloys</b> 6AL-4V, ASTM 1, 2, 3, 6AL-2S	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
	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	CUTTING DIAMETER - METRIC							
		M/MIN	FL	6MM	10MM	12MM	16MM	20MM	25MM
<b>STAINLESS STEELS ISO-M</b>		<b>CHIP PER TOOTH</b>							
<b>Precipitation</b> 13-8, 15-5, 17-4PH	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
	Profiling @ Full Length Axial / < .015 D Radial	99	9	0.0584	0.0864	0.1143	0.1448	0.1727	0.2311
<b>Austenitic</b> 302, 303, 304L, 316L	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
	Profiling @ Full Length Axial / < .015 D Radial	107	9	0.0686	0.1041	0.1372	0.1727	0.2057	0.2769
<b>Martensitic</b> 403, 410, 416	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
	Profiling @ Full Length Axial / < .015 D Radial	114	9	0.0737	0.1092	0.1473	0.1829	0.2184	0.2946
<b>HIGH TEMP ALLOYS ISO-S</b>									
<b>Cobalt Base</b> Stellite, Haynes 25, 188, X-40	High Speed Profiling @ .5 D Axial / < .02 D Radial	53	9	0.0127	0.0203	0.0279	0.0356	0.0406	0.0559
	Profiling @ Full Length Axial / < .01 D Radial	46	9	0.0178	0.0178	0.0330	0.0406	0.0508	0.0660
<b>Nickel Base</b> - Inconel 600, 625, 718, Nickel 200 Monel 400, 405, K-Monel, Inconel 600	High Speed Profiling @ .5 D Axial / < .02 D Radial	49	9	0.0178	0.0254	0.0432	0.0406	0.0660	0.0660
	Profiling @ Full Length Axial / < .01 D Radial	44	9	0.0178	0.0279	0.0457	0.0457	0.0559	0.0559
<b>Iron Base</b> Incoloy 800-802, Multimet N-155	High Speed Profiling @ .5 D Axial / < .02 D Radial	47	9	0.0203	0.0330	0.0432	0.0533	0.0635	0.0838
	Profiling @ Full Length Axial / < .01 D Radial	40	9	0.0229	0.0356	0.0483	0.0584	0.0711	0.0965
<b>STEELS ISO-P</b>									
<b>High Strength Steels</b> 4140, 4340, 52100	High Speed Profiling @ 1 x D Axial / < .025 D Radial	152	9	0.0635	0.0965	0.1270	0.1600	0.1930	0.2565
	Profiling @ Full Length Axial / < .015 D Radial	114	9	0.0737	0.1092	0.1473	0.1829	0.2184	0.2946
<b>High Alloy Steels - Mold &amp; Die</b> A-2, P20, 01, 02, D2, H-13	High Speed Profiling @ 1 x D Axial / < .025 D Radial	145	9	0.0559	0.0813	0.1067	0.1346	0.1626	0.2184
	Profiling @ Full Length Axial / < .015 D Radial	107	9	0.0610	0.0940	0.1245	0.1549	0.1854	0.2489
<b>Medium Alloy Steels</b> 200, 250, 300	High Speed Profiling @ Full Length Axial / < .025 D Radial	130	9	0.0635	0.0965	0.1270	0.1600	0.1930	0.2565
	Profiling @ Full Length Axial / < .015 D Radial	114	9	0.0737	0.1092	0.1473	0.1829	0.2184	0.2946
<b>Low Alloy Steels-Maraging</b> 10XX, 11XX, 13XX	High Speed Profiling @ Full Length Axial / < .025 D Radial	160	9	0.0711	0.1041	0.1397	0.1753	0.2108	0.2819
	Profiling @ Full Length Axial / < .015 D Radial	122	9	0.0813	0.1448	0.1600	0.2007	0.2413	0.3226
<b>CAST IRONS ISO-K</b>									
<b>Ductile Iron</b> Ductile Cast Iron	High Speed Profiling @ Full Length Axial / < .025 D Radial	145	9	0.0508	0.0762	0.1016	0.1270	0.1499	0.2007
	Profiling @ Full Length Axial / < .015 D Radial	107	9	0.0584	0.0864	0.1143	0.1448	0.1727	0.2311
<b>Cast Iron</b> Grey 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
	Profiling @ Full Length Axial / < .015 D Radial	114	9	0.0686	0.1041	0.1372	0.1727	0.2057	0.2769
<b>TITANIUM ISO-S</b>									
<b>Titanium Alloys</b> 6AL-4V, ASTM 1, 2, 3, 6AL-2S	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
	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%

