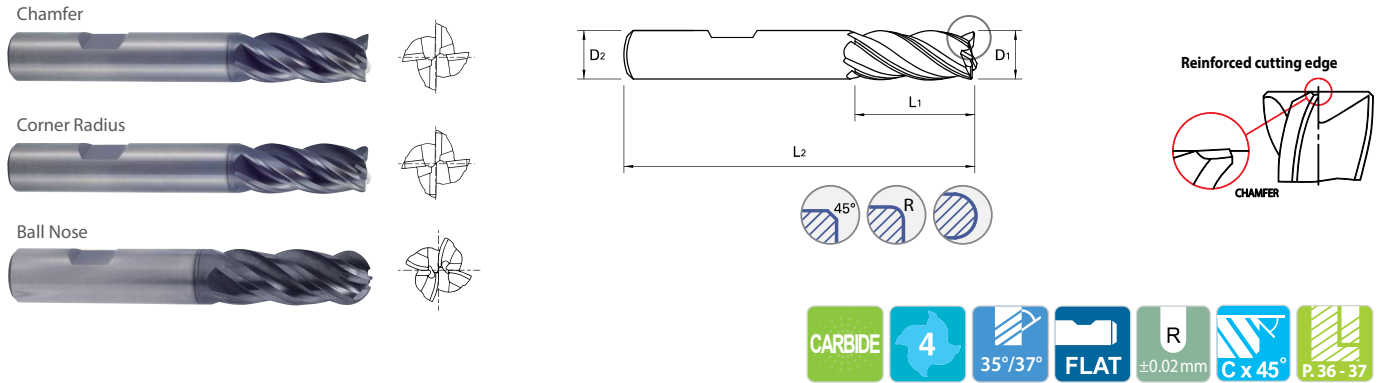


Y-Coated SOLID CARBIDE END MILLS

4 FLUTE STANDARD LENGTH (FLAT SHANK)

Chamfer	GMF53, GMF57
Corner Radius	GMF55, GMF59
Ball Nose	GMG56

- ▶ 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 : METRIC

OD (D ₁)		SD (D ₂)	LOC (L ₁)	OAL (L ₂)	Chamfer EDP No.	Corner Radius					Ball Nose EDP No.	CHAMFER KEY		
Metric	Inch					EDP No.	EDP No.	EDP No.	EDP No.	EDP No.		Mill Diameter Metric	Chamfer Size Inch	Chamfer Size (mm)
3.0	.1181	6	7	54	GMF53030	GMF55030	GMF5901					3.0	.1181	0.10
		6	8	57	GMF57030	GMF59030	GMF59901				GMG56030	4.0	.1575	0.15
4.0	.1575	6	8	54	GMF53040	GMF55040	GMF5902					5.0	.1969	0.15
		6	11	57	GMF57040	GMF59040	GMF59902				GMG56040	6.0	.2362	0.20
5.0	.1969	6	10	54	GMF53050	GMF55050	GMF5903					8.0	.3150	0.20
		6	13	57	GMF57050	GMF59050	GMF59903				GMG56050	10.0	.3937	0.30
6.0	.2362	6	10	54	GMF53060	GMF55060	GMF5904	GMF59905				12.0	.4724	0.35
		6	13	57	GMF57060	GMF59060	GMF59904	GMF59905			GMG56060	14.0	.5512	0.40
8.0	.3150	8	12	58	GMF53080		GMF55080	GMF5906				16.0	.6299	0.40
		8	19	63	GMF57080		GMF59080	GMF59906			GMG56080	18.0	.7087	0.50
10.0	.3937	10	14	66	GMF53100		GMF55100	GMF5907				20.0	.7874	0.50
		10	22	72	GMF57100		GMF59100	GMF59907			GMG56100	25.0	.9843	0.50
12.0	.4724	12	16	73	GMF53120		GMF55120	GMF5908	GMF59909			BALL NOSE KEY		
		12	26	83	GMF57120		GMF59120	GMF59908	GMF59909		GMG56120	Mill Diameter	Radius of Ball	
14.0	.5512	14	18	75	GMF53140		GMF55140					Metric	Inch	
		14	26	83	GMF57140		GMF59140					3.0	.1181	1.5
16.0	.6299	16	22	82	GMF53160			GMF55160	GMF5912	GMF59913		4.0	.1575	2.0
		16	32	92	GMF57160			GMF59160	GMF59912	GMF59913	GMG56160	5.0	.1969	2.5
18.0	.7087	18	24	84	GMF53180			GMF55180				6.0	.2362	3.0
		18	32	92	GMF57180			GMF59180				8.0	.3150	4.0
20.0	.7874	20	26	92	GMF53200			GMF55200	GMF5916	GMF59917		10.0	.3937	5.0
		20	38	104	GMF57200			GMF59200	GMF59916	GMF59917	GMG56200	12.0	.4724	6.0
25.0	.9843	25	38	104	GMF57250			GMF59250			GMG56250	16.0	.6299	8.0
												20.0	.7874	10.0
												25.0	.9843	12.5

Mill Dia. Tolerance (mm)		Shank Dia. Tolerance	
Up to Ø12	0 ~ -0.02	h5 (≥ Ø12 : h6)	
Over Ø12	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				
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	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									
Material Description	Aluminum-wrought alloy					Aluminum-cast, alloyed					Copper and Copper Alloys (Bronze / Brass)					Non Metallic Materials				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
HRC	60	100	75	90	130	110	90	100			15	30	25	38	34	320	400 Rm	1050 Rm	55	60
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

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

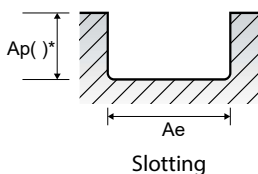
4 FLUTE - SIDE & SLOTTING



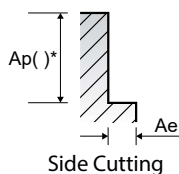
SFM = ft./min. fz = in./tooth
RPM = rev./min. FEED = in./min.

