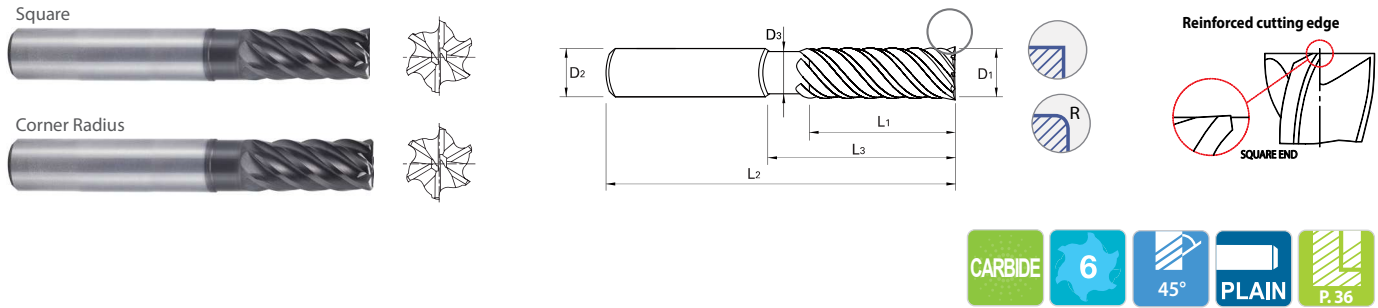


Y-Coated SOLID CARBIDE END MILLS  
6 FLUTE EXTENDED LENGTH (PLAIN SHANK)

Square Corner Radius **UGMH08**  
**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 <sub>1</sub> )	SD (D <sub>2</sub> )	LOC (L <sub>1</sub> )	LBS (L <sub>3</sub> )	OAL (L <sub>2</sub> )	Neck Dia (D <sub>3</sub> )	Square End	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	4-1/8	6	.344	UGMH08905	UGMH09914	UGMH09915	UGMH09916			
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	4-1/8	6	.461	UGMH08908	UGMH09928	UGMH09929	UGMH09930	UGMH09931		
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~-0.012	h5 (≥ Ø12 : h6)

◎ : Excellent ○ : Good

ISO	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		
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323																					
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				
	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	
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323																					
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											○	○	○	○	○	○	○				

SERIES

Square

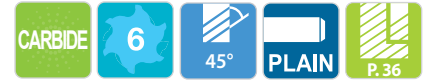
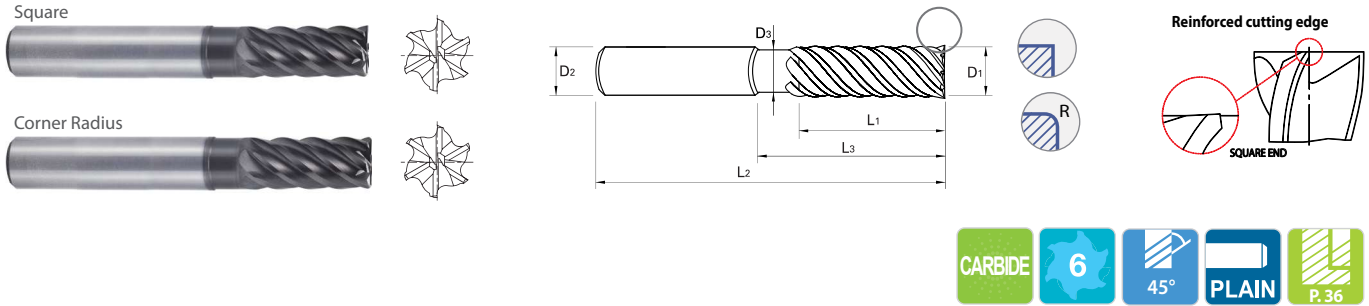
**UGMH08**

Corner Radius

**UGMH09**

# Y-Coated SOLID CARBIDE END MILLS 6 FLUTE EXTENDED 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 : INCH

OD (D1)	SD (D2)	LOC (L1)	LBS (L3)	OAL (L2)	Neck Dia (D3)	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	29	32	38	15	35	15	23	10	10	26	3	25	35	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	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	40	40	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	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	○	○	

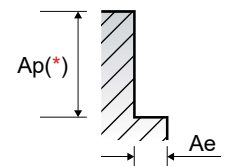
**UGMG20, UGMG21, UGMG22**  
**UGMG23, UGMH08, UGMH09** SERIES

**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
<b>P</b>	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
					FEED	241.52	329.60	340.96	307.22	286.98	266.38	206.00
	5	Low alloy steel	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
					FEED	120.19	163.46	169.88	153.85	143.27	133.82	104.57
	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	Low alloy steel	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
					FEED	120.19	163.46	169.88	153.85	143.27	133.82	104.57
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	
				FEED	48.54	67.25	69.46	62.15	58.25	54.06	42.62	
<b>M</b>	12-13	Stainless steel	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
					FEED	123.63	169.55	174.93	157.69	147.34	136.24	105.97
	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
					FEED	71.33	98.82	102.07	91.34	85.6	79.45	62.2
	14.2	Stainless steel	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
					FEED	65.11	90.21	93.17	83.38	78.14	72.53	56.38
<b>S</b>	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
					FEED	12.86	17.15	18.19	15.98	15.13	14.55	11.21
	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
					FEED	45.38	60.51	64.18	57.07	53.36	51.80	40.22

