

Contents

END MILLS WITH STRAIGHT SHANK

Page	Standard	Name
15		End mills - short, NR P, 1 tooth cutting to centre DIN 844 (NR P), ISO 1641
15		End mills - short, 1 tooth cutting to centre DIN 844, ČSN 222130
16		End mills - long, 1 tooth cutting to centre DIN 844, ČSN 222130
16		End mills - short, 1 tooth cut over centre DIN 844
17		End mills - long DIN 844
17		End mills - long, 1 tooth cut over centre DIN 844
18		End mills - short, NR, 1 tooth cut over centre DIN 844
19		End mills - short, NR P, 1 tooth cut over centre DIN 844
20		End mills - long, NR, 1 tooth cut over centre DIN 844
20		End mills - long, NR P, 1 tooth cut over centre DIN 844
21		End mills - short, HR, 1 tooth cut over centre DIN 844
22		End mills - short, HR P, 1 tooth cut over centre DIN 844
23		End mills - long, HR, 1 tooth cut over centre DIN 844
23		End mills - long, HR P, 1 tooth cut over centre DIN 844
24		End mills - short, fine teeth DIN 844, ČSN 222134
24		End mills - long, fine teeth DIN 844, ČSN 222134
25		End mills - short DIN 844, ČSN 222132
26		End mills - short, 1 tooth cutting to centre DIN 844
27		End mills - short, 2 teeth cut to centre DIN 844
28		End mills - long DIN 844, ČSN 222132

Contents

END MILLS WITH STRAIGHT SHANK - continued

Standard	Name	Page
1604	Mini end mills - short	29
1614	Mini end mills - longt	29
.SET	Sets of end mills with straight shank	30



SLOT DRILLS

2105 DIN 327, PN 222190.13	Slot drills - short, centre cutting	31
2115 PN 222190.13	Slot drills - long, centre cutting	31
2204 DIN 327, ČSN 222192.1	Slot drills - short, centre cutting	32
2214	Slot drills - long, centre cutting	33
2304 DIN 327	Slot drills - short, 3-fluted centre cutting	34
2314 DIN 327	Slot drills - long, 3-fluted centre cutting	34
2403 DIN 327, PN 222191.13	Slot drills - short	35
2605 DIN 326, ČSN 222194.1	Slot drills - short, centre cutting	35
.SET	Sets of slot drills	36
.SET4-12	Sets of milling cutters with straight shank	36



FORM CUTTERS WITH STRAIGHT AND TAPER SHANK

3102 DIN 851	T-Slot cutters	37
31034 DIN 851, ČSN 222181	T-Slot cutters	37
3200 DIN 850	Woodruff keyseat cutters	38
3201 ČSN 222185	Woodruff keyseat cutters	39
3302 DIN 1833	Dovetail milling cutters	40



Contents

FORM CUTTERS WITH STRAIGHT AND TAPER SHANK - continued

Page		Standard	Name
41		3409 ČSN 222268	Dovetail milling cutters
41		3500 DIN 1833B, ČSN 222262	Inverse dovetail milling cutters
42		3600 DIN 6518	Corner rounding concave cutters

END MILLS WITH TAPER SHANK

43		4102, 4109 DIN 845, ČSN 222148	End mills - short
43		4112, 4119 DIN 845, ČSN 222148	End mills - long
44		4202, 4209 DIN 845, ČSN 222142	End mills - short, medium-coarse teeth
45		4212, 4219 DIN 845, ČSN 222142	End mills - long, medium-coarse teeth
46		4222, 4229 ČSN 222298	End mills - long, medium-coarse teeth
47		4232, 4239 DIN 845, ČSN 222142.1	End mills - long, medium-coarse teeth
48		4309 ČSN 222146	End mills - short, fine teeth
48		4319 ČSN 222146	End mills - long, fine teeth

DIE SINKING CUTTERS

49		5005 ČSN 222290	Die sinking cutters - short, straight teeth
50		5104 DIN 1889	Die sinking cutters - short, 2-fluted
51		5114	Die sinking cutters - long 2-fluted
51		5204 DIN 1889	Die sinking cutters - short, 3-fluted
52		5214 DIN 1889	Die sinking cutters - long 3-fluted

Contents

DIE SINKING CUTTERS - continued

Standard	Name	Image	Page
5307 DIN 1889, PN 222291	Die sinking cutters - short, with ball nose		52
5317 DIN 1889, PN 222291	Die sinking cutters - long, with ball nose		53
5807 ČSN 222814	Die sinking cutters tapered, 4-fluted		53
.SET	Sets of die sinking cutters		54

SHELL END MILLS

6109 DIN 1880, PN 222050	Shell end mills, coarse teeth		55
6202 DIN 1880	Shell end mills, medium-coarse teeth		55
6209 DIN 1880, PN 222052	Shell end mills, medium-coarse teeth		55
6222 DIN 1880	Shell end mills, medium-coarse teeth		56
6229 DIN 1880, PN 222052.1	Shell end mills, medium-coarse teeth		56
6242 DIN 1880	Shell end mills, NR, medium-coarse teeth		56
6309 DIN 1880, PN 222054	Shell end mills, fine teeth		57

SIDE AND FACE MILLING CUTTERS

7103 PN 222162	Side and face milling cutters, coarse teeth		58
7202 DIN 885	Side and face milling cutters, medium-coarse teeth		59
7203 DIN 885, PN 222161	Side and face milling cutters, medium-coarse teeth		60

Contents

SIDE AND FACE MILLING CUTTERS - continued

Page	Standard	Name
60÷61		7262 DIN 885 Narrow side and face milling cutters medium-coarse teeth
61÷64		7302 DIN 885 Side and face milling cutters, fine teeth
64		7303 DIN 885, ČSN 222165 Side and face milling cutters, fine teeth
65		7323 ČSN 222168 Slotting cutters
65		7343 DIN 1891, ČSN 222171 Interlocking side and face milling cutters, fine teeth
66		7362 DIN 1834A Narrow side and face milling cutters, fine teeth
67		7372 DIN 1834B Narrow side and face milling cutters, fine teeth, straight teeth
68		7392 DIN 885B Narrow side and face milling cutters, fine teeth, straight teeth
69		7503 ON 222172 Interlocking side and face milling cutters, coarse teeth
69		7601 ON 222173 Interlocking side and face milling cutters, fine teeth

FORM RELIEVED AND ANGLE CUTTERS

70		8100 DIN 856, ČSN 222210 Convex cutters
71		8200 DIN 855, ČSN 222230 Concave cutters
71		8241 DIN 855, ČSN 222231 Interlocking concave cutters
72		8301 DIN 6513, ČSN 222234 Corner-rounding concave cutters
72		8525 DIN 1824A, ČSN 222242.1 Single angle milling cutters

Contents

FORM RELIEVED AND ANGLE CUTTERS - continued

Standard	Name	Page
8532 DIN 842, ČSN 222254	Dovetail milling cutters	73
8535 DIN 1823A, ČSN 222240	Single angle milling cutters	74
8539 DIN 842, ČSN 222254	Dovetail milling cutters	74
8561 DIN 1824B, ČSN 222252.1	Double equal-angle cutters	75
8570 DIN 847, ČSN 222250	Double equal-angle cutters	75
8591 DIN 1823B, ČSN 222244	Double unequal-angle cutters	76



SPECIAL MILLING CUTTERS

222509	Involute gear cutters	77
222510	Involute gear cutters	78
222551	Involute spur gear hobs	79
222712	Roller chain sprocket milling cutters	79
222720	Roller chain sprocket hobs	80



END MILLS WITH STRAIGHT SHANK

1201 ČSN 222110	End mills - short	81
1211 ČSN 222110	End mills - long	81
1422 DIN 844, ČSN 222132.1	End mills - short, interrupted cutting edge	82
1432 DIN 844, ČSN 222132.1	End mills - long, interrupted cutting edge	82
1809 PN 222137	End mills left-hand cutting - short	83



Contents

END MILLS WITH STRAIGHT SHANK - continued

Page		Standard	Name
84		1909 ČSN 222139	End mills left-hand cutting - short
84		1919 ČSN 222139	End mills left-hand cutting - long

FORM CUTTERS WITH STRAIGHT AND TAPER SHANK

85		31035 ČSN 222182	T-Slot cutters
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END MILLS WITH TAPER SHANK

86		4101 ČSN 222114	End mills - short
86		4111 ČSN 222114	End mills - long
87		41195 ČSN 222197	End mills - long, coarse teeth
87		42036 DIN 2328, ON 222299	End mills - short, medium-coarse teeth
88		42095 ČSN 222198	End mills - short, medium-coarse teeth
88		42136 DIN 2328, ČSN 222299	End mills - long, medium-coarse teeth
89		42195 ČSN 222198	End mills - long, medium-coarse teeth
89		42236 DIN 2326, ON 222299.13	End mills - short, medium-coarse teeth
90		42295 ČSN 222198.1	End mills - short, medium-coarse teeth

Contents

END MILLS WITH TAPER SHANK - continued

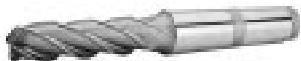
Standard	Name	Page
42336 DIN 2328, ČSN 222299.13	End mills - long, medium-coarse teeth	 90
42395 ČSN 222198.1	End mills - long, medium-coarse teeth	 91
43195 ČSN 222199	End mills - long, fine teeth	 91
4709 ČSN 222149	End mills left-hand cutting - short, coarse teeth	 92
4719 ČSN 222149	End mills left-hand cutting - long, coarse teeth	 92
4809 ČSN 222143	End mills left-hand cutting - short, medium-coarse teeth	 93
4819 ČSN 222143	End mills left-hand cutting - long, medium-coarse teeth	 93
4909 ČSN 222147	End mills left-hand cutting - short, fine teeth	 94
4919 ČSN 222147	End mills left-hand cutting - long, fine teeth	 94

DIE SINKING CUTTERS

53074 DIN 1889, PN 222292	Die sinking cutters - short, with ball nose	 95
53174 DIN 1889, PN 222292	Die sinking cutters - long, with ball nose	 95
5407 ČSN 222293	Die sinking cutters - short, corner rounding	 96

Contents

DIE SINKING CUTTERS - continued

Page	Standard	Name
96		5417 ČSN 222293 Die sinking cutters - long, corner rounding
97		5507, 5517 ČSN 222294 Die sinking cutters, extended with ball nose
98		5607, 5617 ČSN 222295 Die sinking cutters, extended, corner rounding
99		5703, 5713 ČSN 222296 Die sinking cutters, extended

SIDE AND FACE MILLING CUTTERS

100		7703 ČSN 222176 Shell end mills, right-side cutting
100		7803 ČSN 222177 Shell end mills, left-side cutting

SPECIAL MILLING CUTTERS

101		9141 ON 222732 Cutters for four spline shafts, with grinding allowance
101		9161 ON 222734 Cutters for six spline shafts, with grinding allowance
102		9201 PN 222842, PN 22844x) End mills for oil grooves
102		92017 PN 222846 Cutters for oil grooves
103		9211 PN 222840 Cutters for oil grooves

Contents

SPECIAL MILLING CUTTERS - continued

Standard	Name	Page
013516	Boring bar for core cutters	103
013517	Drift	103
01354	Core cutter	104



CARBIDE ENDMILLS

MASTER	2 flute square end standard length endmills		105
MASTER	3 flute square end standard lenght endmills		105
MASTER	4 flute square end standard lenght endmills		106
MASTER	2 flute ball end standard lenght endmills		106
MASTER	4 flute ball end standard lenght endmills		107
MASTER	2 flute square end long lenght endmills		107
MASTER	4 flute square end long length endmills		108
MASTER	2 flute ball end long length endmills		108
MASTER	4 flute ball end long length endmills		109

Contents

CARBIDE ENDMILLS - continued

Page		Standard	Name
109		MASTER	620 series medium pitch roughers
110		MASTER	Extra long length square endmills
110		MASTER	6 flute endmills

BURRS

111		229310	HSS burrs
111		229310	HSS burrs
112		229310	HSS burrs for tool and jig production
113		229310	HSS burrs for engraving
114		229310	HSS burrs with straight shank
115		229310	HSS burrs with internal thread
115		229310	HSS rasping burrs with internal thread
116		229311	Straight shanks for burrs
116		229311	Taper shanks for burrs

Contents

TUNGSTEN CARBIDE BURRS

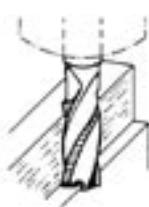
Standard	Name	Page
FREZA	Tungsten carbide burrs cylinder	117
FREZA	Tungsten carbide burrs cylinder end cut	117
FREZA	Tungsten carbide burrs cylinder with ball top	117
FREZA	Tungsten carbide burrs ball shape	118
FREZA	Tungsten carbide burrs ellipse	118
FREZA	Tungsten carbide burrs ARC cylinder with ball top	118
FREZA	Tungsten carbide burrs ARC cylinder with sharp top	119
FREZA	Tungsten carbide burrs flame	119
FREZA	Tungsten carbide burrs conical round nose	120
FREZA	Tungsten carbide burrs cone shape	120
FREZA	Cone 60°	121
FREZA	Cone 90°	121
FREZA	Inverted cone	121

Contents

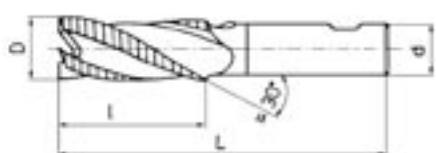
TECHNICAL SECTION

Page	Name
122	Feed per tooth for end mills and slot drills page 15÷30; 37÷57
122	Feed per tooth for shell end mills, side and face milling cutters, form relieved and angle cutters page 57÷76
123	Recomanded cutting speeds for material groups
124÷125	Use of milling cutters
126	Technical conditions for burrs page 111÷115
127	Technical informations for carbide burrs page 105÷110

End Mills



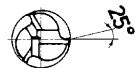
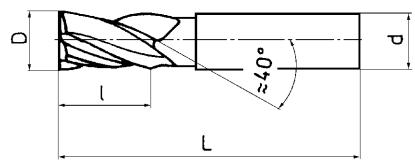
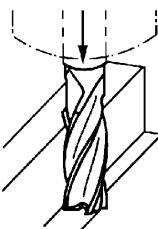
NR P



**END MILLS SHORT,
NR P, 1 TOOTH CUT OVER
CENTRE**



D k 10	I	L	d h 6	Z	HSS Co8					
6	13	57	6	3	6x13					
8	19	69	10	3	8x19					
10	22	72	10	3	10x22					
12	26	83	12	3	12x26					
14	26	83	12	3	14x26					
16	32	92	16	3	16x32					
18	32	92	16	3	18x32					
20	38	104	20	3	20x38					



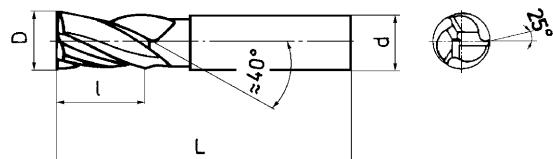
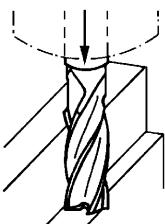
**END MILLS SHORT,
1 TOOTH CUTTING TO CENTRE**



D k 10	I	L	d h 6	Z	HSS Co8					
6	13	57	6	3	6x13					
7	16	66	10	3	7x16					
8	19	69	10	3	8x19					
9	19	69	10	3	9x19					
10	22	72	10	3	10x22					
12	26	83	12	3	12x26					
14	26	83	12	3	14x26					
16	32	92	16	3	16x32					
18	32	92	16	3	18x32					
20	38	104	20	3	20x38					

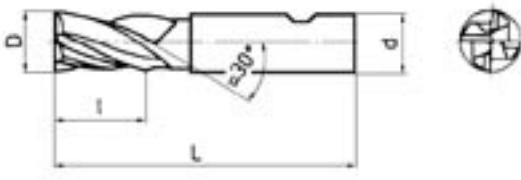
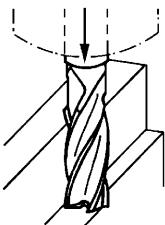
We deliver these tools with coating (TiN, TiCN, TiAlN) also.

END MILLS LONG, 1 TOOTH CUTTING TO CENTRE



D k 10	I	L	d h 6	z	HSS Co8					
6	24	68	6	3	6×24					
7	30	80	10	3	7×30					
8	38	88	10	3	8×38					
9	38	88	10	3	9×38					
10	45	95	10	3	10×45					
12	53	110	12	3	12×53					
14	53	110	12	3	14×53					
16	63	123	16	3	16×63					
18	63	123	16	3	18×63					
20	75	141	20	3	20×75					

END MILLS SHORT, 1 TOOTH CUT OVER CENTRE

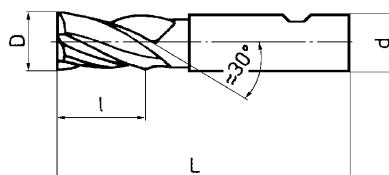
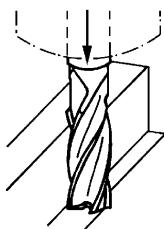


120517 - AITIN coated, 120518 - We deliver these tools with coating (TiN, TiCN, TiAlN) also.

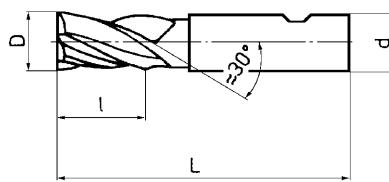
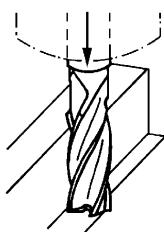
D js 14	I	L	d h 8	z	HSSE-PM + AITIN	HSS Co8				
3	8	52	6	4	-	3×8				
4	11	55	6	4	-	4×11				
5	13	57	6	4	-	5×13				
6	13	57	6	4	6×13	6×13				
7	16	66	10	4	-	7×16				
8	19	69	10	4	8×19	8×19				
9	19	69	10	4	-	9×19				
10	22	72	10	4	10×22	10×22				
11	22	79	12	4	-	11×22				
12	26	83	12	4	12×26	12×26				
13	26	83	12	4	-	13×26				
14	26	83	12	4	14×26	14×26				
15	26	83	12	4	-	15×26				
16	32	92	16	4	16×32	16×32				
18	32	92	16	4	18×32	17×32				
20	38	104	20	4	20×38	20×38				
22	38	104	20	5	-	22×38				
24	45	121	25	5	-	24×45				
25	45	121	25	5	-	25×45				
26	45	121	25	5	-	26×45				
28	45	121	25	5	-	28×45				
30	45	121	25	5	-	30×45				
32	53	133	32	6	-	32×53				

End Mills

END MILLS LONG



D k 10	I	L	d h 6	Z	HSS Co8				
6	24	68	6	4	6x24				
7	30	80	10	4	7x30				
8	38	88	10	4	8x38				
10	45	95	10	4	10x45				
12	53	110	12	4	12x53				
14	53	110	12	4	14x53				
16	63	123	16	4	16x63				
18	63	123	16	4	18x63				
20	75	141	20	4	20x75				



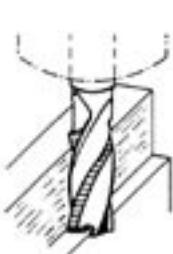
END MILLS LONG, 1 TOOTH CUT OVER CENTRE



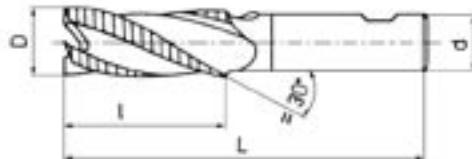
D k 10	I	L	d h 6	Z	HSS Co8				
6	24	68	6	4	6x24				
7	30	80	10	4	7x30				
8	38	88	10	4	8x38				
9	38	88	10	4	9x38				
10	45	95	10	4	10x45				
12	53	110	12	4	12x53				
14	53	110	12	4	14x53				
16	63	123	16	4	16x63				
18	63	123	16	4	18x63				
20	75	141	20	4	20x75				
22	75	141	20	5	22x75				
24	90	166	25	5	24x90				
25	90	166	25	5	25x90				
26	90	166	25	5	26x90				
28	90	166	25	5	28x90				
30	90	166	25	5	30x90				
32	106	186	32	6	32x106				

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

**END MILLS SHORT,
NR, 1 TOOTH CUT OVER CENTRE**



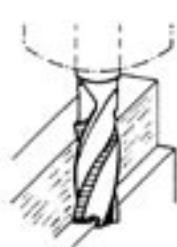
NR



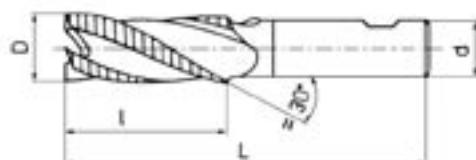
D k 12	I	L	d h 6	Z	HSS Co8					
6	13	57	6	4	6x13					
7	16	66	10	4	7x16					
8	19	69	10	4	8x19					
9	19	69	10	4	9x19					
10	22	72	10	4	10x22					
12	26	83	12	4	12x26					
13	26	83	12	4	13x26					
14	26	83	12	4	14x26					
15	26	83	12	4	15x26					
16	32	92	16	4	16x32					
17	32	92	16	4	17x32					
18	32	92	16	4	18x32					
20	38	104	20	4	20x38					
22	38	104	20	5	22x38					
24	45	121	25	5	24x45					
25	45	121	25	5	25x45					
26	45	121	25	5	26x45					
28	45	121	25	5	28x45					
30	45	121	25	5	30x45					
32	53	133	32	6	32x53					

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

End Mills



NR P



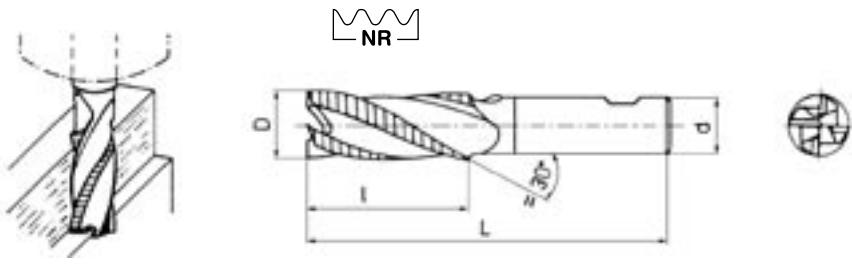
**END MILLS SHORT,
NR P, 1 TOOTH CUT OVER
CENTRE**



D k 12	I	L	d h 6	Z	HSS Co8					
6	13	57	6	4	6x13					
7	16	66	10	4	7x16					
8	19	69	10	4	8x19					
9	19	69	10	4	9x19					
10	22	72	10	4	10x22					
12	26	83	12	4	12x26					
13	26	83	12	4	13x26					
14	26	83	12	4	14x26					
15	26	83	12	4	15x26					
16	32	92	16	4	16x32					
17	32	92	16	4	17x32					
18	32	92	16	4	18x32					
20	38	104	20	4	20x38					
22	38	104	20	5	22x38					
24	45	121	25	5	24x45					
25	45	121	25	5	25x45					
26	45	121	25	5	26x45					
28	45	121	25	5	28x45					
30	45	121	25	5	30x45					
32	53	133	32	6	32x53					

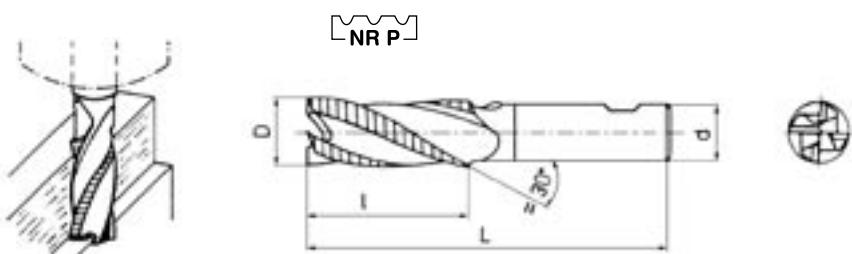
We deliver these tools with coating (TiN, TiCN, TiAlN) also.

END MILLS LONG, NR, 1 TOOTH CUT OVER CENTRE



D k 12	I	L	d h 6	Z	HSS Co8					
10	45	95	10	4		10×45				
12	53	110	12	4		12×53				
14	53	110	12	4		14×53				
16	63	123	16	4		16×63				
18	63	123	16	4		18×63				
20	75	141	20	4		20×75				
22	75	141	20	5		22×75				
24	75	166	25	5		24×75				
25	90	166	25	5		25×90				
26	90	166	25	5		26×90				
28	90	166	25	5		28×90				
30	90	166	25	5		30×90				
32	106	186	32	6		32×106				

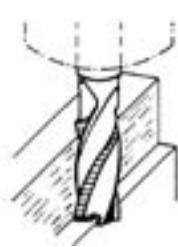
END MILLS LONG, NR P, 1 TOOTH CUT OVER CENTRE



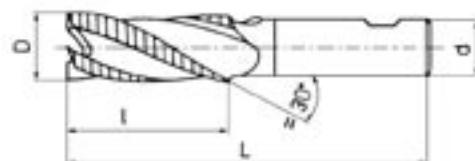
D k 12	I	L	d h 6	Z	HSS Co8					
10	45	95	10	4		10×45				
12	53	110	12	4		12×53				
14	53	110	12	4		14×53				
16	63	123	16	4		16×63				
18	63	123	16	4		18×63				
20	75	141	20	4		20×75				
22	75	141	20	5		22×75				
24	75	166	25	5		24×75				
25	90	166	25	5		25×90				
26	90	166	25	5		26×90				
28	90	166	25	5		28×90				
30	90	166	25	5		30×90				
32	106	186	32	6		32×106				

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

End Mills



HR

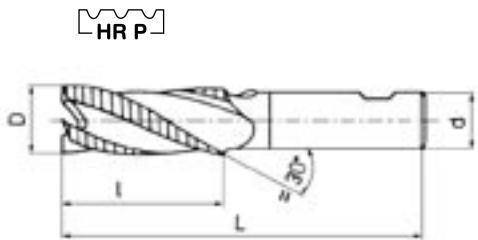
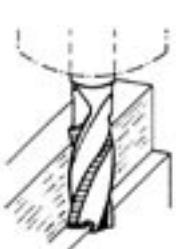


END MILLS SHORT,
HR, 1 TOOTH CUT OVER CENTRE



D k 12	I	L	d h 6	Z	HSS Co8						
6	13	57	6	4	6x13						
7	16	66	10	4	7x16						
8	19	69	10	4	8x19						
9	19	69	10	4	9x19						
10	22	72	10	4	10x22						
11	22	79	12	4	11x22						
12	26	83	12	4	12x26						
13	26	83	12	4	13x26						
14	26	83	12	4	14x26						
15	26	83	12	4	15x26						
16	32	92	16	4	16x32						
17	32	92	16	4	17x32						
18	32	92	16	4	18x32						
20	38	104	20	4	20x38						
22	38	104	20	5	22x38						
24	45	121	25	5	24x45						
25	45	121	25	5	25x45						
26	45	121	25	5	26x45						
28	45	121	25	5	28x45						
30	45	121	25	5	30x45						
32	53	133	32	6	32x53						

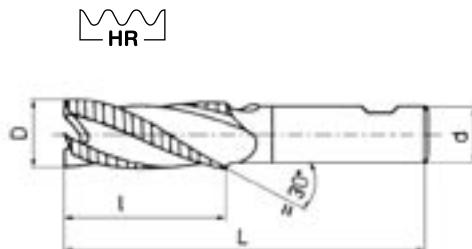
We deliver these tools with coating (TiN, TiCN, TiAlN) also.

