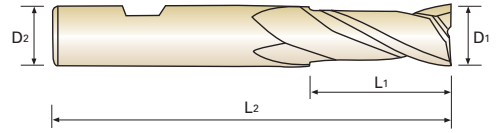
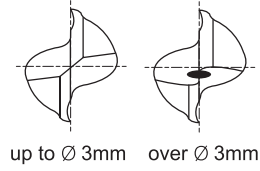


2 FLUTE SHORT LENGTH (Center Cut)



PM 60
2
30°
FLAT

P. 16

GYF99 SERIES

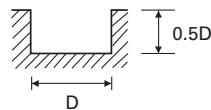
Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
GYF99010	1.0	6	2.5	47
GYF99020	2.0	6	4	48
GYF99030	3.0	6	5	49
GYF99040	4.0	6	7	51
GYF99050	5.0	6	8	52
GYF99060	6.0	6	8	52
GYF99070	7.0	8	10	60
GYF99080	8.0	8	11	61
GYF99090	9.0	10	11	61
GYF99100	10.0	10	13	63
GYF99120	12.0	12	16	73
GYF99140	14.0	12	16	73
GYF99160	16.0	16	19	79
GYF99180	18.0	16	19	79
GYF99200	20.0	20	22	88
GYF99220	22.0	20	22	88
GYF99250	25.0	25	26	102

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0 ~ -0.03	h6

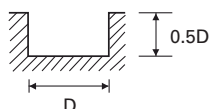
GYF99 SERIES
Only One Coated PM60, 2 FLUTE SHORT (Center Cut)

Material	P															
	Structural Steels Carbon Steels				Structural Steels Carbon Steels Cast Irons				Carbon Steels Alloy Steels Tool Steels				Prehardened Steels Alloy Steels Tool Steels			
Hardness					~ HRc20				HRc20 ~ HRc30				HRc30 ~ HRc35			
Strength	~ 500N/mm ²				500 ~ 800N/mm ²				800 ~ 1000N/mm ²				1000 ~ 1100N/mm ²			
Diameter	RPM	FEED	V _c	F _z	RPM	FEED	V _c	F _z	RPM	FEED	V _c	F _z	RPM	FEED	V _c	F _z
2.0	8400	140	53	0.008	7080	110	44	0.008	5880	95	37	0.008	3780	80	24	0.011
3.0	6000	190	57	0.016	4920	160	46	0.016	4020	140	38	0.017	2760	95	26	0.017
4.0	5160	275	65	0.027	4320	210	54	0.024	3780	190	48	0.025	2400	110	30	0.023
5.0	4680	305	74	0.033	3900	240	61	0.031	3120	220	49	0.035	2040	120	32	0.029
6.0	4200	320	79	0.038	3480	250	66	0.036	2760	230	52	0.042	1740	130	33	0.037
8.0	3120	330	78	0.053	2640	290	66	0.055	2160	240	54	0.056	1380	140	35	0.051
10.0	2520	360	79	0.071	2160	320	68	0.074	1740	275	55	0.079	1080	150	34	0.069
12.0	2160	330	81	0.076	1740	290	66	0.083	1380	250	52	0.091	890	140	34	0.079
14.0	1920	320	84	0.083	1500	250	66	0.083	1200	235	53	0.098	760	130	33	0.086
16.0	1620	320	81	0.099	1380	235	69	0.085	1070	215	54	0.100	670	120	34	0.090
18.0	1380	290	78	0.105	1140	235	64	0.103	950	190	54	0.100	600	120	34	0.100
20.0	1140	265	72	0.116	940	200	59	0.106	840	180	53	0.107	530	110	33	0.104
22.0	1010	220	70	0.109	850	180	59	0.106	720	150	50	0.104	480	95	33	0.099
25.0	900	185	71	0.103	760	170	60	0.112	590	140	46	0.119	430	90	34	0.105



