

# GÜHRING

## GROOVING SYSTEMS



**INNOVATION**

SYSTEM  
**222**

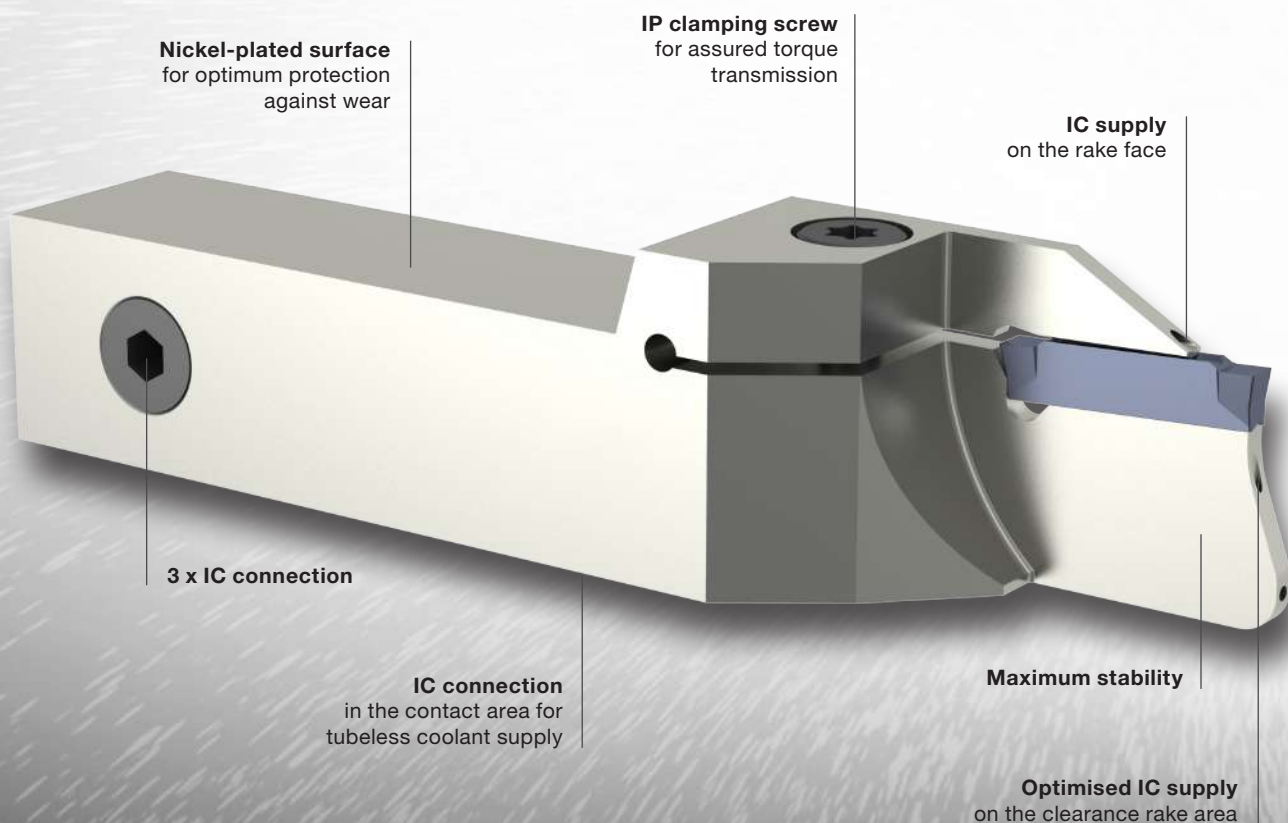
## NEW SYSTEM

2 CUTTING EDGES | 22 MM LENGTH | FOR GROOVING AND PARTING OFF

With System 222, Gühring continues in the pursuit of completing its range of turning and grooving tools. With the so-called pressed-to-size inserts, the chip former and cutting geometry are pressed in directly - for particularly high process reliability. The first step is the groove width of 3 mm. Chip formers and geometry are suitable for general applications in steel materials. We also offer an extensive range of tool holders with and without internal cooling.