**END MILLS SHORT,
HR P, 1 TOOTH CUT OVER
CENTRE**


D k 12	I	L	d h 6	Z	HSSE-PM + AITIN	HSS Co8			
6	13	57	6	4	6×13	6×13			
7	16	66	10	4	-	7×16			
8	19	69	10	4	8×19	8×19			
9	19	69	10	4	-	9×19			
10	22	72	10	4	10×22	10×22			
11	22	79	12	4	-	11×22			
12	26	83	12	4	12×26	12×26			
13	26	83	12	4	-	13×26			
14	26	83	12	4	14×26	14×26			
15	26	83	12	4	-	15×26			
16	32	92	16	4	16×32	16×32			
17	32	92	16	4	-	17×32			
18	32	92	16	4	18×32	18×32			
20	38	104	20	4	20×38	20×38			
22	38	104	20	5	-	22×38			
24	45	121	25	5	-	24×45			
25	45	121	25	5	-	25×45			
26	45	121	25	5	-	26×45			
28	45	121	25	5	-	28×45			
30	45	121	25	5	-	30×45			
32	53	133	32	6	-	32×53			

We deliver these tools with coating (TiN, TiCN, TiAlN) also.
128517P - AITIN coated

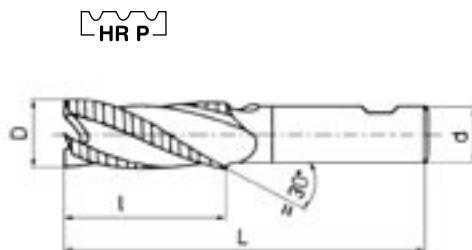
End Mills



END MILLS LONG,
HR, 1 TOOTH CUT OVER CENTRE



D k 12	I	L	d h 6	z	HSS Co8						
10	45	95	10	4	10×45						
12	53	110	12	4	12×53						
14	53	110	12	4	14×53						
16	63	123	16	4	16×63						
18	63	123	16	4	18×63						
20	75	141	20	4	20×75						
22	75	141	20	5	22×75						
24	90	166	25	5	24×90						
25	90	166	25	5	25×90						
26	90	166	25	5	26×90						
28	90	166	25	5	28×90						
30	90	166	25	5	30×90						
32	106	186	32	6	32×106						



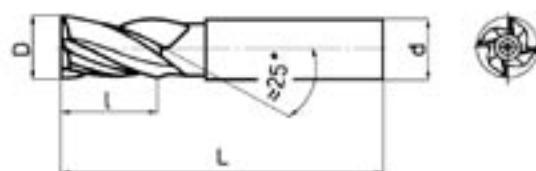
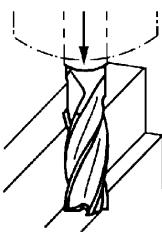
END MILLS LONG,
HR P, 1 TOOTH CUT OVER
CENTRE



D k 12	I	L	d h 6	z	HSS Co8						
10	45	95	10	4	10×45						
12	53	110	12	4	12×53						
14	53	110	12	4	14×53						
16	63	123	16	4	16×63						
18	63	123	16	4	18×63						
20	75	141	20	4	20×75						
22	75	141	20	5	22×75						
24	90	166	25	5	24×90						
25	90	166	25	5	25×90						
26	90	166	25	5	26×90						
28	90	166	25	5	28×90						
30	90	166	25	5	30×90						
32	106	186	32	6	32×106						

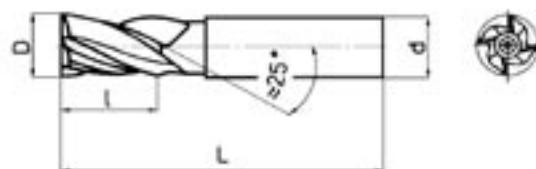
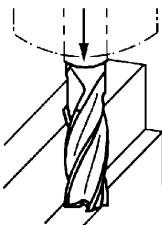
We deliver these tools with coating (TiN, TiCN, TiAlN) also.

END MILLS SHORT, FINE TEETH



D k 12	I	L	d h 6	z	HSS Co8					
10	22	72	10	5	10×22					
12	26	83	12	5	12×26					
16	32	92	16	6	16×32					
20	38	104	20	6	20×38					

END MILLS LONG, FINE TEETH

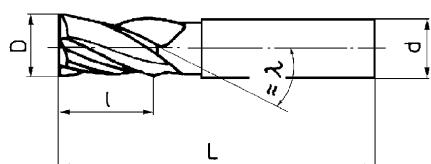
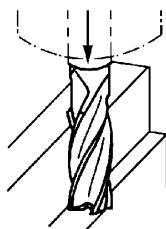


D k 12	I	L	d h 6	z	HSS Co8					
10	45	95	10	5	10×45					
12	53	110	12	5	12×53					
14	53	110	12	5	14×53					
16	63	123	16	6	16×63					
18	63	123	16	6	18×63					
20	75	141	20	6	20×75					

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

End Mills

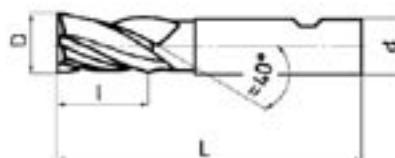
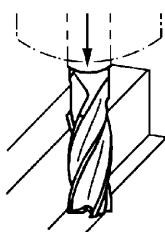
END MILLS SHORT



D k 10	I	L	d h 6	Z	$\approx \lambda$	HSS Co5	HSS Co8	HSS Co5	HSS Co8		
6	13	57	6	4	40°		6×13		6×13		
7	16	66	10	4	40°	7×16	7×16	7×16	7×16		
8	19	69	10	4	40°	8×19	8×19	8×19	8×19		
9	19	69	10	4	40°	9×19	9×19	9×19	9×19		
10	22	72	10	4	40°	10×22	10×22	10×22	10×22		
11*	22	79	12	4	40°	11×22	11×22	11×22	11×22		
12	26	83	12	4	40°	12×26	12×26	12×26	12×26		
13*	26	83	12	4	40°	13×26	13×26	13×26	13×26		
14	26	83	12	4	40°	14×26	14×26	14×26	14×26		
15*	26	83	12	4	40°	15×26	15×26	15×26	15×26		
16	32	92	16	4	40°	16×32	16×32	16×32	16×32		
18	32	92	16	4	40°	18×32	18×32	18×32	18×32		
20	38	104	20	4	40°	20×38	20×38	20×38	20×38		
22	38	104	20	5	35°	-	-	-	-	22×38	
24	45	121	25	5	35°	-	-	-	-	24×45	
25	45	121	25	5	35°	-	-	-	-	25×45	
28	45	121	25	5	35°	-	-	-	-	28×45	
30	45	121	25	6	35°	-	-	-	-	30×45	
32	53	133	32	6	35°	-	-	-	-	32×53	
36	53	133	32	6	35°	-	-	-	-	36×53	
40	63	143	32*	6	35°	-	-	-	-	40×63	

* ≠ DIN 844

**END MILLS SHORT,
1 TOOTH CUT OVER CENTRE**

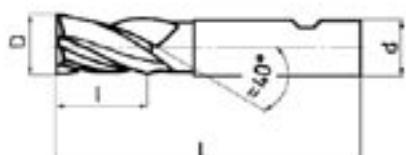
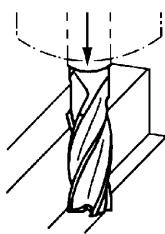


D k 12	I	L	d h 6	z	HSS Co8					
4	11	55	6	3	4x11					
5	13	57	6	3	5x13					
6	13	57	6	3	6x13					
7	16	66	10	3	7x16					
8	19	69	10	3	8x19					
9	19	69	10	3	9x19					
10	22	72	10	3	10x22					
11*	22	79	12	3	11x22					
12	26	83	12	3	12x26					
13*	26	83	12	3	13x26					
14	26	83	12	3	14x26					
15*	26	83	12	3	15x26					
16	32	92	16	3	16x32					
18	32	92	16	3	18x32					
20	38	104	20	3	20x38					

* / ≠ DIN 844

End Mills

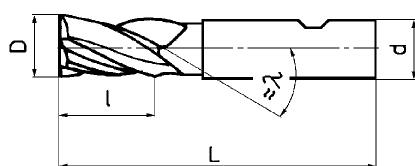
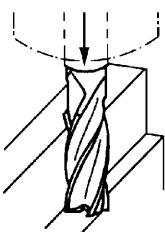
END MILLS SHORT,
2 TEETH CUT TO CENTRE



D k 10	I	L	d h 6	Z	HSS Co8	HSS Co8				
2	7	51	6	4	2×7	2×7				
2,5	8	52	6	4	2,5×8	2,5×8				
3	8	52	6	4	3×8	3×8				
3,5	10	54	6	4	3,5×10	3,5×10				
4	11	55	6	4	4×11	4×11				
4,5	11	55	6	4	4,5×11	4,5×11				
5	13	57	6	4	5×13	5×13				
6	13	57	6	4	-	6×13				
7	16	66	10	4	-	7×16				
8	19	69	10	4	-	8×19				
9	19	69	10	4	-	9×19				
10	22	72	10	4	-	10×22				
11	22	79	12	4	-	11×22				
12	26	83	12	4	-	12×26				
13	26	83	12	4	-	13×26				
14	26	83	12	4	-	14×26				
15	26	83	12	4	-	15×26				
16	32	92	16	4	-	16×32				
18	32	92	16	4	-	18×32				
20	38	104	20	4	-	20×38				
24	45	121	25	5	-	24×45				
25	45	121	25	5	-	25×45				

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

END MILLS LONG

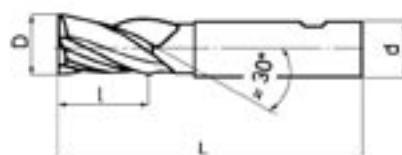
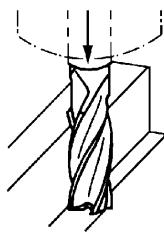


D k 10	I	L	d h 6	Z	$\approx\lambda$	HSS Co5	HSS Co8	HSS Co5	HSS Co8	
3	12	56	6	4	30°	-	3×12	-	3×12	
4	19	63	6	4	40°	-	4×19	-	4×19	
5	24	68	6	4	40°	-	5×24	-	5×24	
6	24	68	6	4	40°	-	6×24	-	6×24	
7	30	80	10	4	40°	7×30	7×30	7×30	7×30	
8	38	88	10	4	40°	8×38	8×38	8×38	8×38	
9	38	88	10	4	40°	9×38	9×38	9×38	9×38	
10	45	95	10	4	40°	10×45	10×45	10×45	10×45	
11*	45	102	12	4	40°	11×45	11×45	11×45	11×45	
12	53	110	12	4	40°	12×53	12×53	12×53	12×53	
14	53	110	12	4	40°	14×53	14×53	14×53	14×53	
15*	53	110	12	4	40°	15×53	15×53	15×53	15×53	
16	63	123	16	4	40°	16×63	16×63	16×63	16×63	
18	63	123	16	4	40°	18×63	18×63	18×63	18×63	
20	75	141	20	4	40°	20×75	20×75	20×75	20×75	
22	75	141	20	5	35°	-	-	-	22×75	
25	90	166	25	5	35°	-	-	-	25×90	
28	90	166	25	5	35°	-	-	-	28×90	
30	90	166	25	6	35°	-	-	-	30×90	
32	106	186	32	6	35°	-	-	-	32×106	
36	106	186	32	6	35°	-	-	-	36×106	
40	125	205	32*	6	35°	-	-	-	40×125	

* / ≠ DIN 844

End Mills

MINI END MILLS SHORT

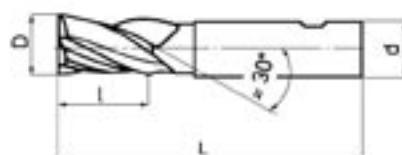
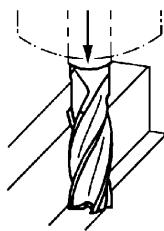


$D \leq 2,5 \text{ mm}$
 $D \geq 3 \text{ mm}$



D k 10	I	L	d h 6	Z	HSS Co8					
2	4	35	6	3	2x4					
2,5	5	36	6	3	2,5x5					
3	5	36	6	3	3x5					
3,5	6	37	6	3	3,5x6					
4	7	38	6	3	4x7					
4,5	7	38	6	3	4,5x7					
5	8	39	6	3	5x8					
5,5	8	39	6	3	5,5x8					
6	8	39	6	3	6x8					

MINI END MILLS LONG



$D \leq 2,5 \text{ mm}$
 $D \geq 3 \text{ mm}$



D k 10	I	L	d h 6	Z	HSS Co8					
2	7	38	6	3	2x7					
2,5	8	39	6	3	2,5x8					
3	8	39	6	3	3x8					
3,5	10	41	6	3	3,5x10					
4	11	42	6	3	4x11					
4,5	11	42	6	3	4,5x11					
5	13	44	6	3	5x13					
5,5	13	44	6	3	5,5x13					
6	13	44	6	3	6x13					

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

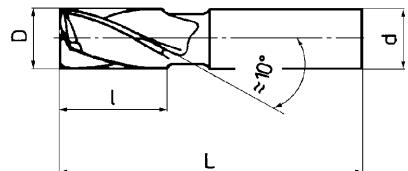
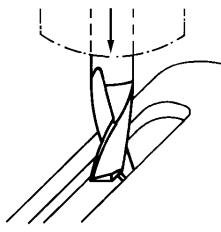
**SETS OF END MILLS
WITH STRAIGHT SHANK**

6, 8, 10, 12, 16, 20



CODE	Materiál	Uncoated	TiN	TiCN	TiAlN	AlTiN
F 104418P.SET	HSS Co8	●	●	●	●	
F 110418.SET	HSS Co8	●	●	●	●	
F 120517.SET	HSSE-PM+AlTiN					●
F 120518.SET	HSS Co8	●	●	●	●	
F 154518.SET	HSS Co8	●	●	●	●	
F 124518P.SET	HSS Co8	●	●	●	●	
F 128518.SET	HSS Co8	●	●	●	●	
F 128517P.SET	HSSE-PM+AlTiN					●
F 128518P.SET	HSS Co8	●	●	●	●	
F 140218.SET	HSS Co8	●	●	●	●	
F 140418.SET	HSS Co8	●	●	●	●	
F 140618.SET	HSS Co8	●	●	●	●	

Slot Drills

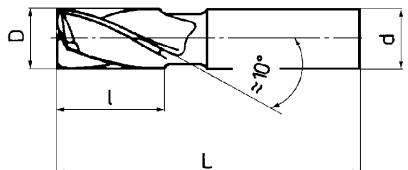
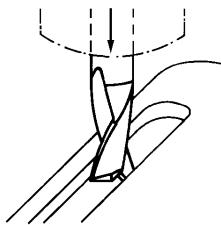


SLOT DRILLS SHORT,
CENTRE CUTTING



D e 8	I	L	d h 6	HSS Co8				
2	4	48	6	2x4				
3	5	49	6	3x5				
4	7	51	6	4x7				
5	8	52	6	5x8				
6	8	52	6	6x8				
7	10	60	10	7x10				
8	11	61	10	8x11				
10	13	63	10	10x13				
12	16	73	12	12x16				
14	16	73	12	14x16				
16	19	79	16	16x19				
18	19	79	16	18x19				
20	22	88	20	20x22				
22	22	88	20	22x22				
25	26	96	20*	25x26				
28	26	96	20*	28x26				

* / ≠ DIN 327



SLOT DRILLS LONG,
CENTRE CUTTING

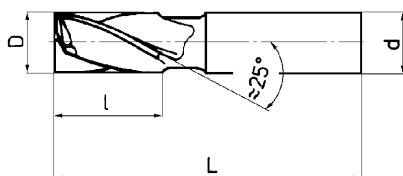
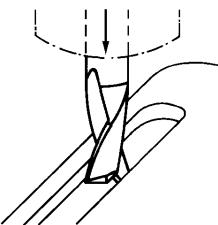


D e 8	I	L	d h 6	HSS Co8				
2	7	51	6	2x7				
3	8	52	6	3x8				
4	11	55	6	4x11				
5	13	57	6	5x13				
6	13	57	6	6x13				
7	16	66	10	7x16				
8	19	69	10	8x19				
10	25	75	10	10x25				
12	28	82	12	12x28				
14	32	90	12	14x32				
16	36	100	16	16x36				
18	40	105	16	18x40				
20	45	115	20	20x45				
22	50	125	20	22x50				
25	56	130	20	25x56				
28	63	140	20	28x63				

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

Slot Drills

SLOT DRILLS SHORT, CENTRE CUTTING

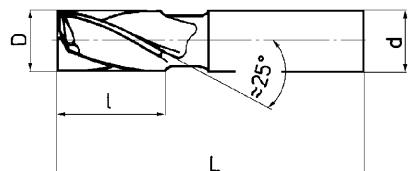
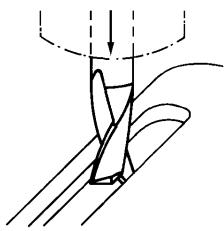


D e 8	I	L	d h 6	HSS Co8	HSS Co8	HSS Co5		
2	4	48	6	2x4	2x4	-		
2,5	5	49	6	2,5x5	2,5x5	-		
3	5	49	6	3x5	3x5	-		
3,5	6	50	6	3,5x6	3,5x6	-		
4	7	51	6	4x7	4x7	-		
4,5	7	51	6	4,5x7	4,5x7	-		
5	8	52	6	5x8	5x8	-		
5,5	8	52	6	5,5x8	5,5x8	-		
6	8	52	6	6x8	6x8	-		
6,5	10	60	10	6,5x10	6,5x10	-		
7	10	60	10	7x10	7x10	-		
7,5	10	60	10	7,5x10	7,5x10	-		
8	11	61	10	8x11	8x11	8x11		
8,5	11	61	10	8,5x11	8,5x11	-		
9	11	61	10	9x11	9x11	9x11		
9,5	11	61	10	9,5x11	9,5x11	-		
10	13	63	10	10x13	10x13	10x13		
10,5	13	70	12	10,5x13	10,5x13	-		
11	13	70	12	11x13	11x13	11x13		
11,5	13	70	12	11,5x13	11,5x13	-		
12	16	73	12	12x16	12x16	12x16		
13	16	73	12	13x16	13x16	13x16		
14	16	73	12	14x16	14x16	14x16		
15	16	73	12	15x16	15x16	15x16		
16	19	79	16	16x19	16x19	16x19		
17	19	79	16	17x19	17x19	17x19		
18	19	79	16	18x19	18x19	18x19		
19	19	79	16	19x19	19x19	19x19		
20	22	88	20	20x22	20x22	20x22		
22	22	88	20	22x22	22x22	22x22		
24	26	102	25	-	24x26	24x26		
25	26	102	25	-	25x26x25	25x26x25		
25	26	96	20*	25x26x20	-	25x26x20		
26	26	102	25	-	26x26	26x26		
28	26	102	25	-	28x26x25	28x26x25		
28	26	96	20*	28x26x20	-	28x26x20		
30	26	102	25	-	30x26	-		
32	32	112	32	-	32x32	-		
36	32	112	32	-	36x32	-		
40	38	118	32*	-	40x38	-		

* / ≠ DIN 844

* only to the sell the stock

Slot Drills



SLOT DRILLS LONG,
CENTRE CUTTING

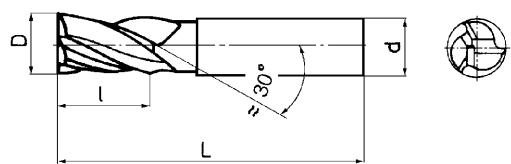
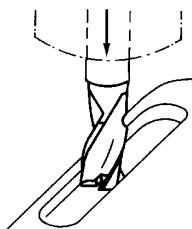


D e 8	I	L	d h 6	HSS Co8	HSS Co8				
4	11	63	6	4x11	4x11				
5	13	68	6	5x13	5x13				
6	13	68	6	6x13	6x13				
7	16	80	10	7x16	7x16				
8	19	88	10	8x19	8x19				
9	19	88	10	9x19	9x19				
10	22	95	10	10x22	10x22				
11	22	102	12	11x22	11x22				
12	26	110	12	12x26	12x26				
13	26	110	12	13x26	13x26				
14	26	110	12	14x26	14x26				
15	26	110	12	15x26	15x26				
16	32	123	16	16x32	16x32				
18	32	123	16	18x32	18x32				
20	38	141	20	20x38	20x38				
22	38	141	20	22x38	22x38				
24	45	166	25	24x45	24x45				
25	45	166	25	25x45	25x45				
26	45	166	25	26x45	26x45				
28	45	166	25	28x45	28x45				
30	45	166	25	30x45	30x45				
32	53	186	32	32x53	32x53				

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

Slot Drills

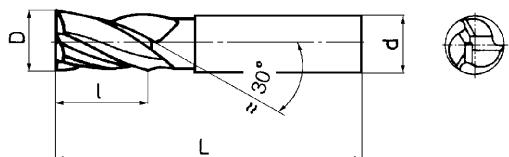
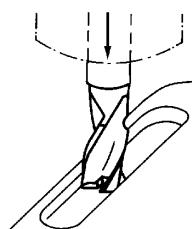
SLOT DRILLS SHORT, 3-FLUTED, CENTRE CUTTING



D e 8	I	L	d h 6	HSSE-PM + AlTiN	HSS Co8				
3	5	49	6	-	3x5				
4	7	51	6	-	4x7				
5	8	52	6	-	5x8				
6	8	52	6	6x8	6x8				
7	10	60	10	-	7x10				
8	11	61	10	8x11	8x11				
10	13	63	10	10x13	10x13				
12	16	73	12	12x16	12x16				
14	16	73	12	14x16	14x16				
16	19	79	16	16x19	16x19				
18	19	79	16	18x19	18x19				
20	22	88	20	20x22	20x22				

230417 - AlTiN coated.

SLOT DRILLS LONG, 3-FLUTED, CENTRE CUTTING

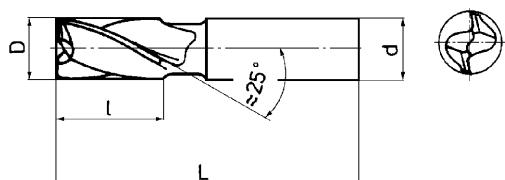
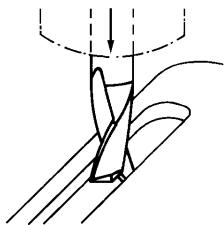


D e 8	I	L	d h 6	HSS Co8					
3	8	52	6	3x8					
4	11	55	6	4x11					
5	13	57	6	5x13					
6	13	57	6	6x13					
7	16	66	10	7x16					
8	19	69	10	8x19					
10	22	72	10	10x22					
12	26	83	12	12x26					
14	26	83	12	14x26					
16	32	92	16	16x32					
18	32	92	16	18x32					
20	38	104	20	20x38					

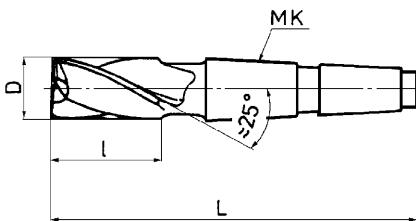
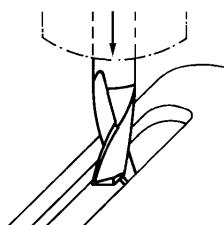
We deliver these tools with coating (TiN, TiCN, TiAlN) also.

Slot Drills

SLOT DRILLS SHORT



D h 10	I	L	d h 6	HSS Co8				
2,8	5	49	6	2,8x5				
3,8	7	51	6	3,8x7				
4,8	8	52	6	4,8x7				
5,75	8	52	6	5,75x8				
6,75	10	60	10	6,75x10				
7,75	11	61	10	7,75x11				
9,7	13	63	10	9,7x13				
11,7	16	73	12	11,7x16				
13,7	16	73	12	13,7x16				
15,7	19	79	16	15,7x19				
17,7	19	79	16	17,7x19				
19,7	22	88	20	19,7x22				
21,7	22	88	20	21,7x22				
24,7	26	96	20	24,7x26				
27,7	26	96	20	27,7x26				



SLOT DRILLS SHORT, CENTRE CUTTING



D e 8	I	L	Mk	HSS Co5				
12	14	85	1	12x14				
14	16	100	2	14x16				
16	18	105	2	16x18				
18	20	110	2	18x20				
20	20	115	2	20x20				
22	22	120	2	22x22				
24	25	140	3	24x25				
25	25	140	3	25x25				
28	28	145	3	28x28				
30	30	150	3	30x30				
32	32	175	4	32x32				
36	34	175	4	36x34				
40	38	180	4	40x38				
45	42	185	4	45x42				
50	45	220	5	50x45				

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

SETS OF SLOT DRILLS

6, 8, 10, 12, 16, 20



	Materiál	Uncoated	TiN	TiCN	TiAlN	AlTiN
F 210508.SET	HSS Co8	●	●	●	●	
F 220418.SET	HSS Co8	●	●	●	●	
F 230417.SET	HSSE-PM+AlTiN					●
F 230418.SET	HSS Co8	●	●	●	●	
F 231418.SET	HSS Co8	●	●	●	●	

SETS OF MILLING CUTTERS WITH STRAIGHT SHANK

4, 5, 6, 8, 10, 12

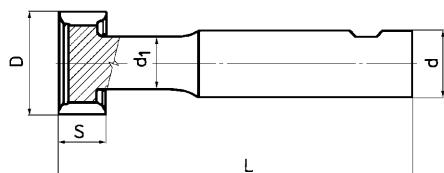
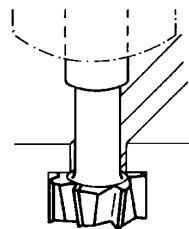


CODE	Materiál	Uncoated	TiN	TiCN	TiAlN	AlTiN
F 120518.SET	HSS Co8					
F 140418.SET	HSS Co8					
F 140618.SET	HSS Co8					
F 220418.SET	HSS Co8					
F 230418.SET	HSS Co8					
F 231418.SET	HSS Co8					
F 510418.SET	HSS Co8					
F 530718.SET	HSS Co8					

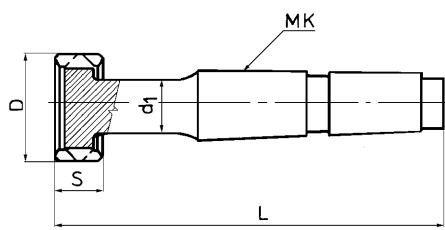
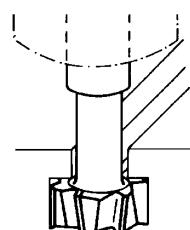
We deliver these tools with coating (TiN, TiCN, TiAlN) also.

