

YU-VP20

BEST VALUE IN THE WORLD OF CUTTING TOOLS



FOR TOUGH STEEL, CAST IRON, STAINLESS STEEL AND EXOTIC MATERIALS:
NOTHING CUTS IT BETTER

V7 Plus^A

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

NEW

6 Flute Chip Splitter
Size Expansion in 1/2" x 1/2" x 1-1/4" x 3"

**Over 1,500 Items
in Stock.**



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

NEW

6 Flute Chip Splitter

6 Flute for Trochoidal Milling

4 Flute

4 Flute Ball Nose



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 create the great 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 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 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

GUIDE TO ICONS

The tool is made of micrograin carbide



No. of Flutes



Cutting Conditions



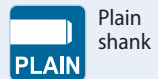
Tolerance of Ball Radius



Helix Angle



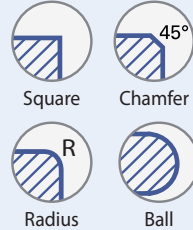
Type of Shank



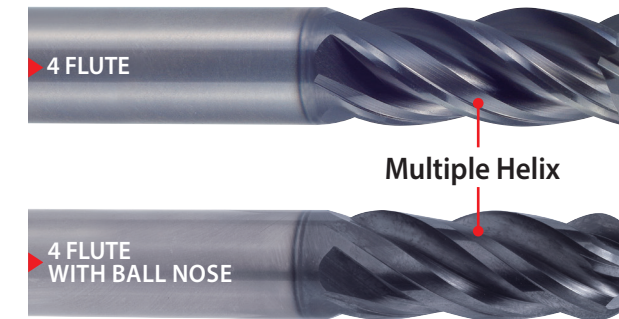
Weldon flat



Tool Ends



V7 Plus A 4 FLUTE END MILLS

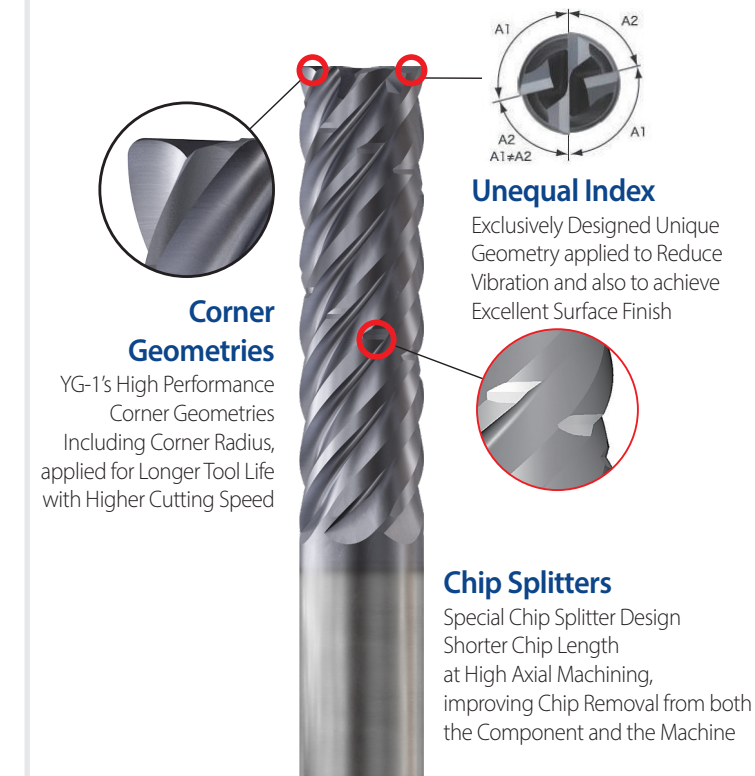


Setting a Higher Standard in 4 Flute Design

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.

NEW

V7 Plus A 6 FLUTE CHIP SPLITTER



Unequal Index

Exclusively Designed Unique Geometry applied to Reduce Vibration and also to achieve Excellent Surface Finish

Corner Geometries

YG-1's High Performance Corner Geometries Including Corner Radius, applied for Longer Tool Life with Higher Cutting Speed

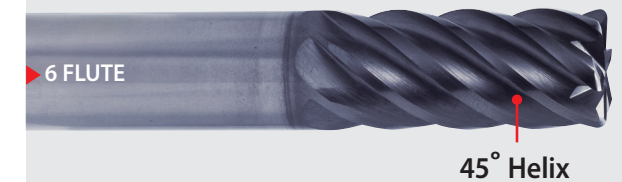
Chip Splitters

Special Chip Splitter Design Shorter Chip Length at High Axial Machining, improving Chip Removal from both the Component and the Machine

HIGH-PERFORMANCE SOLID CARBIDE

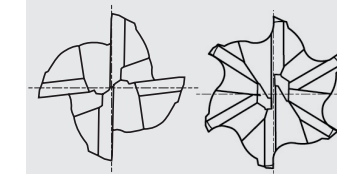


V7 Plus A 6 FLUTE END MILLS



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.

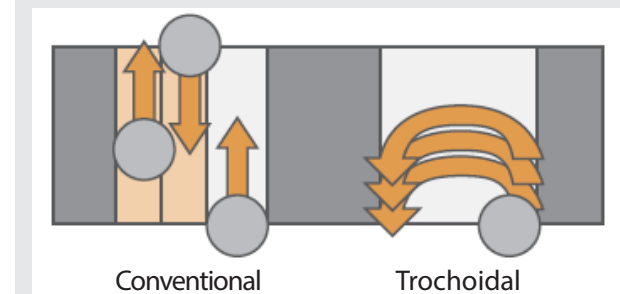


UNEQUAL INDEX WITH HIGH-PERFORMANCE CORNER GEOMETRIES INCLUDING CORNER RADIUS

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





SELECTION GUIDE
INCH

SOLID CARBIDE
V7 PLUS A
END MILLS

High performance carbide end mills for Steels, Cast Iron and Stainless Steels



Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P 32

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc	NEW SIZES							
						UGMF68	UGMF76	UGMF70	UGMG53	UGMF69	UGMF77	UGMF71	UGMG54
P	1	Non-alloy steel	About 0.15% C Annealed	125	13	◎	◎	◎	◎	◎	◎	◎	◎
	2		About 0.45% C Annealed	190	25	◎	◎	◎	◎	◎	◎	◎	◎
	3		About 0.45% C Quenched & Tempered	250	28	◎	◎	◎	◎	◎	◎	◎	◎
	4		About 0.75% C Annealed	270	32	◎	◎	◎	◎	◎	◎	◎	◎
	5		About 0.75% C Quenched & Tempered	300	10	◎	◎	◎	◎	◎	◎	◎	◎
	6	Low alloy steel	Annealed	180	29	◎	◎	◎	◎	◎	◎	◎	◎
	7		Quenched & Tempered	275	32	◎	◎	◎	◎	◎	◎	◎	◎
	8		Quenched & Tempered	300	38	◎	◎	◎	◎	◎	◎	◎	◎
	9		Quenched & Tempered	350	15	◎	◎	◎	◎	◎	◎	◎	◎
	10	High alloyed steel, and tool steel	Annealed	200	35	◎	◎	◎	◎	◎	◎	◎	◎
	11		Quenched & Tempered	325	15	◎	◎	◎	◎	◎	◎	◎	◎
M	12	Stainless steel	Ferritic / Martensitic Annealed	200	23	◎	◎	◎	◎	◎	◎	◎	◎
	13		Martensitic Quenched & Tempered	240	10	◎	◎	◎	◎	◎	◎	◎	◎
	14		Austenitic	180	10	◎	◎	◎	◎	◎	◎	◎	◎
K	15	Grey cast iron	Pearlitic / ferritic	180	26	◎	◎	◎	◎	◎	◎	◎	◎
	16		Pearlitic (Martensitic)	260	3	◎	◎	◎	◎	◎	◎	◎	◎
	17	Nodular cast iron	Ferritic	160	25	◎	◎	◎	◎	◎	◎	◎	◎
	18		Pearlitic	250	21	◎	◎	◎	◎	◎	◎	◎	◎
	19		Ferritic	130	21	◎	◎	◎	◎	◎	◎	◎	◎
	20	Malleable cast iron	Pearlitic	230	60	◎	◎	◎	◎	◎	◎	◎	◎
N	21	Aluminum-wrought alloy	Not Curable	60									
	22		Curable Hardened	100									
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable	75									
	24		≤ 12% Si, Curable Hardened	90									
	25		> 12% Si, Not Curable	130									
	26		Cutting Alloys, PB>1%	110									
	27	Copper and Copper Alloys (Bronze / Brass)	CuZn, CuSnZn (Brass)	90									
	28		CuSn, lead free copper and electrolytic copper	100									
	29		Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic Rubber, Wood, etc.									
	30												
S	31	Heat Resistant Super Alloys	Fe Based Annealed	200	15	○	○	○	○	○	○	○	○
	32		Cured	280	30	○	○	○	○	○	○	○	○
	33		Annealed	250	25	○	○	○	○	○	○	○	○
	34		Ni or Co Based Cured	350	34	○	○	○	○	○	○	○	○
	35		Cast	320	40	○	○	○	○	○	○	○	○
	36	Titanium Alloys	Pure Titanium	400 Rm		○	○	○	○	○	○	○	○
	37		Alpha + Beta Alloys Hardened	1050 Rm		○	○	○	○	○	○	○	○
H	38	Hardened steel	Hardened	550	55								
	39		Hardened	630	60								
	40		Chilled Cast Iron	400	42								
	41		Hardened Cast Iron	550	55								

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc	NEW SIZES													
						UGMF72	UGMF74	UGMH10	UGMF73	UGMF75	UGMG20	UGMG22	UGMG21	UGMG23	UGMH08	UGMH09	GMH72		
P	1	Non-alloy steel	About 0.15% C Annealed	125	13	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	2		About 0.45% C Annealed	190	25	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	3		About 0.45% C Quenched & Tempered	250	28	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	4		About 0.75% C Annealed	270	32	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	5		About 0.75% C Quenched & Tempered	300	10	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	6	Low alloy steel	Annealed	180	29	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	7		Quenched & Tempered	275	32	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	8		Quenched & Tempered	300	38	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	9		Quenched & Tempered	350	15	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	10	High alloyed steel, and tool steel	Annealed	200	35	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	11		Quenched & Tempered	325	15	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
M	12	Stainless steel	Ferritic / Martensitic Annealed	200	23	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	
	13		Martensitic Quenched & Tempered	240	10	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	
	14		Austenitic	180	10	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
K	15	Grey cast iron	Pearlitic / ferritic	180	26	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	
	16		Pearlitic (Martensitic)	260	3	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	17	Nodular cast iron	Ferritic	160	25	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	18		Pearlitic	250	21	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	19		Ferritic	130	21	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	20	Malleable cast iron	Pearlitic	230	60	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
N	21	Aluminum-wrought alloy	Not Curable	60															
	22		Curable Hardened	100															
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable	75															
	24		≤ 12% Si, Curable Hardened	90															
	25		> 12% Si, Not Curable	130															
	26		Cutting Alloys, PB>1%	110															
	27	Copper and Copper Alloys (Bronze / Brass)	CuZn, CuSnZn (Brass)	90															
	28		CuSn, lead free copper and electrolytic copper	100															
	29		Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic Rubber, Wood, etc.															
	30																		
S	31	Heat Resistant Super Alloys	Fe Based Annealed	200	15	○	○	○	○	○	○	○	○	○	○	○	○	○	
	32		Cured	280	30	○	○	○	○	○	○	○	○	○	○	○	○	○	
	33		Annealed	250	25	○	○	○	○	○	○	○	○	○	○	○	○	○	
	34		Ni or Co Based Cured	350	34	○	○	○	○	○	○	○	○	○	○	○	○	○	
	35		Cast	320	40	○	○	○	○	○	○	○	○	○	○	○	○	○	
	36	Titanium Alloys	Pure Titanium	400 Rm		○	○	○	○	○	○	○	○	○	○	○	○	○	
	37		Alpha + Beta Alloys Hardened	1050 Rm		○	○	○	○	○	○	○	○	○	○	○	○	○	
H	38	Hardened steel	Hardened	550	55														
	39		Hardened	630	60														
	40		Chilled Cast Iron	400	42														
	41		Hardened Cast Iron	550	55														

4 FLUTE

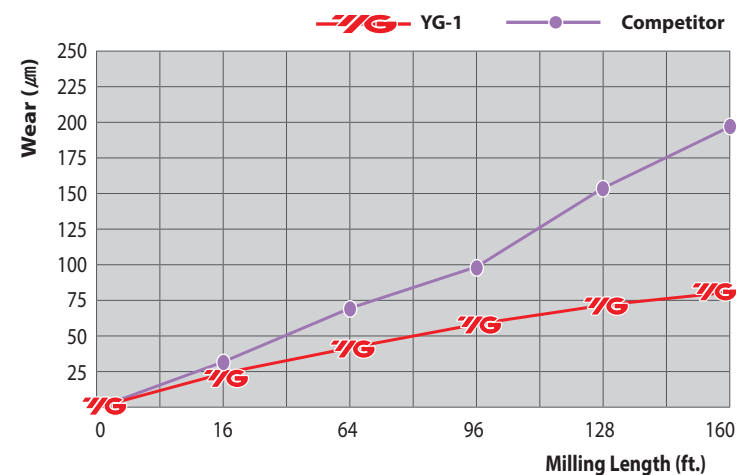


Innovative cutting performance that's not just a chip off the old block.

