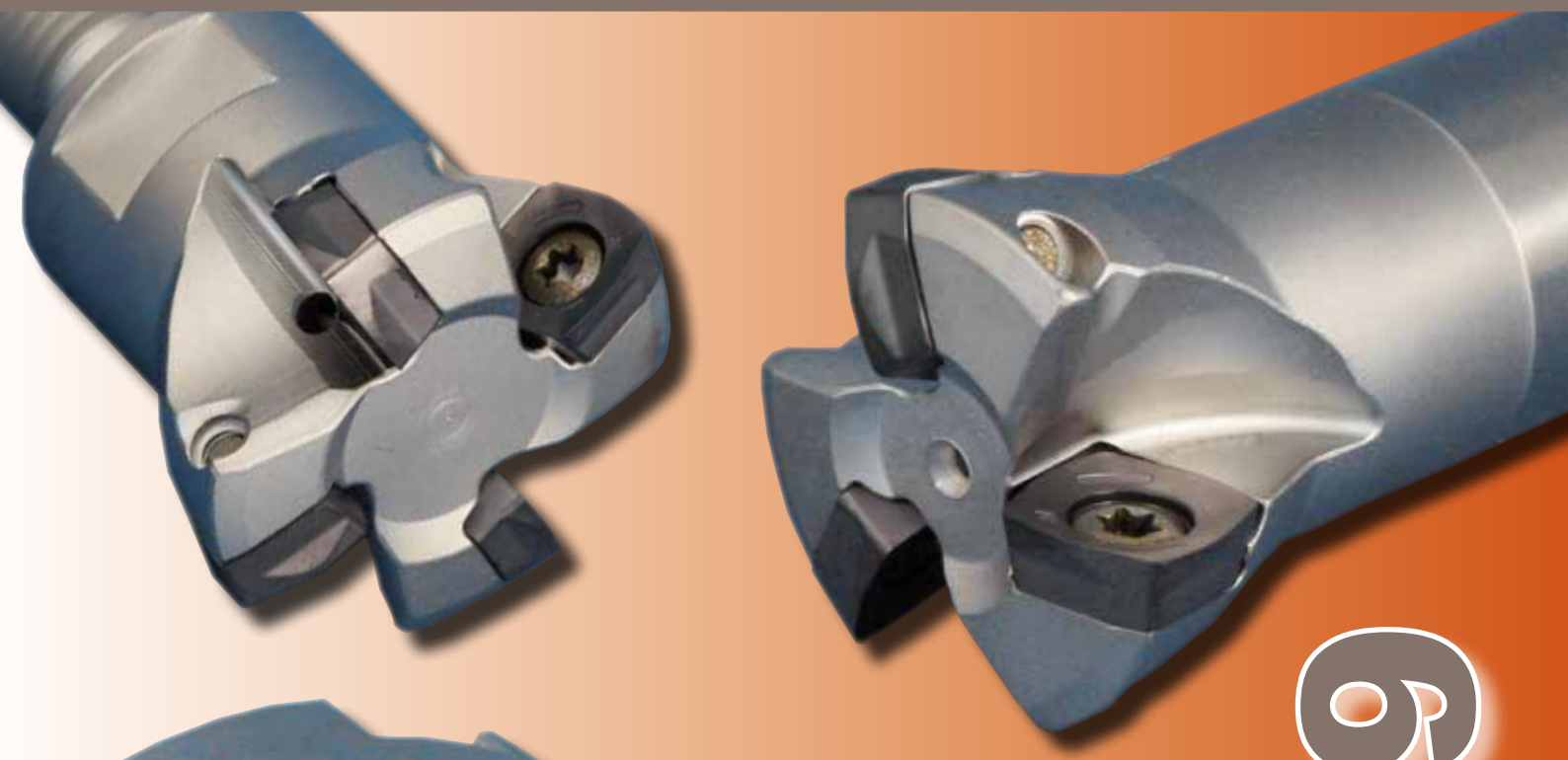
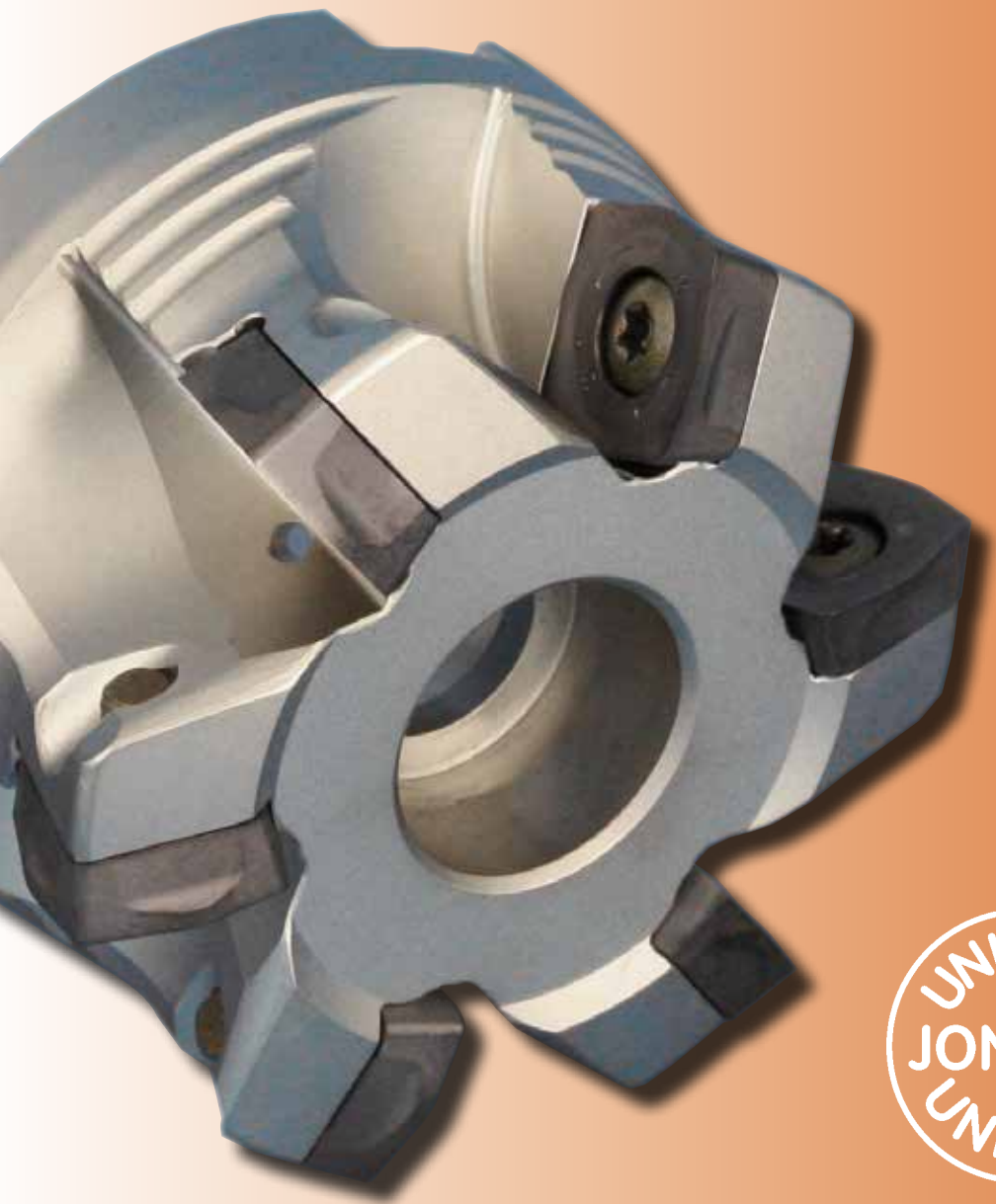
Jongen Werkzeugtechnik





