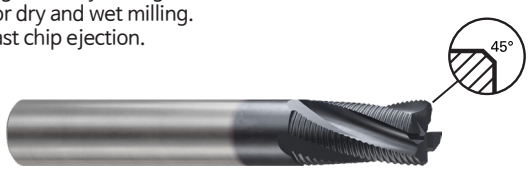
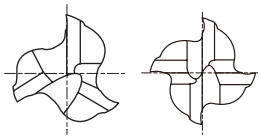
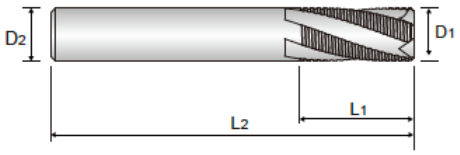
CARBIDE, MULTI FLUTE 20° HELIX ROUGHING - FINE

- ▶ Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- ▶ High velocity milling of hardened steels.
- ▶ For dry and wet milling.
- ▶ Fast chip ejection.







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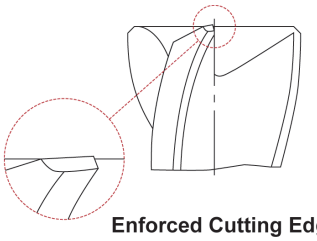
G9J60 SERIES

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Chamfer	No. of Flute
	D1	D2	L1	L2		
G9J60999	6.0	6	16	57	0.38	3
G9J60998	8.0	8	16	63	0.38	3
G9J60997	10.0	10	22	72	0.60	4
G9J60996	12.0	12	26	83	0.60	4
G9J60995	16.0	16	32	92	0.60	4
G9J60994	20.0	20	38	104	0.60	4

Tolerances according to DIN 7160 & 7161

Tolerance range in μm					
Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
h10	0 / - 40	0 / - 48	0 / - 58	0 / - 70	0 / - 84
h5	0 / - 4	0 / - 5	0 / - 6	0 / - 8	0 / - 9



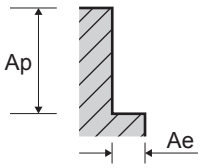
Enforced Cutting Edge

RECOMMENDED CUTTING CONDITIONS

G9J60 SERIES — 3&4 FLUTE ROUGHING - SIDE CUTTING

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

ISO	VDI 3323	Material Description	Ae(mm)	Ap(mm)	Parameter	Diameter (Ø) 6.0	8.0	10.0	12.0	16.0	20.0
P	1-4	Non-alloy steel	0.3D	1.5D	Vc	265	262	260	271	271	271
					fz	0.050	0.067	0.063	0.075	0.100	0.113
					RPM	14040	10440	8280	7200	5400	4320
					FEED	2090	2090	2090	2160	2160	1945
	5		0.3D	1.5D	Vc	210	208	215	204	217	204
					fz	0.023	0.030	0.028	0.033	0.040	0.039
					RPM	11160	8280	6840	5400	4320	3240
					FEED	755	755	755	720	685	505
	6-7	Low alloy steel	0.3D	1.5D	Vc	265	262	260	271	271	271
					fz	0.050	0.067	0.063	0.075	0.100	0.113
					RPM	14040	10440	8280	7200	5400	4320
					FEED	2090	2090	2090	2160	2160	1945
	8-9		0.3D	1.5D	Vc	210	208	215	204	217	204
					fz	0.023	0.030	0.028	0.033	0.040	0.039
					RPM	11160	8280	6840	5400	4320	3240
					FEED	755	755	755	720	685	505
	10	High alloyed steel, and tool steel	0.3D	1.5D	Vc	265	262	260	271	271	271
					fz	0.050	0.067	0.063	0.075	0.100	0.113
					RPM	14040	10440	8280	7200	5400	4320
					FEED	2090	2090	2090	2160	2160	1945
	11.1		0.3D	1.5D	Vc	210	208	215	204	217	204
					fz	0.023	0.030	0.028	0.033	0.040	0.039
					RPM	11160	8280	6840	5400	4320	3240
					FEED	755	755	755	720	685	505
M	14.1	Stainless steel	0.3D	1.5D	Vc	143	143	144	143	149	136
					fz	0.023	0.030	0.028	0.034	0.042	0.038
					RPM	7560	5670	4590	3780	2970	2160
					FEED	515	515	515	515	500	325
K	15-16	Grey cast iron	0.3D	1.5D	Vc	265	262	260	271	271	271
					fz	0.050	0.067	0.063	0.075	0.100	0.113
					RPM	14040	10440	8280	7200	5400	4320
					FEED	2090	2090	2090	2160	2160	1945
	17-18	Nodular cast iron	0.3D	1.5D	Vc	265	262	260	271	271	271
					fz	0.050	0.067	0.063	0.075	0.100	0.113
					RPM	14040	10440	8280	7200	5400	4320
					FEED	2090	2090	2090	2160	2160	1945
	19-20	Malleable cast iron	0.3D	1.5D	Vc	265	262	260	271	271	271
					fz	0.050	0.067	0.063	0.075	0.100	0.113
					RPM	14040	10440	8280	7200	5400	4320
					FEED	2090	2090	2090	2160	2160	1945



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SOLID CARBIDE, END MILLS for General

A highly effective solution
for enhancing productivity and efficiency when cutting various materials

◎ : Excellent ○ : Good

							SERIES	G9F44	G9J56	G9J62
							FLUTE	2	2	2
							HELIX ANGLE	30°	30°	30°
							CUTTING EDGE SHAPE	BALL NOSE	BALL NOSE	BALL NOSE
							SIZE MIN	R1.0	R1.5	R0.25
							SIZE MAX	R6.0	R6.0	R2.0
							PAGE	34	35	36
								SHORT LENGTH	-	-
								X-Coating	X-Coating	X-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	38.1	Hardened steel		Hardened	550	55		◎	◎	◎
	38.2			Hardened	630	60		○	○	○
	40	Chilled Cast Iron		Cast	400	42		◎	◎	◎
	41	Hardened Cast Iron		Hardened	550	55		○	○	○

Recommended cutting conditions : p.47~58

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G9J57	G9F41	G9J54	G9J61	G9J59	G9F43	G9F42	G9J55	G9J58	G9J60	
4	2	2	2	3	3	4	4	6	4	
30°	30°	30°	30°	30°	30°	30°	30°	45°	20°	
CORNER RADIUS	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	Roughing	
D2.0	D1.0	D3.0	D0.4	D2.0	D1.0	D1.0	D3.0	D6.0	D6.0	
D12.0	D20.0	D12.0	D4.0	D12.0	D20.0	D20.0	D12.0	D16.0	D20.0	
37	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	
-	SHORT LENGTH	-	-	SHORT LENGTH	-	SHORT LENGTH	-	-	FINE	
X-Coating	X-Coating	X-Coating	X-Coating	X-Coating	X-Coating	X-Coating	X-Coating	X-Coating	X-Coating	
										
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