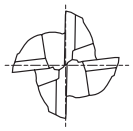
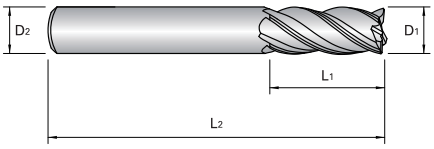
END MILLS for HEAVY CUTTING

NEW CENTURY

CARBIDE, 4 FLUTE MULTIPLE HELIX LONG LENGTH

▶ New Coating enhances heat and oxidation resistance
▶ Multiple Helix Designed for Optimal Chip Formation and Chip Evacuation
▶ Unique Geometry applied to Reduce Vibration





CARBIDE | DIN 6527 | 4 | 35/37° | PLAIN | FLAT | X Coating

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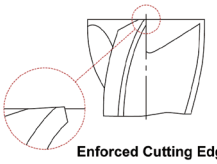

Enforced Cutting Edge

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0 ~ - 0.030	h5

G9J66 G9J67 SERIES

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	D1	D2	L1	L2
G9J66030	G9J67030	3.0	6	8	57
G9J66040	G9J67040	4.0	6	11	57
G9J66050	G9J67050	5.0	6	13	57
G9J66060	G9J67060	6.0	6	13	57
G9J66080	G9J67080	8.0	8	19	63
G9J66100	G9J67100	10.0	10	22	72
G9J66120	G9J67120	12.0	12	26	83
G9J66160	G9J67160	16.0	16	32	92
G9J66200	G9J67200	20.0	20	38	104

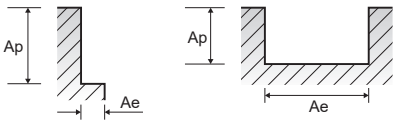
RECOMMENDED CUTTING CONDITIONS

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

G9J64, G9J65, G9J66, G9J67 SERIES — 4 FLUTE MULTIFUL HELIX

ISO	VDI 3323	Material Description	SIDE CUTTING Ae	SIDE CUTTING Ap	SLOTTING Ae	SLOTTING Ap	Parameter	Diameter (Ø) 3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0	20.0
P	1-4	Non-alloy steel	0.3D	1.5D (1.2D)	0.1D	0.8D	Vc	106	106	106	106	106	118	118	118	118
							fz	0.005	0.008	0.011	0.016	0.027	0.038	0.047	0.053	0.065
							RPM	11291	8470	6776	5642	4235	3745	3122	2338	1869
							FEED	228	270	298	361	459	571	588	497	487
	5		0.3D	1.5D (1.2D)	0.1D	0.8D	Vc	75	75	75	75	75	82	82	82	82
							fz	0.005	0.008	0.011	0.016	0.027	0.038	0.047	0.053	0.065
							RPM	7945	5957	4767	3976	2982	2604	2170	1631	1302
							FEED	158	189	210	256	322	396	410	347	340
	6-7	Low alloy steel	0.3D	1.5D (1.2D)	0.1D	0.8D	Vc	106	106	106	106	106	118	118	118	118
							fz	0.005	0.008	0.011	0.016	0.027	0.038	0.047	0.053	0.065
							RPM	11291	8470	6776	5642	4235	3745	3122	2338	1869
							FEED	228	270	298	361	459	571	588	497	487
	8-9		0.3D	1.5D (1.2D)	0.1D	0.8D	Vc	75	75	75	75	75	82	82	82	82
							fz	0.005	0.008	0.011	0.016	0.027	0.038	0.047	0.053	0.065
							RPM	7945	5957	4767	3976	2982	2604	2170	1631	1302
							FEED	158	189	210	256	322	396	410	347	340
	10 - 11.1	High alloyed steel, and tool steel	0.3D	1.5D (1.2D)	0.1D	0.8D	Vc	45	45	45	45	45	49	49	49	49
							fz	0.003	0.006	0.008	0.011	0.019	0.027	0.032	0.037	0.045
							RPM	4753	3563	2849	2380	1785	1561	1302	973	777
							FEED	56	84	91	105	137	168	168	144	140
M	12-13	Stainless steel	0.1D	1.5D (1.2D)	0.1D	0.8D	Vc	104	104	104	104	104	104	104	104	104
							fz	0.004	0.006	0.009	0.013	0.022	0.034	0.039	0.045	0.055
							RPM	10990	8246	6594	5495	4123	3297	2751	2058	1652
							FEED	175	200	238	287	364	448	427	371	364
	14.1		0.3D	1.5D (1.2D)	0.1D	0.8D	Vc	74	74	74	74	74	74	74	74	74
							fz	0.005	0.008	0.013	0.018	0.028	0.048	0.055	0.062	0.077
							RPM	7875	5908	4725	3934	2954	2359	1967	1477	1183
							FEED	158	189	245	284	329	455	434	368	364
	14.2		0.3D	1.5D (1.2D)	0.1D	0.8D	Vc	67	67	67	67	67	67	67	67	67
							fz	0.005	0.008	0.013	0.018	0.028	0.048	0.055	0.062	0.076
							RPM	7056	5292	4235	3528	2646	2114	1764	1323	1057
							FEED	140	168	221	256	298	406	389	329	322
K	15-16	Grey cast iron	0.3D	1.5D (1.2D)	0.1D	0.8D	Vc	78	78	78	78	78	86	86	86	86
							fz	0.006	0.01	0.014	0.02	0.034	0.048	0.058	0.065	0.081
							RPM	8316	6237	4991	4158	3122	2744	2282	1715	1372
							FEED	200	249	280	333	424	525	529	445	445
	17-18	Nodular cast iron	0.3D	1.5D (1.2D)	0.1D	0.8D	Vc	78	78	78	78	78	86	86	86	86
							fz	0.006	0.01	0.014	0.02	0.034	0.048	0.058	0.065	0.081
							RPM	8316	6237	4991	4158	3122	2744	2282	1715	1372
							FEED	200	249	280	333	424	525	529	445	445
	19-20	Malleable cast iron	0.3D	1.5D (1.2D)	0.1D	0.8D	Vc	78	78	78	78	78	86	86	86	86
							fz	0.006	0.01	0.014	0.02	0.034	0.048	0.058	0.065	0.081
							RPM	8316	6237	4991	4158	3122	2744	2282	1715	1372
							FEED	200	249	280	333	424	525	529	445	445

*( ) : Short length



SOLID CARBIDE, END MILLS for Heavy Cutting

Unique geometry design reduces vibration
when machining versatile materials
such as steels, alloy steels, stainless steels. etc

◎ : Excellent ○ : Good

SERIES	G9J64 G9J65	G9J66 G9J67
FLUTE	4	4
HELIX ANGLE	35°/37°	35°/37°
CUTTING EDGE SHAPE	SQUARE	SQUARE
SIZE MIN	D3.0	D3.0
SIZE MAX	D20.0	D20.0
PAGE	61	62
	SHORT LENGTH	LONG LENGTH
	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.63

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