

YU-TP18

BEST VALUE IN THE WORLD OF CUTTING TOOLS



FOR TITANIUM, STAINLESS STEEL AND ALLOY STEELS :
TOUGH MATERIALS?
TAKE IT ON WITH TITANOX

TitaNox Power

INDUSTRY-LEADING SOLID CARBIDE END MILLS

HIGH-PERFORMANCE
MACHINING MADE EASY:

- Variable Helix and Pitch
- 4 Flute and 5 Flute
- Square End, Chamfer and Radius
- Standard and Extended Length
- Inch and Metric Sizes

Take It On With

TitaNox Power

HIGH-PERFORMANCE MACHINING MADE EASY.

- ▶ Titanium
- ▶ Stainless Steel
- ▶ Alloy Steels



4-Flute

5-Flute



If you've been looking for a superior carbide end mill that won't back down when the going gets tough, it's time you look at TitaNox.

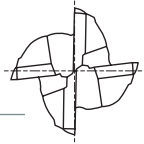
The TitaNox line is built to take on titanium, stainless steel, alloy steels, and more. With a choice of 4- and 5-flute designs and extra-rigid high-speed performance, TitaNox makes the perfect match for aerospace, power generation and medical applications.

TitaNox — Nothing Cuts Better.

With more choices in high-performance carbide end mills, YG-1 is the undisputed leader in end mill offerings. And with the TitaNox line, you have a full selection of extremely durable end mills built to take on the toughest materials in the business. From titanium to stainless steel and more—TitaNox rules. In either 4-flute or 5-flute configurations you get:

- ▶ YG-1 advanced coating for better wear resistance
- ▶ Better thermal stability
- ▶ Optimized edge design provides excellent performance in heavy cutting applications
- ▶ Excellent performance in difficult-to-machine materials
- ▶ Perfect solution for aerospace, power generation and medical applications
- ▶ Premium grade substrate for longer tool life

TitaNox Power 4-FLUTE DOUBLE CORE END MILLS

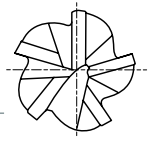


Let the Chips Fly.

For heavy cutting in slotting and profiling applications, our true double-core design provides faster chip evacuation and improved dimensional stability. Experience what a difference double-core design can make in your operation.

- ▶ Highly rigid double core adds stability and improves rigidity
- ▶ Unique 4-flute design provides excellent chip evacuation
- ▶ Variable flute design featuring multiple helix helps increase performance, reduce vibration and eliminate chatter

TitaNox Power 5-FLUTE END MILLS



Strong Performance — Right to the Finish.

These new 5-flute end mills are built to handle high-speed machining with fine finishing ability.

- ▶ 5-flute multiple helix design for fast, fine finishing in tough materials
- ▶ Multiple-helix geometry delivers smooth cutting with reduced chatter
- ▶ The perfect choice for profiling, finishing, peel milling operations and more

GUIDE TO ICONS

The tool is made of micrograin carbide



Helix Angle



Tool Ends:



Cutting Conditions



No. of Flutes



Type of Shank



Plain shank

Weldon flat



Radius

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	DIAMETER		PAGE	
			Min.	Max.		
INCH						
UGMG42		4-FLUTE DOUBLE CORE STANDARD LENGTH (Plain Shank)	CORNER RADIUS	1/4	1	10
UGMG43		4-FLUTE DOUBLE CORE STANDARD LENGTH (Weldon Flat Shank)	CORNER RADIUS	3/8	1	11
UGMH12		5-FLUTE STANDARD LENGTH (Plain Shank)	SQUARE END	1/8	1-1/4	14
UGMG32			CHAMFER	1/8	1	14
UGMG34			CORNER RADIUS	1/8	1-1/4	14
UGMH06		5-FLUTE EXTENDED LENGTH (Plain Shank)	SQUARE END	1/8	1	15
UGMH07			CORNER RADIUS	1/8	1	15
METRIC						
GMG40		4-FLUTE DOUBLE CORE EXTENDED LENGTH (Plain Shank)	CORNER RADIUS	6.0	25.0	11
GMG24 GMG26		5-FLUTE STANDARD LENGTH (Plain Shank)	CHAMFER	6.0	25.0	16
GMG28 GMG30			CORNER RADIUS	6.0	25.0	16
RECOMMENDED CUTTING CONDITIONS					18	

⊙ Excellent ○ Good

P				M	K	N	S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels	Stainless Steels	Cast Iron	Aluminum	Titanium
-HB225	HB225-352	HRC30-40	HRC40-45				

○	○	○		⊙	○		⊙
○	○	○		⊙	○		⊙
○	○	○		⊙	○		⊙
○	○	○		⊙	○		⊙
○	○	○		⊙	○		⊙
○	○	○		⊙	○		⊙
○	○	○		⊙	○		⊙

○	○	○		⊙	○		⊙
○	○	○		⊙	○		⊙
○	○	○		⊙	○		⊙

4-FLUTE

Our 4-Flute Double-Core Design Has One Purpose – Remove Material Faster.

With an extremely innovative 4-flute geometry, the TitaNox double-core end mill with advanced coating is built to not only survive but thrive in tough materials like titanium, stainless steel and more.

4-FLUTE DOUBLE-CORE END MILLS

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6



“ You would be hard pressed to find a tool that can handle a heavier cut in full slotting operations. It’s outstanding. ”

President,
Aerospace-Focused Corporation

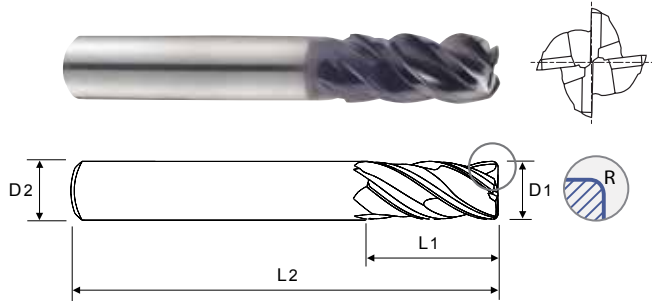
P				M	K	N	S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels	Stainless Steels	Cast Iron	Aluminum	Titanium
-HB225	HB225-352	HRc30-40	HRc40-45				
○	○	○		◎	○		◎

◎ : Excellent ○ : Good

4-FLUTE STANDARD LENGTH

DOUBLE CORE with CORNER RADIUS

Inch: Page 10

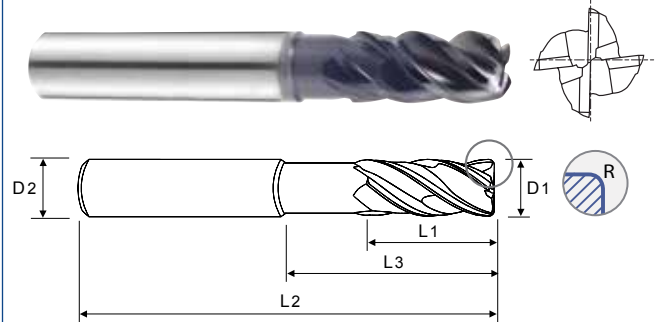


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4-FLUTE EXTENDED LENGTH

DOUBLE CORE with CORNER RADIUS

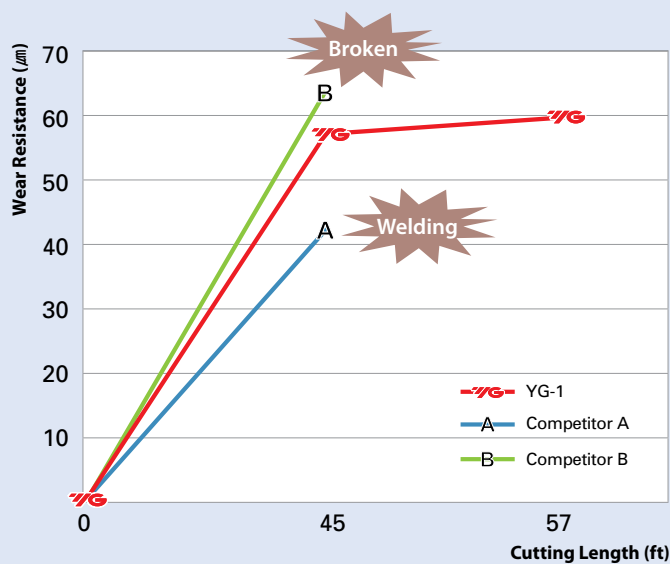
Metric: Page 11



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4-Flute Double Core End Mills vs. Two Competitors

Cutting Conditions			
Milling Method	Slotting	Feed	10 in./min.
Work Material	- DIN : Ti6Al4V (Titanium) - WR : 3.7165.1	Cutting Depth	.470" (Axial Depth)
		Coolant	Wet Cut
Size	Ø12(R1) x Ø12 x 26 x 80	Overhang	1.41"
RPM	1591 rev./min.	Machine	Machining Center



Total Milling Length : 57 ft.



Competitor A

Total Milling Length : 53 ft.



