



The tangential milling system

# Type B29

...made by JONGEN!



Products from



Willich



North-Rhine  
Westphalia



Germany



Europe

for



Europe

and the



## THE TOOL

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

## CHARACTERISTICS

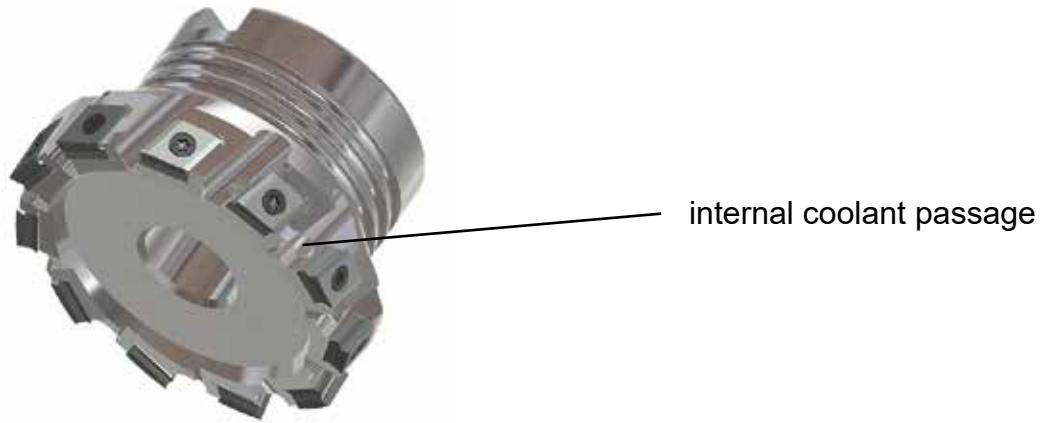
- Robust Construction
- Positive rake angle for a smooth running of the machine
- Positive axial positioning for soft cutting manner
- Ground and directly pressed inserts for different applications



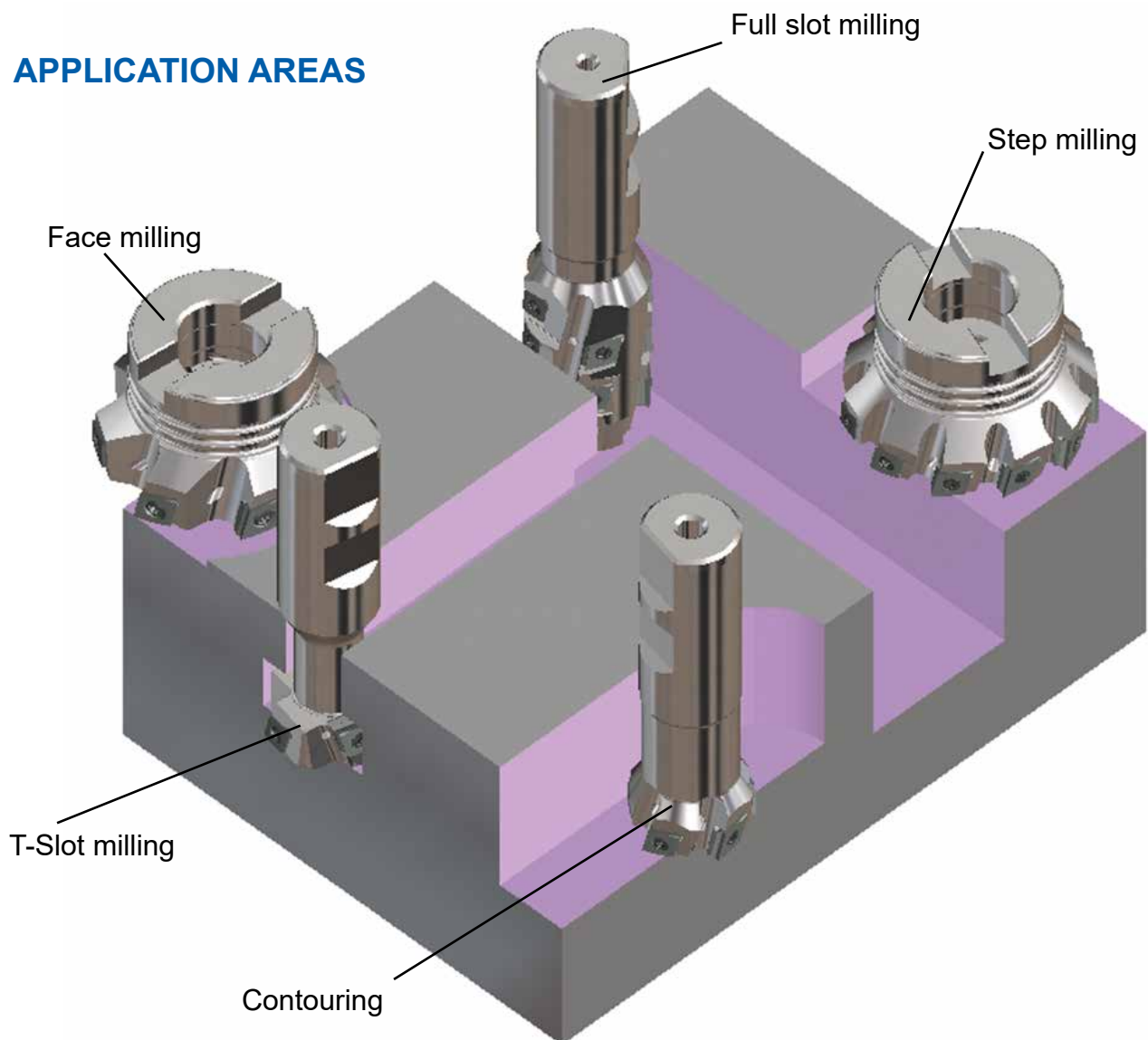
### Available types:

- Step-shell type milling cutters made to DIN 8030-A in regular and close pitch, within diameter ranges of 32-80mm
- Shank type milling cutters made to DIN1835-B in regular pitch, within diameter ranges of 25-40mm
- Multi-tooth milling cutter made to DIN1835-B in regular pitch, within diameter ranges of 25-40mm
- T-Slot milling cutter made to DIN DIN1835-B, for T-slots made to DIN650

➤ All tools are equipped with boreholes for internal cooling



## APPLICATION AREAS



## THE INSERTS

### JMB29-T08G(R)R06



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 a radius of R0,6 mm and a trailing chamfer. Right/left version for T-slot cutters.

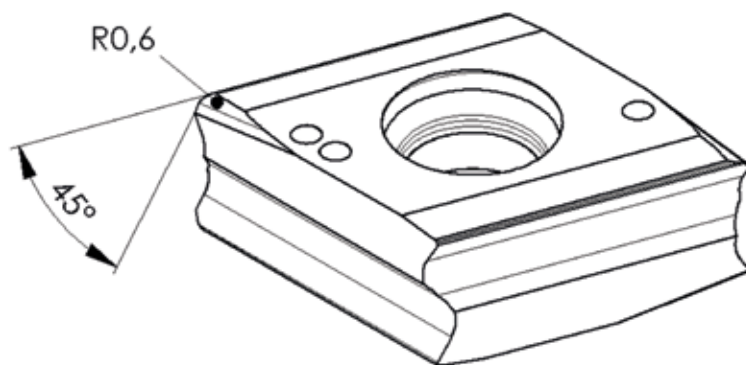
Areas of application: roughing and finishing  
all common materials  
 $a_p = \text{max. } 8\text{mm}$

### JMB29-T08PR06




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  
 $a_p = \text{max. } 8\text{mm}$




## Following carbide types are available:


### **HC45 Code 41, DIN-ISO513: Classification P30-P35, M25-M30, K20-K30**

 Very tough fine grain quality with a thick HIPIMS-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.


### **HC30 Code 52, DIN-ISO513: Classification P20-P30, M25-M30, S20-S30**

 Hard wearing and tough finest grain carbide with HIPIMS-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.


### **HC35 Code 50, DIN-ISO513: Classification P20-P30, M20-M30 , S15-S25**

 Wear resistant and tough finest grain hard metal quality with HIPIMS-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, DIN-ISO513: Classification P20-P30, M20-M30, S15-S25**

 Wear resistant and tough finest grain hard metal quality with HIPIMS-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. .

### **HC20 Code 53, DIN-ISO513: Classification K15-K20, H15-H20**

 Very hard wearing fine grain carbide with power nitride 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.