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

4 Flute vs Competitor



CASE STUDY

	V7 Plus A	Competitor
Wear (µm)	83.518	203.381
Milling Length (ft.)	160	160
Size (mm)	Ø10 x Ø10 x 22 x 72	
Work Material	- JIS : S45C(HRC30) - WR : 1.0503	- DIN : C45 - 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	

Y-Coated SOLID CARBIDE END MILLS 4 FLUTE STANDARD LENGTH (PLAIN SHANK)

Square	UGMF68	Chamfer	UGMF76
Corner Radius	UGMF70	Ball Nose	UGMG53

SERIES

- ▶ 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

SEE CHAMFER AND BALL KEYS ON PAGE 11

Unit : INCH

OD (D ₁)	SD (D ₂)	LOC (L ₁)	OAL (L ₂)	Square End EDP No.	Chamfer EDP No.	Corner Radius								Ball Nose EDP No.		
						.010 EDP No.	.015 EDP No.	.030 EDP No.	.060 EDP No.	.090 EDP No.	.125 EDP No.	.190 EDP No.	.250 EDP No.			
1/8	1/8	1/8	1-1/2	UGMF68008											UGMG53901	
			1-1/2	UGMF68901											UGMG53008	
			2-1/2	UGMF68S915												UGMG53S902
5/32	3/16	3/16	2	UGMF68010											UGMG53903	
			2	UGMF68902											UGMG53010	
			2	UGMF68012												UGMG53904
3/16	3/16	3/16	2	UGMF68916											UGMG53905	
			2	UGMF68903											UGMG53012	
			2-1/2	UGMF68S917												UGMG53S906
			2	UGMF68014												UGMG53907
7/32	1/4	1/4	2-1/2	UGMF68904											UGMG53014	
			2	UGMF68016	UGMF76016	UGMF70016									UGMG53908	
1/4	1/4	1/4	2-1/2	UGMF68918											UGMG53016	
			2-1/2	UGMF68905	UGMF76902	UGMF70907	UGMF70964	UGMF70965	UGMF70966						UGMG53909	
			3	UGMF68S919			UGMF70S968	UGMF70S969	UGMF70S970							UGMG53S910
9/32	5/16	5/16	2-1/2	UGMF68018											UGMG53018	
			3	UGMF68S920				UGMF70018	UGMF70971	UGMF70972						UGMG53S911
5/16	5/16	5/16	2	UGMF68020											UGMG53912	
			2-1/2	UGMF68906	UGMF76020	UGMF70910									UGMG53020	
			3	UGMF68S921			UGMF70S975	UGMF70S976	UGMF70S977							UGMG53S913
11/32	3/8	3/8	2-1/2	UGMF68022											UGMG53914	
			2-1/2	UGMF68922				UGMF70022								UGMG53022

▶ Length of cut in excess of 3xD on 37° single-helix requires feed reduction of approximately 50%

NEXT PAGE ▶

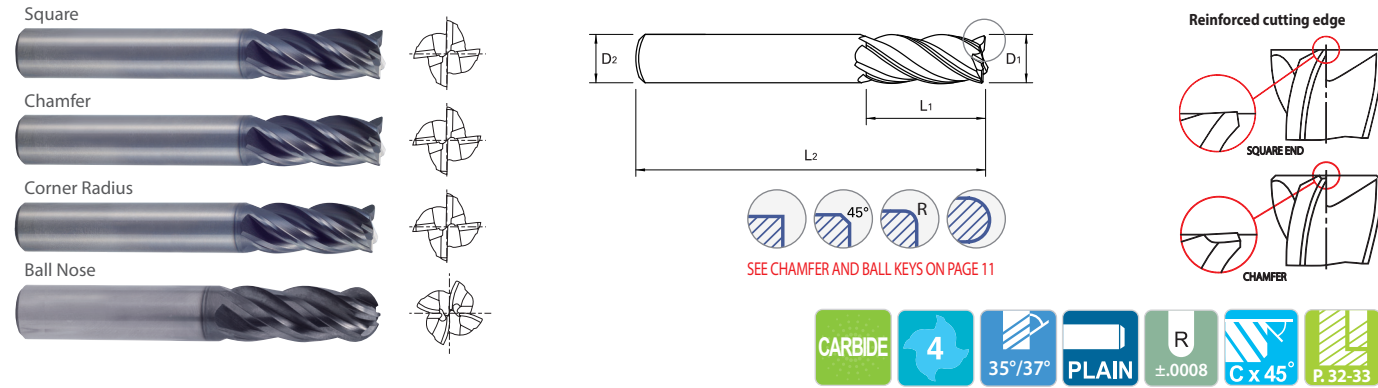
Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0 ~ -.0012	h5 (≥ Ø1/2" : h6)

ISO Material Description	P										M				K								
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel				Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
HRC		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21			
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230			
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎			
ISO Material Description	N							S							H								
	Aluminum-wrought alloy			Aluminum-cast, alloyed				Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials				Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41		
HRC											15	30	25	38	34			55	60	42	55		
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550		
Recommend											○	○	○	○	○	○	○						

NEW SIZES

Y-Coated SOLID CARBIDE END MILLS
4 FLUTE STANDARD LENGTH (PLAIN SHANK)

- ▶ 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



Unit : INCH * (NEW SIZES)

OD (D1)	SD (D2)	LOC (L1)	OAL (L2)	Square End EDP No.	Chamfer EDP No.	Corner Radius										Ball Nose EDP No.		
						.10	.15	.30	.60	.90	.125	.190	.250					
						EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.					
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	
13/32	7/16	1-1/4	3	UGMF68594		UGMF705985		UGMF705986	UGMF705987	UGMF705988							UGMG53917	
		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	
1/2	1/2	5/8	2-1/2	UGMF68032	UGMF76032	UGMF70032	UGMF70922	UGMF70923	UGMF70924	UGMF70998	UGMF70999						UGMG53923	
		1	3	UGMF68909	UGMF76904	UGMF70925	UGMF70926	UGMF70927	UGMF70928	UGMF70929	UGMF70928	UGMF70928					UGMG53032	
		1 1/4	3	*UGMF68941	*UGMF76913	*UGMF70899	*UGMF70701	*UGMF70702	*UGMF70703	*UGMF70704	*UGMF70705							*UGMG53941
		1-1/4	3-1/2	UGMF68910	UGMF76901	UGMF70929	UGMF70930	UGMF70931	UGMF70932	UGMF70803	UGMF70933							UGMG53924
		1-5/8	4	UGMF685929	UGMF765905		UGMF705804	UGMF705805	UGMF705806	UGMF705807	UGMF705808							UGMG53925
		2	4	UGMF685939			UGMF705889	UGMF705890	UGMF705891	UGMF705892	UGMF705893							UGMG53939
		2-1/2	4-1/2	UGMF685940	UGMF765906		UGMF705894	UGMF705895	UGMF705896	UGMF705897	UGMF705898							UGMG53940

▶ Length of cut in excess of 3xD on 37° single-helix requires feed reduction of approximately 50%

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0 ~ -.0012	h5 (≥ Ø1/2" : h6)

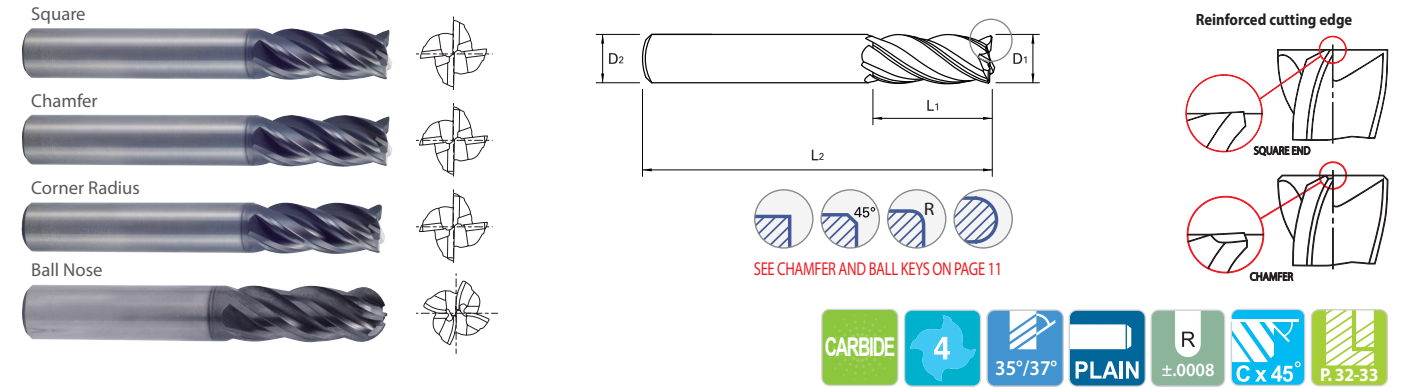
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ISO Material Description	P										M				K				S				H																		
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel				Grey cast iron				Nodular cast iron				Malleable cast iron														
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRC	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25			55	60	42	55																	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230																					
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎					

◎ : Excellent ○ : Good

Y-Coated SOLID CARBIDE END MILLS
4 FLUTE STANDARD LENGTH (PLAIN SHANK)

- ▶ 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



Unit : INCH

OD (D1)	SD (D2)	LOC (L1)	OAL (L2)	Square End EDP No.	Chamfer EDP No.	Corner Radius										Ball Nose EDP No.
						.10	.15	.30	.60	.90	.125	.190	.250			
						EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.			
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
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		
1	1	2-1/4	5	UGMF68934	UGMF76909		UGMF70843	UGMF70844	UGMF70845	UGMF70846	UGMF70847	UGMF70848	UGMF70849	UGMG53932		
		3-1/4	6	UGMF68935			UGMF70850	UGMF70851	UGMF70852	UGMF70853	UGMF70854	UGMF70855	UGMF70856	UGMG53933		
		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	UGMF68938			UGMF70882	UGMF70883	UGMF70884	UGMF70885	UGMF70886	UGMF70887	UGMF70888	UGMG53938				

▶ Length of cut in excess of 3xD on 37° single-helix requires feed reduction of approximately 50%

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0 ~ -.0012	h5 (≥ Ø1/2" : h6)

CHAMFER KEY		BALL NOSE KEY			
Mill Diameter	Chamfer Size	Mill Diameter	Radius of Ball	Mill Diameter	Radius of Ball
1/4	.007	1/8	1/16	11/32	11/64
5/16	.007	5/32	5/64	3/8	3/16
3/8	.011	3/16	3/32	7/16	7/32
7/16	.013	7/32	7/64	1/2	1/4
1/2	.013	1/4	1/8	5/8	5/16
5/8	.015	9/32	9/64	3/4	3/8
3/4	.019	5/16	5/32	1	1/2
1	.019				

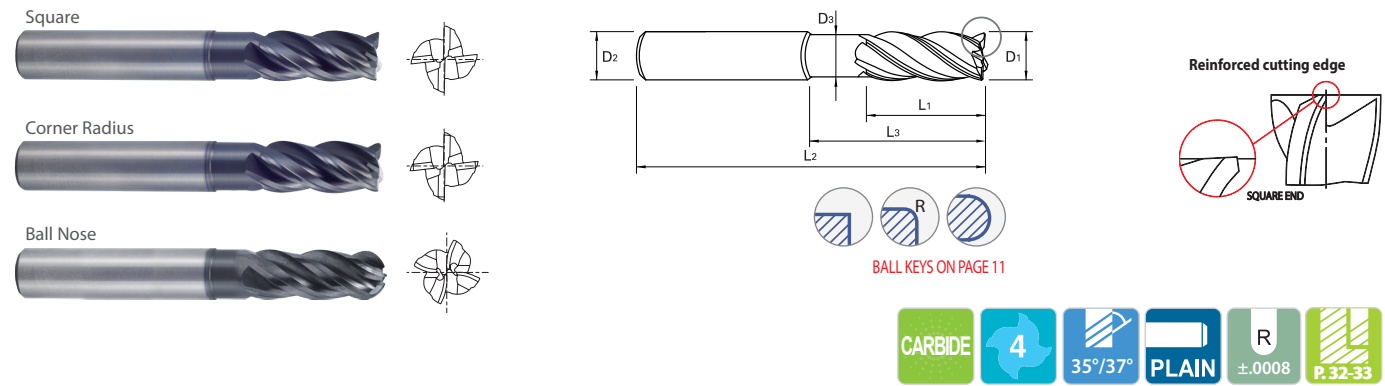
◎ : Excellent ○ : Good

ISO Material Description	P										M				K				S				H																		
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel				Grey cast iron				Nodular cast iron				Malleable cast iron														
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRC	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25			55	60	42	55																	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230																					
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎					

Y-Coated SOLID CARBIDE END MILLS
4 FLUTE EXTENDED LENGTH (PLAIN SHANK)

