



X5070 END MILLS

PLAIN SHANK

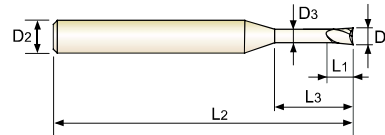
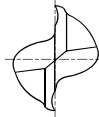
G8A45 SERIES

CARBIDE, 2 FLUTE for RIB PROCESSING

- VOLLHARTMETALL, 2 SCHNEIDEN für SCHMALE RIPPEN
- ① Fraise carbure, 2 dents pour usinage de rainure
- ② TAGLIANTI PER NERVATURE

- ▶ Designed to machine high hardened materials.
- ▶ Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- ▶ Excellent workpiece finish.
- ▶ Designed for high precision milling operation.
- ▶ Higher wear-resistance.

- ▶ Geeignet zum Fräsen hochgehärteter Stähle.
- ▶ Geeignet zum Trockenfräsen und HSC-Fräsen dank neuentwickeltem Material und Beschichtung.
- ▶ Excellente Werkstückoberflächen.
- ▶ Geeignet für hochpräzises Fräsen.
- ▶ Höhere Verschleißfestigkeit.



P,151~152

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
G8A45863	0.1	4	0.15	0.3	45	0.085
G8A45864	0.1	4	0.15	0.5	45	0.085
G8A45002	0.2	4	0.3	0.5	45	0.17
G8A45815	0.2	4	0.3	1	45	0.17
G8A45816	0.2	4	0.3	1.5	45	0.17
G8A45003	0.3	4	0.45	1	45	0.27
G8A45844	0.3	4	0.45	1.5	45	0.27
G8A45817	0.3	4	0.45	2	45	0.27
G8A45818	0.3	4	0.45	3	45	0.27
G8A45842	0.3	4	0.45	4	45	0.27
G8A45843	0.4	4	0.6	1	45	0.37
G8A45004	0.4	4	0.6	2	45	0.37
G8A45984	0.4	4	0.6	3	45	0.37
G8A45985	0.4	4	0.6	4	45	0.37
G8A45986	0.4	4	0.6	5	45	0.37
G8A45005	0.5	4	0.7	2	45	0.45
G8A45861	0.5	4	0.7	2.5	45	0.45
G8A45988	0.5	4	0.7	4	45	0.45
G8A45989	0.5	4	0.7	6	45	0.45
G8A45990	0.5	4	0.7	8	45	0.45
G8A45006	0.6	4	0.9	2	45	0.55
G8A45860	0.6	4	0.9	3	45	0.55



Due to the characteristics of the blue decoration layer, it might be erased during short term use and the color layer might not be uniformed. However, it doesn't affect the performance of the tool.

▶ NEXT PAGE

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0 ~ - 0.012	h5

◎ : 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																					
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																					
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		◎	◎	○	◎

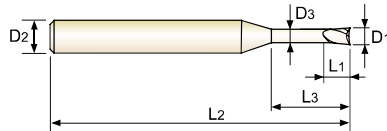
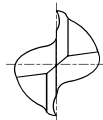


CARBIDE, 2 FLUTE for RIB PROCESSING

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- **Fraise carbure, 2 dents pour usinage de rainure**
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P,151~152

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
G8A45991	0.6	4	0.9	4	45	0.55
G8A45992	0.6	4	0.9	6	45	0.55
G8A45993	0.6	4	0.9	8	45	0.55
G8A45819	0.6	4	0.9	10	45	0.55
G8A45862	0.8	4	1.2	2	45	0.75
G8A45008	0.8	4	1.2	4	45	0.75
G8A45908	0.8	4	1.2	6	45	0.75
G8A45909	0.8	4	1.2	8	45	0.75
G8A45994	0.8	4	1.2	10	45	0.75
G8A45995	0.8	4	1.2	12	45	0.75
G8A45996	1.0	4	1.5	4	45	0.95
G8A45010	1.0	4	1.5	6	45	0.95
G8A45912	1.0	4	1.5	8	45	0.95
G8A45913	1.0	4	1.5	10	45	0.95
G8A45914	1.0	4	1.5	12	45	0.95
G8A45997	1.0	4	1.5	16	50	0.95
G8A45998	1.0	4	1.5	20	55	0.95
G8A45012	1.2	4	1.8	6	45	1.15
G8A45915	1.2	4	1.8	8	45	1.15
G8A45916	1.2	4	1.8	10	45	1.15
G8A45917	1.2	4	1.8	12	45	1.15
G8A45999	1.2	4	1.8	16	50	1.15

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Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0 ~ - 0.012	h5

◎ : 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		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											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																		◎	◎	○	◎



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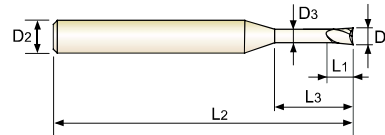
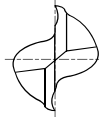
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P,151~152

