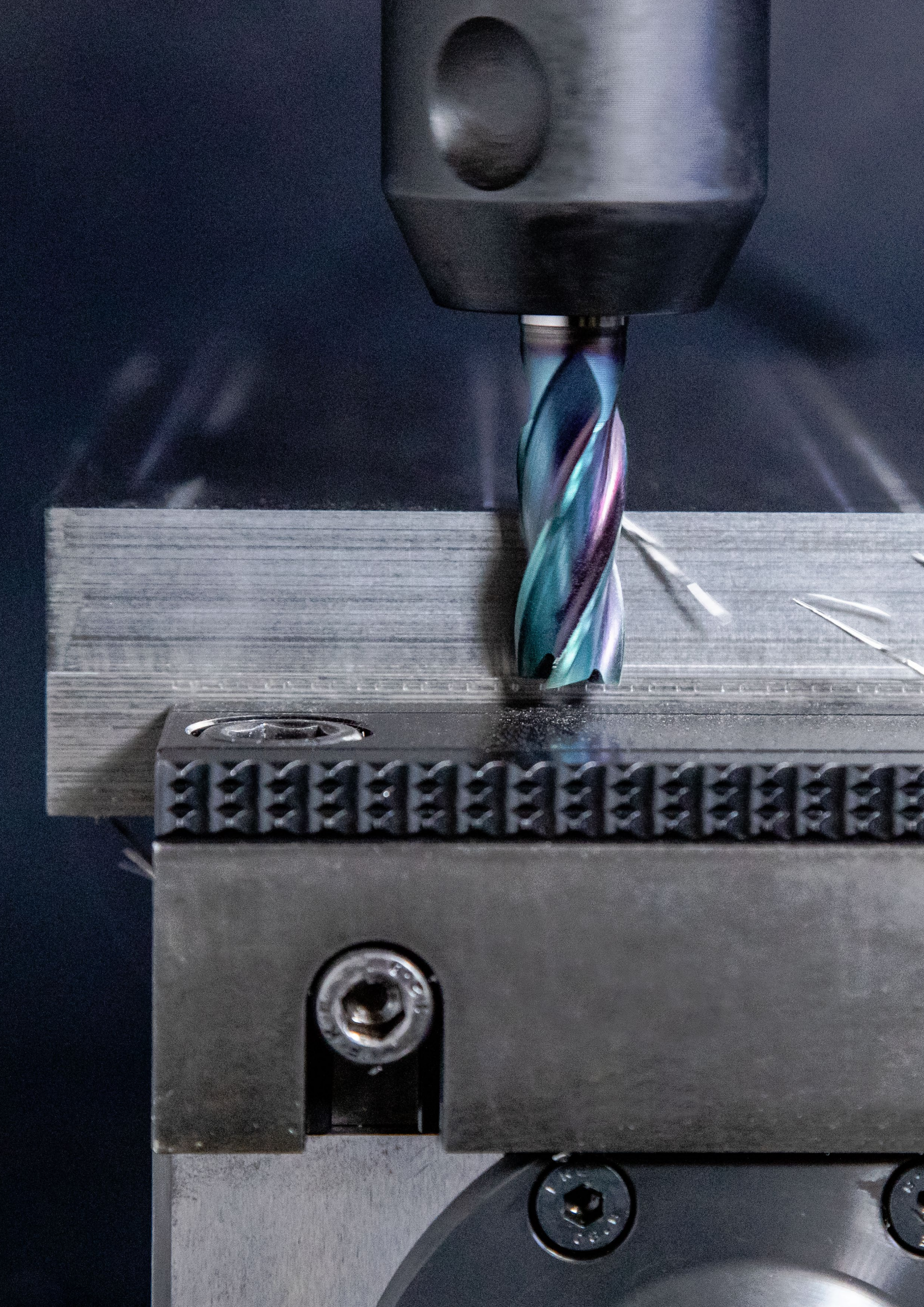

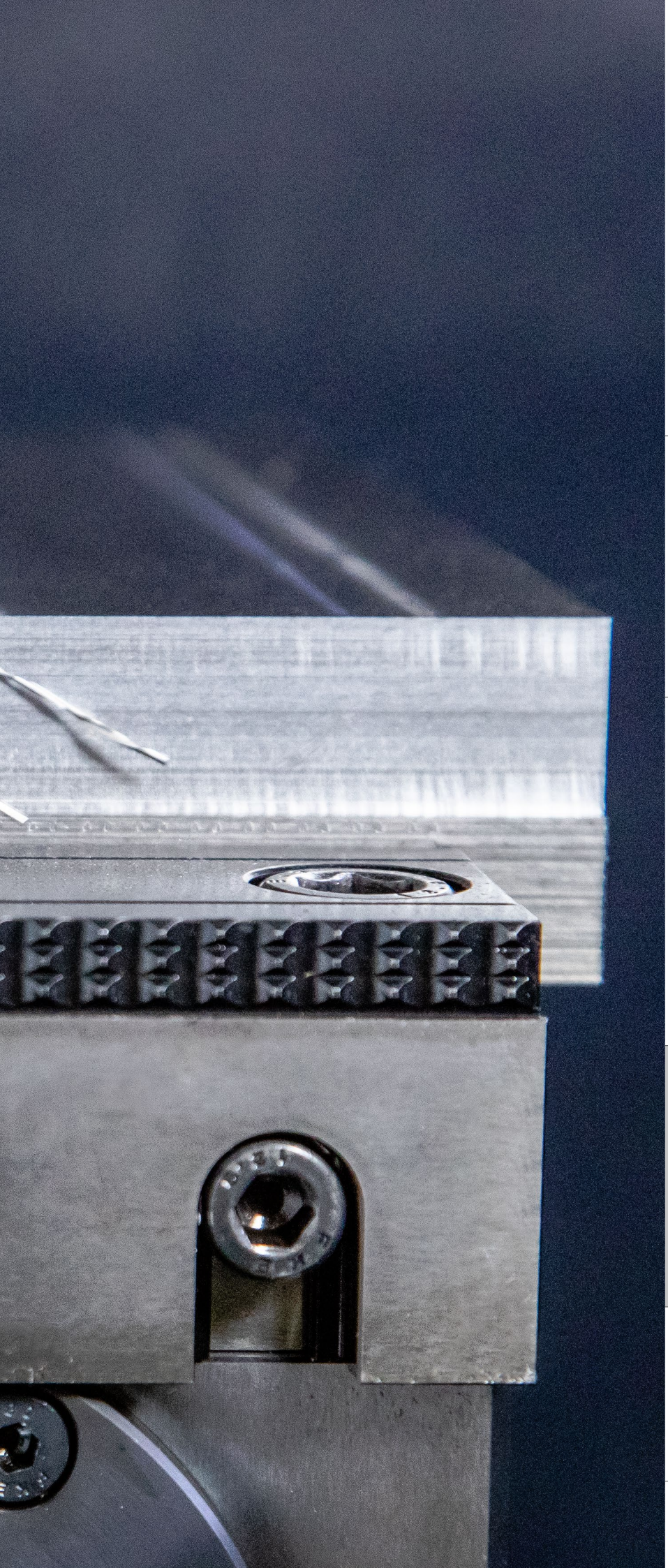

Solid drilling and bore machining

1 HSS drilling

2 Solid carbide drilling

3 Indexable insert drilling

4 Reaming and Countersinking

5 Spindle Tooling

Threading

6 Taps and thread formers

7 Circular and Thread Milling

8 Thread turning

Turning

9 Turning Tools

10 EcoCut

11 Grooving Tools

12 Miniature turning tools

Milling

13 HSS Milling Cutters

14 Solid Carbide milling cutters

15 Milling tools with indexable inserts

Tool Clamping

16 Adapters

17 Accessories

18 Material examples and article no. index

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Cutting Data	39–46
Formula for cutting data calculation	47
Coating	47

WNT \ Performance

Premium quality tools for high performance.

The premium quality tools from the **WNT 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.

Symbol explanation

Shank

Shank type

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

Cutting edge preparation

Sharp

Chamfer (CHW = chamfer width in mm)

Full Radius

Application

Machining example

The red arrows describe the possible feed directions

Number of teeth

Cutting geometry
λ_s = helix angle
γ_s = rake angle

● = **Main Application**

○ = Extended application

Toolfinder

softer — Material to machine — harder

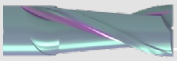
Finish milling

W

6+7

37

N


8–15

25

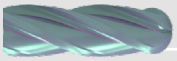
28+29

31

33+34

37

H

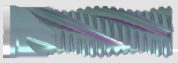

26

32

35+36

Rough and finish machining

NTI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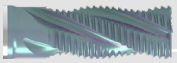
HS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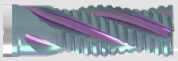
NF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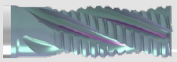
30

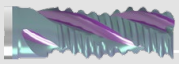
37

HF


19

Rough machining

WR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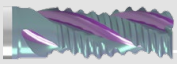
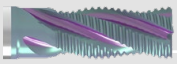
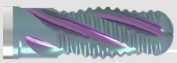
NR


21+22

38

HR

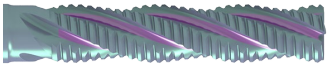
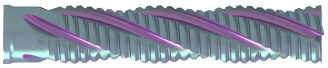
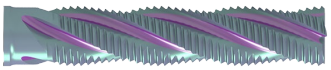
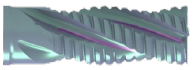
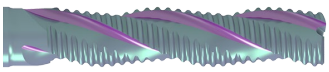
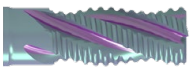
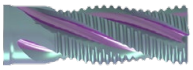
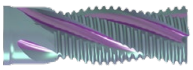

23+24


27

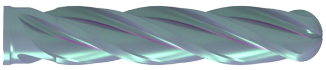
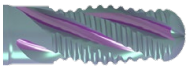
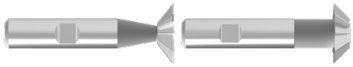
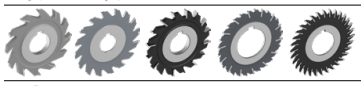
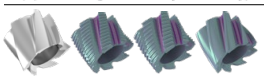
38

13

Overview HSS milling cutters

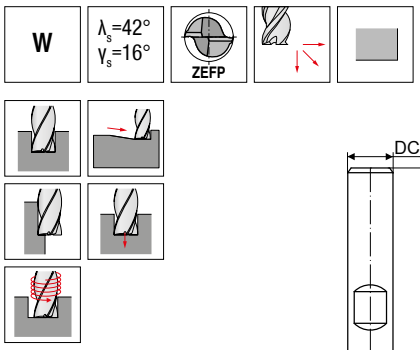
	Tool type	Number of teeth (ZEFP)	Diameter in mm Ø DC	Steel	Stainless steel	Cast iron	Non-ferrous metals	Heat resistant alloys	hardened materials	Sharp	Chamfer	Radius	Full Radius	Length	Material, e.g. PM = Powdersteel	coated	uncoated	WNT \ Performance
Finishing cutter																		
	W	2	2-22				●			■					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	4–5	4-25	○	●	○	●	●		■					HSS-E	■	□	13
	N	4–8	2-50	●	●	●	○	○		■					HSS-E	■	□	14+15
Rough and finish milling cutters																		
	NTI	4–6	6-40	○	●	○	○	●			■				PM	■		16
	NF	4–5	6-28	●	○	●	○	○		■					HSS-E	■		17
	HS	4–6	6-40	○		●		●			■				PM	■		18
	HF	4	6-25	●	○	●	○	○		■					PM	■		19
Rough milling cutters																		
	WR	3	6-32				●			■					HSS-E	■		20
	NR	3	6-25	●	○	●	○	○			■				HSS-E	■	□	21
	NR	4–6	6-40	●	○	●	○	○			■				HSS-E	■	□	22
	HR	4–6	6-32	●	●	●	○	○			■				PM	■		23
	HR	3–6	4-32	●	●	●	○	○			■				HSS-E	■	□	24

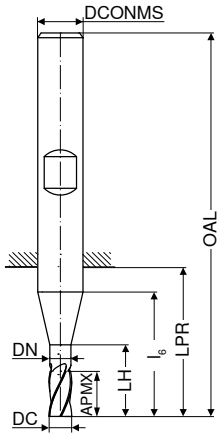
Overview HSS milling cutters

	Tool type	Number of teeth (ZEFP)	Diameter in mm (Ø DC)	Steel	Stainless steel	Cast iron	Non-ferrous metals	Heat resistant alloys	hardened materials	Sharp	Chamfer	Radius	Full Radius	Length	Material, e.g. PM = Powdersteel	coated	uncoated	WNT \ Performance
Ball nose end milling cutters																		
	N	2	2–30	●	○	●	○	○							HSS-E	■	□	25
	H	4–5	6–25	●	○	●	○	○							HSS-E	■	□	26
	HR	4	6–20	●	○	●	○	○							HSS-E	■		27
Form / Side and Face / Shell milling cutters																		
	N	6–10	11–60	●	○	●	○	○							HSS-E		□	28
	N	6–12	10,5–45,5	●	○	●	○	○							HSS-E		□	29
	NF	6–8	21–45	●	○	●	○	○							HSS-E		□	30
	N	4–6	1–16	●	○	●	○	○							HSS-E		□	31
	H	10	16–25	●	○	●	○	○							HSS-E		□	32
	N	14–28		●	○	●	○	○							HSS		□	33
		12–52		●	●	●	●	●							HSS-E		□	34–36
		6–12		●	●	●	●	○							HSS-E	■	□	37+38

13

Slot milling cutter HSS-E Co 8





DIN 844

B

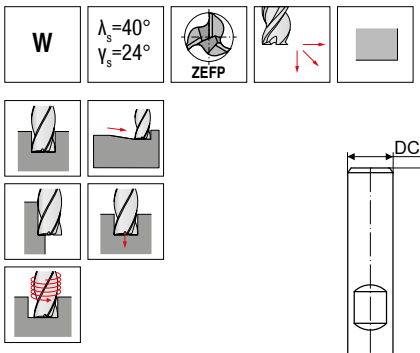
U6

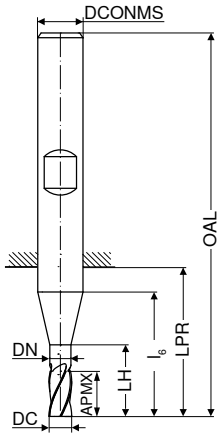
DC e8 mm	APMX mm	DN mm	LH mm	l6 mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	Article no. 50 144 ...	EUR
2,0	7		7	13	15	51	6	2	021,30	020
2,5	8		8	14	16	52	6	2	021,30	025
3,0	8		8	14	16	52	6	2	021,30	030
3,5	10		10	16	18	54	6	2	021,30	035
4,0	11		11	17	19	55	6	2	021,30	040
4,5	11		11	17	19	55	6	2	021,30	045
5,0	13		13	19	21	57	6	2	021,30	050
5,5	13		13	19	21	57	6	2	021,30	055
6,0	13		13	19	21	57	6	2	021,30	060
6,5	16	6,0	22	24	26	66	10	2	028,71	065
7,0	16	6,5	22	24	26	66	10	2	028,71	070
8,0	19	7,5	25	27	29	69	10	2	028,71	080
9,0	19	8,5	26	27	29	69	10	2	028,71	090
10,0	22	9,5	30	30	32	72	10	2	028,71	100
12,0	26	11,5	36	36	38	83	12	2	037,94	120
14,0	26	11,5	36	36	38	83	12	2	042,18	140
16,0	32	15,0	42	42	44	92	16	2	050,97	160
18,0	32	15,0	42	42	44	92	16	2	062,73	180
20,0	38	19,0	52	52	54	104	20	2	075,67	200
22,0	38	19,0	52	52	54	104	20	2	120,90	220

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

→ v_c/f_z Page 40–42

End milling cutter HSS-E Co 8





DC k10 mm	APMX mm	DN mm	LH mm	l_6 mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	DIN 69844 U8 Article no. 50 120 ... EUR		DIN 844 U8 Article no. 50 121 ... EUR	
2	7		7	13	15	51	6	3	36,88	020		
3	8		8	14	16	52	6	3	35,39	030		
3	12		12	18	20	56	6	3			40,37	030
4	11		11	17	19	55	6	3	29,89	040		
4	19		19	25	27	63	6	3			41,43	040
5	13		13	19	21	57	6	3	29,89	050		
5	24		24	30	32	68	6	3			41,43	050
6	13	5,5	19	19	21	57	6	3	31,69	060		
6	24	5,5	30	30	32	68	6	3			39,31	060
7	16	6,5	22	24	26	66	10	3	41,86	070		
7	30	6,5	36	38	40	80	10	3			59,03	070
8	19	7,5	25	27	29	69	10	3	37,41	080		
8	38	7,5	44	46	48	88	10	3			47,27	080
9	19	8,5	26	27	29	69	10	3	48,54	090		
9	38	8,5	45	46	48	88	10	3			65,92	090
10	22	9,5	30	30	32	72	10	3	42,82	100		
10	45	9,5	53	53	55	95	10	3			53,31	100
12	26	11,5	36	36	38	83	12	3	50,34	120		
12	53	11,5	63	63	65	110	12	3			59,03	120
14	26	11,5	36	36	38	83	12	3	63,69	140		
14	53	11,5	63	63	65	110	12	3			68,89	140
16	32	15,0	42	42	44	92	16	3	59,77	160		
16	63	15,0	73	73	75	123	16	3			72,81	160
18	32	15,0	42	42	44	92	16	3	98,98	180		
18	63	15,0	73	73	75	123	16	3			121,90	180
20	38	19,0	52	52	54	104	20	3	97,07	200		
20	75	19,0	89	89	91	141	20	3			116,60	200
22	38	19,0	52	52	54	104	20	3	140,90	220		
22	75	19,0	89	89	91	141	20	3			174,80	220
24	90	23,0	106	108	110	166	25	3			223,60	240
25	45	24,0	63	45	65	121	25	4	154,80	250		
25	90	24,0	108	108	110	166	25	4			212,00	250
28	90	24,0	108	108	110	166	25	4			239,50	280
30	90	24,0	108	108	110	166	25	4			302,00	300
32	106	31,0	123	123	126	186	32	4			311,60	320
36	106	31,0	123	123	126	186	32	4			431,30	360
40	125	38,0	142	142	147	217	40	4			550,10	400

