



HOLLFELDER
 **GÜHRING**
CUTTING TOOLS

Main Catalog 2013

HOLLFELDER-GÜHRING CUTTING TOOLS

Your competent partner in the area of metal chip removal.

At our two company locations in Nuremberg und Zorbau (Germany) we design and manufacture precision tooling for highest quality demands on most modern CNC-turning / milling / grinding and EDM machines.

All activities in our enterprise are based on our corporate quality and environmental policy and aim to contribute to a permanent increase in our customers productivity while observing all applicable legal and governmental regulations.

Additionally we strive to achieve a leading position in our sector with our products and services and to continuously improve this position by means of a high level of quality as well as an adequate environmental policy.

All processes in our enterprise are mainly based on our customers demands and are always supervised by the management team and adapted to the changing general conditions by continuous improvement processes (CIP). In order to achieve our targets we maintain a certificated quality and environmental system according to DIN EN ISO 9001 : 2008 and DIN EN ISO 14001 : 2004.

The perfect composition of highly qualified staff and most modern production methods constitutes the basis for fully developed products on a high quality standard.

The easy handling and the adjustability of our milling cutters are the basis for savings in the area of tool presetting as well as for achieving tight tolerances.

Our standard program constitutes the basis for a huge number of innovative special tooling solutions which get used and appreciated at our customers globally. In many cases it is the customers specific solution which opens up the full potential of our tooling systems and thus contributes to savings and an increase in productivity.

We would be pleased to assist you in selecting the right tooling solution for your specific application and to stay on your side as your competent partner from the start of process planning until the effective use of our tools.

**Call us, we will also meet your requirement
... precise ... flexible ... innovative.
We always appreciate your confidence in us.**



Headquarters Nuremberg



Location Zorbau



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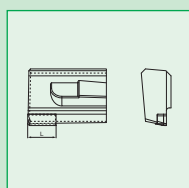
Standard range with maximum number of cutting edges for maximum feed rates

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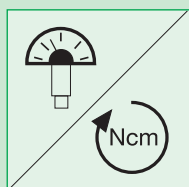
Standard range with a reduced number of cutting edges for lower spindle power

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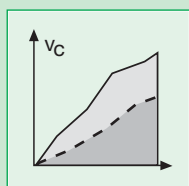
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HPC milling cutters

Features and advantages

THE ULTIMATE EVOLUTION!

Features:

- Extremely high number of cutting edges (i.e. dia. 63 mm → Z = 12; dia. 125 mm → Z = 27)
- Easy to set – precision adjustable cutting edges
- Replaceable PCD inserts and carbide chip guiding elements
- Wear-resistant steelbody, modular design
- PCD cutting inserts are regrindable up to 10 times
- Enclosed chip flute design

Advantages:

- Virtually chip-free components, lower cleaning costs
- Reduced tooling costs per component
- Extremely high feed rates (up to 60,000 mm/min)
- Lower machine investment for new projects
- Tool life improvement by factor 2 to 5
- High productivity and energy efficiency

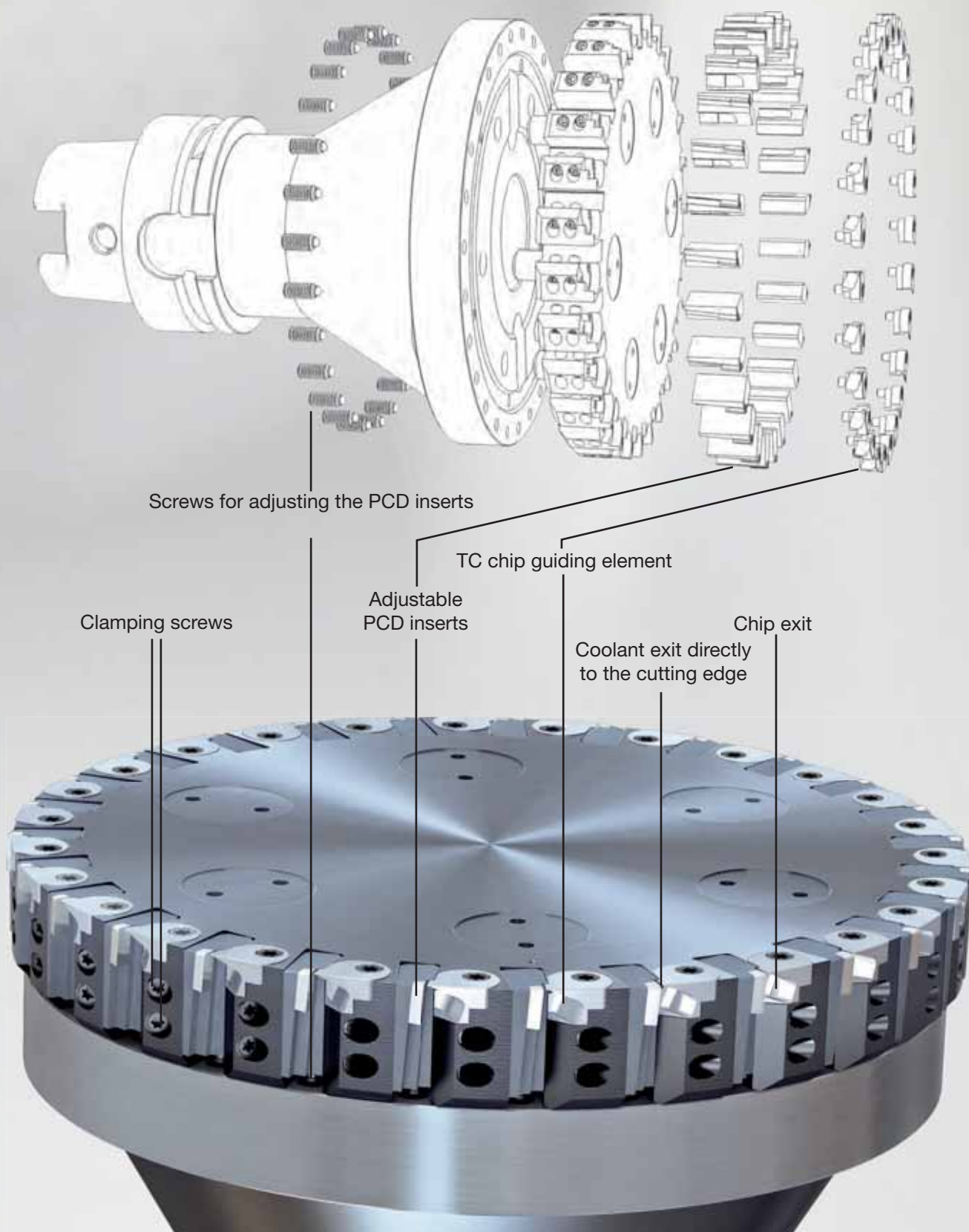
HPC-Fräser - Die Spitze der Evolution!

Schneller, sauberer, effizienter - HPC-Fräser von Hollfelder-Gühring!



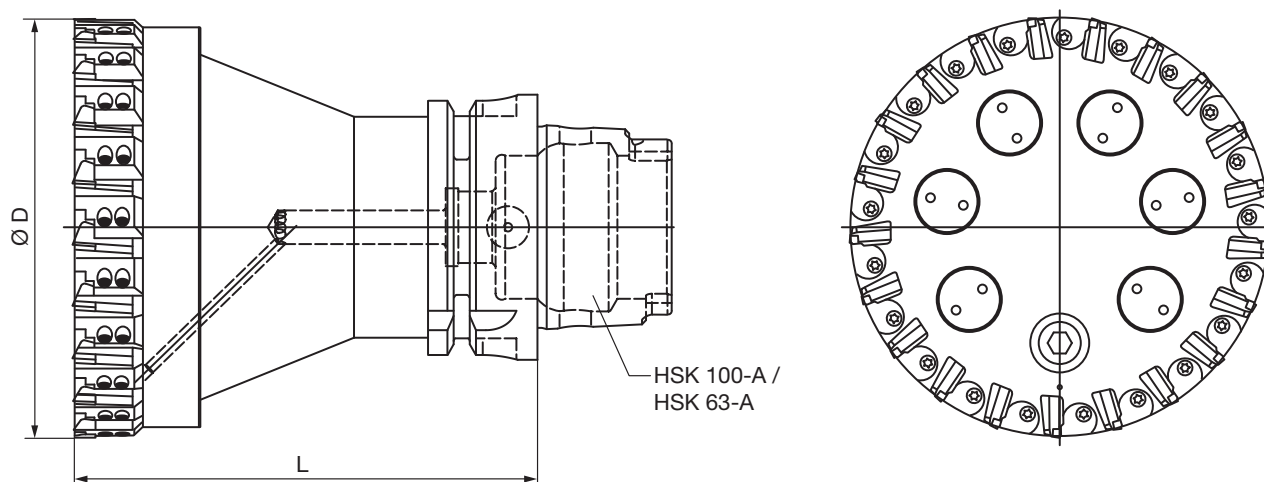
HPC milling cutters

Features and advantages



HPC milling cutters

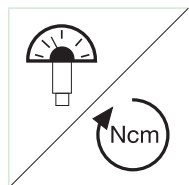
Standard range with maximum number of cutting edges
for cutting depths up to max. 2 mm



Part nr. 20004							
Code	Drawing nr.	Diameter/mm	cutting edges	L/mm	max. rev./min	Shank	Weight (kg)
for maximum feed rates							
50,101	Q 9936-5000 1063 R	50	9	100	32,000	HSK 63-A	1.5
63,101	Q 9936-6300 1063 R	63	12	100	31,000	HSK 63-A	1.9
80,101	Q 9936-8000 1163 R	80	15	110	28,000	HSK 63-A	2.7
100,101	Q 9936-1000 1163 R	100	21	110	24,000	HSK 63-A	3.7
125,101	Q 9936-1250 1263 R	125	27	123	20,000	HSK 63-A	5.5
160,101	Q 9936-1600 1263 R	160	33	123	15,000	HSK 63-A	7.7

Part nr. 20004							
Code	Drawing nr.	Diameter/mm	cutting edges	L/mm	max. rev./min	Shank	Weight (kg)
for maximum feed rates							
50,103	Q 9936-5000 1010 R	50	9	100	32,000	HSK 100-A	2.8
63,103	Q 9936-6300 1010 R	63	12	100	31,000	HSK 100-A	3.2
80,103	Q 9936-8000 1110 R	80	15	110	28,000	HSK 100-A	4.2
100,103	Q 9936-1000 1110 R	100	21	110	24,000	HSK 100-A	5.7
125,103	Q 9936-1250 1210 R	125	27	123	20,000	HSK 100-A	7.7
160,103	Q 9936-1600 1210 R	160	33	123	15,000	HSK 100-A	10

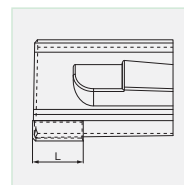
Ordering example: 1 piece Q 9936-6300 1010 R = Ordering number: 20004 63,103



Adjustment
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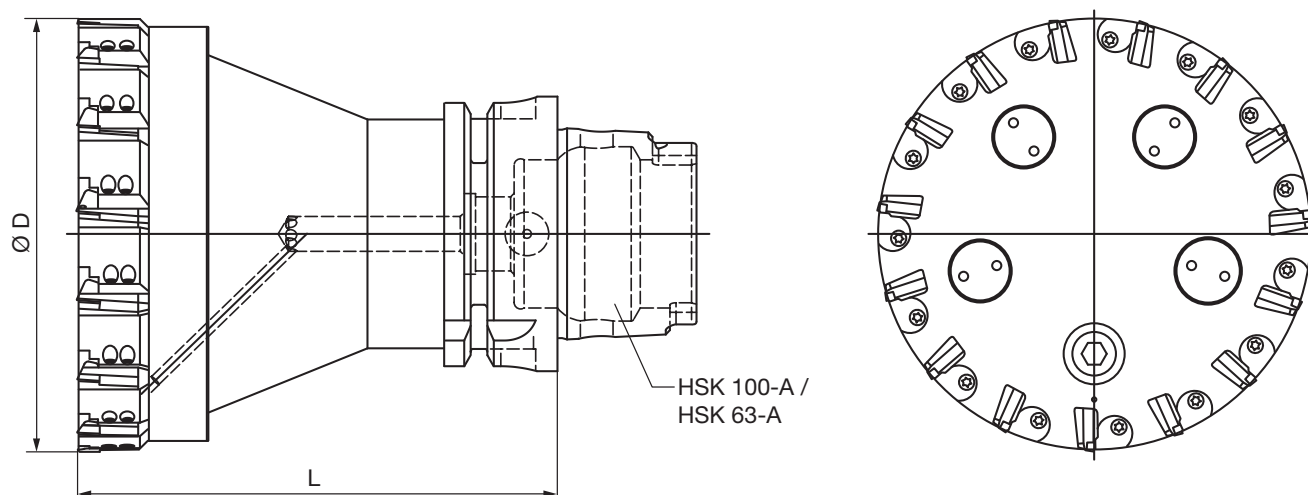
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HPC milling cutters

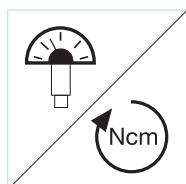
Standard range with a reduced number of cutting edges
for cutting depths up to max. 2 mm



Part nr. 20004							
Code	Drawing nr.	Diameter/mm	cutting edges	L/mm	max. rev./min	Shank	Weight (kg)
for lower spindle power							
63,106	Q 9933-6300 1063 R	63	9	100	31,000	HSK 63-A	1.9
80,106	Q 9933-8000 1163 R	80	12	110	28,000	HSK 63-A	2.7
100,106	Q 9933-1000 1163 R	100	15	110	24,000	HSK 63-A	3.7
125,106	Q 9933-1250 1263 R	125	18	123	20,000	HSK 63-A	5.5
160,106	Q 9933-1600 1263 R	160	24	123	15,000	HSK 63-A	7.7

Part nr. 20004							
Code	Drawing nr.	Diameter/mm	cutting edges	L/mm	max. rev./min	Shank	Weight (kg)
for lower spindle power							
63,108	Q 9933-6300 1010 R	63	9	100	31,000	HSK 100-A	3.2
80,108	Q 9933-8000 1110 R	80	12	110	28,000	HSK 100-A	4.2
100,108	Q 9933-1000 1110 R	100	15	110	24,000	HSK 100-A	5.7
125,108	Q 9933-1250 1210 R	125	18	123	20,000	HSK 100-A	7.7
160,108	Q 9933 -1600 1210 R	160	24	123	15,000	HSK 100-A	10

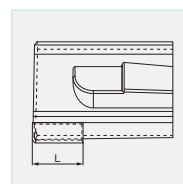
Ordering example: 1 piece Q 9933-6300 1010 R = Ordering number: 20004 63,108



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Form „Request
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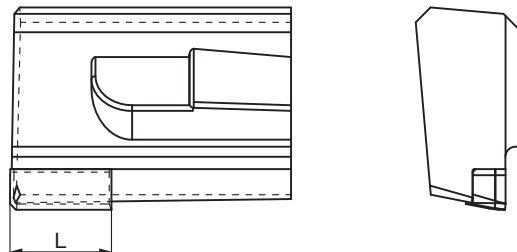
PCD inserts
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HPC milling cutters

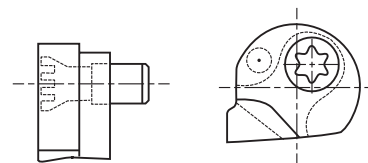
Inserts, chip guiding elements, spare parts

PCD inserts



Part nr.				
20371				
Code	Drawing nr.	Rz	Cutting edge length, mm	Tool material
	suitable for a fine surface finish			
99,300	W9930-03200445R PCD	2-10	5	PCD
	suitable for a defined surface finish			
99,320	W9931-03200445R PCD	10-25	5	PCD

Chip guiding elements (incl. screw), CGE set



Part nr.		
20071		
Code	Drawing nr.	Milling cutter diameter/mm
50,101	E5000 9936	50 - 57,99
63,101	E6300 9936	58 - 69,99
80,101	E8000 9936	70 - 89,99
100,101	E1000 9936	90 - 124,99
125,101	E1250 9936	125 - 250

Spare parts

Clamping screw, CS1-CS2

Part nr.	Drawing nr.
302308411	E5538

Adjustment screw, AS

Part nr.	Drawing nr.
333045922	E5785-1

HPC milling cutters

Adjustment instructions



Adjustment instructions HPC milling cutters

The chip-guiding elements are assembled at the factory!

1. Determine the highest chip guiding element.

Recommendation:

Place milling cutter in a setting fixture and rotate under the dial test indicator (DTI) and measure the individual chip guiding elements. (pict. 1)



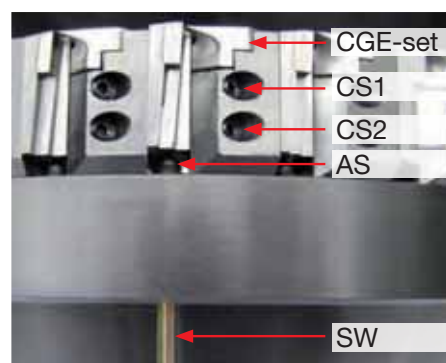
2. Install the inserts and tighten the clamping screw (CS 1) to 15 Ncm.

