

HSS-PM, 2 FLUTE LONG LENGTH BALL NOSE

- HSS-PM, 2 SCHNEIDEN LANG STIRNRADIUS
- FRAISES HSS-PM, 2 DENTS À BOUT HÉMISPHERIQUE, SÉRIE LONGUE
- 2 TAGLIENTI, SERIE LUNGA, HSS-PM, SEMISFERICA

- ▶ Designed to machine carbon steels, alloyed steels, stainless steels.
- ▶ Designed for milling of radius bottom slots, fillets and special contours.
- ▶ YG-1's new developed TANK-POWER Coating suitable for high speed cutting.
- ▶ Geeignet zum Fräsen von Stahl, legiertem Stahl und rostfreier Stahl.
- ▶ Entworfen zum Fräsen von Nuten mit Radien, Rippen und speziellen Konturen.
- ▶ Neuentwickelte Beschichtung für Hochgeschwindigkeitsfräsen.



HSS PM
DIN 1889
2
30°
R ±0.02
DIN 1835B
P.654~655

Unit : mm

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiAIN based	R(±0.02)				
E9A32020	GAA32020	R1.0	2.0	6	7	54
E9A32030	GAA32030	R1.5	3.0	6	8	56
E9A32040	GAA32040	R2.0	4.0	6	11	63
E9A32050	GAA32050	R2.5	5.0	6	13	68
E9A32060	GAA32060	R3.0	6.0	6	13	68
E9A32070	GAA32070	R3.5	7.0	10	16	80
E9A32080	GAA32080	R4.0	8.0	10	19	88
E9A32090	GAA32090	R4.5	9.0	10	19	88
E9A32100	GAA32100	R5.0	10.0	10	22	95
E9A32120	GAA32120	R6.0	12.0	12	26	110
E9A32140	GAA32140	R7.0	14.0	12	26	110
E9A32160	GAA32160	R8.0	16.0	16	32	123
E9A32180	GAA32180	R9.0	18.0	16	32	123
E9A32200	GAA32200	R10.0	20.0	20	38	141
E9A32220	GAA32220	R11.0	22.0	20	38	141
E9A32250	GAA32250	R12.5	25.0	25	45	166

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

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	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	130	21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	○	◎	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	

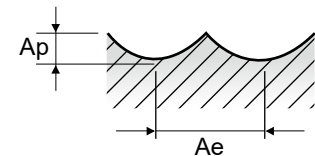
ISO Material Description	N					S										H					
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	55	60	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						○	○	○													

E9940 , E9A32 SERIES 2 FLUTE BALL NOSE

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

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)								
						3.0	4.0	6.0	8.0	10.0	12.0	16.0	20.0	25.0
P	1	Non-alloy steel	0.5D	0.2D	Vc	45	50	55	60	55	55	55	60	50
					fz	0.021	0.033	0.05	0.072	0.103	0.11	0.136	0.14	0.148
					RPM	4775	3979	2918	2387	1751	1459	1094	955	637
	2		0.5D	0.2D	Vc	35	40	45	45	45	45	45	45	40
					fz	0.018	0.029	0.043	0.061	0.089	0.092	0.111	0.12	0.13
					RPM	3714	3183	2387	1790	1432	1194	895	716	509
	3-4		0.5D	0.2D	Vc	25	25	30	30	30	30	30	30	25
					fz	0.015	0.024	0.034	0.052	0.07	0.076	0.092	0.099	0.103
					RPM	2653	1989	1592	1194	955	796	597	477	318
	5		0.5D	0.2D	Vc	10	15	15	15	15	15	15	15	15
					fz	0.013	0.023	0.034	0.046	0.068	0.069	0.083	0.094	0.086
RPM		1061			1194	796	597	477	398	298	239	191		
6	0.5D	0.2D	Vc	35	40	45	45	45	45	45	45	40		
			fz	0.018	0.029	0.043	0.061	0.089	0.092	0.111	0.12	0.13		
			RPM	3714	3183	2387	1790	1432	1194	895	716	509		
7	0.5D	0.2D	Vc	25	25	30	30	30	30	30	30	25		
			fz	0.015	0.024	0.034	0.052	0.07	0.076	0.092	0.099	0.103		
			RPM	2653	1989	1592	1194	955	796	597	477	318		
8-9	0.5D	0.2D	Vc	10	15	15	15	15	15	15	15	15		
			fz	0.013	0.023	0.034	0.046	0.068	0.069	0.083	0.094	0.086		
			RPM	1061	1194	796	597	477	398	298	239	191		
10	0.5D	0.2D	Vc	35	40	45	45	45	45	45	45	40		
			fz	0.018	0.029	0.043	0.061	0.089	0.092	0.111	0.12	0.13		
			RPM	3714	3183	2387	1790	1432	1194	895	716	509		
11.1	0.5D	0.2D	Vc	10	15	15	15	15	15	15	15	15		
			fz	0.013	0.023	0.034	0.046	0.068	0.069	0.083	0.094	0.086		
			RPM	1061	1194	796	597	477	398	298	239	191		
M	14.1	Stainless steel	0.5D	0.2D	Vc	15	15	15	15	15	15	15	15	15
					fz	0.014	0.025	0.036	0.049	0.075	0.074	0.091	0.104	0.09
					RPM	1592	1194	796	597	477	398	298	239	191
					FEED	45	60	57	58	72	59	54	50	34
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.5D	0.2D	Vc	35	40	45	45	45	45	45	40	
					fz	0.018	0.029	0.043	0.061	0.089	0.092	0.111	0.12	0.13
					RPM	3714	3183	2387	1790	1432	1194	895	716	509
					FEED	134	185	205	218	255	220	199	172	132

※ The FEED, in long & extra long types, should be reduced by around 50%



SELECTION GUIDE



SERIES	E9940 GA940	E9A32 GAA32	E9936 GA936	E9A29 GAA29
FLUTE	2	2	2	2
HELIX ANGLE	30°	30°	30°	30°
CUTTING EDGE SHAPE	BALL NOSE	BALL NOSE	SQUARE	SQUARE
SIZE MIN	R0.5	R1.0	D1.0	D1.0
SIZE MAX	R12.5	R12.5	D25.0	D25.0
PAGE	640	641	642	643

HSS-PM TANK-POWER END MILLS

High Toughness, for Stainless Steels, Carbon steels, Alloy Steels
For General Application, Rough & Finish

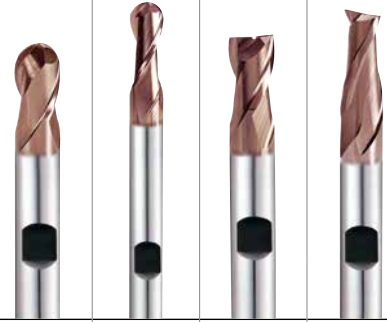


Please visit
globalyg1.com/mat
for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P 654

SHORT LENGTH	LONG LENGTH	SHORT LENGTH	LONG LENGTH
TiAlN based	TiAlN based	TiAlN based	TiAlN based



ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc	E9940	E9A32	E9936	E9A29	
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		Cutting Alloys, PB>1%	110		○	○	○	○	
	27	Copper and Copper Alloys (Bronze / Brass)	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					