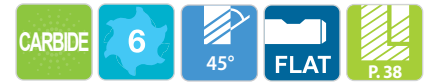
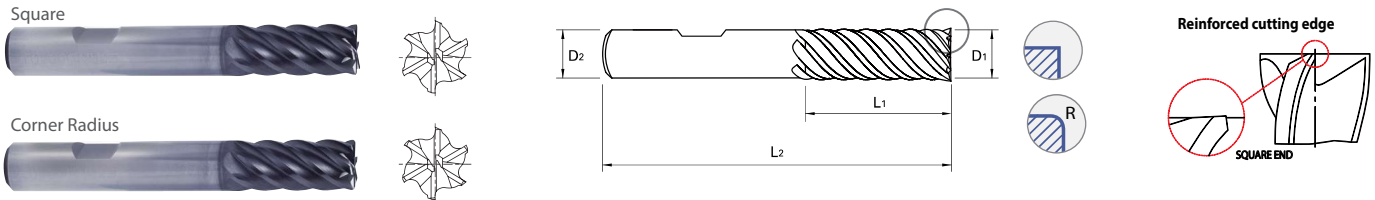


Y-Coated SOLID CARBIDE END MILLS

6 FLUTE STANDARD LENGTH (FLAT SHANK)

Square **GMG13, GMG15**
Corner Radius **GMG17, GMG19**

- 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**

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	0.2362	6	13	57	GMG13060	GMG17060	GMG17901					
		6	24	75	GMG15060	GMG19060	GMG19901					
8.0	0.3150	8	19	63	GMG13080	GMG17080	GMG17902					
		8	32	75	GMG15080	GMG19080	GMG19902		GMG19903			
10.0	0.3937	10	22	72	GMG13100	GMG17100	GMG17903	GMG17904	GMG17905			
		10	40	100	GMG15100	GMG19100	GMG19904	GMG19905	GMG19906			
12.0	0.4724	12	26	83	GMG13120	GMG17120	GMG17906	GMG17907	GMG17908	GMG17909		
		12	48	120	GMG15120	GMG19120	GMG19907	GMG19908	GMG19909	GMG19910		
16.0	0.6299	16	32	92	GMG13160		GMG17160	GMG17910	GMG17911	GMG17912		
		16	64	140	GMG15160		GMG19160	GMG19911	GMG19912	GMG19913		
20.0	0.7874	20	38	104	GMG13200		GMG17200	GMG17913	GMG17914	GMG17915		
		20	80	150	GMG15200		GMG19200	GMG19914	GMG19915	GMG19916	GMG19917	GMG19918
25.0	0.9843	25	44	104	GMG13250		GMG17250	GMG17916	GMG17917	GMG17918		
		25	100	170	GMG15250		GMG19250	GMG19919	GMG19920	GMG19921	GMG19922	GMG19923

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

◎ : 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	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	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
HRC											15	30	25	38	34			55	60	42
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400
Recommend											○	○	○	○	○	○	○			

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

6 FLUTE - SIDE CUTTING

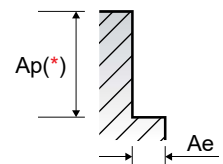


SFM = ft./min.
RPM = rev./min.

fz = in./tooth
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
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	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%