Form Cutters

T-SLOT CUTTERS



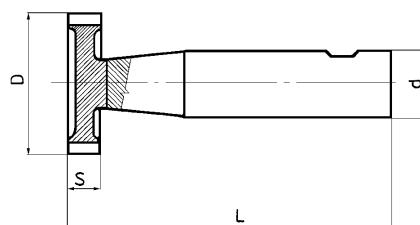
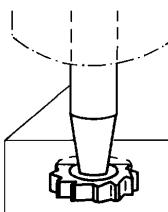
D d 11	S d 11	L	d1	d h 6	Z	HSS Co5					
12,5	6	57	5	10	6	12,5x6					
16	8	62	7	10	6	16x8					
18	8	70	8	12	8	18x8					
21	9	74	10	12	8	21x9					
25	11	82	12	16	8	25x11					
28	12	85	13	16	8	28x12					
32	14	90	15	16	8	32x14					



D h 12	S h 12	L	d1	MK	Z	HSS					
32	14	111	16	2	8	32					
40	18	138	20	3	8	40					
50	22	173	25	4	8	50					
60	28	188	31	4	10	60					
72	35	229	36	5	10	72					

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

WOODRUFF KEYSEAT CUTTERS

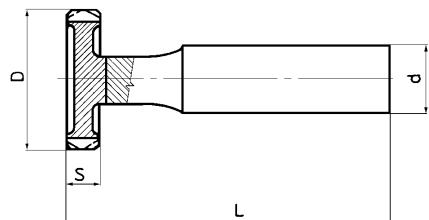
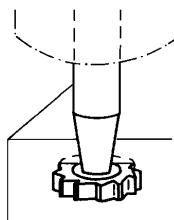


D h 12	S e 8	L	d h 6	Z					
4,5**	1	50	6	6	4,5x1				
7,5**	1,5	50	6	8	7,5x1,5				
7,5**	2	50	6	8	7,5x2				
10,5	2	50	6	8	10,5x2				
10,5	2,5	50	6	8	10,5x2,5				
10,5	3	50	6	8	10,5x3				
13,5*	2	56	10	8	13,5x2				
13,5	3	56	10	8	13,5x3				
13,5	4	56	10	8	13,5x4				
16,5	3	56	10	8	16,5x3				
16,5	4	56	10	8	16,5x4				
16,5	5	56	10	8	16,5x5				
19,5*	3	63	10	8	19,5x3				
19,5	4	63	10	8	19,5x4				
19,5	5	63	10	8	19,5x5				
19,5	6	63	10	8	19,5x6				
22,5*	4	63	10	8	22,5x4				
22,5	5	63	10	8	22,5x5				
22,5	6	63	10	8	22,5x6				
22,5	8	63	10	8	22,5x8				
25,5*	5	63	10	10	25,5x5				
25,5	6	63	10	10	25,5x6				
28,5	6	63	10	10	28,5x6				
28,5	8	63	10	10	28,5x8				
28,5	10	71	12	10	28,5x10				
32,5*	6	71	12	10	32,5x6				
32,5	7	71	12	10	32,5x7				
32,5	8	71	12	10	32,5x8				
32,5	10	71	12	10	32,5x10				
38,5	8	71	12	10	38,5x8				
45,5*	8	71	12	12	45,5x8				
45,5	10	71	12	12	45,5x10				

*/ ≠ DIN 1833

**/ straight teeth

Form Cutters



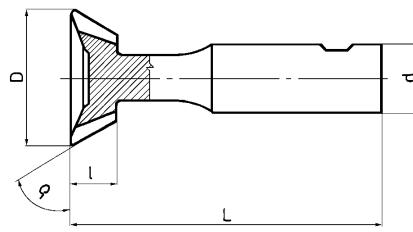
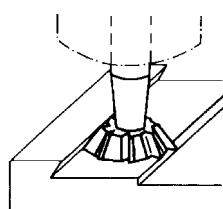
WOODRUFF KEYSEAT CUTTERS



D	D1 h 11	S e 8	L	d h 8	Z	HSS D1		HSS D1			
7	7,5	1,5	35	5	8	-		7x1,5			
7	7,5	2	40	6	8	-		7x2			
10	10,8	1	45	8	8	-		10x1			
10	10,8	1,6	45	8	8	-		10x1,6			
10	10,8	2,5	45	8	8	-		10x2,5			
10	10,8	3	45	8	8	-		10x3			
13	14	3	45	8	8	-		13x3			
13	14	4	50	10	8	13x4		-			
16	17,2	1,6	50	10	8	-		16x1,6			
16	17,2	2	50	10	8	-		16x2			
16	17,2	3	50	10	8	-		16x3			
16	17,2	4	50	10	8	16x4		-			
16	17,2	5	60	12	8	16x5		-			
19	20,5	4	50	10	8	19x4		-			
19	20,5	5	60	12	8	19x5		-			
22	23,7	5	60	12	8	22x5		-			
22	23,7	6	60	12	8	22x6		-			
25	27	2	60	12	10	-		25x2			
25	27	3	60	12	10	-		25x3			
25	27	6	60	12	10	25x6		-			
28	30,2	6	60	12	10	28x6		-			
28	30,2	8	70	16	10	28x8		-			
32	34,5	6	70	16	10	32x6		-			
32	34,5	8	70	16	10	32x8		-			
38	41	8	70	16	10	38x8		-			
45	48,6	8	70	16	10	45x8		-			
45	48,6	10	70	16	10	45x10		-			

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

DOVETAIL MILLING CUTTERS

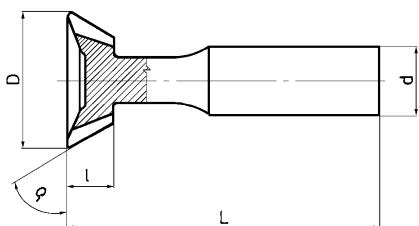
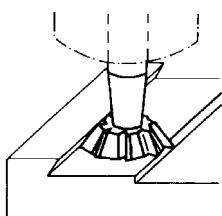


ρ	D	I	L	d h 6	Z	HSS Co5	HSS Co5			
45°	16	4	60	12	10	45×16	45×16			
45°	20	5	63	12	10	45×20	45×20			
45°	25	6,3	67	12	10	45×25	45×25			
45°	32	8	71	16	12	-	45×32			
50°	16	5	60	12	10	50×16	50×16			
50°	20	6,3	63	12	10	50×20	50×20			
50°	25	8	67	12	10	50×25	50×25			
55°	16	5,6	60	12	10	55×16	55×16			
55°	20	7,1	63	12	10	55×20	55×20			
55°	25	9	67	12	10	55×25	55×25			
60°	16	6,3	60	12	10	60×16	60×16			
60°	20	8	63	12	10	60×20	60×20			
60°	25	10	67	12	10	60×25	60×25			
60°	32	12,5	71	16	12	-	60×32			
•65°	16	6,3	60	12	10	-	65×16			
•65°	25	10	67	12	12	-	65×25			
•70°	16	8	60	12	10	70×16	70×16			
•70°	20	9	63	12	10	70×20	70×20			
•70°	25	10	67	12	12	70×25	70×25			
•75°	16	8	60	12	10	-	75×16			
•75°	25	10	67	12	12	-	75×25			
•80°	16	8	60	12	10	-	80×16			
•80°	25	10	67	12	12	-	80×25			
•85°	16	8	60	12	10	-	85×16			
•85°	25	10	67	12	12	-	85×25			

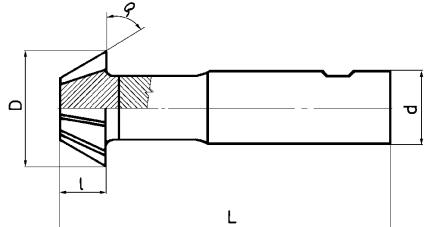
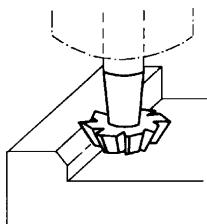
*/ ≠ DIN 1833

Form Cutters

DOVETAIL MILLING CUTTERS



ρ	D	I	L	d h 6	z	HSS Co5				
55°	16	6	50	8	10	55×16				
55°	20	8	58	10	10	55×20				
55°	25	10	66	12	12	55×25				
55°	32	12	75	16	14	55×32				
55°	40	15	85	16	14	55×40				
55°	50	18	95	20	16	55×50				

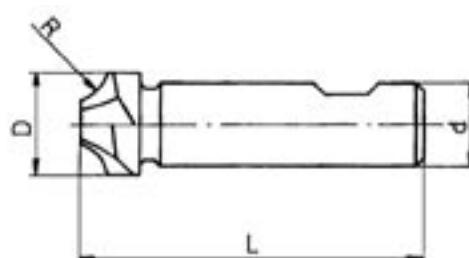
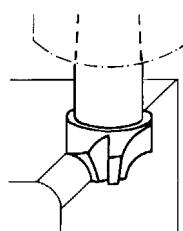
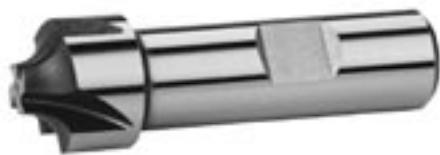


ρ	D	I	L	d h 6	z	HSS Co5	HSS Co5			
45°	16	4	60	12	10	45×16	45×16			
45°	20	5	63	12	10	45×20	45×20			
45°	25	6,3	67	12	10	45×25	45×25			
45°	32	8	71	16	10	-	45×32			
50°	16	5	60	12	10	-	50×16			
50°	20	6,3	63	12	10	-	50×20			
50°	25	8	67	12	10	-	50×25			
55°	16	5,6	60	12	10	-	55×16			
55°	20	7,1	63	12	10	-	55×20			
55°	25	9	67	12	10	-	55×25			
60°	16	6,3	60	12	10	60×16	60×16			
60°	20	8	63	12	10	60×20	60×20			
60°	25	10	67	12	10	60×25	60×25			
60°	32	12,5	71	16	12	-	60×32			
•65°	16	6,3	60	12	10	-	65×16			
•65°	25	10	67	12	10	-	65×25			
•70°	16	8	60	12	10	70×16	70×16			
•70°	20	9	63	12	10	70×20	70×20			
•70°	25	10	67	12	10	70×25	70×25			
•75°	16	8	60	12	10	-	75×16			
•75°	25	10	67	12	12	-	75×25			

* / ≠ DIN 1833

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

CORNER ROUNDING CONCAVE CUTTERS

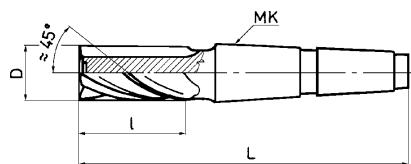
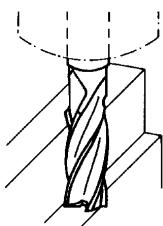


R h 11	D	L	d h 6	z	HSS Co8				
1	8	60	10	4	1				
1,5	10	60	10	4	1,5				
1,6	10	60	10	4	1,6				
2	10	60	10	4	2				
2,5	10	60	10	4	2,5				
3	12	60	12	4	3				
3,5	14	60	12	4	3,5				
4	14	60	12	4	4				
4,5	16	60	16	4	4,5				
5	16	60	16	4	5				
5,5	21	67	16	4	5,5				
6	21	67	16	4	6				
6,5	24	71	16	4	6,5				
7	24	71	16	4	7				
7,5	24	71	16	4	7,8				
8	24	71	16	4	8				
8,5	28	85	16	4	8,5				
9	28	85	25	4	9				
9,5	28	85	25	4	9,5				
10	28	85	25	4	10				
10,5	35	90	25	4	10,5				
11	35	90	25	4	11				
12	35	90	25	4	12				
12,5	42	100	25	6	12,5				
13	42	100	25	6	13				
14	42	100	25	6	14				
15	48	100	25	6	15				
16	48	100	25	6	16				
18	54	112	32	6	18				
20	58	112	32	6	20				

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

End Mills with Taper Shank

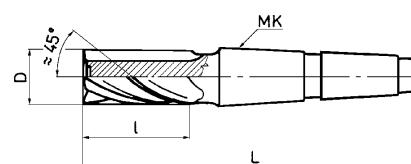
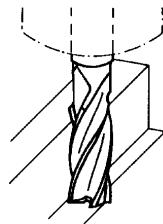
END MILLS - SHORT



D k 10	I	L	MK	Z	F 410245 HSS Co5	F 410940* HSS				
10	22	92	1	3	10×22	-				
12	26	111	2	3	12×25	-				
16	32	117	2	3	16×32	-				
20	38	123	2	3	20×38	-				
22	38	123	2	3	22×38	-				
25	45	147	3	4	25×45	-				
25	50	154	3	4	-	25×50				
28	45	147	3	4	28×45	-				
28	50	154	3	4	-	28×50				
30	45	147	3	4	30×45	-				
30	50	154	3	4	-	30×50				
32	53	178	4	4	32×53	32×53				
36	53	178	4	4	36×53	36×53				
40	63	188	4	4	40×63	40×63				
45	63	188	4	4	45×63	45×63				
50	70	228	5	5	-	50×70				
50	75	233	5	5	50×75	-				
63	80	241	5	6	-	63×80				
63	90	248	5	6	63×90	-				

* / ≠ DIN 845

END MILLS, LONG



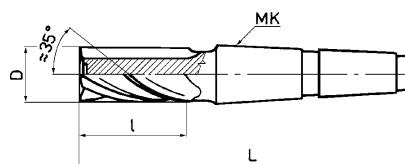
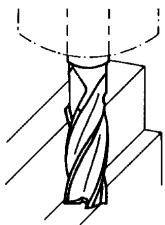
D k 10	I	L	MK	Z	HSS Co5	HSS				
25	80	184	3	4	-	25×80				
25	90	192	3	4	25×90	-				
32	100	229	4	4	-	32×100				
32	106	231	4	4	32×106	-				
40	125	256	4	4	40×125	40×125				
50	150	308	5	5	50×150	50×150				
63	180	341	5	6	63×180	63×180				

* / ≠ DIN 845

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

End Mills with Taper Shank

**END MILLS - SHORT,
MEDIUM-COARSE TEETH**

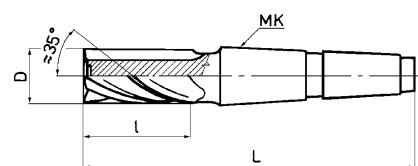
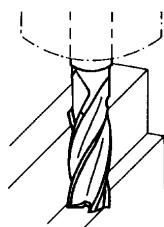


D k 10	I	L	MK	Z	HSS Co5	HSS			
10	22	92	1	4	10×22	-			
12	26	111	2	4	12×26	-			
14	26	111	2	4	14×26	-			
16	32	117	2	4	16×32	-			
18	32	117	2	4	18×32	-			
20	38	123	2	4	20×38	20×38			
22	38	123	2	5	22×38	22×38			
25	45	147	3	5	25×45	-			
25	50	154	3	5	-	25×50			
28	45	147	3	5	28×45	-			
28	50	154	3	5	-	28×50			
30	45	147	3	6	30×45	-			
30	50	154	3	6	-	30×50			
32	53	178	4	6	32×53	32×53			
36	53	178	4	6	36×53	36×53			
40	63	188	4	6	40×63	40×63			
45	63	188	4	6	45×63	45×63			
50	70	228	5	6	-	50×70			
50	75	233	5	6	50×75	-			
56	75	233	5	8	56×75	-			
63	80	241	5	8	-	63×80			
63	90	248	5	8	63×90	-			

•/ ≠ DIN 845

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

End Mills with Taper Shank



**END MILLS, LONG,
MEDIUM-COARSE TEETH**



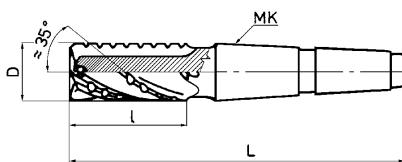
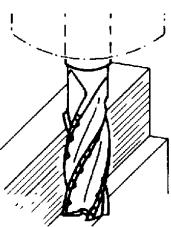
D k 10	I	L	MK	Z	HSS Co5	HSS				
10	45	115	1	4	10×45	-				
12	53	138	2	4	12×53	-				
14	53	138	2	4	14×53	-				
16	63	148	2	4	16×63	-				
18	63	148	2	4	18×63	-				
20	75	160	2	4	20×75	-				
22	75	160	2	5	22×75	22×75				
25	80	184	3	5	-	25×80				
25	90	192	3	6	25×90	-				
28	90	192	3	5	28×90	-				
32	100	229	4	6	-	32×100				
32	106	231	4	6	32×106	-				
36	106	231	4	6	36×106	-				
40	125	250	4	6	-	40×125				
45	125	250	4	6	45×125	-				
50	110	268	5	6	-	50×110				
50	150	308	5	6	50×150	50×150				
56	150	308	5	8	56×150	-				
63	180	338	5	8	63×180	63×180				

* ≠ DIN 845

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

End Mills with Taper Shank

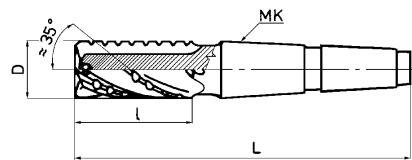
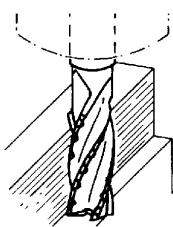
END MILLS, SHORT, MEDIUM-COARSE TEETH



D k 10	I	L	MK	Z	HSS Co5	HSS			
10	22	92	1	4	10×22	-			
12	26	111	2	4	12×26	-			
14	26	111	2	4	14×26	-			
16	32	117	2	4	16×32	-			
18	32	117	2	4	18×36	-			
20	38	123	2	4	20×38	20×38			
22	38	123	2	5	22×38	22×38			
25	45	147	3	5	25×45	-			
25	50	154	3	5	-	25×50			
28	45	147	3	5	28×45	-			
28	50	154	3	5	-	28×50			
30	45	147	3	6	30×45	-			
30	50	154	3	6	-	30×50			
32	53	178	4	6	32×53	32×53			
36	53	178	4	6	36×53	36×53			
40	63	188	4	6	40×63	40×63			
45	63	188	4	6	45×63	45×63			
50	70	228	5	6	-	50×70			
50	75	233	5	6	50×75	-			
56	75	233	5	8	56×75	-			
63	80	241	5	8	-	63×80			
63	90	248	5	8	63×90	-			

*/ ≠ DIN 845

End Mills with Taper Shank



END MILLS, LONG,
MEDIUM-COARSE TEETH



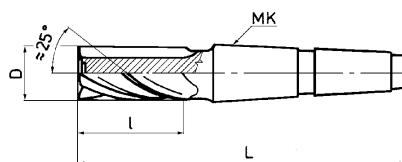
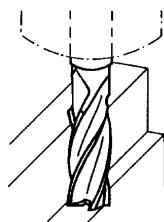
D k 10	I	L	MK	Z	HSS Co5	HSS			
10	45	115	1	4	10×45	-			
12	53	138	2	4	12×53	-			
14	53	138	2	4	14×53	-			
16	63	148	2	4	16×63	-			
18	63	148	2	4	18×63	-			
20	75	160	2	4	20×75	-			
22	75	160	2	5	22×75	22×75			
25	80	184	3	5	-	25×80			
25	90	192	3	6	25×90	-			
28	90	192	3	5	28×90	-			
32	100	229	4	6	-	32×100			
32	106	231	4	6	32×106	-			
36	106	231	4	6	36×106	-			
40	125	250	4	6	40×125	40×125			
45	125	250	4	6	45×125	-			
50	110	268	5	6	-	50×110			
50	150	308	5	6	50×150	50×150			
56	150	308	5	8	56×150	-			
63	180	338	5	8	63×180	63×180			

• / ≠ DIN 845

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

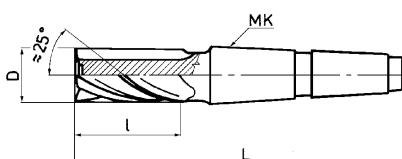
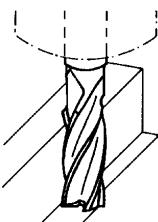
End Mills with Taper Shank

END MILLS, SHORT, FINE TEETH



D js 14	I	L	MK	Z	HSS				
10	22	90	1	5	10×22				
12	26	111	2	5	12×26				
14	26	111	2	5	14×26				
16	32	117	2	6	16×32				
18	36	120	2	6	18×36				
20	38	123	2	6	20×38				
22	38	123	2	6	22×38				
25	50	154	3	6	25×50				
28	50	154	3	7	28×50				
30	50	154	3	7	30×50				
32	53	178	4	7	32×53				
36	53	178	4	8	36×56				
40	63	188	4	8	40×63				
45	63	188	4	8	45×63				
50	70	228	5	10	50×70				
63	80	241	5	12	63×80				

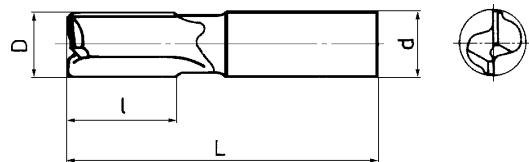
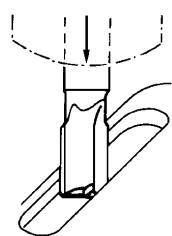
END MILLS, LONG, FINE TEETH



D js 14	I	L	MK	Z	HSS				
25	80	184	3	6	25×80				
32	100	229	4	7	32×100				
40	125	250	4	8	40×125				
50	110	268	5	10	50×110				
50	150	308	5	10	50×150				
63	180	338	5	12	63×180				

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

Die Sinking Cutters



DIE SINKING CUTTERS
SHORT, STRAIGHT TEETH

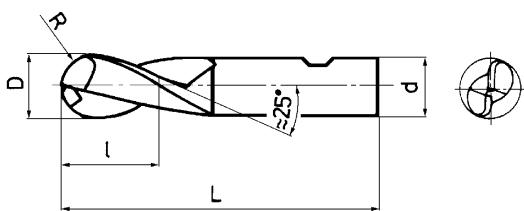
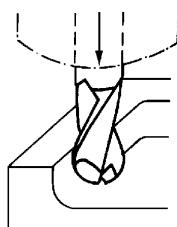


D k 12	I	L	d h 6	HSS Co5	HSS Co8			
2*	7	51	6	-	2x7			
2,5*	8	52	6	-	2,5x8			
3*	8	52	6	-	3x8			
3,5*	10	54	6	-	3,5x10			
4*	11	55	6	-	4x11			
4,5*	11	55	6	-	4,5x11			
5*	13	57	6	-	5x13			
5,5*	13	57	6	-	5,5x13			
6	13	57	6	-	6x13			
7	16	66	10	7x16	-			
8	19	69	10	8x19	-			
9	22	72	10	9x22	-			
10	25	75	10	10x25	-			
12	28	82	12	12x28	-			
14	32	90	12	14x32	-			
16	36	100	16	16x36	-			
18	40	105	16	18x40	-			
20	45	115	20	20x45	-			
22	50	125	20	22x50	-			
25	56	130	20	25x56	-			
28	63	140	20	28x63	-			

* / These sizes have right-hand helix $\lambda = 10^\circ$

Die Sinking Cutters

DIE SINKING CUTTERS SHORT, 2-FLUTED

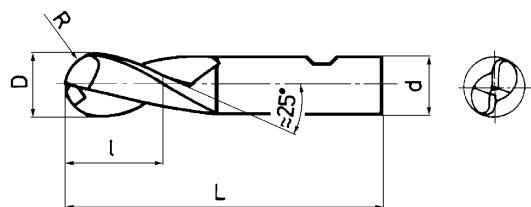
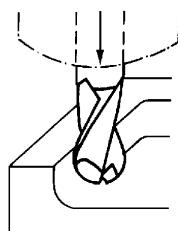


D k 12	I	L	d h 6	HSSE-PM+AITIN	HSS Co8				
4	7	51	6		4x7				
5	8	52	6		5x8				
6	8	52	6	6x8	6x8				
7	10	60	10		7x10				
8	11	61	10	8x11	8x11				
9	11	61	10		9x11				
10	13	63	10	10x13	10x13				
11	13	70	12		11x13				
12	16	73	12	12x16	12x16				
13	16	73	12		13x16				
14	16	73	12	14x16	14x16				
15	16	73	12		15x16				
16	19	79	16	16x19	16x19				
18	19	79	16	18x19	18x19				
20	22	88	20	20x22	20x22				
22	22	88	20		22x22				
24	26	102	25		24x26				
25	26	102	25		25x26				
28	26	102	25		28x26				
30	26	102	25		30x26				
32	32	112	32		32x32				

R = D/2

We deliver these tools with coating (TiN, TiCN, TiAlN) also.
510417 - AITiN coated.

Die Sinking Cutters

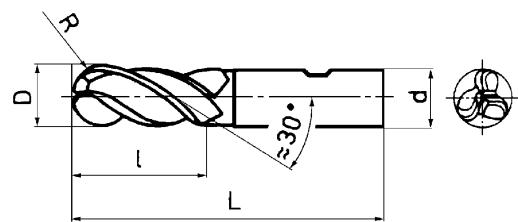
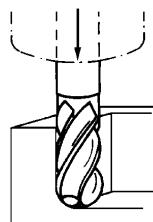


DIE SINKING CUTTERS
LONG, 2-FLUTED



D k 10	I	L	d h 6	HSS Co 8				
4	11	63	6	4x11				
5	13	68	6	5x13				
6	13	68	6	6x13				
7	16	80	10	7x16				
8	19	88	10	8x19				
9	19	88	10	9x19				
10	22	95	10	10x22				
11	22	102	12	11x22				
12	26	110	12	12x26				
13	26	110	12	13x26				
14	26	110	12	14x26				
15	26	110	12	15x26				
16	32	123	16	16x32				
18	32	123	16	18x32				
20	38	141	20	20x38				
22	38	141	20	22x38				
24	45	166	25	24x45				
25	45	166	25	25x45				
28	45	166	25	28x45				
30	45	166	25	30x45				
32	53	186	32	32x53				

R = D/2



DIE SINKING CUTTERS
SHORT, 3-FLUTED



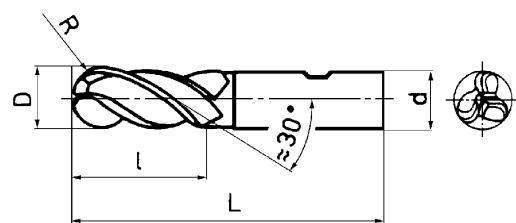
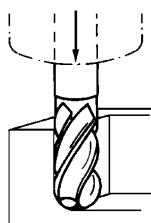
D k 12	I	L	d h 6	HSS Co 8				
6	13	57	6	6x13				
8	19	69	10	8x19				
10	22	72	10	10x22				
12	26	83	12	12x26				
16	32	92	16	16x32				
20	38	104	20	20x38				

R = D/2

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

Die Sinking Cutters

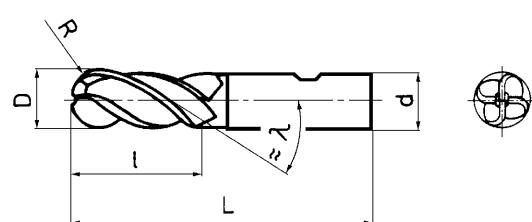
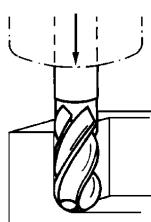
DIE SINKING CUTTERS LONG, 3-FLUTED



D k 12	I	L	d h 6	HSS Co8				
12	53	110	12	12×53				
16	63	123	16	16×63				
20	75	141	20	20×75				

R = D/2

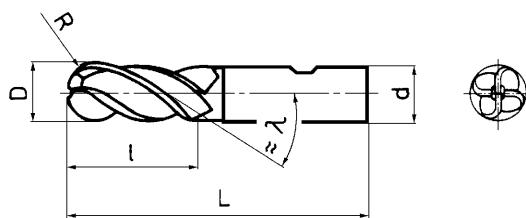
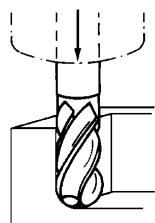
DIE SINKING CUTTERS SHORT, WITH BALL NOSE



D k 12	R	I	L	d h 6	Z	$\approx\lambda$	HSS Co8			
4	2	11	55	6	4	15°	4×11			
5	2,5	13	57	6	4	15°	5×13			
6	3	13	57	6	4	25°	6×13			
8	4	19	69	10	4	25°	8×19			
10	5	22	72	10	4	35°	10×22			
12	6	26	83	12	4	35°	12×26			
16	8	32	92	16	4	35°	16×32			
20	10	38	104	20	4	35°	20×38			

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

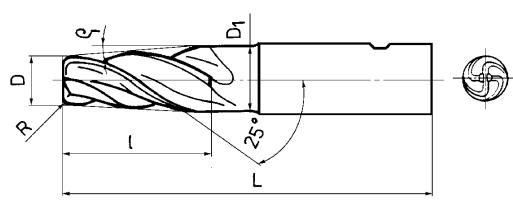
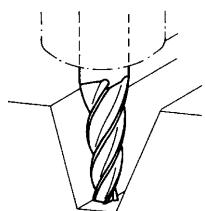
Die Sinking Cutters



DIE SINKING CUTTERS LONG,
WITH BALL NOSE



D k 12	R	I	L	d h 6	z	$\approx \lambda$	HSS Co8				
4	2	19	63	6	4	15°	4x19				
5	2,5	24	68	6	4	15°	5x24				
6	3	24	68	6	4	25°	6x24				
8	4	38	88	10	4	25°	8x38				
10	5	45	95	10	4	35°	10x45				
12	6	53	110	12	4	35°	12x53				
16	8	63	123	16	4	35°	16x63				
20	10	75	141	20	4	35°	20x75				



DIE SINKING CUTTERS TAPERED, 4-FLUTED



° ρ	D k 12	D1 ~	I	L	d h 6	HSS Co8					
1	5	5,7	20	73	10	1x5					
1	8	9,1	32	95	12	1x8					
1	12	13,7	50	118	16	1x12					
1	20	22,8	80	155	16	1x20					
2	5	6,4	20	74	10	2x5					
2	8	10,2	32	95	12	2x8					
2	12	15,5	50	118	16	2x12					
2	20	25,6	80	160	25	2x20					
3	5	7,1	20	74	10	3x5					
3	8	11,4	32	95	12	3x8					
3	12	17,2	50	120	20	3x12					
3	20	28,4	80	160	25	3x20					
5	5	8,5	20	74	10	5x5					
5	8	13,6	32	98	16	5x8					
5	12	20,7	50	120	20	5x12					
5	20	34	80	165	32	5x20					
7	5	9,9	20	80	12	7x5					
7	8	15,9	32	98	16	7x8					
7	12	24,3	50	130	25	7x12					
7	20	39,6	80	165	32	7x20					
10	5	12,1	20	80	12	10x5					
10	8	19,3	32	100	20	10x8					
10	12	29,6	50	130	25	10x12					
10	20	48,2	80	165	32	10x20					

R = 0,1 D

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

Die Sinking Cutters

SETS OF DIE SINKING CUTTERS

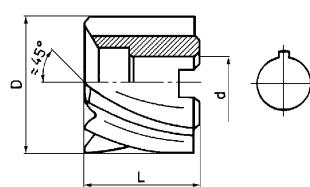
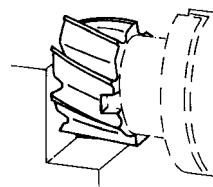
6, 8, 10, 12, 16, 20



CODE	Materiál	Uncoated	TiN	TiCN	TiAlN	AlTiN
F 510417.SET	HSSE-PM+AlTiN					●
F 510418.SET	HSS Co8	●	●	●	●	
F 520418.SET	HSS Co8	●	●	●	●	
F 530718.SET	HSS Co8	●	●	●	●	

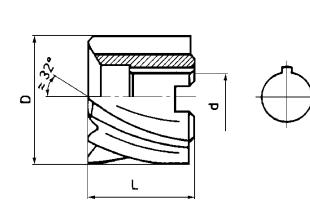
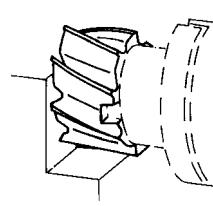
We deliver these tools with coating (TiN, TiCN, TiAlN) also.