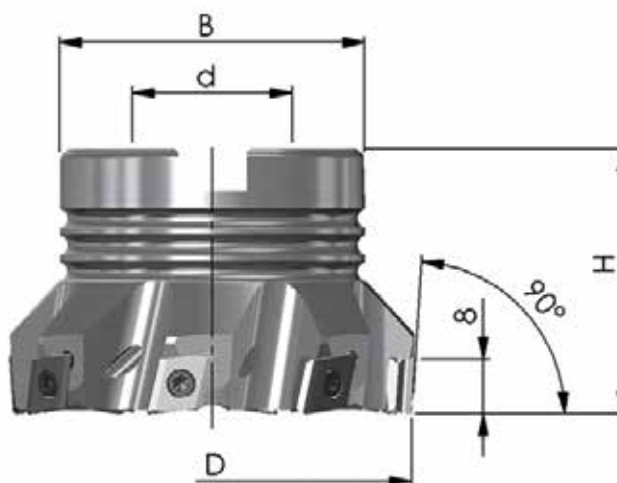
### **K15M Code 8, DIN-ISO513: Classification N20-N25**

 Very hard wearing fine 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 finishing nonferrous heavy materials and aluminium up to a Si-content of approx. 8%.

## TECHNICAL DATA - 90° STEP MILLS



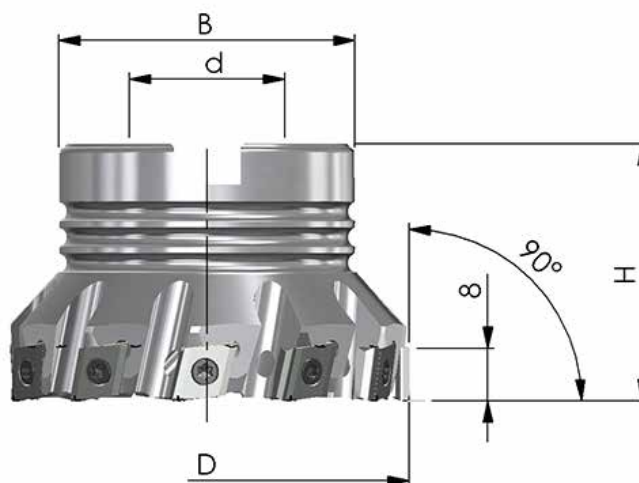
## SHELL TYPE MILLING CUTTERS (DIN 8030-A)



Order-No.	D	H	d H6	B	Z	MS
90PP-032-B29-4	32	40	16	30	4	MS-8x25-912
90PP-040-B29-5	40	40	16	38	5	MS-8x25-912
90PP-050-B29-6	50	40	22	46	6	MS-10x25-912
90PP-063-B29-8	63	40	22	46	8	MS-10x25-912
90PP-080-B29-10	80	50	27	58	10	MS-12x35-912

MS= Central Screw

## SHELL TYPE MILLING CUTTERS (DIN 8030-A) - CLOSE PITCH



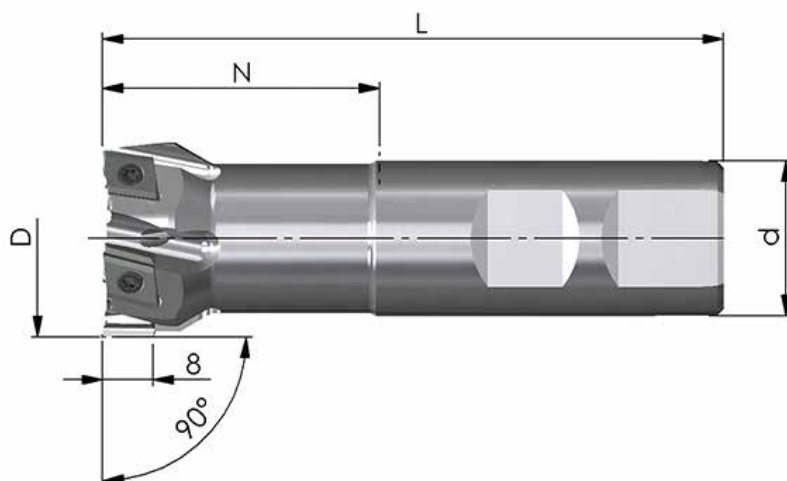
Order-No.	D	H	d H6	B	Z	MS
90PP-032-B29-5	32	40	16	30	5	MS-8x25-912
90PP-040-B29-6	40	40	16	38	6	MS-8x25-912
90PP-050-B29-8	50	40	22	46	8	MS-10x25-912
90PP-063-B29-11	63	40	22	46	11	MS-10x25-912
90PP-080-B29-13	80	50	27	58	13	MS-12x35-912