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.**



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



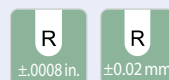
No. of Flutes



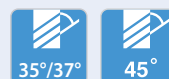
Cutting Conditions



Tolerance of Ball Radius



Helix Angle



Type of Shank



Plain
shank



Weldon
flat

Tool Ends



Square

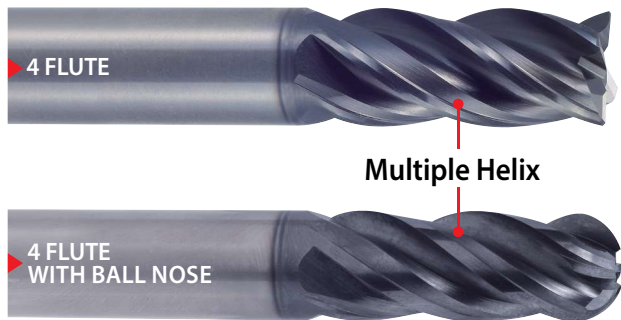
Chamfer



Radius

Ball

V7 Plus A 4 FLUTE END MILLS



Setting a Higher Standard in 4 Flute Design

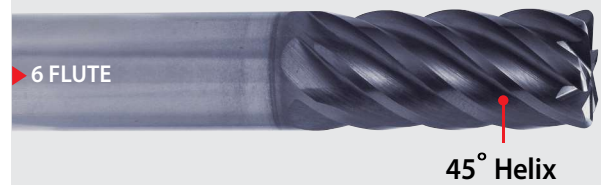
You asked for it. Now you can have state-of-the-art performance in an innovative 4 Flute design. First, you'll notice reduced vibration, optimal chip formation and excellent chip evacuation. And best of all, you'll get longer tool life in heavy cutting conditions. Available in ball nose, too.

NEW

V7 Plus A 6 FLUTE CHIP SPLITTER

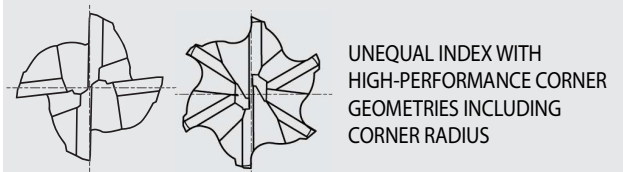


V7 Plus A 6 FLUTE END MILLS



Better by Every Measure

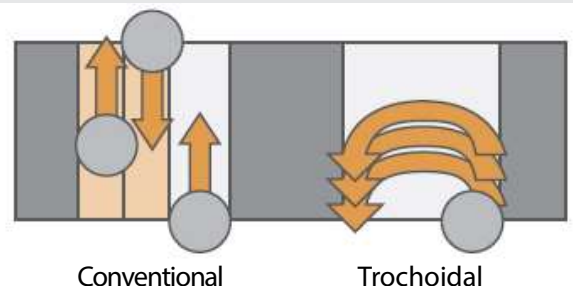
From its higher stability for lower vibration to its improved performance in high-speed and trochoidal milling applications, the V7 Plus A 6 Flute solid carbide, 45-degree helix, was designed with longer tool life and higher productivity in mind.



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.

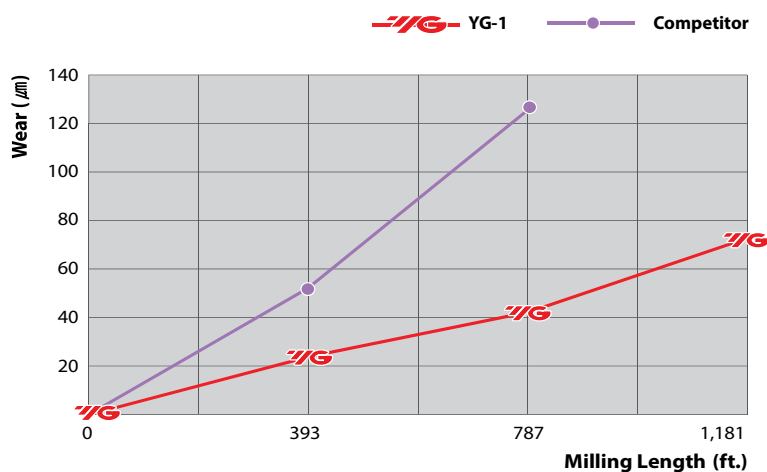
V7 Plus A's revolutionary 6 Flute design lets you handle tougher trochoidal milling at higher speeds with better feed per tooth.

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	