**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: VHMG

BACK TO SERIES 

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

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

**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: GVHMG



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

BACK TO SERIES

SERIES: CRMG

MATERIAL	CONDITION	SFM	CUTTING DIAMETER						
			3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"
<b>STAINLESS STEELS ISO-M</b>			<b>CHIP PER TOOTH</b>						
<b>Precipitation</b> 13-8, 15-5, 17-4PH	Slotting @ $\leq .5 \times D$	175	0.00063	0.00081	0.00126	0.00171	0.00216	0.00261	0.00351
	Profiling @ $2 \times D$ Axial / $\leq .5 D$ Radial		0.00090	0.00117	0.00171	0.00234	0.00297	0.00360	0.00486
<b>Austenitic</b> 302, 303, 304L, 316L	Slotting @ $\leq .5 \times D$	225	0.00072	0.00099	0.00153	0.00207	0.00261	0.00315	0.00423
	Profiling @ $2 \times D$ Axial / $\leq .5 D$ Radial		0.00099	0.00135	0.00216	0.00288	0.0036	0.00432	0.00576
<b>Martensitic</b> 403, 410, 416	Slotting @ $\leq .5 \times D$	200	0.00081	0.00108	0.00162	0.00225	0.00279	0.00333	0.00450
	Profiling @ $2 \times D$ Axial / $\leq .5 D$ Radial		0.00117	0.00144	0.00225	0.00306	0.00387	0.00459	0.00621
<b>HIGH TEMP ALLOYS ISO-S</b>									
<b>Cobalt Base</b> Stellite, Haynes 25, 188, X-40, L-605	Slotting @ $.5 \times D$	85	0.00027	0.00036	0.00063	0.0009	0.00117	0.00135	0.00189
	Profiling @ $2 \times D$ Axial / $\leq .5 D$ Radial		0.00027	0.00054	0.00054	0.00108	0.00135	0.00171	0.00225
<b>Nickel Base</b> Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel 400, 405, K-Monel, PermaNickel 300, Inconel 600	Slotting @ $.5 \times D$	60	0.00018	0.00054	0.00081	0.00144	0.00135	0.00225	0.00225
	Profiling @ $2 \times D$ Axial / $\leq .5 D$ Radial		0.00027	0.00054	0.00090	0.00153	0.00153	0.00189	0.00189
<b>Iron Base</b> Incoloy 800-802, Multimet N-155, Timken 16-26-6	Slotting @ $\leq .5 \times D$	70	0.00036	0.00072	0.00117	0.00162	0.00198	0.00243	0.00324
	Profiling @ $2 \times D$ Axial / $\leq .5 D$ Radial		0.00036	0.00081	0.00135	0.0018	0.00225	0.00270	0.00369
<b>STEELS ISO-P</b>									
<b>High Strength Steels</b> 4140, 4340, 52100	Slotting @ $\leq .5 \times D$	225	0.00072	0.00108	0.00162	0.00225	0.00279	0.00333	0.00450
	Profiling @ $2 \times D$ Axial / $\leq .5 D$ Radial		0.00108	0.00144	0.00225	0.00306	0.00387	0.00459	0.00621
<b>High Alloy Steels - Mold &amp; Die</b> A-2, P20, 01, 02, D2, H-13	Slotting @ $\leq .5 \times D$	200	0.00063	0.00090	0.00135	0.00189	0.00234	0.00279	0.00378
	Profiling @ $2 \times D$ Axial / $\leq .5 D$ Radial		0.00090	0.00126	0.00189	0.00252	0.00324	0.00387	0.00522
<b>Medium Alloy Steels</b> 200, 250, 300	Slotting @ $\leq .5 \times D$	250	0.00036	0.00099	0.00171	0.00216	0.00306	0.00351	0.00441
	Profiling @ $2 \times D$ Axial / $\leq .5 D$ Radial		0.00036	0.00126	0.00207	0.00261	0.00351	0.00441	0.00531
<b>Low Alloy Steels-Maraging</b> 10XX, 11XX, 13XX	Slotting @ $\leq .5 \times D$	265	0.00081	0.00117	0.0018	0.00243	0.00306	0.00369	0.00495
