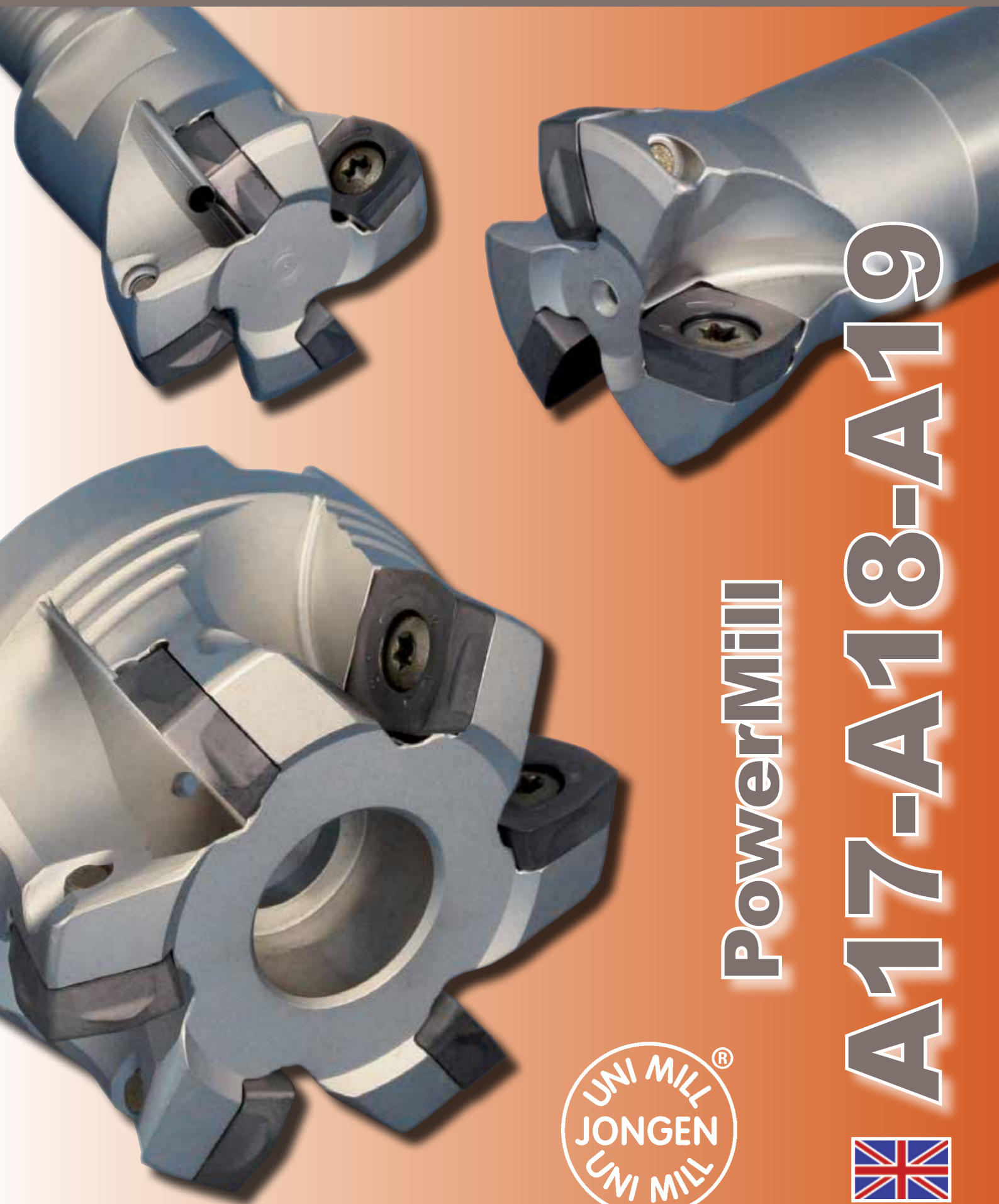


Jongen Werkzeugtechnik



PowerMill

A17-A18-A19

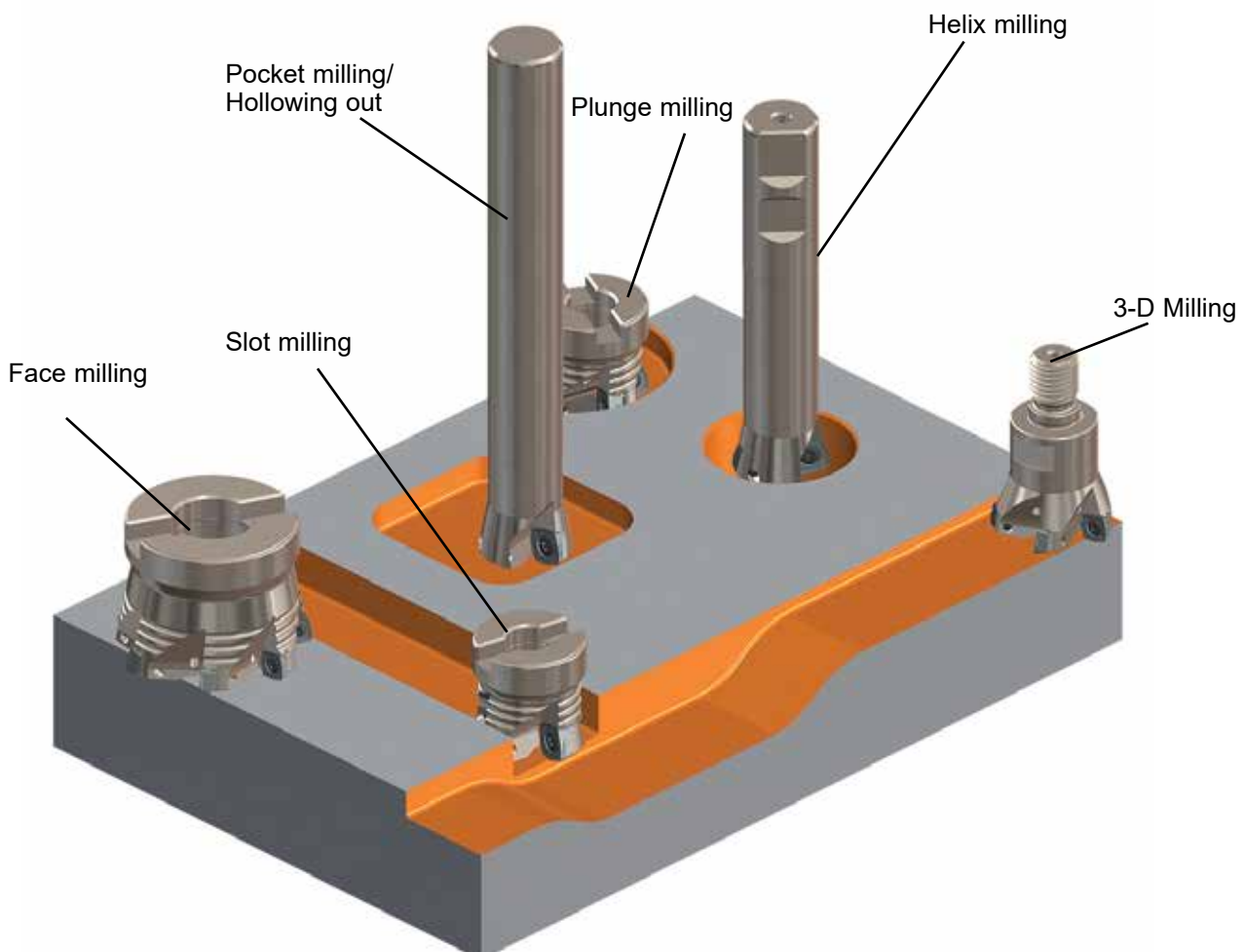


FEATURES:

- ☞ 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 M = Rough machining
Version H = Average 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



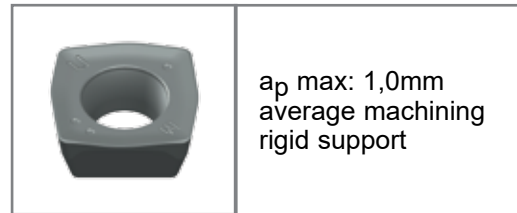
THE INSERT

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

JMA17-09MR08



JMA17-09HR08



JMA17-09SR08



JMA18-12MR10



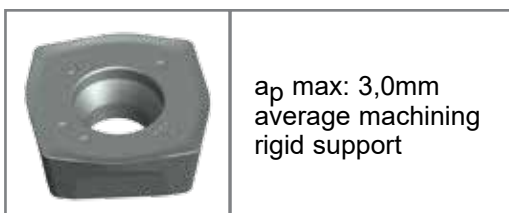
JMA18-12HR10



JMA18-12SR10



JMA19-19HR12



JMA19-19SR12



Following carbide qualities are offered:

HC45

Code 41, ISO Classification P30 - P35



Very tough fine grain quality with a thick power nitride 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 steels such as structural steel, tool steel, heat-treatable steel as well as unalloyed, low alloyed and high alloyed steel, and also cast-qualities such as grey cast iron, globular graphite cast iron etc.

HT45

Code 31, ISO Classification P30 - P35



Very tough fine grain carbide with an AlTiN- Nanocomposit-coating for middle to high cutting speeds with 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 steels and cast iron qualities such as: structural steel, tool steel, heat-treatable steel as well as unalloyed steel, low alloyed steel, high alloyed steel 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 an AlTiN- Nanocomposit-coating for medium to high cutting speeds and middle feed rates. This quality is equally applicable for dry as well as wet milling. It is especially suited for processing stainless steel, tool steel as well as high alloyed steel.