Do not tighten the clamping screw (CS 2) !

3. Adjust the inserts in the axial direction with the adjustment screw (AS) to 10 µm below the final setting dimension.

Setting dimension = highest chip guiding element height +30 µm

The face run-out should be max. 2 µm.



4. Firmly tighten the clamping screw (CS 2) to 80 Ncm to perfectly align the insert then loosen again and re- tighten to 15 Ncm.

5. Tighten the clamping screw (CS 1) to 80 Ncm.

6. Adjust all inserts to the setting dimension. The face run-out should be max. 2 µm. Tighten the clamping screw (CS 2) to 80 Ncm.

7. A control measurement has to be carried out after 10 minutes. If the face run-out is more than 2 µm, readjust the cutting plates without retightening the clamp screws.

Safety note:

In the event of damage the tool must be returned to the manufacturer for checking for technical safety reasons! Only original replacement parts must be used!

Recommended torque wrench:

E 6000 → **adjustable** 10-80 Ncm Tx 6

Tx-bits 6 → Bit Tx 6 for adjustable torque wrench E6000

Tx-bits 8 → Bit Tx 8 for chip guiding elements (80 Ncm)

E 6001 → **fixed** 15 Ncm Tx 6

E 6002 → **fixed** 80 Ncm Tx 6



HPC milling cutters

Cutting data recommendations, Application examples

The cutting data recommendations in the table are only guide values
and depend to a high degree on the stability of the machine, fixture and workpiece.

Cutting groups	Material group	Composition / structure	Tensile strength	Hardness	Cutting speed v_c m/min		Feed rate f_z mm/z	
			RM (MPa)	HB HRC	PCD / PCD 3		W 9930-....	W 9931-....
21	Aluminium forging alloys	not heat treatable		60	-6000	PKD	0,05-0,20 ↓	0,1-0,25 ↓
22		heat treatable/heat treated		100	-6000	PKD		
23	Aluminium casting alloys	<12% Si not heat treatable		75	-6000	PKD		
24		<12% Si heat treatable/heat treated		90	-6000	PKD		
25		>12% Si not heat treatable		130	-2000	PKD 3		

Sealing surface milling

Workpiece	Oil sump
Material	GD-AlSi8...
Tools	HPC milling cutter, dia. = 63 mm, no. of cutting edges = 12, HSK 63-A
Cutting speed	$v_c = 2,980$ m/min
Revolution	$n = 9,500$ rev/min
Feed per tooth	0.16 mm
Feed rate	32,000 mm/min
Achieved surface finish quality	$R_z = 15$



HPC milling cutters

Application examples



Sealing surface milling

Workpiece	Gearbox - sealing surface
Material	GD-AlSi9Cu3
Tools	HPC milling cutter, dia. = 63 mm, no. of cutting edges = 12, HSK 63-A
Cutting speed	$vc = 2,970 \text{ m/min}$
Revolution	$n = 15,000 \text{ rev/min}$
Feed per tooth	0.05 mm
Feed rate	9,000 mm/min
Achieved surface finish quality	$Rz = 5$, $Pt = 7$, flatness = 0.025



Fire face milling on a cylinder head

Workpiece	Cylinder head – fire face
Material	G-AlSi9
Tools	HPC milling cutter, dia. = 125 mm, no. of cutting edges = 27, HSK 63-A
Cutting speed	$vc = 5,890 \text{ m/min}$
Revolution	$n = 15,000 \text{ rev/min}$
Feed per tooth	0.15 mm
Feed rate	60,000 mm/min
Achieved surface finish quality	$Rz = 2-4$





HPC milling cutter

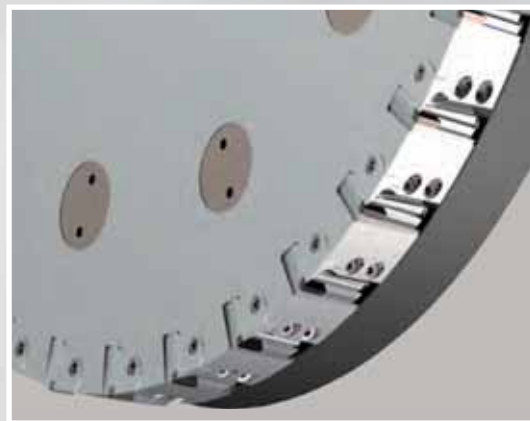
Special tooling for customer applications

Example 1:

Monolithic steel design

Diameter 200 mm, no. of cutting edges = 33, HSK 63-A with flange dia. = 80 mm

Weight: 9 kg

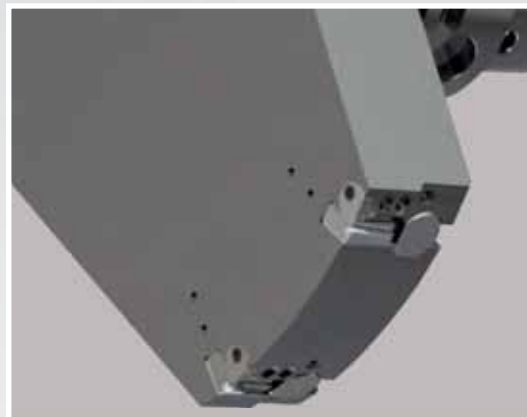


Application:
Crankcase, milling of combustion chamber side

Example 2:

„Bar cutter“ for limited space in the tool magazine

Diameter 226 mm, no. of cutting edges = 2x2, HSK 63-A



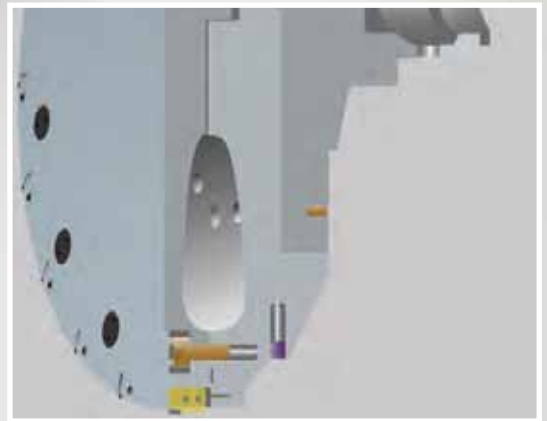
Application:
Face milling of a valve plate on a MC,
complete coverage required

HPC milling cutters

Special tooling for customer applications

Example 3:

Version with aluminum intermediate plate (weight reduction!)
Diameter 315 mm, no. of cutting edges = 21, HSK 80-C
Weight: 18 kg



Application:
Face milling of a valve plate on a special purpose machine

Example 4:

Version with cartridges, axially and radially adjustable
Diameter 400 mm, no. of cutting edges = 42, HSK 100-C
Weight: 37 kg



Application:
Housing machining on a special purpose machine

H HPC milling cutter

for MQL machining

MQL machining - Technique and advantages

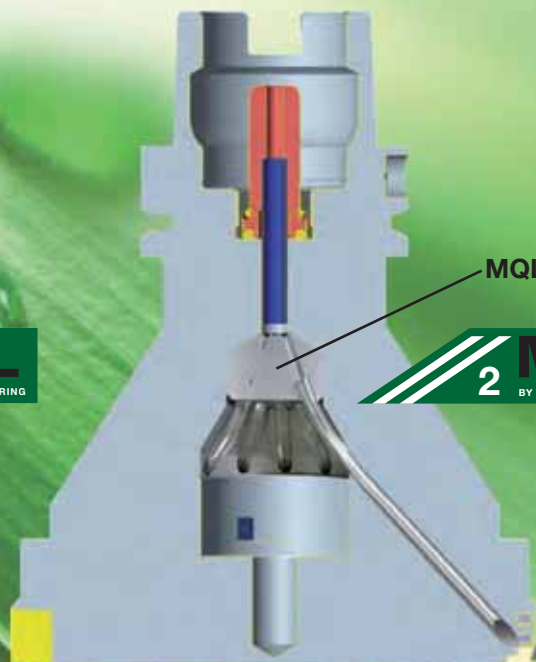
- Cost reduction through reduced cleaning effort
- Environmental and health protection
- Less cooling lubricant requirements - High cooling and lubricating effect
- No influence on the process temperature during milling by removing chips



Hollfelder-Gühring HPC milling cutters are in principle suitable for MQL machining

Catalog standard

Customized solutions



HPC milling cutter for MQL machining

MQL distributor

Advantages MQL distributor:

- absolutely uniform distribution of the oil / air mixture
- „smooth transport“ by special plastic hoses
- therefore significantly faster response time



protected by patents!



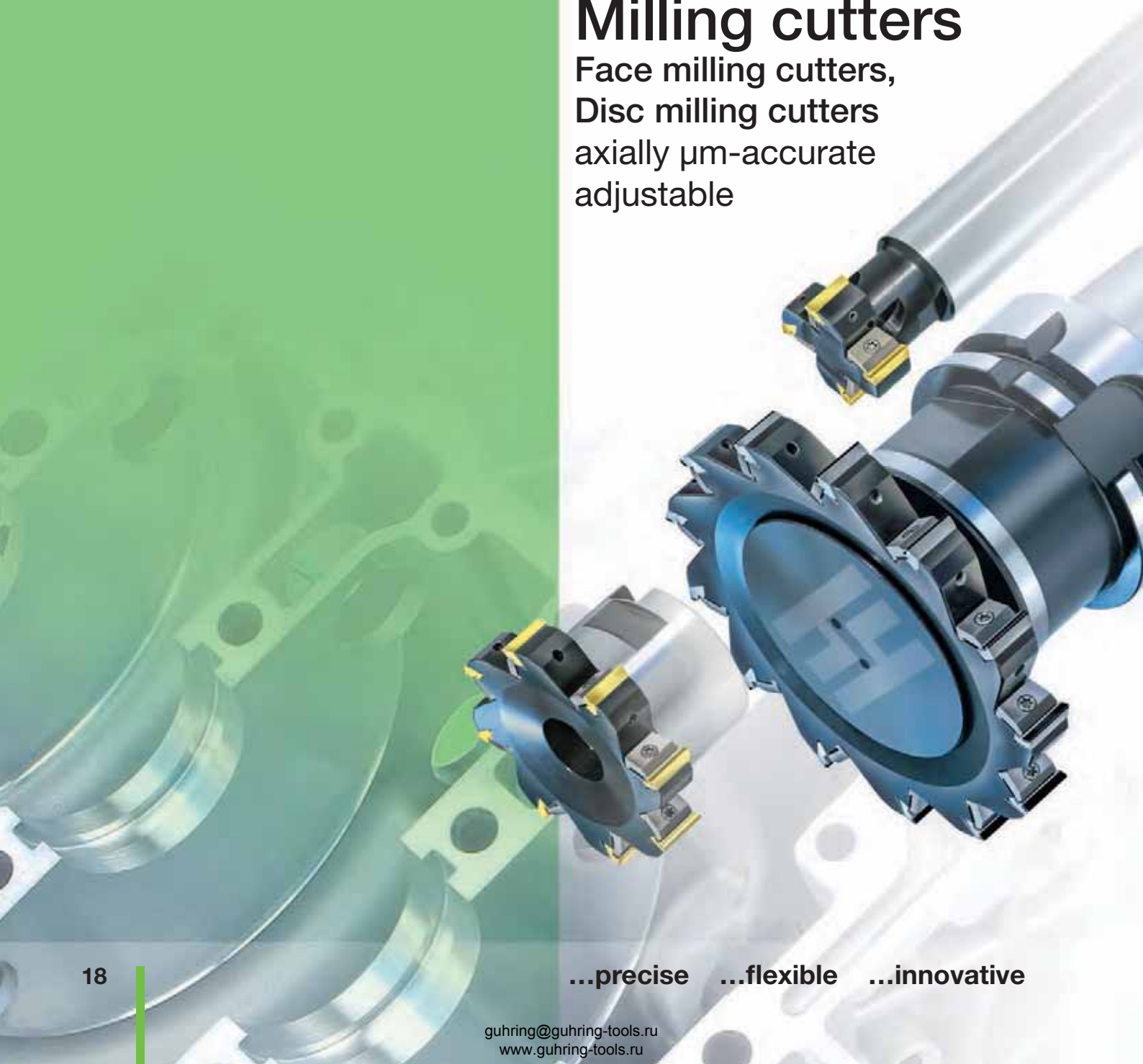
Example MQL:

Workpiece	Cylinder head – fire face
Material	G-AlSi9
Tools	HPC milling cutter, dia. = 125 mm, cutting edges = 27, HSK 63-A
Cutting speed	$v_c = 4,710 \text{ m/min}$
Revolution	$n = 12,000 \text{ rev/min}$
Feed per tooth	0.11 mm
Feed rate	35,640 mm/min
Achieved surface finish quality	$R_z = 2-4$



Milling cutters

Face milling cutters,
Disc milling cutters
axially μm -accurate
adjustable





Milling cutters

Features

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End milling cutters

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Face milling cutters

as shell milling cutter

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Face milling cutters

as monoblock milling cutter

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Disc milling cutters

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Inserts

Features

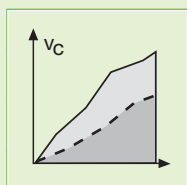
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Spare parts

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Profitability calculation

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Milling cutters

axial μm -accurate adjustable with eccentric adjustment

...innovative

HOLLFELDER-GÜHRING CUTTING TOOLS

offers the possibility to adjust all inserts of the milling cutter to an exact measure or rather the exact position of the inserts to each other by means of the eccentric adjustment.

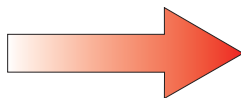
This system can be applied on the most different materials and impresses with good handling and reliable tension of the cutting edges

The features:

- Highly exact insert pocket to hold the insert, max. runout 0,03 mm
- Precision ground insert applicable in right as well as in left tools
- Eccentric bolt for μm -accurate axial adjustment
- Extremely high number of inserts
- Big clamping element

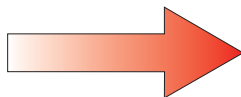
Advantages in the use of these tools:

High feed rates due to
a high number of inserts



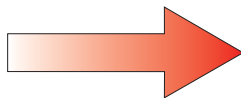
...lead to an essential
increase in productivity

Very good face and radial
run out accuracies



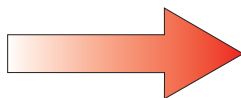
...lead to extremely high tool life
and excellent surface qualities

When completely assembled with
insert the adjustment can easily be
made by means of the eccentric bolt



...which reduced non-productive times

The lateral stability is guaranteed
by the eccentric bolt as well as
the stable clamping element, ...



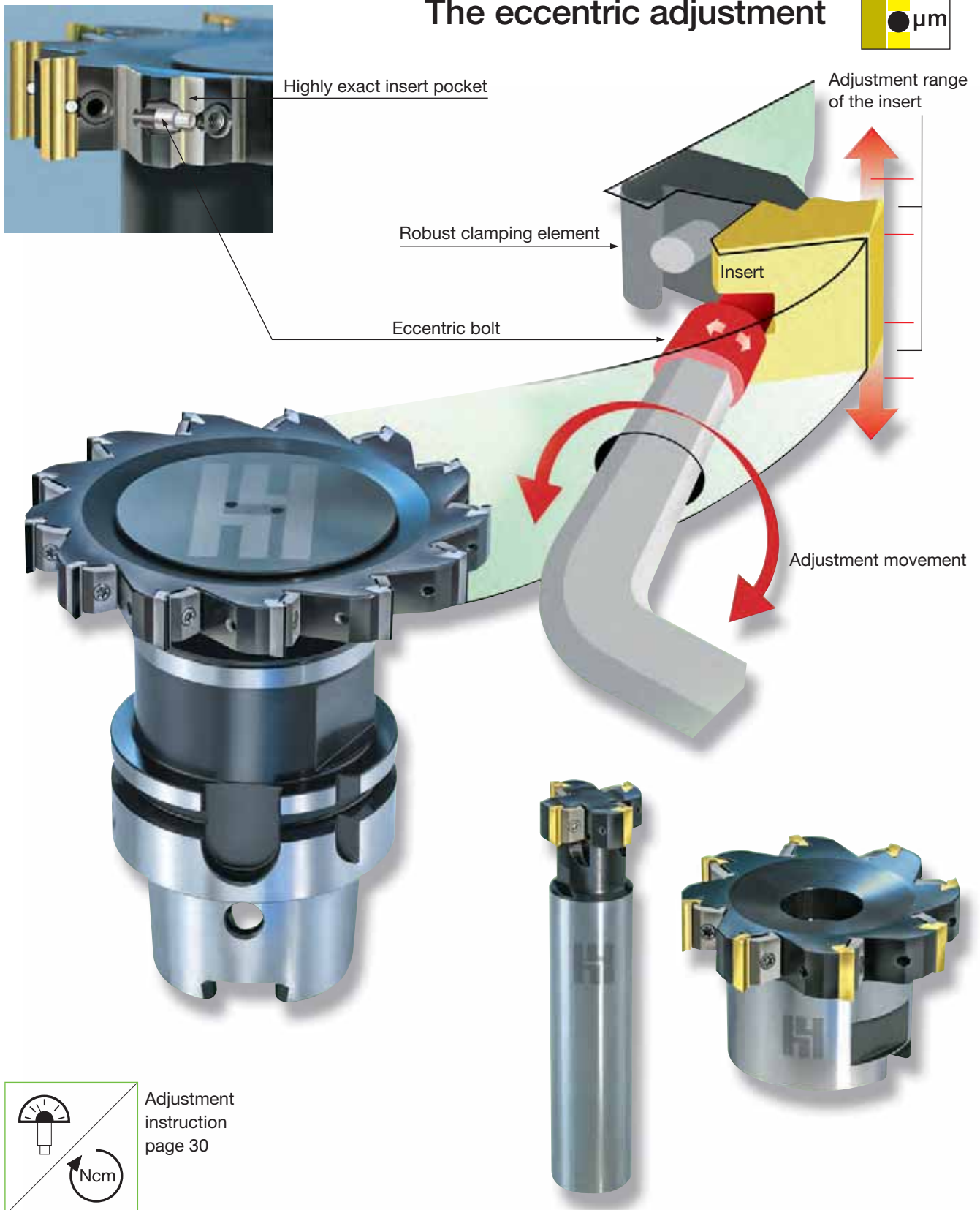
...thus a
trilateral machining
is possible



