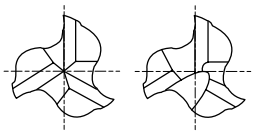
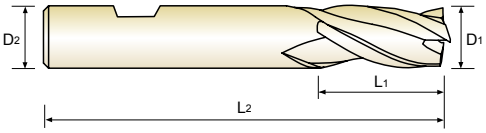
ONLY ONE COATED PM60 END MILLS

FLAT SHANK **GYG01 SERIES**

PM60, 3 FLUTE SHORT LENGTH (Center Cut)

- PM60, 3 Schneiden, kurz, Zentrumschnitt
- Revêtue YG-AlCrN - PM60, 3 dents, série courte (Coupe au centre)
- Rivestita PM60, 3 TAGLIENTI SERIE CORTA (Tagliente al centro)





PM 60 | 3 | 30° | FLAT

p.630-631

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D_1	D_2	L_1	L_2
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

◎ : 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	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend						○	○	○												○	

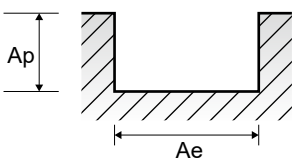
ONLY ONE COATED PM60 END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

GYG01 SERIES — 3 FLUTE - SLOTTING

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

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø) 2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	25.0
P	1	Non-alloy steel	1.0D	0.5D	Vc	49	52	65	72	76	78	79	81	84	81	78	72	70	71
					fz	0.004	0.007	0.011	0.014	0.023	0.031	0.04	0.051	0.052	0.06	0.07	0.08	0.091	0.107
					RPM	7799	5517	5173	4584	4032	3104	2515	2149	1910	1611	1379	1146	1013	904
					FEED	94	116	171	193	278	289	302	329	298	290	290	275	276	290
	2		1.0D	0.5D	Vc	41	44	54	60	63	66	68	66	71	69	61	60	61	60
					fz	0.003	0.007	0.011	0.013	0.023	0.032	0.039	0.053	0.055	0.06	0.072	0.081	0.089	0.11
					RPM	6525	4669	4297	3820	3342	2626	2165	1751	1614	1373	1079	955	883	764
					FEED	59	98	142	149	231	252	253	278	266	247	233	232	236	252
	3-4		1.0D	0.5D	Vc	36	38	45	49	52	54	53	54	53	54	54	53	50	46
					fz	0.003	0.005	0.009	0.012	0.021	0.028	0.038	0.047	0.053	0.056	0.063	0.067	0.083	0.107
					RPM	5730	4032	3581	3119	2759	2149	1687	1432	1205	1074	955	844	723	586
					FEED	52	60	97	112	174	180	192	202	192	180	180	170	180	188
	5		1.0D	0.5D	Vc	23	25	29	32	33	35	34	34	35	34	34	33	33	34
					fz	0.004	0.007	0.009	0.012	0.021	0.029	0.044	0.052	0.055	0.06	0.064	0.069	0.08	0.093
					RPM	3661	2653	2308	2037	1751	1393	1082	902	796	676	601	525	477	433
					FEED	44	56	62	73	110	121	143	141	131	122	115	109	115	121
	6	Low alloy steel	1.0D	0.5D	Vc	41	44	54	60	63	66	68	66	71	69	61	60	61	60
					fz	0.003	0.007	0.011	0.013	0.023	0.032	0.039	0.053	0.055	0.06	0.072	0.081	0.089	0.11
					RPM	6525	4669	4297	3820	3342	2626	2165	1751	1614	1373	1079	955	883	764
					FEED	59	98	142	149	231	252	253	278	266	247	233	232	236	252
	7		1.0D	0.5D	Vc	36	38	45	49	52	54	53	54	53	54	54	53	50	46