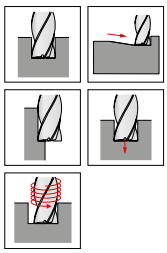
Steel		
Stainless steel		
Cast iron		
Non ferrous metals	●	●
Heat resistant alloys		
hardened materials		

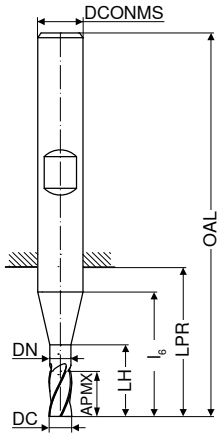
→ v_c/f_z Page 40–42

13

Slot milling cutter HSS-E Co 8

N | λ_s=30° γ_s=10° | ZEFP





	Ti100 Pro		Ti100 Pro
DIN 327	DIN 327	Factory standard	Factory standard
B	B	B	B
U8	U8	U8	U8

DC mm	Tol.	APMX mm	DN mm	LH mm	l_6 mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	Article no. 50 100 ... EUR		Article no. 54 025 ... EUR		Article no. 50 122 ... EUR		Article no. 54 020 ... EUR	
1,00	h10	2,5		2,5	9	11	47	6	2	31,16	010 1)	35,61	010 1)				
1,50	h10	3,0		3,0	9	11	47	6	2	29,14	015 1)	35,61	015 1)				
1,80	h10	4,0		4,0	10	12	48	6	2	14,31	018	36,35	018				
2,00	e8	4,0		4,0	10	12	48	6	2	17,07	020	29,99	020				
2,50	e8	5,0		5,0	11	13	49	6	2	17,07	025	29,99	025				
2,80	h10	5,0		5,0	11	13	49	6	2	17,07	028	31,37	028				
3,00	e8	5,0		5,0	11	13	49	6	2	15,58	030	29,99	030				
3,00	e8	8,0		8,0	18	20	56	6	2					25,01	030	44,19	030
3,50	h10	6,0		6,0	12	14	50	6	2	16,95	035	31,37	035				
3,50	h10	10,0		10,0	21	23	59	6	2					31,05	035	48,43	035
3,80	h10	7,0		7,0	13	15	51	6	2	17,70	038	34,98	038				
4,00	e8	7,0		7,0	13	15	51	6	2	15,58	040	26,38	040				
4,00	e8	11,0		11,0	25	27	63	6	2					26,81	040	44,19	040
4,50	h10	7,0		7,0	13	15	51	6	2	19,40	045	31,37	045				
4,50	h10	11,0		11,0	25	27	63	6	2					34,02	045	48,43	045
4,80	h10	8,0		8,0	14	16	52	6	2	19,40	048	34,98	048				
5,00	e8	8,0		8,0	14	16	52	6	2	15,58	050	29,99	050				
5,00	e8	13,0		13,0	30	32	68	6	2					25,97	050	44,19	050
5,50	h10	8,0		8,0	14	16	52	6	2	19,40	055	31,37	055				
5,50	h10	13,0		13,0	30	32	68	6	2					34,02	055	48,43	055
5,75	h10	8,0		8,0	14	16	52	6	2	19,50	057	34,98	057				
6,00	e8	8,0	5,50	14,0	14	16	52	6	2	15,58	060	29,99	060				
6,00	e8	13,0	5,50	30,0	30	32	68	6	2					28,40	060	42,82	060
6,50	h10	10,0	6,00	16,0	18	20	60	10	2	21,40	065	36,98	065				
6,50	h10	16,0	6,35	36,0	38	40	80	10	2					40,70	065	59,77	065
6,75	h10	10,0	6,50	16,0	18	20	60	10	2	23,95	067	39,31	067				
7,00	e8	10,0	6,50	16,0	18	20	60	10	2	22,79	070	35,61	070				
7,00	e8	16,0	6,35	36,0	38	40	80	10	2					35,71	070	55,54	070
7,50	h10	10,0	7,00	16,0	18	20	60	10	2	24,27	075	36,98	075				
7,50	h10	16,0	7,35	36,0	38	40	80	10	2					41,76	075	59,77	075
7,75	h10	11,0	7,50	17,0	19	21	61	10	2	23,95	077	39,31	077				
8,00	e8	11,0	7,50	17,0	19	21	61	10	2	20,66	080	35,61	080				
8,00	e8	19,0	7,35	44,0	46	48	88	10	2					31,05	080	54,89	080
8,50	h10	11,0	8,00	18,0	19	21	61	10	2	24,27	085	46,31	085				
8,50	h10	19,0	8,35	45,0	46	48	88	10	2					44,82	085	63,38	085
8,70	h10	11,0	8,50	18,0	19	21	61	10	2	29,78	087	49,91	087				
9,00	h10	11,0	8,50	18,0	19	21	61	10	2	23,74	090	45,68	090				
9,00	h10	19,0	8,35	45,0	46	48	88	10	2					40,70	090	64,12	090
9,50	h10	11,0	9,00	18,0	19	21	61	10	2	29,78	095	46,31	095				
9,50	h10	19,0	9,35	45,0	46	48	88	10	2					46,10	095	66,98	095
9,70	h10	13,0	9,50	21,0	21	23	63	10	2	29,04	097	49,91	097				
10,00	e8	13,0	9,50	21,0	21	23	63	10	2	22,68	100	39,96	100				
10,00	e8	22,0	9,35	53,0	53	55	95	10	2					33,70	100	57,01	100
10,50	h10	13,0	10,00	21,0	23	25	70	12	2	42,60	105	54,15	105				
10,70	h10	13,0	10,50	21,0	23	25	70	12	2	39,53	107	59,13	107				
11,00	h10	13,0	10,50	21,0	23	25	70	12	2	36,88	110	49,28	110				
11,00	h10	22,0	10,50	53,0	55	57	102	12	2					47,05	110	68,36	110
11,50	h10	13,0	11,00	21,0	23	25	70	12	2	42,39	115	54,89	115				

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

1) Factory standard

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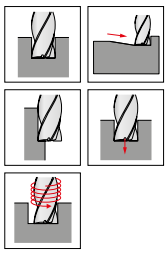
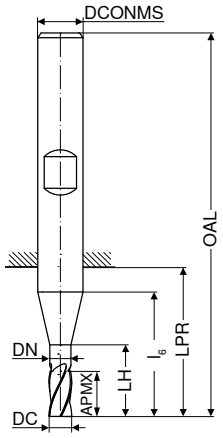
Continued on next page

Slot milling cutter HSS-E Co 8

N | λ_s=30° γ_s=10° | ZEFP





	Ti100 Pro		Ti100 Pro
DIN 327	DIN 327	Factory standard	Factory standard
B	B	B	B
U8	U8	U8	U8

DC mm	Tol.	APMX mm	DN mm	LH mm	l_6 mm	LPR mm	OAL mm	DCONMS $_{h6}$ mm	ZEFP	Article no. 50 100 ... EUR		Article no. 54 025 ... EUR		Article no. 50 122 ... EUR		Article no. 54 020 ... EUR	
11,70	h10	16,0	11,50	26,0	26	28	73	12	2	42,39	117	58,40	117				
12,00	e8	16,0	11,50	26,0	26	28	73	12	2	30,94	120	49,28	120				
12,00	e8	26,0	11,50	63,0	63	65	110	12	2					38,79	120	64,96	120
12,70	h10	16,0	11,50	26,0	26	28	73	12	2	47,58	127	81,18	127				
13,00	h10	16,0	11,50	26,0	26	28	73	12	2	42,39	130	72,70	130				
13,00	h10	26,0	11,50	63,0	63	65	110	12	2					63,91	130	94,01	130
13,70	h10	16,0	11,50	26,0	26	28	73	12	2	58,93	137	76,94	137				
14,00	e8	16,0	11,50	26,0	26	28	73	12	2	40,37	140	66,98	140				
14,00	e8	26,0	11,50	63,0	63	65	110	12	2					49,17	140	89,76	140
14,70	h10	16,0	11,50	26,0	26	28	73	12	2	65,07	147						
15,00	h10	16,0	11,50	26,0	26	28	73	12	2	49,17	150	72,70	150				
15,00	h10	26,0	11,50	63,0	63	65	110	12	2					60,51	150	101,30	150
15,70	h10	19,0	15,00	29,0	29	31	79	16	2	64,32	157	84,15	157				
16,00	e8	19,0	15,00	29,0	29	31	79	16	2	45,04	160	72,70	160				
16,00	e8	32,0	15,00	73,0	73	75	123	16	2					58,71	160	98,46	160
16,70	h10	19,0	15,00	29,0	29	31	79	16	2	74,71	167						
17,00	h10	19,0	15,00	29,0	29	31	79	16	2	57,97	170	104,10	170				
17,00	h10	32,0	15,00	73,0	73	75	123	16	2					76,51	170	147,30	170
17,70	h10	19,0	15,00	29,0	29	31	79	16	2	78,31	177	104,10	177				
18,00	e8	19,0	15,00	29,0	29	31	79	16	2	61,68	180	92,73	180				
18,00	e8	32,0	15,00	73,0	73	75	123	16	2					77,04	180	132,50	180
19,00	h10	19,0	15,00	29,0	29	31	79	16	2	74,82	190	115,50	190				
19,00	h10	32,0	15,00	73,0	73	75	123	16	2					83,72	190	153,70	190
19,70	h10	22,0	19,00	36,0	36	38	88	20	2	89,44	197	115,50	197				
20,00	e8	22,0	19,00	36,0	36	38	88	20	2	69,84	200	99,73	200				
20,00	e8	38,0	19,00	89,0	89	91	141	20	2					77,37	200	135,60	200
21,70	h10	22,0	19,00	36,0	36	38	88	20	2	124,00	217	166,40	217				
22,00	e8	22,0	19,00	36,0	36	38	88	20	2	85,42	220	142,10	220				
22,00	e8	38,0	19,00	89,0	89	91	141	20	2					133,50	220	177,00	220
23,70	h10	26,0	23,00	42,0	44	46	102	25	2	131,50	237	191,80	237				
24,00	e8	26,0	23,00	42,0	44	46	102	25	2	111,30	240	172,70	240				
24,00	e8	45,0	23,00	106,0	108	110	166	25	2					165,40	240	246,90	240
24,70	h10	26,0	24,00	44,0	44	46	102	25	2	130,30	247	197,10	247				
25,00	e8	26,0	24,00	44,0	44	46	102	25	2	105,50	250	171,70	250				
25,00	e8	45,0	24,00	108,0	108	110	166	25	2					165,40	250	204,60	250
26,00	h10	26,0	24,00	44,0	44	46	102	25	2	128,20	260	222,60	260				

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

1) Factory standard

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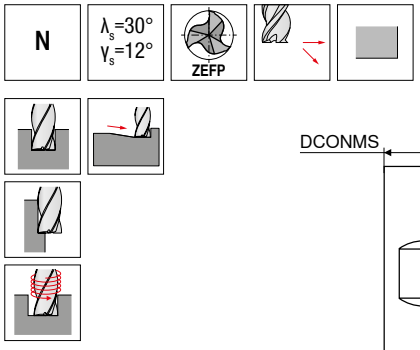
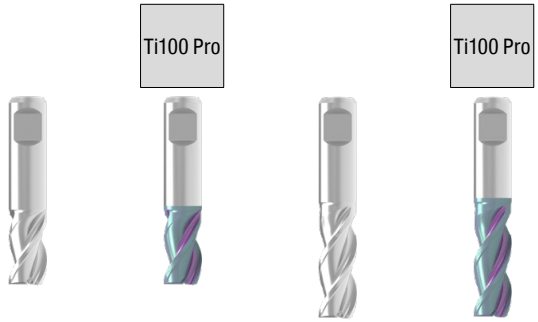
Throw-away milling cutter, HSS-E Co 8

▲ Shank similar to DIN 1835 B





DC e8	APMX	LPR	OAL	DCONMS h6	ZEFP	Factory standard		Factory standard		Factory standard		Factory standard	
						B		B		B		B	
						U6		U8		U6		U8	
						Article no. 50 092 ...		Article no. 54 014 ...		Article no. 50 093 ...		Article no. 54 042 ...	
mm	mm	mm	mm	mm		EUR		EUR		EUR		EUR	
1,00	2	8	34	6	3	11,34	010	22,46	010				
1,50	3	8	34	6	3	11,34	015	22,46	015				
1,50	4	10	35	6	3					13,25	015 1)	25,12	015 1)
1,80	3	8	34	6	3	11,34	018	22,46	018				
2,00	4	9	35	6	3	11,34	020	22,46	020				
2,00	7	12	38	6	3					13,25	020 1)	25,12	020
2,30	4	9	35	6	3	11,34	023	22,46	023				
2,50	5	10	36	6	3	11,34	025	22,46	025				
2,50	8	13	39	6	3					13,25	025 1)	25,12	025
2,80	5	10	36	6	3	11,34	028	22,46	028				
3,00	5	10	36	6	3	11,34	030	22,46	030				
3,00	8	13	39	6	3					13,25	030 1)	25,12	030
3,30	6	11	37	6	3	11,34	033	22,46	033				
3,50	6	11	37	6	3	11,34	035	22,46	035				
3,50	10	15	41	6	3					13,25	035 1)	25,12	035
3,80	7	12	38	6	3	11,34	038	22,46	038				
4,00	7	12	38	6	3	11,34	040	22,46	040				
4,00	11	16	42	6	3					13,25	040 1)	25,12	040
4,30	7	12	38	6	3	11,34	043	22,46	043				
4,50	7	12	38	6	3	11,34	045	22,46	045				
4,50	11	16	42	6	3					13,25	045 1)	25,12	045
4,80	8	13	39	6	3	11,34	048	22,46	048				
5,00	8	13	39	6	3	11,34	050	22,46	050				
5,00	13	18	44	6	3					13,25	050 1)	25,12	050
5,30	8	13	39	6	3	11,34	053	22,46	053				
5,50	8	13	39	6	3	11,34	055	22,46	055				
5,50	13	18	44	6	3					13,25	055 1)	25,12	055
5,75	8	13	39	6	3	11,34	057	22,46	057				
6,00	8	13	39	6	3	11,34	060	22,46	060				
6,00	13	18	44	6	3					13,25	060 1)	25,12	060
6,50	10	14	42	8	3	13,15	065	30,63	065				
6,50	16	20	48	8	3					15,68	065 1)	33,49	065
7,00	10	14	42	8	3	13,15	070	30,63	070				
7,00	16	20	48	8	3					15,68	070 1)	33,49	070
7,50	10	14	42	8	3	13,15	075	30,63	075				
7,50	16	20	48	8	3					15,68	075 1)	33,49	075
8,00	11	15	43	8	3	13,15	080	30,63	080				
8,00	19	23	51	8	3					15,68	080 1)	33,49	080
8,50	11	16	48	10	3	17,07	085	34,98	085				
8,50	19	24	56	10	3					19,60	085 1)	37,51	085
9,00	11	16	48	10	3	17,07	090	34,98	090				
9,00	19	24	56	10	3					19,60	090 1)	37,51	090
9,50	11	16	48	10	3	17,07	095	34,98	095				
9,50	19	24	56	10	3					19,60	095 1)	37,51	095
10,00	13	18	50	10	3	17,07	100	34,98	100				
10,00	22	27	59	10	3					19,60	100 1)	37,51	100

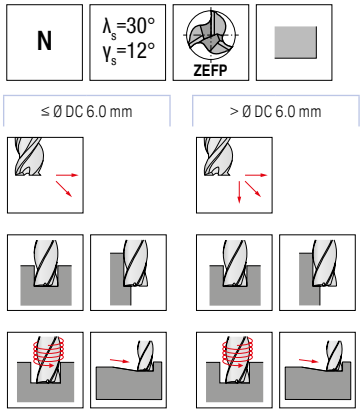
Steel	●	●	●	●
Stainless steel	○	●	○	●
Cast iron	●	●	●	●
Non ferrous metals	○	○	○	○
Heat resistant alloys	○	○	○	○
hardened materials				