PowerMill

09-12-19

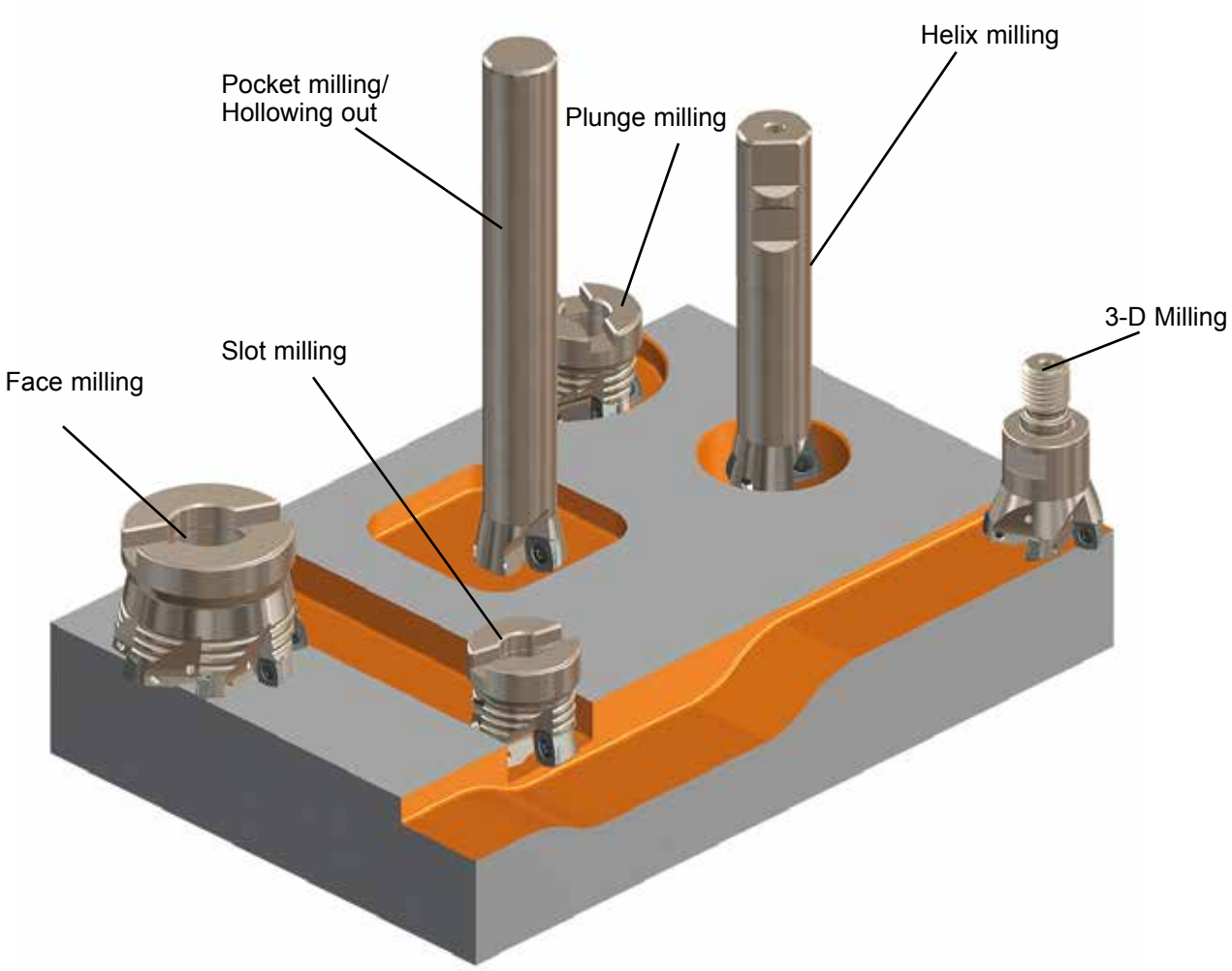
UNI MILL® JONGEN UNI MILL

FEATURES:

- Very high feed rates with axial depth of cut -ap-, depending on insert type, of up to 3,0 mm
- Positive cutting geometry thanks to chip breaker on the insert
- 4 cutting edges per insert
- Almost no radial cutting forces
- Different cutting edge geometries for rough and light metal cutting.
  Version H = Rough machining
  Version S = Light machining
- The different no. of teeth allow an optimal choice of the appropriate milling tool

ADVANTAGES:

- High chip removal rates for lowest working time
- Suitable for almost all materials
- Applicable for great overhangs
- Close-contoured roughing possible
- Extreme stable inserts
- Very hard tools
- Different tool types (ø20 - ø125) allow flexible application areas: shell milling cutters, screw-in cutters, shank milling cutters with coupling made to DIN 1835-B and cylindrical shank milling cutters for big extension lengths.
- Shell milling cutters with coupling made to DIN 8030 with internal coolant passages
- Screw-in cutters with internal coolant passages
- Shank milling cutters with coupling made to DIN 1835-B, with internal coolant passages
  Cylindrical shank milling cutters similar to DIN 1835-A, without internal coolant passage



THE INSERT

☞ Precision sintered, with 4 effective cutting edges with positive chip breaker,

FP 09 H

a_p max: 1,0mm
rough machining
rigid support

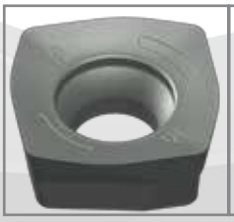
FP 09 S

a_p max: 1,0mm
light machining
unstable support
adhesive materials

FP 12 H

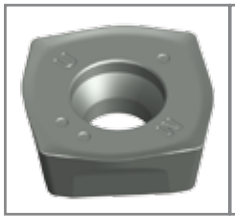
a_p max: 2,2mm
rough machining
rigid support

FP 12 S



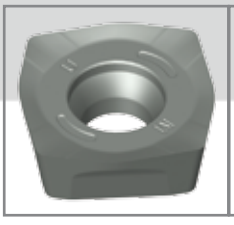
a_p max: 2,2mm
light machining
unstable support
adhesive materials

FP 19 H



a_p max: 3,0mm
rough machining
rigid support

FP 19 S



a_p max: 3,0mm
light machining
unstable support
adhesive materials

Following carbide qualities are offered:

HT45

Code 31 , Iso-Classification P30-35
Very tough fine grain carbide with a AlTiN- Nanocomposit-coating for middle – high cutting speeds and high feed rates. This quality is suitable for dry milling and can also be adopted with cooling. Application areas are roughing and finishing of almost all materials such as: structural steel, tool steel, heat-treatable steel, as well as unalloyed, low alloyed and high alloyed steels, stainless steels and also grey cast iron, globular graphite cast iron etc.

