

New products for machining technicians

NEW End milling cutter Type N HSS-E Co 5



- with increasing tapered core
- with irregular pitch

→ Page 13

NEW Powdersteel end milling cutter Type N



- with wave profile

→ Page 14

NEW Powdersteel fine roughing cutter Type HR



- with increasing tapered core

→ Page 27

NEW Powdersteel end milling cutter Type H



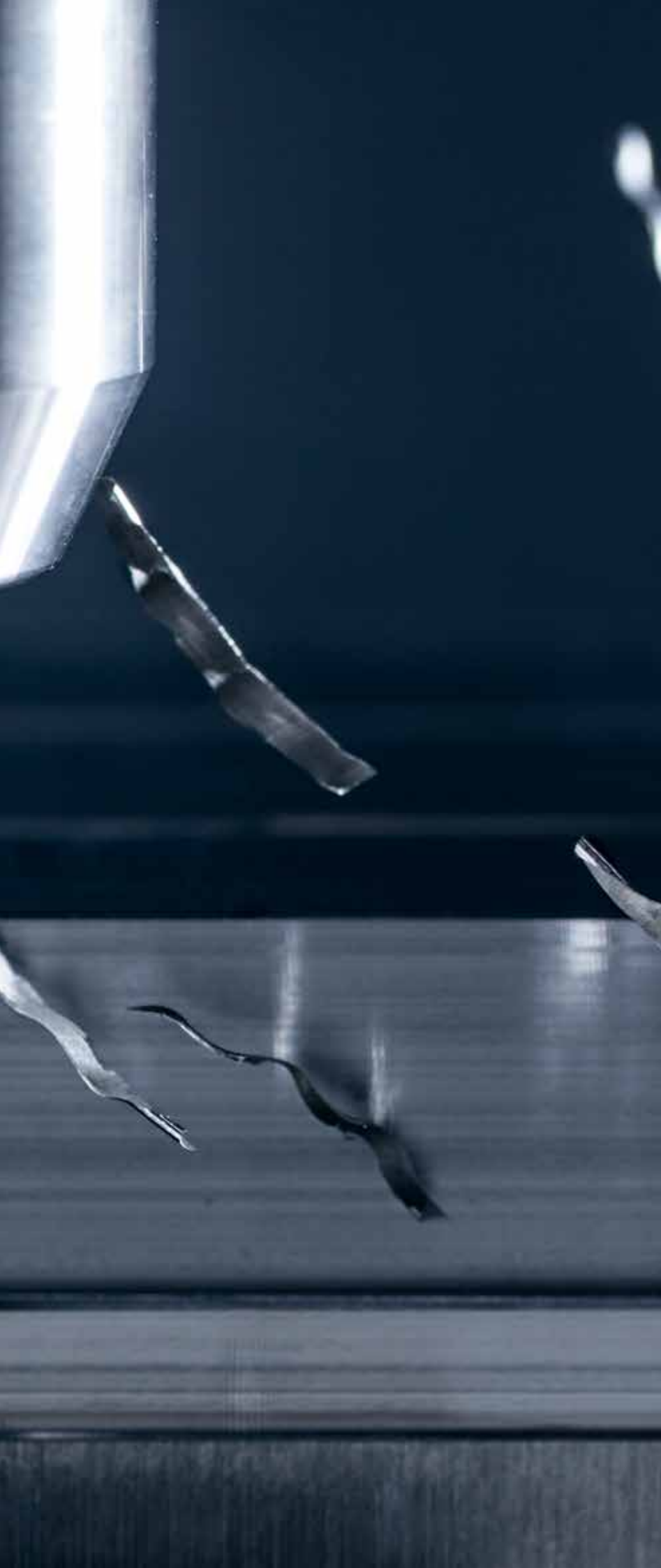
- with irregular pitch
- HSS PM without carbon content
- Combination of cobalt, molybdenum and iron

→ Page 19

NEW New coating in Mastertool Standard program

The new Ti 100 Pro coating is an evolution of the previous Ti 100 XL coating. This enables WNT to offer a new improved coating throughout the Mastertool Standard program.





Drilling	1	HSS drilling
	2	Solid carbide drilling
	3	Indexable insert drilling
	4	Reaming and Countersinking

Threading	5	HSS taps and dies
	6	Circular and Thread Milling
	7	Thread turning

Turning	8	Turning Tools
	9	EcoCut
	10	Grooving Tools
	11	Miniature turning tools

Milling	12	HSS Milling Cutters
	13	Solid Carbide milling cutters
	14	Milling tools with indexable inserts

Tool Holders	15	Rotating toolholders
	16	Tool holders, static + driven tools

Modular Toolholders	17	Spindle Tooling
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	18	Material examples and Article no. index
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WNT MASTERTOOL PERFORMANCE

Premium quality tools for high performance.

The premium quality tools from the **WNT Mastertool Performance** product line have been designed for specific applications and are distinguished by their outstanding performance.

If you make high demands on the performance of your production and want to achieve the very best results, we recommend the Premium tools in this product line.

WNT MASTERTOOL STANDARD

Quality tools for standard applications.

The quality tools of the **WNT Mastertool Standard** product line are high quality, powerful and reliable and enjoy the highest trust of our customers worldwide.

Tools from this product line are the first choice for many standard applications and guarantee optimal results.

Symbol explanation

Shank



Length: extra short / short / medium / long / extra long



Cutting edge preparation



K = Chamfer width (in mm)



Sharp



Chamfer



Radius



Application



Machining example



The red arrows describe the possible feed directions



Number of teeth













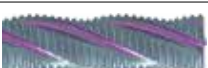























Cutting geometry
 $\lambda_s = 48^\circ$ λ_s = helix angle
 $\nu_s = 10^\circ$ ν_s = rake angle

- = Main Application
- = Extended application

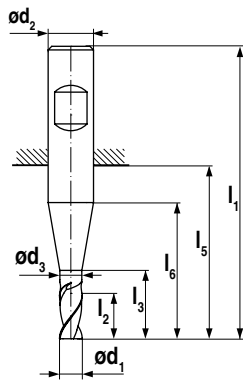
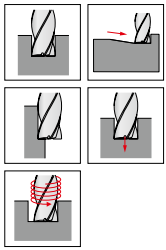
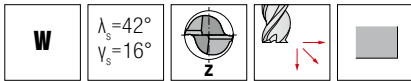
Overview HSS milling cutters

Tool type	Number of teeth	Diameter in mm $\varnothing d$	Material compatibility					Sharp	Chamfer	Radius	Length	Material, e.g. PM = Powdersteel	Coating		Pages
			Steel	Stainless	Cast iron	Non ferrous metals	Heat resistant						Tempered steel	coated	
Finishing cutter															
	W	2	2-22	■	■	■	●	■	■	■	HSS-E	□	□	6	
	W	3-4	2-40	■	■	■	●	■	■	■	HSS-E	□	□	7	
	N	2	1-26	●	○	●	○	○	■	■	HSS-E	■	□	8+9	
	N	3	1-10	●	○	●	○	○	■	■	HSS-E	■	□	10	
	N	3	1,8-24,7	●	○	●	○	○	■	■	HSS-E	■	□	11+12	
	N	4	6-20	●	○	●	○	○	■	■	HSS-E	■	■	13	
	N	4	12-25	○	●	○	●	○	■	■	PM	■	■	14	
	N	4-5	4-25	○	●	○	●	○	■	■	HSS-E	■	□	15	
	N	4-8	6-40	●	○	●	○	○	■	■	HSS-E	□	□	16	
	N	4-8	2-50	●	○	●	○	○	■	■	HSS-E	■	□	17+18	
	H	8-10	25-32	■	○	■	●	■	■	■	PM	■	■	19	
Rough and finish milling cutters															
	NTI	4-6	6-40	■	○	■	●	■	■	■	PM	■	■	20	
	NF	4-5	6-28	●	○	●	○	○	■	■	HSS-E	■	■	21	
	HS	4-6	6-40	○	●	○	●	○	■	■	PM	■	■	22	
	HF	4	6-25	●	○	●	○	○	■	■	PM	■	■	23	

Overview HSS milling cutters

Tool type	Number of teeth	Diameter in mm $\varnothing d$	Material compatibility					Sharp	Chamfer	Radius	Length	Material, e.g. PM = Powdersteel	coated	uncoated	Pages
			Steel	Stainless	Cast iron	Non ferrous metals	Heat resistant								
Rough milling cutters															
	WR	3	6-32	■	■	■	●	■	■		HSS-E	■	□	24	
	NR	3	6-25	■	○	■	○	○	■		HSS-E	■	□	25	
	NR	4-6	6-40	■	○	■	○	○	■		HSS-E	■	□	26	
	HR	4	6-20	■	○	■	○	■	■		PM	■	□	27	
	HR	3-4	4-25	■	○	■	○	○	■		HSS-E	□	□	28	
	HR	4-6	6-32	■	■	■	○	○	■		PM	■	□	29	
	HR	3-6	4-32	■	■	■	○	○	■		HSS-E	■	□	30	
Ball nose end milling cutters															
	N	2	2-30	■	○	■	○	○	■		HSS-E	■	□	31	
	H	4-5	6-25	■	○	■	○	○	■		HSS-E	■	□	32	
	HR	4	6-20	■	○	■	○	○	■		HSS-E	■	□	33	
Form / Side and Face / Shell milling cutters															
	N	6-12	10,5-60	■	○	■	○	○	■		HSS-E	□	□	34+35	
	NF	6-8	21-45	■	○	■	○	○	■		HSS-E	□	□	36	
	N	4-6	1-16	■	○	■	○	○	■		HSS-E	□	□	37	
	H	10	16-25	■	○	■	○	○	■		HSS-E	□	□	38	
		12-28		■	○	■	○	○	■		HSS-E	□	□	39+40	
		12-52		■	■	■	○	○	■		HSS-E	□	□	41-43	
		6-12		■	■	■	○	○	■		HSS-E	■	□	44+45	

Slot milling cutter HSS-E Co 8



DIN 844



U6

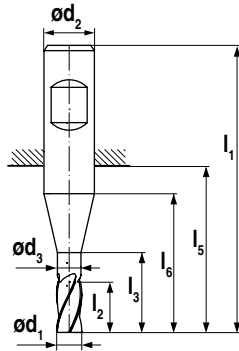
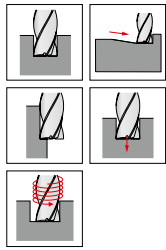
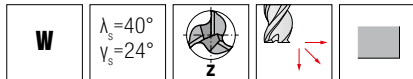
Article no.
50 144 ...

d _{1 e8} DC mm	l ₂ APMX mm	d ₃ DN mm	l ₃ LH mm	l ₆ mm	l ₅ LPR mm	l ₁ OAL mm	d _{2 h6} DCONMS mm	Z ZEFP	£	
2.0	7		7	13	15	51	6	2	24.83	020
2.5	8		8	14	16	52	6	2	23.68	025
3.0	8		8	14	16	52	6	2	23.11	030
3.5	10		10	16	18	54	6	2	26.11	035
4.0	11		11	17	19	55	6	2	23.68	040
4.5	11		11	17	19	55	6	2	27.09	045
5.0	13		13	19	21	57	6	2	24.29	050
5.5	13		13	19	21	57	6	2	27.69	055
6.0	13		13	19	21	57	6	2	24.29	060
6.5	16	6.0	22	24	26	66	10	2	32.99	065
7.0	16	6.5	22	24	26	66	10	2	31.16	070
8.0	19	7.5	25	27	29	69	10	2	27.89	080
9.0	19	8.5	26	27	29	69	10	2	35.48	090
10.0	22	9.5	30	30	32	72	10	2	33.89	100
12.0	26	11.5	36	36	38	83	12	2	38.98	120
14.0	26	11.5	36	36	38	83	12	2	45.21	140
16.0	32	15.0	42	42	44	92	16	2	49.72	160
18.0	32	15.0	42	42	44	92	16	2	63.24	180
20.0	38	19.0	52	52	54	104	20	2	77.63	200
22.0	38	19.0	52	52	54	104	20	2	112.88	220

Steel	
Stainless steel	
Cast iron	
Non ferrous metals	●
Heat resistant alloys	
hardened materials	

→ v_c/f_z Page 53–55

End milling cutter HSS-E Co 8



DIN 69844



DIN 844

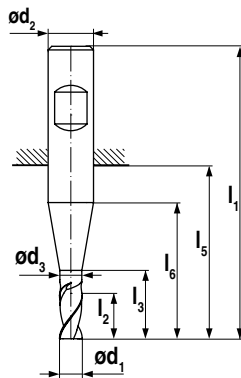
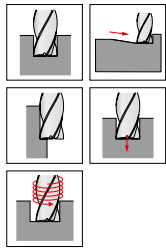
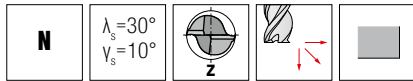


d ₁ k10 DC mm	l ₂ APMX mm	d ₃ DN mm	l ₃ LH mm	l ₆ mm	l ₅ LPR mm	l ₁ OAL mm	d ₂ h6 DCONMS mm	Z ZEFP
2	7		7	13	15	51	6	3
3	8		8	14	16	52	6	3
3	12		12	18	20	56	6	3
4	11		11	17	19	55	6	3
4	19		19	25	27	63	6	3
5	13		13	19	21	57	6	3
5	24		24	30	32	68	6	3
6	13	5.5	19	19	21	57	6	3
6	24	5.5	30	30	32	68	6	3
7	16	6.5	22	24	26	66	10	3
7	30	6.5	36	38	40	80	10	3
8	19	7.5	25	27	29	69	10	3
8	38	7.5	44	46	48	88	10	3
9	19	8.5	26	27	29	69	10	3
9	38	8.5	45	46	48	88	10	3
10	22	9.5	30	30	32	72	10	3
10	45	9.5	53	53	55	95	10	3
12	26	11.5	36	36	38	83	12	3
12	53	11.5	63	63	65	110	12	3
14	26	11.5	36	36	38	83	12	3
14	53	11.5	63	63	65	110	12	3
16	32	15.0	42	42	44	92	16	3
16	63	15.0	73	73	75	123	16	3
18	32	15.0	42	42	44	92	16	3
18	63	15.0	73	73	75	123	16	3
20	38	19.0	52	52	54	104	20	3
20	75	19.0	89	89	91	141	20	3
22	38	19.0	52	52	54	104	20	3
22	75	19.0	89	89	91	141	20	3
24	90	23.0	106	108	110	166	25	3
25	45	24.0	63	45	65	121	25	4
25	90	24.0	108	108	110	166	25	4
28	90	24.0	108	108	110	166	25	4
30	90	24.0	108	108	110	166	25	4
32	106	31.0	123	123	126	186	32	4
36	106	31.0	123	123	126	186	32	4
40	125	38.0	142	142	147	217	40	4

U8		U8	
Article no.		Article no.	
50 120 ...		50 121 ...	
£		£	
29.93	020		
23.37	030		
		28.96	030
23.68	040	28.77	040
24.11	050	28.77	050
24.48	060	29.85	060
25.74	070	37.79	070
27.65	080	32.10	080
29.47	090	42.98	090
30.37	100	35.44	100
33.89	120	39.99	120
39.35	140	45.82	140
39.74	160	46.48	160
65.58	180	80.48	180
64.64	200	75.82	200
89.31	220	104.76	220
		144.09	240
116.70	250	136.69	250
		165.50	280
		196.78	300
		216.00	320
		316.59	360
		383.17	400

Steel	
Stainless steel	
Cast iron	
Non ferrous metals	•
Heat resistant alloys	
hardened materials	

Slot milling cutter HSS-E Co 8



Ti 100 Pro

Ti 100 Pro



DIN 327
B

DIN 327
B

Factory standard
B

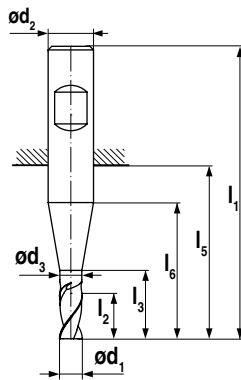
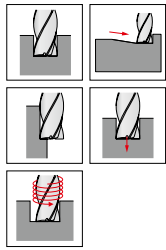
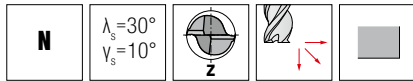
Factory standard
B

d ₁ DC mm	Tol.	l ₂ APMX mm	d ₃ DN mm	l ₃ LH mm	l ₆ mm	l ₅ LPR mm	l ₁ OAL mm	d ₂ h ₆ DCONMS mm	Z ZFFP	U8		NEW U8		U8		NEW U8	
										Article no. 50 100 ...	£	Article no. 54 025 ...	£	Article no. 50 122 ...	£	Article no. 54 020 ...	£
1.00	h10	2.5		2.5	9	11	47	6	2	20.77	010	20.52	010				
1.50	h10	3.0		3.0	9	11	47	6	2	19.61	015	19.74	015				
1.80	h10	4.0		4.0	10	12	48	6	2	13.98	018	25.97	018				
2.00	e8	4.0		4.0	10	12	48	6	2	12.20	020	23.02	020				
2.50	e8	5.0		5.0	11	13	49	6	2	12.20	025	23.02	025				
2.80	h10	5.0		5.0	11	13	49	6	2	12.98	028	18.95	028				
3.00	e8	5.0		5.0	11	13	49	6	2	12.20	030	18.60	030				
3.00	e8	8.0		8.0	18	20	56	6	2					19.66	030	36.36	030
3.50	h10	6.0		6.0	12	14	50	6	2	12.20	035	17.40	035				
3.50	h10	10.0		10.0	21	23	59	6	2					23.51	035	39.08	035
3.80	h10	7.0		7.0	13	15	51	6	2	12.86	038	24.32	038				
4.00	e8	7.0		7.0	13	15	51	6	2	12.20	040	15.76	040				
4.00	e8	11.0		11.0	25	27	63	6	2					20.63	040	24.49	040
4.50	h10	7.0		7.0	13	15	51	6	2	13.90	045	17.40	045				
4.50	h10	11.0		11.0	25	27	63	6	2					25.57	045	27.26	045
4.80	h10	8.0		8.0	14	16	52	6	2	15.15	048	25.10	048				
5.00	e8	8.0		8.0	14	16	52	6	2	12.49	050	17.75	050				
5.00	e8	13.0		13.0	30	32	68	6	2					20.63	050	24.49	050
5.50	h10	8.0		8.0	14	16	52	6	2	13.90	055	18.53	055				
5.50	h10	13.0		13.0	30	32	68	6	2					25.57	055	27.26	055
5.75	h10	8.0		8.0	14	16	52	6	2	14.29	057	25.10	057				
6.00	e8	8.0	5.50	14.0	14	16	52	6	2	12.49	060	17.48	060				
6.00	e8	13.0	5.50	30.0	30	32	68	6	2					22.02	060	25.71	060
6.50	h10	10.0	6.00	16.0	18	20	60	10	2	16.70	065	22.77	065				
6.50	h10	16.0	6.35	36.0	38	40	80	10	2					30.37	065	33.93	065
6.75	h10	10.0	6.50	16.0	18	20	60	10	2	17.20	067	22.77	067				
7.00	e8	10.0	6.50	16.0	18	20	60	10	2	16.06	070	22.77	070				
7.00	e8	16.0	6.35	36.0	38	40	80	10	2					27.89	070	32.54	070
7.50	h10	10.0	7.00	16.0	18	20	60	10	2	17.32	075	22.85	075				
7.50	h10	16.0	7.35	36.0	38	40	80	10	2					30.37	075	33.93	075
7.75	h10	11.0	7.50	17.0	19	21	61	10	2	17.32	077	36.36	077				
8.00	e8	11.0	7.50	17.0	19	21	61	10	2	16.30	080	24.32	080				
8.00	e8	19.0	7.35	44.0	46	48	88	10	2					24.36	080	30.55	080
8.50	h10	11.0	8.00	18.0	19	21	61	10	2	21.03	085	25.71	085				
8.50	h10	19.0	8.35	45.0	46	48	88	10	2					32.59	085	35.82	085
8.70	h10	11.0	8.50	18.0	19	21	61	10	2	22.07	087	38.56	087				
9.00	h10	11.0	8.50	18.0	19	21	61	10	2	19.42	090	36.43	090				
9.00	h10	19.0	8.35	45.0	46	48	88	10	2					30.37	090	49.92	090
9.50	h10	11.0	9.00	18.0	19	21	61	10	2	20.76	095	37.19	095				
9.50	h10	19.0	9.35	45.0	46	48	88	10	2					49.59	095	48.38	095
9.70	h10	13.0	9.50	21.0	21	23	63	10	2	20.76	097	38.52	097				
10.00	e8	13.0	9.50	21.0	21	23	63	10	2	20.16	100	24.16	100				
10.00	e8	22.0	9.35	53.0	53	55	95	10	2					26.71	100	32.36	100
10.50	h10	13.0	10.00	21.0	23	25	70	12	2	36.73	105	38.86	105				
10.70	h10	13.0	10.50	21.0	23	25	70	12	2	39.80	107	41.20	107				
11.00	h10	13.0	10.50	21.0	23	25	70	12	2	27.00	110	35.13	110				
11.00	h10	22.0	10.50	53.0	55	57	102	12	2					34.79	110	39.11	110
11.50	h10	13.0	11.00	21.0	23	25	70	12	2	37.47	115	39.46	115				

Steel	●	●	●	●
Stainless steel	○	●	○	●
Cast iron	●	●	●	●
Non ferrous metals	○	○	○	○
Heat resistant alloys	○	○	○	○
hardened materials				

1) Factory standard

Slot milling cutter HSS-E Co 8



Ti 100 Pro



Ti 100 Pro



DIN 327



DIN 327



Factory standard



Factory standard



d ₁ DC mm	Tol.	l ₂ APMX mm	d ₃ DN mm	l ₃ LH mm	l ₆ mm	l ₅ LPR mm	l ₁ OAL mm	d ₂ h ₆ DCONMS mm	Z ZEFP	U8 Article no. 50 100 ... £	NEW U8 Article no. 54 025 ... £	U8 Article no. 50 122 ... £	NEW U8 Article no. 54 020 ... £
11.70	h10	16.0	11.50	26.0	26	28	73	12	2	28.96	117	41.72	117
12.00	e8	16.0	11.50	26.0	26	28	73	12	2	24.98	120	31.59	120
12.00	e8	26.0	11.50	63.0	63	65	110	12	2			30.30	120
12.70	h10	16.0	11.50	26.0	26	28	73	12	2	51.18	127	56.26	127
13.00	h10	16.0	11.50	26.0	26	28	73	12	2	42.52	130	50.28	130
13.00	h10	26.0	11.50	63.0	63	65	110	12	2			47.14	130
13.70	h10	16.0	11.50	26.0	26	28	73	12	2	35.49	137	47.08	137
14.00	e8	16.0	11.50	26.0	26	28	73	12	2	31.16	140	42.14	140
14.00	e8	26.0	11.50	63.0	63	65	110	12	2			38.21	140
14.70	h10	16.0	11.50	26.0	26	28	73	12	2	47.89	147		
15.00	h10	16.0	11.50	26.0	26	28	73	12	2	39.46	150	46.73	150
15.00	h10	26.0	11.50	63.0	63	65	110	12	2			48.03	150
15.70	h10	19.0	15.00	29.0	29	31	79	16	2	40.25	157	64.64	157
16.00	e8	19.0	15.00	29.0	29	31	79	16	2	38.32	160	45.35	160
16.00	e8	32.0	15.00	73.0	73	75	123	16	2			45.74	160
16.70	h10	19.0	15.00	29.0	29	31	79	16	2	65.16	167		
17.00	h10	19.0	15.00	29.0	29	31	79	16	2	61.94	170	72.43	170
17.00	h10	32.0	15.00	73.0	73	75	123	16	2			101.25	170
17.70	h10	19.0	15.00	29.0	29	31	79	16	2	47.89	177	72.18	177
18.00	e8	19.0	15.00	29.0	29	31	79	16	2	47.24	180	55.31	180
18.00	e8	32.0	15.00	73.0	73	75	123	16	2			61.41	180
19.00	h10	19.0	15.00	29.0	29	31	79	16	2	73.07	190	77.37	190
19.00	h10	32.0	15.00	73.0	73	75	123	16	2			106.07	190
19.70	h10	22.0	19.00	36.0	36	38	88	20	2	58.41	197	85.00	197
20.00	e8	22.0	19.00	36.0	36	38	88	20	2	54.92	200	66.64	200
20.00	e8	38.0	19.00	89.0	89	91	141	20	2			60.21	200
21.70	h10	22.0	19.00	36.0	36	38	88	20	2	104.22	217	111.64	217
22.00	e8	22.0	19.00	36.0	36	38	88	20	2	68.98	220	102.03	220
22.00	e8	38.0	19.00	89.0	89	91	141	20	2			92.16	220
23.70	h10	26.0	23.00	42.0	44	46	102	25	2	135.62	237	134.48	237
24.00	e8	26.0	23.00	42.0	44	46	102	25	2	76.97	240	127.11	240
24.00	e8	45.0	23.00	106.0	108	110	166	25	2			114.37	240
24.70	h10	26.0	24.00	44.0	44	46	102	25	2	135.62	247	129.98	247
25.00	e8	26.0	24.00	44.0	44	46	102	25	2	75.82	250	127.91	250
25.00	e8	45.0	24.00	108.0	108	110	166	25	2			114.37	250
26.00	h10	26.0	24.00	44.0	44	46	102	25	2	94.49	260	141.99	260