RPM = rev./min.
FEED = mm/min.
V_c = m/min.
F_z = mm/tooth

Material	P				M			
	Alloy Steels Tool Steels				Stainless Steels			
Hardness	HRc35 ~ HRc40							
Strength	1100 ~ 1300N/mm ²							
Diameter	RPM	FEED	V _c	F _z	RPM	FEED	V _c	F _z
2.0	2400	50	15	0.010	2640	55	17	0.010
3.0	2160	75	20	0.017	2380	85	22	0.018
4.0	1920	90	24	0.023	2110	100	27	0.024
5.0	1620	90	25	0.028	1780	100	28	0.028
6.0	1380	100	26	0.036	1520	110	29	0.036
8.0	1070	100	27	0.047	1180	110	30	0.047
10.0	840	120	26	0.071	920	130	29	0.071
12.0	700	100	26	0.071	770	110	29	0.071
14.0	600	95	26	0.079	660	105	29	0.080
16.0	530	95	27	0.090	580	105	29	0.091
18.0	480	90	27	0.094	530	100	30	0.094
20.0	430	85	27	0.099	470	95	30	0.101
22.0	380	65	26	0.086	420	70	29	0.083
25.0	300	60	24	0.100	330	65	26	0.098



RPM = rev./min.
FEED = mm/min.
V_c = m/min.
F_z = mm/tooth

- A. The ONLY ONE material is based on powder metallurgy that ensures **High Toughness** performance which is one of the advantages of Cobalt HSS.
- B. The ONLY ONE has **Exceptional Wear Resistance** which is another advantage of the micro-grain carbide tools.
- C. The ONLY ONE has **very strong toughness which can bring out better performances also on machines with unstable conditions such as vibration and irregular composition of work materials.**
- D. The ONLY ONE performs better without causing chipping than Normal coated carbide end mills under the same carbide cutting conditions.
- E. Excellent performance for Stainless Steels
Pre-hardened Steels, Carbon steels,
Alloy steels and Cast Iron.

Note Limited performance can occur under the rigid clamping, high speed machining and/or high hardness materials above HRc45.



YG PRODUCT PHILOSOPHY

- A. For whom did we develop 'ONLY ONE'?
 - For every CNC machining center & Conventional milling machine, **for users who pursue to increase productivity.**
 - **'Only One' can replace all of both Coated Solid Carbide & HSS Co8 End Mills.**
- B. It can replace;
 - **Both Coated and uncoated Solid Carbide End Mills.**
 - **Better Tool Life & Cheaper Price than Coated Solid Carbide End Mills.**
 - All of **HSS Co8(M42) End Mills.**
- C. High Technologies applied;
 - YG-1's advanced "Y" coating technology applied, which is an AlCrN based coating
 - 4 flutes and roughers are with multiple helix (from Ø3mm to Ø25mm)

Parameters	HSS Co8	Only One (Coated PM60)	Coated Normal Carbide
Cutting Speed	(↓)	(↑)	(↑)
Toughness		(↑)	(↑)
Price	(↓)(↓) Low	(↓) Medium	(↑) High

- A. The ONLY ONE material is based on powder metallurgy that ensures **High Toughness** performance which is one of the advantages of Cobalt HSS.
- B. The ONLY ONE has **Exceptional Wear Resistance** which is another advantage of the micro-grain carbide tools.
- C. The ONLY ONE has **very strong toughness which can bring out better performances also on machines with unstable conditions such as vibration and irregular composition of work materials.**
- D. The ONLY ONE performs better without causing chipping than Normal coated carbide end mills under the same carbide cutting conditions.
- E. Excellent performance for Stainless Steels
Pre-hardened Steels, Carbon steels,
Alloy steels and Cast Iron.

Note Limited performance can occur under the rigid clamping, high speed machining and/or high hardness materials above HRc45.