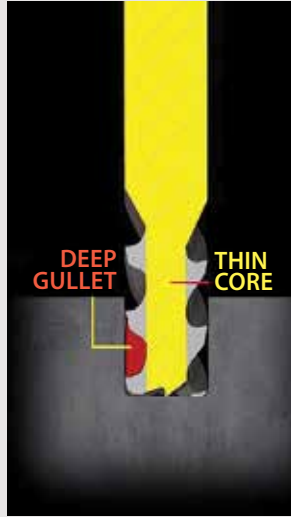
Competitor B

Total Milling Length : 53 ft.

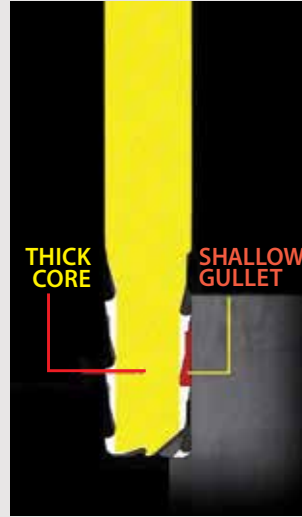


How Our 4-Flute Double-Core Design Can Cut It Where Others Can't.

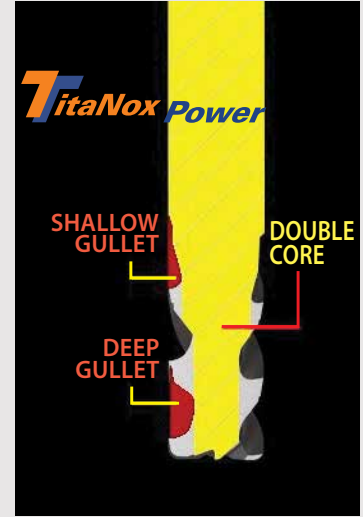
Whether in profiling or slotting conditions, the TitaNox double-core design takes end milling titanium and other tough metals to a new level. With our super-rigid, heat resistant design featuring an innovative large gullet configuration, the TitaNox can cut it where single-core designs can't. With outstanding chip evacuation and the added ability to maneuver in tough materials, the TitaNox double-core end mills can combine heavy profiling and slotting in the same move – without vibration or chip packing.



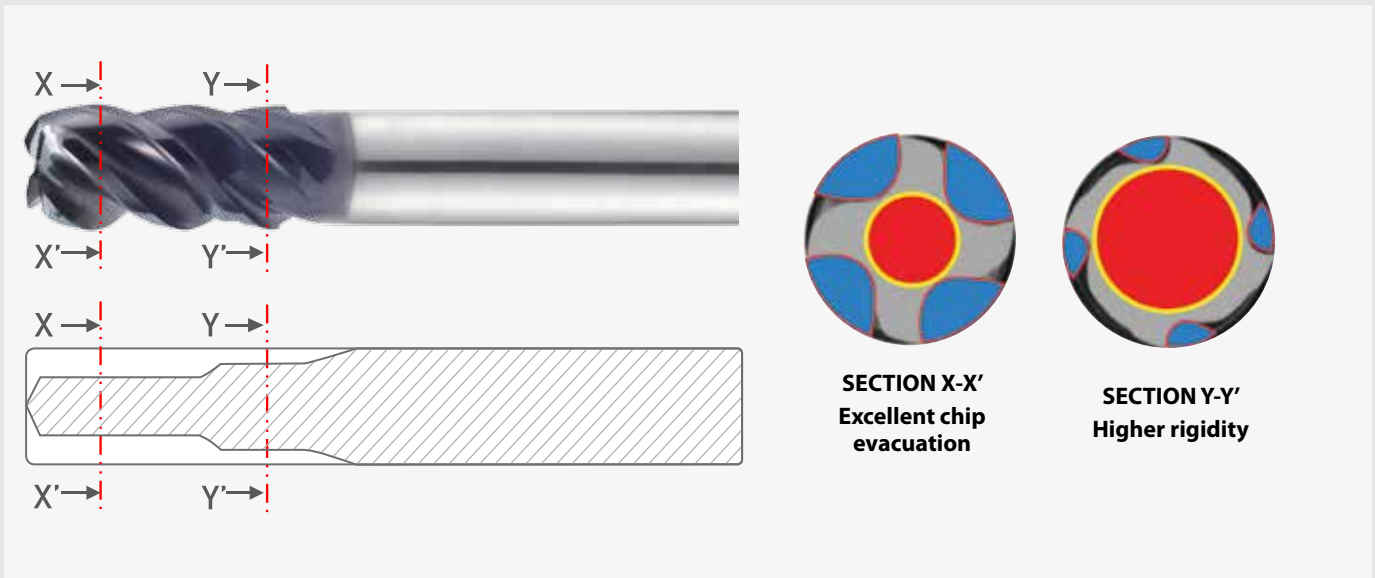
▲ Thin-core designs allow aggressive cutting at first, but are soon slowed down due to excessive vibration, and often break.



▲ Thick-core designs provide enhanced stability but don't deliver enough chip evacuation, which can often lead to catastrophic failure.

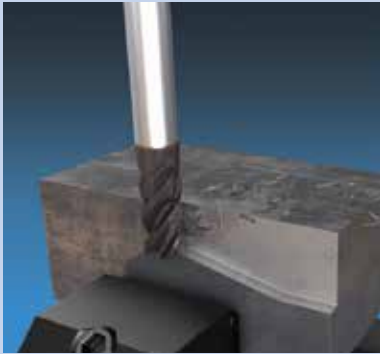


▲ The TitaNox double-core design provides the best of both worlds – excellent chip evacuation combined with tool rigidity – to ensure stability, cut after cut. All this, plus quiet, vibration-free operation.

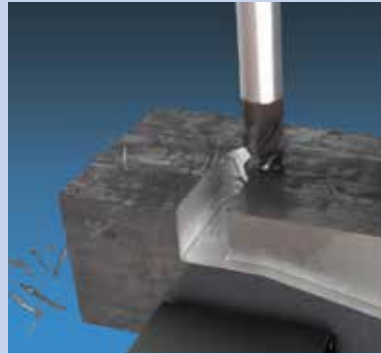


▲ The illustration above detailed along the X-X' axis shows how the 4-flute design starts the cut with aggressive chip evacuation. The Y-Y' axis shows how the double core comes into play, providing perfect slotting operations through its extra-rigid double-core design.

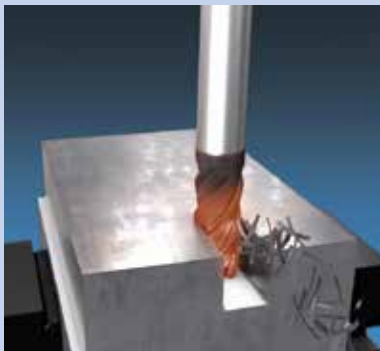
Super-Stable, Super-Performing, Super-Productive.



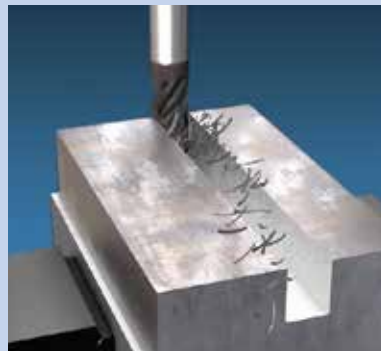
▲ For smooth, effortless profiling, the double-core design provides extremely stable cutting for increased productivity. No other end mill performs better in tough cutting conditions.



▲ Switch from profiling to slotting without excessive vibration without loading up. TitaNox double-core design pushes productivity higher in tough-to-mill materials.



▲ Other 4-flute single-core tools can load up in heavy axial depths of cut and break, as shown in the illustration above.



▲ The TitaNox super-rigid design and large gullet configuration provide excellent chip evacuation in titanium.

Our Advanced Coating cuts faster—and lasts longer.

Compared to other competitive coatings currently on the market, YG-1's new advanced coating brings you the best of both worlds—increased tool hardness and higher speed performance. It all adds up to increased productivity in tough materials, and longer tool life. But what really sets our advanced coating apart is how it makes the TitaNox line the best value around in cutting tools — just another way YG-1 adds more value for less.

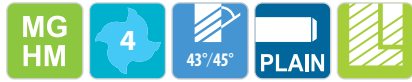
The YG-1 Technical Center provides turnkey custom-engineered tooling solutions.