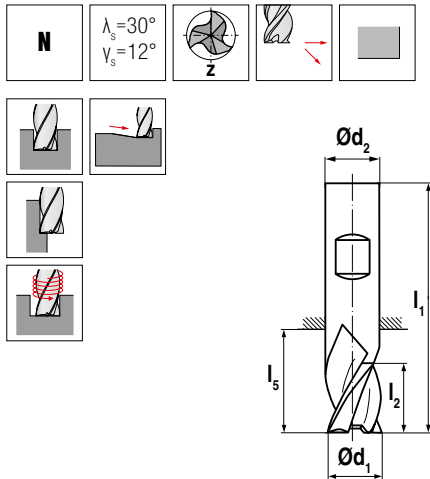
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Stainless steel	○	●	○	●
Cast iron	●	●	●	●
Non ferrous metals	○	○	○	○
Heat resistant alloys	○	○	○	○
hardened materials				

1) Factory standard

→ v_c/f_z Page 53–55

Throw-away milling cutter, HSS-E Co 8

▪ Shank similar to DIN 1835 B



Ti 100 Pro

Ti 100 Pro



Factory standard

Factory standard

Factory standard

Factory standard



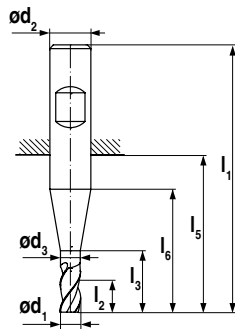
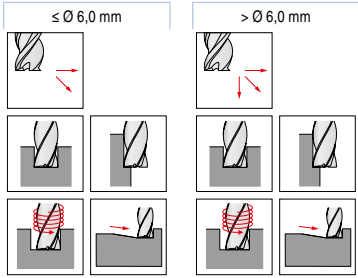
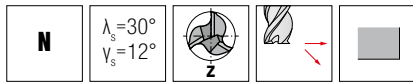
d ₁ es DC mm	l ₂ APMX mm	l ₃ LPR mm	l ₁ OAL mm	d ₂ h6 DCONMS mm	Z ZEFP	U6		NEW U8		U6		NEW U8	
						Article no. 50 092 ...	£	Article no. 54 014 ...	£	Article no. 50 093 ...	£	Article no. 54 042 ...	£
1.00	2	8	34	6	3	10.81	010	13.90	010				
1.50	3	8	34	6	3	10.81	015	13.90	015				
1.50	4	10	35	6	3					12.44	015 ¹⁾	15.37	015 ¹⁾
1.80	3	8	34	6	3	10.81	018	13.90	018				
2.00	4	9	35	6	3	10.81	020	13.90	020				
2.00	7	12	38	6	3					12.44	020 ¹⁾	15.37	020
2.30	4	9	35	6	3	10.81	023	13.90	023				
2.50	5	10	36	6	3	10.81	025	13.90	025				
2.50	8	13	39	6	3					12.44	025 ¹⁾	15.37	025
2.80	5	10	36	6	3	10.81	028	13.90	028				
3.00	5	10	36	6	3	10.81	030	13.90	030				
3.00	8	13	39	6	3					12.44	030 ¹⁾	15.37	030
3.30	6	11	37	6	3	10.81	033	13.90	033				
3.50	6	11	37	6	3	10.81	035	13.90	035				
3.50	10	15	41	6	3					12.44	035 ¹⁾	15.37	035
3.80	7	12	38	6	3	10.81	038	13.90	038				
4.00	7	12	38	6	3	10.81	040	13.90	040				
4.00	11	16	42	6	3					12.44	040 ¹⁾	15.37	040
4.30	7	12	38	6	3	10.81	043	13.90	043				
4.50	7	12	38	6	3	10.81	045	13.90	045				
4.50	11	16	42	6	3					12.44	045 ¹⁾	15.37	045
4.80	8	13	39	6	3	10.81	048	13.90	048				
5.00	8	13	39	6	3	10.81	050	13.90	050				
5.00	13	18	44	6	3					12.44	050 ¹⁾	15.37	050
5.30	8	13	39	6	3	10.81	053	13.90	053				
5.50	8	13	39	6	3	10.81	055	13.90	055				
5.50	13	18	44	6	3					12.44	055 ¹⁾	15.37	055
5.75	8	13	39	6	3	10.81	057	13.90	057				
6.00	8	13	39	6	3	10.81	060	13.90	060				
6.00	13	18	44	6	3					12.44	060 ¹⁾	15.37	060
6.50	10	14	42	8	3	12.52	065	18.32	065				
6.50	16	20	48	8	3					14.94	065 ¹⁾	20.40	065
7.00	10	14	42	8	3	12.52	070	18.32	070				
7.00	16	20	48	8	3					14.94	070 ¹⁾	20.40	070
7.50	10	14	42	8	3	12.52	075	18.32	075				
7.50	16	20	48	8	3					14.94	075 ¹⁾	20.40	075
8.00	11	15	43	8	3	12.52	080	18.32	080				
8.00	19	23	51	8	3					14.94	080 ¹⁾	20.40	080
8.50	11	16	48	10	3	16.21	085	21.62	085				
8.50	19	24	56	10	3					18.77	085 ¹⁾	23.13	085
9.00	11	16	48	10	3	16.21	090	21.62	090				
9.00	19	24	56	10	3					18.77	090 ¹⁾	23.13	090
9.50	11	16	48	10	3	16.21	095	21.62	095				
9.50	19	24	56	10	3					18.77	095 ¹⁾	23.13	095
10.00	13	18	50	10	3	16.21	100	21.62	100				
10.00	22	27	59	10	3					18.77	100 ¹⁾	23.13	100

Steel	●	●	●	●
Stainless steel	○	●	○	●
Cast iron	○	●	●	●
Non ferrous metals	○	○	○	○
Heat resistant alloys	○	○	○	○
hardened materials				

1) Shank tolerance -0,025 / -0,0323

End milling cutter HSS-E Co 8

• $\varnothing \leq 6$ mm, 3 teeth cutting to centre



Ti 100 Pro

Ti 100 Pro



DIN 327

DIN 327

DIN 844 K

DIN 844 K



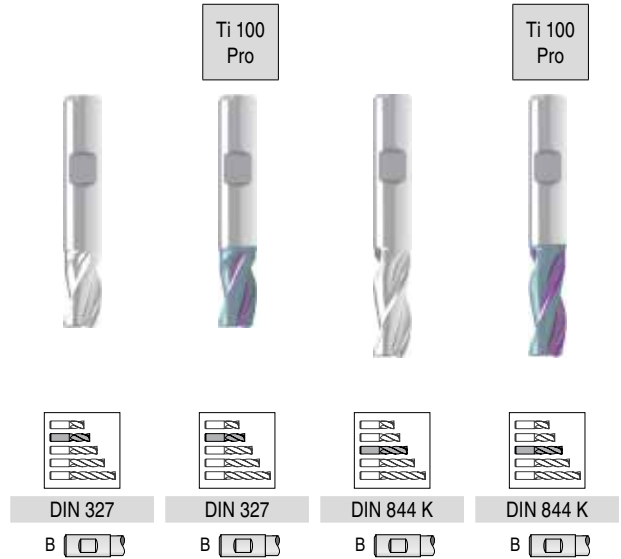
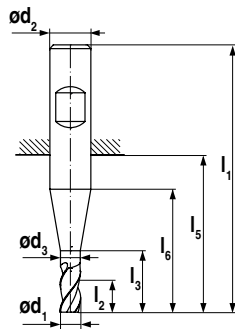
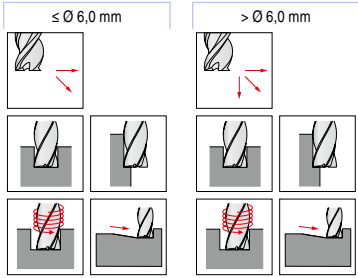
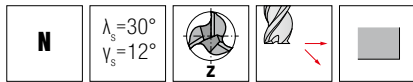
d ₁ DC mm	Tol.	l ₂ APMX mm	d ₃ DN mm	l ₃ LH mm	l ₆ mm	l ₅ LPR mm	l ₁ OAL mm	d ₂ h6 DCONMS mm	Z ZEFP	U8		NEW U8		U8		NEW U8	
										Article no. 50 105 ...	£	Article no. 54 021 ...	£	Article no. 50 106 ...	£	Article no. 54 016 ...	£
1.80	h10	4		4	10	12	48	6	3	21.77	018	22.33	018				
2.00	e8	4		4	10	12	48	6	3	15.67	020	19.82	020				
2.50	e8	5		5	11	13	49	6	3	15.67	025	19.82	025				
2.80	h10	5		5	11	13	49	6	3	21.77	028	24.40	028				
2.80	h10	8		8	18	20	56	6	3			26.34	028	1)	28.91	028	1)
3.00	e8	5		5	11	13	49	6	3	15.67	030	19.82	030				
3.00	e8	8		8	14	16	52	6	3			19.17	030		23.98	030	
3.50	h10	6		6	12	14	50	6	3	15.67	035	23.21	035				
3.50	h10	10		10	16	18	54	6	3			26.21	035		28.83	035	
3.80	h10	7		7	13	15	51	6	3	21.77	038	24.49	038				
3.80	h10	11		11	25	27	63	6	3			26.34	038	1)	28.91	038	1)
4.00	e8	7		7	13	15	51	6	3	15.67	040	19.82	040				
4.00	e8	11		11	17	19	55	6	3			19.17	040		17.83	040	
4.50	h10	7		7	13	15	51	6	3	15.67	045	23.21	045				
4.50	h10	11		11	17	19	55	6	3			26.34	045		20.17	045	
4.80	h10	8		8	14	16	52	6	3	21.77	048	24.40	048				
5.00	e8	8		8	14	16	52	6	3	15.67	050	19.82	050				
5.00	e8	13		13	19	21	57	6	3			19.17	050		17.83	050	
5.50	h10	8		8	14	16	52	6	3	15.67	055	23.21	055				
5.50	h10	13		13	19	21	57	6	3			26.21	055		20.17	055	
5.75	h10	8		8	14	16	52	6	3	21.77	057	24.40	057				
6.00	e8	8	5.5	14	14	16	52	6	3	15.67	060	19.82	060				
6.00	e8	13	5.5	19	19	21	57	6	3			19.17	060		17.83	060	
6.50	h10	10	6.0	16	18	20	60	10	3	24.97	065	27.87	065				
6.50	h10	16	6.0	22	24	26	66	10	3			33.26	065		37.13	065	
6.75	h10	10	6.5	16	18	20	60	10	3	31.41	067	32.96	067				
7.00	e8	10	6.5	16	18	20	60	10	3	24.97	070	30.65	070				
7.00	e8	16	6.5	22	24	26	66	10	3			33.26	070		37.13	070	
7.50	h10	10	7.0	16	18	20	60	10	3	24.97	075	32.36	075				
7.50	h10	16	7.0	22	24	26	66	10	3			34.63	075		37.73	075	
7.75	h10	11	7.5	17	19	21	61	10	3	27.58	077	35.22	077				
8.00	e8	11	7.5	17	19	21	61	10	3	23.37	080	30.37	080				
8.00	e8	19	7.5	25	27	29	69	10	3			27.09	080		25.37	080	
8.50	h10	11	8.0	18	19	21	61	10	3	23.37	085	32.36	085				
8.50	h10	19	8.0	26	27	29	69	10	3			41.18	085		42.42	085	
8.70	h10	11	8.5	18	19	21	61	10	3	29.19	087	32.96	087				
9.00	h10	11	8.5	18	19	21	61	10	3	26.12	090	32.36	090				
9.00	h10	19	8.5	26	27	29	69	10	3			32.40	090		36.52	090	
9.50	h10	11	9.0	18	19	21	61	10	3	26.12	095	32.36	095				
9.50	h10	19	9.0	26	27	29	69	10	3			35.48	095		35.82	095	
9.70	h10	13	9.5	21	21	23	63	10	3	26.12	097	36.52	097				
10.00	e8	13	9.5	21	21	23	63	10	3	22.21	100	30.30	100				
10.00	e8	22	9.5	30	30	32	72	10	3			27.09	100		26.22	100	
10.50	h10	13	10.0	21	23	25	70	12	3	40.18	105	41.46	105				
10.70	h10	13	10.5	21	23	25	70	12	3	41.18	107	41.97	107				
11.00	h10	13	10.5	21	23	25	70	12	3	30.37	110	33.58	110				
11.00	h10	22	10.5	30	32	34	79	12	3			37.84	110		42.14	110	
11.50	h10	13	11.0	21	23	25	70	12	3	40.18	115	41.46	115				
11.50	h10	22	11.0	30	32	34	79	12	3			49.34	115		50.45	115	

Steel	●	●	●	●
Stainless steel	○	●	○	●
Cast iron	●	●	●	●
Non ferrous metals	○	○	○	○
Heat resistant alloys	○	○	○	○
hardened materials				

1) Factory standard

End milling cutter HSS-E Co 8

• $\varnothing \leq 6$ mm, 3 teeth cutting to centre



d ₁ DC mm	Tol.	l ₂ APMX mm	d ₃ DN mm	l ₃ LH mm	l ₆ mm	l ₅ LPR mm	l ₁ OAL mm	d ₂ h6 DCONMS mm	Z ZEFP	U8		NEW U8		U8		NEW U8	
										Article no. 50 105 ...	£	Article no. 54 021 ...	£	Article no. 50 106 ...	£	Article no. 54 016 ...	£
11.70	h10	16	11.5	26	26	28	73	12	3	34.74	117	40.77	117				
12.00	e8	16	11.5	26	26	28	73	12	3	29.08	120	34.79	120				
12.00	e8	26	11.5	36	36	38	83	12	3					32.28	120	29.25	120
12.70	h10	16	11.5	26	26	28	73	12	3	54.53	127	58.16	127				
13.00	h10	16	11.5	26	26	28	73	12	3	38.98	130	46.90	130				
13.00	h10	26	11.5	36	36	38	83	12	3					51.07	130	58.59	130
13.70	h10	16	11.5	26	26	28	73	12	3	45.57	137	47.87	137				
14.00	e8	16	11.5	26	26	28	73	12	3	38.98	140	42.32	140				
14.00	e8	26	11.5	36	36	38	83	12	3					43.26	140	35.66	140
15.00	h10	16	11.5	26	26	28	73	12	3	41.16	150	55.48	150				
15.00	h10	26	11.5	36	36	38	83	12	3					55.90	150	61.02	150
15.50	h10	32	15.0	42	42	44	92	16	3					67.75	155	70.37	155
15.70	h10	19	15.0	29	29	31	79	16	3	45.57	157	63.78	157				
16.00	e8	19	15.0	29	29	31	79	16	3	38.98	160	58.66	160				
16.00	e8	32	15.0	42	42	44	92	16	3					48.60	160	51.92	160
17.00	h10	19	15.0	29	29	31	79	16	3	65.27	170	74.50	170				
17.00	h10	32	15.0	42	42	44	92	16	3					84.81	170	93.80	170
17.70	h10	19	15.0	29	29	31	79	16	3	63.24	177	73.65	177				
18.00	e8	19	15.0	29	29	31	79	16	3	52.09	180	66.46	180				
18.00	e8	32	15.0	42	42	44	92	16	3					58.98	180	60.40	180
19.00	h10	19	15.0	29	29	31	79	16	3	78.87	190	84.11	190				
19.00	h10	32	15.0	42	42	44	92	16	3					89.88	190	97.96	190
19.50	h10	38	19.0	52	52	54	104	20	3					96.30	195	110.43	195
19.70	h10	22	19.0	36	36	38	88	20	3	69.41	197	84.11	197				
20.00	e8	22	19.0	36	36	38	88	20	3	61.01	200	77.37	200				
20.00	e8	38	19.0	52	52	54	104	20	3					68.24	200	62.92	200
21.70	h10	22	19.0	36	36	38	88	20	3	111.26	217	110.78	217				
22.00	e8	22	19.0	36	36	38	88	20	3	87.09	220	99.87	220				
22.00	e8	38	19.0	52	52	54	104	20	3					94.82	220	135.33	220
23.70	h10	26	23.0	42	44	46	102	25	3	134.50	237	140.88	237				
24.00	e8	26	23.0	42	44	46	102	25	3	101.76	240	123.32	240				
24.70	h10	26	24.0	44	44	46	102	25	3	144.51	247	140.88	247				

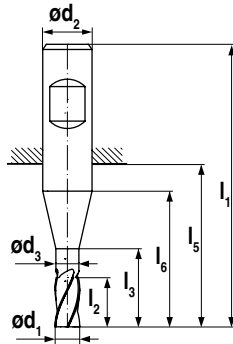
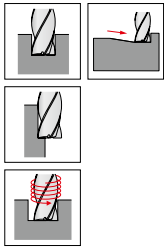
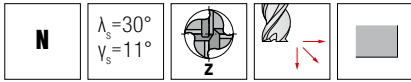
Steel	●	●	●	●
Stainless steel	○	●	○	●
Cast iron	●	●	●	●
Non ferrous metals	○	○	○	○
Heat resistant alloys	○	○	○	○
hardened materials				

1) Factory standard

→ v_c/f_z Page 53–55

End milling cutter HSS-E Co 5

- increasing tapered core
- with irregular pitch



AI 200 Pro AI 200 Pro AI 200 Pro



DIN 844

DIN 844

DIN 844

B

B

B

d ₁ k10 DC mm	l ₂ APMX mm	d ₃ DN mm	l ₃ LH mm	l ₆ mm	l ₅ LPR mm	l ₁ OAL mm	d ₂ h6 DCONMS mm	Z ZEFP
6	13	5.5	19	19	21	57	6	4
6	19	5.5	25	25	27	63	6	4
6	24	5.5	30	30	32	68	6	4
8	19	7.5	25	27	29	69	10	4
8	28	7.5	34	36	38	78	10	4
8	38	7.5	44	46	48	88	10	4
10	22	9.5	30	30	32	72	10	4
10	34	9.5	42	42	44	84	10	4
10	45	9.5	53	53	55	95	10	4
12	26	11.5	36	36	38	83	12	4
12	40	11.5	50	50	52	97	12	4
12	53	11.5	63	63	65	110	12	4
16	32	15.0	42	42	44	92	16	4
16	48	15.0	58	58	60	108	16	4
16	63	15.0	73	73	75	123	16	4
20	38	19.0	52	52	54	104	20	4
20	56	19.0	70	70	72	122	20	4
20	75	19.0	89	89	91	141	20	4

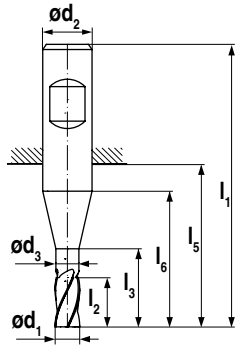
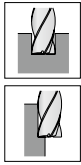
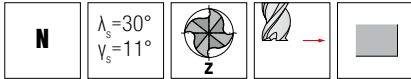
NEW U8	NEW U8	NEW U8
Article no.	Article no.	Article no.
50 000 ...	50 001 ...	50 002 ...
£	£	£
14.59		
	16.67	
19.80		18.76
	20.84	
		21.88
20.84		
	22.92	
		23.97
23.97		
	25.01	
		28.13
34.39		
	36.47	
		41.68
50.02		
	54.18	
		61.48

Steel	●	●	●
Stainless steel	○	○	○
Cast iron	●	●	●
Non ferrous metals	●	●	●
Heat resistant alloys	○	○	○
hardened materials			

→ v_c/f_z Page 48+49

Powdersteel end milling cutter

▪ with wave profile



Al 200
Pro



DIN 844



NEW U8

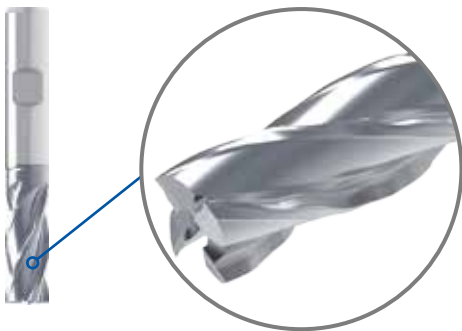
Article no.
50 003 ...

£	
42.72	120
59.39	160
85.44	200
124.00	250

d ₁ k10 DC mm	l ₂ APMX mm	d ₃ DN mm	l ₃ LH mm	l ₄ LPR mm	l ₁ OAL mm	d ₂ h6 DCONMS mm	Z ZEFP
12	26	11.5	36	38	83	12	4
16	32	15.0	42	44	92	16	4
20	38	19.0	52	54	104	20	4
25	45	24.0	63	65	121	25	4

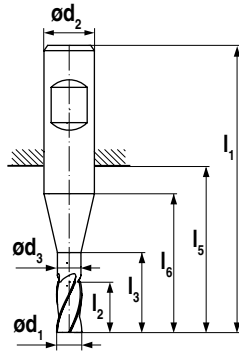
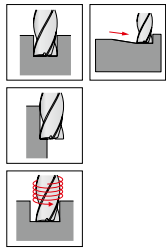
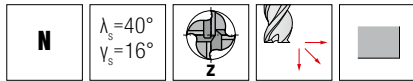
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Stainless steel	<input checked="" type="radio"/>
Cast iron	<input type="radio"/>
Non ferrous metals	<input type="radio"/>
Heat resistant alloys	<input checked="" type="radio"/>
hardened materials	<input type="radio"/>

→ v_c/f_z Page 47



Wave profile

End milling cutter HSS-E Co 8



Ti 100 Pro

Ti 100 Pro



Factory standard

DIN 844

DIN 844



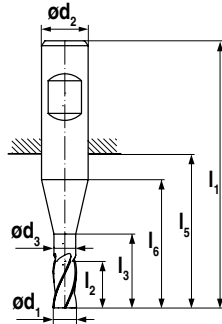
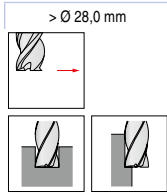
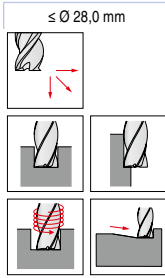
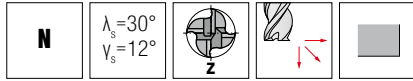
d ₁ DC mm	Tol.	l ₂ APMX mm	d ₃ DN mm	l ₃ LH mm	l ₆ mm	l ₅ LPR mm	l ₁ OAL mm	d ₂ h ₆ DCONMS mm	Z ZFP	NEW U8 Article no. 54 017 ... £	U8 Article no. 50 124 ... £	NEW U8 Article no. 54 011 ... £	U8 Article no.
4	k10	11		11	17	19	55	6	4				040
5	k10	13		13	19	21	57	6	4				050
6	e8	8	5.5	14	14	16	52	6	4	16.10	060		060
6	k10	13	5.5	19	19	21	57	6	4				060
8	e8	11	7.5	17	19	21	61	10	4	21.99	080		080
8	k10	19	7.5	25	27	29	69	10	4				080
9	k10	19	8.5	26	27	29	69	10	4				090
10	e8	13	9.5	21	21	23	63	10	4	22.68	100		100
10	k10	22	9.5	30	30	32	72	10	4				100
12	e8	16	11.5	26	26	28	73	12	4	27.52	120		120
12	k10	26	11.5	36	36	38	83	12	4				120
14	e8	16	11.5	26	26	28	73	12	4	37.99	140		140
14	k10	26	11.5	36	36	38	83	12	4				140
15	k10	26	11.5	36	36	38	83	12	4				150
16	e8	19	15.0	29	29	31	79	16	4	39.64	160		160
16	k10	32	15.0	42	42	44	92	16	4				160
17	k10	32	15.0	42	42	44	92	16	4				170
18	e8	19	15.0	29	29	31	79	16	4	46.13	180		180
18	k10	32	15.0	42	42	44	92	16	4				180
20	e8	22	19.0	36	36	38	88	20	4	55.48	200		200
20	k10	38	19.0	52	52	54	104	20	4				200
25	k10	45	24.0	63	63	65	121	25	5				250

Steel	○	○	○
Stainless steel	●	●	●
Cast iron	○	○	○
Non ferrous metals	●	●	●
Heat resistant alloys	●	●	●
hardened materials			

→ v_c/f_z Page 53–55

End milling cutter HSS-E Co 8

▪ > Ø 28,0 mm recessed centre



Factory standard



U6

Article no.

