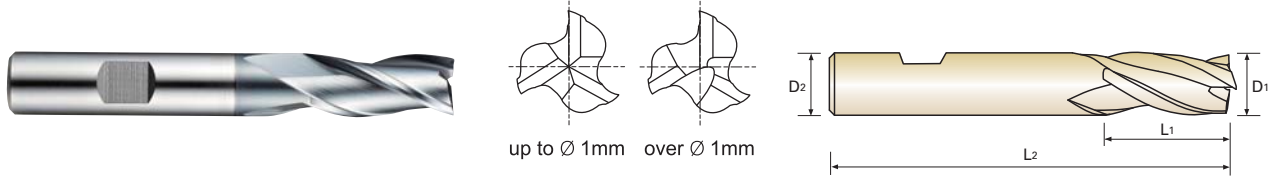


3 FLUTE SHORT LENGTH (Center Cut)

ONLY ONE

COATED **PM60**
END MILLS



P. 17~18

GYG01 SERIES

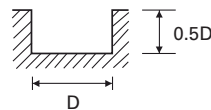
Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
GYG01010	1.0	6	3	47
GYG01020	2.0	6	7	51
GYG01030	3.0	6	8	52
GYG01040	4.0	6	11	55
GYG01050	5.0	6	13	57
GYG01060	6.0	6	13	57
GYG01070	7.0	8	16	66
GYG01080	8.0	8	19	69
GYG01090	9.0	10	19	69
GYG01100	10.0	10	22	72
GYG01120	12.0	12	26	83
GYG01140	14.0	12	26	83
GYG01160	16.0	16	32	92
GYG01180	18.0	16	32	92
GYG01200	20.0	20	38	104
GYG01220	22.0	20	38	104
GYG01250	25.0	25	45	121

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

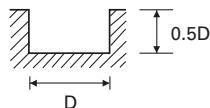
GYG01 SERIES
Only One Coated PM60, 3 FLUTE SHORT (Center Cut) - Slotting

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	Vc	Fz	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz
2.0	7800	85	49	0.004	6600	65	41	0.003	5760	55	36	0.003	3600	40	23	0.004
3.0	5520	120	52	0.007	4680	100	44	0.007	4020	60	38	0.005	2640	55	25	0.007
4.0	5160	170	65	0.011	4320	140	54	0.011	3600	95	45	0.009	2280	60	29	0.009
5.0	4560	190	72	0.014	3840	155	60	0.013	3120	110	49	0.012	2040	75	32	0.012
6.0	4020	275	76	0.023	3360	230	63	0.023	2760	170	52	0.021	1740	110	33	0.021
8.0	3120	290	78	0.031	2640	250	66	0.032	2160	180	54	0.028	1380	120	35	0.029
10.0	2520	300	79	0.040	2160	250	68	0.039	1680	190	53	0.038	1070	140	34	0.044
12.0	2160	330	81	0.051	1740	275	66	0.053	1440	205	54	0.047	890	140	34	0.052
14.0	1920	300	84	0.052	1620	265	71	0.055	1200	190	53	0.053	790	130	35	0.055
16.0	1620	290	81	0.060	1380	250	69	0.060	1070	180	54	0.056	670	120	34	0.060
18.0	1380	290	78	0.070	1070	230	61	0.072	950	180	54	0.063	600	115	34	0.064
20.0	1140	275	72	0.080	950	230	60	0.081	840	170	53	0.067	530	110	33	0.069
22.0	1010	275	70	0.091	880	235	61	0.089	720	180	50	0.083	480	115	33	0.080
25.0	900	290	71	0.107	760	250	60	0.110	590	190	46	0.107	430	120	34	0.093



