YU-VP18

BEST VALUE IN THE WORLD OF CUTTING TOOLS

FOR TOUGH STEEL, CAST IRON, STAINLESS STEEL AND EXOTIC MATERIALS:

NOTHING CUTS IT BETTER

V7 PlusA

INDUSTRY-LEADING HIGH-PERFORMANCE CARBIDE END MILLS:

- 4-Flute & 6-Flute
- Square, Chamfer, Radius, Ball Nose
- Standard & Extended Length
- Plain & Weldon Flat Shanks
- Inch & Metric Sizes

Over 1,500 Items in Stock.

V7 Plus A

When The Cut Calls For High-Performance Carbide, **We Have More Options** To Meet Your Needs.

YG-1 is the undisputed world leader in carbide end mill offerings. And now, with our newly expanded V7 Plus A line, you have even more high-performance choices than ever before. Choose from a full array of 4-flute and 6-flute standard-stocked or custom-designed solutions. No matter what your machining challenge, we have a product for you.

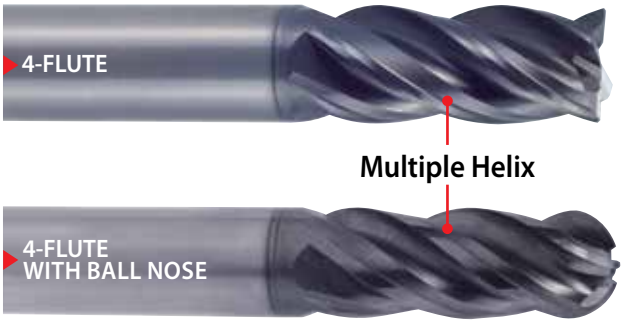
How Our Innovative V7 Plus A Design Started a **REVOLUTION** in End Mill Technology

We didn't improve the cutting performance of our V7 Plus A end mills line by just doing what others have done. We engineered our line from the tip of flute to end of shank with performance-enhancing technology in mind. It's what makes the V7 Plus A line the top choice in end mill performance.

For excellent performance in stainless steels, mild steels, low/medium hardness materials (less than HRc40) and exotic materials to boot, the V7 Plus A's advanced geometry provides:

- Excellent material removal rates and surface finishes
- Unequal indexing for reduced chatter (harmonics) and improved stability
- Advanced coating for for superior performance and tool life
- Improved flute geometry for impressive chip formation and evacuation
- Noticeably smooth operation in high-speed machining and peel-milling applications
- Superior slotting and profiling in most ferrous materials for more flexible use
- Excellent performance in high-speed trochoidal milling applications for improved accuracy, reduced vibration and better heat displacement
- Premium-grade carbide substrate for longer tool life

V7 Plus A **4-FLUTE** END MILLS



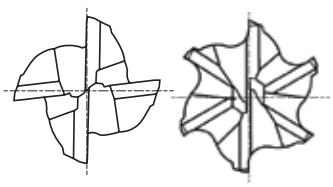
Setting a Higher Standard in 4-Flute Design

You asked for it. Now you can have state-of-the-art performance in an innovative 4-flute design. First, you'll notice reduced vibration, optimal chip formation and excellent chip evacuation. And best of all, you'll get longer tool life in heavy cutting conditions. Available in ball nose, too.

V7 Plus A **6-FLUTE** END MILLS

Better by Every Measure

From its higher stability for lower vibration to its improved performance in high-speed and trochoidal milling applications, the V7 Plus A 6-flute solid carbide, 45-degree helix, was designed with longer tool life and higher productivity in mind.

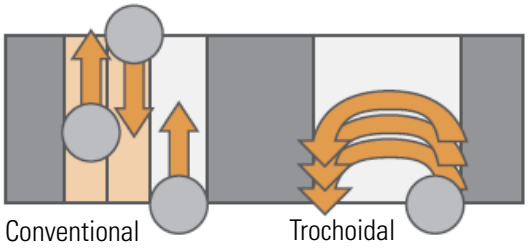


UNEQUAL INDEX WITH HIGH-PERFORMANCE CORNER GEOMETRIES INCLUDING CORNER RADIUS

Trochoidal Milling

With our V7 Plus A 6-flute's unique cutting geometry, we made it easier to apply a small radial width-of-cut along with higher cutting speeds and excellent feed per tooth. That's why we perform better in trochoidal milling application. Here's why:

- Smaller arc engagement provides lower cutting force and better heat displacement
- More flutes provide deeper depth of cut for more productivity and reduced wear
- Stability-inducing geometry reduces vibration for increased accuracy and longer tool life
- Aggressive feed-per-tooth provides excellent chip evacuation



GUIDE TO ICONS

The tool is made of micrograin carbide

MG HM

Tolerance of Ball Radius

R ±.0008mm R ±0.02mm

No. of Flutes

4 6

Cutting Conditions

Helix Angle

35°/37° 45°

Tool Ends

90° Square 45° Chamfer R Radius Ball

Type of Shank

PLAIN Cylindrical shank FLAT Weldon flat

SELECTION GUIDE – INCH

SERIES	MODEL	DESCRIPTION		DIAMETER (in.) Min.	DIAMETER (in.) Max.	PAGE
UGMF68		4-FLUTE (Plain Shank) STANDARD LENGTH	SQUARE END	1/8	1	10-11
UGMF76			CHAMFER	3/8	1	10-11
UGMF70			CORNER RADIUS	1/8	1	10-11
UGMG53			BALL NOSE	1/8	1	10-11
UGMF69		4-FLUTE (Weldon Flat Shank) STANDARD LENGTH	SQUARE END	11/32	1	12
UGMF77			CHAMFER	3/8	1	12
UGMF71			CORNER RADIUS	3/8	1	12
UGMG54			BALL NOSE	11/32	1	12
UGMF72		4-FLUTE (Plain Shank) EXTENDED LENGTH	SQUARE END	1/8	1	14
UGMF74			CORNER RADIUS	1/8	1	14
UGMH10			BALL NOSE	1/8	1	14
UGMF73		4-FLUTE (Weldon Flat Shank) EXTENDED LENGTH	SQUARE END	3/8	1	15
UGMF75			CORNER RADIUS	3/8	1	15
UGMG20		6-FLUTE (Plain Shank) STANDARD LENGTH	SQUARE END	1/4	1	24
UGMG22			CORNER RADIUS	1/4	1	24
UGMG21		6-FLUTE (Weldon Flat Shank) STANDARD LENGTH	SQUARE END	3/8	1	25
UGMG23			CORNER RADIUS	3/8	1	25
UGMH08		6-FLUTE (Plain Shank) EXTENDED LENGTH	SQUARE END	1/4	1	26
UGMH09			CORNER RADIUS	1/4	1	26
			RECOMMENDED CUTTING CONDITIONS			28–33

◎ Excellent ○ Good

P					M	K	S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	High-Temperature Alloy	Titanium
~HB225	HB225~352	HRc30~40	HRc40~45	HRc55~				
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○

SELECTION GUIDE – METRIC

SERIES	MODEL	DESCRIPTION		DIAMETER (mm) Min.	DIAMETER (mm) Max.	PAGE
GMF52 GMF56		4-FLUTE (Plain Shank) STANDARD LENGTH	CHAMFER	3.0	25.0	16
GMF54 GMF58			CORNER RADIUS	3.0	25.0	16
GMG55			BALL NOSE	3.0	25.0	16
GMF53 GMF57		4-FLUTE (Weldon Flat Shank) STANDARD LENGTH	CHAMFER	3.0	25.0	17
GMF55 GMF59			CORNER RADIUS	3.0	25.0	17
GMG56			BALL NOSE	3.0	25.0	17
GMF60		4-FLUTE (Plain Shank) EXTENDED LENGTH	CHAMFER	3.0	20.0	18
GMF62			CORNER RADIUS	3.0	20.0	19
GMF61		4-FLUTE (Weldon Flat Shank) EXTENDED LENGTH	CHAMFER	3.0	20.0	20
GMF63			CORNER RADIUS	3.0	20.0	21
GMG12 GMG14		6-FLUTE (Plain Shank) STANDARD LENGTH	SQUARE END	6.0	25.0	27
GMG16 GMG18			CORNER RADIUS	6.0	25.0	27
GMG13 GMG15		6-FLUTE (Weldon Flat Shank) STANDARD LENGTH	SQUARE END	6.0	25.0	27
GMG17 GMG19			CORNER RADIUS	6.0	25.0	27
			RECOMMENDED CUTTING CONDITIONS			34–37

◎ Excellent ○ Good

P					M	K	S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	High-Temperature Alloy	Titanium
~HB225	HB225~352	HRc30~40	HRc40~45	HRc55~				
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○
◎	◎	◎	○		◎	◎	○	○

Innovative cutting performance that's not just a chip off the old block.

Our highly engineered flute geometry with multiple-helix design eliminates vibration, and our premium substrate and coating ensures longer tool life. Did we mention better cutting performance, too?

HIGH-PERFORMANCE SOLID CARBIDE
4-FLUTE END MILLS

- Special flute geometry and multiple helix eliminate vibrations
- Excellent performance for stainless steels, mild steels, cast iron, low/medium hardness materials and all exotic materials up to HRc40
- Advanced coating for superior performance and tool life

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

MG HM 4

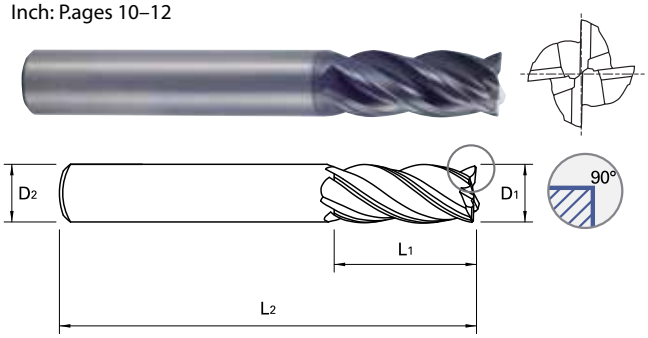
P					M	K	S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Titanium	High-Temperature Alloys
~HB225	HB225~352	HRc30~40	HRc40~55	HRc55				
◎	◎	◎	○		◎	◎	○	○

◎ : Excellent ○ : Good

4-FLUTE STANDARD LENGTH

4-FLUTE SQUARE END

Inch: P.ages 10–12

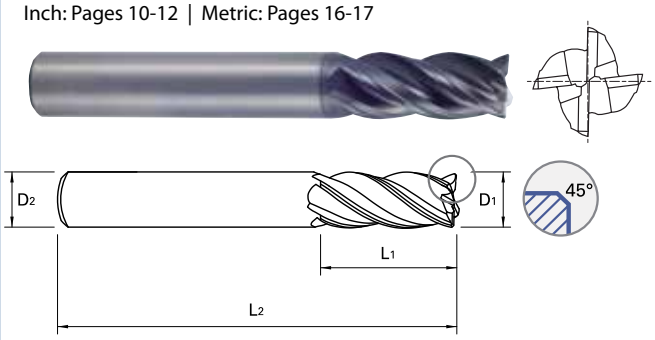


MG HM | 4 | 35°/37° | PLAIN | FLAT

Pages 28–33

4-FLUTE CHAMFER

Inch: Pages 10-12 | Metric: Pages 16-17

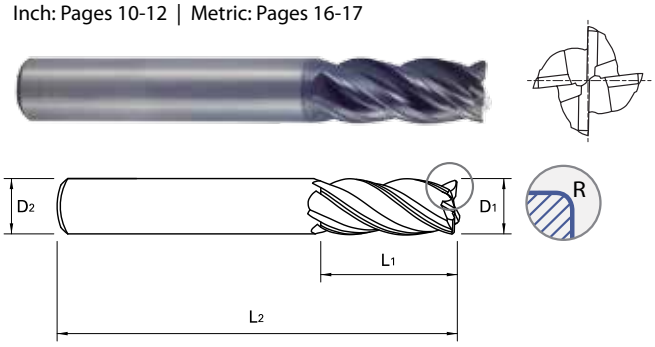


MG HM | 4 | 35°/37° | PLAIN | FLAT | C x 45°

Pages 28–37

4-FLUTE CORNER RADIUS

Inch: Pages 10-12 | Metric: Pages 16-17

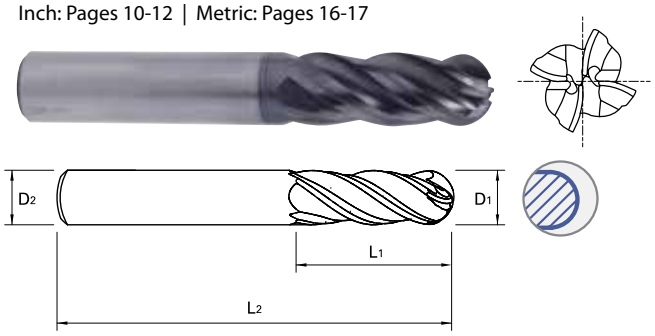


MG HM | 4 | 35°/37° | PLAIN | FLAT

Pages 28–37

4-FLUTE BALL NOSE

Inch: Pages 10-12 | Metric: Pages 16-17

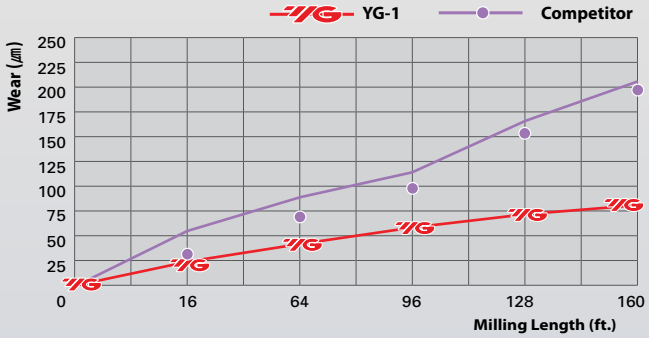


MG HM | 4 | 35°/37° | PLAIN | FLAT | R ±.0008

Pages 28–37

V7 Plus A CASE STUDY

4-Flute vs. Competitor



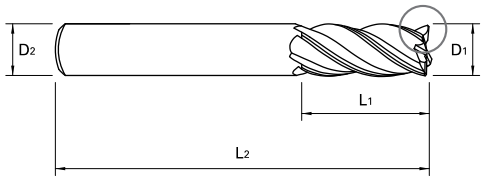
	V7 Plus A	Competitor
Wear(㎛)	83.518	203.381
Milling Length (ft.)	160	160
Size (mm)	Ø10 x Ø10 x 22 x 72	
Work Material	- JIS : S45C(HRc30) - DIN : C45 - WR : 1.0503 - AISI: 1405	
Cutting Speed	755 ft/min.	
RPM	7,324 rev./min.	
Feed	57.64 inch/min.	
Feed per tooth	.002 inch/tooth	
Milling Method	Down & Side Cutting	
Milling Depth	Axial : .394 inch, Radial : .118 inch	
Coolant	Wet Cut	
Overhang	1.339 inch	
Machine	Machining Center	

4-FLUTE STANDARD LENGTH (PLAIN SHANK)