SERIES
Square **UGMF72**
Corner Radius **UGMF74**
Ball Nose **UGMH10**

- ▶ 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



Unit : INCH

OD (D ₁)	SD (D ₂)	LOC (L ₁)	LBS (L ₃)	OAL (L ₂)	Neck Dia (D ₃)	Corner Radius										Ball Nose Mill	
						Square End											
						.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.	
5/8	5/8	3/4	1-5/8	4	.586	UGMF72040			UGMF74040	UGMF74959	UGMF74960	UGMF74961					UGMH10040
		3/4	2-3/8	5	.586	UGMF72924			UGMF74824	UGMF74825	UGMF74826	UGMF74827					UGMH10924
		3/4	3-3/8	5	.586	UGMF72925			UGMF74828	UGMF74829	UGMF74830	UGMF74831					UGMH10925
		3/4	2-3/8	6	.586	UGMF72907			UGMF74907	UGMF74962	UGMF74963	UGMF74964					UGMH10913
		3/4	3-3/8	6	.586	UGMF72908			UGMF74908	UGMF74965	UGMF74966	UGMF74967					UGMH10914
		3/4	4-1/8	6	.586	UGMF72919			UGMF74968	UGMF74969	UGMF74970	UGMF74971					UGMH10915
3/4	3/4	1	2	4	.711	UGMF72048			UGMF74048	UGMF74972	UGMF74973	UGMF74974	UGMF74975	UGMF74976			UGMH10048
		1	3	5	.711	UGMF72926			UGMF74832	UGMF74833	UGMF74834	UGMF74835	UGMF74836	UGMF74837			UGMH10926
		1	2-1/2	6	.711	UGMF72920			UGMF74977	UGMF74978	UGMF74979	UGMF74980	UGMF74981	UGMF74982			UGMH10916
		1	3	6	.711	UGMF72909			UGMF74909	UGMF74983	UGMF74984	UGMF74985	UGMF74986	UGMF74987			UGMH10917
		1	4	6	.711	UGMF72910			UGMF74910	UGMF74988	UGMF74989	UGMF74990	UGMF74991	UGMF74992			UGMH10918
1	1	1-1/8	2	4	.961	UGMF72064			UGMF74064	UGMF74993	UGMF74994	UGMF74995	UGMF74996	UGMF74997			UGMH10064
		1-1/8	2-5/8	5	.961	UGMF72927			UGMF74838	UGMF74839	UGMF74840	UGMF74841	UGMF74842	UGMF74843			UGMH10927
		1-1/8	3	5	.961	UGMF72928			UGMF74844	UGMF74845	UGMF74846	UGMF74847	UGMF74848	UGMF74849			UGMH10928
		1-1/8	2-5/8	6	.961	UGMF72921			UGMF74998	UGMF74999	UGMF74801	UGMF74802	UGMF74803	UGMF74804			UGMH10919
		1-1/8	3	6	.961	UGMF72911			UGMF74911	UGMF74805	UGMF74806	UGMF74807	UGMF74808	UGMF74809			UGMH10920
1-1/8	4	6	.961	UGMF72912			UGMF74912	UGMF74810	UGMF74811	UGMF74812	UGMF74813	UGMF74814			UGMH10921		

▶ Length of cut in excess of 3xD on 37° single-helix requires feed reduction of approximately 50%

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0 ~ -.0012	h5 (≥ Ø1/2" : h6)

◎ : Excellent ○ : Good

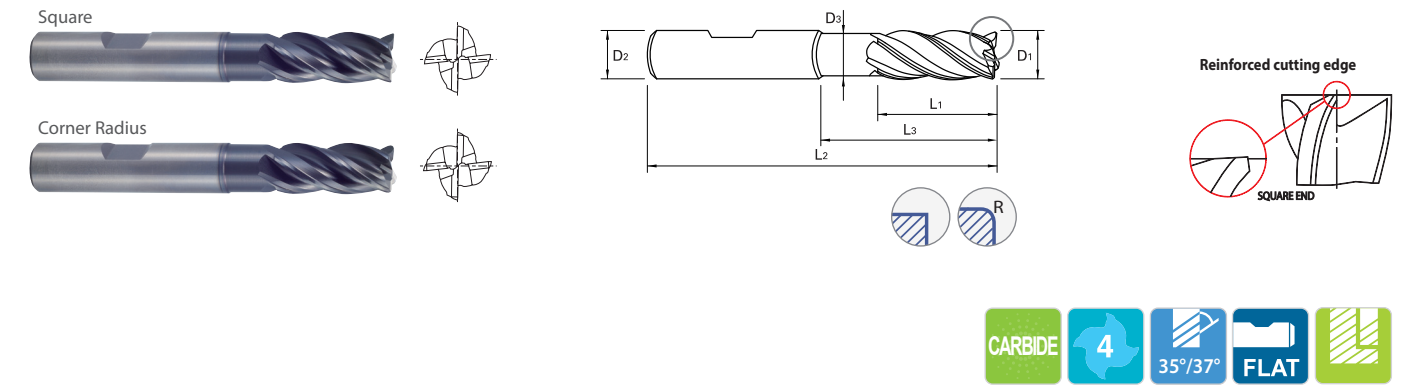
ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRC	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	13	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO Material Description	N					S					H														
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys			Titanium Alloys		Hardened steel			Chilled Cast Iron		Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
HRC	15	30	25	38	34	15	30	25	38	34	200	280	250	350	320	400 Rm	1050 Rm	55	60	42	55	55	60	42	55
HB	60	100	75	90	130	110	90	100																	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

Y-Coated SOLID CARBIDE END MILLS
4 FLUTE EXTENDED LENGTH (FLAT SHANK)

SERIES
Square **UGMF73**
Corner Radius **UGMF75**

- ▶ 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



Unit : INCH

OD (D ₁)	SD (D ₂)	LOC (L ₁)	LBS (L ₃)	OAL (L ₂)	Neck Dia (D ₃)	Square End		Corner Radius	
						EDP No.		.030	
						EDP No.		EDP No.	
3/8	3/8	1/2	1-1/8	4	.344	UGMF73024	UGMF75024		
		1/2	2-1/8	4	.344	UGMF73903	UGMF75903		
		1/2	3-1/8	5	.344	UGMF73913	UGMF75913		
		1/2	3-1/8	6	.344	UGMF73904	UGMF75904		
1/2	1/2	5/8	1-1/2	4	.461	UGMF73032	UGMF75032		
		5/8	2-1/4	4	.461	UGMF73905	UGMF75905		
		5/8	3-3/8	5	.461	UGMF73914	UGMF75914		
5/8	5/8	3/4	1-5/8	4	.586	UGMF73040	UGMF75040		
		3/4	2-3/8	5	.586	UGMF73915	UGMF75915		
		3/4	3-3/8	5	.586	UGMF73916	UGMF75916		
3/4	3/4	1	2	4	.711	UGMF73048	UGMF75048		
		1	3	5	.711	UGMF73917	UGMF75917		
		1	3	6	.711	UGMF73909	UGMF75909		
		1	4	6	.711	UGMF73910	UGMF75910		
1	1	1-1/8	2	4	.961	UGMF73064	UGMF75064		
		1-1/8	2-5/8	5	.961	UGMF73918	UGMF75918		
		1-1/8	3	5	.961	UGMF73919	UGMF75919		
		1-1/8	3	6	.961	UGMF73911	UGMF75911		
		1-1/8	4	6	.961	UGMF73912	UGMF75912		

▶ Length of cut in excess of 3xD on 37° single-helix requires feed reduction of approximately 50%

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0 ~ -.0012	h5 (≥ Ø1/2" : h6)

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRC	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	13	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO Material Description	N					S					H														
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys			Titanium Alloys		Hardened steel			Chilled Cast Iron		Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
HRC	15	30	25	38	34	15	30	25	38	34	200	280	250	350	320	400 Rm	1050 Rm	55	60	42	55	55	60	42	55
HB	60	100	75	90	130	110	90	100																	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

6 FLUTE



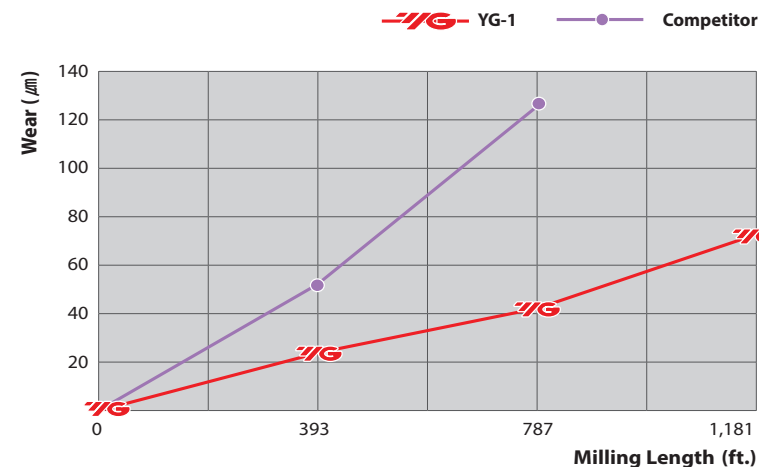
Say goodbye to milling tool fatigue and hello to the innovative V7 Plus A 6 Flute tool.

Wake up to better 6 Flute performance. V7 Plus A's revolutionary 6 Flute design lets you handle tougher trochoidal milling at higher speeds with better feed per tooth. The unique V7 PLUS A geometry reduces vibration, increases accuracy, and provides better heat dissipation for enhanced tool life.

HIGH-PERFORMANCE SOLID CARBIDE 6 FLUTE END MILLS

CASE STUDY

6 Flute vs. Competitor



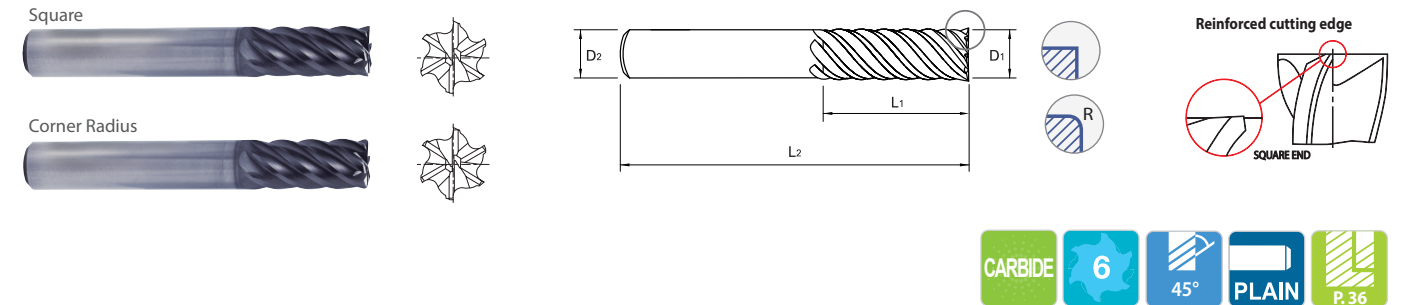
	V7 Plus A	Competitor
Wear (µm)	70.855	123.776
Milling Length (ft.)	1,181	787
Size (mm)	Ø12(R1) x Ø12 x 26 x 83	
Work Material	- JIS : S45C(HRc30) - DIN : C45	- WR : 1.0503 - AISI : 1405
Cutting Speed/RPM	914 ft./min. / 7,392 rev./min.	
Feed/Feed per tooth	295.08 in./min. / .007 in./tooth	
Milling Method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

NEW SIZES

Y-Coated SOLID CARBIDE END MILLS 6 FLUTE STANDARD LENGTH (PLAIN SHANK)

SERIES Square **UGMG20** Corner Radius **UGMG22**

- The unique geometry of the variable pitch provides the best chatter free tool for high speed and trochoidal milling
- Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40



Unit : INCH

* NEW SIZES

OD (D1)	SD (D2)	LOC (L1)	OAL (L2)	Square End EDP No.	Corner Radius								
					.015 EDP No.	.030 EDP No.	.060 EDP No.	.090 EDP No.	.120 EDP No.	.125 EDP No.	.190 EDP No.	.250 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	*UGMG20930	*UGMG22880	*UGMG22881	*UGMG22882	*UGMG22883	*UGMG22884	*UGMG22885			
		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					

NEXT PAGE

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-.0012	h5 (≥ Ø12 : h6)

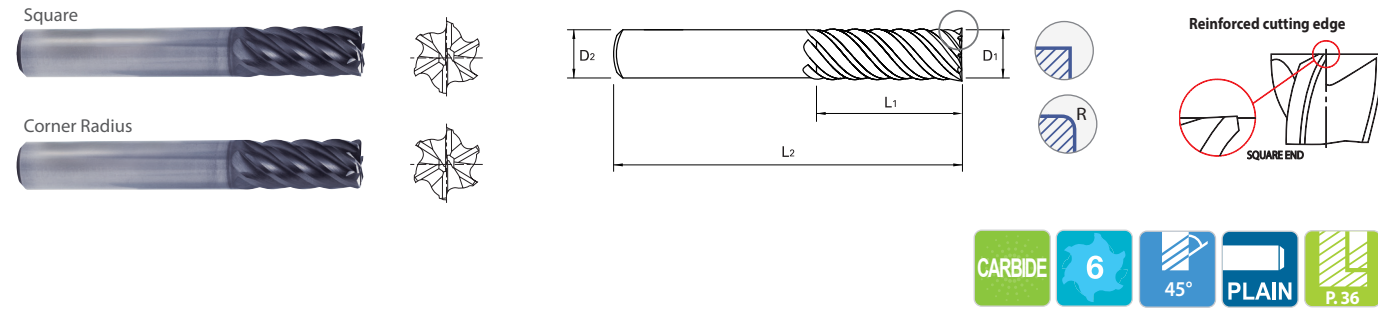
ISO Material Description	P									M				K						
	Non-alloy steel				Low alloy steel				High alloyed steel, and tool steel	Stainless steel			Grey cast iron	Nodular cast iron		Malleable cast iron				
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○