Bring us your special orders. The YG-1 Technical Center is your one-stop center for all your tool-making needs. With state-of-the-art manufacturing assets, including a full assortment of top-of-the-line CNC stations, multiple high-performance grinding and milling machines, plus flexible programming testing modules, the YG-1 Tech Center gives you a turnkey solution to tool design, testing and manufacturing. ▼

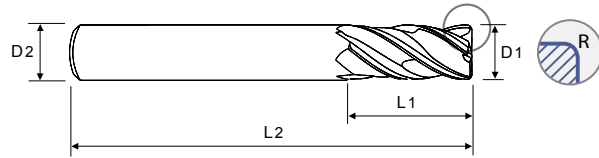


4-FLUTE DOUBLE CORE STANDARD LENGTH (PLAIN SHANK)

UGMG42 SERIES



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Unit : INCH

OD (D ₁)	SD (D ₂)	LOC (L ₁)	OAL (L ₂)	Corner Radius							
				.010	.015	.030	.060	.090	.125	.190	.250
				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/4	1/4	9/16	2-1/2	UGMG42802	UGMG42016	UGMG42901	UGMG42902				
		3/4	2-1/2			UGMG42924	UGMG42925				
		1	3			UGMG42S926*	UGMG42S927*				
3/8	3/8	1/2	2-1/2			UGMG42K998	UGMG42K999	UGMG42K801			
		7/8	2-1/2			UGMG42928	UGMG42929	UGMG42930			
		13/16	2-1/2	UGMG42931		UGMG42905	UGMG42906	UGMG42907			
		1	3	UGMG42932	UGMG42803	UGMG42933	UGMG42934	UGMG42935			
		1-1/4	3	UGMG42S936*	UGMG42S804*	UGMG42S937*	UGMG42S938*	UGMG42S939*			
1/2	1/2	1	3	UGMG42940		UGMG42908	UGMG42909	UGMG42910	UGMG42911		
		1-1/4	3-1/2		UGMG42805	UGMG42912	UGMG42941	UGMG42942	UGMG42943		
		1-5/8	4			UGMG42S944*	UGMG42S945*	UGMG42S946*	UGMG42S947*		
		2	4			UGMG42S806*	UGMG42S807*	UGMG42S808*	UGMG42S809*		
5/8	5/8	1-1/4	3-1/2			UGMG42040	UGMG42913	UGMG42914	UGMG42915		
		1-5/8	4			UGMG42948	UGMG42949	UGMG42950	UGMG42951		
		2	4			UGMG42S952*	UGMG42S953*	UGMG42S954*	UGMG42S955*		
		3-1/4	6			UGMG42S956*	UGMG42S957*	UGMG42S958*	UGMG42S959*		
3/4	3/4	1-1/2	4			UGMG42048	UGMG42916	UGMG42917	UGMG42918	UGMG42919	UGMG42960
		1-7/8	4			UGMG42961	UGMG42962	UGMG42963	UGMG42964	UGMG42965	UGMG42966
		2-1/4	5			UGMG42967	UGMG42968	UGMG42969	UGMG42970	UGMG42971	UGMG42972
		3-1/4	6			UGMG42S973*	UGMG42S974*	UGMG42S975*	UGMG42S976*	UGMG42S977*	UGMG42S978*
1	1	2	5			UGMG42064	UGMG42920	UGMG42921	UGMG42922	UGMG42923	UGMG42979
		2-5/8	5			UGMG42980	UGMG42981	UGMG42982	UGMG42983	UGMG42984	UGMG42985
		3	6			UGMG42986	UGMG42987	UGMG42988	UGMG42989	UGMG42990	UGMG42991
		4-1/4	7			UGMG42S992*	UGMG42S993*	UGMG42S994*	UGMG42S995*	UGMG42S996*	UGMG42S997*

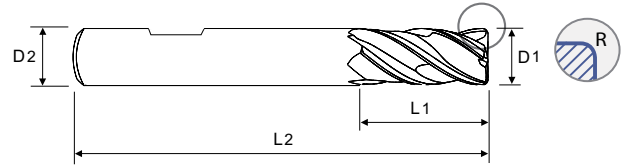
* Length of cut in excess of 3xD at 45° single-helix requires feed reduction of approximately 50%

4-FLUTE DOUBLE CORE STANDARD LENGTH (WELDON FLAT SHANK)

UGMG43 SERIES



Pages 18-19



Unit: INCH

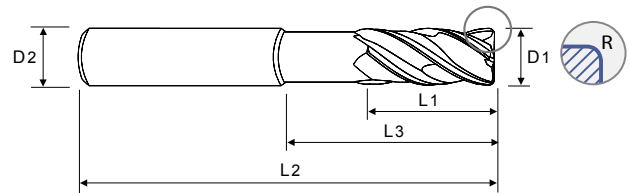
OD (D ₁)	SD (D ₂)	LOC (L ₁)	OAL (L ₂)	Corner Radius					
				.010	.030	.060	.090	.125	.190
				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
3/8	3/8	13/16	2-1/2	UGMG43024	UGMG43905	UGMG43906	UGMG43907		
1/2	1/2	1	3	UGMG43032	UGMG43908	UGMG43909	UGMG43910	UGMG43911	
		1-1/4	3-1/2		UGMG43912	UGMG43924			
5/8	5/8	1-1/4	3-1/2		UGMG43040	UGMG43913	UGMG43914	UGMG43915	
3/4	3/4	1-1/2	4		UGMG43048	UGMG43916	UGMG43917	UGMG43818	UGMG43919
1	1	2	5		UGMG43064	UGMG43920	UGMG43921	UGMG43922	UGMG43923

4-FLUTE DOUBLE CORE EXTENDED LENGTH (PLAIN SHANK)

GMG40 SERIES



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Unit: METRIC

OD (D ₁)		SD (D ₂)	LOC (L ₁)	LBS (L ₃)	OAL (L ₂)	Corner Radius						
Metric	Inch					0.50	1.00	1.50	2.00	3.00	3.50	4.00
						EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
6	.2362	6	13	20	57	GMG40060	GMG40901					
8	.315	8	19	25	63	GMG40080	GMG40902	GMG40903	GMG40904			
10	.3937	10	22	30	72	GMG40100	GMG40905	GMG40906	GMG40907			
12	.4724	12	26	35	83	GMG40120	GMG40908	GMG40909	GMG40910	GMG40911		
14	.5512	14	26	35	83		GMG40140		GMG40912			
16	.6299	16	35	43	92		GMG40160	GMG40913	GMG40914	GMG40915		GMG40916
20	.7874	20	44	56	110		GMG40200	GMG40917	GMG40918	GMG40919	GMG40920	GMG40921
25	.9843	25	55	70	130		GMG40250	GMG40922	GMG40923	GMG40924		GMG40925

5-FLUTE

Cuts Through the Toughest Materials. Cuts the Chatter, Too!

Our 5-flute multiple-helix design puts the power where you need it. For profiling and high-speed milling, you can't find a better choice—or a better value.



5-FLUTE END MILLS

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6



“As a machining engineer in the energy sector, I have never seen a 5-flute end mill provide this kind of performance in profile milling. It is now my number-one choice for high-speed milling operations.”

Machining Engineer,
Major Turbine Manufacturer

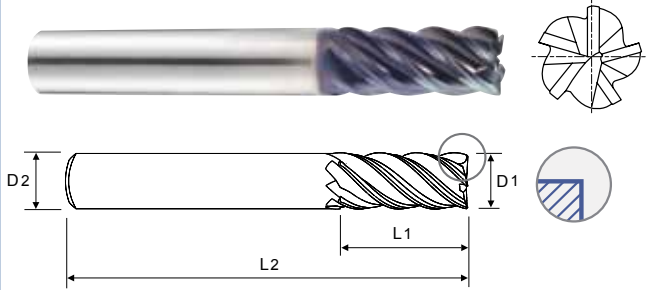
P				M	K	N	S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels	Stainless Steels	Cast Iron	Aluminum	Titanium
-HB225	HB225-352	HRc30-40	HRc40-45				
○	○	○		◎	○		◎