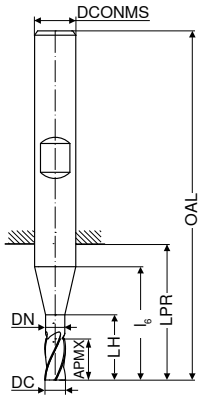
1) Shank tolerance -0,025 / -0,0323

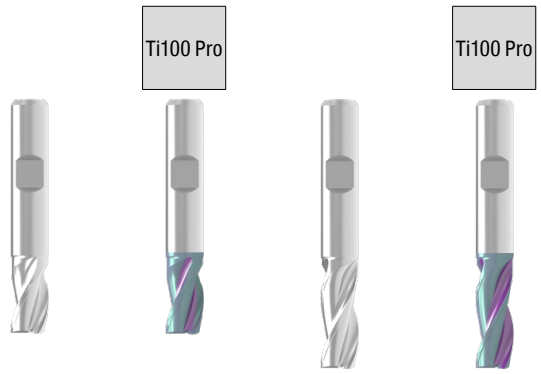
→ v_c/f_z Page 40–42

End milling cutter HSS-E Co 8

▲ Ø ≤ 6 mm, 3 teeth cutting to centre







DC mm	Tol.	APMX mm	DN mm	LH mm	l_6 mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	DIN 327 B U8 Article no. 50 105 ... EUR		DIN 327 B U8 Article no. 54 021 ... EUR		DIN 844 K B U8 Article no. 50 106 ... EUR		DIN 844 K B U8 Article no. 54 016 ... EUR	
1,80	h10	4		4	10	12	48	6	3	25,97	018	36,98	018				
2,00	e8	4		4	10	12	48	6	3	21,20	020	30,63	020				
2,50	e8	5		5	11	13	49	6	3	23,10	025	30,63	025				
2,80	h10	5		5	11	13	49	6	3	25,97	028	36,98	028				
2,80	h10	8		8	18	20	56	6	3					32,12	028 1)	42,82	028 1)
3,00	e8	5		5	11	13	49	6	3	20,46	030	30,63	030				
3,00	e8	8		8	14	16	52	6	3					24,59	030	27,87	030
3,50	h10	6		6	12	14	50	6	3	25,44	035	33,49	035				
3,50	h10	10		10	16	18	54	6	3					26,60	035	27,87	035
3,80	h10	7		7	13	15	51	6	3	25,44	038	36,98	038				
3,80	h10	11		11	25	27	63	6	3					32,12	038 1)	42,82	038 1)
4,00	e8	7		7	13	15	51	6	3	20,46	040	30,63	040				
4,00	e8	11		11	17	19	55	6	3					23,95	040	27,87	040
4,50	h10	7		7	13	15	51	6	3	23,10	045	33,49	045				
4,50	h10	11		11	17	19	55	6	3					26,60	045	27,87	045
4,80	h10	8		8	14	16	52	6	3	23,10	048	36,98	048				
5,00	e8	8		8	14	16	52	6	3	20,87	050	30,63	050				
5,00	e8	13		13	19	21	57	6	3					24,59	050	27,87	050
5,50	h10	8		8	14	16	52	6	3	25,44	055	33,49	055				
5,50	h10	13		13	19	21	57	6	3					28,61	055	27,87	055
5,75	h10	8		8	14	16	52	6	3	25,44	057	36,98	057				
6,00	e8	8	5,5	14	14	16	52	6	3	20,87	060	30,63	060				
6,00	e8	13	5,5	19	19	21	57	6	3					23,95	060	27,87	060
6,50	h10	10	6,0	16	18	20	60	10	3	33,70	065	46,31	065				
6,50	h10	16	6,0	22	24	26	66	10	3					32,43	065	39,96	065
6,75	h10	10	6,5	16	18	20	60	10	3	33,70	067	54,15	067				
7,00	e8	10	6,5	16	18	20	60	10	3	33,06	070	45,68	070				
7,00	e8	16	6,5	22	24	26	66	10	3					32,65	070	39,96	070
7,50	h10	10	7,0	16	18	20	60	10	3	33,70	075	46,31	075				
7,50	h10	16	7,0	22	24	26	66	10	3					38,57	075	39,96	075
7,75	h10	11	7,5	17	19	21	61	10	3	33,70	077	48,43	077				
8,00	e8	11	7,5	17	19	21	61	10	3	29,46	080	42,82	080				
8,00	e8	19	7,5	25	27	29	69	10	3					34,12	080	39,96	080
8,50	h10	11	8,0	18	19	21	61	10	3	34,65	085	47,05	085				
8,50	h10	19	8,0	26	27	29	69	10	3					44,82	085	39,96	085
8,70	h10	11	8,5	18	19	21	61	10	3	34,65	087	54,15	087				
9,00	h10	11	8,5	18	19	21	61	10	3	36,88	090	45,68	090				
9,00	h10	19	8,5	26	27	29	69	10	3					37,62	090	39,96	090
9,50	h10	11	9,0	18	19	21	61	10	3	37,20	095	48,43	095				
9,50	h10	19	9,0	26	27	29	69	10	3					42,49	095	61,36	095
9,70	h10	13	9,5	21	21	23	63	10	3	37,20	097	51,40	097				
10,00	e8	13	9,5	21	21	23	63	10	3	28,19	100	44,94	100				
10,00	e8	22	9,5	30	30	32	72	10	3					33,81	100	39,96	100
10,50	h10	13	10,0	21	23	25	70	12	3	48,43	105	55,54	105				
10,70	h10	13	10,5	21	23	25	70	12	3	48,43	107	61,36	107				
11,00	h10	13	10,5	21	23	25	70	12	3	41,43	110	52,03	110				

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

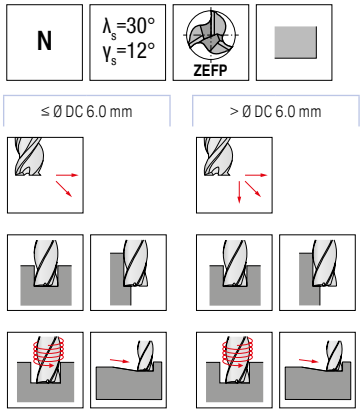
1) Factory standard

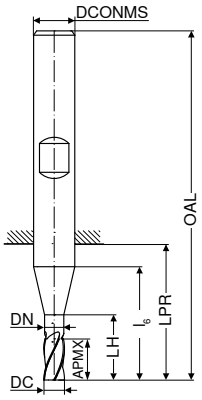
→ v_c/f_z Page 40–42

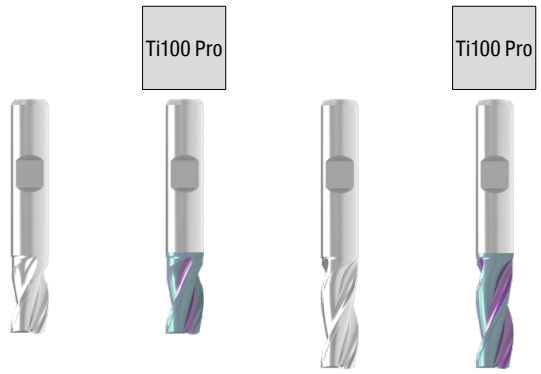
Continued on next page

End milling cutter HSS-E Co 8

▲ Ø ≤ 6 mm, 3 teeth cutting to centre







DC mm	Tol.	APMX mm	DN mm	LH mm	l_6 mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	DIN 327 B U8 Article no. 50 105 ... EUR		DIN 327 B U8 Article no. 54 021 ... EUR		DIN 844 K B U8 Article no. 50 106 ... EUR		DIN 844 K B U8 Article no. 54 016 ... EUR	
11,00	h10	22	10,5	30	32	34	79	12	3					42,49	110	41,23	110
11,50	h10	13	11,0	21	23	25	70	12	3	42,92	115	55,54	115				
11,50	h10	22	11,0	30	32	34	79	12	3					54,48	115	70,58	115
11,70	h10	16	11,5	26	26	28	73	12	3	42,92	117	61,99	117				
12,00	e8	16	11,5	26	26	28	73	12	3	36,88	120	51,40	120				
12,00	e8	26	11,5	36	36	38	83	12	3					40,27	120	48,43	120
12,70	h10	16	11,5	26	26	28	73	12	3	53,94	127	86,90	127				
13,00	h10	16	11,5	26	26	28	73	12	3	53,94	130	75,56	130				
13,00	h10	26	11,5	36	36	38	83	12	3					58,60	130	59,77	130
13,70	h10	16	11,5	26	26	28	73	12	3	57,34	137	81,18	137				
14,00	e8	16	11,5	26	26	28	73	12	3	52,67	140	71,32	140				
14,00	e8	26	11,5	36	36	38	83	12	3					52,03	140	63,38	140
15,00	h10	16	11,5	26	26	28	73	12	3	55,85	150	75,56	150				
15,00	h10	26	11,5	36	36	38	83	12	3					72,91	150	95,38	150
15,50	h10	32	15,0	42	42	44	92	16	3					91,56	155	114,50	155
15,70	h10	19	15,0	29	29	31	79	16	3	58,71	157	91,14	157				
16,00	e8	19	15,0	29	29	31	79	16	3	50,44	160	78,43	160				
16,00	e8	32	15,0	42	42	44	92	16	3					60,40	160	63,38	160
17,00	h10	19	15,0	29	29	31	79	16	3	72,81	170	111,30	170				
17,00	h10	32	15,0	42	42	44	92	16	3					71,85	170	84,15	170
17,70	h10	19	15,0	29	29	31	79	16	3	84,04	177	115,50	177				
18,00	e8	19	15,0	29	29	31	79	16	3	70,69	180	101,30	180				
18,00	e8	32	15,0	42	42	44	92	16	3					66,98	180	92,73	180
19,00	h10	19	15,0	29	29	31	79	16	3	81,18	190	122,90	190				
19,00	h10	32	15,0	42	42	44	92	16	3					87,33	190	92,73	190
19,50	h10	38	19,0	52	52	54	104	20	3					106,00	195	153,70	195
19,70	h10	22	19,0	36	36	38	88	20	3	91,25	197	122,90	197				
20,00	e8	22	19,0	36	36	38	88	20	3	79,70	200	107,00	200				
20,00	e8	38	19,0	52	52	54	104	20	3					80,01	200	102,60	200
21,70	h10	22	19,0	36	36	38	88	20	3	138,80	217	173,80	217				
22,00	e8	22	19,0	36	36	38	88	20	3	124,00	220	153,70	220				
22,00	e8	38	19,0	52	52	54	104	20	3					98,03	220	116,60	220
23,70	h10	26	23,0	42	44	46	102	25	3	166,40	237	204,60	237				
24,00	e8	26	23,0	42	44	46	102	25	3	142,10	240	181,30	240				
24,70	h10	26	24,0	44	44	46	102	25	3	160,10	247	210,90	247				

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

1) Factory standard

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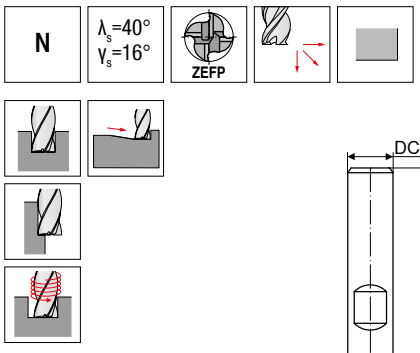
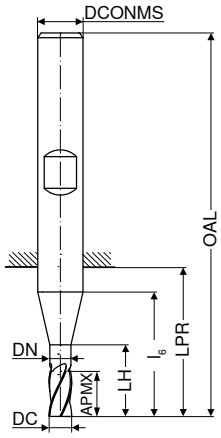
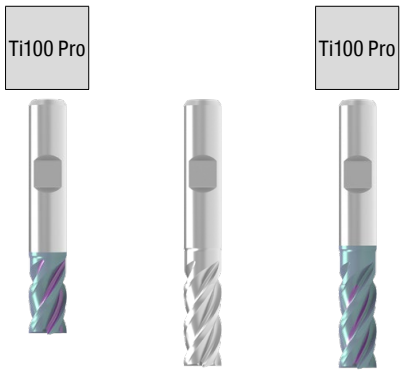
End milling cutter HSS-E Co 8







DC mm	Tol.	APMX mm	DN mm	LH mm	l_6 mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	Factory standard U8 Article no. 54 017 ... EUR		DIN 844 U8 Article no. 50 124 ... EUR		DIN 844 U8 Article no. 54 011 ... EUR	
4	k10	11		11	17	19	55	6	4			36,45	040	51,93	040
5	k10	13		13	19	21	57	6	4			36,45	050	56,27	050
6	e8	8	5,5	14	14	16	52	6	4	28,51	060				
6	k10	13	5,5	19	19	21	57	6	4			36,45	060	56,27	060
8	e8	11	7,5	17	19	21	61	10	4	35,61	080				
8	k10	19	7,5	25	27	29	69	10	4			40,27	080	68,67	080
9	k10	19	8,5	26	27	29	69	10	4			50,97	090	74,92	090
10	e8	13	9,5	21	21	23	63	10	4	37,84	100				
10	k10	22	9,5	30	30	32	72	10	4			49,49	100	68,67	100
12	e8	16	11,5	26	26	28	73	12	4	45,68	120				
12	k10	26	11,5	36	36	38	83	12	4			55,11	120	86,37	120
14	e8	16	11,5	26	26	28	73	12	4	64,12	140				
14	k10	26	11,5	36	36	38	83	12	4			64,75	140	114,50	140
15	k10	26	11,5	36	36	38	83	12	4			83,72	150		
16	e8	19	15,0	29	29	31	79	16	4	65,60	160				
16	k10	32	15,0	42	42	44	92	16	4			73,76	160	125,00	160
17	k10	32	15,0	42	42	44	92	16	4			104,10	170	174,80	170
18	e8	19	15,0	29	29	31	79	16	4	81,18	180				
18	k10	32	15,0	42	42	44	92	16	4			96,01	180	170,70	180
20	e8	22	19,0	36	36	38	88	20	4	92,73	200				
20	k10	38	19,0	52	52	54	104	20	4			108,10	200	179,10	200
25	k10	45	24,0	63	63	65	121	25	5			153,70	250	257,50	250

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

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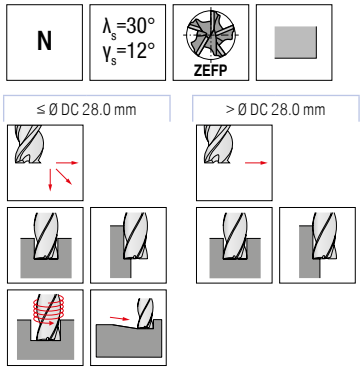
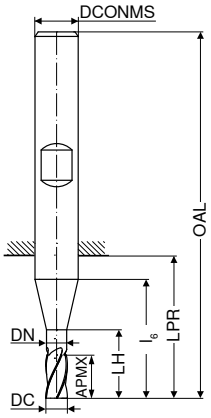
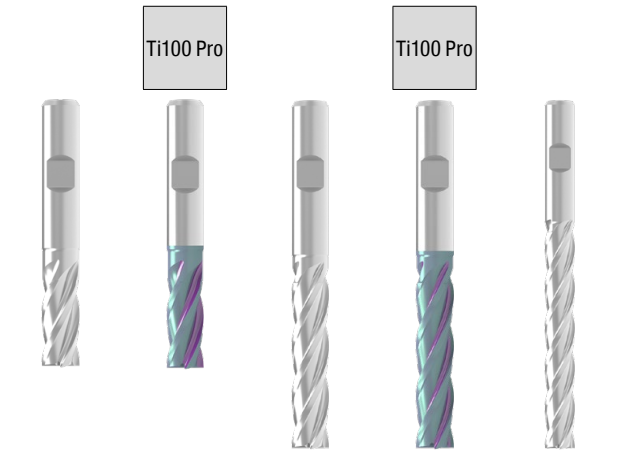
End milling cutter HSS-E Co 8

▲ > Ø 28,0 mm recessed centre







	DIN 69844	DIN 69844	DIN 844	DIN 844	Factory standard
	U8	U8	U8	U8	U6
	Article no. 50 110 ...	Article no. 54 018 ...	Article no. 50 111 ...	Article no. 54 019 ...	Article no. 50 104 ...

DC k10 mm	APMX mm	DN mm	LH mm	l6 mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	EUR		EUR		EUR		EUR		EUR	
2,0	7		7	13	15	51	6	4	21,20	020	34,98	020						
2,5	8		8	14	16	52	6	4	22,36	025	33,49	025						
3,0	8		8	14	16	52	6	4	21,20	030	32,75	030						
3,0	12		12	18	20	56	6	4					29,57	030	42,07	030		
3,5	10		10	16	18	54	6	4	21,20	035	34,98	035						
4,0	11		11	17	19	55	6	4	19,29	040	31,37	040						
4,0	19		19	25	27	63	6	4					29,04	040	42,07	040		
4,5	11		11	17	19	55	6	4	21,20	045	34,23	045						
5,0	13		13	19	21	57	6	4	19,29	050	31,37	050						
5,0	24		24	30	32	68	6	4					29,04	050	42,07	050		
5,5	13		13	19	21	57	6	4	21,20	055	34,98	055						
6,0	13	5,5	19	19	21	57	6	4	17,91	060	32,00	060						
6,0	24	5,5	30	30	32	68	6	4					26,28	060	41,23	060		
6,0	56	5,5	62	62	64	100	6	4									45,78	060
6,5	16	6,0	22	24	26	66	10	4	25,12	065	44,19	065						
7,0	16	6,5	22	24	26	66	10	4	25,12	070	43,56	070						
7,0	30	6,5	36	38	40	80	10	4					43,56	070	52,78	070		
7,5	16	7,0	22	24	26	66	10	4	25,12	075	44,19	075						
8,0	19	7,5	25	27	29	69	10	4	22,05	080	42,07	080						
8,0	38	7,5	44	46	48	88	10	4					37,30	080	48,43	080		
8,0	70	7,5	73	73	75	115	10	4									51,72	080
8,5	19	8,0	26	27	29	69	10	4	26,81	085	44,19	085						
9,0	19	8,5	26	27	29	69	10	4	26,92	090	47,80	090						
9,0	38	8,5	45	46	48	88	10	4					45,35	090	57,01	090		
9,5	19	9,0	26	27	29	69	10	4	26,81	095	54,89	095						
10,0	22	9,5	30	30	32	72	10	4	25,54	100	44,19	100						
10,0	45	9,5	53	53	55	95	10	4					39,31	100	52,03	100		
10,0	75	9,5	79	79	81	121	10	4									62,32	100
10,5	22	10,0	30	32	34	79	12	4	42,71	105	60,73	105						
11,0	22	10,5	30	32	34	79	12	4	36,98	110	54,15	110						
11,0	45	10,5	53	55	57	102	12	4					51,62	110	69,20	110		
11,5	22	11,0	30	32	34	79	12	4	41,12	115	55,54	115						
12,0	26	11,5	36	36	38	83	12	4	35,39	120	51,40	120						
12,0	53	11,5	63	63	65	110	12	4					42,49	120	61,36	120		
12,0	85		85	85	85	130	12	4									67,30	120
13,0	26	11,5	36	36	38	83	12	4	53,41	130	75,56	130						
14,0	26	11,5	36	36	38	83	12	4	47,48	140	64,12	140						
14,0	53	11,5	63	63	65	110	12	4					54,48	140	81,18	140		

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

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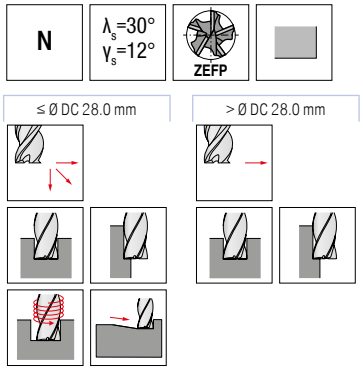
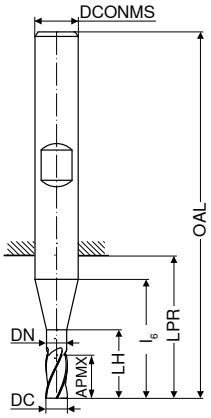
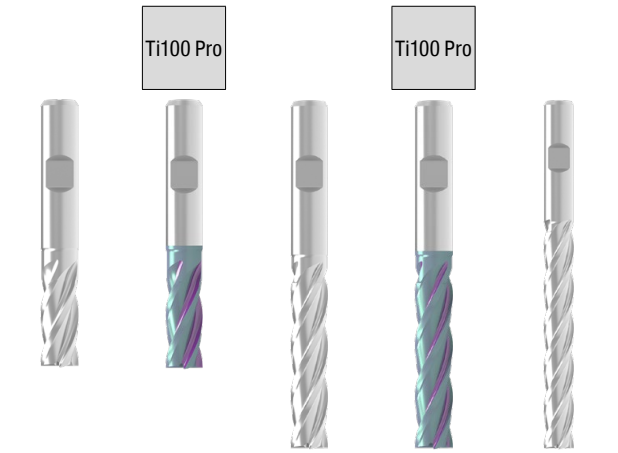
Continued on next page

