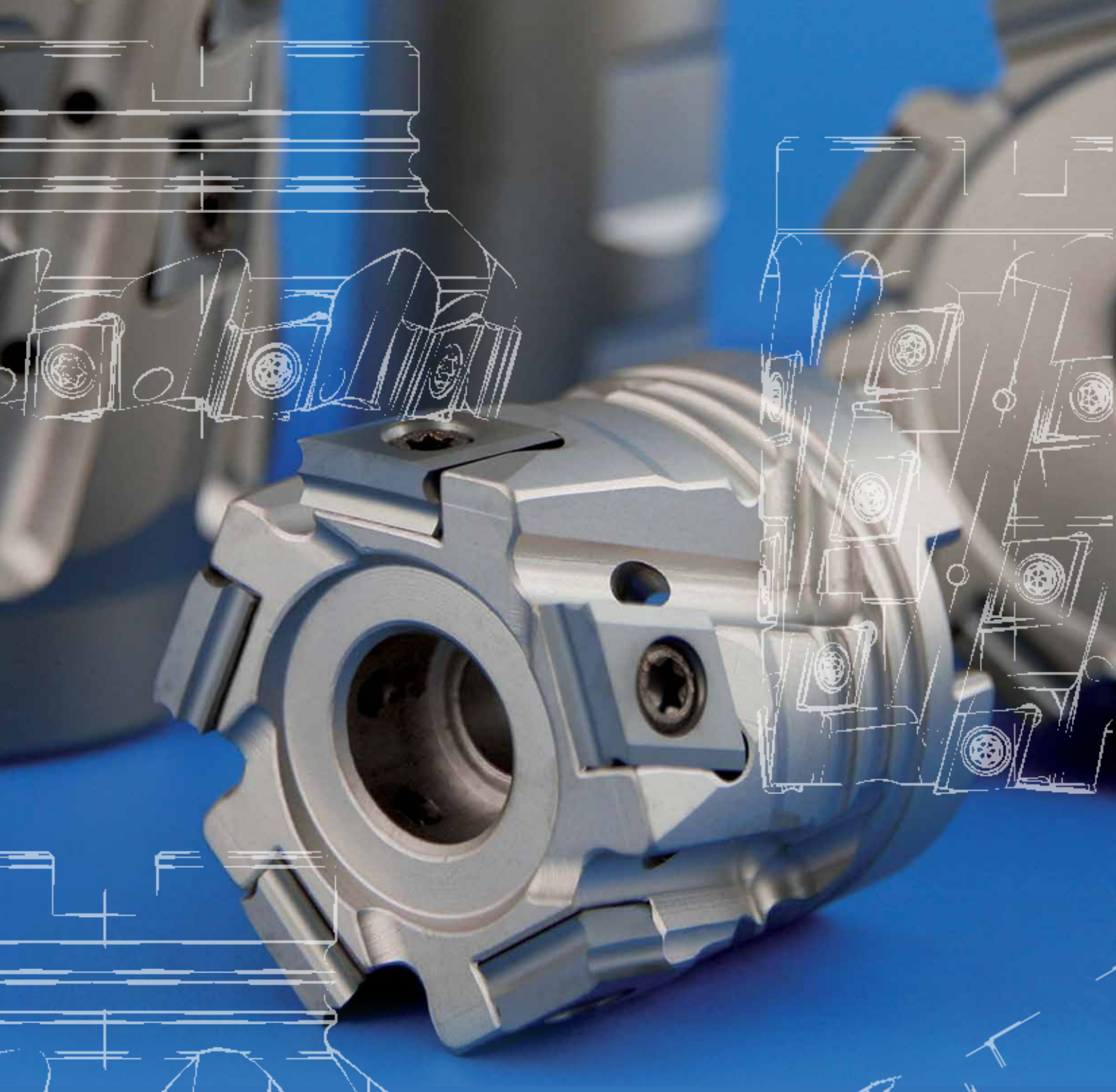


The tangential milling system

Type B27

...made by JONGEN!