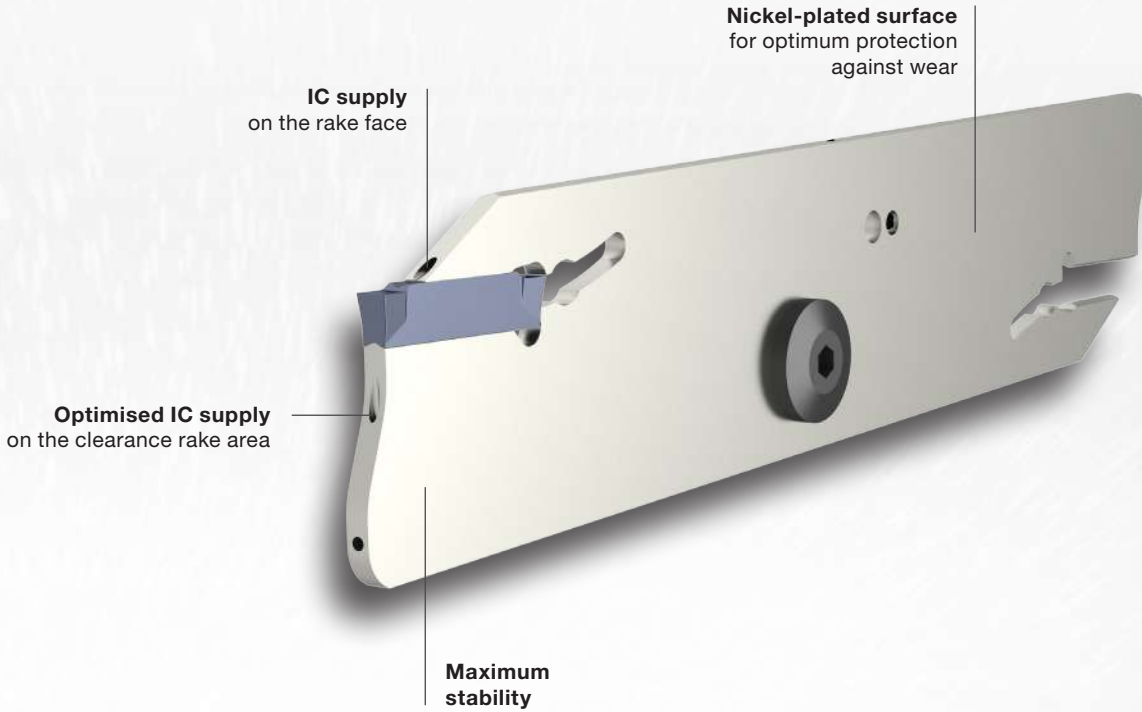
## TOOL HOLDER,

WITH AND WITHOUT INTERNAL COOLANT SUPPLY



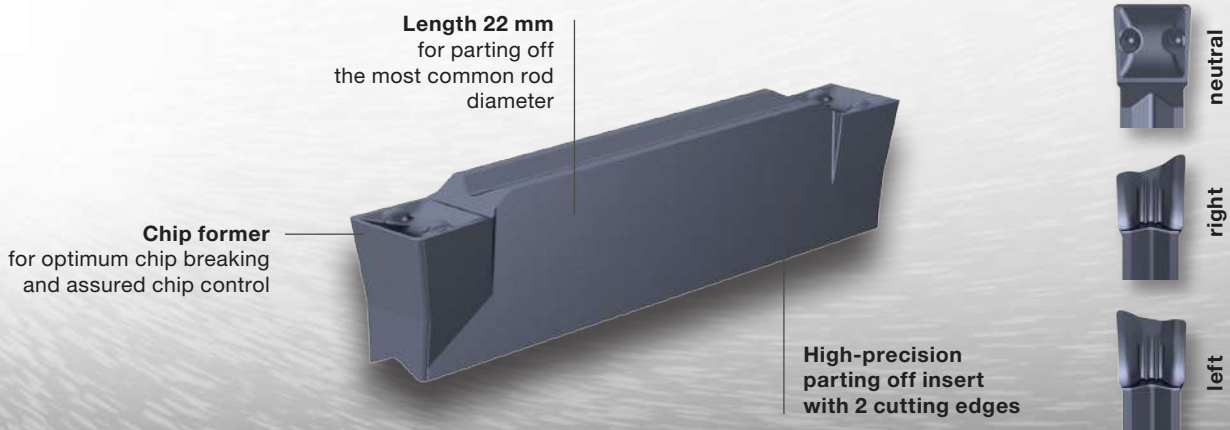
## PARTING OFF BLADE,

WITH AND WITHOUT INTERNAL COOLANT SUPPLY



## INDEXABLE INSERT,

VERSION NEUTRAL, RIGHT, LEFT



# NEW SYSTEM

2 cutting edges | 22 mm length | for grooving and parting off

Explanation of the article description

### System description

2 usable cutting edges  
22 mm length

### Article description Tool holder

Tool description: Example: GH222.2020.109.00.03.R.IK.52

- System 222
- Shank size
- Total length
- Insert position
- Size
- Version R/L
- IC
- D max

### Article description Parting off blade

Tool description: Example: GS222.0032.147.03.02.N.IK

- System 222
- Height
- Total length
- Size
- No. of insert seats
- Version neutral
- IC

When ordering please always state the  
**Article No. and the Code No. i.e.:**  
 Article GZ222.0300.020.PM.01.R.08,  
 FIRE-coated = **26602 22.030**