End milling cutter HSS-E Co 8

▲ > Ø 28,0 mm recessed centre







	DIN 69844	DIN 69844	DIN 844	DIN 844	Factory standard
	U8	U8	U8	U8	U6
DC k10 / mm	Article no. 50 110 ... EUR	Article no. 54 018 ... EUR	Article no. 50 111 ... EUR	Article no. 54 019 ... EUR	Article no. 50 104 ... EUR
14,0					85,42 / 140
15,0	53,94 / 150	76,94 / 150			
15,0			70,69 / 150	94,01 / 150	
16,0	49,17 / 160	75,56 / 160			
16,0			60,51 / 160	91,14 / 160	
16,0					81,18 / 160
18,0	69,20 / 180	104,10 / 180			
18,0			74,92 / 180	129,30 / 180	
18,0					149,50 / 180
20,0	72,59 / 200	109,20 / 200			
20,0			86,80 / 200	135,60 / 200	
20,0					139,90 / 200
22,0	100,80 / 220	145,20 / 220			
22,0			121,90 / 220	219,30 / 220	
22,0					197,10 / 220
24,0	116,60 / 240	167,40 / 240			
24,0			164,30 / 240	243,80 / 240	
25,0	116,60 / 250	160,10 / 250			
25,0			165,40 / 250	233,20 / 250	
25,0					197,10 / 250
28,0	133,50 / 280	197,10 / 280			
28,0			196,00 / 280	305,20 / 280	
28,0					276,60 / 280
30,0	186,50 / 300	234,20 / 300			
30,0			216,20 / 300	363,50 / 300	
32,0	181,30 / 320				
32,0		222,60 / 320			
32,0			205,60 / 320	354,00 / 320	
32,0					338,10 / 320
36,0	205,60 / 360	321,20 / 360			
40,0	271,30 / 400	399,60 / 400			
40,0			389,00 / 400	524,60 / 400	
40,0					562,70 / 400
45,0			652,80 / 450	722,80 / 450	
50,0			753,50 / 500	839,40 / 500	

DC k10	APMX	DN	LH	l6	LPR	OAL	DCONMS h6	ZEFP
mm	mm	mm	mm	mm	mm	mm	mm	
14,0	85		85	85	85	130	12	4
15,0	26	11,5	36	36	38	83	12	4
15,0	53	11,5	63	63	65	110	12	4
16,0	32	15,0	42	42	44	92	16	4
16,0	63	15,0	73	73	75	123	16	4
16,0	90	15,0	95	95	97	145	16	4
18,0	32	15,0	42	42	44	92	16	4
18,0	63	15,0	73	73	75	123	16	4
18,0	100	15,0	110	110	112	160	16	5
20,0	38	19,0	52	52	54	104	20	4
20,0	75	19,0	89	89	91	141	20	4
20,0	110	19,0	128	128	130	180	20	5
22,0	38	19,0	52	52	54	104	20	5
22,0	75	19,0	89	89	91	141	20	5
22,0	110	19,0	128	128	130	180	20	5
24,0	45	23,0	61	63	65	121	25	5
24,0	90	23,0	106	108	110	166	25	5
25,0	45	24,0	63	63	65	121	25	5
25,0	90	24,0	108	108	110	166	25	5
25,0	125	24,0	142	142	144	200	25	6
28,0	45	24,0	63	63	65	121	25	5
28,0	90	24,0	108	108	110	166	25	5
28,0	140	24,0	147	147	149	205	25	6
30,0	45	24,0	63	63	65	121	25	5
30,0	90	24,0	108	108	110	166	25	5
32,0	53	31,0	70	70	73	133	32	6
32,0	53	31,0	70	70	73	133	32	5
32,0	106	31,0	123	123	126	186	32	6
32,0	160	31,0	167	167	170	230	32	6
36,0	53	31,0	70	70	73	133	32	6
40,0	63	38,0	80	80	85	155	40	6
40,0	125	38,0	142	142	147	217	40	6
40,0	180	31,0	197	197	200	260	32	8
45,0	125	38,0	142	142	147	217	40	8
50,0	150	48,0	172	172	172	252	50	8

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

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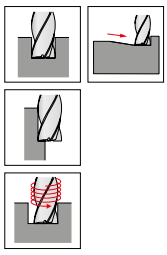
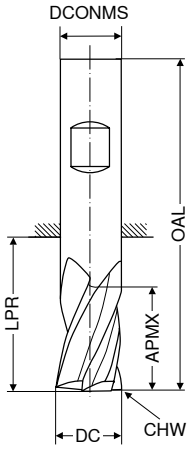
Powdersteel roughing finishing cutter

NTI | λ_s=30° γ_s=14° | ZEFP





Ti100 Pro

DIN 69844

B

U8

Ti100 Pro

DIN 844

B

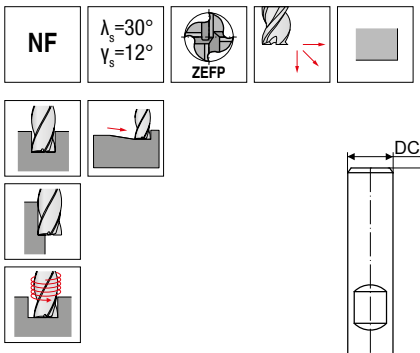
U8

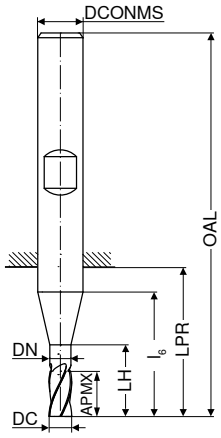
DC k12 mm	APMX mm	LPR mm	OAL mm	DCONMS h6 mm	CHW mm	ZEFP	Article no. 54 007 ... EUR		Article no. 54 008 ... EUR	
6	13	21	57	6	0,3	4	101,50	060		
6	24	32	68	6	0,3	4			145,20	060
7	16	26	66	10	0,3	4	143,10	070		
8	19	29	69	10	0,3	4	133,50	080		
8	38	48	88	10	0,3	4			171,70	080
9	19	29	69	10	0,5	4	153,70	090		
10	22	32	72	10	0,5	4	143,10	100		
10	45	55	95	10	0,5	4			180,10	100
12	26	38	83	12	0,7	4	147,30	120		
12	53	65	110	12	0,7	4			201,30	120
14	26	38	83	12	0,8	4	186,50	140		
14	53	65	110	12	0,8	4			239,50	140
16	32	44	92	16	0,8	4	210,90	160		
16	63	75	123	16	0,8	4			272,40	160
18	32	44	92	16	0,8	4	265,00	180		
18	63	75	123	16	0,8	4			346,50	180
20	38	54	104	20	0,8	4	280,80	200		
20	75	91	141	20	0,8	4			375,10	200
25	45	65	121	25	1,0	5	416,50	250		
25	90	110	166	25	1,0	4			609,30	250
30	90	110	166	25	1,3	5			957,00	300
32	53	73	133	32	1,3	6	557,40	320		
32	106	126	186	32	1,3	5			886,00	320
40	63	85	155	40	1,3	6	957,00	400		
40	125	147	217	40	1,3	6			1.378,00	400

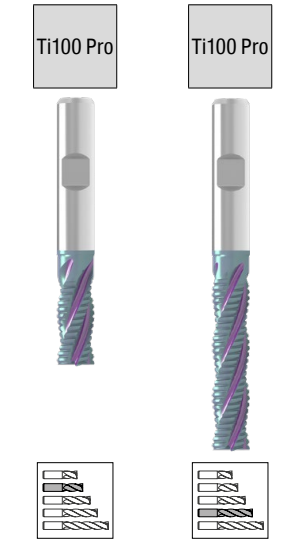
Steel	○	○
Stainless steel	●	●
Cast iron	○	○
Non ferrous metals	○	○
Heat resistant alloys	●	●
hardened materials		

→ v_c/f_z Page 40–42

Roughing-finishing milling cutter HSS-E Co 5







DC k12 mm	APMX mm	DN mm	LH mm	l_6 mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	U8 Article no. 54 028 ... EUR		U8 Article no. 54 029 ... EUR	
6	13	5,5	19	19	21	57	6	4	48,43	060		
6	24	5,5	30	30	32	68	6	4			69,20	060
7	16	6,5	22	24	26	66	10	4	66,24	070		
8	19	7,5	25	27	29	69	10	4	62,63	080		
8	38	7,5	44	46	48	88	10	4			81,18	080
9	19	8,5	26	27	29	69	10	4	71,32	090		
10	22	9,5	30	30	32	72	10	4	65,60	100		
10	45	9,5	53	53	55	95	10	4			86,90	100
11	22	10,5	30	32	32	79	12	4	78,43	110		
11	45	10,5	53	55	57	102	12	4			115,50	110
12	26	11,5	36	36	38	83	12	4	72,70	120		
12	53	11,5	63	63	65	110	12	4			96,97	120
13	26	11,5	36	36	38	83	12	4	94,01	130		
14	26	11,5	36	36	38	83	12	4	91,14	140		
15	26	11,5	36	36	38	83	12	4	101,30	150		
15	53	11,5	63	63	65	110	12	4			122,90	150
16	32	15,0	42	42	44	92	16	4	99,73	160		
16	63	15,0	73	73	75	123	16	4			131,50	160
18	32	15,0	42	42	44	92	16	4	135,60	180		
20	38	19,0	52	52	54	104	20	4	138,80	200		
20	75	19,0	89	89	91	141	20	4			186,50	200
22	75	19,0	89	89	91	141	20	4			277,70	220
22	38	19,0	52	52	54	104	20	4	182,30	220		
25	90	24,0	108	108	110	166	25	4			305,20	250
25	45	24,0	63	63	65	121	25	4	198,20	250		
28	90	24,0	108	108	110	166	25	5			396,30	280

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

→ v_c/f_z Page 40–42

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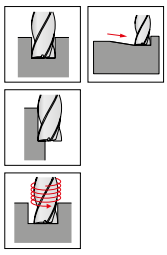
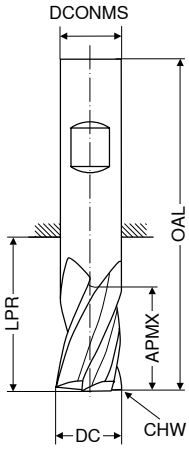
Powdersteel roughing finishing cutter

HS | λ_s=30° γ_s=10° | ZEFP





Ti100 Pro

DIN 69844

B

U8

Ti100 Pro

DIN 844

B

U8

DC k12 mm	APMX mm	LPR mm	OAL mm	DCONMS h6 mm	CHW mm	ZEFP	Article no. 54 009 ... EUR		Article no. 54 012 ... EUR	
6	13	21	57	6	0,45	4	101,50	060		
6	24	32	68	6	0,45	4			145,20	060
8	19	29	69	10	0,45	4	133,50	080		
8	38	48	88	10	0,45	4			171,70	080
10	22	32	72	10	0,45	4	143,10	100		
10	45	55	95	10	0,45	4			180,10	100
12	26	38	83	12	0,45	4	147,30	120		
12	53	65	110	12	0,45	4			201,30	120
14	26	38	83	12	0,45	4	186,50	140		
14	53	65	110	12	0,45	4			239,50	140
16	32	44	92	16	0,60	4	210,90	160		
16	63	75	123	16	0,60	4			272,40	160
18	32	44	92	16	0,60	4	265,00	180		
18	63	75	123	16	0,60	4			346,50	180
20	38	54	104	20	0,60	4	280,80	200		
20	75	91	141	20	0,60	4			375,10	200
22	38	54	104	20	0,60	5	368,80	220		
25	45	65	121	25	0,75	5	416,50	250		
25	90	110	166	25	0,75	5			609,30	250
28	45	65	121	25	0,75	5	522,50	280		
28	90	110	166	25	0,75	5			918,80	280
30	45	65	121	25	0,75	5	605,20	300		
30	90	110	166	25	0,75	5			957,00	300
32	53	73	133	32	0,75	6	557,40	320		
32	106	126	186	32	0,75	5			886,00	320
40	63	85	155	40	0,90	6	957,00	400		

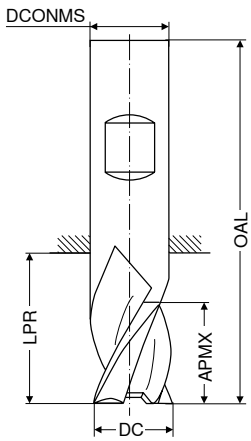
Steel	○	○
Stainless steel		
Cast iron	●	●
Non ferrous metals		
Heat resistant alloys	●	●
hardened materials		

→ v_c/f_z Page 40–42

Powdersteel roughing finishing cutter

HF | λ_s=30° γ_s=10° | ZEFP

Ti100 Pro



DIN 844

B

U8

DC k12 mm	APMX mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	Article no. 54 034 ... EUR	
6	13	21	57	6	4	55,54	060
8	19	29	69	10	4	75,56	080
10	22	32	72	10	4	81,18	100
12	26	38	83	12	4	88,28	120
14	26	38	83	12	4	99,73	140
16	32	44	92	16	4	131,50	160
18	32	44	92	16	4	138,80	180
20	38	54	104	20	4	168,50	200
25	45	65	121	25	4	258,50	250

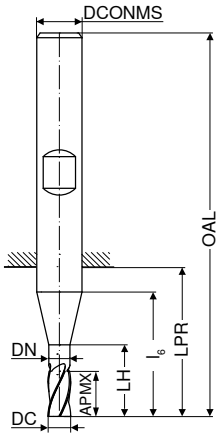
Steel	●
Stainless steel	○
Cast iron	●
Non ferrous metals	○
Heat resistant alloys	○
hardened materials	

→ v_c/f_z Page 40–42

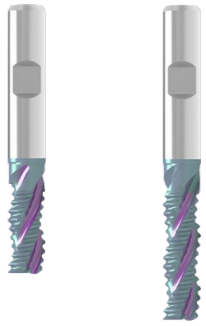
13

Rough milling cutter HSS-E Co 8

WR | λ_s=36° γ_s=23° | ZEFP



Ti100 Pro | Ti100 Pro



DIN 844 | Factory standard

B | B

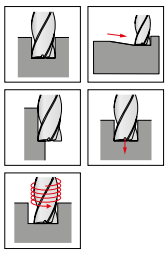
DC k12 mm	APMX mm	DN mm	LH mm	l_6 mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	U8 Article no. 54 013 ... EUR		U8 Article no. 54 010 ... EUR	
6	13	5,5	19	19	21	57	6	3	79,27	060		
6	19	5,5	25	25	27	63	6	3			103,70	060
8	19	7,5	25	27	29	69	10	3	105,80	080		
8	28	7,5	34	36	38	78	10	3			121,90	080
10	22	9,5	30	30	32	72	10	3	115,50	100		
10	34	9,5	42	42	44	84	10	3			126,20	100
12	26	11,5	36	36	38	83	12	3	124,00	120		
12	40	11,5	50	50	52	97	12	3			142,10	120
16	32	15,0	42	42	44	92	16	3	172,70	160		
16	48	15,0	58	58	60	108	16	3			190,70	160
20	38	19,0	52	52	54	104	20	3	232,10	200		
20	56	19,0	70	70	72	122	20	3			272,40	200
25	45	24,0	63	63	65	121	25	3	333,80	250		
25	68	24,0	86	86	88	144	25	3			435,60	250
32	80	31,0	97	97	100	160	32	3			608,30	320

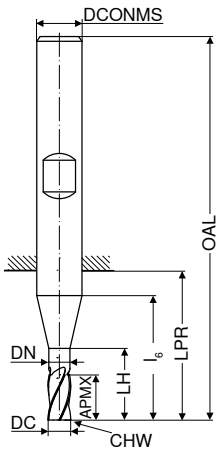
Steel		
Stainless steel		
Cast iron		
Non ferrous metals	●	●
Heat resistant alloys		
hardened materials		