UNI MILL JONGEN UNI MILL ®

THE TOOL

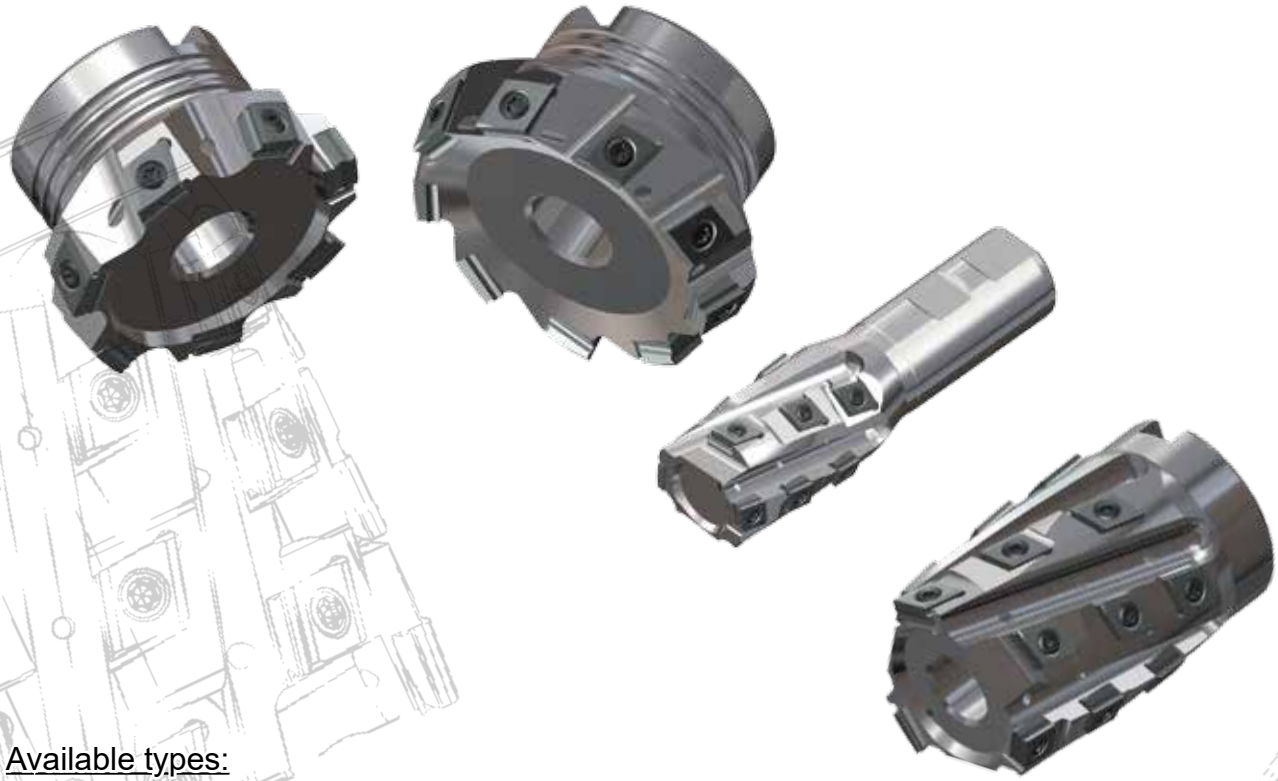
➢ The new tangential step and face milling system convinces by a quiet and smooth running of machine, maximum productivity and longer tool lives.

CHARACTERISTICS

Step and face milling

➢ Positive rake angle and axial angle of inclination enable soft and smooth running of the machine