	Profiling @ $2 \times D$ Axial / $\leq .5 D$ 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"
<b>STAINLESS STEELS ISO-M</b>			<b>CHIP PER TOOTH</b>								
<b>Precipitation</b> 13-8, 15-5, 17-4PH	Slotting @ $\leq .5 \times D$	53	0.0206	0.0254	0.0330	0.0432	0.0483	0.0549	0.0610	0.0663	0.1016
	Profiling @ $2 \times D$ Axial / $\leq .5 D$ Radial		0.0297	0.0356	0.0432	0.0584	0.0660	0.0754	0.0838	0.0914	0.1397
<b>Austenitic</b> 302, 303, 304L, 316L	Slotting @ $\leq .5 \times D$	68	0.0251	0.0305	0.0381	0.0533	0.0610	0.0663	0.0737	0.0800	0.1219
	Profiling @ $2 \times D$ Axial / $\leq .5 D$ Radial		0.0343	0.0457	0.0559	0.0737	0.0838	0.0914	0.0838	0.1097	0.1651
<b>Martensitic</b> 403, 410, 416	Slotting @ $\leq .5 \times D$	61	0.0274	0.0330	0.0406	0.0584	0.0660	0.0709	0.0787	0.0846	0.1295
	Profiling @ $2 \times D$ Axial / $\leq .5 D$ Radial		0.0366	0.0483	0.0584	0.0787	0.0889	0.0983	0.1067	0.1166	0.1778
<b>HIGH TEMP ALLOYS ISO-S</b>											
<b>Cobalt Base</b> Stellite, Haynes 25, 188, X-40, L-605	Slotting @ $.5 \times D$	26	0.0091	0.0127	0.0152	0.0229	0.0279	0.0297	0.0330	0.0343	0.0559
	Profiling @ $2 \times D$ Axial / $\leq .5 D$ Radial		0.0137	0.0127	0.0127	0.0279	0.0330	0.0343	0.0381	0.0434	0.0660
<b>Nickel Base</b> Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel 400, 405, K-Monel, PermaNickel 300, Inconel 600	Slotting @ $.5 \times D$	18	0.0137	0.0152	0.0203	0.0356	0.0356	0.0343	0.0508	0.0572	0.0660
	Profiling @ $2 \times D$ Axial / $\leq .5 D$ Radial		0.0137	0.0178	0.0229	0.0381	0.0381	0.0389	0.0432	0.0480	0.0559
<b>Iron Base</b> Incoloy 800-802, Multimet N-155, Timken 16-26-6	Slotting @ $\leq .5 \times D$	21	0.0183	0.0229	0.0305	0.0406	0.0457	0.0503	0.0559	0.0617	0.0940
	Profiling @ $2 \times D$ Axial / $\leq .5 D$ Radial		0.0206	0.0279	0.0356	0.0457	0.0508	0.0572	0.0635	0.0686	0.1067
<b>STEELS ISO-P</b>											
<b>High Strength Steels</b> 4140, 4340, 52100	Slotting @ $\leq .5 \times D$	68	0.0274	0.0330	0.0406	0.0584	0.0635	0.0709	0.0762	0.0846	0.1295
	Profiling @ $2 \times D$ Axial / $\leq .5 D$ Radial		0.0366	0.0483	0.0584	0.0787	0.0889	0.0983	0.1067	0.1166	0.1778
<b>High Alloy Steels - Mold &amp; Die</b> A-2, P20, 01, 02, D2, H-13	Slotting @ $\leq .5 \times D$	61	0.0229	0.0254	0.0356	0.0483	0.0533	0.0594	0.0635	0.0709	0.1092
	Profiling @ $2 \times D$ Axial / $\leq .5 D$ Radial		0.0320	0.0406	0.0483	0.0635	0.0711	0.0823	0.0914	0.0983	0.1499
<b>Medium Alloy Steels</b> 200, 250, 300	Slotting @ $\leq .5 \times D$	76	0.0251	0.0330	0.0432	0.0559	0.0660	0.0777	0.0838	0.0892	0.1270
	Profiling @ $2 \times D$ Axial / $\leq .5 D$ Radial		0.0320	0.0432	0.0533	0.0660	0.0762	0.0892	0.0991	0.1120	0.1524
<b>Low Alloy Steels-Maraging</b> 10XX, 11XX, 13XX	Slotting @ $\leq .5 \times D$	80	0.0297	0.0381	0.0457	0.0610	0.0711	0.0777	0.0889	0.0937	0.1422
	Profiling @ $2 \times D$ Axial / $\leq .5 D$ Radial		0.0406	0.0508	0.0635	0.0838	0.0965	0.1074	0.1168	0.1280	0.1930