Shell End Mills



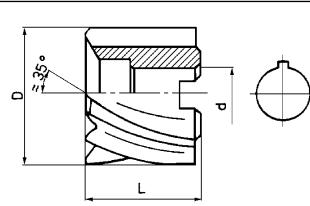
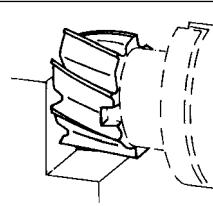
SHELL END MILLS, COARSE TEETH

D js 16	L	d H 7	Z	HSSE				
40	32	16	4	40x32				
50	36	22	6	50x36				
63	40	27	6	63x40				
80	45	27	6	80x45				
100	50	32	8	100x50				
125	56	40	8	125x56				
160	63	50	10	160x63				



SHELL END MILLS, MEDIUM-COARSE TEETH

D js 16	L	d H 7	Z	HSS Co5				
40	32	16	6	40x32				
50	36	22	8	50x36				
63	40	27	8	63x40				
80	45	27	10	80x45				
100	50	32	10	100x50				



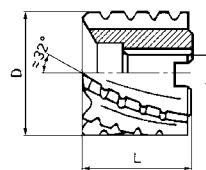
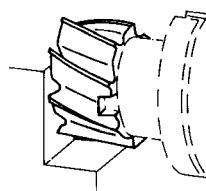
SHELL END MILLS MEDIUM-COARSE TEETH

D js 16	L	d H 7	Z	HSSE				
40	32	16	6	40x32				
50	36	22	8	50x36				
63	40	27	8	63x40				
80	45	27	10	80x45				
100	50	32	10	100x50				
125	56	40	12	125x56				
160	63	50	14	160x63				

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

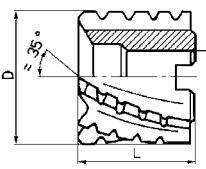
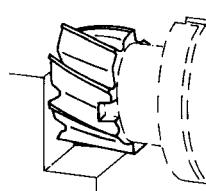
Shell End Mills

SHELL END MILLS, MEDIUM-COARSE TEETH



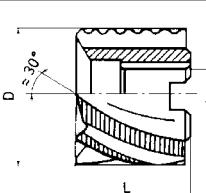
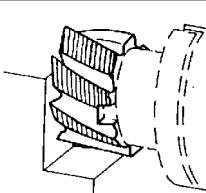
D js 16	L	d H 7	z	HSS Co5					
40	32	16	6	40x32					
50	36	22	8	50x36					
63	40	27	8	63x40					
80	45	27	10	80x45					
100	50	32	10	100x50					

SHELL END MILLS, MEDIUM-COARSE TEETH



D js 16	L	d H 7	z	HSSE					
40	32	16	6	40x32					
50	36	22	8	50x36					
63	40	27	8	63x40					
80	45	27	10	80x45					
100	50	32	10	100x50					
125	56	40	12	125x56					
160	63	50	14	160x63					

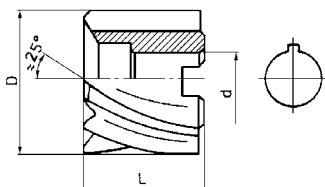
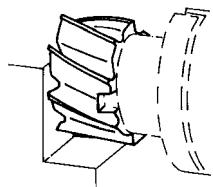
SHELL END MILLS, NR, MEDIUM-COARSE TEETH



D js 16	L	d H 7	z	HSS Co8					
40	32	16	6	40x32					
50	36	22	8	50x36					
63	40	27	8	63x40					
80	45	27	10	80x45					
100	50	32	10	100x50					

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

Shell End Mills



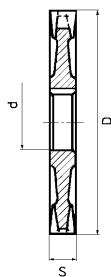
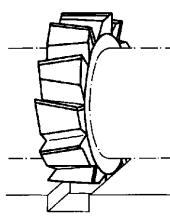
SHELL END MILLS, FINE TEETH

D js 16	L	d H 7	z	HSSE					
40	32	16	8	40×32					
50	36	22	10	50×36					
63	40	27	12	63×40					
80	45	27	14	80×45					
100	50	32	16	100×50					
125	56	40	18	125×56					
160	63	50	20	160×63					

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

Side And Face Milling Cutters

SIDE AND FACE MILLING CUTTERS, COARSE TEETH

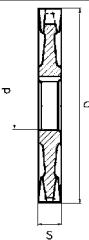
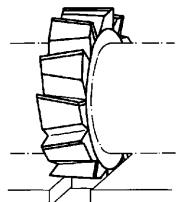


D js 16	s s 10	d H 7	z	HSSE						
63	8	22	6	63x8x22						
80	10	22	6	80x10x22						
100	12	27	8	100x12x27						
100	16	32	8	100x16x32						
125	14	32	8	125x14x32						
125	18	40	8	125x18x40						
160	16	32	10	160x16x32						
160	20	40	10	160x20x40						

Helix angle: 10°

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

Side And Face Milling Cutters



SIDE AND FACE MILLING
CUTTERS MEDIUM-COARSE TEETH

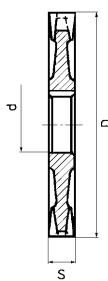
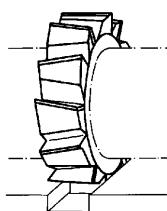
D js 16	s k 11	d H 7	z	HSS Co5					
50	4	16	12	50×4×16					
50	5	16	12	50×5×16					
50	6	16	12	50×6×16					
50	8	16	12	50×8×16					
50	10	16	12	50×10×16					
63	4	22	12	63×4×22					
63	5	22	12	63×5×22					
63	6	22	12	63×6×22					
63	8	22	12	63×8×22					
63	10	22	12	63×10×22					
63	12	22	12	63×12×22					
63	14	22	12	63×14×22					
63	15	22	12	63×15×22					
80	5	27	14	80×5×27					
80	6	27	14	80×6×27					
80	8	27	14	80×8×27					
80	10	27	14	80×10×27					
80	12	27	14	80×12×27					
80	14	27	14	80×14×27					
80	16	27	14	80×16×27					
80	18	27	14	80×18×27					
80	20	27	14	80×20×27					
100	6	32	14	100×6×32					
100	8	32	14	100×8×32					
100	10	32	14	100×10×32					
100	12	32	14	100×12×32					
100	14	32	14	100×14×32					
100	16	32	14	100×16×32					
100	18	32	14	100×18×32					
100	20	32	14	100×20×32					
100	25	32	14	100×25×32					
125	8	32	16	125×8×32					
125	10	32	16	125×10×32					
125	12	32	16	125×12×32					
125	14	32	16	125×14×32					
125	16	32	16	125×16×32					
125	18	32	16	125×18×32					
125	20	32	16	125×20×32					
125	25	32	16	125×25×32					
160	8	40	18	160×8×40					
160	10	40	18	160×10×40					
160	12	40	18	160×12×40					
160	14	40	18	160×14×40					
160	16	40	18	160×16×40					
160	18	40	18	160×18×40					
160	20	40	18	160×20×40					
160	25	40	18	160×25×40					
160	32	40	18	160×32×40					
200	8	40	24	200×8×40					
200	10	40	24	200×10×40					
200	12	40	24	200×12×40					
200	14	40	24	200×14×40					
200	16	40	24	200×16×40					
200	18	40	24	200×18×40					
200	20	40	24	200×20×40					
200	25	40	24	200×25×40					
200	32	40	24	200×32×40					

Helix angle: 10°

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

Side And Face Milling Cutters

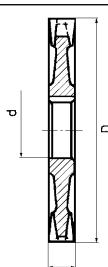
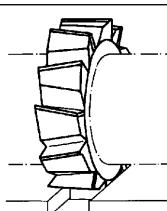
SIDE AND FACE MILLING CUTTERS, MEDIUM-COARSE TEETH



D js 16	S s 10	d H 7	z	HSSE						
63	8	22	12	63x8x22						
63	10	22	12	63x10x22						
63	12	22	12	63x12x22						
80	10	22	14	80x10x22						
80	8	27	14	80x8x27						
80	10	27	14	80x10x27						
80	12	27	14	80x12x27						
100	12	22	14	100x12x22						
100	10	27	14	100x10x27						
100	12	27	14	100x12x27						
100	14	27	14	100x14x27						
100	12	32	14	100x12x32						
100	14	32	14	100x14x32						
100	16	32	14	100x16x32						
125	14	27	16	125x14x27						
125	12	32	16	125x12x32						
125	14	32	16	125x14x32						
125	16	32	16	125x16x32						
125	14	40	16	125x14x40						
125	16	40	16	125x16x40						
125	18	40	16	125x18x40						
160	16	32	18	160x16x32						
160	14	40	18	160x14x40						
160	16	40	18	160x16x40						
160	18	40	18	160x18x40						
160	20	40	18	160x20x40						

Helix angle: 10°

NARROW SIDE AND FACE MILLING CUTTERS MEDIUM- COARSE TEETH



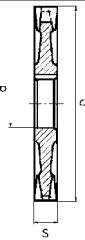
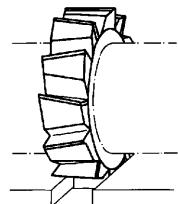
D js 16	S k 11	d H 7	z	HSS Co5						
63	1,6	22	16	63x1,6x22						
63	2	22	16	63x2x22						
63	2,5	22	16	63x2,5x22						
63	3	22	16	63x3x22						
63	4	22	16	63x4x22						
63	5	22	16	63x5x22						
63	6	22	16	66x6x22						
80	1,6	27	20	80x1,6x27						
80	2	27	20	80x2x27						
80	2,5	27	20	80x2,5x27						
80	3	27	20	80x3x27						

Helix angle: 10°

Continuation on next page.

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

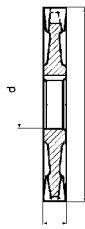
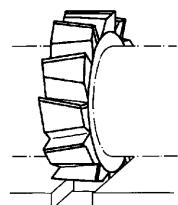
Side And Face Milling Cutters



NARROW SIDE AND FACE MILLING CUTTERS MEDIUM-COARSE TEETH

D js 16	S k 11	d H 7	Z	HSS Co5					
80	4	27	20	80×4×27					
80	5	27	20	80×5×27					
80	6	27	20	80×6×27					
100	1,6	32	24	100×1,6×32					
100	2	32	24	100×2×32					
100	2,5	32	24	100×2,5×32					
100	3	32	24	100×3×32					
100	4	32	24	100×4×32					
100	5	32	24	100×5×32					
100	6	32	24	100×6×32					
100	8	32	24	100×8×32					
125	1,6	32	26	125×1,6×32					
125	2	32	26	125×2×32					
125	2,5	32	26	125×2,5×32					
125	3	32	26	125×3×32					
125	4	32	26	125×4×32					
125	5	32	26	125×5×32					
125	6	32	26	125×6×32					
125	8	32	26	125×8×32					
125	10	32	26	125×10×32					
160	2	40	30	160×2×40					
160	2,5	40	30	160×2,5×40					
160	3	40	30	160×3×40					
160	4	40	30	160×4×40					
160	5	40	30	160×5×40					
160	6	40	30	160×6×40					
160	8	40	30	160×8×40					
160	10	40	30	160×10×40					
160	12	40	30	160×12×40					

Helix angle: 10°



SIDE AND FACE MILLING CUTTERS, FINE TEETH

D js 16	S k 11	d H 7	Z	HSS	HSS Co5				
50	4	16	16	-	50×4×16				
50	5	16	16	-	50×5×16				
50	6	16	16	-	50×6×16				
50	8	16	16	-	50×8×16				
50	10	16	16	-	50×10×16				
63	4	22	18	-	63×4×22				
63	5	22	18	-	63×5×22				
63	6	22	18	-	63×6×22				
63	8	22	18	-	63×8×22				
63	10	22	18	-	63×10×22				
63	12	22	18	-	63×12×22				
63	14	22	18	-	63×14×22				

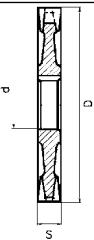
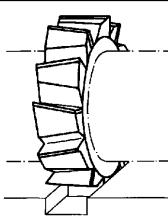
Helix angle: 10°

Continuation on next page.

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

Side And Face Milling Cutters

SIDE AND FACE MILLING CUTTERS, FINE TEETH

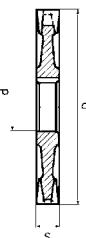
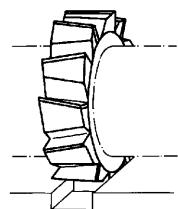


D js 16	S k 11	d H 7	Z	HSS	HSS Co5				
63	16	22	18	-	63×16×22				
80	4	27	20	-	80×4×27				
80	5	27	20	-	80×5×27				
80	6	27	20	-	80×6×27				
80	8	27	20	-	80×8×27				
80	10	27	20	-	80×10×27				
80	12	27	18	-	80×12×27				
80	14	27	18	-	80×14×27				
80	16	27	18	-	80×16×27				
80	18	27	18	-	80×18×27				
80	20	27	18	-	80×20×27				
100	4	32	20	-	100×4×32				
100	5	32	20	-	100×5×32				
100	6	32	20	-	100×6×32				
100	8	32	20	-	100×8×32				
100	10	32	20	-	100×10×32				
100	12	32	20	-	100×12×32				
100	14	32	20	-	100×14×32				
100	16	32	20	-	100×16×32				
100	18	32	20	-	100×18×32				
100	20	32	20	-	100×20×32				
100	25	32	20	-	100×25×32				
125	5	32	24	-	125×5×32				
125	6	32	24	-	125×6×32				
125	8	32	24	-	125×8×32				
125	10	32	22	-	125×10×32				
125	12	32	22	-	125×12×32				
125	14	32	22	-	125×14×32				
125	16	32	22	-	125×16×32				
125	18	32	22	-	125×18×32				
125	20	32	22	-	125×20×32				
125	25	32	22	-	125×25×32				
160	6	40	26	-	160×6×40				
160	8	40	26	-	160×8×40				
160	10	40	26	-	160×10×40				
160	12	40	26	-	160×12×40				
160	14	40	26	-	160×14×40				
160	16	40	26	-	160×16×40				
160	18	40	26	-	160×18×40				
160	20	40	26	-	160×20×40				
160	25	40	26	-	160×25×40				
160	32	40	26	-	160×32×40				
200	6	40	32	-	200×6×40				
200	8	40	32	-	200×8×40				
200	10	40	32	-	200×10×40				
200	12	40	32	-	200×12×40				
200	14	40	32	-	200×14×40				
200	16	40	32	-	200×16×40				
200	18	40	32	-	200×18×40				
200	20	40	32	-	200×20×40				
200	25	40	32	-	200×25×40				
200	32	40	32	-	200×32×40				
250	8	40	38	250×8×40	-				
250	10	40	38	250×10×40	-				
250	12	40	38	250×12×40	-				

Helix angle: 10°

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

Side And Face Milling Cutters



SIDE AND FACE MILLING CUTTERS, FINE TEETH

D js 16	S k 11	d H 7	Z	HSS Co8					
50	4	16	14	50×4×16					
50	5	16	14	50×5×16					
50	6	16	14	50×6×16					
50	8	16	14	50×8×16					
50	10	16	14	50×10×16					
63	4	22	16	63×4×22					
63	5	22	16	63×5×22					
63	6	22	16	63×6×22					
63	8	22	16	63×8×22					
63	10	22	18	63×10×22					
63	12	22	18	63×12×22					
63	14	22	18	63×14×22					
63	16	22	18	63×16×22					
80	4	27	18	80×4×27					
80	5	27	18	80×5×27					
80	6	27	18	80×6×27					
80	8	27	18	80×8×27					
80	10	27	18	80×10×27					
80	12	27	18	80×12×27					
80	14	27	18	80×14×27					
80	16	27	18	80×16×27					
80	18	27	16	80×18×27					
80	20	27	16	80×20×27					
100	4	32	20	100×4×32					
100	5	32	20	100×5×32					
100	6	32	20	100×6×32					
100	8	32	20	100×8×32					
100	10	32	20	100×10×32					
100	12	32	20	100×12×32					
100	14	32	20	100×14×32					
100	16	32	20	100×16×32					
100	18	32	20	100×18×32					
100	20	32	20	100×20×32					
100	22	32	18	100×22×32					
100	25	32	18	100×25×32					
125	5	32	22	125×5×32					
125	6	32	22	125×6×32					
125	8	32	22	125×8×32					
125	10	32	22	125×10×32					
125	12	32	22	125×12×32					
125	14	32	22	125×14×32					
125	16	32	22	125×16×32					
125	18	32	22	125×18×32					
125	20	32	22	125×20×32					
125	22	32	20	125×22×32					
125	25	32	20	125×25×32					
160	6	40	24	160×6×40					
160	8	40	24	160×8×40					
160	10	40	24	160×10×40					
160	12	40	24	160×12×40					
160	14	40	24	160×14×40					
160	16	40	24	160×16×40					
160	18	40	24	160×18×40					
160	20	40	24	160×20×40					
160	22	40	22	160×22×40					
160	25	40	22	160×25×40					

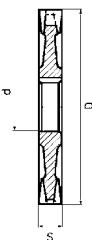
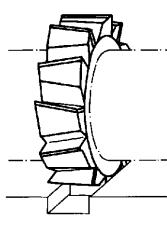
Helix angle: 10°

Continuation on next page.

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

Side And Face Milling Cutters

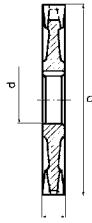
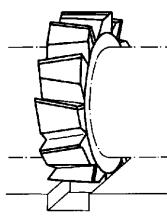
SIDE AND FACE MILLING CUTTERS, FINE TEETH



D js 16	S s 10	d H 7	Z	HSS Co8					
200	8	40	30	200×8×40					
200	10	40	30	200×10×40					
200	12	40	30	200×12×40					
200	14	40	30	200×14×40					
200	16	40	30	200×16×40					
200	18	40	30	200×18×40					
200	20	40	30	200×20×40					
200	22	40	28	200×22×40					
200	25	40	28	200×25×40					

Helix angle: 10°

SIDE AND FACE MILLING CUTTERS, FINE TEETH

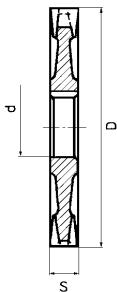
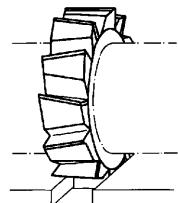


D js 16	S s 10	d H 7	Z	HSSE					
50	4	16	18	50×4×16					
50	5	16	18	50×5×16					
50	6	16	18	50×6×16					
63	4	22	20	63×4×22					
63	5	22	20	63×5×22					
63	6	22	20	63×6×22					
63	8	22	20	63×8×22					
63	10	22	20	63×10×22					
63	12	22	20	63×12×22					
80	4	22	24	80×4×22					
80	5	22	24	80×5×22					
80	6	22	22	80×6×22					
80	8	22	22	80×8×22					
80	10	22	22	80×10×22					
80	12	22	22	80×12×22					
100	8	22	24	100×8×22					
100	10	22	24	100×10×22					
100	14	22	24	100×14×22					
100	16	27	24	100×16×27					
125	8	32	28	125×8×32					
125	10	27	26	125×10×27					
125	12	27	26	127×12×27					
125	16	27	26	125×16×27					
125	18	32	26	125×18×32					
125	20	32	26	125×20×32					
160	18	32	28	160×18×32					
160	22	40	28	160×22×40					

Helix angle: 10°

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

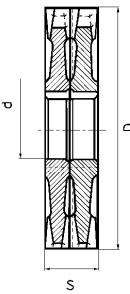
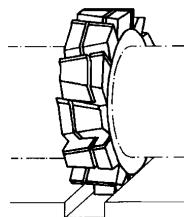
Side And Face Milling Cutters



SLOTTING CUTTERS

D js 16	S e 8	d H 7	z	HSSE					
50	4	16	18	50x4x16					
63	5	22	20	63x5x22					
63	6	22	20	63x6x22					
63	8	22	20	63x8x22					
80	10	27	22	80x10x27					
80	12	27	22	80x12x27					
80	14	27	22	80x14x27					
100	16	32	24	100x16x32					
100	18	32	24	100x18x32					
125	22	40	26	125x22x40					
125	25	40	26	125x25x40					

Helix angle: 10°



INTERLOCKING SIDE AND FACE MILLING CUTTERS, FINE TEETH

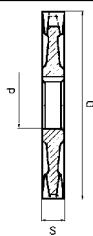
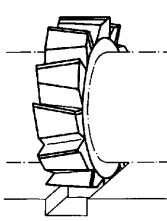
D js 16	S s 10	d H 7	z	HSSE					
80	16	27	22	80x16x27					
80	18	27	22	80x18x27					
80	20	27	22	80x20x27					
100	20	27	24	100x20x27					
100	22	27	24	100x22x27					
125	22	32	26	125x22x32					
125	25	32	26	125x25x32					
125	28	32	26	125x28x32					
160	25	40	28	160x25x40					
160	28	40	28	160x28x40					
160	32	40	28	160x32x40					

Helix angle: 10°

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

Side And Face Milling Cutters

NARROW SIDE AND FACE MILLING CUTTERS, FINE TEETH

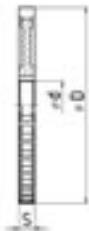
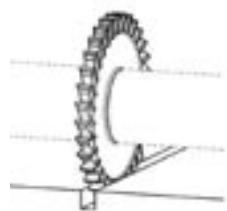


D js 16	S k 11	d H 7	Z	HSS Co5					
63	1,6	22	28	63x1,6x22					
63	2,0	22	28	63x2x22					
63	2,5	22	28	63x2,5x22					
63	3,0	22	28	63x3x22					
63	4,0	22	28	63x4x22					
63	5,0	22	28	63x5x22					
63	6,0	22	28	63x6x22					
80	1,6	27	32	80x1,6x27					
80	2,0	27	32	80x2x27					
80	2,5	27	32	80x2,5x27					
80	3,0	27	32	80x3x27					
80	4,0	27	32	80x4x27					
80	5,0	27	32	80x5x27					
80	6,0	27	32	80x6x27					
100	1,6	32	36	100x1,6x32					
100	2,0	32	36	100x2x32					
100	2,5	32	36	100x2,5x32					
100	3,0	32	36	100x3x32					
100	4,0	32	36	100x4x32					
100	5,0	32	36	100x5x32					
100	6,0	32	36	100x6x32					
100	8,0	32	36	100x8x32					
125	1,6	32	40	125x1,6x32					
125	2,0	32	40	125x2x32					
125	2,5	32	40	125x2,5x32					
125	3,0	32	40	125x3x32					
125	4,0	32	40	125x4x32					
125	5,0	32	40	125x5x32					
125	6,0	32	40	125x6x32					
125	8,0	32	40	125x8x32					
125	10,0	32	40	125x10x32					
160	2,0	40	44	160x2x40					
160	2,5	40	44	160x2,5x40					
160	3,0	40	44	160x3x40					
160	4,0	40	44	160x4x40					
160	5,0	40	44	160x5x40					
160	6,0	40	44	160x6x40					
160	8,0	40	36	160x8x40					
160	10,0	40	36	160x10x40					
160	12,0	40	36	160x12x40					
200	2,0	40	52	200x2x40					
200	2,5	40	52	200x2,5x40					
200	3,0	40	52	200x3x40					
200	4,0	40	52	200x4x40					
200	5,0	40	52	200x5x40					
200	6,0	40	52	200x6x40					
200	8,0	40	40	200x8x40					
200	10,0	40	40	200x10x40					
200	12,0	40	40	200x12x40					

Helix angle: 10°

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

Side And Face Milling Cutters



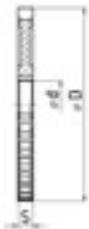
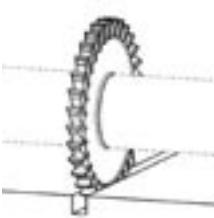
NARROW SIDE AND FACE
MILLING CUTTERS, FINE TEETH,
STRAIGHT TEETH

D js 16	S k 11	d H 7	z	HSS Co5						
63	1,6	22	32	63x1,6x22						
63	2	22	32	63x2x22						
63	2,5	22	32	63x2,5x22						
63	3	22	32	63x3x22						
63	4	22	32	63x4x22						
63	5	22	32	63x5x22						
80	1,6	27	32	80x1,6x27						
80	2	27	32	80x2x27						
80	2,5	27	32	80x2,5x27						
80	3	27	32	80x3x27						
80	4	27	32	80x4x27						
100	1,6	32	40	100x1,6x32						
100	2	32	40	100x2x32						
100	2,5	32	40	100x2,5x32						
100	3	32	40	100x3x32						
100	4	32	40	100x4x32						
100	5	32	40	100x5x32						
125	1,6	32	44	125x1,6x32						
125	2	32	44	125x2x32						
125	2,5	32	44	125x2,5x32						
125	3	32	44	125x3x32						
125	4	32	44	125x4x32						
125	5	32	44	125x5x32						
125	6	32	44	125x6x32						
160	2	40	52	160x2x52						
160	2,5	40	52	160x2,5x52						
160	3	40	52	160x3x52						
160	4	40	52	160x4x52						
160	5	40	52	160x5x52						
160	6	40	52	160x6x52						
160	8	40	40	160x8x52						

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

Side And Face Milling Cutters

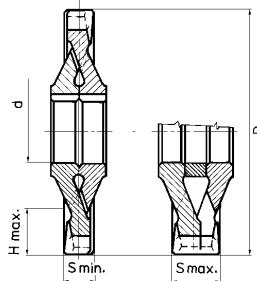
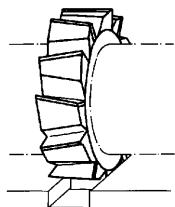
**SIDE AND FACE MILLING CUTTERS,
FINE TEETH, STRAIGHT TEETH**



D js 16	S k 11	d H 7	Z	HSS Co5					
50	4	16	16	50x4x16					
50	5	16	16	50x5x16					
50	6	16	16	50x6x16					
50	8	16	16	50x8x16					
50	10	16	16	50x10x16					
63	4	22	18	63x4x22					
63	5	22	18	63x5x22					
63	6	22	18	63x6x22					
63	8	22	18	63x8x22					
63	10	22	18	63x10x22					
63	12	22	18	63x12x22					
63	14	22	18	63x14x22					
63	16	22	18	63x16x22					
63	18	22	18	63x18x22					
80	5	27	20	80x5x27					
80	6	27	20	80x6x27					
80	8	27	20	80x8x27					
80	10	27	20	80x10x27					
80	12	27	20	80x12x27					
80	14	27	20	80x14x27					
80	16	27	20	80x16x27					
80	18	27	20	80x18x27					
80	20	27	20	80x20x27					
100	6	32	24	100x6x32					
100	8	32	24	100x8x32					
100	10	32	24	100x10x32					
100	12	32	24	100x12x32					
100	14	32	24	100x14x32					
100	16	32	24	100x16x32					
100	18	32	24	100x18x32					
100	20	32	24	100x20x32					
100	22	32	24	100x22x32					
100	25	32	24	100x25x32					
125	8	32	24	125x8x32					
125	10	32	24	125x10x32					
125	12	32	24	125x12x32					
125	14	32	24	125x14x32					
125	16	32	24	125x16x32					
125	18	32	24	125x18x32					
125	20	32	24	125x20x32					
125	25	32	24	125x25x32					
160	10	40	24	160x10x40					
160	12	40	24	160x12x40					
160	14	40	24	160x14x40					
160	16	40	24	160x16x40					
160	18	40	24	160x18x40					
160	20	40	24	160x20x40					
200	10	40	32	200x10x40					
200	12	40	32	200x12x40					
200	14	40	32	200x14x40					
200	16	40	32	200x16x40					
200	18	40	32	200x18x40					
200	20	40	32	200x20x40					

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

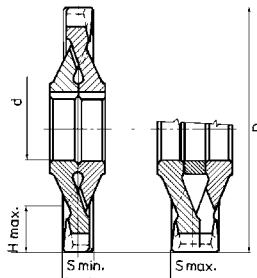
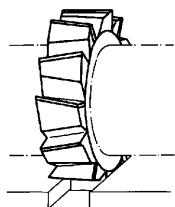
Side And Face Milling Cutters



INTERLOCKING SIDE AND FACE
MILLING CUTTERS, COARSE TEETH

D js 16	s min	s max	d H 7	z	H max	HSSE					
80	10	16	22	12	12	80x10-16					
100	12	20	27	12	16	100x12-20					
125	14	25	32	14	22	125x14-25					
160	16	28	40	16	28	160x16-28					

Helix angle: 10°

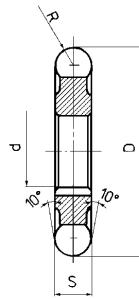
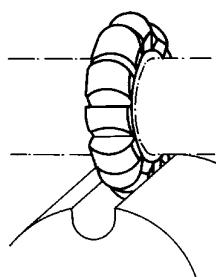


INTERLOCKING SIDE AND FACE MILLING
CUTTERS, FINE TEETH

D js 16	s min	s max	d H 7	z	H max	HSSE					
60	4	6	22	14	6	60x4-6					
80	5	8	22	16	8	80x5-8					
80	6	10	22	16	10	80x6-10					
100	8	14	27	16	14	100x8-14					
125	10	18	32	18	18	125x10-18					
160	12	22	40	20	22	160x12-22					

Helix angle: 10°

CONVEX CUTTERS

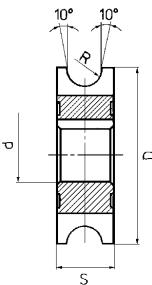
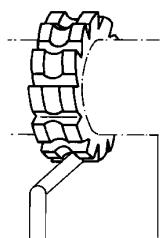


R k 11	D js 16	S	d H 7	Z	HSS					
1	50	2	16	14	1					
1,25	50	2,5	16	14	1,25					
1,6	50	3,2	16	14	1,6					
2	50	4	16	14	2					
2,5	63	5	22	12	2,5					
3	63	6	22	12	3					
3,15	63	6,3	22	12	3,15					
3,5*	63	7	22	12	3,5					
4	63	8	22	12	4					
4,5*	63	9	22	12	4,5					
5	63	10	22	12	5					
5,5*	80	11	27	12	5,5					
6	80	12	27	12	6					
6,3	80	12,6	27	12	6,3					
6,5*	80	13	27	12	6,5					
7,5*	80	15	27	12	7,5					
8	80	16	27	12	8					
8,5*	100	17	32	12	8,5					
9*	100	18	32	12	9					
10	100	20	32	12	10					
12	100	24	32	12	12					
12,5	100	25	32	12	12,5					
14*	125	28	40	12	14					
16	125	32	32	12	16					
18*	125	36	40	12	18					
20	125	40	32	12	20					
25*	160	50	40	12	25					