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
G8A45015	1.5	4	2.3	6	45	1.45
G8A45923	1.5	4	2.3	8	45	1.45
G8A45924	1.5	4	2.3	10	45	1.45
G8A45925	1.5	4	2.3	12	45	1.45
G8A45926	1.5	4	2.3	14	50	1.45
G8A45927	1.5	4	2.3	16	50	1.45
G8A45928	1.5	4	2.3	18	55	1.45
G8A45810	1.5	4	2.3	20	55	1.45
G8A45958	2.0	4	3.0	6	45	1.95
G8A45020	2.0	4	3.0	8	45	1.95
G8A45959	2.0	4	3.0	10	45	1.95
G8A45960	2.0	4	3.0	12	45	1.95
G8A45961	2.0	4	3.0	14	50	1.95
G8A45962	2.0	4	3.0	16	50	1.95
G8A45963	2.0	4	3.0	18	55	1.95
G8A45964	2.0	4	3.0	20	55	1.95
G8A45966	2.0	4	3.0	25	60	1.95
G8A45814	2.0	4	3.0	30	70	1.95
G8A45975	3.0	6	4.5	10	45	2.85
G8A45976	3.0	6	4.5	12	45	2.85
G8A45977	3.0	6	4.5	14	50	2.85
G8A45978	3.0	6	4.5	16	55	2.85



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▶ NEXT PAGE

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0 ~ - 0.012	h5

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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																					
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				
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HRC																					
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
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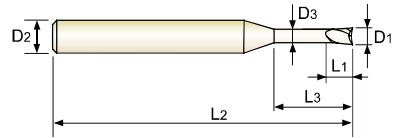
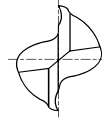


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P,151~152

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
G8A45979	3.0	6	4.5	18	55	2.85
G8A45980	3.0	6	4.5	20	60	2.85
G8A45981	3.0	6	4.5	25	65	2.85
G8A45832	3.0	6	4.5	30	70	2.85
G8A45833	3.0	6	4.5	35	80	2.85
G8A45983	3.0	6	4.5	40	90	2.85
G8A45040	4.0	6	6	12	50	3.85
G8A45801	4.0	6	6	16	60	3.85
G8A45802	4.0	6	6	20	60	3.85
G8A45803	4.0	6	6	25	70	3.85
G8A45834	4.0	6	6	30	70	3.85
G8A45835	4.0	6	6	35	80	3.85
G8A45836	4.0	6	6	40	90	3.85
G8A45837	4.0	6	6	45	90	3.85
G8A45838	4.0	6	6	50	100	3.85

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0 ~ - 0.012	h5

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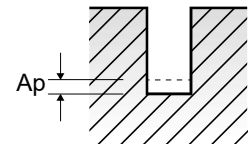
ISO Material Description	P											M			K						
	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25	42	55		
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											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																		◎	◎	○	◎

G8A45 SERIES
2 FLUTE for RIB PROCESSING - SLOTTING

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

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)						
				0.2	0.3	0.4	0.5	0.6	0.8	
P	5	Non-alloy steel	Vc	31	41~47	39~63	40~52	39~66	41~66	
			fz	0.003~0.004	0.004~0.004	0.006~0.006	0.007~0.007	0.008~0.008	0.011~0.011	
			RPM	50000	43000~50000	31400~50000	25650~33000	20900~35200	16150~26400	
			FEED	300~350	330~420	350~590	370~470	330~560	360~590	
	8-9	Low alloy steel	Vc	31	41~47	39~63	40~52	39~66	41~66	
			fz	0.003~0.004	0.004~0.004	0.006~0.006	0.007~0.007	0.008~0.008	0.011~0.011	
			RPM	50000	43000~50000	31400~50000	25650~33000	20900~35200	16150~26400	
			FEED	300~350	330~420	350~590	370~470	330~560	360~590	
	11.1 - 11.2	High alloyed steel, and tool steel	Vc	31	41~47	39~63	40~52	39~66	41~66	
			fz	0.003~0.004	0.004~0.004	0.006~0.006	0.007~0.007	0.008~0.008	0.011~0.011	
			RPM	50000	43000~50000	31400~50000	25650~33000	20900~35200	16150~26400	
			FEED	300~350	330~420	350~590	370~470	330~560	360~590	
H	38.1 - 38.2	Hardened steel	Vc	31	38~44	38~44	37~41	38~41	38~42	
			fz	0.003~0.003	0.003~0.003	0.005~0.005	0.006~0.006	0.007~0.007	0.009~0.009	
			RPM	50000	39900~46200	30500~35200	23750~26000	19900~22000	15200~16700	
			FEED	265~310	265~310	295~340	285~315	260~290	280~310	
	39.1 - 39.2	Hardened steel	Vc	31	23~30	23~31	22~28	22~29	23~29	
			fz	0.002~0.003	0.002~0.003	0.003~0.004	0.004~0.004	0.004~0.004	0.006~0.005	
			RPM	50000	23900~32300	18300~24600	14200~18000	11900~15500	9000~11700	
			FEED	225~265	105~185	120~200	115~130	100~120	110~125	
	40	Chilled Cast Iron	Vc	31	41~47	39~63	40~52	39~66	41~66	
			fz	0.003~0.004	0.004~0.004	0.006~0.006	0.007~0.007	0.008~0.008	0.011~0.011	
			RPM	50000	43000~50000	31400~50000	25650~33000	20900~35200	16150~26400	
			FEED	300~350	330~420	350~590	370~470	330~560	360~590	
41	Hardened Cast Iron	Vc	31	38~44	38~44	37~41	38~41	38~42		
		fz	0.003~0.003	0.003~0.003	0.005~0.005	0.006~0.006	0.007~0.007	0.009~0.009		
		RPM	50000	39900~46200	30500~35200	23750~26000	19900~22000	15200~16700		
		FEED	265~310	265~310	295~340	285~315	260~290	280~310		
				Ap	0.005~0.013	0.004~0.011	0.003~0.020	0.004~0.025	0.005~0.021	0.006~0.028