**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: CRFMG



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

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

**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

BACK TO SERIES 

SERIES: HMG1-\_\_-SF-R

MATERIAL	STANDARD	CUTTING DIAMETER								
	MACHINING	1/32"	0.0394"	3/64"	1/16"	5/64"	3/32"	1/8"	3/16"	1/2"
<b>HARDENED STEELS</b>	<b>ISO-H</b>	<b>CHIP PER TOOTH</b>								
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	CUTTING DIAMETER-METRIC								
	MACHINING	.8mm	1mm	1.2mm	1.5mm	2mm	2.5mm	3mm	4mm	6mm
<b>HARDENED STEELS</b>	<b>ISO-H</b>	<b>CHIP PER TOOTH</b>								
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

BACK TO SERIES 

SERIES: HMG1-\_\_-SF-B

MATERIAL	STANDARD	CUTTING DIAMETER											
	MACHINING	1/64"	0.0200"	1/32"	0.0394"	3/64"	1/16"	5/64"	3/32"	0.1181"	1/8"	3/16"	1/4"
<b>HARDENED STEELS</b>	<b>ISO-H</b>	<b>CHIP PER TOOTH</b>											
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	CUTTING DIAMETER-METRIC										
	MACHINING	.5mm	.6mm	.8mm	1mm	1.5mm	2mm	2.5mm	3mm	4mm	5mm	6mm
<b>HARDENED STEELS</b>	<b>ISO-H</b>	<b>CHIP PER TOOTH</b>										
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

**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

[BACK TO SERIES](#)

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"	
<b>HARDENED STEELS</b>		<b>ISO-H</b>		<b>CHIP PER TOOTH</b>								
Hardened Steels 55-65 HRc	Roughing $\leq .04 \times D$ doc and $.25 \times D$ woc	180-240 SFM										
	Roughing $\leq .03 \times D$ doc and $.25 \times D$ woc		60-120 SFM	0.004	0.001	0.002	0.002	0.003	0.004	0.005	0.006	0.005
Hardened Steels 55-65 HRc	Roughing $\leq .02 \times D$ doc and $.2 \times D$ woc	120-160 SFM		0.004	0.001	0.002	0.002	0.003	0.004	0.005	0.006	0.005
	Roughing $\leq .03 \times D$ doc and $.2 \times D$ woc		50-80 SFM	0.004	0.001	0.001	0.002	0.003	0.004	0.005	0.005	0.005
Hardened Steels 65 HRc and above	Finishing $\leq .04 \times D$ doc and $.4 \times D$ woc	200-250 SFM		0.001	0.002	0.002	0.003	0.004	0.004	0.005	0.005	0.005
	Finishing $\leq .02 \times D$ doc and $.4 \times D$ woc		60-150 SFM	0.001	0.002	0.002	0.003	0.004	0.004	0.005	0.005	0.005
Hardened Steels 65 HRc and above	Finishing $\leq .03 \times D$ doc and $.02-.03 \times D$ woc	150-200 SFM		0.001	0.002	0.002	0.003	0.004	0.004	0.005	0.005	0.005
	Finishing $\leq .03 \times D$ doc and $.02-.03 \times D$ woc		60-120 SFM	0.001	0.002	0.002	0.003	0.004	0.004	0.005	0.005	0.005

