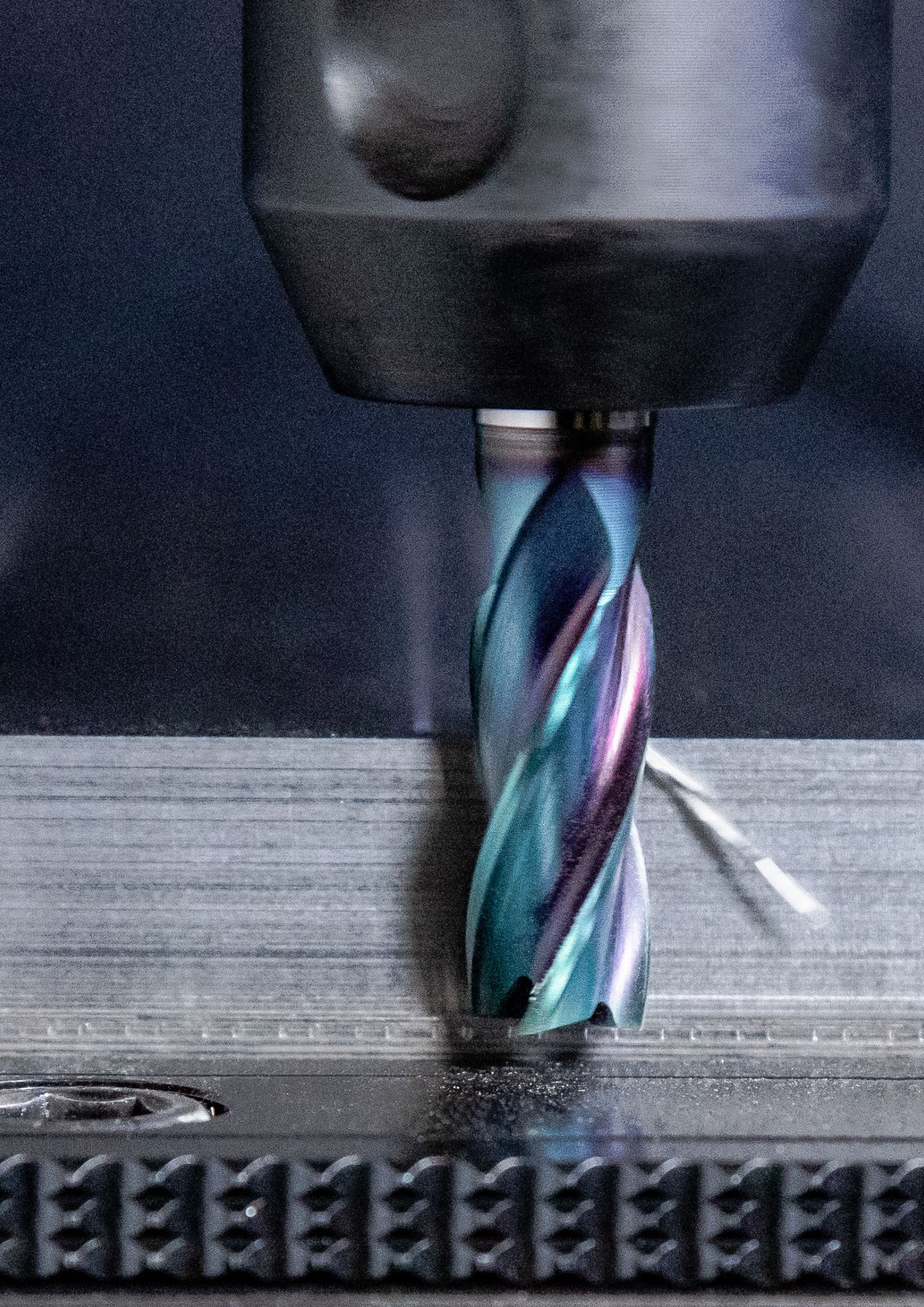


Table of contents

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

Corner chamfer (CHW = chamfer width in mm)

Full Radius

Application

Machining example

The red arrows describe the possible feed directions

Number of flutes

Cutting geometry
λ_s = helix angle
γ_s = rake angle

● = **Main Application**

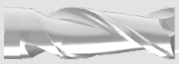
○ = Extended application

Toolfinder

softer — Material to machine — harder

Finish milling

W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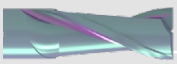
37

N


8–15


25

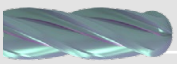

28+29


31


33+34


37

H

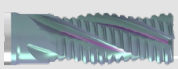

26


32


35+36

Rough and finish machining

NTI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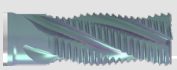
HS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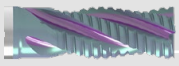
NF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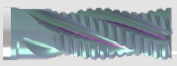
30

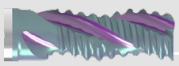

37

HF


19

Rough machining

WR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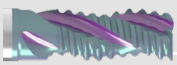
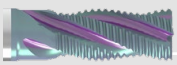
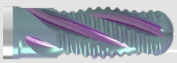
NR


21+22


38

HR

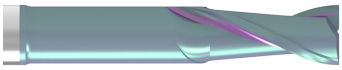
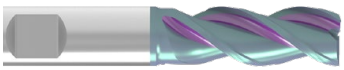
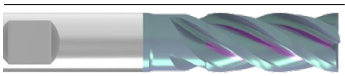
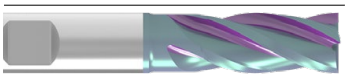
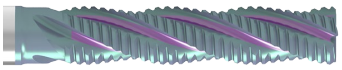
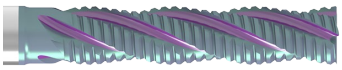
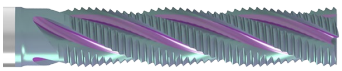
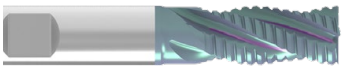
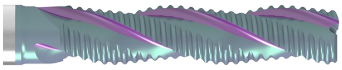
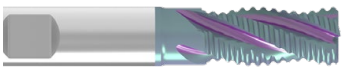
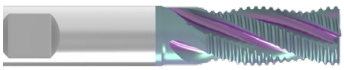
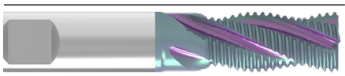

23+24


27


38

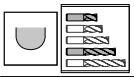
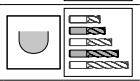
13

Overview HSS milling cutters

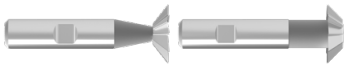
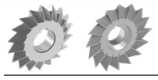
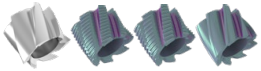
	Tool type	Number of flutes ZEFP	Diameter in mm Ø DC	Steel P	Stainless steel M	Cast iron K	Non ferrous metals N	Heat resistant S	hardened materials H	Non metal materials O	Sharp	Corner chamfer	Corner radius	Full Radius	Length	Material, e.g. PM = Powdersteel	coated ■	uncoated □	WNT \ Performance
Finishing 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

Ball nose end milling cutters

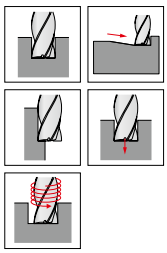
	Tool type	Number of flutes	Diameter in mm Ø DC	Steel P	Stainless steel M	Cast iron K	Non ferrous metals N	Heat resistant S	hardened materials H	Non metal materials O	Sharp	Corner chamfer	Corner radius	Full Radius	Length	Material, e.g. PM = Powdersteel	coated	uncoated	WNT \ Performance
	N	2	2–30	●	○	●	○	○		○						HSS-E	■	□	25
	H	4–5	6–25	●	○	●	○	○		○						HSS-E	■	□	26
	HR	4	6–20	●	○	●	○	○		○						HSS-E	■		27

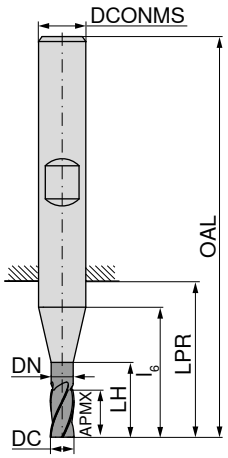
Form / Side and Face / Shell milling cutters

	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	6–16	●	○	●	○	○		○						HSS-E		□	31
	H	10	16–25	●	○	●	○	○		○						HSS-E		□	32
	N	14–28	40–125	●	○	●	○	○		○						HSS-E		□	33
		12–52	50–160	●	●	●	●	●		●						HSS-E		□	34–36
		6–12	40–100	●	●	●	●	○		●						HSS-E	■	□	37+38

13

Slot milling cutter HSS-E Co 8





DIN 844

B

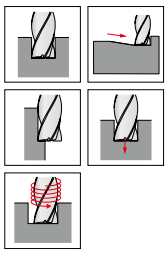
50 144 ...

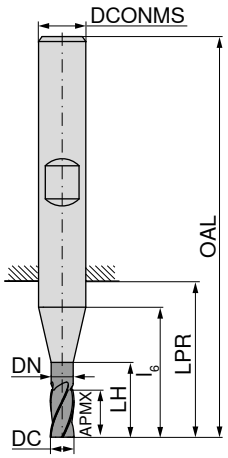
DC e8 mm	APMX mm	DN mm	LH mm	l_6 mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	£ U6	
2.0	7		7	13	15	51	6	2	29.18	**020**
2.5	8		8	14	16	52	6	2	27.84	**025**
3.0	8		8	14	16	52	6	2	27.16	**030**
3.5	10		10	16	18	54	6	2	30.68	**035**
4.0	11		11	17	19	55	6	2	27.84	**040**
4.5	11		11	17	19	55	6	2	31.84	**045**
5.0	13		13	19	21	57	6	2	28.54	**050**
5.5	13		13	19	21	57	6	2	32.54	**055**
6.0	13		13	19	21	57	6	2	28.54	**060**
6.5	16	6.0	22	24	26	66	10	2	38.76	**065**
7.0	16	6.5	22	24	26	66	10	2	36.61	**070**
8.0	19	7.5	25	27	29	69	10	2	32.78	**080**
9.0	19	8.5	26	27	29	69	10	2	41.69	**090**
10.0	22	9.5	30	30	32	72	10	2	39.83	**100**
12.0	26	11.5	36	36	38	83	12	2	45.80	**120**
14.0	26	11.5	36	36	38	83	12	2	53.12	**140**
16.0	32	15.0	42	42	44	92	16	2	58.42	**160**
18.0	32	15.0	42	42	44	92	16	2	74.31	**180**
20.0	38	19.0	52	52	54	104	20	2	91.22	**200**
22.0	38	19.0	52	52	54	104	20	2	132.64	**220**

P	
M	
K	
N	●
S	
H	
O	●

→ v_c/f_z Page 40–42

End milling cutter HSS-E Co 8

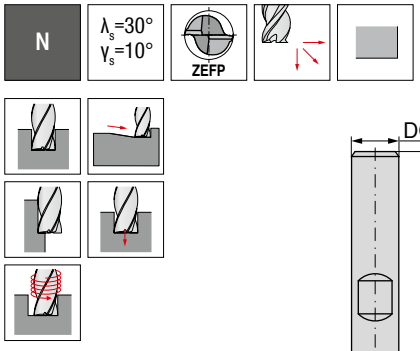


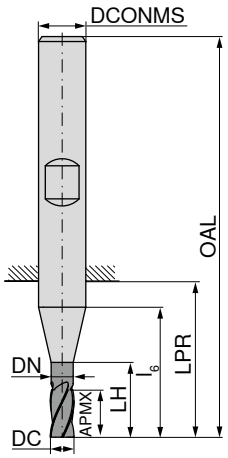


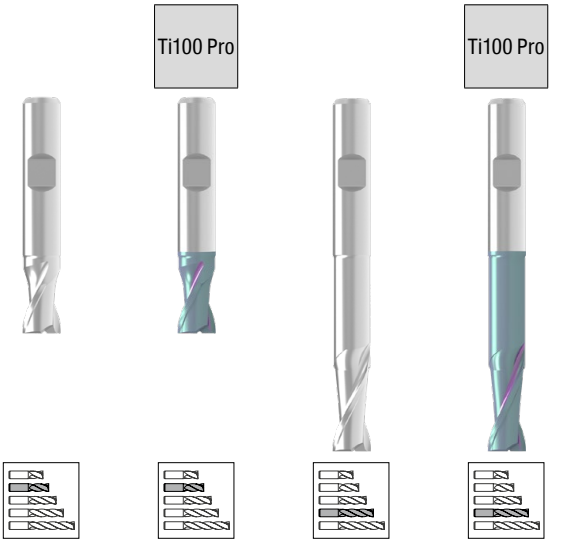
									DIN 69844		DIN 844	
									B		B	
									50 120 ...		50 121 ...	
DC k10 mm	APMX mm	DN mm	LH mm	l_6 mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	£ U8		£ U8	
2	7		7	13	15	51	6	3	35.18	020		
3	8		8	14	16	52	6	3	27.47	030		
3	12		12	18	20	56	6	3			34.03	030
4	11		11	17	19	55	6	3	27.84	040		
4	19		19	25	27	63	6	3			33.81	040
5	13		13	19	21	57	6	3	28.33	050		
5	24		24	30	32	68	6	3			33.81	050
6	13	5.5	19	19	21	57	6	3	28.77	060		
6	24	5.5	30	30	32	68	6	3			35.07	060
7	16	6.5	22	24	26	66	10	3	30.25	070		
7	30	6.5	36	38	40	80	10	3			44.40	070
8	19	7.5	25	27	29	69	10	3	32.50	080		
8	38	7.5	44	46	48	88	10	3			37.72	080
9	19	8.5	26	27	29	69	10	3	34.63	090		
9	38	8.5	45	46	48	88	10	3			50.49	090
10	22	9.5	30	30	32	72	10	3	35.68	100		
10	45	9.5	53	53	55	95	10	3			41.64	100
12	26	11.5	36	36	38	83	12	3	39.83	120		
12	53	11.5	63	63	65	110	12	3			46.99	120
14	26	11.5	36	36	38	83	12	3	46.24	140		
14	53	11.5	63	63	65	110	12	3			53.83	140
16	32	15.0	42	42	44	92	16	3	46.69	160		
16	63	15.0	73	73	75	123	16	3			54.62	160
18	32	15.0	42	42	44	92	16	3	77.07	180		
18	63	15.0	73	73	75	123	16	3			94.57	180
20	38	19.0	52	52	54	104	20	3	75.96	200		
20	75	19.0	89	89	91	141	20	3			89.08	200
22	38	19.0	52	52	54	104	20	3	104.95	220		
22	75	19.0	89	89	91	141	20	3			123.10	220
24	90	23.0	106	108	110	166	25	3			169.31	240
25	45	24.0	63	45	65	121	25	4	137.13	250		
25	90	24.0	108	108	110	166	25	4			160.62	250
28	90	24.0	108	108	110	166	25	4			194.48	280
30	90	24.0	108	108	110	166	25	4			231.24	300
32	106	31.0	123	123	126	186	32	4			253.83	320
36	106	31.0	123	123	126	186	32	4			372.03	360
40	125	38.0	142	142	147	217	40	4			450.26	400
P												
M												
K												
N										●		●
S												
H												
O										●		●

→ v_c/f_z Page 40–42

Slot milling cutter HSS-E Co 8







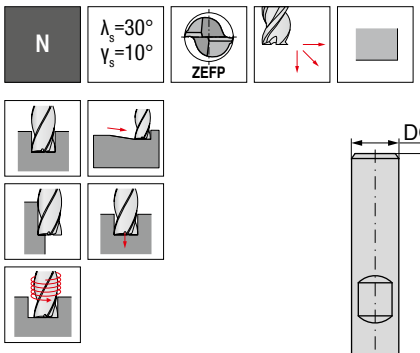
										50 100 ...		54 025 ...		50 122 ...		54 020 ...	
										DIN 327		DIN 327		Factory standard		Factory standard	
										B		B		B		B	
DC	Tol.	APMX	DN	LH	l_6	LPR	OAL	DCONMS $_{h6}$	ZEFP	£		£		£		£	
mm		mm	mm	mm	mm	mm	mm	mm		U8		U8		U8		U8	
1.00	h10	2.5		2.5	9	11	47	6	2	24.41	010 [1]	24.12	010 [1]				
1.50	h10	3.0		3.0	9	11	47	6	2	23.05	015 [1]	23.19	015 [1]				
1.80	h10	4.0		4.0	10	12	48	6	2	16.42	018	30.52	018				
2.00	e8	4.0		4.0	10	12	48	6	2	14.34	020	27.05	020				
2.50	e8	5.0		5.0	11	13	49	6	2	14.34	025	27.05	025				
2.80	h10	5.0		5.0	11	13	49	6	2	15.25	028	22.27	028				
3.00	e8	5.0		5.0	11	13	49	6	2	14.34	030	21.86	030				
3.00	e8	8.0		8.0	18	20	56	6	2					23.10	030	42.72	030
3.50	h10	6.0		6.0	12	14	50	6	2	14.34	035	20.44	035				
3.50	h10	10.0		10.0	21	23	59	6	2					27.63	035	45.92	035
3.80	h10	7.0		7.0	13	15	51	6	2	15.11	038	28.58	038				
4.00	e8	7.0		7.0	13	15	51	6	2	14.34	040	18.52	040				
4.00	e8	11.0		11.0	25	27	63	6	2					24.24	040	28.78	040
4.50	h10	7.0		7.0	13	15	51	6	2	16.34	045	20.44	045				
4.50	h10	11.0		11.0	25	27	63	6	2					30.04	045	32.04	045
4.80	h10	8.0		8.0	14	16	52	6	2	17.80	048	29.49	048				
5.00	e8	8.0		8.0	14	16	52	6	2	14.68	050	20.85	050				
5.00	e8	13.0		13.0	30	32	68	6	2					24.24	050	28.78	050
5.50	h10	8.0		8.0	14	16	52	6	2	16.34	055	21.78	055				
5.50	h10	13.0		13.0	30	32	68	6	2					30.04	055	32.04	055
5.75	h10	8.0		8.0	14	16	52	6	2	16.79	057	29.49	057				
6.00	e8	8.0	5.50	14.0	14	16	52	6	2	14.68	060	20.54	060				
6.00	e8	13.0	5.50	30.0	30	32	68	6	2					25.87	060	30.22	060
6.50	h10	10.0	6.00	16.0	18	20	60	10	2	19.62	065	26.76	065				
6.50	h10	16.0	6.35	36.0	38	40	80	10	2					35.68	065	39.87	065
6.75	h10	10.0	6.50	16.0	18	20	60	10	2	20.20	067	26.76	067				
7.00	e8	10.0	6.50	16.0	18	20	60	10	2	18.87	070	26.76	070				
7.00	e8	16.0	6.35	36.0	38	40	80	10	2					32.78	070	38.24	070
7.50	h10	10.0	7.00	16.0	18	20	60	10	2	20.36	075	26.85	075				
7.50	h10	16.0	7.35	36.0	38	40	80	10	2					35.68	075	39.87	075
7.75	h10	11.0	7.50	17.0	19	21	61	10	2	20.36	077	42.72	077				
8.00	e8	11.0	7.50	17.0	19	21	61	10	2	19.16	080	28.58	080				
8.00	e8	19.0	7.35	44.0	46	48	88	10	2					28.62	080	35.90	080
8.50	h10	11.0	8.00	18.0	19	21	61	10	2	24.72	085	30.22	085				
8.50	h10	19.0	8.35	45.0	46	48	88	10	2					38.29	085	42.08	085
8.70	h10	11.0	8.50	18.0	19	21	61	10	2	25.94	087	45.32	087				
9.00	h10	11.0	8.50	18.0	19	21	61	10	2	22.82	090	42.81	090				
9.00	h10	19.0	8.35	45.0	46	48	88	10	2					35.68	090	58.66	090
9.50	h10	11.0	9.00	18.0	19	21	61	10	2	24.39	095	43.69	095				
9.50	h10	19.0	9.35	45.0	46	48	88	10	2					58.28	095	56.85	095
9.70	h10	13.0	9.50	21.0	21	23	63	10	2	24.39	097	45.28	097				
10.00	e8	13.0	9.50	21.0	21	23	63	10	2	23.70	100	28.39	100				
10.00	e8	22.0	9.35	53.0	53	55	95	10	2					31.38	100	38.02	100
10.50	h10	13.0	10.00	21.0	23	25	70	12	2	43.17	105	45.66	105				
10.70	h10	13.0	10.50	21.0	23	25	70	12	2	46.77	107	48.42	107				
11.00	h10	13.0	10.50	21.0	23	25	70	12	2	31.73	110	41.29	110				
11.00	h10	22.0	10.50	53.0	55	57	102	12	2					40.89	110	45.96	110
P											●		●		●		●
M											○		●		○		●
K											●		●		●		●
N											○		○		○		○
S											○		○		○		○
H																	
O											○		○		○		○