50 104 ...

£

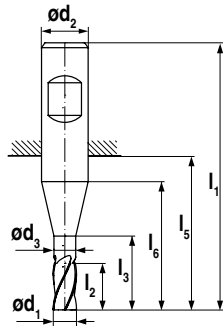
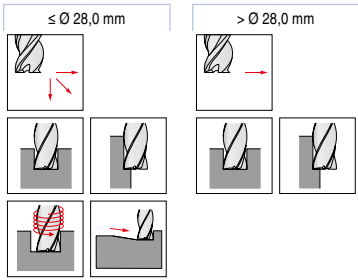
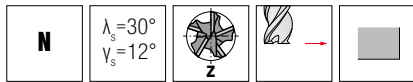
d ₁ k10 DC mm	l ₂ APMX mm	d ₃ DN mm	l ₃ LH mm	l ₆ mm	l ₅ LPR mm	l ₁ OAL mm	d ₂ h6 DCONMS mm	Z ZEFP	£	
6	56	5.5	62	62	64	100	6	4	49.03	060
8	70	7.5	73	73	75	115	10	4	58.16	080
10	75	9.5	79	79	81	121	10	4	70.11	100
12	85		85	85	85	130	12	4	76.07	120
14	85		85	85	85	130	12	4	92.55	140
16	90	15.0	95	95	97	145	16	4	100.76	160
18	100	15.0	110	110	112	160	16	5	141.52	180
20	110	19.0	128	128	130	180	20	5	145.90	200
22	110	19.0	128	128	130	180	20	5	186.24	220
25	125	24.0	142	142	144	200	25	6	190.64	250
28	140	24.0	147	147	149	205	25	6	262.85	280
32	160	31.0	167	167	170	230	32	6	317.25	320
40	180	31.0	197	197	200	260	32	8	533.72	400

Steel	●
Stainless steel	○
Cast iron	●
Non ferrous metals	○
Heat resistant alloys	○
hardened materials	○

→ v_c/f_z Page 53–55

End milling cutter HSS-E Co 8

▪ > Ø 28,0 mm recessed centre



Ti 100 Pro

Ti 100 Pro



DIN 69844

DIN 69844

DIN 844

DIN 844

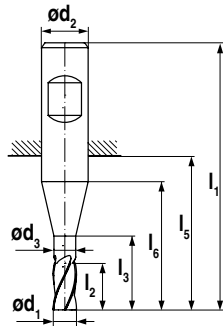
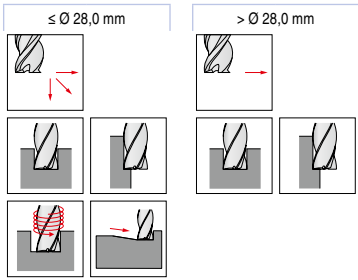
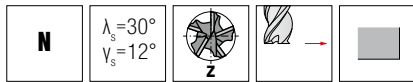


d ₁ k10 DC mm	l ₂ APMX mm	d ₃ DN mm	l ₃ LH mm	l ₆ mm	l ₅ LPR mm	l ₁ OAL mm	d ₂ h6 DCONMS mm	Z ZEFP	U8		NEW U8		U8		NEW U8	
									Article no. 50 110 ...	£	Article no. 54 018 ...	£	Article no. 50 111 ...	£	Article no. 54 019 ...	£
2.0	7		7	13	15	51	6	4	13.90	020	20.01	020				
2.5	8		8	14	16	52	6	4	13.90	025	20.01	025				
3.0	8		8	14	16	52	6	4	13.90	030	20.01	030				
3.0	12		12	18	20	56	6	4					22.99	030	26.49	030
3.5	10		10	16	18	54	6	4	13.90	035	20.01	035				
4.0	11		11	17	19	55	6	4	13.90	040	19.79	040	23.62	040	26.84	040
4.0	19		19	25	27	63	6	4								
4.5	11		11	17	19	55	6	4	13.90	045	20.01	045				
5.0	13		13	19	21	57	6	4	13.90	050	19.79	050				
5.0	24		24	30	32	68	6	4					20.76	050	26.84	050
5.5	13		13	19	21	57	6	4	13.90	055	20.01	055				
6.0	13	5.5	19	19	21	57	6	4	13.90	060	20.12	060	20.76	060	25.10	060
6.0	24	5.5	30	30	32	68	6	4								
6.5	16	6.0	22	24	26	66	10	4	17.71	065	32.72	065				
7.0	16	6.5	22	24	26	66	10	4	17.71	070	24.88	070				
7.0	30	6.5	36	38	40	80	10	4					30.25	070	39.03	070
7.5	16	7.0	22	24	26	66	10	4	17.71	075	32.72	075				
8.0	19	7.5	25	27	29	69	10	4	17.19	080	27.86	080				
8.0	38	7.5	44	46	48	88	10	4					30.25	080	35.22	080
8.5	19	8.0	26	27	29	69	10	4	17.71	085	25.99	085				
9.0	19	8.5	26	27	29	69	10	4	19.36	090	33.50	090				
9.0	38	8.5	45	46	48	88	10	4					30.25	090	41.72	090
9.5	19	9.0	26	27	29	69	10	4	19.36	095	38.02	095				
10.0	22	9.5	30	30	32	72	10	4	19.36	100	29.41	100				
10.0	45	9.5	53	53	55	95	10	4					30.25	100	37.64	100
10.5	22	10.0	30	32	34	79	12	4	30.25	105	43.00	105				
11.0	22	10.5	30	32	34	79	12	4	28.82	110	33.39	110				
11.0	45	10.5	53	55	57	102	12	4					39.46	110	45.43	110
11.5	22	11.0	30	32	34	79	12	4	26.61	115	33.39	115				
12.0	26	11.5	36	36	38	83	12	4	26.61	120	32.06	120				
12.0	53	11.5	63	63	65	110	12	4					40.06	120	41.02	120
13.0	26	11.5	36	36	38	83	12	4	37.79	130	45.76	130				
14.0	26	11.5	36	36	38	83	12	4	34.15	140	37.69	140				
14.0	53	11.5	63	63	65	110	12	4					46.12	140	48.55	140
15.0	26	11.5	36	36	38	83	12	4	39.74	150	47.54	150				
15.0	53	11.5	63	63	65	110	12	4					41.70	150	66.10	150
16.0	32	15.0	42	42	44	92	16	4	37.79	160	53.17	160				
16.0	63	15.0	73	73	75	123	16	4					56.02	160	65.85	160
18.0	32	15.0	42	42	44	92	16	4	51.15	180	61.03	180				

Steel	●	●	●	●
Stainless steel	○	●	○	●
Cast iron	●	●	●	●
Non ferrous metals	○	○	○	○
Heat resistant alloys	○	○	○	○
hardened materials				

End milling cutter HSS-E Co 8

▪ > Ø 28,0 mm recessed centre



Ti 100 Pro

Ti 100 Pro



DIN 69844

DIN 69844

DIN 844

DIN 844



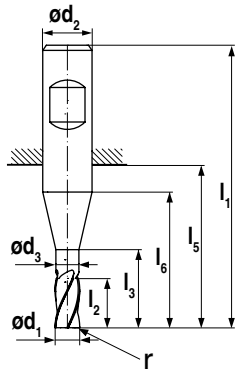
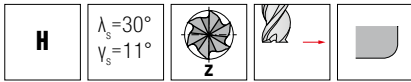
d ₁ k10 DC mm	l ₂ APMX mm	d ₃ DN mm	l ₃ LH mm	l ₆ mm	l ₅ LPR mm	l ₁ OAL mm	d ₂ h6 DCONMS mm	Z ZEFP	U8		NEW U8		U8		NEW U8	
									Article no. 50 110 ...	£	Article no. 54 018 ...	£	Article no. 50 111 ...	£	Article no. 54 019 ...	£
18.0	63	15.0	73	73	75	123	16	4					68.62	180	79.36	180
20.0	38	19.0	52	52	54	104	20	4	56.35	200	66.99	200	66.85	200	89.31	200
20.0	75	19.0	89	89	91	141	20	4								
22.0	38	19.0	52	52	54	104	20	5	66.85	220	83.79	220				
22.0	75	19.0	89	89	91	141	20	5					87.50	220	128.51	220
24.0	45	23.0	61	63	65	121	25	5	83.85	240	103.69	240				
24.0	90	23.0	106	108	110	166	25	5					109.55	240	180.08	240
25.0	45	24.0	63	63	65	121	25	5	83.85	250	103.03	250				
25.0	90	24.0	108	108	110	166	25	5					109.55	250	179.04	250
28.0	45	24.0	63	63	65	121	25	5	88.14	280	116.40	280				
28.0	90	24.0	108	108	110	166	25	5					135.92	280	211.76	280
30.0	45	24.0	63	63	65	121	25	5	130.32	300	168.37	300				
30.0	90	24.0	108	108	110	166	25	5					152.12	300	231.99	300
32.0	53	31.0	70	70	73	133	32	5			133.66	320				
32.0	53	31.0	70	70	73	133	32	6	130.32	320						
32.0	106	31.0	123	123	126	186	32	6					160.34	320	255.53	320
36.0	53	31.0	70	70	73	133	32	6	167.02	360	222.53	360				
40.0	63	38.0	80	80	85	155	40	6	217.45	400	263.88	400				
40.0	125	38.0	142	142	147	217	40	6					289.98	400	315.15	400
45.0	125	38.0	142	142	147	217	40	8					572.49	450	546.03	450
50.0	150	48.0	172	172	172	252	50	8					697.46	500	673.66	500

Steel	●	●	●	●
Stainless steel	○	●	○	●
Cast iron	●	●	●	●
Non ferrous metals	○	○	○	○
Heat resistant alloys	○	○	○	○
hardened materials				

→ v_c/f_z Page 53–55

Powdersteel end milling cutter

- with irregular pitch
- HSS PM without carbon content
- Combination of cobalt, molybdenum and iron



DIN 844

DIN 844



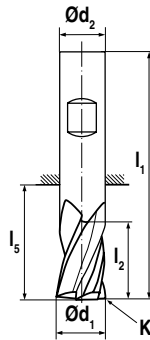
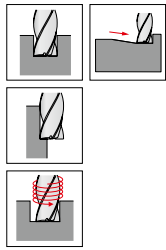
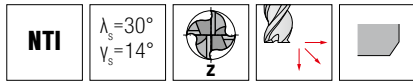
NEW U8	NEW U8
Article no.	Article no.
50 007 ...	50 008 ...
£	£
252.16 25020	324.06 25020
261.54 25040	333.44 25040
405.34 32020	525.17 32020
415.76 32040	535.59 32040

d _{1 h8}	r	l ₂	d ₃	l ₃	l ₅	l ₁	d _{2 h6}	Z
DC	RE	APMX	DN	LH	LPR	OAL	DCONMS	ZEFP
mm	mm	mm	mm	mm	mm	mm	mm	
25	2	45	24	63	65	121	25	8
25	2	90	24	108	110	166	25	8
25	4	45	24	63	65	121	25	8
25	4	90	24	108	110	166	25	8
32	2	53	31	70	73	133	32	10
32	2	106	31	123	126	186	32	10
32	4	53	31	70	73	133	32	10
32	4	106	31	123	126	186	32	10

Steel		
Stainless steel	○	○
Cast iron		
Non ferrous metals		
Heat resistant alloys	●	●
hardened materials		

→ v_c/f_z Page 52

Powdersteel roughing finishing cutter



DIN 69844 DIN 844
B B

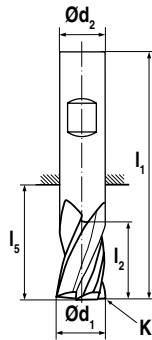
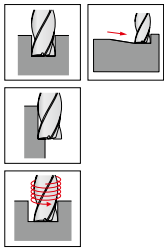
NEW U8	NEW U8
Article no.	Article no.
54 007 ...	54 008 ...
£	£
74.12	108.26
060	060
106.96	128.12
070	080
99.17	134.21
080	100
114.37	149.40
090	120
106.96	178.48
100	140
109.82	202.90
120	160
138.77	257.53
140	180
157.20	278.95
160	200
196.78	452.49
180	250
208.87	711.45
200	300
208.87	658.10
250	320
309.45	1,023.74
250	400

d ₁ k12	l ₂	l ₅	l ₁	d ₂ h6	K	Z
DC	APMX	LPR	OAL	DCONMS	CHW	ZEFP
mm	mm	mm	mm	mm	mm	
6	13	21	57	6	0,3	4
6	24	32	68	6	0,3	4
7	16	26	66	10	0,3	4
8	19	29	69	10	0,3	4
8	38	48	88	10	0,3	4
9	19	29	69	10	0,5	4
10	22	32	72	10	0,5	4
10	45	55	95	10	0,5	4
12	26	38	83	12	0,7	4
12	53	65	110	12	0,7	4
14	26	38	83	12	0,8	4
14	53	65	110	12	0,8	4
16	32	44	92	16	0,8	4
16	63	75	123	16	0,8	4
18	32	44	92	16	0,8	4
18	63	75	123	16	0,8	4
20	38	54	104	20	0,8	4
20	75	91	141	20	0,8	4
25	45	65	121	25	1	5
25	90	110	166	25	1	4
30	90	110	166	25	1,3	5
32	53	73	133	32	1,3	6
32	106	126	186	32	1,3	5
40	63	85	155	40	1,3	6
40	125	147	217	40	1,3	6

Steel	○	○
Stainless steel	●	●
Cast iron	○	○
Non ferrous metals	○	○
Heat resistant alloys	●	●
hardened materials		

→ v_c/f_z Page 53–55

Powdersteel roughing finishing cutter



DIN 69844 DIN 844



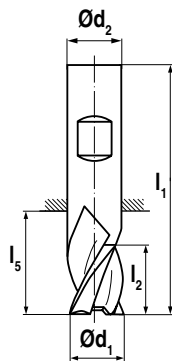
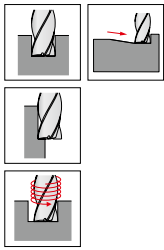
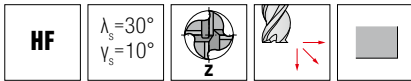
d ₁ k12 DC mm	l ₂ APMX mm	l ₅ LPR mm	l ₁ OAL mm	d ₂ h6 DCONMS mm	K CHW mm	Z ZEFP
6	13	21	57	6	0,45	4
6	24	32	68	6	0,45	4
8	19	29	69	10	0,45	4
8	38	48	88	10	0,45	4
10	22	32	72	10	0,45	4
10	45	55	95	10	0,45	4
12	26	38	83	12	0,45	4
12	53	65	110	12	0,45	4
14	26	38	83	12	0,45	4
14	53	65	110	12	0,45	4
16	32	44	92	16	0,6	4
16	63	75	123	16	0,6	4
18	32	44	92	16	0,6	4
18	63	75	123	16	0,6	4
20	38	54	104	20	0,6	4
20	75	91	141	20	0,6	4
22	38	54	104	20	0,6	5
25	45	65	121	25	0,75	5
25	90	110	166	25	0,75	5
28	45	65	121	25	0,75	5
28	90	110	166	25	0,75	5
30	45	65	121	25	0,75	5
30	90	110	166	25	0,75	5
32	53	73	133	32	0,75	6
32	106	126	186	32	0,75	5
40	63	85	155	40	0,9	6

NEW U8	Article no.	£	NEW U8	Article no.	£
	54 009 ...	74.12		54 012 ...	
	060			060	108.26
	080	99.17		080	128.12
	100	106.96		100	134.21
	120	109.82		120	149.40
	140	138.77		140	178.48
	160	157.20		160	202.90
	180	196.78		180	257.53
	200	208.87		200	278.95
	220	274.40		220	
	250	309.45		250	452.49
	280	388.49		280	682.62
	300	449.37		300	711.45
	320	414.32		320	658.10
	400	711.45		400	

Steel	<input type="radio"/>	<input type="radio"/>
Stainless steel	<input type="radio"/>	<input type="radio"/>
Cast iron	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Non ferrous metals	<input type="radio"/>	<input type="radio"/>
Heat resistant alloys	<input checked="" type="radio"/>	<input checked="" type="radio"/>
hardened materials	<input type="radio"/>	<input type="radio"/>

→ v_c/f_z Page 53–55

Powdersteel roughing finishing cutter



Ti 100
Pro



DIN 844

B

NEW U8

Article no.

54 034 ...

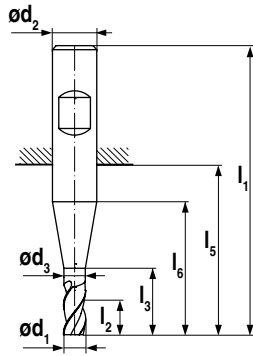
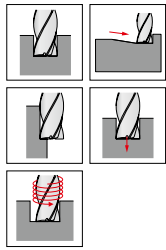
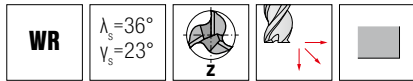
£

d ₁ k12 DC mm	l ₂ APMX mm	l ₅ LPR mm	l ₁ OAL mm	d ₂ h6 DCONMS mm	Z ZEFP	£	
6	13	21	57	6	4	34.50	060
8	19	29	69	10	4	47.02	080
10	22	32	72	10	4	48.96	100
12	26	38	83	12	4	54.07	120
14	26	38	83	12	4	61.49	140
16	32	44	92	16	4	81.68	160
18	32	44	92	16	4	112.41	180
20	38	54	104	20	4	103.39	200
25	45	65	121	25	4	156.14	250

Steel	●
Stainless steel	○
Cast iron	●
Non ferrous metals	○
Heat resistant alloys	○
hardened materials	○

→ v_c/f_z Page 53–55

Rough milling cutter HSS-E Co 8



DIN 844 Factory standard



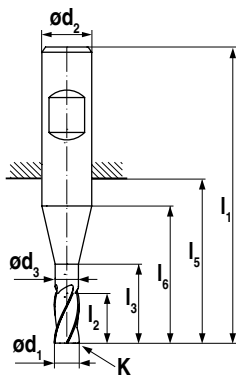
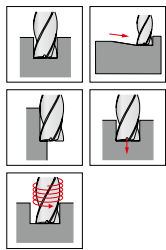
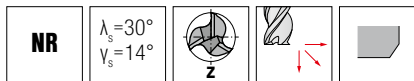
d ₁ k12 DC mm	l ₂ APMX mm	d ₃ DN mm	l ₃ LH mm	l ₆ mm	l ₅ LPR mm	l ₁ OAL mm	d ₂ h6 DCONMS mm	Z ZEFP
6	13	5.5	19	19	21	57	6	3
6	19	5.5	25	25	27	63	6	3
8	19	7.5	25	27	29	69	10	3
8	28	7.5	34	36	38	78	10	3
10	22	9.5	30	30	32	72	10	3
10	34	9.5	42	42	44	84	10	3
12	26	11.5	36	36	38	83	12	3
12	40	11.5	50	50	52	97	12	3
16	32	15.0	42	42	44	92	16	3
16	48	15.0	58	58	60	108	16	3
20	38	19.0	52	52	54	104	20	3
20	56	19.0	70	70	72	122	20	3
25	45	24.0	63	63	65	121	25	3
25	68	24.0	86	86	88	144	25	3
32	80	31.0	97	97	100	160	32	3

NEW U8	NEW U8
Article no.	Article no.
54 013 ...	54 010 ...
£	£
58.45	76.28
060	060
77.94	91.64
080	080
86.85	94.64
100	100
93.21	106.96
120	120
129.68	143.32
160	160
173.94	204.19
200	200
250.00	326.06
250	250
	455.60
	320

Steel	
Stainless steel	
Cast iron	
Non ferrous metals	•
Heat resistant alloys	•
hardened materials	

→ v_c/f_z Page 53-55

Rough milling cutter HSS-E Co 8



Ti 100 Pro

Ti 100 Pro



DIN 69844

DIN 69844

DIN 844

DIN 844



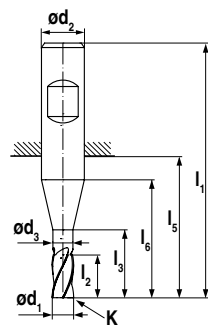
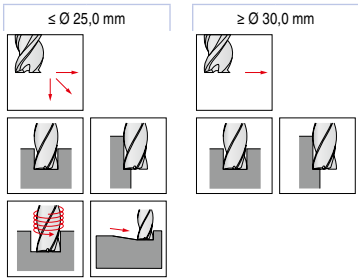
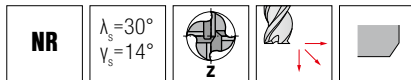
d ₁ k12 DC mm	l ₂ APMX mm	d ₃ DN mm	l ₃ LH mm	l ₆ mm	l ₅ LPR mm	l ₁ OAL mm	d ₂ h6 DCONMS mm	K CHW mm	Z ZEFP	U8		NEW U8		U8		NEW U8	
										Article no. 50 153 ...	£	Article no. 54 026 ...	£	Article no. 50 157 ...	£	Article no. 54 027 ...	£
6	13	5.5	19	19	21	57	6	0,5	3	35.10	060	35.75	060				
6	24	5.5	30	30	32	68	6	0,5	3					41.54	060	43.09	060
7	16	6.5	22	24	26	66	10	0,5	3	39.35	070	45.18	070				
8	19	7.5	25	27	29	69	10	0,7	3	39.86	080	45.60	080				
8	38	7.5	44	46	48	88	10	0,7	3					44.88	080	56.16	080
9	19	8.5	26	27	29	69	10	0,7	3	42.98	090	48.46	090				
9	38	8.5	45	46	48	88	10	0,7	3					49.98	090	58.16	090
10	22	9.5	30	30	32	72	10	0,7	3	39.74	100	46.13	100				
10	45	9.5	53	53	55	95	10	0,7	3					51.15	100	59.02	100
11	22	10.5	30	32	34	79	12	0,7	3	45.21	110	52.53	110				
11	45	10.5	53	55	55	102	12	0,7	3					56.72	110	66.38	110
12	26	11.5	36	36	38	83	12	0,7	3	46.12	120	55.65	120				
12	53	11.5	63	63	65	110	12	0,7	3					54.63	120	67.42	120
14	26	11.5	36	36	38	83	12	0,9	3	54.01	140	59.10	140				
14	53	11.5	63	63	65	110	12	0,9	3					66.85	140	75.97	140
15	26	11.5	36	36	38	83	12	0,9	3	56.22	150	60.76	150				
15	53	11.5	63	63	65	110	12	0,9	3					76.71	150	76.67	150
16	32	15.0	42	42	44	92	16	0,9	3	59.73	160	78.92	160				
16	63	15.0	73	73	75	123	16	0,9	3					75.28	160	102.64	160
18	32	15.0	42	42	44	92	16	0,9	3	74.91	180	90.70	180				
18	63	15.0	73	73	75	123	16	0,9	3					93.98	180	112.41	180
20	38	19.0	52	52	54	104	20	0,9	3	90.25	200	106.96	200				
20	75	19.0	89	89	91	141	20	0,9	3					108.77	200	131.09	200
25	45	24.0	63	63	65	121	25	0,9	3	127.72	250	155.85	250				
25	90	24.0	108	108	110	166	25	0,9	3					161.59	250	200.17	250