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

For light periphery profiling  $\leq .005 \times D$  increase above profiling chip load by 20-25%

## SERIES: CCMG45

[BACK TO SERIES](#)

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

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

For light periphery profiling  $\leq .005 \times D$  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



# SPEED & FEED INFORMATION

BACK TO SERIES

## SERIES: DIAMOND COATED

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

BACK TO SERIES

## SERIES: CRMGD

MATERIAL	CONDITION	CUTTING DIAMETER					
		1/8"	3/16"	1/4"	5/16"	3/8"	1/2"
<b>Non- Ferrous</b>		<b>ISO-N</b>					
<i>Aramid Fiber / Carbon Fiber - CRFP &amp; AFRP</i>							
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
<i>Fiberglass - GFRP</i>							
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
<i>Plastics</i>							
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
<b>Non- Ferrous</b>		<b>ISO-N</b>					
<i>Aramid Fiber / Carbon Fiber - CRFP &amp; AFRP</i>							
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
<i>Fiberglass - GFRP</i>							
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
<i>Plastics</i>							
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

**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: VBMG

BACK TO SERIES 

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

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

*For light periphery profiling  $\leq .005 \times D$  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

# SPEED & FEED INFORMATION

BACK TO SERIES 

SERIES: HXMG2 & HXMG4

MATERIAL	AXIAL DEPTH MAX & 75% CUTTING WIDTH					SFM	CUTTING DIAMETER					
	1/8	1/4	3/8	1/2	5/8		1/8"	1/4"	3/8"	1/2"	5/8"	
<b>STAINLESS STEELS</b>	<b>ISO-M</b>	<b>CONDITION</b>					<b>CHIP PER TOOTH</b>					
<b>Precipitation &lt;35 HRc</b> 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
<b>Precipitation &gt;35 HRc</b> 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
<b>Austenitic &lt; 28 HRc</b> 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
<b>STEELS</b>	<b>ISO-P</b>											
<b>High Strength Steels</b> 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
<b>High Alloy Steels - Mold &amp; Die &lt;50 HRc</b> 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
<b>High Alloy Steels - Mold &amp; Die &gt;50 HRc</b> 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
<b>Medium Alloy Steels</b> 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
<b>CAST IRONS</b>	<b>ISO-K</b>											
<b>Cast Iron &lt;40 HRc</b>		0.006	0.010	0.016	0.020	0.022	1000-3000	.003-.006	.006-.011	.009-.016	.012-.022	.012-.024
<b>Cast Iron &gt;40 HRc</b>		0.006	0.010	0.016	0.020	0.022	800-1200	.003-.006	.006-.011	.009-.016	.012-.022	.012-.024
<b>TITANIUM</b>	<b>ISO-S</b>											
<b>Titanium Alloys</b> 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					M/MIN	CUTTING DIAMETER-METRIC					
	3mm	6mm	8mm	10mm	12mm		3mm	6mm	8mm	10mm	12mm	
<b>STAINLESS STEELS</b>	<b>ISO-M</b>	<b>CONDITION</b>					<b>CHIP PER TOOTH</b>					
<b>Precipitation &lt;35 HRc</b> 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
<b>Precipitation &gt;35 HRc</b> 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
<b>Austenitic &lt; 28 HRc</b> 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
<b>STEELS</b>	<b>ISO-P</b>											
<b>High Strength Steels</b> 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
<b>High Alloy Steels - Mold &amp; Die &lt;50 HRc</b> 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
<b>High Alloy Steels - Mold &amp; Die &gt;50 HRc</b> 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
<b>Medium Alloy Steels</b> 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
<b>CAST IRONS</b>	<b>ISO-K</b>											
<b>Cast Iron &lt;40 HRc</b>		0.140	0.240	0.330	0.430	0.480	300-900	.08-.15	.15-.25	.19-.41	.23-.41	.30-.56
<b>Cast Iron &gt;40 HRc</b>		0.140	0.240	0.330	0.430	0.480	245-365	.08-.15	.15-.25	.19-.41	.23-.41	.30-.56
<b>TITANIUM</b>	<b>ISO-S</b>											
<b>Titanium Alloys</b> 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