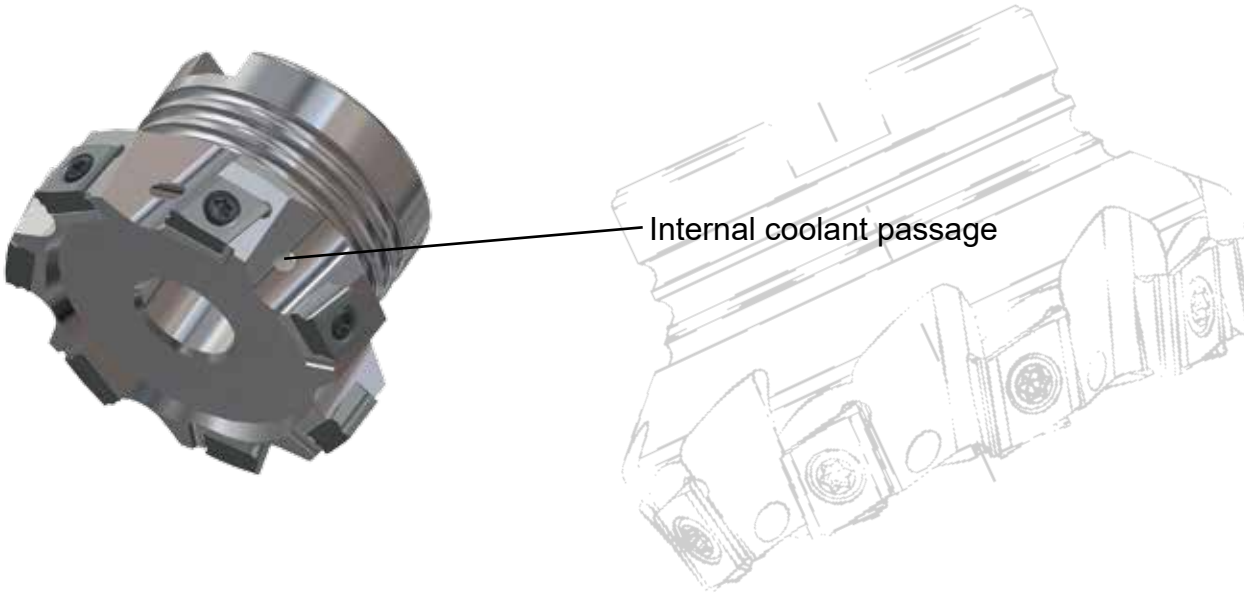
➢ Integrated trailing chamfer produces excellent surface quality.



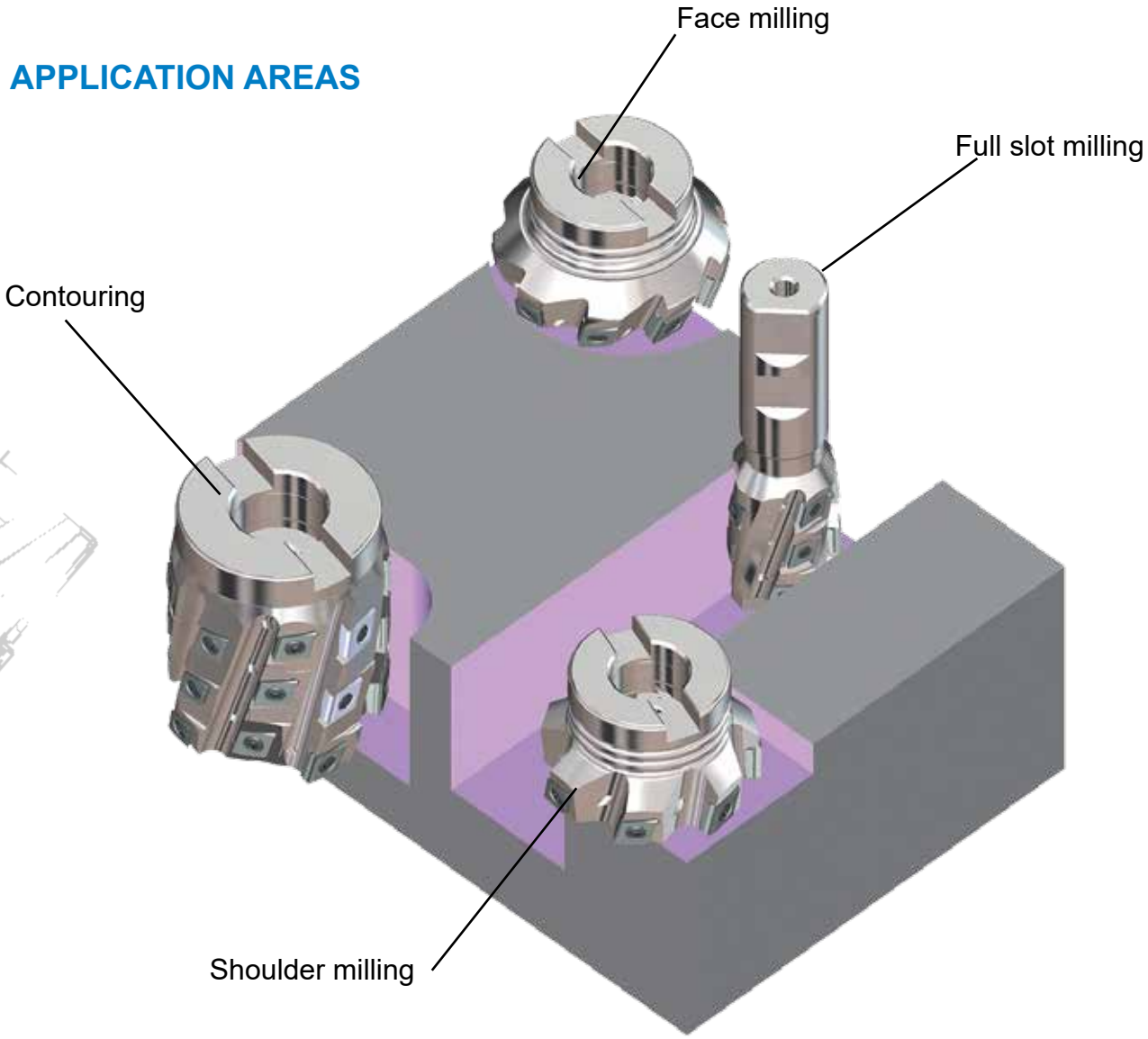
Available types:

- Step-shell type mill made to DIN 8030-A in regular and close pitch, within diameter ranges of 40-125mm
- Face-shell type mill 75 ° made to DIN 8030-A in regular pitch, within diameter ranges of 40-100mm
- Multi-tooth milling cutter with clamping shank made to DIN1835-B in regular pitch with diameter of 40mm
- Multi-tooth milling cutter with tool holder made to DIN8030-A in regular pitch, within diameter ranges of 50 and 63mm

➢ All tools include internal coolant passages

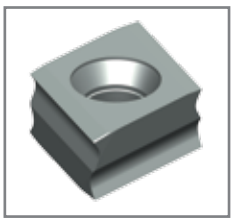


APPLICATION AREAS



THE INSERTS

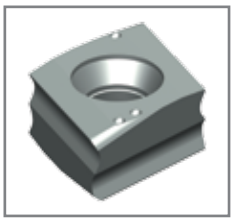
JMB27-T09GR08



Completely precision ground insert with 4-effective cutting edges. The insert is provided with a positive chip groove and reinforced cutting edge depending on the application type. A stable wedge angle is enabled through additionally applied free-formed surface. The cutting edge is provided with radius of R0,8 mm and trailing chamfer.

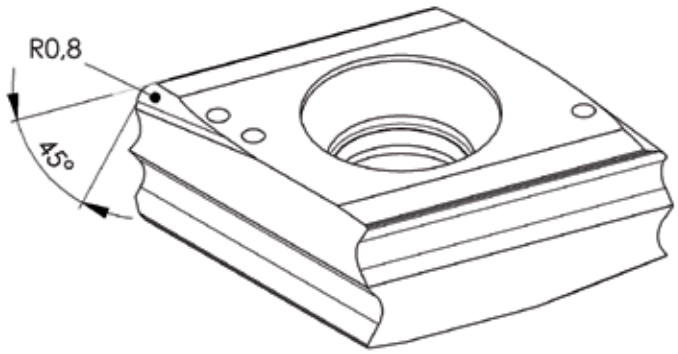
Areas of application: roughing and finishing
all common materials
a_p = max. 9mm

JMB27-T09PR08



Precision sintered insert, supporting surface ground with 4-effective cutting edges. The insert is provided with a positive chip groove and reinforced cutting edge depending on the application type. A stable wedge angle is enabled through additionally applied free-formed surface. The cutting edge is provided, due to the process-related properties, with a radii-segment and outlet bevel. (see drawing)

Areas of application: roughing
all common materials
a_p = max. 9mm



Following carbide types are available:

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.

HT32

Code 33, Iso-Classification M20-M30

Hard wearing and tough finest grain carbide with a AlTiN- Nanocomposit-coating for middle – high 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 materials, tool steel and stainless steel.

HC35

Code 50, Iso-Classification M20-M30

Wear resistant and tough finest grain hard metal quality with power nitride coating for middle cutting speed rates and feed rates. This quality is preferably to be adopted with cooling. Application areas are roughing and finishing of stainless steels and high alloyed materials.

XC35

Code 46, Iso-Classification M20-M30

Wear resistant and tough finest grain hard metal quality with power nitride coating. This quality is preferably to be adopted for wet machining, 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 a 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.