					fz	0.003	0.005	0.009	0.012	0.021	0.028	0.038	0.047	0.053	0.056	0.063	0.067	0.083	0.107
					RPM	5730	4032	3581	3119	2759	2149	1687	1432	1205	1074	955	844	723	586
					FEED	52	60	97	112	174	180	192	202	192	180	180	170	180	188
	8		1.0D	0.5D	Vc	23	25	29	32	33	35	34	34	35	34	34	33	33	34
					fz	0.004	0.007	0.009	0.012	0.021	0.029	0.044	0.052	0.055	0.06	0.064	0.069	0.08	0.093
					RPM	3661	2653	2308	2037	1751	1393	1082	902	796	676	601	525	477	433
					FEED	44	56	62	73	110	121	143	141	131	122	115	109	115	121
	9		1.0D	0.3D	Vc	14	20	23	25	25	27	26	26	26	27	27	27	26	24
					fz	0.005	0.008	0.012	0.014	0.023	0.031	0.045	0.052	0.056	0.063	0.066	0.074	0.088	0.111
					RPM	2228	2122	1830	1592	1326	1074	828	690	591	537	477	430	376	306
					FEED	33	51	66	67	92	100	112	108	99	102	95	95	99	102
	10	High alloyed steel, and tool steel	1.0D	0.5D	Vc	41	44	54	60	63	66	68	66	71	69	61	60	61	60
					fz	0.003	0.007	0.011	0.013	0.023	0.032	0.039	0.053	0.055	0.06	0.072	0.081	0.089	0.11
					RPM	6525	4669	4297	3820	3342	2626	2165	1751	1614	1373	1079	955	883	764
					FEED	59	98	142	149	231	252	253	278	266	247	233	232	236	252
	11.1		1.0D	0.5D	Vc	23	25	29	32	33	35	34	34	35	34	34	33	33	34
					fz	0.004	0.007	0.009	0.012	0.021	0.029	0.044	0.052	0.055	0.06	0.064	0.069	0.08	0.093
					RPM	3661	2653	2308	2037	1751	1393	1082	902	796	676	601	525	477	433
					FEED	44	56	62	73	110	121	143	141	131	122	115	109	115	121
	11.2		1.0D	0.3D	Vc	10	14	16	17	17	19	18	18	18	19	19	19	19	16
					fz	0.005	0.009	0.012	0.014	0.024	0.031	0.044	0.051	0.056	0.063	0.064	0.072	0.086	0.111
					RPM	1592	1485	1273	1082	902	756	573	477	409	378	336	302	275	204
					FEED	24	40	46	45	65	70	76	73	69	71	65	65	71	68
M	14.1	Stainless steel	1.0D	0.5D	Vc	41	44	54	60	63	66	68	66	71	69	61	60	61	60
					fz	0.003	0.007	0.011	0.013	0.023	0.032	0.039	0.053	0.055	0.06	0.072	0.081	0.089	0.11
					RPM	6525	4669	4297	3820	3342	2626	2165	1751	1614	1373	1079	955	883	764
					FEED	59	98	142	149	231	252	253	278	266	247	233	232	236	252
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	0.5D	Vc	41	44	54	60	63	66	68	66	71	69	61	60	61	60
					fz	0.003	0.007	0.011	0.013	0.023	0.032	0.039	0.053	0.055	0.06	0.072	0.081	0.089	0.11
					RPM	6525	4669	4297	3820	3342	2626	2165	1751	1614	1373	1079	955	883	764
					FEED	59	98	142	149	231	252	253	278	266	247	233	232	236	252
H	40	Chilled Cast Iron	1.0D	0.3D	Vc	10	14	16	17	17	19	18	18	18	19	19	19	19	16
					fz	0.005	0.009	0.012	0.014	0.024	0.031	0.044	0.051	0.056	0.063	0.064	0.072	0.086	0.111
					RPM	1592	1485	1273	1082	902	756	573	477	409	378	336	302	275	204
					FEED	24	40	46	45	65	70	76	73	69	71	65	65	71	68