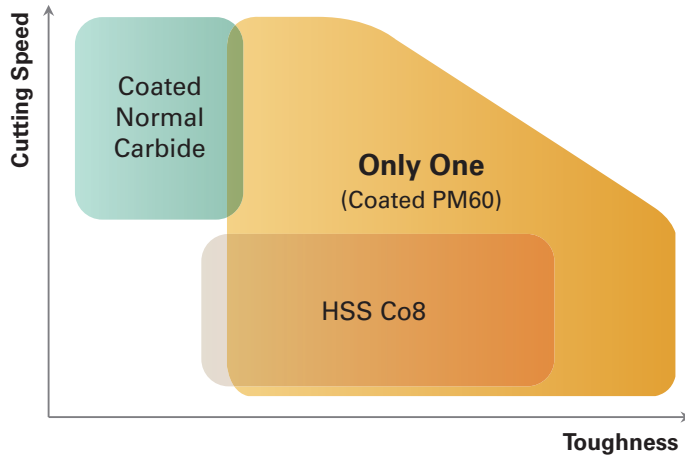


YG PRODUCT PHILOSOPHY

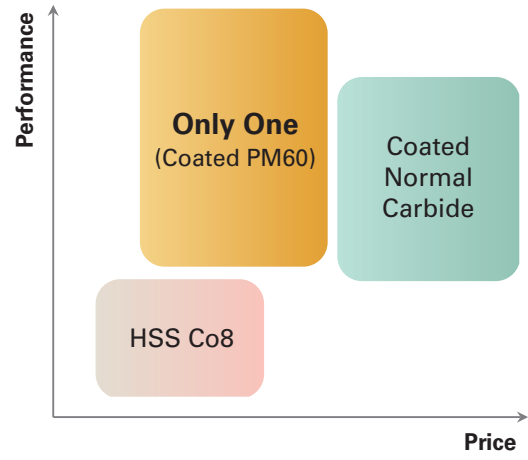
- A. For whom did we develop 'ONLY ONE'?
 - For every CNC machining center & Conventional milling machine, **for users who pursue to increase productivity.**
 - **'Only One' can replace all of both Coated Solid Carbide & HSS Co8 End Mills.**
- B. It can replace;
 - **Both Coated and uncoated Solid Carbide End Mills.**
 - **Better Tool Life & Cheaper Price than Coated Solid Carbide End Mills.**
 - All of **HSS Co8(M42) End Mills.**
- C. High Technologies applied;
 - YG-1's advanced "Y" coating technology applied, which is an AlCrN based coating
 - 4 flutes and roughers are with multiple helix (from Ø3mm to Ø25mm)

Parameters	HSS Co8	Only One (Coated PM60)	Coated Normal Carbide
Cutting Speed	(↓)	(↑)	(↑)
Toughness		(↑)	(↑)
Price	(↓)(↓) Low	(↓) Medium	(↑) High

To protect chipping problems under the unstable machining conditions with vibration,




Higher Toughness than HSS Co8,
Cutting Speed (Vc) is as high as Coated Normal Carbide.



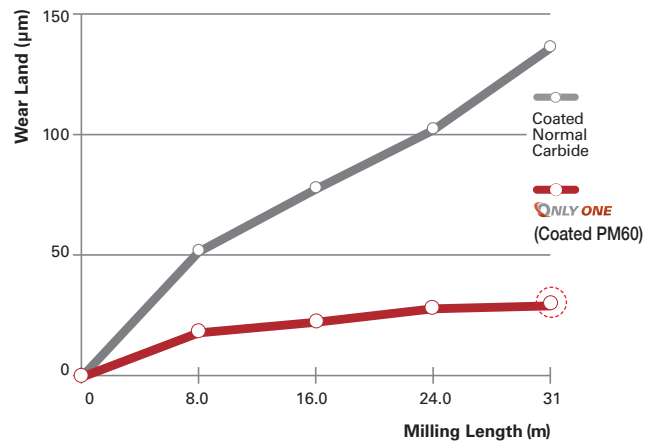
Better performance than HSS Co8,
Better price than Coated Normal Carbide.

YG CASE STUDY 1


- 4 Flute Square End Mill, S45C – Carbide Cutting Condition

Result	Only One Coated PM60 > Coated Normal Carbide	
Tool List	Only One Coated PM60	Coated Normal Carbide
Size	Ø10xØ10x22x72	Ø10xØ10x22x70
Work Material	- JIS : S45C - DIN : C45	- KS : SM45C - AISI : 1045
RPM	2750 rev/min.	
Feed	520 mm/rev.	
Milling Method	Down & Side Cutting 	
Milling Depth	Axial : 3 mm	Radial : 1 mm
Coolant	Wet Cut	
Machine	Machining Center	