Milling cutters

axial μm -accurate adjustable with eccentric adjustment

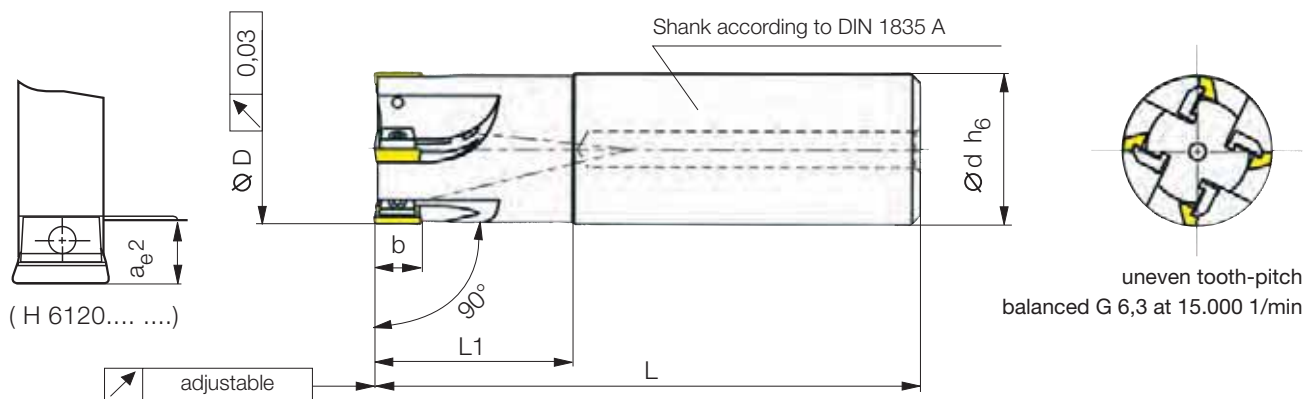
The eccentric adjustment



H End milling cutters

axial μm -accurate adjustable

Central coolant supply directly to all inserts



Part nr. 20000													
Code	Drawing nr.		Ø D	z	b	Ø d	L ₁	L	a _{e2}	max. RPM	Weight (kg)	Inserts	
	Light and medium machining												
32,000	H 6120-3200 7025 R	●	32	4	12/7*	25	69	125	2.8	50.000	0.42	W 612...N/R/L	
40,000	H 6120-4000 7025 R	●	40	5	12/7*	25	69	125	6	48.000	0.50	↓	
16,000	H 3108-1600 2616 R	●	16	2	7.8	16	26	75	-	85.000	0.10	W 3108...N	
20,000	H 3108-2000 3320 R	●	20	3	7.8	20	33	85	-	65.000	0.20	↓	
25,000	H 3108-2500 3325 R	●	25	4	7.8	25	33	90	-	58.000	0.33	↓	
32,001	H 3108-3200 4325 R	●	32	6	7.8	25	43	100	-	50.000	0.40	↓	

* PCD-inserts with cutting length of 7mm see page 20

On request all tools are also available as left-hand cutting version!

● ex stock

Ordering example: 1 piece H 6120-3200 7025 R = Ordering number: 20000 32,000



Spare parts
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Form „Request
for customer
specific tools“
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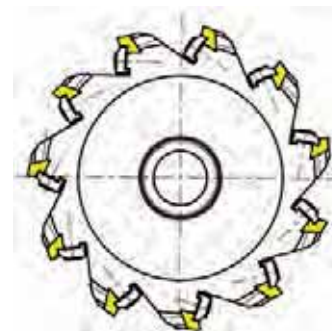
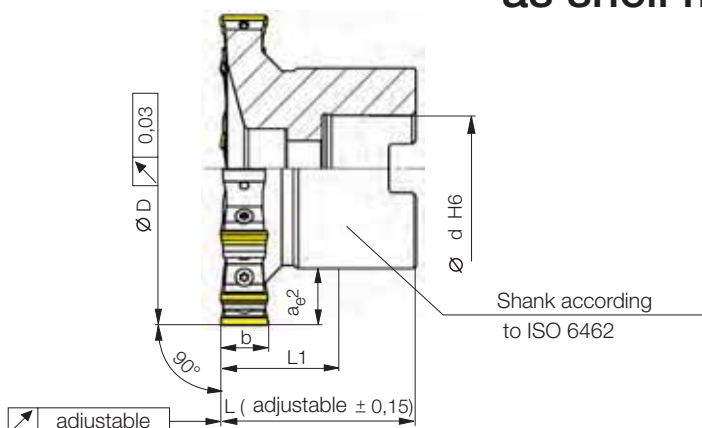
Geometry and
grade selection
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Face milling cutters

axial μm -accurate adjustable



as shell milling cutter



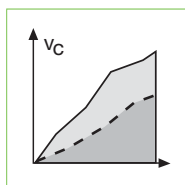
uneven tooth-pitch
balanced G 6,3 at 15.000 1/min

Part nr. 20001	Code	Drawing nr.	Ø D	z	b	Ø d	L ₁	L	a ₂	max. RPM	Weight (kg)	Inserts
Light and medium machining												
	40,000	H 6120-4000 4016 R	● 40	5	12 / 7*	16	24	40	4.5	48.000	0.20	W 612...N/R/L
	50,000	H 6120-5000 4022 R	● 50	7	12 / 7*	22	40	40	3.5	45.000	0.30	
	63,000	H 6120-6300 4022 R	● 63	8	12 / 7*	22	40	40	8.5	41.000	0.40	
	80,000	H 6120-8000 5027 R	● 80	11	12 / 7*	27	50	50	9	36.000	0.75	
	100,000	H 6120-1000 5032 R	● 100	13	12 / 7*	32	50	50	9	31.000	1.10	
	125,000	H 6120-1250 6340 R	● 125	15	12 / 7*	40	63	63	11	23.000	2.00	
Reduced number of teeth												
	40,001	H 6121-4000 4016 R	● 40	3	12 / 7*	16	24	40	4.5	48.000	0.20	
	50,001	H 6121-5000 4022 R	● 50	4	12 / 7*	22	40	40	3.5	45.000	0.30	
	63,001	H 6121-6300 4022 R	● 63	5	12 / 7*	22	40	40	8.5	41.000	0.40	
	80,001	H 6121-8000 5027 R	● 80	6	12 / 7*	27	50	50	9	36.000	0.75	
	100,001	H 6121-1000 5032 R	● 100	8	12 / 7*	32	50	50	9	31.000	1.10	
	125,001	H 6121-1250 6340 R	● 125	10	12 / 7*	40	63	63	9	23.000	2.00	
Max. numbers of teeth for light machining												
	40,002	H 3108-4000 4016 R	● 40	6	7.8	16	30	40	4	48.000	0.20	W 3108...N
	50,002	H 3108-5000 4022 R	● 50	8	7.8	22	30	40	4	45.000	0.30	
	63,002	H 3108-6300 4022 R	● 63	9	7.8	22	16	40	4	41.000	0.40	
	80,002	H 3108-8000 5027 R	● 80	12	7.8	27	17	50	11	36.000	0.75	
	100,002	H 3108-1000 5032 R	● 100	15	7.8	32	-	50	11	31.000	1.10	
	125,002	H 3108-1250 6340 R	● 125	19	7.8	40	-	63	11	23.000	2.00	
	160,000	H 3108-1600 6340 R	● 160	22	7.8	40	-	63	16	12.000	2.50	

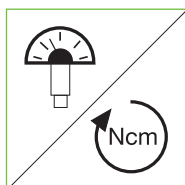
* Central coolant supply for shell milling cutter has to be ordered separately if needed! (see page 31)

● ex stock

Ordering example: 1 piece H 6120-4000 4016 R = Ordering number: 20001 40,000



Application
recommendations
pages 40-43



Adjustment
instruction
page 44



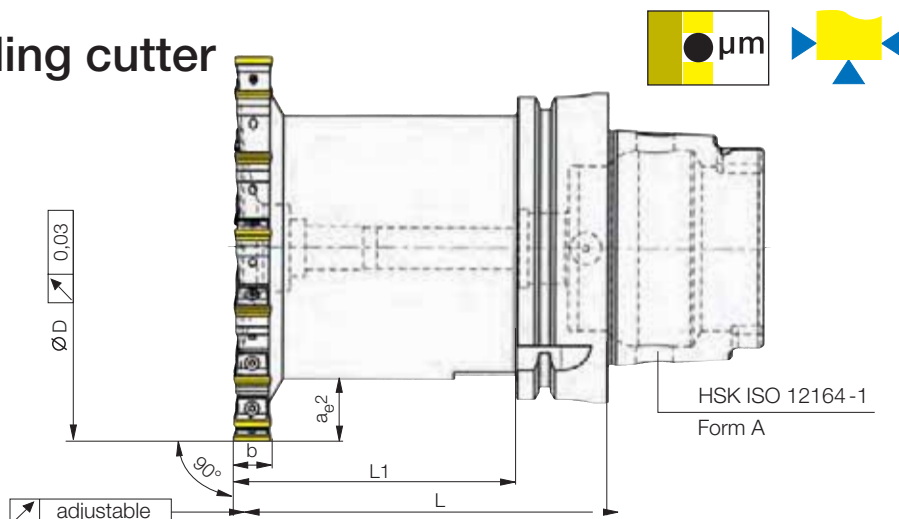
Central coolant supply*

Distribution directly
to each insert by
means of a coolant
distribution screw
FKS

H Face milling cutters

axial μm -accurate adjustable

as monoblock milling cutter



Part nr. 20002	<div><div><div><div><div></div><div>adjustable</div></div><div><div></div><div></div><div></div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div></div>												
Code	Drawing nr.		HSK	Ø D	z	b	L ₁	L	a _{e2}	max. RPM	Weight (kg)	Inserts	
	Light and medium machining												
32,000	H 6120-3200 6032 R	●	32	32	4	12/7*	40	60	4	50.000	0.20	W 612... N/R/L	
40,000	H 6120-4000 6032 R	●	32	40	5	12/7*	40	60	5.4	48.000	0.30		
50,000	H 6120-5000 6032 R	●	32	50	7	12/7*	40	60	9	45.000	0.40		
32,001	H 6120-3200 6040 R	●	40	32	4	12/7*	31.5	60	4.5	50.000	0.30		
40,001	H 6120-4000 6040 R	●	40	40	5	12/7*	33.5	60	5.4	48.000	0.40		
50,001	H 6120-5000 6040 R	●	40	50	7	12/7*	40	60	9	45.000	0.50		
32,002	H 6120-3200 8063 R	●	63	32	4	12/7*	31	80	4	50.000	0.90		
40,002	H 6120-4000 8063 R	●	63	40	5	12/7*	36	80	5.4	48.000	1.00		
50,002	H 6120-5000 8063 R	●	63	50	7	12/7*	39	80	9	45.000	1.10		
63,000	H 6120-6300 8063 R	●	63	63	8	12/7*	43	80	9	41.000	1.30		
80,000	H 6120-8000 8063 R	●	63	80	11	12/7*	54	80	9	36.000	1.60		
100,000	H 6120-1000 8063 R	●	63	100	13	12/7*	54	80	9	31.000	2.00		
125,000	H 6120-1250 8063 R	●	63	125	15	12/7*	54	80	11.5	23.000	2.40		
40,003	H 6120-4000 1080 R	●	80	40	5	12/7*	45	100	5	48.000	1.60		
50,003	H 6120-5000 1080 R	●	80	50	7	12/7*	45	100	9	45.000	1.80		
63,001	H 6120-6300 1080 R	●	80	63	8	12/7*	50	100	9	41.000	2.20		
80,001	H 6120-8000 1080 R	●	80	80	11	12/7*	74	100	9	36.000	2.80		
100,001	H 6120-1000 1080 R	●	80	100	13	12/7*	74	100	9	31.000	3.30		
125,001	H 6120-1250 1080 R	●	80	125	15	12/7*	74	100	11.5	23.000	3.90		↓

* PCD-inserts with cutting length of 7 mm see page 20

On request all tools are also available as left-hand cutting version!

● ex stock

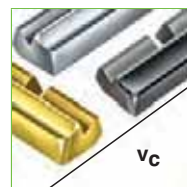
Ordering example: 1 piece H 6120-3200 6032 R = Ordering number: 20002 32,000



Spare parts
page 45



Form „Request
for customer
specific tools“
page 130



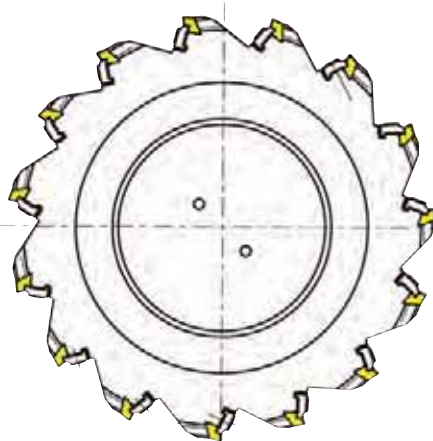
Geometry and
grade selection
pages 27-29

Face milling cutters

axial μm -accurate adjustable



as monoblock milling cutter



uneven tooth-pitch
balanced G 6,3 at 15.000 1/min

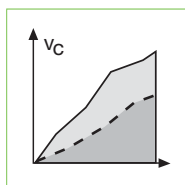
Part nr. 20002	Code	Drawing nr.	HSK	Ø D	z	b	L ₁	L	a _{e2}	max. RPM	Weight (kg)	Inserts
Light and medium machining												
40,004	H 6120-4000 1210 R	●	100	40	5	12 / 7*	57	120	5.4	48.000	2.90	W 612... N/R/L
50,004	H 6120-5000 1210 R	●	100	50	7	12 / 7*	49	120	9	45.000	3.20	
63,002	H 6120-6300 1210 R	●	100	63	8	12 / 7*	52	120	9	41.000	3.60	
80,002	H 6120-8000 1210 R	●	100	80	11	12 / 7*	69	120	9	36.000	4.30	
100,002	H 6120-1000 1210 R	●	100	100	13	12 / 7*	91	120	9	31.000	5.60	
125,002	H 6120-1250 1210 R	●	100	125	15	12 / 7*	91	120	11.5	23.000	6.50	
160,000	H 6120-1600 1210 R	●	100	160	18	12 / 7*	91	120	14	16.000	7.50	
Reduced number of teeth												
80,003	H 6121-8000 8063 R	●	63	80	6	12 / 7*	54	80	9	36.000	1.60	
100,003	H 6121-1000 8063 R	●	63	100	8	12 / 7*	54	80	9	31.000	2.00	
125,003	H 6121-1250 8063 R	●	63	125	10	12 / 7*	54	80	11.5	23.000	2.40	
80,004	H 6121-8000 1080 R	●	80	80	6	12 / 7*	74	100	9	36.000	2.80	
100,004	H 6121-1000 1080 R	●	80	100	8	12 / 7*	74	100	9	31.000	3.30	
125,004	H 6121-1250 1080 R	●	80	125	10	12 / 7*	74	100	11.5	23.000	3.90	
80,005	H 6121-8000 1210 R	●	100	80	6	12 / 7*	91	120	9	36.000	4.30	
100,005	H 6121-1000 1210 R	●	100	100	8	12 / 7*	91	120	9	31.000	5.60	
125,005	H 6121-1250 1210 R	●	100	125	10	12 / 7*	91	120	11.5	23.000	6.50	
160,001	H 6121-1600 1210 R	●	100	160	12	12 / 7*	91	120	14	16.000	7.50	

* PCD-inserts with cutting length of 7 mm see page 20

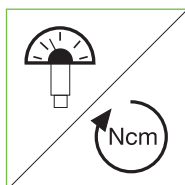
On request all tools are also available as left-hand cutting version!

● ex stock

Ordering example: 1 piece H 6120-4000 1210 R = Ordering number: 20002 40,004



Application
recommendations
pages 36-39



Adjustment
instruction
page 44



Central coolant supply

FKS Coolant
distribution screw
for monobloc milling
cutters already
included

H Side milling cutters

axial μm -accurate adjustable

...,3" sided

The side milling cutters constitute a further supplementation of our new milling cutter line and are a reasonable completion of our program.