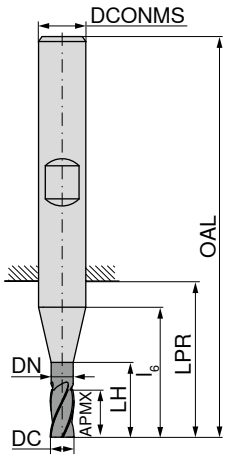
1) Factory standard

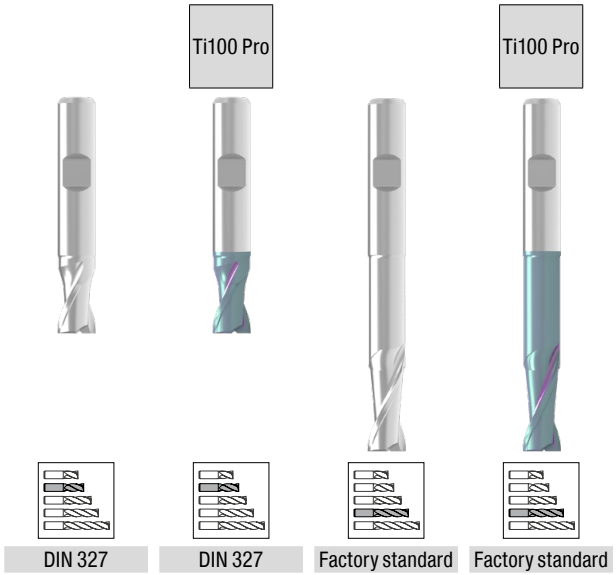
→ v_c/f_z Page 40–42

Continued on next page

Slot milling cutter HSS-E Co 8







										50 100 ...		54 025 ...		50 122 ...		54 020 ...	
										DIN 327		DIN 327		Factory standard		Factory standard	
										B		B		B		B	
DC	Tol.	APMX	DN	LH	l_6	LPR	OAL	DCONMS $_{h6}$	ZEFP	£		£		£		£	
mm		mm	mm	mm	mm	mm	mm	mm		U8		U8		U8		U8	
11.50	h10	13.0	11.00	21.0	23	25	70	12	2	44.03	**115**	46.38	**115**				
11.70	h10	16.0	11.50	26.0	26	28	73	12	2	34.03	**117**	49.04	**117**				
12.00	e8	16.0	11.50	26.0	26	28	73	12	2	29.36	**120**	37.13	**120**				
12.00	e8	26.0	11.50	63.0	63	65	110	12	2					35.61	**120**	43.63	**120**
12.70	h10	16.0	11.50	26.0	26	28	73	12	2	60.14	**127**	66.12	**127**				
13.00	h10	16.0	11.50	26.0	26	28	73	12	2	49.97	**130**	59.08	**130**				
13.00	h10	26.0	11.50	63.0	63	65	110	12	2					55.39	**130**	63.88	**130**
13.70	h10	16.0	11.50	26.0	26	28	73	12	2	41.70	**137**	55.32	**137**				
14.00	e8	16.0	11.50	26.0	26	28	73	12	2	36.61	**140**	49.52	**140**				
14.00	e8	26.0	11.50	63.0	63	65	110	12	2					44.91	**140**	58.58	**140**
14.70	h10	16.0	11.50	26.0	26	28	73	12	2	56.28	**147**						
15.00	h10	16.0	11.50	26.0	26	28	73	12	2	46.38	**150**	54.92	**150**				
15.00	h10	26.0	11.50	63.0	63	65	110	12	2					56.44	**150**	97.34	**150**
15.70	h10	19.0	15.00	29.0	29	31	79	16	2	47.30	**157**	75.96	**157**				
16.00	e8	19.0	15.00	29.0	29	31	79	16	2	45.02	**160**	53.30	**160**				
16.00	e8	32.0	15.00	73.0	73	75	123	16	2					53.75	**160**	64.87	**160**
16.70	h10	19.0	15.00	29.0	29	31	79	16	2	76.57	**167**						
17.00	h10	19.0	15.00	29.0	29	31	79	16	2	72.79	**170**	85.12	**170**				
17.00	h10	32.0	15.00	73.0	73	75	123	16	2					118.97	**170**	124.08	**170**
17.70	h10	19.0	15.00	29.0	29	31	79	16	2	56.28	**177**	84.82	**177**				
18.00	e8	19.0	15.00	29.0	29	31	79	16	2	55.51	**180**	65.01	**180**				
18.00	e8	32.0	15.00	73.0	73	75	123	16	2					72.17	**180**	88.67	**180**
19.00	h10	19.0	15.00	29.0	29	31	79	16	2	85.87	**190**	90.92	**190**				
19.00	h10	32.0	15.00	73.0	73	75	123	16	2					124.64	**190**	128.03	**190**
19.70	h10	22.0	19.00	36.0	36	38	88	20	2	68.63	**197**	99.89	**197**				
20.00	e8	22.0	19.00	36.0	36	38	88	20	2	64.54	**200**	78.31	**200**				
20.00	e8	38.0	19.00	89.0	89	91	141	20	2					70.76	**200**	90.18	**200**
21.70	h10	22.0	19.00	36.0	36	38	88	20	2	122.47	**217**	131.20	**217**				
22.00	e8	22.0	19.00	36.0	36	38	88	20	2	81.05	**220**	119.90	**220**				
22.00	e8	38.0	19.00	89.0	89	91	141	20	2					108.30	**220**	153.56	**220**
23.70	h10	26.0	23.00	42.0	44	46	102	25	2	159.37	**237**	158.04	**237**				
24.00	e8	26.0	23.00	42.0	44	46	102	25	2	90.45	**240**	149.37	**240**				
24.00	e8	45.0	23.00	106.0	108	110	166	25	2					134.39	**240**	238.42	**240**
24.70	h10	26.0	24.00	44.0	44	46	102	25	2	159.37	**247**	152.74	**247**				
25.00	e8	26.0	24.00	44.0	44	46	102	25	2	89.08	**250**	150.31	**250**				
25.00	e8	45.0	24.00	108.0	108	110	166	25	2					134.39	**250**	158.93	**250**
26.00	h10	26.0	24.00	44.0	44	46	102	25	2	111.04	**260**	166.86	**260**				

P	●	●	●	●
M	○	●	○	●
K	●	●	●	●
N	○	○	○	○
S	○	○	○	○
H				
O	○	○	○	○

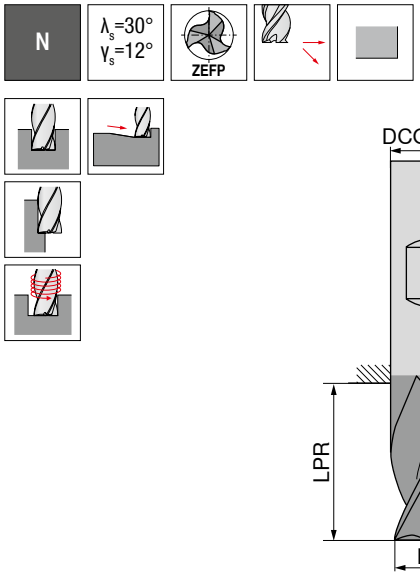
1) Factory standard

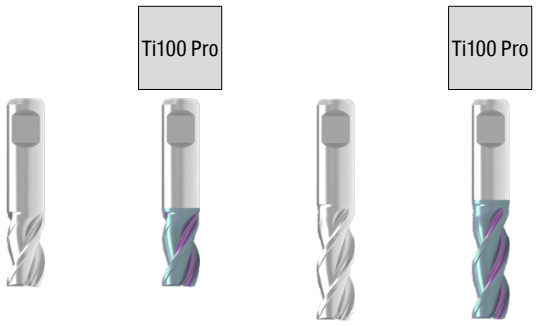
→ v_c/f_z Page 40–42

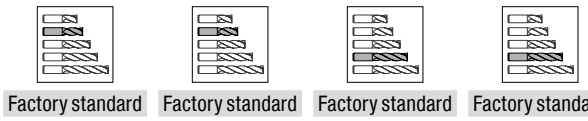
13

Throw-away milling cutter, HSS-E Co 8

▲ Shank similar to DIN 1835 B







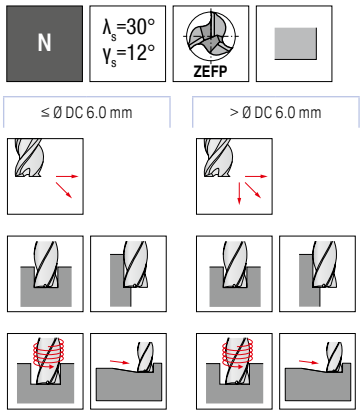
DC e8 mm	APMX mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	50 092 ... £ U6		54 014 ... £ U8		50 093 ... £ U6		54 042 ... £ U8	
1.00	2	8	34	6	3	12.71	010	16.34	010				
1.50	3	8	34	6	3	12.71	015	16.34	015				
1.50	4	10	35	6	3					14.63	015 1)	18.07	015 1)
1.80	3	8	34	6	3	12.71	018	16.34	018				
2.00	4	9	35	6	3	12.71	020	16.34	020				
2.00	7	12	38	6	3					14.63	020 1)	18.07	020
2.30	4	9	35	6	3	12.71	023	16.34	023				
2.50	5	10	36	6	3	12.71	025	16.34	025				
2.50	8	13	39	6	3					14.63	025 1)	18.07	025
2.80	5	10	36	6	3	12.71	028	16.34	028				
3.00	5	10	36	6	3	12.71	030	16.34	030				
3.00	8	13	39	6	3					14.63	030 1)	18.07	030
3.30	6	11	37	6	3	12.71	033	16.34	033				
3.50	6	11	37	6	3	12.71	035	16.34	035				
3.50	10	15	41	6	3					14.63	035 1)	18.07	035
3.80	7	12	38	6	3	12.71	038	16.34	038				
4.00	7	12	38	6	3	12.71	040	16.34	040				
4.00	11	16	42	6	3					14.63	040 1)	18.07	040
4.30	7	12	38	6	3	12.71	043	16.34	043				
4.50	7	12	38	6	3	12.71	045	16.34	045				
4.50	11	16	42	6	3					14.63	045 1)	18.07	045
4.80	8	13	39	6	3	12.71	048	16.34	048				
5.00	8	13	39	6	3	12.71	050	16.34	050				
5.00	13	18	44	6	3					14.63	050 1)	18.07	050
5.30	8	13	39	6	3	12.71	053	16.34	053				
5.50	8	13	39	6	3	12.71	055	16.34	055				
5.50	13	18	44	6	3					14.63	055 1)	18.07	055
5.75	8	13	39	6	3	12.71	057	16.34	057				
6.00	8	13	39	6	3	12.71	060	16.34	060				
6.00	13	18	44	6	3					14.63	060 1)	18.07	060
6.50	10	14	42	8	3	14.71	065	21.53	065				
6.50	16	20	48	8	3					17.55	065 1)	23.96	065
7.00	10	14	42	8	3	14.71	070	21.53	070				
7.00	16	20	48	8	3					17.55	070 1)	23.96	070
7.50	10	14	42	8	3	14.71	075	21.53	075				
7.50	16	20	48	8	3					17.55	075 1)	23.96	075
8.00	11	15	43	8	3	14.71	080	21.53	080				
8.00	19	23	51	8	3					17.55	080 1)	23.96	080
8.50	11	16	48	10	3	19.05	085	25.41	085				
8.50	19	24	56	10	3					22.06	085 1)	27.18	085
9.00	11	16	48	10	3	19.05	090	25.41	090				
9.00	19	24	56	10	3					22.06	090 1)	27.18	090
9.50	11	16	48	10	3	19.05	095	25.41	095				
9.50	19	24	56	10	3					22.06	095 1)	27.18	095
10.00	13	18	50	10	3	19.05	100	25.41	100				
10.00	22	27	59	10	3					22.06	100 1)	27.18	100
P						●		●		●		●	
M						○		●		○		●	
K						●		●		●		●	
N						○		○		○		○	
S						○		○		○		○	
H													
O						○		○		○		○	

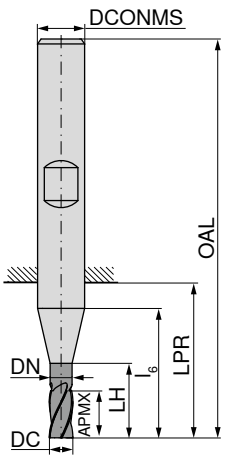
1) Shank tolerance -0,025 / -0,0323

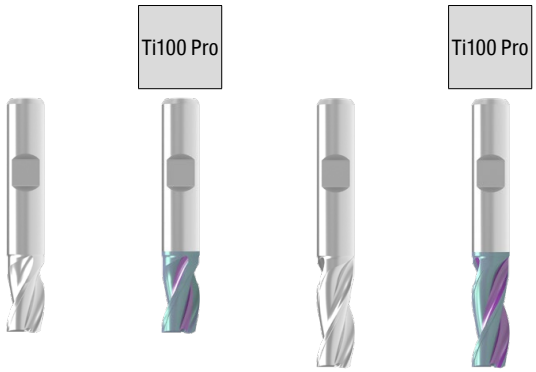
→ v_c/f_z Page 40–42

End milling cutter HSS-E Co 8

▲ ≤ Ø DC 6 mm, 3 cutting edges to centre







										DIN 327		DIN 327		DIN 844 K		DIN 844 K			
										B		B		B		B			
										50 105 ...		54 021 ...		50 106 ...		54 016 ...			
DC mm	Tol.	APMX mm	DN mm	LH mm	l_6 mm	LPR mm	OAL mm	DCONMS $_{h6}$ mm	ZEFP	£ U8		£ U8		£ U8		£ U8			
1.80	h10	4		4	10	12	48	6	3	25.59	018	26.24	018						
2.00	e8	4		4	10	12	48	6	3	18.42	020	23.29	020						
2.50	e8	5		5	11	13	49	6	3	18.42	025	23.29	025						
2.80	h10	5		5	11	13	49	6	3	25.59	028	28.68	028						
2.80	h10	8		8	18	20	56	6	3					30.95	028 1)	33.97	028 1)		
3.00	e8	5		5	11	13	49	6	3	18.42	030	23.29	030						
3.00	e8	8		8	14	16	52	6	3					22.53	030	28.17	030		
3.50	h10	6		6	12	14	50	6	3	18.42	035	27.27	035						
3.50	h10	10		10	16	18	54	6	3					30.80	035	33.88	035		
3.80	h10	7		7	13	15	51	6	3	25.59	038	28.78	038						
3.80	h10	11		11	25	27	63	6	3					30.95	038 1)	33.97	038 1)		
4.00	e8	7		7	13	15	51	6	3	18.42	040	23.29	040						
4.00	e8	11		11	17	19	55	6	3					22.53	040	20.95	040		
4.50	h10	7		7	13	15	51	6	3	18.42	045	27.27	045						
4.50	h10	11		11	17	19	55	6	3					30.95	045	23.71	045		
4.80	h10	8		8	14	16	52	6	3	25.59	048	28.68	048						
5.00	e8	8		8	14	16	52	6	3	18.42	050	23.29	050						
5.00	e8	13		13	19	21	57	6	3					22.53	050	20.95	050		
5.50	h10	8		8	14	16	52	6	3	18.42	055	27.27	055						
5.50	h10	13		13	19	21	57	6	3					30.80	055	23.71	055		
5.75	h10	8		8	14	16	52	6	3	25.59	057	28.68	057						
6.00	e8	8	5.5	14	14	16	52	6	3	18.42	060	23.29	060						
6.00	e8	13	5.5	19	19	21	57	6	3					22.53	060	20.95	060		
6.50	h10	10	6.0	16	18	20	60	10	3	29.35	065	32.76	065						
6.50	h10	16	6.0	22	24	26	66	10	3					39.08	065	43.63	065		
6.75	h10	10	6.5	16	18	20	60	10	3	36.92	067	38.72	067						
7.00	e8	10	6.5	16	18	20	60	10	3	29.35	070	36.02	070						
7.00	e8	16	6.5	22	24	26	66	10	3					39.08	070	43.63	070		
7.50	h10	10	7.0	16	18	20	60	10	3	29.35	075	38.02	075						
7.50	h10	16	7.0	22	24	26	66	10	3					40.70	075	44.33	075		
7.75	h10	11	7.5	17	19	21	61	10	3	32.41	077	41.38	077						
8.00	e8	11	7.5	17	19	21	61	10	3	27.47	080	35.68	080						
8.00	e8	19	7.5	25	27	29	69	10	3					31.84	080	29.82	080		
8.50	h10	11	8.0	18	19	21	61	10	3	27.47	085	38.02	085						
8.50	h10	19	8.0	26	27	29	69	10	3					48.39	085	49.84	085		
8.70	h10	11	8.5	18	19	21	61	10	3	34.30	087	38.72	087						
9.00	h10	11	8.5	18	19	21	61	10	3	30.69	090	38.02	090						
9.00	h10	19	8.5	26	27	29	69	10	3					38.07	090	42.91	090		
9.50	h10	11	9.0	18	19	21	61	10	3	30.69	095	38.02	095						
9.50	h10	19	9.0	26	27	29	69	10	3					41.69	095	42.08	095		
9.70	h10	13	9.5	21	21	23	63	10	3	30.69	097	42.91	097						
10.00	e8	13	9.5	21	21	23	63	10	3	26.10	100	35.61	100						
10.00	e8	22	9.5	30	30	32	72	10	3					31.84	100	30.81	100		
10.50	h10	13	10.0	21	23	25	70	12	3	47.22	105	48.72	105						
10.70	h10	13	10.5	21	23	25	70	12	3	48.39	107	49.32	107						
11.00	h10	13	10.5	21	23	25	70	12	3	35.68	110	39.46	110						