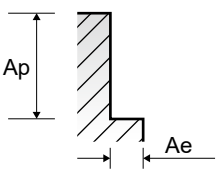


RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

GYG01 SERIES — 3 FLUTE - SIDE CUTTING

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

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø) 2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	25.0
P	1	Non-alloy steel	0.1D	1.5D	Vc	62	66	78	89	95	97	94	95	95	97	92	94	95	94
					fz	0.004	0.008	0.012	0.015	0.024	0.034	0.047	0.056	0.065	0.069	0.076	0.08	0.089	0.11
					RPM	9868	7003	6207	5666	5040	3860	2992	2520	2160	1930	1627	1496	1375	1197
					FEED	118	168	223	255	363	394	422	423	421	399	371	359	367	395
	2		0.1D	1.5D	Vc	51	54	66	75	81	78	79	81	79	78	78	79	79	79
					fz	0.004	0.008	0.012	0.015	0.023	0.035	0.046	0.056	0.063	0.071	0.077	0.081	0.094	0.109
					RPM	8117	5730	5252	4775	4297	3104	2515	2149	1796	1552	1379	1257	1143	1006
					FEED	97	138	189	215	297	326	347	361	339	331	319	306	322	329
	3-4		0.1D	1.5D	Vc	41	43	53	55	59	60	60	63	61	60	61	59	62	60
					fz	0.004	0.007	0.01	0.014	0.025	0.033	0.043	0.055	0.06	0.067	0.073	0.082	0.088	0.11
					RPM	6525	4562	4218	3501	3130	2387	1910	1671	1387	1194	1079	939	897	764
					FEED	78	96	127	147	235	236	246	276	250	240	236	231	237	252
	5		0.1D	1.5D	Vc	29	31	35	38	41	39	38	41	41	40	40	39	39	39
					fz	0.004	0.008	0.011	0.014	0.023	0.036	0.05	0.056	0.06	0.072	0.074	0.081	0.092	0.107
					RPM	4615	3289	2785	2419	2175	1552	1210	1088	932	796	707	621	564	497
					FEED	55	79	92	102	150	168	181	183	168	172	157	151	156	159
	6	Low alloy steel	0.1D	1.5D	Vc	51	54	66	75	81	78	79	81	79	78	78	79	79	79
					fz	0.004	0.008	0.012	0.015	0.023	0.035	0.046	0.056	0.063	0.071	0.077	0.081	0.094	0.109
					RPM	8117	5730	5252	4775	4297	3104	2515	2149	1796	1552	1379	1257	1143	1006
					FEED	97	138	189	215	297	326	347	361	339	331	319	306	322	329
	7		0.1D	1.5D	Vc	41	43	53	55	59	60	60	63	61	60	61	59	62	60
					fz	0.004	0.007	0.01	0.014	0.025	0.033	0.043	0.055	0.06	0.067	0.073	0.082	0.088	0.11
					RPM	6525	4562	4218	3501	3130	2387	1910	1671	1387	1194	1079	939	897	764
					FEED	78	96	127	147	235	236	246	276	250	240	236	231	237	252
	8		0.1D	1.5D	Vc	29	31	35	38	41	39	38	41	41	40	40	39	39	39
					fz	0.004	0.008	0.011	0.014	0.023	0.036	0.05	0.056	0.06	0.072	0.074	0.081	0.092	0.107
					RPM	4615	3289	2785	2419	2175	1552	1210	1088	932	796	707	621	564	497
					FEED	55	79	92	102	150	168	181	183	168	172	157	151	156	159
	9		0.05D	1.5D	Vc	18	25	29	32	34	33	34	34	33	33	34	33	33	34
					fz	0.006	0.01	0.013	0.015	0.022	0.035	0.047	0.056	0.064	0.071	0.072	0.082	0.09	0.112
					RPM	2865	2653	2308	2037	1804	1313	1082	902	750	657	601	525	477	433
					FEED	52	80	90	92	119	138	153	152	144	140	130	129	129	145
	10	High alloyed steel, and tool steel	0.1D	1.5D	Vc	51	54	66	75	81	78	79	81	79	78	78	79	79	79
					fz	0.004	0.008	0.012	0.015	0.023	0.035	0.046	0.056	0.063	0.071	0.077	0.081	0.094	0.109
					RPM	8117	5730	5252	4775	4297	3104	2515	2149	1796	1552	1379	1257	1143	1006
					FEED	97	138	189	215	297	326	347	361	339	331	319	306	322	329
	11.1		0.1D	1.5D	Vc	29	31	35	38	41	39	38	41	41	40	40	39	39	39
					fz	0.004	0.008	0.011	0.014	0.023	0.036	0.05	0.056	0.06	0.072	0.074	0.081	0.092	0.107
					RPM	4615	3289	2785	2419	2175	1552	1210	1088	932	796	707	621	564	497
					FEED	55	79	92	102	150	168	181	183	168	172	157	151	156	159
	11.2		0.05D	1.5D	Vc	13	17	20	22	24	23	24	23	23	23	24	23	23	24
					fz	0.006	0.01	0.014	0.015	0.022	0.036	0.047	0.056	0.063	0.072	0.071	0.081	0.088	0.111
					RPM	2069	1804	1592	1401	1273	915	764	610	523	458	424	366	333	306
					FEED	37	54	67	63	84	99	108	102	99	99	90	89	88	102
M	14.1	Stainless steel	0.1D	1.5D	Vc	20	27	32	35	37	36	37	37	37	37	37	36	37	37
					fz	0.006	0.01	0.013	0.015	0.022	0.036	0.047	0.056	0.063	0.071	0.073	0.083	0.091	0.113
					RPM	3183	2865	2546	2228	1963	1432	1178	981	841	736	654	573	535	471
					FEED	57	86	99	100	130	155	166	165	159	157	143	143	146	160
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.1D	1.5D	Vc	51	54	66	75	81	78	79	81	79	78	78	79	79	79
					fz	0.004	0.008	0.012	0.015	0.023	0.035	0.046	0.056	0.063	0.071	0.077	0.081	0.094	0.109
					RPM	8117	5730	5252	4775	4297	3104	2515	2149	1796	1552	1379	1257	1143	1006
					FEED	97	138	189	215	297	326	347	361	339	331	319	306	322	329
H	40	Chilled Cast Iron	0.05D	1.5D	Vc	13	17	20	22	24	23	24	23	23	23	24	23	23	24
					fz	0.006	0.01	0.014	0.015	0.022	0.036	0.047	0.056	0.063	0.072	0.071	0.081	0.088	0.111
					RPM	2069	1804	1592	1401	1273	915	764	610	523	458	424	366	333	306
					FEED	37	54	67	63	84	99	108	102	99	99	90	89	88	102