As usual all inserts are adjustable, which makes a μm -accurate adjustment of the different tools possible, e.g. in gang milling cutters. For adjustment instructions see page 30.

Depending on the customer specific requirement standard inserts can often be used in these milling cutters which is generally possible due to the „neutral shape“. Special types of the inserts can be delivered within short time.

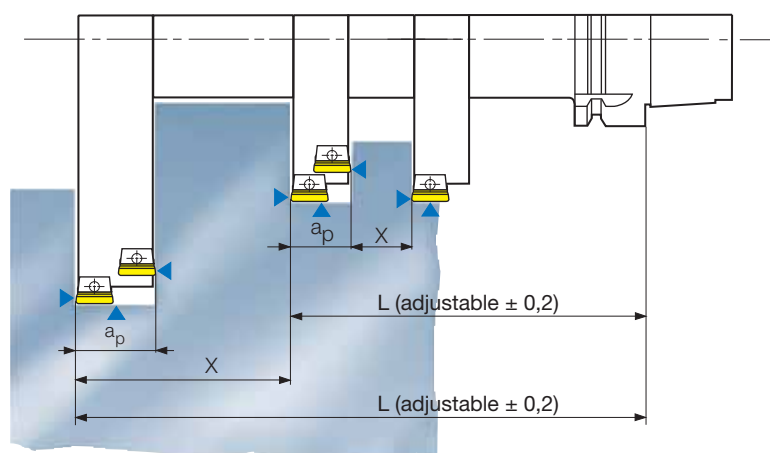
The features:

Range	Number of teeth	Width	Special type
Ø 80-250 mm	12 - 25	from 8 mm	from 5 mm

In gang milling cutters

standard-inserts are applicable
trilateral

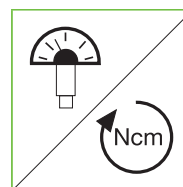
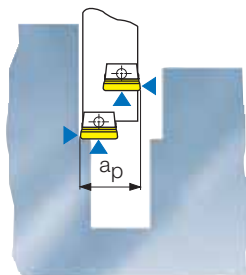
Total length adjustable (L)
Width adjustable (a_p)
Position of the inserts
adjustable (X)



In groove milling cutters

Standard-inserts N-type
right-hand and left-hand
application possible

Width μm -accurate adjustable
adjustment range (a_p)
depending on the size
of insert up to $\pm 0,2$



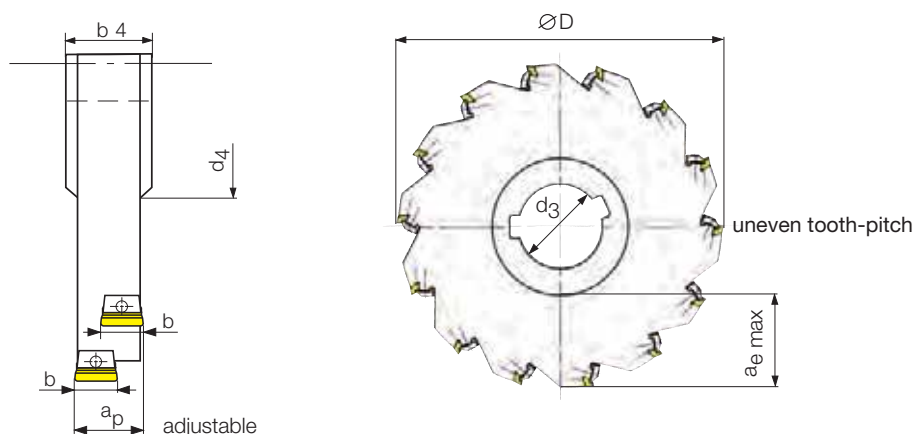
Adjustment
instruction
page 44

Side milling cutters

axial μm -accurate adjustable



Type 3108 and 6120 $\varnothing D 80 - \varnothing D 100$



Part nr. 20003	Code	Drawing nr.		$\varnothing D$	z	z_{eff}	a_p	b	$a_{\text{e max}}$	d_3	d_4	b_4	Inserts
	80,000	H 3108-8000 0827 N	○	80	10	5	8	7.8	15	27	45	10	W 3108-... N
	80,001	H 3108-8000 1027 N	○	80	10	5	10	7.8	15	27	45	12	
	80,002	H 3108-8000 1227 N	○	80	10	5	12	7.8	15	27	45	14	
	80,003	H 3108-8000 1427 N	○	80	10	5	14	7.8	15	27	45	16	
	80,004	H 6120-8000 1227 N	○	80	10	5	12.2	12 / 7*	15	27	45	14	W 612-...N/R/L
	80,005	H 6120-8000 1427 N	○	80	10	5	14	12 / 7*	15	27	45	16	
	80,006	H 6120-8000 1627 N	○	80	10	5	16	12 / 7*	15	27	45	18	
	80,007	H 6120-8000 1827 N	○	80	10	5	18	12 / 7*	15	27	45	20	
	80,008	H 6120-8000 2027 N	○	80	10	5	20	12 / 7*	15	27	45	22	
	100,000	H 3108-1000 0832 N	○	100	14	7	8	7.8	24	32	48	10	W 3108-... N
	100,001	H 3108-1000 1032 N	○	100	14	7	10	7.8	24	32	48	12	
	100,002	H 3108-1000 1232 N	○	100	14	7	12	7.8	24	32	48	14	
	100,003	H 3108-1000 1432 N	○	100	14	7	14	7.8	24	32	48	16	
	100,004	H 6120-1000 1232 N	○	100	12	6	12.2	12 / 7*	24	32	48	14	W 612-...N/R/L
	100,005	H 6120-1000 1432 N	○	100	12	6	14	12 / 7*	24	32	48	16	
	100,006	H 6120-1000 1632 N	○	100	12	6	16	12 / 7*	24	32	48	18	
	100,007	H 6120-1000 1832 N	○	100	12	6	18	12 / 7*	24	32	48	20	
	100,008	H 6120-1000 2032 N	○	100	12	6	20	12 / 7*	24	32	48	22	

* PCD-inserts with cutting length of 7 mm see page 20

Special measurements e.g. from 5 mm onward can be delivered on request

○ in short time available

Ordering example: 1 piece H 3108-8000 0827 N = Ordering number: 20003 80,000



Spare parts
page 45



Form „Request
for customer
specific tools“
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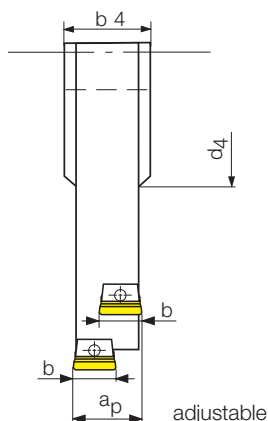


Geometry and
grade selection
pages 37-39

H Side milling cutters

axial μm -accurate adjustable

Type 3108 and 6120 $\varnothing D 125 - \varnothing D 160$



Part nr. 20003												
Code	Drawing nr.		$\varnothing D$	z	z_{eff}	a_p	b	$a_{\text{e max}}$	d_3	d_4	b_4	Inserts
125,000	H 3108-1250 0840 N	○	125	18	9	8	7.8	30	40	58	10	W 3108-... N
125,001	H 3108-1250 1040 N	○	125	18	9	10	7.8	30	40	58	12	↓
125,002	H 3108-1250 1240 N	○	125	18	9	12	7.8	30	40	58	14	↓
125,003	H 3108-1250 1440 N	○	125	18	9	14	7.8	30	40	58	16	↓
125,004	H 6120-1250 1240 N	○	125	14	7	12.2	12 / 7*	30	40	58	14	W 612-...N/R/L
125,005	H 6120-1250 1440 N	○	125	14	7	14	12 / 7*	30	40	58	16	↓
125,006	H 6120-1250 1640 N	○	125	14	7	16	12 / 7*	30	40	58	18	↓
125,007	H 6120-1250 1840 N	○	125	14	7	18	12 / 7*	30	40	58	20	↓
125,008	H 6120-1250 2040 N	○	125	14	7	20	12 / 7*	30	40	58	22	↓
160,000	H 3108-1600 0840 N	○	160	22	11	8	7.8	44	40	58	10	W 3108-... N
160,001	H 3108-1600 1040 N	○	160	22	11	10	7.8	44	40	58	12	↓
160,002	H 3108-1600 1240 N	○	160	22	11	12	7.8	44	40	58	14	↓
160,003	H 3108-1600 1440 N	○	160	22	11	14	7.8	44	40	58	16	↓

* PCD-inserts with cutting length of 7 mm see page 20

Special measurements e.g. from 5 mm onward can be delivered on request

○ in short time available

Ordering example: 1 piece H 3108-1250 0840 N = Ordering number: 20003 125,000



Spare parts
page 45



Form „Request
for customer
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page 130



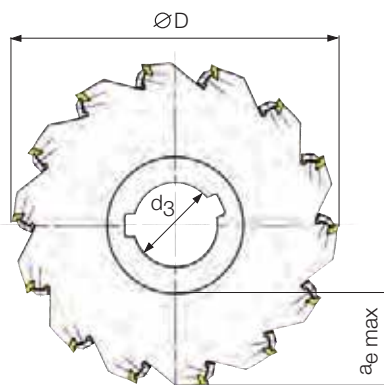
Geometry and
grade selection
pages 37-39

Side milling cutters

axial μm -accurate adjustable



Type 3108 and 6120 $\varnothing D 160 - \varnothing D 200$



uneven tooth-pitch

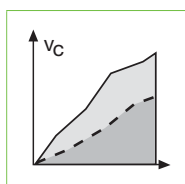
Part nr. 20003	Code	Drawing nr.		$\varnothing D$	z	z_{eff}	a_p	b	$a_{\text{e max}}$	d_3	d_4	b_4	Inserts
	160,004	H 6120-1600 1240 N	○	160	18	9	12.2	12 / 7*	44	40	58	14	W 612...N/R/L
	160,005	H 6120-1600 1440 N	○	160	18	9	14	12 / 7*	44	40	58	16	
	160,006	H 6120-1600 1640 N	○	160	18	9	16	12 / 7*	44	40	58	18	
	160,007	H 6120-1600 1840 N	○	160	18	9	18	12 / 7*	44	40	58	20	
	160,008	H 6120-1600 2040 N	○	160	18	9	20	12 / 7*	44	40	58	22	
	200,000	H 3108-2000 0850 N	○	200	26	13	8	7.8	62	50	72	10	W 3108... N
	200,001	H 3108-2000 1050 N	○	200	26	13	10	7.8	62	50	72	12	
	200,002	H 3108-2000 1250 N	○	200	26	13	12	7.8	62	50	72	14	
	200,003	H 3108-2000 1450 N	○	200	26	13	14	7.8	62	50	72	16	
	200,004	H 6120-2000 1250 N	○	200	22	11	12.2	12 / 7*	62	50	72	14	W 612...N/R/L
	200,005	H 6120-2000 1450 N	○	200	22	11	14	12 / 7*	62	50	72	16	
	200,006	H 6120-2000 1650 N	○	200	22	11	16	12 / 7*	62	50	72	18	
	200,007	H 6120-2000 1850 N	○	200	22	11	18	12 / 7*	62	50	72	20	
	200,008	H 6120-2000 2050 N	○	200	22	11	20	12 / 7*	62	50	72	22	

* PCD-inserts with cutting length of 7 mm see page 20

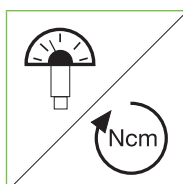
Special measurements e.g. from 5 mm onward can be delivered on request

○ in short time available

Ordering example: 1 piece H 6120-1600 1240 N = Ordering number: 20003 160,004



Application
recommendations
pages 40-43



Adjustment
instruction
page 44

Inserts

precision ground

...the high efficient

core parts of our tools are the inserts.

The applied cutting materials and coatings fulfil the latest requirements from the market and ensure a cutting performance and tool life on the highest level.

The excellent surface finish on the workpiece is a result of the smooth cut of our tools.

We create the optimal conditions for this by means of a combination of the insert pocket produced with the utmost precision, the robust clamping element and the precision-ground inserts.

Our standard inserts are suited for a variety of fields of application.

A help for selecting the right combination of cutting grade, coating and cutting edge geometry for your specific application you will find in the table on page 37. Further you can find cutting data recommendations in the table on page 39.

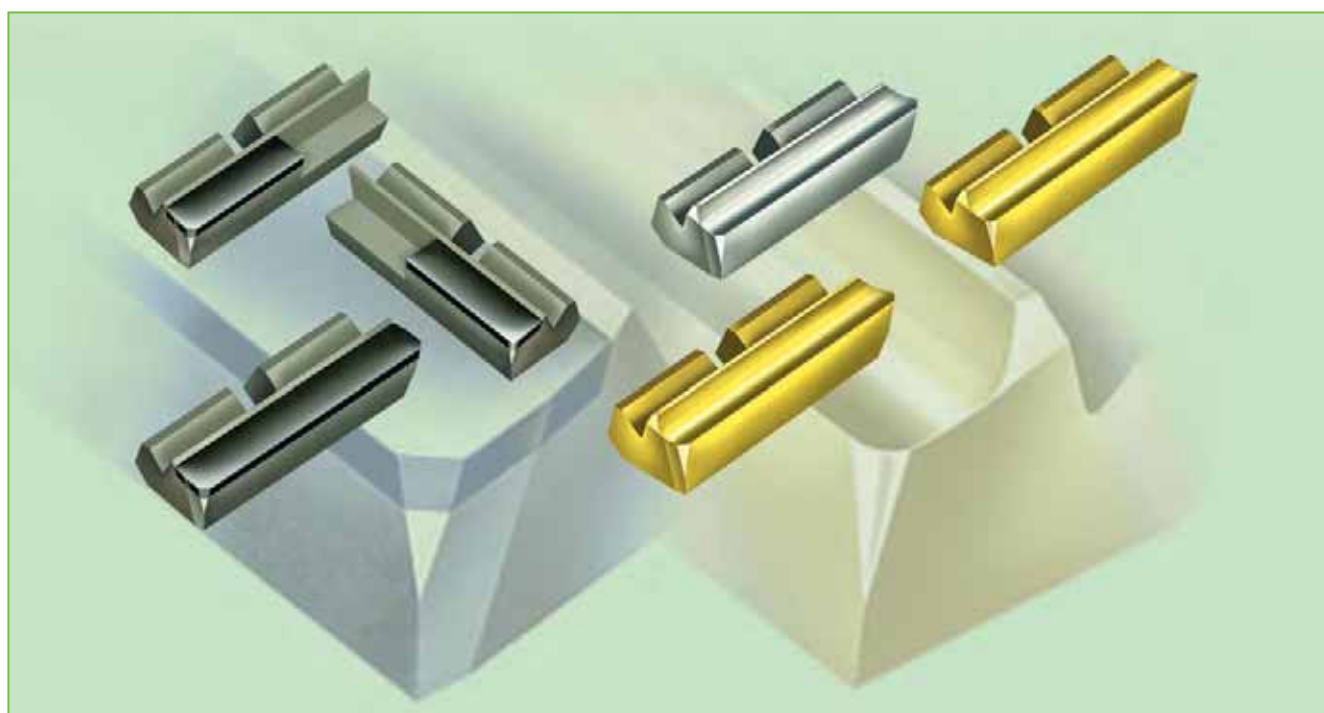
Our application recommendations

from page 26 will give you additional information for the efficient use of our tools.

The good availability from stock of our standard inserts supports you in saving costs and reduces your capital investment.

Especially wiper geometries lead to a better surface finish, higher feed rates along with constant high precision and reduced machining times.

In addition to our standard program we are also prepared to offer other cutting materials and insert geometries on request.

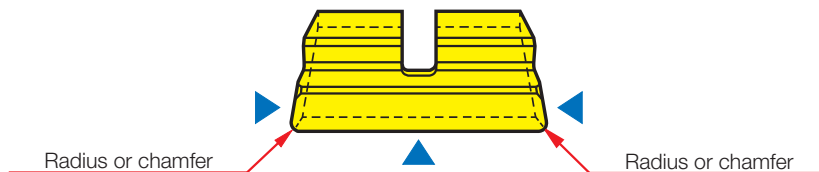


Inserts

precision ground

Specific features:

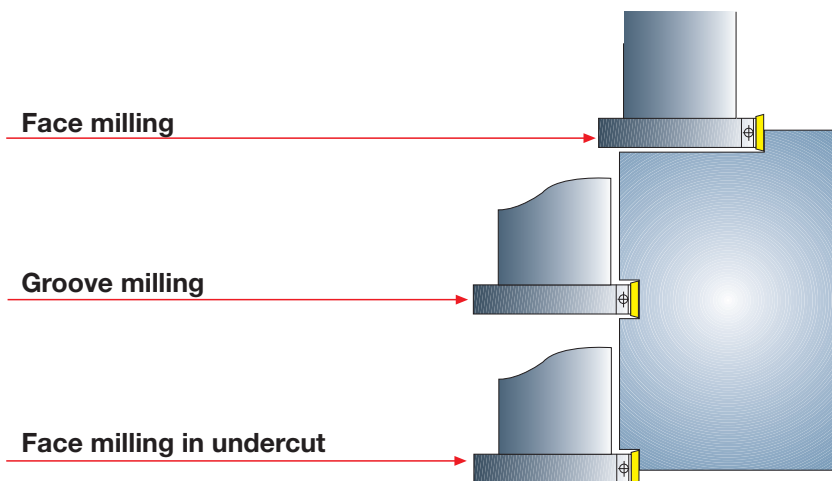
An essential advantage of the milling cutters inserts is the peripherie-ground geometry for the types W 3108-... / W 6120-N (N = neutral type, trilateral cutting)



The neutral type can be used in undercut applications as well as in side milling cutters.