**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: CDR & MDR

[BACK TO SERIES](#)

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)									
<b>STAINLESS STEELS ISO-M</b>									
<b>Precipitation</b> 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
<b>Austenitic</b> 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
<b>Martensitic</b> 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
<b>HIGH TEMP ALLOYS ISO-S</b>									
<b>Cobalt Base</b> 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
<b>Nickel Base</b> Inconel 600, 625, 718, Nickel 200 Monel 400, 405, K-Monel, Inconel 600	Under 35 Rc	150	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
<b>Iron Base</b> 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
<b>STEELS ISO-P</b>									
<b>High Strength Steels</b> 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
<b>High Alloy Steels - Mold &amp; Die</b> 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
<b>Medium Alloy Steels</b> 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
<b>Low Alloy Steels-Maraging</b> 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
<b>CAST IRONS ISO-K</b>									
<b>Ductile Iron</b> Ductile Cast Iron		250	350	.0013 - .0025	.0025 - .0035	.0035 - .0045	.0035 - .0045	.0045 - .0055	.0065 - .0075
<b>Cast Iron</b> Grey Cast Iron		250	400	.0013 - .0025	.0025 - .0035	.0035 - .0045	.0035 - .0045	.0045 - .0055	.0065 - .0075
<b>TITANIUM ISO-S</b>									
<b>Titanium Alloys</b> 6AL-4V, ASTM 1, 2, 3, 6AL-2S <small>For 5553, decrease SFM and IPM by 25%</small>		225	350	.0005 - .0010	.0010 - .0020	.0020 - .0030	.0025 - .0035	.0030 - .0040	.0035 - .0055
<b>COPPER ISO-N</b>									
<b>Copper Alloys</b>		300	400	.0015 - .0025	.0025 - .0035	.0035 - .0045	.0035 - .0045	.0045 - .0055	.0065 - .0075
<b>BRASS ISO-N</b>									
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
<b>BRONZE ISO-N</b>									
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
<b>MAGNESIUM ISO-N</b>									
		300	400	.0020 - .0035	.0035 - .0045	.0045 - .0055	.0065 - .0075	.0085 - .0095	.0085 - .0095
<b>ALUMINUM ISO-N</b>									
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

# SPEED & FEED INFORMATION

## SERIES: CDR & MDR (METRIC)

MATERIAL	MATERIAL HARDNESS	RECOMMENDED M/MIN		CUTTING DIAMETER - METRIC					
		NON-COOLANT (M/MIN)	COOLANT FED (M/MIN)	1.5MM-3MM	3MM-6.5MM	6.5MM-10MM	10MM-13MM	13MM-16MM	16MM-20MM
MILLIMETERS PER REV (MPR)									
<b>STAINLESS STEELS ISO-M</b>									
<b>Precipitation</b>									
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
<b>Austenitic</b>									
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
<b>Martensitic</b>									
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
<b>HIGH TEMP ALLOYS ISO-S</b>									
<b>Cobalt Base</b>									
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
<b>Nickel Base</b>									
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
<b>Iron Base</b>									
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
<b>STEELS ISO-P</b>									
<b>High Strength Steels</b>									
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
<b>High Alloy Steels - Mold &amp; Die</b>									
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
<b>Medium Alloy Steels</b>									
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
<b>Low Alloy Steels-Maraging</b>									
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
<b>CAST IRONS ISO-K</b>									
<b>Ductile Iron</b>									
Ductile Cast Iron		76	106	.0330-.0635	.0635-.0889	.0889-.1143	.0889-.1143	.1143-.1397	.1651-.1905
<b>Cast Iron</b>									
Grey Cast Iron		76	122	.0330-.0635	.0635-.0889	.0889-.1143	.0889-.1143	.1143-.1397	.1651-.1905
<b>TITANIUM ISO-S</b>									
<b>Titanium Alloys</b>									
6AL-4V, ASTM 1, 2, 3, 6AL-2S		68	106	.0127-.0254	.0254-.0508	.0508-.0672	.0635-.0889	.0762-.1016	.0889-.1397
For 5553, decrease SFM and IPM by 25%									
<b>COPPER ISO-N</b>									
<b>Copper Alloys</b>									
		90	122	.0381-.0635	.0635-.0889	.0889-.1143	.0889-.1143	.1143-.1397	.1651-.1905
<b>BRASS ISO-N</b>									
<b>Short Chips</b>									
		90	122	.0381-.0889	.0889-.1143	.1143-.1397	.1651-.1905	.2159-.2413	.2519-.2413
<b>Long Chips</b>									
		60	90	.0254-.0635	.0635-.0889	.0889-.1143	.1397-.1651	.1905-.2159	.1905-.2159
<b>BRONZE ISO-N</b>									
<b>Short Chips</b>									
		60	90	.0254-.0635	.0635-.0889	.0889-.1143	.0889-.1143	.1397-.1651	.1905-.2159
<b>Long Chips</b>									
		45	76	.0177-.0381	.0381-.0635	.0365-.0889	.0635-.0889	.1143-.1397	.1651-.1905
<b>MAGNESIUM ISO-N</b>									
		90	122	.0580-.0889	.0889-.1143	.1143-.1397	.1651-.1905	.2159-.2413	.2159-.2413
<b>ALUMINUM ISO-N</b>									
<b>6061-T6, 7075</b>									
		122	152	.0580-.0889	.0889-.1143	.1143-.1397	.1651-.1905	.2159-.2431	.2159-.2413
<b>Die Cast</b>									
		90	122	.0254-.0635	.0635-.0889	.0889-.1143	.1397-.1651	.1905-.2159	.1905-.2159