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
							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
	5		0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	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
							SFM(Vc)	350	350	350	350	350	385	385	385	385	385	385	385
							fz	.0002	.0003	.0004	.0006	.0011	.0015	.0018	.0019	.0021	.0023	.0026	.0025
	6-7	Low alloy steel	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	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
							SFM(Vc)	500	500	500	500	500	550	550	550	550	550	550	550
	8-9		0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	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
M	12-13		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
							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
	14.1	Stainless steel	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	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
							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
	14.2		0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	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
							SFM(Vc)	350	350	350	350	350	350	350	350	350	350	350	350
K	15-20	Grey cast iron	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	fz	.0002	.0003	.0005	.0007	.0011	.0019	.0022	.0023	.0024	.0026	.0029	.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
S	31-35	Heat Resistant Super Alloys	0.25D	1.0D	1.0D	0.5D	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
	36-37	Titanium Alloys	0.35D	1.0D	1.0D	0.5D	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
							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

*() : Short length & Neck type



Slotting



Side Cutting

- 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

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



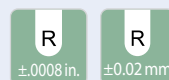
No. of Flutes



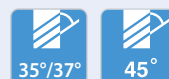
Cutting Conditions



Tolerance of Ball Radius



Helix Angle



Type of Shank



Plain
shank



Weldon
flat

Tool Ends



Square

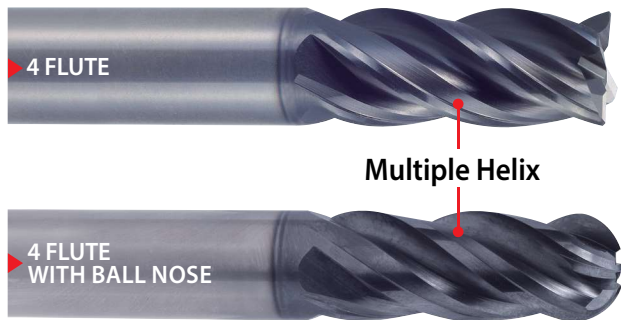
Chamfer



Radius

Ball

V7 Plus A 4 FLUTE END MILLS



Setting a Higher Standard in 4 Flute Design

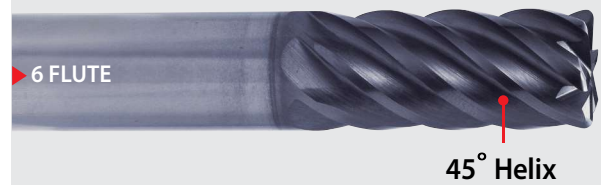
You asked for it. Now you can have state-of-the-art performance in an innovative 4 Flute design. First, you'll notice reduced vibration, optimal chip formation and excellent chip evacuation. And best of all, you'll get longer tool life in heavy cutting conditions. Available in ball nose, too.

NEW

V7 Plus A 6 FLUTE CHIP SPLITTER

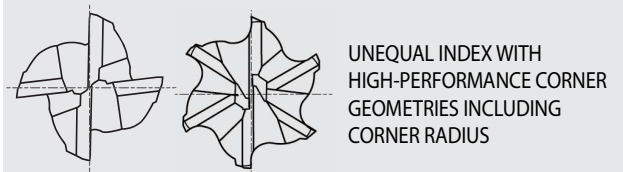


V7 Plus A 6 FLUTE END MILLS



Better by Every Measure

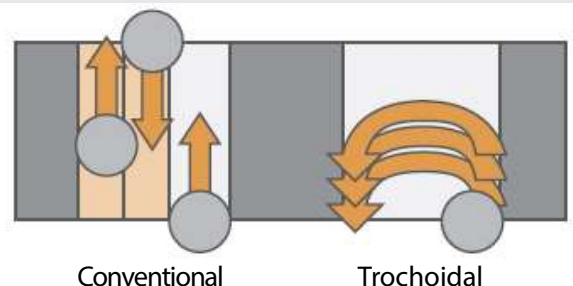
From its higher stability for lower vibration to its improved performance in high-speed and trochoidal milling applications, the V7 Plus A 6 Flute solid carbide, 45-degree helix, was designed with longer tool life and higher productivity in mind.



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





4 FLUTE

V7 Plus A

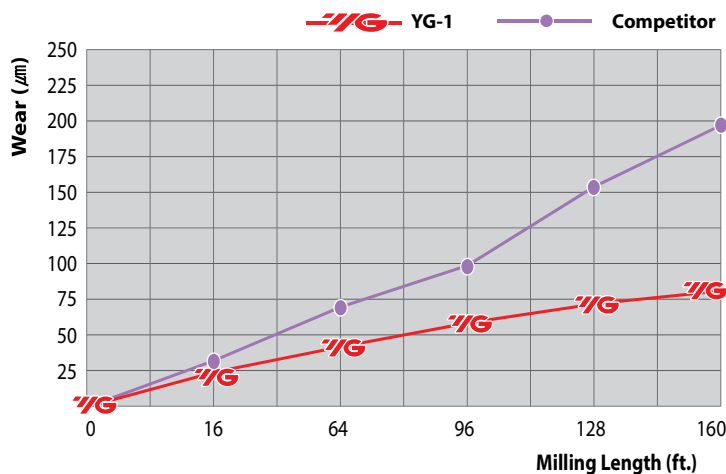
Innovative cutting performance that's not just a chip off the old block.

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

CASE STUDY

4 Flute vs Competitor



	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	