P	●	●	●	●
M	○	●	○	●
K	●	●	●	●
N	○	○	○	○
S	○	○	○	○
H				
O	○	○	○	○

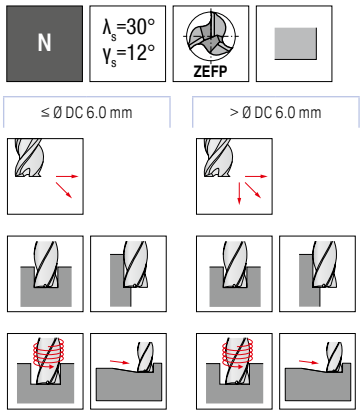
1) Factory standard

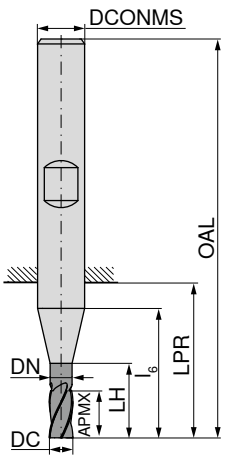
→ v_c/f_z Page 40–42

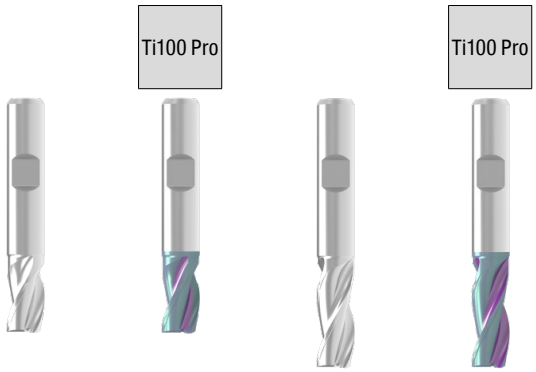
Continued on next page

End milling cutter HSS-E Co 8

▲ ≤ Ø DC 6 mm, 3 cutting edges to centre





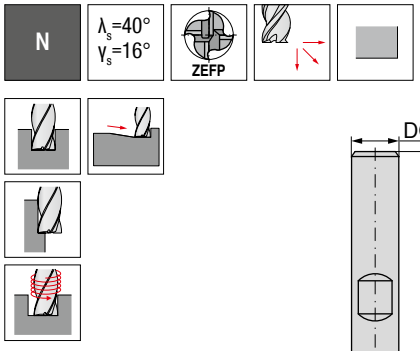


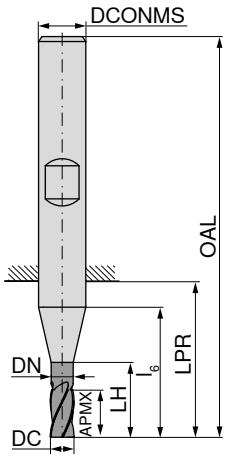
										DIN 327		DIN 327		DIN 844 K		DIN 844 K	
										B		B		B		B	
										50 105 ...		**54 021 ...**		**50 106 ...**		**54 016 ...**	
DC mm	Tol.	APMX mm	DN mm	LH mm	l_6 mm	LPR mm	OAL mm	DCONMS $_{h6}$ mm	ZEFP	£ U8		£ U8		£ U8		£ U8	
11.00	h10	22	10.5	30	32	34	79	12	3					44.46	**110**	49.52	**110**
11.50	h10	13	11.0	21	23	25	70	12	3	47.22	**115**	48.72	**115**				
11.50	h10	22	11.0	30	32	34	79	12	3					57.98	**115**	59.29	**115**
11.70	h10	16	11.5	26	26	28	73	12	3	40.82	**117**	47.91	**117**				
12.00	e8	16	11.5	26	26	28	73	12	3	34.17	**120**	40.89	**120**				
12.00	e8	26	11.5	36	36	38	83	12	3					37.93	**120**	34.37	**120**
12.70	h10	16	11.5	26	26	28	73	12	3	64.07	**127**	68.36	**127**				
13.00	h10	16	11.5	26	26	28	73	12	3	45.80	**130**	55.11	**130**				
13.00	h10	26	11.5	36	36	38	83	12	3					60.02	**130**	68.85	**130**
13.70	h10	16	11.5	26	26	28	73	12	3	53.54	**137**	56.26	**137**				
14.00	e8	16	11.5	26	26	28	73	12	3	45.80	**140**	49.73	**140**				
14.00	e8	26	11.5	36	36	38	83	12	3					50.83	**140**	41.91	**140**
15.00	h10	16	11.5	26	26	28	73	12	3	48.37	**150**	65.19	**150**				
15.00	h10	26	11.5	36	36	38	83	12	3					65.70	**150**	71.70	**150**
15.50	h10	32	15.0	42	42	44	92	16	3					79.61	**155**	82.69	**155**
15.70	h10	19	15.0	29	29	31	79	16	3	53.54	**157**	74.95	**157**				
16.00	e8	19	15.0	29	29	31	79	16	3	45.80	**160**	68.92	**160**				
16.00	e8	32	15.0	42	42	44	92	16	3					57.11	**160**	61.02	**160**
17.00	h10	19	15.0	29	29	31	79	16	3	76.70	**170**	87.55	**170**				
17.00	h10	32	15.0	42	42	44	92	16	3					99.66	**170**	110.22	**170**
17.70	h10	19	15.0	29	29	31	79	16	3	74.31	**177**	86.55	**177**				
18.00	e8	19	15.0	29	29	31	79	16	3	61.22	**180**	78.10	**180**				
18.00	e8	32	15.0	42	42	44	92	16	3					69.30	**180**	70.98	**180**
19.00	h10	19	15.0	29	29	31	79	16	3	92.68	**190**	98.84	**190**				
19.00	h10	32	15.0	42	42	44	92	16	3					105.62	**190**	115.11	**190**
19.50	h10	38	19.0	52	52	54	104	20	3					113.16	**195**	129.77	**195**
19.70	h10	22	19.0	36	36	38	88	20	3	81.57	**197**	98.84	**197**				
20.00	e8	22	19.0	36	36	38	88	20	3	71.69	**200**	90.92	**200**				
20.00	e8	38	19.0	52	52	54	104	20	3					80.19	**200**	73.93	**200**
21.70	h10	22	19.0	36	36	38	88	20	3	130.74	**217**	130.18	**217**				
22.00	e8	22	19.0	36	36	38	88	20	3	102.33	**220**	117.36	**220**				
22.00	e8	38	19.0	52	52	54	104	20	3					111.42	**220**	159.02	**220**
23.70	h10	26	23.0	42	44	46	102	25	3	158.06	**237**	165.54	**237**				
24.00	e8	26	23.0	42	44	46	102	25	3	119.57	**240**	144.92	**240**				
24.70	h10	26	24.0	44	44	46	102	25	3	169.82	**247**	165.54	**247**				
P										●		●		●		●	
M										○		●		○		●	
K										●		●		●		●	
N										○		○		○		○	
S										○		○		○		○	
H																	
O										○		○		○		○	

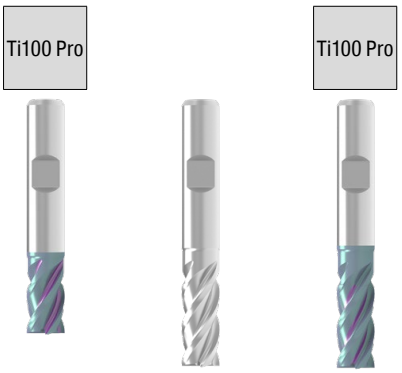
1) Factory standard

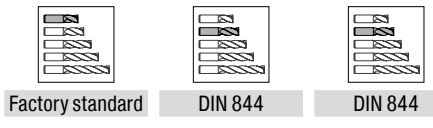
→ v_c/f_z Page 40–42

End milling cutter HSS-E Co 8









	Factory standard	DIN 844	DIN 844
	B	B	B
	54 017 ...	**50 124 ...**	**54 011 ...**

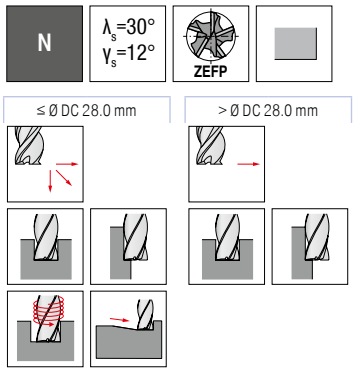
DC mm	Tol.	APMX mm	DN mm	LH mm	l_6 mm	LPR mm	OAL mm	DCONMS $_{h6}$ mm	ZEFP	£ U8		£ U8		£ U8	
4	k10	11		11	17	19	55	6	4			30.99	**040**	39.00	**040**
5	k10	13		13	19	21	57	6	4			30.99	**050**	40.76	**050**
6	e8	8	5.5	14	14	16	52	6	4	18.91	**060**				
6	k10	13	5.5	19	19	21	57	6	4			33.72	**060**	41.86	**060**
8	e8	11	7.5	17	19	21	61	10	4	25.84	**080**				
8	k10	19	7.5	25	27	29	69	10	4			37.22	**080**	50.04	**080**
9	k10	19	8.5	26	27	29	69	10	4			42.88	**090**	54.81	**090**
10	e8	13	9.5	21	21	23	63	10	4	26.64	**100**				
10	k10	22	9.5	30	30	32	72	10	4			40.74	**100**	50.04	**100**
12	e8	16	11.5	26	26	28	73	12	4	32.33	**120**				
12	k10	26	11.5	36	36	38	83	12	4			46.85	**120**	65.59	**120**
14	e8	16	11.5	26	26	28	73	12	4	44.65	**140**				
14	k10	26	11.5	36	36	38	83	12	4			62.18	**140**	89.39	**140**
15	k10	26	11.5	36	36	38	83	12	4			67.28	**150**		
16	e8	19	15.0	29	29	31	79	16	4	46.58	**160**				
16	k10	32	15.0	42	42	44	92	16	4			63.60	**160**	91.68	**160**
17	k10	32	15.0	42	42	44	92	16	4			77.82	**170**	129.32	**170**
18	e8	19	15.0	29	29	31	79	16	4	54.20	**180**				
18	k10	32	15.0	42	42	44	92	16	4			86.52	**180**	127.55	**180**
20	e8	22	19.0	36	36	38	88	20	4	65.19	**200**				
20	k10	38	19.0	52	52	54	104	20	4			99.03	**200**	132.55	**200**
25	k10	45	24.0	63	63	65	121	25	5			153.99	**250**	208.06	**250**

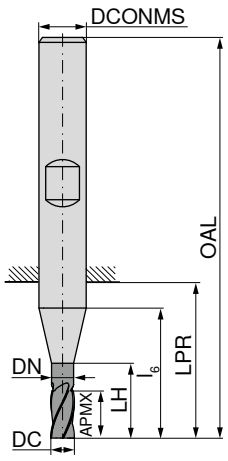
P	o	o	o
M	●	●	●
K	o	o	o
N	●	●	●
S	●	●	●
H			
O	●	●	●

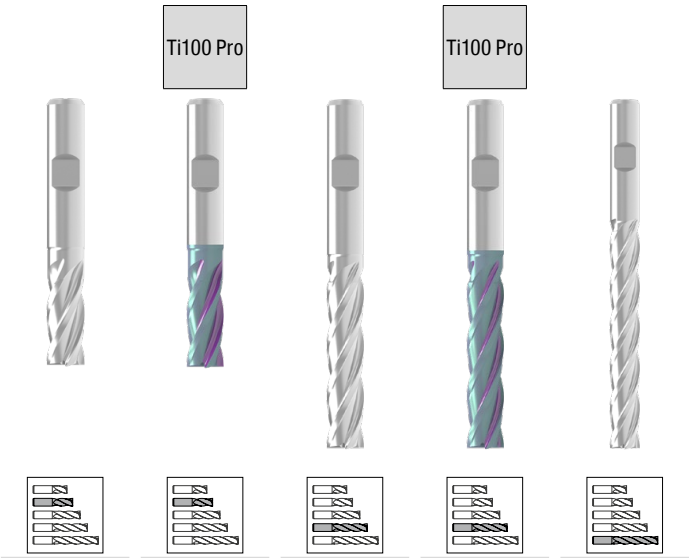
→ v_c/f_z Page 40–42

End milling cutter HSS-E Co 8

▲ > Ø 28,0 mm recessed centre







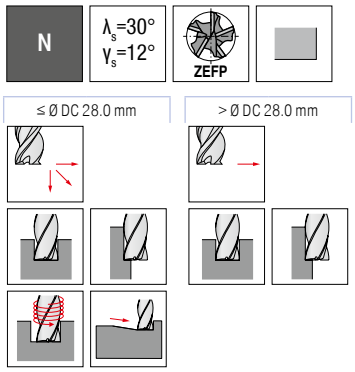
									DIN 69844		DIN 69844		DIN 844		DIN 844		Factory standard	
									B		B		B		B		B	
									50 110 ...		54 018 ...		50 111 ...		54 019 ...		50 104 ...	
DC k10 mm	APMX mm	DN mm	LH mm	l_6 mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	£ U8		£ U8		£ U8		£ U8		£ U6	
2.0	7		7	13	15	51	6	4	16.34	020	23.51	020						
2.5	8		8	14	16	52	6	4	16.34	025	23.51	025						
3.0	8		8	14	16	52	6	4	16.34	030	23.51	030						
3.0	12		12	18	20	56	6	4					27.01	030	31.13	030		
3.5	10		10	16	18	54	6	4	16.34	035	23.51	035						
4.0	11		11	17	19	55	6	4	16.34	040	23.25	040						
4.0	19		19	25	27	63	6	4					27.75	040	31.53	040		
4.5	11		11	17	19	55	6	4	16.34	045	23.51	045						
5.0	13		13	19	21	57	6	4	16.34	050	23.25	050						
5.0	24		24	30	32	68	6	4					24.39	050	31.53	050		
5.5	13		13	19	21	57	6	4	16.34	055	23.51	055						
6.0	13	5.5	19	19	21	57	6	4	16.34	060	23.64	060						
6.0	24	5.5	30	30	32	68	6	4					24.39	060	29.49	060		
6.0	56	5.5	62	62	64	100	6	4									57.61	060
6.5	16	6.0	22	24	26	66	10	4	20.81	065	38.46	065						
7.0	16	6.5	22	24	26	66	10	4	20.81	070	29.23	070						
7.0	30	6.5	36	38	40	80	10	4					35.55	070	45.86	070		
7.5	16	7.0	22	24	26	66	10	4	20.81	075	38.46	075						
8.0	19	7.5	25	27	29	69	10	4	20.19	080	32.75	080						
8.0	38	7.5	44	46	48	88	10	4					35.55	080	41.38	080		
8.0	70	7.5	73	73	75	115	10	4									68.36	080
8.5	19	8.0	26	27	29	69	10	4	20.81	085	30.54	085						
9.0	19	8.5	26	27	29	69	10	4	22.75	090	39.36	090						
9.0	38	8.5	45	46	48	88	10	4					35.55	090	49.04	090		
9.5	19	9.0	26	27	29	69	10	4	22.75	095	44.68	095						
10.0	22	9.5	30	30	32	72	10	4	22.75	100	34.56	100						
10.0	45	9.5	53	53	55	95	10	4					35.55	100	44.24	100		
10.0	75	9.5	79	79	81	121	10	4									82.38	100
10.5	22	10.0	30	32	34	79	12	4	35.55	105	50.54	105						
11.0	22	10.5	30	32	34	79	12	4	33.86	110	39.24	110						
11.0	45	10.5	53	55	57	102	12	4					46.38	110	53.38	110		
11.5	22	11.0	30	32	34	79	12	4	31.27	115	39.24	115						
12.0	26	11.5	36	36	38	83	12	4	31.27	120	37.67	120						
12.0	53	11.5	63	63	65	110	12	4					47.07	120	48.21	120		
12.0	85		85	85	85	130	12	4									89.39	120
13.0	26	11.5	36	36	38	83	12	4	44.40	130	53.77	130						
14.0	26	11.5	36	36	38	83	12	4	40.13	140	44.29	140						
14.0	53	11.5	63	63	65	110	12	4					54.19	140	57.06	140		
14.0	85		85	85	85	130	12	4									108.75	140
P									●		●		●		●		●	
M									○		●		○		●		○	
K									●		●		●		●		●	
N									○		○		○		○		○	
S									○		○		○		○		○	
H																		
O									○		○		○		○		○	