* = ČSN

* Available on request ≠ DIN 856

Form Cutters

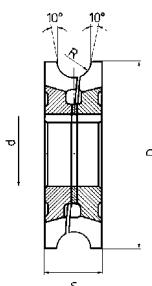
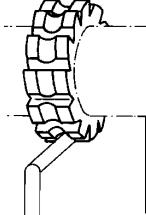


CONCAVE CUTTERS

R H 11	D js 16	S js 16	d H 7	Z	F 820070 HSS				
1	50	6	16	14	1				
1,25	50	6	16	14	1,25				
1,6	50	8	16	14	1,6				
2	50	9	16	14	2				
2,5	63	10	22	12	2,5				
3	63	12	22	12	3				
3,15	63	12	22	12	3,15				
3,5*	63	16	22	12	3,5				
4	63	16	22	12	4				
4,5*	63	18	22	12	4,5				
5	63	20	22	12	5				
6	80	24	27	12	6				
6,3	80	24	27	12	6,3				
7*	80	24	27	12	7				
8	80	32	27	12	8				
9*	100	32	32	12	9				
10	100	36	32	12	10				
12*	100	40	32	12	12				
12,5*	100	40	32	12	12,5				
16*	125	50	32	10	16				
20*	125	60	32	10	20				

* ≠ DIN 855

• Available on request - substitution CODE 8241



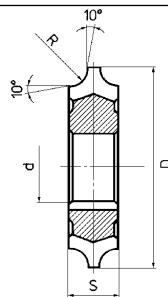
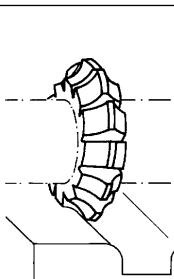
INTERLOCKING CONCAVE CUTTERS

R	D js 16	S js 16	d H 7	Z	HSSE				
11 +0,12	100	36	32	10	11				
12 +0,12	100	38	32	10	12				
12,5 +0,12	100	40	32	10	12,5				
14 +0,12	125	44	40	10	14				
16 +0,12	125	48	40	10	16				
18 +0,12	125	52	40	10	18				
20 +0,12	125	58	40	10	20				
22,5 +0,2	160	63	40	12	22,5				
25 +0,2	160	68	40	12	25				

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

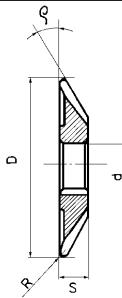
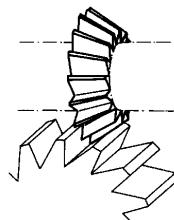
Form Cutters

CORNER ROUNDING CONCAVE CUTTERS



R	D js 16	S js 16	d H 7	Z	HSS					
1	$\pm 0,05$	63	4	22	20	1				
1,6	$\pm 0,05$	63	5	22	18	1,6				
2	$\pm 0,05$	63	6	22	16	2				
2,5	$\pm 0,05$	63	8	22	14	2,5				
3	$\pm 0,05$	63	10	22	12	3				
4	$\pm 0,08$	63	12	22	12	4				
5	$\pm 0,08$	80	14	27	12	5				
6	$\pm 0,08$	80	16	27	12	6				
8	$\pm 0,08$	80	22	27	12	8				
10	$\pm 0,08$	100	26	32	12	10				
12	$\pm 0,12$	100	32	32	10	12				
14	$\pm 0,12$	125	36	40	10	14				
16	$\pm 0,12$	125	40	40	10	16				
18	$\pm 0,12$	125	45	40	10	18				
20	$\pm 0,12$	125	50	40	10	20				
25	$\pm 0,2$	160	60	40	12	25				

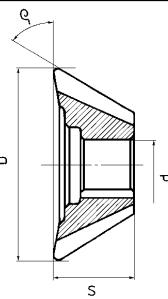
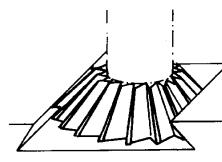
SINGLE ANGLE MILLING CUTTERS



ρ $\pm 30'$	D js 16	S js 16	d H 7	Z	R	HSS				
20°	63	6	16	14	1	20x63				
20°	100	10	27	18	1,5	20x100				
25°	63	6	22	14	1	25x63				
25°	80	10	22	16	1	25x80				
25°	100	14	27	18	1,5	25x100				
25°	125	18	27	20	2	25x125				
25°	160	22	32	22	2,5	25x160				
30°	63	8	22	14	1	30x63				
30°	100	14	27	18	1,5	30x100				

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

Form Cutters



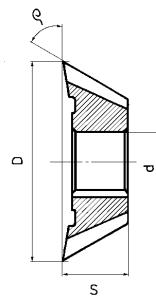
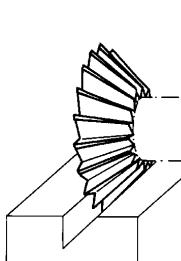
DOVETAIL MILLING CUTTERS

ρ $\pm 20'$	D js 16	S js 14	d H 7	Z	HSS					
45°	40	10	10	14	45×40					
45°	50	13	13	16	45×50					
45°	63	18	16	18	45×63					
45°	80	22	22	20	45×80					
45°	100	28	27	22	45×100					
45°	125	36	32	24	45×125					
45°	160	45	40	28	45×160					
50°	40	13	10	14	50×40					
50°	50	16	13	16	50×50					
50°	63	20	16	18	50×63					
50°	80	25	22	20	50×80					
50°	100	32	27	22	50×100					
50°	125	40	32	24	50×125					
50°	160	50	40	28	50×160					
60°	40	13	10	14	60×40					
60°	50	16	13	16	60×50					
60°	63	20	16	18	60×63					
60°	80	25	22	20	60×80					
60°	100	32	27	22	60×100					
60°	125	40	32	24	60×125					
60°	160	50	40	28	60×160					

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

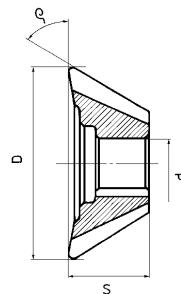
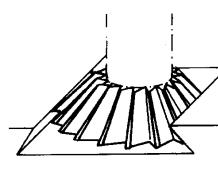
Form Cutters

SINGLE ANGLE MILLING CUTTERS



ρ $\pm 30'$	D js 16	S js 16	d H 7	Z	HSS						
40°	63	10	22	18	40x63						
40°	100	20	32	22	40x100						
45°	63	12	22	18	45x63						
45°	80	16	27	20	45x80						
45°	100	22	32	22	45x100						
50°	50	12	16	16	50x50						
50°	63	16	22	18	50x63						
50°	80	20	27	20	50x80						
50°	100	25	32	22	50x100						
60°	50	12	16	14	60x50						
60°	63	16	22	16	60x63						
60°	80	20	27	18	60x80						
60°	100	25	32	20	60x100						
65°	63	16	22	16	65x63						
65°	80	20	27	18	65x80						
70°	50	12	16	14	70x50						
70°	63	16	22	16	70x63						
70°	80	20	27	18	70x80						
70°	100	25	32	20	70x100						
75°	63	16	22	16	75x63						
75°	80	20	27	18	75x80						
80°	50	12	16	14	80x50						
80°	63	16	22	16	80x63						
80°	80	20	27	18	80x80						
80°	100	25	32	20	80x100						
85°	63	16	22	16	85x63						
85°	80	20	27	18	85x80						

DOVETAIL MILLING CUTTERS

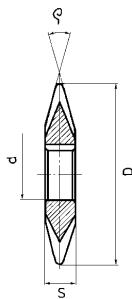
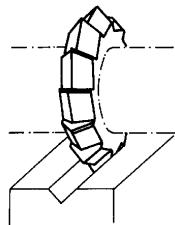


ρ $-10'$	D js 16	S js 16	d H 7	Z	HSS						
55°	63	20	22	16	55x63						
55°	80	25	27	18	55x80						
55°	100	32	32	20	55x100						
55°	125	40	40	22	55x125						

Helix angle: 10°

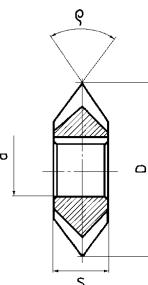
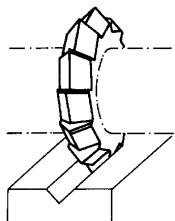
We deliver these tools with coating (TiN, TiCN, TiAlN) also.

Form Cutters



DOUBLE EQUAL-ANGLE CUTTERS

ρ $\pm 30'$	D js 16	S js 16	d H 7	Z	R	HSS					
30°	63	8	16	14	1	30×63					
30°	80	12	22	16	1	30×80					
30°	100	16	27	18	1,5	30×100					
30°	125	20	27	20	2	30×125					
30°	160	25	32	22	2,5	30×160					

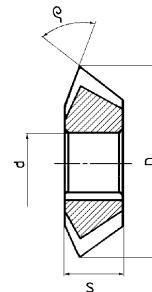
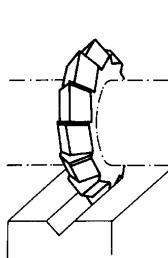


DOUBLE EQUAL-ANGLE CUTTERS

ρ $\pm 30'$	D js 16	S js 16	d H 7	Z	HSS						
45°	50	8	16	16	45×50						
45°	63	10	22	18	45×63						
45°	80	12	27	18	45×80						
45°	100	18	32	20	45×100						
60°	50	10	16	16	60×50						
60°	63	14	22	18	60×63						
60°	80	18	27	18	60×80						
60°	100	25	32	20	60×100						
90°	50	14	16	16	90×50						
90°	63	20	22	18	90×63						
90°	80	22	27	18	90×80						
90°	100	32	32	20	90×100						

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

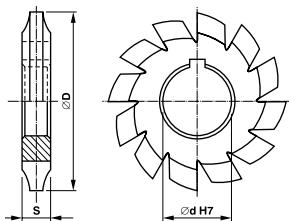
DOUBLE UNEQUAL-ANGLE CUTTERS



ρ $\pm 30'$	D js 16	S js 16	d H 7	Z	HSS						
45°	63	8	22	18	45x63						
45°	100	16	32	22	45x100						
50°	63	10	22	18	50x63						
50°	80	14	27	20	50x80						
50°	100	18	32	22	50x100						
55°	63	10	22	18	55x63						
55°	100	20	32	22	55x100						
60°	63	12	22	18	60x63						
60°	80	18	27	20	60x80						
60°	100	24	32	22	60x100						
65°	63	12	22	18	65x63						
65°	100	26	32	22	65x100						
70°	63	16	22	18	70x63						
70°	80	22	27	20	70x80						
70°	100	32	32	22	70x100						
75°	63	16	22	18	75x63						
75°	100	32	32	22	75x100						
80°	63	16	22	18	80x63						
80°	80	22	27	20	80x80						
80°	100	32	32	22	80x100						
85°	63	22	22	18	85x63						
85°	100	36	32	22	85x100						
90°	63	22	22	18	90x63						
90°	80	28	27	20	90x80						
90°	100	36	32	22	90x100						

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

Special Milling Cutters



INVOLUTE GEAR CUTTERS

MODUL	$\varnothing D$ mm	s mm	$\varnothing d$ mm	Number of teeth	
0,3	28	2	13	16	M 0,3 SADA
0,4	32	3	13	16	M 0,4 SADA
0,5	32	3	13	16	M 0,5 SADA
0,6	40	3	16	16	M 0,6 SADA
0,7	40	3,5	16	16	M 0,7 SADA
0,8	40	3,5	16	16	M 0,8 SADA

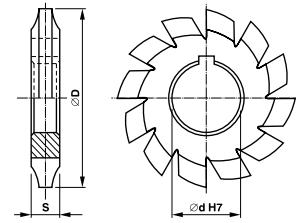
Application: For milling of involute gearing by means of a dividing method.

We deliver these cutters in sets per 8 pcs or separately according to the table.

Cutter No.	1	2	3	4	5	6	7	8
number teeth	12÷13	14÷15	16÷20	21÷25	26÷34	35÷54	55÷134	135÷
MODUL 0,3	M0,3-1	M0,3-2	M0,3-3	M0,3-4	M0,3-5	M0,3-6	M0,3-7	M0,3-8
MODUL 0,4	M0,4-1	M0,4-2	M0,4-3	M0,4-4	M0,4-5	M0,4-6	M0,4-7	M0,4-8
MODUL 0,5	M0,5-1	M0,5-2	M0,5-3	M0,5-4	M0,5-5	M0,5-6	M0,5-7	M0,5-8
MODUL 0,6	M0,6-1	M0,6-2	M0,6-3	M0,6-4	M0,6-5	M0,6-6	M0,6-7	M0,6-8
MODUL 0,7	M0,7-1	M0,7-2	M0,7-3	M0,7-4	M0,7-5	M0,7-6	M0,7-7	M0,7-8
MODUL 0,8	M0,8-1	M0,8-2	M0,8-3	M0,8-4	M0,8-5	M0,8-6	M0,8-7	M0,8-8

Special Milling Cutters

INVOLUTE GEAR CUTTERS



MODUL	ØD mm	s mm	Ød mm	Number of teeth	
1	45	4,4	16	16	M 1 SADA
1,25	45	5,2	16	14	M 1,25 SADA
1,5	50	6	22	14	M 1,5 SADA
(1,75)	56	6,8	22	12	M 1,75 SADA
2	56	7,5	22	12	M 2 SADA
(2,25)	63	8,5	22	12	M 2,25 SADA
2,5	63	9	22	12	M 2,5 SADA
(2,75)	71	10	27	12	M 2,75 SADA
3	71	11	27	12	M 3 SADA
(3,5)	80	12,5	27	12	M 3,5 SADA
4	80	14,5	27	12	M 4 SADA
(4,5)	80	16	27	12	M 4,5 SADA
5	90	18	32	12	M 5 SADA
(5,5)	90	19,5	32	12	M 5,5 SADA
6	100	21	32	12	M 6 SADA
(7)	100	24,5	32	12	M 7 SADA
8	112	28	32	12	M 8 SADA
9	112	31,5	32	12	M 9 SADA
10	125	35	32	12	M 10 SADA

Application: For milling of involute gearing by means of a dividing method.

We deliver these cutters in sets per 8 pcs or separately according to the table.

Cutter No.	1	2	3	4	5	6	7	8
number teeth	12÷13	14÷16	17÷20	21÷25	26÷34	35÷54	55÷134	135÷
MODUL 1	M1-1	M1-2	M1-3	M1-4	M1-5	M1-6	M1-7	M1-8
MODUL 1,25	M1,25-1	M1,25-2	M1,25-3	M1,25-4	M1,25-5	M1,25-6	M1,25-7	M1,25-8
MODUL 1,5	M1,5-1	M1,5-2	M1,5-3	M1,5-4	M1,5-5	M1,5-6	M1,5-7	M1,5-8
MODUL 1,75	M1,75-1	M1,75-2	M1,75-3	M1,75-4	M1,75-5	M1,75-6	M1,75-7	M1,75-8
MODUL 2	M2-1	M2-2	M2-3	M2-4	M2-5	M2-6	M2-7	M2-8
MODUL 2,25	M2,25-1	M2,25-2	M2,25-3	M2,25-4	M2,25-5	M2,25-6	M2,25-7	M2,25-8
MODUL 2,5	M2,5-1	M2,5-2	M2,5-3	M2,5-4	M2,5-5	M2,5-6	M2,5-7	M2,5-8
MODUL 2,75	M2,75-1	M2,75-2	M2,75-3	M2,75-4	M2,75-5	M2,75-6	M2,75-7	M2,75-8
MODUL 3	M3-1	M3-2	M3-3	M3-4	M3-5	M3-6	M3-7	M3-8
MODUL 3,5	M3,5-1	M3,5-2	M3,5-3	M3,5-4	M3,5-5	M3,5-6	M3,5-7	M3,5-8
MODUL 4	M4-1	M4-2	M4-3	M4-4	M4-5	M4-6	M4-7	M4-8
MODUL 4,5	M4,5-1	M4,5-2	M4,5-3	M4,5-4	M4,5-5	M4,5-6	M4,5-7	M4,5-8
MODUL 5	M5-1	M5-2	M5-3	M5-4	M5-5	M5-6	M5-7	M5-8
MODUL 5,5	M5,5-1	M5,5-2	M5,5-3	M5,5-4	M5,5-5	M5,5-6	M5,5-7	M5,5-8
MODUL 6	M6-1	M6-2	M6-3	M6-4	M6-5	M6-6	M6-7	M6-8
MODUL 7	M7-1	M7-2	M7-3	M7-4	M7-5	M7-6	M7-7	M7-8
MODUL 8	M8-1	M8-2	M8-3	M8-4	M8-5	M8-6	M8-7	M8-8
MODUL 9	M9-1	M9-2	M9-3	M9-4	M9-5	M9-6	M9-7	M9-8
MODUL 10	M10-1	M10-2	M10-3	M10-4	M10-5	M10-6	M10-7	M10-8

Special Milling Cutters

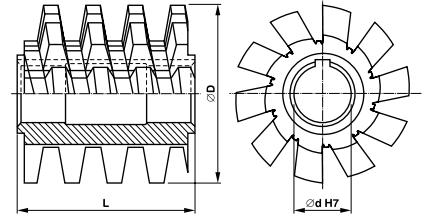
MODUL	ØD mm	L mm	Ød mm	Number of teeth	I min. mm		
1	50	32	22	14	4	0,34	M 1 XX
1,25	50	40	22	14	4	0,42	M 1,25 XX
1,5	63	50	27	12	4	0,80	M 1,5 XX
1,75	63	50	27	12	4	0,88	M 1,75 XX
2	63	50	27	12	4	0,94	M 2 XX
2,25	71	56	27	12	4	1,24	M 2,25 XX
2,5	71	63	27	12	4	1,32	M 2,5 XX
2,75	71	63	27	12	4	1,33	M 2,75 XX
3	80	71	32	12	4	1,98	M 3 XX
3,25	80	71	32	12	4	2,00	M 3,25 XX
3,5	80	71	32	12	4	2,03	M 3,5 XX
3,75	90	80	32	12	4	2,70	M 3,75 XX
4	90	80	32	12	4	2,80	M 4 XX
4,5	90	90	32	10	4	3,5	M 4,5 XX
5	100	100	32	10	4	4,2	M 5 XX
5,5	112	112	40	10	4	4,4	M 5,5 XX
6	112	112	40	10	4	4,2	M 6 XX
6,5	118	118	40	10	4	5,1	M 6,5 XX
7	118	125	40	10	5	5,1	M 7 XX
8	125	132	40	10	5	5,6	M 8 XX
9	140	150	40	10	5	8,6	M 9 XX
10	150	170	50	10	5	10,4	M 10 XX
11	160	180	50	9	5	13,1	M 11 XX
12	170	200	50	9	5	16,5	M 12 XX
13	180	210	50	9	5	19,7	M 13 XX
14	190	224	50	9	5	23,6	M 14 XX
15	200	235	60	9	6	25,4	M 15 XX
16	212	250	60	9	6	31,4	M 16 XX
18	236	280	60	9	6	44,5	M 18 XX
20	250	300	60	9	6	52,9	M 20 XX

XX Delivered with profile IIa, IIb, IIIb in accuracy class A, B
in following combination: IIaB, IIbA, IIaA and IIIb.

Material: HSS, HSSCo; with coating TiN also.

Application: For hobbing of involute teeth.

INVOLUTE SPUR GEAR HOBS CUTTERS



Marking $d_1 \times t$	ØD mm	Ød mm	s max. mm	s min. mm	Number of teeth		
5×9,525	56	22	9	7	12	0,07	5×9,525
6,35×9,525	56	22	11	9	12	0,07	6,35×9,525
7,75×12,7	70	27	14	11	12	0,15	7,75×12,7
8,51×12,7	70	27	15	13	12	0,15	8,51×12,7
10,16×15,875	75	27	18	14	12	0,20	10,16×15,875
12,07×19,05	80	32	21	17	12	0,30	12,07×19,05
15,88×25,4	95	32	28	23	12	0,58	15,88×25,4

Material: HSS, HSSCo; with coating TiN also.

Application: For milling of chain sprockets.

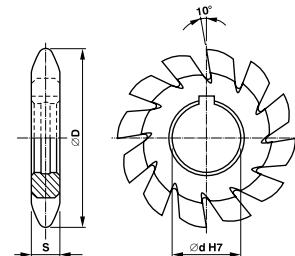
The milling cutters are manufactured according to the number of teeth:

Cutters no. 1: teeth 11÷16
Cutters no. 2: teeth 17÷40
Cutters no. 3: teeth 41 and more.

ROLLER CHAIN SPROCKET MILLING CUTTERS



	11÷16 teeth	17÷40 teeth	41÷ and more
5×9,525	5×9,525 - 1	5×9,525 - 2	5×9,525 - 3
6,35×9,525	6,35×9,525 - 1	6,35×9,525 - 2	6,35×9,525 - 3
7,75×12,7	7,75×12,7 - 1	7,75×12,7 - 2	7,75×12,7 - 3
8,51×12,7	8,51×12,7 - 1	8,51×12,7 - 2	8,51×12,7 - 3
10,16×15,875	10,16×15,875 - 1	10,16×15,875 - 2	10,16×15,875 - 3
12,07×19,05	12,07×19,05 - 1	12,07×19,05 - 2	12,07×19,05 - 3
15,88×25,4	15,88×25,4 - 1	15,88×25,4 - 2	15,88×25,4 - 3

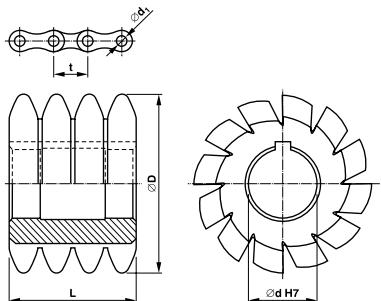


Special Milling Cutters

ROLLER CHAIN SPROCKET HOBES

t mm	$\varnothing d_1$ mm	$\varnothing D_{h16}$ mm	$\varnothing d_{H7}$ mm	L mm	Number of teeth	kg	
6,35	3,3	56	22	55	12	0,7	6,35×3,3
8	5	63	27	50	12	0,9	8×5
9,525	5,08	71	27	56	12	1,3	9,525×5,08
9,525	6	71	27	56	12	1,3	9,525×6
9,525	6,35	71	27	56	12	1,3	9,525×6,35
12,7	7,75	80	32	71	12	2,2	12,7×7,75
12,7	8,51	80	32	71	12	2,2	12,7×8,51
15,875	10,16	90	32	80	12	3,3	15,875×10,16
19,05	11,91	100	32	100	10	4,2	19,05×11,91
19,05	12,07	100	32	100	10	4,2	19,05×12,07
25,40	15,88	112	40	112	10	4,7	25,40×15,88
31,75	19,05	125	40	132	10	4,9	31,75×19,05
38,10	22,23	140	40	150	9	11,7	38,10×22,23
38,10	25,4	140	40	150	9	11,7	38,10×25,4
44,45	25,4	160	50	180	9	12,7	44,45×25,4
44,45	27,94	160	50	180	9	12,7	44,45×27,94
50,80	28,58	170	50	200	9	13,8	50,80×28,58
50,80	29,21	170	50	200	9	13,8	50,80×29,21
63,50	39,68	190	50	224	9	17,9	63,50×39,68
76,20	47,63	236	60	280	9	35,4	76,20×47,63

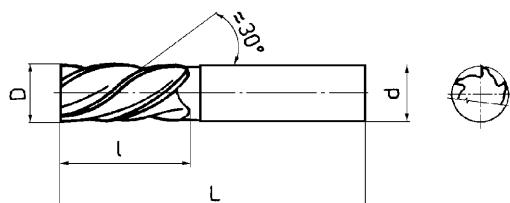
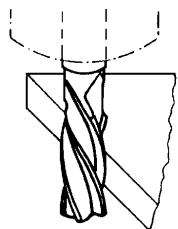
x We deliver as a special product only.



Application: For milling of roller chain sprockets
ČSN 014811, DIN 8196.

End Mills

END MILLS SHORT

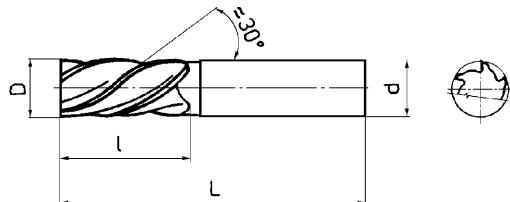
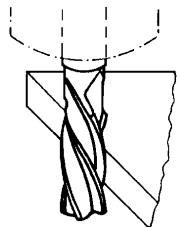


D js 14	I	L	d h 8	Z	HSS Co5					
10	22	72	10	4	10x22					
12	26	83	12	5	12x26					
16	32	92	16	5	16x32					
20	39	104	20	5	20x39					

left-hand helix

* We deliver as a special product only.

END MILLS LONG



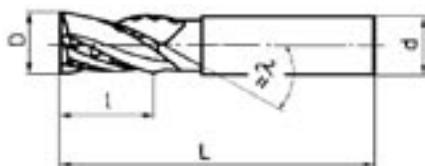
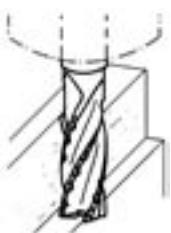
D js 14	I	L	d h 8	Z	HSS Co5					
10	32	78	10	4	10x32					
12	40	93	12	5	12x40					
16	50	110	16	5	16x50					
20	63	128	20	5	20x63					

left-hand helix

* We deliver as a special product only.

Uncoated type.

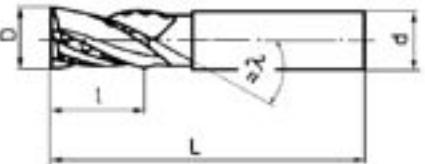
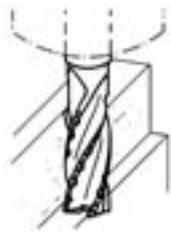
END MILLS SHORT, INTERRUPTED CUTTING EDGE



D k 12	I	L	d h 6	Z	$\approx \lambda$	HSS Co8	HSS Co8			HSS Co5	HSS Co8
6	13	57	6	4	40°	6×13	6×13				
7	16	66	10	4	40°	7×16	7×16				
8	19	69	10	4	40°	8×19	8×19				
9	19	69	10	4	40°	9×19	9×19				
10	22	72	10	4	40°	10×22	10×22				
12	26	83	12	4	40°	12×26	12×26				
14	26	83	12	4	40°	14×26	14×26				
16	32	92	16	4	40°	16×32	16×32				
18	32	92	16	4	40°	18×32	18×32				
20	38	104	20	4	40°	20×38	20×38				

* We deliver as a special product only.

END MILLS LONG, INTERRUPTED CUTTING EDGE

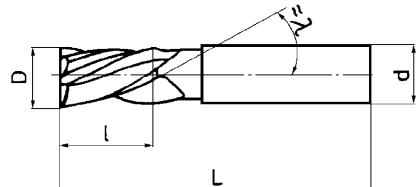
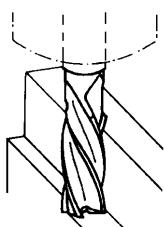


D k 12	I	L	d h 6	Z	$\approx \lambda$	HSS Co8	HSS Co8			HSS Co5	
6	24	68	6	4	40°	6×24	6×24				
7	30	80	10	4	40°	7×30	7×30				
8	38	88	10	4	40°	8×38	8×38				
9	38	88	10	4	40°	9×38	9×38				
10	45	95	10	4	40°	10×45	10×45				
12	53	110	12	4	40°	12×53	12×53				
14	53	110	12	4	40°	14×53	14×53				
16	63	123	16	4	40°	16×63	16×63				
18	63	123	16	4	40°	18×63	18×63				
20	75	141	20	4	40°	20×75	20×75				

* We deliver as a special product only.

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

End Mills



END MILLS SHORT,
LEFT-HAND CUTTING



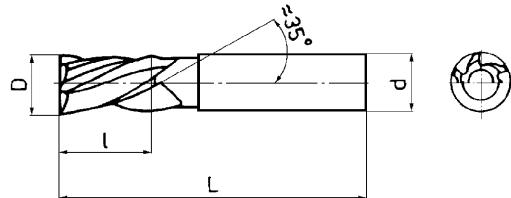
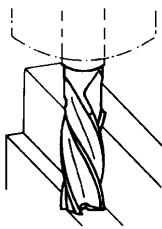
D k 14	I	L	d h 8	Z	$\approx \lambda$	HSS Co5						
4	11	55	6	4	20°	4x11						
5	13	57	6	4	20°	5x13						
6	13	57	6	4	20°	6x13						
8	19	69	10	4	30°	8x19						
10	22	72	10	4	30°	10x22						
12	26	83	12	4	30°	12x26						
16	32	92	16	4	45°	16x32						
20	38	104	20	4	45°	20x38						

left-hand helix

* We deliver as a special product only.