ISO Material Description	N					S				H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	○	○	○	○	○	○

Y-Coated SOLID CARBIDE END MILLS
6 FLUTE STANDARD LENGTH (PLAIN SHANK)

SERIES
Square **UGMG20**
Corner Radius **UGMG22**

- ▶ The unique geometry of the variable pitch provides the best chatter free tool for high speed and trochoidal milling
- ▶ Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRC40



Unit : INCH

OD (D1)	SD (D2)	LOC (L1)	OAL (L2)	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.	
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				
3/4	3/4	3	5	UGMG20911	UGMG22813	UGMG22938	UGMG22939	UGMG22940	UGMG22941	UGMG22814				
		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		

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-.0012	h5 (≥ Ø12 : h6)

◎ : Excellent ○ : Good

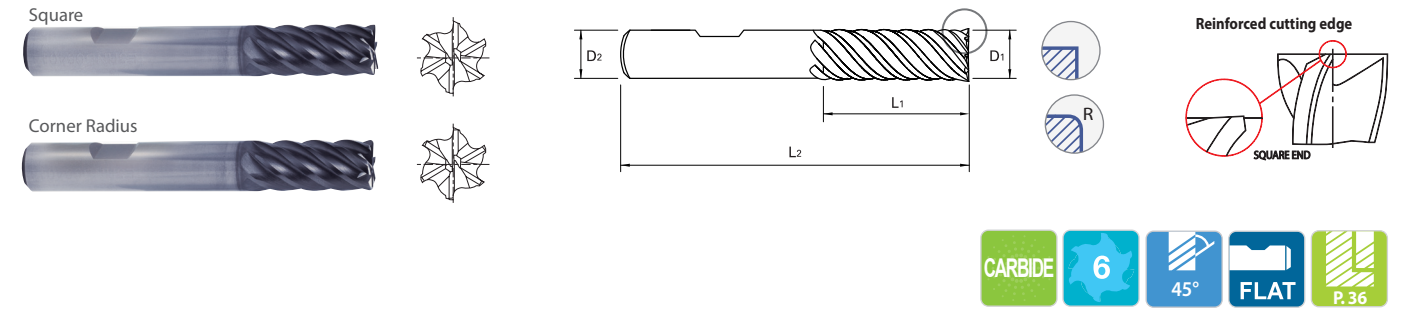
ISO	P										M				K																															
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel				Grey cast iron				Nodular cast iron				Malleable cast iron																			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41					
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25			15	35	15	23	10	10	26	3	25	15	35	15	23	10	10	26	3	25	15	35	15	23	10			
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	180	260	160	250	130	230																				
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

ISO	N					S					H																								
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron													
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50					
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55	55	60	42	55	55	60	42	55	55	60	42	55		
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	550	630	400	550	550	630	400	550	550	630	400	550		
Recommend											◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

NEW SIZES
Y-Coated SOLID CARBIDE END MILLS
6 FLUTE STANDARD LENGTH (FLAT SHANK)

SERIES
Square **UGMG21**
Corner Radius **UGMG23**

- ▶ The unique geometry of the variable pitch provides the best chatter free tool for high speed and trochoidal milling
- ▶ Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRC40



Unit : INCH

* NEW SIZES

OD (D1)	SD (D2)	LOC (L1)	OAL (L2)	Square End	Corner Radius				
					.015	.030	.060	.090	.120
					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	*UGMG21915	*UGMG23956	*UGMG23957	*UGMG23958	*UGMG23959	*UGMG23960
		1-1/4	3-1/2	UGMG21907		UGMG23919	UGMG23920	UGMG23921	UGMG23922
5/8	5/8	2	4	UGMG21908		UGMG23923	UGMG23924	UGMG23925	UGMG23926
		3	5	UGMG21909		UGMG23927	UGMG23928	UGMG23929	UGMG23930
		1-1/4	3-1/2	UGMG21040		UGMG23040	UGMG23931	UGMG23932	UGMG23933
3/4	3/4	2	4	UGMG21910		UGMG23934	UGMG23935	UGMG23936	UGMG23937
		3	5	UGMG21911		UGMG23938	UGMG23939	UGMG23940	UGMG23941
1	1	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

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-.0012	h5 (≥ Ø12 : h6)

◎ : Excellent ○ : Good

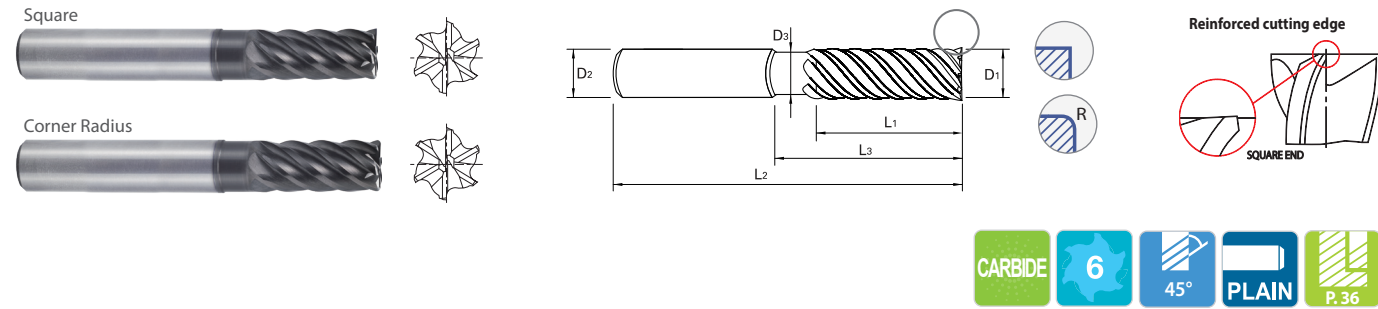
ISO	P										M				K																															
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel				Grey cast iron				Nodular cast iron				Malleable cast iron																			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41					
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25			15	35	15	23	10	10	26	3	25	15	35	15	23	10	10	26	3	25	15	35	15	23	10			
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	180	260	160	250	130	230																				
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

ISO	N					S					H																								
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron													
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50					
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55	55	60	42	55	55	60	42	55	55	60	42	55		
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	550	630	400	550	550	630	400	550	550	630	400	550		
Recommend											◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

Y-Coated SOLID CARBIDE END MILLS
6 FLUTE EXTENDED LENGTH (PLAIN SHANK)

SERIES
Square UGMH08
Corner Radius UGMH09

- ▶ The unique geometry of the variable pitch provides the best chatter free tool for high speed and trochoidal milling
- ▶ Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRC40



Unit : INCH

OD (D ₁)	SD (D ₂)	LOC (L ₁)	LBS (L ₃)	OAL (L ₂)	Neck Dia (D ₃)	Square End EDP No.	Corner Radius					
							.030	.060	.090	.125	.190	.250
							EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/4	1/4	3/8	3/4	4	.230	UGMH08016	UGMH09016	UGMH09901				
		3/8	1-1/8	4	.230	UGMH08901	UGMH09902	UGMH09903				
		3/8	2-1/8	4	.230	UGMH08902	UGMH09904	UGMH09905				
3/8	3/8	1/2	1-1/8	4	.344	UGMH08024	UGMH09024	UGMH09906	UGMH09907			
		1/2	2-1/8	4	.344	UGMH08903	UGMH09908	UGMH09909	UGMH09910			
		1/2	3-1/8	5	.344	UGMH08919	UGMH09999	UGMH09801	UGMH09802			
		1/2	3-1/8	6	.344	UGMH08904	UGMH09911	UGMH09912	UGMH09913			
1/2	1/2	5/8	1-1/2	4	.461	UGMH08032	UGMH09032	UGMH09917	UGMH09918	UGMH09919		
		5/8	2-1/4	4	.461	UGMH08906	UGMH09920	UGMH09921	UGMH09922	UGMH09923		
		5/8	3-3/8	5	.461	UGMH08920	UGMH09803	UGMH09804	UGMH09805	UGMH09806		
		5/8	3-3/8	6	.461	UGMH08907	UGMH09924	UGMH09925	UGMH09926	UGMH09927		
5/8	5/8	3/4	1-5/8	4	.586	UGMH08040	UGMH09040	UGMH09932	UGMH09933	UGMH09934		
		3/4	2-3/8	5	.586	UGMH08921	UGMH09807	UGMH09808	UGMH09809	UGMH09810		
		3/4	3-3/8	5	.586	UGMH08922	UGMH09811	UGMH09812	UGMH09813	UGMH09814		
		3/4	2-3/8	6	.586	UGMH08909	UGMH09935	UGMH09936	UGMH09937	UGMH09938		
		3/4	3-3/8	6	.586	UGMH08910	UGMH09939	UGMH09940	UGMH09941	UGMH09942		
		3/4	4-1/8	6	.586	UGMH08911	UGMH09943	UGMH09944	UGMH09945	UGMH09946		

NEXT PAGE ▶

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-.0012	h5 (≥ Ø12 : h6)

◎ : Excellent ○ : Good

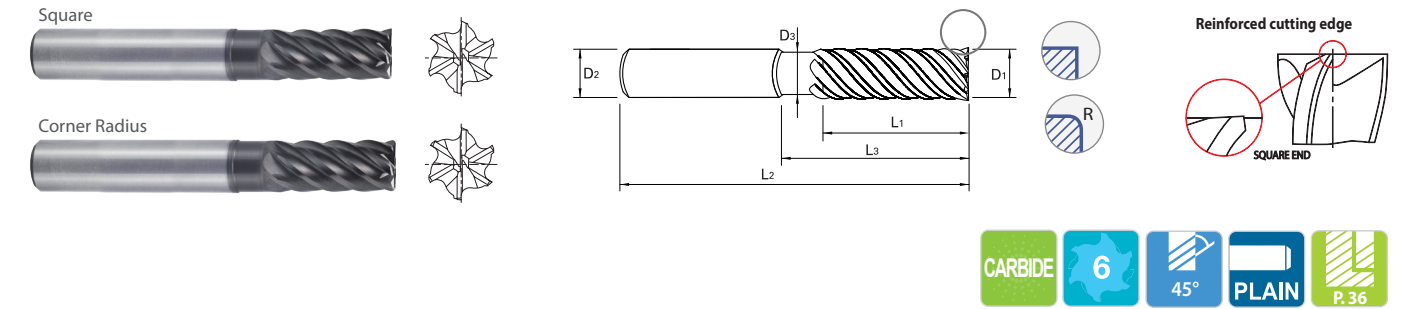
ISO	P										M				K					
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	32	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○

ISO	N					S					H										
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	○	○				

Y-Coated SOLID CARBIDE END MILLS
6 FLUTE EXTENDED LENGTH (PLAIN SHANK)

SERIES
Square UGMH08
Corner Radius UGMH09

- ▶ The unique geometry of the variable pitch provides the best chatter free tool for high speed and trochoidal milling
- ▶ Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRC40



Unit : INCH

OD (D ₁)	SD (D ₂)	LOC (L ₁)	LBS (L ₃)	OAL (L ₂)	Neck Dia (D ₃)	Square End EDP No.	Corner Radius					
							.030	.060	.090	.125	.190	.250
							EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
3/4	3/4	1-1/8	2	4	.711	UGMH08048	UGMH09048	UGMH09947	UGMH09948	UGMH09949	UGMH09950	UGMH09951
		1-1/8	2-5/8	5	.711	UGMH08912	UGMH09952	UGMH09953	UGMH09954	UGMH09955	UGMH09956	UGMH09957
		1-1/8	3-1/4	6	.711	UGMH08913	UGMH09958	UGMH09959	UGMH09960	UGMH09961	UGMH09962	UGMH09963
		1-1/8	4-1/4	7	.711	UGMH08914	UGMH09964	UGMH09965	UGMH09966	UGMH09967	UGMH09968	UGMH09969
1	1	1-1/4	2-1/4	4	.961	UGMH08064	UGMH09064	UGMH09970	UGMH09971	UGMH09972	UGMH09973	UGMH09974
		1-1/4	2-5/8	5	.961	UGMH08915	UGMH09975	UGMH09976	UGMH09977	UGMH09978	UGMH09979	UGMH09980
		1-1/4	3-1/4	6	.961	UGMH08916	UGMH09981	UGMH09982	UGMH09983	UGMH09984	UGMH09985	UGMH09986
		1-1/4	4-1/4	7	.961	UGMH08917	UGMH09987	UGMH09988	UGMH09989	UGMH09990	UGMH09991	UGMH09992
		1-1/4	5-1/4	8	.961	UGMH08918	UGMH09993	UGMH09994	UGMH09995	UGMH09996	UGMH09997	UGMH09998