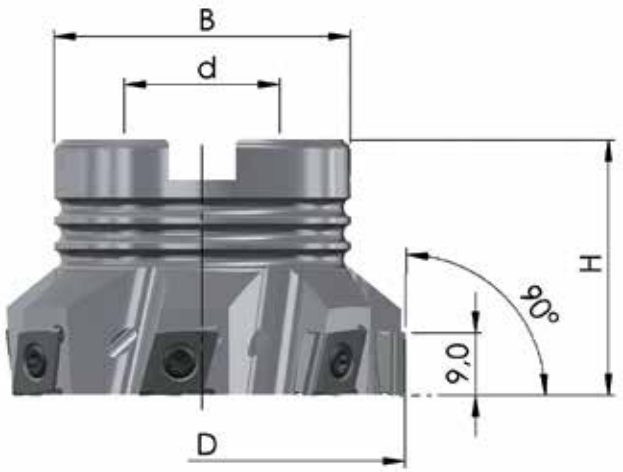
K15M

Code 8, ISO-Classification K10

Very hard wearing fi ne grain carbide, for 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 fi nishing nonferrous heavy materials and aluminium up to a Si-component of approx. 8%.

TECHNICAL DATA - 90° STEP MILLS

SHELL TYPE MILLING CUTTERS (DIN 8030-A)

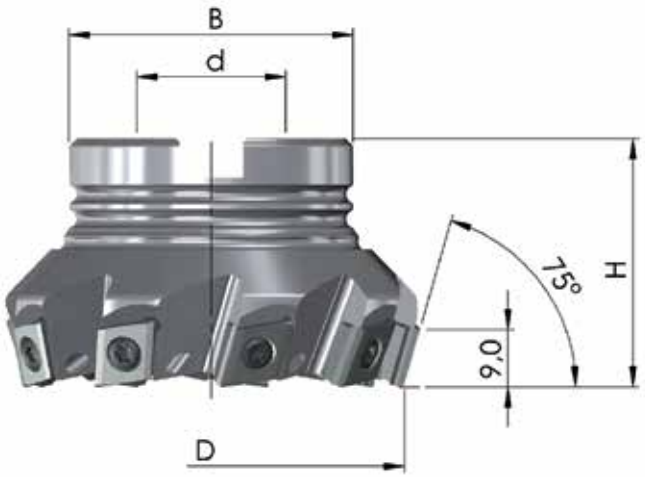


Order-No.	D	H	d H6	B	Z	MS
90PP-040-T09-4	40	40	16	38	4	MS-8x25-912
90PP-050-T09-5	50	40	22	46	5	MS-10x25-912
90PP-063-T09-7	63	40	22	46	7	MS-10x25-912
90PP-080-T09-9	80	50	27	58	9	MS12x35-912
90PP-100-T09-11	100	50	32	78	11	MS16x30-912
90PP-125-T09-13	125	50	40	90	13	MS20x45-7991
Close pitch:						
90PP-040-T09-5	40	40	16	38	5	MS-8x25-912
90PP-050-T09-7	50	40	22	46	7	MS-10x25-912
90PP-063-T09-9	63	40	22	46	9	MS-10x25-912
90PP-080-T09-12	80	50	27	58	12	MS12x35-912
90PP-100-T09-13	100	50	32	78	13	MS16x30-912
90PP-125-T09-15	125	50	40	90	15	MS20x45-7991

MS = Central Screw

TECHNICAL DATA - 75° FACE MILLS

SHELL TYPE MILLING CUTTERS (DIN 8030-A)



Order-No.	D	H	d H6	B	Z	MS
75PP-040-T09-5	40	40	16	38	5	MS-8x25-912
75PP-050-T09-7	50	40	22	46	7	MS-10x25-912
75PP-063-T09-9	63	40	22	46	9	MS-10x25-912
75PP-080-T09-12	80	50	27	58	12	MS12x35-912
75PP-100-T09-13	100	50	32	78	13	MS16x30-912