UGMF68 | UGMF76 | UGMF70 | UGMG53 SERIES

MG HM | 4 | 35°/37° | PLAIN | R ±.0008 | C x 45°

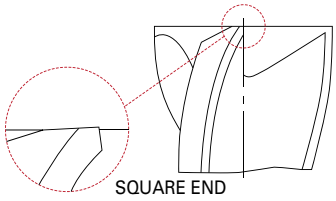
Pages 28–32



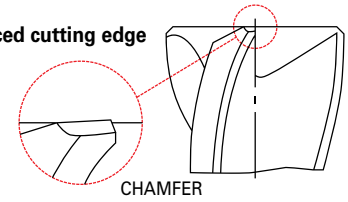
SEE CHAMFER AND BALL KEYS ON PAGE 12

Unit : **INCH**

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	Square End	Chamfer	Corner Radius								Ball Nose
						.010	.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	1/8	1-1/2	UGMF68008		UGMF70008		UGMF70955						UGMG53901
		3/8	1-1/2	UGMF68901		UGMF70901		UGMF70902						UGMG53008
		1/2	2-1/2	UGMF68S915		UGMF70S956		UGMF70S957						UGMG53S902
5/32	3/16	3/16	2	UGMF68010		UGMF70010								UGMG53903
		7/16	2	UGMF68902		UGMF70958								UGMG53010
3/16	3/16	3/16	2	UGMF68012		UGMF70012								UGMG53904
		5/16	2	UGMF68916		UGMF70959		UGMF70960						UGMG53905
		7/16	2	UGMF68903		UGMF70903		UGMF70904						UGMG53012
		5/8	2-1/2	UGMF68S917		UGMF70S961		UGMF70S962						UGMG53S906
7/32	1/4	1/4	2	UGMF68014		UGMF70014								UGMG53907
		7/16	2-1/2	UGMF68904		UGMF70963								UGMG53014
1/4	1/4	3/8	2	UGMF68016	UGMF76016	UGMF70016		UGMF70905	UGMF70906					UGMG53908
		1/2	2-1/2	UGMF68918			UGMF70964	UGMF70965	UGMF70966					UGMG53016
		3/4	2-1/2	UGMF68905	UGMF76902	UGMF70907	UGMF70908	UGMF70909	UGMF70967					UGMG53909
		1	3	UGMF68S919			UGMF70S968	UGMF70S969	UGMF70S970					UGMG53S910
9/32	5/16	5/8	2-1/2	UGMF68018			UGMF70018	UGMF70971	UGMF70972					UGMG53018
		1	3	UGMF68S920			UGMF70S973	UGMF70S974						UGMG53S911
5/16	5/16	7/16	2	UGMF68020				UGMF70020						UGMG53912
		13/16	2-1/2	UGMF68906	UGMF76020	UGMF70910		UGMF70911	UGMF70912					UGMG53020
		1-1/4	3	UGMF68S921			UGMF70S975	UGMF70S976	UGMF70S977					UGMG53S913
11/32	3/8	1/2	2-1/2	UGMF68022				UGMF70022						UGMG53914
		13/16	2-1/2	UGMF68922				UGMF70978						UGMG53022
3/8	3/8	1/2	2-1/2	UGMF68024	UGMF76903	UGMF70024		UGMF70913	UGMF70914	UGMF70979				UGMG53915
		7/8	2-1/2	UGMF68907	UGMF76024	UGMF70915		UGMF70916	UGMF70917	UGMF70980				UGMG53024
		1	3	UGMF68923		UGMF70981		UGMF70982	UGMF70983	UGMF70984				UGMG53916
		1-1/4	3	UGMF68S924		UGMF70S985		UGMF70S986	UGMF70S987	UGMF70S988				UGMG53S917
13/32	7/16	1/2	2-3/4	UGMF68026				UGMF70026						UGMG53026
		15/16	2-3/4	UGMF68925				UGMF70989						UGMG53918
7/16	7/16	5/8	2-1/2	UGMF68028			UGMF70028	UGMF70918	UGMF70990	UGMF70991				UGMG53919
		7/8	2-3/4	UGMF68926	UGMF76028		UGMF70992	UGMF70993	UGMF70994	UGMF70995				UGMG53920
		1	2-3/4	UGMF68908		UGMF70919		UGMF70920	UGMF70921					UGMG53028
15/32	1/2	5/8	2-1/2	UGMF68030				UGMF70030						UGMG53030
		1	3	UGMF68927				UGMF70996						UGMG53921
		1-1/4	3-1/2	UGMF68928				UGMF70997						UGMG53922



Reinforced cutting edge



NEXT PAGE ▶

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	Square End	Chamfer	Corner Radius								Ball Nose
						.010	.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.
1/2	1/2	5/8	2-1/2	UGMF68032	UGMF76032	UGMF70032	UGMF70922	UGMF70923	UGMF70924	UGMF70998	UGMF70999			UGMG53923
		1	3	UGMF68909	UGMF76904	UGMF70925	UGMF70801	UGMF70926	UGMF70927	UGMF70802	UGMF70928			UGMG53032
		1-1/4	3-1/2	UGMF68910	UGMF76901	UGMF70929	UGMF70930	UGMF70931	UGMF70932	UGMF70803	UGMF70933			UGMG53924
		1-5/8	4	UGMF68S929	UGMF76S905		UGMF70S804	UGMF70S805	UGMF70S806	UGMF70S807	UGMF70S808			UGMG53S925
		2	4	UGMF68S939			UGMF70S889	UGMF70S890	UGMF70S891	UGMF70S892	UGMF70S893			UGMG53S939
		2-1/2	4-1/2	UGMF68S940	UGMF76S906		UGMF70S894	UGMF70S895	UGMF70S896	UGMF70S897	UGMF70S898			UGMG53S940
5/8	5/8	3/4	3	UGMF68040		UGMF70040	UGMF70809	UGMF70934	UGMF70935	UGMF70810	UGMF70811			UGMG53926
		1-1/4	3-1/2	UGMF68911	UGMF76040	UGMF70936	UGMF70937	UGMF70938	UGMF70939	UGMF70812	UGMF70940			UGMG53040
		1-5/8	4	UGMF68930	UGMF76907		UGMF70813	UGMF70814	UGMF70815	UGMF70816	UGMF70817			UGMG53927
		2	4	UGMF68S931			UGMF70S818	UGMF70S819	UGMF70S820	UGMF70S821	UGMF70S822			UGMG53S928
		3-1/4	6	UGMF68S932			UGMF70S823	UGMF70S824	UGMF70S825	UGMF70S826	UGMF70S827			UGMG53S929
3/4	3/4	3/4	3	UGMF68048	UGMF76908		UGMF70828	UGMF70048	UGMF70941	UGMF70829	UGMF70830	UGMF70831	UGMF70832	UGMG53930
		1-1/2	4	UGMF68912	UGMF76048		UGMF70942	UGMF70943	UGMF70944	UGMF70833	UGMF70945	UGMF70834	UGMF70835	UGMG53048
		1-7/8	4	UGMF68933			UGMF70836	UGMF70837	UGMF70838	UGMF70839	UGMF70840	UGMF70841	UGMF70842	UGMG53931
		2-1/4	5	UGMF68934	UGMF76909		UGMF70843	UGMF70844	UGMF70845	UGMF70846	UGMF70847	UGMF70848	UGMF70849	UGMG53932
		3-1/4	6	UGMF68S935			UGMF70S850	UGMF70S851	UGMF70S852	UGMF70S853	UGMF70S854	UGMF70S855	UGMF70S856	UGMG53S933
1	1	1	4	UGMF68064	UGMF76910		UGMF70064	UGMF70946	UGMF70947	UGMF70857	UGMF70858	UGMF70859	UGMF70860	UGMG53934
		1-1/2	4	UGMF68913	UGMF76064		UGMF70948	UGMF70949	UGMF70950	UGMF70861	UGMF70951	UGMF70862	UGMF70863	UGMG53064
		2	5	UGMF68914	UGMF76911		UGMF70952	UGMF70953	UGMF70954	UGMF70864	UGMF70865	UGMF70866	UGMF70867	UGMG53935
		2-5/8	5	UGMF68936	UGMF76912		UGMF70868	UGMF70869	UGMF70870	UGMF70871	UGMF70872	UGMF70873	UGMF70874	UGMG53936
		3	6	UGMF68937			UGMF70875	UGMF70876	UGMF70877	UGMF70878	UGMF70879	UGMF70880	UGMF70881	UGMG53937
		4-1/4	7	UGMF68S938			UGMF70S882	UGMF70S883	UGMF70S884	UGMF70S885	UGMF70S886	UGMF70S887	UGMF70S888	UGMG53S938

V7 PlusA | Can't find what you're looking for?

Specialty products are not a problem. With over 30 years of tooling experience for some of the world's most successful companies, YG-1 can handle your most demanding design, testing and manufacturing needs. And now with our state-of-the-art Charlotte Technical Center, you have a place that can do it all (see more about our Technical Center on pages 38 and 39).

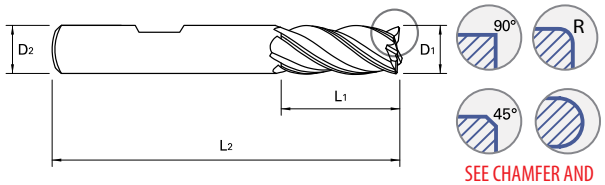
When you're looking for the best solution at the most efficient cost, come to YG-1. **Call us at 800-765-8665 or contact our distributor partners** to discuss your machining solution needs.

4-FLUTE STANDARD LENGTH (WELDON FLAT SHANK)

UGMF69 | UGMF77 | UGMF71 | UGMG54 SERIES

MG HM | 4 | 35°/37° | FLAT | R ±.0008 | C x 45°

Pages 28–32



SEE CHAMFER AND BALL KEYS BELOW

Unit : INCH

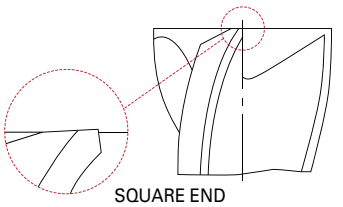
OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	Square End	Chamfer	Corner Radius						Ball Nose
						.010	.015	.030	.060	.090	.125	
				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
11/32	3/8	1/2	2-1/2	UGMF69022								
		13/16	2-1/2									UGMG54022
3/8	3/8	1/2	2-1/2	UGMF69024	UGMF77902	UGMF71024		UGMF71913	UGMF71914			
		7/8	2-1/2	UGMF69907	UGMF77024	UGMF71915		UGMF71916	UGMF71917			UGMG54024
7/16	7/16	5/8	2-1/2	UGMF69028			UGMF71028	UGMF71918				
		1	2-3/4	UGMF69908		UGMF71919		UGMF71920	UGMF71921			UGMG54028
1/2	1/2	5/8	2-1/2	UGMF69032	UGMF77032	UGMF71032	UGMF71922	UGMF71923	UGMF71924			
		1	3	UGMF69909	UGMF77903	UGMF71925		UGMF71926	UGMF70927		UGMF71928	UGMG54032
		1-1/4	3-1/2	UGMF69910	UGMF77901	UGMF71929	UGMF71930	UGMF71931	UGMF71932		UGMF71933	
		2	4	UGMF69S915			UGMF71S955	UGMF71S956	UGMF71S957	UGMF71S958	UGMF71S959	UGMG54S901
		2-1/2	4-1/2	UGMF69S916			UGMF71S960	UGMF71S961	UGMF71S962	UGMF71S963	UGMF71S964	UGMG54S902
5/8	5/8	3/4	3	UGMF69040	UGMF77904	UGMF71040		UGMF71934	UGMF71935			
		1-1/4	3-1/2	UGMF69911	UGMF77040	UGMF71936	UGMF71937	UGMF71938	UGMF71939		UGMF71940	UGMG54040
3/4	3/4	3/4	3	UGMF69048	UGMF77905			UGMF71048	UGMF71941			
		1-1/2	4	UGMF69912	UGMF77048		UGMF71942	UGMF71943	UGMF71944		UGMF71945	UGMG54048
1	1	1	4	UGMF69064	UGMF77906		UGMF71064	UGMF71946	UGMF71947			
		1-1/2	4	UGMF69913	UGMF77064		UGMF71948	UGMF71949	UGMF71950		UGMF71951	UGMG54064
		2	5	UGMF69914	UGMF77907		UGMF71952	UGMF71953	UGMF71954			

KEYS:

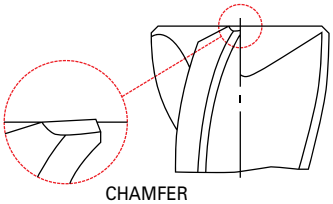
CHAMFER KEY	
Mill Diameter	Chamfer Size
1/4	.007
5/16	.007
3/8	.011
7/16	.013
1/2	.013
5/8	.015
3/4	.019
1	.019

BALL NOSE KEY	
Mill Diameter	Radius of Ball
1/8	1/16
5/32	5/64
3/16	3/32
7/32	7/64
1/4	1/8
9/32	9/64
5/16	5/32
11/32	11/64
3/8	3/16
7/16	7/32
1/2	1/4
5/8	5/16
3/4	3/8
1	1/2

Reinforced cutting edge



SQUARE END

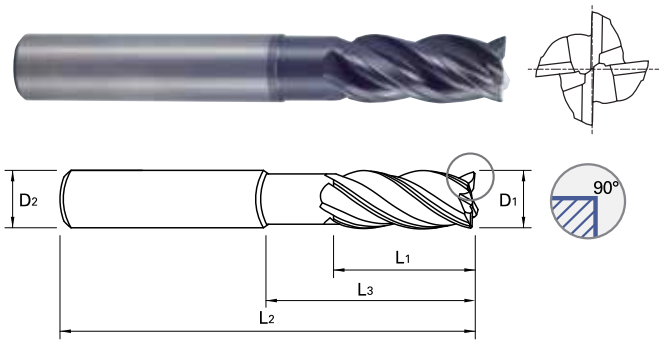


CHAMFER

4-FLUTE EXTENDED LENGTH

4-FLUTE SQUARE END EXTENDED LENGTH

Inch: Pages 14-15

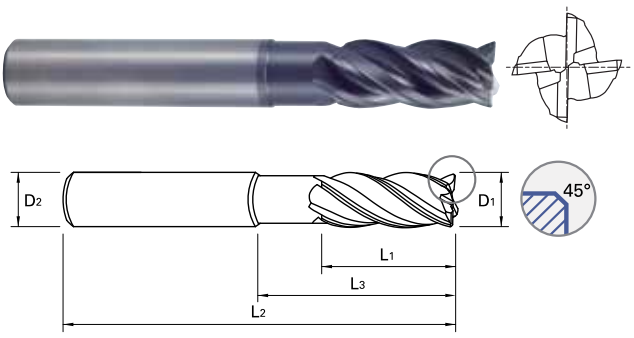


MG HM | 4 | 35°/37° | PLAIN | FLAT

Pages 28–33

4-FLUTE CHAMFER EXTENDED LENGTH

Metric: Pages 18, 20

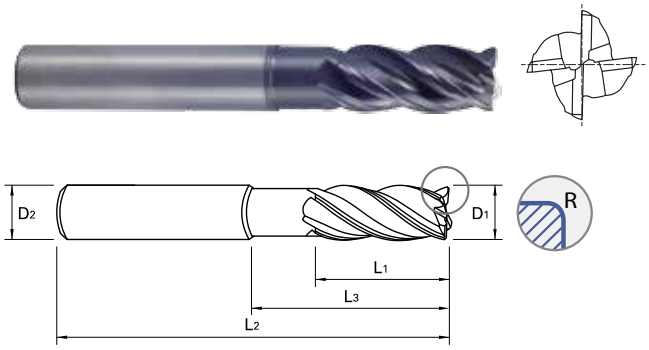


MG HM | 4 | 35°/37° | PLAIN | FLAT | C x 45°

Pages 34–37

4-FLUTE CORNER RADIUS EXTENDED LENGTH

Inch: Pages 14–21 | Metric: Pages 19, 21

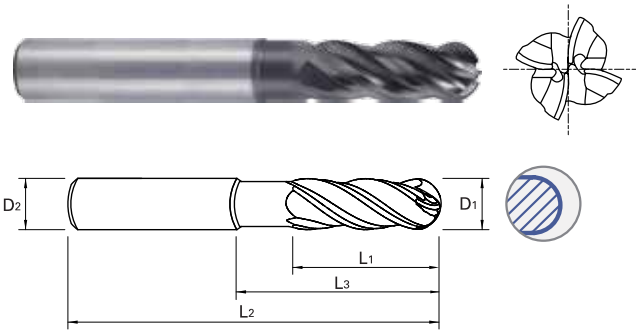


MG HM | 4 | 35°/37° | PLAIN | FLAT

Pages 28–37

4-FLUTE BALL NOSE EXTENDED LENGTH

Inch: Page 14

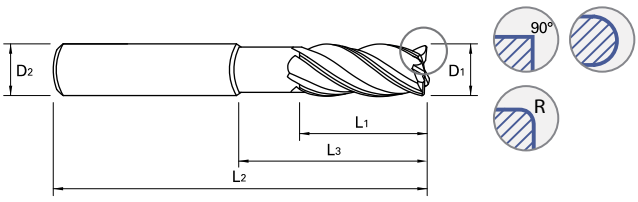


MG HM | 4 | 35°/37° | PLAIN | FLAT | R ±.0008

Pages 28–33

4-FLUTE EXTENDED LENGTH (PLAIN SHANK)

