

CARBIDE, MULTI FLUTE 45° HELIX LONG LENGTH ROUGHING - FINE

 VOLLHARTMETALL, MULTI SCHNEIDEN 45° RECHTSSPIRALE LANG SCHRUPPFÄRER - FEIN

 Fraise carbure, multi-dents ébauche, hélice 45°, pas fin, longue

 MULTITAGLIENTI, ELICA 45°, PER SGROSSATURA, LUNGA - Bombato fine

- ▶ Ultra micro grain carbide

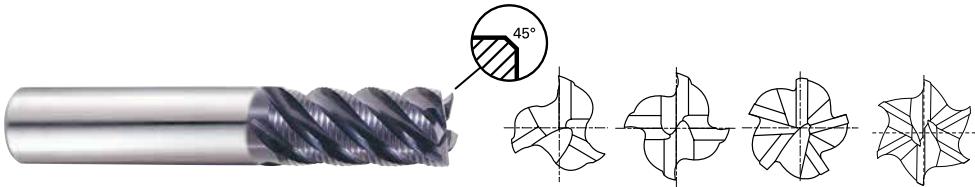
▶ High chip removal and minimizing breakages of cutting edges.

▶ Suitable for low hardness materials(under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steels, etc

▶ Ultra Feinstkorn - Vollhartmetall

▶ Schnelle Spanausfuhr und Minimierung von Abbrechen von Schneidkanten.

▶ zur Bearbeitung von: Werkstoffen bis 45 HRc, rostfreien Stählen, Titan und Nickellegierungen.



CARBIDE

HR

3-6











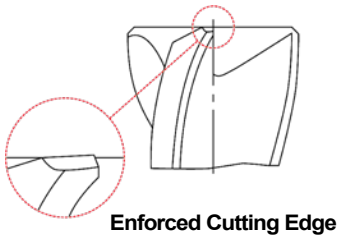
P.436-437

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute	Chamfer
PLAIN	FLAT	h10	h5				
EH919040	EH920040	4.0	6	11	57	3	0.1
EH919050	EH920050	5.0	6	13	57	4	0.13
EH919060	EH920060	6.0	6	16	57	4	0.15
EH919070	EH920070	7.0	8	16	63	4	0.15
EH919080	EH920080	8.0	8	16	63	4	0.18
EH919090	EH920090	9.0	10	19	72	4	0.18
EH919100	EH920100	10.0	10	22	72	4	0.2
EH919120	EH920120	12.0	12	26	83	4	0.2
EH919140	EH920140	14.0	14	26	83	5	0.2
EH919160	EH920160	16.0	16	32	92	5	0.2
EH919200	EH920200	20.0	20	38	104	6	0.2
EH919250	EH920250	25.0	25	45	121	6	0.2

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



◎ : Excellent ○ : Good

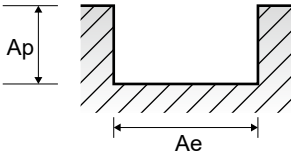
ISO	P										M				K						
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc		13	25	28	32	10	29	32	38	15	35	15	23	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	36	37	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											○	○	○	○	○	◎	◎			○	

EH919, EH920 SERIES

MULTI FLUTES ROUGHING - **SLOTTING**

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

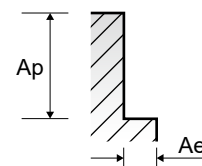
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)								
						4.0	6.0	8.0	10.0	12.0	14.0	16.0	20.0	25.0
P	1-4	Non-alloy steel	1.0D	0.5D	Vc	294	294	292	289	302	299	302	302	338
					fz	0.02	0.022	0.03	0.038	0.045	0.042	0.048	0.045	0.05
					RPM	23396	15597	11618	9199	8011	6798	6008	4806	4304
					FEED	1404	1373	1394	1398	1442	1428	1442	1298	1291
	5	Non-alloy steel	1.0D	0.5D	Vc	234	234	231	239	226	229	241	226	251
					fz	0.009	0.01	0.014	0.016	0.02	0.019	0.019	0.016	0.019
					RPM	18621	12414	9191	7608	5995	5207	4795	3597	3196
					FEED	503	497	515	487	480	495	455	345	364
	6-7	Low alloy steel	1.0D	0.5D	Vc	294	294	292	289	302	299	302	302	338
					fz	0.02	0.022	0.03	0.038	0.045	0.042	0.048	0.045	0.05
					RPM	23396	15597	11618	9199	8011	6798	6008	4806	4304
					FEED	1404	1373	1394	1398	1442	1428	1442	1298	1291
8-9	Low alloy steel	1.0D	0.5D	Vc	234	234	231	239	226	229	241	226	251	
				fz	0.009	0.01	0.014	0.016	0.02	0.019	0.019	0.016	0.019	
				RPM	18621	12414	9191	7608	5995	5207	4795	3597	3196	
				FEED	503	497	515	487	480	495	455	345	364	
10	High alloyed steel, and tool steel	1.0D	0.5D	Vc	294	294	292	289	302	299	302	302	338	
				fz	0.02	0.022	0.03	0.038	0.045	0.042	0.048	0.045	0.05	
11.1 11.2	High alloyed steel, and tool steel	1.0D	0.5D	RPM	23396	15597	11618	9199	8011	6798	6008	4806	4304	
				FEED	1404	1373	1394	1398	1442	1428	1442	1298	1291	
M	14.1	Stainless steel	1.0D	Ø4 ~10:0.25D Ø12~16:0.15D Ø18~25:0.10D	Vc	158	158	158	160	158	158	166	151	170
					fz	0.009	0.01	0.013	0.017	0.02	0.019	0.019	0.015	0.019
					RPM	12573	8382	6287	5093	4191	3592	3302	2403	2165
					FEED	339	335	327	346	335	341	314	216	247
S	31-35	Heat Resistant Super Alloys	1.0D	0.05D	Vc	45	45	45	41	45	40	40	41	47
					fz	0.011	0.012	0.015	0.022	0.024	0.018	0.016	0.015	0.018
					RPM	3581	2387	1790	1305	1194	909	796	653	598
					FEED	118	115	107	115	115	82	64	59	65
S	36-37	Titanium Alloys	1.0D	Ø4 ~10:0.25D Ø12~16:0.15D Ø18~25:0.10D	Vc	158	158	158	160	158	158	166	151	170
					fz	0.009	0.01	0.013	0.017	0.02	0.019	0.019	0.015	0.019
					RPM	12573	8382	6287	5093	4191	3592	3302	2403	2165
					FEED	339	335	327	346	335	341	314	216	247
	40	Chilled Cast Iron	1.0D	0.5D	Vc	234	234	231	239	226	229	241	226	251
					fz	0.009	0.01	0.014	0.016	0.02	0.019	0.019	0.016	0.019
					RPM	18621	12414	9191	7608	5995	5207	4795	3597	3196
					FEED	503	497	515	487	480	495	455	345	364