→ v_c/f_z Page 40–42

Rough milling cutter HSS-E Co 8

NR | λ_s=30° γ_s=14° | ZEFP





	Ti100 Pro		Ti100 Pro
DIN 69844	DIN 69844	DIN 844	DIN 844
B	B	B	B
U8	U8	U8	U8

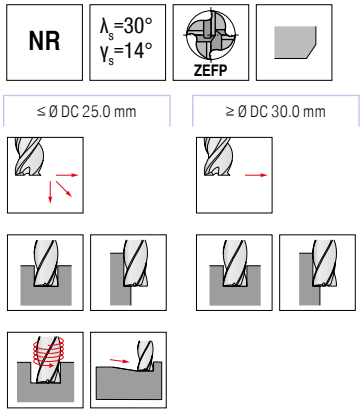
DC k12 mm	APMX mm	DN mm	LH mm	l_6 mm	LPR mm	OAL mm	DCONMS h6 mm	CHW mm	ZEFP	Article no. 50 153 ... EUR		Article no. 54 026 ... EUR		Article no. 50 157 ... EUR		Article no. 54 027 ... EUR	
6	13	5,5	19	19	21	57	6	0,5	3	41,96	060	48,43	060				
6	24	5,5	30	30	32	68	6	0,5	3					49,91	060	69,20	060
7	16	6,5	22	24	26	66	10	0,5	3	55,11	070	66,98	070				
8	19	7,5	25	27	29	69	10	0,7	3	50,34	080	62,63	080				
8	38	7,5	44	46	48	88	10	0,7	3					55,74	080	81,18	080
9	19	8,5	26	27	29	69	10	0,7	3	60,62	090	71,32	090				
9	38	8,5	45	46	48	88	10	0,7	3					82,66	090	94,01	090
10	22	9,5	30	30	32	72	10	0,7	3	53,62	100	65,60	100				
10	45	9,5	53	53	55	95	10	0,7	3					71,00	100	86,90	100
11	22	10,5	30	32	34	79	12	0,7	3	67,93	110	81,18	110				
11	45	10,5	53	55	55	102	12	0,7	3					92,73	110	115,50	110
12	26	11,5	36	36	38	83	12	0,7	3	57,65	120	72,70	120				
12	53	11,5	63	63	65	110	12	0,7	3					76,73	120	96,97	120
14	26	11,5	36	36	38	83	12	0,9	3	66,98	140	91,14	140				
14	53	11,5	63	63	65	110	12	0,9	3					92,52	140	116,60	140
15	26	11,5	36	36	38	83	12	0,9	3	79,06	150	102,60	150				
15	53	11,5	63	63	65	110	12	0,9	3					110,20	150	136,80	150
16	32	15,0	42	42	44	92	16	0,9	3	76,30	160	99,73	160				
16	63	15,0	73	73	75	123	16	0,9	3					95,38	160	131,50	160
18	32	15,0	42	42	44	92	16	0,9	3	96,34	180	135,60	180				
18	63	15,0	73	73	75	123	16	0,9	3					145,20	180	176,00	180
20	38	19,0	52	52	54	104	20	0,9	3	105,70	200	138,80	200				
20	75	19,0	89	89	91	141	20	0,9	3					139,90	200	186,50	200
25	45	24,0	63	63	65	121	25	0,9	3	164,30	250	198,20	250				
25	90	24,0	108	108	110	166	25	0,9	3					205,60	250	305,20	250

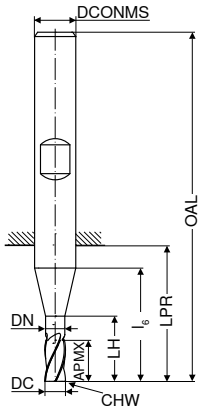
Steel	●	●	●	●
Stainless steel	○	○	○	○
Cast iron	●	●	●	●
Non ferrous metals	○	○	○	○
Heat resistant alloys	○	○	○	○
hardened materials				

→ v_c/f_z Page 40–42

Rough milling cutter HSS-E Co 5

▲ > Ø 25,0 mm recessed centre





Ti100 Pro

DIN 69844

B

U8

DIN 69844

B

U8

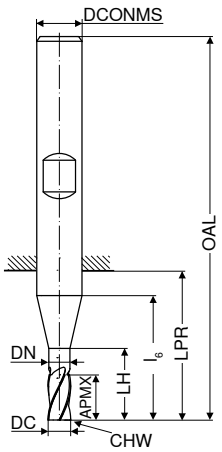
DC k12 mm	APMX mm	DN mm	LH mm	l6 mm	LPR mm	OAL mm	DCONMS h6 mm	CHW mm	ZEFP	Article no. 50 125 ... EUR		Article no. 54 030 ... EUR	
6	13	5,5	19	19	21	57	6	0,5	4	33,17	060	48,43	060
7	16	6,5	22	24	26	66	10	0,5	4	41,86	070	66,98	070
8	19	7,5	25	27	29	69	10	0,7	4	36,24	080	62,63	080
9	19	8,5	26	27	29	69	10	0,7	4	48,86	090	64,12	090
10	22	9,5	30	30	32	72	10	0,7	4	38,68	100	65,60	100
11	22	10,5	30	32	32	79	12	0,7	4	53,52	110	86,90	110
12	26	11,5	36	36	38	83	12	0,7	4	40,80	120	72,70	120
13	26	11,5	36	36	38	83	12	0,7	4			94,01	130
14	26	11,5	36	36	38	83	12	0,9	4	52,99	140	91,14	140
15	26	11,5	36	36	38	83	12	0,9	4			101,30	150
16	32	15,0	42	42	44	92	16	0,9	4	63,59	160	99,73	160
18	32	15,0	42	42	44	92	16	0,9	4	68,36	180	135,60	180
20	38	19,0	52	52	54	104	20	0,9	4	84,46	200	138,80	200
22	38	19,0	52	52	54	104	20	0,9	4			182,30	220
24	45	23,0	61	63	65	121	25	0,9	4			195,00	240
25	45	24,0	63	63	65	121	25	0,9	4	108,10	250	198,20	250
30	45	24,0	63	63	65	121	25	1,1	5			298,90	300
32	53	31,0	70	70	73	133	32	1,1	6			280,80	320
40	63	38,0	80	80	85	155	40	1,1	6			504,40	400

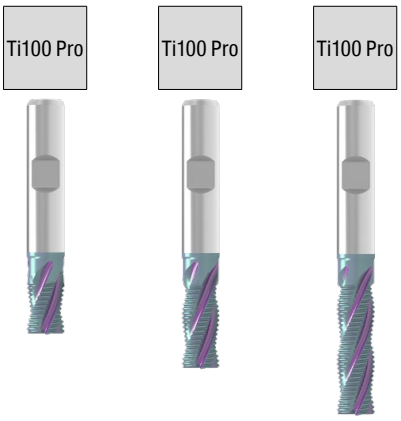
Steel	●	●
Stainless steel	○	○
Cast iron	●	●
Non ferrous metals	○	○
Heat resistant alloys	○	○
hardened materials		

→ v_c/f_z Page 40–42

Powdersteel Fine rough milling cutter

HR | λ_s=30° γ_s=10° | ZEFP





DC k12 mm	APMX mm	DN mm	LH mm	l_6 mm	LPR mm	OAL mm	DCONMS h6 mm	CHW mm	ZEFP	Factory standard B U8 Article no. 54 031 ... EUR		DIN 844 B U8 Article no. 54 032 ... EUR		Factory standard B U8 Article no. 54 033 ... EUR	
6	8	5,5	14	14	16	52	6	0,35	4	63,38	060				
6	13	5,5	19	19	21	57	6	0,35	4			48,43	060		
8	11	7,5	17	19	21	61	10	0,45	4	71,32	080				
8	19	7,5	25	27	29	69	10	0,45	4			68,36	080		
8	28	7,5	34	36	38	78	10	0,45	4					93,26	080
10	13	9,5	21	21	23	63	10	0,45	4	71,32	100				
10	22	9,5	30	30	32	72	10	0,45	4			75,56	100		
10	34	9,5	42	42	44	84	10	0,45	4					100,00	100
12	16	11,5	26	26	28	73	12	0,60	4	84,15	120				
12	26	11,5	36	36	38	83	12	0,60	4			85,52	120		
12	40	11,5	50	50	52	97	12	0,60	4					116,60	120
14	16	11,5	26	26	28	73	12	0,60	4	108,10	140				
14	26	11,5	36	36	38	83	12	0,60	4			95,38	140		
14	40	11,5	50	50	52	97	12	0,60	4					152,60	140
16	19	15,0	29	29	31	79	16	0,70	4	118,70	160				
16	32	15,0	42	42	44	92	16	0,70	4			118,70	160		
16	48	15,0	58	58	60	108	16	0,70	4					174,80	160
18	19	15,0	29	29	31	79	16	0,70	4	142,10	180				
18	32	15,0	42	42	44	92	16	0,70	4			145,20	180		
18	48	15,0	58	58	60	108	16	0,70	4					216,20	180
20	22	19,0	36	36	38	88	20	0,70	4	160,10	200				
20	38	19,0	52	52	54	104	20	0,70	4			166,40	200		
20	56	19,0	70	70	72	122	20	0,70	4					219,30	200
22	22	19,0	36	36	38	88	20	0,70	4	214,00	220				
22	38	19,0	52	52	54	104	20	0,70	4			232,10	220		
22	56	19,0	70	70	72	122	20	0,70	4					305,20	220
25	26	24,0	44	44	46	102	25	0,70	4	252,20	250				
25	45	24,0	63	63	65	121	25	0,70	4			227,90	250		
25	68	24,0	86	86	88	144	25	0,70	4					342,30	250
28	26	24,0	44	44	46	102	25	0,90	5	316,90	280				
30	45	24,0	63	63	65	121	25	0,90	5			387,90	300		
32	32	31,0	49	49	52	112	32	0,90	6	337,00	320				
32	53	31,0	70	70	73	133	32	0,90	6			364,50	320		

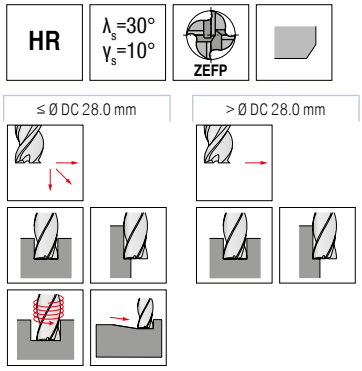
Steel	●	●	●
Stainless steel	●	●	●
Cast iron	●	●	●
Non ferrous metals	○	○	○
Heat resistant alloys	○	○	○
hardened materials			

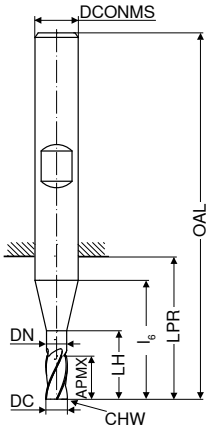
→ v_c/f_z Page 40–42

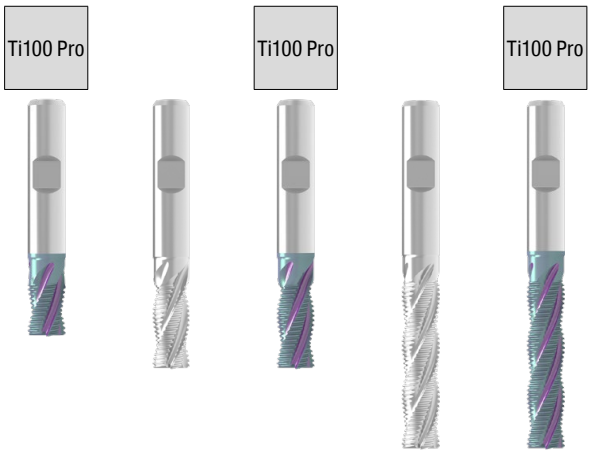
13

Fine profile milling cutter HSS-E Co 8

▲ > Ø 28,0 mm recessed centre







	Factory standard	DIN 69844	DIN 69844	DIN 844	DIN 844
	B	B	B	B	B
	U8	U8	U8	U8	U8
	Article no. 54 022 ...	Article no. 50 140 ...	Article no. 54 023 ...	Article no. 50 141 ...	Article no. 54 024 ...

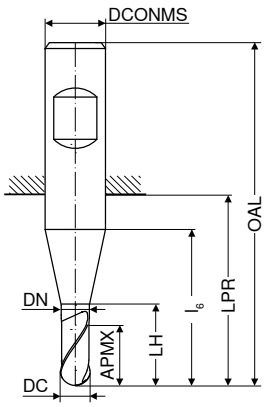
DC k12 mm	APMX mm	DN mm	LH mm	l6 mm	LPR mm	OAL mm	DCONMS h6 mm	CHW mm	ZEFP	EUR		EUR		EUR		EUR		EUR	
4	11		11	17	19	55	6	0,35	3			37,10	040	47,05	040				
5	13		13	19	21	57	6	0,35	3			37,10	050	47,05	050				
6	8	5,5	14	14	16	52	6	0,35	4	50,55	060								
6	13	5,5	19	19	21	57	6	0,35	4			37,10	060	40,59	060				
6	24	5,5	30	30	32	68	6	0,35	4							57,12	060	76,94	060
8	11	7,5	17	19	21	61	10	0,45	4	62,63	080								
8	19	7,5	25	27	29	69	10	0,45	4			39,31	080	44,94	080				
8	38	7,5	44	46	48	88	10	0,45	4							65,92	080	91,14	080
10	13	9,5	21	21	23	63	10	0,45	4	55,54	100								
10	22	9,5	30	30	32	72	10	0,45	4			42,60	100	48,43	100				
10	45	9,5	53	53	55	95	10	0,45	4							71,00	100	95,38	100
12	16	11,5	26	26	28	73	12	0,60	4	68,36	120								
12	26	11,5	36	36	38	83	12	0,60	4			47,16	120	57,01	120				
12	53	11,5	63	63	65	110	12	0,60	4							79,16	120	107,00	120
14	16	11,5	26	26	28	73	12	0,60	4	86,90	140								
14	26	11,5	36	36	38	83	12	0,60	4			51,72	140	64,12	140				
14	53	11,5	63	63	65	110	12	0,60	4							85,95	140	122,90	140
16	19	15,0	29	29	31	79	16	0,70	4	91,14	160								
16	32	15,0	42	42	44	92	16	0,70	4			55,42	160	74,08	160				
16	63	15,0	73	73	75	123	16	0,70	4							103,10	160	144,10	160
18	19	15,0	29	29	31	79	16	0,70	4	118,70	180								
18	32	15,0	42	42	44	92	16	0,70	4			70,69	180	91,14	180				
18	63	15,0	73	73	75	123	16	0,70	4							119,80	180	176,00	180
20	22	19,0	36	36	38	88	20	0,70	4	122,90	200								
20	38	19,0	52	52	54	104	20	0,70	4			82,23	200	108,10	200				
20	75	19,0	89	89	91	141	20	0,70	4							139,90	200	204,60	200
22	38	19,0	52	52	54	114	20	0,70	4			110,20	220	136,80	220				
22	75	19,0	89	89	91	141	20	0,70	4							172,70	220	279,80	220
25	45	24,0	63	63	65	121	25	0,70	4			154,80	250	147,30	250				
25	90	24,0	108	108	110	166	25	0,70	4									327,50	250
28	45	24,0	63	63	65	121	25	0,90	5					223,60	280				
28	90	24,0	108	108	110	166	25	0,90	5									412,30	280
30	45	24,0	63	63	65	121	25	0,90	5					191,80	300				
30	90	24,0	108	108	110	166	25	0,90	5									449,40	300
32	53	31,0	70	70	73	133	32	0,90	6					228,90	320				
32	106	31,0	123	123	126	186	32	0,90	6									457,80	320

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

→ v_c/f_z Page 40–42

Ball nosed end milling cutter HSS-E Co 8

N | λ_s=30° γ_s=10° | ZEFP



Ti100 Pro

	Factory standard	Factory standard	Factory standard
	U8	U8	U8
	Article no. 50 320 ...	Article no. 54 041 ...	Article no. 50 321 ...

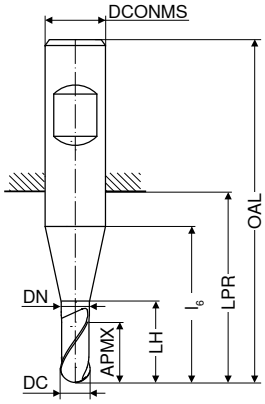
DC h10 mm	APMX mm	DN mm	LH mm	l_6 mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	EUR		EUR		EUR	
2	4		4	10	12	48	6	2	35,18	020	45,68	020		
3	5		5	11	13	49	6	2	33,17	030	44,94	030		
3	8		8	18	20	56	6	2					49,28	030
4	7		7	13	15	51	6	2	33,17	040	44,94	040		
4	11		11	25	27	63	6	2					49,28	040
5	8		8	14	16	52	6	2	33,17	050	44,94	050		
5	13		13	30	32	68	6	2					49,28	050
6	8	5,50	14	14	16	52	6	2	33,17	060	44,94	060		
6	13	5,50	30	30	32	68	6	2					52,03	060
7	10	6,50	16	18	20	60	10	2	44,82	070	65,60	070		
7	16	6,35	36	38	40	80	10	2					58,50	070
8	11	7,50	17	19	21	61	10	2	36,35	080	61,36	080		
8	19	7,35	44	46	48	88	10	2					53,09	080
9	11	8,50	18	19	21	61	10	2	42,07	090	69,20	090		
9	19	8,35	45	46	48	88	10	2					62,10	090
10	13	9,50	21	21	23	63	10	2	41,86	100	64,12	100		
10	22	9,35	53	53	55	95	10	2					66,45	100
11	13	10,50	21	23	25	70	12	2	48,64	110				
11	22	10,50	53	55	57	102	12	2					71,75	110
12	16	11,50	26	26	28	73	12	2	46,95	120	72,70	120		
12	26	11,50	63	63	65	110	12	2					67,61	120
13	16	11,50	26	26	28	73	12	2	54,05	130	104,10	130		
14	16	11,50	26	26	28	73	12	2	54,89	140	95,38	140		
14	26	11,50	63	63	65	110	12	2					78,53	140
15	16	11,50	26	26	28	73	12	2	64,01	150	114,50	150		
15	26	11,50	63	63	65	110	12	2					102,00	150
16	19	15,50	29	29	31	79	16	2	66,55	160	114,50	160		
16	32	15,00	73	73	75	123	16	2					102,20	160
18	19	15,50	29	29	31	79	16	2	82,98	180	136,80	180		
18	32	15,00	73	73	75	123	16	2					129,30	180
20	22	19,00	36	36	38	88	20	2	88,28	201	135,60	201		
22	22	19,00	36	36	38	88	20	2	113,40	220				
24	26	23,00	42	44	46	102	25	2	115,50	240	215,20	240		
24	45	23,00	106	108	110	166	25	2					191,80	240
25	26	24,00	44	44	46	102	25	2	115,50	250				
25	45	24,00	108	108	110	166	25	2					180,10	250
26	26	24,00	44	44	46	102	25	2	168,50	260				
28	26	24,00	44	44	46	102	25	2	159,00	280				
30	26	24,00	44	44	46	102	25	2	183,40	300				
30	45	24,00	108	108	110	166	25	2					260,70	300