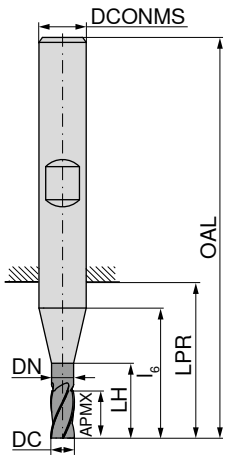
→ v_c/f_z Page 40–42

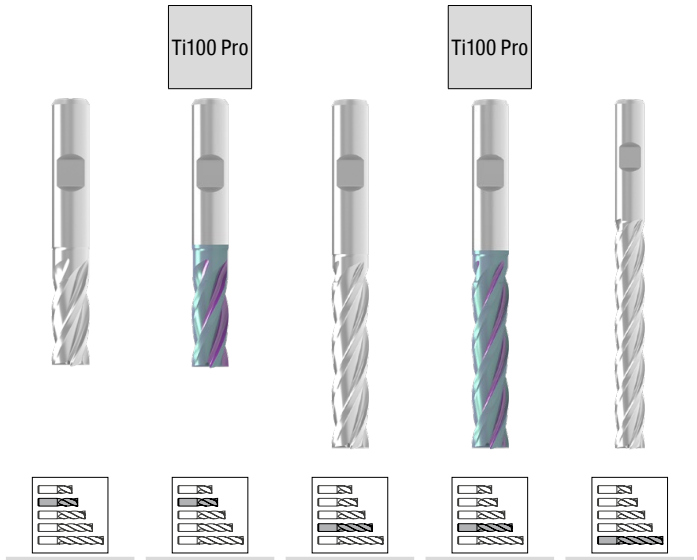
Continued on next page

End milling cutter HSS-E Co 8

▲ > Ø 28,0 mm recessed centre







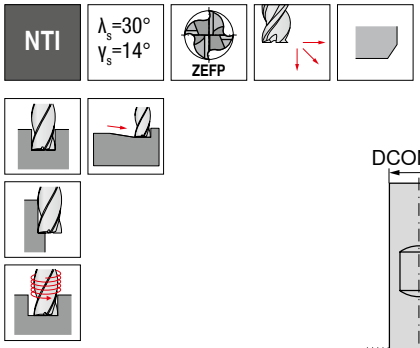
DC k10 mm	APMX mm	DN mm	LH mm	l_6 mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	DIN 69844		DIN 69844		DIN 844		DIN 844		Factory standard	
									B		B		B		B		B	
									50 110 ...		54 018 ...		50 111 ...		54 019 ...		50 104 ...	
									£ U8		£ U8		£ U8		£ U8		£ U6	
15.0	26	11.5	36	36	38	83	12	4	46.69	**150**	55.86	**150**						
15.0	53	11.5	63	63	65	110	12	4					48.99	**150**	77.67	**150**		
16.0	32	15.0	42	42	44	92	16	4	44.40	**160**	62.48	**160**						
16.0	63	15.0	73	73	75	123	16	4					65.82	**160**	77.37	**160**		
16.0	90	15.0	95	95	97	145	16	4									118.41	**160**
18.0	32	15.0	42	42	44	92	16	4	60.11	**180**	71.73	**180**						
18.0	63	15.0	73	73	75	123	16	4					80.63	**180**	93.25	**180**		
18.0	100	15.0	110	110	112	160	16	5									166.29	**180**
20.0	38	19.0	52	52	54	104	20	4	66.21	**200**	78.72	**200**						
20.0	75	19.0	89	89	91	141	20	4					78.56	**200**	104.95	**200**		
20.0	110	19.0	128	128	130	180	20	5									171.45	**200**
22.0	38	19.0	52	52	54	104	20	5	78.56	**220**	98.46	**220**						
22.0	75	19.0	89	89	91	141	20	5					102.83	**220**	151.01	**220**		
22.0	110	19.0	128	128	130	180	20	5									218.85	**220**
24.0	45	23.0	61	63	65	121	25	5	98.52	**240**	121.84	**240**						
24.0	90	23.0	106	108	110	166	25	5					128.73	**240**	211.61	**240**		
25.0	45	24.0	63	63	65	121	25	5	98.52	**250**	121.08	**250**						
25.0	90	24.0	108	108	110	166	25	5					128.73	**250**	210.40	**250**		
25.0	125	24.0	142	142	144	200	25	6									224.02	**250**
28.0	45	24.0	63	63	65	121	25	5	103.57	**280**	136.77	**280**						
28.0	90	24.0	108	108	110	166	25	5					159.73	**280**	248.84	**280**		
28.0	140	24.0	147	147	149	205	25	6									308.87	**280**
30.0	45	24.0	63	63	65	121	25	5	153.14	**300**	197.85	**300**						
30.0	90	24.0	108	108	110	166	25	5					178.75	**300**	272.61	**300**		
32.0	53	31.0	70	70	73	133	32	6	153.14	**320**								
32.0	53	31.0	70	70	73	133	32	5			157.07	**320**						
32.0	106	31.0	123	123	126	186	32	6					188.41	**320**	300.27	**320**		
32.0	160	31.0	167	167	170	230	32	6									372.79	**320**
36.0	53	31.0	70	70	73	133	32	6	196.28	**360**	261.49	**360**						
40.0	63	38.0	80	80	85	155	40	6	255.52	**400**	310.09	**400**						
40.0	125	38.0	142	142	147	217	40	6					340.75	**400**	370.34	**400**		
40.0	180	31.0	197	197	200	260	32	8									627.17	**400**
45.0	125	38.0	142	142	147	217	40	8					672.74	**450**	641.63	**450**		
50.0	150	48.0	172	172	172	252	50	8					819.59	**500**	791.62	**500**		

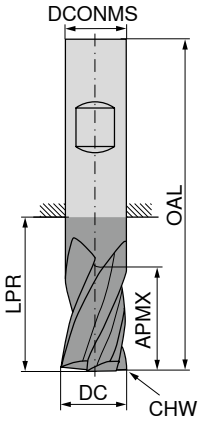
P	●	●	●	●	●
M	○	●	○	●	○
K	●	●	●	●	●
N	○	○	○	○	○
S	○	○	○	○	○
H					
O	○	○	○	○	○

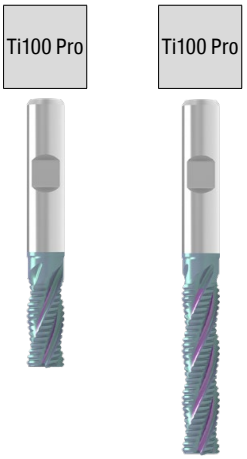
→ v_c/f_z Page 40–42

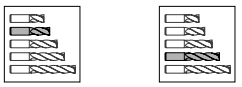
13

Powdersteel roughing finishing cutter









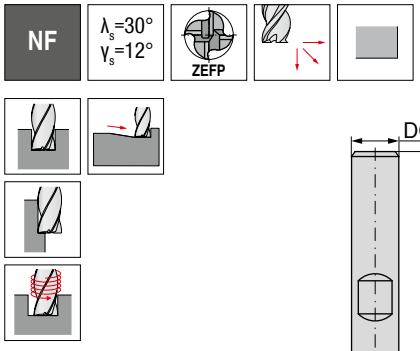
DIN 69844 | DIN 844

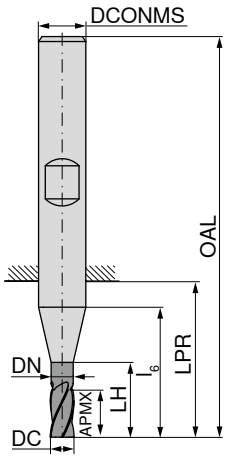
B | B

DC k12 mm	APMX mm	LPR mm	OAL mm	DCONMS h6 mm	CHW mm	ZEFP	54 007 ... £ U8		54 008 ... £ U8	
6	13	21	57	6	0.3	4	87.09	060		
6	24	32	68	6	0.3	4			127.22	060
7	16	26	66	10	0.3	4	125.69	070		
8	19	29	69	10	0.3	4	116.53	080		
8	38	48	88	10	0.3	4			150.55	080
9	19	29	69	10	0.5	4	134.39	090		
10	22	32	72	10	0.5	4	125.69	100		
10	45	55	95	10	0.5	4			157.72	100
12	26	38	83	12	0.7	4	129.05	120		
12	53	65	110	12	0.7	4			175.56	120
14	26	38	83	12	0.8	4	163.08	140		
14	53	65	110	12	0.8	4			209.74	140
16	32	44	92	16	0.8	4	184.73	160		
16	63	75	123	16	0.8	4			238.42	160
18	32	44	92	16	0.8	4	231.24	180		
18	63	75	123	16	0.8	4			302.62	180
20	38	54	104	20	0.8	4	245.45	200		
20	75	91	141	20	0.8	4			327.79	200
25	45	65	121	25	1.0	5	363.64	250		
25	90	110	166	25	1.0	4			531.72	250
30	90	110	166	25	1.3	5			836.02	300
32	53	73	133	32	1.3	6	486.86	320		
32	106	126	186	32	1.3	5			773.33	320
40	63	85	155	40	1.3	6	836.02	400		
40	125	147	217	40	1.3	6			1,203.00	400
P							○		○	
M							●		●	
K							○		○	
N							○		○	
S							●		●	
H										
O							○		○	

→ v_c/f_z Page 40–42

Roughing-finishing milling cutter HSS-E Co 5

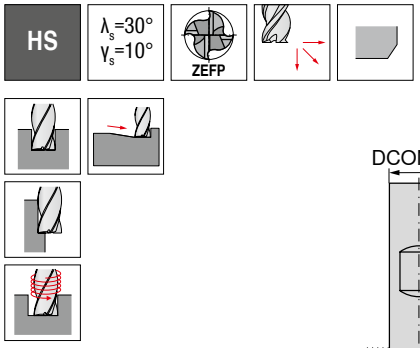


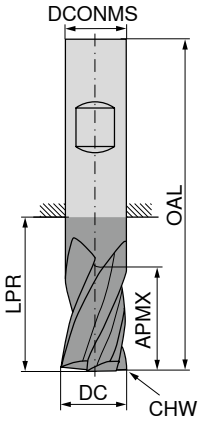


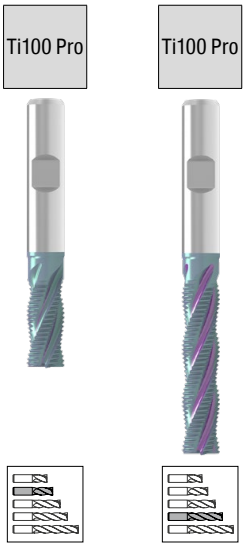
									DIN 69844		DIN 844	
									B		B	
									54 028 ...		54 029 ...	
DC k12 mm	APMX mm	DN mm	LH mm	l_6 mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	£ U8		£ U8	
6	13	5.5	19	19	21	57	6	4	34.67	060		
6	24	5.5	30	30	32	68	6	4			49.04	060
7	16	6.5	22	24	26	66	10	4	44.24	070		
8	19	7.5	25	27	29	69	10	4	42.41	080		
8	38	7.5	44	46	48	88	10	4			67.33	080
9	19	8.5	26	27	29	69	10	4	51.57	090		
10	22	9.5	30	30	32	72	10	4	48.31	100		
10	45	9.5	53	53	55	95	10	4			70.49	100
11	22	10.5	30	32	32	79	12	4	59.49	110		
11	45	10.5	53	55	57	102	12	4			85.12	110
12	26	11.5	36	36	38	83	12	4	53.92	120		
12	53	11.5	63	63	65	110	12	4			76.89	120
13	26	11.5	36	36	38	83	12	4	67.22	130		
14	26	11.5	36	36	38	83	12	4	61.53	140		
15	26	11.5	36	36	38	83	12	4	78.93	150		
15	53	11.5	63	63	65	110	12	4			108.82	150
16	32	15.0	42	42	44	92	16	4	79.32	160		
16	63	15.0	73	73	75	123	16	4			111.66	160
18	32	15.0	42	42	44	92	16	4	98.25	180		
20	38	19.0	52	52	54	104	20	4	105.97	200		
20	75	19.0	89	89	91	141	20	4			146.41	200
22	75	19.0	89	89	91	141	20	4			263.57	220
22	38	19.0	52	52	54	104	20	4	131.68	220		
25	90	24.0	108	108	110	166	25	4			285.52	250
25	45	24.0	63	63	65	121	25	4	162.00	250		
28	90	24.0	108	108	110	166	25	5			317.56	280
P									●		●	
M									○		○	
K									●		●	
N									○		○	
S									○		○	
H												
O									○		○	

→ v_c/f_z Page 40–42

Powdersteel roughing finishing cutter







DIN 69844 | DIN 844

B | B

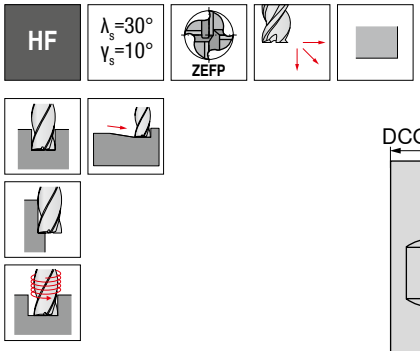
DC k12 mm	APMX mm	LPR mm	OAL mm	DCONMS h6 mm	CHW mm	ZEFP	54 009 ... £ U8		54 012 ... £ U8	
6	13	21	57	6	0.45	4	87.09	060		
6	24	32	68	6	0.45	4			127.22	060
8	19	29	69	10	0.45	4	116.53	080		
8	38	48	88	10	0.45	4			150.55	080
10	22	32	72	10	0.45	4	125.69	100		
10	45	55	95	10	0.45	4			157.72	100
12	26	38	83	12	0.45	4	129.05	120		
12	53	65	110	12	0.45	4			175.56	120
14	26	38	83	12	0.45	4	163.08	140		
14	53	65	110	12	0.45	4			209.74	140
16	32	44	92	16	0.60	4	184.73	160		
16	63	75	123	16	0.60	4			238.42	160
18	32	44	92	16	0.60	4	231.24	180		
18	63	75	123	16	0.60	4			302.62	180
20	38	54	104	20	0.60	4	245.45	200		
20	75	91	141	20	0.60	4			327.79	200
22	38	54	104	20	0.60	5	322.44	220		
25	45	65	121	25	0.75	5	363.64	250		
25	90	110	166	25	0.75	5			531.72	250
28	45	65	121	25	0.75	5	456.51	280		
28	90	110	166	25	0.75	5			802.15	280
30	45	65	121	25	0.75	5	528.06	300		
30	90	110	166	25	0.75	5			836.02	300
32	53	73	133	32	0.75	6	486.86	320		
32	106	126	186	32	0.75	5			773.33	320
40	63	85	155	40	0.90	6	836.02	400		

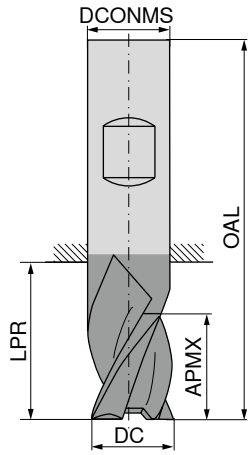
P	○	○
M		
K	●	●
N		
S	●	●
H		
O	○	○

→ v_c/f_z Page 40–42

Powdersteel roughing finishing cutter

HF | λ_s=30° γ_s=10° | ZEFP





Ti100 Pro

DIN 844

54 034 ...

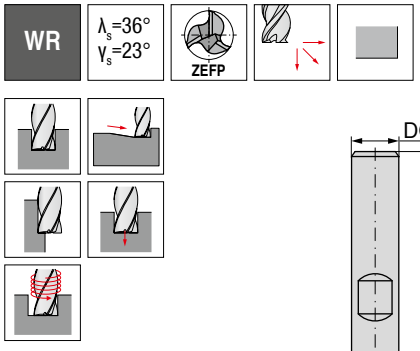
DC $_{k12}$ mm	APMX mm	LPR mm	OAL mm	DCONMS $_{h6}$ mm	ZEFP	£ U8	
6	13	21	57	6	4	40.54	**060**
8	19	29	69	10	4	55.26	**080**
10	22	32	72	10	4	57.53	**100**
12	26	38	83	12	4	63.54	**120**
14	26	38	83	12	4	72.25	**140**
16	32	44	92	16	4	95.99	**160**
18	32	44	92	16	4	132.09	**180**
20	38	54	104	20	4	121.50	**200**
25	45	65	121	25	4	183.48	**250**

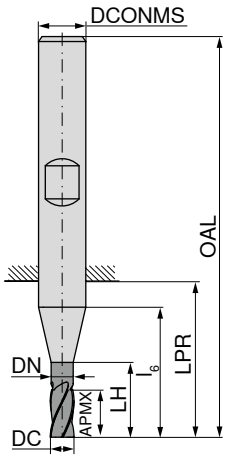
P	●
M	○
K	●
N	○
S	○
H	
O	○

→ v_c/f_z Page 40–42

13

Rough milling cutter HSS-E Co 8





DIN 844 | Factory standard

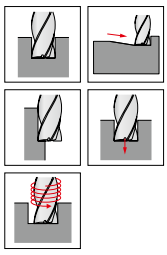
DC k12 mm	APMX mm	DN mm	LH mm	l_6 mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	54 013 ... £ U8		54 010 ... £ U8	
6	13	5.5	19	19	21	57	6	3	68.69	**060**		
6	19	5.5	25	25	27	63	6	3			89.64	**060**
8	19	7.5	25	27	29	69	10	3	91.59	**080**		
8	28	7.5	34	36	38	78	10	3			107.70	**080**
10	22	9.5	30	30	32	72	10	3	102.06	**100**		
10	34	9.5	42	42	44	84	10	3			111.21	**100**
12	26	11.5	36	36	38	83	12	3	109.53	**120**		
12	40	11.5	50	50	52	97	12	3			125.69	**120**
16	32	15.0	42	42	44	92	16	3	152.39	**160**		
16	48	15.0	58	58	60	108	16	3			168.42	**160**
20	38	19.0	52	52	54	104	20	3	204.39	**200**		
20	56	19.0	70	70	72	122	20	3			239.95	**200**
25	45	24.0	63	63	65	121	25	3	293.77	**250**		
25	68	24.0	86	86	88	144	25	3			383.15	**250**
32	80	31.0	97	97	100	160	32	3			535.38	**320**