◎ : Excellent ○ : Good

5-FLUTE STANDARD LENGTH

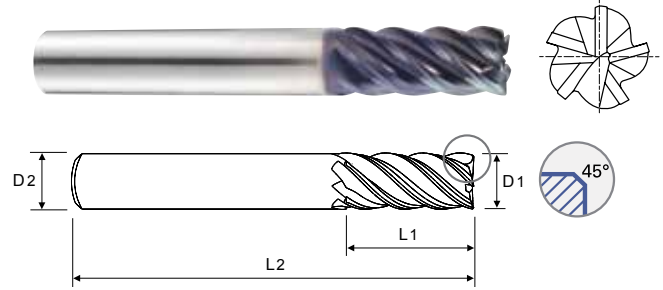
SQUARE END

Inch: Page 14



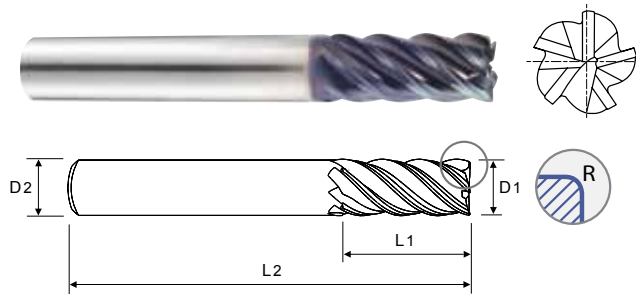
CHAMFER

Inch: Page 14 | Metric: Page 16



CORNER RADIUS

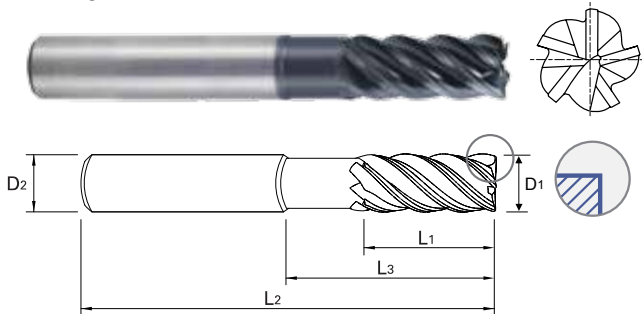
Inch: Page 14 | Metric: Page 16



5-FLUTE EXTENDED LENGTH

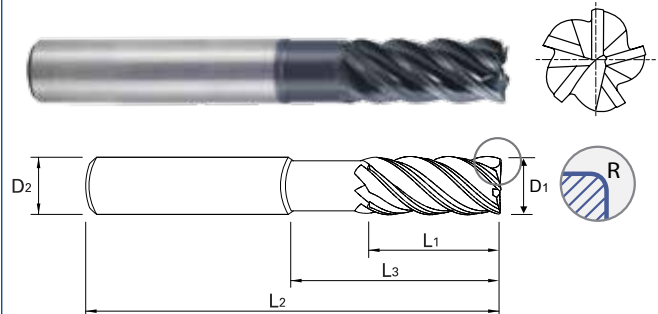
SQUARE END

Inch: Page 15



CORNER RADIUS

Inch: Page 15

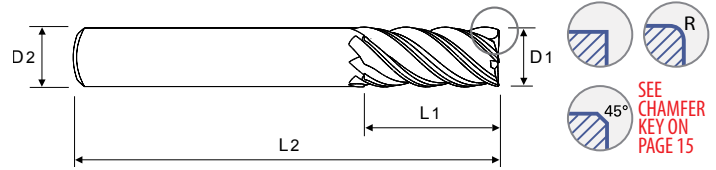


5-FLUTE STANDARD LENGTH (PLAIN SHANK)

UGMH12 | UGMG32 | UGMG34 SERIES



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SEE CHAMFER KEY ON PAGE 15

Unit : INCH

OD (D ₁)	SD (D ₂)	LOC (L ₁)	OAL (L ₂)	Square End	Chamfer	Corner Radius													
													.015	.030	.060	.090	.125	.190	.250
						EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.			
1/8	1/8	1/4	1-1/2	UGMH12008	UGMG32008	UGMG34008	UGMG34950												
		3/8	1-1/2	UGMH12901	UGMG32901	UGMG34901	UGMG34951												
		1/2	2-1/2	UGMH12S902*		UGMG34S952*	UGMG34S953*												
		3/4	2-1/2	UGMH12S903*		UGMG34S954*	UGMG34S955*												
3/16	3/16	5/16	2	UGMH12012	UGMG32012	UGMG34012	UGMG34956												
		9/16	2	UGMH12904	UGMG32902	UGMG34902	UGMG34957												
		3/4	2-1/2	UGMH12S905*		UGMG34S958*	UGMG34S959*												
1/4	1/4	3/8	2	UGMH12016	UGMG32016	UGMG34960	UGMG34016	UGMG34961											
		1/2	2-1/2	UGMH12906		UGMG34962	UGMG34963	UGMG34964											
		3/4	2-1/2	UGMH12907	UGMG32903	UGMG34903	UGMG34904	UGMG34905											
		1	3	UGMH12S908*		UGMG34S965*	UGMG34S966*	UGMG34S967*											
		1-1/4	3	UGMH12S909*		UGMG34S968*	UGMG34S969*	UGMG34S970*											
5/16	5/16	7/16	2"	UGMH12020	UGMG32020	UGMG34971	UGMG34020	UGMG34972											
		13/16	2-1/2	UGMH12910	UGMG32904	UGMG34906	UGMG34907	UGMG34908											
		1	3	UGMH12S911*		UGMG34S973*	UGMG34S974*	UGMG34S975*											
3/8	3/8	1/2	2-1/2	UGMH12024	UGMG32024	UGMG34976	UGMG34024	UGMG34909	UGMG34977										
		1	3	UGMH12912	UGMG32905	UGMG34910	UGMG34911	UGMG34912	UGMG34978										
		1-1/4	3	UGMH12S913*		UGMG34S979*	UGMG34S980*	UGMG34S981*	UGMG34S982*										
		1-1/2	4	UGMH12S914*		UGMG34S983*	UGMG34S984*	UGMG34S985*	UGMG34S986*										
1/2	1/2	5/8	2-1/2	UGMH12032	UGMG32032	UGMG34032	UGMG34913	UGMG34914	UGMG34987	UGMG34988									
		1	3	UGMH12915	UGMG32906	UGMG34915	UGMG34916	UGMG34917	UGMG34918	UGMG34919									
		1-1/4	3-1/2	UGMH12916	UGMG32907	UGMG34920	UGMG34921	UGMG34922	UGMG34923	UGMG34924									
		1-5/8	4	UGMH12S917*		UGMG34S989*	UGMG34S990*	UGMG34S991*	UGMG34S992*	UGMG34S993*									
		2	4	UGMH12S918*		UGMG34S994*	UGMG34S995*	UGMG34S996*	UGMG34S997*	UGMG34S998*									
5/8	5/8	3/4	3	UGMH12040	UGMG32040	UGMG34040	UGMG34925	UGMG34999	UGMG34801										
		1-1/4	3-1/2	UGMH12919	UGMG32908	UGMG34926	UGMG34927	UGMG34928	UGMG34929	UGMG34930									
		1-5/8	4	UGMH12920			UGMG34802	UGMG34803	UGMG34804	UGMG34805									
		2-1/8	4-1/2	UGMH12S921*			UGMG34S806*	UGMG34S807*	UGMG34S808*	UGMG34S809*									
		2-1/2	5	UGMH12S922*			UGMG34S810*	UGMG34S811*	UGMG34S812*	UGMG34S813*									
3/4	3/4	1	3-1/2	UGMH12048	UGMG32048		UGMG34048	UGMG34931	UGMG34932	UGMG34814	UGMG34815	UGMG34816							
		1-1/2	4	UGMH12923	UGMG32909	UGMG34933	UGMG34934	UGMG34935	UGMG34936	UGMG34937	UGMG34938	UGMG34817							
		1-7/8	5	UGMH12924			UGMG34818	UGMG34819	UGMG34820	UGMG34821	UGMG34822	UGMG34823							
		2-1/4	5	UGMH12925			UGMG34824	UGMG34825	UGMG34826	UGMG34827	UGMG34828	UGMG34829							
		2-3/4	5	UGMH12S926*			UGMG34S830*	UGMG34S831*	UGMG34S832*	UGMG34S833*	UGMG34S834*	UGMG34S835*							
		3-1/4	6	UGMH12S927*			UGMG34S836*	UGMG34S837*	UGMG34S838*	UGMG34S839*	UGMG34S840*	UGMG34S841*							
1	1	1-1/8	4	UGMH12064	UGMG32064		UGMG34064	UGMG34939	UGMG34940	UGMG34842	UGMG34843	UGMG34844							
		1-1/2	4	UGMH12928	UGMG32910	UGMG34941	UGMG34942	UGMG34943	UGMG34944	UGMG34945	UGMG34946	UGMG34845							
		2	5	UGMH12929	UGMG32911		UGMG34947	UGMG34948	UGMG34949	UGMG34846	UGMG34847	UGMG34848							
		2-5/8	5	UGMH12930			UGMG34849	UGMG34850	UGMG34851	UGMG34852	UGMG34853	UGMG34854							
		3-1/4	6	UGMH12S931*			UGMG34S855*	UGMG34S856*	UGMG34S857*	UGMG34S858*	UGMG34S859*	UGMG34S860*							
		4-1/4	7	UGMH12S932*			UGMG34S861*	UGMG34S862*	UGMG34S863*	UGMG34S864*	UGMG34S865*	UGMG34S866*							
		1-1/2	4-1/2	UGMH12116			UGMG34116	UGMG34867	UGMG34868	UGMG34869	UGMG34870								
1-1/4	1-1/4	2	4-1/2	UGMH12933			UGMG34871	UGMG34872	UGMG34873	UGMG34874	UGMG34875								
		2-5/8	5-1/2	UGMH12934			UGMG34876	UGMG34877	UGMG34878	UGMG34879	UGMG34880								
		3-1/4	6	UGMH12935			UGMG34881	UGMG34882	UGMG34883	UGMG34884	UGMG34885								
		4-1/2	7	UGMH12S936*			UGMG34S886*	UGMG34S887*	UGMG34S888*	UGMG34S889*	UGMG34S890*								

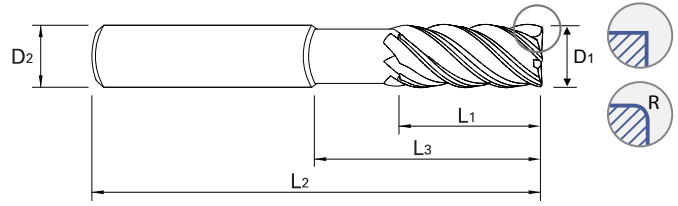
*Length of cut in excess of 3xD on 45° single-helix requires feed reduction of approximately 50%