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

→ v_c/f_z Page 40–42

Ball nosed cutter HSS-E Co 8

H | λ_s=30° γ_s= 6° | ZEFP



									Ti100 Pro		Ti100 Pro	
									DIN 1889 B		DIN 1889 B	
									B		B	
									U8		U8	
DC $_{k12}$	APMX	DN	LH	l_6	LPR	OAL	DCONMS $_{h6}$	ZEFP	**Article no. 50 308 ...**		**Article no. 54 038 ...**		**Article no. 54 039 ...**	
mm	mm	mm	mm	mm	mm	mm	mm		EUR		EUR		EUR	
6	13	5,5	19	19	21	57	6	4	74,92	**060**	79,80	**060**		
6	24	5,5	30	30	32	68	6	4					96,97	**060** [1]
8	19	7,5	25	27	29	69	10	4	82,35	**080**	104,10	**080**		
8	38	7,5	44	46	48	88	10	4					116,60	**080** [1]
10	22	9,5	30	30	32	72	10	4	84,46	**100**	114,50	**100**		
10	45	9,5	53	53	55	95	10	4					126,20	**100**
12	26	11,5	36	36	38	83	12	4	95,59	**120**	129,30	**120**		
12	53	11,5	63	63	65	110	12	4					146,20	**120**
16	32	15,0	42	42	44	92	16	4	126,20	**160**	173,80	**160**		
16	63	15,0	73	73	75	123	16	4					205,60	**160**
20	38	19,0	52	52	54	104	20	4			243,80	**200**		
20	75	19,0	89	89	91	141	20	4					291,40	**200**
25	45	24,0	63	63	65	121	25	5			306,30	**250**		

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

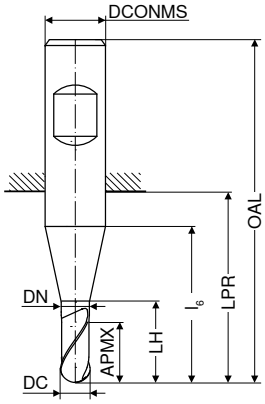
1) Factory standard

→ v_c/f_z Page 40–42

Ball nosed fine rough milling cutter HSS-E Co 8

HR | λ_s=30° γ_s=10° | ZEFP

Ti100 Pro



DIN 1889 B

B

U8

DC js14 mm	APMX mm	DN mm	LH mm	l_6 mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	Article no. 54 040 ... EUR	
6	13	5,5	19	19	21	57	6	4	101,30	060
8	19	7,5	25	27	29	69	10	4	124,00	080
10	22	9,5	30	30	32	72	10	4	125,00	100
12	26	11,5	36	36	38	83	12	4	147,30	120
16	32	15,0	42	42	44	92	16	4	207,70	160
20	38	19,0	52	52	54	104	20	4	267,10	200

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

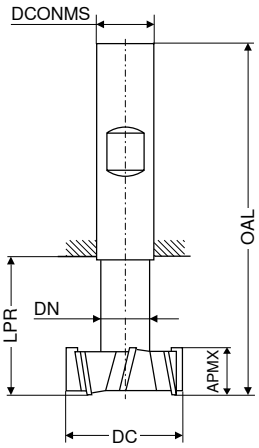
→ v_c/f_z Page 40–42

13

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

▲ for slots according to DIN 650

N | λ_s=10° γ_s=11° | ZEFP



DIN 851 A

B

U6

DC d11 mm	APMX d11 mm	DN h12 mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	Article no. 50 240 ... EUR	
11,0	4	4	13,5	53,5	10	6	81,18	**110**
12,5	6	5	17,0	57,0	10	6	78,53	**125**
16,0	8	7	22,0	62,0	10	6	86,80	**160**
18,0	8	8	25,0	70,0	12	6	91,03	**180**
19,0	9	8	26,0	71,0	12	6	110,20	**190** 1)
21,0	9	10	29,0	74,0	12	6	113,40	**210**
22,0	10	10	30,0	75,0	12	6	116,60	**220** 1)
25,0	11	12	34,0	82,0	16	8	136,80	**250**
28,0	12	13	37,0	85,0	16	8	164,30	**280** 1)
32,0	14	15	42,0	90,0	16	8	185,40	**320**
36,0	16	17	47,0	103,0	25	8	278,70	**360** 1)
40,0	18	19	52,0	108,0	25	10	313,70	**400**
45,0	20	21	57,0	113,0	25	10	348,70	**450** 1)
50,0	22	25	64,0	124,0	32	10	383,70	**500**
60,0	28	30	79,0	139,0	32	10	512,90	**600**

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

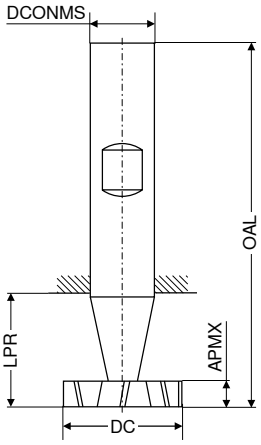
1) Factory standard

→ v_c/f_z Page 43

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

▲ for slots according to DIN 6888
▲ CDX = $a_{p\,max.}$

N | λ_s=10° γ_s=10° | ZEFP



DIN 850
B
U6

DC h12 mm	APMX e8 mm	LPR mm	OAL mm	DCONMS h6 mm	CDX mm	ZEFP	Article no. 50 234 ... EUR	
10,5	2,0	14	50	6	3,25	6	61,79	100
10,5	2,5	14	50	6	3,15	6	61,79	101
10,5	3,0	14	50	6	3,15	6	61,79	102
13,5	2,0	16	56	10	4,45	6	61,79	130 1)
13,5	3,0	16	56	10	4,45	6	61,79	132
13,5	4,0	16	56	10	4,45	6	61,79	133
16,5	3,0	16	56	10	5,95	6	67,30	161
16,5	4,0	16	56	10	5,95	6	67,30	162
16,5	5,0	16	56	10	5,75	6	67,30	163
19,5	3,0	23	63	10	6,95	8	74,18	190 1)
19,5	4,0	23	63	10	6,95	8	74,18	191
19,5	5,0	23	63	10	6,75	8	74,18	192
22,5	4,0	23	63	10	8,25	8	88,07	220 1)
22,5	5,0	23	63	10	8,25	8	88,07	221
22,5	6,0	23	63	10	8,00	8	88,07	222
25,5	5,0	23	63	10	9,00	10	88,07	250 1)
25,5	6,0	23	63	10	9,00	10	88,07	251
28,5	6,0	23	63	10	10,00	10	129,30	281
28,5	8,0	23	63	10	10,00	10	129,30	283
32,5	6,0	26	71	12	12,00	10	131,50	321 1)
32,5	8,0	26	71	12	12,00	10	131,50	322
38,5	8,0	26	71	12	13,35	10	195,00	381 1)
45,5	10,0	26	71	12	16,85	12	237,40	450

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

1) Factory standard

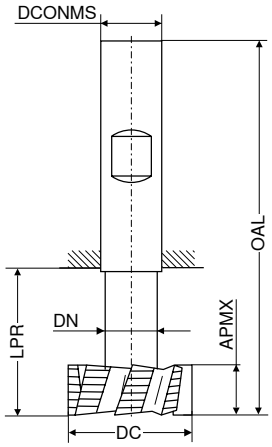
→ v_c/f_z Page 43

13

T-slot milling cutter HSS-E Co 5

▲ for slots according to DIN 650

NF | λ_s=20° γ_s=11° | ZEFP



DC d11 mm	APMX mm	DN h12 mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	DIN 851 A B U6 Article no. 50 241 ... EUR	
21	9	10	29	74	12	6	131,50	**210**
22	10	10	30	75	12	6	145,20	**220** 1)
25	11	12	34	82	16	6	156,80	**250**
28	12	13	37	85	16	6	171,70	**280** 1)
32	14	15	42	90	16	6	216,20	**320**
36	16	17	47	103	25	6	263,90	**360** 1)
40	18	19	52	108	25	8	341,20	**400**
45	20	21	57	113	25	8	357,10	**450** 1)

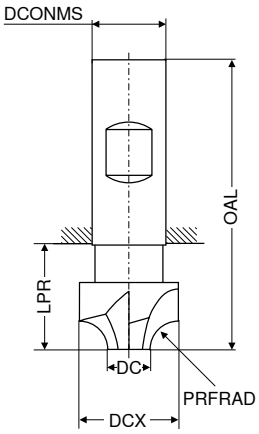
Steel	●
Stainless steel	○
Cast iron	●
Non ferrous metals	○
Heat resistant alloys	○
hardened materials	

1) Factory standard

→ v_c/f_z Page 43

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

N | λ_s=0° γ_s=0° | ZEFP



DIN 6518

B

U6

PRFRAD H11 mm	DCX mm	DC mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	Article no. 50 248 ... EUR	
1,0	8	6	20	60	10	4	47,58	010
1,5	9	6	20	60	10	4	58,18	015
2,0	10	6	20	60	10	4	53,94	020
2,5	11	6	20	60	10	4	60,73	025
3,0	12	6	15	60	12	4	55,21	030
4,0	14	6	15	60	12	4	71,43	040
5,0	16	6	15	60	12	4	74,18	050
6,0	20	8	19	67	16	4	96,75	060
8,0	24	8	23	71	16	4	129,30	080
9,0	26	8	29	85	25	4	136,80	090
10,0	28	8	29	85	25	4	157,90	100
12,0	34	10	34	90	25	4	240,60	120
15,0	46	16	44	100	25	6	330,60	150
16,0	48	16	44	100	25	6	389,00	160

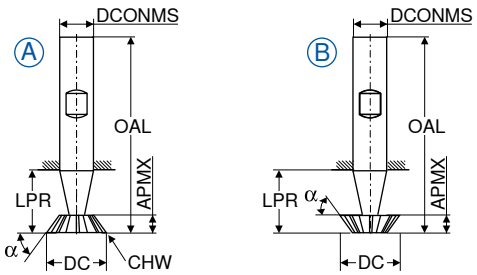
Steel	●
Stainless steel	○
Cast iron	●
Non ferrous metals	○
Heat resistant alloys	○
hardened materials	

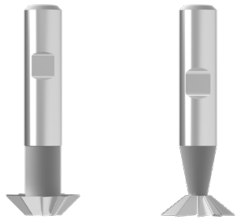
→ v_c/f_z Page 43

13

Single angle miling cutters HSS-E Co 5

H | λ_s=0° γ_s=0° | ZEFP





α°	DC mm	APMX mm	LPR mm	OAL mm	DCONMS h6 mm	CHW mm	ZEFP	Fig.	DIN 1833 B U6 Article no. 50 246 ... EUR		DIN 1833 B U6 Article no. 50 245 ... EUR	
45	16	4,0	15	60	12	0,3	10	A			71,43	016
	16	4,0	15	60	12		10	B	81,18	016		
	20	5,0	18	63	12	0,3	10	A			103,70	020
	20	5,0	18	63	12		10	B	109,20	020		
	25	6,3	22	67	12	0,3	10	A			126,20	025
	25	6,3	22	67	12		10	B	126,20	025		
60	16	6,3	15	60	12	0,3	10	A			81,18	116
	16	6,3	15	60	12		10	B	81,18	116		
	20	8,0	18	63	12	0,3	10	A			103,70	120
	20	8,0	18	63	12		10	B	103,70	120		
	25	10,0	22	67	12	0,3	10	A			112,30	125
	25	10,0	22	67	12		10	B	126,20	125		
70	16	7,0	15	60	12	0,3	10	A			81,18	216 1)
	20	9,0	18	63	12	0,3	10	A			103,70	220 1)
	25	11,0	19	67	16	0,3	10	A			126,20	225 1)

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

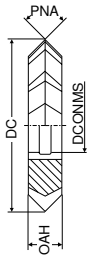
1) Factory standard

→ v_c/f_z Page 44

Double angle milling cutter HSS

▲ with keyway to DIN 138

N | λ_s=0° γ_s=0° | ZEFP



DIN 847

U6

PNA °	DC mm	OAH mm	DCONMS mm	ZEFP	Article no. 50 360 ... EUR	
45	50	8	16	22	131,50	045
	63	10	22	24	164,30	145
	80	12	27	26	260,70	245
	100	18	32	28	389,00	345
60	50	10	16	18	131,50	060
	63	14	22	20	164,30	160
	80	18	27	22	302,00	260
	100	25	32	24	484,30	360
90	50	14	16	16	153,70	090
	63	20	22	18	196,00	190
	80	22	27	20	321,20	290
	100	32	32	24	535,20	390
120	50	14	16	16	174,80	120 1)
	63	20	22	16	254,40	121 1)

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

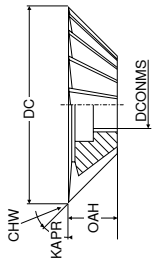
1) Factory standard

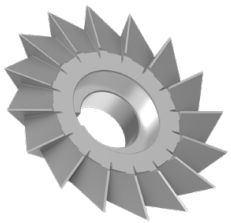
→ v_c/f_z Page 44

Shell type single angle milling cutter HSS

▲ with keyway to DIN 138

N | λ_s=0° γ_s=2° | ZEFP





DIN 842 A

U6

KAPR °	DC mm	OAH mm	DCONMS mm	CHW mm	ZEFP	Article no. 50 362 ... EUR	
45	40	10	10	0,3	14	151,50	045
	50	13	13	0,3	16	207,70	145
	63	18	16	0,3	18	261,80	245
	80	22	22	0,3	20	369,80	345
	100	28	27	0,3	22	561,70	445
50	50	16	13	0,3	16	207,70	150
60	40	13	10	0,3	14	133,50	060
	50	16	13	0,3	16	164,30	160
	63	20	16	0,3	18	225,80	260
	80	25	22	0,3	20	369,80	360
	100	32	27	0,3	22	561,70	460
	125	40	32	0,3	28	925,20	560

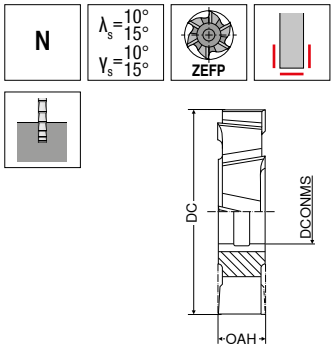
Steel	●
Stainless steel	○
Cast iron	●
Non ferrous metals	○
Heat resistant alloys	○
hardened materials	

→ v_c/f_z Page 44

13

Side and face milling cutter HSS-E Co 5

- Coarse cross-pitched
- with keyway to DIN 138



DIN 885 A

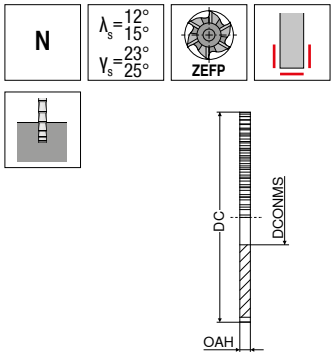
DC js16 mm	OAH k11 mm	DCONMS H7 mm	ZEFP	U6 Article no. 50 348 ... EUR	
50	4	16	12	102,30	100
50	5	16	12	104,10	102
50	6	16	12	105,80	104
50	8	16	12	118,70	106
50	10	16	12	128,20	108
63	4	22	12	111,30	200
63	5	22	12	118,70	202
63	6	22	12	117,60	204
63	8	22	12	130,30	206
63	10	22	12	143,10	208
63	12	22	12	164,30	210
63	14	22	12	184,40	212
80	5	27	14	150,50	300
80	6	27	14	152,60	302
80	8	27	14	164,30	304
80	10	27	14	168,50	306
80	12	27	14	186,50	308
80	14	27	14	216,20	310
80	16	27	14	233,20	312
80	18	27	14	269,20	314
80	20	27	14	291,40	316
100	6	32	14	219,30	400
100	8	32	14	218,30	402
100	10	32	14	231,00	404
100	12	32	14	251,20	406
100	14	32	14	281,90	408
100	16	32	14	294,60	410
100	18	32	14	348,70	412
100	20	32	14	341,20	414
100	25	32	14	442,90	418
125	8	32	16	288,30	500
125	10	32	16	308,40	502
125	12	32	16	333,80	504
125	14	32	16	376,30	506
125	16	32	16	397,40	508
125	18	32	16	431,30	510
125	20	32	16	461,00	512
125	25	32	16	554,20	516
160	10	40	18	456,80	600
160	12	40	18	507,60	602
160	14	40	18	537,30	604
160	16	40	18	577,60	606
160	18	40	18	644,40	608
160	20	40	18	652,80	610
160	25	40	18	799,00	614
160	32	40	18	1.015,00	618

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

→ v_c/f_z Page 45

Narrow side and face milling cutter HSS-E Co 5

- Coarse cross-pitched
- with keyway to DIN 138



Factory standard

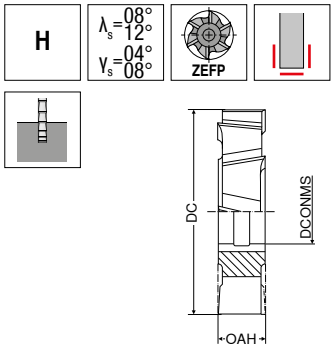
DC js16 mm	OAH k11 mm	DCONMS H7 mm	ZEFP	U6 Article no. 50 342 ... EUR	
63	1,6	22	16	109,20	200
63	2,0	22	16	96,44	202
63	2,5	22	16	98,24	204
63	3,0	22	16	101,10	206
80	1,6	27	20	116,60	300
80	2,0	27	20	113,40	302
80	2,5	27	20	115,50	304
80	3,0	27	20	118,70	306
80	4,0	27	20	128,20	310
100	1,6	32	24	149,50	400
100	2,0	32	24	147,30	402
100	2,5	32	24	147,30	404
100	3,0	32	24	150,50	406
100	4,0	32	24	161,10	410
100	5,0	32	24	172,70	414
125	1,6	32	26	186,50	500
125	2,0	32	26	179,10	502
125	2,5	32	26	184,40	504
125	3,0	32	26	187,60	506
125	4,0	32	26	204,60	510
125	5,0	32	26	218,30	514
125	6,0	32	26	234,20	516
160	2,0	40	30	291,40	600
160	2,5	40	30	281,90	602
160	3,0	40	30	286,10	604
160	4,0	40	30	301,00	606
160	5,0	40	30	320,00	608
160	6,0	40	30	341,20	610
160	8,0	40	22	392,10	612

