

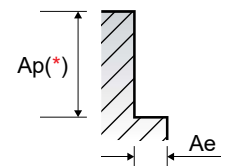
**UGMG20, UGMG21, UGMG22**  
**UGMG23, UGMH08, UGMH09** SERIES

**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



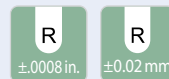
No. of Flutes



Cutting Conditions



Tolerance of Ball Radius



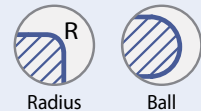
Helix Angle



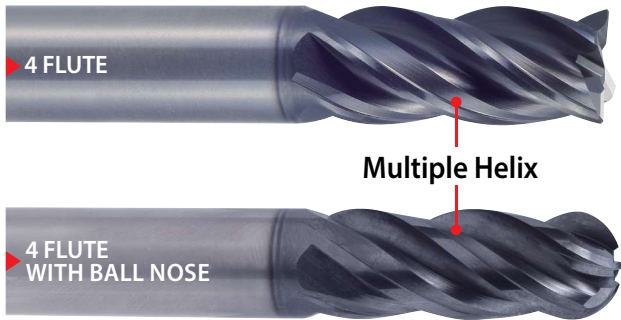
Type of Shank



Tool Ends



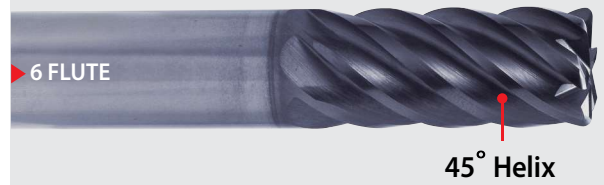
## V7 Plus A 4 FLUTE END MILLS



### Setting a Higher Standard in 4 Flute Design

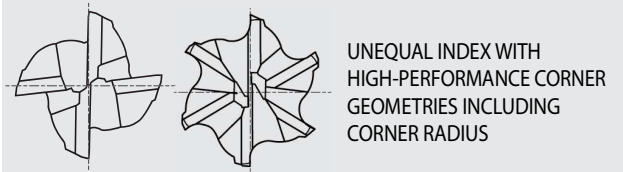
You asked for it. Now you can have state-of-the-art performance in an innovative 4 Flute design. First, you'll notice reduced vibration, optimal chip formation and excellent chip evacuation. And best of all, you'll get longer tool life in heavy cutting conditions. Available in ball nose, too.

## 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

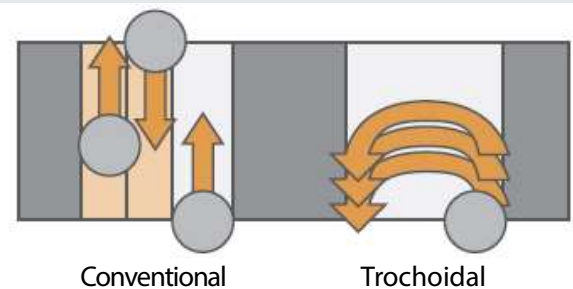
#### Chip Splitters

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.

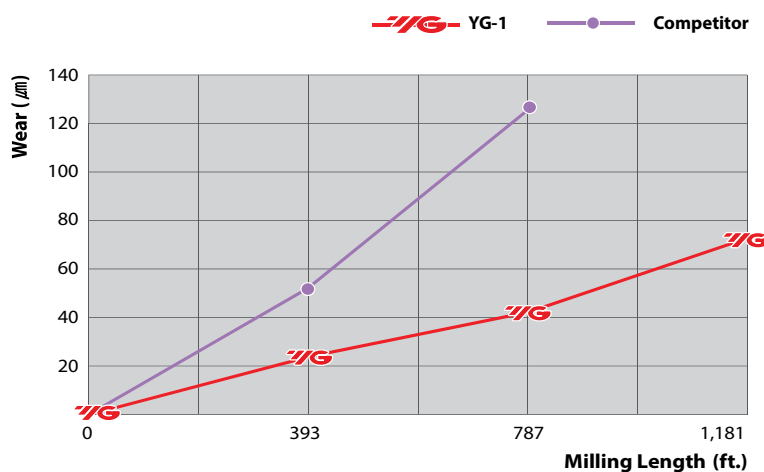
V7 Plus A's revolutionary 6 Flute design lets you handle tougher trochoidal milling at higher speeds with better feed per tooth.

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	