## Ordering example

Indexable inserts for parting off 

### Indexable inserts for parting off




- with chip-former

for tool holders type GH222/GS222 see from page 6

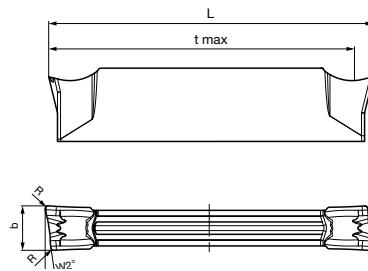
**GÜHRING** NAVIGATOR  
 Cutting data page 14

Tool material **Solid carbide**

Type GZ222

Surface 

FIRE



Right hand version shown  
 Left hand version mirror image



Article no. **26602**

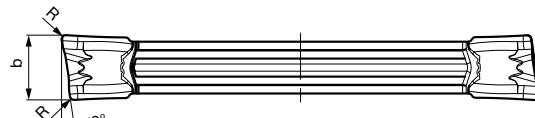
Version right

Article no.

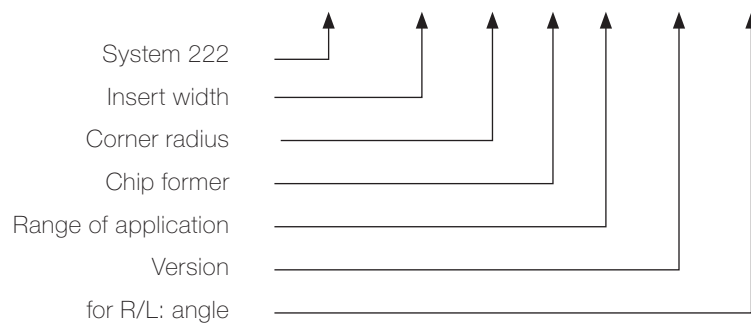
Code no.	Description	t max mm	b ±0.025 mm	L ±0.1 mm	R mm	W2 °
22.030	GZ222.0300.020.PM.01.R.08	21.00	3.00	22.00	0.20	8

Code no.

## Article description Indexable insert



Tool description: Example: GZ222.0300.020.PM.01.N/R/L.08

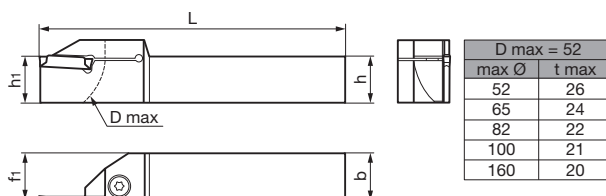


**Square shank holders straight, external machining, without IC**

- tmax: maximum grooving depth before 2nd cutting edge engages
- without internal coolant supply