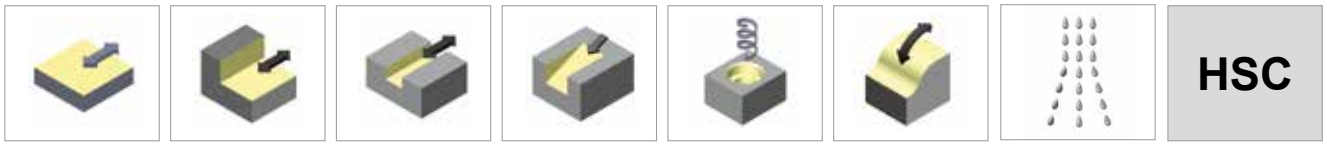
HT32

Code 33 , Iso-Classification M20-M30
Hard wearing and tough finest grain carbide with a AlTiN- Nanocomposit-coating.
This quality is suitable for dry milling and can also be adopted with cooling.
This quality is especially designed for machining high grade steels, tool steels and high alloyed materials.

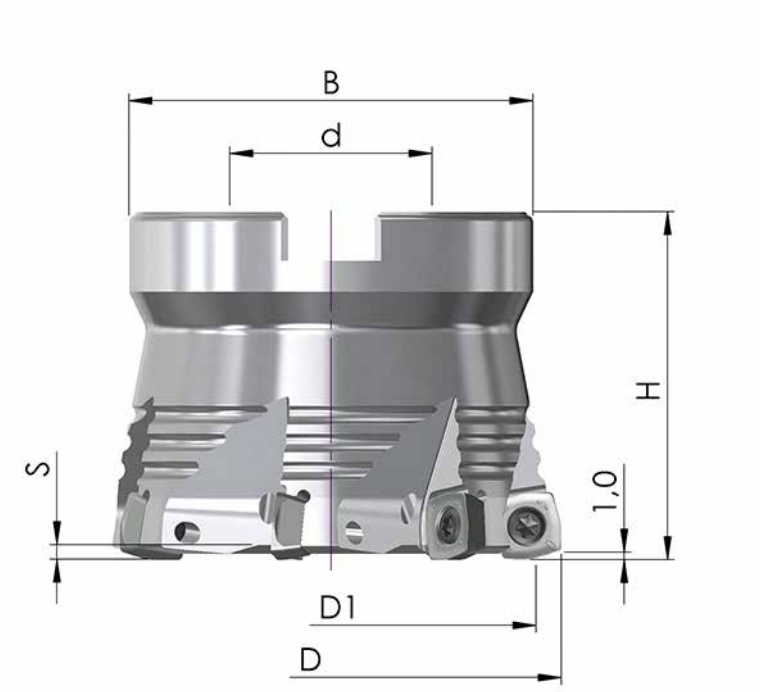
HT20

Code 32 , Iso-Classification K15-K20
Very hard wearing fine grain carbide with a AlTiN- Nanocomposit-coating for middle – high cutting speeds with high feed rates for processing of cast iron materials, as grey-, tempered-, vermicular-, graphite- and globular graphite cast iron.

TYPE 09 - TECHNICAL DATA



SHELL TYPE MILL



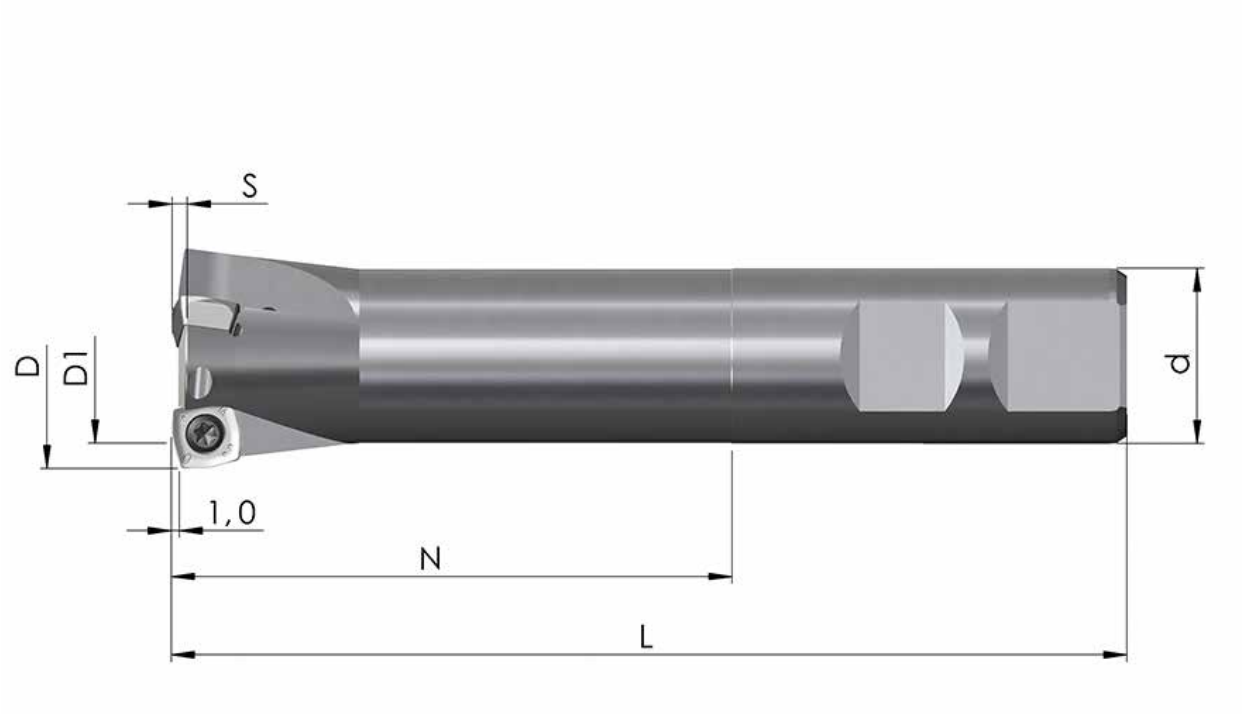
Order-Nr.	D	D_1	H	d H6	B	S	Z	MS
00PP-040-09-4	40	30,0	40	16	38	2,25	4	MS-8x25-912
00PP-042-09-4	42	32,0	40	16	38	2,25	4	MS-8x25-912
00PP-050-09-5	50	40,0	40	22	46	2,25	5	MS-10x25-912
00PP-052-09-5	52	42,0	40	22	46	2,25	5	MS-10x25-912
00PP-063-09-5	63	53,0	50	27	58	2,25	5	MS-12x35-912
00PP-066-09-5	66	56,0	50	27	58	2,25	5	MS-12x35-912
Close pitch:								
00PP-042-09-5	42	32,0	40	16	38	2,25	5	MS-8x25-912
00PP-050-09-6	50	40,0	40	22	46	2,25	6	MS-10x25-912
00PP-052-09-6	52	42,0	40	22	46	2,25	6	MS-10x25-912
00PP-063-09-7	63	53,0	50	27	58	2,25	7	MS-12x35-912
00PP-066-09-7	66	56,0	50	27	58	2,25	7	MS-12x35-912

MS= Central screw

TYPE 09 - TECHNICAL DATA

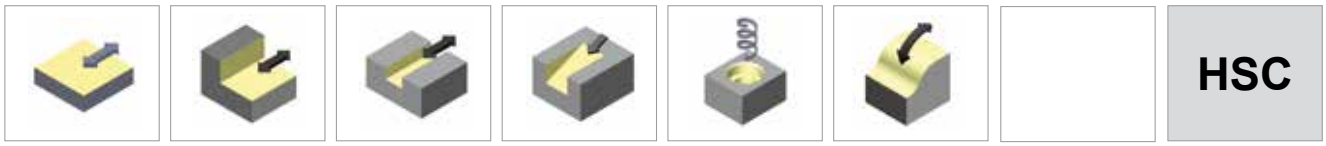
HSC

SHANK TYPE MILL DIN 1835-B (WELDON)