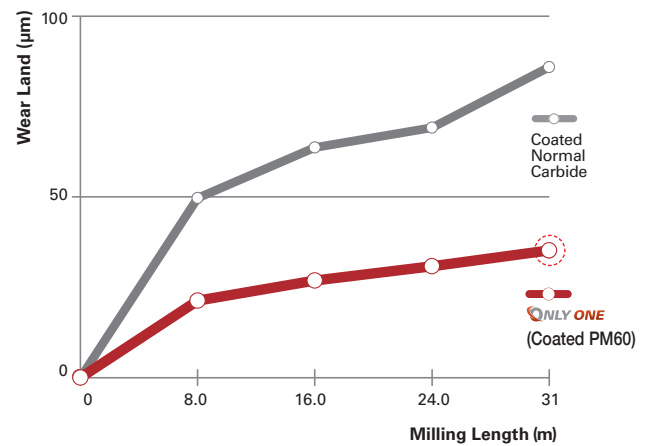
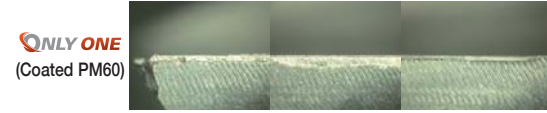
Cutting Edges Condition



• 4 Flute Square End Mill, S45C(HRc30) – Carbide Cutting Condition

Result	Only One Coated PM60 > Coated Normal Carbide	
Tool List	Only One Coated PM60	Coated Normal Carbide
Size	Ø10xØ10x22x72	Ø10xØ10x22x70
Work Material	- JIS : S45C - DIN : C45	- KS : SM45C - AISI : 1045
RPM	2750 rev/min.	
Feed	520 mm/rev.	
Milling Method	Down & Side Cutting 	
Milling Depth	Axial : 10 mm	Radial : 1 mm
Coolant	Wet Cut	
Machine	Machining Center	

Cutting Edges Condition



ICON GUIDE



Powder Metallurgy HSS



No. of Flute



Helix Angle



Tolerance of Ball Radius



Type of Shank













Type of Periphery



Cutting condition of tool see the page 000

◎:Excellent ○:Good

ITEM	MODEL	DESCRIPTION	SIZE		P			M	N		S	PAGE	
					Carbon Steels	Alloy Steels	Hardened Steels	Stainless Steels	Copper	Cast Iron	Aluminum		Titanium
					Min. ~HB225	Max. HB225~352	Max. HRC30~40						
GYF99		PM60, 2 FLUTE SHORT LENGTH (Center Cut)	D1.0	D25.0	◎	◎	○	◎	○	◎		6	
GYG01		PM60, 3 FLUTE SHORT LENGTH (Center Cut)	D1.0	D25.0	◎	◎	○	◎	○	◎		7	
GYF96		PM60, 4 FLUTE SHORT LENGTH (Center Cut)	D1.0	D25.0	◎	◎	○	◎	○	◎		8	
GYG52		PM60, 4 FLUTE MULTIPLE HELIX SHORT LENGTH (Center Cut)	D3.0	D25.0	◎	◎	○	◎	○	◎		9	
GYG02		PM60, 4 FLUTE LONG LENGTH (Center Cut)	D2.0	D25.0	◎	◎	○	◎	○	◎		10	
GYF97		PM60, 2 FLUTE SHORT LENGTH BALL NOSE	R0.5	R12.5	◎	◎	○	◎	○	◎		11	
GYF94		PM60, MULTI FLUTE SHORT LENGTH ROUGHING - FINE (Center Cut)	D6.0	D25.0	◎	◎	○	◎	○	◎		12	
GYF98		PM60, MULTI FLUTE LONG LENGTH ROUGHING - FINE (Center Cut)	D6.0	D25.0	◎	◎	○	◎	○	◎		13	
GYG03		PM60, MULTI FLUTE SHORT LENGTH ROUGHING - COARSE (Center Cut)	D6.0	D25.0	◎	◎	○	◎	○	◎		14	
GYF95		PM60, MULTI FLUTE MULTIPLE HELIX SHORT LENGTH CORNER RADIUS ROUGHING - FINE (Center Cut)	D6.0	D25.0	◎	◎	○	◎	○	◎		15	