Type GH222

for indexable inserts type 222 see from page 10



Right hand version shown  
Left hand version mirror image

Article no. **26100**  
Version right

Code no.	Description	t max	h	b	L	h1	f1	D max	Size
		mm	mm	mm	mm	mm	mm	mm	
22.020	GH222.1212.125.00.03.R.00.34	21.00	12.00	12.00	125.00	12.00	10.50	34.00	03
22.030	GH222.0500.500.00.03.R.00.34	21.00	12.70	12.70	127.00	12.70	11.20	34.00	03
22.040	GH222.0625.500.00.03.R.00.45	21.00	15.87	15.87	127.00	15.87	14.37	45.00	03
22.050	GH222.1616.125.00.03.R.00.45	21.00	16.00	16.00	125.00	16.00	14.50	45.00	03
22.060	GH222.0750.500.00.03.R.00.52	21.00	19.05	19.05	127.00	19.05	19.05	52.00	03
22.070	GH222.2020.125.00.03.R.00.52	21.00	20.00	20.00	125.00	20.00	20.00	52.00	03
22.080	GH222.2525.150.00.03.R.00.52	21.00	25.00	25.00	150.00	25.00	25.00	52.00	03
22.090	GH222.1000.600.00.03.R.00.52	21.00	25.40	25.40	152.40	25.40	25.40	52.00	03

Article no. **26101**  
Version left

Code no.	Description	t max	h	b	L	h1	f1	D max	Size
		mm	mm	mm	mm	mm	mm	mm	
22.020	GH222.1212.125.00.03.L.00.34	21.00	12.00	12.00	125.00	12.00	10.50	34.00	03
22.030	GH222.0500.500.00.03.L.00.34	21.00	12.70	12.70	127.00	12.70	11.20	34.00	03
22.040	GH222.0625.500.00.03.L.00.45	21.00	15.87	15.87	127.00	15.87	14.37	45.00	03
22.050	GH222.1616.125.00.03.L.00.45	21.00	16.00	16.00	125.00	16.00	14.50	45.00	03
22.060	GH222.0750.500.00.03.L.00.52	21.00	19.05	19.05	127.00	19.05	19.05	52.00	03
22.070	GH222.2020.125.00.03.L.00.52	21.00	20.00	20.00	125.00	20.00	20.00	52.00	03
22.080	GH222.2525.150.00.03.L.00.52	21.00	25.00	25.00	150.00	25.00	25.00	52.00	03
22.090	GH222.1000.600.00.03.L.00.52	21.00	25.40	25.40	152.40	25.40	25.40	52.00	03

**Spare parts**

Article no.	Clamping screw	Tightening torque	Description
25906		Nm	
4.000	M4x15.5x15IP	3.5	GH222.1212....; GH222.0500....; GH222.0625....; GH222.1616....

Article no.	Clamping screw	Tightening torque	Description
25907		Nm	
5.000	M5x18x25IP	6	GH222.0750....; GH222.2020....; GH222.2525....; GH222.1000....

Article no.	Torx-Plus wrench
25904	
Code 15.001	T15IP

Article no.	Torx-Plus wrench
25922	
Code 15.000	T25IP

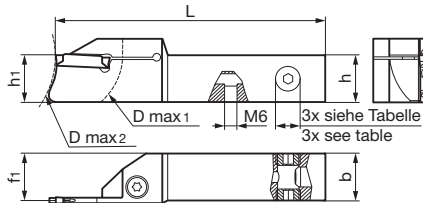


**Square shank holders straight, external machining, with IC**

- **t<sub>max</sub>**: maximum grooving depth before 2nd cutting edge engages
- with internal coolant supply from above and below
- TL (tubeless): tubeless coolant supply from location face from shank size 19.05x19.05

Type **GH222**

for indexable inserts type 222 see from page 10



□	⊙
12/12	M8x1
12,7/12,7	M8x1
15,87/15,87	G1/8
16/16	G1/8
19,05/19,05	G1/8
20/20	G1/8
25/25	G1/8
25,4/25,4	G1/8