**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: 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											
<b>STAINLESS STEELS</b>		<b>ISO-M</b>									
<b>Precipitation</b> 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	
<b>Austenitic &amp; Martensitic</b> 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	
<b>HIGH TEMP ALLOYS</b>		<b>ISO-S</b>									
<b>Nickel Base</b> Inconel, Hastelloy, Monel	80-130	0.0003	0.0005	0.0008	0.0010	0.0015	0.0020	0.0025	0.0030	0.0035	
<b>STEELS</b>		<b>ISO-P</b>									
<b>Medium Carbon Steel</b> 1045, 4140, 4340, 52100, <46HrC	250	0.0003	0.0005	0.0008	0.0009	0.0010	0.0015	0.0020	0.0025	0.0030	
<b>Medium Carbon Steel</b> 1030, 4130, 40140, 25-35HrC	300	0.0005	0.0010	0.0015	0.0020	0.0030	0.0035	0.0040	0.0045	0.0050	
<b>Low Carbon Steel</b> 1018, 12L-14, <25 HrC	500	0.0005	0.0010	0.0015	0.0020	0.0030	0.0035	0.0040	0.0045	0.0050	
<b>CAST IRONS</b>		<b>ISO-K</b>									
<b>Ductile Iron</b> Ductile Cast Iron	300	0.0006	0.0007	0.0010	0.0015	0.0020	0.0025	0.0030	0.0035	0.0040	
<b>Cast Iron</b> Cast Iron	350-500	0.0005	0.0006	0.0009	0.0010	0.0015	0.0020	0.0025	0.0030	0.0035	
<b>TITANIUM</b>		<b>ISO-S</b>									
<b>Titanium Alloys</b> 6AL-4V	200-250	0.0003	0.0005	0.0008	0.0010	0.0015	0.0020	0.0025	0.0030	0.0035	
<b>ALUMINUM</b>		<b>ISO-N</b>									
T-6061, T7075	1000	0.0005	0.0010	0.0015	0.0020	0.0030	0.0035	0.0040	0.0045	0.0050	
<b>BRASS</b>		<b>ISO-N</b>									
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											
<b>STAINLESS STEELS</b>		<b>ISO-M</b>									
<b>Precipitation</b> 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	
<b>Austenitic &amp; Martensitic</b> 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	
<b>HIGH TEMP ALLOYS</b>		<b>ISO-S</b>									
<b>Nickel Base</b> Inconel, Hastelloy, Monel	24-40	0.01mm	0.01mm	0.02mm	0.03mm	0.04mm	0.05mm	0.06mm	0.08mm	0.09mm	
<b>STEELS</b>		<b>ISO-P</b>									
<b>Medium Carbon Steel</b> 1045, 4140, 4340, 52100, <46HrC	76	0.01mm	0.01mm	0.02mm	0.02mm	0.03mm	0.04mm	0.05mm	0.06mm	0.08mm	
<b>Medium Carbon Steel</b> 1030, 4130, 40140, 25-35HrC	90	0.01mm	0.03mm	0.04mm	0.05mm	0.08mm	0.09mm	0.10mm	0.11mm	0.13mm	
<b>Low Carbon Steel</b> 1018, 12L-14, <25 HrC	152	0.01mm	0.03mm	0.04mm	0.05mm	0.08mm	0.09mm	0.10mm	0.11mm	0.13mm	
<b>CAST IRONS</b>		<b>ISO-K</b>									
<b>Ductile Iron</b> Ductile Cast Iron	90	0.02mm	0.02mm	0.03mm	0.04mm	0.05mm	0.06mm	0.08mm	0.09mm	0.10mm	
<b>Cast Iron</b> Cast Iron	107-152	0.01mm	0.02mm	0.02mm	0.03mm	0.04mm	0.05mm	0.06mm	0.08mm	0.09mm	
<b>TITANIUM</b>		<b>ISO-S</b>									
<b>Titanium Alloys</b> 6AL-4V	60-76	0.01mm	0.01mm	0.02mm	0.03mm	0.04mm	0.05mm	0.06mm	0.08mm	0.09mm	
<b>ALUMINUM</b>		<b>ISO-N</b>									
T-6061, T7075	305	0.01mm	0.03mm	0.04mm	0.05mm	0.08mm	0.09mm	0.10mm	0.11mm	0.13mm	
<b>BRASS</b>		<b>ISO-N</b>									
Free Machining	244	0.01mm	0.03mm	0.04mm	0.05mm	0.08mm	0.09mm	0.10mm	0.11mm	0.13mm	