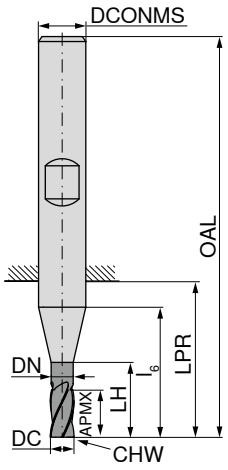
P		
M		
K		
N	●	●
S		
H		
O	●	●

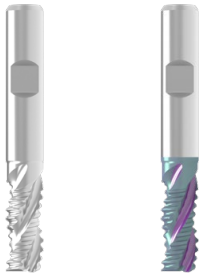
→ v_c/f_z Page 40–42

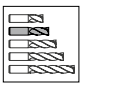
Rough milling cutter HSS-E Co 8

NR | λ_s=30° γ_s=14° | ZEFP









	DIN 69844	DIN 69844	DIN 844	DIN 844
	B	B	B	B
	50 153 ...	**54 026 ...**	**50 157 ...**	**54 027 ...**

DC $_{k12}$ mm	APMX mm	DN mm	LH mm	l_6 mm	LPR mm	OAL mm	DCONMS $_{h6}$ mm	CHW mm	ZEFP	£ U8		£ U8		£ U8		£ U8	
6	13	5.5	19	19	21	57	6	0.5	3	41.24	**060**	42.01	**060**				
6	24	5.5	30	30	32	68	6	0.5	3					48.81	**060**	50.64	**060**
7	16	6.5	22	24	26	66	10	0.5	3	46.24	**070**	53.09	**070**				
8	19	7.5	25	27	29	69	10	0.7	3	46.85	**080**	53.59	**080**				
8	38	7.5	44	46	48	88	10	0.7	3					52.73	**080**	65.99	**080**
9	19	8.5	26	27	29	69	10	0.7	3	50.49	**090**	56.94	**090**				
9	38	8.5	45	46	48	88	10	0.7	3					58.73	**090**	68.36	**090**
10	22	9.5	30	30	32	72	10	0.7	3	46.69	**100**	54.20	**100**				
10	45	9.5	53	53	55	95	10	0.7	3					60.11	**100**	69.35	**100**
11	22	10.5	30	32	34	79	12	0.7	3	53.12	**110**	61.73	**110**				
11	45	10.5	53	55	55	102	12	0.7	3					66.65	**110**	77.99	**110**
12	26	11.5	36	36	38	83	12	0.7	3	54.19	**120**	65.39	**120**				
12	53	11.5	63	63	65	110	12	0.7	3					64.20	**120**	79.22	**120**
14	26	11.5	36	36	38	83	12	0.9	3	63.47	**140**	69.46	**140**				
14	53	11.5	63	63	65	110	12	0.9	3					78.56	**140**	89.27	**140**
15	26	11.5	36	36	38	83	12	0.9	3	66.08	**150**	71.41	**150**				
15	53	11.5	63	63	65	110	12	0.9	3					90.13	**150**	90.09	**150**
16	32	15.0	42	42	44	92	16	0.9	3	70.18	**160**	92.74	**160**				
16	63	15.0	73	73	75	123	16	0.9	3					88.46	**160**	120.61	**160**
18	32	15.0	42	42	44	92	16	0.9	3	88.03	**180**	106.59	**180**				
18	63	15.0	73	73	75	123	16	0.9	3					110.44	**180**	132.09	**180**
20	38	19.0	52	52	54	104	20	0.9	3	106.05	**200**	125.69	**200**				
20	75	19.0	89	89	91	141	20	0.9	3					127.82	**200**	154.05	**200**
25	45	24.0	63	63	65	121	25	0.9	3	150.09	**250**	183.13	**250**				
25	90	24.0	108	108	110	166	25	0.9	3					189.89	**250**	235.23	**250**

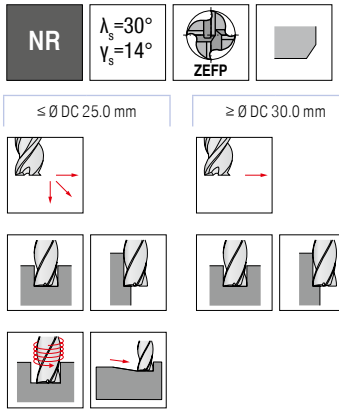
P	●	●	●	●
M	○	○	○	○
K	●	●	●	●
N	○	○	○	○
S	○	○	○	○
H				
O	○	○	○	○

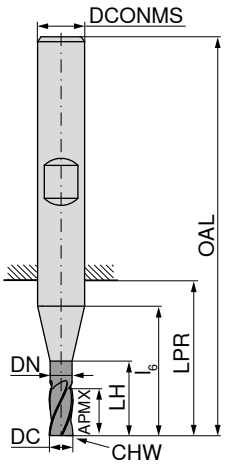
→ v_c/f_z Page 40–42

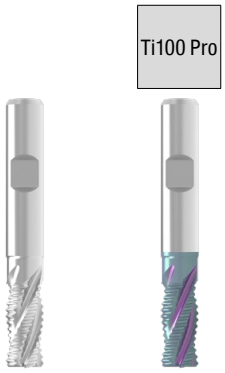
13

Rough milling cutter HSS-E Co 5

▲ > Ø 25,0 mm recessed centre







DIN 69844

B

50 125 ...

DIN 69844

B

54 030 ...

DC k12 mm	APMX mm	DN mm	LH mm	l_6 mm	LPR mm	OAL mm	DCONMS h6 mm	CHW mm	ZEFP	£ U8		£ U8	
6	13	5.5	19	19	21	57	6	0.5	4	35.73	060	34.67	060
7	16	6.5	22	24	26	66	10	0.5	4	43.60	070	46.89	070
8	19	7.5	25	27	29	69	10	0.7	4	36.61	080	42.41	080
9	19	8.5	26	27	29	69	10	0.7	4	45.33	090	53.30	090
10	22	9.5	30	30	32	72	10	0.7	4	36.61	100	48.31	100
11	22	10.5	30	32	32	79	12	0.7	4	54.04	110	59.49	110
12	26	11.5	36	36	38	83	12	0.7	4	50.83	120	53.92	120
13	26	11.5	36	36	38	83	12	0.7	4			67.22	130
14	26	11.5	36	36	38	83	12	0.9	4	53.33	140	60.62	140
15	26	11.5	36	36	38	83	12	0.9	4			78.93	150
16	32	15.0	42	42	44	92	16	0.9	4	60.59	160	79.32	160
18	32	15.0	42	42	44	92	16	0.9	4	67.85	180	89.19	180
20	38	19.0	52	52	54	104	20	0.9	4	84.26	200	106.06	200
22	38	19.0	52	52	54	104	20	0.9	4			130.25	220
24	45	23.0	61	63	65	121	25	0.9	4			162.91	240
25	45	24.0	63	63	65	121	25	0.9	4	123.92	250	162.00	250
30	45	24.0	63	63	65	121	25	1.1	5			213.54	300
32	53	31.0	70	70	73	133	32	1.1	6			220.46	320
40	63	38.0	80	80	85	155	40	1.1	6			436.43	400

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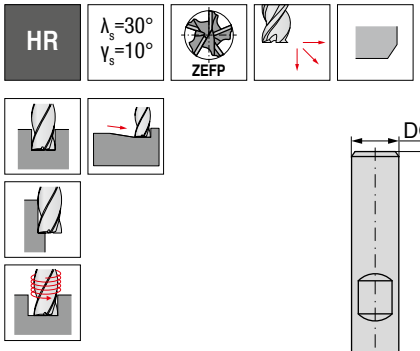
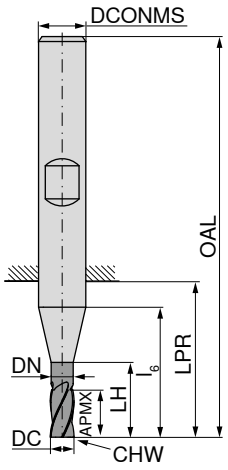
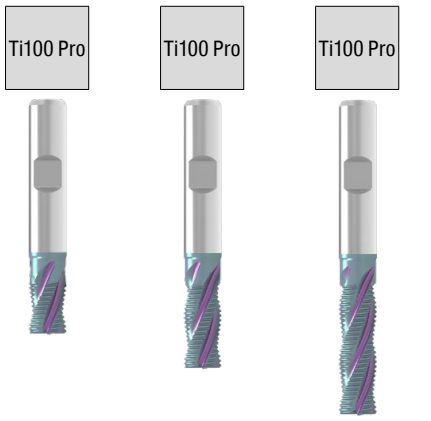
→ v_c/f_z Page 40–42

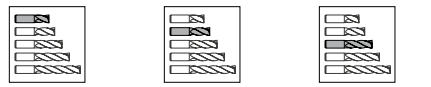
Powdersteel Fine rough milling cutter

HR | λ_s=30° γ_s=10° | ZEFP









Factory standard | DIN 844 | Factory standard

DC $_{k12}$ mm	APMX mm	DN mm	LH mm	l_6 mm	LPR mm	OAL mm	DCONMS $_{h6}$ mm	CHW mm	ZEFP	54 031 ... £ U8		54 032 ... £ U8		54 033 ... £ U8	
6	8	5.5	14	14	16	52	6	0.35	4	51.35	060				
6	13	5.5	19	19	21	57	6	0.35	4			37.67	060		
8	11	7.5	17	19	21	61	10	0.45	4	57.19	080				
8	19	7.5	25	27	29	69	10	0.45	4			51.05	080		
8	28	7.5	34	36	38	78	10	0.45	4					65.82	080
10	13	9.5	21	21	23	63	10	0.45	4	58.07	100				
10	22	9.5	30	30	32	72	10	0.45	4			53.12	100		
10	34	9.5	42	42	44	84	10	0.45	4					81.05	100
12	16	11.5	26	26	28	73	12	0.60	4	69.42	120				
12	26	11.5	36	36	38	83	12	0.60	4			58.58	120		
12	40	11.5	50	50	52	97	12	0.60	4					96.11	120
14	16	11.5	26	26	28	73	12	0.60	4	89.02	140				
14	26	11.5	36	36	38	83	12	0.60	4			66.77	140		
14	40	11.5	50	50	52	97	12	0.60	4					121.93	140
16	19	15.0	29	29	31	79	16	0.70	4	95.99	160				
16	32	15.0	42	42	44	92	16	0.70	4			88.71	160		
16	48	15.0	58	58	60	108	16	0.70	4					156.79	160
18	19	15.0	29	29	31	79	16	0.70	4	116.49	180				
18	32	15.0	42	42	44	92	16	0.70	4			102.50	180		
18	48	15.0	58	58	60	108	16	0.70	4					197.76	180
20	22	19.0	36	36	38	88	20	0.70	4	129.65	200				
20	38	19.0	52	52	54	104	20	0.70	4			113.93	200		
20	56	19.0	70	70	72	122	20	0.70	4					238.59	200
22	22	19.0	36	36	38	88	20	0.70	4	175.21	220				
22	38	19.0	52	52	54	104	20	0.70	4			183.29	220		
22	56	19.0	70	70	72	122	20	0.70	4					299.19	220
25	26	24.0	44	44	46	102	25	0.70	4	205.05	250				
25	45	24.0	63	63	65	121	25	0.70	4			171.75	250		
25	68	24.0	86	86	88	144	25	0.70	4					349.42	250
28	26	24.0	44	44	46	102	25	0.90	5	285.45	280				
30	45	24.0	63	63	65	121	25	0.90	5			272.53	300		
32	32	31.0	49	49	52	112	32	0.90	6	347.54	320				
32	53	31.0	70	70	73	133	32	0.90	6			241.88	320		

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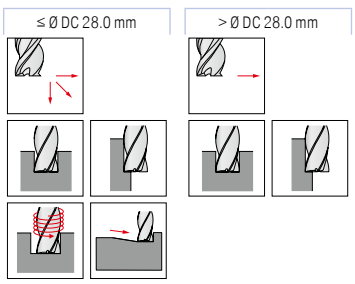
→ v_c/f_z Page 40–42

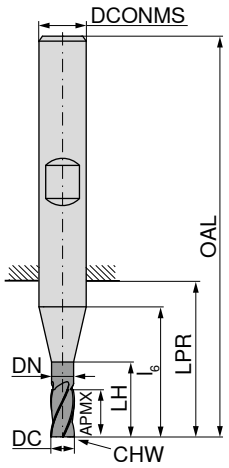
13

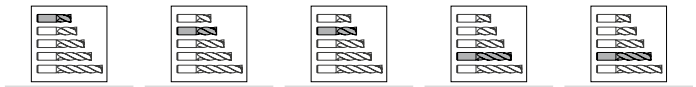
Fine profile milling cutter HSS-E Co 8

▲ > Ø 28,0 mm recessed centre

HR | λ_s=30° γ_s=10° | ZEFP







	Factory standard	DIN 69844	DIN 69844	DIN 844	DIN 844
B	●	●	●	●	●
	54 022 ...	**50 140 ...**	**54 023 ...**	**50 141 ...**	**54 024 ...**

DC $_{k12}$ mm	APMX mm	DN mm	LH mm	l_6 mm	LPR mm	OAL mm	DCONMS $_{h6}$ mm	CHW mm	ZEFP	£ U8		£ U8		£ U8		£ U8		£ U8	
4	11		11	17	19	55	6	0.35	3			44.17	**040**	48.06	**040**				
5	13		13	19	21	57	6	0.35	3			44.17	**050**	28.84	**050**				
6	8	5.5	14	14	16	52	6	0.35	4	36.71	**060**								
6	13	5.5	19	19	21	57	6	0.35	4			37.35	**060**	25.98	**060**				
6	24	5.5	30	30	32	68	6	0.35	4							64.95	**060**	49.68	**060**
8	11	7.5	17	19	21	61	10	0.45	4	43.02	**080**								
8	19	7.5	25	27	29	69	10	0.45	4			39.67	**080**	31.45	**080**				
8	38	7.5	44	46	48	88	10	0.45	4							75.69	**080**	69.30	**080**
10	13	9.5	21	21	23	63	10	0.45	4	39.35	**100**								
10	22	9.5	30	30	32	72	10	0.45	4			42.72	**100**	34.94	**100**				
10	45	9.5	53	53	55	95	10	0.45	4							81.05	**100**	72.26	**100**
12	16	11.5	26	26	28	73	12	0.60	4	46.99	**120**								
12	26	11.5	36	36	38	83	12	0.60	4			51.00	**120**	38.70	**120**				
12	53	11.5	63	63	65	110	12	0.60	4							90.36	**120**	79.32	**120**
14	16	11.5	26	26	28	73	12	0.60	4	62.44	**140**								
14	26	11.5	36	36	38	83	12	0.60	4			56.81	**140**	51.58	**140**				
14	53	11.5	63	63	65	110	12	0.60	4							98.23	**140**	103.99	**140**
16	19	15.0	29	29	31	79	16	0.70	4	63.66	**160**								
16	32	15.0	42	42	44	92	16	0.70	4			64.07	**160**	55.99	**160**				
16	63	15.0	73	73	75	123	16	0.70	4							118.24	**160**	115.13	**160**
18	19	15.0	29	29	31	79	16	0.70	4	84.32	**180**								
18	32	15.0	42	42	44	92	16	0.70	4			72.22	**180**	73.78	**180**				
18	63	15.0	73	73	75	123	16	0.70	4							136.85	**180**	135.89	**180**
20	22	19.0	36	36	38	88	20	0.70	4	85.72	**200**								
20	38	19.0	52	52	54	104	20	0.70	4			90.07	**200**	77.54	**200**				
20	75	19.0	89	89	91	141	20	0.70	4							161.98	**200**	149.49	**200**
22	38	19.0	52	52	54	114	20	0.70	4			114.78	**220**	99.91	**220**				
22	75	19.0	89	89	91	141	20	0.70	4							195.10	**220**	186.33	**220**
25	45	24.0	63	63	65	121	25	0.70	4			129.45	**250**	117.71	**250**				
25	90	24.0	108	108	110	166	25	0.70	4									297.31	**250**
28	45	24.0	63	63	65	121	25	0.90	5					139.39	**280**				
28	90	24.0	108	108	110	166	25	0.90	5									333.03	**280**
30	45	24.0	63	63	65	121	25	0.90	5					152.38	**300**				
30	90	24.0	108	108	110	166	25	0.90	5									347.76	**300**
32	53	31.0	70	70	73	133	32	0.90	6					171.09	**320**				
32	106	31.0	123	123	126	186	32	0.90	6									351.26	**320**

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H					
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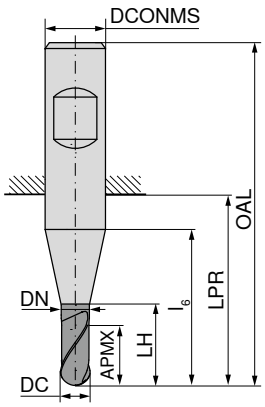
→ v_c/f_z Page 40–42

Ball nosed end milling cutter HSS-E Co 8



Factory standard | Factory standard | Factory standard

DC h10 mm	APMX mm	DN mm	LH mm	l_6 mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	50 320 ... £ U8		54 041 ... £ U8		50 321 ... £ U8	
2	4		4	10	12	48	6	2	35.02	020	33.04	020		
3	5		5	11	13	49	6	2	33.27	030	31.85	030		
3	8		8	18	20	56	6	2					38.76	030
4	7		7	13	15	51	6	2	33.27	040	31.85	040		
4	11		11	25	27	63	6	2					38.76	040
5	8		8	14	16	52	6	2	33.27	050	31.85	050		
5	13		13	30	32	68	6	2					39.84	050
6	8	5.50	14	14	16	52	6	2	32.97	060	31.73	060		
6	13	5.50	30	30	32	68	6	2					40.74	060
7	10	6.50	16	18	20	60	10	2	40.89	070	60.56	070		
7	16	6.35	36	38	40	80	10	2					48.37	070
8	11	7.50	17	19	21	61	10	2	36.48	080	56.28	080		
8	19	7.35	44	46	48	88	10	2					44.70	080
9	11	8.50	18	19	21	61	10	2	43.30	090	65.13	090		
9	19	8.35	45	46	48	88	10	2					50.28	090
10	13	9.50	21	21	23	63	10	2	41.57	100	42.08	100		
10	22	9.35	53	53	55	95	10	2					50.28	100
11	13	10.50	21	23	25	70	12	2	48.50	110				
11	22	10.50	53	55	57	102	12	2					56.00	110
12	16	11.50	26	26	28	73	12	2	46.77	120	48.42	120		
12	26	11.50	63	63	65	110	12	2					56.89	120
13	16	11.50	26	26	28	73	12	2	56.36	130	87.09	130		
14	16	11.50	26	26	28	73	12	2	54.19	140	62.13	140		
14	26	11.50	63	63	65	110	12	2					67.59	140
15	16	11.50	26	26	28	73	12	2	63.79	150	103.29	150		
15	26	11.50	63	63	65	110	12	2					85.61	150
16	19	15.50	29	29	31	79	16	2	66.39	160	105.71	160		
16	32	15.00	73	73	75	123	16	2					85.61	160
18	19	15.50	29	29	31	79	16	2	82.38	180	91.82	180		
18	32	15.00	73	73	75	123	16	2					107.38	180
20	22	19.00	36	36	38	88	20	2	87.89	201	95.60	201		
22	22	19.00	36	36	38	88	20	2	119.98	220				
24	26	23.00	42	44	46	102	25	2	114.78	240	190.97	240		
24	45	23.00	106	108	110	166	25	2					161.70	240
25	26	24.00	44	44	46	102	25	2	114.78	250				
25	45	24.00	108	108	110	166	25	2					151.63	250
26	26	24.00	44	44	46	102	25	2	157.34	260				
28	26	24.00	44	44	46	102	25	2	157.47	280				
30	26	24.00	44	44	46	102	25	2	172.04	300				
30	45	24.00	108	108	110	166	25	2					219.04	300