UGMF72|UGMF74|UGMH10 SERIES



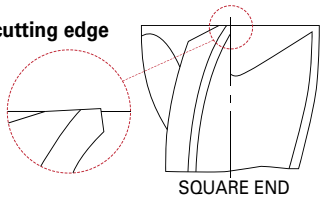
MG HM | 4 | 35°/37° | PLAIN | R ±.0008

Pages 28–32

Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	LBS (L_3)	OAL (L_2)	Square End	Corner Radius								Ball Nose Mill
						.010	.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.
1/8	1/8	5/32	3/8	3	UGMF72008	UGMF74008		UGMF74913						UGMH10008
		5/32	1/2	3	UGMF72913	UGMF74914		UGMF74915						UGMH10901
		5/32	5/8	3	UGMF72914	UGMF74916		UGMF74917						UGMH10902
3/16	3/16	7/32	1/2	3	UGMF72012	UGMF74012		UGMF74918						UGMH10012
		7/32	3/4	3	UGMF72915	UGMF74919		UGMF74920						UGMH10903
		7/32	1	3	UGMF72916	UGMF74921		UGMF74922						UGMH10904
1/4	1/4	3/8	3/4	4	UGMF72016		UGMF74016	UGMF74923	UGMF74924					UGMH10016
		3/8	1-1/8	4	UGMF72901		UGMF74901	UGMF74925	UGMF74926					UGMH10905
		3/8	2-1/8	4	UGMF72902		UGMF74902	UGMF74927	UGMF74928					UGMH10906
3/8	3/8	1/2	1-1/8	4	UGMF72024		UGMF74929	UGMF74024	UGMF74930	UGMF74931				UGMH10024
		1/2	2-1/8	4	UGMF72903		UGMF74932	UGMF74903	UGMF74933	UGMF74934				UGMH10907
		1/2	3-1/8	5	UGMF72922		UGMF74815	UGMF74816	UGMF74817	UGMF74818				UGMH10922
		1/2	3-1/8	6	UGMF72904		UGMF74935	UGMF74904	UGMF74936	UGMF74937				UGMH10908
		1/2	4-1/8	6	UGMF72917		UGMF74938	UGMF74939	UGMF74940	UGMF74941				UGMH10909
1/2	1/2	5/8	1-1/2	4	UGMF72032		UGMF74942	UGMF74032	UGMF74943	UGMF74944	UGMF74945			UGMH10032
		5/8	2-1/4	4	UGMF72905		UGMF74946	UGMF74905	UGMF74947	UGMF74948	UGMF74949			UGMH10910
		5/8	3-3/8	5	UGMF72923		UGMF74819	UGMF74820	UGMF74821	UGMF74822	UGMF74823			UGMH10923
		5/8	3-3/8	6	UGMF72906		UGMF74950	UGMF74906	UGMF74951	UGMF74952	UGMF74953			UGMH10911
		5/8	4-1/8	6	UGMF72918		UGMF74954	UGMF74955	UGMF74956	UGMF74957	UGMF74958			UGMH10912
5/8	5/8	3/4	1-5/8	4	UGMF72040			UGMF74040	UGMF74959	UGMF74960	UGMF74961			UGMH10040
		3/4	2-3/8	5	UGMF72924			UGMF74824	UGMF74825	UGMF74826	UGMF74827			UGMH10924
		3/4	3-3/8	5	UGMF72925			UGMF74828	UGMF74829	UGMF74830	UGMF74831			UGMH10925
		3/4	2-3/8	6	UGMF72907			UGMF74907	UGMF74962	UGMF74963	UGMF74964			UGMH10913
		3/4	3-3/8	6	UGMF72908			UGMF74908	UGMF74965	UGMF74966	UGMF74967			UGMH10914
		3/4	4-1/8	6	UGMF72919			UGMF74968	UGMF74969	UGMF74970	UGMF74971			UGMH10915
3/4	3/4	1	2	4	UGMF72048			UGMF74048	UGMF74972	UGMF74973	UGMF74974	UGMF74975	UGMF74976	UGMH10048
		1	3	5	UGMF72926			UGMF74832	UGMF74833	UGMF74834	UGMF74835	UGMF74836	UGMF74837	UGMH10926
		1	2-1/2	6	UGMF72920			UGMF74977	UGMF74978	UGMF74979	UGMF74980	UGMF74981	UGMF74982	UGMH10916
		1	3	6	UGMF72909			UGMF74909	UGMF74983	UGMF74984	UGMF74985	UGMF74986	UGMF74987	UGMH10917
		1	4	6	UGMF72910			UGMF74910	UGMF74988	UGMF74989	UGMF74990	UGMF74991	UGMF74992	UGMH10918
1	1	1-1/8	2	4	UGMF72064			UGMF74064	UGMF74993	UGMF74994	UGMF74995	UGMF74996	UGMF74997	UGMH10064
		1-1/8	2-5/8	5	UGMF72927			UGMF74838	UGMF74839	UGMF74840	UGMF74841	UGMF74842	UGMF74843	UGMH10927
		1-1/8	3	5	UGMF72928			UGMF74844	UGMF74845	UGMF74846	UGMF74847	UGMF74848	UGMF74849	UGMH10928
		1-1/8	2-5/8	6	UGMF72921			UGMF74998	UGMF74999	UGMF74801	UGMF74802	UGMF74803	UGMF74804	UGMH10919
		1-1/8	3	6	UGMF72911			UGMF74911	UGMF74805	UGMF74806	UGMF74807	UGMF74808	UGMF74809	UGMH10920
		1-1/8	4	6	UGMF72912			UGMF74912	UGMF74810	UGMF74811	UGMF74812	UGMF74813	UGMF74814	UGMH10921

Reinforced cutting edge



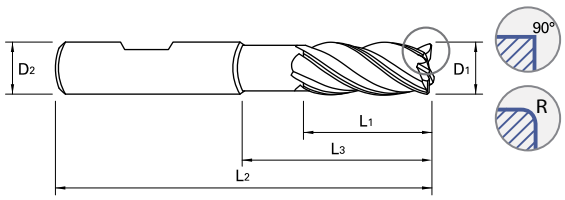
SQUARE END

4-FLUTE EXTENDED LENGTH (WELDON FLAT SHANK)

UGMF73 | UGMF75 SERIES

MG HM | 4 | 35°/37° | FLAT | R ±.0008

Pages 28–32



Unit : **INCH**

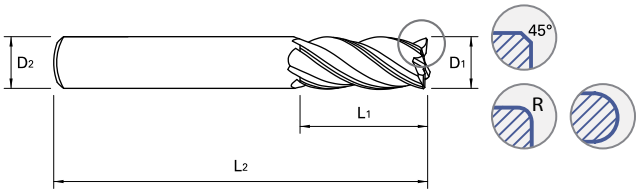
OD (D_1)	SD (D_2)	LOC (L_1)	LBS (L_3)	OAL (L_2)	Square End	Corner Radius .030
					EDP No.	EDP No.
3/8	3/8	1/2	1-1/8	4	UGMF73024	UGMF75024
		1/2	2-1/8	4	UGMF73903	UGMF75903
		1/2	3-1/8	5	UGMF73913	UGMF75913
		1/2	3-1/8	6	UGMF73904	UGMF75904
1/2	1/2	5/8	1-1/2	4	UGMF73032	UGMF75032
		5/8	2-1/4	4	UGMF73905	UGMF75905
		5/8	3-3/8	5	UGMF73914	UGMF75914
		5/8	3-3/8	6	UGMF73906	UGMF75906
5/8	5/8	3/4	1-5/8	4	UGMF73040	UGMF75040
		3/4	2-3/8	5	UGMF73915	UGMF75915
		3/4	3-3/8	5	UGMF73916	UGMF75916
		3/4	2-3/8	6	UGMF73907	UGMF75907
		3/4	3-3/8	6	UGMF73908	UGMF75908
3/4	3/4	1	2	4	UGMF73048	UGMF75048
		1	3	5	UGMF73917	UGMF75917
		1	3	6	UGMF73909	UGMF75909
		1	4	6	UGMF73910	UGMF75910
1	1	1-1/8	2	4	UGMF73064	UGMF75064
		1-1/8	2-5/8	5	UGMF73918	UGMF75918
		1-1/8	3	5	UGMF73919	UGMF75919
		1-1/8	3	6	UGMF73911	UGMF75911
		1-1/8	4	6	UGMF73912	UGMF75912

V7 PlusA | Need something you don't see?

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. **Call us at 800-765-8665 or contact our distributor partners** to discuss your machining solution needs.

4-FLUTE STANDARD LENGTH (PLAIN SHANK)

GMF52 | GMF56 | GMF54 | GMF58 | GMG55 SERIES



MG HM | 4 | 35°/37° | PLAIN | C x 45° | R ±0.02 mm

Pages 34–36

Unit : METRIC

OD (D_1)		SD (D_2)	LOC (L_1)	OAL (L_2)	Chamfer	Ball Nose
Metric	Inch				EDP No.	EDP No.
3.0	.1181	6	7	54	GMF52030	
		6	8	57	GMF56030	GMG55030
4.0	.1575	6	8	54	GMF52040	
		6	11	57	GMF56040	GMG55040
5.0	.1969	6	10	54	GMF52050	
		6	13	57	GMF56050	GMG55050
6.0	.2362	6	10	54	GMF52060	
		6	13	57	GMF56060	GMG55060
8.0	.3150	8	12	58	GMF52080	
		8	19	63	GMF56080	GMG55080
10.0	.3937	10	14	66	GMF52100	
		10	22	72	GMF56100	GMG55100
12.0	.4724	12	16	73	GMF52120	
		12	26	83	GMF56120	GMG55120
14.0	.5512	14	18	75	GMF52140	
		14	26	83	GMF56140	
16.0	.6299	16	22	82	GMF52160	
		16	32	92	GMF56160	GMG55160
18.0	.7087	18	24	84	GMF52180	
		18	32	92	GMF56180	
20.0	.7874	20	26	92	GMF52200	
		20	38	104	GMF56200	GMG55200
25.0	.9843	25	38	104	GMF56250	GMG55250

CHAMFER KEY		
Mill Diameter		Chamfer Size (mm)
Metric	Inch	
3.0	.1181	0.10
4.0	.1575	0.15
5.0	.1969	0.15
6.0	.2362	0.20
8.0	.3150	0.20
10.0	.3937	0.30
12.0	.4724	0.35
14.0	.5512	0.40
16.0	.6299	0.40
18.0	.7087	0.50
20.0	.7874	0.50
25.0	.9843	0.50

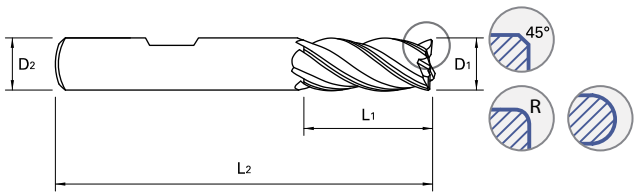
OD (D_1)		SD (D_2)	LOC (L_1)	OAL (L_2)	Corner Radius				
					0.30	0.50	1.00	2.00	3.00
Metric	Inch				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
3.0	.1181	6	7	54	GMF54030	GMF54901			
		6	8	57	GMF58030	GMF58901			
4.0	.1575	6	8	54	GMF54040	GMF54902			
		6	11	57	GMF58040	GMF58902			
5.0	.1969	6	10	54	GMF54050	GMF54903			
		6	13	57	GMF58050	GMF58903			
6.0	.2362	6	10	54	GMF54060	GMF54904	GMF54905		
		6	13	57	GMF58060	GMF58904	GMF58905		
8.0	.3150	8	12	58		GMF54080	GMF54906		
		8	19	63		GMF58080	GMF58906		
10.0	.3937	10	14	66		GMF54100	GMF54907		
		10	22	72		GMF58100	GMF58907		
12.0	.4724	12	16	73		GMF54120	GMF54908	GMF54909	
		12	26	83		GMF58120	GMF58908	GMF58909	
14.0	.5512	14	18	75		GMF54140			
		14	26	83		GMF58140			
16.0	.6299	16	22	82			GMF54160	GMF54912	GMF54913
		16	32	92			GMF58160	GMF58912	GMF58913
18.0	.7087	18	24	84			GMF54180		
		18	32	92			GMF58180		
20.0	.7874	20	26	92			GMF54200	GMF54916	GMF54917
		20	38	104			GMF58200	GMF58916	GMF58917
25.0	.9843	25	38	104			GMF58250		

4-FLUTE STANDARD LENGTH (WELDON FLAT SHANK)

GMF53 | GMF57 | GMF55 | GMF59 | GMG56 SERIES

MG HM | 4 | 35°/37° | FLAT | C x 45° | R ±0.02mm

Pages 34–36



Unit : METRIC

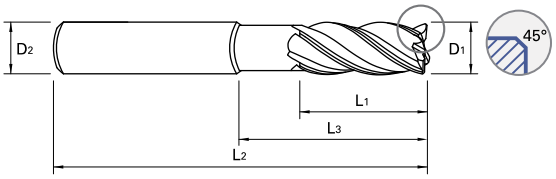
OD (D_1)		SD (D_2)	LOC (L_1)	OAL (L_2)	Chamfer	Ball Nose
Metric	Inch				EDP No.	EDP No.
3.0	0.1181	6	7	54	GMF53030	
		6	8	57	GMF57030	GMG56030
4.0	0.1575	6	8	54	GMF53040	
		6	11	57	GMF57040	GMG56040
5.0	0.1969	6	10	54	GMF53050	
		6	13	57	GMF57050	GMG56050
6.0	0.2362	6	10	54	GMF53060	
		6	13	57	GMF57060	GMG56060
8.0	0.3150	8	12	58	GMF53080	
		8	19	63	GMF57080	GMG56080
10.0	0.3937	10	14	66	GMF53100	
		10	22	72	GMF57100	GMG56100
12.0	0.4724	12	16	73	GMF53120	
		12	26	83	GMF57120	GMG56120
14.0	0.5512	14	18	75	GMF53140	
		14	26	83	GMF57140	
16.0	0.6299	16	22	82	GMF53160	
		16	32	92	GMF57160	GMG56160
18.0	0.7087	18	24	84	GMF53180	
		18	32	92	GMF57180	
20.0	0.7874	20	26	92	GMF53200	
		20	38	104	GMF57200	GMG56200
25.0	0.9843	25	38	104	GMF57250	GMG56250

CHAMFER KEY		
Mill Diameter		Chamfer Size (mm)
Metric	Inch	
3.0	.1181	0.10
4.0	.1575	0.15
5.0	.1969	0.15
6.0	.2362	0.20
8.0	.3150	0.20
10.0	.3937	0.30
12.0	.4724	0.35
14.0	.5512	0.40
16.0	.6299	0.40
18.0	.7087	0.50
20.0	.7874	0.50
25.0	.9843	0.50