HC30

Code 52, ISO Classification M25 - M30



Hard wearing and tough finest grain carbide with power nitride coating for middle cutting speeds and middle feed rates. This quality is suitable for dry milling and can also be adopted with cooling. Application areas are roughing and finishing high grade steel as well as high alloyed materials.

XC35

Code 46, ISO Classification M20 - M30



Wear resistant and tough finest grain hard metal quality with power nitride coating. On the basis of the experience gained wet machining is preferably to be adopted with this quality; however the dry processing is also possible. XC35 has been especially developed for processing stainless steel, duplex steel and high-alloyed materials, but also for titanium etc. .

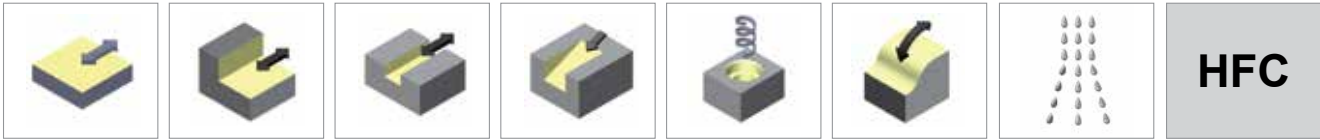
HT20

Code 32, ISO Classification K15 - K20

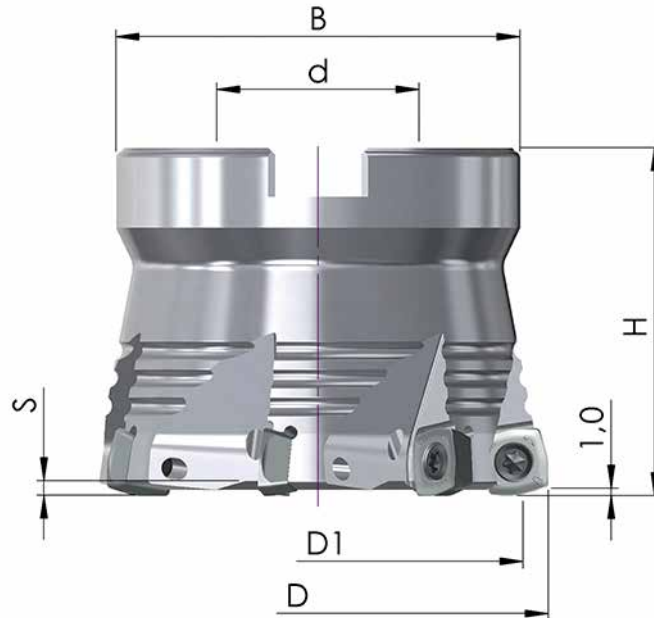


Very hard wearing fine grain carbide with an AlTiN- Nanocomposit-coating for middle – high cutting speeds with high feed rates. This quality is suitable for dry milling and can also be adopted with cooling. Application areas are roughing and finishing of cast iron materials, e.g. grey-, tempered-, vermicular-, graphite- and globular graphite cast iron.