5-FLUTE EXTENDED LENGTH (PLAIN SHANK)

UGMH06 | UGMH07 SERIES



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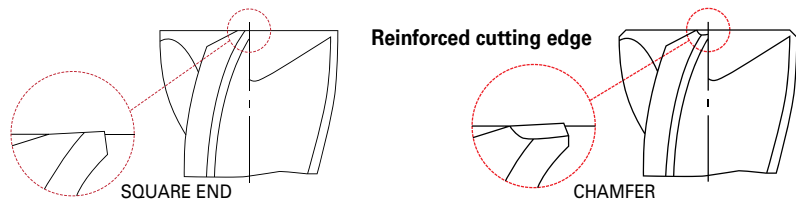


Unit: INCH

OD (D1)	SD (D2)	LOC (L1)	LBS (L3)	OAL (L2)	Square End	Corner Radius					
						.030	.060	.090	.125	.190	.250
						EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/8	1/8	5/32	3/8	3	UGMH06008	UGMH07008					
		5/32	1/2	3	UGMH06901	UGMH07901					
		5/32	5/8	3	UGMH06902	UGMH07902					
3/16	3/16	7/32	1/2	3	UGMH06012	UGMH07012					
		7/32	3/4	3	UGMH06903	UGMH07903					
		7/32	1	3	UGMH06904	UGMH07904					
1/4	1/4	3/8	3/4	4	UGMH06016	UGMH07016	UGMH07905				
		3/8	1-1/8	4	UGMH06905	UGMH07906	UGMH07907				
		3/8	2-1/8	4	UGMH06906	UGMH07908	UGMH07909				
3/8	3/8	1/2	1-1/8	4	UGMH06024	UGMH07024	UGMH07910	UGMH07911			
		1/2	2-1/8	4	UGMH06907	UGMH07912	UGMH07913	UGMH07914			
		1/2	3-1/8	5	UGMH06923	UGMH07804	UGMH07805	UGMH07806			
		1/2	3-1/8	6	UGMH06908	UGMH07915	UGMH07916	UGMH07917			
		1/2	4-1/8	6	UGMH06909	UGMH07918	UGMH07919	UGMH07920			
1/2	1/2	5/8	1-1/2	4	UGMH06032	UGMH07032	UGMH07921	UGMH07922	UGMH07923		
		5/8	2-1/4	4	UGMH06910	UGMH07924	UGMH07925	UGMH07926	UGMH07927		
		5/8	3-3/8	5	UGMH06924	UGMH07807	UGMH07808	UGMH07809	UGMH07810		
		5/8	3-3/8	6	UGMH06911	UGMH07928	UGMH07929	UGMH07930	UGMH07931		
		5/8	4-1/8	6	UGMH06912	UGMH07932	UGMH07933	UGMH07934	UGMH07935		
5/8	5/8	3/4	1-5/8	4	UGMH06040	UGMH07040	UGMH07936	UGMH07937	UGMH07938		
		3/4	2-3/8	6	UGMH06913	UGMH07939	UGMH07940	UGMH07941	UGMH07942		
		3/4	3-3/8	6	UGMH06914	UGMH07943	UGMH07944	UGMH07945	UGMH07946		
		3/4	4-1/8	6	UGMH06915	UGMH07947	UGMH07948	UGMH07949	UGMH07950		
3/4	3/4	1-1/8	2	4	UGMH06048	UGMH07048	UGMH07951	UGMH07952	UGMH07953	UGMH07954	
		1-1/8	2-5/8	5	UGMH06916	UGMH07956	UGMH07957	UGMH07958	UGMH07959	UGMH07960	
		1-1/8	3-1/4	6	UGMH06917	UGMH07962	UGMH07963	UGMH07964	UGMH07965	UGMH07966	
		1-1/8	4-1/4	7	UGMH06918	UGMH07968	UGMH07969	UGMH07970	UGMH07971	UGMH07972	
1	1	1-1/4	2-1/4	4	UGMH06064	UGMH07064	UGMH07974	UGMH07975	UGMH07976	UGMH07977	
		1-1/4	2-5/8	5	UGMH06919	UGMH07979	UGMH07980	UGMH07981	UGMH07982	UGMH07983	
		1-1/4	3-1/4	6	UGMH06920	UGMH07985	UGMH07986	UGMH07987	UGMH07988	UGMH07989	
		1-1/4	4-1/4	7	UGMH06921	UGMH07991	UGMH07992	UGMH07993	UGMH07994	UGMH07995	
		1-1/4	5-1/4	8	UGMH06922	UGMH07997	UGMH07998	UGMH07999	UGMH07801	UGMH07802	

CHAMFER KEY UGMG32

Mill Diameter (in.)	Chamfer Size
1/8	.004
3/16	.006
1/4	.007
5/16	.007
3/8	.011
1/2	.013
5/8	.015
3/4	.019
1	.019

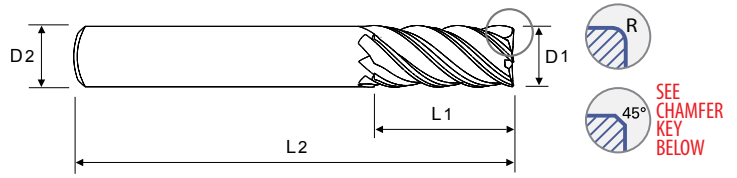


5-FLUTE STANDARD LENGTH (PLAIN SHANK)

GMG24 | GMG26 | GMG28 | GMG30 SERIES



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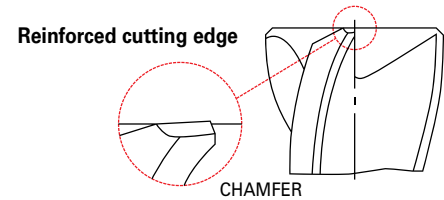


Unit: METRIC

OD (D ₁)		SD (D ₂)	LOC (L ₁)	OAL (L ₂)	Chamfer
Metric	Inch				EDP No.
6	.2362	6	10	54	GMG24060
		6	13	57	GMG26060
8	.315	8	12	58	GMG24080
		8	19	63	GMG26080
10	.3937	10	14	66	GMG24100
		10	22	72	GMG26100
12	.4724	12	16	73	GMG24120
		12	26	83	GMG26120
16	.6299	16	22	82	GMG24160
		16	36	92	GMG26160
20	.7874	20	26	92	GMG24200
		20	44	104	GMG26200
25	.9843	25	29	100	GMG24250
		25	54	121	GMG26250

CHAMFER KEY GMG24 GMG26

Mill Diameter		Chamfer Size (mm)
Metric	Inch	
6	.2362	0.20
8	.315	0.20
10	.3937	0.30
12	.4724	0.35
16	.6299	0.40
20	.7874	0.50
25	.9843	0.50



OD (D ₁)		SD (D ₂)	LOC (L ₁)	OAL (L ₂)	Corner Radius									
Metric	Inch				0.30	0.50	1.00	1.50	2.00	2.50	3.00	4.00	5.00	
						EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
6	.2362	6	10	54		GMG28060								
		6	13	57	GMG30060	GMG30901	GMG30902							
8	.315	8	12	58		GMG28080								
		8	19	63		GMG30080	GMG30903	GMG30904	GMG30905					
10	.3937	10	14	66		GMG28100								
		10	22	72		GMG30100	GMG30906	GMG30907	GMG30908					
12	.4724	12	16	73		GMG28120								
		12	26	83		GMG30120	GMG30909	GMG30910	GMG30911	GMG30912	GMG30913			
16	.6299	16	22	82			GMG28160							
		16	36	92			GMG30160	GMG30914	GMG30915	GMG30916	GMG30917	GMG30918		
20	.7874	20	26	92			GMG28200							
		20	44	104			GMG30200	GMG30919	GMG30920	GMG30921	GMG30922	GMG30923	GMG30924	
25	.9843	25	29	100			GMG28250							
		25	54	121			GMG30250	GMG30925	GMG30926	GMG30927	GMG30928	GMG30929	GMG30930	

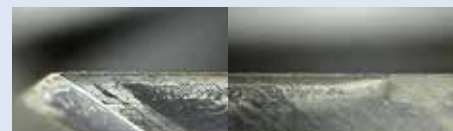
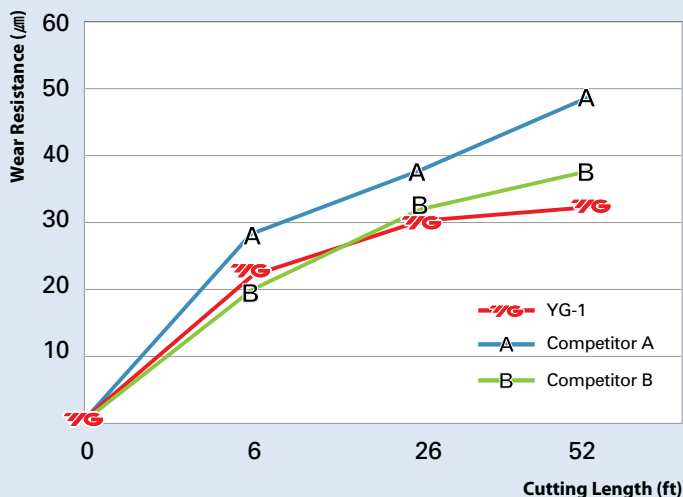
Why Peel Milling Appeals To Our 5-Flute TitaNox Design

For peel milling applications, the 5-flute Titanox is the preferred choice of the pros. Why Titanox? First off, the raw power of its 5-flute corner radius design provides seemingly effortless performance in materials ranging from stainless to titanium. Secondly, unlike slotting operations that push through materials, the high-speed cutting ability of the Titanox 5-flute design provides precise cutting to produce an ultra-fine finish, pass after pass.