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-.0012	h5 (≥ Ø12 : h6)

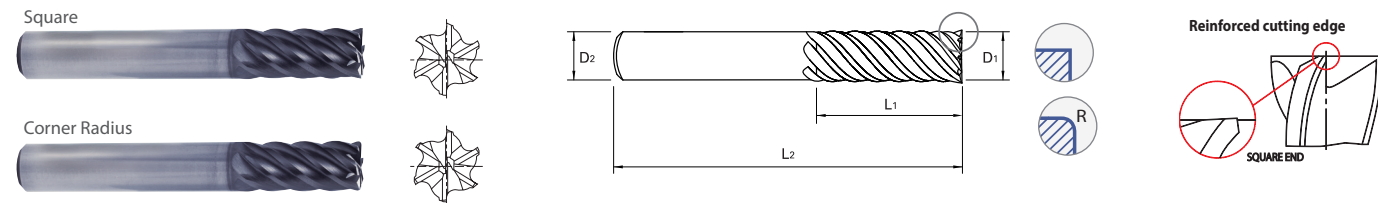
◎ : Excellent ○ : Good

ISO	P										M				K					
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	32	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○

ISO	N					S					H										
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	○	○				

Y-Coated SOLID CARBIDE END MILLS 6 FLUTE STANDARD LENGTH (PLAIN SHANK)

- ▶ The unique geometry of the variable pitch provides the best chatter free tool for high speed and trochoidal milling
- ▶ Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRC40



Unit : METRIC

Metric	Inch	OD (D ₁)	SD (D ₂)	LOC (L ₁)	OAL (L ₂)	Square End EDP No.	Corner Radius								
							0.50 EDP No.	1.00 EDP No.	1.50 EDP No.	2.00 EDP No.	3.00 EDP No.	4.00 EDP No.	5.00 EDP No.		
6.0	0.2362	6.0	6	13	57	GMG12060	GMG16060	GMG16901							
			6	24	75	GMG14060	GMG18060	GMG18901							
8.0	0.3150	8.0	8	19	63	GMG12080	GMG16080	GMG16902							
			8	32	75	GMG14080	GMG18080	GMG18902			GMG18903				
10.0	0.3937	10.0	10	22	72	GMG12100	GMG16100	GMG16903	GMG16904	GMG16905					
			10	40	100	GMG14100	GMG18100	GMG18904	GMG18905	GMG18906					
12.0	0.4724	12.0	12	26	83	GMG12120	GMG16120	GMG16906	GMG16907	GMG16908	GMG16909				
			12	48	120	GMG14120	GMG18120	GMG18907	GMG18908	GMG18909	GMG18910				
16.0	0.6299	16.0	16	32	92	GMG12160		GMG16160	GMG16910	GMG16911	GMG16912				
			16	64	140	GMG14160		GMG18160	GMG18911	GMG18912	GMG18913				
20.0	0.7874	20.0	20	38	104	GMG12200		GMG16200	GMG16913	GMG16914	GMG16915				
			20	80	150	GMG14200		GMG18200	GMG18914	GMG18915	GMG18916	GMG18917	GMG18918		
25.0	0.9843	25.0	25	44	104	GMG12250		GMG16250	GMG16916	GMG16917	GMG16918				
			25	100	170	GMG14250		GMG18250	GMG18919	GMG18920	GMG18921	GMG18922	GMG18923		

Mill Dia. Tolerance (mm)		Shank Dia. Tolerance	
Up to 3xD	Over 3xD	h5 (≥ Ø12 : h6)	0 ~ -0.03
Up to Ø12	0 ~ -0.02		
Over Ø12	0 ~ -0.03		

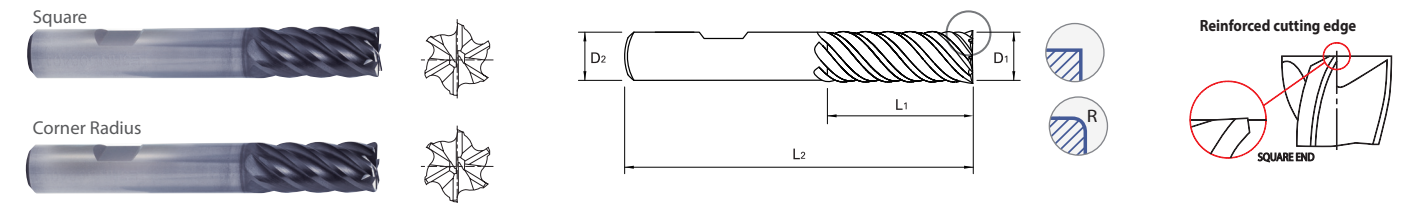
◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRC	13	25	28	32	32	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRC	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	○	○				

Y-Coated SOLID CARBIDE END MILLS 6 FLUTE STANDARD LENGTH (FLAT SHANK)

- ▶ The unique geometry of the variable pitch provides the best chatter free tool for high speed and trochoidal milling
- ▶ Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRC40



Unit : METRIC

Metric	Inch	OD (D ₁)	SD (D ₂)	LOC (L ₁)	OAL (L ₂)	Square End EDP No.	Corner Radius								
							0.50 EDP No.	1.00 EDP No.	1.50 EDP No.	2.00 EDP No.	3.00 EDP No.	4.00 EDP No.	5.00 EDP No.		
6.0	0.2362	6.0	6	13	57	GMG13060	GMG17060	GMG17901							
			6	24	75	GMG15060	GMG19060	GMG19901							
8.0	0.3150	8.0	8	19	63	GMG13080	GMG17080	GMG17902							
			8	32	75	GMG15080	GMG19080	GMG19902			GMG19903				
10.0	0.3937	10.0	10	22	72	GMG13100	GMG17100	GMG17903	GMG17904	GMG17905					
			10	40	100	GMG15100	GMG19100	GMG19904	GMG19905	GMG19906					
12.0	0.4724	12.0	12	26	83	GMG13120	GMG17120	GMG17906	GMG17907	GMG17908	GMG17909				
			12	48	120	GMG15120	GMG19120	GMG19907	GMG19908	GMG19909	GMG19910				
16.0	0.6299	16.0	16	32	92	GMG13160		GMG17160	GMG17910	GMG17911	GMG17912				
			16	64	140	GMG15160		GMG19160	GMG19911	GMG19912	GMG19913				
20.0	0.7874	20.0	20	38	104	GMG13200		GMG17200	GMG17913	GMG17914	GMG17915				
			20	80	150	GMG15200		GMG19200	GMG19914	GMG19915	GMG19916	GMG19917	GMG19918		
25.0	0.9843	25.0	25	44	104	GMG13250		GMG17250	GMG17916	GMG17917	GMG17918				
			25	100	170	GMG15250		GMG19250	GMG19919	GMG19920	GMG19921	GMG19922	GMG19923		

Mill Dia. Tolerance (mm)		Shank Dia. Tolerance	
Up to 3xD	Over 3xD	h5 (≥ Ø12 : h6)	0 ~ -0.03
Up to Ø12	0 ~ -0.02		
Over Ø12	0 ~ -0.03		

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRC	13	25	28	32	32	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRC	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	○	○				

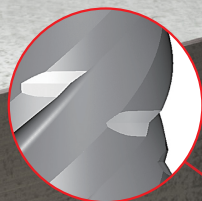
6 FLUTE CHIP SPLITTER



Do Chips a Complete Makeover

The New V7 Plus Chip Splitter reduces vibrations and realizes outstanding machining performance and surface finish by applying unequal index design which is the strength of V7 Plus.

Furthermore, the optimized chip splitter design shortens the length of the chips into approximately 1/3 than other End Mills that leads to excellent chip evacuation, as well. As the V7 Plus Chip Splitter shows a superior performance in high-speed machining and trochoidal milling.

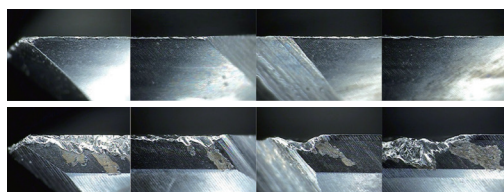
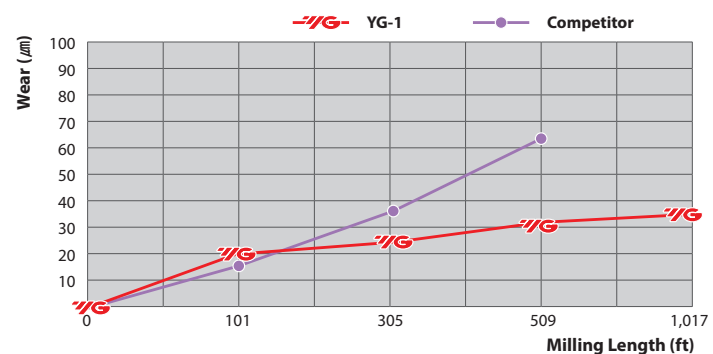


Special Chip Splitter Design
Shorter Chip Length at High Axial Machining, improving Chip Removal from both the Component and the Machine

HIGH-PERFORMANCE SOLID CARBIDE 6 FLUTE CHIP SPLITTER

CASE STUDY

6 Flute Chip Splitter vs Competitor



	V7 Plus A	Competitor
Wear (μm)	32.49	88.26
Milling Length (ft.)	1,017	509
Size (mm)	Ø12 x Ø12 x 48 x 120 with chip Splitter	
Work Material	- JIS : S45C(HRc30) - DIN : C45	- WR : 1.0503 - AISI: 1405
Cutting Speed/RPM	722 ft/min. / 5,836 rev./min.	
FEED	124 in./min.	
Milling Method	Trochoidal Cutting	
Milling Depth	Axial: 1.417 in., Radial: .024 in	
Coolant	Wet Cut	
Overhang	2.204 in.	
Machine	Machining Center	

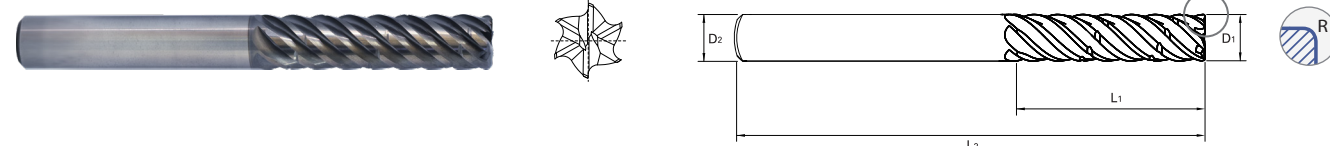
NEW

Y-Coated SOLID CARBIDE END MILLS 6 FLUTE CHIP SPLITTER (PLAIN SHANK)

SERIES
Corner Radius **GMH72**

- ▶ Special chip splitter design for better chip removal shortened chip length at high axial machining
- ▶ High Performance for Steels, Stainless Steels and Cast Iron

Corner Radius



Unit : INCH

OD (D1)	SD (D2)	LOC (L1)	OAL (L2)	Corner Radius			
				.015 EDP No.	.030 EDP No.	.060 EDP No.	.125 EDP No.
3/8	3/8	5/8	2_1/2	◇ GMH72901	GMH72902		
3/8	3/8	1"	2_1/2	◇ GMH72903			
3/8	3/8	1_1/8	3"	GMH72024	GMH72904		
1/2	1/2	1_1/4	3"		◇ GMH72905	◇ GMH72906	
1/2	1/2	1_1/2	3_1/2		◇ GMH72907	◇ GMH72908	
1/2	1/2	1_5/8	4"	GMH72032	GMH72909	GMH72910	
1/2	1/2	2"	4"		GMH72911	GMH72912	
5/8	5/8	1_1/4	3_1/2		◇ GMH72913	◇ GMH72914	
5/8	5/8	1_7/8	4"		◇ GMH72915	◇ GMH72916	
5/8	5/8	2"	4"	GMH72040	GMH72917	GMH72918	◇ GMH72919
5/8	5/8	2_3/16	4_1/2		◇ GMH72920	◇ GMH72921	
5/8	5/8	2_5/8	5"		GMH72922	GMH72923	
3/4	3/4	1_1/2	4"		◇ GMH72924	◇ GMH72925	◇ GMH72926
3/4	3/4	1_7/8	4_1/2		GMH72927	GMH72928	
3/4	3/4	2_1/4	5"	GMH72048	GMH72929	GMH72930	GMH72931
3/4	3/4	2_3/4	5"		◇ GMH72932	GMH72933	◇ GMH72934
3/4	3/4	3"	6"		GMH72935	◇ GMH72936	
1"	1"	2"	5"		◇ GMH72937	◇ GMH72938	◇ GMH72939
1"	1"	2_1/2	5_1/2		◇ GMH72942	◇ GMH72943	
1"	1"	3_1/4	6"	GMH72064	GMH72944	GMH72945	GMH72946
1"	1"	3_1/2	6_1/2		◇ GMH72940	◇ GMH72941	
1"	1"	4"	7"			◇ GMH72947	

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.012	h5 (≥ Ø12 : h6)