OD (D_1)		SD (D_2)	LOC (L_1)	OAL (L_2)	Corner Radius				
					0.30	0.50	1.00	2.00	3.00
Metric	Inch				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
3.0	.1181	6	7	54	GMF55030	GMF55901			
		6	8	57	GMF59030	GMF59901			
4.0	.1575	6	8	54	GMF55040	GMF55902			
		6	11	57	GMF59040	GMF59902			
5.0	.1969	6	10	54	GMF55050	GMF55903			
		6	13	57	GMF59050	GMF59903			
6.0	.2362	6	10	54	GMF55060	GMF55904	GMF55905		
		6	13	57	GMF59060	GMF59904	GMF59905		
8.0	.3150	8	12	58		GMF55080	GMF55906		
		8	19	63		GMF59080	GMF59906		
10.0	.3937	10	14	66		GMF55100	GMF55907		
		10	22	72		GMF59100	GMF59907		
12.0	.4724	12	16	73		GMF55120	GMF55908	GMF55909	
		12	26	83		GMF59120	GMF59908	GMF59909	
14.0	.5512	14	18	75		GMF55140			
		14	26	83		GMF59140			
16.0	.6299	16	22	82			GMF55160	GMF55912	GMF55913
		16	32	92			GMF59160	GMF59912	GMF59913
18.0	.7087	18	24	84			GMF55180		
		18	32	92			GMF59180		
20.0	.7874	20	26	92			GMF55200	GMF55916	GMF55917
		20	38	104			GMF59200	GMF59916	GMF59917
25.0	.9843	25	38	104			GMF59250		

4-FLUTE EXTENDED LENGTH (PLAIN SHANK)

GMF60 SERIES



MG HM | 4 | 35°/37° | PLAIN | C x 45°

Pages 34–35

Unit : **METRIC**

OD (D_1)		SD (D_2)	LOC (L_1)	LBS (L_3)	OAL (L_2)	Chamfer
Metric	Inch					EDP No.
3.0	.1181	6	7	12	54	GMF60030
		6	7	17	57	GMF60901
		6	8	14	57	GMF60902
4.0	.1575	6	8	15	57	GMF60040
		6	8	22	63	GMF60903
		6	11	16	57	GMF60904
5.0	.1969	6	10	17	57	GMF60050
		6	10	27	67	GMF60905
		6	13	18	57	GMF60906
6.0	.2362	6	10	15	57	GMF60060
		6	10	20	62	GMF60907
		6	10	32	74	GMF60908
		6	13	21	57	GMF60909
8.0	.3150	8	12	20	63	GMF60080
		8	12	30	73	GMF60910
		8	12	46	90	GMF60911
		8	19	27	63	GMF60912
10.0	.3937	10	14	25	72	GMF60100
		10	14	35	82	GMF60913
		10	14	55	102	GMF60914
		10	22	32	72	GMF60915
12.0	.4724	12	16	30	83	GMF60120
		12	16	40	93	GMF60916
		12	16	64	117	GMF60917
		12	26	38	83	GMF60918
16.0	.6299	16	22	38	92	GMF60160
		16	22	55	109	GMF60919
		16	22	87	141	GMF60920
		16	32	44	92	GMF60921
20.0	.7874	20	26	50	104	GMF60200
		20	26	70	124	GMF60922
		20	26	110	164	GMF60923
		20	38	54	104	GMF60924

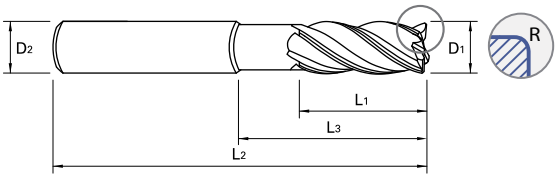
CHAMFER KEY		
Mill Diameter		Chamfer Size (mm)
Metric	Inch	
3.0	.1181	0.10
4.0	.1575	0.15
5.0	.1969	0.15
6.0	.2362	0.20
8.0	.3150	0.20
10.0	.3937	0.30
12.0	.4724	0.35
16.0	.6299	0.40
20.0	.7874	0.50

4-FLUTE EXTENDED LENGTH (PLAIN SHANK)

GMF62 SERIES

MG HM | 4 | 35°/37° | PLAIN

Pages 34–35



Unit : **METRIC**

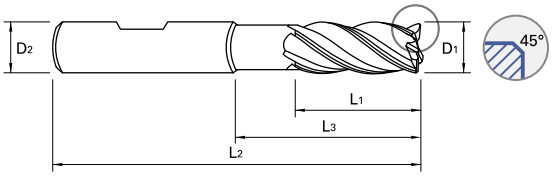
OD (D_1)		SD (D_2)	LOC (L_1)	LBS (L_3)	OAL (L_2)	Corner Radius				
						0.30	0.50	1.00	2.00	3.00
Metric	Inch					EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
3.0	.1181	6	7	12	54	GMF62030	GMF62901			
		6	7	17	57	GMF62902	GMF62903			
		6	8	14	57					
4.0	.1575	6	8	15	57	GMF62040	GMF62904			
		6	8	22	63	GMF62905	GMF62906			
		6	11	16	57					
5.0	.1969	6	10	17	57	GMF62050	GMF62907			
		6	10	27	67	GMF62908	GMF62909			
		6	13	18	57					
6.0	.2362	6	10	15	57	GMF62060	GMF62910	GMF62911		
		6	10	20	62	GMF62912	GMF62913	GMF62914		
		6	10	32	74	GMF62915	GMF62916	GMF62917		
		6	13	21	57					
8.0	.3150	8	12	20	63		GMF62080	GMF62918		
		8	12	30	73		GMF62919	GMF62920		
		8	12	46	90		GMF62921	GMF62922		
		8	19	27	63					
10.0	.3937	10	14	25	72		GMF62100	GMF62923		
		10	14	35	82		GMF62924	GMF62925		
		10	14	55	102		GMF62926	GMF62927		
		10	22	32	72					
12.0	.4724	12	16	30	83		GMF62120	GMF62928	GMF62929	
		12	16	40	93		GMF62930	GMF62931	GMF62932	
		12	16	64	117		GMF62933	GMF62934	GMF62935	
		12	26	38	83					
16.0	.6299	16	22	38	92			GMF62160	GMF62936	GMF62937
		16	22	55	109			GMF62938	GMF62939	GMF62940
		16	22	87	141			GMF62941	GMF62942	GMF62943
		16	32	44	92					
20.0	.7874	20	26	50	104			GMF62200	GMF62944	GMF62945
		20	26	70	124			GMF62946	GMF62947	GMF62948
		20	26	110	164			GMF62949	GMF62950	GMF62951
		20	38	54	104					

4-FLUTE EXTENDED LENGTH (WELDON FLAT SHANK)

GMF61 SERIES

MG HM | 4 | 35°/37° | FLAT

Pages 34–35



Unit : **METRIC**

OD (D_1)		SD (D_2)	LOC (L_1)	LBS (L_3)	OAL (L_2)	Chamfer
						0.10
Metric	Inch					EDP No.
3.0	.1181	6	7	12	54	GMF61030
		6	7	17	57	GMF61901
		6	8	14	57	GMF61902
4.0	.1575	6	8	15	57	GMF61040
		6	8	22	63	GMF61903
		6	11	16	57	GMF61904
5.0	.1969	6	10	17	57	GMF61050
		6	10	27	67	GMF61905
		6	13	18	57	GMF61906
6.0	.2362	6	10	15	57	GMF61060
		6	10	20	62	GMF61907
		6	10	32	74	GMF61908
		6	13	21	57	GMF61909
8.0	.3150	8	12	20	63	GMF61080
		8	12	30	73	GMF61910
		8	12	46	90	GMF61911
		8	19	27	63	GMF61912
10.0	.3937	10	14	25	72	GMF61100
		10	14	35	82	GMF61913
		10	14	55	102	GMF61914
		10	22	32	72	GMF61915
12.0	.4724	12	16	30	83	GMF61120
		12	16	40	93	GMF61916
		12	16	64	117	GMF61917
		12	26	38	83	GMF61918
16.0	.6299	16	22	38	92	GMF61160
		16	22	55	109	GMF61919
		16	22	87	141	GMF61920
		16	32	44	92	GMF61921
20.0	.7874	20	26	50	104	GMF61200
		20	26	70	124	GMF61922
		20	26	110	164	GMF61923
		20	38	54	104	GMF61924

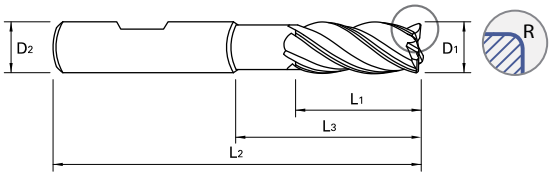
CHAMFER KEY		
Mill Diameter		Chamfer Size (mm)
Metric	Inch	
3.0	.1181	0.10
4.0	.1575	0.15
5.0	.1969	0.15
6.0	.2362	0.20
8.0	.3150	0.20
10.0	.3937	0.30
12.0	.4724	0.35
16.0	.6299	0.40
20.0	.7874	0.50

4-FLUTE EXTENDED LENGTH (WELDON FLAT SHANK)

GMF63 SERIES

MG HM | 4 | 35°/37° | FLAT

Pages 34–35



Unit : **METRIC**

OD (D_1)		SD (D_2)	LOC (L_1)	LBS (L_3)	OAL (L_2)	Corner Radius				
						0.30	0.50	1.00	2.00	3.00
Metric	Inch					EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
3.0	.1181	6	7	12	54	GMF63030	GMF63901			
		6	7	17	57	GMF63902	GMF63903			
		6	8	14	57					
4.0	.1575	6	8	15	57	GMF63040	GMF63904			
		6	8	22	63	GMF63905	GMF63906			
		6	11	16	57					
5.0	.1969	6	10	17	57	GMF63050	GMF63907			
		6	10	27	67	GMF63908	GMF63909			
		6	13	18	57					
6.0	.2362	6	10	15	57	GMF63060	GMF63910	GMF63911		
		6	10	20	62	GMF63912	GMF63913	GMF63914		
		6	10	32	74	GMF63915	GMF63916	GMF63917		
		6	13	21	57					
8.0	.3150	8	12	20	63		GMF63080	GMF63918		
		8	12	30	73		GMF63919	GMF63920		
		8	12	46	90		GMF63921	GMF63922		
		8	19	27	63					
10.0	.3937	10	14	25	72		GMF63100	GMF63923		
		10	14	35	82		GMF63924	GMF63925		
		10	14	55	102		GMF63926	GMF63927		
		10	22	32	72					
12.0	.4724	12	16	30	83		GMF63120	GMF63928	GMF63929	
		12	16	40	93		GMF63930	GMF63931	GMF63932	
		12	16	64	117		GMF63933	GMF63934	GMF63935	
		12	26	38	83					
16.0	.6299	16	22	38	92			GMF63160	GMF63936	GMF63937
		16	22	55	109			GMF63938	GMF63939	GMF63940
		16	22	87	141			GMF63941	GMF63942	GMF63943
		16	32	44	92					
20.0	.7874	20	26	50	104			GMF63200	GMF63944	GMF63945
		20	26	70	124			GMF63946	GMF63947	GMF63948
		20	26	110	164			GMF63949	GMF63950	GMF63951
		20	38	54	104					

Say goodbye to milling tool fatigue and hello to the innovative V7 Plus A 6-flute tool.

Wake up to better 6-flute performance. The new V7 Plus A's revolutionary 6-flute design lets you handle tougher trochoidal milling at higher speeds with better feed per tooth. And since we improved the geometry, you get reduced vibration, increased accuracy and better heat dissipation for enhanced tool life.

HIGH PERFORMANCE SOLID CARBIDE
6-FLUTE END MILLS

- The unique geometry of the variable pitch reduces chatter for high-speed and trochoidal milling
- Excellent performance for stainless steels, mild steels, cast iron and low/medium hardness materials up to HRc40
- Advanced coating for superior performance and tool life

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

MG HM | 6

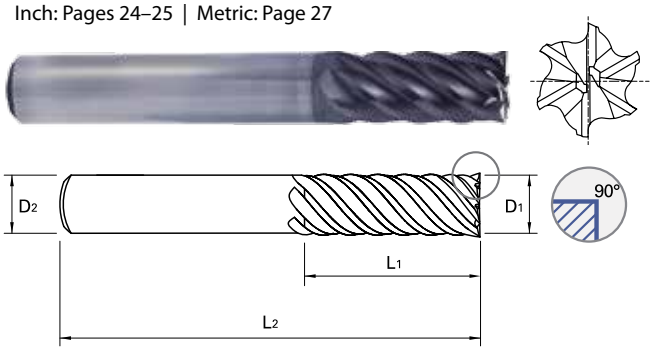
P					M	K	S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Titanium	High-Temperature Alloys
~HB225	HB225~352	HRc30~40	HRc40~55	HRc55				
◎	◎	◎	○		◎	◎	○	○

◎ : Excellent ○ : Good

6-FLUTE STANDARD LENGTH

6-FLUTE SQUARE END

Inch: Pages 24–25 | Metric: Page 27

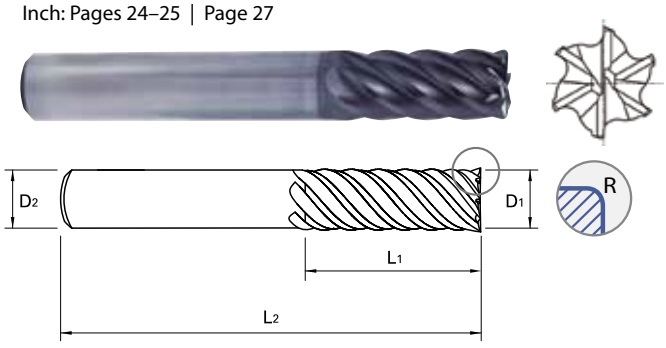


MG HM | 6 | 45° | PLAIN | FLAT

Pages 28-37

6-FLUTE CORNER RADIUS

Inch: Pages 24–25 | Page 27



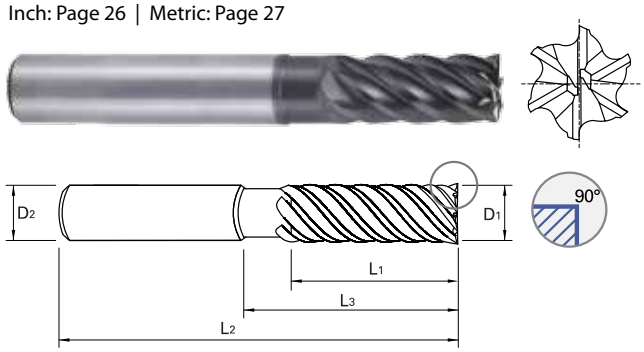
MG HM | 6 | 45° | PLAIN | FLAT

Pages 28-37

6-FLUTE EXTENDED LENGTH

6-FLUTE SQUARE END EXTENDED LENGTH

Inch: Page 26 | Metric: Page 27

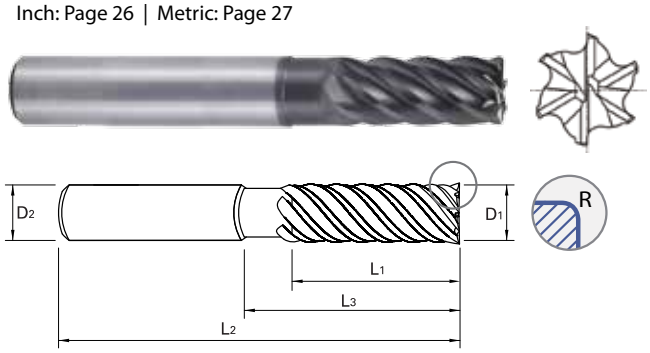


MG HM | 6 | 45° | PLAIN | FLAT

Pages 28-37

6-FLUTE CORNER RADIUS EXTENDED LENGTH

Inch: Page 26 | Metric: Page 27

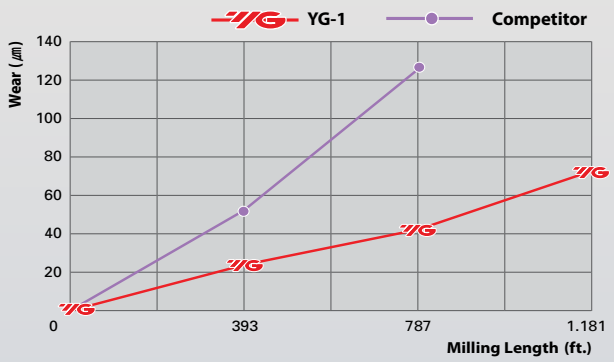


MG HM | 6 | 45° | PLAIN | FLAT

Pages 28-37

V7 Plus A CASE STUDY

6-Flute vs Competitor



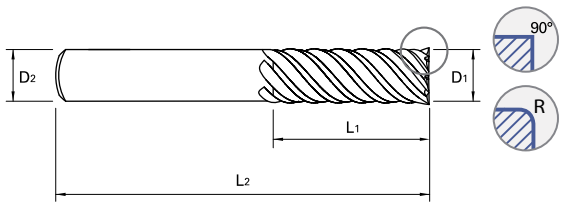
	V7 Plus A	Competitor
Wear(㎛)	70.855	123.776
Milling Length (ft.)	1,181	787
Size (mm)	Ø12(R1) x Ø12 x 26 x 83	
Work Material	- JIS : S45C(HRc30) - WR : 1.0503 - DIN : C45 - AISI: 1405	
Cutting Speed/RPM	914 ft./min. / 7,392 rev./min.	
Feed/Feed per tooth	295.08 in./min. / .007 in./tooth	
Milling Method	Trochoidal Cutting	
Milling Depth	Axial: .945 in., Radial: .024 in.	
Coolant	Wet Cut	
Overhang	1.417 in.	
Machine	Machining Center	