MS= Central Screw

## TECHNICAL DATA - 90° STEP MILLS AND MULTI-TOOTH MILLING CUTTERS

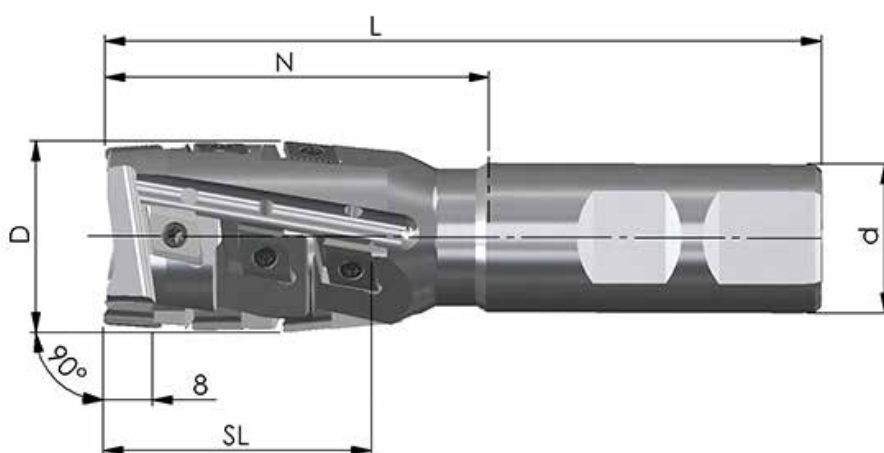


### SHANK TYPE MILLING CUTTERS (DIN1835-B / WELDON)










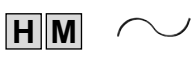





Order-No.	D	L	N	d <sub>h6</sub>	Z
90PP-25-44-25-B29-3	25	100	44	25	3
90PP-32-44-25-B29-4	32	100	44	25	4
90PP-32-44-32-B29-4	32	104	44	32	4
90PP-40-44-32-B29-5	40	104	44	32	5

### MULTI-TOOTH MILLING CUTTERS (DIN1835-B / WELDON)



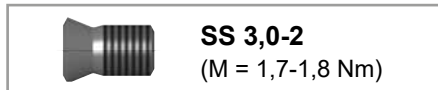
Order-No.	D	SL	N	L	d <sub>h6</sub>	Z <sub>eff.</sub>	ZZ
VZF-25-44-25-B29-2	25	45	63	120	25	2	12
VZF-28-44-25-B29-2	28	45	63	120	25	2	12
VZF-32-44-25-B29-2	32	45	63	120	25	2	12
VZF-32-44-32-B29-2	32	45	59	120	32	2	12
VZF-40-44-32-B29-3	40	45	59	120	32	3	18

## THE INSERTS FOR 90° STEP MILLS AND MUTLI-TOOTH MILLING CUTTERS

			<b>HC45</b> (code 41) 	<b>HC30</b> (code 52) 	<b>HC35</b> (code 50) 	<b>XC35</b> (code 46) 	<b>HC20</b> (code 53) 	<b>K15M</b> (code 8) 	
	<b>JMB29-T08PR06</b> IK 8,0x4,0 R0,6 + chamfer 	Order-No	<b>B29A-TZ41</b>	<b>B29A-YL52</b>			<b>B29A-WA53</b>		
	$f_z$ [mm]	0,15 (0,05-0,25)	0,15 (0,05-0,25)				0,15 (0,05-0,25)		
	<b>JMB29-T08GR06</b> IK 8,0x4,0 R0,6 	Order-No	<b>B29B-AX41</b>		<b>B29B-SM50</b>	<b>B29B-KZ46</b>	<b>B29B-YU53</b>		
	$f_z$ [mm]	0,15 (0,05-0,25)		0,15 (0,05-0,25)	0,15 (0,05-0,25)	0,15 (0,05-0,25)			
	<b>JMB29-T08GR02</b> IK 8,0x4,0 R0,2 	Order-No						<b>B29B-RW08</b>	
	$f_z$ [mm]							0,20 (0,15-0,25)	
			20	20	20	20	20	20	