5-Flute Multiple Helix End Mills vs. Two Competitors

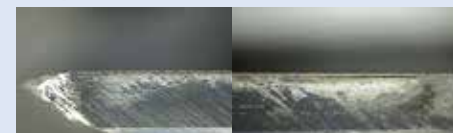
Cutting Conditions			
Milling Method	Down & Side Cutting	Feed	15.669 in./min.
Work Material	- DIN : Ti6Al4V (Titanium) - WR : 3.7165.1	Axial Depth	.710"
		Radial Depth	.141"
Size	Ø12 × Ø12 × 26 × 83	Coolant	Wet Cut
RPM	1591 rev./min.	Machine	Machining Center



Competitor A



Competitor B



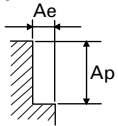
4-FLUTE DOUBLE CORE RECOMMENDED CUTTING CONDITIONS – INCH

UGMG42 | UGMG43 SERIES

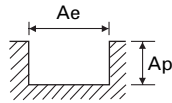
RPM = rev./min. Feed = in./min.
SFM = ft./min. Fz = in./tooth

ISO Hardness (Brinell)	Work Materials	Speed and Feed Recommendations					Diameter (in.)						
		Type of Cut	Ap x D1	Ae x D1	Vc (SFM)	Parameters	1/4	5/16	3/8	1/2	5/8	3/4	1
P <300	CARBON STEELS 10**, 11**, 12**, 12L**, 15**	Side Cutting 	1 *(0.7)	0.4	525 (420-630)	RPM	8021	6417	5347	4010	3208	2674	2005
						Fz	.0011	.0014	.0017	.0021	.0025	.0030	.0033
						Feed (IPM)	34.11	35.37	35.37	33.47	31.83	32.42	26.53
		Slotting 	1 *(0.7)	1	410 (328-492)	RPM	6266	5013	4178	3133	2507	2089	1567
						Fz	.0010	.0013	.0017	.0019	.0025	.0028	.0033
						Feed (IPM)	24.67	26.84	27.63	24.18	24.87	23.03	20.72
P <300 P <380	ALLOY STEELS 41**, 43**, 51**, 86**	Side Cutting 	1 *(0.7)	0.4	492 (394-591)	RPM	7520	6016	5013	3760	3008	2507	1880
						Fz	.0010	.0014	.0017	.0019	.0025	.0028	.0033
						Feed (IPM)	29.61	33.16	33.16	29.01	29.84	27.63	24.87
		Slotting 	1 *(0.7)	1	394 (315-472)	RPM	6016	4813	4010	3008	2406	2005	1504
						Fz	.0010	.0013	.0017	.0019	.0025	.0028	.0030
						Feed (IPM)	23.68	25.77	26.53	23.21	23.87	22.11	18.24
P <380	TOOL STEELS A2, D2, H13, P20, T15	Side Cutting 	1 *(0.7)	0.4	492 (394-591)	RPM	7520	6016	5013	3760	3008	2507	1880
						Fz	.0011	.0014	.0018	.0021	.0026	.0030	.0033
						Feed (IPM)	31.97	33.16	36.32	31.38	31.74	30.39	24.87
		Slotting 	1 *(0.7)	1	394 (315-472)	RPM	6016	4813	4010	3008	2406	2005	1504
						Fz	.0011	.0014	.0017	.0021	.0025	.0030	.0033
						Feed (IPM)	25.58	26.53	26.53	25.11	23.87	24.32	19.89
K <260	CAST IRON Gray, Malleable, Ductile	Side Cutting 	1 *(0.7)	0.4	574 (459-689)	RPM	8773	7018	5849	4386	3509	2924	2193
						Fz	.0008	.0011	.0014	.0017	.0021	.0024	.0028
						Feed (IPM)	29.01	30.95	32.24	29.01	29.29	27.63	24.18
		Slotting 	1 *(0.7)	1	459 (367-551)	RPM	7018	5615	4679	3509	2807	2339	1755
						Fz	.0008	.0011	.0014	.0017	.0021	.0024	.0026
						Feed (IPM)	23.21	24.76	25.79	23.21	23.43	22.11	18.51
M	STAINLESS STEELS 300 304, 316, 304L, 316L, SUS316	Side Cutting 	1 *(0.7)	0.4	344 (276-413)	RPM	5264	4211	3509	2632	2106	1755	1316
						Fz	.0010	.0013	.0016	.0019	.0024	.0028	.0032
						Feed (IPM)	20.47	22.68	23.10	19.69	20.47	19.69	16.73
		Slotting 	1 *(0.7)	1	279 (223-335)	RPM	4261	3409	2841	2131	1704	1420	1065
						Fz	.0010	.0013	.0016	.0019	.0024	.0028	.0032
						Feed (IPM)	16.57	18.36	18.70	15.94	16.57	15.94	13.55

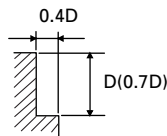
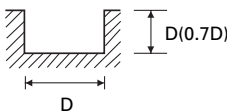
Side Cutting



Slotting



Axial cutting depth



NOTES: ▶ Maximum recommended depth shown

- ▶ Finish cuts typically require reduced feed rates and/or higher spindle speed, with radial width of 2% x D1 or less
- ▶ Feed to be reduced by approximately 50% if L.O.C. (length of cut) is over 3x D
- ▶ Reduce speed and feed recommendations for materials harder than listed
- ▶ Recommendations above are based on ideal conditions. Adjust parameters accordingly for smaller taper machining centers or less rigid conditions

NEXT PAGE ▶

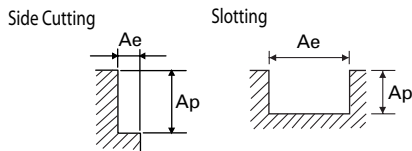
*(0.7D): UGMG42K998, UGMG42K999, UGMGK801
0.7D cutting depth for slotting and side cutting applications due to short double-core length

4-FLUTE DOUBLE CORE RECOMMENDED CUTTING CONDITIONS – INCH

UGMG42 | UGMG43 SERIES

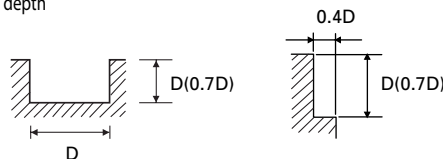
RPM = rev./min. Feed = in./min.
SFM = ft./min. Fz = in./tooth

ISO Hardness (Brinell)	Work Materials	Speed and Feed Recommendations					Diameter (in.)						
		Type of Cut	Ap x D1	Ae x D1	Vc (SFM)	Parameters	1/4	5/16	3/8	1/2	5/8	3/4	1
M	STAINLESS STEELS 400 416, 420F, 430F, 440F	Side Cutting 	1 *(0.7)	0.4	509 (407-610)	RPM	7770	6216	5180	3885	3108	2590	1943
						Fz	.0013	.0018	.0022	.0026	.0034	.0037	.0045
						Feed (IPM)	41.85	44.64	46.50	40.69	41.85	38.75	34.87
		Slotting 	1 *(0.7)	1	410 (328-492)	RPM	6266	5013	4178	3133	2507	2089	1567
						Fz	.0013	.0018	.0022	.0026	.0032	.0037	.0041
						Feed (IPM)	33.75	36.00	37.50	32.81	31.87	31.25	25.78
M	STAINLESS STEELS (PH) 17-4PH, 15-5PH, 13-8PH	Side Cutting 	0.6	0.4	144 (115-173)	RPM	2206	1765	1471	1103	882	735	551
						Fz	.0006	.0008	.0010	.0013	.0016	.0018	.0021
						Feed (IPM)	5.61	5.81	6.16	5.61	5.54	5.28	4.54
		Slotting 	0.5	1	118 (94-142)	RPM	1805	1444	1203	902	722	602	451
						Fz	.0006	.0008	.0010	.0013	.0016	.0018	.0021
						Feed (IPM)	4.59	4.75	5.04	4.59	4.54	4.32	3.71
S	TITANIUM Ti6Al4V Ti5Al5V5Mo Ti7Al4Mo	Side Cutting 	1 *(0.7)	0.4	230 (184-276)	RPM	3509	2807	2339	1755	1404	1170	877
						Fz	.0013	.0019	.0022	.0026	.0034	.0037	.0045
						Feed (IPM)	18.90	21.00	21.00	18.37	18.90	17.50	15.75
		Slotting 	1 *(0.7)	1	180 (144-217)	RPM	2757	2206	1838	1379	1103	919	689
						Fz	.0013	.0018	.0022	.0026	.0034	.0037	.0041
						Feed (IPM)	14.85	15.84	16.50	14.44	14.85	13.75	11.34