Steel	●	●	●	●
Stainless steel	○	○	○	○
Cast iron	●	●	●	●
Non ferrous metals	○	○	○	○
Heat resistant alloys	○	○	○	○
hardened materials				

→ v_c/f_z Page 53-55

Rough milling cutter HSS-E Co 5

▪ > Ø 25,0 mm recessed centre



Ti 100 Pro



DIN 69844 B DIN 69844 B

d ₁ k12 DC mm	l ₂ APMX mm	d ₃ DN mm	l ₃ LH mm	l ₆ mm	l ₅ LPR mm	l ₁ OAL mm	d ₂ h6 DCONMS mm	K CHW mm	Z ZEFP
6	13	5.5	19	19	21	57	6	0,5	4
7	16	6.5	22	24	26	66	10	0,5	4
8	19	7.5	25	27	29	69	10	0,7	4
9	19	8.5	26	27	29	69	10	0,7	4
10	22	9.5	30	30	32	72	10	0,7	4
11	22	10.5	30	32	32	79	12	0,7	4
12	26	11.5	36	36	38	83	12	0,7	4
13	26	11.5	36	36	38	83	12	0,7	4
14	26	11.5	36	36	38	83	12	0,9	4
15	26	11.5	36	36	38	83	12	0,9	4
16	32	15.0	42	42	44	92	16	0,9	4
18	32	15.0	42	42	44	92	16	0,9	4
20	38	19.0	52	52	54	104	20	0,9	4
22	38	19.0	52	52	54	104	20	0,9	4
24	45	23.0	61	63	65	121	25	0,9	4
25	45	24.0	63	63	65	121	25	0,9	4
30	45	24.0	63	63	65	121	25	1,1	5
32	53	31.0	70	70	73	133	32	1,1	6
40	63	38.0	80	80	85	155	40	1,1	6

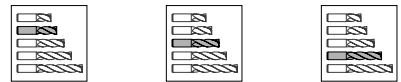
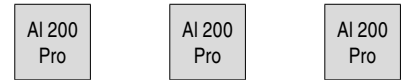
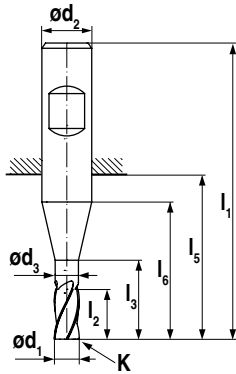
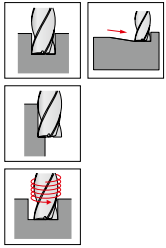
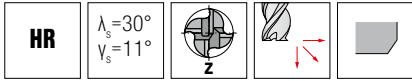
U8		NEW U8	
Article no.		Article no.	
50 125 ...	£	54 030 ...	£
060	30.42	060	29.50
070	37.10	070	39.90
080	31.16	080	36.09
090	38.57	090	45.35
100	31.16	100	41.11
110	45.99	110	50.63
120	43.26	120	45.88
130		130	57.20
140	45.38	140	51.58
150		150	67.16
160	51.56	160	67.50
180	57.74	180	75.89
200	71.70	200	90.26
220		220	110.85
240		240	138.64
250	105.46	250	137.86
300		300	181.72
320		320	187.60
400		400	371.40

Steel	●	●
Stainless steel	○	○
Cast iron	●	●
Non ferrous metals	○	○
Heat resistant alloys	○	○
hardened materials		

→ v_c/f_z Page 53–55

Powdersteel fine roughing cutter

▪ increasing tapered core



DIN 844 DIN 844 DIN 844

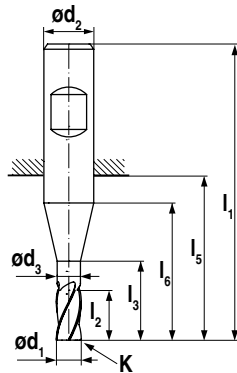
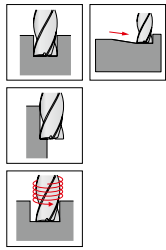
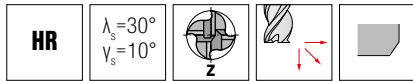


d_1 k10 DC mm	l_2 APMX mm	d_3 DN mm	l_3 LH mm	l_6 mm	l_5 LPR mm	l_1 OAL mm	d_2 h6 DCONMS mm	K CHW mm	Z ZEFP	NEW U8 Article no. 50 004 ... £	NEW U8 Article no. 50 005 ... £	NEW U8 Article no. 50 006 ... £
6	13	5.5	19	19	21	57	6	0,35	4	22.92	060	
6	19	5.5	25	25	27	63	6	0,35	4		35.43	060
6	24	5.5	30	30	32	68	6	0,35	4			39.60
8	19	7.5	25	27	29	69	10	0,45	4	23.97	080	
8	28	7.5	34	36	38	78	10	0,45	4		42.72	080
8	38	7.5	44	46	48	88	10	0,45	4			47.93
10	22	9.5	30	30	32	72	10	0,45	4	27.09	100	
10	34	9.5	42	42	44	84	10	0,45	4		45.85	100
10	45	9.5	53	53	55	95	10	0,45	4			52.10
12	26	11.5	36	36	38	83	12	0,6	4	30.22	120	
12	40	11.5	50	50	52	97	12	0,6	4		52.10	120
12	53	11.5	63	63	65	110	12	0,6	4			58.35
16	32	15.0	42	42	44	92	16	0,7	4	39.60	160	
16	48	15.0	58	58	60	108	16	0,7	4		68.77	160
16	63	15.0	73	73	75	123	16	0,7	4			78.15
20	38	19.0	52	52	54	104	20	0,7	4	58.35	200	
20	56	19.0	70	70	72	122	20	0,7	4		94.82	200
20	75	19.0	89	89	91	141	20	0,7	4			107.33

Steel	●	●	●
Stainless steel	○	○	○
Cast iron	●	●	●
Non ferrous metals	○	○	○
Heat resistant alloys			
hardened materials			

→ v_c/f_z Page 50+51

Fine profile milling cutter HSS-E Co 8F



DIN 69844

DIN 844



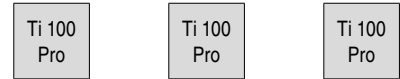
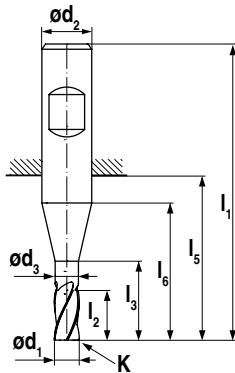
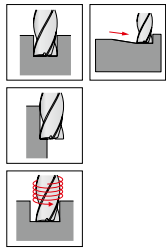
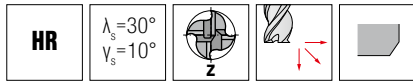
d ₁ k12 DC mm	l ₂ APMX mm	d ₃ DN mm	l ₃ LH mm	l ₆ mm	l ₅ LPR mm	l ₁ OAL mm	d ₂ h6 DCONMS mm	K CHW mm	Z ZEFP
4	11		11	17	19	55	6	0,35	3
5	13		13	19	21	57	6	0,35	3
6	13	5.5	19	19	21	57	6	0,35	4
6	24	5.5	30	30	32	68	6	0,35	4
8	19	7.5	25	27	29	69	10	0,45	4
8	38	7.5	44	46	48	88	10	0,45	4
10	22	9.5	30	30	32	72	10	0,45	4
10	45	9.5	53	53	55	95	10	0,45	4
12	26	11.5	36	36	38	83	12	0,6	4
12	53	11.5	63	63	65	110	12	0,6	4
14	26	11.5	36	36	38	83	12	0,6	4
14	53	11.5	63	63	65	110	12	0,6	4
16	32	15.0	42	42	44	92	16	0,7	4
16	63	15.0	73	73	75	123	16	0,7	4
18	32	15.0	42	42	44	92	16	0,7	4
18	63	15.0	73	73	75	123	16	0,7	4
20	38	19.0	52	52	54	104	20	0,7	4
20	75	19.0	89	89	91	141	20	0,7	4
22	38	19.0	52	52	54	114	20	0,7	4
22	75	19.0	89	89	91	141	20	0,7	4
25	45	24.0	63	63	65	121	25	0,7	4

U8		U8	
Article no.		Article no.	
50 140 ...		50 141 ...	
£		£	
37.58	040		
37.58	050		
31.78	060		
		55.28	060
33.76	080	64.42	080
		68.98	100
36.36	100		
		76.90	120
43.40	120		
		83.58	140
48.34	140		
		100.63	160
54.53	160		
		116.45	180
61.46	180		
		137.85	200
76.65	200		
		166.03	220
97.67	220		
110.16	250		

Steel	●	●
Stainless steel	○	○
Cast iron	●	●
Non ferrous metals	○	○
Heat resistant alloys	○	○
hardened materials		

→ v_c/f_z Page 53–55

Powdersteel Fine rough milling cutter



Factory standard

DIN 844

Factory standard



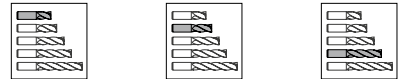
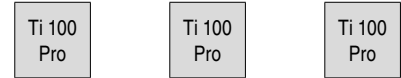
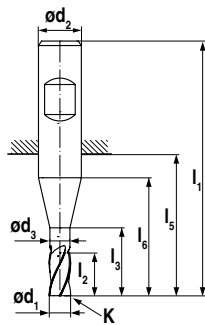
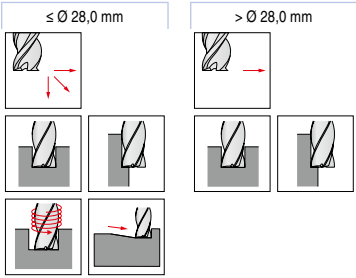
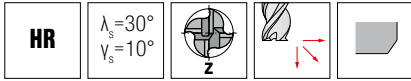
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										Article no. 54 031 ...	£	Article no. 54 032 ...	£	Article no. 54 033 ...	£
6	8	5.5	14	14	16	52	6	0,35	4	54 031 ...	43.69	54 032 ...	32.06	54 033 ...	
6	13	5.5	19	19	21	57	6	0,35	4				060		
8	11	7.5	17	19	21	61	10	0,45	4	54 031 ...	48.68	54 032 ...	43.44	54 033 ...	
8	19	7.5	25	27	29	69	10	0,45	4				080		
8	28	7.5	34	36	38	78	10	0,45	4						56.02
10	13	9.5	21	21	23	63	10	0,45	4	54 031 ...	49.42	54 032 ...	45.21	54 033 ...	
10	22	9.5	30	30	32	72	10	0,45	4				100		
10	34	9.5	42	42	44	84	10	0,45	4						68.98
12	16	11.5	26	26	28	73	12	0,6	4	54 031 ...	59.07	54 032 ...	49.85	54 033 ...	
12	26	11.5	36	36	38	83	12	0,6	4				120		
12	40	11.5	50	50	52	97	12	0,6	4						81.79
14	16	11.5	26	26	28	73	12	0,6	4	54 031 ...	75.76	54 032 ...	56.82	54 033 ...	
14	26	11.5	36	36	38	83	12	0,6	4				140		
14	40	11.5	50	50	52	97	12	0,6	4						103.76
16	19	15.0	29	29	31	79	16	0,7	4	54 031 ...	81.68	54 032 ...	75.50	54 033 ...	
16	32	15.0	42	42	44	92	16	0,7	4				160		
16	48	15.0	58	58	60	108	16	0,7	4						133.43
18	19	15.0	29	29	31	79	16	0,7	4	54 031 ...	99.13	54 032 ...	87.23	54 033 ...	
18	32	15.0	42	42	44	92	16	0,7	4				180		
18	48	15.0	58	58	60	108	16	0,7	4						168.29
20	22	19.0	36	36	38	88	20	0,7	4	54 031 ...	110.33	54 032 ...	96.95	54 033 ...	
20	38	19.0	52	52	54	104	20	0,7	4				200		
20	56	19.0	70	70	72	122	20	0,7	4						203.04
22	22	19.0	36	36	38	88	20	0,7	4	54 031 ...	149.10	54 032 ...	155.98	54 033 ...	
22	38	19.0	52	52	54	104	20	0,7	4				220		
22	56	19.0	70	70	72	122	20	0,7	4						254.60
25	26	24.0	44	44	46	102	25	0,7	4	54 031 ...	174.50	54 032 ...	146.15	54 033 ...	
25	45	24.0	63	63	65	121	25	0,7	4				250		
25	68	24.0	86	86	88	144	25	0,7	4						297.35
28	26	24.0	44	44	46	102	25	0,9	5	54 031 ...	242.92	54 032 ...	231.92	54 033 ...	
30	45	24.0	63	63	65	121	25	0,9	5				280		
32	32	31.0	49	49	52	112	32	0,9	6	54 031 ...	295.76	54 032 ...	205.84	54 033 ...	
32	53	31.0	70	70	73	133	32	0,9	6				320		

Steel	●	●	●
Stainless steel	●	●	●
Cast iron	●	●	●
Non ferrous metals	○	○	○
Heat resistant alloys	○	○	○
hardened materials			

→ v_c/f_z Page 53–55

Fine profile milling cutter HSS-E Co 8F

▪ > Ø 28,0 mm recessed centre

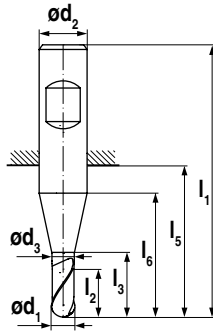
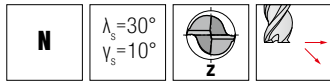


Factory standard DIN 69844 DIN 844
B B B

d ₁ k12 DC mm	l ₂ APMX mm	d ₃ DN mm	l ₃ LH mm	l ₆ mm	l ₅ LPR mm	l ₁ OAL mm	d ₂ h6 DCONMS mm	K CHW mm	Z ZEFP	NEW U8		NEW U8		NEW U8	
										Article no. 54 022 ...	£	Article no. 54 023 ...	£	Article no. 54 024 ...	£
4	11		11	17	19	55	6	0,35	3			40.90	040		
5	13		13	19	21	57	6	0,35	3			24.55	050		
6	8	5.5	14	14	16	52	6	0,35	4	31.24	060				
6	13	5.5	19	19	21	57	6	0,35	4			22.11	060	42.28	060
6	24	5.5	30	30	32	68	6	0,35	4						
8	11	7.5	17	19	21	61	10	0,45	4	36.61	080				
8	19	7.5	25	27	29	69	10	0,45	4			26.76	080		
8	38	7.5	44	46	48	88	10	0,45	4					58.98	080
10	13	9.5	21	21	23	63	10	0,45	4	33.49	100				
10	22	9.5	30	30	32	72	10	0,45	4			29.74	100		
10	45	9.5	53	53	55	95	10	0,45	4					61.50	100
12	16	11.5	26	26	28	73	12	0,6	4	39.99	120				
12	26	11.5	36	36	38	83	12	0,6	4			32.94	120		
12	53	11.5	63	63	65	110	12	0,6	4					67.50	120
14	16	11.5	26	26	28	73	12	0,6	4	53.14	140				
14	26	11.5	36	36	38	83	12	0,6	4			43.89	140		
14	53	11.5	63	63	65	110	12	0,6	4					88.49	140
16	19	15.0	29	29	31	79	16	0,7	4	54.17	160				
16	32	15.0	42	42	44	92	16	0,7	4			47.64	160		
16	63	15.0	73	73	75	123	16	0,7	4					97.98	160
18	19	15.0	29	29	31	79	16	0,7	4	71.75	180				
18	32	15.0	42	42	44	92	16	0,7	4			62.79	180		
18	63	15.0	73	73	75	123	16	0,7	4					115.64	180
20	22	19.0	36	36	38	88	20	0,7	4	72.95	200				
20	38	19.0	52	52	54	104	20	0,7	4			65.99	200		
20	75	19.0	89	89	91	141	20	0,7	4					127.22	200
22	38	19.0	52	52	54	114	20	0,7	4			85.02	220		
22	75	19.0	89	89	91	141	20	0,7	4					158.57	220
25	45	24.0	63	63	65	121	25	0,7	4			100.16	250		
25	90	24.0	108	108	110	166	25	0,7	4					253.00	250
28	45	24.0	63	63	65	121	25	0,9	5			118.62	280		
28	90	24.0	108	108	110	166	25	0,9	5					283.40	280
30	45	24.0	63	63	65	121	25	0,9	5			129.67	300		
30	90	24.0	108	108	110	166	25	0,9	5					295.94	300
32	53	31.0	70	70	73	133	32	0,9	6			145.59	320		
32	106	31.0	123	123	126	186	32	0,9	6					298.92	320

Steel	●	●	●
Stainless steel	●	●	●
Cast iron	●	●	●
Non ferrous metals	○	○	○
Heat resistant alloys	○	○	○
hardened materials			

Ball nosed end milling cutter HSS-E Co 8



Ti 100
Pro



Factory standard

Factory standard

Factory standard

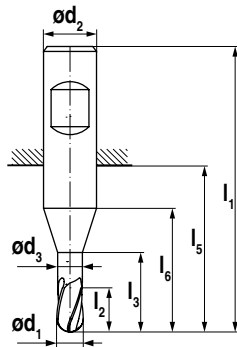
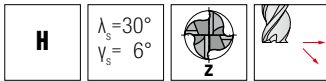


d ₁ h10 DC mm	l ₂ APMX mm	d ₃ DN mm	l ₃ LH mm	l ₆ mm	l ₅ LPR mm	l ₁ OAL mm	d ₂ h6 DCONMS mm	Z ZEFP	U8		NEW U8		U8	
									Article no. 50 320 ...	£	Article no. 54 041 ...	£	Article no. 50 321 ...	£
2	4		4	10	12	48	6	2	29.80	020	28.13	020		
3	5		5	11	13	49	6	2	28.32	030	27.10	030		
3	8		8	18	20	56	6	2					32.99	030
4	7		7	13	15	51	6	2	28.32	040	27.10	040		
4	11		11	25	27	63	6	2					32.99	040
5	8		8	14	16	52	6	2	28.32	050	27.10	050		
5	13		13	30	32	68	6	2					33.90	050
6	8	5.50	14	14	16	52	6	2	28.06	060	27.00	060		
6	13	5.50	30	30	32	68	6	2					34.67	060
7	10	6.50	16	18	20	60	10	2	34.79	070	51.54	070		
7	16	6.35	36	38	40	80	10	2					41.16	070
8	11	7.50	17	19	21	61	10	2	31.04	080	47.89	080		
8	19	7.35	44	46	48	88	10	2					38.04	080
9	11	8.50	18	19	21	61	10	2	36.85	090	55.43	090		
9	19	8.35	45	46	48	88	10	2					42.79	090
10	13	9.50	21	21	23	63	10	2	35.37	100	35.82	100		
10	22	9.35	53	53	55	95	10	2					42.79	100
11	13	10.50	21	23	25	70	12	2	41.28	110				
11	22	10.50	53	55	57	102	12	2					47.65	110
12	16	11.50	26	26	28	73	12	2	39.80	120	41.20	120		
12	26	11.50	63	63	65	110	12	2					48.42	120
13	16	11.50	26	26	28	73	12	2	47.96	130	74.12	130		
14	16	11.50	26	26	28	73	12	2	46.12	140	52.87	140		
14	26	11.50	63	63	65	110	12	2					57.52	140
15	16	11.50	26	26	28	73	12	2	54.28	150	87.89	150		
15	26	11.50	63	63	65	110	12	2					72.85	150
16	19	15.50	29	29	31	79	16	2	56.50	160	89.96	160		
16	32	15.00	73	73	75	123	16	2					72.85	160
18	19	15.50	29	29	31	79	16	2	70.11	180	78.14	180		
18	32	15.00	73	73	75	123	16	2					91.38	180
20	22	19.00	36	36	38	88	20	2	74.79	201	81.35	201		
22	22	19.00	36	36	38	88	20	2	102.11	220				
24	26	23.00	42	44	46	102	25	2	97.67	240	162.51	240		
24	45	23.00	106	108	110	166	25	2					137.60	240
25	26	24.00	44	44	46	102	25	2	97.67	250				
25	45	24.00	108	108	110	166	25	2					129.03	250
26	26	24.00	44	44	46	102	25	2	133.89	260				
28	26	24.00	44	44	46	102	25	2	134.01	280				
30	26	24.00	44	44	46	102	25	2	146.41	300				
30	45	24.00	108	108	110	166	25	2					186.40	300

Steel	●	●	●
Stainless steel	○	○	○
Cast iron	●	●	●
Non ferrous metals	○	○	○
Heat resistant alloys	○	○	○
hardened materials			

→ v_c/f_z Page 53–55

Ball nosed cutter HSS-E Co 8F



DIN 1889 B

DIN 1889 B

DIN 1889 B



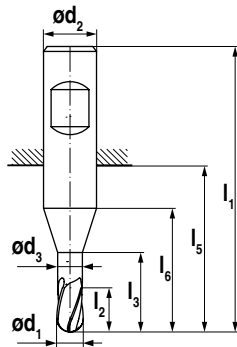
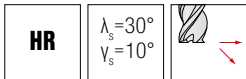
d ₁ k12 DC mm	l ₂ APMX mm	d ₃ DN mm	l ₃ LH mm	l ₆ mm	l ₅ LPR mm	l ₁ OAL mm	d ₂ h6 DCONMS mm	Z ZEFP
6	13	5.5	19	19	21	57	6	4
6	24	5.5	30	30	32	68	6	4
8	19	7.5	25	27	29	69	10	4
8	38	7.5	44	46	48	88	10	4
10	22	9.5	30	30	32	72	10	4
10	45	9.5	53	53	55	95	10	4
12	26	11.5	36	36	38	83	12	4
12	53	11.5	63	63	65	110	12	4
16	32	15.0	42	42	44	92	16	4
16	63	15.0	73	73	75	123	16	4
20	38	19.0	52	52	54	104	20	4
20	75	19.0	89	89	91	141	20	4
25	45	24.0	63	63	65	121	25	5

U8		NEW U8		NEW U8	
Article no.		Article no.		Article no.	
50 308 ...		54 038 ...		54 039 ...	
£		£		£	
79.62	060	61.18	060	71.65	060 ¹⁾
97.67	080	80.21	080	93.28	080 ¹⁾
107.44	100	86.11	100	101.33	100
105.83	120	96.49	120	114.49	120
158.00	160	139.33	160	164.76	160
		181.63	200	222.92	200
		235.19	250		

Steel	●	●	●
Stainless steel	○	○	○
Cast iron	●	●	●
Non ferrous metals	○	○	○
Heat resistant alloys	○	○	○
hardened materials			

1) Factory standard

Ball nosed fine rough milling cutter HSS-E Co 8F



Ti 100
Pro



DIN 1889 B



NEW U8

Article no.