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

→ v_c/f_z Page 45

Side and face milling cutter HSS-E Co 5

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



DIN 885 A

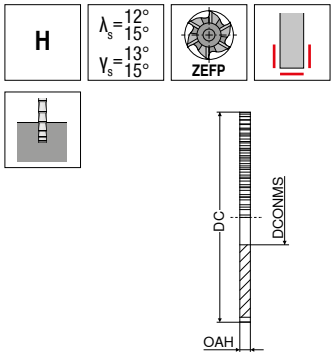
DC js16 mm	OAH k11 mm	DCONMS H7 mm	ZEFP	U6 Article no. 50 349 ... EUR	
50	4	16	16	120,90	100
50	5	16	16	120,90	102
50	6	16	16	129,30	104
50	8	16	16	136,80	106
50	10	16	16	150,50	108
63	4	22	18	132,50	200
63	5	22	18	140,90	202
63	6	22	18	135,60	204
63	8	22	18	152,60	206
63	10	22	18	170,70	208
63	12	22	18	192,90	210
63	14	22	18	217,30	212
80	5	27	20	178,10	300
80	6	27	20	183,40	302
80	8	27	20	191,80	304
80	10	27	18	195,00	306
80	12	27	18	220,50	308
80	14	27	18	255,40	310
80	16	27	18	276,60	312
80	18	27	18	320,00	314
80	20	27	18	320,00	316
100	6	32	22	257,50	400
100	8	32	22	255,40	402
100	10	32	20	275,50	404
100	12	32	20	296,70	406
100	14	32	20	330,60	408
100	16	32	20	350,80	410
100	18	32	20	409,00	412
100	20	32	20	412,30	414
100	25	32	20	510,90	418
125	8	32	24	340,20	500
125	10	32	22	364,50	502
125	12	32	22	394,30	504
125	14	32	22	442,90	506
125	16	32	22	460,00	508
125	18	32	22	530,90	510
125	20	32	22	539,50	512
125	25	32	22	646,50	516
160	10	40	26	542,60	600
160	12	40	26	591,30	602
160	14	40	26	635,90	604
160	16	40	26	684,60	606
160	18	40	26	752,40	608
160	20	40	26	753,50	610
160	25	40	26	937,90	614
160	32	40	26	1.179,00	618

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

→ v_c/f_z Page 45

Narrow side and face milling cutter HSS-E Co 5

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



DIN 1834 A

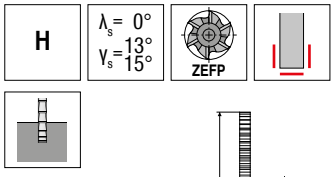
DC js16 mm	OAH k11 mm	DCONMS H7 mm	ZEFP	U6 Article no. 50 340 ... EUR	
63	1,6	22	28	104,30	200
63	2,0	22	28	89,87	202
63	2,5	22	28	91,78	204
63	3,0	22	28	94,11	206
80	1,6	27	32	108,10	300
80	2,0	27	32	105,50	302
80	2,5	27	32	107,00	304
80	3,0	27	32	110,20	306
80	4,0	27	32	118,70	310
100	1,6	32	36	131,50	400
100	2,0	32	36	130,30	402
100	2,5	32	36	130,30	404
100	3,0	32	36	132,50	406
100	4,0	32	36	140,90	410
100	5,0	32	36	154,80	414
125	1,6	32	40	170,70	500
125	2,0	32	40	164,30	502
125	2,5	32	40	169,50	504
125	3,0	32	40	172,70	506
125	4,0	32	40	183,40	510
125	5,0	32	40	196,00	514
125	6,0	32	40	217,30	516
160	2,0	40	48	271,30	600
160	2,5	40	48	261,80	602
160	3,0	40	48	266,00	604
160	4,0	40	48	284,00	606
160	5,0	40	48	298,90	608
160	6,0	40	48	323,20	610
160	8,0	40	36	366,70	612

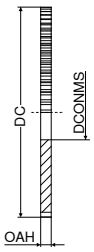
Steel	●
Stainless steel	
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
hardened materials	

→ v_c/f_z Page 45

Narrow side and face milling cutter HSS-E Co 5

- straight cut
- with keyway to DIN 138





DC js16 mm	OAH k11 mm	DCONMS H7 mm	ZEFP	DIN 1834 B U6 Article no. 50 341 ... EUR	
63	1,6	22	32	119,80	200
63	2,0	22	32	106,00	202
63	2,5	22	32	108,10	204
63	3,0	22	32	111,30	206
80	1,6	27	36	129,30	300
80	2,0	27	36	125,00	302
80	2,5	27	36	126,20	304
80	3,0	27	36	131,50	306
80	4,0	27	36	138,80	310
100	1,6	32	40	152,60	400
100	2,0	32	40	152,60	402
100	2,5	32	40	152,60	404
100	3,0	32	40	154,80	406
100	4,0	32	40	168,50	410
100	5,0	32	40	177,00	414
125	1,6	32	44	206,70	500
125	2,0	32	44	197,10	502
125	2,5	32	44	204,60	504
125	3,0	32	44	208,70	506
125	4,0	32	44	222,60	510
125	5,0	32	44	239,50	514
125	6,0	32	44	262,80	516
160	2,0	40	52	320,00	600
160	2,5	40	52	307,30	602
160	3,0	40	52	313,70	604
160	4,0	40	52	330,60	606
160	5,0	40	52	351,80	608
160	6,0	40	52	375,10	610
160	8,0	40	40	430,30	612

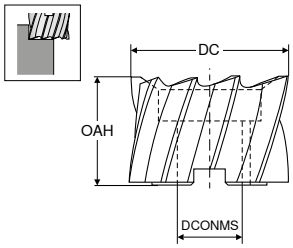
Steel	●
Stainless steel	○
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	○
hardened materials	

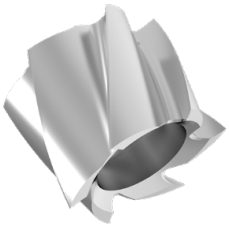
→ v_c/f_z Page 45

Face milling cutters HSS-E Co 5

▲ with keyway to DIN 138

W | λ_s=30° γ_s=24° | ZEFP





DC k10 mm	OAH mm	DCONMS mm	ZEFP	DIN 1880 U8 Article no. 50 255 ... EUR	
40	32	16	6	212,00	040
50	36	22	6	242,70	050
63	40	27	6	308,40	063
80	45	27	6	499,20	080
100	50	32	6	785,30	100

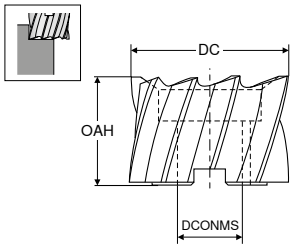
Steel	
Stainless steel	
Cast iron	
Non ferrous metals	●
Heat resistant alloys	
hardened materials	

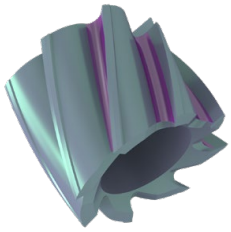
→ v_c/f_z Page 46+47

Face milling cutters HSS-E Co 5

▲ with keyway to DIN 138

N | λ_s=25° γ_s=10° | ZEFP | Ti100 Pro





DC k10 mm	OAH mm	DCONMS mm	ZEFP	DIN 1880 U8 Article no. 54 035 ... EUR	
40	32	16	8	240,60	040
50	36	22	8	308,40	050
63	40	27	8	391,00	063
80	45	27	10	584,00	080
100	50	32	12	914,60	100

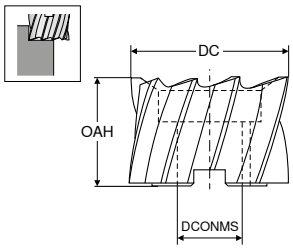
Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	○
hardened materials	

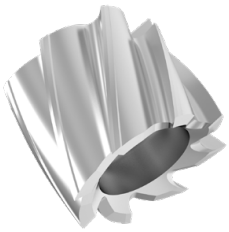
→ v_c/f_z Page 46+47

Face milling cutters HSS-E Co 5

▲ with keyway to DIN 138

N | λ_s=25° γ_s=10° | ZEFP





DC k10 mm	OAH mm	DCONMS mm	ZEFP	DIN 1880 U8 Article no. 50 250 ... EUR	
40	32	16	8	168,50	040
50	36	22	8	220,50	050
63	40	27	8	303,10	063
80	45	27	10	457,80	080
100	50	32	12	723,80	100

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

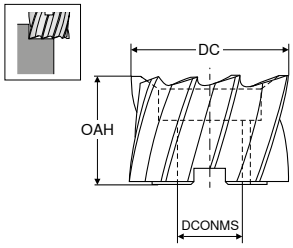
→ v_c/f_z Page 46+47

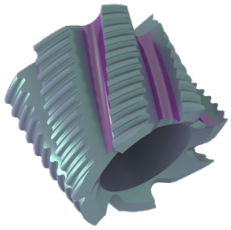
Roughing-finishing face milling cutters HSS-Co 5

▲ with keyway to DIN 138

▲ Manufacturing tolerance lies on the plus range of the tolerance js14

NF | λ_s=25° γ_s=12° | ZEFP | Ti100 Pro





DC js14 mm	OAH mm	DCONMS mm	ZEFP	DIN 1880 U8 Article no. 54 036 ... EUR	
40	32	16	7	228,90	040
50	36	22	8	293,60	050
63	40	27	8	448,20	063
80	45	27	10	656,00	080
100	50	32	12	995,10	100

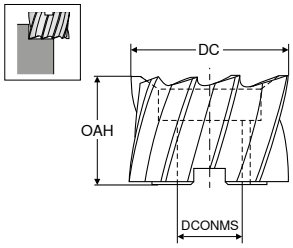
Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	○
hardened materials	

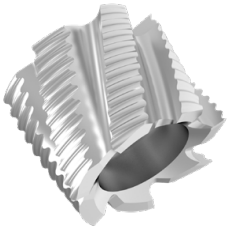
→ v_c/f_z Page 46+47

Roughing face milling cutters HSS-E Co 5

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

NR | λ_s=25° γ_s=14° | ZEFP





DC js14	OAH	DCONMS	ZEFP	DIN 1880 U8 Article no. 50 260 ...	
mm	mm	mm		EUR	
40	32	16	7	171,70	040
50	36	22	8	226,80	050
63	40	27	8	305,20	063
80	45	27	10	428,20	080
100	50	32	12	658,10	100

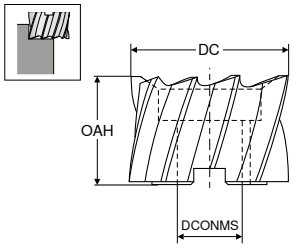
Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	○
hardened materials	

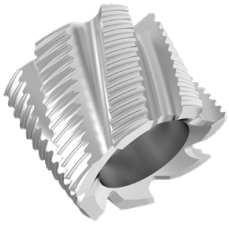
→ v_c/f_z Page 46+47

Roughing-finishing face milling cutters HSS-E Co 8

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

HR | λ_s=25° γ_s=10° | ZEFP





DC js14	OAH	DCONMS	ZEFP	DIN 1880 U8 Article no. 50 297 ...	
mm	mm	mm		EUR	
40	32	16	7	171,70	040
50	36	22	8	226,80	050
63	40	27	8	305,20	063
80	45	27	10	428,20	080
100	50	32	12	658,10	100

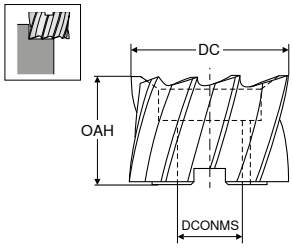
Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	○
hardened materials	

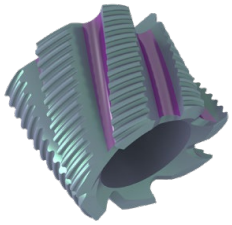
→ v_c/f_z Page 46+47

Roughing-finishing face milling cutters HSS-E Co 8

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

HR | λ_s=25° γ_s=10° | ZEFP | Ti100 Pro





DC js14	OAH	DCONMS	ZEFP	DIN 1880 U8 Article no. 54 037 ...	
mm	mm	mm		EUR	
40	32	16	7	240,60	040
50	36	22	8	301,00	050
63	40	27	8	465,20	063
80	45	27	10	682,50	080
100	50	32	12	1.031,00	100

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

→ v_c/f_z Page 46+47

Material examples referring to the cutting data tables

	Index	Material	Strength N/mm² / HB / HRC	Material number	Material designation	Material number	Material designation	Material number	Material designation
P	1.1	General construction steel	< 800 N/mm²	1.0402	EN3B				
	1.2	Free cutting steel	< 800 N/mm²	1.0711	EN1A				
	1.3	Hardened steel, non alloyed	< 800 N/mm²	1.0401	EN32C				
	1.4	Alloyed hardened steel	< 1000 N/mm²	1.7325	25 CD4				
	1.5	Tempering steel, unalloyed	< 850 N/mm²	1.5752	EN36	1.0535	EN9		
	1.6	Tempering steel, unalloyed	< 1000 N/mm²	1.6582	EN24				
	1.7	Tempering steel, alloyed	< 800 N/mm²	1.7225	EN19				
	1.8	Tempering steel, alloyed	< 1300 N/mm²	1.8515	EN40B				
	1.9	Steel castings	< 850 N/mm²	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/mm²	1.8509	EN41B				
	1.11	Nitriding steel	< 1200 N/mm²	1.1186	EN8	1.1160	EN14A		
	1.12	Roller bearing steel	< 1200 N/mm²	1.3505	534A99				
	1.13	Spring steel	< 1200 N/mm²		EN45		EN47		EN43
	1.14	High-speed steel	< 1300 N/mm²	1.3343	M2	1.3249	M34		
	1.15	Cold working tool steel	< 1300 N/mm²	1.2379	D2	1.2311	P20		
	1.16	Hot working tool steel	< 1300 N/mm²	1.2344	H13				
M	2.1	Cast steel and sulphured stainless steel	< 850 N/mm²	1.4581	318				
	2.2	Stainless steel, ferritic	< 750 N/mm²	1.4000	403				
	2.3	Stainless steel, martensitic	< 900 N/mm²	1.4057	EN57				
	2.4	Stainless steel, ferritic / martensitic	<1100 N/mm²	1.4028	EN56B				
	2.5	Stainless steel, austenitic / ferritic	< 850 N/mm²	1.4542	17-4PH				
	2.6	Stainless steel, austenitic	< 750 N/mm²	1.4305	303	1.4401	316	1.4301	304
	2.7	Heat resistant steel	< 1100 N/mm²	1.4876	Incoloy 800				
K	3.1	Grey cast iron with lamellar graphite	100–350 N/mm²	0.6015	Grade 150	0.6020	Grade 220	0.6025	Grade 260
	3.2	Grey cast iron with lamellar graphite	300–500 N/mm²	0.6030	Grade 300	0.6035	Grade 350	0.6040	Grade 400
	3.3	Gray cast iron with spheroidal graphite	300–500 N/mm²	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/mm²	0.7060	SG 600-3	0.7070	SG 700-2	0.7080	SG 800-2
	3.5	White malleable cast iron	270–450 N/mm²	0.8035	GTW-35	0.8045	GTW-45		
	3.6	White malleable cast iron	500–650 N/mm²	0.8055	GTW-55	0.8065	GTW-65		
	3.7	Black malleable cast iron	300–450 N/mm²	0.8135	GTS-35	0.8145	GTS-45		
	3.8	Black malleable cast iron	500–800 N/mm²	0.8155	GTS-55	0.8170	GTS-70		
N	4.1	Aluminium (non alloyed, low alloyed)	< 350 N/mm²	3.0255	1050 A	3.0275	1070 A	3.0285	1080 A (A8)
	4.2	Aluminium alloys < 0.5 % Si	< 500 N/mm²	3.1325	2017 A (AU4G)	3.4335	7005 (AZ5G)	3.4365	7075 (AZ5GU)
	4.3	Aluminium alloy 0.5–10 % Si	< 400 N/mm²	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/mm²	3.2581	A-S12	3.2583	A-S12 U		
	4.5	Aluminum alloys > 15 % Si	< 400 N/mm²		A-S18	A-S17 U4			
	4.6	Copper (non alloyed, low alloyed)	< 350 N/mm²	2.0040	Cu-c1	2.0060	Cu-a1	2.0090	Cu-b1
	4.7	Copper wrought alloys	< 700 N/mm²	2.1247	Cub2 (Berylium 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-Al11 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/mm²	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/mm²	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/mm²	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/mm²	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/mm²	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/mm²	2.4964	Co Cr20 W15 Ni10		Co Cr20 Ni16 Mo7		Co Cr28 Mo 6
	5.7	Heat resistant alloys	< 1300 N/mm²	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/mm²	2.4851	Ni Cr23Fe (Inconel 601)	2.4668	Ni Cr19NbMo (Inconel 718)	2.4602	Ni Cr21Mo14 Hastelloy C22
	5.9	Pure titanium	< 900 N/mm²	3.7025	T35 (Titanium Grade 1)	3.7034	T40 (Titanium Grade 2)	3.7064	T60 (Titanium Grade 4)
	5.10	Titanium alloys	< 700 N/mm²		T-A6-Nb7 (367)		T-A5-Sn2-Mo4-Cr4 (Ti17)		T-A3-V2,5 (Gr18)
	5.11	Titanium alloys	< 1200 N/mm²	3.7165	T-A6-V4 (Ta6V)		T-A4-3V-Mo2-Fe2 (SP700)		T-A5-Sn1-Zr1-V1-Mo (Gr32)
H	6.1	Tempered steel	< 45 HRC						
	6.2		46–55 HRC						
	6.3		56–60 HRC						
	6.4		61–65 HRC						
	6.5		65–70 HRC						

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Cutting data – slot and end milling cutters

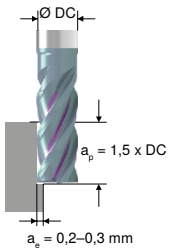
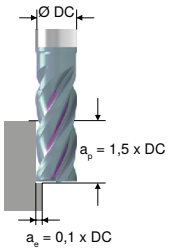
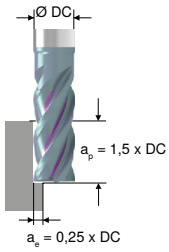
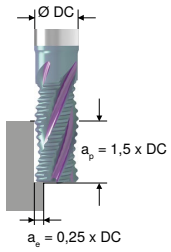
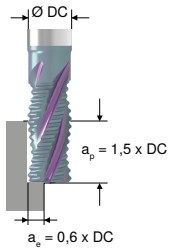
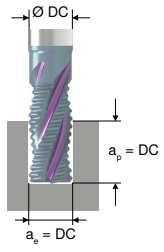
		uncoated	Ti100 Pro	Powder steel	● 1st choice		○ suitable
				Ti100 Pro	Emulsion	Compressed air	MMS
Index	Kf f_z	v_c in m/min					
1.1	1,2	30–40	60–80	65–90	●		
1.2	1,2	25–35	50–65	55–75	●		
1.3	1,2	20–30	45–55	50–65	●		
1.4	1	15–25	40–55	45–65	●		
1.5	1,2	20–30	45–55	50–60	●		
1.6	1	15–20	30–35	35–45	●		
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							

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

Kf f_z = Correction factor for feed per tooth

Feed per tooth for HSS end mills

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

	Peripheral milling										Full slot milling	
												
	f_z in mm		f_z in mm		f_z in mm		f_z in mm		f_z in mm		f_z in mm	
Ø DC 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

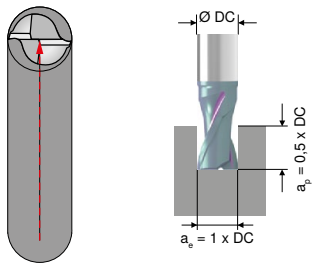
Attention:
In the case of uncoated milling cutters climb milling is preferred to conventional milling. When using coated milling cutters climb milling is necessary in order to achieve optimum results.