6 -FLUTE STANDARD LENGTH (PLAIN SHANK)

UGMG20 | UGMG22 SERIES

MG HM | 6 | 45° | PLAIN

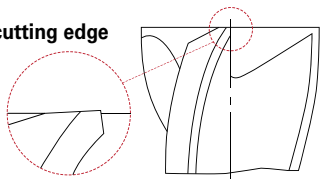
Page 33



Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	Square End	Corner Radius							
					.015	.030	.060	.090	.120	.125	.190	.250
				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/4	1/4	1/2	2-1/2	UGMG20914	UGMG22956	UGMG22957	UGMG22958					
		3/4	2-1/2	UGMG20016	UGMG22016	UGMG22959	UGMG22960					
		1-1/8	3	UGMG20901	UGMG22901	UGMG22902	UGMG22961					
		1-1/2	4	UGMG20902	UGMG22903	UGMG22904	UGMG22962					
5/16	5/16	3/4	2-1/2	UGMG20020	UGMG22020							
		1-1/4	3	UGMG20903	UGMG22905	UGMG22906						
		1-5/8	4	UGMG20904	UGMG22907	UGMG22908						
3/8	3/8	5/8	2-1/2	UGMG20915	UGMG22963	UGMG22964	UGMG22965	UGMG22966				
		1	3	UGMG20024	UGMG22024	UGMG22909	UGMG22910	UGMG22967				
		1-1/2	4	UGMG20905	UGMG22911	UGMG22912	UGMG22913	UGMG22968				
		2	4	UGMG20906	UGMG22914	UGMG22915	UGMG22916	UGMG22969				
1/2	1/2	5/8	3	UGMG20916	UGMG22970	UGMG22971	UGMG22972	UGMG22973		UGMG22974		
		1	3	UGMG20917	UGMG22032	UGMG22917	UGMG22918	UGMG22975		UGMG22976		
		1	3-1/4	UGMG20032								
		1-1/4	3-1/2	UGMG20907	UGMG22977	UGMG22919	UGMG22920	UGMG22921	UGMG22922	UGMG22978		
		1-5/8	4	UGMG20918	UGMG22979	UGMG22980	UGMG22981	UGMG22982		UGMG22983		
		2	4	UGMG20908	UGMG22984	UGMG22923	UGMG22924	UGMG22925	UGMG22926	UGMG22985		
		2-5/8	5	UGMG20919	UGMG22986	UGMG22987	UGMG22988	UGMG22989		UGMG22990		
		3	5	UGMG20909	UGMG22991	UGMG22927	UGMG22928	UGMG22929	UGMG22930	UGMG22992		
5/8	5/8	3/4	3	UGMG20920	UGMG22993	UGMG22994	UGMG22995	UGMG22996		UGMG22997		
		1-1/4	3-1/2	UGMG20040	UGMG22998	UGMG22040	UGMG22931	UGMG22932	UGMG22933	UGMG22999		
		1-7/8	4	UGMG20921	UGMG22801	UGMG22802	UGMG22803	UGMG22804		UGMG22805		
		2	4	UGMG20910	UGMG22806	UGMG22934	UGMG22935	UGMG22936	UGMG22937	UGMG22807		
		2-5/8	5	UGMG20922	UGMG22808	UGMG22809	UGMG22810	UGMG22811		UGMG22812		
		3	5	UGMG20911	UGMG22813	UGMG22938	UGMG22939	UGMG22940	UGMG22941	UGMG22814		
3/4	3/4	1	3-1/2	UGMG20923	UGMG22815	UGMG22816	UGMG22817	UGMG22818		UGMG22819	UGMG22820	UGMG22821
		1-1/2	4	UGMG20048	UGMG22822	UGMG22048	UGMG22942	UGMG22943	UGMG22944	UGMG22823	UGMG22824	UGMG22825
		1-7/8	5	UGMG20924	UGMG22826	UGMG22827	UGMG22828	UGMG22829		UGMG22830	UGMG22831	UGMG22832
		2-1/4	5	UGMG20925	UGMG22833	UGMG22834	UGMG22835	UGMG22836		UGMG22837	UGMG22838	UGMG22839
		2-3/4	5	UGMG20926	UGMG22840	UGMG22841	UGMG22842	UGMG22843		UGMG22844	UGMG22845	UGMG22846
		3	5-1/2	UGMG20912	UGMG22847	UGMG22945	UGMG22946	UGMG22947	UGMG22948	UGMG22848	UGMG22849	UGMG22850
1	1	1-1/2	4	UGMG20064	UGMG22851	UGMG22064	UGMG22949	UGMG22950	UGMG22951	UGMG22852	UGMG22853	UGMG22854
		2	5	UGMG20927	UGMG22855	UGMG22856	UGMG22857	UGMG22858		UGMG22859	UGMG22860	UGMG22861
		2-5/8	5	UGMG20928	UGMG22862	UGMG22863	UGMG22864	UGMG22865		UGMG22866	UGMG22867	UGMG22868
		3-1/4	6	UGMG20929	UGMG22869	UGMG22870	UGMG22871	UGMG22872		UGMG22873	UGMG22874	UGMG22875
		4	7	UGMG20913	UGMG22876	UGMG22952	UGMG22953	UGMG22954	UGMG22955	UGMG22877	UGMG22878	UGMG22879

Reinforced cutting edge



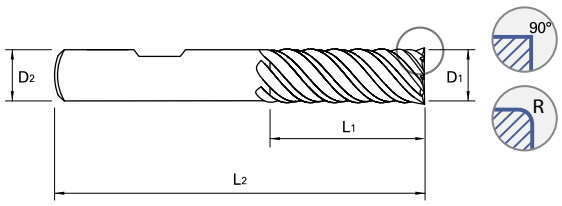
SQUARE END

6-FLUTE STANDARD LENGTH (WELDON FLAT SHANK)

UGMG21 | UGMG23 SERIES

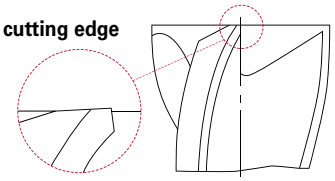
MG HM | 6 | 45° | FLAT

Page 33



Unit : **INCH**

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	Square End	Corner Radius				
					.015	.030	.060	.090	.120
				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
3/8	3/8	1	3	UGMG21024	UGMG23024	UGMG23909	UGMG23910		
		1-1/2	4	UGMG21905	UGMG23911	UGMG23912	UGMG23913		
		2	4	UGMG21906	UGMG23914	UGMG23915	UGMG23916		
1/2	1/2	1	3	UGMG21914	UGMG23032	UGMG23917	UGMG23918		
		1	3-1/4	UGMG21032					
		1-1/4	3-1/2	UGMG21907		UGMG23919	UGMG23920	UGMG23921	UGMG23922
		2	4	UGMG21908		UGMG23923	UGMG23924	UGMG23925	UGMG23926
		3	5	UGMG21909		UGMG23927	UGMG23928	UGMG23929	UGMG23930
5/8	5/8	1-1/4	3-1/2	UGMG21040		UGMG23040	UGMG23931	UGMG23932	UGMG23933
		2	4	UGMG21910		UGMG23934	UGMG23935	UGMG23936	UGMG23937
		3	5	UGMG21911		UGMG23938	UGMG23939	UGMG23940	UGMG23941
3/4	3/4	1-1/2	4	UGMG21048		UGMG23048	UGMG23942	UGMG23943	UGMG23944
		3	5-1/2	UGMG21912		UGMG23945	UGMG23946	UGMG23947	UGMG23948
1	1	1-1/2	4	UGMG21064		UGMG23064	UGMG23949	UGMG23950	UGMG23951
		4	7	UGMG21913		UGMG23952	UGMG23953	UGMG23954	UGMG23955



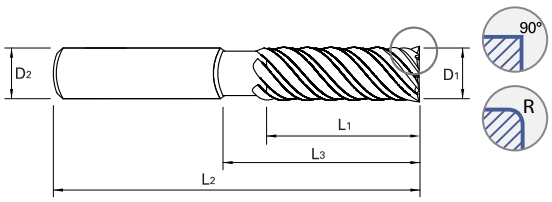
SQUARE END

6-FLUTE EXTENDED LENGTH (PLAIN SHANK)

UGMH08 | UGMH09 SERIES

MG HM | 6 | 45° | PLAIN

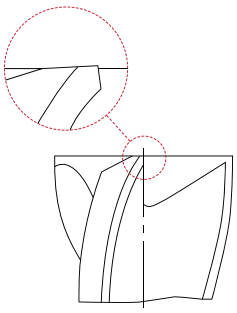
Page 33



Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	LBS (L_3)	OAL (L_2)	Square End	Corner Radius					
						.030	.060	.090	.125	.190	.250
					EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/4	1/4	3/8	3/4	4	UGMH08016	UGMH09016	UGMH09901				
		3/8	1-1/8	4	UGMH08901	UGMH09902	UGMH09903				
		3/8	2-1/8	4	UGMH08902	UGMH09904	UGMH09905				
3/8	3/8	1/2	1-1/8	4	UGMH08024	UGMH09024	UGMH09906	UGMH09907			
		1/2	2-1/8	4	UGMH08903	UGMH09908	UGMH09909	UGMH09910			
		1/2	3-1/8	5	UGMH08919	UGMH09999	UGMH09801	UGMH09802			
		1/2	3-1/8	6	UGMH08904	UGMH09911	UGMH09912	UGMH09913			
		1/2	4-1/8	6	UGMH08905	UGMH09914	UGMH09915	UGMH09916			
1/2	1/2	5/8	1-1/2	4	UGMH08032	UGMH09032	UGMH09917	UGMH09918	UGMH09919		
		5/8	2-1/4	4	UGMH08906	UGMH09920	UGMH09921	UGMH09922	UGMH09923		
		5/8	3-3/8	5	UGMH08920	UGMH09803	UGMH09804	UGMH09805	UGMH09806		
		5/8	3-3/8	6	UGMH08907	UGMH09924	UGMH09925	UGMH09926	UGMH09927		
		5/8	4-1/8	6	UGMH08908	UGMH09928	UGMH09929	UGMH09930	UGMH09931		
5/8	5/8	3/4	1-5/8	4	UGMH08040	UGMH09040	UGMH09932	UGMH09933	UGMH09934		
		3/4	2-3/8	5	UGMH08921	UGMH09807	UGMH09808	UGMH09809	UGMH09810		
		3/4	3-3/8	5	UGMH08922	UGMH09811	UGMH09812	UGMH09813	UGMH09814		
		3/4	2-3/8	6	UGMH08909	UGMH09935	UGMH09936	UGMH09937	UGMH09938		
		3/4	3-3/8	6	UGMH08910	UGMH09939	UGMH09940	UGMH09941	UGMH09942		
		3/4	4-1/8	6	UGMH08911	UGMH09943	UGMH09944	UGMH09945	UGMH09946		
3/4	3/4	1-1/8	2	4	UGMH08048	UGMH09048	UGMH09947	UGMH09948	UGMH09949	UGMH09950	UGMH09951
		1-1/8	2-5/8	5	UGMH08912	UGMH09952	UGMH09953	UGMH09954	UGMH09955	UGMH09956	UGMH09957
		1-1/8	3-1/4	6	UGMH08913	UGMH09958	UGMH09959	UGMH09960	UGMH09961	UGMH09962	UGMH09963
		1-1/8	4-1/4	7	UGMH08914	UGMH09964	UGMH09965	UGMH09966	UGMH09967	UGMH09968	UGMH09969
1	1	1-1/4	2-1/4	4	UGMH08064	UGMH09064	UGMH09970	UGMH09971	UGMH09972	UGMH09973	UGMH09974
		1-1/4	2-5/8	5	UGMH08915	UGMH09975	UGMH09976	UGMH09977	UGMH09978	UGMH09979	UGMH09980
		1-1/4	3-1/4	6	UGMH08916	UGMH09981	UGMH09982	UGMH09983	UGMH09984	UGMH09985	UGMH09986
		1-1/4	4-1/4	7	UGMH08917	UGMH09987	UGMH09988	UGMH09989	UGMH09990	UGMH09991	UGMH09992
		1-1/4	5-1/4	8	UGMH08918	UGMH09993	UGMH09994	UGMH09995	UGMH09996	UGMH09997	UGMH09998

Reinforced cutting edge



SQUARE END

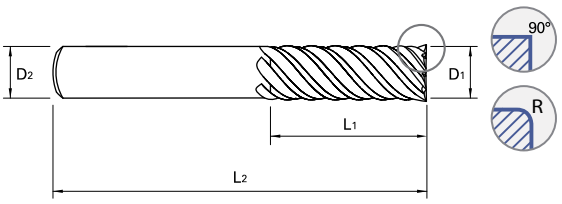
6 -FLUTE STANDARD LENGTH (PLAIN SHANK)

GMG12 | GMG14 | GMG16 | GMG18 SERIES

MG HM | 6 | 45° | PLAIN

Page 37

Unit : **METRIC**



OD (D_1)		SD (D_2)	LOC (L_1)	OAL (L_2)	Square End	Corner Radius						
						0.50	1.00	1.50	2.00	3.00	4.00	5.00
Metric	Inch				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
6.0	0.2362	6	13	57	GMG12060	GMG16060	GMG16901					
		6	24	75	GMG14060	GMG18060	GMG18901					
8.0	0.3150	8	19	63	GMG12080	GMG16080	GMG16902					
		8	32	75	GMG14080	GMG18080	GMG18902		GMG18903			
10.0	0.3937	10	22	72	GMG12100	GMG16100	GMG16903	GMG16904	GMG16905			
		10	40	100	GMG14100	GMG18100	GMG18904	GMG18905	GMG18906			
12.0	0.4724	12	26	83	GMG12120	GMG16120	GMG16906	GMG16907	GMG16908	GMG16909		
		12	48	120	GMG14120	GMG18120	GMG18907	GMG18908	GMG18909	GMG18910		
16.0	0.6299	16	32	92	GMG12160		GMG16160	GMG16910	GMG16911	GMG16912		
		16	64	140	GMG14160		GMG18160	GMG18911	GMG18912	GMG18913		
20.0	0.7874	20	38	104	GMG12200		GMG16200	GMG16913	GMG16914	GMG16915		
		20	80	150	GMG14200		GMG18200	GMG18914	GMG18915	GMG18916	GMG18917	GMG18918
25.0	0.9843	25	44	104	GMG12250		GMG16250	GMG16916	GMG16917	GMG16918		
		25	100	170	GMG14250		GMG18250	GMG18919	GMG18920	GMG18921	GMG18922	GMG18923