D max 1 = 52	
max Ø	t max
52	26
65	24
82	22
100	21
120	20



Right hand version shown  
Left hand version mirror image

Article no. **26102**

Version **right**

Code no.	Description	t max	h	b	L	h1	f1	TL	D max1	D max2	Size
		mm	mm	mm	mm	mm	mm		mm	mm	
22.020	GH222.1212.125.00.03.R.IK.34	21.00	12.00	12.00	125.00	12.00	10.50	-	34.00	65.00	03
22.030	GH222.0500.500.00.03.R.IK.34	21.00	12.70	12.70	127.00	12.70	11.20	-	34.00	65.00	03
22.040	GH222.0625.500.00.03.R.IK.45	21.00	15.87	15.87	127.00	15.87	14.37	-	45.00	82.00	03
22.050	GH222.1616.125.00.03.R.IK.45	21.00	16.00	16.00	125.00	16.00	14.50	-	45.00	82.00	03
22.060	GH222.0750.427.00.03.R.IK.52	21.00	19.05	19.05	108.50	19.05	19.05	M6	52.00	82.00	03
22.070	GH222.2020.109.00.03.R.IK.52	21.00	20.00	20.00	109.00	20.00	20.00	M6	52.00	82.00	03
22.080	GH222.2525.120.00.03.R.IK.52	21.00	25.00	25.00	120.50	25.00	25.00	M6	52.00	120.00	03
22.090	GH222.1000.474.00.03.R.IK.52	21.00	25.40	25.40	120.50	25.40	25.40	M6	52.00	120.00	03

Article no. **26103**

Version **left**

Code no.	Description	t max	h	b	L	h1	f1	TL	D max1	D max2	Size
		mm	mm	mm	mm	mm	mm		mm	mm	
22.020	GH222.1212.125.00.03.L.IK.34	21.00	12.00	12.00	125.00	12.00	10.50	-	34.00	65.00	03
22.030	GH222.0500.500.00.03.L.IK.34	21.00	12.70	12.70	127.00	12.70	11.20	-	34.00	65.00	03
22.040	GH222.0625.500.00.03.L.IK.45	21.00	15.87	15.87	127.00	15.87	14.37	-	45.00	82.00	03
22.050	GH222.1616.125.00.03.L.IK.45	21.00	16.00	16.00	125.00	16.00	14.50	-	45.00	82.00	03
22.060	GH222.0750.427.00.03.L.IK.52	21.00	19.05	19.05	108.50	19.05	19.05	M6	52.00	82.00	03
22.070	GH222.2020.109.00.03.L.IK.52	21.00	20.00	20.00	109.00	20.00	20.00	M6	52.00	82.00	03
22.080	GH222.2525.120.00.03.L.IK.52	21.00	25.00	25.00	120.50	25.00	25.00	M6	52.00	120.00	03
22.090	GH222.1000.474.00.03.L.IK.52	21.00	25.40	25.40	120.50	25.40	25.40	M6	52.00	120.00	03

**Spare parts**

Article no.	Clamping screw	Tightening torque	Description
25906		Nm	
4.000	M4x15.5x15IP	3.5	GH222.1212....; GH222.0500....; GH222.0625....; GH222.1616....

Article no.	Clamping screw	Tightening torque	Description
25907		Nm	
5.000	M5x18x25IP	6	GH222.0750....; GH222.2020....; GH222.2525....; GH222.1000....

Article no.	Torx-Plus wrench
25904	
Code 15.001	T15IP

Article no.	Torx-Plus wrench
25922	
Code 15.000	T25IP

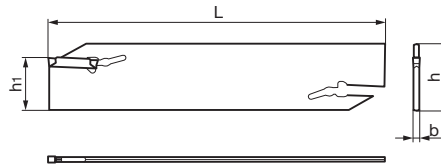


**Parting off blades, without IC**

- without internal coolant supply

Type GS222

for indexable inserts type 222 see from page 10



Article no. **26200**

Version neutral

Code no.	Description	t max	b	h	h1	L	Size
		mm	mm	mm	mm	mm	
22.002	GS222.0026.120.03.02.N	35.00	2.25	26.00	21.40	120.00	03
22.003	GS222.0032.150.03.02.N	45.00	2.25	32.00	25.00	150.00	03