54 040 ...

£

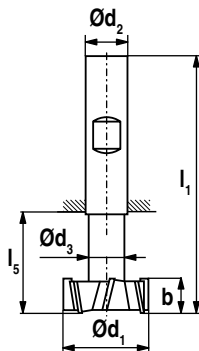
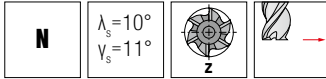
d ₁ js14	l ₂	d ₃	l ₃	l ₆	l ₅	l ₁	d ₂ h6	Z		
DC	APMX	DN	LH		LPR	OAL	DCONMS	ZEFP		
mm	mm	mm	mm	mm	mm	mm	mm			
6	13	5.5	19	19	21	57	6	4		71.65 060
8	19	7.5	25	27	29	69	10	4		88.35 080
10	22	9.5	30	30	32	72	10	4		88.71 100
12	26	11.5	36	36	38	83	12	4		103.07 120
16	32	15.0	42	42	44	92	16	4		152.48 160
20	38	19.0	52	52	54	104	20	4		186.06 200

Steel	●
Stainless steel	○
Cast iron	●
Non ferrous metals	○
Heat resistant alloys	○
hardened materials	○

→ v_c/f_z Page 53-55

T-slot milling cutter HSS-E Co 5, cross pitched

▪ For slots according to DIN 650



DIN 851 A

B

U6

Article no.
50 240 ...

£

d ₁ d ₁₁ DC mm	b _{d11} APMX mm	d ₃ h ₁₂ DN mm	l ₅ LPR mm	l ₁ OAL mm	d ₂ h ₆ DCONMS mm	Z ZEFP	£	
11.0	4	4	13.5	53.5	10	6	78.66	110
12.5	6	5	17.0	57.0	10	6	76.71	125
16.0	8	7	22.0	62.0	10	6	86.85	160
18.0	8	8	25.0	70.0	12	6	98.69	180
19.0	9	8	26.0	71.0	12	6	125.79	190 ¹⁾
21.0	9	10	29.0	74.0	12	6	112.93	210
22.0	10	10	30.0	75.0	12	6	146.94	220 ¹⁾
25.0	11	12	34.0	82.0	16	8	132.79	250
28.0	12	13	37.0	85.0	16	8	179.13	280 ¹⁾
32.0	14	15	42.0	90.0	16	8	190.81	320
36.0	16	17	47.0	103.0	25	8	291.01	360 ¹⁾
40.0	18	19	52.0	108.0	25	10	388.91	400
45.0	20	21	57.0	113.0	25	10	413.93	450 ¹⁾
50.0	22	25	64.0	124.0	32	10	497.08	500
60.0	28	30	79.0	139.0	32	10	649.66	600

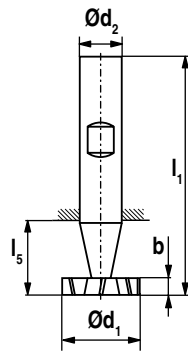
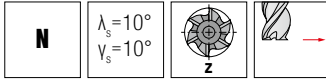
Steel	●
Stainless steel	○
Cast iron	●
Non ferrous metals	○
Heat resistant alloys	○
hardened materials	○

1) Factory standard

→ v_c/f_z Page 53–55

Slot milling cutter HSS-E Co 5, cross-pitched

▪ For slots according to DIN 6888



DIN 850



U6

Article no.
50 234 ...

£

d ₁ h12 DC mm	b _{e8} APMX mm	l ₅ LPR mm	l ₁ OAL mm	d ₂ h6 DCONMS mm	a _p max CDX mm	Z ZEFP	£	Article no.
10.5	2.0	14	50	6	3.25	6	59.07	100
10.5	2.5	14	50	6	3.15	6	59.07	101
10.5	3.0	14	50	6	3.15	6	59.07	102
13.5	2.0	16	56	10	4.45	6	59.02	130 ¹⁾
13.5	3.0	16	56	10	4.45	6	59.02	132
13.5	4.0	16	56	10	4.45	6	59.02	133
16.5	3.0	16	56	10	5.95	6	64.05	161
16.5	4.0	16	56	10	5.95	6	64.05	162
16.5	5.0	16	56	10	5.75	6	64.05	163
19.5	3.0	23	63	10	6.95	8	71.13	190 ¹⁾
19.5	4.0	23	63	10	6.95	8	71.13	191
19.5	5.0	23	63	10	6.75	8	71.13	192
22.5	4.0	23	63	10	8.25	8	83.91	220 ¹⁾
22.5	5.0	23	63	10	8.25	8	83.91	221
22.5	6.0	23	63	10	8.00	8	83.91	222
25.5	5.0	23	63	10	9.00	10	87.50	250 ¹⁾
25.5	6.0	23	63	10	9.00	10	87.50	251
28.5	6.0	23	63	10	10.00	10	121.93	281
28.5	8.0	23	63	10	10.00	10	121.93	283
32.5	6.0	26	71	12	12.00	10	124.43	321 ¹⁾
32.5	8.0	26	71	12	12.00	10	124.43	322
38.5	8.0	26	71	12	13.35	10	180.56	381 ¹⁾
45.5	10.0	26	71	12	16.85	12	220.57	450

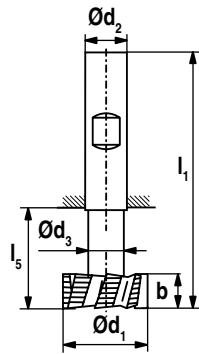
Steel	●
Stainless steel	○
Cast iron	●
Non ferrous metals	○
Heat resistant alloys	○
hardened materials	○

1) Factory standard

→ v_c/f_z Page 53–55

T-slot milling cutter HSS-E Co 5

▪ For slots according to DIN 650



DIN 851 A

B

U6

Article no.

50 241 ...

£

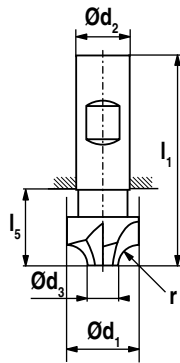
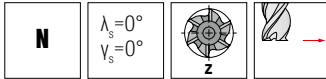
d ₁ d ₁₁ DC mm	b APMX mm	d ₃ h ₁₂ DN mm	l ₅ LPR mm	l ₁ OAL mm	d ₂ h ₆ DCONMS mm	Z ZEFP	Price (£)	Article no.
21	9	10	29	74	12	6	164.55	210
22	10	10	30	75	12	6	194.22	220 ¹⁾
25	11	12	34	82	16	6	197.04	250
28	12	13	37	85	16	6	210.80	280 ¹⁾
32	14	15	42	90	16	6	272.32	320
36	16	17	47	103	25	6	336.74	360 ¹⁾
40	18	19	52	108	25	8	409.39	400
45	20	21	57	113	25	8	493.86	450 ¹⁾

Steel	●
Stainless steel	○
Cast iron	●
Non ferrous metals	○
Heat resistant alloys	○
hardened materials	○

1) Factory standard

→ v_c/f_z Page 53–55

Quarter-round profile milling cutter HSS-E Co 5, concave



DIN 6518
B

U6
Article no.
50 248 ...

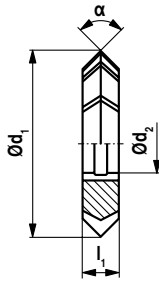
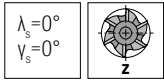
r _{H11} PRFRAD mm	d ₁ DCX mm	d ₃ DC mm	l ₅ LPR mm	l ₁ OAL mm	d _{2 H6} DCONMS mm	Z ZEFP	£	Article no.
1.0	8	6	20	60	10	4	66.40	010
1.5	9	6	20	60	10	4	69.71	015
2.0	10	6	20	60	10	4	66.40	020
2.5	11	6	20	60	10	4	69.71	025
3.0	12	6	15	60	12	4	69.71	030
4.0	14	6	15	60	12	4	74.76	040
5.0	16	6	15	60	12	4	88.67	050
6.0	20	8	19	67	16	4	103.32	060
8.0	24	8	23	71	16	4	121.98	080
9.0	26	8	29	85	25	4	169.74	090
10.0	28	8	29	85	25	4	154.22	100
12.0	34	10	34	90	25	4	221.04	120
15.0	46	16	44	100	25	6	412.39	150
16.0	48	16	44	100	25	6	433.00	160

Steel	●
Stainless steel	○
Cast iron	●
Non ferrous metals	○
Heat resistant alloys	○
hardened materials	○

→ v_c/f_z Page 53-55

Double angle milling cutter HSS

▪ with keyway to DIN 138



DIN 847

α° PNA	d ₁ DC mm	l ₁ OAH mm	d ₂ DCONMS mm	Z ZEFP	U6	
					Article no. 50 360 ...	£
45	50	8	16	22	124.29	045
	63	10	22	24	155.02	145
	80	12	27	26	239.42	245
	100	18	32	28	358.70	345
60	50	10	16	18	124.29	060
	63	14	22	20	172.77	160
	80	18	27	22	277.85	260
	100	25	32	24	445.17	360
90	50	14	16	16	147.40	090
	63	20	22	18	187.92	190
	80	22	27	20	305.82	290
	100	32	32	24	511.02	390
120	50	14	16	16	166.29	120 ¹⁾
	63	20	22	16	236.27	121 ¹⁾

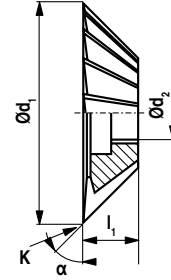
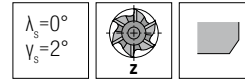
Steel	●
Stainless steel	○
Cast iron	●
Non ferrous metals	○
Heat resistant alloys	○
hardened materials	

1) Factory standard

→ v_c/f_z Page 53–55

Shell type single angle milling cutter HSS

▪ with keyway to DIN 138



DIN 842 A

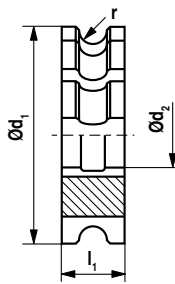
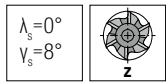
α° KAPR	d ₁ DC mm	l ₁ OAH mm	d ₂ DCONMS mm	K CHW mm	Z ZEFP	U6	
						Article no. 50 362 ...	£
45	40	10	10	0,3	14	138.90	045
	50	13	13	0,3	16	190.94	145
	63	18	16	0,3	18	241.39	245
	80	22	22	0,3	20	340.91	345
	100	28	27	0,3	22	514.78	445
50	50	16	13	0,3	16	190.94	150
60	40	13	10	0,3	14	124.43	060
	50	16	13	0,3	16	152.84	160
	63	20	16	0,3	18	213.78	260
	80	25	22	0,3	20	342.97	360
	100	32	27	0,3	22	522.45	460
	125	40	32	0,3	28	880.17	560

Steel	●
Stainless steel	○
Cast iron	●
Non ferrous metals	○
Heat resistant alloys	○
hardened materials	

→ v_c/f_z Page 53–55

Half-round profile milling cutter HSS, concave

- Relieved version
- with keyway to DIN 138



DIN 855

U6

r_{H11} PRFRAD mm	d_1 DC mm	l_1 OAH mm	d_2 DCONMS mm	Z ZEFP	Article no. 50 366 ...	£
2.0	50	9	16	14		154.67 020
2.5	63	10	22	12		188.65 025
3.0	63	12	22	12		193.91 030
4.0	63	16	22	12		211.41 040
5.0	63	20	22	12		296.23 050
5.5	80	22	27	12		450.51 055 ¹⁾
6.0	80	24	27	12		358.18 060
8.0	80	32	27	12		475.48 080
10.0	100	36	32	12		636.60 100
12.0	100	40	32	12		771.22 120

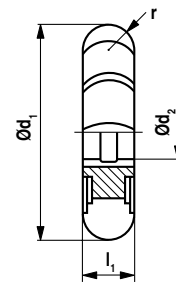
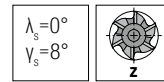
Steel	●
Stainless steel	○
Cast iron	●
Non ferrous metals	○
Heat resistant alloys	○
hardened materials	○

1) Factory standard

→ v_c/f_z Page 53–55

Half-round profile milling cutter HSS, convex

- Relieved version
- with keyway to DIN 138



DIN 856

U6

r_{H11} PRFRAD mm	d_1 DC mm	l_1 OAH mm	d_2 DCONMS mm	Z ZEFP	Article no. 50 364 ...	£
1.6	50	3.2	16	14		129.59 016
2.0	50	4.0	16	14		123.71 020
2.5	63	5.0	22	12		155.84 025
3.0	63	6.0	22	12		155.84 030
4.0	63	8.0	22	12		155.84 040
5.0	63	10.0	22	12		181.00 050
5.5	80	11.0	27	12		309.49 055 ¹⁾
6.0	80	12.0	27	12		267.33 060
8.0	80	16.0	27	12		267.33 080
10.0	100	20.0	32	12		467.36 100
12.0	100	24.0	32	12		616.12 120

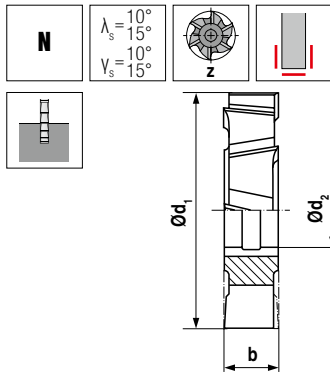
Steel	●
Stainless steel	○
Cast iron	●
Non ferrous metals	○
Heat resistant alloys	○
hardened materials	○

1) Factory standard

→ v_c/f_z Page 53–55

Side and face milling cutter HSS-E Co 5

- Coarse cross-pitched
- with keyway to DIN 138



DIN 885 A

U6

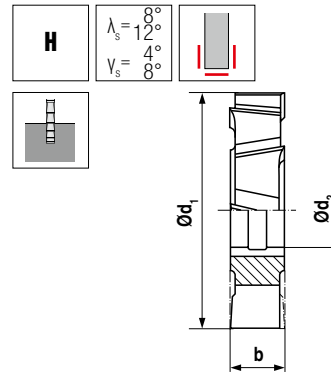
d _{1 js16} DC mm	b _{k11} OAH mm	d _{2 H7} DCONMS mm	Z ZEFP	Article no. 50 348 ...	
				£	
50	4	16	12	132.77	100
50	5	16	12	134.88	102
50	6	16	12	137.10	104
50	8	16	12	152.55	106
50	10	16	12	164.18	108
63	4	22	12	144.28	200
63	5	22	12	153.67	202
63	6	22	12	151.32	204
63	8	22	12	166.90	206
63	10	22	12	187.79	208
63	12	22	12	211.28	210
63	14	22	12	239.34	212
80	5	27	14	194.70	300
80	6	27	14	197.79	302
80	8	27	14	211.28	304
80	10	27	14	216.58	306
80	12	27	14	243.91	308
80	14	27	14	279.38	310
80	16	27	14	302.62	312
80	18	27	14	352.06	314
80	20	27	14	376.67	316
100	6	32	14	283.47	400
100	8	32	14	281.60	402
100	10	32	14	301.51	404
100	12	32	14	325.11	406
100	14	32	14	362.57	408
100	16	32	14	382.48	410
100	18	32	14	449.61	412
100	20	32	14	444.54	414
100	25	32	14	574.83	418
125	8	32	16	373.08	500
125	10	32	16	400.03	502
125	12	32	16	434.15	504
125	14	32	16	489.17	506
125	16	32	16	515.98	508
125	18	32	16	559.39	510
125	20	32	16	596.10	512
125	25	32	16	720.08	516
160	10	40	18	589.80	600
160	12	40	18	659.14	602
160	14	40	18	695.23	604
160	16	40	18	748.14	606
160	18	40	18	836.15	608
160	20	40	18	844.31	610
160	25	40	18	1,035.56	614
160	32	40	18	1,313.44	618

Steel	○
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	○
hardened materials	

→ v_c/f_z Page 56+58

Side and face milling cutter HSS-E Co 5

- Fine cross-pitched version
- with keyway to DIN 138



DIN 885 A

U6

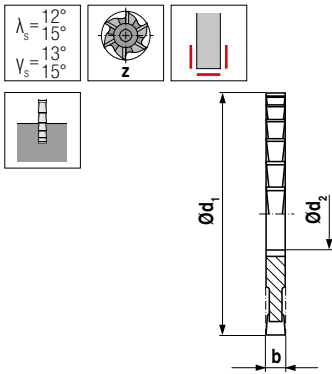
d _{1 js16} DC mm	b _{k11} OAH mm	d _{2 H7} DCONMS mm	Z ZEFP	Article no. 50 349 ...	
				£	
50	4	16	16	156.01	100
50	5	16	16	157.00	102
50	6	16	16	165.16	104
50	8	16	16	177.53	106
50	10	16	16	194.32	108
63	4	22	18	170.86	200
63	5	22	18	183.58	202
63	6	22	18	176.16	204
63	8	22	18	197.54	206
63	10	22	18	220.41	208
63	12	22	18	250.34	210
63	14	22	18	281.12	212
80	5	27	20	230.68	300
80	6	27	20	238.34	302
80	8	27	20	248.11	304
80	10	27	18	254.29	306
80	12	27	18	286.44	308
80	14	27	18	330.81	310
80	16	27	18	358.61	312
80	18	27	18	413.39	314
80	20	27	18	413.63	316
100	6	32	22	332.78	400
100	8	32	22	330.68	402
100	10	32	20	357.02	404
100	12	32	20	385.08	406
100	14	32	20	429.45	408
100	16	32	20	452.94	410
100	18	32	20	532.19	412
100	20	32	20	535.77	414
100	25	32	20	663.08	418
125	8	32	24	441.82	500
125	10	32	22	473.71	502
125	12	32	22	509.56	504
125	14	32	22	574.33	506
125	16	32	22	595.35	508
125	18	32	22	685.83	510
125	20	32	22	699.92	512
125	25	32	22	838.01	516
160	10	40	26	704.63	600
160	12	40	26	767.17	602
160	14	40	26	823.81	604
160	16	40	26	886.22	606
160	18	40	26	973.12	608
160	20	40	26	974.12	610
160	25	40	26	1,216.15	614
160	32	40	26	1,528.66	618

Steel	●
Stainless steel	○
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	○
hardened materials	

→ v_c/f_z Page 56+58

Narrow side and face milling cutter HSS-E Co 5

- Cross-pitched
- with keyway to DIN 138



DIN 1834 A

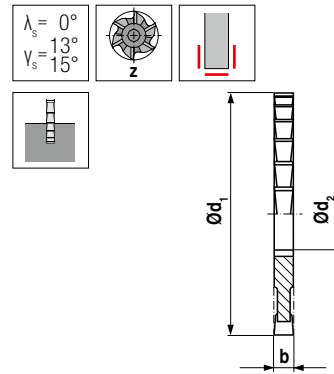
d _{1 js16} DC mm	b _{k11} OAH mm	d _{2 H7} DCONMS mm	Z ZEFP	U6	
				Article no. 50 340 ...	£
63	1.6	22	28	118.52	200
63	2.0	22	28	116.58	202
63	2.5	22	28	119.06	204
63	3.0	22	28	122.38	206
80	1.6	27	32	140.82	300
80	2.0	27	32	136.72	302
80	2.5	27	32	139.08	304
80	3.0	27	32	143.04	306
80	4.0	27	32	153.04	310
100	1.6	32	36	168.38	400
100	2.0	32	36	167.39	402
100	2.5	32	36	167.39	404
100	3.0	32	36	170.35	406
100	4.0	32	36	183.58	410
100	5.0	32	36	201.50	414
125	1.6	32	40	220.54	500
125	2.0	32	40	212.02	502
125	2.5	32	40	218.37	504
125	3.0	32	40	222.64	506
125	4.0	32	40	238.47	510
125	5.0	32	40	255.40	514
125	6.0	32	40	246.89	516
160	2.0	40	48	353.44	600
160	2.5	40	48	340.33	602
160	3.0	40	48	346.76	604
160	4.0	40	48	366.54	606
160	5.0	40	48	388.05	608
160	6.0	40	48	416.61	610
160	8.0	40	36	475.57	612

Steel	●
Stainless steel	○
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
hardened materials	○

→ v_c/f_z Page 56+58

Narrow side and face milling cutter HSS-E Co 5

- straight cut
- with keyway to DIN 138



DIN 1834 B

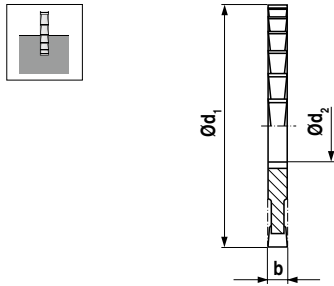
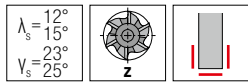
d _{1 js16} DC mm	b _{k11} OAH mm	d _{2 H7} DCONMS mm	Z ZEFP	U6	
				Article no. 50 341 ...	£
63	1.6	22	32	155.15	200
63	2.0	22	32	137.36	202
63	2.5	22	32	140.18	204
63	3.0	22	32	144.14	206
80	1.6	27	36	165.90	300
80	2.0	27	36	161.20	302
80	2.5	27	36	163.92	304
80	3.0	27	36	168.25	306
80	4.0	27	36	180.36	310
100	1.6	32	40	198.42	400
100	2.0	32	40	197.29	402
100	2.5	32	40	197.18	404
100	3.0	32	40	200.76	406
100	4.0	32	40	216.47	410
100	5.0	32	40	229.44	414
125	1.6	32	44	267.76	500
125	2.0	32	44	257.51	502
125	2.5	32	44	263.80	504
125	3.0	32	44	270.37	506
125	4.0	32	44	289.52	510
125	5.0	32	44	309.92	514
125	6.0	32	44	299.58	516
160	2.0	40	52	414.62	600
160	2.5	40	52	399.17	602
160	3.0	40	52	406.95	604
160	4.0	40	52	429.95	606
160	5.0	40	52	455.30	608
160	6.0	40	52	488.78	610
160	8.0	40	40	557.90	612

Steel	●
Stainless steel	○
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	○
hardened materials	○

→ v_c/f_z Page 56+58

Narrow side and face milling cutter HSS-E Co 5

- Coarse cross-pitched
- with keyway to DIN 138



Factory standard

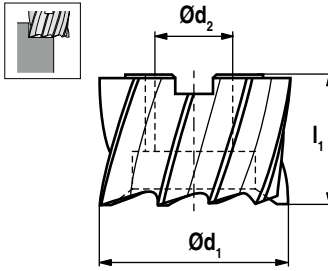
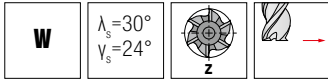
d ₁ js16 DC mm	b _{k11} OAH mm	d ₂ H7 DCONMS mm	Z ZEFP	U6	
				Article no. 50 342 ...	£
63	1.6	22	16	141.06	200
63	2.0	22	16	124.86	202
63	2.5	22	16	127.58	204
63	3.0	22	16	131.04	206
80	1.6	27	20	150.82	300
80	2.0	27	20	146.51	302
80	2.5	27	20	149.10	304
80	3.0	27	20	153.04	306
80	4.0	27	20	164.05	310
100	1.6	32	24	192.48	400
100	2.0	32	24	191.36	402
100	2.5	32	24	191.12	404
100	3.0	32	24	194.58	406
100	4.0	32	24	209.91	410
100	5.0	32	24	222.40	414
125	1.6	32	26	243.29	500
125	2.0	32	26	234.13	502
125	2.5	32	26	239.95	504
125	3.0	32	26	245.65	506
125	4.0	32	26	263.20	510
125	5.0	32	26	281.75	514
125	6.0	32	26	272.46	516
160	2.0	40	30	377.04	600
160	2.5	40	30	362.95	602
160	3.0	40	30	369.88	604
160	4.0	40	30	390.90	606
160	5.0	40	30	413.88	608
160	6.0	40	30	444.41	610
160	8.0	40	22	507.33	612