TYPE A17 (09) - TECHNICAL DATA



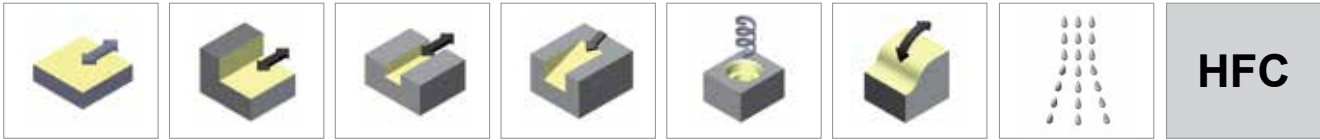
SHELL TYPE MILL



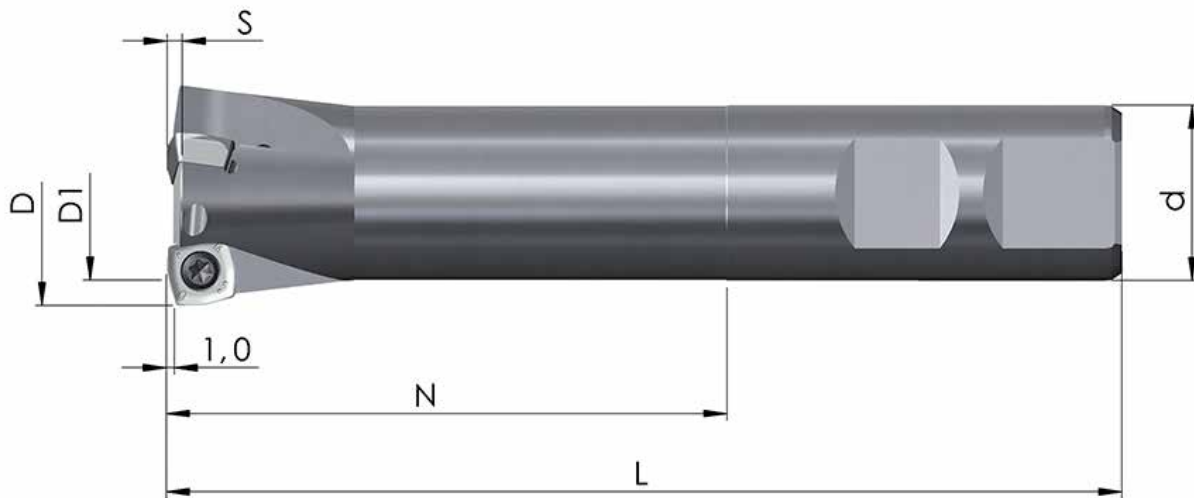
Order-Nr.	D	D ₁	H	d H ⁶	B	S	Z	MS
00PP-040-09-4	40	30,0	40	16	38	2,25	4	MS-8x25-912
00PP-042-09-4	42	32,0	40	16	38	2,25	4	MS-8x25-912
00PP-050-09-5	50	40,0	40	22	46	2,25	5	MS-10x25-912
00PP-052-09-5	52	42,0	40	22	46	2,25	5	MS-10x25-912
00PP-063-09-5	63	53,0	50	27	58	2,25	5	MS-12x35-912
00PP-066-09-5	66	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 A17 (09) - TECHNICAL DATA

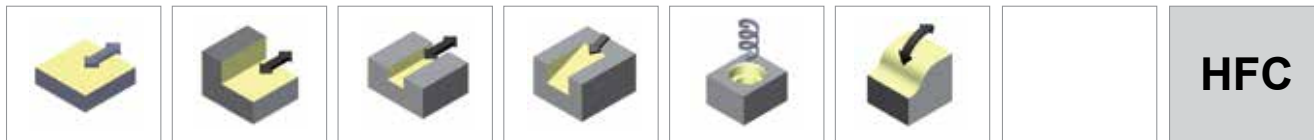


SHANK TYPE MILL DIN 1835-B (WELDON)

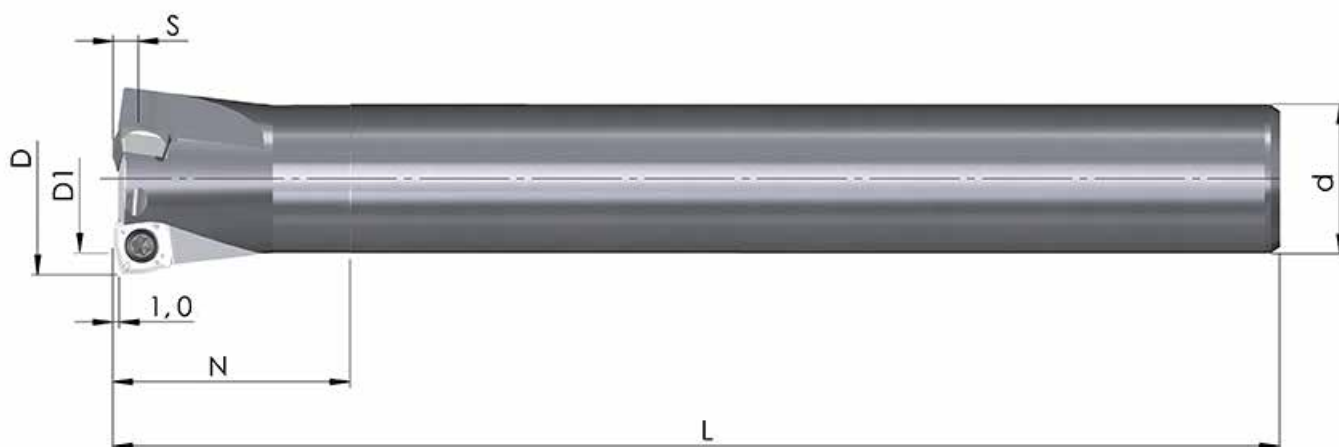


Order-Nr.	D	D ₁	N	d _{h6}	L	S	Z
00PP-20-09-2-80	20	10,0	80	20	130	2,25	2
00PP-22-09-2-80	22	12,0	80	20	130	2,25	2
00PP-22-09-2-125	22	12,0	125	20	175	2,25	2
00PP-25-09-3-80	25	15,0	80	25	136	2,25	3
00PP-25-09-3-125	25	15,0	125	25	181	2,25	3
00PP-32-09-3-80	32	22,0	80	25	136	2,25	3
00PP-32-09-3-125	32	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