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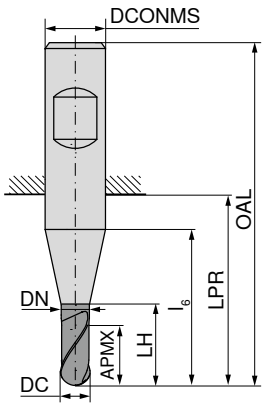
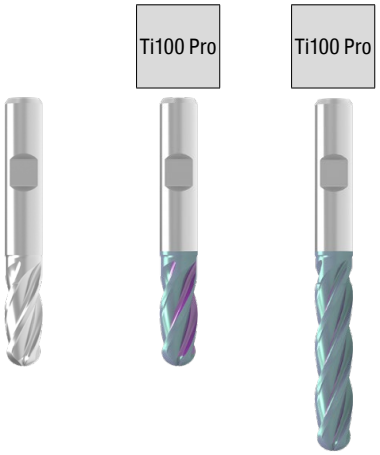
→ v_c/f_z Page 40–42

13

Ball nosed cutter HSS-E Co 8

H | λ_s=30° γ_s= 6° | ZEFP





DIN 1889 B | DIN 1889 B | DIN 1889 B

B | B | B

		50 308 ...		54 038 ...		54 039 ...	
DC $_{k12}$ mm	APMX mm	DN mm	LH mm	l_6 mm	LPR mm	OAL mm	DCONMS $_{h6}$ mm	ZEFP	£ U8		£ U8		£ U8	
6	13	5.5	19	19	21	57	6	4	93.57	**060**	71.89	**060**		
6	24	5.5	30	30	32	68	6	4					84.19	**060** [1]
8	19	7.5	25	27	29	69	10	4	114.78	**080**	94.26	**080**		
8	38	7.5	44	46	48	88	10	4					109.61	**080** [1]
10	22	9.5	30	30	32	72	10	4	126.25	**100**	101.18	**100**		
10	45	9.5	53	53	55	95	10	4					119.08	**100**
12	26	11.5	36	36	38	83	12	4	124.36	**120**	113.39	**120**		
12	53	11.5	63	63	65	110	12	4					134.55	**120**
16	32	15.0	42	42	44	92	16	4	185.67	**160**	163.74	**160**		
16	63	15.0	73	73	75	123	16	4					193.62	**160**
20	38	19.0	52	52	54	104	20	4			213.43	**200**		
20	75	19.0	89	89	91	141	20	4					261.94	**200**
25	45	24.0	63	63	65	121	25	5			276.37	**250**		
P									●		●		●	
M									○		○		○	
K									●		●		●	
N									○		○		○	
S									○		○		○	
H														
O									○		○		○	

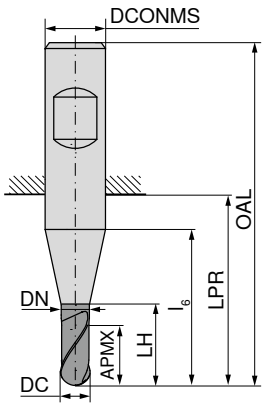
1) Factory standard

→ 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

54 040 ...

DC $_{js14}$ mm	APMX mm	DN mm	LH mm	l_6 mm	LPR mm	OAL mm	DCONMS $_{h6}$ mm	ZEFP	£ U8	
6	13	5.5	19	19	21	57	6	4	84.19	**060**
8	19	7.5	25	27	29	69	10	4	103.81	**080**
10	22	9.5	30	30	32	72	10	4	104.23	**100**
12	26	11.5	36	36	38	83	12	4	121.12	**120**
16	32	15.0	42	42	44	92	16	4	179.17	**160**
20	38	19.0	52	52	54	104	20	4	218.64	**200**

P	●
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K	●
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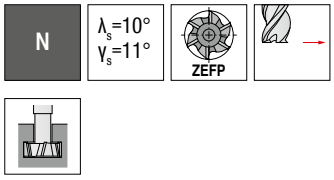
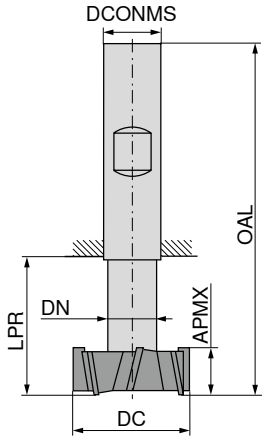
→ v_c/f_z Page 40–42

13

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

▲ For slots according to DIN 650





DIN 851 A

B 

50 240 ...

DC $_{d11}$ mm	APMX $_{d11}$ mm	DN $_{h12}$ mm	LPR mm	OAL mm	DCONMS $_{h6}$ mm	ZEFP	£ U6	
11.0	4	4	13.5	53.5	10	6	92.43	**110**
12.5	6	5	17.0	57.0	10	6	90.13	**125**
16.0	8	7	22.0	62.0	10	6	102.06	**160**
18.0	8	8	25.0	70.0	12	6	115.96	**180**
19.0	9	8	26.0	71.0	12	6	147.82	**190** 1)
21.0	9	10	29.0	74.0	12	6	132.71	**210**
22.0	10	10	30.0	75.0	12	6	172.66	**220** 1)
25.0	11	12	34.0	82.0	16	8	156.04	**250**
28.0	12	13	37.0	85.0	16	8	210.49	**280** 1)
32.0	14	15	42.0	90.0	16	8	224.22	**320**
36.0	16	17	47.0	103.0	25	8	341.97	**360** 1)
40.0	18	19	52.0	108.0	25	10	457.01	**400**
45.0	20	21	57.0	113.0	25	10	486.41	**450** 1)
50.0	22	25	64.0	124.0	32	10	584.12	**500**
60.0	28	30	79.0	139.0	32	10	763.41	**600**

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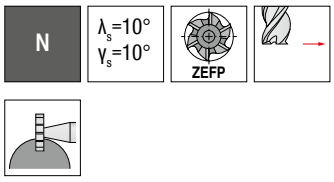
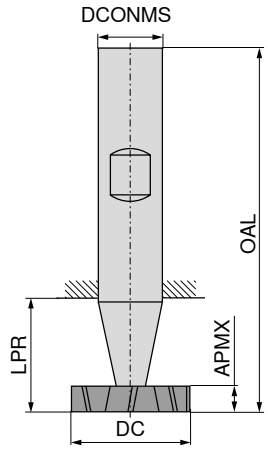
1) Factory standard

→ v_c/f_z Page 43

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

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





DIN 850
B

50 234 ...

DC h12 mm	APMX e8 mm	LPR mm	OAL mm	DCONMS h6 mm	CDX mm	ZEFP	£ U6	
10.5	2.0	14	50	6	3.25	6	69.42	**100**
10.5	2.5	14	50	6	3.15	6	69.42	**101**
10.5	3.0	14	50	6	3.15	6	69.42	**102**
13.5	2.0	16	56	10	4.45	6	69.35	**130** 1)
13.5	3.0	16	56	10	4.45	6	69.35	**132**
13.5	4.0	16	56	10	4.45	6	69.35	**133**
16.5	3.0	16	56	10	5.95	6	75.26	**161**
16.5	4.0	16	56	10	5.95	6	75.26	**162**
16.5	5.0	16	56	10	5.75	6	75.26	**163**
19.5	3.0	23	63	10	6.95	8	83.59	**190** 1)
19.5	4.0	23	63	10	6.95	8	83.59	**191**
19.5	5.0	23	63	10	6.75	8	83.59	**192**
22.5	4.0	23	63	10	8.25	8	98.62	**220** 1)
22.5	5.0	23	63	10	8.25	8	98.62	**221**
22.5	6.0	23	63	10	8.00	8	98.62	**222**
25.5	5.0	23	63	10	9.00	10	102.83	**250** 1)
25.5	6.0	23	63	10	9.00	10	102.83	**251**
28.5	6.0	23	63	10	10.00	10	143.28	**281**
28.5	8.0	23	63	10	10.00	10	143.28	**283**
32.5	6.0	26	71	12	12.00	10	146.22	**321** 1)
32.5	8.0	26	71	12	12.00	10	146.22	**322**
38.5	8.0	26	71	12	13.35	10	212.18	**381** 1)
45.5	10.0	26	71	12	16.85	12	259.19	**450**

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1) Factory standard

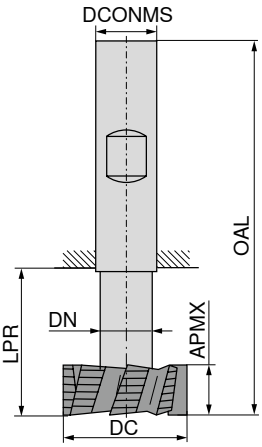
→ v_c/f_z Page 43

13

T-slot milling cutter HSS-E Co 5

▲ For slots according to DIN 650

NF | λ_s=20° γ_s=11° | ZEFP



DIN 851 A

B 

50 241 ...

DC $_{d11}$ mm	APMX mm	DN $_{h12}$ mm	LPR mm	OAL mm	DCONMS $_{h6}$ mm	ZEFP	£ U6	
21	9	10	29	74	12	6	193.37	**210**
22	10	10	30	75	12	6	228.23	**220** 1)
25	11	12	34	82	16	6	231.55	**250**
28	12	13	37	85	16	6	247.72	**280** 1)
32	14	15	42	90	16	6	320.01	**320**
36	16	17	47	103	25	6	395.71	**360** 1)
40	18	19	52	108	25	8	481.07	**400**
45	20	21	57	113	25	8	580.34	**450** 1)

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S	○
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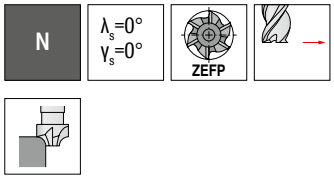
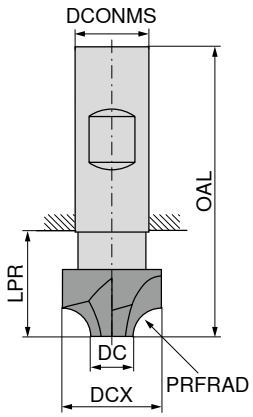
O	○

1) Factory standard

→ v_c/f_z Page 43

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





DIN 6518

B

50 248 ...

PRFRAD h11 mm	DCX mm	DC mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	£ U6	
1.0	8	6	20	60	10	4	78.02	**010**
1.5	9	6	20	60	10	4	81.91	**015**
2.0	10	6	20	60	10	4	78.02	**020**
2.5	11	6	20	60	10	4	81.91	**025**
3.0	12	6	15	60	12	4	81.91	**030**
4.0	14	6	15	60	12	4	87.85	**040**
5.0	16	6	15	60	12	4	104.19	**050**
6.0	20	8	19	67	16	4	121.42	**060**
8.0	24	8	23	71	16	4	143.35	**080**
9.0	26	8	29	85	25	4	199.46	**090**
10.0	28	8	29	85	25	4	181.23	**100**
12.0	34	10	34	90	25	4	259.74	**120**
15.0	46	16	44	100	25	6	484.59	**150**
16.0	48	16	44	100	25	6	508.82	**160**

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K	●
N	○
S	○
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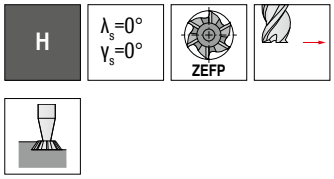
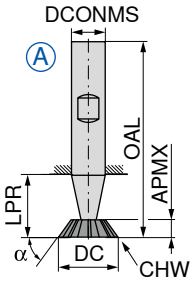
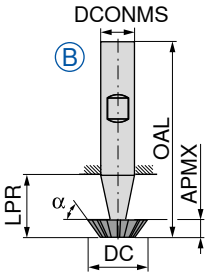
→ v_c/f_z Page 43

13

Single angle miling cutters HSS-E Co 5







α°	DC mm	APMX mm	LPR mm	OAL mm	DCONMS h6 mm	CHW mm	ZEFP	Fig.	DIN 1833 B 50 246 ... £ U6		DIN 1833 B 50 245 ... £ U6	
45	16	4.0	15	60	12	0.3	10	A			77.33	016
	16	4.0	15	60	12		10	B	88.38	016		
	20	5.0	18	63	12	0.3	10	A			116.41	020
	20	5.0	18	63	12		10	B	116.41	020		
	25	6.3	22	67	12	0.3	10	A			138.41	025
	25	6.3	22	67	12		10	B	138.41	025		
60	16	6.3	15	60	12	0.3	10	A			88.38	116
	16	6.3	15	60	12		10	B	88.38	116		
	20	8.0	18	63	12	0.3	10	A			116.41	120
	20	8.0	18	63	12		10	B	116.41	120		
	25	10.0	22	67	12	0.3	10	A			121.12	125
	25	10.0	22	67	12		10	B	138.41	125		
70	16	7.0	15	60	12	0.3	10	A			117.67	216 1)
	20	9.0	18	63	12	0.3	10	A			148.17	220 1)
	25	11.0	19	67	16	0.3	10	A			198.01	225 1)
P										●		●
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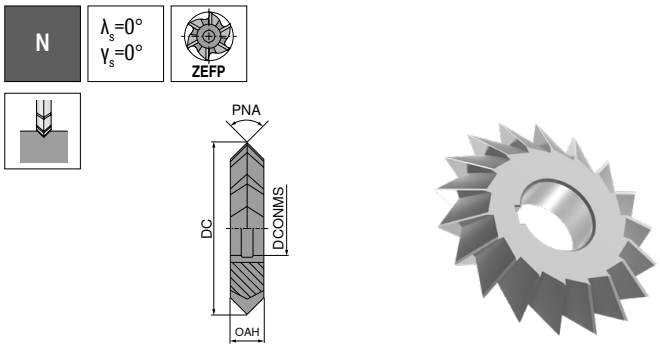
S										○		○
H												
O										○		○

1) Factory standard

→ v_c/f_z Page 44

Double angle milling cutter HSS

▲ with keyway to DIN 138



DIN 847

50 360 ...

PNA °	DC mm	OAH mm	DCONMS mm	ZEFP	£ U6	
45	50	8	16	22	146.06	045
	63	10	22	24	182.16	145
	80	12	27	26	281.34	245
	100	18	32	28	421.50	345
60	50	10	16	18	146.06	060
	63	14	22	20	203.02	160
	80	18	27	22	326.50	260
	100	25	32	24	523.11	360
90	50	14	16	16	173.22	090
	63	20	22	18	220.84	190
	80	22	27	20	359.37	290
	100	32	32	24	600.51	390
120	50	14	16	16	195.41	120 1)
	63	20	22	16	277.64	121 1)

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M	○
K	●
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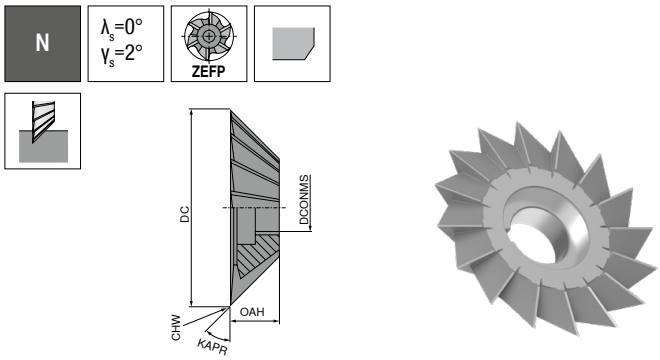
O	○

1) Factory standard

→ v_c/f_z Page 44

Shell type single angle milling cutter HSS

▲ with keyway to DIN 138



DIN 842 A

50 362 ...

KAPR °	DC mm	OAH mm	DCONMS mm	CHW mm	ZEFP	£ U6	
45	40	10	10	0.3	14	163.21	045
	50	13	13	0.3	16	224.37	145
	63	18	16	0.3	18	283.67	245
	80	22	22	0.3	20	400.61	345
	100	28	27	0.3	22	604.92	445
50	50	16	13	0.3	16	224.37	150
60	40	13	10	0.3	14	146.22	060
	50	16	13	0.3	16	179.60	160
	63	20	16	0.3	18	251.21	260
	80	25	22	0.3	20	403.02	360
	100	32	27	0.3	22	613.94	460
	125	40	32	0.3	28	1,034.29	560

P	●
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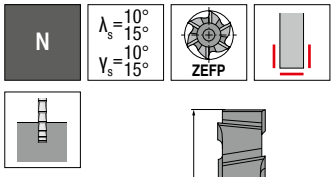
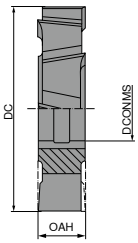
→ v_c/f_z Page 44

13

Side and face milling cutter HSS-E Co 5

▲ Coarse cross-pitched
▲ with keyway to DIN 138





DIN 885 A

50 348 ...

DC js16 mm	OAH k11 mm	DCONMS H7 mm	ZEFP	£ U6	
50	4	16	12	156.02	100
50	5	16	12	158.50	102
50	6	16	12	161.11	104
50	8	16	12	179.27	106
50	10	16	12	192.94	108
63	4	22	12	169.54	200
63	5	22	12	180.58	202
63	6	22	12	177.82	204
63	8	22	12	196.12	206
63	10	22	12	220.67	208
63	12	22	12	248.27	210
63	14	22	12	281.25	212
80	5	27	14	228.80	300
80	6	27	14	232.42	302
80	8	27	14	248.27	304
80	10	27	14	254.50	306
80	12	27	14	286.62	308
80	14	27	14	328.29	310
80	16	27	14	355.61	312
80	18	27	14	413.70	314
80	20	27	14	442.63	316
100	6	32	14	333.10	400
100	8	32	14	330.91	402
100	10	32	14	354.30	404
100	12	32	14	382.03	406
100	14	32	14	426.06	408
100	16	32	14	449.46	410
100	18	32	14	528.34	412
100	20	32	14	522.38	414
100	25	32	14	675.49	418
125	8	32	16	438.41	500
125	10	32	16	470.07	502
125	12	32	16	510.17	504
125	14	32	16	574.82	506
125	16	32	16	606.32	508
125	18	32	16	657.34	510
125	20	32	16	700.48	512
125	25	32	16	846.16	516
160	10	40	18	693.06	600
160	12	40	18	774.55	602
160	14	40	18	816.96	604
160	16	40	18	879.13	606
160	18	40	18	982.56	608
160	20	40	18	992.15	610
160	25	40	18	1,216.88	614
160	32	40	18	1,543.42	618

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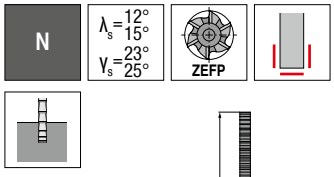
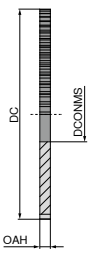
→ v_c/f_z Page 45

Narrow side and face milling cutter HSS-E Co 5

▲ Coarse cross-pitched
▲ with keyway to DIN 138





Factory standard

50 342 ...