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

END MILLS SHORT, LEFT-HAND CUTTING

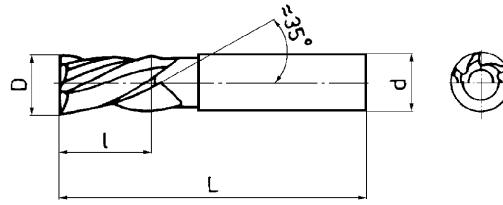
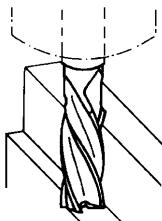


D js 14	I	L	d h 8	Z	HSS Co5					
16	32	92	16	6	16x32					
20	38	104	20	6	20x38					

left-hand helix

* We deliver as a special product only.

END MILLS LONG, LEFT-HAND CUTTING



D js 14	I	L	d h 8	Z	HSS Co5					
16	63	123	16	6	16x63					
20	75	141	20	6	20x75					

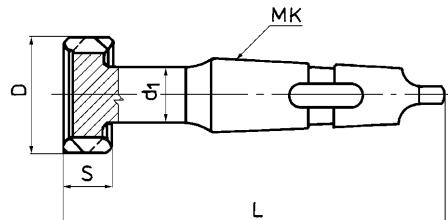
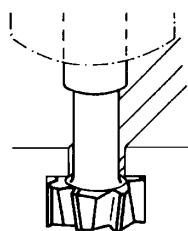
left-hand helix

* We deliver as a special product only.

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

Form Cutters

T-SLOT CUTTERS

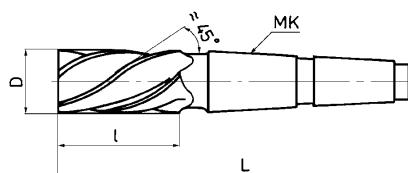
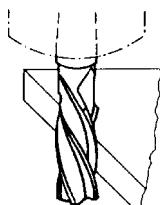


D h 12	S h 12	L	d1	MK	Z	HSS					
32	14	140	16	3	8	32					
40	18	175	20	4	8	40					
50	22	188	25	4	8	50					
60	28	235	31	5	10	60					
72	35	250	36	5	10	72					

* We deliver as a special product only.

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

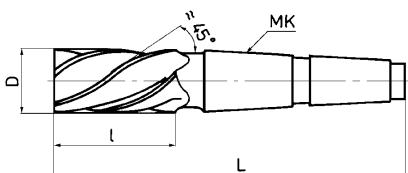
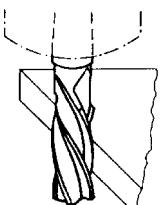
END MILLS - SHORT



D js 14	I	L	MK	Z	HSS					
25	50	154	3	4	25×50					
32	56	185	4	5	32×56					
40	63	194	4	5	40×63					
50	70	228	5	6	50×70					

* We deliver as a special product only.

END MILLS - LONG

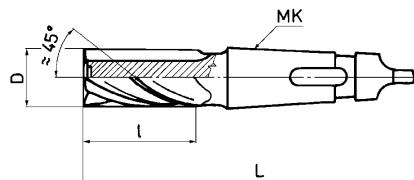
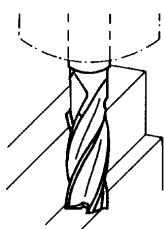


D js 14	I	L	MK	Z	HSS					
25	80	184	3	4	25×80					
32	100	229	4	5	32×100					
40	125	256	4	5	40×125					
50	150	308	5	6	50×150					

* We deliver as a special product only.

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

End Mills

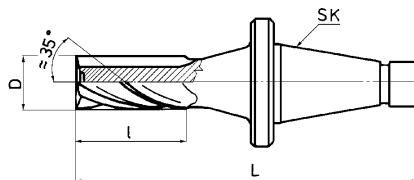
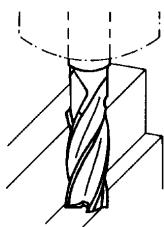


**END MILLS, LONG,
COARSE TEETH**



D js 14	I	L	MK	Z	HSS				
25	80	226	4	4	25×80				
32	100	285	5	4	32×100				
40	125	375	6	4	40×125				
50	150	400	6	5	50×150				
63	180	430	6	6	63×180				

* We deliver as a special product only.



**END MILLS, SHORT,
MEDIUM-COARSE TEETH**

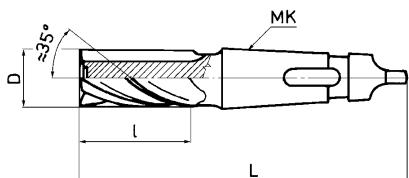
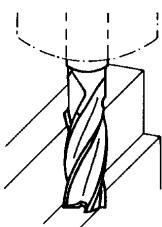


D z 13	I	L	SK	Z	HSS Co5				
25	40	155	30	4	25×40				
28	45	160	30	6	28×45				
32	50	190	40	6	32×50				
36	56	200	40	6	36×56				
40	63	210	40	6	40×63				
45	65	215	40	6	45×65				
50	70	220	40	6	50×70				
56	75	265	50	8	56×75				
63	80	270	50	8	63×80				
71	90	280	50	8	71×90				

* We deliver as a special product only.

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

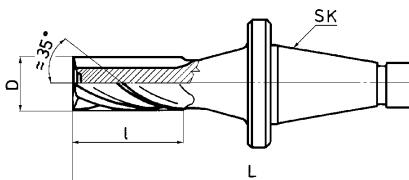
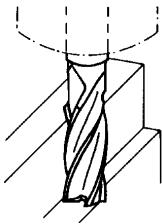
END MILLS, SHORT, MEDIUM-COARSE TEETH



D js 14	I	L	MK	Z	HSS					
25	50	196	4	5	25×50					
32	56	202	4	6	32×56					
40	63	212	4	6	40×63					
50	70	251	5	6	50×70					
63	80	330	6	8	63×80					
80	125	375	6	10	80×125					

x We deliver as a special product only.

END MILLS, LONG, MEDIUM-COARSE TEETH

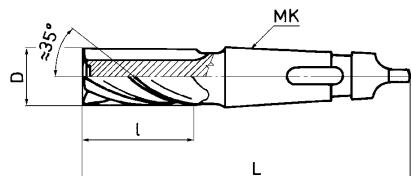
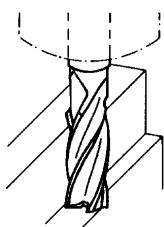


D z 13	I	L	SK	Z	HSS Co5					
25	80	195	30	4	25×80					
28	90	205	30	6	28×90					
32	100	240	40	6	32×100					
36	110	255	40	6	36×110					
40	125	270	40	6	40×125					
45	130	275	40	6	45×130					
50	140	290	40	6	50×140					
56	150	340	50	8	56×150					
63	160	350	50	8	63×160					
71	180	370	50	8	71×180					

x We deliver as a special product only.

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

End Mills

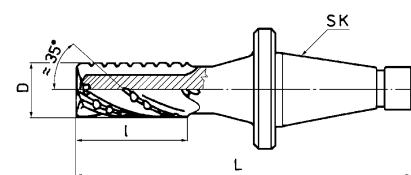
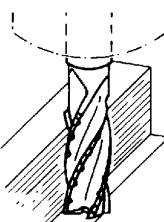


**END MILLS, LONG,
MEDIUM-COARSE TEETH**



D js 14	I	L	MK	Z	HSS					
25	80	226	4	5	25x80					
32	100	246	4	6	32x100					
40	80	229	4	6	40x80					
40	125	306	5	6	40x125					
40	200	450	6	6	40x200					
50	110	291	5	6	50x110					
50	150	400	6	6	50x150					
50	220	470	6	6	50x220					
63	180	430	6	8	63x180					
63	250	500	6	8	63x250					

* We deliver as a special product only.



**END MILLS, SHORT,
MEDIUM-COARSE TEETH**

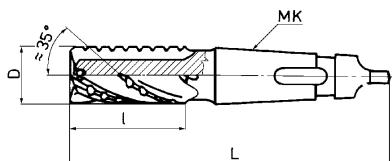
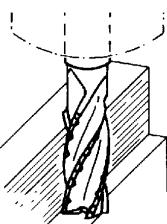


D z 13	I	L	SK	Z	HSS Co5					
25	40	155	30	4	25x40					
28	45	160	30	6	28x45					
32	50	190	40	6	32x50					
36	56	200	40	6	36x56					
40	63	210	40	6	40x63					
45	65	215	40	6	45x65					
50	70	220	40	6	50x70					
56	75	265	50	8	56x75					
63	80	270	50	8	63x80					
71	90	280	50	8	71x90					

* We deliver as a special product only.

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

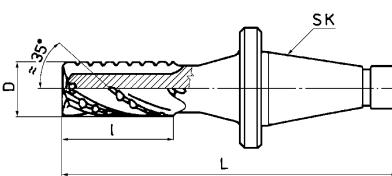
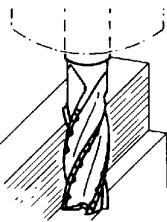
END MILLS, SHORT, MEDIUM-COARSE TEETH



D js 14	I	L	MK	Z	HSS					
25	50	196	4	5	25×50					
32	56	202	4	6	32×56					
40	63	212	4	6	40×63					
50	70	251	5	6	50×70					
63	80	330	6	8	63×80					
80	125	375	6	10	80×125					

^x We deliver as a special product only.

END MILLS, LONG, MEDIUM-COARSE TEETH

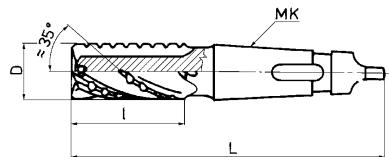
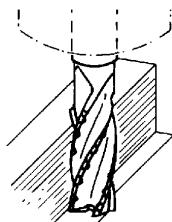


D z 13	I	L	SK	Z	HSS Co5					
25	80	195	30	4	25×80					
28	90	205	30	6	28×90					
32	100	240	40	6	32×100					
36	110	255	40	6	36×110					
40	125	270	40	6	40×125					
45	130	275	40	6	45×130					
50	140	290	40	6	50×140					
56	150	340	50	8	56×150					
63	160	350	50	8	63×160					
71	180	370	50	8	71×180					

^x We deliver as a special product only.

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

End Mills

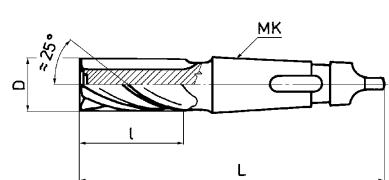
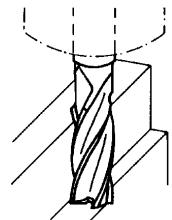


**END MILLS, LONG,
MEDIUM-COARSE TEETH**



D js 14	I	L	MK	Z	HSS				
25	80	226	4	5	25×80				
32	100	246	4	6	32×100				
40	80	229	4	6	40×80				
40	125	306	5	6	40×125				
40	200	450	6	6	40×200				
50	110	291	5	6	50×110				
50	150	400	6	6	50×150				
50	220	470	6	6	50×220				
63	180	430	6	8	63×180				
63	250	500	6	8	63×250				

* We deliver as a special product only.



END MILLS, LONG, FINE TEETH

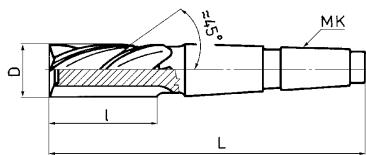
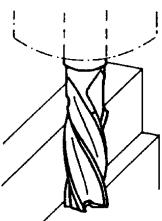


D js 14	I	L	MK	Z	HSS				
25	80	226	4	6	25×80				
32	100	246	4	7	32×100				
40	125	274	4	8	40×125				
50	150	331	5	10	50×150				
63	180	430	6	12	63×180				

* We deliver as a special product only.

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

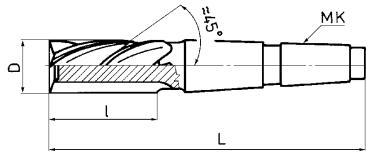
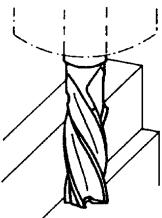
END MILLS LEFT-HAND CUTTING, SHORT, COARSE TEETH



D js 14	I	L	MK	Z	HSS					
25	50	154	3	4	25×50					
32	56	185	4	4	32×56					
40	63	194	4	4	40×63					
50	70	228	5	5	50×70					
63	80	241	5	6	63×80					

x We deliver as a special product only.

END MILLS LEFT-HAND CUTTING, LONG, COARSE TEETH

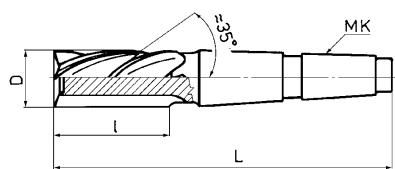
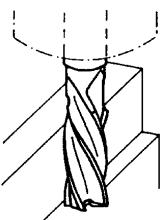


D js 14	I	L	MK	Z	HSS					
25	80	184	3	4	25×80					
32	100	229	4	4	32×100					
40	125	256	4	4	40×125					
50	150	308	5	5	50×150					
63	180	341	5	6	63×180					

x We deliver as a special product only.

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

End Mills

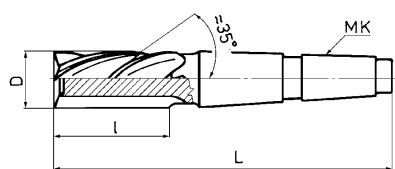
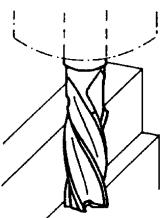


**END MILLS LEFT-HAND CUTTING,
SHORT, MEDIUM-COARSE TEETH**



D js 14	I	L	MK	z	HSS				
25	50	154	3	5	25×50				
32	56	185	4	6	32×56				
40	63	194	4	6	40×63				
50	70	228	5	6	50×70				
63	80	241	5	8	63×80				

* We deliver as a special product only.



**END MILLS LEFT-HAND CUTTING,
LONG, MEDIUM-COARSE TEETH**



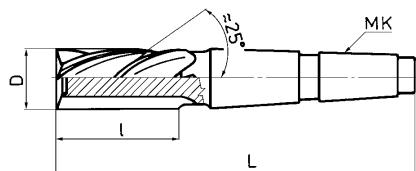
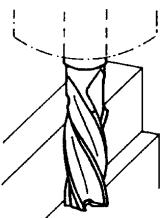
D js 14	I	L	MK	z	HSS				
25	80	184	3	5	25×80				
32	100	229	4	6	32×100				
40	125	256	4	6	40×125				
50	150	308	5	6	50×150				
63	180	341	5	8	63×180				

* We deliver as a special product only.

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

End Mills

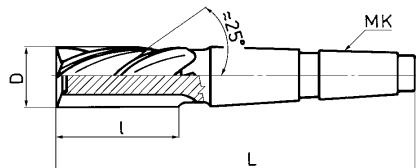
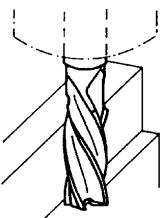
END MILLS LEFT-HAND CUTTING, SHORT, FINE TEETH



D js 14	I	L	MK	Z	HSS					
25	50	154	3	6	25×50					
32	56	185	4	7	32×56					
40	63	194	4	8	40×63					
50	70	228	5	10	50×70					
63	80	241	5	12	63×80					

x We deliver as a special product only.

END MILLS LEFT-HAND CUTTING, LONG, FINE TEETH

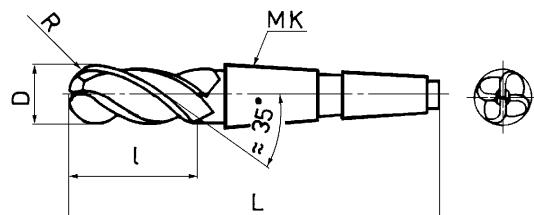
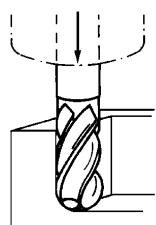


D js 14	I	L	MK	Z	HSS					
25	80	184	3	6	25×80					
32	100	229	4	7	32×100					
40	125	256	4	8	40×125					
50	150	308	5	10	50×150					
63	180	341	5	12	63×180					

x We deliver as a special product only.

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

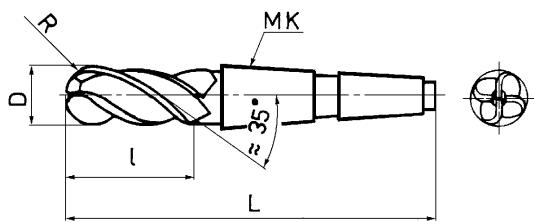
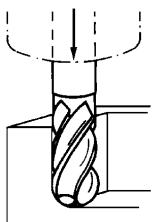
Die Sinking Cutters



DIE SINKING CUTTERS SHORT,
WITH BALL NOSE



D k 12	R	I	L	MK	Z	HSS Co5				
10	5	20	100	2	4	10×20				
12	6	25	105	2	4	12×25				
16	8	32	115	2	4	16×32				
20	10	36	135	3	4	20×36				
25	12,5	40	145	3	4	25×40				
32	16	50	180	4	4	32×50				
40	20	63	195	4	4	40×63				
50	25	70	202	4	4	50×70				



DIE SINKING CUTTERS LONG,
WITH BALL NOSE

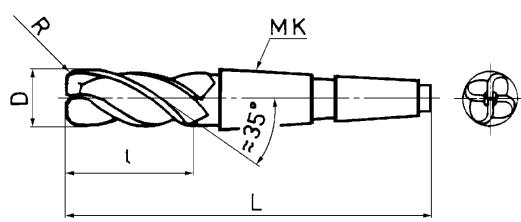
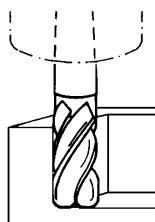


D k 12	R	I	L	MK	Z	HSS Co5				
10	5	40	120	2	4	10×40				
12	6	50	130	2	4	12×50				
16	8	63	145	2	4	16×63				
20	10	70	175	3	4	20×70				
25	12,5	80	185	3	4	25×80				
32	16	100	230	4	4	32×100				
40	20	125	285	5	4	40×125				
50	25	140	300	5	4	50×140				

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

Die Sinking Cutters

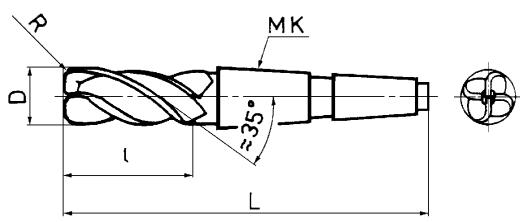
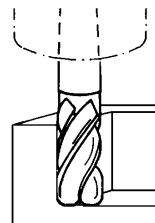
DIE SINKING CUTTERS SHORT, CORNER ROUNDING



D k 12	R	I	L	MK	Z	HSS Co5					
10	2,5	20	100	2	4	10×20					
12	3	25	105	2	4	12×25					
16	4	32	115	2	4	16×32					
20	5	36	135	3	4	20×36					
25	6	40	145	3	4	25×40					
32	8	50	180	4	6	32×50					
40	10	63	195	4	6	40×63					
50	12,5	70	202	4	6	50×70					

* We deliver as a special product only.

DIE SINKING CUTTERS LONG, CORNER ROUNDING

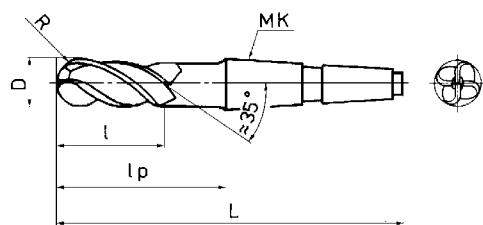
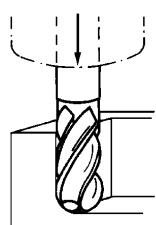


D k 12	R	I	L	MK	Z	HSS Co5					
10	2,5	40	120	2	4	10×40					
12	3	50	130	2	4	12×50					
16	4	63	145	2	4	16×63					
20	5	70	175	3	4	20×70					
25	6	80	185	3	4	25×80					
32	8	100	230	4	6	32×100					
40	10	125	285	5	6	40×125					
50	12,5	140	300	5	6	50×140					

* We deliver as a special product only.

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

Die Sinking Cutters

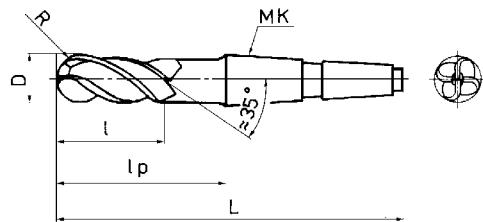
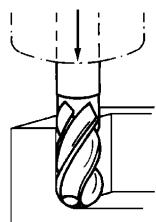


DIE SINKING CUTTERS EXTENDED,
WITH BALL NOSE



D k 12	R	I	l _p	L	MK	z	HSS Co5				
16	8	25	70	139	2	4	16×25				
20	10	32	90	176	3	4	20×32				
25	12,5	40	100	186	3	4	25×40				
32	16	50	120	229	4	4	32×50				
40	20	63	140	249	4	4	40×63				
50	25	80	160	269	4	4	50×80				

* We deliver as a special product only.



DIE SINKING CUTTERS EXTRA
EXTENDED, WITH BALL NOSE



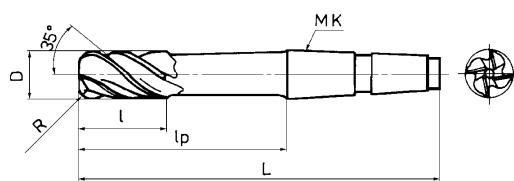
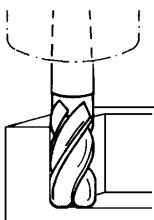
D k 12	R	I	l _p	L	MK	z	HSS Co5				
16	8	25	100	186	3	4	16×25				
20	10	32	120	206	3	4	20×32				
25	12,5	40	140	249	4	4	25×40				
32	16	50	160	269	4	4	32×50				
40	20	63	180	316	5	4	40×63				
50	25	80	200	336	5	4	50×80				

* We deliver as a special product only.

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

Die Sinking Cutters

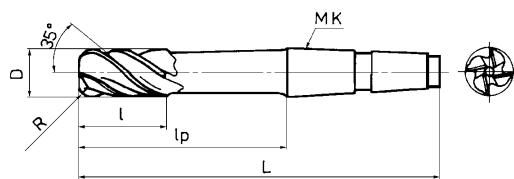
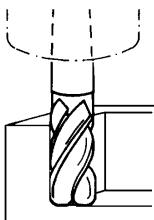
DIE SINKING CUTTERS EXTENDED, CORNER ROUNDING



D k 12	R	I	lp ~	L	MK	Z	HSS Co5				
16	4	25	70	139	2	4	16x25				
20	5	32	90	176	3	4	20x32				
25	6	40	100	186	3	4	25x40				
32	8	50	120	229	4	6	32x50				
40	10	63	140	249	4	6	40x63				
50	12,5	80	160	269	4	6	50x80				

^x We deliver as a special product only.

DIE SINKING CUTTERS EXTRA EXTENDED, CORNER ROUNDING



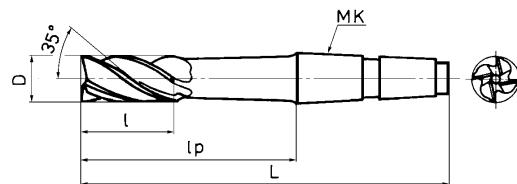
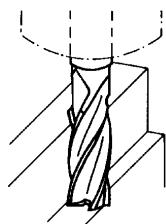
D k 12	R	I	lp ~	L	MK	Z	HSS Co5				
16	4	25	100	186	3	4	16x25				
20	5	32	120	206	3	4	20x32				
25	6	40	140	249	4	4	25x40				
32	8	50	160	269	4	6	32x50				
40	10	63	180	316	5	6	40x63				
50	12,5	80	200	336	5	6	50x80				

^x We deliver as a special product only.

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

Die Sinking Cutters

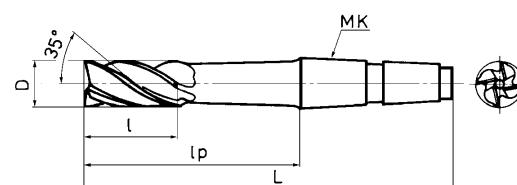
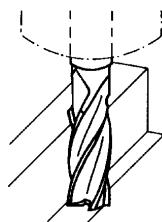
DIE SINKING CUTTERS EXTENDED



D k 12	I	l _p ~	L	MK	Z	HSS Co5				
16	25	70	139	2	4	16×25				
20	32	90	176	3	4	20×32				
25	40	100	186	3	4	25×40				
32	50	120	229	4	6	32×50				
40	63	140	249	4	6	40×63				
50	80	160	269	4	6	50×80				

* We deliver as a special product only.

DIE SINKING CUTTERS EXTRA EXTENDED



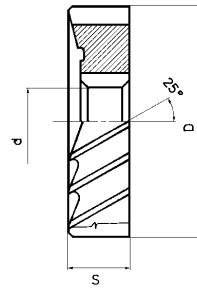
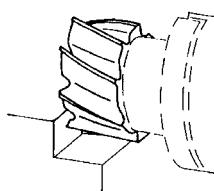
D k 12	I	l _p ~	L	MK	Z	HSS Co5				
16	25	100	186	3	4	16×25				
20	32	120	206	3	4	20×32				
25	40	140	249	4	4	25×40				
32	50	160	269	4	6	32×50				
40	63	180	316	5	6	40×63				
50	80	200	336	5	6	50×80				

* We deliver as a special product only.

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

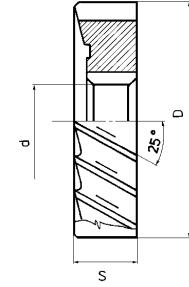
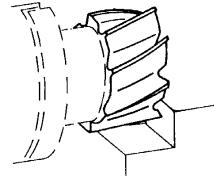
Shell End Mills

SHELL END MILLS, RIGHT-SIDE CUTTING



D js 16	s s 10	d H 7	z	HSSE					
50	10	16	14	50x10x16					
63	12	22	16	63x12x22					
80	16	27	18	80x16x27					
100	20	27	20	100x20x27					
100	20	32	20	100x20x32					
125	25	27	22	125x25x27					
125	25	32	22	125x25x32					
160	32	32	24	160x32x32					
160	32	40	24	160x32x40					

SHELL END MILLS, LEFT-SIDE CUTTING

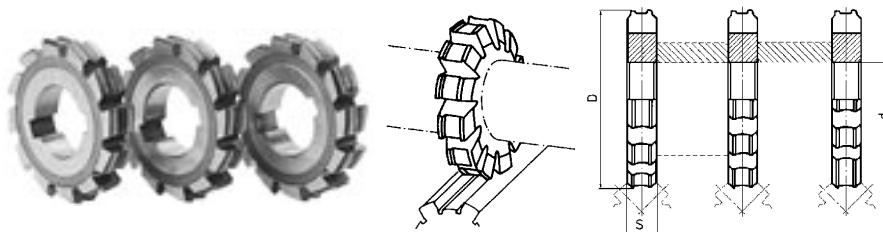


D js 16	s s 10	d H 7	z	HSS					
50	10	16	14	50x10x16					
63	12	22	16	63x12x22					
80	16	27	18	80x16x27					
100	20	27	20	100x20x27					
100	20	32	20	100x20x32					
125	25	27	22	125x25x27					
125	25	32	22	125x25x32					
160	32	32	24	160x32x32					
160	32	40	24	160x32x40					

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

Special Milling Cutters

CUTTERS FOR FOUR SPLINE SHAFTS

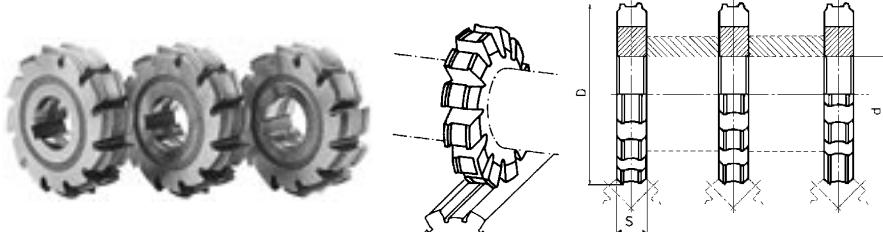


with grinding allowance

dh x Dh x bh	D js 16	s js 16	d H 7	z	HSS					
11x15x3	63	10	27	12	11x15x3					
13x17x4	63	10	27	12	13x17x4					
16x20x6	63	12	27	12	16x20x6					
18x22x6	63	12	27	12	18x22x6					

* We deliver as a special product only.

CUTTERS FOR SIX SPLINE SHAFTS



with grinding allowance

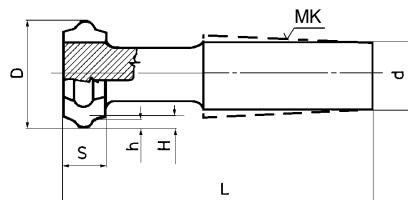
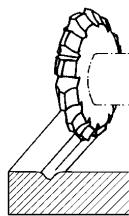
dh x Dh x bh	D js 16	s js 16	d H 7	z	HSS					
21x25x5	63	10	27	12	21x25x5					
23x28x6	63	10	27	12	23x28x6					
26x32x6	63	12	27	12	26x32x6					
28x34x7	63	12	27	12	28x34x7					
32x38x8	63	14	27	12	32x38x8					
36x42x8	63	16	27	12	36x42x8					
42x48x10	80	18	27	12	42x48x10					
46x52x12	80	18	27	12	46x52x12					
52x60x14	80	20	27	12	52x60x14					
58x65x14	80	24	27	12	58x65x14					
62x70x16	80	24	27	12	62x70x16					
68x78x16	80	28	27	12	68x78x16					
72x82x16	80	30	27	12	72x82x16					

* We deliver as a special product only.