MS = Central Screw

TECHNICAL DATA - MULTI-TOOTH MILLING CUTTERS

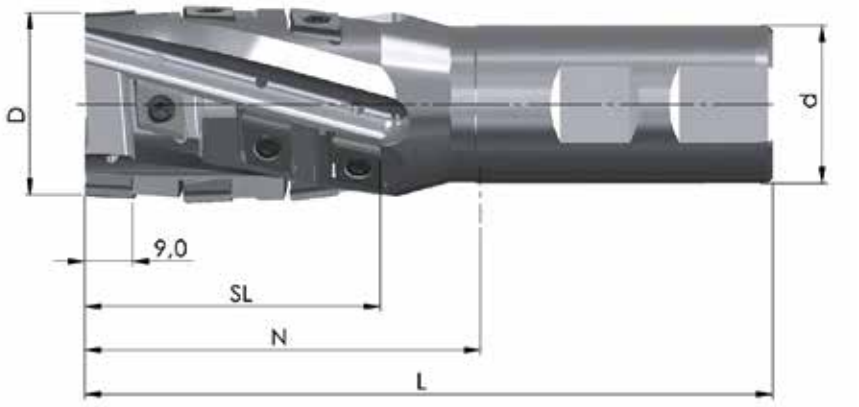
SHELL TYPE MILLING CUTTERS (DIN 8030-A)

Order-No.	D	SL	H	d H6	B	$Z_{eff.}$	ZZ	MS
VZF-50-54-T09-3 KD22	50	54	80	22	46	3	18	MS-10x65-912
VZF-63-54-T09-4 KD27	63	54	80	27	58	4	24	MS-12x65-912

MS = Central Screw

TECHNICAL DATA - MULTI-TOOTH MILLING CUTTERS

SHANK TYPE MILLING CUTTERS MADE TO (DIN1835-B / WELDON)



Order-No.	D	SL	N	L	d $_{h6}$	$Z_{eff.}$	ZZ
VZF-40-53-32-T09-2	40	53,6	80	140	32	2	12

INSERTS

			HC45 (code 41)	HT32 (code 33)	HC35 (code 50)	XC35 (code 46)	HT20 (code 32)	K15M (code 8)	
	**JMB27-T09PR08** IK 9,52x4,62 R0,8 + chamfer								
		f_z [mm]	0,15 (0,10-0,30)	0,20 (0,15-0,30)			0,20 (0,15-0,30)		
	**JMB27-T09GR08** IK 9,52x4,62 R0,8								
		f_z [mm]	0,15 (0,10-0,30)		0,15 (0,10-0,30)	0,15 (0,10-0,30)	0,20 (0,15-0,30)		
	**JMB27-T09GR02** IK 9,52x4,62 R0,2								
		f_z [mm]						0,20 (0,15-0,25)	
			20	20	20	20	20	20	

P Areas of application: roughing

G Areas of application: roughing and finishing

SPARE PARTS

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

T 15

100g

FURTHER TECHNICAL INFORMATION

Calculation of rotation number of main spindle:

$$n = \frac{1000 \cdot v_c \ [min^{-1}]}{D \cdot \pi}$$

n = Rotation number (min-1)
Vc = Cutting speed (m/min)
D = Diameter of a tool (mm)

Feed rate:

$$v_f = f_z \cdot Z \cdot n \ [mm/min]$$

V_f = Feed speed at the tool tip (mm/min)
f_z = Feed rate per tooth (mm)
Z = Number of teeth
n = Rotation number (min-1)

Average chip thickness

$$h_m \approx f_z \sqrt{\frac{a_e}{D}} \ [mm] \rightarrow f_z \approx h_m \sqrt{\frac{D}{a_e}} \ [mm]$$

h_m = *Average chip thickness [mm]*
f_z = Feed rate per tooth (mm)
a_e = Radial depth of cut [mm]
D = Diameter of a tool (mm)

