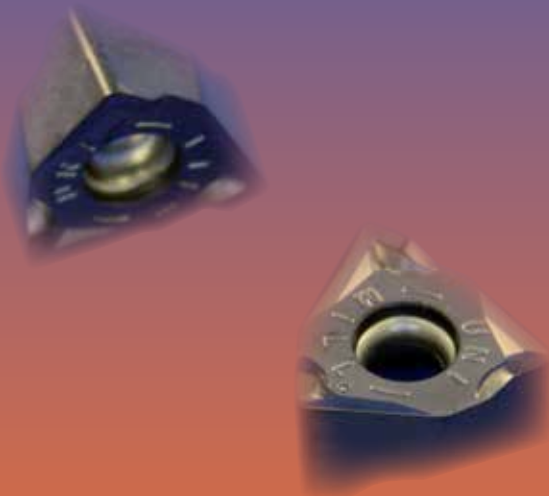




STEP MILLING

FP 853



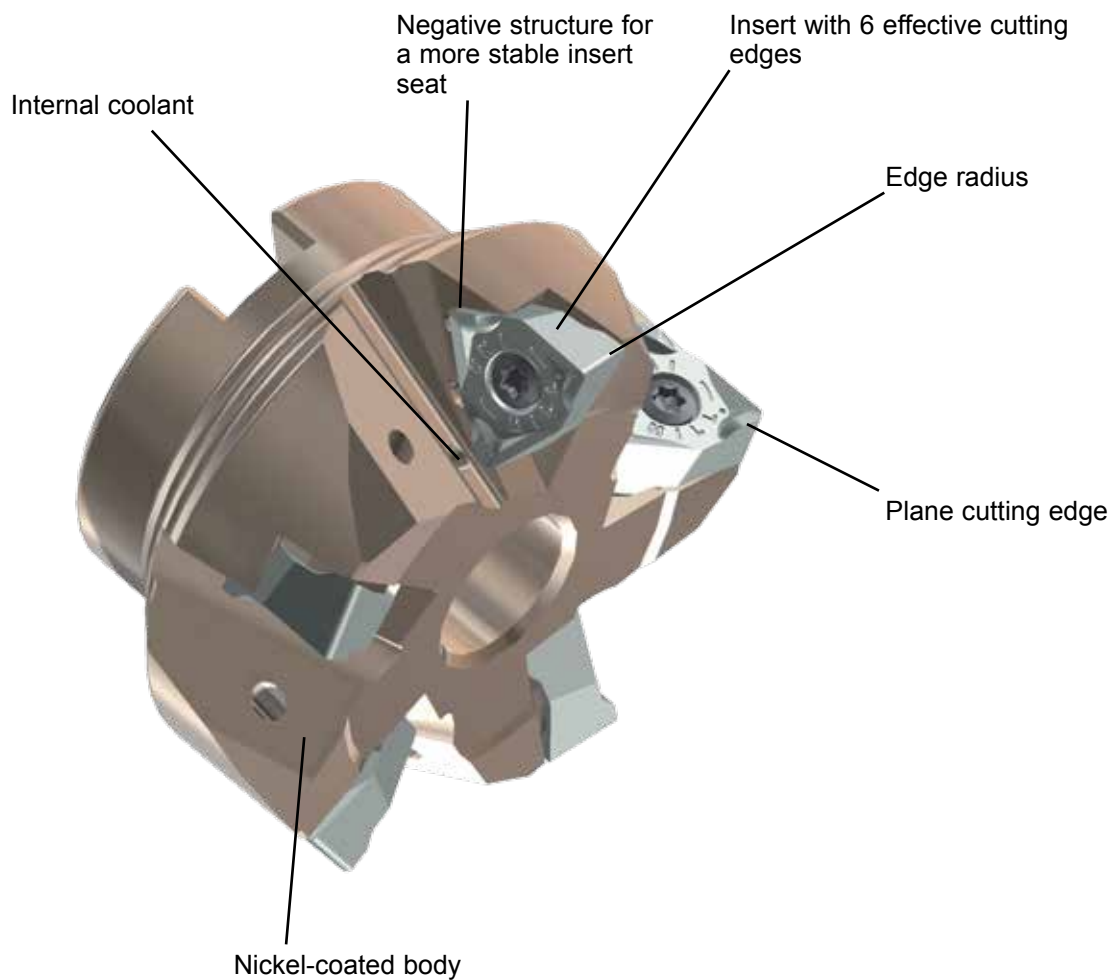
Jongen Werkzeugtechnik GmbH

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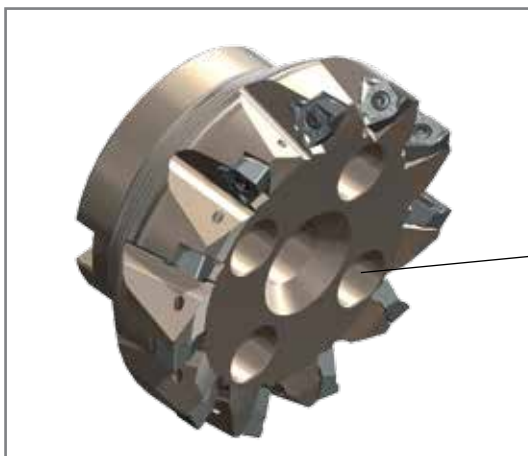
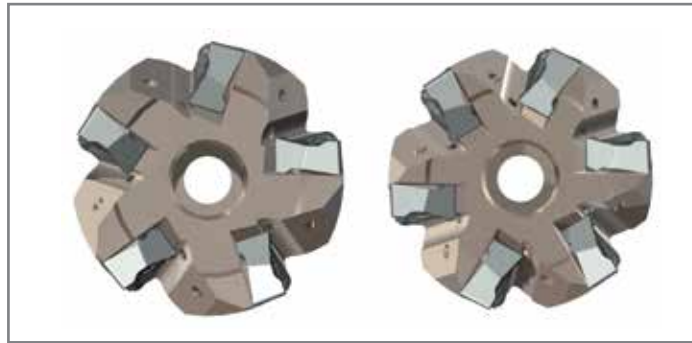
THE TOOL

- ☞ Especially efficient step milling cutter for processing roughing and finishing operations
- ☞ Axial depth of cut up to 7 mm possible
- ☞ Tools are made of high-strength and additionally hardened tool steel in order to resist highest charges
- ☞ Thanks to the nickel-coated surfaces of the tools, a higher resistance can be obtained against reweldings and corrosion.