◇ : Call for Availability

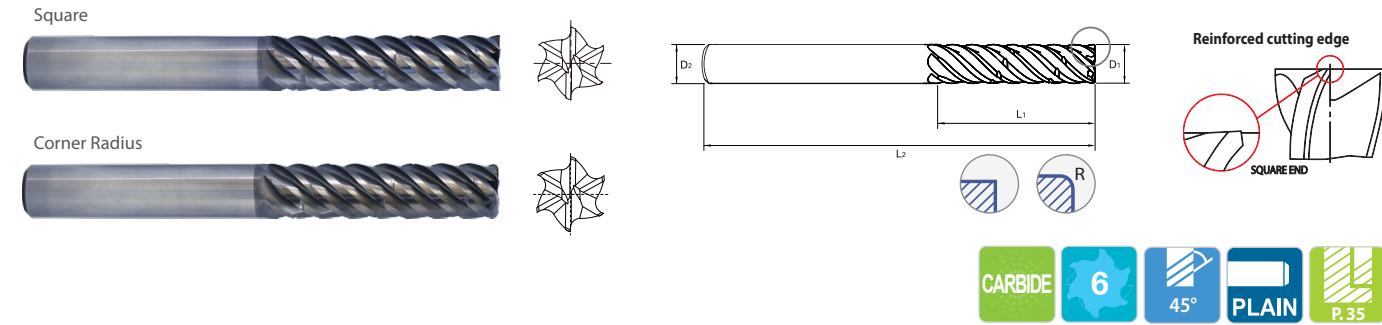
ISO Material Description	P									M				K							
	Non-alloy steel			Low alloy steel			High alloyed steel, and tool steel			Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron					
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	
ISO Material Description	N						S						H								
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	○	○				

◎ : Excellent ○ : Good

NEW

Y-Coated SOLID CARBIDE END MILLS
6 FLUTE CHIP SPLITTER (PLAIN SHANK)

- Special chip splitter design for better chip removal shortened chip length at high axial machining
- High Performance for Steels, Stainless Steels and Cast Iron



Unit : METRIC

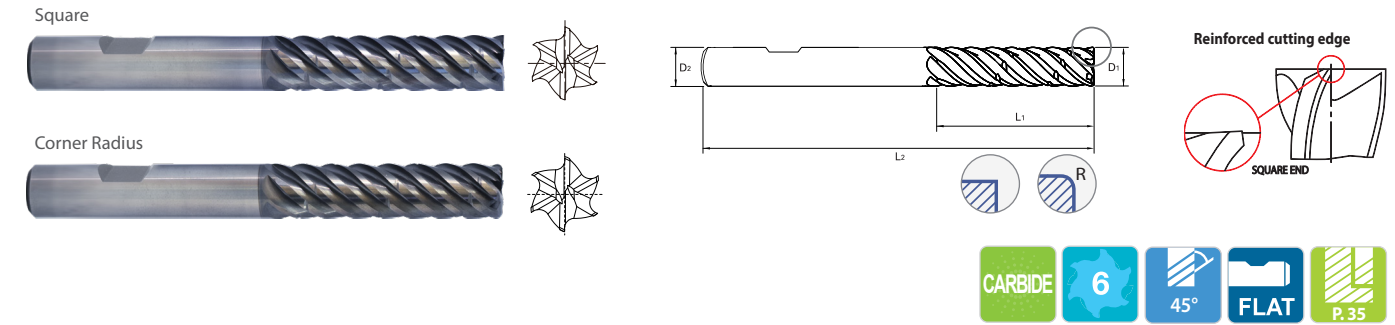
OD (D ₁)		SD (D ₂)	LOC (L ₁)	OAL (L ₂)	Square End	Corner Radius						
Metric	Inch					0.50	1.00	1.50	2.00	3.00	4.00	5.00
				EDP No.		EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
6.0	.2363	6	24	75	GMH56060	GMH58060	GMH58901					
8.0	.3150	8	32	75	GMH56080	GMH58080	GMH58902		GMH58903			
10.0	.3937	10	40	100	GMH56100	GMH58100	GMH58904	GMH58905	GMH58906			
12.0	.4724	12	48	120	GMH56120	GMH58120	GMH58907	GMH58908	GMH58909	GMH58910		
16.0	.6299	16	64	140	GMH56160		GMH58160	GMH58911	GMH58912	GMH58913		
20.0	.7874	20	80	150	GMH56200		GMH58200	GMH58914	GMH58915	GMH58916	GMH58917	GMH58918
25.0	.9843	25	100	170	GMH56250		GMH58250	GMH58919	GMH58920	GMH58921	GMH58922	GMH58923

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0 ~ -0.03	h5 (≥ Ø12 : h6)

NEW

Y-Coated SOLID CARBIDE END MILLS
6 FLUTE CHIP SPLITTER (FLAT SHANK)

- Special chip splitter design for better chip removal shortened chip length at high axial machining
- High Performance for Steels, Stainless Steels and Cast Iron



Unit : METRIC

OD (D ₁)		SD (D ₂)	LOC (L ₁)	OAL (L ₂)	Square End	Corner Radius						
Metric	Inch					0.50	1.00	1.50	2.00	3.00	4.00	5.00
				EDP No.		EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
6.0	.2363	6	24	75	GMH57060	GMH59060	GMH59901					
8.0	.3150	8	32	75	GMH57080	GMH59080	GMH59902		GMH59903			
10.0	.3937	10	40	100	GMH57100	GMH59100	GMH59904	GMH59905	GMH59906			
12.0	.4724	12	48	120	GMH57120	GMH59120	GMH59907	GMH59908	GMH59909	GMH59910		
16.0	.6299	16	64	140	GMH57160		GMH59160	GMH59911	GMH59912	GMH59913		
20.0	.7874	20	80	150	GMH57200		GMH59200	GMH59914	GMH59915	GMH59916	GMH59917	GMH59918
25.0	.9843	25	100	170	GMH57250		GMH59250	GMH59919	GMH59920	GMH59921	GMH59922	GMH59923

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0 ~ -0.03	h5 (≥ Ø12 : h6)

◎ : Excellent ○ : Good

ISO	P										M				K					
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○

◎ : Excellent ○ : Good

ISO	P										M				K					
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○

UGMG20, UGMG21, UGMG22
UGMG23, UGMH08, UGMH09 SERIES

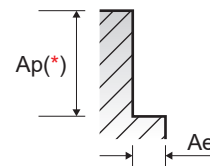
6 FLUTE - SIDE CUTTING



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

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)							
						1/4	5/16	3/8	1/2	5/8	3/4	1	
P	1-4	Non-alloy steel	0.05D	2.0D	SFM(Vc)	985	985	985	985	985	985	985	
					fz	.0027	.0046	.0057	.0068	.0080	.0089	.0091	
					RPM	15036	12028	10024	7518	6014	5012	3759	
	5	0.05D	2.0D	SFM(Vc)	665	665	665	665	665	665	665		
				fz	.0020	.0033	.0042	.0050	.0059	.0066	.0069		
				RPM	10176	8141	6784	5088	4071	3392	2544		
	6-7	Low alloy steel	0.05D	2.0D	Vc	985	985	985	985	985	985	985	
					fz	.0027	.0046	.0057	.0068	.0080	.0089	.0091	
					RPM	15036	12028	10024	7518	6014	5012	3759	
	8-9	0.05D	2.0D	SFM(Vc)	665	665	665	665	665	665	665		
				fz	.0020	.0033	.0042	.0050	.0059	.0066	.0069		
				RPM	10176	8141	6784	5088	4071	3392	2544		
10-11.1	High alloyed steel, and tool steel	0.05D	2.0D	SFM(Vc)	330	330	330	330	330	330	330		
				fz	.0016	.0028	.0035	.0041	.0048	.0054	.0057		
				RPM	5012	4009	3341	2506	2005	1671	1253		
M	12-13	0.05D	2.0D	SFM(Vc)	700	700	700	700	700	700	700		
				fz	.0019	.0033	.0041	.0049	.0057	.0064	.0066		
				RPM	10681	8545	7120	5340	4272	3560	2670		
	14.1	Stainless steel	0.05D	2.0D	SFM(Vc)	480	480	480	480	480	480	480	
					fz	.0016	.0028	.0035	.0041	.0048	.0054	.0056	
					RPM	7365	5892	4910	3682	2946	2455	1841	
	14.2	0.05D	2.0D	SFM(Vc)	440	440	440	440	440	440	440		
				fz	.0016	.0028	.0035	.0041	.0048	.0054	.0056		
				RPM	6723	5379	4482	3362	2689	2241	1681		
	S	31-35	Heat Resistant Super Alloys	0.05D	2.0D	SFM(Vc)	110	110	110	110	110	110	110
						fz	.0013	.0022	.0028	.0032	.0038	.0044	.0045
						RPM	1650	1320	1100	825	660	550	413
36-37		Titanium Alloys	0.05D	2.0D	SFM(Vc)	380	380	380	380	380	380	380	
					fz	.0013	.0022	.0028	.0033	.0038	.0044	.0046	
					RPM	5822	4657	3881	2911	2329	1941	1455	

(*) : If product's Length of Cut(L.O.C) is below 2D, it must be applied L.O.C x 90%



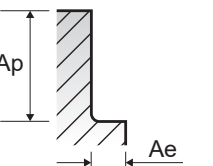
GMH72 SERIES

6 FLUTE CHIP SPLITTER - SIDE CUTTING



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

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)					
						3/8	1/2	5/8	3/4	1	
P	1-4	Non-alloy steel	0.05D	2.0D	SFM(Vc)	885	885	885	885	885	
					fz	.0028	.0034	.0040	.0044	.0046	
					RPM	9022	6766	5413	4511	3383	
	5	0.05D	2.0D	SFM(Vc)	600	600	600	600	600		
				fz	.0021	.0025	.0029	.0033	.0034		
				RPM	6106	4579	3664	3053	2290		
	6-7	Low alloy steel	0.05D	2.0D	SFM(Vc)	885	885	885	885	885	
					fz	.0028	.0034	.0040	.0044	.0046	
					RPM	9022	6766	5413	4511	3383	
	8-9	0.05D	2.0D	SFM(Vc)	600	600	600	600	600		
				fz	.0021	.0025	.0029	.0033	.0034		
				RPM	6106	4579	3664	3053	2290		
10-11.1	High alloyed steel, and tool steel	0.05D	2.0D	SFM(Vc)	295	295	295	295	295		
				fz	.0017	.0021	.0024	.0027	.0028		
				RPM	3007	2255	1805	1504	1128		
M	12-13	0.05D	2.0D	SFM(Vc)	630	630	630	630	630		
				fz	.0020	.0025	.0029	.0032	.0033		
				RPM	6408	4806	3845	3204	2403		
	14.1	Stainless steel	0.05D	2.0D	SFM(Vc)	435	435	435	435	435	
					fz	.0017	.0021	.0024	.0027	.0028	
					RPM	4419	3313.8	2651.4	2209.5	1656.9	
	14.2	0.05D	2.0D	SFM(Vc)	395	395	395	395	395		
				fz	.0017	.0021	.0024	.0027	.0028		
				RPM	4034	3026	2420	2017	1513		
	S	31-35	Heat Resistant Super Alloys	0.05D	2.0D	SFM(Vc)	95	95	95	95	95
						fz	.0014	.0016	.0019	.0022	.0023
						RPM	990	742.5	594	495	371.7
36-37		Titanium Alloys	0.05D	2.0D	SFM(Vc)	345	345	345	345	345	
					fz	.0014	.0016	.0019	.0022	.0023	
					RPM	3493	2620	2096	1747	1310	



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

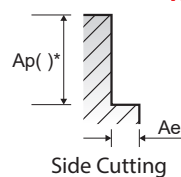
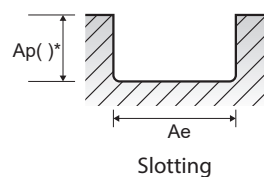
4 FLUTE - SIDE & SLOTTING