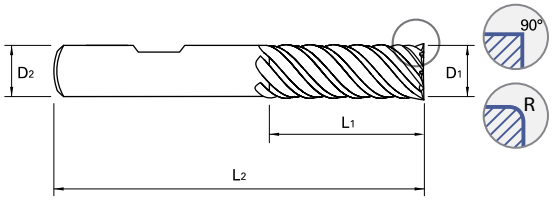
6-FLUTE STANDARD LENGTH (WELDON FLAT SHANK)

GMG13 | GMG15 | GMG17 | GMG19 SERIES

MG HM | 6 | 45° | FLAT

Page 37

Unit : **METRIC**



OD (D_1)		SD (D_2)	LOC (L_1)	OAL (L_2)	Square End	Corner Radius						
						0.50	1.00	1.50	2.00	3.00	4.00	5.00
Metric	Inch				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
6.0	0.2362	6	13	57	GMG13060	GMG17060	GMG17901					
		6	24	75	GMG15060	GMG19060	GMG19901					
8.0	0.3150	8	19	63	GMG13080	GMG17080	GMG17902					
		8	32	75	GMG15080	GMG19080	GMG19902		GMG19903			
10.0	0.3937	10	22	72	GMG13100	GMG17100	GMG17903	GMG17904	GMG17905			
		10	40	100	GMG15100	GMG19100	GMG19904	GMG19905	GMG19906			
12.0	0.4724	12	26	83	GMG13120	GMG17120	GMG17906	GMG17907	GMG17908	GMG17909		
		12	48	120	GMG15120	GMG19120	GMG19907	GMG19908	GMG19909	GMG19910		
16.0	0.6299	16	32	92	GMG13160		GMG17160	GMG17910	GMG17911	GMG17912		
		16	64	140	GMG15160		GMG19160	GMG19911	GMG19912	GMG19913		
20.0	0.7874	20	38	104	GMG13200		GMG17200	GMG17913	GMG17914	GMG17915		
		20	80	150	GMG15200		GMG19200	GMG19914	GMG19915	GMG19916	GMG19917	GMG19918
25.0	0.9843	25	44	104	GMG13250		GMG17250	GMG17916	GMG17917	GMG17918		
		25	100	170	GMG15250		GMG19250	GMG19919	GMG19920	GMG19921	GMG19922	GMG19923

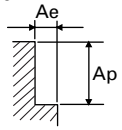
RECOMMENDED CUTTING CONDITIONS – INCH

UGMF68 | UGMF69 | UGMF70 | UGMF71 | UGMF72 | UGMF73 | UGMF74 | UGMF75 | UGMF76 | UGMF77 SERIES

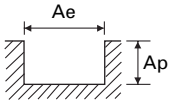
RPM = rev./min. FEED = in./min.
SFM = ft./min. Fz = in./tooth

ISO Hardness (BHN)	Work Materials	Speed and Feed Recommendations				Diameter (in.)			
		Type of Cut	Ap x D1	Ae x D1	Parameters	1/8	5/32	3/16	7/32
P <300	CARBON STEEL 10**, 11**, 12**, 12L**, 15**	Side Cutting	1.5 (1.2)	0.5	SFM (Vc)	499 (400-599)			499 (400-598)
					RPM	15249	12200	10166	8714
					Fz	.0002	.0003	.0004	.0005
					FEED	12.01	15.37	17.61	18.53
		Slotting	1 (0.8)	1	SFM (Vc)	499 (400-599)			499 (400-598)
					RPM	15249	12200	10166	8714
					Fz	.0002	.0003	.0004	.0005
					FEED	12.01	15.37	17.61	18.53
P >300 P <380	ALLOY STEEL 41**, 43**, 51**, 86**	Side Cutting	1.5 (1.2)	0.5	SFM (Vc)	351 (281-422)			351 (281-421)
					RPM	10727	8581	7151	6129
					Fz	.0002	.0003	.0004	.0005
					FEED	8.45	10.81	12.39	13.03
		Slotting	1 (0.8)	1	SFM (Vc)	351 (281-422)			351 (281-421)
					RPM	10727	8581	7151	6129
					Fz	.0002	.0003	.0004	.0005
					FEED	8.45	10.81	12.39	13.03
P <380	TOOL STEEL A2, D2, H13, P20, T15	Side Cutting	1.5 (1.2)	0.5	SFM (Vc)	210 (168-252)			
					RPM	6418	5134	4278	3667
					Fz	.0001	.0002	.0003	.0004
					FEED	3.03	4.85	5.39	5.49
		Slotting	1 (0.8)	1	SFM (Vc)	210 (168-252)			
					RPM	6418	5134	4278	3667
					Fz	.0001	.0002	.0003	.0004
					FEED	3.03	4.85	5.39	5.49
K <260	CAST IRON GRAY, MALLEABLE, DUCTILE	Side Cutting	1.5 (1.2)	0.5	SFM (Vc)	367 (294-440)			
					RPM	11216	8972	7477	6409
					Fz	.0002	.0004	.0006	.0007
					FEED	10.60	14.13	16.48	17.16
		Slotting	1 (0.8)	1	SFM (Vc)	367 (294-440)			
					RPM	11216	8972	7477	6409
					Fz	.0002	.0004	.0006	.0007
					FEED	10.60	14.13	16.48	17.16

Side Cutting



Slotting



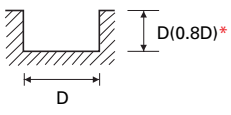
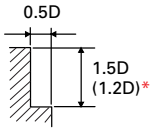
NOTES:

- Feed to be reduced by approximately 50% if L.O.C. (Length Of Cut) is over 3xD
- The above recommendations are based on ideal conditions; for smaller taper machining centers or less rigid conditions please adjust parameters accordingly on diameters greater than 1/2"
- In profile operations, engaging more that 2xD, reduce the radial depth of cut by 50%-60%
- Finish cuts typically require reduced cutting feeds and speeds; also, it is recommended the radial width of cut (AE) should not exceed 2%xD1

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

Diameter (in.)									
1/4	9/32	5/16	11/32	3/8	7/16	1/2	5/8	3/4	1
499 (400-599)	499 (400-598)	499 (400-599)	525 (420-630)	551 (441-662)	551 (441-661)	551 (441-662)			
7625	6778	6100	5834	5613	4811	4210	3368	2806	2105
.0006	.0008	.0011	.0013	.0015	.0017	.0019	.0021	.0026	.0025
19.21	22.95	25.94	29.86	33.59	32.20	31.16	28.11	28.73	21.21
499 (400-599)	499 (400-598)	499 (400-599)	525 (420-630)	551 (441-662)	551 (441-661)	551 (441-662)			
7625	6778	6100	5834	5613	4811	4210	3368	2806	2105
.0006	.0008	.0011	.0013	.0015	.0017	.0019	.0021	.0026	.0025
19.21	22.95	25.94	29.86	33.59	32.20	31.16	28.11	28.73	21.21
351 (281-422)	351 (281-421)	351 (281-422)	368 (295-441)	384 (308-461)	384 (308-460)	384 (308-461)			
5363	4767	4291	4089	3912	3353	2934	2347	1956	1467
.0006	.0008	.0011	.0013	.0015	.0017	.0019	.0021	.0026	.0025
13.51	16.14	18.24	20.93	23.41	22.44	21.71	19.59	20.02	14.78
351 (281-422)	351 (281-421)	351 (281-422)	368 (295-441)	384 (308-461)	384 (308-460)	384 (308-461)			
5363	4767	4291	4089	3912	3353	2934	2347	1956	1467
.0006	.0008	.0011	.0013	.0015	.0017	.0019	.0021	.0023	.0025
13.51	16.14	18.24	20.93	23.41	22.44	21.71	19.59	18.17	14.78
210 (168-252)			220 (176-264)	230 (184-276)					
3209	2852	2567	2445	2343	2008	1757	1406	1171	879
.0004	.0006	.0007	.0009	.0011	.0012	.0013	.0015	.0018	.0018
5.56	6.74	7.68	8.86	9.96	9.33	8.86	8.19	8.30	6.23
210 (168-252)			220 (176-264)	230 (184-276)					
3209	2852	2567	2445	2343	2008	1757	1406	1171	879
.0004	.0006	.0007	.0009	.0011	.0012	.0013	.0015	.0018	.0018
5.56	6.74	7.68	8.86	9.96	9.33	8.86	8.19	8.30	6.23
367 (294-440)			386 (309-463)	404 (324-484)					
5608	4985	4486	4290	4115	3527	3087	2469	2058	1543
.0008	.0011	.0013	.0016	.0019	.0021	.0023	.0026	.0032	.0031
17.66	21.19	24.02	27.70	31.11	29.44	28.19	25.28	26.25	19.20
367 (294-440)			386 (309-463)	404 (324-484)					
5608	4985	4486	4290	4115	3527	3087	2469	2058	1543
.0008	.0011	.0013	.0016	.0019	.0021	.0023	.0026	.0032	.0031
17.66	21.19	24.02	27.70	31.11	29.44	28.19	25.28	26.25	19.20

NEXT PAGE ▶

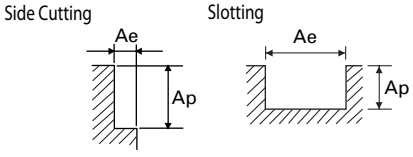
*Axial cutting depth			
Length of Cut	<1.5xD	1xD	1.5xD
	≥1.5xD	0.8xD	1.2xD

RECOMMENDED CUTTING CONDITIONS – INCH

UGMF68 | UGMF69 | UGMF70 | UGMF71 | UGMF72 | UGMF73 | UGMF74 | UGMF75 | UGMF76 | UGMF77 SERIES

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

ISO Hardness (BHN)	Work Materials	Speed and Feed Recommendations				Diameter (in.)			
		Type of Cut	Ap x D1	Ae x D1	Parameters	1/8	5/32	3/16	7/32
M	STAINLESS STEELS 300 304, 316, 304L, 316LSUS316	Side Cutting	1.5 (1.2)	0.5	SFM (Vc)	348 (279-417)			
					RPM	10635	8508	7090	6077
					Fz	.0002	.0003	.0005	.0006
					FEED	8.37	10.72	14.51	14.83
		Slotting	1 (0.8)	1	SFM (Vc)	348 (279-417)			
					RPM	10635	8508	7090	6077
					Fz	.0002	.0003	.0005	.0006
					FEED	8.37	10.72	14.51	14.83
M	STAINLESS STEELS 400 416, 420F, 430F, 440F	Side Cutting	1.5 (1.2)	0.5	SFM (Vc)	486 (389-583)			
					RPM	14852	11882	9901	8487
					Fz	.0002	.0002	.0004	.0004
					FEED	9.36	11.23	14.03	14.70
		Slotting	1 (0.8)	1	SFM (Vc)	486 (389-583)			
					RPM	14852	11882	9901	8487
					Fz	.0002	.0002	.0004	.0004
					FEED	9.36	11.23	14.03	14.70
M	STAINLESS STEELS (PH) 17-4PH, 15-5PH, 13-8PH	Side Cutting	1.5 (1.2)	0.5	SFM (Vc)	312 (250-374)			
					RPM	9535	7628	6356	5448
					Fz	.0002	.0003	.0005	.0006
					FEED	7.51	9.61	13.01	13.30
		Slotting	1 (0.8)	1	SFM (Vc)	312 (250-374)			
					RPM	9535	7628	6356	5448
					Fz	.0002	.0003	.0005	.0006
					FEED	7.51	9.61	13.01	13.30
S	TITANIUM Ti6Al4V, Ti5Al5V5Mo, Ti7Al4Mo	Side Cutting	1	0.35	SFM (Vc)	190 (152-228)			
					RPM	5806	4645	3871	3318
					Fz	.0002	.0003	.0004	.0005
					FEED	3.66	5.12	6.71	7.05
		Slotting	0.5	1	SFM (Vc)	190 (152-228)			
					RPM	5806	4645	3871	3318
					Fz	.0002	.0003	.0004	.0005
					FEED	3.66	5.12	6.71	7.05
S	HIGH-TEMPERATURE ALLOY INCONEL, HASTALLOY, RENE	Side Cutting	1	0.25	SFM (Vc)	85 (68-102)			
					RPM	2598	2078	1732	1484
					Fz	.0002	.0003	.0003	.0004
					FEED	2.05	2.29	2.18	2.34
		Slotting	0.5	1	SFM (Vc)	85 (68-102)			
					RPM	2598	2078	1732	1484
					Fz	.0002	.0003	.0003	.0004
					FEED	2.05	2.29	2.18	2.34

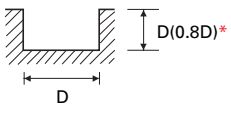
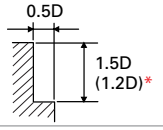


NOTES:

- Feed to be reduced by approximately 50% if L.O.C. (Length Of Cut) is over 3xD
- The above recommendations are based on ideal conditions; for smaller taper machining centers or less rigid conditions please adjust parameters accordingly on diameters greater than 1/2"
- In profile operations, engaging more that 2xD, reduce the radial depth of cut by 50%-60%
- Finish cuts typically require reduced cutting feeds and speeds; also, it is recommended the radial width of cut (AE) should not exceed 2%xD1

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

Diameter (in.)									
1/4	9/32	5/16	11/32	3/8	7/16	1/2	5/8	3/4	1
348 (279-417)									
5317	4727	4254	3867	3545	3039	2659	2127	1772	1329
.0007	.0009	.0011	.0015	.0019	.0020	.0022	.0024	.0030	.0030
15.07	17.12	18.76	23.14	26.80	24.64	23.03	20.77	21.49	16.12
348 (279-417)									
5317	4727	4254	3867	3545	3039	2659	2127	1772	1329
.0007	.0009	.0011	.0015	.0019	.0020	.0022	.0024	.0030	.0030
15.07	17.12	18.76	23.14	26.80	24.64	23.03	20.77	21.49	16.12
486 (389-583)									
7426	6601	5941	5401	4951	4243	3713	2970	2475	1857
.0005	.0007	.0009	.0011	.0013	.0014	.0015	.0018	.0022	.0022
15.20	18.48	20.58	23.81	26.51	24.39	22.80	21.05	21.44	16.08
486 (389-583)									
7426	6601	5941	5401	4951	4243	3713	2970	2475	1857
.0005	.0007	.0009	.0011	.0013	.0014	.0015	.0018	.0022	.0022
15.20	18.19	20.58	23.81	26.51	24.39	22.80	21.05	21.44	16.08
312 (250-374)									
4767	4238	3814	3467	3178	2724	2384	1907	1589	1192
.0007	.0009	.0011	.0015	.0019	.0020	.0022	.0024	.0030	.0030
13.51	15.35	16.82	20.75	24.02	22.09	20.65	18.62	19.02	14.26
312 (250-374)									
4767	4238	3814	3467	3178	2724	2384	1907	1589	1192
.0007	.0009	.0011	.0015	.0019	.0020	.0022	.0024	.0030	.0030
13.51	15.35	16.82	20.75	24.02	22.09	20.65	18.62	19.02	14.26
190 (152-228)									
2903	2581	2323	2111	1935	1659	1452	1161	968	726
.0006	.0008	.0010	.0013	.0017	.0018	.0020	.0022	.0027	.0027
7.32	8.33	9.14	11.14	12.80	12.02	11.43	10.06	10.36	7.89
190 (152-228)									
2903	2581	2323	2111	1935	1659	1452	1161	968	726
.0006	.0008	.0010	.0013	.0017	.0018	.0020	.0022	.0027	.0027
7.32	8.33	9.14	11.14	12.80	12.02	11.43	10.06	10.36	7.89
85 (68-102)									
1299	1154	1039	945	866	742	649	520	433	325
.0005	.0006	.0007	.0010	.0013	.0014	.0015	.0017	.0021	.0020
2.45	2.82	3.11	3.87	4.50	4.15	3.89	3.52	3.68	2.66
85 (68-102)									
1299	1154	1039	945	866	742	649	520	433	325
.0005	.0006	.0007	.0010	.0013	.0014	.0015	.0017	.0021	.0020
2.45	2.82	3.11	3.87	4.50	4.15	3.89	3.52	3.68	2.66