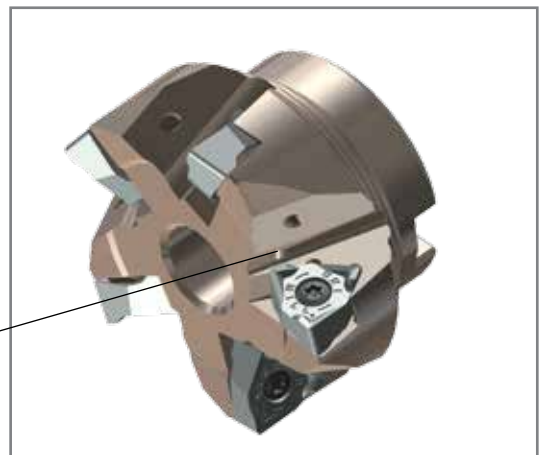
CHARACTERISTICS

- ☞ Step milling cutter designed for steel, stainless steel and cast iron processing
- ☞ This new step milling generation impresses thanks to the number of teeth and the soft cutting manner, as a result of the effectively positive rake angle
- ☞ The ground insert offers high precision and surface quality
- ☞ Thanks to positive/negative entangled clearance angles on the insert's circumference, an optimal and almost vibration-free insert seat is granted
- ☞ A variety of different teeth numbers allow an optimal choice for routine machining processes



