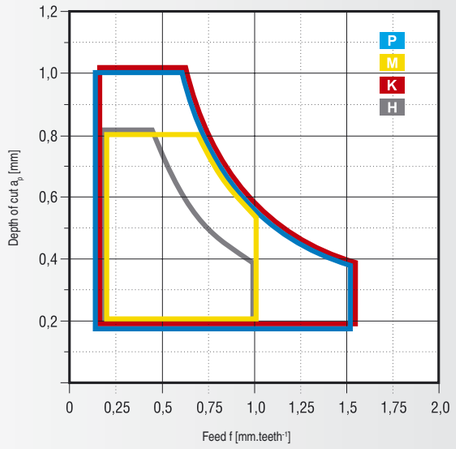
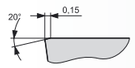
Technical Information

Geometry	Photo	Workpiece material group: Milling	P	M	K	N	S	H	Diagram of application	Description	Aplied to inserts: ZDCW 070304
ZDCW 07		Finishing	■	□	■			■		P - steel up to 330 HB M - corrosion-resistant steel up to 170 HB K - cast iron up to 220 HB H - hardened steel up to 56 HRC - special geometry for HFC technology - suitable for machining of material groups P, K and H - suitable for light and medium machining conditions - especially suitable for copy and general milling	
	Profile of cutting edge	Medium	■	□	■			■			
		Roughing								Range of cutting conditions:	
										f_z	0,15 ÷ 1,5 [mm.tooth^{-1}]
										$a_{p\,max.}$	1,0 [mm]

■ - Main application ▣ - Other applications □ - Conditional applications

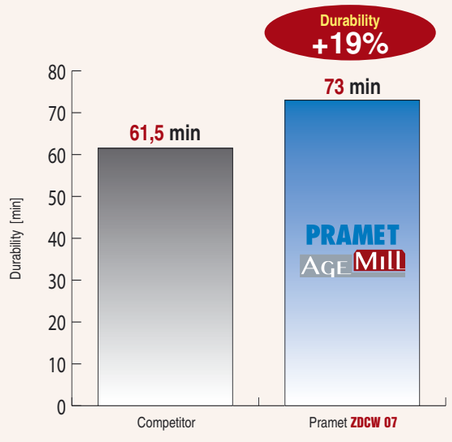
Practical example of HFC milling cutters

EXAMPLE

MACHINING WITH INSERTS ZDCW 07:

Operation: copy milling
Tool: cutter d = 20 mm
Workpiece: 19 552 (hardness 310 HB)
Inserts: WDHX 070205; P40 competitor
ZDCW 070304; 7040 Pramet
Cooling: with cooling

Cutting conditions		Competitor	Pramet	
Cutting speed	v_c	205	205	m.min^{-1}
Revolutions	n	3263	3263	rev.min^{-1}
Feed per tooth	f_z	1,2	1,2	mm.tooth^{-1}
Feed	f_{min}	11747	11747	mm.min^{-1}
Axial depth of cut	a_p	0,5	0,5	mm
Radial depth of cut	a_e	7	7	mm
Durability	-	61,5	73	min



PRAMET

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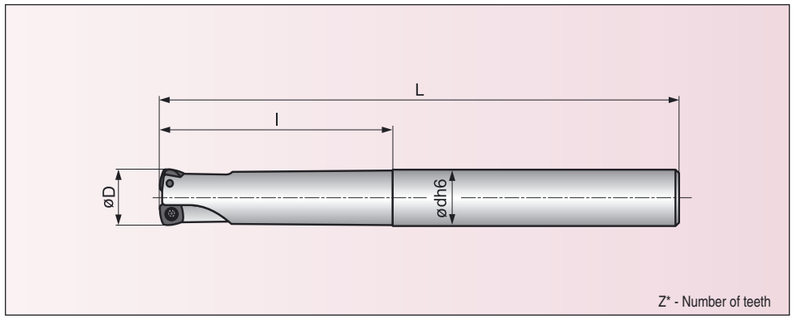
ZDCW 07