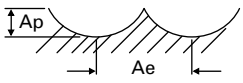
*Axial cutting depth			
Length of Cut	<1.5xD	1xD	1.5xD
	≥1.5xD	0.8xD	1.2xD

RECOMMENDED CUTTING CONDITIONS – INCH

UGMG53 | UGMG54 | UGMH10 SERIES

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

ISO Hardness (BHN)	Work Materials	Speed and Feed Recommendations				Diameter (in.)										
		Type of Cut	Ap x D1	Ae x D1	Parameters	1/8	3/16	13/64	1/4	5/16	3/8	1/2	5/8	11/16	3/4	1
P <300	CARBON STEEL 10**, 11**, 12**, 12L**, 15**		1	0.5	SFM (Vc)	531 (425-637)										
					RPM	16227	10818	9986	8114	6491	5409	4057	3245	2950	2705	2028
					Fz	.0010	.0011	.0012	.0016	.0024	.0026	.0028	.0030	.0031	.0035	.0039
					FEED	63.89	46.00	47.18	51.11	61.33	55.37	44.72	38.33	37.17	38.33	31.62
P >300 P <380	ALLOY STEEL 41**, 43**, 51**, 86**		1	0.5	SFM (Vc)	371 (297-445)										
					RPM	11338	7559	6977	5669	4535	3779	2834	2268	2061	1890	1417
					Fz	.0010	.0011	.0012	.0016	.0024	.0026	.0028	.0029	.0031	.0035	.0039
					FEED	44.64	32.14	32.96	35.71	42.85	38.69	31.25	26.43	25.65	26.78	22.10
P <380	TOOL STEEL A2, D2, H13, P20, T15		1	0.5	SFM (Vc)	223 (178-268)										
					RPM	6815	4543	4194	3407	2726	2272	1704	1363	1239	1136	852
					Fz	.0007	.0007	.0008	.0011	.0017	.0018	.0019	.0020	.0022	.0025	.0028
					FEED	18.24	13.59	13.87	15.02	18.03	16.10	13.15	11.16	10.93	11.27	9.39
K <260	CAST IRON Gray, Malleable, Ductile		1	0.5	SFM (Vc)	390 (312-468)										
					RPM	11918	7946	7334	5959	4767	3973	2980	2384	2167	1986	1490
					Fz	.0012	.0013	.0015	.0020	.0029	.0032	.0034	.0037	.0039	.0044	.0049
					FEED	58.18	41.29	42.74	46.92	55.56	50.68	40.82	34.91	33.78	35.04	29.09
M	STAINLESS STEELS 300 304, 316, 304L, 316LSUS316		1	0.5	SFM (Vc)	279 (223-335)										
					RPM	8526	5684	5247	4263	3410	2842	2132	1705	1550	1421	1066
					Fz	.0008	.0008	.0010	.0016	.0018	.0020	.0022	.0024	.0025	.0026	.0027
					FEED	26.85	17.90	20.66	27.53	24.17	22.38	18.46	16.11	15.62	14.55	11.41
M	STAINLESS STEELS 400 416, 420F, 430F, 440F		1	0.5	SFM (Vc)	253 (202-304)										
					RPM	7732	5154	4758	3866	3093	2577	1933	1546	1406	1289	966
					Fz	.0006	.0006	.0010	.0012	.0016	.0018	.0020	.0021	.0023	.0023	.0023
					FEED	18.26	12.18	18.73	18.26	19.48	18.26	15.22	13.15	13.06	11.77	8.98
M	STAINLESS STEELS (PH) 17-4PH, 15-5PH, 13-8PH		1	0.5	SFM (Vc)	253 (202-304)										
					RPM	7732	5154	4758	3866	3093	2577	1933	1546	1406	1289	966
					Fz	.0008	.0008	.0010	.0016	.0018	.0020	.0022	.0024	.0025	.0026	.0027
					FEED	24.35	16.23	18.73	24.96	21.92	20.29	16.74	14.61	14.17	13.19	10.35
S	TITANIUM Ti6Al4V, Ti5Al5V5Mo, Ti7Al4Mo		0.3	0.5	SFM (Vc)	154 (123-185)										
					RPM	4706	3137	2896	2353	1882	1569	1177	941	856	784	588
					Fz	.0007	.0007	.0009	.0015	.0016	.0018	.0019	.0021	.0023	.0023	.0024
					FEED	13.34	8.89	10.03	13.71	11.86	11.12	9.08	8.00	7.82	7.16	5.65
S	HIGH-TEMPERATURE ALLOY INCONEL, HASTALLOY, RENE		0.3	0.2	SFM (Vc)	69 (55-83)										
					RPM	2109	1406	1298	1054	843	703	527	422	383	351	264
					Fz	.0006	.0006	.0007	.0011	.0012	.0014	.0015	.0017	.0018	.0018	.0019
					FEED	4.65	3.10	3.47	4.65	4.12	3.87	3.15	2.79	2.72	2.49	1.99



See notes on next page

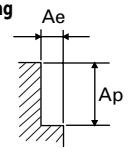
RECOMMENDED CUTTING CONDITIONS – INCH

UGMG20 | UGMG21 | UGMG22 | UGMG23 | UGMH08 | UGMH09 SERIES

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

ISO Hardness (BHN)	Work Materials	Speed and Feed Recommendations				Diameter (in.)						
		Type of Cut	Ap x D1	Ae x D1	Parameters	1/4	5/16	3/8	1/2	5/8	3/4	1
P <300	CARBON STEEL 10**, 11**, 12**, 12L**, 15**	Side Cutting	2 (*)	0.05	SFM (Vc)	984 (787-1181)						
					RPM	15036	12028	10024	7518	6014	5012	3759
					Fz	.0027	.0046	.0057	.0068	.0080	.0089	.0091
					FEED	241.52	329.60	340.96	307.22	286.98	266.38	206.00
P >300 P <380	ALLOY STEEL 41**, 43**, 51**, 86**	Side Cutting	2 (*)	0.05	SFM (Vc)	666 (533-799)						
					RPM	10176	8141	6784	5088	4071	3392	2544
					Fz	.0020	.0033	.0042	.0050	.0059	.0066	.0069
					FEED	120.19	163.46	169.88	153.85	143.27	133.82	104.57
P <380	TOOL STEEL A2, D2, H13, P20, T15	Side Cutting	2 (*)	0.05	SFM (Vc)	328 (262-394)						
					RPM	5012	4009	3341	2506	2005	1671	1253
					Fz	.0016	.0028	.0035	.0041	.0048	.0054	.0057
					FEED	48.54	67.25	69.46	62.15	58.25	54.06	42.62
M	STAINLESS STEELS 300 304, 316, 304L, 316LSUS316	Side Cutting	2 (*)	0.05	SFM (Vc)	482 (386-578)						
					RPM	7365	5892	4910	3682	2946	2455	1841
					Fz	.0016	.0028	.0035	.0041	.0048	.0054	.0056
					FEED	71.33	98.82	102.07	91.34	85.60	79.45	62.20
M	STAINLESS STEELS 400 416, 420F, 430F, 440F	Side Cutting	2 (*)	0.05	SFM (Vc)	699 (559-839)						
					RPM	10681	8545	7120	5340	4272	3560	2670
					Fz	.0019	.0033	.0041	.0049	.0057	.0064	.0066
					FEED	123.63	169.55	174.93	157.69	147.34	136.24	105.97
M	STAINLESS STEELS (PH) 17-4PH, 15-5PH, 13-8PH	Side Cutting	2 (*)	0.05	SFM (Vc)	440 (352-528)						
					RPM	6723	5379	4482	3362	2689	2241	1681
					Fz	.0016	.0028	.0035	.0041	.0048	.0054	.0056
					FEED	65.11	90.21	93.17	83.38	78.14	72.53	56.38
S	TITANIUM Ti6Al4V, Ti5Al5V5Mo, Ti7Al4Mo	Side Cutting	2 (*)	0.05	SFM (Vc)	381 (305-457)						
					RPM	5822	4657	3881	2911	2329	1941	1455
					Fz	.0013	.0022	.0028	.0033	.0038	.0044	.0046
					FEED	45.38	60.51	64.18	57.07	53.36	51.80	40.22
S	HIGH-TEMPERATURE ALLOY INCONEL, HASTALLOY, RENE	Side Cutting	2 (*)	0.05	SFM (Vc)	108 (86-130)						
					RPM	1650	1320	1100	825	660	550	413
					Fz	.0013	.0022	.0028	.0032	.0038	.0044	.0045
					FEED	12.86	17.15	18.19	15.98	15.13	14.55	11.21

Side cutting



NOTES:

- Feed to be reduced by approximately 50% if L.O.C. (Length Of Cut) is over 3xD
- The above recommendations are based on ideal conditions; for smaller taper machining centers or less rigid conditions please adjust parameters accordingly on diameters greater than 1/2"
- In profile operations, engaging more that 2xD, reduce the radial depth of cut by 50%-60%
- Finish cuts typically require reduced cutting feeds and speeds; also, it is recommended the radial width of cut (AE) should not exceed 2%xD1

RECOMMENDED CUTTING CONDITIONS – METRIC

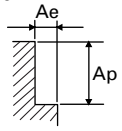
GMF52 | GMF53 | GMF54 | GMF55 | GMF56 | GMF57 | GMF58 | GMF59 | GMF60 | GMF61 | GMF62 | GMF63 SERIES

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

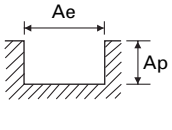
ISO Hardness (BHN)	Work Materials	Speed and Feed Recommendations				Diameter (mm)											
		Type of Cut	Ap x D1	Ae x D1	Parameters	3	4	5	6	8	10	12	14	16	18	20	25
P <300	CARBON STEEL 1.1191 (C45) 1.0726 (35 S 20) 1.0715 (9 SMn 28) 1.0718 (9 SMnPb 28)	Side Cutting	1.5 (1.2)	0.5	SFM (Vc)	499 (399-598)					551 (441-661)						
					RPM	16128	12096	9677	8064	6048	5348	4456	3820	3342	2971	2674	2139
					Fz	.0002	.0003	.0004	.0006	.0011	.0015	.0019	.0019	.0021	.0023	.0026	.0025
					FEED	12.70	15.24	16.76	20.32	25.72	32.00	32.98	29.47	27.90	27.60	27.37	21.56
		Slotting	1 (0.8)	1	SFM (Vc)	499 (399-598)					551 (441-661)						
					RPM	16128	12096	9677	8064	6048	5348	4456	3820	3342	2971	2674	2139
					Fz	.0002	.0003	.0004	.0006	.0011	.0015	.0019	.0019	.0021	.0023	.0026	.0025
					FEED	12.70	15.24	16.76	20.32	25.72	32.00	32.98	29.47	27.90	27.60	27.37	21.56
P >300 P <380	ALLOY STEEL 1.2330 (35 CrMo 4) 1.6565 (40NiCrMo6) 1.7033 (34Cr4) 1.6523 (21 NiCrMo2)	Side Cutting	1.5 (1.2)	0.5	SFM (Vc)	351 (281-421)					384 (307-461)						
					RPM	11353	8515	6812	5677	4257	3724	3104	2660	2328	2069	1862	1490
					Fz	.0002	.0003	.0004	.0006	.0011	.0015	.0019	.0019	.0021	.0023	.0026	.0025
					FEED	8.94	10.73	11.80	14.30	18.10	22.29	22.97	20.53	19.43	19.22	19.06	15.01
		Slotting	1 (0.8)	1	SFM (Vc)	351 (281-421)					384 (307-461)						
					RPM	11353	8515	6812	5677	4257	3724	3104	2660	2328	2069	1862	1490
					Fz	.0002	.0003	.0004	.0006	.0011	.0015	.0019	.0019	.0021	.0023	.0026	.0025
					FEED	8.94	10.73	11.80	14.30	18.10	22.29	22.97	20.53	19.43	19.22	19.06	15.01
P <380	TOOL STEEL 1.2363 (X100 CrMoV 5 1) 1.2379 (X155 CrVMo 12 1) 1.2344 (X40 CrMoV 5 1) 1.3243 (S 6-5-2-5)	Side Cutting	1.5 (1.2)	0.5	SFM (Vc)	210 (168-252)					230 (184-276)						
					RPM	6791	5093	4074	3395	2546	2228	1857	1592	1393	1238	1114	891
					Fz	.0001	.0002	.0003	.0004	.0007	.0011	.0013	.0013	.0015	.0016	.0018	.0018
					FEED	3.21	4.81	5.13	5.88	7.62	9.47	9.36	8.52	8.11	7.99	7.90	6.32
		Slotting	1 (0.8)	1	SFM (Vc)	210 (168-252)					230 (184-276)						
					RPM	6791	5093	4074	3395	2546	2228	1857	1592	1393	1238	1114	891
					Fz	.0001	.0002	.0003	.0004	.0007	.0011	.0013	.0013	.0015	.0016	.0018	.0018
					FEED	3.21	4.81	5.13	5.88	7.62	9.47	9.36	8.52	8.11	7.99	7.90	6.32
K < 260	CAST IRON 0.6020 (GG20) 0.8145 (GTS-45-06) 0.7060 (GGG-60)	Side Cutting	1.5 (1.2)	0.5	SFM (Vc)	367 (294-441)					404 (323-484)						
					RPM	11884	8913	7130	5942	4456	3915	3263	2797	2447	2175	1958	1566
					Fz	.0002	.0004	.0006	.0008	.0013	.0019	.0023	.0024	.0026	.0029	.0032	.0031
					FEED	11.23	14.04	15.72	18.71	23.86	29.60	29.80	26.86	25.05	25.01	24.97	19.48
		Slotting	1 (0.8)	1	SFM (Vc)	367 (294-441)					404 (323-484)						
					RPM	11884	8913	7130	5942	4456	3915	3263	2797	2447	2175	1958	1566
					Fz	.0002	.0004	.0006	.0008	.0013	.0019	.0023	.0024	.0026	.0029	.0032	.0031
					FEED	11.23	14.04	15.72	18.71	23.86	29.60	29.80	26.86	25.05	25.01	24.97	19.48