SELECTION GUIDE

YG MILLING TOOLS

COATED PM60
ONLY ONE
END MILLS

Perfect solution to protect Carbide chipping problems under vibrations

Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P 628

SERIES	GYG77 GYF97	GYG72 GYF99	GYG01
FLUTE	2	2	3
HELIX ANGLE	30°	30°	30°
CUTTING EDGE SHAPE	BALL NOSE	SQUARE	SQUARE
SIZE MIN	R0.5	D1.0	D1.0
SIZE MAX	R12.5	D25.0	D25.0
PAGE	618	619	620
	SHORT LENGTH	SHORT LENGTH	SHORT LENGTH (Center Cut)
	Y-Coating	Y-Coating	Y-Coating

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc			
P	1	Non-alloy steel	About 0.15% C	Annealed	125		◎	◎	◎
	2		About 0.45% C	Annealed	190	13	◎	◎	◎
	3		About 0.45% C	Quenched & Tempered	250	25	◎	◎	◎
	4		About 0.75% C	Annealed	270	28	◎	◎	◎
	5		About 0.75% C	Quenched & Tempered	300	32	◎	◎	◎
	6	Low alloy steel		Annealed	180	10	◎	◎	◎
	7			Quenched & Tempered	275	29	◎	◎	◎
	8			Quenched & Tempered	300	32	◎	◎	◎
	9			Quenched & Tempered	350	38	○	○	○
	10	High alloyed steel, and tool steel		Annealed	200	15	◎	◎	◎
	11			Quenched & Tempered	325	35	○	○	○
M	12	Stainless steel	Ferritic / Martensitic	Annealed	200	15	◎	◎	◎
	13		Martensitic	Quenched & Tempered	240	23	◎	◎	◎
	14		Austenitic		180	10	◎	◎	◎
K	15	Grey cast iron	Pearlitic / ferritic		180	10	◎	◎	◎
	16		Pearlitic (Martensitic)		260	26	◎	◎	◎
	17	Nodular cast iron	Ferritic		160	3	◎	◎	◎
	18		Pearlitic		250	25	◎	◎	◎
	19	Malleable cast iron	Ferritic		130		◎	◎	◎
	20		Pearlitic		230	21	◎	◎	◎
N	21	Aluminum-wrought alloy	Not Curable		60				
	22		Curable	Hardened	100				
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable		75				
	24		≤ 12% Si, Curable	Hardened	90				
	25		> 12% Si, Not Curable		130				
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%		110		○	○	○
	27		CuZn, CuSnZn (Brass)		90		○	○	○
	28		CuSn, lead-free copper and electrolytic copper		100		○	○	○
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic						
	30		Rubber, Wood, etc.						
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15			
	32			Cured	280	30			
	33		Ni or Co Based	Annealed	250	25			
	34			Cured	350	38			
	35			Cast	320	34			
	36	Titanium Alloys	Pure Titanium		400 Rm				
	37		Alpha + Beta Alloys	Hardened	1050 Rm				
H	38	Hardened steel		Hardened	550	55			
	39			Hardened	630	60			
	40	Chilled Cast Iron		Cast	400	42	○	○	○
	41	Hardened Cast Iron		Hardened	550	55			