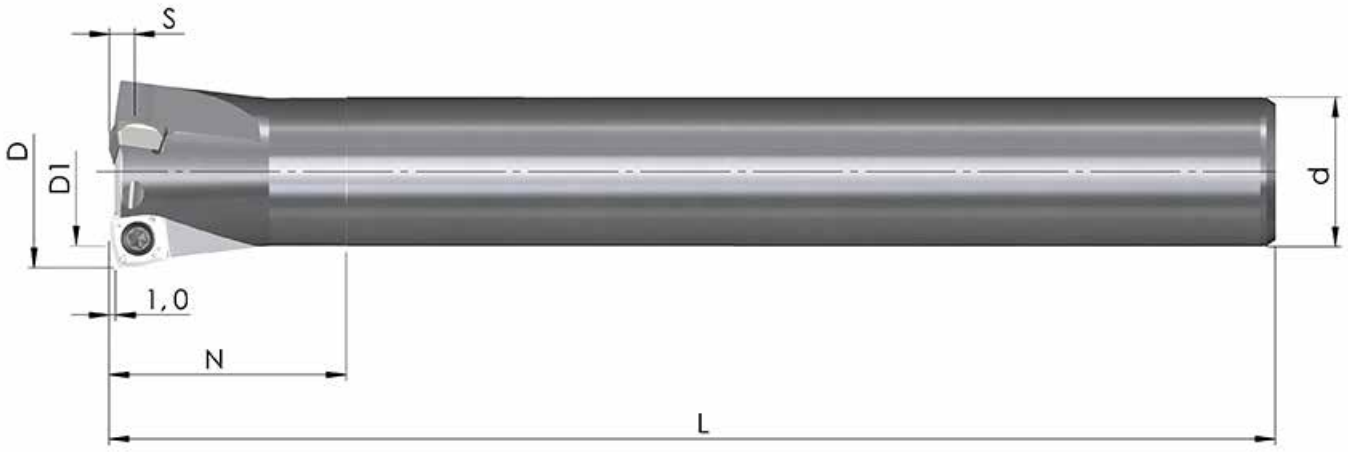


Order-Nr.	D	D_1	N	d_{h6}	L	S	Z
00PP-20-09-2-80	20	10,0	80	20	130	2,25	2
00PP-22-09-2-80	22	12,0	80	20	130	2,25	2
00PP-22-09-2-125	22	12,0	125	20	175	2,25	2
00PP-25-09-3-80	25	15,0	80	25	136	2,25	3
00PP-25-09-3-125	25	15,0	125	25	181	2,25	3
00PP-32-09-3-80	32	22,0	80	25	136	2,25	3
00PP-32-09-3-125	32	22,0	125	25	181	2,25	3
00PP-35-09-3-80	35	25,0	80	25	136	2,25	3
00PP-35-09-3-125	35	25,0	125	25	181	2,25	3

TYPE 09 - TECHNICAL DATA

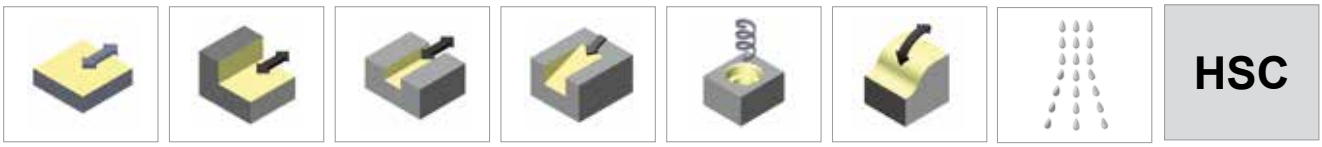


SHANK TYPE MILL DIN 1835-A

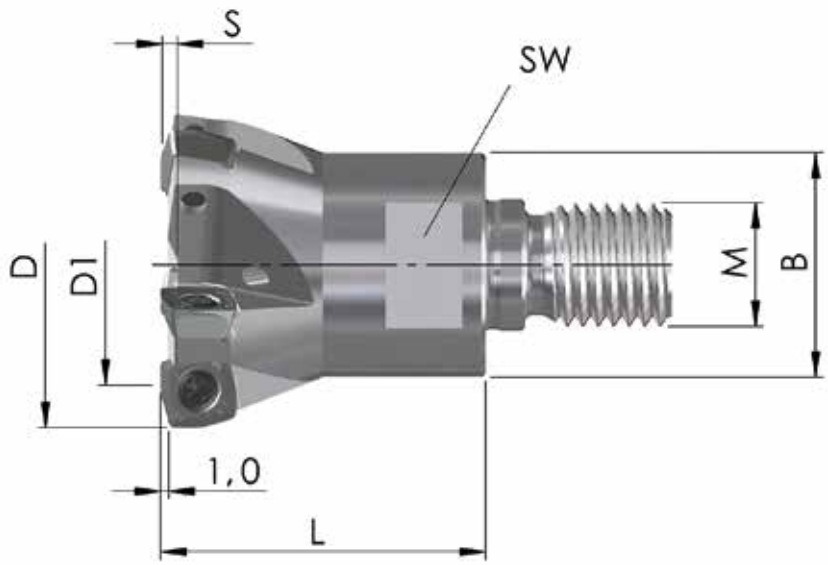


Order-Nr.	D	D_1	N	d_{h6}	L	S	Z
00PP-20-16-09-2-160	20	10,0	35	16	160	2,25	2
00PP-22-20-09-2-160	22	12,0	35	20	160	2,25	2
00PP-25-20-09-3-170	25	15,0	35	20	170	2,25	3
00PP-32-25-09-3-195	32	22,0	40	25	195	2,25	3
00PP-35-25-09-3-195	35	25,0	40	25	195	2,25	3

TYPE 09 - TECHNICAL DATA



SCREW-IN CUTTERS



Order-Nr.	D	D_1	L	M	B	SW	S	Z
ESF-20-M10-09-2	20	10,0	32	M10	18	16	2,25	2
ESF-22-M10-09-2	22	12,0	32	M10	18	16	2,25	2
ESF-25-M12-09-2	25	15,0	32	M12	21	18	2,25	2
ESF-32-M16-09-3	32	22,0	42	M16	29	24	2,25	3
ESF-35-M16-09-3	35	25,0	42	M16	29	24	2,25	3
ESF-42-M16-09-4	42	32,0	42	M16	29	24	2,25	4
Close pitch:								
ESF-25-M12-09-3	25	15,0	32	M12	21	18	2,25	3
ESF-32-M16-09-4	32	22,0	42	M16	29	24	2,25	4
ESF-35-M16-09-4	35	25,0	42	M16	29	24	2,25	4
ESF-42-M16-09-5	42	32,0	42	M16	29	24	2,25	5

INSERTS

		HT45 (code 31)	HT32 (code 33)	HT20 (code 32)				
 **FP 09H** (A17) IK ø9,6 x 4,0 R0,8	~							
	f_z [mm]	0,9 (0,6-1,5)	0,9 (0,6-1,5)	0,9 (0,6-1,5)				
 **FP 09S** (A17) IK ø9,6 x 4,0 R0,8	~							
	f_z [mm]	0,8 (0,5-1,5)	0,8 (0,5-1,5)	0,8 (0,5-1,5)				
	VPE	20	20	20				