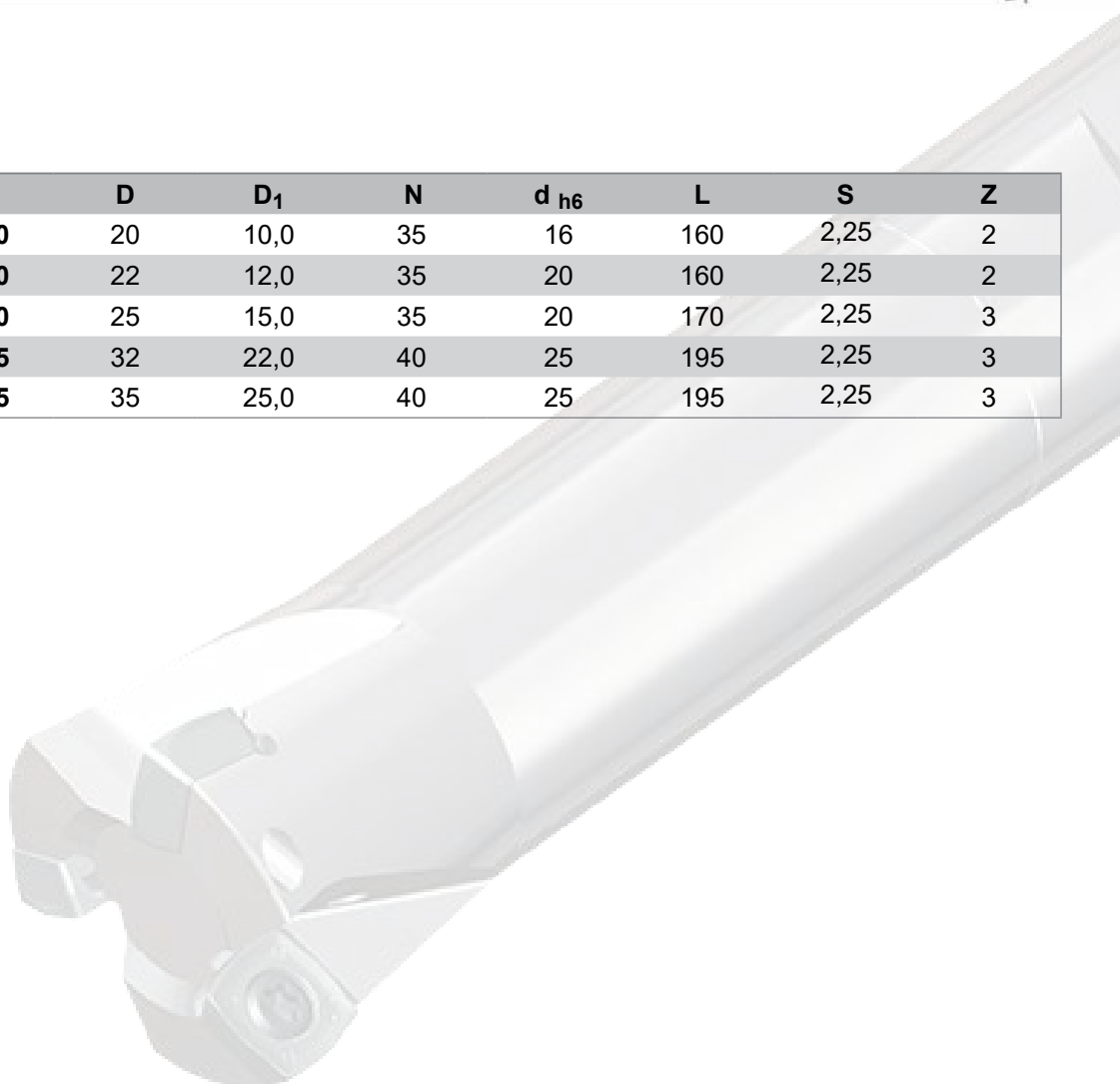
TYPE A17 (09) - TECHNICAL DATA



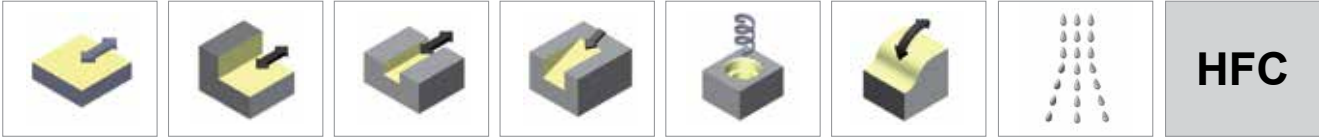
SHANK TYPE MILL DIN 1835-A



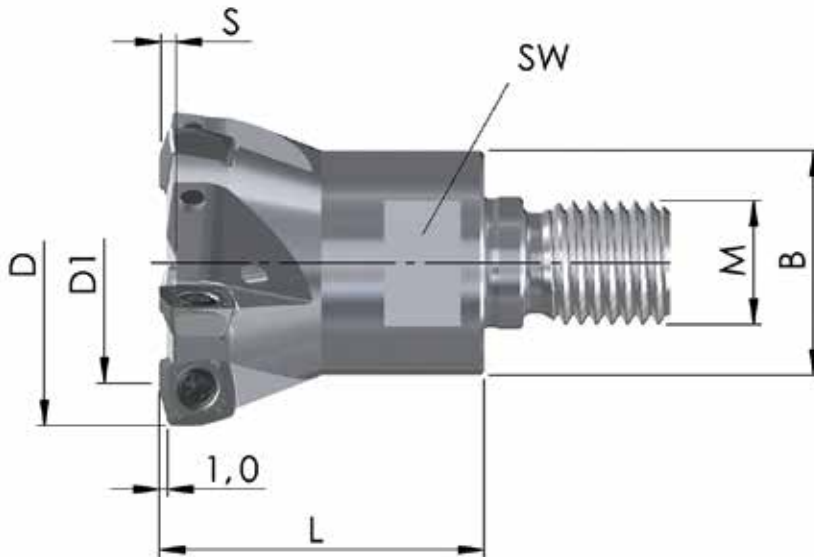
Order-Nr.	D	D ₁	N	d _{h6}	L	S	Z
00PP-20-16-09-2-160	20	10,0	35	16	160	2,25	2
00PP-22-20-09-2-160	22	12,0	35	20	160	2,25	2
00PP-25-20-09-3-170	25	15,0	35	20	170	2,25	3
00PP-32-25-09-3-195	32	22,0	40	25	195	2,25	3
00PP-35-25-09-3-195	35	25,0	40	25	195	2,25	3



TYPE A17 (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

A17			HC45 (code 41)	HT45 (code 31)	HT32 (code 33)	HC30 (code 52)	XC35 (code 46)	HT20 (code 32)	
	JMA17-09MR08- IK 9,6x4,0 R0,8								
	f_z [mm]		0,90 (0,60-1,50)			0,90 (0,60-1,50)		0,90 (0,60-1,50)	
	JMA17-09HR08- IK 9,6x4,0 R0,8								
	f_z [mm]			0,80 (0,50-1,50)	0,80 (0,50-1,50)		0,80 (0,50-1,50)	0,80 (0,50-1,50)	
	JMA17-09SR08- IK 9,6x4,0 R0,8								
	f_z [mm]			0,70 (0,50-1,50)	0,70 (0,50-1,50)			0,70 (0,50-1,50)	
			20	20	20	20	20	20	