PARAMETERS STEP MILLING + FACE MILLING

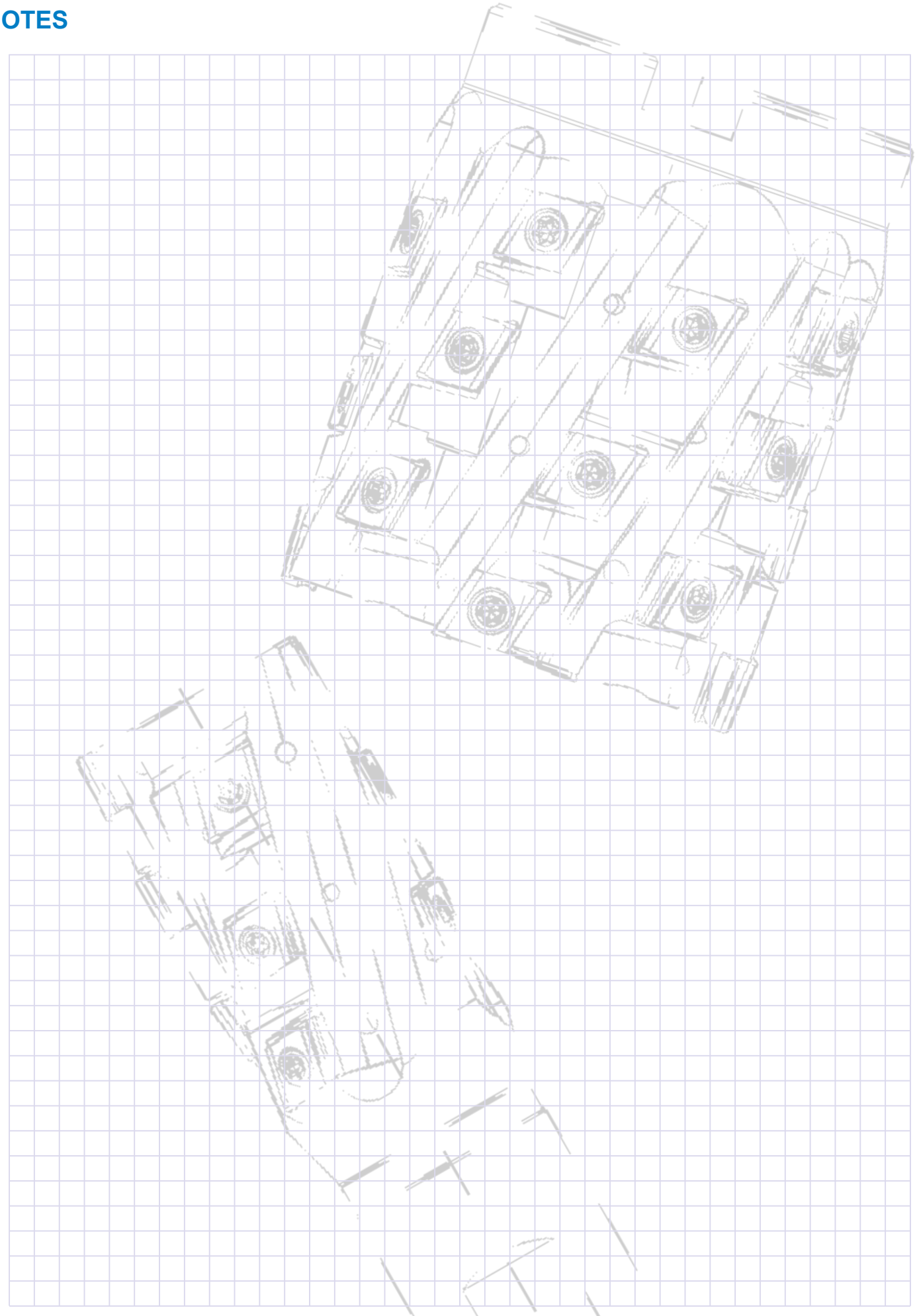
Material		Hardness	Quality	Depth of cut a_e [mm]
P	Structural steel, Unalloyed steel	<180 HB	HC45	-0,25D
				-0,5D
				-0,75D
				>0,75D-1D
	Tool steel, Heat-treatable steel, Alloyed steel	180-350 HB	HC45	-0,25D
				-0,5D
				-0,75D
				>0,75D-1D
M	Stainless-steel, High grade steel, High alloyed steel,	<270 HB	HC35 XC35 (HT32)	-0,25D
				-0,5D
				-0,75D
				>0,75D-1D
S	Heat-resistant super alloys Titan alloys		XC35 (HC35) (HT32)	-0,25D
				-0,5D
				-0,75D
				>0,75D-1D
H	Tempered steel	40-55 HRC	HT20	-0,25D
				-0,5D
				-0,75D
				>0,75D-1D
K	Grey cast iron	<800 N/mm²	HT20	-0,25D
				-0,5D
				-0,75D
				>0,75D-1D
	Globular graphite cast iron	<350 N/mm²	HT20 (HC45)	-0,25D
				-0,5D
				-0,75D
				>0,75D-1D
N	Aluminium Non-ferrous metals	bis 12% Si	K15M	-0,25D
				-0,5D
				-0,75D
				>0,75D-1D

The above mentioned data are standard values.
Up and down corrections are admitted depending on the machine type, tool and holding fixture.