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

ISO	VDI 3323	Material Description	Ae		Ap		Parameter	Diameter (Ø)															
			Side	Slotting	Side	Slotting		1/8	5/32	3/16	7/32	1/4	9/32	5/16	7/16	1/2	5/8	3/4	1				
P	1-4	Non-alloy steel	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	SFM(Vc)	500	500	500	500	500	550	550	550	550	550	550	550	550	550	550	
							fz	.0002	.0003	.0004	.0006	.0011	.0015	.0019	.0019	.0021	.0023	.0026	.0025				
							RPM	16128	12096	9677	8064	6048	5348	4456	3820	3342	2971	2674	2139				
							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				
	5	Low alloy steel	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	SFM(Vc)	350	350	350	350	350	385	385	385	385	385	385	385	385	385		
							fz	.0002	.0003	.0004	.0006	.0011	.0015	.0018	.0019	.0021	.0023	.0026	.0025				
							RPM	11353	8515	6812	5677	4257	3724	3104	2660	2328	2069	1862	1490				
							FEED	8.94	10.71	11.81	14.29	18.11	22.28	22.95	20.51	19.41	19.21	19.06	15.00				
	6-7	High alloyed steel, and tool steel	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	SFM(Vc)	500	500	500	500	500	550	550	550	550	550	550	550	550			
							fz	.0002	.0003	.0004	.0006	.0011	.0015	.0018	.0019	.0021	.0023	.0026	.0025				
							RPM	16128	12096	9677	8064	6048	5348	4456	3820	3342	2971	2674	2139				
							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				
8-9	High alloyed steel, and tool steel	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	SFM(Vc)	350	350	350	350	350	385	385	385	385	385	385	385	385				
						fz	.0002	.0003	.0004	.0006	.0011	.0015	.0018	.0019	.0021	.0023	.0026	.0025					
						RPM	11353	8515	6812	5677	4257	3724	3104	2660	2328	2069	1862	1490					
						FEED	8.94	10.71	11.81	14.29	18.11	22.28	22.95	20.51	19.41	19.21	19.06	15.00					
10-11.1	High alloyed steel, and tool steel	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	SFM(Vc)	210	210	210	210	210	230	230	230	230	230	230	230	230				
						fz	.0001	.0002	.0003	.0004	.0008	.0011	.0013	.0013	.0015	.0016	.0018	.0018					
						RPM	6791	5093	4074	3395	2546	2228	1857	1592	1393	1238	1114	891					
						FEED	3.19	4.80	5.12	5.87	7.64	9.49	9.37	8.50	8.11	7.99	7.91	6.30					
M	12-13	Stainless steel	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	SFM(Vc)	485	485	485	485	485	485	485	485	485	485	485	485				
							fz	.0002	.0002	.0004	.0005	.0009	.0013	.0015	.0017	.0018	.0020	.0022	.0022				
							RPM	15703	11777	9422	7852	5889	4711	3926	3365	2944	2617	2355	1884				
							FEED	9.88	11.14	13.35	16.06	20.39	25.24	24.09	22.24	20.87	20.59	20.39	16.34				
	14.1	Stainless steel	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	SFM(Vc)	350	350	350	350	350	350	350	350	350	350	350	350				
							fz	.0002	.0003	.0005	.0007	.0011	.0019	.0022	.0023	.0024	.0028	.0030	.0030				
							RPM	11247	8435	6748	5623	4218	3374	2812	2410	2109	1874	1687	1350				
							FEED	8.86	10.63	13.82	15.94	18.58	25.51	24.37	22.4	20.59	20.67	20.47	16.38				
	14.2	Stainless steel	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	SFM(Vc)	310	310	310	310	310	310	310	310	310	310	310	310				
							fz	.0002	.0003	.0005	.0007	.0011	.0019	.0022	.0023	.0024	.0027	.0030	.0030				
							RPM	10080	7560	6048	5040	3780	3024	2520	2160	1890	1680	1512	1210				
							FEED	7.95	9.53	12.36	14.29	16.65	22.87	21.81	20.08	18.46	18.27	18.11	14.49				
K	15-20	Grey cast iron	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	SFM(Vc)	365	365	365	365	365	405	405	405	405	405	405	405				
							fz	.0002	.0004	.0006	.0008	.0013	.0019	.0023	.0024	.0026	.0029	.0032	.0031				
							RPM	11884	8913	7130	5942	4456	3915	3263	2797	2447	2175	1958	1566				
							FEED	11.22	14.06	15.71	18.70	23.86	29.61	29.80	26.85	25.04	25.00	24.96	19.49				
S	31-35	Heat Resistant Super Alloys	0.25D	1.0D	1.0D	0.5D	SFM(Vc)	85	85	85	85	85	85	85	85	85	85	85	85				
							fz	.0002	.0003	.0003	.0005	.0008	.0013	.0015	.0016	.0017	.0019	.0021	.0021				
							RPM	2759	2069	1655	1379	1035	828	690	591	517	460	414	331				
							FEED	2.17	2.28	2.09	2.6	3.11	4.29	4.13	3.74	3.5	3.46	3.5	2.72				
	36-37	Titanium Alloys	0.35D	1.0D	1.0D	0.5D	SFM(Vc)	190	190	190	190	190	190	190	190	190	190	190	190				
							fz	.0002	.0003	.0004	.0006	.0010	.0017	.0020	.0021	.0022	.0024	.0027	.0027				
							RPM	6154	4615	3692	3077	2308	1846	1538	1319	1154	1026	923	738				
							FEED	3.86	5.08	6.38	7.76	9.09	12.20	12.13	11.02	10.00	10.00	9.88	8.03				

(*) : Short length & Neck type



- NOTES:**
- ▶ 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 than 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

GMG55, GMG56 SERIES

4 FLUTE BALL NOSE



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

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)											
						3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0	18.0	20.0	25.0	
P	1-4	Non-alloy steel	0.5D	1.0D	SFM(Vc)	530	530	530	530	530	530	530	530	530	530	530	530
					fz	.0010	.0011	.0012	.0016	.0024	.0026	.0028	.0030	.0032	.0035	.0039	
					RPM	17189	12892	10313	8594	6446	5157	4297	3223	2865	2578	2063	
					FEED	67.68	54.80	48.74	54.13	60.91	52.80	47.36	38.07	36.10	36.54	32.17	
	5	Low alloy steel	0.5D	1.0D	SFM(Vc)	370	370	370	370	370	370	370	370	370	370	370	
					fz	.0010	.0011	.0012	.0016	.0024	.0026	.0028	.0029	.0031	.0035	.0039	
					RPM	11990	8992	7194	5995	4496	3597	2997	2248	1998	1798	1439	
					FEED	47.20	38.23	33.98	37.76	42.48	36.81	33.03	26.18	24.84	25.47	22.44	
	6-7	Low alloy steel	0.5D	1.0D	SFM(Vc)	530	530	530	530	530	530	530	530	530	530		
					fz	.0010	.0011	.0012	.0016	.0024	.0026	.0028	.0030	.0032	.0035	.0039	
					RPM	17189	12892	10313	8594	6446	5157	4297	3223	2865	2578	2063	
					FEED	67.68	54.80	48.74	54.13	60.91	52.80	47.36	38.07	36.10	36.54	32.17	
8-9	Low alloy steel	0.5D	1.0D	SFM(Vc)	370	370	370	370	370	370	370	370	370	370			
				fz	.0010	.0011	.0012	.0016	.0024	.0026	.0028	.0029	.0031	.0035	.0039		
				RPM	11990	8992	7194	5995	4496	3597	2997	2248	1998	1798	1439		
				FEED	47.20	38.23	33.98	37.76	42.48	36.81	33.03	26.18	24.84	25.47	22.44		
10-11.1	High alloyed steel, and tool steel	0.5D	1.0D	SFM(Vc)	225	225	225	225	225	225	225	225	225	225			
				fz	.0007	.0007	.0008	.0011	.0017	.0018	.0019	.0020	.0022	.0025	.0028		
				RPM	7215	5411	4329	3608	2706	2165	1804	1353	1203	1082	866		
				FEED	19.33	16.18	14.33	15.91	17.91	15.35	13.94	11.06	10.59	10.75	9.53		
M	12-13	Stainless steel	0.5D	1.0D	SFM(Vc)	255	255	255	255	255	255	255	255	255	255		
					fz	.0006	.0006	.0010	.0012	.0016	.0018	.0020	.0021	.0023	.0023	.0023	
					RPM	8170	6127	4902	4085	3064	2451	2042	1532	1362	1225	980	
					FEED	19.29	14.49	19.29	19.29	19.29	17.36	16.06	13.03	12.64	11.18	9.09	
	14.1	Stainless steel	0.5D	1.0D	SFM(Vc)	280	280	280	280	280	280	280	280	280	280		
					fz	.0008	.0008	.0010	.0016	.0018	.0020	.0022	.0024	.0025	.0026	.0027	
					RPM	9019	6764	5411	4509	3382	2706	2255	1691	1503	1353	1082	
					FEED	28.43	21.3	21.3	29.13	23.98	21.3	19.53	15.98	15.16	13.86	11.57	
	14.2	Stainless steel	0.5D	1.0D	SFM(Vc)	255	255	255	255	255	255	255	255	255	255		
					fz	.0008	.0008	.0010	.0016	.0018	.0020	.0022	.0024	.0025	.0026	.0027	
					RPM	8170	6127	4902	4085	3064	2451	2042	1532	1362	1225	980	
					FEED	25.75	19.29	19.29	26.38	21.69	19.29	17.68	14.49	13.74	12.56	10.51	
K	15-20	Grey cast iron	0.5D	1.0D	SFM(Vc)	390	390	390	390	390	390	390	390	390	390		
					fz	.0012	.0013	.0015	.0020	.0029	.0032	.0034	.0037	.0039	.0044	.0049	
					RPM	12626	9470										

**GMG12, GMG13, GMG14, GMG15
GMG16, GMG17, GMG18, GMG19 SERIES**

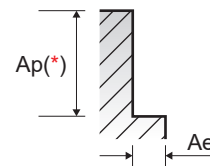
6 FLUTE - SIDE CUTTING



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

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						6.0	8.0	10.0	12.0	16.0	20.0	25.0
P	1-4	Non-alloy steel	0.05D	2.0D	SFM(Vc)	985	985	985	985	985	985	985
					fz	.0027	.0046	.0057	.0068	.0080	.0089	.0091
					RPM	15915	11937	9549	7958	5968	4775	3820
					FEED	255.67	327.09	324.84	325.20	284.80	253.78	209.33
	5	0.05D	2.0D	SFM(Vc)	665	665	665	665	665	665	665	
				fz	.0020	.0033	.0042	.0050	.0059	.0066	.0068	
				RPM	10769	8077	6462	5385	4039	3231	2585	
				FEED	127.20	162.17	161.81	162.80	142.13	127.44	106.22	
	6-7	Low alloy steel	0.05D	2.0D	Vc	985	985	985	985	985	985	985
					fz	.0027	.0046	.0057	.0068	.0080	.0089	.0091
					RPM	15036	12028	10024	7518	6014	5012	3759
					FEED	241.52	329.60	340.96	307.22	286.98	266.38	206.00
	8-9	0.05D	2.0D	SFM(Vc)	665	665	665	665	665	665	665	
				fz	.0020	.0033	.0042	.0050	.0059	.0066	.0068	
				RPM	10769	8077	6462	5385	4039	3231	2585	
				FEED	127.20	162.17	161.81	162.80	142.13	127.44	106.22	
	10-11.1	High alloyed steel, and tool steel	0.05D	2.0D	SFM(Vc)	330	330	330	330	330	330	330
					fz	.0016	.0028	.0035	.0041	.0048	.0054	.0057
					RPM	5305	3979	3183	2653	1989	1592	1273
					FEED	51.38	66.73	66.18	65.79	57.80	51.50	43.31
M	12-13	0.05D	2.0D	SFM(Vc)	700	700	700	700	700	700	700	
				fz	.0019	.0033	.0041	.0049	.0057	.0064	.0066	
				RPM	11300	8475	6780	5650	4238	3390	2712	
				FEED	130.79	168.15	166.57	166.85	146.14	129.72	107.64	
	14.1	Stainless steel	0.05D	2.0D	SFM(Vc)	480	480	480	480	480	480	480
					fz	.0016	.0028	.0035	.0041	.0048	.0054	.0056
					RPM	7799	5849	4679	3899	2924	2340	1872
					FEED	75.51	98.11	97.28	96.73	84.96	75.71	63.23
	14.2	0.05D	2.0D	SFM(Vc)	440	440	440	440	440	440	440	
				fz	.0016	.0028	.0035	.0041	.0048	.0054	.0056	
				RPM	7109	5332	4265	3554	2666	2133	1706	
				FEED	68.86	89.41	88.66	88.15	77.44	69.02	57.24	
31-35	Heat Resistant Super Alloys	0.05D	2.0D	SFM(Vc)	110	110	110	110	110	110	110	
				fz	.0013	.0022	.0028	.0032	.0038	.0044	.0045	
				RPM	1751	1313	1050	875	657	525	420	
				FEED	13.66	17.05	17.36	16.97	15.04	13.9	11.42	
36-37	Titanium Alloys	0.05D	2.0D	SFM(Vc)	380	380	380	380	380	380	380	
				fz	.0013	.0022	.0028	.0033	.0038	.0045	.0046	
				RPM	6154	4615	3692	3077	2308	1846	1477	
				FEED	47.95	59.96	61.06	60.31	52.87	49.29	40.83	

(*) : If product's Length of Cut(L.O.C) is below 2D, it must be applied L.O.C x 90%