It is also possible in serial production to use one cutting edge in a right-hand cutter and the „second cutting edge“ in a left-hand cutter.

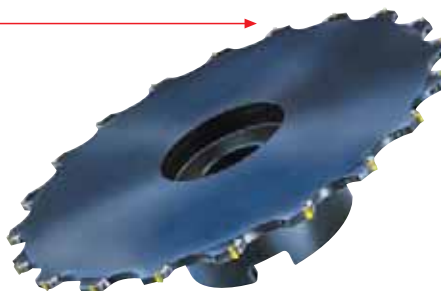
Inserts (W 3108- / W 6120-... ..N) in neutral type enable



or the application of the same inserts in side milling cutters

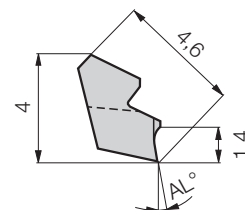
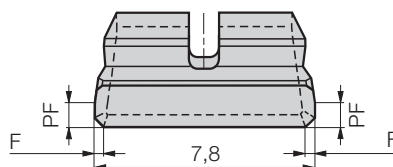
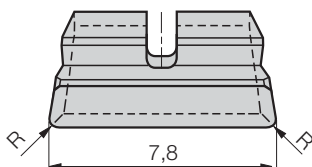
Our standard inserts are available ex stock with:

- Different corner radii
- Corner chamfers
- Wiper geometries
- Edge preparations
- Cutting grades



Insert W 3108-.... N

Carbide / carbide coated / PCD / CBN

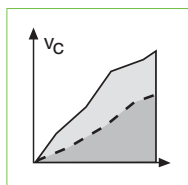


with radius (R) or with chamfer (F) and wiper geometry (PF)

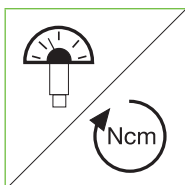
Carbide						Part nr. 20295	Part nr. 20494	Part nr. 20496	Part nr. 20498		
						uncoated	coated	coated	coated		
Code	Drawing nr.	R	AL°	F	PF	K10	G12	G16	G26		
31,080	W 3108-0314 1645 N		16	0.3x45°	0,9	●	○	○	○		
31,081	W 3108-0414 1620 N	0.4	16			●	○	○	○		
31,082	W 3108-0314 1045 N		10	0.3x45°	0,9	○	●	●	●		
31,083	W 3108-0414 1000 N	0.4	10			○	●	●	●		
PCD						Part nr. 20299	Part nr. 20300	Part nr. 20301	Part nr. 20302	Part nr. 20303	Part nr. 20304
Code	Drawing nr.	R	AL°	F	PF	PCD	PCD 3	PCD C	PCD 1	CBN	CBN 8
31,080	W 3108-0314 1045 N		10	0.3x45°	0.9	●	○	○	○	○	○
31,081	W 3108-0314 0045 N		0	0.3x45°	0.9	●	○	○	○	○	○
31,082	W 3108-0414 0000 N	0.4	0			●	○	○	○	○	○
31,083	W 3108-0814 0000 N	0.8	0							○	○

● ex stock ○ in short time available

Ordering example: 1 piece W 3108-0314 1645 N K10 = Ordering number: 20295 31,080



Application
recommendations
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Adjustment
instruction
page 44



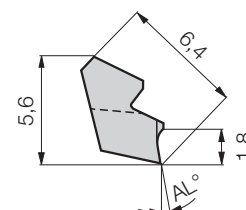
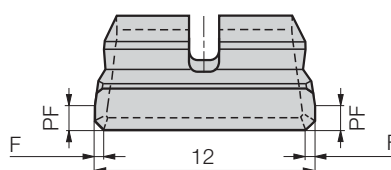
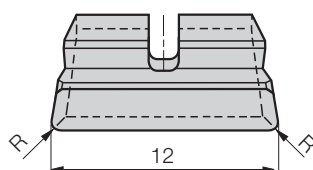
Geometry and
grade selection
pages 37-39

Inserts

precision ground

Insert W 6120-.... N

Carbide / carbide coated / PCD



with radius (R) or with chamfer (F) and wiper geometry (PF)

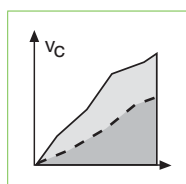
Carbide						Part nr. 20305	Part nr. 20499	Part nr. 20501	Part nr. 20503
						uncoated	coated	coated	coated
Code	Drawing nr.	R	AL°	F	PF	K10	G12	G16	G26
61,200	W 6120-0318 1645 N		16	0,3x45°	1	●	○	○	○
61,201	W 6120-0418 1620 N	0,4	16			●	○	○	○
61,202	W 6120-0318 1045 N		10	0,3x45°	1	○	●	●	●
61,203	W 6120-0418 1000 N	0,4	10			○	●	●	●

PCD						Part nr. 20309	Part nr. 20310	Part nr. 20311	Part nr. 20312
Code	Drawing nr.	R	AL°	F	PF	PCD	PCD 3	PCD C	PCD 1
61,200	W 6120-0318 1045 N		10	0,3x45°	1	●	○	○	○
61,201	W 6120-0318 0045 N		0	0,3x45°	1	●	○	○	○
61,202	W 6120-0418 0000 N	0,4	0			●	○	○	○

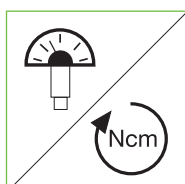
						Part nr. 20390
Code	Drawing nr.	R	AL°	F	PF	PCD
61,201	W 6120-0118 6245 R		6	0,1x45°	1,8	●

● ex stock ○ in short time available

Ordering example: 1 piece W 6120-0318 1645 N K10 = Ordering number: 20305 61,200



Application
recommendations
pages 40-43



Adjustment
instruction
page 44

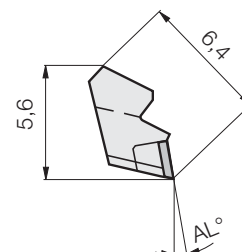
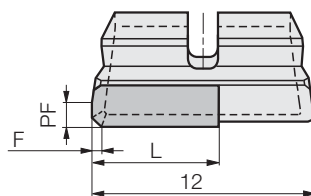
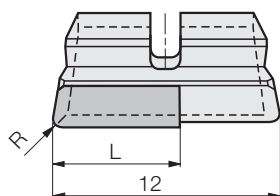


Inserts PCD
W 3108-... .. N
W 6120-... .. N

Inserts

precision ground

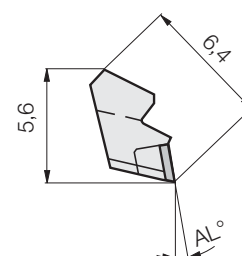
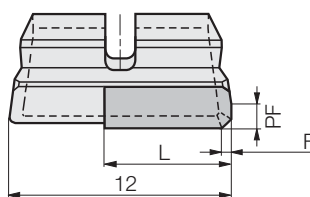
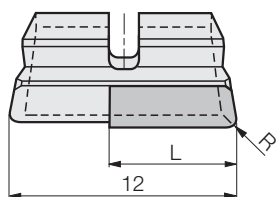
Insert W 612.-..... R PCD / CBN



with radius (R) or with chamfer (F) and wiper geometry (PF)

PCD / CBN							Part nr. 20313	Part nr. 20314	Part nr. 20315	Part nr. 20316	Part nr. 20317	Part nr. 20318
Code	Drawing nr.	L	R	AL°	F	PF	PCD	PCD 3	PCD C	PCD 1	CBN	CBN 8
61,270	W 6127-0318 0045 R	7		0	0,3x45°	1	●	●	○	○		
61,271	W 6127-0318 1045 R	7		10	0,3x45°	1	●	○	○	○		
61,272	W 6127-0318 6445 R	7		6	0,3x45°	1	●	○	○	○		
61,273	W 6127-0418 0000 R	7	0,4	0			●	○	○	○		
61,274	W 6127-0318 0000 R	7	0,3	0			●	●	○	○		
61,275	W 6127-0218 0000 R	7	0,2	0			●	○	○	○		
61,276	W 6127-0301 0045 R	7	0,1	0	0,3x45°		●	○	○	○		
61,278	W 6127-0818 0011 R	7	0,8	0		1,6					○	●
61,279	W 6127-0305 6445 R	7		6	0,3x45°		●					
61,250	W 6125-0118 6645 R	5		6	0,1x45°	1	●					

Insert W 612.-..... L PCD / CBN

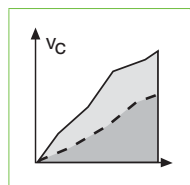


with radius (R) or with chamfer (F) and wiper geometry (PF)

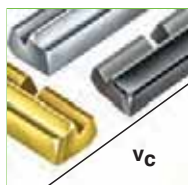
PCD / CBN							Part nr. 20319	Part nr. 20320	Part nr. 20321	Part nr. 20322	Part nr. 20323	Part nr. 20324
Code	Drawing nr.	L	R	AL°	F	PF	PCD	PCD 3	PCD C	PCD 1	CBN	CBN 8
61,270	W 6127-0318 0045 L	7		0	0,3x45°	1	●	●	○	○	○	○
61,271	W 6127-0418 0000 L	7	0,4	0			●	○	○	○		
61,250	W 6125-0118 6645 L	5		6	0,1x45°	1	●					

● ex stock ○ in short time available

Ordering example: 1 piece W 6127-0318 0045 R PCD = Ordering number: 20313 61,270



Application
recommendations
pages 40-43



Geometry and
grade selection
pages 37-39



Inserts PCD
W 6127-..... R
W 6127-..... L

Inserts

precision ground

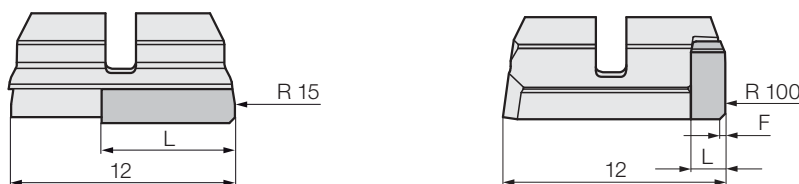
Wiper-insert W 612.-..... R PCD / CBN



with radius (R) or with chamfer (F) and wiper geometry (PF)

PCD / CBN						Part nr. 20313	Part nr. 20314	Part nr. 20315	Part nr. 20316	Part nr. 20317	Part nr. 20318
Code	Drawing nr.	L	R	AL°	F	PCD	PCD 3	PCD C	PCD 1	CBN	CBN 8
61,277	W 6127-0315 0045 R	7	15	0	0,3x45°	●			●		
61,200*	W 6120-1000 0445 R	1,8	100	0	0,3x45°	●					
*only with clamping set E 5032											

Wiper-insert W 612.-..... L PCD / CBN

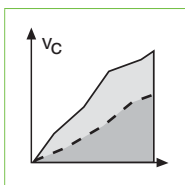


with radius (R) or with chamfer (F) and wiper geometry (PF))

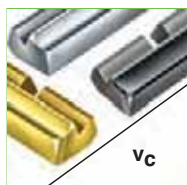
PCD / CBN						Part nr. 20319	Part nr. 20320	Part nr. 20321	Part nr. 20322	Part nr. 20323	Part nr. 20324
Code	Drawing nr.	L	R	AL°	F	PCD	PCD 3	PCD C	PCD 1	CBN	CBN 8
61,277	W 6127-0315 0045 L	7	15	0	0,3x45°	●			●		
61,200*	W 6120-1000 0445 L	1,8	100	0	0,3x45°	●					
*only with clamping set E 5482											

● ex stock ○ in short time available

Ordering example: 1 piece W 6127-0315 0045 R PCD = Ordering number: 20313 61,277



Application
recommendations
pages 40-43



Geometry and
grade selection
pages 37-39



Inserts PCD
W 6127-..... R
W 6127-..... L

H Regeneration service

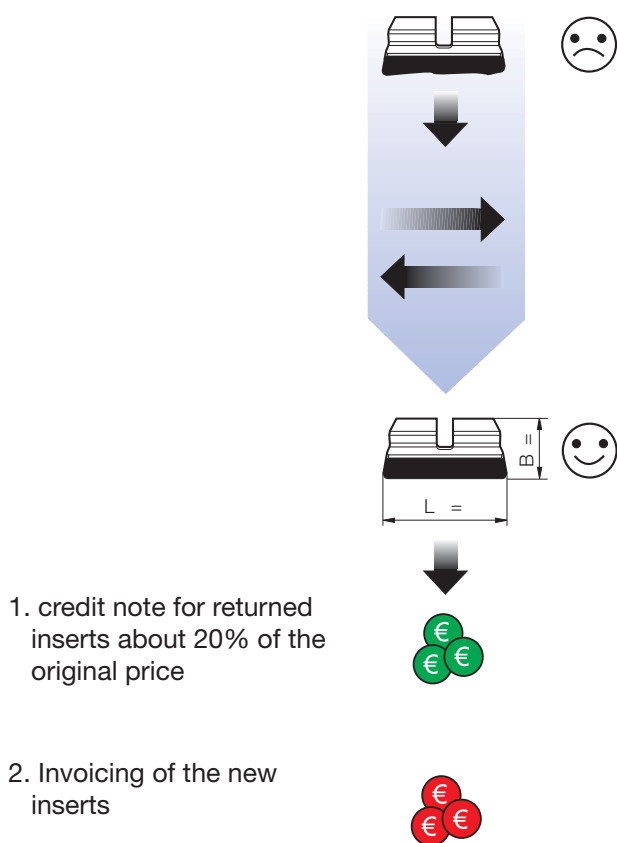
Hollfelder-Gühring services

for PCD- and PCBN-inserts

Thanks to our regeneration and regrinding service we can guarantee a long-term and constant application of your tools on the highest level.

Compared to new inserts the original grinding guarantees a constant quality of your workpieces and a constant tool life.

Regeneration service

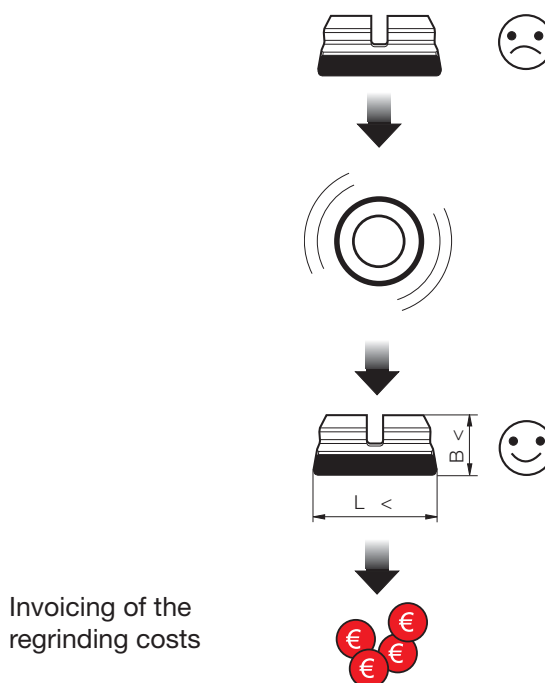


Inserts can be sent for regeneration in the quantities desired.

Advantage:

- short flow time
- constant tool dimensions (L and Ø D)

Regrinding service



We recommend to send us the complete set of inserts of one cutter for regrinding. Experience has shown that inserts can be reground three times at a maximum. However the wear pattern should not exceed 0,1 mm per regrinding!

We are always at your disposal for further information.