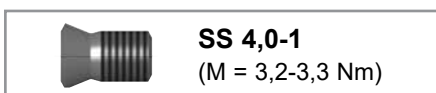
M rough machining

H average machining

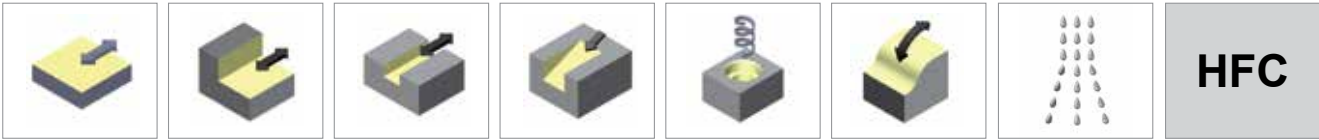
S light machining

V_c [m/min]	steel	stainless	cast iron	non-ferrous metals	highly heat-resistant	tempered
HC45	250 (200 - 350)	240 (140 - 300)	240 (130 - 280)			
HT45	250 (200 - 350)	240 (140 - 300)	240 (130 - 280)			
HT32	250 (200 - 350)	240 (140 - 300)			60 (40 - 200)	
HC30	160 (120 - 220)	200 (100 - 300)			60 (40 - 200)	
XC35	120 (60 - 160)	100 (60 - 180)			80 (60 - 120)	
HT20			260 (180 - 350)			80 (40 - 120)

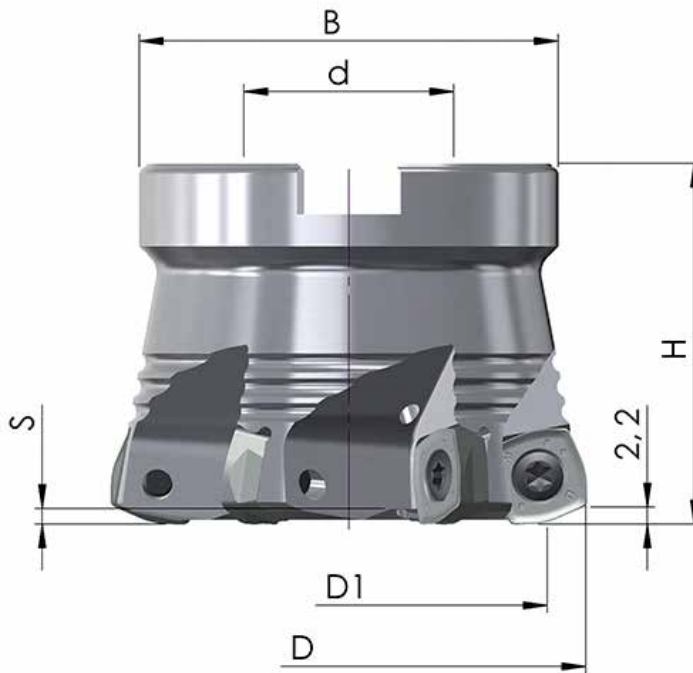
SPARE PARTS



TYPE A18 (12) - TECHNICAL DATA



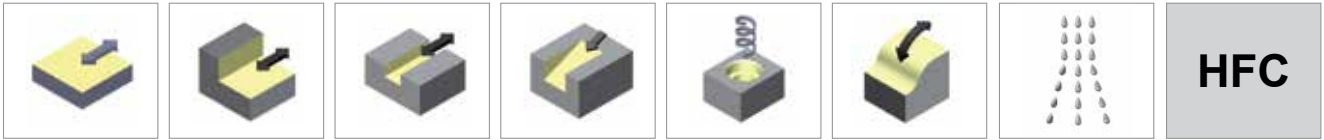
SHELL TYPE MILL



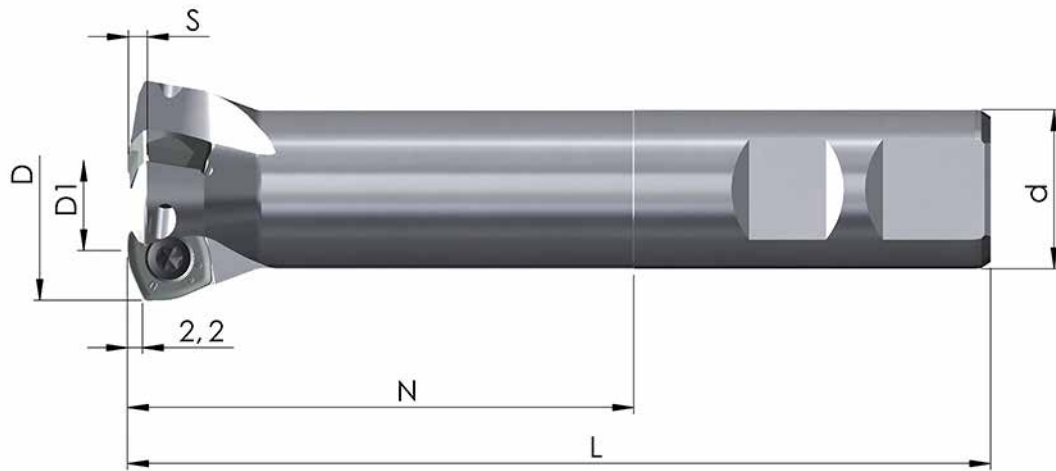
Order-Nr.	D	D ₁	H	d H ⁶	B	S	Z	MS
00PP-040-12-3	40	24,6	40	16	38	2,25	3	MS-8x30-912
00PP-042-12-3	42	26,6	40	16	38	2,25	3	MS-8x30-912
00PP-050-12-4	50	34,6	40	22	46	2,25	4	MS-10x25-912
00PP-052-12-4	52	36,6	40	22	46	2,25	4	MS-10x25-912
00PP-063-12-5	63	47,6	50	27	58	2,25	5	MS-12x35-912
00PP-066-12-5	66	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 A18 (12) - TECHNICAL DATA

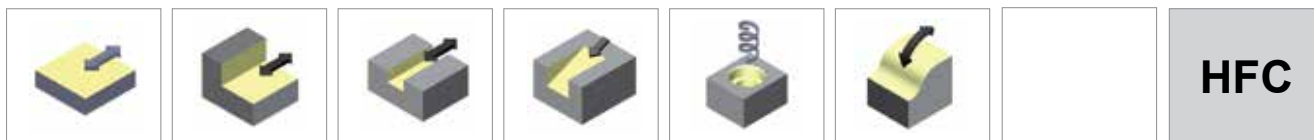


SHANK TYPE MILL DIN 1835-B (WELDON)