CHART CONTINUES ON NEXT PAGE ▶

Side Cutting



Slotting



RECOMMENDED CUTTING CONDITIONS – METRIC

GMF52 | GMF53 | GMF54 | GMF55 | GMF56 | GMF57 | GMF58 | GMF59 | GMF60 | GMF61 | GMF62 | GMF63 SERIES

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

ISO Hardness (BHN)	Work Materials	Speed and Feed Recommendations				Diameter (mm)											
		Type of Cut	Ap x D1	Ae x D1	Parameters	3	4	5	6	8	10	12	14	16	18	20	25
M	STAINLESS STEELS 300 1.4301 (X5 CrNi 18 10) 1.4436 (X3 CrNiMo 17 13 3) 1.4306 (X2 CrNi 19 11) 1.4435 (X2 CrNiMo 18 14 3)	Side Cutting	1.5 (1.2)	0.5	SFM (Vc)	348 (278-417)											
					RPM	11247	8435	6748	5623	4218	3374	2812	2410	2109	1874	1687	1350
					Fz	.0002	.0003	.0005	.0007	.0011	.0019	.0022	.0023	.0024	.0028	.0030	.0030
					FEED	8.86	10.63	13.82	15.94	18.60	25.50	24.35	22.39	20.59	20.66	20.46	16.37
		Slotting	1 (0.8)	1	SFM (Vc)	348 (278-417)											
					RPM	11247	8435	6748	5623	4218	3374	2812	2410	2109	1874	1687	1350
					Fz	.0002	.0003	.0005	.0007	.0011	.0019	.0022	.0023	.0024	.0028	.0030	.0030
					FEED	8.86	10.63	13.82	15.94	18.60	25.50	24.35	22.39	20.59	20.66	20.46	16.37
M	STAINLESS STEELS 400 1.4005 (X12 CrS 13) 1.4104 (X12 CrMoS 17)	Side Cutting	1.5 (1.2)	0.5	SFM (Vc)	486 (388-583)											
					RPM	15703	11777	9422	7852	5889	4711	3926	3365	2944	2617	2355	1884
					Fz	.0002	.0002	.0004	.0005	.0009	.0013	.0015	.0017	.0018	.0020	.0022	.0022
					FEED	9.89	11.13	13.35	16.07	20.40	25.22	24.11	22.26	20.87	20.61	20.40	16.32
		Slotting	1 (0.8)	1	SFM (Vc)	486 (388-583)											
					RPM	15703	11777	9422	7852	5889	4711	3926	3365	2944	2617	2355	1884
					Fz	.0002	.0002	.0004	.0005	.0009	.0013	.0015	.0017	.0018	.0020	.0022	.0022
					FEED	9.89	11.13	13.35	16.07	20.40	25.22	24.11	22.26	20.87	20.61	20.40	16.32
M	STAINLESS STEELS (PH) 1.4594 (Z7 CNU 15.05)	Side Cutting	1.5 (1.2)	0.5	SFM (Vc)	312 (249-374)											
					RPM	10080	7560	6048	5040	3780	3024	2520	2160	1890	1680	1512	1210
					Fz	.0002	.0003	.0005	.0007	.0011	.0019	.0022	.0023	.0024	.0027	.0030	.0030
					FEED	7.94	9.52	12.38	14.29	16.67	22.86	21.83	20.07	18.45	18.25	18.10	14.48
		Slotting	1 (0.8)	1	SFM (Vc)	312 (249-374)											
					RPM	10080	7560	6048	5040	3780	3024	2520	2160	1890	1680	1512	1210
					Fz	.0002	.0003	.0005	.0007	.0011	.0019	.0022	.0023	.0024	.0027	.0030	.0030
					FEED	7.94	9.52	12.38	14.29	16.67	22.86	21.83	20.07	18.45	18.25	18.10	14.48
S	TITANIUM Ti6Al4V Ti5Al5V5Mo Ti7Al4Mo	Side Cutting	1	0.35	SFM (Vc)	190 (152-228)											
					RPM	6154	4615	3692	3077	2308	1846	1538	1319	1154	1026	923	738
					Fz	.0002	.0003	.0004	.0006	.0010	.0017	.0020	.0021	.0022	.0024	.0027	.0027
					FEED	3.88	5.09	6.40	7.75	9.09	12.21	12.11	11.01	9.99	10.01	9.89	8.02
		Slotting	0.5	1	SFM (Vc)	190 (152-228)											
					RPM	6154	4615	3692	3077	2308	1846	1538	1319	1154	1026	923	738
					Fz	.0002	.0003	.0004	.0006	.0010	.0017	.0020	.0021	.0022	.0024	.0027	.0027
					FEED	3.88	5.09	6.40	7.75	9.09	12.21	12.11	11.01	9.99	10.01	9.89	8.02
S	HIGH-TEMPERATURE ALLOY INCONEL HASTALLOY RENE	Side Cutting	1	0.25	SFM (Vc)	85 (68-102)											
					RPM	2759	2069	1655	1379	1035	828	690	591	517	460	414	331
					Fz	.0002	.0003	.0003	.0005	.0007	.0013	.0015	.0016	.0017	.0019	.0021	.0020
					FEED	2.17	2.28	2.09	2.61	3.10	4.30	4.13	3.72	3.50	3.48	3.52	2.71
		Slotting	0.5	1	SFM (Vc)	85 (68-102)											
					RPM	2759	2069	1655	1379	1035	828	690	591	517	460	414	331
					Fz	.0002	.0003	.0003	.0005	.0007	.0013	.0015	.0016	.0017	.0019	.0021	.0020
					FEED	2.17	2.28	2.09	2.61	3.10	4.30	4.13	3.72	3.50	3.48	3.52	2.71

NOTES:

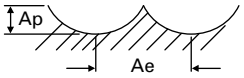
- Feed to be reduced by approximately 50% if L.O.C. (Length Of Cut) is over 3xD
- The above recommendations are based on ideal conditions; for smaller taper machining centers or less rigid conditions please adjust parameters accordingly on diameters greater than 12mm
- In profile operations, engaging more that 2xD, reduce the radial depth of cut by 50%-60%
- Finish cuts typically require reduced cutting feeds and speeds; also, it is recommended the radial width of cut (AE) should not exceed 2%xD1

RECOMMENDED CUTTING CONDITIONS - METRIC

GMG55 | GMG56 SERIES

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

ISO Hardness (BHN)	Work Materials	Speed and Feed Recommendations				Diameter (mm)										
		Type of Cut	Ap x D1	Ae x D1	Parameters	3	4	5	6	8	10	12	16	18	20	25
P < 300	CARBON STEEL 10**, 11**, 12**, 12L**, 15**		1	0.5	SFM (Vc)	531 (425-638)										
					RPM	17189	12892	10313	8594	6446	5157	4297	3223	2865	2578	2063
					Fz	.0010	.0011	.0012	.0016	.0024	.0026	.0028	.0030	.0031	.0035	.0039
					FEED	67.67	54.81	48.72	54.14	60.90	52.78	47.37	38.07	36.09	36.54	32.16
P > 300 P < 380	ALLOY STEEL 41**, 43**, 51**, 86**		1	0.5	SFM (Vc)	371 (297-445)										
					RPM	11990	8992	7194	5995	4496	3597	2997	2248	1998	1798	1439
					Fz	.0010	.0011	.0012	.0016	.0024	.0026	.0028	.0029	.0031	.0035	.0039
					FEED	47.20	38.23	33.99	37.76	42.48	36.82	33.04	26.20	24.86	25.49	22.43
P < 380	TOOL STEEL A2, D2, H13, P20, T15		1	0.5	SFM (Vc)	223 (178-268)										
					RPM	7215	5411	4329	3608	2706	2165	1804	1353	1203	1082	866
					Fz	.0007	.0007	.0008	.0011	.0017	.0018	.0019	.0020	.0022	.0025	.0028
					FEED	19.32	16.19	14.32	15.91	17.90	15.34	13.92	11.08	10.60	10.74	9.54
K < 260	CAST IRON Gray, Malleable, Ductile		1	0.5	SFM (Vc)	390 (312-469)										
					RPM	12626	9470	7576	6313	4735	3788	3157	2367	2104	1894	1515
					Fz	.0012	.0013	.0015	.0020	.0029	.0032	.0034	.0037	.0039	.0044	.0049
					FEED	61.64	49.21	44.14	49.71	55.18	48.32	43.25	34.67	32.81	33.40	29.59
M	STAINLESS STEELS 300 304, 316, 304L, 316LSUS316		1	0.5	SFM (Vc)	279 (223-335)										
					RPM	9019	6764	5411	4509	3382	2706	2255	1691	1503	1353	1082
					Fz	.0008	.0008	.0010	.0016	.0018	.0020	.0022	.0024	.0025	.0026	.0027
					FEED	28.41	21.30	21.30	29.12	23.97	21.30	19.53	15.98	15.15	13.85	11.59
M	STAINLESS STEELS 400 416, 420F, 430F, 440F		1	0.5	SFM (Vc)	253 (202-303)										
					RPM	8170	6127	4902	4085	3064	2451	2042	1532	1362	1225	980
					Fz	.0006	.0006	.0010	.0012	.0016	.0018	.0020	.0021	.0023	.0023	.0023
					FEED	19.30	14.47	19.30	19.30	19.30	17.37	16.08	13.03	12.65	11.19	9.11
M	STAINLESS STEELS(PH) 17-4PH, 15-5PH, 13-8PH		1	0.5	SFM (Vc)	253 (202-303)										
					RPM	8170	6127	4902	4085	3064	2451	2042	1532	1362	1225	980
					Fz	.0008	.0008	.0010	.0016	.0018	.0020	.0022	.0024	.0025	.0026	.0027
					FEED	25.73	19.30	19.30	26.38	21.71	19.30	17.69	14.47	13.72	12.54	10.50
S	TITANIUM Ti6Al4V Ti5Al5V5Mo Ti7Al4Mo		0.3	0.5	SFM (Vc)	154 (123-185)										
					RPM	4987	3740	2992	2493	1870	1496	1247	935	831	748	598
					Fz	.0007	.0007	.0009	.0015	.0016	.0018	.0019	.0021	.0023	.0023	.0024
					FEED	14.14	10.60	10.37	14.53	11.78	10.60	9.62	7.95	7.59	6.83	5.75
S	HIGH-TEMPERATURE ALLOY INCONEL HASTALLOY, RENE		0.3	0.2	SFM (Vc)	69 (55-83)										
					RPM	2228	1671	1337	1114	836	668	557	418	371	334	267
					Fz	.0006	.0006	.0007	.0011	.0012	.0014	.0015	.0017	.0018	.0018	.0019
					FEED	4.91	3.68	3.58	4.91	4.08	3.68	3.33	2.76	2.63	2.37	2.02



See notes on next page

RECOMMENDED CUTTING CONDITIONS - METRIC

GMG12 | GMG13 | GMG14 | GMG15 | GMG16 | GMG17 | GMG18 | GMG19 SERIES

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

ISO Hardness (BHN)	Work Materials	Speed and Feed Recommendations				Diameter (mm)						
		Type of Cut	Ap x D1	Ae x D1	Parameters	6	8	10	12	16	20	25
P < 300	CARBON STEEL 10**, 11**, 12**, 12L**, 15**	Side Cutting	2 (*)	0.05	SFM (Vc)	984 (787-1181)						
					RPM	15915	11937	9549	7958	5968	4775	3820
					Fz	.0027	.0046	.0057	.0068	.0080	.0089	.0091
					FEED	255.65	327.08	324.83	325.20	284.79	253.77	209.33
P > 300 P < 380	ALLOY STEEL 41**, 43**, 51**, 86**	Side Cutting	2 (*)	0.05	SFM (Vc)	666 (533-799)						
					RPM	10769	8077	6462	5385	4039	3231	2585
					Fz	.0020	.0033	.0042	.0050	.0059	.0066	.0069
					FEED	127.20	162.18	161.80	162.81	142.14	127.45	106.24
P < 380	TOOL STEEL A2, D2, H13, P20, T15	Side Cutting	2 (*)	0.05	SFM (Vc)	328 (262-394)						
					RPM	5305	3979	3183	2653	1989	1592	1273
					Fz	.0016	.0028	.0035	.0041	.0048	.0054	.0057
					FEED	51.38	66.73	66.17	65.79	57.80	51.51	43.31
M	STAINLESS STEELS 300 304, 316, 304L, 316LSUS316	Side Cutting	2 (*)	0.05	SFM (Vc)	482 (386-579)						
					RPM	7799	5849	4679	3899	2924	2340	1872
					Fz	.0016	.0028	.0035	.0041	.0048	.0054	.0056
					FEED	75.53	98.10	97.27	96.71	84.97	75.71	63.22
M	STAINLESS STEELS 400 416, 420F, 430F, 440F	Side Cutting	2 (*)	0.05	SFM (Vc)	699 (559-839)						
					RPM	11300	8475	6780	5650	4238	3390	2712
					Fz	.0019	.0033	.0041	.0049	.0057	.0064	.0066
					FEED	130.80	168.17	166.56	166.83	146.14	129.73	107.63
M	STAINLESS STEELS (PH) 17-4PH, 15-5PH, 13-8PH	Side Cutting	2 (*)	0.05	SFM (Vc)	440 (352-528)						
					RPM	7109	5332	4265	3554	2666	2133	1706
					Fz	.0016	.0028	.0035	.0041	.0048	.0054	.0056
					FEED	68.85	89.42	88.67	88.16	77.46	69.02	57.23
S	TITANIUM Ti6Al4V Ti5Al5V5Mo Ti7Al4Mo	Side Cutting	2 (*)	0.05	SFM (Vc)	381 (304-457)						
					RPM	6154	4615	3692	3077	2308	1846	1477
					Fz	.0013	.0022	.0028	.0033	.0038	.0044	.0046
					FEED	47.97	59.97	61.06	60.33	52.88	49.28	40.82
S	HIGH-TEMPERATURE ALLOY INCONEL HASTALLOY, RENE	Side Cutting	2 (*)	0.05	SFM (Vc)	108 (87-130)						
					RPM	1751	1313	1050	875	657	525	420
					Fz	.0013	.0022	.0028	.0032	.0038	.0044	.0045
					FEED	13.65	17.06	17.37	16.96	15.04	13.90	11.41

NOTES:

- Feed to be reduced by approximately 50% if L.O.C. (Length Of Cut) is over 3x D
- The above recommendations are based on ideal conditions; for smaller taper machining centers or less rigid conditions please adjust parameters accordingly on diameters greater than 12mm
- In profile operations, engaging more that 2x D, reduce the radial depth of cut by 50%-60%
- Finish cuts typically require reduced cutting feeds and speeds; also, it is recommended the radial width of cut (AE) should not exceed 2% x D1

CHARLOTTE TECHNICAL CENTER

DESIGN, **SIMULATE**, **PRODUCE** and **TEST.**
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.

"I really like seeing the tools demonstrated and actually cutting. It's very helpful to see how the tools perform in actual conditions in a wide variety of different materials and styles."

- Tier 1 automotive manufacturer

Collaboration Is Key

From your first design concepts to prototyping to final tooling, YG-1 will work with you at every turn. It's this part-nership that keeps our customers on the cutting edge with the most cost-effective tooling solutions in the industry. For group training, collaboration with our designers and engineers, the Tech Center features an expansive training room with a live demonstration area.

Design

- Advanced CAD/CAM-assisted application simulation to ensure precise design integrity
- On-site R&D specialists for advanced high-production solutions
- Expertise in aerospace, automotive, power generation and general engineering

Simulate

- Computer-aided simulation to ensure cost-effective manufacturing
- Solution application for high-strength alloy and CRFP required for aerospace industry
- Three-dimensional simulation provides predictable performance data consistency

Produce

- Multiple CNC stations and high-performance grinding and milling machines
- World-class microfine carbide blanks to ensure increased tool life
- Latest-generation coatings PVD and CVD for pressure-resistant performance

Test

- Threshold testing in extreme applications for reliable performance
- Laser-assisted measuring for high-tolerance reliability
- Prototype testing in actual conditions to ensure best cost per piece

Call us or contact your distributor partners to discuss your machining solution needs.

V7 Plus A

NOTHING CUTS IT BETTER

Scan this QR code to see our V7 Plus A tools at work.

YG-1 CO., LTD.

YG-1 USA

730 Corporate Woods Parkway
Vernon Hills, IL 60061 U.S.A.
Phone: 800-765-8665
Technical Assistance: 888-868-5988
yg1usa.com

YG-1 CANADA INC.

3375 North Service Road, Unit A8
Burlington, Ontario, CANADA L7N 3G2
Phone: +1 905-335-2500
FAX: +1 905-335-4003
Customer Service: orders@yg1.ca
yg1.ca

GLOBAL HEADQUARTERS

211, Sewolcheon-ro, Bupyeong-gu
Incheon, Korea
Phone: +82-32-526-0909
yg1.kr
E-mail: yg1@yg1.kr

Registered
ISO 9001:2015 / ISO 14001:2015

GLOBAL BRAND 2012

YG1YUVP180418003