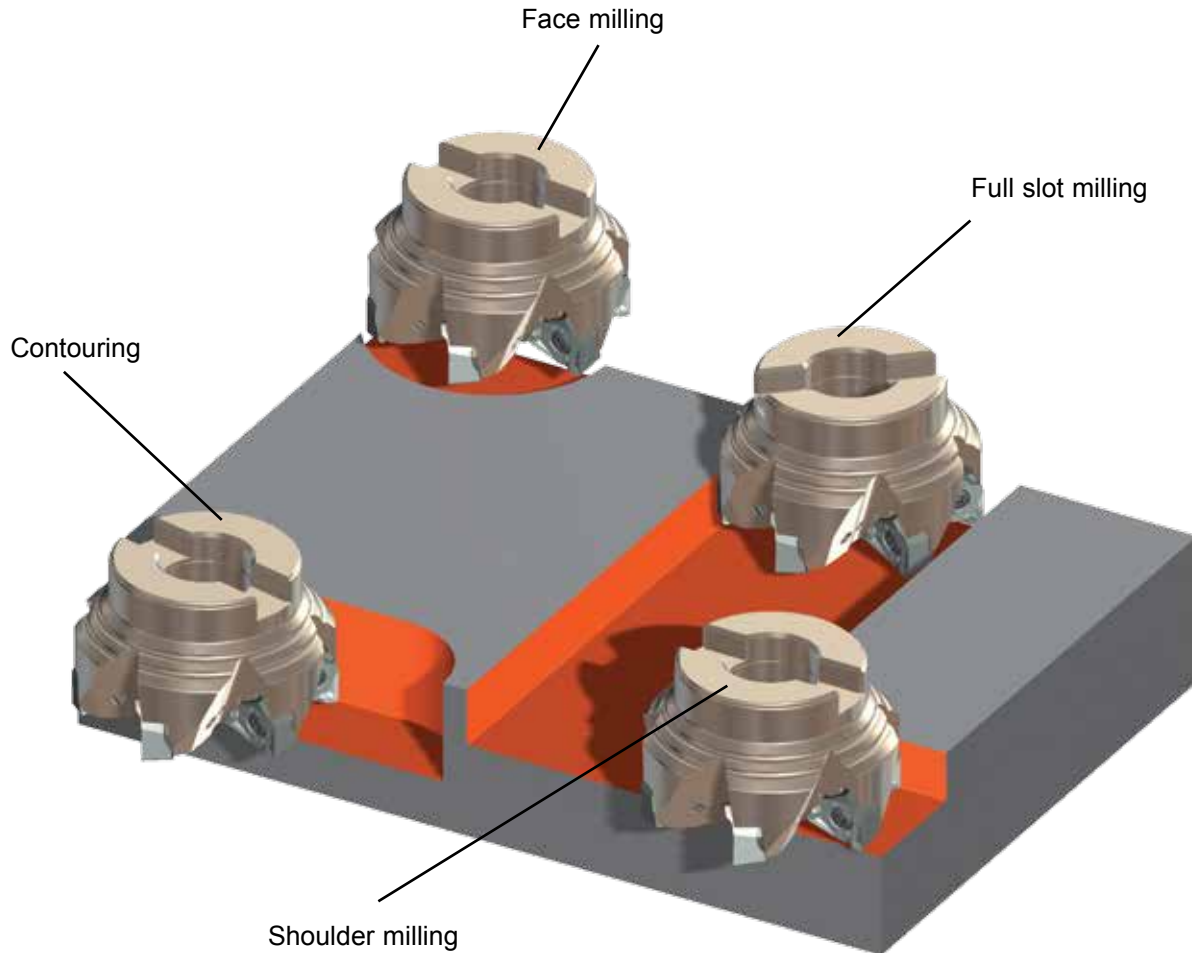
- ☞ Holders are made to DIN 8030. Starting from $\varnothing 125$ the tools are equipped with supplementary boreholes for the corresponding tool holder

supplementary boreholes from $\varnothing 125$



- ☞ Step mills from $\varnothing 50 - 100$ include internal coolant passages

APPLICATION AREAS



THE INSERT



FP 853

Precision ground insert, with chip breaker and plane chamfer, chamfered and rounded cutting edge.