▶ NEXT PAGE



G8A45 SERIES

2 FLUTE for RIB PROCESSING - SLOTTING

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

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)					
				1.0	1.2	1.5	2.0	3.0	4.0
P	5	Non-alloy steel	Vc	39~59	39~66	43~83	40~66	41~66	40~67
			fz	0.014~0.014	0.017~0.017	0.024~0.024	0.027~0.027	0.064~0.064	0.063~0.064
			RPM	12300~18700	10450~17600	9100~17600	6350~10550	4300~7050	3200~5300
	8-9	Low alloy steel	FEED	350~540	350~590	430~830	340~570	550~900	400~675
			Ap	0.011~0.028	0.025~0.070	0.017~0.077	0.021~0.140	0.056~0.210	0.074~0.280
			Vc	39~59	39~66	43~83	40~66	41~66	40~67
	11.1 - 11.2	High alloyed steel, and tool steel	fz	0.014~0.014	0.017~0.017	0.024~0.024	0.027~0.027	0.064~0.064	0.063~0.064
			RPM	12300~18700	10450~17600	9100~17600	6350~10550	4300~7050	3200~5300
			FEED	350~540	350~590	430~830	340~570	550~900	400~675
H	38.1 - 38.2	Hardened steel	Ap	0.011~0.028	0.025~0.070	0.017~0.077	0.021~0.140	0.056~0.210	0.074~0.280
			Vc	33~36	34~38	33~38	38~42	38~43	38~43
			fz	0.012~0.012	0.014~0.014	0.018~0.018	0.022~0.022	0.056~0.056	0.056~0.056
	39.1 - 39.2	Hardened steel	RPM	10500~11500	9100~10000	7000~8000	6100~6700	3990~4600	3000~3400
			FEED	250~280	250~280	250~280	270~300	445~515	335~380
			Ap	0.008~0.020	0.015~0.042	0.012~0.055	0.015~0.100	0.040~0.150	0.053~0.200
	40	Chilled Cast Iron	Vc	20~25	20~26	20~26	23~30	23~30	23~30
			fz	0.008~0.007	0.009~0.008	0.012~0.01	0.014~0.013	0.022~0.048	0.021~0.048
			RPM	6300~8050	5400~7000	4300~5500	3600~4700	2400~3200	1800~2400
41	Hardened Cast Iron	FEED	100~115	100~115	100~115	100~120	105~310	75~230	
		Ap	0.005~0.012	0.009~0.026	0.007~0.033	0.009~0.060	0.024~0.090	0.032~0.120	
		Vc	39~59	39~66	43~83	40~66	41~66	40~67	
41	Hardened Cast Iron	fz	0.014~0.014	0.017~0.017	0.024~0.024	0.027~0.027	0.064~0.064	0.063~0.064	
		RPM	12300~18700	10450~17600	9100~17600	6350~10550	4300~7050	3200~5300	
		FEED	350~540	350~590	430~830	340~570	550~900	400~675	
41	Hardened Cast Iron	Ap	0.011~0.028	0.025~0.070	0.017~0.077	0.021~0.140	0.056~0.210	0.074~0.280	
		Vc	33~36	34~38	33~38	38~42	38~43	38~43	
		fz	0.012~0.012	0.014~0.014	0.018~0.018	0.022~0.022	0.056~0.056	0.056~0.056	
41	Hardened Cast Iron	RPM	10500~11500	9100~10000	7000~8000	6100~6700	3990~4600	3000~3400	
		FEED	250~280	250~280	250~280	270~300	445~515	335~380	
		Ap	0.008~0.020	0.015~0.042	0.012~0.055	0.015~0.100	0.040~0.150	0.053~0.200	