- NOTES:**
- ▶ Maximum recommended depth shown
 - ▶ Finish cuts typically require reduced feed rates and/or higher spindle speed, with radial width of 2% x D1 or less
 - ▶ Feed to be reduced by approximately 50% if L.O.C. (length of cut) is over 3xD
 - ▶ Reduce speed and feed recommendations for materials harder than listed
 - ▶ Recommendations above are based on ideal conditions.
Adjust parameters accordingly for smaller taper machining centers or less rigid conditions

Axial cutting depth



* (0.7D): UGMG42K998, UGMG42K999, UGMGK801
0.7D cutting depth for slotting and side cutting applications due to short double-core length

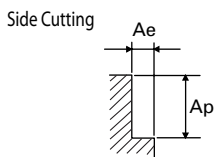
5-FLUTE RECOMMENDED CUTTING CONDITIONS – INCH

UGMH12 | UGMG32 | UGMG34 | UGMH06 | UGMH07 SERIES

RPM = rev./min.
SFM = ft./min.

Feed = in./min.
Fz = in./tooth

ISO Hardness (Brinell)	Work Materials	Type of cut	Speed and Feed Recommendations				Diameter (in.)											
			Ap x D1	Ae x D1	Vc (SFM)	Parameters	1/8	3/16	1/4	5/16	3/8	1/2	9/16	5/8	11/16	3/4	1	1-1/4
P <300	CARBON STEELS 10**, 11**, 12**, 12L**, 15**	Side Cutting 	1.5	0.3	472 (378-567)	RPM	14438	9625	7219	5775	4813	3609	3208	2888	2625	2406	1805	1444
						Fz	.0004	.0007	.0013	.0015	.0020	.0025	.0027	.0030	.0033	.0035	.0040	.0046
						Feed (IPM)	28.88	33.69	48.32	43.20	47.37	44.76	43.58	43.20	42.89	42.16	35.88	33.21
P <300 P <380	ALLOY STEELS 41**, 43**, 51**, 86**	Side Cutting 	1.5	0.3	331 (265-398)	RPM	10127	6751	5063	4051	3376	2532	2250	2025	1841	1688	1266	1013
						Fz	.0004	.0007	.0013	.0015	.0020	.0025	.0027	.0030	.0033	.0035	.0040	.0046
						Feed (IPM)	20.25	23.63	33.89	30.30	33.22	31.40	30.57	30.30	30.08	29.57	25.17	23.29
P <380	TOOL STEELS A2, D2, H13, P20, T15	Side Cutting 	1.5	0.3	197 (157-236)	RPM	6016	4010	3008	2406	2005	1504	1337	1203	1094	1003	752	602
						Fz	.0003	.0005	.0009	.0011	.0014	.0017	.0019	.0021	.0023	.0024	.0028	.0033
						Feed (IPM)	9.02	10.03	14.21	12.79	13.82	13.03	12.89	12.79	12.49	12.24	10.51	9.93
K <260	CAST IRON Gray, Malleable, Ductile	Side Cutting 	1.5	0.3	348 (278-417)	RPM	10628	7085	5314	4251	3543	2657	2362	2126	1932	1771	1328	1063
						Fz	.0006	.0008	.0017	.0019	.0025	.0031	.0034	.0038	.0041	.0044	.0050	.0057
						Feed (IPM)	31.88	28.34	44.98	40.17	43.93	41.32	40.45	40.17	39.18	38.70	32.95	30.29
M	STAINLESS STEELS 300 304, 316, 304L, 316L, SUS316	Side Cutting 	1.5	0.3	269 (215-323)	RPM	8222	5481	4111	3289	2741	2055	1827	1644	1495	1370	1028	822
						Fz	.0004	.0005	.0012	.0013	.0015	.0025	.0026	.0027	.0028	.0030	.0035	.0041
						Feed (IPM)	16.44	13.70	24.28	20.72	20.50	25.49	23.38	22.33	20.60	20.50	17.80	16.85
M	STAINLESS STEELS 400 416, 420F, 430F, 440F	Side Cutting 	1.5	0.3	384 (307-461)	RPM	11731	7820	5865	4692	3910	2933	2607	2346	2133	1955	1466	1173
						Fz	.0003	.0004	.0009	.0010	.0012	.0018	.0020	.0021	.0022	.0024	.0028	.0033
						Feed (IPM)	17.60	15.64	27.71	23.09	23.09	26.56	26.17	24.94	23.93	23.48	20.49	19.36
M	STAINLESS STEELS (PH) 17-4PH, 15-5PH, 13-8PH	Side Cutting 	1.5	0.3	194 (155-232)	RPM	5915	3944	2958	2366	1972	1479	1315	1183	1076	986	739	592
						Fz	.0004	.0005	.0012	.0013	.0015	.0025	.0026	.0027	.0028	.0030	.0035	.0041
						Feed (IPM)	11.83	9.86	17.47	14.91	14.75	18.34	16.82	16.07	14.82	14.75	12.81	12.13
S	TITANIUM Ti6Al4V Ti5Al5V5Mo Ti7Al4Mo	Side Cutting 	1.5	0.2	226 (181-272)	RPM	6918	4612	3459	2767	2306	1730	1537	1384	1258	1153	865	692
						Fz	.0004	.0004	.0011	.0011	.0013	.0022	.0023	.0024	.0025	.0027	.0031	.0036
						Feed (IPM)	13.84	9.22	18.38	15.80	15.43	19.41	17.86	16.89	15.60	15.66	13.45	12.45



NOTES: ▶ Maximum recommended depth shown

- ▶ Finish cuts typically require reduced feed rates and/or higher spindle speed, with radial width of 2% x D1 or less
- ▶ Feed to be reduced by approximately 50% if L.O.C. (length of cut) is over 3xD
- ▶ Reduce speed and feed recommendations for materials harder than listed
- ▶ Recommendations above are based on ideal conditions.

Adjust parameters accordingly for smaller taper machining centers or less rigid conditions

4-FLUTE DOUBLE CORE RECOMMENDED CUTTING CONDITIONS – METRIC

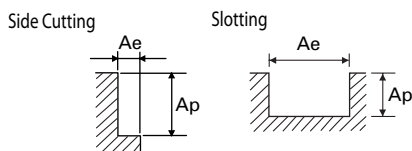
GMG40 SERIES

RPM = rev./min.
SFM = ft./min.

Feed = in./min.
Fz = in./tooth

ISO Hardness (Brinell)	Work Materials	Speed and Feed Recommendations					Diameter (mm)							
		Type of Cut	Ap x D1	Ae x D1	Vc (SFM)	Parameters	6	8	10	12	14	16	20	25
P <300	CARBON STEELS 10**, 11**, 12**, 12L**, 15**	Side Cutting 	1	0.4	525 (420-630)	RPM	8488	6366	5093	4244	3638	3183	2546	2037
						Fz	.0011	.0014	.0017	.0021	.0023	.0025	.0030	.0033
						Feed (IPM)	36.09	35.09	33.69	35.42	33.23	31.58	30.88	26.95
		Slotting 	1	1	410 (328-492)	RPM	6631	4974	3979	3316	2842	2487	1989	1592
						Fz	.0010	.0013	.0017	.0019	.0022	.0025	.0028	.0033
						Feed (IPM)	26.11	26.63	26.32	25.59	25.06	24.67	21.93	21.05
P <300 P <380	ALLOY STEELS 41**, 43**, 51**, 86**	Side Cutting 	1	0.4	492 (394-591)	RPM	7958	5968	4775	3979	3410	2984	2387	1910
						Fz	.0010	.0014	.0017	.0019	.0022	.0025	.0028	.0033
						Feed (IPM)	31.33	32.90	31.58	30.70	30.08	29.61	26.32	25.26
		Slotting 	1	1	394 (315-472)	RPM	6366	4775	3820	3183	2728	2387	1910	1528
						Fz	.0010	.0013	.0017	.0019	.0022	.0025	.0028	.0030
						Feed (IPM)	25.06	25.57	25.26	24.56	24.06	23.69	21.05	18.53
P <380	TOOL STEELS A2, D2, H13, P20, T15	Side Cutting 	1	0.4	492 (394-591)	RPM	7958	5968	4775	3979	3410	2984	2387	1910
						Fz	.0011	.0014	.0018	.0021	.0024	.0026	.0030	.0033
						Feed (IPM)	33.84	32.90	34.59	33.21	32.22	31.49	28.95	25.26
		Slotting 	1	1	394 (315-472)	RPM	6366	4775	3820	3183	2728	2387	1910	1528
						Fz	.0011	.0014	.0017	.0021	.0023	.0025	.0030	.0033
						Feed (IPM)	27.07	26.32	25.26	26.57	24.92	23.69	23.16	20.21
K <260	CAST IRON Gray, Malleable, Ductile	Side Cutting 	1	0.4	574 (459-689)	RPM	9284	6963	5570	4642	3979	3482	2785	2228
						Fz	.0008	.0011	.0014	.0017	.0019	.0021	.0024	.0028
						Feed (IPM)	30.70	30.70	30.70	30.70	30.08	29.06	26.32	24.56
		Slotting 	1	1	459 (367-551)	RPM	7427	5570	4456	3714	3183	2785	2228	1783
						Fz	.0008	.0011	.0014	.0017	.0019	.0021	.0024	.0026
						Feed (IPM)	24.56	24.56	24.56	24.56	24.06	23.25	21.05	18.81
M	STAINLESS STEELS 300 304, 316, 304L, 316L, SUS316	Side Cutting 	1	0.4	344 (276-413)	RPM	5570	4178	3342	2785	2387	2089	1671	1337
						Fz	.0010	.0013	.0016	.0019	.0022	.0024	.0028	.0032
						Feed (IPM)	21.67	22.50	22.00	20.83	20.68	20.31	18.75	17.00
		Slotting 	1	1	279 (223-335)	RPM	4509	3382	2706	2255	1933	1691	1353	1082
						Fz	.0010	.0013	.0016	.0019	.0022	.0024	.0028	.0032
						Feed (IPM)	17.54	18.22	17.81	16.87	16.74	16.44	15.18	13.76