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
Fz = mm/tooth

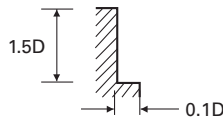
Material	P				M			
	Alloy Steels Tool Steels				Stainless Steels			
Hardness	HRc35 ~ HRc40							
Strength	1100 ~ 1300N/mm ²							
Diameter	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz
2.0	2280	35	14	0.005	2510	40	16	0.005
3.0	2160	55	20	0.008	2380	60	22	0.008
4.0	1800	65	23	0.012	1980	70	25	0.012
5.0	1560	65	25	0.014	1720	70	27	0.014
6.0	1320	90	25	0.023	1450	100	27	0.023
8.0	1070	100	27	0.031	1180	110	30	0.031
10.0	820	110	26	0.045	900	120	28	0.044
12.0	700	110	26	0.052	770	120	29	0.052
14.0	600	100	26	0.056	660	110	29	0.056
16.0	530	100	27	0.063	580	110	29	0.063
18.0	480	95	27	0.066	530	105	30	0.066
20.0	430	95	27	0.074	470	105	30	0.074
22.0	380	100	26	0.088	420	110	29	0.087
25.0	300	100	24	0.111	330	110	26	0.111



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
Fz = mm/tooth

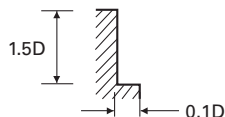
GYG01 SERIES
Only One Coated PM60, 3 FLUTE SHORT (Center Cut) - Side Cutting

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	9840	120	62	0.004	8160	95	51	0.004	6600	80	41	0.004	4560	60	29	0.004
3.0	6960	175	66	0.008	5760	145	54	0.008	4560	90	43	0.007	3240	80	31	0.008
4.0	6240	220	78	0.012	5280	185	66	0.012	4200	130	53	0.010	2760	90	35	0.011
5.0	5640	250	89	0.015	4800	210	75	0.015	3480	150	55	0.014	2400	100	38	0.014
6.0	5040	360	95	0.024	4320	300	81	0.023	3120	230	59	0.025	2160	150	41	0.023
8.0	3840	395	97	0.034	3120	325	78	0.035	2400	240	60	0.033	1560	170	39	0.036
10.0	3000	420	94	0.047	2520	350	79	0.046	1920	250	60	0.043	1200	180	38	0.050
12.0	2520	420	95	0.056	2160	360	81	0.056	1680	275	63	0.055	1080	180	41	0.056
14.0	2160	420	95	0.065	1800	340	79	0.063	1380	250	61	0.060	940	170	41	0.060
16.0	1920	395	97	0.069	1560	330	78	0.071	1200	240	60	0.067	790	170	40	0.072
18.0	1620	370	92	0.076	1380	320	78	0.077	1070	235	61	0.073	700	155	40	0.074
20.0	1500	360	94	0.080	1260	305	79	0.081	940	230	59	0.082	620	150	39	0.081
22.0	1380	370	95	0.089	1140	320	79	0.094	890	235	62	0.088	560	155	39	0.092
25.0	1200	395	94	0.110	1010	330	79	0.109	760	250	60	0.110	500	160	39	0.107



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	2880	50	18	0.006	3170	55	20	0.006
3.0	2640	80	25	0.010	2900	90	27	0.010
4.0	2280	90	29	0.013	2510	100	32	0.013
5.0	2040	90	32	0.015	2240	100	35	0.015
6.0	1800	120	34	0.022	1980	130	37	0.022
8.0	1320	140	33	0.035	1450	155	36	0.036
10.0	1070	150	34	0.047	1180	165	37	0.047
12.0	890	150	34	0.056	980	165	37	0.056
14.0	760	145	33	0.064	840	160	37	0.063
16.0	660	140	33	0.071	730	155	37	0.071
18.0	600	130	34	0.072	660	145	37	0.073
20.0	530	130	33	0.082	580	145	36	0.083
22.0	480	130	33	0.090	530	145	37	0.091
25.0	430	145	34	0.112	470	160	37	0.113



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.