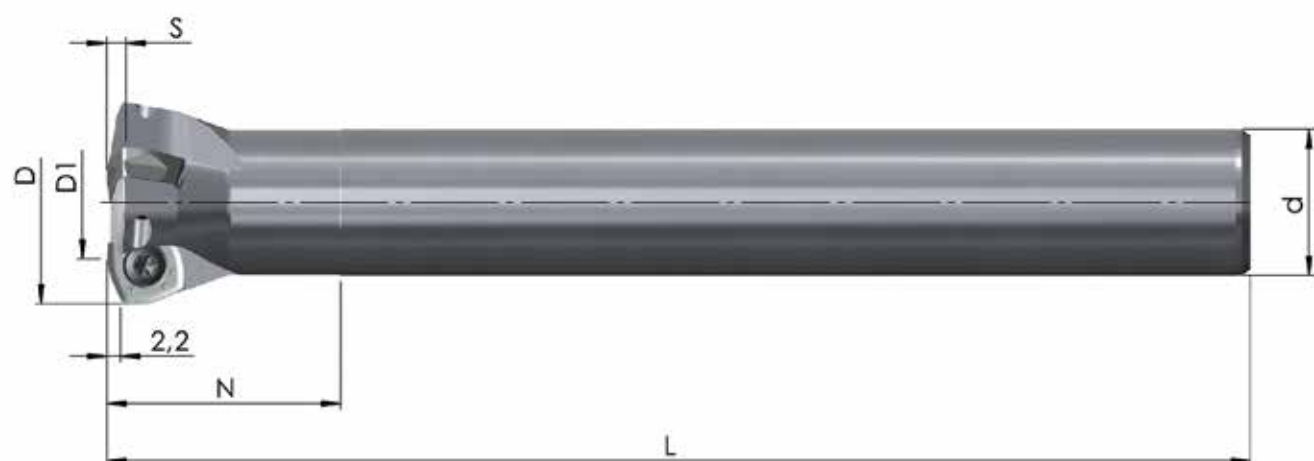


Order-Nr.	D	D ₁	N	d _{h6}	L	S	Z
00PP-32-12-2-80	32	16,6	80	25	136	2,25	2
00PP-32-12-2-125	32	16,6	125	25	181	2,25	2
00PP-35-12-3-80	35	19,6	80	25	136	2,25	3
00PP-35-12-3-125	35	19,6	125	25	181	2,25	3

TYPE A18 (12) - TECHNICAL DATA

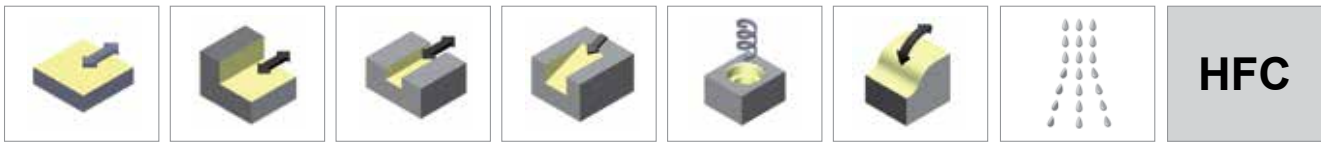


SHANK TYPE MILL DIN 1835-A

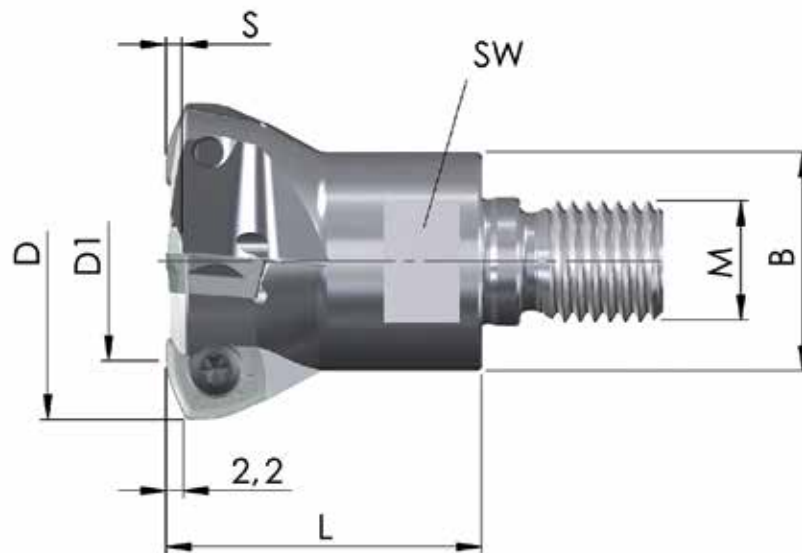


Order-Nr.	D	D ₁	N	d _{h6}	L	S	Z
00PP-32-25-12-2-195	32	16,6	40	25	195	2,25	2
00PP-35-25-12-3-195	35	19,6	40	25	195	2,25	3

TYPE A18 (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

A18			HC45 (code 41)	HT45 (code 31)	HT32 (code 33)	HC30 (code 52)	XC35 (code 46)	HT20 (code 32)	
	JMA18-12MR10- IK 12,7x5,0 R1,0								
	f_z [mm]		1,20 (0,80-1,50)			1,20 (0,80-1,50)		1,20 (0,80-1,50)	
	JMA18-12HR10- IK 12,7x5,0 R1,0								
	f_z [mm]			0,90 (0,60-1,50)	0,90 (0,60-1,50)		0,90 (0,60-1,50)	0,90 (0,60-1,50)	
	JMA18-12SR10- IK 12,7x5,0 R1,0								
	f_z [mm]			0,80 (0,50-1,50)	0,80 (0,50-1,50)			0,80 (0,50-1,50)	
			20	20	20	20	20	20	