Steel	
Stainless steel	●
Cast iron	
Non ferrous metals	●
Heat resistant alloys	○
hardened materials	

→ v_c/f_z Page 56+58

Face milling cutters HSS-E Co 5

- with keyway to DIN 138



DIN 1880

U8

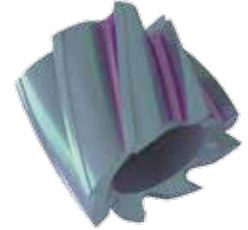
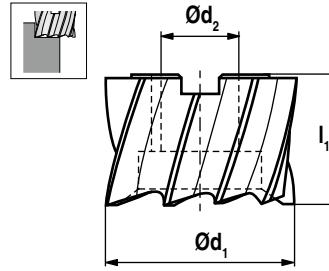
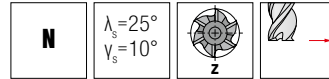
d ₁ k10 DC mm	l ₁ OAH mm	d ₂ DCONMS mm	Z ZEFP	Article no. 50 255 ... £	
40	32	16	6	142.51	040
50	36	22	6	181.45	050
63	40	27	6	242.60	063
80	45	27	6	358.00	080
100	50	32	6	580.47	100

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	○
hardened materials	○

→ v_c/f_z Page 57+58

Face milling cutters HSS-E Co 5

- with keyway to DIN 138



Ti 100
Pro

DIN 1880

NEW U8

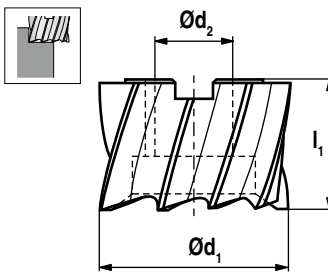
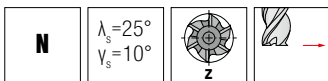
d ₁ k10 DC mm	l ₁ OAH mm	d ₂ DCONMS mm	Z ZEFP	Article no. 54 035 ... £	
40	32	16	8	198.74	040
50	36	22	8	243.77	050
63	40	27	8	224.66	063
80	45	27	10	349.26	080
100	50	32	12	585.30	100

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	○
hardened materials	○

→ v_c/f_z Page 57+58

Face milling cutters HSS-E Co 5

- with keyway to DIN 138



DIN 1880

U8

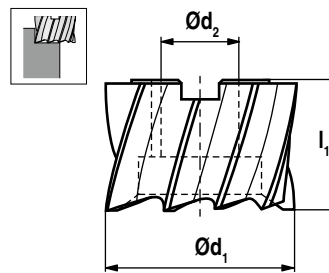
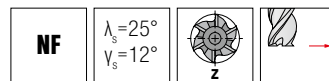
d ₁ k10 DC mm	l ₁ OAH mm	d ₂ DCONMS mm	Z ZEFP	Article no. 50 250 ... £	
40	32	16	8	135.39	040
50	36	22	8	173.57	050
63	40	27	8	246.62	063
80	45	27	10	361.76	080
100	50	32	12	575.54	100

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	○
hardened materials	○

→ v_c/f_z Page 57+58

Roughing-finishing face milling cutters HSS-Co 5

- with keyway to DIN 138
- Manufacturing tolerance lies on the plus range of the tolerance js14



Ti 100
Pro

DIN 1880

NEW U8

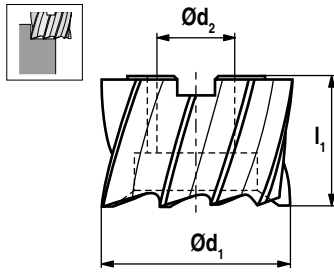
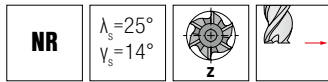
d ₁ js14 DC mm	l ₁ OAH mm	d ₂ DCONMS mm	Z ZEFP	Article no. 54 036 ... £	
40	32	16	7	134.14	040
50	36	22	8	172.12	050
63	40	27	8	352.02	063
80	45	27	10	531.01	080
100	50	32	12	792.31	100

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	○
hardened materials	○

→ v_c/f_z Page 57+58

Roughing face milling cutters HSS-E Co 5

- with keyway to DIN 138
- Manufacturing tolerance lies on the plus range of the tolerance js14



DIN 1880

U8

Article no.

50 260 ...

£

d _{1 js14} DC mm	l ₁ OAH mm	d ₂ DCONMS mm	Z ZEFP	Article no.	Price (£)
40	32	16	7	040	137.96
50	36	22	8	050	182.96
63	40	27	8	063	244.91
80	45	27	10	080	338.22
100	50	32	12	100	513.09

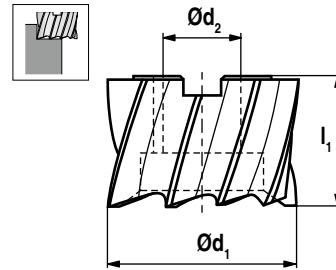
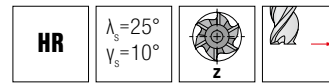
Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	○
hardened materials	○

→ v_c/f_z Page 57+58

Roughing-finishing face milling cutters

HSS-E Co 8F

- with keyway to DIN 138
- Manufacturing tolerance lies on the plus range of the tolerance js14



Ti 100
Pro

DIN 1880

NEW U8

Article no.

54 037 ...

£

d _{1 js14} DC mm	l ₁ OAH mm	d ₂ DCONMS mm	Z ZEFP	Article no.	Price (£)
40	32	16	7	040	142.10
50	36	22	8	050	175.67
63	40	27	8	063	380.31
80	45	27	10	080	377.63
100	50	32	12	100	605.91

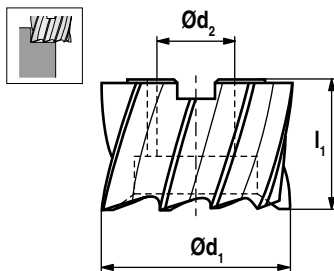
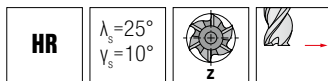
Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	○
hardened materials	○

→ v_c/f_z Page 57+58

Roughing-finishing face milling cutters

HSS-E Co 8F

- with keyway to DIN 138
- Manufacturing tolerance lies on the plus range of the tolerance js14



DIN 1880

U8

Article no.

50 297 ...

£

d _{1 js14} DC mm	l ₁ OAH mm	d ₂ DCONMS mm	Z ZEFP	Article no.	Price (£)
40	32	16	7	040	137.96
50	36	22	8	050	182.96
63	40	27	8	063	244.91
80	45	27	10	080	338.22
100	50	32	12	100	525.14

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	○
hardened materials	○

→ v_c/f_z Page 57+58

Material examples referring to the WNT cutting data tables

	Index	Material	Strength N/mm ² / HB / HRC	Material number	Material designation	Material number	Material designation	Material number	Material designation
P	1.1	General construction steel	< 800 N/mm ²	1.0402	EN3B				
	1.2	Free cutting steel	< 800 N/mm ²	1.0711	EN1A				
	1.3	Hardened steel, non alloyed	< 800 N/mm ²	1.0401	EN32C				
	1.4	Alloyed hardened steel	< 1000 N/mm ²	1.7325	25 CD4				
	1.5	Tempering steel, unalloyed	< 850 N/mm ²	1.5752	EN36	1.0535	EN9		
	1.6	Tempering steel, unalloyed	< 1000 N/mm ²	1.6582	EN24				
	1.7	Tempering steel, alloyed	< 800 N/mm ²	1.7225	EN19				
	1.8	Tempering steel, alloyed	< 1300 N/mm ²	1.8515	EN40B				
	1.9	Steel castings	< 850 N/mm ²	0.9650	G-X 260 Cr 27	1.6750	GS-20 NiCrMo 3.7	1.6582	GS-34 CrNiMo 6
	1.10	Nitriding steel	< 1000 N/mm ²	1.8509	EN41B				
	1.11	Nitriding steel	< 1200 N/mm ²	1.1186	EN8	1.1160	EN14A		
	1.12	Roller bearing steel	< 1200 N/mm ²	1.3505	534A99				
	1.13	Spring steel	< 1200 N/mm ²		EN45		EN47		EN43
	1.14	High-speed steel	< 1300 N/mm ²	1.3343	M2	1.3249	M34		
	1.15	Cold working tool steel	< 1300 N/mm ²	1.2379	D2	1.2311	P20		
	1.16	Hot working tool steel	< 1300 N/mm ²	1.2344	H13				
M	2.1	Cast steel and sulphured stainless steel	< 850 N/mm ²	1.4581	318				
	2.2	Stainless steel, ferritic	< 750 N/mm ²	1.4000	403				
	2.3	Stainless steel, martensitic	< 900 N/mm ²	1.4057	EN57				
	2.4	Stainless steel, ferritic / martensitic	< 1100 N/mm ²	1.4028	EN56B				
	2.5	Stainless steel, austenitic / ferritic	< 850 N/mm ²	1.4542	17-4PH				
	2.6	Stainless steel, austenitic	< 750 N/mm ²	1.4305	303	1.4401	316	1.4301	304
	2.7	Heat resistant steel	< 1100 N/mm ²	1.4876	Incoloy 800				
K	3.1	Grey cast iron with lamellar graphite	100–350 N/mm ²	0.6015	Grade 150	0.6020	Grade 220	0.6025	Grade 260
	3.2	Grey cast iron with lamellar graphite	300–500 N/mm ²	0.6030	Grade 300	0.6035	Grade 350	0.6040	Grade 400
	3.3	Gray cast iron with spheroidal graphite	300–500 N/mm ²	0.7040	SG 400-12	0.7043	SG 370-17	0.7050	SG 500-7
	3.4	Gray cast iron with spheroidal graphite	500–900 N/mm ²	0.7060	SG 600-3	0.7070	SG 700-2	0.7080	SG 800-2
	3.5	White malleable cast iron	270–450 N/mm ²	0.8035	GTW-35	0.8045	GTW-45		
	3.6	White malleable cast iron	500–650 N/mm ²	0.8055	GTW-55	0.8065	GTW-65		
	3.7	Black malleable cast iron	300–450 N/mm ²	0.8135	GTS-35	0.8145	GTS-45		
	3.8	Black malleable cast iron	500–800 N/mm ²	0.8155	GTS-55	0.8170	GTS-70		
N	4.1	Aluminium (non alloyed, low alloyed)	< 350 N/mm ²	3.0255	1050 A	3.0275	1070 A	3.0285	1080 A (A8)
	4.2	Aluminium alloys < 0.5% Si	< 500 N/mm ²	3.1325	2017 A (AU4G)	3.4335	7005 (AZ5G)	3.4365	7075 (AZ5GU)
	4.3	Aluminium alloy 0,5- 10% Si	< 400 N/mm ²	3.2315	A- G S1	3.2373	A-S9 G	3.2151	A-S 6 U4
	4.4	Aluminium alloys 10 - 15% Si	< 400 N/mm ²	3.2581	A-S12	3.2583	A-S12 U		
	4.5	Aluminum alloys > 15% Si	< 400 N/mm ²		A-S18	A-S17 U4			
	4.6	Copper (non alloyed, low alloyed)	< 350 N/mm ²	2.0040	Cu-c1	2.0060	Cu-a1	2.0090	Cu-b1
	4.7	Copper wrought alloys	< 700 N/mm ²	2.1247	Cub2 (Beryllium Copper)	2.0855	CuN2S (Nickel Copper)	2.1310	CU-Fe2P
	4.8	Special copper alloys	< 200 HB	2.0916	Cu-A5	2.1525	Cu-S3 M		Ampco 8 (Cu-A6Fe2)
	4.9	Special copper alloys	< 300 HB	2.0978	Cu-A111 Fe5 Ni5)		Ampco 18 (Cu- A10 Fe3)		
	4.10	Special copper alloys	> 300 HB	2.1247	Cu Be2		Ampco M4		
	4.11	Short-chipping brass, bronze, red bronze	< 600 N/mm ²	2.0331	Cu Zn36 Pb1,5	2.0380	Cu Zn39 Pb2 (Ms 56)	2.0410	Cu Zn44 Pb2
	4.12	Long-chipping brass	< 600 N/mm ²	2.0335	Cu Zn 36 (Ms63)	2.1293	Cu Cr1 Zr		
	4.13	Thermoplastics		PE	PVC	PS	Polystyrene		Plexiglas
	4.14	Duroplastics		PF	Bakelite		Pertinax		
	4.15	Fibre-reinforced plastics			Carbon Fibre		Fibreglass		Aramid Fibre (Kevlar)
	4.16	Magnesium and magnesium alloys	< 850 N/mm ²	3.5812	Mg A7 Z1	3.5662	Mg A9	3.5105	Mg Tr3 Z2 Zn 1
	4.17	Graphite			R8500X		R8650		Technograph 15
	4.18	Tungsten and tungsten alloys			W-Ni Fe (Densimet)		W- Ni Cu (Inermet)		Denal
	4.19	Molybdenum and molybdenum alloys			TZM		MHQ		Mo W
S	5.1	Pure nickel		2.4066	Ni99 (Nickel 200)	2.4068	Lc Ni99 (Nickel 201)		
	5.2	Nickel alloys		1.3912	Fe-Ni36 (Invar)	1.3917	Fe -Ni42 (N42)	1.3922	Fe-Ni48 (N48)
	5.3	Nickel alloys	< 850 N/mm ²	2.4375	Ni Cu30 Al (Monel K500)	2.4360	Ni Cu30Fe (Monel 400)	2.4668	
	5.4	Nickel molybdenum alloys		2.4600	Ni Mo30Cr2 (Hastelloy B4)	2.4617	Ni Mo28 (Hastelloy B2)	2.4819	Ni Mo16Cr16 Hastell. C276
	5.5	Nickel-chromium alloys	< 1300 N/mm ²	2.4951	Ni Cr20TiAl (Nimonic 80A)	2.4858	Ni Cr21Mo (Inconel 825)	2.4856	Ni Cr22Mo9Nb Inconel 625
	5.6	Cobalt Chrome Alloys	< 1300 N/mm ²	2.4964	Co Cr20 W15 Ni10		Co Cr20 Ni16 Mo7		Co Cr28 Mo 6
	5.7	Heat resistant alloys	< 1300 N/mm ²	1.4718	Z45 C S 9-3	1.4747	Z80 CSN 20-02	1.4845	Z12 CN 25-20
	5.8	Nickel-cobalt-chromium alloys	< 1400 N/mm ²	2.4851	Ni Cr23Fe (Inconel 601)	2.4668	Ni Cr19NbMo (Inconel 718)	2.4602	Ni Cr21Mo14 Hastelloy C22
	5.9	Pure titanium	< 900 N/mm ²	3.7025	T35 (Titanium Grade 1)	3.7034	T40 (Titanium Grade 2)	3.7064	T60 (Titanium Grade 4)
	5.10	Titanium alloys	< 700 N/mm ²		T-A6-Nb7 (367)		T-A5-Sn2-Mo4-Cr4 (Ti17)		T-A3-V2,5 (Gr18)
	5.11	Titanium alloys	< 1200 N/mm ²	3.7165	T-A6-V4 (Ta6V)		T-A4-3V-Mo2-Fe2 (SP700)		T-A5-Sn1-Zr1-V1-Mo (Gr32)
H	6.1		< 45 HRC						
	6.2		46–55 HRC						
	6.3	Tempered steel	56–60 HRC						
	6.4		61–65 HRC						
	6.5		65–70 HRC						

Cutting Data – End Milling cutters – 50 003 ...

Index	v _c in m/min	Type short a _{p,max} x d ₁	Ø d ₁ = 12 mm			Ø d ₁ = 16 mm			Ø d ₁ = 20 mm			Ø d ₁ = 25 mm			1st choice			suitable		
			a _e 0,2 mm	a _e 0,1 x d ₁	a _e 0,25 x d ₁	a _e 0,2 mm	a _e 0,1 x d ₁	a _e 0,25 x d ₁	a _e 0,2 mm	a _e 0,1 x d ₁	a _e 0,25 x d ₁	a _e 0,2 mm	a _e 0,1 x d ₁	a _e 0,25 x d ₁	Emulsion	Compressed air	MMS			
			f _z mm			f _z mm			f _z mm			f _z mm								
1.1	66	1,5	0,080	0,064	0,046	0,107	0,085	0,061	0,134	0,106	0,076	0,168	0,133	0,095	●	○	○			
1.2	66	1,5	0,080	0,064	0,046	0,107	0,085	0,061	0,134	0,106	0,076	0,168	0,133	0,095	●	○	○			
1.3	66	1,5	0,080	0,064	0,046	0,107	0,085	0,061	0,134	0,106	0,076	0,168	0,133	0,095	●	○	○			
1.4	61	1,5	0,074	0,058	0,042	0,099	0,077	0,056	0,124	0,096	0,070	0,155	0,120	0,088	●		○			
1.5	61	1,5	0,074	0,058	0,042	0,099	0,077	0,056	0,124	0,096	0,070	0,155	0,120	0,088	●		○			
1.6	61	1,5	0,074	0,058	0,042	0,099	0,077	0,056	0,124	0,096	0,070	0,155	0,120	0,088	●		○			
1.7	61	1,5	0,074	0,058	0,042	0,099	0,077	0,056	0,124	0,096	0,070	0,155	0,120	0,088	●		○			
1.8	44	1,5	0,067	0,053	0,038	0,090	0,070	0,051	0,112	0,088	0,064	0,140	0,110	0,080	●					
1.9	44	1,5	0,067	0,053	0,038	0,090	0,070	0,051	0,112	0,088	0,064	0,140	0,110	0,080	●					
1.10	44	1,5	0,067	0,053	0,038	0,090	0,070	0,051	0,112	0,088	0,064	0,140	0,110	0,080	●					
1.11	44	1,5	0,067	0,053	0,038	0,090	0,070	0,051	0,112	0,088	0,064	0,140	0,110	0,080	●					
1.12	44	1,5	0,067	0,053	0,038	0,090	0,070	0,051	0,112	0,088	0,064	0,140	0,110	0,080	●					
1.13	44	1,5	0,067	0,053	0,038	0,090	0,070	0,051	0,112	0,088	0,064	0,140	0,110	0,080	●					
1.14																				
1.15	44	1,5	0,067	0,053	0,038	0,090	0,070	0,051	0,112	0,088	0,064	0,140	0,110	0,080	●					
1.16	44	1,5	0,067	0,053	0,038	0,090	0,070	0,051	0,112	0,088	0,064	0,140	0,110	0,080	●					
2.1	31	1,5	0,067	0,053	0,038	0,090	0,070	0,051	0,112	0,088	0,064	0,140	0,110	0,080	●					
2.2	26	1,5	0,060	0,048	0,035	0,080	0,064	0,046	0,100	0,080	0,058	0,125	0,100	0,073	●					
2.3	26	1,5	0,060	0,048	0,035	0,080	0,064	0,046	0,100	0,080	0,058	0,125	0,100	0,073	●					
2.4	22	1,5	0,054	0,042	0,031	0,072	0,056	0,042	0,090	0,070	0,052	0,113	0,088	0,065	●					
2.5	22	1,5	0,054	0,042	0,031	0,072	0,056	0,042	0,090	0,070	0,052	0,113	0,088	0,065	●					
2.6	26	1,5	0,060	0,048	0,035	0,080	0,064	0,046	0,100	0,080	0,058	0,125	0,100	0,073	●					
2.7	20	1,5	0,047	0,037	0,026	0,062	0,050	0,035	0,078	0,062	0,044	0,098	0,078	0,055	●					
3.1	53	1,5	0,080	0,064	0,046	0,107	0,085	0,061	0,134	0,106	0,076	0,168	0,133	0,095	●	○	○			
3.2	46	1,5	0,074	0,058	0,042	0,099	0,077	0,056	0,124	0,096	0,070	0,155	0,120	0,088	●	○	○			
3.3	42	1,5	0,074	0,058	0,042	0,099	0,077	0,056	0,124	0,096	0,070	0,155	0,120	0,088	●		○			
3.4	37	1,5	0,067	0,053	0,038	0,090	0,070	0,051	0,112	0,088	0,064	0,140	0,110	0,080	●		○			
3.5	44	1,5	0,074	0,058	0,042	0,099	0,077	0,056	0,124	0,096	0,070	0,155	0,120	0,088	●		○			
3.6	30	1,5	0,067	0,053	0,038	0,090	0,070	0,051	0,112	0,088	0,064	0,140	0,110	0,080	●		○			
3.7	44	1,5	0,074	0,058	0,042	0,099	0,077	0,056	0,124	0,096	0,070	0,155	0,120	0,088	●		○			
3.8	30	1,5	0,067	0,053	0,038	0,090	0,070	0,051	0,112	0,088	0,064	0,140	0,110	0,080	●		○			
4.1																				
4.2																				
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5.4																				
5.5																				
5.6																				
5.7																				
5.8																				
5.9	44	1,5	0,067	0,053	0,038	0,090	0,070	0,051	0,112	0,088	0,064	0,140	0,110	0,080	●					
5.10	31	1,5	0,060	0,048	0,035	0,080	0,064	0,046	0,100	0,080	0,058	0,125	0,100	0,073	●					
5.11	22	1,5	0,054	0,042	0,031	0,072	0,056	0,042	0,090	0,070	0,052	0,113	0,088	0,065	●					
6.1																				
6.2																				
6.3																				
6.4																				
6.5																				

Cutting Data – End Milling cutters – 50 000 .../ 50 001 .../ 50 002 ...