**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

# 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
VXMG4T	4 Flute - Variable FL, High Performance Roughing Applications	48
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

- High Performance
- Micro Catalog
- General Purpose

# CATALOGS

Melin's product offering is separated in 3 different catalogs. Call Customer Service to order additional copies or download our interactive PDFs online at [www.melintool.com](http://www.melintool.com)  
**PH: 216-362-4200 or 1-800-521-1078**

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





With Melin's **HIGH PERFORMANCE** **PRODUCT LINE**, you **BENEFIT FROM THE MANUFACTURER'S ADVANTAGE— Melin Tool's high performance products are manufactured in-house, in our Cleveland, Ohio Facility.** Our advantage is that we have complete control of the entire manufacturing process. We use the highest quality carbide rod and state-of-the-art grinding, inspection and coating equipment. Melin Tool provides **SUPERIOR** performance, with reliable and consistent quality - **EVERY TIME!**



Contact Your Authorized  
Melin Distributor Today

*ALL PRODUCTS MANUFACTURED IN OUR OWN USA PLANT*

LIT: HP 2016

[www.melintool.com](http://www.melintool.com)

5565 Venture Drive Cleveland, OH USA

**TEL:** 216-362-4200

**TEL** (toll free): 1-800-521-1078

**FAX:** 216-362-4230

**FAX** (toll free): 1-800-521-1558

**MELIN**





With Melin's **HIGH PERFORMANCE PRODUCT LINE**, you **BENEFIT FROM THE MANUFACTURER'S ADVANTAGE— Melin Tool's high performance products are manufactured in-house, in our Cleveland, Ohio Facility.** Our advantage is that we have complete control of the entire manufacturing process. We use the highest quality carbide rod and state-of-the-art grinding, inspection and coating equipment. Melin Tool provides **SUPERIOR** performance, with reliable and consistent quality - **EVERY TIME!**



Contact Your Authorized  
Melin Distributor Today

*ALL PRODUCTS MANUFACTURED IN OUR OWN USA PLANT*

LIT: HP 2016

[www.melintool.com](http://www.melintool.com)

5565 Venture Drive Cleveland, OH USA

**TEL:** 216-362-4200

**TEL** (toll free): 1-800-521-1078

**FAX:** 216-362-4230

**FAX** (toll free): 1-800-521-1558