FP 753

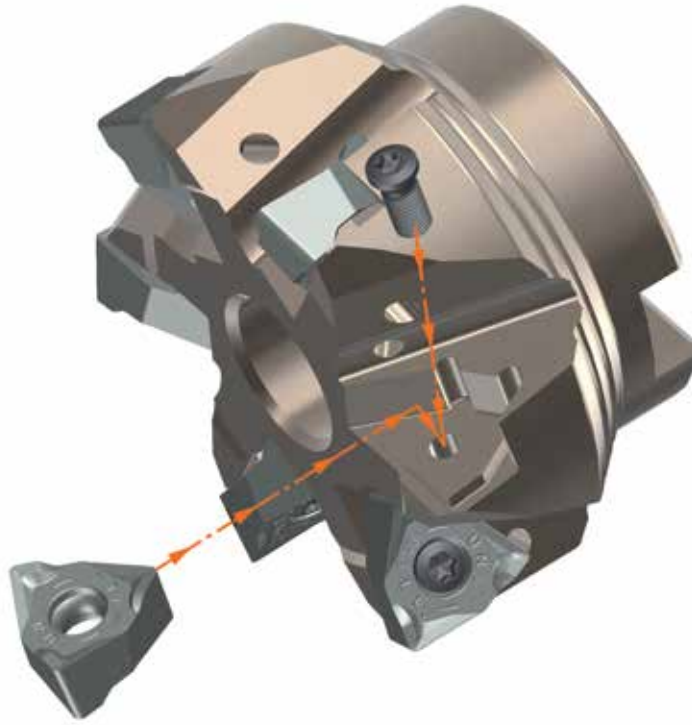
Precision sintered insert, with chip breaker and plane chamfer, chamfered and rounded cutting edge.

Due to the manufacturing process a parallelism error up to 0,05 mm is possible

☞ Precision ground, with 6 effective cutting edges, highly positive chip breaker, axial depth of cut max. 7 mm

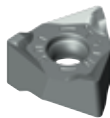
☞ Application areas: all kind of steels and high-grade steels, hard-to-machine materials as well as cast iron materials.

Inserts' fitting



Following carbide qualities are offered:

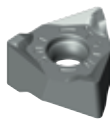
HT45



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 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 raphite cast iron etc.

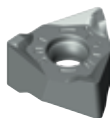
HT32



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.