**Spare parts**

Article no.	Mounting key
25921	

Code 15.000



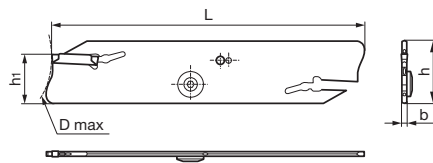


**Parting off blades, with IC**

- with internal coolant supply from above and below

Type GS222

for indexable inserts type 222 see from page 10



Article no. **26201**

Version neutral

Code no.	Description	t max	b	h	h1	L	D max	Size
		mm	mm	mm	mm	mm	mm	
22.002	GS222.0026.118.03.02.N.IK	35.00	2.25	26.00	21.40	118.00	70.00	03
22.003	GS222.0032.147.03.02.N.IK	45.00	2.25	32.00	25.00	147.50	90.00	03

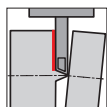
**Spare parts**

Article no.	Mounting key
25921	
Code 15.000	

Article no.	IC locking screw
25909	
Code 4.000	



**Indexable inserts for parting off**



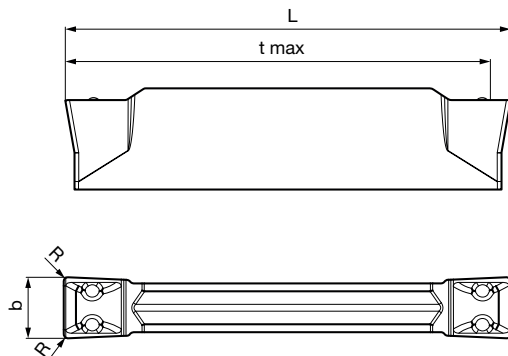
- with chip former

for tool holders type GH222/GS222 see from page 6

**GÜHRING NAVIGATOR**

Cutting data page 14

Tool material	<b>Solid carbide</b>
Type	GZ222
Surface	<b>F</b>
	FIRE



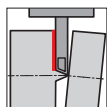
Article no. **26601**

Version neutral

Code no.	Description	t max	b ±0.025	L ±0.1	R	W2
		mm	mm	mm	mm	°
22.030	GZ222.0300.020.PP.02.N	21.00	3.00	22.00	0.20	0



**Indexable inserts for parting off**

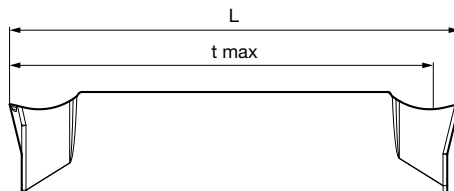


- with chip former

for tool holders type GH222/GS222 see from page 6

**GÜHRING NAVIGATOR**

Cutting data page 14



Right hand version shown  
Left hand version mirror image



Article no. **26602**

Version right

Code no.	Description	t max	b ±0.025	L ±0.1	R	W2
		mm	mm	mm	mm	°
22.030	GZ222.0300.020.PM.01.R.08	21.00	3.00	22.00	0.20	8

Article no. **26603**

Version left

Code no.	Description	t max	b ±0.025	L ±0.1	R	W2
		mm	mm	mm	mm	°
22.030	GZ222.0300.020.PM.01.L.08	21.00	3.00	22.00	0.20	8

**Clamping screw**

- Accessory for tool holders GH222

Article no. **25906**

Size	d1	for shank size <input type="checkbox"/>	Code no.
		mm	
15IP	M4	12/12 – 16/16	4.000

**Clamping screw**

- Accessory for tool holders GH222

Article no. **25907**

Size	d1	for shank size <input type="checkbox"/>	Code no.
		mm	
25IP	M5	19.05/19.05 – 25.4/25.4	5.000