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

Special Milling Cutters

END MILLS FOR OIL GROOVES



920100
PN 222842

920140
PN 222844

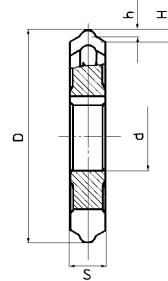
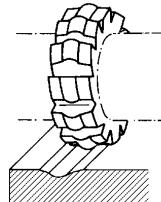


h	H	D js 16	S js 16	L js 16	d h 8	MK	HSS	HSS				
0,8	1	20	8	75	16		0,8	-				
1,2	1,6	25	12	80	16		1,2	-				
2	2,5	32	16	95	20		2	-				
3	4	40	22	170	4		-	3				
5	6	50	28	180	4		-	5				

Z = 8

* We deliver as a special product only.

CUTTERS FOR OIL GROOVES

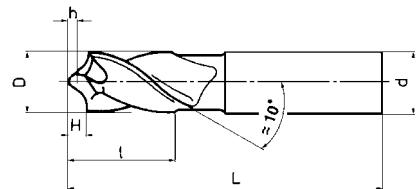
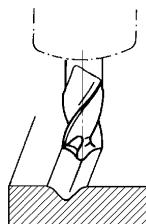


h	H	D js 16	S js 16	d H 7	Z	HSS						
0,8	1	50	8	22	16	0,8						
1,2	1,6	50	12	22	16	1,2						
2	2,5	63	16	22	16	2						
3	4	63	22	22	14	3						
5	6	80	28	27	12	5						

* We deliver as a special product only.

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

Special Milling Cutters

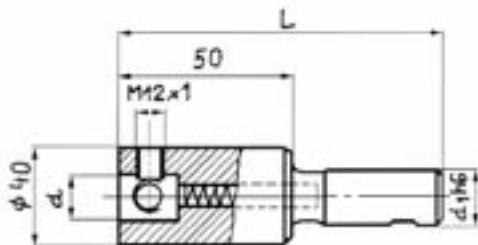


CUTTERS FOR OIL GROOVES

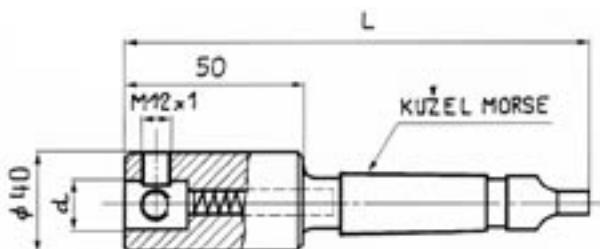


h	H	D js 16	I js 16	L js 16	d h 8	HSS				
0,8	1	8	11	61	10	0,8				
1,2	1,6	12	16	73	12	1,2				
2	2,5	16	19	79	16	2				
3	4	22	22	88	20	3				
5	6	28	26	96	20	5				

* We deliver as a special product only.

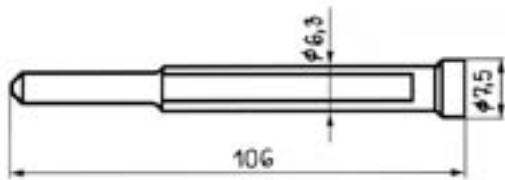


BORING BAR FOR CORE CUTTERS



d +0,01	d1	MK	L	
19,05	20	-	112	013516.20
19,05	-	2	145	013516.02
19,05	-	3	166	013516.03

* We deliver as a special product only.

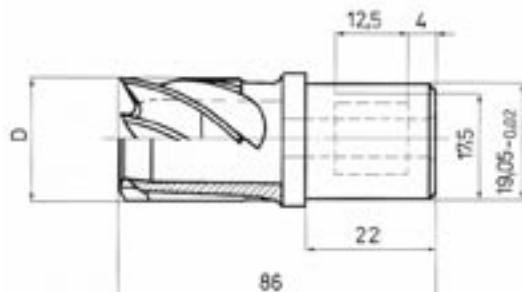
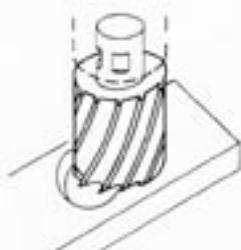


DRIFT

013517

We deliver these tools with coating (TiN, TiCN, TiAlN) also.

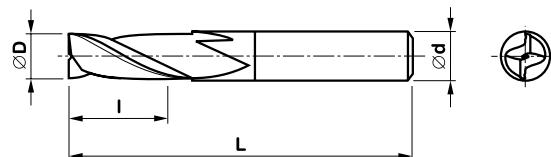
CORE CUTTER



D	Z	
20	6	013545.20
21	6	013545.21
22	6	013545.22
23	6	013545.23
24	6	013545.24
25	8	013545.25
26	8	013545.26
27	8	013545.27
28	8	013545.28
29	8	013545.29
30	8	013545.30
31	8	013545.31
32	8	013545.32
33	10	013545.33
34	10	013545.34
35	10	013545.35
36	10	013545.36
37	10	013545.37
38	10	013545.38
39	10	013545.39
40	10	013545.40
41	12	013545.41
42	12	013545.42
43	12	013545.43
44	12	013545.44
45	12	013545.45
46	12	013545.46
47	12	013545.47
48	12	013545.48
49	12	013545.49
50	14	013545.50
51	14	013545.51
52	14	013545.52

* We deliver as a special product only.
Recommended depth of drilling max. 25 mm.

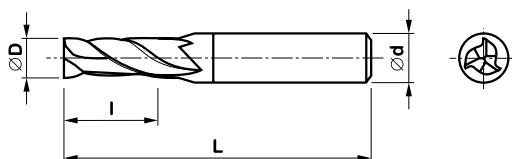
Carbide Endmills



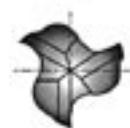
**2 FLUTE SQUARE END
STANDARD LENGTH ENDMILLS**



D	I	L	d	without coating	coating TiAlN
1	3	38	3	81001	81031
1,5	5	38	3	81051	81081
2	6	38	3	81101	81131
2,5	7	38	3	81151	81181
3	12	38	3	81201	81231
3,5	12	50	4	81251	81281
4	14	50	4	81301	81331
4,5	14	50	5	81351	81381
5	16	50	5	81401	81431
6	19	63	6	81451	81481
7	19	63	8	81501	81531
8	19	63	8	81551	81581
9	22	70	10	81601	81631
10	22	70	10	81651	81681
11	25	70	11	81701	81731
12	25	75	12	81751	81781
14	30	88	14	81801	81831
16	32	88	16	81851	81881
18	36	100	18	81901	81931
20	38	100	20	81951	81981
22	38	100	22	82001	82031
25	38	100	25	82051	82081



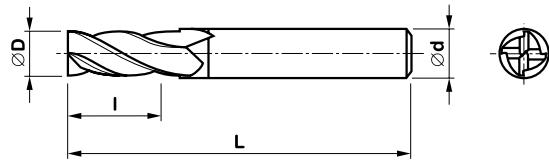
**3 FLUTE SQUARE END
STANDARD LENGTH ENDMILLS**



D	I	L	d	without coating	coating TiAlN
1	3	38	3	81003	81033
1,5	5	38	3	81053	81083
2	6	38	3	81103	81133
2,5	7	38	3	81153	81183
3	12	38	3	81203	81233
3,5	12	50	4	81253	81283
4	14	50	4	81303	81333
4,5	14	50	5	81353	81383
5	16	50	5	81403	81433
6	19	63	6	81453	81483
7	19	63	8	81503	81533
8	19	63	8	81553	81583
9	22	70	10	81603	81633
10	22	70	10	81653	81683
11	25	70	11	81703	81733
12	25	75	12	81753	81783
14	30	88	14	81803	81833
16	32	88	16	81853	81883
18	36	100	18	81903	81933
20	38	100	20	81953	81983
22	38	100	22	82003	82033
25	38	100	25	82053	82083

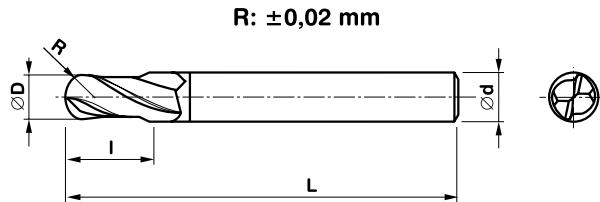
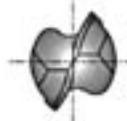
Cutting edge tolerance +,00 – ,05; shank tolerance +,000 – ,005.

4 FLUTE SQUARE END STANDARD LENGTH ENDMILLS



D	I	L	d	without coating	coating TiAIN
1	3	38	3	81000	81030
1,5	5	38	3	81050	81080
2	6	38	3	81100	81130
2,5	7	38	3	81150	81180
3	12	38	3	81200	81230
3,5	12	50	4	81250	81280
4	14	50	4	81300	81330
4,5	14	50	5	81350	81380
5	16	50	5	81400	81430
6	19	63	6	81450	81480
7	19	63	8	81500	81530
8	19	63	8	81550	81580
9	22	70	10	81600	81630
10	22	70	10	81650	81680
11	25	70	11	81700	81730
12	25	75	12	81750	81780
14	30	88	14	81800	81830
16	32	88	16	81850	81880
18	36	100	18	81900	81930
20	38	100	20	81950	81980
22	38	100	22	82000	82030
25	38	100	25	82050	82080

2 FLUTE BALL END STANDARD LENGTH ENDMILLS



D	I	L	d	without coating	coating TiAIN
1	3	38	3	81005	81035
1,5	5	38	3	81055	81085
2	6	38	3	81105	81135
2,5	7	38	3	81155	81185
3	12	38	3	81205	81235
3,5	12	50	4	81255	81285
4	14	50	4	81305	81335
4,5	14	50	5	81355	81385
5	16	50	5	81405	81435
6	19	63	6	81455	81485
7	19	63	8	81505	81535
8	19	63	8	81555	81585
9	22	70	10	81605	81635
10	22	70	10	81655	81685
11	25	70	11	81705	81735
12	25	75	12	81755	81785
14	30	88	14	81805	81835
16	32	88	16	81855	81885
18	36	100	18	81905	81935
20	38	100	20	81955	81985
22	38	100	22	82005	82035
25	38	100	25	82055	82085

Cutting edge tolerance +,00 – ,05; shank tolerance +,000 – ,005.

Carbide Endmills

R: $\pm 0,02$ mm



**4 FLUTE BALL END
STANDARD LENGTH
ENDMILLS**



D	I	L	d	without coating	coating TiAIN
1	3	38	3	81004	81034
1,5	5	38	3	81054	81084
2	6	38	3	81104	81134
2,5	7	38	3	81154	81184
3	12	38	3	81204	81234
3,5	12	50	4	81254	81284
4	14	50	4	81304	81334
4,5	14	50	5	81354	81384
5	16	50	5	81404	81434
6	19	63	6	81454	81484
7	19	63	8	81504	81534
8	19	63	8	81554	81584
9	22	70	10	81604	81634
10	22	70	10	81654	81684
11	25	70	11	81704	81734
12	25	75	12	81754	81784
14	30	88	14	81804	81834
16	32	88	16	81854	81884
18	36	100	18	81904	81934
20	38	100	20	81954	81984
22	38	100	22	82004	82034
25	38	100	25	82054	82084

**2 FLUTE SQUARE END
LONG LENGTH ENDMILLS**

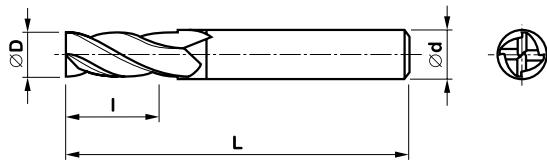


D	I	L	d	without coating	coating TiAIN
3	25	65	3	83001	83031
4	25	65	4	83051	83081
5	25	75	5	83101	83131
6	25	75	6	83151	83181
8	25	75	8	83201	83231
10	38	100	10	83251	83281
12	50	100	12	83301	83331
14	56	125	14	83351	83381
16	75	150	16	83401	83431
18	75	150	18	83451	83481
20	75	150	20	83501	83531
25	75	150	25	83551	83581

Cutting edge tolerance +,00 – ,05; shank tolerance +,000 – ,005.

Carbide Endmills

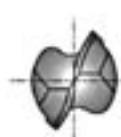
4 FLUTE SQUARE END LONG LENGTH ENDMILLS



D	I	L	d	without coating	coating TiAIN
3	25	65	3	83000	83030
4	25	65	4	83050	83080
5	25	75	5	83100	83130
6	25	75	6	83150	83180
8	25	75	8	83200	83230
10	38	100	10	83250	83280
12	50	100	12	83300	83330
14	56	125	14	83350	83380
16	75	150	16	83400	83430
18	75	150	18	83450	83480
20	75	150	20	83500	83530
25	75	150	25	83550	83580

2 FLUTE BALL END LONG LENGTH ENDMILLS

R: $\pm 0,02$ mm

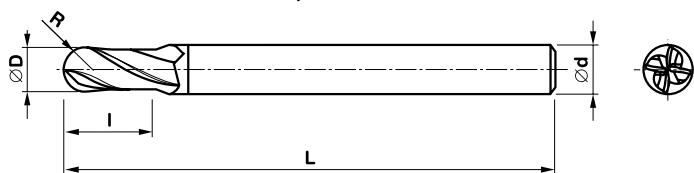


D	I	L	d	without coating	coating TiAIN
3	25	65	3	83005	83035
4	25	65	4	83055	83085
5	25	75	5	83105	83135
6	25	75	6	83155	83185
8	25	75	8	83205	83235
10	38	100	10	83255	83285
12	50	100	12	83305	83335
14	56	125	14	83355	83385
16	75	150	16	83405	83435
18	75	150	18	83455	83485
20	75	150	20	83505	83535
25	75	150	25	83555	83585

Cutting edge tolerance +,00 – ,05; shank tolerance +,000 – ,005.

Carbide Endmills

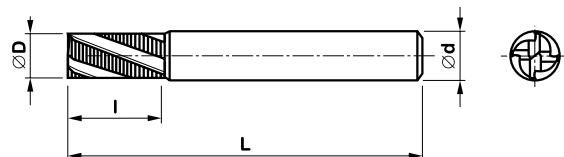
R: $\pm 0,02$ mm



4 FLUTE BALL END LONG LENGTH ENDMILLS



D	I	L	d	without coating	coating TiAlN
3	25	65	3	83004	83034
4	25	65	4	83054	83084
5	25	75	5	83104	83134
6	25	75	6	83154	83184
8	25	75	8	83204	83234
10	38	100	10	83254	83284
12	50	100	12	83304	83334
14	56	125	14	83354	83384
16	75	150	16	83404	83434
18	75	150	18	83454	83484
20	75	150	20	83504	83534
25	75	150	25	83554	83584



620 SERIES MEDIUM PITCH ROUGHES (.062 PITCH)

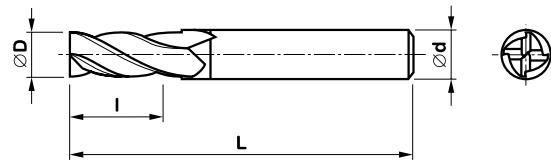


D	I	L	d	No. of flute	without coating	coating TiAlN
6	19	63	6	3	86900	86903
8	19	63	8	3	86904	86907
10	22	63	10	3	86908	86911
12	25	75	12	4	86912	86915
16	32	88	16	4	86916	86919
20	38	100	20	4	86920	86923
25	38	100	25	5	86924	86927

Cutting edge tolerance +,00 – ,05; shank tolerance +,000 – ,005.

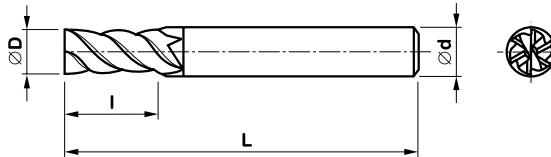
Carbide Endmills

EXTRA LONG LENGTH SQUARE ENDMILLS



D	I	L	d	4FL SQ	2FL SQ
6	38	100	6	301-1000	300-1000
6	75	150	6	301-1002	300-1002
6	75	200	8	301-1004	300-1004
8	42	100	8	301-1006	300-1006
8	75	150	8	301-1008	300-1008
8	75	200	8	301-1010	300-1010
8	75	200	10	301-1012	300-1012
10	75	150	10	301-1014	300-1014
10	75	200	10	301-1016	300-1016
12	75	150	12	301-1018	300-1018
12	75	200	12	301-1020	300-1020
14	62	125	14	301-1022	300-1022
14	75	150	14	301-1024	300-1024
14	75	200	16	301-1026	300-1026
16	75	200	16	301-1028	300-1028
18	75	200	18	301-1030	300-1030
20	75	200	20	301-1032	300-1032

6 FLUTE ENDMILLS



D	I	L	d	without coating	coating TiAlN
3	12	38	3	81202	81232
4	14	50	4	81302	81332
5	16	50	5	81402	81432
6	19	63	6	81452	81482
7	19	63	8	81502	81532
8	21	63	8	81552	81582
9	22	70	10	81602	81632
10	25	70	10	81652	81682
11	25	70	11	81702	81732
12	25	75	12	81752	81782
14	30	88	14	81802	81832
16	32	88	16	81852	81882
18	35	100	18	81902	81932
20	38	100	20	81952	81982
22	38	100	22	82002	82032
25	38	100	25	82052	82082

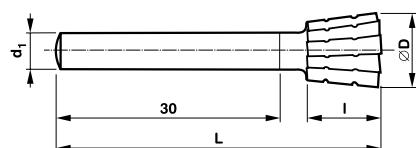
Cutting edge tolerance +,00 – ,05; shank tolerance +,000 – ,005.

Burrs

Type	$\varnothing D$ max. mm	I mm	L mm	d_1 mm	$\frac{kg}{\text{pc}}$	
3A	7,5	7,5	37,5	3	0,0032	3A
3B	7	10	40	3	0,0039	3B
3C	7	10	40	3	0,0028	3C
3D	7	6,7	36,7	3	0,0031	3D
3E	7	11	41	3	0,0032	3E
3F	7	10	40	3	0,0032	3F

Burrs are made with teeth form No. 1 (see page 111).

HSS BURRS



3A

3B

3C

3D

3E

3F

Type	$\varnothing D$ max. mm	L mm	Thread size	$\frac{kg}{\text{pc}}$	
119	20	50	M10	0,0573	119
120	20	45	M10	0,0502	120

HSS BURRS

Burrs are made with teeth form No. 1 (see page 111).

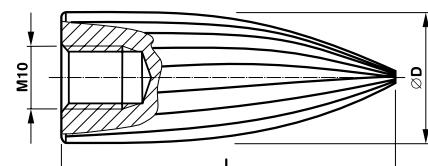
Straight or taper shanks for clamping on the machine spindle see page 116.



119



120



Teeth form No. 1

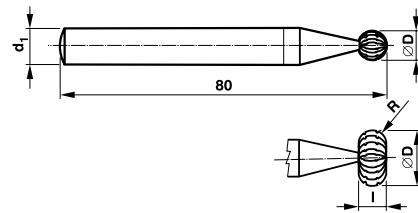
Teeth form No. 2

Teeth form No. 3

Teeth form No. 4

Teeth form No. 5

TYPE OF TEETH BURRS

HSS BURRS FOR TOOL AND JIG PRODUCTION


Burrs are made with teeth form No. 1 (see page 111).

Type	\varnothing D max. mm	R mm	I mm	$\frac{\text{kg}}{\text{pc}}$	
265/3	3			0,037	265/3
265/4	4			0,038	265/4
265/5	5			0,039	265/5
265/6	6			0,040	265/6
265/7	7			0,041	265/7
265/8	8			0,042	265/8
265/9	9			0,043	265/9
265/10	10			0,044	265/10
265/12	12			0,046	265/12
266/3,5	19	3,5	7	0,054	266/3,5
266/4	19	4	8	0,056	266/4
266/4,5	22	4,5	9	0,065	266/4,5
266/5	22	5	10	0,072	266/5



265/3

265/5

265/7

265/8

265/9

265/10

265/12

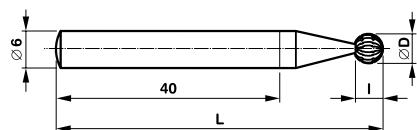
266/4

266/5

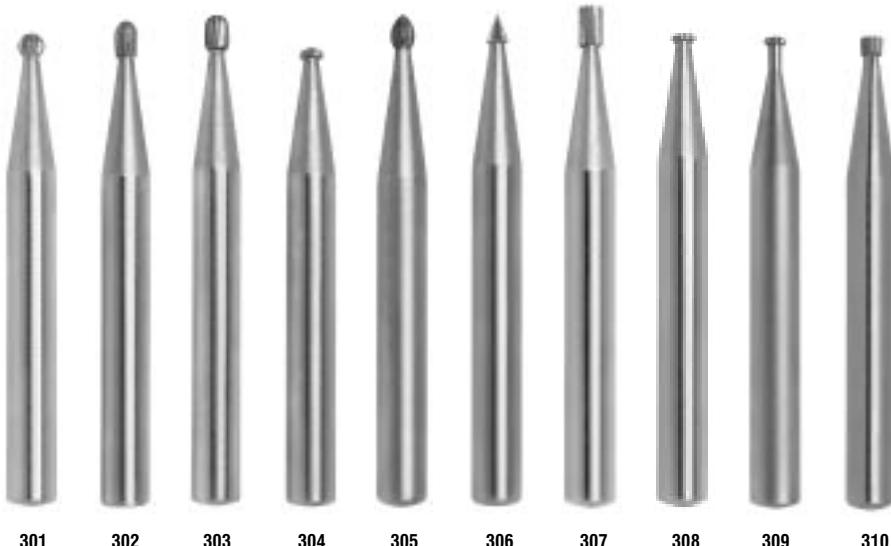
Burrs

Type	$\varnothing D$ max. mm	I mm	L mm	kg	
301	3	2,6	58,6	0,0104	301
302	3	4,5	60,5	0,0105	302
303	3	4,5	60,5	0,0105	303
304	3	1,5	57,5	0,0102	304
305	3	4,5	60,5	0,0106	305
306	3	4,5	60,5	0,0104	306
307	3	4,5	60,5	0,0105	307
308	3	1	57	0,0104	308
309	3	1	57	0,0105	309
310	3	3	59	0,0106	310
311	6	5,6	58,1	0,0109	311
312	6	7	59,5	0,0110	312
313	6	7	59,5	0,0111	313
314	6	3	55,5	0,0107	314
315	6	7	59,5	0,0112	315
316	6	7	59,5	0,0109	316
317	6	7	59,5	0,0114	317
318	6	1,5	54	0,0108	318
319	6	1,5	54	0,0110	319
320	6	6	58,5	0,0113	320

HSS BURRS FOR ENGRAVING



Burrs are made with special teeth form.



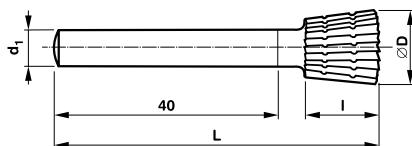
301 302 303 304 305 306 307 308 309 310



311 312 313 314 315 316 317 318 319 320

HSS BURRS WITH STRAIGHT SHANK

Type	$\varnothing D$ max. mm	I mm	L mm	d_1 mm	$\frac{kg}{kg}$	
42	12	11,5	52	6	0,016	42 XX
43	10	14	54	6	0,017	43 XX
44	10	14	54	6	0,013	44 XX
45	12	18	58	6	0,017	45 XX
46	10	17	57	6	0,012	46 XX
47	15	30	70	6	0,047	47 XX
48	15	30	70	6	0,030	48 XX
49	15	35	75	6	0,029	49 XX
50	15	30	70	6	0,039	50 XX
51	6	20	60	6	0,012	51 XX
52	6	20	60	6	0,012	52 XX
53	6	20	60	6	0,010	53 XX
54	6	15	55	6	0,010	54 XX
55	6	20	60	6	0,011	55 XX
56	6	10	60	6	0,012	56 XX
57	4	3,4	60	6	0,011	57 XX
58	8	7,5	60	6	0,012	58 XX
59	12	11,5	60	6	0,018	59 XX
60	15	14,5	60	6	0,023	60 XX
61	12	20	60	6	0,021	61 XX
62	12	20	60	6	0,018	62 XX
63	12	30	70	6	0,025	63 XX
64	12	30	70	6	0,022	64 XX
65	12	30	70	6	0,023	65 XX
66	12	30	70	6	0,019	66 XX
67	12	30	70	6	0,028	67 XX
68	12	30	70	6	0,033	68 XX
81	8	30	70	6	0,017	81 XX
82	10	30	70	6	0,024	82 XX



Typ 42

Typ 43

Typ 44

XX Specify the coarseness of teeth. Burrs are made with teeth form No. 1, 2, 3, 4 and 5 (see page 111).



Typ 45

Typ 46

Typ 47

Typ 48

Typ 49

Typ 50

Typ 51

Typ 52

Typ 53

Typ 54

Typ 55

Typ 56



Typ 57

Typ 58

Typ 59

Typ 60

Typ 62

Typ 64

Typ 61

Typ 66

Typ 63

Typ 68

Typ 65

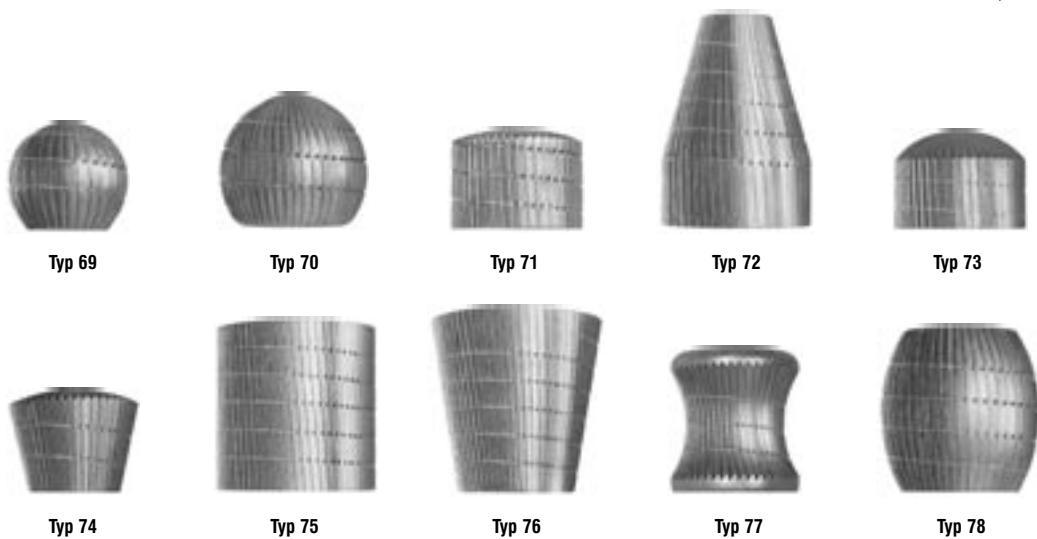
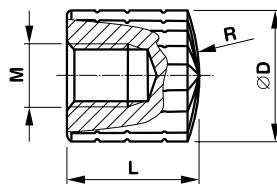
Typ
67, 81, 82

Burrs

Type	$\varnothing D$ max. mm	$\varnothing D$ min. mm	mm	L mm	Thread size	kg	
69	20	-		18,4	M6	0,028	69
70	25	-		21,7	M10	0,048	70
71	22	29		17	M6	0,038	71
72	25	-		35	M10	0,075	72
73	22	15		17	M6	0,037	73
74	22	15		17	M6	0,030	74
75	30	-		30	M10	0,150	75
76	30	20		30	M10	0,104	76
77	23	18		25	M10	0,055	77
78	25	-		25	M10	0,063	78

Burrs are made with teeth form No. 1, 2, 3, 4, and 5 (see page 111). Straight or taper shanks for clamping on the machine spindle see page 116.