EH919, EH920 SERIES
MULTI FLUTES ROUGHING - SIDE CUTTING

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

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)								
						4.0	6.0	8.0	10.0	12.0	14.0	16.0	20.0	25.0
P	1-4	Non-alloy steel	0.3D	1.5D	Vc	294	294	292	289	302	299	302	302	338
					fz	0.033	0.037	0.05	0.063	0.075	0.071	0.08	0.075	0.083
					RPM	23396	15597	11618	9199	8011	6798	6008	4806	4304
	5	Non-alloy steel	0.3D	1.5D	FEED	2316	2308	2324	2318	2403	2413	2403	2163	2143
					Vc	234	234	231	239	226	229	241	226	251
					fz	0.015	0.017	0.023	0.028	0.033	0.032	0.032	0.026	0.032
	6-7	Low alloy steel	0.3D	1.5D	RPM	18621	12414	9191	7608	5995	5207	4795	3597	3196
					FEED	838	844	846	852	791	833	767	561	614
	8-9	Low alloy steel	0.3D	1.5D	Vc	294	294	292	289	302	299	302	302	338
					fz	0.033	0.037	0.05	0.063	0.075	0.071	0.08	0.075	0.083
					RPM	23396	15597	11618	9199	8011	6798	6008	4806	4304
	10	High alloyed steel, and tool steel	0.3D	1.5D	FEED	2316	2308	2324	2318	2403	2413	2403	2163	2143
					Vc	234	234	231	239	226	229	241	226	251
					fz	0.015	0.017	0.023	0.028	0.033	0.032	0.032	0.026	0.032
M	11.1 - 11.2	High alloyed steel, and tool steel	0.3D	1.5D	RPM	18621	12414	9191	7608	5995	5207	4795	3597	3196
					FEED	838	844	846	852	791	833	767	561	614
	14.1	Stainless steel	0.04 ~ 10:0.15D Ø12 ~ 16:0.10D Ø18 ~ 25:0.05D	1.5D	Vc	158	158	158	160	158	158	166	151	170
					fz	0.015	0.017	0.023	0.028	0.034	0.032	0.031	0.025	0.032
					RPM	12573	8382	6287	5093	4191	3592	3302	2403	2165
	31-35	Heat Resistant Super Alloys	0.05D	1.0D	FEED	566	570	578	570	570	575	512	360	416
					Vc	45	45	45	41	45	40	40	41	47
					fz	0.018	0.02	0.025	0.037	0.04	0.029	0.028	0.025	0.031
	36-37	Titanium Alloys	0.04 ~ 10:0.15D Ø12 ~ 16:0.10D Ø18 ~ 25:0.05D	1.0D	RPM	3581	2387	1790	1305	1194	909	796	653	598
					FEED	193	191	179	193	191	132	111	98	111
					Vc	158	158	158	160	158	158	166	151	170
S	40	Chilled Cast Iron	0.3D	1.5D	fz	0.015	0.017	0.023	0.028	0.033	0.032	0.032	0.026	0.032
					RPM	18621	12414	9191	7608	5995	5207	4795	3597	3196
					FEED	838	844	846	852	791	833	767	561	614



SELECTION GUIDE

HSS

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END MILLS

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PRO
END MILLS

ItaNox-
POWER
END MILLS

JET-POWER END MILLS

V7 PLUS END MILLS

ALU-POWER
HPC
END MILLS

ALU- POWER END MILLS

D-POWER
GRAPHITE
END MILLS

D-POWER
CFRP
END MILLS

ROUTERS

CRX S END MILLS

K-2 END MILLS

ONLY ONE
COATED PM60
END MILLS

TANK-POWER END MILLS

GENERAL
HSS
END MILLS

MILLING CUTTERS

TECHNICAL DATA



MILLING TOOLS

SOLID CARBIDE

JET-POWER

END MILLS

Exotic materials like Stainless Steels
Nickel alloys and Titanium



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◎: Excellent ○: Good

Recommended cutting conditions : P 426

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			Annealed	250	25			○		
	34		Ni or Co Based	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					

CBN
END MILLS

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END MILLS

i-SMART MODULAR END MILLS

X5070
END MILLS

4G MILL END MILLS

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POWER
END MILLS

**JET-POWER
END MILLS**

V7 PLUS END MILLS

ALU-POWER
HPC
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ALU-POWER END MILLS

D-POWER
GRAPHITE
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CRX S
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TANK-
POWER
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HSS
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MILLING CUTTERS

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