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



**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<sup>A</sup>**

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.**

# 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 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



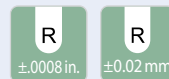
No. of Flutes



Cutting Conditions



Tolerance of Ball Radius



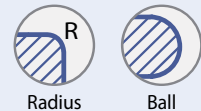
Helix Angle



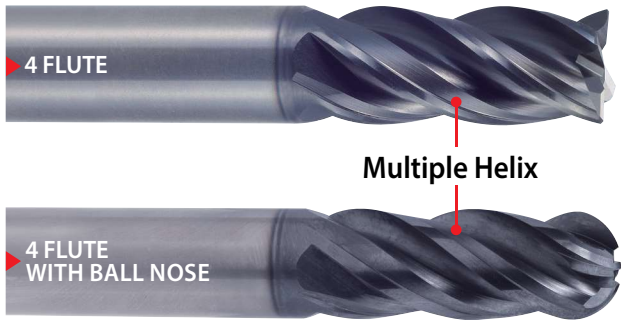
Type of Shank



Tool Ends



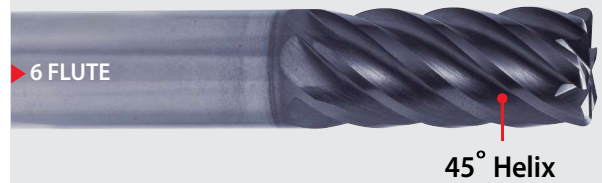
## V7 Plus A 4 FLUTE END MILLS



### Setting a Higher Standard in 4 Flute Design

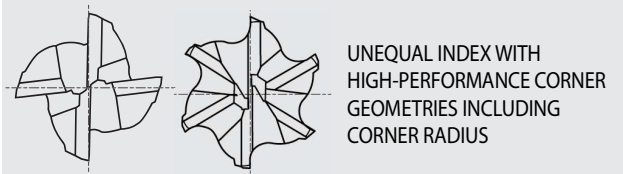
You asked for it. Now you can have state-of-the-art performance in an innovative 4 Flute design. First, you'll notice reduced vibration, optimal chip formation and excellent chip evacuation. And best of all, you'll get longer tool life in heavy cutting conditions. Available in ball nose, too.

## 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.



**NEW**

## V7 Plus A 6 FLUTE CHIP SPLITTER



#### Corner Geometries

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

#### Unequal Index

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

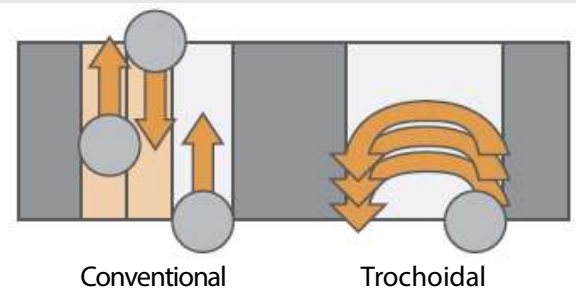
#### Chip Splitters

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

### 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





# 6 FLUTE

## V7 Plus A

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

Wake up to better 6 Flute performance.

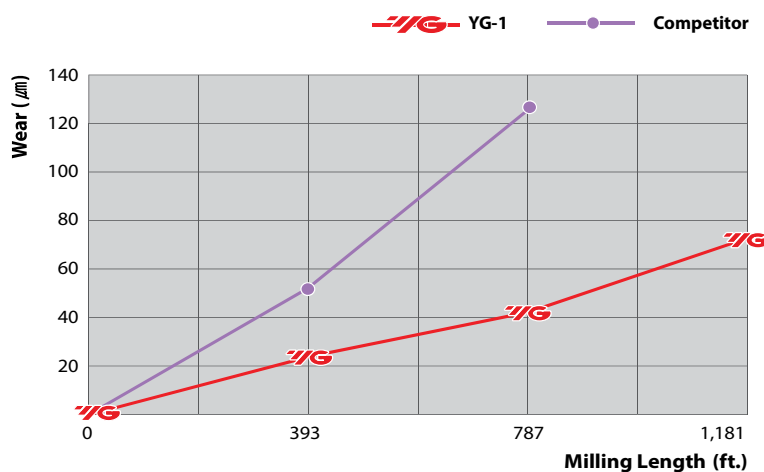
V7 Plus A's revolutionary 6 Flute design lets you handle tougher trochoidal milling at higher speeds with better feed per tooth.

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	