DC js16 mm	OAH k11 mm	DCONMS H7 mm	ZEFP	£ U6	
63	1.6	22	16	165.76	200
63	2.0	22	16	146.73	202
63	2.5	22	16	149.92	204
63	3.0	22	16	153.99	206
80	1.6	27	20	177.23	300
80	2.0	27	20	172.17	302
80	2.5	27	20	175.21	304
80	3.0	27	20	179.83	306
80	4.0	27	20	192.77	310
100	1.6	32	24	226.19	400
100	2.0	32	24	224.87	402
100	2.5	32	24	224.58	404
100	3.0	32	24	228.65	406
100	4.0	32	24	246.67	410
100	5.0	32	24	261.35	414
125	1.6	32	26	285.89	500
125	2.0	32	26	275.12	502
125	2.5	32	26	281.97	504
125	3.0	32	26	288.67	506
125	4.0	32	26	309.28	510
125	5.0	32	26	331.09	514
125	6.0	32	26	320.17	516
160	2.0	40	30	443.07	600
160	2.5	40	30	426.50	602
160	3.0	40	30	434.65	604
160	4.0	40	30	459.34	606
160	5.0	40	30	486.35	608
160	6.0	40	30	522.22	610
160	8.0	40	22	596.16	612

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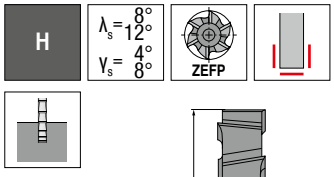
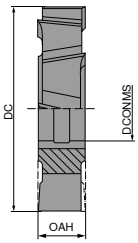
O	●

→ 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

50 349 ...

DC js16 mm	OAH k11 mm	DCONMS H7 mm	ZEFP	£ U6	
50	4	16	16	183.32	100
50	5	16	16	184.51	102
50	6	16	16	194.08	104
50	8	16	16	208.60	106
50	10	16	16	228.34	108
63	4	22	18	200.78	200
63	5	22	18	215.73	202
63	6	22	18	207.01	204
63	8	22	18	232.12	206
63	10	22	18	258.99	208
63	12	22	18	294.17	210
63	14	22	18	330.34	212
80	5	27	20	271.07	300
80	6	27	20	280.07	302
80	8	27	20	291.54	304
80	10	27	18	298.82	306
80	12	27	18	336.60	308
80	14	27	18	388.73	310
80	16	27	18	421.40	312
80	18	27	18	485.78	314
80	20	27	18	486.06	316
100	6	32	22	391.05	400
100	8	32	22	388.58	402
100	10	32	20	419.54	404
100	12	32	20	452.51	406
100	14	32	20	504.64	408
100	16	32	20	532.25	410
100	18	32	20	625.37	412
100	20	32	20	629.58	414
100	25	32	20	779.18	418
125	8	32	24	519.18	500
125	10	32	22	556.66	502
125	12	32	22	598.77	504
125	14	32	22	674.89	506
125	16	32	22	699.60	508
125	18	32	22	805.91	510
125	20	32	22	822.48	512
125	25	32	22	984.74	516
160	10	40	26	828.01	600
160	12	40	26	901.50	602
160	14	40	26	968.06	604
160	16	40	26	1,041.40	606
160	18	40	26	1,143.51	608
160	20	40	26	1,144.69	610
160	25	40	26	1,429.09	614
160	32	40	26	1,796.32	618

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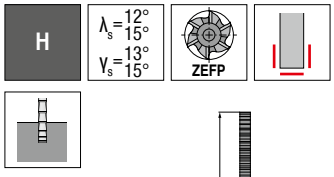
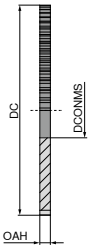
→ v_c/f_z Page 45

Narrow side and face milling cutter HSS-E Co 5

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





DIN 1834 A

50 340 ...

DC js16 mm	OAH k11 mm	DCONMS H7 mm	ZEFP	£ U6	
63	1.6	22	28	139.27	200
63	2.0	22	28	136.99	202
63	2.5	22	28	139.91	204
63	3.0	22	28	143.81	206
80	1.6	27	32	165.48	300
80	2.0	27	32	160.67	302
80	2.5	27	32	163.43	304
80	3.0	27	32	168.08	306
80	4.0	27	32	179.83	310
100	1.6	32	36	197.86	400
100	2.0	32	36	196.71	402
100	2.5	32	36	196.71	404
100	3.0	32	36	200.17	406
100	4.0	32	36	215.73	410
100	5.0	32	36	236.79	414
125	1.6	32	40	259.16	500
125	2.0	32	40	249.14	502
125	2.5	32	40	256.60	504
125	3.0	32	40	261.62	506
125	4.0	32	40	280.22	510
125	5.0	32	40	300.12	514
125	6.0	32	40	290.13	516
160	2.0	40	48	415.32	600
160	2.5	40	48	399.92	602
160	3.0	40	48	407.48	604
160	4.0	40	48	430.72	606
160	5.0	40	48	455.99	608
160	6.0	40	48	489.56	610
160	8.0	40	36	558.84	612

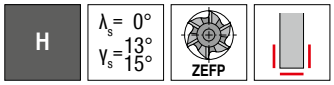
P	●
M	
K	●
N	●
S	●
H	
O	●

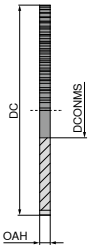
→ v_c/f_z Page 45

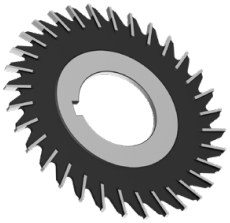
13

Narrow side and face milling cutter HSS-E Co 5

- straight cut
- with keyway to DIN 138







				DIN 1834 B	
				50 341 ...	
DC js16 **mm**	OAH k11 mm	DCONMS H7 mm	ZEFP	£ U6	
63	1.6	22	32	182.32	**200**
63	2.0	22	32	161.42	**202**
63	2.5	22	32	164.72	**204**
63	3.0	22	32	169.38	**206**
80	1.6	27	36	194.95	**300**
80	2.0	27	36	189.43	**302**
80	2.5	27	36	192.62	**304**
80	3.0	27	36	197.70	**306**
80	4.0	27	36	211.94	**310**
100	1.6	32	40	233.15	**400**
100	2.0	32	40	231.84	**402**
100	2.5	32	40	231.70	**404**
100	3.0	32	40	235.91	**406**
100	4.0	32	40	254.37	**410**
100	5.0	32	40	269.61	**414**
125	1.6	32	44	314.63	**500**
125	2.0	32	44	302.60	**502**
125	2.5	32	44	309.98	**504**
125	3.0	32	44	317.70	**506**
125	4.0	32	44	340.21	**510**
125	5.0	32	44	364.18	**514**
125	6.0	32	44	352.03	**516**
160	2.0	40	52	487.21	**600**
160	2.5	40	52	469.06	**602**
160	3.0	40	52	478.20	**604**
160	4.0	40	52	505.24	**606**
160	5.0	40	52	535.03	**608**
160	6.0	40	52	574.37	**610**
160	8.0	40	40	655.59	**612**

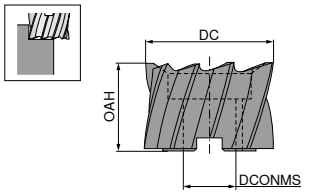
P	●
M	○
K	●
N	●
S	○
H	
O	●

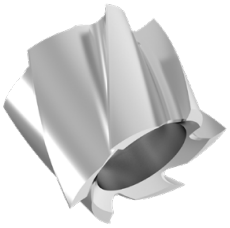
→ v_c/f_z Page 45

Face milling cutters HSS-E Co 5

▲ with keyway to DIN 138

W | λ_s=30° γ_s=24° | ZEFP





DIN 1880

50 255 ...

DC $_{k10}$ mm	OAH mm	DCONMS mm	ZEFP	£ U8	
40	32	16	6	167.48	040
50	36	22	6	213.21	050
63	40	27	6	285.08	063
80	45	27	6	420.69	080
100	50	32	6	682.11	100

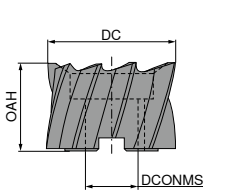
P	
M	
K	
N	●
S	
H	
O	●

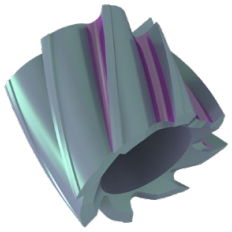
→ v_c/f_z Page 46+47

Face milling cutters HSS-E Co 5

▲ with keyway to DIN 138

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





DIN 1880

54 035 ...

DC $_{k10}$ mm	OAH mm	DCONMS mm	ZEFP	£ U8	
40	32	16	8	233.54	040
50	36	22	8	286.45	050
63	40	27	8	264.00	063
80	45	27	10	410.40	080
100	50	32	12	687.78	100

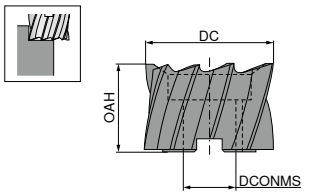
P	●
M	●
K	●
N	●
S	○
H	
O	●

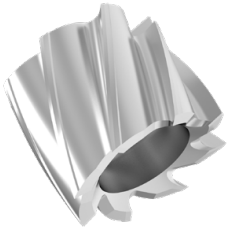
→ v_c/f_z Page 46+47

Face milling cutters HSS-E Co 5

▲ with keyway to DIN 138

N | λ_s=25° γ_s=10° | ZEFP





DIN 1880

50 250 ...

DC $_{k10}$ mm	OAH mm	DCONMS mm	ZEFP	£ U8	
40	32	16	8	159.10	040
50	36	22	8	203.95	050
63	40	27	8	289.80	063
80	45	27	10	425.10	080
100	50	32	12	676.31	100

P	●
M	●
K	●
N	●
S	○
H	
O	●

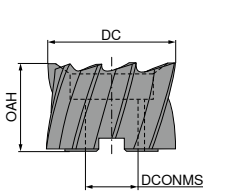
→ v_c/f_z Page 46+47

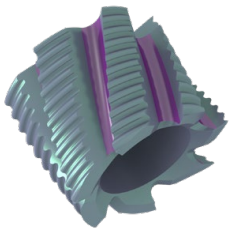
Roughing-finishing face milling cutters HSS-Co 5

▲ 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





DIN 1880

54 036 ...

DC $_{js14}$ mm	OAH mm	DCONMS mm	ZEFP	£ U8	
40	32	16	7	157.62	040
50	36	22	8	202.25	050
63	40	27	8	413.66	063
80	45	27	10	623.99	080
100	50	32	12	931.04	100

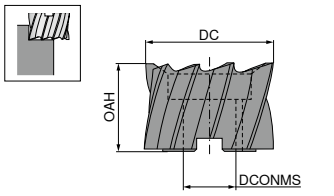
P	●
M	●
K	●
N	●
S	○
H	
O	●

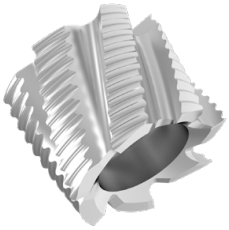
→ v_c/f_z Page 46+47

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





DIN 1880

50 260 ...

DC js14 mm	OAH mm	DCONMS mm	ZEFP	£ U8	
40	32	16	7	162.11	**040**
50	36	22	8	214.99	**050**
63	40	27	8	287.78	**063**
80	45	27	10	397.45	**080**
100	50	32	12	602.93	**100**

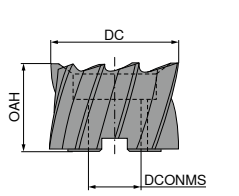
P	●
M	●
K	●
N	●
S	○
H	
O	●

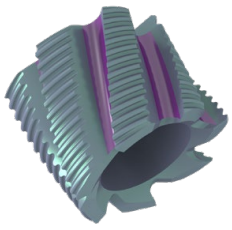
→ v_c/f_z Page 46+47

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





DIN 1880

54 037 ...

DC js14 mm	OAH mm	DCONMS mm	ZEFP	£ U8	
40	32	16	7	166.97	**040**
50	36	22	8	206.43	**050**
63	40	27	8	446.90	**063**
80	45	27	10	443.76	**080**
100	50	32	12	712.01	**100**

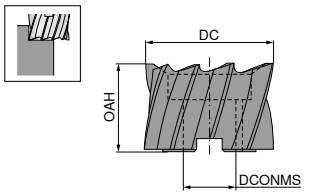
P	●
M	●
K	●
N	●
S	○
H	
O	●

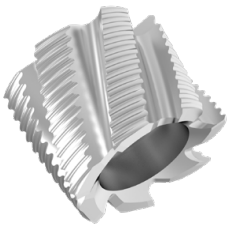
→ v_c/f_z Page 46+47

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





DIN 1880

50 297 ...

DC js14 mm	OAH mm	DCONMS mm	ZEFP	£ U8	
40	32	16	7	162.11	**040**
50	36	22	8	214.99	**050**
63	40	27	8	287.78	**063**
80	45	27	10	397.45	**080**
100	50	32	12	617.10	**100**

P	●
M	●
K	●
N	●
S	○
H	
O	●

→ v_c/f_z Page 46+47

Material examples for cutting data tables

	Material sub-group	Index	Composition / Structure / Heat treatment		Tensile strength N/mm²* / HB / HRC	Material number	Material designation	Material number	Material designation
P	Unalloyed steel	P.1.1	< 0,15 % C	Annealed	420 N/mm² / 125 HB	1.0401	C15	1.1141	Ck15
		P.1.2	< 0,45 % C	Annealed	640 N/mm² / 190 HB	1.1191	C45E	1.0718	9SMnPb28
		P.1.3		Tempered	840 N/mm² / 250 HB	1.1191	C45E	1.0535	C55
		P.1.4	< 0,75 % C	Annealed	910 N/mm² / 270 HB	1.1223	C60R	1.0535	C55
		P.1.5		Tempered	1010 N/mm² / 300 HB	1.1223	C60R	1.0727	45S20
	Low-alloy steel	P.2.1		Annealed	610 N/mm² / 180 HB	1.7131	16MnCr5	1.6587	17CrNiMo6
		P.2.2		Tempered	930 N/mm² / 275 HB	1.7131	16MnCr5	1.6587	17CrNiMo6
		P.2.3		Tempered	1010 N/mm² / 300 HB	1.7225	42CrMo4	1.3505	100Cr6
		P.2.4		Tempered	1200 N/mm² / 375 HB	1.7225	42CrMo4	1.3505	100Cr6
	High-alloy steel and high-alloy tool steel	P.3.1		Annealed	680 N/mm² / 200 HB	1.4021	X20Cr13	1.4034	X46Cr13
		P.3.2		Hardened and tempered	1100 N/mm² / 300 HB	1.2343	X38CrMoV5-1	1.4034	X46Cr13
		P.3.3		Hardened and tempered	1300 N/mm² / 400 HB	1.2343	X38CrMoV5-1	1.4034	X46Cr13
	Stainless steel	P.4.1	Ferritic / martensitic	Annealed	680 N/mm² / 200 HB	1.4016	X6Cr17	1.2316	X36CrMo16
		P.4.2	Martensitic	Tempered	1010 N/mm² / 300 HB	1.4112	X90CrMoV18	1.2316	X36CrMo16
M	Stainless steel	M.1.1	Austenitic / austenitic-ferritic	Quenched	610 N/mm² / 180 HB	1.4301	X5CrNi18-10	1.4571	X6CrNiMoTi17-12-2
		M.2.1	Austenitic	Tempered	300 HB	1.4841	X15CrNiSi25-21	1.4539	X1NiCrMoCu25-20-5
		M.3.1	Austenitic / ferritic (Duplex)		780 N/mm² / 230 HB	1.4462	X2CrNiMoN22-5-3	1.4501	X2CrNiMoCuWN25-7-4
K	Grey cast iron	K.1.1	Pearlitic / ferritic		350 N/mm² / 180 HB	0.6010	GG-10	0.6025	GG-25
		K.1.2	Pearlitic (martensitic)		500 N/mm² / 260 HB	0.6030	GG-30	0.6045	GG-45
	Spherulitic graphite cast iron	K.2.1	Ferritic		540 N/mm² / 160 HB	0.7040	GGG-40	0.7060	GGG-60
		K.2.2	Pearlitic		845 N/mm² / 250 HB	0.7070	GGG-70	0.7080	GGG-80
	Malleable iron	K.3.1	Ferritic		440 N/mm² / 130 HB	0.8035	GTW-35-04	0.8045	GTW-45
		K.3.2	Pearlitic		780 N/mm² / 230 HB	0.8165	GTS-65-02	0.8170	GTS-70-02
N	Aluminium wrought alloy	N.1.1	Non-hardenable		60 HB	3.0255	Al99,5	3.3315	AlMg1
		N.1.2	Hardenable	Age-hardened	340 N/mm² / 100 HB	3.1355	AlCuMg2	3.2315	AlMgSi1
	Cast aluminium alloy	N.2.1	≤ 12 % Si, non-hardenable		250 N/mm² / 75 HB	3.2581	G-AlSi12	3.2163	G-AlSi9Cu3
		N.2.2	≤ 12 % Si, hardenable	Age-hardened	300 N/mm² / 90 HB	3.2134	G-AlSi5Cu1Mg	3.2373	G-AlSi9Mg
		N.2.3	> 12 % Si, non-hardenable		440 N/mm² / 130 HB		G-AlSi17Cu4Mg		G-AlSi18CuNiMg
	Copper and copper alloys (bronze/brass)	N.3.1	Free-machining alloys, PB > 1 %		375 N/mm² / 110 HB	2.0380	CuZn39Pb2 (Ms58)	2.0410	CuZn44Pb2
		N.3.2	CuZn, CuSnZn		300 N/mm² / 90 HB	2.0331	CuZn15	2.4070	CuZn28Sn1As
		N.3.3	CuSn, lead-free copper and electrolytic copper		340 N/mm² / 100 HB	2.0060	E-Cu57	2.0590	CuZn40Fe
	Magnesium alloys	N.4.1	Magnesium and magnesium alloys		70 HB	3.5612	MgAl6Zn	3.5312	MgAl3Zn
S	Heat-resistant alloys	S.1.1	Fe - basis	Annealed	680 N/mm² / 200 HB	1.4864	X12NiCrSi 36-16	1.4865	G-X40NiCrSi38-18
		S.1.2		Age-hardened	950 N/mm² / 280 HB	1.4980	X6NiCrTiMoVB25-15-2	1.4876	X10NiCrAlTi32-20
		S.2.1	Ni or Co basis	Annealed	840 N/mm² / 250 HB	2.4631	NiCr20TiAl (Nimonic80A)	3.4856	NiCr22Mo9Nb
		S.2.2		Age-hardened	1180 N/mm² / 350 HB	2.4668	NiCr19Nb5Mo3 (Inconel 718)	2.4955	NiFe25Cr20NbTi
		S.2.3		Cast	1080 N/mm² / 320 HB	2.4765	CoCr20W15Ni	1.3401	G-X120Mn12
	Titanium alloys	S.3.1	Pure titanium		400 N/mm²	3.7025	Ti99,8	3.7034	Ti99,7
		S.3.2	Alpha + beta alloys	Age-hardened	1050 N/mm² / 320 HB	3.7165	TiAl6V4	Ti-6246	Ti-6Al-2Sn-4Zr-6Mo
		S.3.3	Beta alloys		1400 N/mm² / 410 HB	Ti555.3	Ti-5Al-5V-5Mo-3Cr	R56410	Ti-10V-2Fe-3Al
H	Hardened steel	H.1.1		Hardened and tempered	46–55 HRC				
		H.1.2		Hardened and tempered	56–60 HRC				
		H.1.3		Hardened and tempered	61–65 HRC				
		H.1.4		Hardened and tempered	66–70 HRC				
	Chilled iron	H.2.1		Cast	400 HB				
	Hardened cast iron	H.3.1		Hardened and tempered	55 HRC				
O	Non-metal materials	O.1.1	Plastics, duroplastic		≤ 150 N/mm²				
		O.1.2	Plastics, thermoplastic		≤ 100 N/mm²				
		O.2.1	Aramid fibre-reinforced		≤ 1000 N/mm²				
		O.2.2	Glass/carbon-fibre reinforced		≤ 1000 N/mm²				
		O.3.1	Graphite						