Key to symbols see catalogue page XV-39

## SPARE PARTS

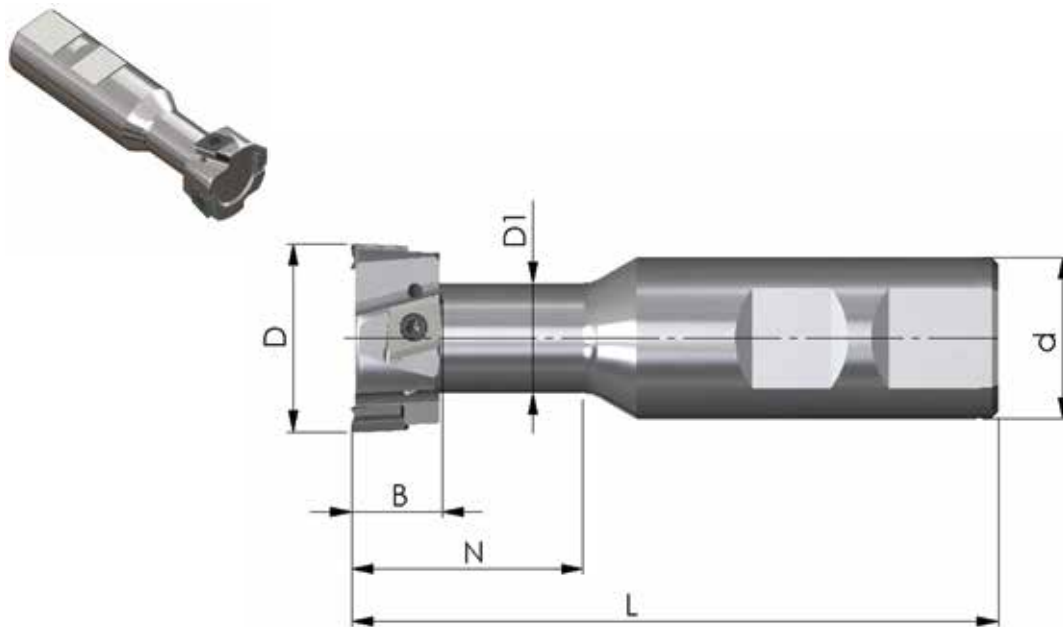




## TECHNICAL DATA - T-SLOT MILLING CUTTERS MADE TO DIN650

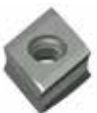








### T-SLOT MILLING CUTTERS (DIN 1835-B WELDON)



Order-No	D	D1	B	L	N	d	Z	ZZ
90TN-32-14-B29-2	32	17	14,0	100	35	25	2	4

### INSERTS FOR T-SLOT MILLING CUTTERS

			HC45 (code 41)	XC35 (code 46)	HC20 (code 53)				
	<b>JMB29-T08GRR06</b> IK 8,0x4,0 R0,6	Order-No.	<b>B29B-SO41</b>	<b>B29B-XY46</b>	<b>B29B-TN53</b>				
		$f_z$ [mm]	0,15 (0,05-0,25)	0,15 (0,05-0,25)	0,15 (0,05-0,25)				
	<b>JMB29-T08GR06</b> IK 8,0x4,0 R0,6	Order-No.	<b>B29B-AX41</b>	<b>B29B-KZ46</b>	<b>B29B-YU53</b>				
		$f_z$ [mm]	0,15 (0,05-0,25)	0,15 (0,05-0,25)	0,15 (0,05-0,25)				
			20	20	20				

Key to symbols see catalogue page XV-39

Please note the assembly instructions for the inserts on page 12!