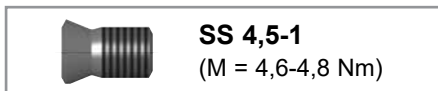
M rough machining

H average machining

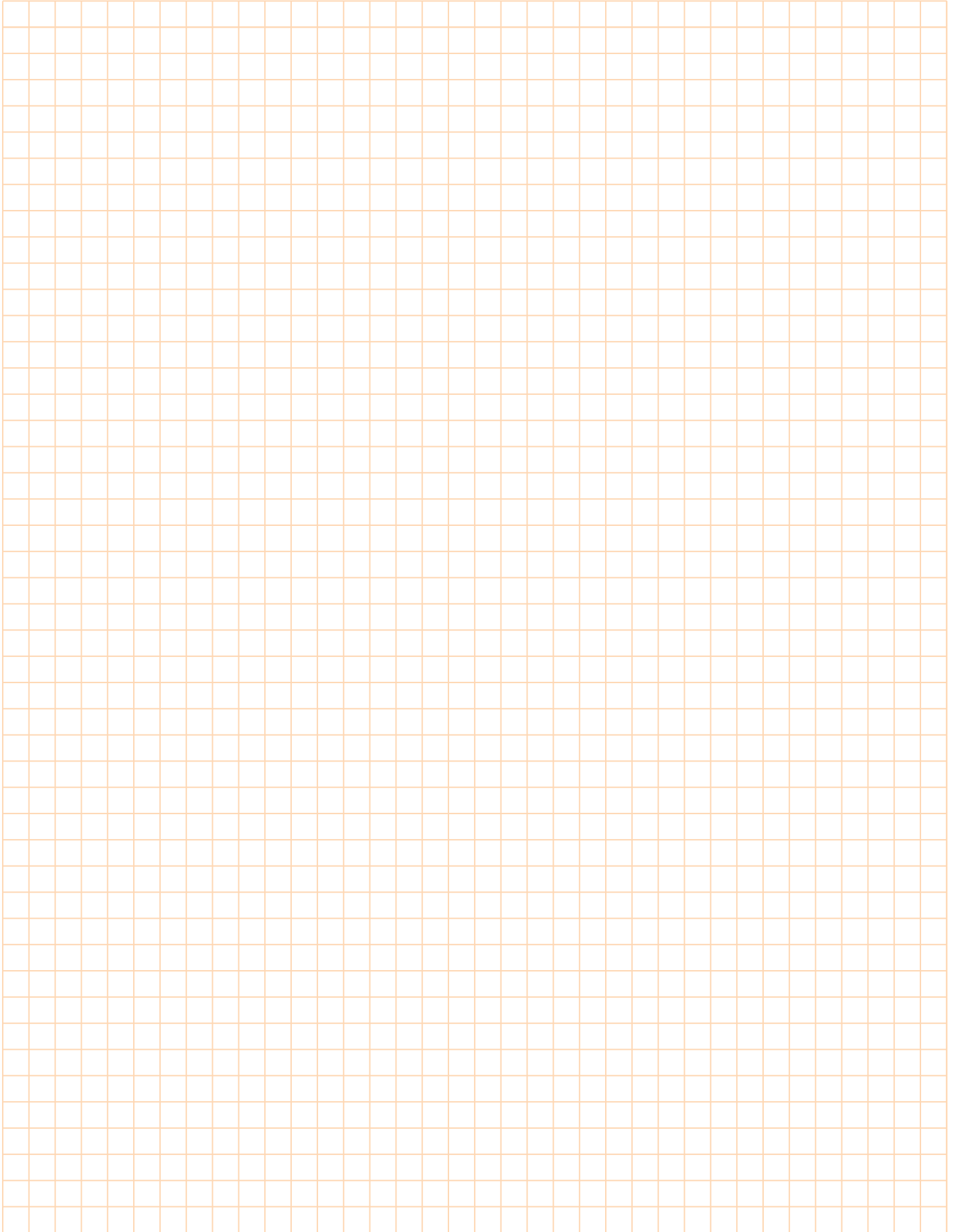
S light machining

V_c [m/min]	steel	stainless	cast iron	non-ferrous metals	highly heat-resistant	tempered
HC45	250 (200 - 350)	240 (140 - 300)	240 (130 - 280)			
HT45	250 (200 - 350)	240 (140 - 300)	240 (130 - 280)			
HT32	250 (200 - 350)	240 (140 - 300)			60 (40 - 200)	
HC30	160 (120 - 220)	200 (100 - 300)			60 (40 - 200)	
XC35	120 (60 - 160)	100 (60 - 180)			80 (60 - 120)	
HT20			260 (180 - 350)			80 (40 - 120)

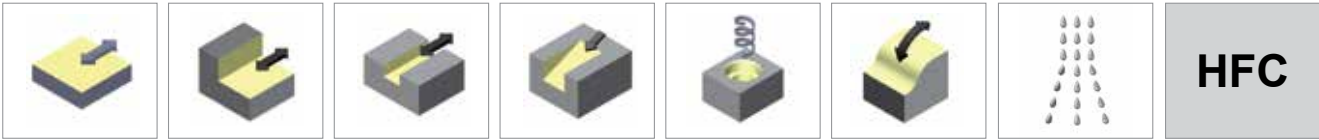
SPARE PARTS



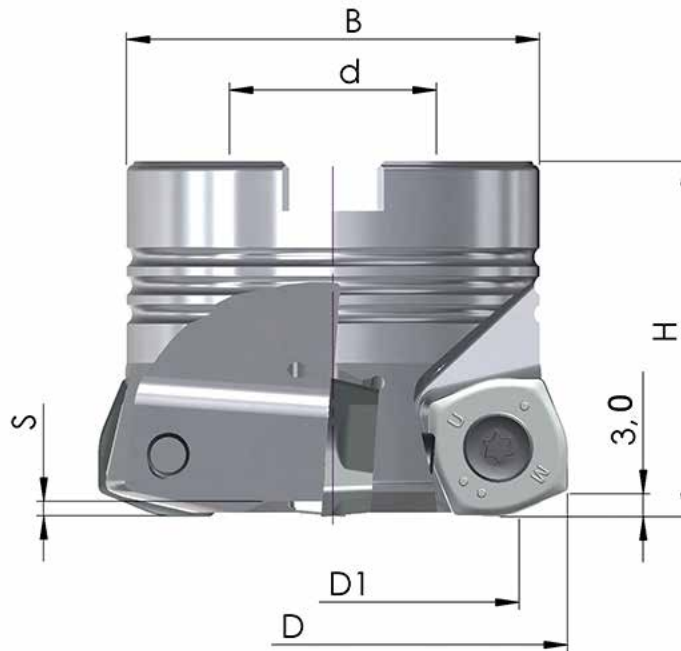
NOTES



TYPE A19 (19) - TECHNICAL DATA














SHELL TYPE MILL



Order-Nr.	D	D ₁	H	d H ⁶	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	32	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

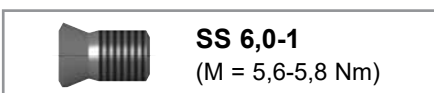
A19			HT45 (code 31)	HT32 (code 33)	HT20 (code 32)				
	JMA19-19HR12- IK 19,1x6,7 R1,2								
	f_z [mm]		1,50 (0,90-2,00)	1,50 (0,90-2,00)	1,50 (0,90-2,00)				
	JMA19-19SR12- IK 19,1x6,7 R1,2								
	f_z [mm]		1,20 (0,80-1,50)	1,20 (0,80-1,50)	1,20 (0,80-1,50)				
			10	10	10				

H rough machining

S light machining

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)