*** Tensile strength**

13

Cutting data – slot and end milling cutters

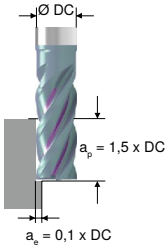
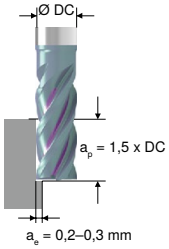
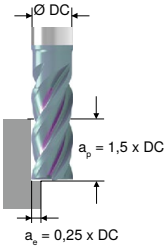
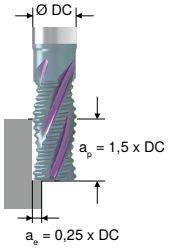
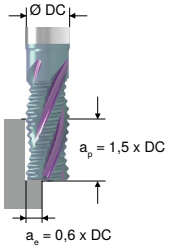
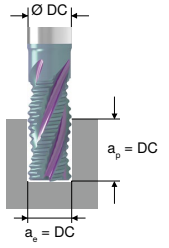
		uncoated	Ti100 Pro	Powder steel	● 1st choice		
				Ti100 Pro	○ suitable		
Index	Kf f_z	v_c in m/min			Emulsion	Compressed air	MMS
P.1.1	1,2	20	45	50	●		
P.1.2	1,2	20	45	50	●		
P.1.3	1,2	20	45	50	●		
P.1.4	1,0	15	30	35	●		
P.1.5	1,0	15	30	35	●		
P.2.1	1,2	20	40	45	●		
P.2.2	1,0	15	40	45	●		
P.2.3	0,8	15	30	35	●		
P.2.4	0,8	15	30	35	●		
P.3.1	1,0	15	30	35	●		
P.3.2	0,8	12	25	30	●		
P.3.3	0,8	10	20	25	●		
P.4.1	1,0	10	20	25	●		
P.4.2	1,0	10	20	25	●		
M.1.1	1,0	10	20	25	●		
M.2.1	0,9	7	15	20	●		
M.3.1	1,0	5	10	15	●		
K.1.1	1,0	18	35	40	●		
K.1.2	1,0	18	25	30	●		
K.2.1	1,0	15	30	35	●		
K.2.2	1,0	15	30	35	●		
K.3.1	1,0	15	35	40	●		
K.3.2	0,8	12	25	30	●		
N.1.1	1,9	150	240	260	●		
N.1.2	1,9	100	130	150	●		
N.2.1	1,8		100	140	●		
N.2.2	1,7		60	80	●		
N.2.3							
N.3.1	1,1		100	130	●		
N.3.2	1,2	30	60	80	●		
N.3.3	1,2	30	60	80	●		
N.4.1	1,8	90	140	160		●	
S.1.1							
S.1.2							
S.2.1							
S.2.2							
S.2.3							
S.3.1	1,0	10	15	25	●		
S.3.2	1,1	10	15	25	●		
S.3.3							
H.1.1							
H.1.2							
H.1.3							
H.1.4							
H.2.1							
H.3.1							
O.1.1	2,0	30	50	70	●		
O.1.2	2,0	20	25	40	●		
O.2.1							
O.2.2							
O.3.1	1,0		30	40	o		

For full slot milling reduce the cutting speed (Vc), 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

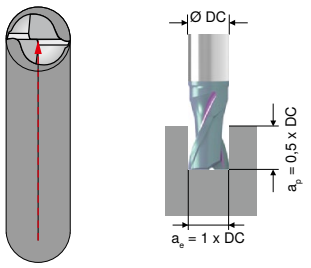
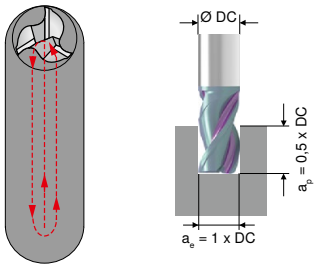
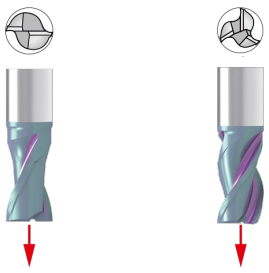
Attention:
In the case of uncoated milling cutters climb milling is preferred to conventional milling. When using coated milling cutters climb milling is necessary in order to achieve optimum results.

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
P.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	●		
P.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	●		
P.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	●		
P.1.4	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	●		
P.1.5	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	●		
P.2.1	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	●		
P.2.2	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	●		
P.2.3	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	●		
P.2.4	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	●		
P.3.1																				
P.3.2																				
P.3.3																				
P.4.1	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	●		
P.4.2	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	●		
M.1.1	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	●		
M.2.1																				
M.3.1																				
K.1.1	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	●		
K.1.2																				
K.2.1	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	●		
K.2.2	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	●		
K.3.1	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	●		
K.3.2	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	●		
N.1.1	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	●		
N.1.2	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	●		
N.2.1	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	●		
N.2.2	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	●		
N.2.3																				
N.3.1	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	●		
N.3.2	25	0,08	0,1	0,12	0,015	0,04	0,035	0,03		25	0,02	0,035	0,045	0,055	0,03	0,06	0,12	0,12	●		
N.3.3	25	0,08	0,1	0,12	0,015	0,04	0,035	0,03		25	0,02	0,035	0,045	0,055	0,03	0,06	0,12	0,12	●		
N.4.1	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	●		
S.1.1																				
S.1.2																				
S.2.1																				
S.2.2																				
S.2.3																				
S.3.1	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	●		
S.3.2																				
S.3.3																				
H.1.1																				
H.1.2																				
H.1.3																				
H.1.4																				
H.2.1																				
H.3.1																				
O.1.1	65	0,12	0,15	0,18		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	●		
O.1.2	80	0,12	0,15	0,18		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	●		
O.2.1																				
O.2.2																				
O.3.1																				

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
P.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	●		
P.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	●		
P.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	●		
P.1.4	22	0,01	0,015	0,018	20	0,008	0,01	0,012	0,018	0,005	0,008	0,01	0,012	●		
P.1.5	22	0,01	0,015	0,018	20	0,01	0,01	0,015	0,02	0,005	0,008	0,01	0,012	●		
P.2.1	22	0,01	0,015	0,018	20	0,01	0,01	0,015	0,02	0,005	0,008	0,01	0,012	●		
P.2.2	28	0,01	0,015	0,018	22	0,008	0,01	0,012	0,018	0,005	0,008	0,01	0,012	●		
P.2.3	20	0,01	0,015	0,018	20	0,01	0,01	0,015	0,02	0,005	0,008	0,01	0,012	●		
P.2.4	20	0,01	0,015	0,018	20	0,01	0,01	0,015	0,02	0,005	0,008	0,01	0,012	●		
P.3.1																
P.3.2																
P.3.3																
P.4.1	10	0,007	0,01	0,012	10	0,008	0,01	0,012	0,018	0,005	0,008	0,01	0,012	●		
P.4.2	10	0,007	0,01	0,012	10	0,008	0,01	0,012	0,018	0,005	0,008	0,01	0,012	●		
M.1.1	10	0,007	0,01	0,012	10	0,008	0,01	0,012	0,018	0,005	0,008	0,01	0,012	●		
M.2.1																
M.3.1																
K.1.1	24	0,01	0,012	0,015	19	0,008	0,01	0,012	0,018	0,005	0,008	0,01	0,012	●		
K.1.2					12	0,008	0,01	0,012	0,018	0,005	0,008	0,01	0,012	●		
K.2.1	22	0,01	0,012	0,015	15	0,008	0,01	0,012	0,018	0,005	0,008	0,01	0,012	●		
K.2.2	20	0,01	0,012	0,015	12	0,008	0,01	0,012	0,018	0,005	0,008	0,01	0,012	●		
K.3.1	15	0,01	0,012	0,015	16	0,008	0,01	0,012	0,018	0,005	0,008	0,01	0,012	●		
K.3.2	15	0,01	0,012	0,015	13	0,008	0,01	0,012	0,018	0,005	0,008	0,01	0,012	●		
N.1.1	90	0,01	0,015	0,02										●		
N.1.2	90	0,01	0,015	0,02	70	0,012	0,015	0,02	0,024	0,008	0,012	0,014	0,018	●		
N.2.1	80	0,01	0,015	0,02	60	0,012	0,015	0,02	0,024	0,008	0,012	0,014	0,018	●		
N.2.2	60	0,01	0,015	0,02	60	0,012	0,015	0,02	0,024	0,008	0,012	0,014	0,018	●		
N.2.3																
N.3.1	25	0,01	0,015	0,02	20	0,01	0,012	0,015	0,018	0,005	0,008	0,01	0,012	●		
N.3.2	25	0,01	0,015	0,02	20	0,01	0,012	0,015	0,018	0,005	0,008	0,01	0,012	●		
N.3.3	25	0,01	0,015	0,02	20	0,01	0,012	0,015	0,018	0,005	0,008	0,01	0,012	●		
N.4.1	70	0,01	0,015	0,0175	45	0,01	0,012	0,015	0,018	0,005	0,008	0,01	0,01	●		
S.1.1																
S.1.2																
S.2.1																
S.2.2																
S.2.3																
S.3.1	20	0,008	0,01	0,015	20	0,008	0,01	0,012	0,016	0,005	0,007	0,009	0,012	●		
S.3.2																
S.3.3																
H.1.1																
H.1.2																
H.1.3																
H.1.4																
H.2.1																
H.3.1																
O.1.1	65	0,018	0,02	0,025	60	0,015	0,02	0,025	0,03	0,008	0,012	0,018	0,022	●		
O.1.2	80	0,018	0,02	0,025	65	0,015	0,02	0,025	0,03	0,008	0,012	0,018	0,022	●		
O.2.1																
O.2.2																
O.3.1																

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

		50 340 ... / 50 341 ... / 50 342 ... / 50 348 ... / 50 349 ...						● 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			
Index	v_c in m/min	f_z mm						Emulsion	Compressed air	MMS
P.1.1	30	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,095–0,11	0,1–0,12	●		
P.1.2	20	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,095–0,11	0,1–0,12	●		
P.1.3	20	0,05–0,07	0,06–0,08	0,07–0,09	0,08–0,10	0,095–0,12	0,1–0,13	●		
P.1.4	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	●		
P.1.5	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	●		
P.2.1	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	●		
P.2.2	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	●		
P.2.3	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	●		
P.2.4	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	●		
P.3.1	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	●		
P.3.2	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	●		
P.3.3	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	●		
P.4.1	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	●		
P.4.2	10	0,04–0,06	0,05–0,07	0,06–0,08	0,07–0,09	0,08–0,10	0,09–0,2	●		
M.1.1	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	●		
M.2.1	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	●		
M.3.1	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	●		
K.1.1	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	●		
K.1.2	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	●		
K.2.1	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	●		
K.2.2	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	●		
K.3.1	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	●		
K.3.2	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	●		
N.1.1	150	0,06–0,075	0,075–0,09	0,009–0,1	0,01–0,12	0,12–0,135	0,135–0,15	●		
N.1.2	100	0,06–0,075	0,075–0,09	0,009–0,1	0,01–0,12	0,12–0,135	0,135–0,15	●		
N.2.1	80	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,095–0,11	0,1–0,12	●		
N.2.2	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	●		
N.2.3										
N.3.1	80	0,04–0,05	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,09–0,1	●		
N.3.2	30	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,095–0,11	0,1–0,12	●		
N.3.3	30	0,05–0,07	0,06–0,08	0,07–0,09	0,08–0,10	0,095–0,12	0,1–0,13	●		
N.4.1	90	0,05–0,06	0,06–0,07	0,07–0,08	0,08–0,09	0,095–0,11	0,1–0,12		●	
S.1.1										
S.1.2										
S.2.1										
S.2.2										
S.2.3										
S.3.1	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	●		
S.3.2	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	●		
S.3.3										
H.1.1										
H.1.2										
H.1.3										
H.1.4										
H.2.1										
H.3.1										
O.1.1	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	●		
O.1.2	20	0,08–0,1	0,1–0,12	0,12–0,14	0,14–0,16	0,16–0,18	0,18–0,2	●		
O.2.1										
O.2.2										
O.3.1										

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 %!

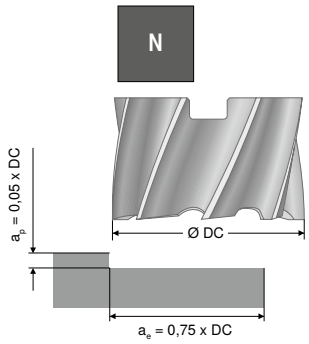
13

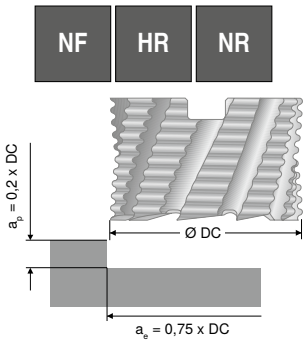
Cutting data – face mills

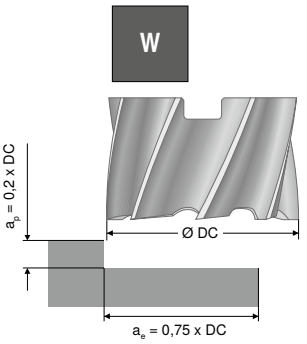
		50 250 ... / 50 255 ... / 50 260 ... / 50 297 ... uncoated	54 035 ... / 54 036 ... / 54 037 ... Ti100 Pro	● 1st choice ○ suitable		
Index	Kf f_z	v_c in m/min		Emulsion	Compressed air	MMS
P.1.1	1,2	25	45	●		
P.1.2	1,2	20	40	●		
P.1.3	1,2	20	40	●		
P.1.4	1,0	15	30	●		
P.1.5	1,0	15	30	●		
P.2.1	1,2	20	40	●		
P.2.2	1,0	20	40	●		
P.2.3	0,8	10	20	●		
P.2.4	0,8	10	20	●		
P.3.1	1,0	15	30	●		
P.3.2	0,8	10	20	●		
P.3.3	0,8	10	20	●		
P.4.1	1,0	10	15	●		
P.4.2	1,0	10	15	●		
M.1.1	1,0	10	15	●		
M.2.1	0,9	7	15	●		
M.3.1	1,0	5	10	●		
K.1.1	1,0	20	30	●		
K.1.2	1,0	18	30	●		
K.2.1	1,0	18	30	●		
K.2.2	1,0	15	25	●		
K.3.1	1,0	18	30	●		
K.3.2	1,0	18	30	●		
N.1.1	1,5	150				
N.1.2	1,5	100				
N.2.1	1,3	80				
N.2.2	1,3	40				
N.2.3						
N.3.1	1,1	80	110	●		
N.3.2	1,2	30	60	●		
N.3.3	1,2	30	60	●		
N.4.1	1,3	90	120		●	
S.1.1						
S.1.2						
S.2.1						
S.2.2						
S.2.3						
S.3.1	1,0	10	15	●		
S.3.2	1,1	10	15	●		
S.3.3	0,8		10	●		
H.1.1						
H.1.2						
H.1.3						
H.1.4						
H.2.1						
H.3.1						
O.1.1	2,0	30	50	●		
O.1.2	2,0	20	25	●		
O.2.1						
O.2.2						
O.3.1						

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 flutes
a_e = cutting width (for side milling cutter cutting depth)
DC = Cutting diameter

13

Version description

H	For high-strength steels and tempered materials
HF	For high-strength steels and tempered materials – with roughing-finishing profile
HR	For high-strength steels and tempered materials – with roughing profile
HS	For high-strength steels and tempered materials – with fine chip breaker especially for cast and nickel alloys
N	For machining steel and cast materials, as well as stainless steels
NF	For machining steel and cast materials, as well as stainless steels – with roughing-finishing profile
NR	For machining steel and cast materials, as well as stainless steels – with roughing profile
NTI	For machining steel and cast materials, as well as stainless steels – with medium chip breaker
W	For soft materials and non-ferrous metals (aluminium, copper, brass)
WF	For soft materials and non-ferrous metals (aluminium, copper, brass) – with roughing-finishing profile
WR	For soft materials and non-ferrous metals (aluminium, copper, brass) – with roughing profile

Coating

Ti100 Pro

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