PRAMET

SZD07

Shoulder end milling cutters



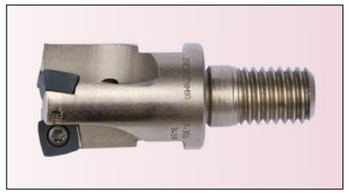
Z* - Number of teeth

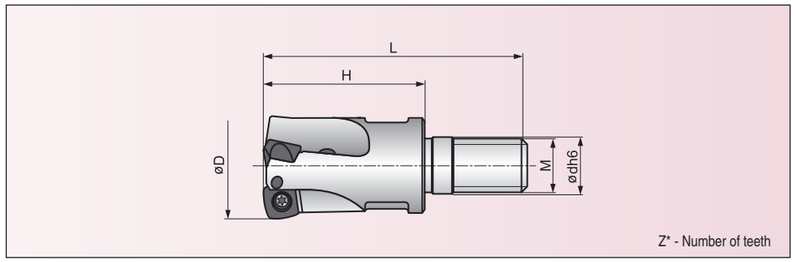
γ_p	+8°	κ_r	90°
γ_f	-5°	$a_{p\,max}$	1,0 mm

ISO	Assortment	Dimensions D	L	l	dh6	Z*	Cooling	kg	Spare parts Screw	Screwdriver	Inserts
16E2R030A16-SZD07	●	16	100	30	16	2	+	0,12	US 2205-T07P	FLAG T07P	ZDCW 070304
16E2R065A16-SZD07	●	16	145	65	16	2	+	0,18			
20E3R040A20-SZD07	●	20	120	40	20	3	+	0,25			
20E3R080A20-SZD07	●	20	165	80	20	3	+	0,33			
25E3R050A25-SZD07	●	25	140	50	25	3	+	0,47			
25E3R100A25-SZD07	●	25	190	100	25	3	+	0,60			

SZD07

Exchangeable heads for modular system





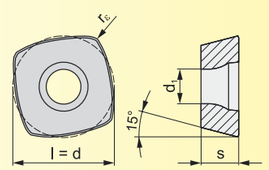
Z* - Number of teeth

γ_p	+8°	κ_r	90°
γ_f	-5°	$a_{p\,max}$	1,0 mm

ISO	Assortment	Dimensions D	H	L	dh6	M	Z*	Cooling	kg	Spare parts Screw	Screwdriver	Inserts
16E2R030M08-SZD07	●	16	30	48	8,5	M8	2	+	0,03	US 2205-T07P	FLAG T07P	ZDCW 070304
20E3R030M10-SZD07	●	20	30	49	10,5	M10	3	+	0,05			
25E3R032M12-SZD07	●	25	32	54	12,5	M12	3	+	0,09			
25E4R032M12-SZD07	●	25	32	54	12,5	M12	4	+	0,08			
32E4R040M16-SZD07	●	32	40	64	17,0	M16	4	+	0,20			

Indexable cutting inserts ZDCW 07

ZDCW 07



ISO	ANSI	Grade 7215	7230	7025	7040	Dimesions l	d	s	d_1	r_ε
ZDCW 070304	ZDCW -21	●	●	●	●	6,800	6,800	3,18	2,6	0,4

● Stock Assortment ○ Non-stock Assortment

All dimensiones in [mm]

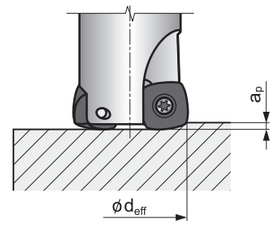
Recommended cutting conditions

Material	PLAIN MILLING feed f_z [mm.tooth^{-1}]	PLAIN MILLING axial depth of cut $a_{p\,max.}$ [mm]	SIDE MILLING feed f_z [mm.tooth^{-1}]	SIDE MILLING axial depth of cut $a_{p\,max.}$ [mm]	PLUNGING feed f_z [mm.tooth^{-1}]	PLUNGING axial depth of cut $a_{p\,max.}$ [mm]
P steel	0,15 ÷ 1,50	1,0	0,15 ÷ 1,00	1,0	0,10 ÷ 0,20	4,0
M corrosion-resistant steel	0,15 ÷ 1,00	0,8	0,15 ÷ 0,80	0,8	0,10 ÷ 0,20	
K cast iron	0,15 ÷ 1,50	1,0	0,15 ÷ 1,00	1,0	0,10 ÷ 0,20	
H hard mat. (52 ÷ 56 HRC)	0,15 ÷ 1,00	0,8	0,15 ÷ 0,80	0,8	0,05 ÷ 0,10	