NEXT PAGE ►



- NOTES:**
- ▶ Maximum recommended depth shown
 - ▶ Finish cuts typically require reduced feed rates and/or higher spindle speed, with radial width of 2% x D1 or less
 - ▶ Reduce speed and feed recommendations for materials harder than listed
 - ▶ Recommendations above are based on ideal conditions. Adjust parameters accordingly for smaller taper machining centers or less rigid conditions

4-FLUTE DOUBLE CORE RECOMMENDED CUTTING CONDITIONS – METRIC

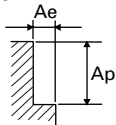
GMG40 SERIES.

RPM = rev./min.
SFM = ft./min.

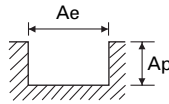
Feed = in./min.
Fz = in./tooth

ISO Hardness (Brinell)	Work Materials	Type of Cut	Speed and Feed Recommendations				Diameter (mm)							
			Ap x D1	Ae x D1	Vc (SFM)	Parameters	6	8	10	12	14	16	20	25
M	STAINLESS STEELS 400 416, 420F, 430F, 440F	Side Cutting 	1	0.4	509 (407-610)	RPM	8223	6167	4934	4112	3524	3084	2467	1974
						Fz	.0013	.0018	.0022	.0026	.0030	.0034	.0037	.0045
						Feed (IPM)	44.29	44.29	44.29	43.06	42.18	41.52	36.91	35.43
		Slotting 	1	1	410 (328-492)	RPM	6631	4974	3979	3316	2842	2487	1989	1592
						Fz	.0013	.0018	.0022	.0026	.0029	.0032	.0037	.0041
						Feed (IPM)	35.72	35.72	35.72	34.72	33.12	31.62	29.76	26.19
M	STAINLESS STEELS (PH) 17-4PH, 15-5PH, 13-8PH	Side Cutting 	0.6	0.4	144 (115-173)	RPM	2334	1751	1401	1167	1000	875	700	560
						Fz	.0006	.0008	.0010	.0013	.0014	.0016	.0018	.0021
						Feed (IPM)	5.94	5.76	5.87	5.94	5.67	5.50	5.03	4.61
		Slotting 	0.5	1	118 (94-142)	RPM	1910	1432	1146	955	819	716	573	458
						Fz	.0006	.0008	.0010	.0013	.0014	.0016	.0018	.0021
						Feed (IPM)	4.86	4.71	4.80	4.86	4.64	4.50	4.11	3.77
S	TITANIUM Ti6Al4V Ti5Al5V5Mo Ti7Al4Mo	Side Cutting 	1	0.4	230 (184-276)	RPM	3714	2785	2228	1857	1592	1393	1114	891
						Fz	.0013	.0019	.0022	.0026	.0030	.0034	.0037	.0045
						Feed (IPM)	20.00	20.83	20.00	19.45	19.05	18.75	16.67	16.00
		Slotting 	1	1	180 (144-217)	RPM	2918	2188	1751	1459	1251	1094	875	700
						Fz	.0013	.0018	.0022	.0026	.0030	.0034	.0037	.0041
						Feed (IPM)	15.71	15.71	15.71	15.28	14.97	14.73	13.10	11.52

Side Cutting



Slotting



- NOTES:**
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 - ▶ Finish cuts typically require reduced feed rates and/or higher spindle speed, with radial width of 2% x D1 or less
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 - ▶ Recommendations above are based on ideal conditions. Adjust parameters accordingly for smaller taper machining centers or less rigid conditions

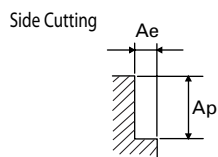
5-FLUTE RECOMMENDED CUTTING CONDITIONS – METRIC

GMG24 | GMG26 | GMG28 | GMG30 SERIES

RPM = rev./min.
SFM = ft./min.

Feed = in./min.
Fz = in./tooth

ISO Hardness (Brinell)	Work Materials	Type of Cut	Speed and Feed Recommendations				Diameter (in.)								
			Ap x D1	Ae x D1	Vc (SFM)	Parameters	6	8	10	12	14	16	18	20	25
P <300	CARBON STEELS 10**, 11**, 12**, 12L**, 15**	Side Cutting 	1.5	0.3	472 (378-567)	RPM	7639	5730	4584	3820	3274	2865	2546	2292	1833
						Fz	.0013	.0015	.0020	.0025	.0027	.0030	.0033	.0035	.0040
						Feed (IPM)	51.13	42.86	45.11	47.37	44.47	42.86	41.61	40.15	36.45
P <300 P <380	ALLOY STEELS 41**, 43**, 51**, 86**	Side Cutting 	1.5	0.3	331 (265-398)	RPM	5358	4019	3215	2679	2296	2009	1786	1607	1286
						Fz	.0013	.0015	.0020	.0025	.0027	.0030	.0033	.0035	.0040
						Feed (IPM)	35.86	30.06	31.64	33.23	31.19	30.06	29.18	28.16	25.57
P <380	TOOL STEELS A2, D2, H13, P20, T15	Side Cutting 	1.5	0.3	197 (157-236)	RPM	3183	2387	1910	1592	1364	1194	1061	955	764
						Fz	.0009	.0011	.0014	.0017	.0019	.0021	.0023	.0024	.0028
						Feed (IPM)	15.04	12.69	13.16	13.79	13.16	12.69	12.11	11.65	10.68
K <260	CAST IRON Gray, Malleable, Ductile	Side Cutting 	1.5	0.3	348 (278-417)	RPM	5623	4218	3374	2812	2410	2109	1874	1687	1350
						Fz	.0017	.0019	.0025	.0031	.0034	.0038	.0041	.0044	.0050
						Feed (IPM)	47.60	39.85	41.84	43.73	41.27	39.85	38.01	36.86	33.48
M	STAINLESS STEELS 300 304, 316, 304L, 316L, SUS316	Side Cutting 	1.5	0.3	269 (215-323)	RPM	4350	3263	2610	2175	1864	1631	1450	1305	1044
						Fz	.0012	.0013	.0015	.0025	.0026	.0027	.0028	.0030	.0035
						Feed (IPM)	25.69	20.55	19.52	26.97	23.86	22.16	19.98	19.52	18.09
M	STAINLESS STEELS 400 416, 420F, 430F, 440F	Side Cutting 	1.5	0.3	384 (307-461)	RPM	6207	4655	3724	3104	2660	2328	2069	1862	1490
						Fz	.0009	.0010	.0012	.0018	.0020	.0021	.0022	.0024	.0028
						Feed (IPM)	29.32	22.91	21.99	28.10	26.71	24.74	23.22	22.36	20.82
M	STAINLESS STEELS (PH) 17-4PH, 15-5PH, 13-8PH	Side Cutting 	1.5	0.3	194 (155-232)	RPM	3130	2348	1878	1565	1341	1174	1043	939	751
						Fz	.0012	.0013	.0015	.0025	.0026	.0027	.0028	.0030	.0035
						Feed (IPM)	18.48	14.79	14.05	19.41	17.16	15.94	14.38	14.05	13.01
S	TITANIUM Ti6Al4V Ti5Al5V5Mo Ti7Al4Mo	Side Cutting 	1.5	0.3	226 (181-272)	RPM	3661	2745	2196	1830	1569	1373	1220	1098	879
						Fz	.0011	.0011	.0013	.0022	.0023	.0024	.0025	.0027	.0031
						Feed (IPM)	19.46	15.67	14.70	20.54	18.22	16.75	15.13	14.92	13.66



- NOTES:**
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