V_c [m/min]	steel	stainless	cast iron	non-ferrous metals	highly heat-resistant	tempered
HT45	250 (200 - 350)	240 (140 - 300)	240 (130 - 280)			
HT32	250 (200 - 350)	240 (140 - 300)			60 (40 - 200)	
HT20			260 (180 - 350)			80 (40 - 120)

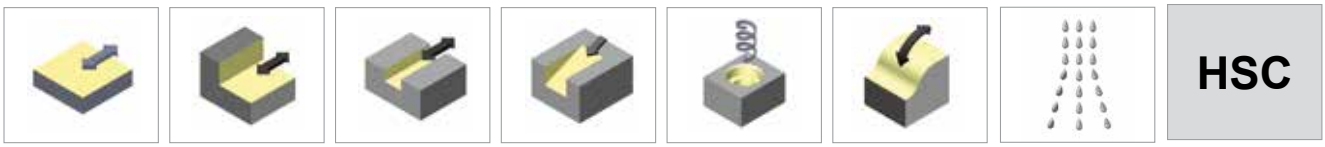
SPARE PARTS

SS 4,0-1
(M = 3,2-3,3 Nm)

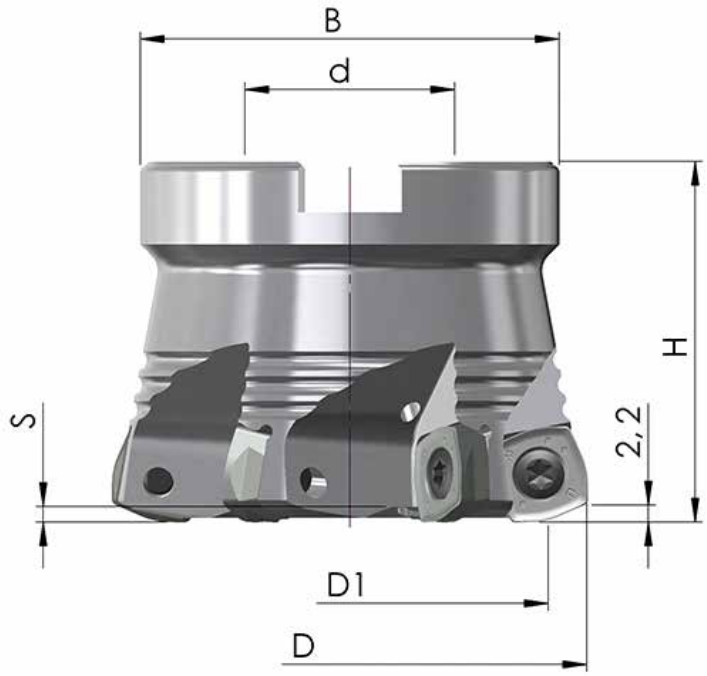
T 15

100g

TYPE 12 - TECHNICAL DATA



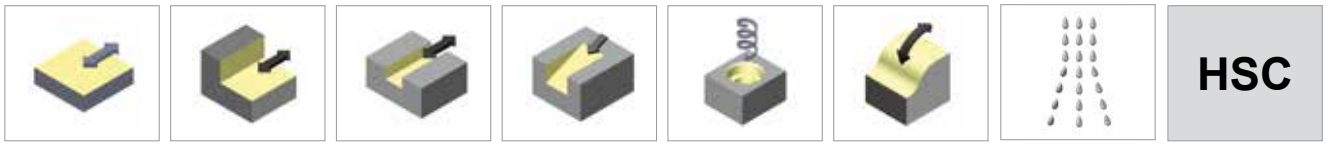
SHELL TYPE MILL



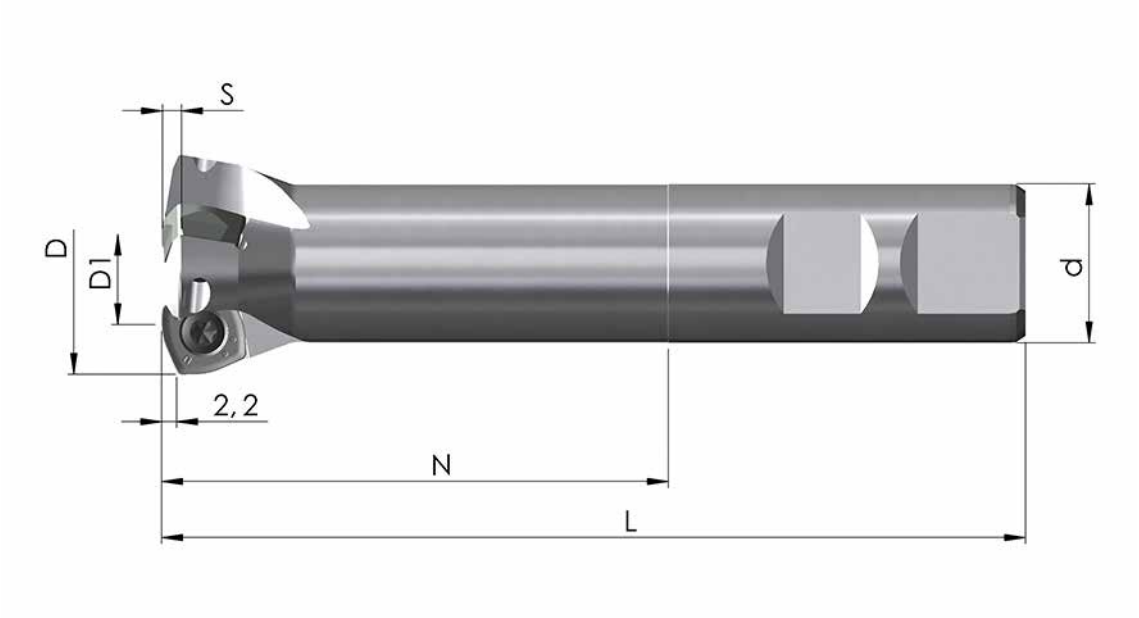
Order-Nr.	D	D_1	H	d H6	B	S	Z	MS
00PP-040-12-3	40	24,6	40	16	38	2,25	3	MS-8x30-912
00PP-042-12-3	42	26,6	40	16	38	2,25	3	MS-8x30-912
00PP-050-12-4	50	34,6	40	22	46	2,25	4	MS-10x25-912
00PP-052-12-4	52	36,6	40	22	46	2,25	4	MS-10x25-912
00PP-063-12-5	63	47,6	50	27	58	2,25	5	MS-12x35-912
00PP-066-12-5	66	50,6	50	27	58	2,25	5	MS-12x35-912
00PP-080-12-5	80	64,6	50	32	78	2,25	5	MS16x35-6912
00PP-100-12-6	100	84,6	50	40	90	2,25	6	MS20x45-7991
Close pitch:								
00PP-040-12-4	40	24,6	40	16	38	2,25	4	MS-8x30-912
00PP-042-12-4	42	26,6	40	16	38	2,25	4	MS-8x30-912
00PP-050-12-5	50	34,6	40	22	46	2,25	5	MS-10x25-912
00PP-052-12-5	52	36,6	40	22	46	2,25	5	MS-10x25-912
00PP-063-12-6	63	47,6	50	27	58	2,25	6	MS-12x35-912
00PP-066-12-6	66	50,6	50	27	58	2,25	6	MS-12x35-912
00PP-080-12-7	80	64,6	50	32	78	2,25	7	MS16x35-6912
00PP-100-12-8	100	84,6	50	40	90	2,25	8	MS20x45-7991