Grade	Cutting conditions		ZDCW 070304 P	M	K	H
7215	cutting speed	[m.min^{-1}]	205 ÷ 385	120 ÷ 230	190 ÷ 365	40 ÷ 75
	feed per tooth	[mm.tooth^{-1}]	0,15 ÷ 1,5	0,15 ÷ 1,0	0,15 ÷ 1,5	0,15 ÷ 1,0
7230	cutting speed	[m.min^{-1}]	175 ÷ 335	105 ÷ 200	165 ÷ 315	35 ÷ 65
	feed per tooth	[mm.tooth^{-1}]	0,15 ÷ 1,5	0,15 ÷ 1,0	0,15 ÷ 1,5	0,15 ÷ 1,0
7025	cutting speed	[m.min^{-1}]	180 ÷ 360	–	170 ÷ 340	–
	feed per tooth	[mm.tooth^{-1}]	0,15 ÷ 1,5	–	0,15 ÷ 1,5	–
7040	cutting speed	[m.min^{-1}]	180 ÷ 335	105 ÷ 200	170 ÷ 315	30 ÷ 55
	feed per tooth	[mm.tooth^{-1}]	0,15 ÷ 1,5	0,15 ÷ 1,0	0,15 ÷ 1,5	0,15 ÷ 1,0

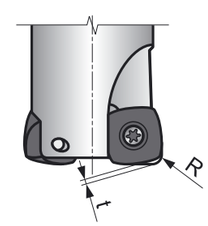
Technical Information

EFFECTIVE DIAMETER OF THE TOOLS FOR PLAIN MILLING:



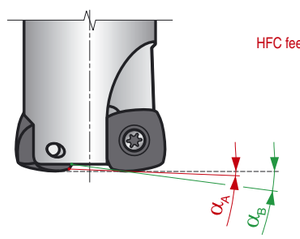
Ø of cutter [mm]	Indexable cutting insert	Effective diameter d_{eff} in relation with a_p [mm] a_p = 0	a_p = 0,25	a_p = 0,5	a_p = 0,75	a_p = 1,0
16	ZDCW 070304	6,0	10,0	12,2	13,8	15,3
20		10,0	14,1	16,2	17,9	19,3
25		15,0	19,1	21,2	22,9	24,3
32		22,0	26,1	28,2	29,9	24,3

INFORMATION FOR CNC PROGRAMMING:



Indexable cutting insert	R [mm]	t [mm]
ZDCW 070304	1,7	0,6

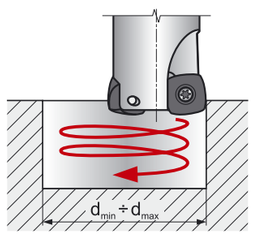
RAMPING:



HFC feeds use for angles ≤ α_A only!

Milling cutter	Indexable cutting insert	D [mm]	α_A [°]	α_B [°]
End mill	ZDCW 070304	16	0,5	7,8
		20	0,3	10,2
		25	0,2	5,4
Modular head	ZDCW 070304	16	0,5	7,8
		20	0,3	10,2
		25	0,2	5,4
		32	0,1	3,3

MILLING BY HELICAL INTERPOLATION:



Milling cutter	Indexable cutting insert	D [mm]	α_A [°]	d_{min} [mm]	d_{max} [mm]	Max. increase [mm/rev.]
End mill	ZDCW 070304	16	0,5	20,5	30	0,4
		20	0,3	28,5	38	
		25	0,2	38,5	48	
Modular head	ZDCW 070304	16	0,5	20,5	30	0,4
		20	0,3	28,5	38	
		25	0,2	38,5	48	
		32	0,1	52,5	62	