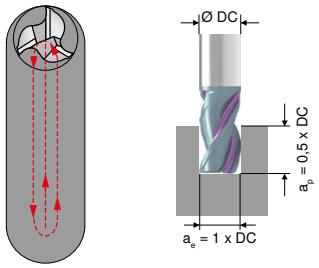
Feed rate correction:
Please multiply the f_z value in the table above with the corresponding **correction factor Kf f_z** from the table on → **page 40**.

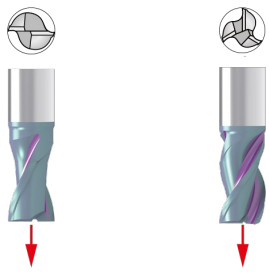
In general the following is valid:
f_z (milling) = f_z x Kf f_z
f_z (drilling) = f_z (milling) ÷ no. of teeth

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

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







	Full slot milling (in one cut)		Profile slot milling (internal profile milling)				Circular ramping			
			Roughing cut		Finishing cut					
	f_z in mm		f_z in mm				f_z in mm			
Ø DC 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

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.

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 40.**

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

Cutting data standard values – form cutters

		50 241 ...			50 240 ...						50 234 ...				50 248 ...				● 1st choice		○ suitable
		Ø DC 21–25 mm	Ø DC 28–36 mm	Ø DC 40–45 mm	Ø DC 11–16 mm	Ø DC 18–22 mm	Ø DC 25–32 mm	Ø DC 36–45 mm	Ø DC 50–60 mm		Ø DC 10–17 mm	Ø DC 19–26 mm	Ø DC 28–33 mm	Ø DC 33–46 mm	Ø DC 8–11 mm	Ø DC 12–24 mm	Ø DC 26–34 mm	Ø DC 46–48 mm			
Index	v_c m/min	f_z mm			f_z mm					v_c m/min	f_z mm				f_z mm				Emulsion	Compressed air	MMS
1.1	28	0,07	0,1	0,12	0,015	0,03	0,03	0,03	0,04	28	0,02	0,03	0,04	0,05	0,03	0,06	0,1	0,12	●		
1.2	28	0,07	0,1	0,12	0,015	0,03	0,03	0,03	0,04	28	0,02	0,03	0,04	0,05	0,03	0,06	0,1	0,12	●		
1.3	28	0,07	0,1	0,12	0,015	0,03	0,03	0,03	0,04	28	0,02	0,03	0,04	0,05	0,03	0,06	0,1	0,12	●		
1.4	28	0,07	0,1	0,12	0,015	0,03	0,03	0,03	0,04	28	0,02	0,03	0,04	0,05	0,03	0,06	0,1	0,12	●		
1.5	28	0,07	0,1	0,12	0,015	0,03	0,03	0,03	0,04	28	0,02	0,03	0,04	0,05	0,03	0,06	0,1	0,12	●		
1.6	22	0,06	0,08	0,1	0,015	0,03	0,03	0,03	0,04	22	0,02	0,03	0,035	0,045	0,025	0,055	0,08	0,1	●		
1.7	22	0,06	0,08	0,1	0,015	0,03	0,03	0,03	0,04	22	0,02	0,03	0,035	0,045	0,025	0,055	0,08	0,1	●		
1.8																					
1.9	20	0,06	0,08	0,1	0,015	0,03	0,03	0,03	0,04	20	0,02	0,03	0,035	0,045	0,025	0,055	0,08	0,1	●		
1.10																					
1.11																					
1.12																					
1.13																					
1.14																					
1.15																					
1.16																					
2.1	10	0,06	0,08	0,1	0,01	0,025	0,025	0,025	0,03	10	0,02	0,025	0,03	0,04	0,02	0,045	0,08	0,09	●		
2.2	10	0,06	0,08	0,1	0,01	0,025	0,025	0,025	0,03	10	0,02	0,025	0,03	0,04	0,02	0,045	0,08	0,09	●		
2.3	10	0,06	0,08	0,1	0,01	0,025	0,025	0,025	0,03	10	0,02	0,025	0,03	0,04	0,02	0,045	0,08	0,09	●		
2.4																					
2.5																					
2.6	10	0,06	0,08	0,1	0,01	0,025	0,025	0,025	0,03	10	0,02	0,025	0,03	0,04	0,02	0,045	0,08	0,09	●		
2.7																					
3.1	28	0,07	0,1	0,12	0,015	0,03	0,025	0,04	0,035	24	0,025	0,03	0,04	0,05	0,03	0,06	0,1	0,12	●		
3.2																			●		
3.3	22	0,07	0,1	0,12	0,015	0,03	0,025	0,04	0,035	22	0,025	0,03	0,04	0,05	0,03	0,06	0,1	0,12	●		
3.4	20	0,07	0,1	0,12	0,015	0,03	0,025	0,04	0,035	20	0,025	0,03	0,04	0,05	0,03	0,06	0,1	0,12	●		
3.5	20	0,07	0,1	0,12	0,015	0,03	0,025	0,04	0,035	20	0,025	0,03	0,04	0,05	0,03	0,06	0,1	0,12	●		
3.6	15	0,07	0,1	0,12	0,015	0,03	0,025	0,04	0,035	15	0,025	0,03	0,04	0,05	0,03	0,06	0,1	0,12			
3.7	20	0,07	0,1	0,12	0,015	0,03	0,025	0,04	0,035	20	0,025	0,03	0,04	0,05	0,03	0,06	0,1	0,12	●		
3.8	15	0,07	0,1	0,12	0,015	0,03	0,025	0,04	0,035	15	0,025	0,03	0,04	0,05	0,03	0,06	0,1	0,12			
4.1	100	0,1	0,12	0,15	0,02	0,045	0,045	0,045	0,055	90	0,03	0,04	0,06	0,07	0,035	0,07	0,14	0,15			
4.2	100	0,1	0,12	0,15	0,02	0,045	0,045	0,045	0,055	90	0,03	0,04	0,06	0,07	0,035	0,07	0,14	0,15	●		
4.3	80	0,09	0,11	0,13	0,015	0,04	0,035	0,04	0,045	80	0,03	0,035	0,045	0,055	0,03	0,06	0,12	0,12	●		
4.4	60	0,09	0,11	0,13	0,015	0,04	0,035	0,04	0,045	60	0,03	0,035	0,045	0,055	0,03	0,06	0,12	0,12	●		
4.5																					
4.6	25	0,08	0,1	0,12	0,015	0,04	0,035	0,03	0,035	25	0,02	0,035	0,045	0,055	0,03	0,06	0,12	0,12	●		
4.7	20	0,08	0,1	0,12	0,015	0,04	0,035	0,03	0,035	20	0,02	0,035	0,045	0,055	0,03	0,06	0,12	0,12	●		
4.8																					
4.9																					
4.10																					
4.11	50	0,09	0,11	0,13	0,015	0,03	0,03	0,03	0,04	45	0,02	0,035	0,045	0,055	0,03	0,06	0,12	0,12	●		
4.12	25	0,09	0,11	0,13	0,015	0,03	0,03	0,03	0,04	25	0,02	0,035	0,045	0,055	0,03	0,06	0,12	0,12	●		
4.13	80	0,12	0,15	0,18	0,025	0,06	0,055	0,055	0,07	80	0,04	0,05	0,07	0,09	0,045	0,1	0,18	0,18	●		
4.14	65	0,12	0,15	0,18	0,025	0,06	0,055	0,055	0,07	65	0,04	0,05	0,07	0,09	0,045	0,1	0,18	0,18	●		
4.15																					
4.16	70	0,1	0,12	0,15	0,018	0,04	0,03	0,035	0,045	70	0,03	0,035	0,05	0,06	0,025	0,06	0,1	0,12	●		
4.17																					
4.18																					
4.19																					
5.1																					
5.2																					
5.3																					
5.4																					
5.5																					
5.6																					
5.7																					
5.8																					
5.9	20	0,06	0,08	0,1	0,012	0,025	0,025	0,025	0,035	20	0,015	0,025	0,035	0,045	0,02	0,05	0,07	0,09			
5.10																					
5.11																					
6.1																					
6.2																					
6.3																					
6.4																					
6.5																					

13

The cutting data depends largely on the external conditions, e.g. stability of the tools and tool clamping, material and machine type.
The indicated values are possible cutting data which have to be increased or reduced according to the application conditions.

Cutting data standard values – form cutters

		50 245 ... / 50 246 ...				50 360 ...				50 362 ...				● 1st choice		○ suitable
		Ø DC 16 mm a_e= 3,2	Ø DC 20 mm a_e= 4	Ø DC 25 mm a_e= 5		Ø DC 50 mm a_e= 5	Ø DC 63 mm a_e= 6,3	Ø DC 80 mm a_e= 8	Ø DC 100 mm a_e= 10	Ø DC 40–50 mm	Ø DC 63 mm	Ø DC 80 mm	Ø DC 100 mm			
Index	v_c m/min	f_z mm			v_c m/min	f_z mm				f_z mm				Emulsion	Compressed air	MMS
1.1	28	0,01	0,015	0,018	22	0,01	0,01	0,015	0,02	0,005	0,008	0,01	0,012	●		
1.2	28	0,01	0,015	0,018	22	0,01	0,01	0,015	0,02	0,005	0,008	0,01	0,012	●		
1.3	28	0,01	0,015	0,018	22	0,01	0,01	0,015	0,02	0,005	0,008	0,01	0,012	●		
1.4	28	0,01	0,015	0,018	22	0,008	0,01	0,012	0,018	0,005	0,008	0,01	0,012	●		
1.5	28	0,01	0,015	0,018	22	0,01	0,01	0,015	0,02	0,005	0,008	0,01	0,012	●		
1.6	22	0,01	0,015	0,018	20	0,008	0,01	0,012	0,018	0,005	0,008	0,01	0,012	●		
1.7	22	0,01	0,015	0,018	20	0,01	0,01	0,015	0,02	0,005	0,008	0,01	0,012	●		
1.8																
1.9	20	0,01	0,015	0,015	20	0,01	0,01	0,015	0,02	0,005	0,008	0,01	0,012	●		
1.10																
1.11																
1.12																
1.13																
1.14																
1.15																
1.16																
2.1	10	0,007	0,01	0,012	10	0,008	0,01	0,012	0,018	0,005	0,008	0,01	0,012	●		
2.2	10	0,007	0,01	0,012	10	0,008	0,01	0,012	0,018	0,005	0,008	0,01	0,012	●		
2.3	10	0,007	0,01	0,012	10	0,008	0,01	0,012	0,018	0,005	0,008	0,01	0,012	●		
2.4																
2.5																
2.6	10	0,007	0,01	0,015										●		
2.7																
3.1	24	0,01	0,012	0,015	19	0,008	0,01	0,012	0,018	0,005	0,008	0,01	0,012	●		
3.2					12	0,008	0,01	0,012	0,018	0,005	0,008	0,01	0,012	●		
3.3	22	0,01	0,012	0,015	15	0,008	0,01	0,012	0,018	0,005	0,008	0,01	0,012	●		
3.4	20	0,01	0,012	0,015	12	0,008	0,01	0,012	0,018	0,005	0,008	0,01	0,012	●		
3.5	20	0,01	0,012	0,015	16	0,008	0,01	0,012	0,018	0,005	0,008	0,01	0,012	●		
3.6	15	0,01	0,012	0,015												
3.7	20	0,01	0,012	0,015	13	0,008	0,01	0,012	0,018	0,005	0,008	0,01	0,012	●		
3.8	15	0,01	0,012	0,015												
4.1	90	0,01	0,015	0,02												
4.2	90	0,01	0,015	0,02	70	0,012	0,015	0,02	0,024	0,008	0,012	0,014	0,018	●		
4.3	80	0,01	0,015	0,02	60	0,012	0,015	0,02	0,024	0,008	0,012	0,014	0,018	●		
4.4	60	0,01	0,015	0,02	60	0,012	0,015	0,02	0,024	0,008	0,012	0,014	0,018	●		
4.5																
4.6	25	0,01	0,015	0,02	18	0,01	0,012	0,015	0,018	0,005	0,008	0,01	0,012	●		
4.7	20	0,01	0,015	0,02	20	0,01	0,012	0,015	0,018	0,005	0,008	0,01	0,012	●		
4.8																
4.9																
4.10																
4.11	45	0,01	0,015	0,02	40	0,01	0,012	0,015	0,018	0,005	0,008	0,01	0,012	●		
4.12	25	0,01	0,015	0,015	20	0,01	0,012	0,015	0,018	0,005	0,008	0,01	0,012	●		
4.13	80	0,018	0,02	0,025	65	0,015	0,02	0,025	0,03	0,008	0,012	0,018	0,022	●		
4.14	65	0,018	0,02	0,025	60	0,015	0,02	0,025	0,03	0,008	0,012	0,018	0,022	●		
4.15																
4.16	70	0,01	0,015	0,0175	45	0,01	0,012	0,015	0,018	0,005	0,008	0,01	0,01	●		
4.17																
4.18																
4.19																
5.1																
5.2																
5.3																
5.4																
5.5																
5.6																
5.7																
5.8																
5.9	20	0,008	0,01	0,015	20	0,008	0,01	0,012	0,016	0,005	0,007	0,009	0,012	●		
5.10																
5.11																
6.1																
6.2																
6.3																
6.4																
6.5																

The cutting data depends largely on the external conditions, e.g. stability of the tools and tool clamping, material and machine type.
The indicated values are possible cutting data which have to be increased or reduced according to the application conditions.

Cutting data – side and face cutters

		uncoated						● 1st choice		○ suitable
		Ø DC 50 mm	Ø DC 63 mm	Ø DC 80 mm	Ø DC 100 mm	Ø DC 125 mm	Ø DC 160 mm	Emulsion	Compressed air	MMS
Index	v_c in m/min	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										
6.1										
6.2										
6.3										
6.4										
6.5										

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 x DC	1,4
0,1 x DC	1,0
0,15 x DC	0,8
0,2 x DC	0,7
0,25 x DC	0,6

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

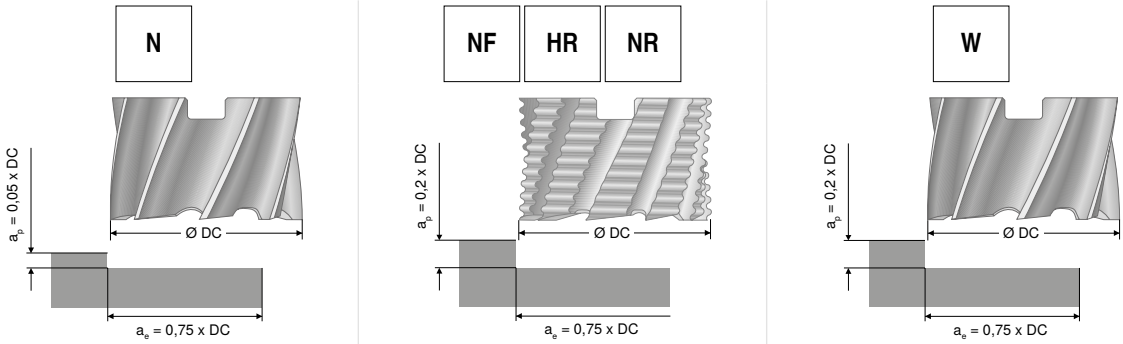
Cutting data – face mills

		uncoated	Ti100 Pro	● 1st choice		○ suitable
Index	Kf f_z	v_c in m/min		Emulsion	Compressed air	MMS
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						

Kf f_z = Correction factor for feed per tooth

Feed per tooth for HSS face mills

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



	f_z in mm		f_z in mm		f_z in mm
Ø DC mm	uncoated	Ti100 Pro	uncoated	Ti100 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 46**.

In general the following is valid:
f_z (milling) = f_z x 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}	$n = \frac{v_c \times 1000}{DC \times \pi}$
Cutting speed	v_c	m/min	$v_c = \frac{DC \times \pi \times n}{1000}$
Feed per tooth	f_z	mm	$f_z = \frac{v_f}{ZEFP \times n}$ $f_z = h_m \times \sqrt{\frac{DC}{a_e}}$
Feed per revolution	f	mm	$f = f_z \times ZEFP$
Feed rate	v_f	mm/min	$v_f = f_z \times ZEFP \times n$
Average chip thickness	h_m	mm	$h_m = f_z \times \sqrt{\frac{a_e}{DC}}$

ZEFP = Number of teeth
a_e = Cutting width (for side milling cutter cutting depth)
DC = Cutting diameter

Coating

Ti100 Pro

- Ti multilayer coating
- HV0.05 = 3500
- Coefficient of friction (against steel) = 0.7
- Maximum application temperature: 900 °C