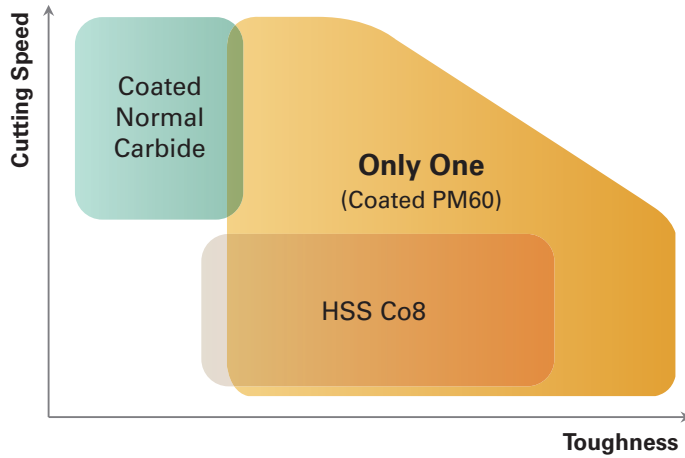


YG PRODUCT PHILOSOPHY

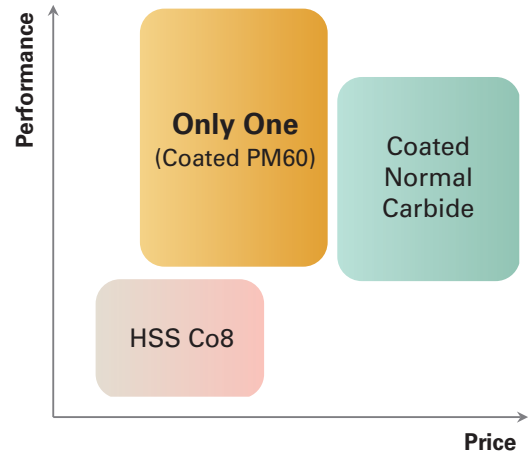
- A. For whom did we develop 'ONLY ONE'?
 - For every CNC machining center & Conventional milling machine, **for users who pursue to increase productivity.**
 - **'Only One' can replace all of both Coated Solid Carbide & HSS Co8 End Mills.**
- B. It can replace;
 - **Both Coated and uncoated Solid Carbide 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.



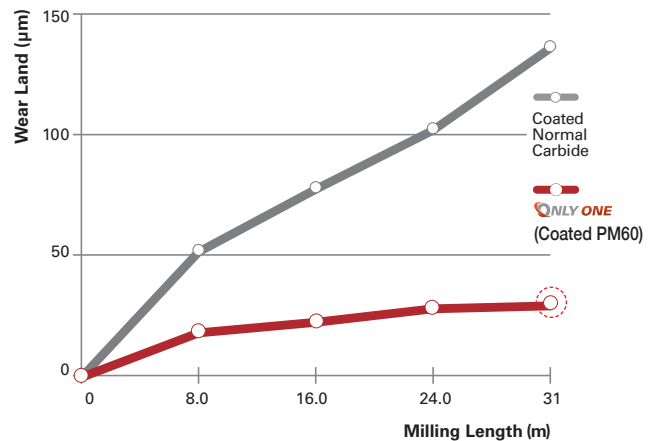
Better performance than HSS Co8,
Better price than Coated Normal Carbide.

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	

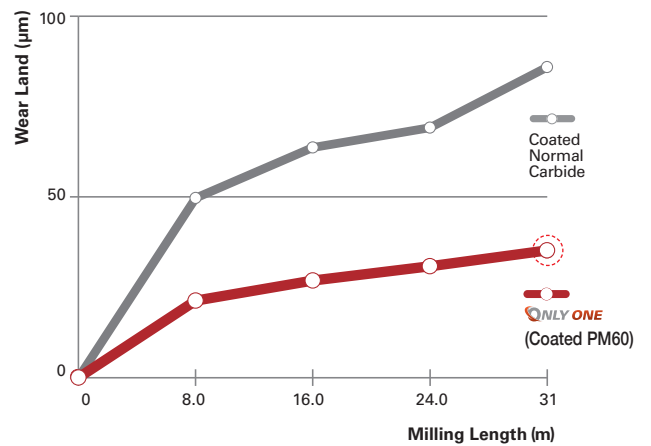
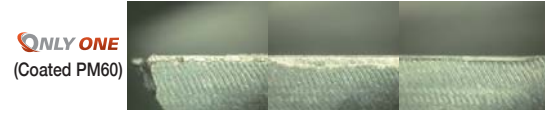
Cutting Edges Condition



• 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		MULTIPLE HELIX 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		MULTIPLE HELIX PM60, MULTI FLUTE MULTIPLE HELIX SHORT LENGTH CORNER RADIUS ROUGHING - FINE (Center Cut)	D6.0	D25.0	◎	◎	○	◎	○	◎		15	