Telefon: +49 (0) 911-64 19 22-0

Fax: +49 (0) 911-64 19 22-10

E-mail: info@hollfelder-guehring.de

Application recommendations

Inserts



Grade matrix

Grade selection

Chipbreaker recommendation

Carbide / carbide coated / PCD / PCBN

● ▲ ▬
Chipbreaker →

Cutting material	Grade composition		Workpiece material					
			Steel	Stainless steel	Cast iron	Nonferrous materials	Heavy machinable materials	Hardened steel
Grade code	Substrat	Coating						
K10	K10	uncoated	▬	▬	● n	▲ n	● n	▬
Chipbreaker					-1000 -1045	-1620 -1645	-1620* -1645	
G12	K10	TiAlN Multilayer PVD	▬	● n	t ▲ n	t ● n	▬	▬
Chipbreaker				-1000 -1045	-1000 -1045	-1620 -1645		
G16	P40	TiAlN Multilayer PVD	▲ n	▲ n	●	▬	● n	▬
Chipbreaker			-1045 -1000		-1045 -1000		-1045 -1000	
G26	P40	TiN CVD	● n	● n	▬	▬	▲ n	▬
Chipbreaker			-1045 -1000	-1045 -1000				
PCD	Grain size 10 µm		▬	▬	▬	t ▲ n	▬	▬
Chipbreaker						-0045 -1045		
PCD 1	Grain size 1 µm		▬	▬	▬	t ▲ n	▬	▬
Chipbreaker						-0045 -1045		
PCD C	Grain size 25 µm		▬	▬	▬	t ▲ n	▬	▬
Chipbreaker						-0045 -1045		
PCD 3	Mixed grain		● n	▬	▬	t ▲ n	▬	▬
Spanleitstufe			-0045			-0045 -1045		
CBN			▬	▬	t ●	▬	▬	t ▲
Chipbreaker					-0000			-0000
CBN 8	high CBN-content		● n	▬	t ●	▬	▬	t ▲
Chipbreaker			-0000		-0000			-0000

▲ = very good applicable

● = applicable

▬ = not applicable

* = for Titanium

t = dry

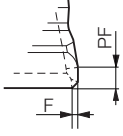
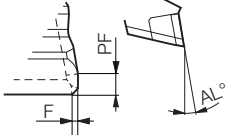
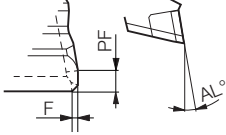
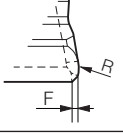
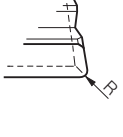

n = wet

Further cutting materials, coatings and geometries on request.





Application recommendations

Inserts

Application for PCD-Inserts

Application	Ordering number	
<ul style="list-style-type: none"> - High surface quality - Stable conditions 	↓ W 3108-0314 0045 N W 6120-0318 0045 N W 6127-0318 0045 R ↓ W 6127-0318 0045 L	
<ul style="list-style-type: none"> - High surface quality - Higher cutting depths - Instable conditions 	↓ W 3108-0314 1045 N W 6120-0318 1045 N W 6127-0318 1045 R W 6127-0318 6445 R ↓ W 6120-0118 6245 R	
<ul style="list-style-type: none"> - High surface quality - Very instable components 	W 6125-0118 6645 R	
<ul style="list-style-type: none"> - Very high surface quality (mixed assembly) 	↓ W 6127-0315 0045 R W 6120-1000 0445 R	
<ul style="list-style-type: none"> - Defined surface quality 	↓ W 3108-0414 0000 N W 6120-0418 0000 N W 6127-0418 0000 R W 6127-0418 0000 L W 6127-0318 0000 R ↓ W 6127-0218 0000 R	
<ul style="list-style-type: none"> - Defined surface quality with very instable components 	↓ W 6127-0301 0045 R W 6127-0305 6445 R	

Application recommendations for PCD-inserts

Application		Grade code
<ul style="list-style-type: none"> - Aluminium with low Si-content - high cutting speed - high surface quality 		PCD
<ul style="list-style-type: none"> - Aluminium with high Si-content - abrasive nonferrous-materials - very high cutting speed 		PCD 3 PCD C
<ul style="list-style-type: none"> - Sintersteel - CGI-machining 		PCD 3
<ul style="list-style-type: none"> - very high surface quality - Form-inserts 		PCD 1

Application recommendations

Inserts, cutting data recommendations



The cutting data recommendations in the table are guide values and depend to a high degree on the stability of the machine, fixture and workpiece.

Cutting groups	Material group	Composition / structure	Tensile strength	Hardness	Cutting speed v_c m/min						Feed rate f_z mm/z	
					K10	G12	G16	G26	PCD / PCD 1 PCD 3 PCD C	PCBN	W 3108-....	W 6120-....
1.1		C = 0.1 -0.25 annealed, long cutt.	420	125			240-280	190-330			0.05-0.15	0.05-0.25
1.2		C = 0.1 -0.25 annealed, short-chip	420	125			240-280	190-330				
2.1	Unalloyed steel	C = 0.25 -0.55 annealed, long cutt.	620	190			220-260	180-220				
2.2	Cast steel	C = 0.25 -0.55 annealed, short-chip	640	190			220-260	180-220				
3	Machining steel	C = 0.25 -0.55 tempered	850	250			210-250	170-210				
4		C = 0.25 -0.8 annealed	915	270			200-240	160-200				
5		C = 0.25 -0.8 tempered	1020	300			190-230	150-190				
6		annealed	610	180			140-180	110-150				
7	Low-alloy steel	tempered	930	275			130-170	100-140				
8	Cast steel											
9	Machining steel	tempered	1020	300			130-170	100-140				
		tempered	1190	350			130-170	100-140				
10	High-alloy steel	annealed	680	200			100-140	90-130				
	Cast steel											
11	High-alloy tool steel	hardened and tempered	1100	325			110-150	90-120				
12-13	Stainless steel and cast steel	ferritic/martensitic annealed	680	200			100-140	80-120				
		martensitic	810	240			100-140	80-120				
14.1	Stainless steel	austenitic quenched	610	180			100-140	80-120				
14.2	Stainless steel	austenitic/ferritic (duplex)	880	260			90-130	70-110				
15	Grey cast iron	perlite/ferritic		180	90-130	170-250				600-800		
16		perlite (martensitic)		260	80-120	140-180	90-130			400-600		
17	Cast iron with	ferritic		160	70-110	130-170				400-600		
18	nodular cast iron	perlite		250	60-90	100-140	90-130					
19	Malleable	ferritic		130	80-120	140-180				500-800		
20		perlite		230	60-90	120-160						
21	Aluminium	not heat treatable		60	-1000	-1500			-5000			
22	forging alloys	heat treatable/heat treated		100	-800	-1200			-5000			
23	Aluminium	<12% Si not heat treatable		75	-800	-1200			-5000			
24	casting alloys	<12% Si heat treatable/heat treated		90	-600	-1000			-5000			
25		>12% Si not heat treatable		130		-800			-1500			
26	Copper	Machined alloys, Pb >1%		110	200-300	350-450			-2000			
27	Copper alloys	CuZn, CuSnZn		90	200-300	350-450			-2000			
28	(bronze, brass)	Cu lead free Copper/electrolyte copper		100	200-300	350-550			-2000			
29	Non metallic	Duroplastic	90		240-280	400-500			-3000			
30	materials	Reinforced materials	100		240-280	400-500			-3000			
31	Heat resistant alloys	Fe-based annealed		200				40-60				
32		heat treated		230				40-60				
33		Ni- or Co-based annealed		250				40-60				
34		heat treated		350				35-55				
35		cast		320				35-55				
36	Titanium alloys	pure titanium	400					35-55				
37		Alpha-beta alloys	1050					50-70				
38	Hardened steel			50-62						150-300		
39												

Application recommendations

Inserts

Examples for achievable surface qualities

depending on the corner profile of the inserts:

Aluminium



Cutting data $f_z = 0.14 \text{ mm}$, $v_c = 2.000 \text{ m/min}$

PCD-inserts with corner radius 0.4 =>

$R_a = 3.2 \text{ } \mu\text{m}$

$R_z = 17.0 \text{ } \mu\text{m}$

PCD-inserts with chamfer and wiper geometry =>

$R_a = 0.25 \text{ } \mu\text{m}$

$R_z = 2.0 \text{ } \mu\text{m}$

Cast iron



Cutting data $f_z = 0.13 \text{ mm}$, $v_c = 250 \text{ m/min}$

Inserts with corner radius 0.4 =>

$R_a = 1.7 \text{ } \mu\text{m}$

$R_z = 11.5 \text{ } \mu\text{m}$

Inserts with chamfer and wiper geometry =>

$R_a = 0.9 \text{ } \mu\text{m}$

$R_z = 6.0 \text{ } \mu\text{m}$

Steel



Cutting data $f_z = 0.13 \text{ mm}$, $v_c = 180 \text{ m/min}$

Inserts with corner radius 0.4 =>

$R_a = 1.4 \text{ } \mu\text{m}$

$R_z = 10.0 \text{ } \mu\text{m}$

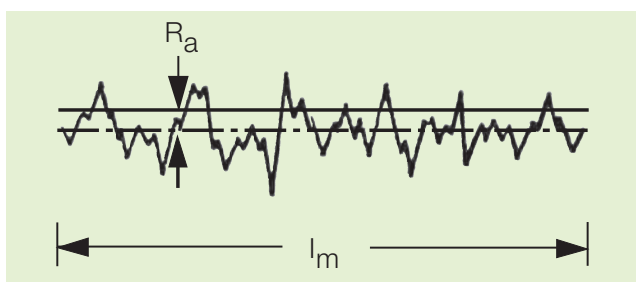
Inserts with chamfer and wiper geometry =>

$R_a = 0.7 \text{ } \mu\text{m}$

$R_z = 5.5 \text{ } \mu\text{m}$

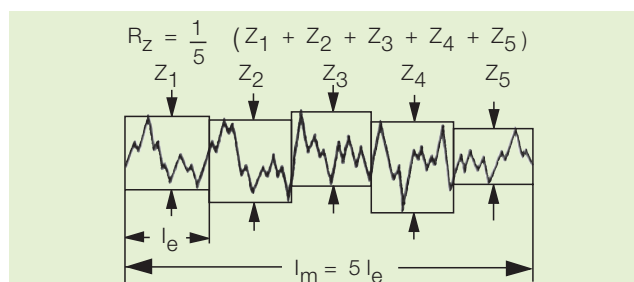
Mean value of roughness R_a

is the arithmetical mean value of the absolute values of all distances of the roughness profile R from the centre line within the total measuring length l_m



Average peak-to-valley height R_z

is the average value of the single peak-to-valley heights of five successive single measuring lengths l_e



Application recommendations

Milling cutters



Advice and practical tips

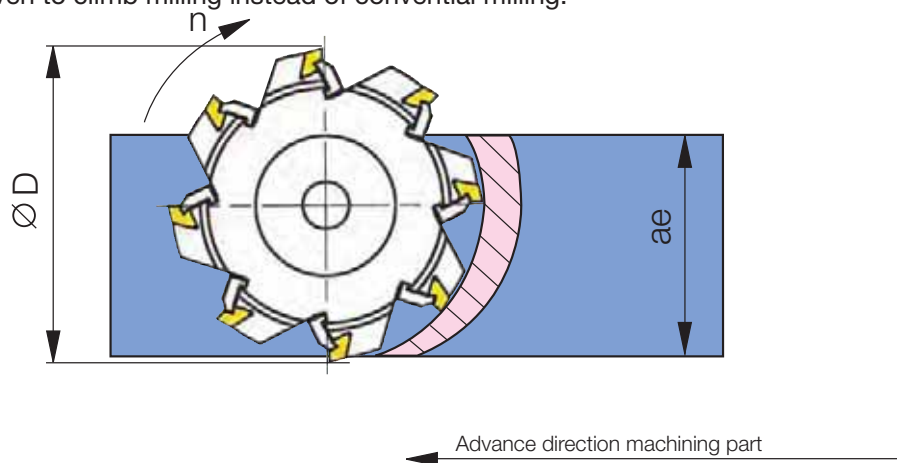
for the application of Holffelder-Gühring face milling cutters

Proportion $ae / \varnothing D$ should not exceed 0.8.

If the performance of the machine is not sufficient please choose a smaller milling cutter and / or do the milling in several steps.

Depending on the machining part and fixturing the milling cutter should come out of the workpiece in a tangential way.

Preference should be given to climb milling instead of conventional milling.

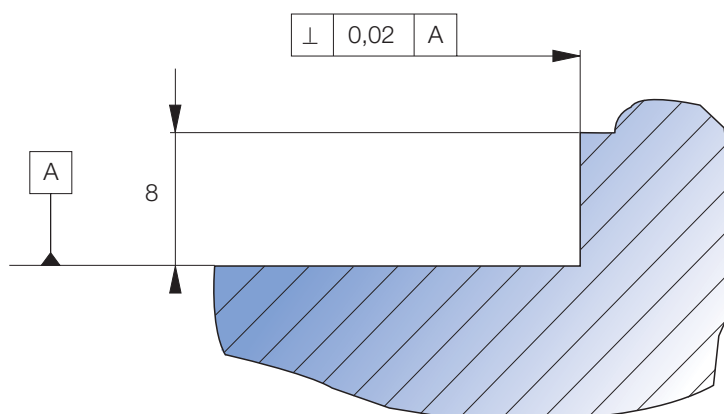


Insufficient clamping of the workpiece, an extreme tool overhang as well as the wrong choice of cutting parameter directly influence the milling results as well as the surface quality, tool life and processing time is concerned.

Should you need any technical support please contact us.

Perpendicularity of the shoulder on the machined part

valid for the complete milling cutter program



Application recommendations

Milling cutters

Power consumption for face milling cutters

Guide values in order to determine the necessary power for Hollfelder-Gühring face milling cutters

Mat GGG 40
 $\varnothing D = 63$ $z = 8$ $v_C = 120$

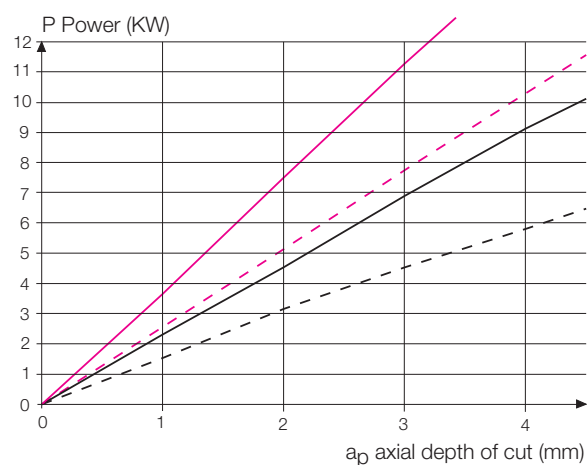


$f_z = 0,08$
 $f_z = 0,12$

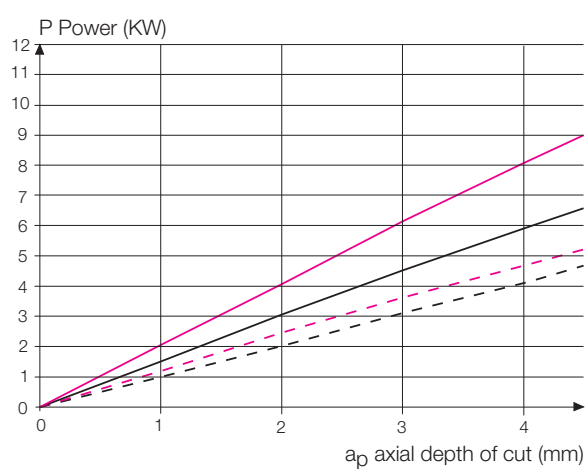
$a_E / \varnothing D = 0,8$

$a_E / \varnothing D = 0,5$

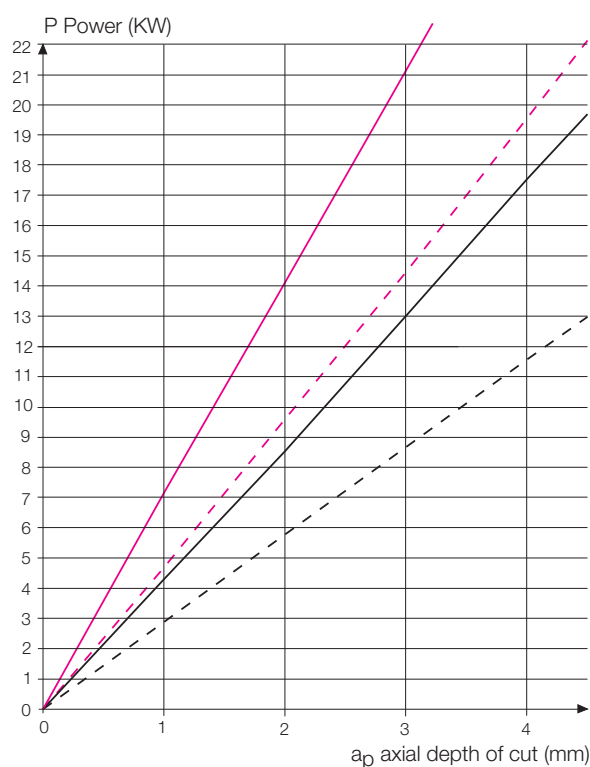
AlSi 10%
 $\varnothing D = 63$ $z = 8$ $v_C = 500$