### SPARE PARTS

	<b>SS 3,0-2</b> (M = 1,7-1,8 Nm)		<b>T 09</b>		<b>100g</b>
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## PARAMETERS STEP MILLING + FACE MILLING

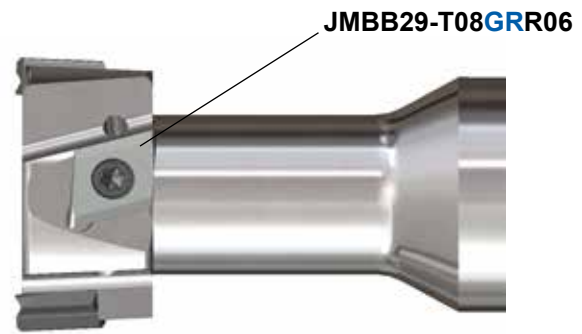
Material	Hardness	Quality	Depth of cut	
			$a_e$ [mm]	
P	Structural steel Unalloyed steel	HC45	-0,25D	
			-0,5D	
			-0,75D	
			>0,75D-1D	
	Tool steel Heat-treatable steel Alloyed steel	180-350 HB	HC45	-0,25D
				-0,5D
				-0,75D
				>0,75D-1D
M	Stainless-steel High grade steel High alloyed steel	HC35 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	HC20	-0,25D	
			-0,5D	
			-0,75D	
			>0,75D-1D	
K	Grey cast iron	HC20	-0,25D	
			-0,5D	
			-0,75D	
			>0,75D-1D	
	Globular graphite cast iron	<350 N/mm <sup>2</sup>	HC20 (HC45)	-0,25D
				-0,5D
				-0,75D
				>0,75D-1D
N	Aluminium Non-ferrous metals	K15M	-0,25D	
			-0,5D	
			-0,75D	
			>0,75D-1D	

The above mentioned data are standard values.

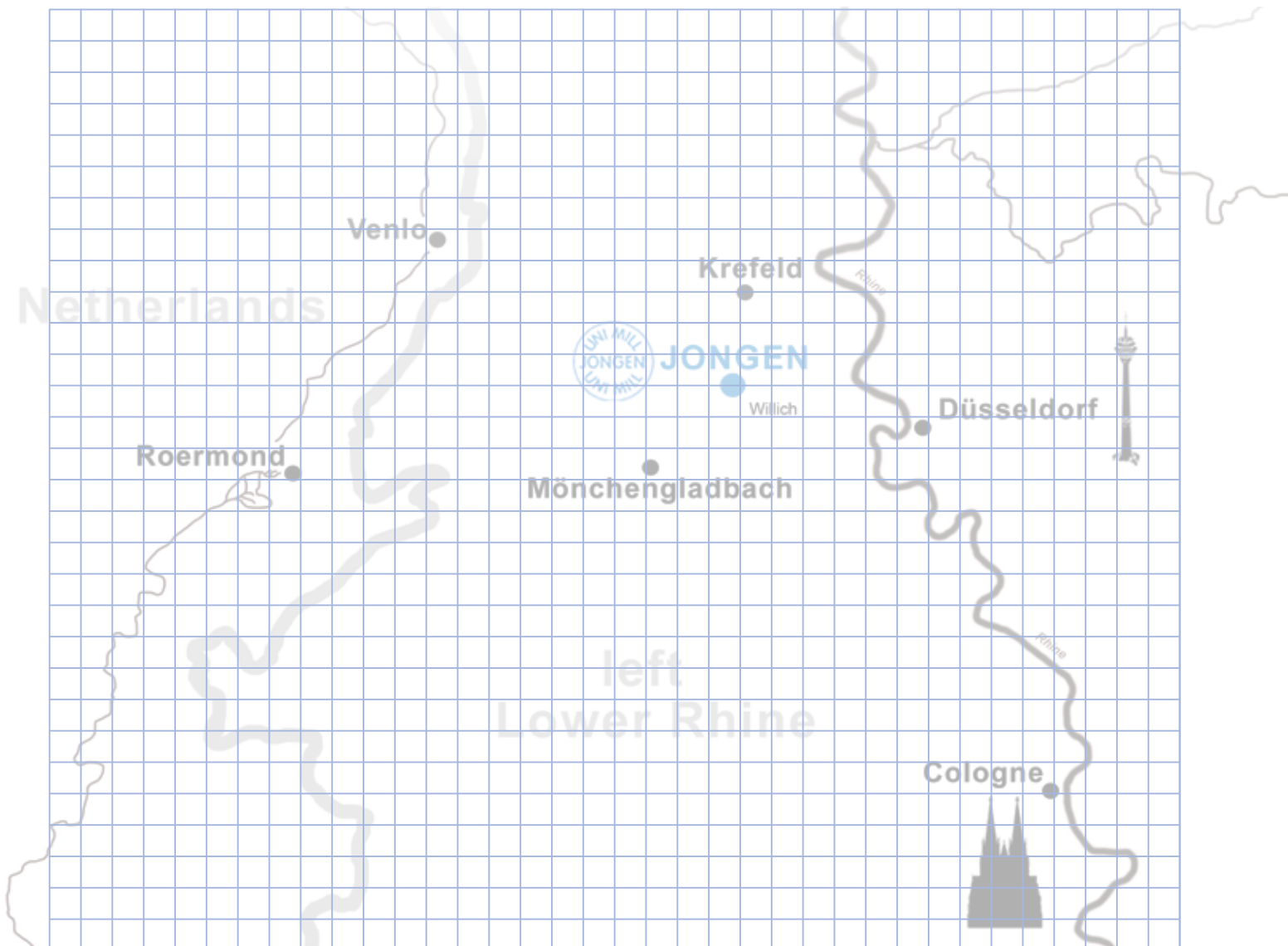
Up and down corrections are possible depending on the machine type, tool and holding fixture.