MS= Central screw

TYPE 12 - TECHNICAL DATA



SHANK TYPE MILL DIN 1835-B (WELDON)



Order-Nr.	D	D_1	N	d_{h6}	L	S	Z
00PP-32-12-2-80	32	16,6	80	25	136	2,25	2
00PP-32-12-2-125	32	16,6	125	25	181	2,25	2
00PP-35-12-3-80	35	19,6	80	25	136	2,25	3
00PP-35-12-3-125	35	19,6	125	25	181	2,25	3

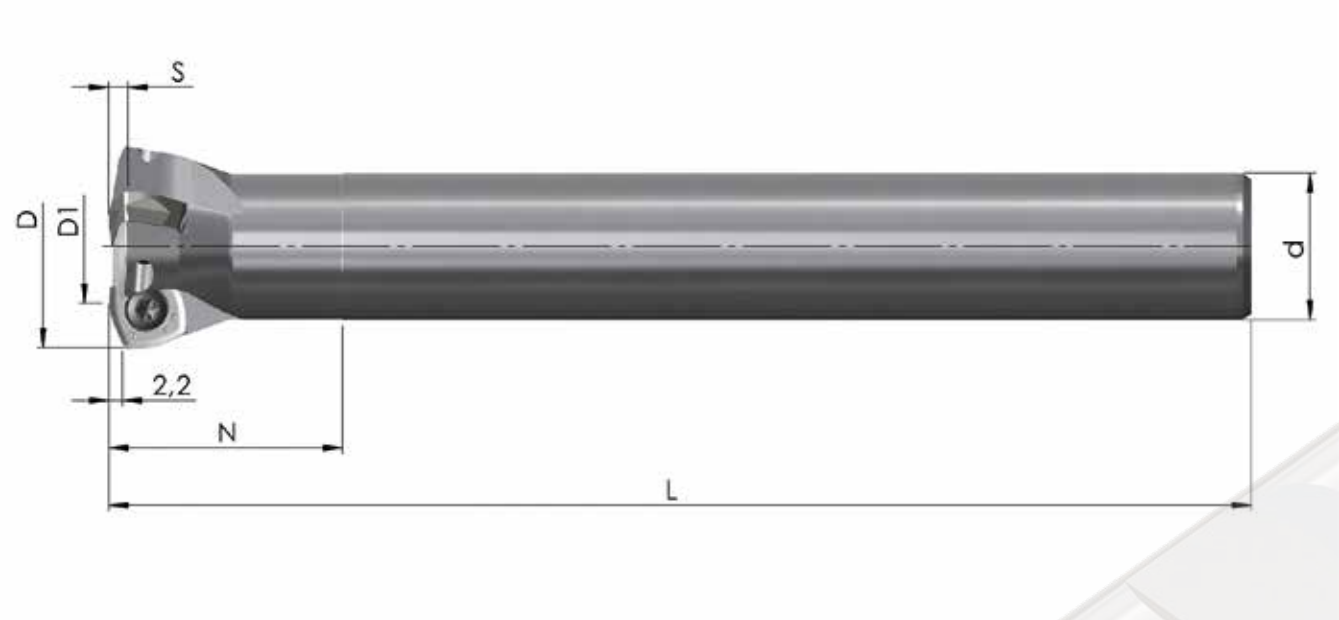
TYPE 12 - TECHNICAL DATA





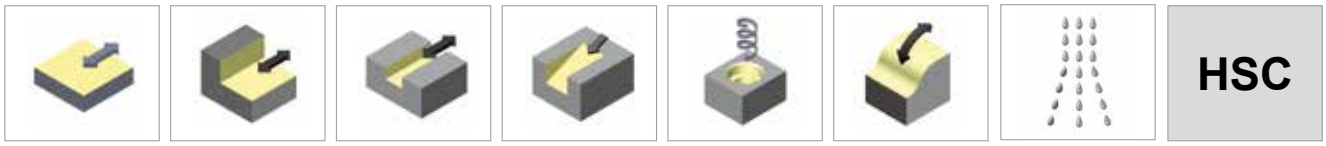

HSC

SHANK TYPE MILL DIN 1835-A

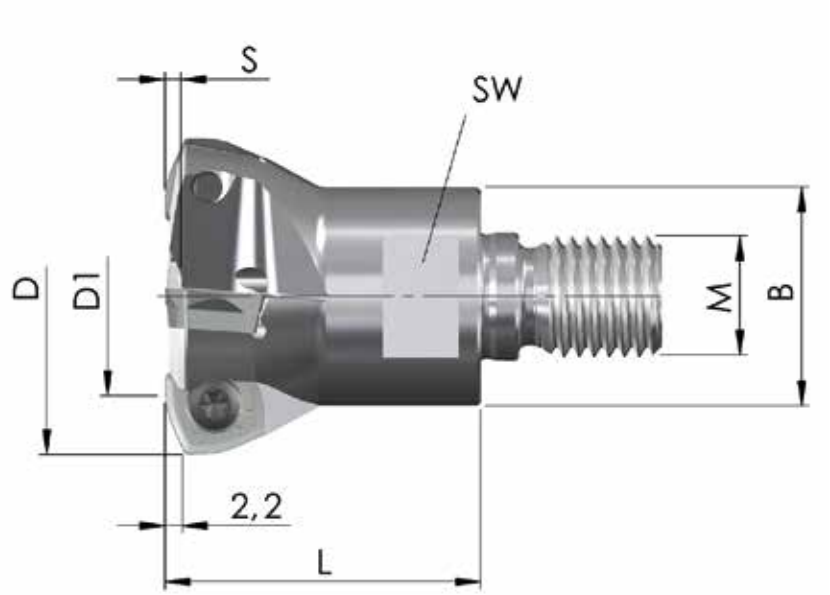


Order-Nr.	D	D_1	N	d_{h6}	L	S	Z
00PP-32-25-12-2-195	32	16,6	40	25	195	2,25	2
00PP-35-25-12-3-195	35	19,6	40	25	195	2,25	3

TYPE 12 - TECHNICAL DATA



SCREW-IN CUTTERS



Order-Nr.	D	D_1	L	M	B	SW	S	Z
ESF-32-M16-12-2	32	16,6	42	M16	29	24	2,25	2
ESF-35-M16-12-2	35	19,6	42	M16	29	24	2,25	2
ESF-42-M16-12-3	42	26,6	42	M16	29	24	2,25	3
Close pitch:								
ESF-35-M16-12-3	35	19,6	42	M16	29	24	2,25	3
ESF-42-M16-12-4	42	26,6	42	M16	29	24	2,25	4

INSERTS

		HT45 (code 31)	HT32 (code 33)	HT20 (code 32)				
 **FP 12H** (A18) IK ø12,7 x 5,0 R1,0	~							
	f_z [mm]	1,2 (0,8-1,5)	1,2 (0,8-1,5)	1,2 (0,8-1,5)				
 **FP 12S** (A18) IK ø12,7 x 5,0 R1,0	~							
	f_z [mm]	1,0 (0,6-1,5)	1,0 (0,6-1,5)	1,0 (0,6-1,5)				
	VPE	20	20	20				