Mat GGG 40
 $\varnothing D = 125$ $z = 15$ $v_C = 120$



AlSi 10%
 $\varnothing D = 125$ $z = 15$ $v_C = 500$



Application recommendations

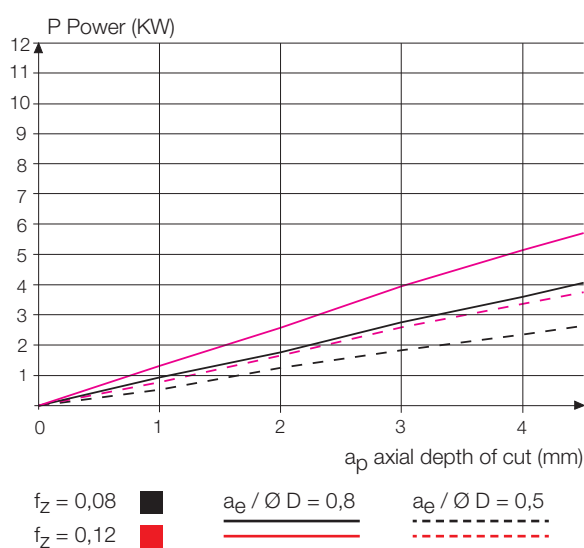
Milling cutters



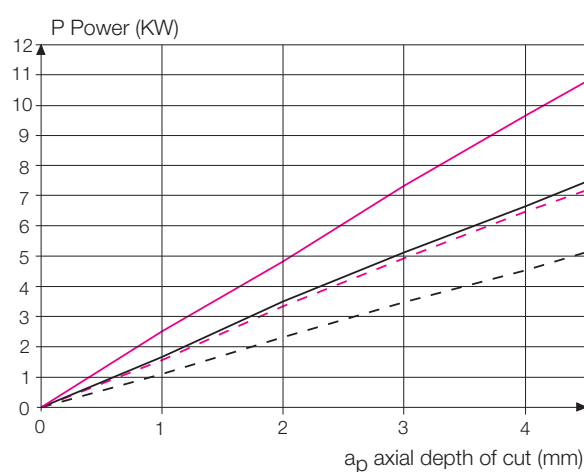
Power consumption for face milling cutters

Guide values in order to determine the necessary power for Hollfelder-Gühring face milling cutters

Steel, low-alloyed and tempered
 $\varnothing D = 63$ $z = 8$ $v_c = 80$



Steel, low-alloyed and tempered
 $\varnothing D = 125$ $z = 15$ $v_c = 80$



General formula list

Formula and abbreviations			Calculation of:	
$\varnothing D$	Milling cutter	[mm]	Cutting speed	$v_c = \frac{\varnothing D \cdot \pi \cdot n}{1000}$
a_p	axial depth of cut	[mm]	Number of revolutions	$n = \frac{v_c \cdot 1000}{\varnothing D \cdot \pi}$
a_e	Width of cut	[mm]	Feed rate	$v_f = f_z \cdot n \cdot z$
v_c	Cutting speed	[m/min]	Feed rate per tooth	$f_z = \frac{v_f}{n \cdot z}$
n	Numbers of revolutions - S	[min ⁻¹]	Processing time	$T_c = \frac{L_m}{v_f}$
z	Number of teeth		Rate of metal removal	$Q = \frac{a_p \cdot a_e \cdot v_f}{1000}$
f_z	Feed rate per tooth	[mm]	Required drive power	$P = \frac{a_p \cdot a_e \cdot v_f \cdot k_c}{60 \cdot 10^6 \cdot \eta}$
v_f	Feed rate	[mm/min]		
L_m	Machining length	[mm]		
T_c	Machining time	[min]		
Q	Rate of metal removal	[cm ³ /min]		
k_c	Specific cutting force	[N/mm ²]		
P	Necessary power	[kW]		
η	Efficiency factor			

H Handling recommendations

Milling cutters

Adjustment instructions

for Hollfelder-Gühring milling cutters with eccentric adjustment

1. Loosen clamping element and clean the insert pocket properly. After the cleaning of the insert pocket the bore hole for the eccentric bolt has to be covered with E 5162 assembly paste E 5162 (copper or graphite based)

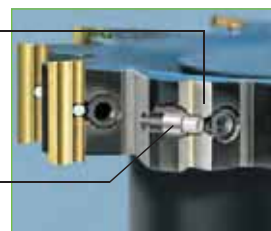
Highly exact insert pocket to attach the insert

2. Put a new insert in the insert pocket.

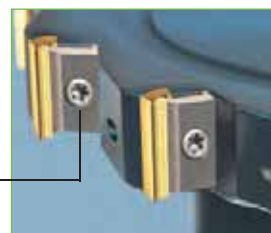


Please see that the slot in the insert „hooks into“ the eccentric bolt in the insert pocket.

Eccentric bolt for µm-accurate adjustment of the insert



3. Softly tighten the clamping element with a Torx-screw driver and then tighten it again with the necessary **torque wrench**. You will find the corresponding **torque wrench** as well as the torx-bits on page 31.



4. By means of the adjustment key (hex key) the cutting edges can be adjusted either towards each other and /or with regard to a specific length dimension. The adjustment system allows a continuous adjustment. All inserts have to be adjusted to the maximum length possible first and then towards each other or to the desired measure.

5. It is important that the adjustment is always only effected in one direction! If an unintended excessive or inferior adjustment occurs you only have to make another whole turn with the eccentric bolt.

6. It is not necessary to retighten the clamping element!

The tool can now be used.



Adjustment key (hex key) to work the eccentric bolt

Security advice: For security reasons the milling cutter must be returned to the manufacturer for inspection if the holder is damaged! The clamping sets must be renewed on a regular basis or in case that they show any sign of damage. Only original spare parts may be used!

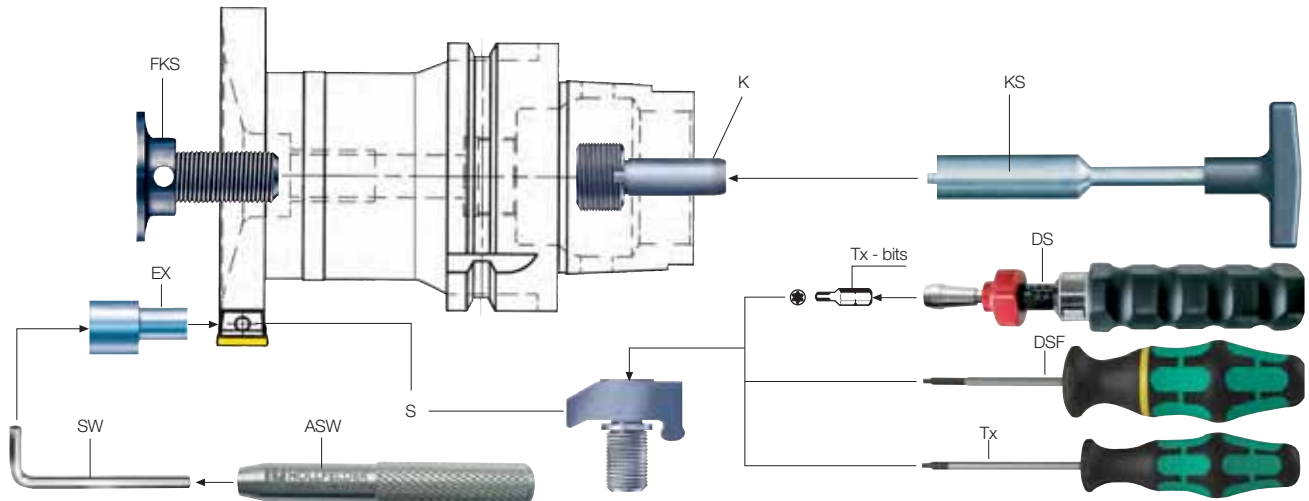
Torque for clamping elements

Tool Type	Clamping set	Torque (Ncm)	Torx size
H 3108	E 4265	70	Tx 6
H 6120	E 4119	140	Tx 8

Spare parts

Milling cutters

Spare parts and handling tools



Tool	S	Tx	DS	DSF	Tx-bits	EX	SW	ASW	FKS	K	KS
H 3108-.... R	E 4265	Tx 6	E 5400-6	E 5000	Tx 6-bit	E 4349	SW 1,3	E 5005			
									for monobloc	DIN 69893	
H 6120-.... R	E 4119	Tx 8	E 5400-8	E 5001	Tx 8-bit	E 4120	SW 1,5	E 5005		Viton-seals included	
									Ø 32 E 4193	for HSK 32 E 2807-1	E 4298
									Ø 40 E 4192	for HSK 40 E 2807-2	E 4299
									Ø 50 E 4230	for HSK 50 E 2807-3	E 4300
									Ø 63 E 4154	for HSK 63 E 2807-4	E 4301
									Ø 80 E 4121	for HSK 80 E 2807-5	E 4302
									Ø 100 E 4247-1	for HSK 100 E 2807-6	E 4303
									Ø 125 E 4247-1		
									Ø 160 E 4275-1		
									for put-on		
									milling cutters		
									Ø 40 E 3805		
									Ø 50 E 3806		
									Ø 63 E 3806		
									Ø 80 E 4079		
									Ø 100 E 4247-2		
									Ø 125 E 4275-2		
									Ø 160 E 4275-2		

Assembly paste E 5162

Please note: Clamping set S contains:

1 Clamping set, 1 sealing ring, 1 clamping screw

S Clamping set

Tx Torx-screw driver

DS Torque wrench adjustable (E 5000...)

DSF Torque wrench fixed (E 5400...)

Tx-bits Torx-bits

EX Eccentric bolt

SW Adjusting key

ASW Adaptor

FKS Coolant distribution screw

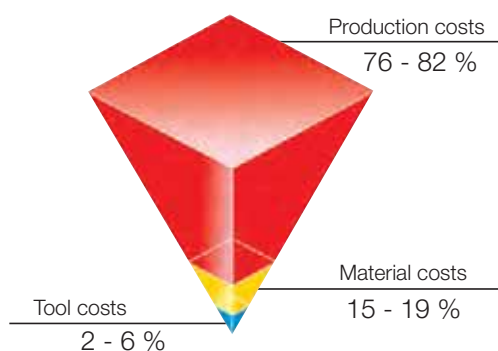
K Coolant pipe

KS Key for coolant pipe

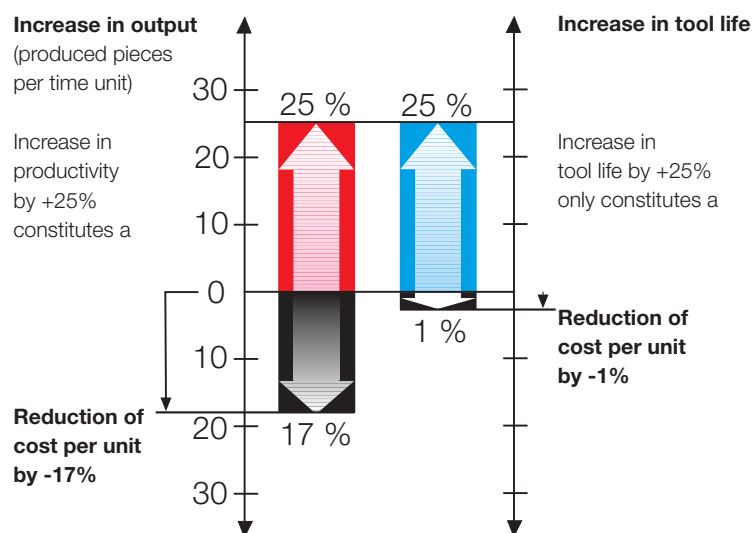
Ordering numbers for spare parts see pages 127-129

H Profitability calculation

Composition of cost per part



Comparison



Example: Milling of cylinder head faces with PCD

Conventional face milling cutter

Tool = Ø 100mm
z = 6
 v_c = 2.400 m/min
 f_z = 0.14 mm
 v_f = 6.418 mm/min
 Cutting length = 700 mm
t = 0.109 min/unit

Increase in
 from to
 productivity

Holfelder-Gühring face milling cutter

Tool = Ø 100mm
z = 13
 v_c = 2.400 m/min
 f_z = 0.14 mm
 v_f = 13.905 mm/min
 Cutting length = 700 mm
t = 0.05 min/unit

Machine costs	0.8 € / min
Costs per unit	0.087 €
Units per day	2.000
Costs per day	174.- €

Reduction of costs per unit

Machine costs	0.8 € / min
Costs per unit	0.040 €
Units per day	2.000
Costs per day	80.- €
Saving per day	94.- €

Application examples

Milling cutters



Milling of sealing surface

Workpiece	Gearbox case
Material	Al Si 9
Tool	Face milling cutter (Monobloc milling cutter) Standard H 6120-8000 8063 R Ø 80
Number of teeth	$z = 11$, all adjustable
Insert	W 6120-0418 0000 N
Cutting grade	PCD
Cutting speed	$V_C = 2.011$ m/min
Number of revolutions	$n = 8.000$ 1/min (max. nr. of spindle revolutions)
Feed rate	$V_f = 14.344$ mm/min
Feed rate per tooth	$f_z = 0.163$ mm
Internal coolant	yes, 70 bar above the coolant distribution screw
Surface requirement	$R_z = 12 - 25$



Milling on pump housing

Workpiece	Pump housing
Material	Al Si 1
Tool	Face milling cutter (Put-on milling cutter) Standard H 6120-6300 8063 R Ø 63
Number of teeth	$z = 8$, all adjustable
Insert	W 6127-0318 0045 R
Cutting grade	PCD
Cutting speed	$V_C = 3.560$ m/min
Number of revolutions	$n = 18.000$ 1/min
Feed rate	$V_f = 20.000$ mm/min
Feed rate per tooth	$f_z = 0.14$ mm
Internal coolant	yes, 50 bar above the coolant distribution screw





Rotating tools

Fineboring tools and
Cartridges

μ m-accurate radially
adjustable





Fineboring tools with tapered screw adjustment

Features

1 cutting edge \varnothing 6 - 13 mm

2 cutting edge \varnothing 10 - 19 mm

3 cutting edge \varnothing 15 - 25 mm

Adjustment system tapered screw

Spare parts

Adjustment instructions



page 50-51

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page 57



Fineboring tools with radial screw adjustment

Features

1 cutting edge \varnothing 7 - 20 mm

2 cutting edge \varnothing 10 - 40 mm

1 cutting edge \varnothing 7 - 20 mm short version

2 cutting edge \varnothing 10 - 40 mm short version

Spare parts

Adjustment instructions

Application example



page 58-59

page 60

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page 67



Cartridges μ m-accurate adjustable

Features

Tool bodies approach angle 90°

Setting dimensions

Spare parts

Application examples



page 68-69

page 70

page 71

page 72

page 73



Inserts

Features

Geometry and grade selection

Cutting data recommendations

Insert program

Special shapes

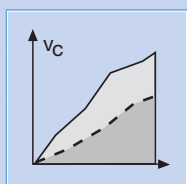
page 74

page 75

from page 76

page 78

page 92



Application recommendations

page 76-77



Form „Request for special tooling“

page 130

H Fineboring tools

Tapered screw adjustment μm -accurate adjustable

... precise

HOLLFELDER-GÜHRING CUTTING TOOLS

offers the possibility to adjust all inserts in the finebores μm -accurate in diameter by means of the tapered screw adjustment.



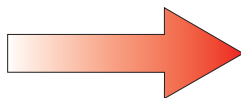
This high-performance tooling system is both suitable for various machining tasks and a wide variety of materials as well as for HSC machining.

The features:

- Highly, precise, special shaped pocket seat for excellent insert guidance
- Precision-ground insert
- Tapered screw for μm -accurate adjustment of the diameter
- Adjustment in clamped position of the insert
- Easy handling

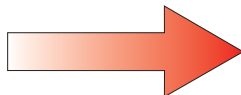
Advantages in the use of these tools:

Cutting forces are absorbed in the pocket seat



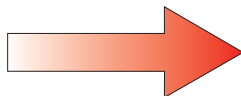
Extremely smooth cut, long-lasting pocket seat

Excellent face run-out and radial run-out accuracy...



...result in extremely high tool life and superior surface finish

Easy adjustment while inserts are clamped...