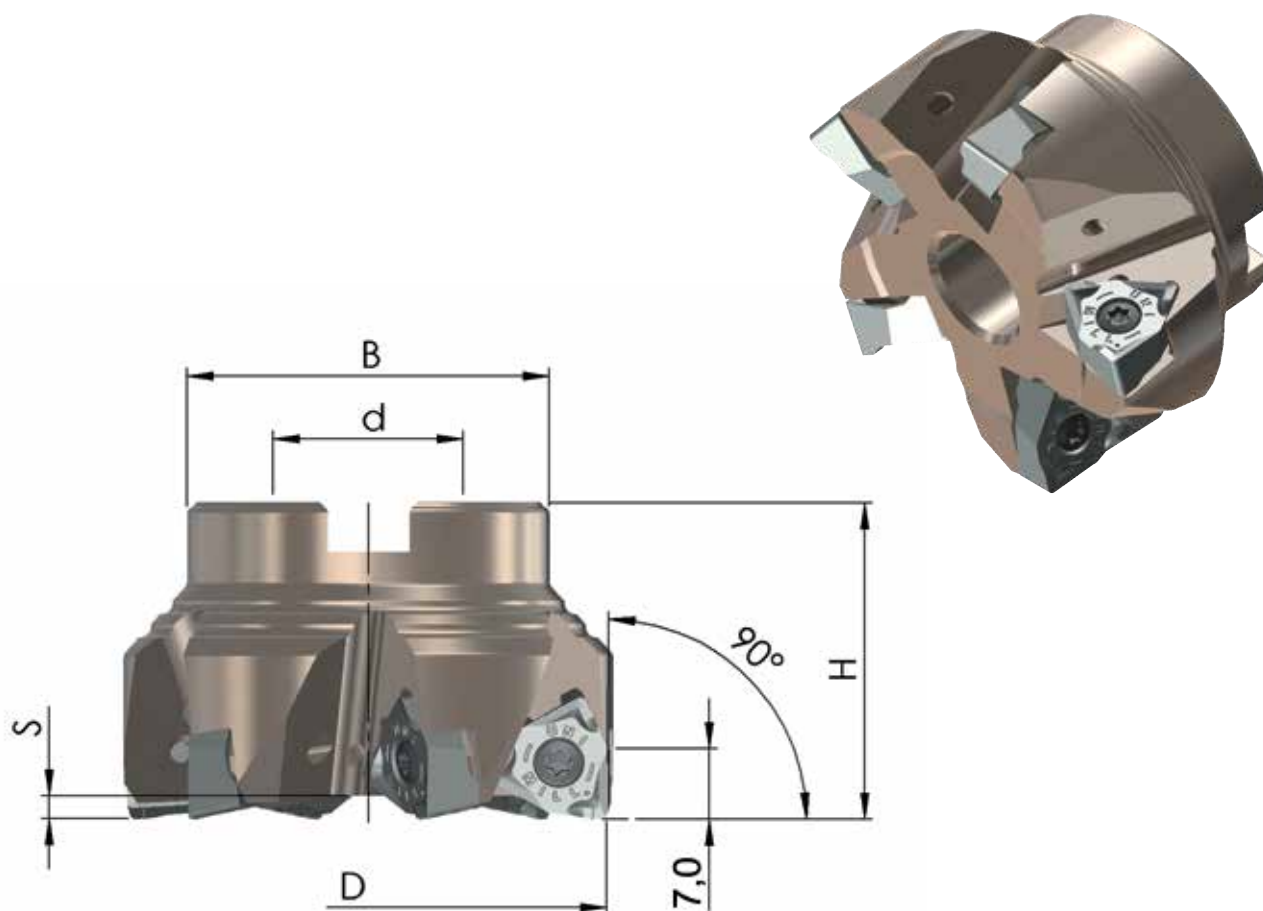
HT20



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.





TECHNICAL DATA



Order No.	D	H	d	B	S	Z	MS
90PP-050-853-4	50	40	22	46	2,75	4	MS 10x25-912
90PP-063-853-5	63	40	22	46	2,75	5	MS 10x25-912
90PP-080-853-6	80	50	27	58	5,75	6	MS 12x35-912
90PP-100-853-7	100	50	32	78	3,75	7	MS 16x35-6912
90PP-125-853-9	125	63	40	90	3,75	9	MS 20x55-7991
90PP-160-853-11	160	63	40	90	3,75	11	MS 20x55-7991
Close tooth pitch							
90PP-050-853-5	50	40	22	46	2,75	5	MS 10x25-912
90PP-063-853-6	63	40	22	46	2,75	6	MS 10x25-912
90PP-080-853-7	80	50	27	58	5,75	7	MS 12x35-912
90PP-100-853-9	100	50	32	78	3,75	9	MS 16x35-6912
90PP-125-853-11	125	63	40	90	3,75	11	MS 20x55-7991
90PP-160-853-13	160	63	40	90	3,75	13	MS 20x55-7991