V_c [m/min]	steel	stainless	cast iron	non-ferrous metals	highly heat-resistant	tempered
HT45	250 (200 - 350)	240 (140 - 300)	240 (130 - 280)			
HT32	250 (200 - 350)	240 (140 - 300)			60 (40 - 200)	
HT20			260 (180 - 350)			80 (40 - 120)

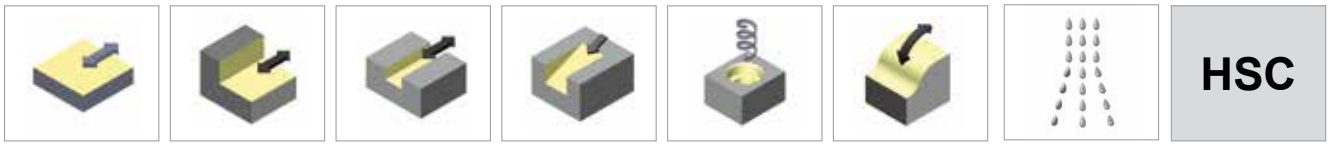
SPARE PARTS

SS 4,5-1
(M = 4,6-4,8 Nm)

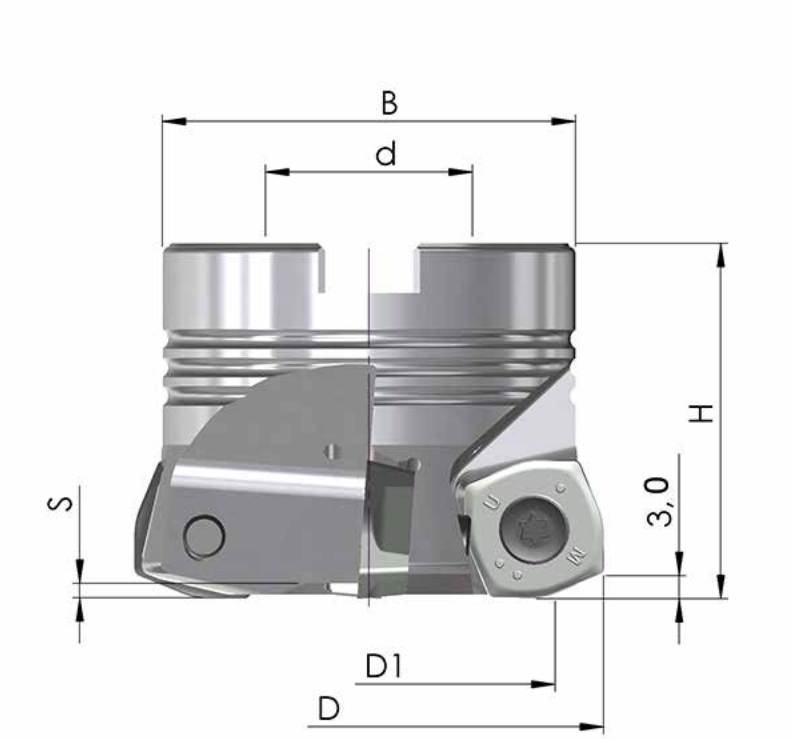
T 20

100g

TYPE 19 - TECHNICAL DATA



SHELL TYPE MILL



Order-Nr.	D	D_1	H	d H6	B	S	Z	MS
00PP-063-19-3	63	42,0	50	27	58	2,25	3	MS-12x35-912
00PP-066-19-3	66	45,0	50	27	58	2,25	3	MS-12x35-912
00PP-080-19-5	80	59,0	50	32	78	2,25	5	MS16x30-6912
00PP-100-19-6	100	79,0	50	40	90	2,25	6	MS20x45-7991
00PP-125-19-7	125	104,0	50	40	90	2,25	7	MS20x45-7991
Close pitch:								
00PP-063-19-4	63	42,0	50	27	58	2,25	4	MS-12x35-912
00PP-066-19-4	66	45,0	50	27	58	2,25	4	MS-12x35-912
00PP-080-19-6	80	59,0	50	27	78	2,25	6	MS16x30-6912
00PP-100-19-7	100	79,0	50	40	90	2,25	7	MS20x45-7991
00PP-125-19-8	125	104,0	50	40	90	2,25	8	MS20x45-7991

MS= Central screw

INSERTS

		HT45 (code 31	HT32 (code 33)	HT20 (code 32)				
 **FP 19H** (A19) IK ø19,1 x 6,7 R1,2	~							
	f_z [mm]	1,5 (0,9-2,0)	1,5 (0,9-2,0)	1,5 (0,9-2,0)				
 **FP 19S** (A19) IK ø19,1 x 6,7 R1,2	~							
	f_z [mm]	1,5 (0,8-2,0)	1,5 (0,8-2,0)	1,5 (0,8-2,0)				
	VPE	10	10	10				

V_c [m/min]	steel	stainless	cast iron	non-ferrous metals	highly heat-resistant	tempered
HT45	250 (200 - 350)	240 (140 - 300)	240 (130 - 280)			
HT32	250 (200 - 350)	240 (140 - 300)			60 (40 - 200)	
HT20			260 (180 - 350)			80 (40 - 120)

SPARE PARTS

SS 6,0-1
(M = 5,6-5,8 Nm)

T 25

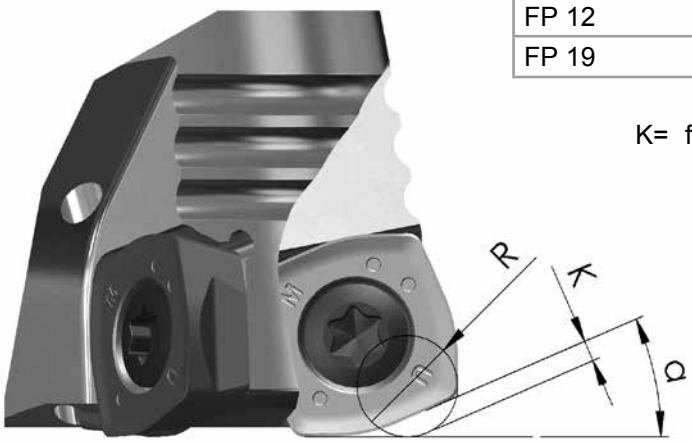
100g

INDICATIONS OF APPLICATION:

With the application of the PowerMill we recommend the programming in correspondence with a tool with radius.