Index	v _c in m/min	Type short/ medium length a _{p,max} x d ₁	Ø d ₁ = 6 mm			Ø d ₁ = 8 mm			Ø d ₁ = 10 mm			Ø d ₁ = 12 mm			Ø d ₁ = 16 mm			Ø d ₁ = 20 mm		
			a _e 0,2 mm	a _e 0,1 x d ₁	a _e 0,25 x d ₁	a _e 0,2 mm	a _e 0,1 x d ₁	a _e 0,25 x d ₁	a _e 0,2 mm	a _e 0,1 x d ₁	a _e 0,25 x d ₁	a _e 0,2 mm	a _e 0,1 x d ₁	a _e 0,25 x d ₁	a _e 0,2 mm	a _e 0,1 x d ₁	a _e 0,25 x d ₁	a _e 0,2 mm	a _e 0,1 x d ₁	a _e 0,25 x d ₁
			f _z mm			f _z mm			f _z mm			f _z mm			f _z mm			f _z mm		
1.1	66	1,5	0,041	0,032	0,024	0,054	0,043	0,032	0,068	0,054	0,040	0,082	0,065	0,048	0,109	0,086	0,064	0,136	0,108	0,080
1.2	66	1,5	0,041	0,032	0,024	0,054	0,043	0,032	0,068	0,054	0,040	0,082	0,065	0,048	0,109	0,086	0,064	0,136	0,108	0,080
1.3	66	1,5	0,041	0,032	0,024	0,054	0,043	0,032	0,068	0,054	0,040	0,082	0,065	0,048	0,109	0,086	0,064	0,136	0,108	0,080
1.4	61	1,5	0,038	0,030	0,022	0,050	0,040	0,029	0,063	0,050	0,036	0,076	0,060	0,043	0,101	0,080	0,058	0,126	0,100	0,072
1.5	61	1,5	0,038	0,030	0,022	0,050	0,040	0,029	0,063	0,050	0,036	0,076	0,060	0,043	0,101	0,080	0,058	0,126	0,100	0,072
1.6	61	1,5	0,038	0,030	0,022	0,050	0,040	0,029	0,063	0,050	0,036	0,076	0,060	0,043	0,101	0,080	0,058	0,126	0,100	0,072
1.7	61	1,5	0,038	0,030	0,022	0,050	0,040	0,029	0,063	0,050	0,036	0,076	0,060	0,043	0,101	0,080	0,058	0,126	0,100	0,072
1.8	44	1,5	0,034	0,027	0,020	0,046	0,036	0,026	0,057	0,045	0,033	0,068	0,054	0,040	0,091	0,072	0,053	0,114	0,090	0,066
1.9	44	1,5	0,034	0,027	0,020	0,046	0,036	0,026	0,057	0,045	0,033	0,068	0,054	0,040	0,091	0,072	0,053	0,114	0,090	0,066
1.10	44	1,5	0,034	0,027	0,020	0,046	0,036	0,026	0,057	0,045	0,033	0,068	0,054	0,040	0,091	0,072	0,053	0,114	0,090	0,066
1.11	44	1,5	0,034	0,027	0,020	0,046	0,036	0,026	0,057	0,045	0,033	0,068	0,054	0,040	0,091	0,072	0,053	0,114	0,090	0,066
1.12	44	1,5	0,034	0,027	0,020	0,046	0,036	0,026	0,057	0,045	0,033	0,068	0,054	0,040	0,091	0,072	0,053	0,114	0,090	0,066
1.13	44	1,5	0,034	0,027	0,020	0,046	0,036	0,026	0,057	0,045	0,033	0,068	0,054	0,040	0,091	0,072	0,053	0,114	0,090	0,066
1.14																				
1.15	44	1,5	0,034	0,027	0,020	0,046	0,036	0,026	0,057	0,045	0,033	0,068	0,054	0,040	0,091	0,072	0,053	0,114	0,090	0,066
1.16	44	1,5	0,034	0,027	0,020	0,046	0,036	0,026	0,057	0,045	0,033	0,068	0,054	0,040	0,091	0,072	0,053	0,114	0,090	0,066
2.1	31	1,5	0,034	0,027	0,020	0,046	0,036	0,026	0,057	0,045	0,033	0,068	0,054	0,040	0,091	0,072	0,053	0,114	0,090	0,066
2.2	26	1,5	0,031	0,025	0,018	0,041	0,033	0,024	0,051	0,041	0,030	0,061	0,049	0,036	0,082	0,066	0,048	0,102	0,082	0,060
2.3	26	1,5	0,031	0,025	0,018	0,041	0,033	0,024	0,051	0,041	0,030	0,061	0,049	0,036	0,082	0,066	0,048	0,102	0,082	0,060
2.4	22	1,5	0,028	0,022	0,016	0,037	0,029	0,021	0,046	0,036	0,026	0,055	0,043	0,031	0,074	0,058	0,042	0,092	0,072	0,052
2.5	22	1,5	0,028	0,022	0,016	0,037	0,029	0,021	0,046	0,036	0,026	0,055	0,043	0,031	0,074	0,058	0,042	0,092	0,072	0,052
2.6	26	1,5	0,031	0,025	0,018	0,041	0,033	0,024	0,051	0,041	0,030	0,061	0,049	0,036	0,082	0,066	0,048	0,102	0,082	0,060
2.7	20	1,5	0,024	0,019	0,014	0,032	0,026	0,018	0,040	0,032	0,023	0,048	0,038	0,028	0,064	0,051	0,037	0,080	0,064	0,046
3.1	52	1,5	0,041	0,032	0,024	0,054	0,043	0,032	0,068	0,054	0,040	0,082	0,065	0,048	0,109	0,086	0,064	0,136	0,108	0,080
3.2	46	1,5	0,038	0,030	0,022	0,050	0,040	0,029	0,063	0,050	0,036	0,076	0,060	0,043	0,101	0,080	0,058	0,126	0,100	0,072
3.3	42	1,5	0,038	0,030	0,022	0,050	0,040	0,029	0,063	0,050	0,036	0,076	0,060	0,043	0,101	0,080	0,058	0,126	0,100	0,072
3.4	38	1,5	0,034	0,027	0,020	0,046	0,036	0,026	0,057	0,045	0,033	0,068	0,054	0,040	0,091	0,072	0,053	0,114	0,090	0,066
3.5	44	1,5	0,038	0,030	0,022	0,050	0,040	0,029	0,063	0,050	0,036	0,076	0,060	0,043	0,101	0,080	0,058	0,126	0,100	0,072
3.6	29	1,5	0,034	0,027	0,020	0,046	0,036	0,026	0,057	0,045	0,033	0,068	0,054	0,040	0,091	0,072	0,053	0,114	0,090	0,066
3.7	44	1,5	0,038	0,030	0,022	0,050	0,040	0,029	0,063	0,050	0,036	0,076	0,060	0,043	0,101	0,080	0,058	0,126	0,100	0,072
3.8	29	1,5	0,034	0,027	0,020	0,046	0,036	0,026	0,057	0,045	0,033	0,068	0,054	0,040	0,091	0,072	0,053	0,114	0,090	0,066
4.1																				
4.2																				
4.3																				
4.4																				
4.5																				
4.6	48	1,5	0,041	0,032	0,024	0,054	0,043	0,032	0,068	0,054	0,040	0,082	0,065	0,048	0,109	0,086	0,064	0,136	0,108	0,080
4.7																				
4.8																				
4.9																				
4.10																				
4.11	93	1,5	0,041	0,032	0,024	0,054	0,043	0,032	0,068	0,054	0,040	0,082	0,065	0,048	0,109	0,086	0,064	0,136	0,108	0,080
4.12	47	1,5	0,038	0,030	0,022	0,050	0,040	0,029	0,063	0,050	0,036	0,076	0,060	0,043	0,101	0,080	0,058	0,126	0,100	0,072
4.13																				
4.14																				
4.15																				
4.16																				
4.17																				
4.18	31	1,5	0,031	0,025	0,018	0,041	0,033	0,024	0,051	0,041	0,030	0,061	0,049	0,036	0,082	0,066	0,048	0,102	0,082	0,060
4.19																				
5.1	29	1,5	0,034	0,027	0,020	0,046	0,036	0,026	0,057	0,045	0,033	0,068	0,054	0,040	0,091	0,072	0,053	0,114	0,090	0,066
5.2	13	1,5	0,028	0,022	0,016	0,037	0,029	0,021	0,046	0,036	0,026	0,055	0,043	0,031	0,074	0,058	0,042	0,092	0,072	0,052
5.3																				
5.4																				
5.5																				
5.6																				
5.7																				
5.8																				
5.9	44	1,5	0,034	0,027	0,020	0,046	0,036	0,026	0,057	0,045	0,033	0,068	0,054	0,040	0,091	0,072	0,053	0,114	0,090	0,066
5.10																				
5.11																				
6.1																				
6.2																				
6.3																				
6.4																				
6.5																				

Index	v _c in m/min	Type long a _{p,max} x d ₁	Ø d ₁ = 6 mm		Ø d ₁ = 8 mm		Ø d ₁ = 10 mm		Ø d ₁ = 12 mm		Ø d ₁ = 16 mm		Ø d ₁ = 20 mm		● 1st choice		○ suitable		
			a _e 0,2 mm	a _e 0,1 x d ₁	a _e 0,2 mm	a _e 0,1 x d ₁	a _e 0,2 mm	a _e 0,1 x d ₁	a _e 0,2 mm	a _e 0,1 x d ₁	a _e 0,2 mm	a _e 0,1 x d ₁	a _e 0,2 mm	a _e 0,1 x d ₁	a _e 0,2 mm	a _e 0,1 x d ₁	Emulsion	Compressed air	MMS
			f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm					
1.1	35	1,5	0,030	0,022	0,040	0,030	0,050	0,037	0,060	0,044	0,080	0,059	0,100	0,074	●		○		
1.2	35	1,5	0,030	0,022	0,040	0,030	0,050	0,037	0,060	0,044	0,080	0,059	0,100	0,074	●		○		
1.3	35	1,5	0,030	0,022	0,040	0,030	0,050	0,037	0,060	0,044	0,080	0,059	0,100	0,074	●		○		
1.4	33	1,5	0,028	0,020	0,037	0,027	0,046	0,034	0,055	0,041	0,074	0,054	0,092	0,068	●				
1.5	33	1,5	0,028	0,020	0,037	0,027	0,046	0,034	0,055	0,041	0,074	0,054	0,092	0,068	●				
1.6	33	1,5	0,028	0,020	0,037	0,027	0,046	0,034	0,055	0,041	0,074	0,054	0,092	0,068	●				
1.7	33	1,5	0,028	0,020	0,037	0,027	0,046	0,034	0,055	0,041	0,074	0,054	0,092	0,068	●				
1.8	15	1,5	0,025	0,019	0,034	0,025	0,042	0,031	0,050	0,037	0,067	0,050	0,084	0,062	●				
1.9	15	1,5	0,025	0,019	0,034	0,025	0,042	0,031	0,050	0,037	0,067	0,050	0,084	0,062	●				
1.10	15	1,5	0,025	0,019	0,034	0,025	0,042	0,031	0,050	0,037	0,067	0,050	0,084	0,062	●				
1.11	15	1,5	0,025	0,019	0,034	0,025	0,042	0,031	0,050	0,037	0,067	0,050	0,084	0,062	●				
1.12	15	1,5	0,025	0,019	0,034	0,025	0,042	0,031	0,050	0,037	0,067	0,050	0,084	0,062	●				
1.13	15	1,5	0,025	0,019	0,034	0,025	0,042	0,031	0,050	0,037	0,067	0,050	0,084	0,062	●				
1.14																			
1.15	15	1,5	0,025	0,019	0,034	0,025	0,042	0,031	0,050	0,037	0,067	0,050	0,084	0,062	●				
1.16	15	1,5	0,025	0,019	0,034	0,025	0,042	0,031	0,050	0,037	0,067	0,050	0,084	0,062	●				
2.1	15	1,5	0,025	0,019	0,034	0,025	0,042	0,031	0,050	0,037	0,067	0,050	0,084	0,062	●				
2.2	14	1,5	0,023	0,017	0,030	0,022	0,038	0,028	0,046	0,034	0,061	0,045	0,076	0,056	●				
2.3	14	1,5	0,023	0,017	0,030	0,022	0,038	0,028	0,046	0,034	0,061	0,045	0,076	0,056	●				
2.4	12	1,5	0,020	0,015	0,027	0,020	0,034	0,025	0,041	0,030	0,054	0,040	0,068	0,050	●				
2.5	12	1,5	0,020	0,015	0,027	0,020	0,034	0,025	0,041	0,030	0,054	0,040	0,068	0,050	●				
2.6	14	1,5	0,023	0,017	0,030	0,022	0,038	0,028	0,046	0,034	0,061	0,045	0,076	0,056	●				
2.7	11	1,5	0,017	0,013	0,023	0,018	0,029	0,022	0,035	0,026	0,046	0,035	0,058	0,044	●				
3.1	29	1,5	0,030	0,022	0,040	0,030	0,050	0,037	0,060	0,044	0,080	0,059	0,100	0,074	●	○	○		
3.2	25	1,5	0,028	0,020	0,037	0,027	0,046	0,034	0,055	0,041	0,074	0,054	0,092	0,068	●	○	○		
3.3	23	1,5	0,028	0,020	0,037	0,027	0,046	0,034	0,055	0,041	0,074	0,054	0,092	0,068	●		○		
3.4	15	1,5	0,025	0,019	0,034	0,025	0,042	0,031	0,050	0,037	0,067	0,050	0,084	0,062	●		○		
3.5	24	1,5	0,028	0,020	0,037	0,027	0,046	0,034	0,055	0,041	0,074	0,054	0,092	0,068	●		○		
3.6	15	1,5	0,025	0,019	0,034	0,025	0,042	0,031	0,050	0,037	0,067	0,050	0,084	0,062	●		○		
3.7	24	1,5	0,028	0,020	0,037	0,027	0,046	0,034	0,055	0,041	0,074	0,054	0,092	0,068	●		○		
3.8	15	1,5	0,025	0,019	0,034	0,025	0,042	0,031	0,050	0,037	0,067	0,050	0,084	0,062	●		○		
4.1																			
4.2																			
4.3																			
4.4																			
4.5																			
4.6	26	1,5	0,030	0,022	0,040	0,030	0,050	0,037	0,060	0,044	0,080	0,059	0,100	0,074	●				
4.7																			
4.8																			
4.9																			
4.10																			
4.11	40	1,5	0,030	0,022	0,040	0,030	0,050	0,037	0,060	0,044	0,080	0,059	0,100	0,074	●				
4.12	28	1,5	0,028	0,020	0,037	0,027	0,046	0,034	0,055	0,041	0,074	0,054	0,092	0,068	●				
4.13																			
4.14																			
4.15																			
4.16																			
4.17																			
4.18	17	1,5	0,023	0,017	0,030	0,022	0,038	0,028	0,046	0,034	0,061	0,045	0,076	0,056	●				
4.19																			
5.1	15	1,5	0,025	0,019	0,034	0,025	0,042	0,031	0,050	0,037	0,067	0,050	0,084	0,062	●				
5.2	10	1,5	0,020	0,015	0,027	0,020	0,034	0,025	0,041	0,030	0,054	0,040	0,068	0,050	●				
5.3																			
5.4																			
5.5																			
5.6																			
5.7																			
5.8																			
5.9	15	1,5	0,025	0,019	0,034	0,025	0,042	0,031	0,050	0,037	0,067	0,050	0,084	0,062	●				
5.10																			
5.11																			
6.1																			
6.2																			
6.3																			
6.4																			
6.5																			

Cutting Data - End Milling cutters - 50 004 .../ 50 005 .../ 50 006 ...

Index	v _c in m/min	Type short/ medium length a _{p,max} x d ₁	Ø d ₁ = 6 mm			Ø d ₁ = 8 mm			Ø d ₁ = 10 mm			Ø d ₁ = 12 mm			Ø d ₁ = 16 mm			Ø d ₁ = 20 mm		
			a _e 0,1-0,2 x d ₁	a _e 0,3-0,4 x d ₁	a _e 0,6-1,0 x d ₁	a _e 0,1-0,2 x d ₁	a _e 0,3-0,4 x d ₁	a _e 0,6-1,0 x d ₁	a _e 0,1-0,2 x d ₁	a _e 0,3-0,4 x d ₁	a _e 0,6-1,0 x d ₁	a _e 0,1-0,2 x d ₁	a _e 0,3-0,4 x d ₁	a _e 0,6-1,0 x d ₁	a _e 0,1-0,2 x d ₁	a _e 0,3-0,4 x d ₁	a _e 0,6-1,0 x d ₁	a _e 0,1-0,2 x d ₁	a _e 0,3-0,4 x d ₁	a _e 0,6-1,0 x d ₁
			f _z mm			f _z mm			f _z mm			f _z mm			f _z mm			f _z mm		
1.1	66	1,5	0,036	0,029	0,022	0,048	0,038	0,029	0,060	0,048	0,036	0,072	0,058	0,043	0,096	0,077	0,058	0,120	0,096	0,072
1.2	66	1,5	0,036	0,029	0,022	0,048	0,038	0,029	0,060	0,048	0,036	0,072	0,058	0,043	0,096	0,077	0,058	0,120	0,096	0,072
1.3	66	1,5	0,036	0,029	0,022	0,048	0,038	0,029	0,060	0,048	0,036	0,072	0,058	0,043	0,096	0,077	0,058	0,120	0,096	0,072
1.4	63	1,5	0,033	0,026	0,020	0,044	0,035	0,026	0,055	0,044	0,033	0,066	0,053	0,040	0,088	0,070	0,053	0,110	0,088	0,066
1.5	63	1,5	0,033	0,026	0,020	0,044	0,035	0,026	0,055	0,044	0,033	0,066	0,053	0,040	0,088	0,070	0,053	0,110	0,088	0,066
1.6	63	1,5	0,033	0,026	0,020	0,044	0,035	0,026	0,055	0,044	0,033	0,066	0,053	0,040	0,088	0,070	0,053	0,110	0,088	0,066
1.7	63	1,5	0,033	0,026	0,020	0,044	0,035	0,026	0,055	0,044	0,033	0,066	0,053	0,040	0,088	0,070	0,053	0,110	0,088	0,066
1.8	46	1,5	0,030	0,024	0,018	0,040	0,032	0,024	0,050	0,040	0,030	0,060	0,048	0,036	0,080	0,064	0,048	0,100	0,080	0,060
1.9	46	1,5	0,030	0,024	0,018	0,040	0,032	0,024	0,050	0,040	0,030	0,060	0,048	0,036	0,080	0,064	0,048	0,100	0,080	0,060
1.10	46	1,5	0,030	0,024	0,018	0,040	0,032	0,024	0,050	0,040	0,030	0,060	0,048	0,036	0,080	0,064	0,048	0,100	0,080	0,060
1.11	46	1,5	0,030	0,024	0,018	0,040	0,032	0,024	0,050	0,040	0,030	0,060	0,048	0,036	0,080	0,064	0,048	0,100	0,080	0,060
1.12	46	1,5	0,030	0,024	0,018	0,040	0,032	0,024	0,050	0,040	0,030	0,060	0,048	0,036	0,080	0,064	0,048	0,100	0,080	0,060
1.13	46	1,5	0,030	0,024	0,018	0,040	0,032	0,024	0,050	0,040	0,030	0,060	0,048	0,036	0,080	0,064	0,048	0,100	0,080	0,060
1.14																				
1.15	46	1,5	0,030	0,024	0,018	0,040	0,032	0,024	0,050	0,040	0,030	0,060	0,048	0,036	0,080	0,064	0,048	0,100	0,080	0,060
1.16	46	1,5	0,030	0,024	0,018	0,040	0,032	0,024	0,050	0,040	0,030	0,060	0,048	0,036	0,080	0,064	0,048	0,100	0,080	0,060
2.1	32	1,5	0,030	0,024	0,018	0,040	0,032	0,024	0,050	0,040	0,030	0,060	0,048	0,036	0,080	0,064	0,048	0,100	0,080	0,060
2.2	28	1,5	0,027	0,022	0,016	0,036	0,029	0,022	0,045	0,036	0,027	0,054	0,043	0,032	0,072	0,058	0,043	0,090	0,072	0,054
2.3	28	1,5	0,027	0,022	0,016	0,036	0,029	0,022	0,045	0,036	0,027	0,054	0,043	0,032	0,072	0,058	0,043	0,090	0,072	0,054
2.4	23	1,5	0,024	0,019	0,014	0,032	0,026	0,019	0,040	0,032	0,024	0,048	0,038	0,029	0,064	0,051	0,038	0,080	0,064	0,048
2.5	23	1,5	0,024	0,019	0,014	0,032	0,026	0,019	0,040	0,032	0,024	0,048	0,038	0,029	0,064	0,051	0,038	0,080	0,064	0,048
2.6	28	1,5	0,027	0,022	0,016	0,036	0,029	0,022	0,045	0,036	0,027	0,054	0,043	0,032	0,072	0,058	0,043	0,090	0,072	0,054
2.7	21	1,5	0,021	0,017	0,013	0,028	0,022	0,017	0,035	0,028	0,021	0,042	0,034	0,025	0,056	0,045	0,034	0,070	0,056	0,042
3.1	55	1,5	0,036	0,029	0,022	0,048	0,038	0,029	0,060	0,048	0,036	0,072	0,058	0,043	0,096	0,077	0,058	0,120	0,096	0,072
3.2	48	1,5	0,033	0,026	0,020	0,044	0,035	0,026	0,055	0,044	0,033	0,066	0,053	0,040	0,088	0,070	0,053	0,110	0,088	0,066
3.3	44	1,5	0,033	0,026	0,020	0,044	0,035	0,026	0,055	0,044	0,033	0,066	0,053	0,040	0,088	0,070	0,053	0,110	0,088	0,066
3.4	39	1,5	0,030	0,024	0,018	0,040	0,032	0,024	0,050	0,040	0,030	0,060	0,048	0,036	0,080	0,064	0,048	0,100	0,080	0,060
3.5	46	1,5	0,033	0,026	0,020	0,044	0,035	0,026	0,055	0,044	0,033	0,066	0,053	0,040	0,088	0,070	0,053	0,110	0,088	0,066
3.6	31	1,5	0,030	0,024	0,018	0,040	0,032	0,024	0,050	0,040	0,030	0,060	0,048	0,036	0,080	0,064	0,048	0,100	0,080	0,060
3.7	46	1,5	0,033	0,026	0,020	0,044	0,035	0,026	0,055	0,044	0,033	0,066	0,053	0,040	0,088	0,070	0,053	0,110	0,088	0,066
3.8	31	1,5	0,030	0,024	0,018	0,040	0,032	0,024	0,050	0,040	0,030	0,060	0,048	0,036	0,080	0,064	0,048	0,100	0,080	0,060
4.1																				
4.2																				
4.3																				
4.4																				
4.5																				
4.6	43	1,5	0,036	0,029	0,022	0,048	0,038	0,029	0,060	0,048	0,036	0,072	0,058	0,043	0,096	0,077	0,058	0,120	0,096	0,072
4.7																				
4.8																				
4.9																				
4.10																				
4.11	85	1,5	0,036	0,029	0,022	0,048	0,038	0,029	0,060	0,048	0,036	0,072	0,058	0,043	0,096	0,077	0,058	0,120	0,096	0,072
4.12	47	1,5	0,033	0,026	0,020	0,044	0,035	0,026	0,055	0,044	0,033	0,066	0,053	0,040	0,088	0,070	0,053	0,110	0,088	0,066
4.13																				
4.14																				
4.15																				
4.16																				
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6.4																				
6.5																				

i With full slot milling a_p = d₁

Index	v _c in m/min	Type long a _{p,max} x d ₁	Ø d ₁ = 6 mm		Ø d ₁ = 8 mm		Ø d ₁ = 10 mm		Ø d ₁ = 12 mm		Ø d ₁ = 16 mm		Ø d ₁ = 20 mm		1st choice		○ suitable		
			a _e 0,1 x d ₁	a _e 0,25 x d ₁	a _e 0,1 x d ₁	a _e 0,25 x d ₁	a _e 0,1 x d ₁	a _e 0,25 x d ₁	a _e 0,1 x d ₁	a _e 0,25 x d ₁	a _e 0,1 x d ₁	a _e 0,25 x d ₁	a _e 0,1 x d ₁	a _e 0,25 x d ₁	a _e 0,1 x d ₁	a _e 0,25 x d ₁	Emulsion	Compressed air	MMS
			f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm				
1.1	39	1,5	0,030	0,024	0,040	0,032	0,050	0,040	0,060	0,048	0,080	0,064	0,100	0,080	●		○		
1.2	39	1,5	0,030	0,024	0,040	0,032	0,050	0,040	0,060	0,048	0,080	0,064	0,100	0,080	●		○		
1.3	39	1,5	0,030	0,024	0,040	0,032	0,050	0,040	0,060	0,048	0,080	0,064	0,100	0,080	●		○		
1.4	36	1,5	0,028	0,022	0,037	0,029	0,046	0,036	0,055	0,043	0,074	0,058	0,092	0,072	●				
1.5	36	1,5	0,028	0,022	0,037	0,029	0,046	0,036	0,055	0,043	0,074	0,058	0,092	0,072	●				
1.6	36	1,5	0,028	0,022	0,037	0,029	0,046	0,036	0,055	0,043	0,074	0,058	0,092	0,072	●				
1.7	36	1,5	0,028	0,022	0,037	0,029	0,046	0,036	0,055	0,043	0,074	0,058	0,092	0,072	●				
1.8	17	1,5	0,025	0,020	0,034	0,026	0,042	0,033	0,050	0,040	0,067	0,053	0,084	0,066	●				
1.9	17	1,5	0,025	0,020	0,034	0,026	0,042	0,033	0,050	0,040	0,067	0,053	0,084	0,066	●				
1.10	17	1,5	0,025	0,020	0,034	0,026	0,042	0,033	0,050	0,040	0,067	0,053	0,084	0,066	●				
1.11	17	1,5	0,025	0,020	0,034	0,026	0,042	0,033	0,050	0,040	0,067	0,053	0,084	0,066	●				
1.12	17	1,5	0,025	0,020	0,034	0,026	0,042	0,033	0,050	0,040	0,067	0,053	0,084	0,066	●				
1.13	17	1,5	0,025	0,020	0,034	0,026	0,042	0,033	0,050	0,040	0,067	0,053	0,084	0,066	●				
1.14																			
1.15	17	1,5	0,025	0,020	0,034	0,026	0,042	0,033	0,050	0,040	0,067	0,053	0,084	0,066	●				
1.16	17	1,5	0,025	0,020	0,034	0,026	0,042	0,033	0,050	0,040	0,067	0,053	0,084	0,066	●				
2.1	17	1,5	0,025	0,020	0,034	0,026	0,042	0,033	0,050	0,040	0,067	0,053	0,084	0,066	●	○	○		
2.2	16	1,5	0,023	0,018	0,030	0,024	0,038	0,030	0,046	0,036	0,061	0,048	0,076	0,060	●	○	○		
2.3	16	1,5	0,023	0,018	0,030	0,024	0,038	0,030	0,046	0,036	0,061	0,048	0,076	0,060	●		○		
2.4	13	1,5	0,020	0,016	0,027	0,021	0,034	0,026	0,041	0,031	0,054	0,042	0,068	0,052	●		○		
2.5	13	1,5	0,020	0,016	0,027	0,021	0,034	0,026	0,041	0,031	0,054	0,042	0,068	0,052	●		○		
2.6	16	1,5	0,023	0,018	0,030	0,024	0,038	0,030	0,046	0,036	0,061	0,048	0,076	0,060	●		○		
2.7	12	1,5	0,017	0,014	0,023	0,018	0,029	0,023	0,035	0,028	0,046	0,037	0,058	0,046	●		○		
3.1	31	1,5	0,030	0,024	0,040	0,032	0,050	0,040	0,060	0,048	0,080	0,064	0,100	0,080	●				
3.2	28	1,5	0,028	0,022	0,037	0,029	0,046	0,036	0,055	0,043	0,074	0,058	0,092	0,072	●				
3.3	25	1,5	0,028	0,022	0,037	0,029	0,046	0,036	0,055	0,043	0,074	0,058	0,092	0,072	●				
3.4	17	1,5	0,025	0,020	0,034	0,026	0,042	0,033	0,050	0,040	0,067	0,053	0,084	0,066	●				
3.5	26	1,5	0,028	0,022	0,037	0,029	0,046	0,036	0,055	0,043	0,074	0,058	0,092	0,072	●				
3.6	17	1,5	0,025	0,020	0,034	0,026	0,042	0,033	0,050	0,040	0,067	0,053	0,084	0,066	●				
3.7	26	1,5	0,028	0,022	0,037	0,029	0,046	0,036	0,055	0,043	0,074	0,058	0,092	0,072	●				
3.8	17	1,5	0,025	0,020	0,034	0,026	0,042	0,033	0,050	0,040	0,067	0,053	0,084	0,066	●				
4.1																			
4.2																			
4.3																			
4.4																			
4.5																			
4.6	29	1,5	0,030	0,024	0,040	0,032	0,050	0,040	0,060	0,048	0,080	0,064	0,100	0,080	●				
4.7																			
4.8																			
4.9																			
4.10																			
4.11	44	1,5	0,030	0,024	0,040	0,032	0,050	0,040	0,060	0,048	0,080	0,064	0,100	0,080	●				
4.12	31	1,5	0,028	0,022	0,037	0,029	0,046	0,036	0,055	0,043	0,074	0,058	0,092	0,072	●				
4.13																			
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5.10																			
5.11																			
6.1																			
6.2																			
6.3																			
6.4																			
6.5																			