Cutting speed v_c [m/min.]	Feed rate per tooth f_z [mm]		
	ø40+50	ø63+80	ø100+125
220 (200-350)	0,30 (0,15-0,35)	0,30 (0,15-0,35)	0,30 (0,15-0,35)
	0,24 (0,12-0,29)	0,24 (0,12-0,29)	0,24 (0,09-0,29)
	0,20 (0,09-0,25)	0,20 (0,09-0,25)	0,20 (0,05-0,25)
	0,17 (0,09-0,22)	0,17 (0,09-0,22)	0,17 (0,02-0,22)
200 (160-280)	0,34 (0,19-0,39)	0,30 (0,15-0,35)	0,30 (0,15-0,35)
	0,21 (0,09-0,26)	0,21 (0,09-0,26)	0,21 (0,06-0,26)
	0,17 (0,07-0,22)	0,17 (0,07-0,22)	0,17 (0,02-0,22)
	0,12 (0,04-0,17)	0,15 (0,07-0,20)	0,15 (0,02-0,20)
160 (100-300)	0,30 (0,15-0,35)	0,30 (0,15-0,35)	0,30 (0,15-0,35)
	0,21 (0,09-0,26)	0,21 (0,09-0,26)	0,21 (0,06-0,26)
	0,17 (0,07-0,22)	0,17 (0,07-0,22)	0,17 (0,02-0,22)
	0,15 (0,07-0,20)	0,15 (0,07-0,20)	0,15 (0,02-0,20)
60 (40-200)	0,24 (0,09-0,29)	0,24 (0,09-0,29)	0,24 (0,14-0,29)
	0,17 (0,05-0,22)	0,17 (0,05-0,22)	0,17 (0,07-0,22)
	0,14 (0,04-0,19)	0,14 (0,04-0,19)	0,14 (0,04-0,19)
	0,12 (0,04-0,17)	0,12 (0,04-0,17)	0,12 (0,02-0,17)
80 (50-120)	0,10 (0,08-0,15)	0,10 (0,08-0,15)	0,10 (0,08-0,15)
	0,07 (0,05-0,12)	0,07 (0,05-0,12)	0,07 (0,05-0,12)
	0,06 (0,04-0,10)	0,06 (0,04-0,10)	0,06 (0,04-0,10)
	0,05 (0,03-0,10)	0,05 (0,03-0,10)	0,05 (0,03-0,10)
250 (180-350)	0,30 (0,15-0,35)	0,30 (0,15-0,35)	0,30 (0,22-0,35)
	0,28 (0,16-0,33)	0,28 (0,16-0,33)	0,28 (0,20-0,33)
	0,23 (0,13-0,28)	0,23 (0,13-0,28)	0,23 (0,15-0,28)
	0,20 (0,12-0,25)	0,20 (0,12-0,25)	0,20 (0,12-0,25)
200 (130-280)	0,30 (0,15-0,35)	0,30 (0,15-0,35)	0,30 (0,15-0,35)
	0,21 (0,09-0,26)	0,21 (0,09-0,26)	0,21 (0,13-0,26)
	0,17 (0,07-0,22)	0,17 (0,07-0,22)	0,17 (0,09-0,22)
	0,15 (0,07-0,20)	0,15 (0,07-0,20)	0,15 (0,07-0,20)
500 (500-1000)	0,35 (0,20-0,40)	0,35 (0,20-0,40)	0,35 (0,20-0,40)
	0,28 (0,16-0,33)	0,28 (0,16-0,33)	0,28 (0,13-0,33)
	0,23 (0,13-0,28)	0,23 (0,13-0,28)	0,23 (0,08-0,28)
	0,20 (0,12-0,25)	0,20 (0,12-0,25)	0,20 (0,05-0,25)

NOTES

NOTES



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Jongen Werkzeugtechnik GmbH

Siemensring 11 · 47877 Willich

Phone: 0049 2154 9285 2900 · Fax: 0049 2154 9285 9 2900

FreePhone International: 00800 85 285 285

www.jongen.de · email: export@jongen.de