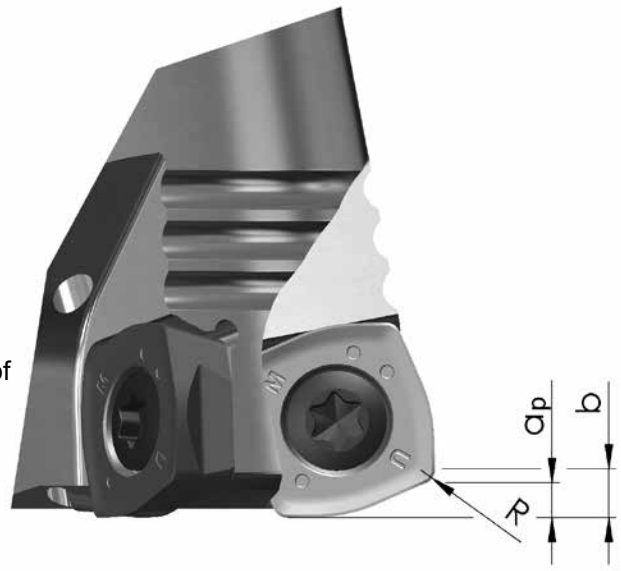
Insert	R	K	α
FP 09	1,9	0,8	15,7°
FP 12	3,3	1,4	23,5°
FP 19	4,3	1,9	22,1°

K= free milling area

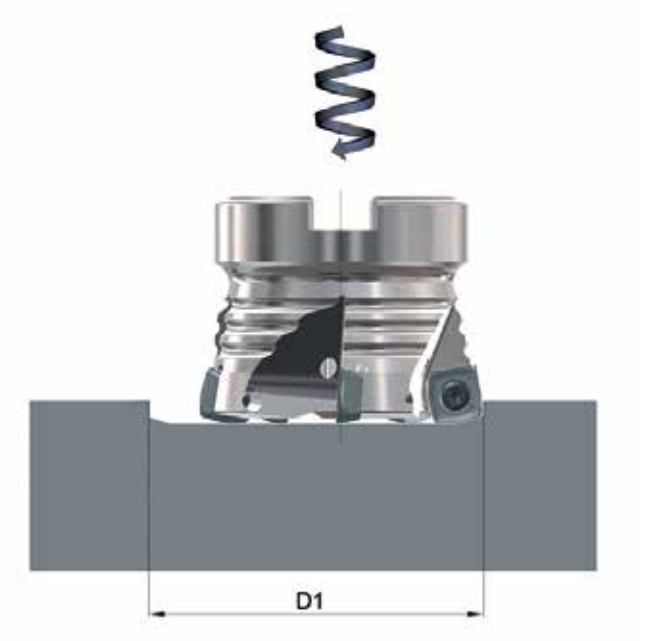


If the depth of cut is higher than measure “ap”, the feed rate per tooth has to be reduced by 30%. Max. depth of cut see measure “b”.

Insert	a_p	b	R
FP 09	1,1	1,9	0,8
FP 12	2,3	3,3	1,0
FP 19	3,2	4,3	1,2



HELIX MILLING WITHOUT PRE-DRILLING:



FP 09 H / FP 09 S

D	ø D1 min.	ø D1 max.	a_p / Umdr.	IK-ø WP
20	22	40	1,0	9,00
25	32	50	1,0	9,00
32	46	64	1,0	9,00
40	62	80	1,0	9,00
42	66	84	1,0	9,00
50	82	100	1,0	9,00
52	86	104	1,0	9,00
63	108	126	1,0	9,00
66	114	132	1,0	9,00

FP 12 H / FP 12 S

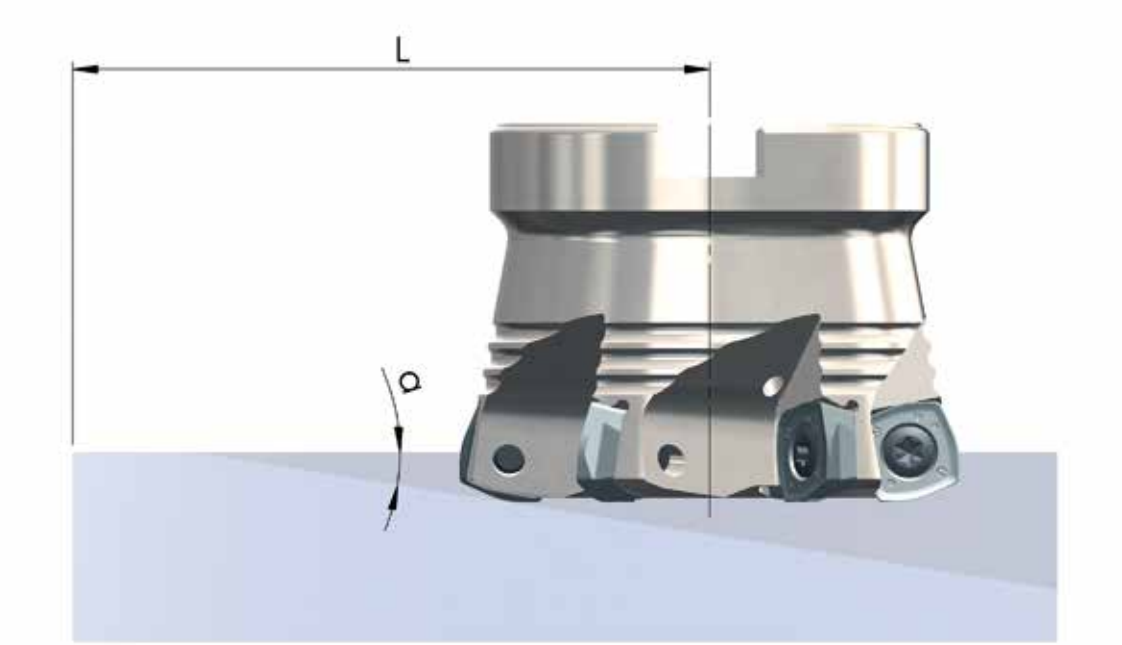
D	ø D1 min.	ø D1 max.	a_p / Umdr.	IK-ø WP
32	40	64	2,2	12,00
35	46	70	2,2	12,00
40	56	80	2,2	12,00
42	60	84	2,2	12,00
50	76	100	2,2	12,00
52	80	104	2,2	12,00
63	102	126	2,2	12,00
66	108	132	2,2	12,00
80	136	160	2,2	12,00
100	176	200	2,2	12,00

FP 19 H / FP 19 S

D	ø D1 min.	ø D1 max.	a_p / Umdr.	IK-ø WP
63	88	126	3,0	19,00
66	94	132	3,0	19,00
80	122	160	3,0	19,00
100	162	200	3,0	19,00
125	212	250	3,0	19,00

With the helix milling 50% of the normal feed rate per tooth is recommended.
The depth of immersion per turning should not exceed the measure „ap“ from picture „depth of cut“.

SLOT MILLING BY RAMPING:



FP 09 H / FP 09 S

D	Ramping angle max. α (°)	Processing path min. L (mm)	ap max.	IK-ø Insert
20	6,0	10	1,10	9,60
25	4,1	15	1,10	9,60
32	2,8	22	1,10	9,60
35	2,5	25	1,10	9,60
40	2,1	30	1,10	9,60
42	1,9	32	1,10	9,60
50	1,6	40	1,10	9,60
52	1,5	42	1,10	9,60
63	1,2	53	1,10	9,60
66	1,1	56	1,10	9,60

FP 12 H / FP 12 S

D	Ramping angle max. α (°)	Processing path min. L (mm)	ap max.	IK-ø Insert
32	6,5	19	2,20	12,70
35	5,6	22	2,20	12,70
40	4,6	27	2,20	12,70
42	4,3	29	2,20	12,70
50	3,4	37	2,20	12,70
52	3,2	39	2,20	12,70
63	2,5	50	2,20	12,70
66	2,4	53	2,20	12,70
80	1,9	67	2,20	12,70
100	1,4	87	2,20	12,70

FP 19 H / FP 19 S

D	Ramping angle max. α (°)	Processing path min. L (mm)	ap max.	IK-ø Insert
63	3,9	44	3,00	19,10
66	3,7	47	3,00	19,10
80	2,8	61	3,00	19,10
100	2,1	81	3,00	19,10
125	1,6	106	3,00	19,10

NOTES

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