HSS BURRS WITH INTERNAL THREAD



Type	$\varnothing D$ max. mm	L mm	Thread size	kg	
101	30	37	M12	0,084	101
102	35	32,5	M12	0,134	102
103	25	35	M12	0,170	103
104	25	40	M10	0,040	104
105	20	55	M12	0,041	105
106	35	55	M12	0,158	106
107	35	55	M12	0,159	107

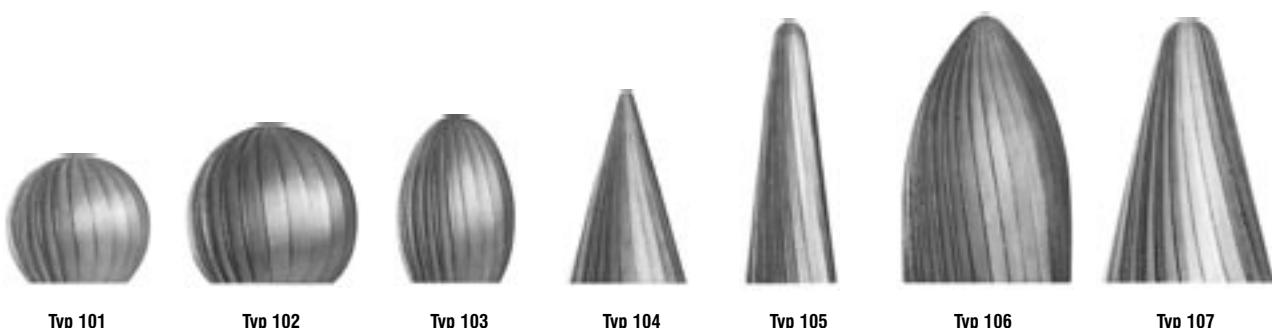
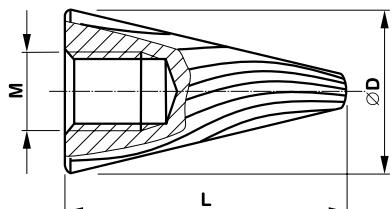
These burrs are designed for machining of following materials and are made with two sorts of teeth No. 10 and 11.

Teeth No. 10 - coarse teeth for soft wood and light smearable metal.

Teeth No. 11 - fine teeth for hard wood and metal alloys.

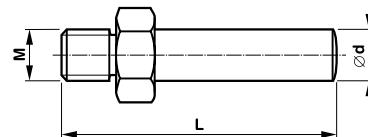
Straight or taper shanks for clamping on the machine spindle see page 116.

HSS RASPING BURRS WITH INTERNAL THREAD



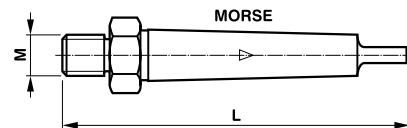
Shanks for Burrs

STRAIGHT SHANKS FOR BURRS



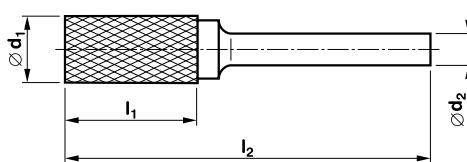
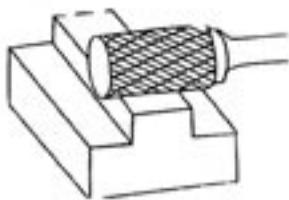
Type	$\varnothing d$ of shank	Clamping thread	L mm	$\frac{kg}{\cdot}$	
88	6	M6	48,0	0,0011	88
89	6	M10	53,5	0,0022	89
90	6	M12	55,5	0,0026	90
91	10	M6	50,5	0,0031	91
92	10	M10	53,5	0,0035	92
93	10	M12	55,5	0,0039	93

TAPER SHANKS FOR BURRS



Type	Taper shank	Clamping thread	L mm	$\frac{kg}{\cdot}$	
94	MORSE 0	M6	65,5	0,0094	94
95	MORSE 0	M10	68,5	0,0095	95
96	MORSE 0	M12	70,5	0,0096	96
98	MORSE 1	M10	72,5	0,0098	98
99	MORSE 1	M12	74,5	0,0099	99

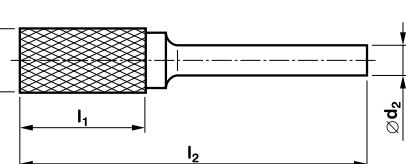
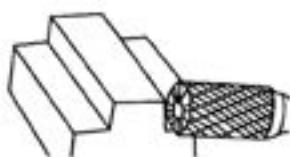
Tungsten Carbide Burrs



**TUNGSTEN CARBIDE BURRS
CYLINDER**



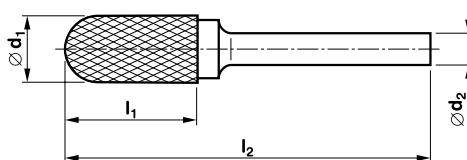
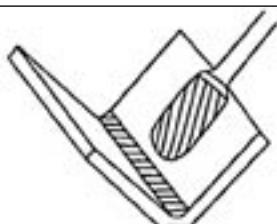
$\varnothing d_1$ mm	$\varnothing d_2$ mm	l_1 mm	l_2 mm	
3	3	14	38	A0314T03
4	3	13	52	A0413T03
5	3	13	52	A0513T03
6	3	13	53	A0613T03
8	6	18	63	A0618T06
8	6	18	63	A0818T06
10	6	20	65	A1020T06
12	6	25	70	A1225T06
16	6	25	70	A1625T06
19	6	25	70	A1925T06



**TUNGSTEN CARBIDE BURRS
CYLINDER END CUT**



$\varnothing d_1$ mm	$\varnothing d_2$ mm	l_1 mm	l_2 mm	
3	3	14	38	B0314T03
6	3	13	52	B0613T03
6	6	18	63	B0618T06
8	6	18	63	B0818T06
10	6	20	65	B1020T06
12	6	25	70	B1225T06
18	6	25	70	B1625T06
19	6	25	70	B1925T06



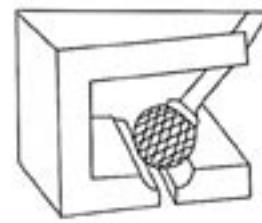
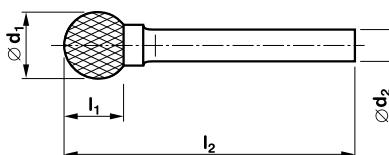
**TUNGSTEN CARBIDE BURRS
CYLINDER WITH BALL TOP**



$\varnothing d_1$ mm	$\varnothing d_2$ mm	l_1 mm	l_2 mm	
3	3	14	35	C0314T03
5	3	12	52	C0512T03
6	3	13	53	C0613T03
6	6	18	63	C0618T06
8	6	18	63	C0818T06
10	6	20	65	C1020T06
12	6	25	70	C1225T06
16	6	25	70	C1625T06
19	6	25	70	C1925T06

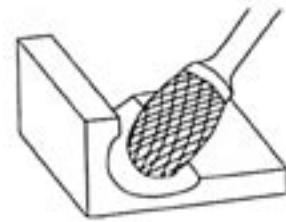
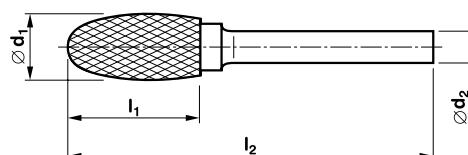
Tungsten Carbide Burrs

TUNGSTEN CARBIDE BURRS BALL SHAPE



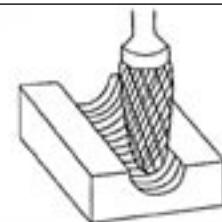
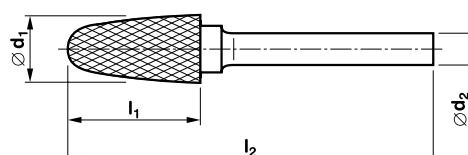
$\varnothing d_1$ mm	$\varnothing d_2$ mm	l_1 mm	l_2 mm	
3	3	3	38	D0303T03
4	3	3	43	D0403T03
5	3	4	44	D0504T03
6	6	5	50	D0605T06
8	6	7	52	D0807T06
10	6	9	54	D1009T06
12	6	11	56	D1211T06
16	6	14	60	D1614T06
19	6	16	62	D1917T06

TUNGSTEN CARBIDE BURRS ELLIPSE



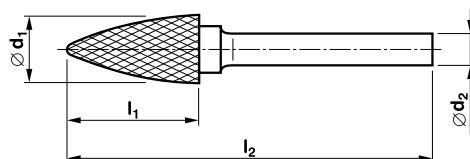
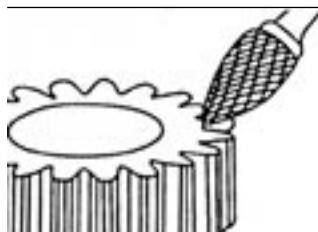
$\varnothing d_1$ mm	$\varnothing d_2$ mm	l_1 mm	l_2 mm	
3	3	6	38	E0306T03
5	3	8	48	E0508T03
6	3	10	50	E0610T03
6	6	10	55	E0610T06
8	6	13	58	E0813T06
10	6	16	61	E1016T06
12	6	20	65	E1220T06
16	6	25	70	E1625T06
19	6	25	70	E1925T06

TUNGSTEN CARBIDE BURRS ARC CYLINDER WITH BALL TOP



$\varnothing d_1$ mm	$\varnothing d_2$ mm	l_1 mm	l_2 mm	
3	3	13	38	F0313T03
5	3	13	50	F0513T03
6	3	13	53	F0613T03
6	6	18	63	F0618T06
8	6	18	63	F0818T06
10	6	20	65	F1020T06
12	6	25	70	F1225T06
16	6	25	70	F1625T06
19	6	25	70	F1925T06
19	6	32	77	F1932T06

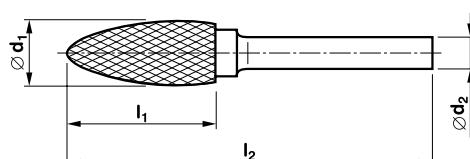
Tungsten Carbide Burrs



TUNGSTEN CARBIDE BURRS ARC CYLINDER WITH SHARP TOP



$\varnothing d_1$ mm	$\varnothing d_2$ mm	l_1 mm	l_2 mm	
3	3	13	38	G0313T03
6	3	13	53	G0613T03
6	6	18	63	G0618T06
8	6	18	63	G0818T06
8	6	20	65	G0820T06
10	6	20	65	G1020T06
12	6	20	65	G1220T06
12	6	25	70	G1225T06
16	6	25	70	G1625T06



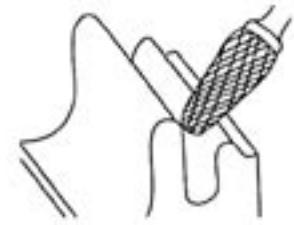
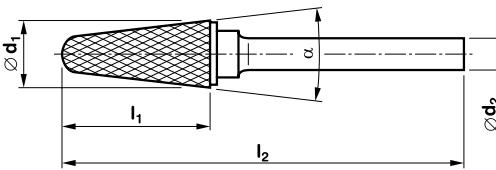
TUNGSTEN CARBIDE BURRS FLAME



$\varnothing d_1$ mm	$\varnothing d_2$ mm	l_1 mm	l_2 mm	
3	3	7	47	H0307T03
6	6	18	63	H0618T06
8	6	20	65	H0820T06
10	6	25	70	H1025T06
12	6	32	75	H1232T06
16	6	36	81	H1636T06
19	6	41	86	H1941T06

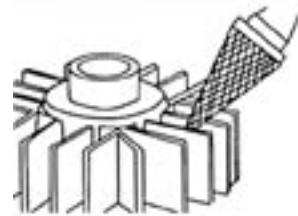
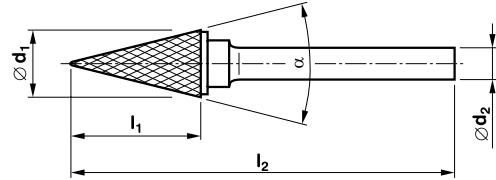
Tungsten Carbide Burrs

TUNGSTEN CARBIDE BURRS CONICAL ROUND NOSE



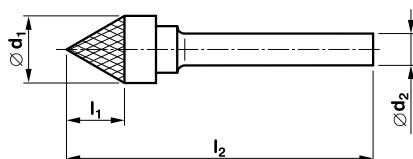
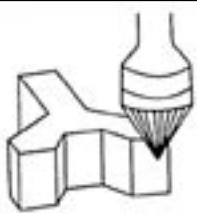
$\varnothing d_1$ mm	$\varnothing d_2$ mm	l_1 mm	l_2 mm	
3 (14°)	3	13	38	L0313T03
5 (14°)	3	13	38	L0513T03
6 (14°)	3	12	38	L0612T03
6 (14°)	3	19	38	L0619T03
6 (14°)	6	12	38	L0612T06
6 (14°)	6	16	61	L0616T06
8 (14°)	6	22	67	L0822T06
10 (14°)	6	27	72	L1027T06
12 (14°)	6	30	75	L1230T06
16 (14°)	6	30	75	L1630T06
19 (14°)	6	38	83	L1938T06

TUNGSTEN CARBIDE BURRS CONE SHAPE



$\varnothing d_1$ mm	$\varnothing d_2$ mm	l_1 mm	l_2 mm	
3 (14°)	3	11	38	M0311T03
3 (7°)	3	16	38	M0316T03
5 (14°)	3	12,7	38	M0513T03
6 (22°)	6	12,7	50	M0613T06
6 (14°)	6	19	64	M0619T06
8 (25°)	6	18	63	M0818T06
8 (22,6°)	6	20	65	M0820T06
9,5 (28°)	6	16	61	M1016T06
10 (25°)	6	20	65	M1025T06
12 (25°)	6	25	70	M1225T06
16 (36°)	6	25	70	M1625T06

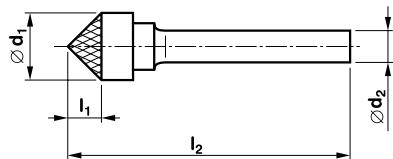
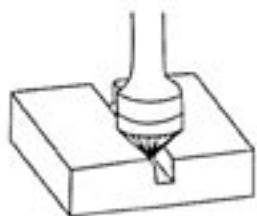
Tungsten Carbide Burrs



CONE 60°



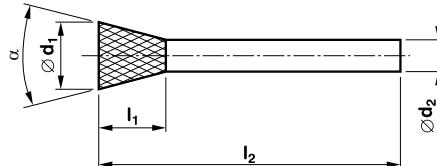
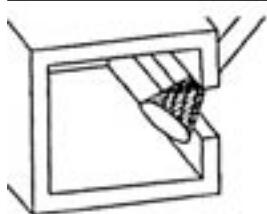
$\varnothing d_1$ mm	$\varnothing d_2$ mm	l_1 mm	l_2 mm	
3	3	2,5	38	J0303T03
6	6	5	50	J0605T06
8	6	7	52	J0807T06
10	6	8	54	J1008T06
12	6	10	55	J1210T06
16	6	14	59	J1614T06
19	6	16,5	65	J1916T06



CONE 90°



$\varnothing d_1$ mm	$\varnothing d_2$ mm	l_1 mm	l_2 mm	
3	3	1,5	38	K0302T03
6	6	3	48	K0603T06
8	6	4	49	K0804T06
10	6	4,7	50	K1005T06
12	6	6	51	K1206T06
16	6	8	53	K1608T06
19	6	9,5	55	K1910T06



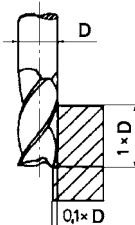
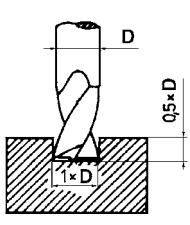
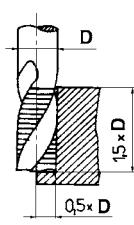
INVERTED CONE



$\varnothing d_1$ mm	$\varnothing d_2$ mm	l_1 mm	l_2 mm	
3	3	3	40	N0303T03
3	3	4	40	N0304T03
5	3	5	45	N0505T03
6	6	8	53	N0608T06
6,3	3	6	46	N0606T03
9,5	6	9,5	55	N1010T06
12,7	6	12,7	58	N1313T06
16	6	19	61	N1619T06
19	6	16	61	N1916T06

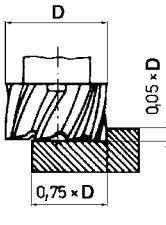
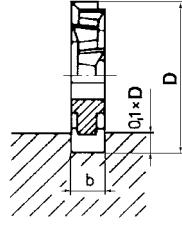
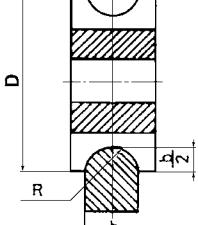
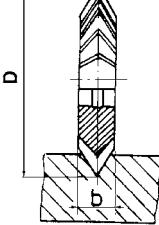
Technical section

FEED PER TOOTH FOR END MILLS AND SLOT DRILLS

Diameter	Feed/tooth	Feed/tooth	Feed/tooth
			
2	0,003	0,009	0,006
3	0,006	0,011	0,009
4	0,008	0,016	0,013
5	0,011	0,025	0,016
6	0,015	0,030	0,022
8	0,021	0,035	0,029
10	0,028	0,040	0,036
12	0,034	0,050	0,044
14	0,040	0,060	0,051
16	0,044	0,065	0,058
18	0,051	0,070	0,065
20	0,057	0,075	0,073
22	0,063	0,080	0,080
25	0,071	0,085	0,091
28	0,080	0,090	0,102
32	0,091	0,095	0,116
36	0,100	0,100	0,130
40	0,110	0,120	0,130
45	0,120	0,140	0,130
50	0,130	0,140	0,130
63	0,140		

Note: Recommended for cutters from page 15÷30; 37÷57

FEED PER TOOTH FOR SHELL END MILLS, SIDE AND FACE MILLING CUTTERS, CONCAVE AND ANGLE CUTTERS

Diameter	Feed/tooth	Feed/tooth	Feed/tooth	Feed/tooth
				
40	0,080	0,050		
50	0,085	0,060		0,030
63	0,100	0,070	0,100	0,035
80	0,110	0,080	0,120	0,040
100	0,110	0,085	0,140	0,045
125	0,115	0,090	0,140	
160	0,120	0,090	0,140	
200	0,125	0,090		

Note: Recommended for cutters from page 57÷76

Technical section

BASIC FORMULAS

The cutting conditions are specified for up-milling with cooling.

Cutting speed	$v = \frac{D \cdot \pi \cdot n}{1000}$	D = diameter of milling cutter
		n = revolutions per minute
Rate of feed	$s = f_z \cdot n \cdot z$	fz = feed per tooth
		z = number of teeth

RECOMMENDED CUTTING SPEEDS FOR MATERIAL GROUPS

Group	Material	Strength	HSS	v m/min HSS Co5%	HSS Co8%
1	Free-cutting steels, structural steel	$\leq 600 \text{ MPa}$ DIN 1.0050 11 107 11 500	30	37,5	45
2	Structural steels, cast steel	$\leq 850 \text{ MPa}$ DIN 1.0503 12 050 422650	26	32,5	39
3	Hot-work tool steels, alloyed steel	$\leq 1100 \text{ MPa}$ DIN 1.2711 19 662 424865		18	24
4	Heat-treatable steels	$\leq 900 \text{ MPa}$ DIN 1.8159 15241 19 312	20	25	30
5	High-speed steels	$\leq 1100 \text{ MPa}$ DIN 1.3343 15 260 19 436 19 856		19	25
6	Hot-work tool steels	$\geq 1100 \text{ MPa}$ DIN 1.2343 19 552 19 733		17	22
7	Cast iron	$\leq 240 \text{ HB}$ DIN 1.6025 422410 422425	25	30	35
8	Cast iron	$\leq 240 \text{ HB}$ DIN 1.6040 422430	17	22	25
9	Corrosion- and acid-proof steels	$\leq 850 \text{ MPa}$ DIN 1.4301 17 242 17 041		13	20
10	Chrome-nickel alloys	$\leq 850 \text{ MPa}$ DIN 2.4360 Nimonic Hasteloy B		8	13
11	Copper-zinc alloys, copper-tin alloys	$\leq 800 \text{ MPa}$ DIN 2.0402 423035 423018	50 - 90	60 - 100	80 - 120
12	Aluminium, Al-Si alloys	$\leq 500 \text{ MPa}$ DIN 3.3211 424254 424203	140 - 240	160 - 250	160 - 300

Technical section

USE OF MILLING CUTTERS AND END MILLS WITH STRAIGHT SHANK

Code		SKUPINA / GROUP											
		1 ≤ 600 MPa	2 ≤ 800 MPa	3 ≤ 1100 MPa	4 ≤ 900 MPa	5 ≤ 1100 MPa	6 >1100 MPa	7 ≤ 240 HB	8 >240 HB	9 ≤ 850 MPa	10 ≤ 850 MPa	11 ≤ 800 MPa	12 ≤ 500 MPa
1104	HSS Co5	•											•
1114	HSS Co8	•											•
1201	HSS Co5	•	•		•								
1211	HSS Co5	•	•										
1206	HSS Co8	•	•	•	•			•		•	•		•
1212	HSS Co8	•	•	•	•			•		•	•		•
1246	HSS Co8	•	•		•			•		•			
1256	HSS Co8	•	•		•			•					
1286	HSS Co8				•			•			•		
1296	HSS Co8				•			•			•		
1302	HSS Co8				•	•	•	•		•	•		
1309	HSS Co5				•	•	•	•		•			•
1402	HSS Co8	•	•	•	•	•							
1404	HSS Co5	•	•	•	•	•		•			•		•
1405	HSS Co8	•	•	•	•	•		•		•	•		
1412	HSS Co8	•	•	•	•	•		•		•	•		•
1415	HSS Co8	•	•	•	•	•		•		•	•		
1422	HSS Co8	•	•					•		•			
1432	HSS Co5	•	•					•					
1809	HSS Co5	•	•		•			•					
1909	HSS Co5	•	•	•	•	•		•		•	•		

USE OF SLOT DRILLS

Code		GROUP											
		1 ≤ 600 MPa	2 ≤ 800 MPa	3 ≤ 1100 MPa	4 ≤ 900 MPa	5 ≤ 1100 MPa	6 >1100 MPa	7 ≤ 240 HB	8 >240 HB	9 ≤ 850 MPa	10 ≤ 850 MPa	11 ≤ 800 MPa	12 ≤ 500 MPa
2105	HSS Co5	•	•	•	•			•	•	•			
2115	HSS Co5		•		•			•	•	•	•		
2204	HSS Co8	•	•	•	•	•		•	•	•		•	•
2214	HSS Co5	•	•	•	•	•		•	•	•		•	•
2304	HSS Co8	•	•	•	•			•	•	•		•	•
2314	HSS Co5	•	•	•	•			•				•	•
2403	HSS Co5	•	•	•	•	•		•				•	•
2605	HSS Co5	•	•	•	•			•				•	•

Technical section

USE OF MILLING CUTTERS AND END MILLS WITH TAPER SHANK

Code		GROUP											
		1 ≤ 600 MPa	2 ≤ 800 MPa	3 ≤ 1100 MPa	4 ≤ 900 MPa	5 ≤ 1100 MPa	6 >1100 MPa	7 ≤ 240 HB	8 >240 HB	9 ≤ 850 MPa	10 ≤ 850 MPa	11 ≤ 800 MPa	12 ≤ 500 MPa
4101	HSS	•	•		•								
4111	HSS	•	•		•								
4102	HSS Co5	•	•		•			•			•	•	
4119	HSS	•	•					•			•	•	
4112	HSS Co5	•	•		•			•			•	•	
4119	HSS	•	•					•			•	•	
41195	HSS	•	•		•			•			•	•	
4202	HSS Co5	•	•	•	•	•		•	•	•			
4209	HSS	•	•		•			•					
4203	HSS Co5	•	•	•	•	•		•	•	•			
42036	HSS Co5	•	•	•	•	•		•	•	•			
42095	HSS	•	•		•			•					
4222	HSS Co5	•	•	•	•	•		•	•	•			
4229	HSS	•	•		•			•					
4223	HSS Co5	•	•	•	•	•		•					
4244	HSS Co5	•	•		•			•	•				
4254	HSS Co5	•	•		•			•	•				
4309	HSS	•	•	•	•			•	•				
4319	HSS Co5	•	•	•	•			•	•	•			
43195	HSS	•		•				•	•				
4709	HSS	•	•					•			•	•	
4719	HSS	•	•					•			•	•	
4809	HSS	•	•		•			•					
4819	HSS	•	•		•			•					
4909	HSS	•		•				•	•				
4919	HSS	•	•		•			•	•				

USE OF SHALL END MILLS

Code		GROUP											
		1 ≤ 600 MPa	2 ≤ 800 MPa	3 ≤ 1100 MPa	4 ≤ 900 MPa	5 ≤ 1100 MPa	6 >1100 MPa	7 ≤ 240 HB	8 HB	9 ≤ 850 MPa	10 ≤ 850 MPa	11 ≤ 800 MPa	12 ≤ 500 MPa
6109	HSSE	•						•			•	•	
6202	HSS Co5	•	•	•	•			•	•	•			
6209	HSSE	•	•	•	•			•	•	•			
6222	HSS Co5	•		•				•	•				
6229	HSSE	•		•				•	•				
6309	HSSE	•	•	•	•			•	•				

USE OF SIDE AND FACE MILLING CUTTERS

Code		GROUP											
		1 ≤ 600 MPa	2 ≤ 800 MPa	3 ≤ 1100 MPa	4 ≤ 900 MPa	5 ≤ 1100 MPa	6 >1100 MPa	7 ≤ 240 HB	8 HB	9 ≤ 850 MPa	10 ≤ 850 MPa	11 ≤ 800 MPa	12 ≤ 500 MPa
7103	HSSE	•									•	•	
7203	HSSE	•	•					•			•	•	
7302	HSSE Co5	•	•		•			•	•	•		•	
7303	HSSE	•	•	•	•	•	•	•	•	•			
7323	HSSE	•	•	•	•	•	•	•	•	•			
7343	HSSE	•	•	•	•	•	•	•	•	•			
7362	HSSE Co5	•	•		•			•	•		•	•	
7503	HSSE	•						•	•		•	•	
7601	HSSE	•		•				•	•		•		
7703	HSSE	•	•	•	•	•	•	•	•	•			
7803	HSSE	•	•	•	•	•	•	•	•	•			

Technical Section for Burrs

RECOMMENDED SPEEDS FOR BURRS

It is necessary to know the diameter of the burrs and the machined material for determining of the suitable speed.

Mean cutter diameter	Alloyed steel 883 MPa	Steel 785 MPa and bronze	Forgeable iron	Cast iron Malleable cast iron	Stamping materials	Bronze, brass, zinc, cooper	Duralumin	Aluminium Mg-alloys, lead, tin	Wood, fibre, rubber
3÷6	600÷1500	1000÷2300	1500÷2500	1300÷2400	1500÷2500	2200÷20000	1500÷20000	1500÷30000	1500÷30000
7÷12	500÷1200	800÷1800	1100÷2000	1000÷1800	1100÷2000	1500÷14000	1500÷14000	1500÷30000	1500÷30000
13÷16	400÷1000	600÷1500	800÷1500	700÷1500	800÷1500	1300÷10000	1500÷10000	1500÷25000	1500÷25000
17÷24	350÷900	450÷1200	600÷1350	500÷1300	600÷1350	1000÷8000	1500÷6000	1500÷10000	1500÷10000
25÷30	300÷800	350÷850	450÷1000	400÷900	450÷1000	1000÷8000	1500÷4500	1500÷7500	1500÷7500
31÷40	---	---	---	---	350÷850	500÷3000	1500÷4500	1500÷5000	1500÷5000
for teeth	3, 5	3, 5	2, 5	4	2	2, 3, 4	1, 2	1, 2	1

Application:

Technical cutters are tools, which are used for hand machining of light alloys, non-ferrous metals, different sorts of plastics, wood and non-hardened steels. The drive of the cutters is lead from motor by flexible shaft. Technical cutters can be used by electrical or pneumatic hand drilling machines, grinding machines and similar devices. Technical cutters are delivered in five different teeth types for the best possible results by machining:

- 1. Teeth no. 1 very coarse - for wood, lead, tin, aluminium, Mg-alloys and fiber machining
- 2. Teeth no. 2 coarse - for steel, bronze, zinc, Mg-alloys, brass, bakelite and hardened wood machining
- 3. Teeth no. 3 fine - for metal and steel as well as for very fine surface machining of materials mentioned on teeth no. 2
- 4. Teeth no. 4 special - for cast iron machining
- 5. Teeth no. 5 very fine - for finishing and final machining of all mentioned materials with fine surface requirement.

THE MOST USED TEETH TYPE IS NO. 3

It is recommended to use burrs with coarse teeth by high speed for high performance of machining. The burrs with fine teeth and low speeds are used for fine and finish machining.

Technical Information for Carbide Burrs

Plain Cut



- The general use of „Plain Cut“ is on steel, steel alloys, cast iron copper and brass.
- Designed for rapid stock and good workpiece finishes.
- Produces long chips

Aluma Cut



- Disigned to be wider chip space with relief angle.
- More suitable application to non-ferrous metals.

Double Cut



- The „Double Cut“ burr allows rapid stock removal in the harder materials.
- Designed for creating a small chip and excellent workpiece finished.
- The small chip helps to eliminate loading of the flutes.
- Exceedingly convenient application by usser.

Diamond Cut



- Disigned for creating extremely small chips as powder-like chip.
- Excellent operator control on heat treated and tough alloy steels.
- Excellent finishes.

BURR APPLICATION INFORMATION

Material	Plain Cut	Double Cut	Aluma Cut	Diamond Cut
Aluminium			●	
Brass, Bronze, Copper	●	●		
Fiber Glass				●
Cast Iron	●	●		
Plastics			●	
Steel, HRc 45÷55	●	●		●
Steel, HRc 55÷60	●	●		●
Steel, Carbon				
Steel, Nickel Chrome	●	●		●
Steel, Weldments	●	●		
Titanium	●	●		
Zink			●	

BURR SPEED RECOMENDATIONS