MS= Central screw

Inserts

 IK $\varnothing 12,9 \times 7,8 R0,8$	FP 853 (B22)	HT45 HT32 HT20		Precision ground with chip braker and plane chamfer, chamfered and rounded cutting edge
 IK $\varnothing 12,9 \times 7,8 R0,8$	FP 753 (B22)	HT45 HT32 HT20		Precision sintered insert with chip braker and plane chamfer, chamfered and rounded cutting edge >>Parallelism error up to 0,05 mm

Packaging unit: 10 pieces

Spare Parts

	SS 4,0-2	Tightening torque 3,2-3,3 Nm	Fixing screw
	T 15	Screw driver	
	100 g	Heavy duty grease	

PARAMETERS STEP MILLING

Errors and omissions excepted.

Material	Hardness	Quality	Depth of cut [mm]		Cutting speed v _c [m/min.]	ø50	ø63	ø80	ø100	ø125	ø160
			a _e	a _p max.		f _z [mm]	f _z [mm]	f _z [mm]	f _z [mm]	f _z [mm]	f _z [mm]
P	Structural steel, Unalloyed steel	HT45 (HT32)	-0,25 D	-8,0	250 (200-350)	0,22 (0,16-0,26)	0,24 (0,20-0,28)	0,27 (0,23-0,31)	0,27 (0,23-0,31)	0,27 (0,23-0,31)	0,27 (0,23-0,31)
			-0,50 D	-8,0		0,18 (0,14-0,22)	0,20 (0,16-0,24)	0,23 (0,19-0,27)	0,23 (0,19-0,27)	0,23 (0,19-0,27)	0,23 (0,19-0,27)
	Tool steel, Heat-treatable steel, Alloyed steel	HT45 (HT32)	-0,75 D	-8,0	220 (160-280)	0,15 (0,11-0,19)	0,16 (0,12-0,20)	0,18 (0,14-0,22)	0,18 (0,14-0,22)	0,18 (0,14-0,22)	0,18 (0,14-0,22)
			>0,75 D - 1 D	-8,0		0,13 (0,09-0,17)	0,14 (0,10-0,18)	0,16 (0,12-0,20)	0,16 (0,12-0,20)	0,16 (0,12-0,20)	0,16 (0,12-0,20)
	Heat-treated Alloyed steel	HT45 (HT32)	-0,25 D	-8,0	220 (160-280)	0,20 (0,16-0,24)	0,22 (0,18-0,26)	0,24 (0,20-0,28)	0,24 (0,20-0,28)	0,24 (0,20-0,28)	0,24 (0,20-0,28)
			-0,50 D	-8,0		0,17 (0,13-0,22)	0,18 (0,14-0,22)	0,20 (0,16-0,24)	0,20 (0,16-0,24)	0,20 (0,16-0,24)	0,20 (0,16-0,24)
	Alloyed steel	HT45 (HT32)	-0,75 D	-8,0	220 (160-280)	0,14 (0,10-0,18)	0,15 (0,11-0,19)	0,16 (0,12-0,20)	0,16 (0,12-0,20)	0,16 (0,12-0,20)	0,16 (0,12-0,20)
			>0,75 D - 1 D	-8,0		0,12 (0,08-0,16)	0,13 (0,09-0,17)	0,14 (0,10-0,18)	0,14 (0,10-0,18)	0,14 (0,10-0,18)	0,14 (0,10-0,18)
M	Stainless-steel, High grade steel, High alloyed steel	HT32 (HT45)	-0,25 D	-8,0	240 (140-300)	0,20 (0,16-0,24)	0,22 (0,18-0,26)	0,24 (0,20-0,28)	0,24 (0,20-0,28)	0,24 (0,20-0,28)	0,24 (0,20-0,28)