Cutting data – slot and end milling cutters

Index	Kf f _z	uncoated	Ti 100 Pro	Powder steel	Emulsion	Compressed air	MMS
		v _c in m/min					
1.1	1,2	30–40	60–80	65–90	●		
1.2	1,2	25–35	50–65	55–75	●		
1.3	1,2	20–30	45–55	50–65	●		
1.4	1	15–25	40–55	45–65	●		
1.5	1,2	20–30	45–55	50–60	●		
1.6	1	15–20	30–35	35–45	●		
1.7	1,2	20–30	40–55	45–65	●		
1.8	0,8	15–20	30–35	35–45	●		
1.9	1,2	20–30	45–55	50–60	●		
1.10	1	15–20	30–35	35–45	●		
1.11	0,8	15–20	30–35	35–45	●		
1.12	0,8	15–20	30–35	35–45	●		
1.13							
1.14							
1.15	0,8	12–18	25–30	30–40	●		
1.16	0,8	10–15	20–25	25–35	●		
2.1	1	10–15	20–30	25–35	●		
2.2	1	10–15	20–30	25–35	●		
2.3	1	8–12	15–25	20–30	●		
2.4	0,9	7–10	15–20	20–30	●		
2.5	1	5–8	10–15	15–20	●		
2.6	1	10–15	20–30	25–35	●		
2.7							
3.1	1	18–25	35–45	40–55	●		
3.2	1	18–25	25–30	30–40	●		
3.3	1	15–20	30–35	35–45	●		
3.4	1	15–20	30–35	35–45	●		
3.5	1	15–25	35–40	40–50	●		
3.6	1	15–20	35–40	40–50	●		
3.7	1	15–20	30–35	35–45	●		
3.8	0,8	12–18	25–30	30–40	●		
4.1	1,9	150–180	240–280	260–300	●		
4.2	1,9	100–130	130–160	150–180	●		
4.3	1,8		100–140	140–160	●		
4.4	1,7		60–130	80–150	●		
4.5							
4.6	1,2	30–50	60–80	80–100	●		
4.7	1,1		110–150	130–170	●		
4.8	0,9	5–10	10–15	20–25	●		
4.9							
4.10							
4.11	1,1		100–140	130–170	●		
4.12	1,1	80–120	120–150	140–180	●		
4.13	2	20–30	25–45	40–60	●		
4.14	2	30–40	50–70	70–90	●		
4.15							
4.16	1,8	90–120	140–170	160–190		●	
4.17	1		30–40	40–50		●	
4.18	1,1		10–20	15–25	●		
4.19							
5.1	1,1	5–10	10–15	15–20	●		
5.2							
5.3							
5.4							
5.5							
5.6							
5.7							
5.8							
5.9	1	10–15	15–25	25–35	●		
5.10	1,1	10–15	15–20	25–35	●		
5.11							
6.1							
6.2							
6.3							
6.4							
6.5							

Coolant
● = 1st choice
○ = suitable
Kf f_z = Correction factor for feed per tooth

i For full slot milling reduce the cutting speed (v_c), indicated in this table by approx. 15–20%!

Feed per tooth for HSS end mills

Approximate values (in mm) for the feed per tooth (f_z)

Peripheral milling												Full slot milling	
$\varnothing d_1$ mm	f_z in mm		f_z in mm		f_z in mm		f_z in mm		f_z in mm		f_z in mm		
	uncoated	coated	uncoated	coated	uncoated	coated	uncoated	coated	uncoated	coated	uncoated	coated	
2	0,008	0,009	0,008	0,009	0,008	0,009							
3	0,011	0,012	0,010	0,012	0,009	0,010							
4	0,017	0,018	0,014	0,015	0,013	0,014	0,015	0,016	0,013	0,014	0,011	0,012	
5	0,024	0,026	0,018	0,020	0,014	0,015	0,019	0,021	0,016	0,018	0,014	0,016	
6	0,032	0,035	0,022	0,024	0,015	0,017	0,024	0,027	0,020	0,022	0,018	0,019	
8	0,047	0,051	0,029	0,032	0,020	0,022	0,032	0,036	0,027	0,030	0,024	0,026	
10	0,065	0,072	0,037	0,041	0,026	0,028	0,042	0,047	0,035	0,039	0,031	0,034	
12	0,084	0,091	0,044	0,049	0,031	0,034	0,051	0,057	0,043	0,047	0,037	0,041	
14	0,100	0,106	0,054	0,059	0,037	0,041	0,063	0,069	0,053	0,058	0,045	0,050	
16	0,111	0,121	0,061	0,067	0,042	0,046	0,072	0,079	0,060	0,066	0,052	0,057	
18	0,126	0,136	0,070	0,077	0,048	0,053	0,084	0,093	0,071	0,078	0,061	0,067	
20	0,141	0,151	0,076	0,083	0,052	0,057	0,092	0,101	0,077	0,084	0,066	0,073	
22	0,160	0,166	0,085	0,094	0,059	0,065	0,104	0,114	0,087	0,096	0,075	0,082	
25	0,170	0,188	0,095	0,104	0,065	0,072	0,117	0,129	0,098	0,108	0,084	0,093	
28	0,196	0,210	0,109	0,120	0,075	0,083	0,136	0,150	0,114	0,125	0,098	0,108	
32	0,212	0,240	0,124	0,137	0,086	0,094	0,157	0,173	0,131	0,145	0,113	0,125	
36	0,224	0,240	0,144	0,159	0,099	0,109	0,170	0,194	0,142	0,162	0,126	0,140	
40	0,240	0,240	0,157	0,173	0,108	0,119	0,184	0,202	0,154	0,169	0,132	0,146	
45	0,240	0,240	0,157	0,173	0,108	0,119	0,200	0,220	0,170	0,180	0,140	0,160	
50	0,240	0,240	0,157	0,173	0,108	0,119	0,200	0,220	0,170	0,180	0,140	0,160	

i Attention:

In the case of uncoated milling cutters climb milling is preferred to conventional milling. When using coated milling cutters climb milling is necessary in order to achieve optimum results.

i Feed rate correction:

Please multiply the f_z value in the table above with the corresponding **correction factor $K_f f_z$** from the table on → page 53.

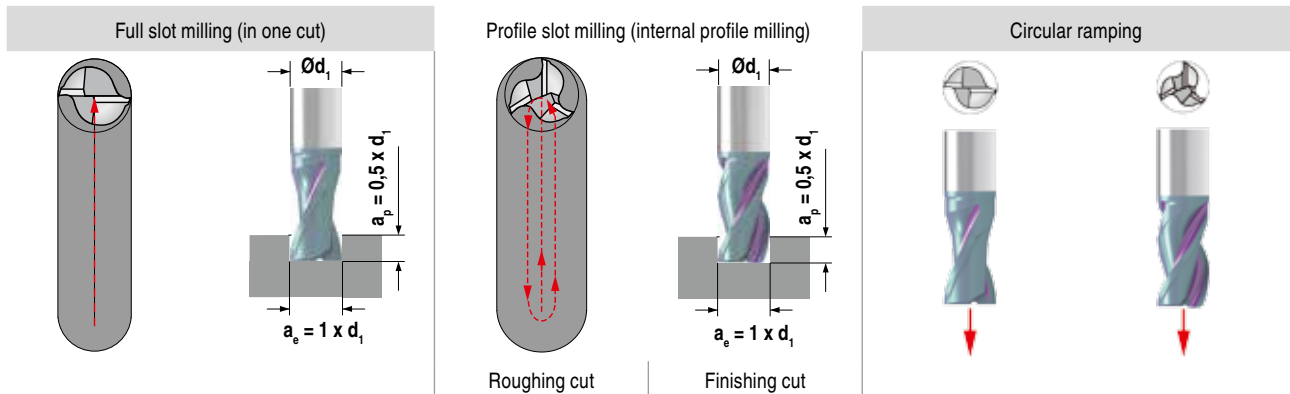
In general the following is valid:

$$f_z \text{ (milling)} = f_z \times K_f f_z$$

$$f_z \text{ (drilling)} = f_z \text{ (milling)} \div \text{no. of teeth}$$

Feed per tooth when milling parallel key slots with HSS slot drills

Approximate values (in mm) for the feed per tooth (f_z)



Ø d ₁ mm	f _z in mm		f _z in mm				f _z in mm			
	uncoated	coated	uncoated	coated	uncoated	coated	uncoated	coated	uncoated	coated
2	0,005	0,006	0,005	0,006	0,008	0,009	0,003	0,003	0,002	0,002
3	0,009	0,010	0,009	0,010	0,015	0,016	0,004	0,005	0,003	0,003
4	0,012	0,013	0,012	0,013	0,022	0,024	0,006	0,007	0,004	0,004
5	0,016	0,017	0,016	0,017	0,030	0,033	0,008	0,009	0,005	0,006
6	0,020	0,022	0,020	0,022	0,039	0,043	0,010	0,011	0,007	0,007
8	0,026	0,029	0,026	0,029	0,055	0,061	0,013	0,014	0,009	0,010
10	0,034	0,037	0,034	0,037	0,075	0,082	0,017	0,019	0,011	0,012
12	0,040	0,044	0,040	0,044	0,093	0,101	0,020	0,022	0,013	0,015
14	0,049	0,054	0,049	0,054	0,117	0,118	0,024	0,027	0,016	0,018
16	0,056	0,062	0,056	0,062	0,135	0,135	0,028	0,031	0,019	0,021
18	0,065	0,072	0,065	0,072	0,151	0,151	0,033	0,036	0,022	0,024
20	0,071	0,078	0,071	0,078	0,167	0,167	0,035	0,039	0,024	0,026
22	0,080	0,088	0,080	0,088	0,184	0,184	0,040	0,044	0,027	0,029
25	0,089	0,098	0,089	0,098	0,208	0,208	0,044	0,049	0,030	0,033
28	0,103	0,113	0,103	0,113	0,233	0,233	0,051	0,056	0,034	0,037
32	0,118	0,130	0,118	0,130	0,260	0,260	0,060	0,065	0,040	0,043
36	0,130	0,143	0,130	0,143	0,260	0,260	0,060	0,065	0,040	0,043
40	0,130	0,143	0,130	0,143	0,260	0,260	0,060	0,065	0,040	0,043
45	0,130	0,143	0,130	0,143	0,260	0,260	0,060	0,065	0,040	0,043
50	0,130	0,143	0,130	0,143	0,260	0,260	0,060	0,065	0,040	0,043

i Attention:
In the case of uncoated milling cutters climb milling is preferred to conventional milling. When using coated milling cutters climb milling is necessary in order to achieve optimum results.

i Feed rate correction:
Please multiply the f_z value in the table above with the corresponding **correction factor Kf f_z** from the table on → page 53.

In general the following is valid:
 f_z (milling) = $f_z \times Kf f_z$
 f_z (drilling) = f_z (milling) ÷ no. of teeth

Cutting data – side and face cutters

Index	v _c in m/min	uncoated						Emulsion	Compressed air	MMS
		Ø 50	Ø 63	Ø 80	Ø 100	Ø 125	Ø 160			
		f _z mm								
1.1	30–40	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,095–0,11	0,1–0,12	●		
1.2	30–40	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,095–0,11	0,1–0,12	●		
1.3	30–40	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,095–0,11	0,1–0,12	●		
1.4	20–30	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,09–0,1	●		
1.5	20–25	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,095–0,11	0,1–0,12	●		
1.6	15–30	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,09–0,1	●		
1.7	20–25	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,09–0,1	●		
1.8	10–15	0,03–0,04	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	●		
1.9	18–25	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,09–0,1	●		
1.10	15–30	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,09–0,1	●		
1.11	12–18	0,03–0,04	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	●		
1.12	15–20	0,03–0,04	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	●		
1.13										
1.14										
1.15	10–15	0,03–0,04	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	●		
1.16	10–15	0,03–0,04	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	●		
2.1	12–18	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,09–0,1	●		
2.2	10–15	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,09–0,1	●		
2.3	8–12	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,09–0,1	●		
2.4	7–10	0,03–0,04	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	●		
2.5	5–8	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,09–0,1	●		
2.6	10–15	0,03–0,04	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	●		
2.7										
3.1	20–30	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,09–0,1	●		
3.2	18–25	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,09–0,1	●		
3.3	18–25	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,09–0,1	●		
3.4	15–20	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,09–0,1	●		
3.5	25–35	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,09–0,1	●		
3.6	18–25	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,09–0,1	●		
3.7	25–35	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,09–0,1	●		
3.8	18–25	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,09–0,1	●		
4.1	150–180	0,06–0,075	0,075–0,09	0,009–0,1	0,01–0,12	0,12–0,135	0,135–0,15	●		
4.2	100–130	0,06–0,075	0,075–0,09	0,009–0,1	0,01–0,12	0,12–0,135	0,135–0,15	●		
4.3	80–100	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,095–0,11	0,1–0,12	●		
4.4	40–60	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,095–0,11	0,1–0,12	●		
4.5										
4.6	30–50	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,095–0,11	0,1–0,12	●		
4.7	90–110	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,09–0,1	●		
4.8	5–10	0,03–0,04	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	●		
4.9										
4.10										
4.11	80–100	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,09–0,1	●		
4.12	80–120	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,09–0,1	●		
4.13	20–30	0,08–0,1	0,1–0,12	0,12–0,14	0,14–0,16	0,16–0,18	0,18–0,2	●		
4.14	30–40	0,08–0,1	0,1–0,12	0,12–0,14	0,14–0,16	0,16–0,18	0,18–0,2	●		
4.15										
4.16	90–120	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,095–0,11	0,1–0,12		●	
4.17										
4.18										
4.19										
5.1	5–10	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,09–0,1	●		
5.2										
5.3										
5.4										
5.5										
5.6										
5.7										
5.8										
5.9	10–15	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,09–0,1	●		
5.10	10–15	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,09–0,1	●		
5.11										

Coolant

● = 1st choice

○ = suitable

i The indicated feed rates apply to straight pitched cutters with a cutting depth of 0.1 x d₁!
With cross-pitched cutters the feed rate is to be reduced by 50%!

Cutting data - face mills

Index	Kf f _z	uncoated	Ti 100 Pro	Emulsion	Compressed air	MMS
		v _c in m/min				
1.1	1,2	25-30	50-60	●		
1.2	1,2	25-30	45-55	●		
1.3	1,2	25-30	45-55	●		
1.4	1	20-25	40-50	●		
1.5	1,2	20-25	40-50	●		
1.6	1	15-30	30-40	●		
1.7	1,2	20-25	40-50	●		
1.8	0,8	10-15	20-30	●		
1.9	1,2	18-25	35-45	●		
1.10	1	15-30	30-40	●		
1.11	0,8	12-18	25-35	●		
1.12	0,8	15-20	30-40	●		
1.13						
1.14						
1.15	0,8	10-15	20-30	●		
1.16	0,8	10-15	20-30	●		
2.1	1	12-18	20-25	●		
2.2	1	10-15	15-20	●		
2.3	1	8-12	20-25	●		
2.4	0,9	7-10	15-20	●		
2.5	1	5-8	10-15	●		
2.6	1	10-15	15-20	●		
2.7						
3.1	1	20-30	30-40	●		
3.2	1	18-25	30-35	●		
3.3	1	18-25	30-35	●		
3.4	1	15-20	25-30	●		
3.5	1	25-35	35-40	●		
3.6	1	18-25	30-35	●		
3.7	1	25-35	35-40	●		
3.8	1	18-25	30-35	●		
4.1	1,5	150-180		●		
4.2	1,5	100-130		●		
4.3	1,3	80-100		●		
4.4	1,3	40-60		●		
4.5						
4.6	1,2	30-50	60-80	●		
4.7	1,1	90-110	120-150	●		
4.8	0,9	5-10	10-15	●		
4.9						
4.10						
4.11	1,1	80-100	110-140	●		
4.12	1,1	80-120	120-150	●		
4.13	2	20-30	25-45	●		
4.14	2	30-40	50-70	●		
4.15						
4.16	1,3	90-120	120-140		●	
4.17	1		30-40		●	
4.18	1,1		15-25	●		
4.19						
5.1	1,1	5-10	10-15	●		
5.2						
5.3						
5.4						
5.5						
5.6						
5.7						
5.8						
5.9	1	10-15	15-25	●		
5.10	1,1	10-15	15-20	●		
5.11	0,8		10-15	●		
6.1						
6.2						
6.3						
6.4						
6.5						

Coolant

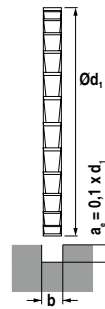
● = 1st choice
○ = suitable

Kf f_z = Correction factor for feed per tooth

Feed per tooth for side and face cutters

Approximate values (in mm) for the feed per tooth (f_z)

$\varnothing d_1$ mm	Fine cross-pitched	Coarse cross-pitched
	uncoated	
	f_z in mm	
50	0,050	0,070
63	0,040	0,056
80	0,031	0,044
100	0,025	0,035
125	0,020	0,030
160	0,0125	0,0175

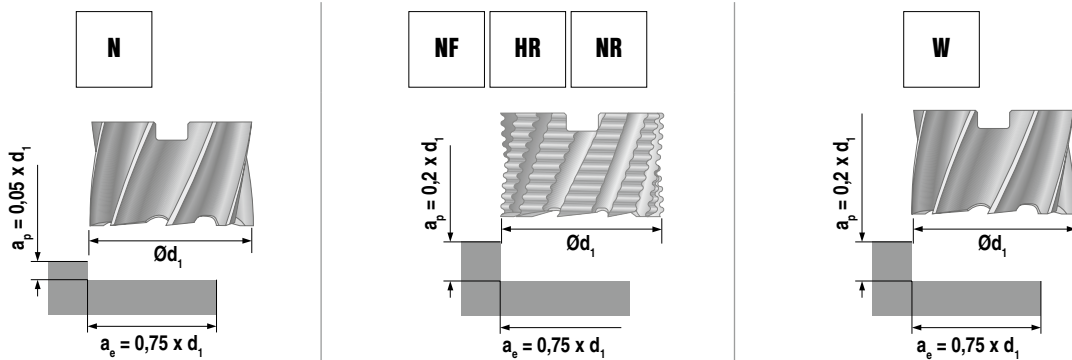


Feed correction factor ($Kf f_z$) for side and face cutters in relation to the cutting depth (a_e)

a_e	$Kf f_z$
$0,05 \times d_1$	1,4
$0,1 \times d_1$	1,0
$0,15 \times d_1$	0,8
$0,2 \times d_1$	0,7
$0,25 \times d_1$	0,6

Feed per tooth for HSS face mills

Approximate values (in mm) for the feed per tooth (f_z)



$\varnothing d_1$ mm	N		NF HR NR		W
	f_z in mm		f_z in mm		f_z in mm
	uncoated	Ti 100 Pro	uncoated	Ti 100 Pro	uncoated
40	0,049	0,054	0,064	0,070	0,060
50	0,055	0,060	0,071	0,078	0,066
63	0,061	0,067	0,079	0,087	0,074
80	0,065	0,071	0,084	0,092	0,078
100	0,059	0,065	0,076	0,084	0,071

Feed rate correction:
Please multiply the f_z value in the table above with the corresponding **correction factor $Kf f_z$** from the table on → **page 57**.

In general the following is valid:
 f_z (milling) = $f_z \times Kf f_z$
 f_z (drilling) = f_z (milling) ÷ no. of teeth

Formula for cutting data calculation

Designation	Abbreviation	Unit	Formula
Number of revolutions	n	min ⁻¹	$n = \frac{v_c \times 1000}{d_1 \times \pi}$
Cutting speed	v _c	m/min	$v_c = \frac{d_1 \times \pi \times n}{1000}$
Feed per tooth	f _z	mm	$f_z = \frac{v_f}{Z \times n} \quad f_z = h_m \times \sqrt{\frac{d_1}{a_e}}$
Feed per revolution	f	mm	$f = f_z \times Z$
Feed rate	v _f	mm/min	$v_f = f_z \times Z \times n$
Average chip thickness	h _m	mm	$h_m = f_z \times \sqrt{\frac{a_e}{d_1}}$

Z = Number of teeth

a_e = cutting width (for side milling cutter cutting depth)

d₁ = Cutting diameter

Coatings

Ti 100 Pro	Multilayer, HV _{0.05} = 3500 Coefficient of friction (against steel) = 0.7 maximum application temperature: 900°
Al 200 Pro	Monolayer, HV _{0.05} = 3200 Coefficient of friction (against steel) = 0.35 maximum application temperature: 1100°
Ti 200 Pro	Multilayer, HV _{0.05} = 3300 Coefficient of friction (against steel) = 0.35 maximum application temperature: 900°