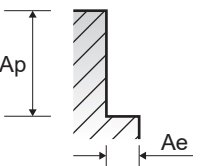
GMH56, GMH58, GMH57, GMH59 SERIES

6 FLUTE CHIP SPLITTER - SIDE CUTTING



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

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						6.0	8.0	10.0	12.0	16.0	20.0	25.0
P	1-4	Non-alloy steel	0.05D	3.0D	SFM(Vc)	885	885	885	885	885	885	885
					fz	.0013	.0023	.0028	.0034	.0040	.0044	.0046
					RPM	14324	10743	8594	7162	5371	4297	3438
					FEED	115.04	147.19	146.17	146.34	128.15	114.20	94.20
	5	0.05D	3.0D	SFM(Vc)	600	600	600	600	600	600	600	
				fz	.0010	.0017	.0021	.0025	.0029	.0033	.0034	
				RPM	9693	7269	5816	4846	3635	2908	2326	
				FEED	57.24	72.98	72.81	73.27	63.97	57.35	47.81	
	6-7	Low alloy steel	0.05D	3.0D	SFM(Vc)	885	885	885	885	885	885	885
					fz	.0013	.0023	.0028	.0034	.0040	.0044	.0046
					RPM	14324	10743	8594	7162	5371	4297	3438
					FEED	115.04	147.19	146.17	146.34	128.15	114.20	94.20
	8-9	0.05D	3.0D	SFM(Vc)	600	600	600	600	600	600	600	
				fz	.0010	.0017	.0021	.0025	.0029	.0033	.0034	
				RPM	9693	7269	5816	4846	3635	2908	2326	
				FEED	57.24	72.98	72.81	73.27	63.97	57.35	47.81	
	10-11.1	High alloyed steel, and tool steel	0.05D	3.0D	SFM(Vc)	295	295	295	295	295	295	295
					fz	.0008	.0014	.0017	.0021	.0024	.0027	.0028
					RPM	4775	3581	2865	2387	1790	1432	1146
					FEED	23.12	30.03	29.78	29.61	26.01	23.18	19.49
M	12-13	0.05D	3.0D	SFM(Vc)	630	630	630	630	630	630	630	
				fz	.0010	.0017	.0020	.0025	.0029	.0032	.0033	
				RPM	10170	7628	6102	5085	3814	3051	2441	
				FEED	58.86	75.67	74.95	75.07	65.76	58.38	48.43	
	14.1	Stainless steel	0.05D	3.0D	SFM(Vc)	435	435	435	435	435	435	435
					fz	.0008	.0014	.0017	.0021	.0024	.0027	.0028
					RPM	7019	5264	4211	3509	2632	2106	1684
					FEED	33.99	44.14	43.77	43.52	38.24	34.07	28.45
	14.2	0.05D	3.0D	SFM(Vc)	395	395	395	395	395	395	395	
				fz	.0008	.0014	.0017	.0021	.0024	.0027	.0028	
				RPM	6398	4799	3839	3199	2399	1919	1536	
				FEED	30.98	40.24	39.90	39.67	34.86	31.06	25.75	
31-35	Heat Resistant Super Alloys	0.05D	3.0D	SFM(Vc)	95	95	95	95	95	95	95	
				fz	.0006	.0011	.0014	.0016	.0019	.0022	.0023	
				RPM	1576	1182	945	788	591	473	378	
				FEED	6.14	7.68	7.82	7.63	6.77	6.25	5.14	
36-37	Titanium Alloys	0.05D	3.0D	SFM(Vc)	345	345	345	345	345	345	345	
				fz	.0006	.0011	.0014	.0016	.0019	.0022	.0023	
				RPM	5539	4154	3323	2769	2077	1662	1329	
				FEED	21.59	26.98	27.47	27.15	23.80	22.18	18.37	

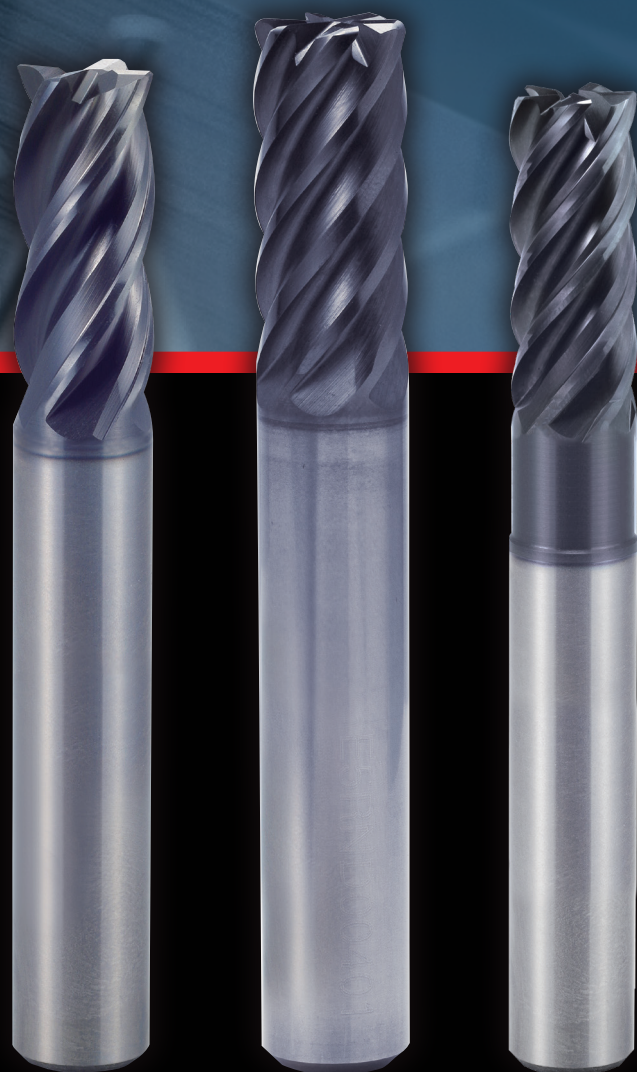




NEW!

QuickTurn Specials

>>> Get exactly the **HIGH PERFORMANCE END MILL** you need for your specific application shipped in days not weeks!



Customized End Mills!



Now the best value in the world of cutting tools goes one better with the **YG-1 QuickTurn Special End Mill Program**.

Get customized solid carbide end mills for your specific application plus, quick response specials – LOC, radius and LBS, all with YG-1's advanced technology and the high-performance cutting-edge features of **V7 PLUS A** and **TitaNox** end mills.

And since your order goes to our state-of-the-art Tech Center in Charlotte, NC right here in the USA, it goes into production the same day.

We're known for bringing you the widest standard end mill offering in the industry. With our new QuickTurn program, the possibilities are almost unlimited!

YG QuickTurn Program

- ▶ Easy selection and design starts with pre-fluted blanks in the most widely used sizes with predefined OD, SD, LOC, OAL(inch dimensions only).
- ▶ Specify your special dimension for: Cutting Diameter (OD), Length of Cut (LOC), Length Below Shank (LBS), Corner Radius, and Overall Length (OAL) using our simple quote request form (available on YG-1 USA Website).
- ▶ QuickTurn delivery ships in 8 business days or less for coated tools, and 3 business days or less for uncoated tools. In many cases, faster shipping for coated tools is available, please consult with our Tech Center team for more information.
- ▶ Minimum order quantity for this program is 3 end mills.
- ▶ For easy custom quote and ordering visit yg1usa.com/quickturn.asp

**Get it customized.
Get it quick.
Get it done.**

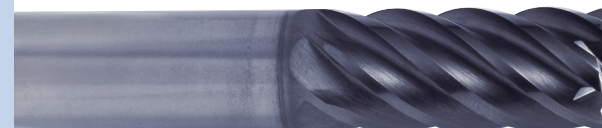


CHOOSE FROM:

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



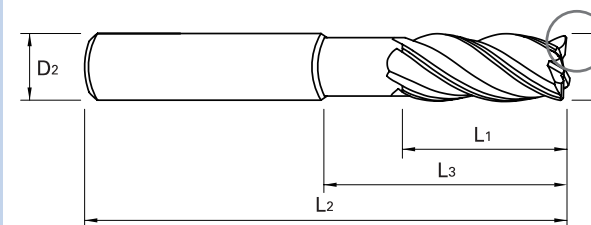
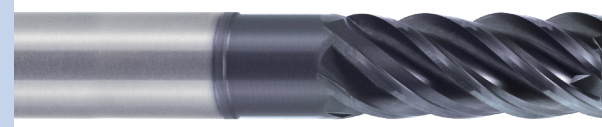
V7 PLUS A **6-FLUTE** END MILLS



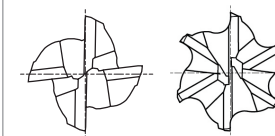
TitaNox Power **4-FLUTE** END MILLS



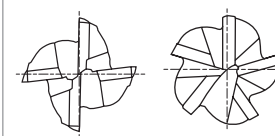
TitaNox Power **5-FLUTE** END MILLS



V7 PLUS A
VARIABLE INDEX END MILLS



TitaNox Power
VARIABLE INDEX END MILLS

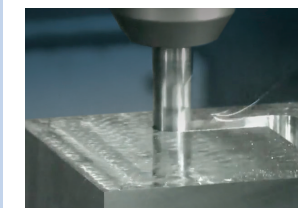


UNEQUAL INDEX WITH
HIGH-PERFORMANCE
CORNER GEOMETRIES
INCLUDING CORNER RADIUS



Corner Radius

D ₁	D ₂	L ₁	L ₂	L ₃
OD	SD	LOC	LBS	OAL



CUSTOM OPTIONS

- ▶ Square, radius, chamfer, ball nose, and corner radius styles
- ▶ Regular, extended lengths, and neck-down tools available
- ▶ Specify OD, LOC, OAL, and LBS dimensions made for your needs

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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

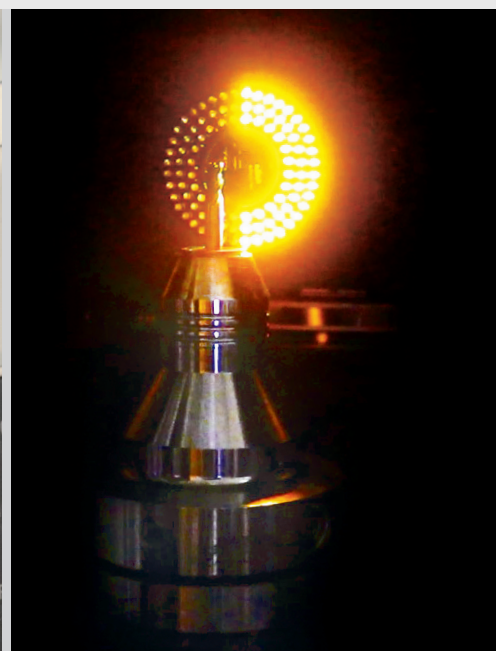
- ▶ Computer-aided simulation to ensure cost-effective manufacturing
- ▶ Solution application for high-strength alloy and CRFP required for aerospace industry
- ▶ Three-dimensional simulation provides predictable performance data consistency

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

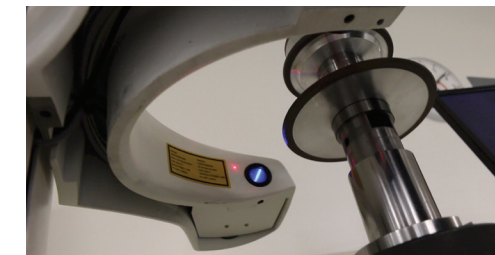
Test

- ▶ 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



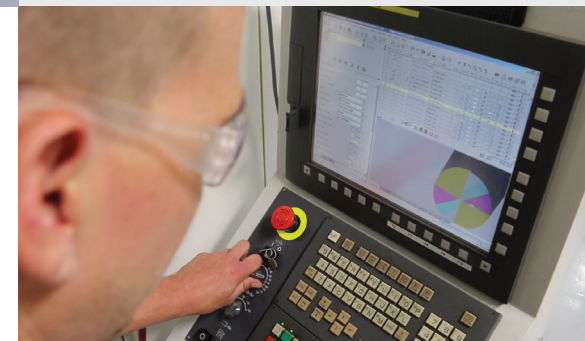
"I really like seeing the tools demonstrated and actually cutting. It's very helpful to see how the tools perform in actual conditions in a wide variety of different materials and styles."

- 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 partnership 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.



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



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.



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.



Every custom job starts with a blank.

Give us your specifications and **we will build the tools you need** – on time and guaranteed to meet your needs. It's how YG-1 has built a reputation for reliable service for the most demanding applications – and customers. So next time you need a special order, **Call us at 800-765-8665 or contact our distributor partners.** We're here to meet all your tooling needs.



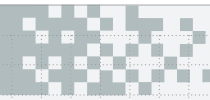
Designed to accommodate your needs.

- ▶ Capabilities for small batch production
- ▶ Ready access to world-class engineering
- ▶ Fast turnaround for one-of-a-kind tools and solutions

Our promise:
The best solution in less time with less expense.



MEMO



A large grid area for taking notes, with a header bar containing the word 'MEMO' and a decorative graphic.



HIGH QUALITY PRODUCTS and ON TIME DELIVERY for WORLD-WIDE CUSTOMERS

Since 1982, YG-1 has been committed to quality, innovation and the unique customer experience. Our performance and experience have granted YG-1 the global impression of one of the leading manufacturers of high quality cutting tool solutions. This global footprint expands over 75 countries, with international logistic centers, pledging to our customers to give the best service available today - and tomorrow.

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INDIA	KINGDOM OF SAUDI ARABIA	THAILAND		

AMERICAS

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AFRICA

EGYPT	SOUTH AFRICA
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YG-1 CO., LTD.

* For the more information on sales network, please contact the head office as below;

YG-1 HEAD OFFICE

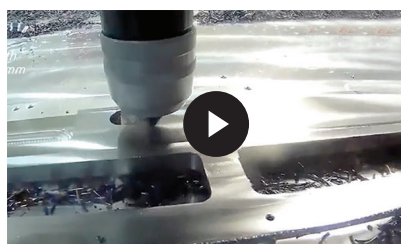
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Phone : +82-32-526-0909
E-mail : yg1@yg1.kr
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