			-0,50 D	-8,0		0,17 (0,13-0,22)	0,18 (0,14-0,22)	0,20 (0,16-0,24)	0,20 (0,16-0,24)	0,20 (0,16-0,24)	0,20 (0,16-0,24)
	High alloyed steel	HT45 (HT45)	-0,75 D	-8,0	240 (140-300)	0,14 (0,10-0,18)	0,15 (0,11-0,19)	0,16 (0,12-0,20)	0,16 (0,12-0,20)	0,16 (0,12-0,20)	0,16 (0,12-0,20)
			>0,75 D - 1 D	-8,0		0,12 (0,08-0,16)	0,13 (0,09-0,17)	0,14 (0,10-0,18)	0,14 (0,10-0,18)	0,14 (0,10-0,18)	0,14 (0,10-0,18)
S	Heat-resistant super alloys, Titan alloys	HT32 (HT45)	-0,25 D	-8,0	60 (40-200)	0,20 (0,16-0,22)	0,22 (0,18-0,26)	0,20 (0,16-0,24)	0,20 (0,16-0,24)	0,20 (0,16-0,24)	0,20 (0,16-0,24)
			-0,50 D	-8,0		0,17 (0,13-0,22)	0,18 (0,14-0,22)	0,17 (0,13-0,21)	0,17 (0,13-0,21)	0,17 (0,13-0,21)	0,17 (0,13-0,21)
	Titan alloys	HT45 (HT45)	-0,75 D	-8,0	60 (40-200)	0,14 (0,10-0,18)	0,15 (0,11-0,19)	0,14 (0,10-0,18)	0,14 (0,10-0,18)	0,14 (0,10-0,18)	0,14 (0,10-0,18)
			>0,75 D - 1 D	-8,0		0,12 (0,08-0,16)	0,13 (0,09-0,17)	0,12 (0,08-0,16)	0,12 (0,08-0,16)	0,12 (0,08-0,16)	0,12 (0,08-0,16)
K	Grey cast iron	HT20	-0,25 D	-8,0	250 (180-350)	0,29 (0,25-0,33)	0,30 (0,26-0,34)	0,32 (0,28-0,36)	0,32 (0,28-0,36)	0,32 (0,28-0,36)	0,32 (0,28-0,36)
			-0,50 D	-8,0		0,25 (0,21-0,29)	0,27 (0,23-0,31)	0,28 (0,24-0,32)	0,28 (0,24-0,32)	0,28 (0,24-0,32)	0,28 (0,24-0,32)
	Grey cast iron	HT20	-0,75 D	-8,0	250 (180-350)	0,21 (0,17-0,25)	0,22 (0,18-0,26)	0,23 (0,19-0,27)	0,23 (0,19-0,27)	0,23 (0,19-0,27)	0,23 (0,19-0,27)
			>0,75 D - 1 D	-8,0		0,18 (0,14-0,22)	0,19 (0,15-0,23)	0,20 (0,16-0,24)	0,20 (0,16-0,24)	0,20 (0,16-0,24)	0,20 (0,16-0,24)
	Grey cast iron	HT20 (HT45)	-0,25 D	-8,0	200 (130-280)	0,20 (0,16-0,24)	0,24 (0,20-0,28)	0,26 (0,22-0,30)	0,26 (0,22-0,30)	0,26 (0,22-0,30)	0,26 (0,22-0,30)
			-0,50 D	-8,0		0,17 (0,13-0,21)	0,20 (0,16-0,24)	0,21 (0,17-0,25)	0,21 (0,17-0,25)	0,21 (0,17-0,25)	0,21 (0,17-0,25)
	Cast iron	HT45 (HT45)	-0,75 D	-8,0	200 (130-280)	0,14 (0,10-0,18)	0,16 (0,12-0,20)	0,17 (0,13-0,21)	0,17 (0,13-0,21)	0,17 (0,13-0,21)	0,17 (0,13-0,21)
			>0,75 D - 1 D	-8,0		0,12 (0,08-0,16)	0,14 (0,10-0,18)	0,15 (0,11-0,19)	0,15 (0,11-0,19)	0,15 (0,11-0,19)	0,15 (0,11-0,19)

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