**IC locking screw for tubeless coolant supply (TL)**

- Accessory for tool holders GH222

Article no. **25910**

Size	d1	l1	Code no.
		mm	
SW 3	M6	6.00	6.000

**Set screw**

- Accessory for tool holders GH222 with IC

Article no. **25905**

Size	d1	l1	Code no.
		mm	
SW 4	G1/8	5.00	5.000

**Set screw**

- Accessory for tool holders GH222 with IC

Article no. **25913**

Size	d1	l1	Code no.
		mm	
SW 4	M8 x 1	5.00	8.000



**Torx-Plus wrench**



- Accessory for tool holders GH222



Article no. **25904**

Size	l1	Code no.
	mm	
15IP	65.00	15.001

**Torx-Plus wrench**



- Accessory for tool holders GH222



Article no. **25922**

Size	l1	Code no.
	mm	
25IP	80.00	15.000

**Mounting key**



- Accessory for parting off blades GS222



Article no. **25921**

l1	Code no.
mm	
120.00	15.000

**IC locking screw**



- Accessory for parting off blades GS222



Article no. **25909**

Size	d1	l1	Code no.
		mm	
SW 3	M4	4.60	4.000

**GÜHRING**NAVIGATOR

## System 222

Geometry .PP02	Feed rate f (mm / rev.)	Geometry .PM01	Feed rate f (mm / rev.)	General formulas
	↓ 0.06 - 0.18		↓ 0.04 - 0.10	Cutting speed ( $v_c$ ) $v_c = \frac{d_1 \cdot \pi \cdot n}{1000} \text{ [m/min]}$
				Revolutions per minute (n) $n = \frac{v_c \cdot 1000}{d_1 \cdot \pi} \text{ [U/min]}$
				Feed rate ( $v_f$ ) $v_f = f \cdot n \text{ [mm/min]}$

↓ = radial feed direction

ISO	Material	Material examples/ material number	Tensile strength (N/mm <sup>2</sup> )	Brinell- Hardness (HB)	Cutting speed $v_c$ (m/min)	
					FIRE	
P	Carbon steel	C ≤ 0,15%	11SMn30+C / 1.0715 C15 / 1.0401	500 600	150 180	150-220
		C ≥ 0,15-0,45%	S235JR (ST37-2) / 1.0037 Ck22 / 1.1151	400 600	120 180	
		C > 0,45%	S355JO (St52-3) / 1.0553 C60 / 1.0601	600 900	180 270	
	Low-alloyed steel alloy content ≤ 5%)	annealed	16MnCr5 / 1.7131 18CrNi8 / 1.5920	650 650	200 200	120-170
		heat-treatable	25CrMoV4 / 1.7218 42CrMo4V / 1.7225	900 1100	270 320	90-150
	High-alloyed steel alloy content > 5%)	annealed	X37CrMoV5-1 / 1.2343 X153CrMoV12 / 1.2379	750 850	220 250	130-180
		heat-treatable	55NiCrMoV7 / 1.2714	1200	350	70-120
	Cast steel	un-alloyed, low-alloyed	GS52 / 1.0552	600	180	130-180
		high-alloyed	GX40CrNiSi22-10 / 1.4826	750	220	100-140
	M	Stainless steel	martensitic, ferritic, tempered	X14CrMoS17 / 1.4104 X4CrNiMo16-5-1 / 1.4418	800 1000	240 300
austenitic, Ni > 8%			X5CrNi18-10 / 1.4301 X2CrNiMo17-12-2 / 1.4404	650	200	90-160
austenitic, ferritic (Duplex)			X2CrNiMoCuN25-6-3 / 1.4507 X2CrNiMoN25-7-4 / 1.4410	850	250	70-100

The specified values must be adapted to the machine and machining conditions.

## General machining information

- The use of neutral indexable inserts is always preferable to the use of right-hand or left-hand cutting inserts:
  - better chip control
  - even wear on the cutting edge
  - higher process reliability
  - higher feed rates possible
  - even for parting off a neutral insert is first choice for reduced edge wear
- Reduce feed rate by approx. 40% when using right or left-hand indexable inserts.
- Reduce the feed rate by approx. 50%-60% when the cutting edge reaches 2-3 mm from centre.

# SYSTEM OVERVIEW

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## SYSTEM 104

Micro-precision tools from  $\varnothing$  0.7 mm  
Broaching from  $\varnothing$  1.5 mm



## SYSTEM 106

Micro-precision tools from  $\varnothing$  5 mm  
Broaching from  $\varnothing$  6 mm



## SYSTEM 108

Micro-precision tools from  $\varnothing$  7 mm  
Broaching from  $\varnothing$  9 mm



## SYSTEM 110

Micro-precision tools for special solutions



## SYSTEM 305

Indexable inserts and tool holders  
for grooving and parting off



## SYSTEM 222

New system  
for grooving and parting off



# GÜHRING

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