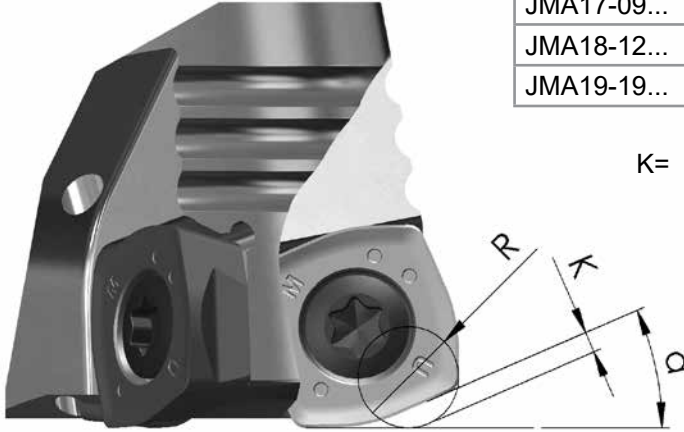
SPARE PARTS



INDICATIONS OF APPLICATION:

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

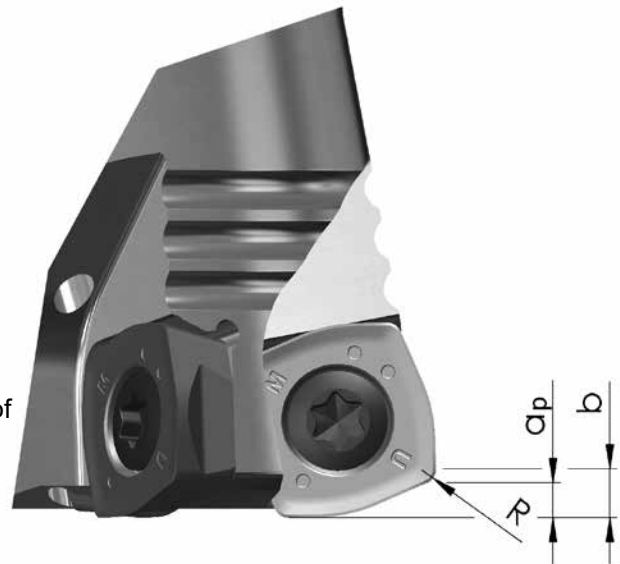
Insert	R	K	α
JMA17-09...	1,9	0,8	15,7°
JMA18-12...	3,3	1,4	23,5°
JMA19-19...	4,3	1,9	22,1°



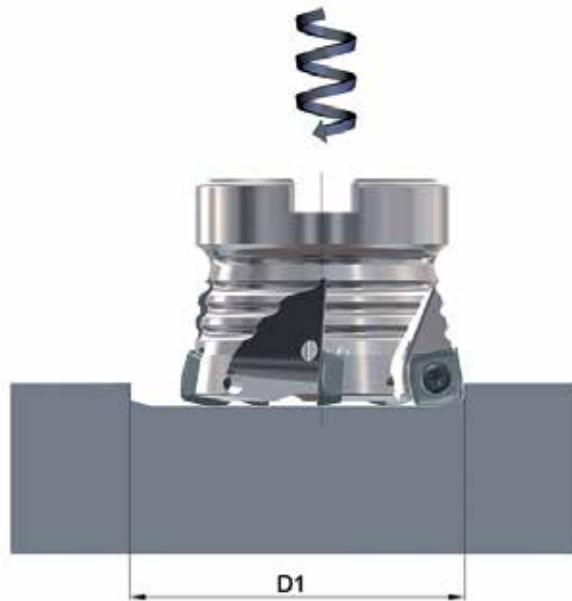
K= free milling area

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
JMA17-09...	1,1	1,9	0,8
JMA18-12...	2,3	3,3	1,0
JMA19-19...	3,2	4,3	1,2



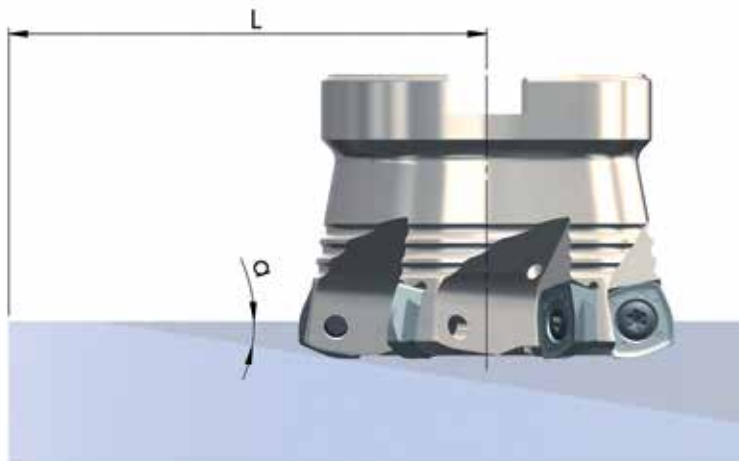
HELIX MILLING WITHOUT PRE-DRILLING:



Insert	D	ø D1 min.	ø D1 max.	a _p / turn	IK-ø Insert
JMA17-09MR08 JMA17-09HR08 JMA17-09SR08	20	21	40	1,0	9,60
	25	31	50	1,0	9,60
	32	45	64	1,0	9,60
	35	51	70	1,0	9,60
	40	61	80	1,0	9,60
	42	65	84	1,0	9,60
	50	81	100	1,0	9,60
	52	85	104	1,0	9,60
	63	107	126	1,0	9,60
66	113	132	1,0	9,60	
JMA18-12MR10 JMA18-12HR10 JMA18-12SR10	32	39	64	2,2	12,70
	35	45	70	2,2	12,70
	40	55	80	2,2	12,70
	42	59	84	2,2	12,70
	50	75	100	2,2	12,70
	52	79	104	2,2	12,70
	63	101	126	2,2	12,70
	66	107	132	2,2	12,70
	80	135	160	2,2	12,70
	100	175	200	2,2	12,70
JMA19-19HR12 JMA19-19SR12	63	88	126	3,0	19,10
	66	94	132	3,0	19,10
	80	122	160	3,0	19,10
	100	162	200	3,0	19,10
	125	212	250	3,0	19,10

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 „a_p“ from picture „depth of cut“.

SLOT MILLING BY RAMPING:



Insert	D	Ramping angle max. α (°)	Processing path min. L (mm)	ap max.	Inscribed circle- \varnothing (IK) Insert
JMA17-09MR08 JMA17-09HR08 JMA17-09SR08	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	
JMA18-12MR10 JMA18-12HR10 JMA18-12SR10	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	
JMA19-19HR12 JMA19-19SR12	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

Errors and omissions excepted!