Cutting speed $v_c$ [m/min.]	Feed rate per tooth $f_z$ [mm]					
	$\varnothing 25-32$		$\varnothing 40+50$		$\varnothing 63+80$	
220 (200-350)	0,24	(0,09-0,29)	0,24	(0,09-0,29)	0,24	(0,09-0,29)
	0,17	(0,12-0,29)	0,17	(0,05-0,22)	0,17	(0,02-0,22)
	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)
200 (160-280)	0,20	(0,09-0,29)	0,20	(0,05-0,25)	0,20	(0,05-0,25)
	0,14	(0,02-0,19)	0,14	(0,02-0,19)	0,14	(0,02-0,19)
	0,12	(0,02-0,17)	0,12	(0,02-0,17)	0,12	(0,02-0,17)
	0,10	(0,02-0,15)	0,10	(0,02-0,15)	0,10	(0,02-0,15)
160 (100-300)	0,20	(0,05-0,25)	0,20	(0,05-0,25)	0,20	(0,05-0,25)
	0,14	(0,02-0,19)	0,14	(0,02-0,19)	0,14	(0,04-0,19)
	0,12	(0,02-0,17)	0,12	(0,02-0,17)	0,12	(0,02-0,17)
	0,10	(0,02-0,15)	0,10	(0,02-0,15)	0,10	(0,05-0,15)
60 (40-200)	0,20	(0,05-0,25)	0,20	(0,05-0,25)	0,20	(0,10-0,25)
	0,14	(0,02-0,19)	0,14	(0,02-0,19)	0,14	(0,04-0,19)
	0,12	(0,02-0,17)	0,12	(0,02-0,17)	0,12	(0,02-0,17)
	0,10	(0,02-0,15)	0,10	(0,02-0,15)	0,10	(0,00-0,15)
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	(0,04-0,11)	0,06	(0,04-0,11)	0,06	(0,04-0,11)
	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)
	0,21	(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)
200 (130-280)	0,20	(0,05-0,25)	0,20	(0,05-0,25)	0,20	(0,05-0,25)
	0,14	(0,02-0,19)	0,14	(0,02-0,19)	0,14	(0,06-0,19)
	0,12	(0,02-0,17)	0,12	(0,02-0,17)	0,12	(0,04-0,17)
	0,10	(0,02-0,15)	0,10	(0,02-0,15)	0,10	(0,02-0,15)
500 (500-1000)	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	(0,00-0,20)

## ASSEMBLY INSTRUCTIONS T-SLOT MILLING CUTTERS



### NOTES



01/21

### Jongen Werkzeugtechnik GmbH

Siemensring 11 · 47877 Willich · Germany  
Phone: +49 2154 9285 2900 · Fax: +49 2154 9285 9 2900  
International FreePhone: 00800 85 285 285  
www.jongen.de · email: export@jongen.de

Errors and omissions excepted!