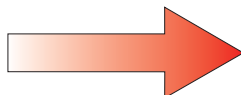
...reduce unproductive handling operations

Avoids change of measurements caused by reclamping of the insert



Constant and reliable measurements of the workpiece during machining

The second cutting edge is embedded in the pocket seat



Avoids destruction of the second cutting edge by evacuated chips

Fineboring tools

Tapered screw adjustment μm -accurate adjustable

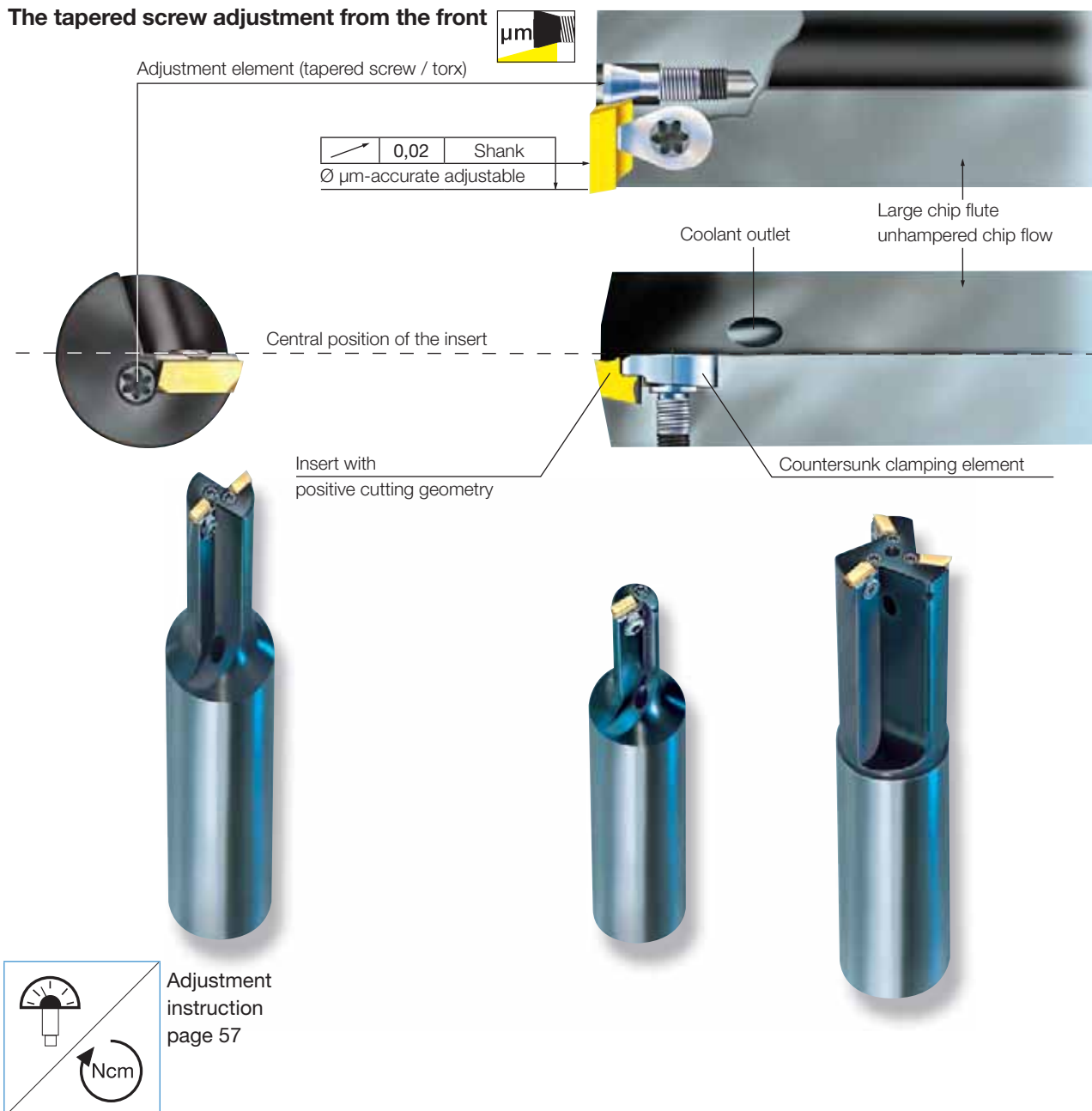
Additional advantages:

The large chip flutes in combination with finebores clamping elements which guarantee an excellent chip evacuation. The clamping element has to be released just a little bit in order to change the insert. But the clamping element itself remains securely connected to the holder.

Based on our standard tools we also design and manufacture customer specific solutions for your individual machining requirement.

Please use our special tool inquiry sheet on page 130 for your convenience.

The tapered screw adjustment from the front

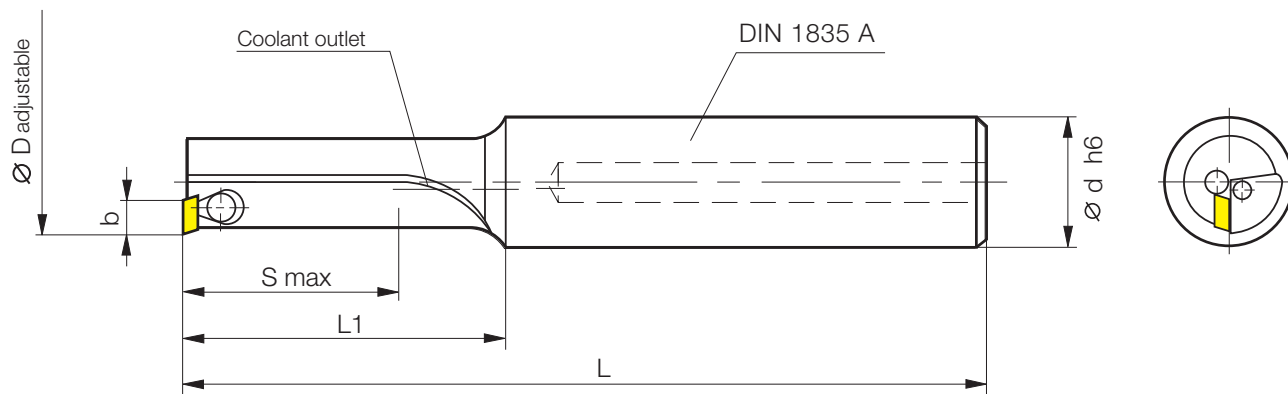




Fineboring tools

Tapered screw adjustment μm -accurate adjustable

1 cutting edge $\varnothing 6 - 13 \text{ mm}$
internal coolant



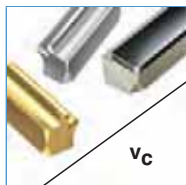
Part nr. 20011									
Code	Drawing nr.		b	Ø D	Ø d	S	L ₁	L	Inserts
6,200	H 1730-0620 1512 R	●	3	5.9 - 6.1	12	15	25	70	W 1730-... L
			3.25	6.4 - 6.6					W 1733-... L
7,200	H 1730-0720 1512 R	●	3	6.9 - 7.1	12	15	25	70	W 1730-... L
			3.25	7.4 - 7.6					W 1733-... L
8,200	H 1730-0820 2012 R	●	3	7.9 - 8.1	12	20	30	75	W 1730-... L
			3.25	8.4 - 8.6					W 1733-... L
9,200	H 1730-0920 2012 R	●	3	8.9 - 9.1	12	20	30	75	W 1730-... L
			3.25	9.4 - 9.6					W 1733-... L
10,200	H 2850-1020 2516 R	●	5	9.7 - 10.3	16	25	35	83	W 2850-...L
			5.25	10.2 - 10.8					W 2853-...L
11,200	H 2850-1120 2516 R	●	5	10.7 - 11.3	16	25	35	83	W 2850-...L
			5.25	11.2 - 11.8					W 2853-...L
12,200	H 2850-1220 3016 R	●	5	11.7 - 12.3	16	30	40	88	W 2850-...L
			5.25	12.2 - 12.8					W 2853-...L
13,200	H 2850-1320 3016 R	●	5	12.7 - 13.3	16	30	40	88	W 2850-...L
			5.25	13.2 - 13.8					W 2853-...L

● ex stock

Ordering example: 1 piece H 1730-0620 1512 R = Ordering number: 20011 6,200



Spare parts
page 56



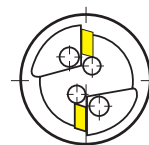
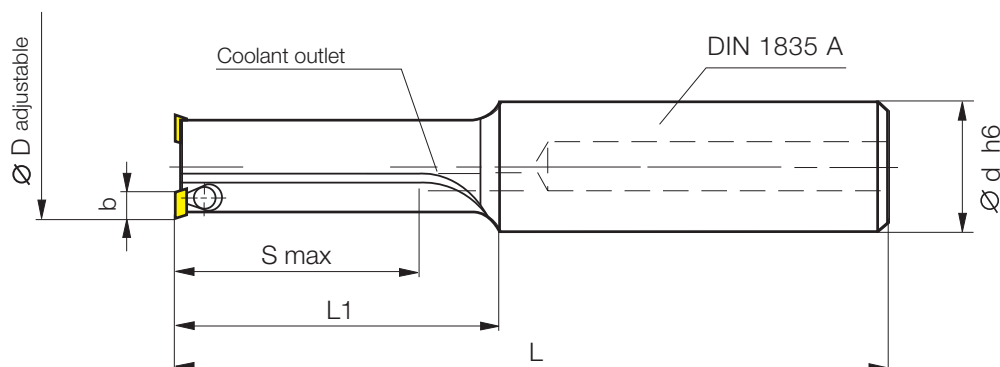
Geometry and
grade selection
pages 75-76

Fineboring tools



Tapered screw adjustment μm -accurate adjustable

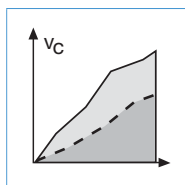
2 cutting edge $\varnothing 10 - 19 \text{ mm}$
internal coolant



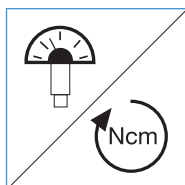
Part nr. 20012									
Code	Drawing nr.		b	Ø D	Ø d	S	L ₁	L	Inserts
10,200	H 1730-1020 2516 R	●	3	9.9 - 10.1	16	25	35	83	W 1730-... L
			3.25	10.4 - 10.6					W 1733-... L
11,200	H 1730-1120 2516 R	●	3	10.9 - 11.1	16	25	35	83	W 1730-... L
			3.25	11.4 - 11.6					W 1733-... L
12,200	H 1730-1220 3016 R	●	3	11.9 - 12.1	16	30	40	88	W 1730-... L
			3.25	12.4 - 12.6					W 1733-... L
13,200	H 1730-1320 3016 R	●	3	12.9 - 13.1	16	30	40	88	W 1730-... L
			3.25	13.4 - 13.6					W 1733-... L
14,200	H 1730-1420 3516 R	●	3	13.9 - 14.1	16	35	45	93	W 1730-... L
			3.25	14.4 - 14.6					W 1733-... L
15,200	H 2850-1520 3520 R	●	5	14.7 - 15.3	20	35	45	95	W 2850-...L
			5.25	15.2 - 15.8					W 2853-...L
16,200	H 2850-1620 4020 R	●	5	15.7 - 16.3	20	40	50	100	W 2850-...L
			5.25	16.2 - 16.8					W 2853-...L
17,200	H 2850-1720 4020 R	●	5	16.7 - 17.3	20	40	50	100	W 2850-...L
			5.25	17.2 - 17.8					W 2853-...L
18,200	H 2850-1820 4520 R	●	5	17.7 - 18.3	20	45	55	105	W 2850-...L
			5.25	18.2 - 18.8					W 2853-...L
19,200	H 2850-1920 4520 R	●	5	18.7 - 19.3	20	45	55	105	W 2850-...L
			5.25	19.2 - 19.8					W 2853-...L

● ex stock

Ordering example: 1 piece H 1730-1020 2516 R = Ordering number: 20012 10,200



Application
recommendations
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Adjustment
instruction
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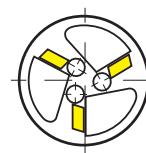
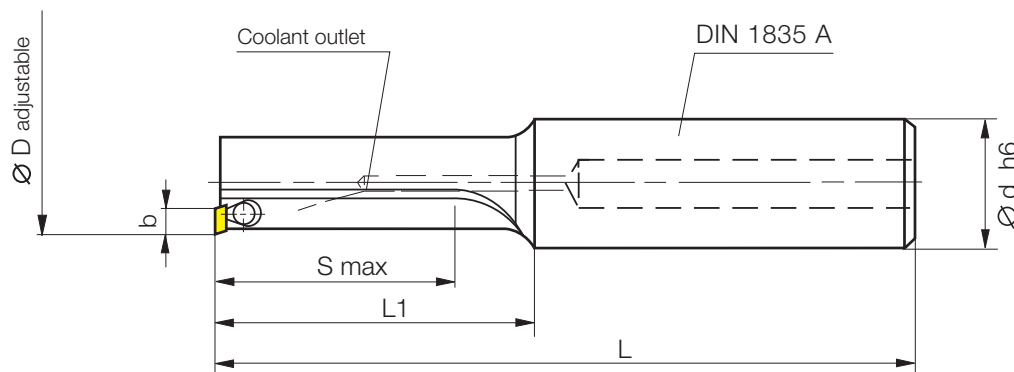
Form „Request for
customer specific
tools“
page 130



Fineboring tools

Tapered screw adjustment μm -accurate adjustable

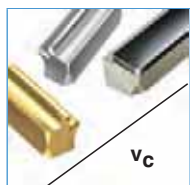
3 cutting edge $\varnothing 15 - 25 \text{ mm}$
internal coolant



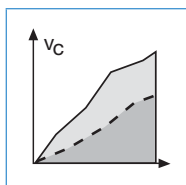
Part nr. 20013									
Code	Drawing nr.		b	$\varnothing D$	$\varnothing d$	S	L ₁	L	Inserts
15,200	H 1730-1520 3520 R	●	3	14.9 - 15.1	20	35	45	95	W 1730-... L
			3.25	15.4 - 15.6					W 1733-... L
16,200	H 1730-1620 4020 R	●	3	15.9 - 16.1	20	40	50	100	W 1730-... L
			3.25	16.4 - 16.6					W 1733-... L
17,200	H 1730-1720 4020 R	●	3	16.9 - 17.1	20	40	50	100	W 1730-... L
			3.25	17.4 - 17.6					W 1733-... L
18,200	H 1730-1820 4520 R	●	3	17.9 - 18.1	20	45	55	105	W 1730-... L
			3.25	18.4 - 18.6					W 1733-... L
19,200	H 1730-1920 4520 R	●	3	18.9 - 19.1	20	45	55	105	W 1730-... L
			3.25	19.4 - 19.6					W 1733-... L
20,200	H 2850-2020 5020 R	●	5	19.7 - 20.3	20	50	64	115	W 2850-...L
			5.25	20.2 - 20.8					W 2853-...L
21,200	H 2850-2120 5020 R	●	5	20.7 - 21.3	20	50	64	115	W 2850-...L
			5.25	21.2 - 21.8					W 2853-...L
22,200	H 2850-2220 5520 R	●	5	21.7 - 22.3	20	55	69	120	W 2850-...L
			5.25	22.2 - 22.8					W 2853-...L
23,200	H 2850-2320 5520 R	●	5	22.7 - 23.3	20	55	69	120	W 2850-...L
			5.25	23.2 - 23.8					W 2853-...L
24,200	H 2850-2420 6020 R	●	5	23.7 - 24.3	20	60	74	125	W 2850-...L
			5.25	24.2 - 24.8					W 2853-...L
25,200	H 2850-2520 6020 R	●	5	24.7 - 25.3	20	60	74	125	W 2850-...L
			5.25	25.2 - 25.8					W 2853-...L

● ex stock

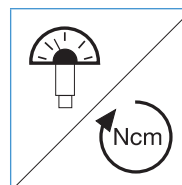
Ordering example: 1 piece H 1730-1520 3520 R = Ordering number: 20013 15,200



Geometry and
grade selection
pages 75-76



Application
recommendations
page 77



Adjustment
instruction
page 57

Adjustment system

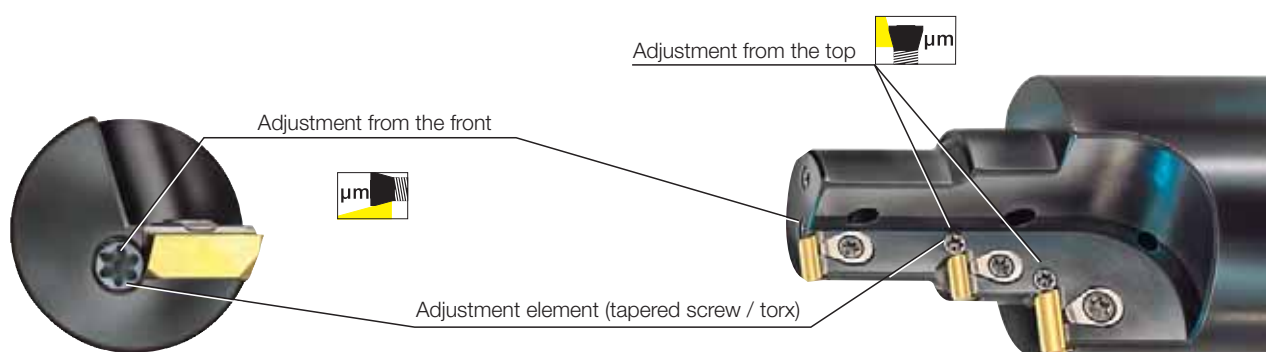
Tapered screw adjustment μm -accurate adjustable



The adjustment from the front and the top



The adjustment with tapered screw is an adjustment system of utmost flexibility which offers a solution in nearly every application making use of the possibility to adjust either in front or at the top. Whereas in single-step tools adjustment in front is preferably used, it's the adjustment at the top which renders many advantages for multi-step tools, even combinations of both adjustment systems can be integrated into a single tool. Both types feature μm -accurate adjustment without releasing the clamping of the inserts. Examples of application can be found on page 51 and in our Special Tool Catalogue KS 1.



Micro-Adjustment



The micro-adjustment can be considered as the logical next step in the development of the tapered screw adjustment from the front. A built-in adjustment cartridge in the holder enables the user to achieve an extremely precise μm -accurate adjustment of the machining measures when using inserts of the product ranges W 2850.... and W 3570....

This adjustment cartridge can be integrated from bore diameter 14 mm. The advantageous relation - 1 turn of screw $\hat{=}$ 0.02 mm adjustment range of machining diameter - results in an extremely precise adjustment directly in the machining center without any additional devices. Particularly in uninterrupted processes such as serial production of automotive parts, the wear of the insert can easily be compensated by use of the micro-adjustment. This type of adjustment system offers advantages also for the machining of highly precise single-item production parts as the adjustment process does not require the direct exchange of the tool.

Adjustment element 1 revolution $\hat{=}$ 0.02 mm im \varnothing

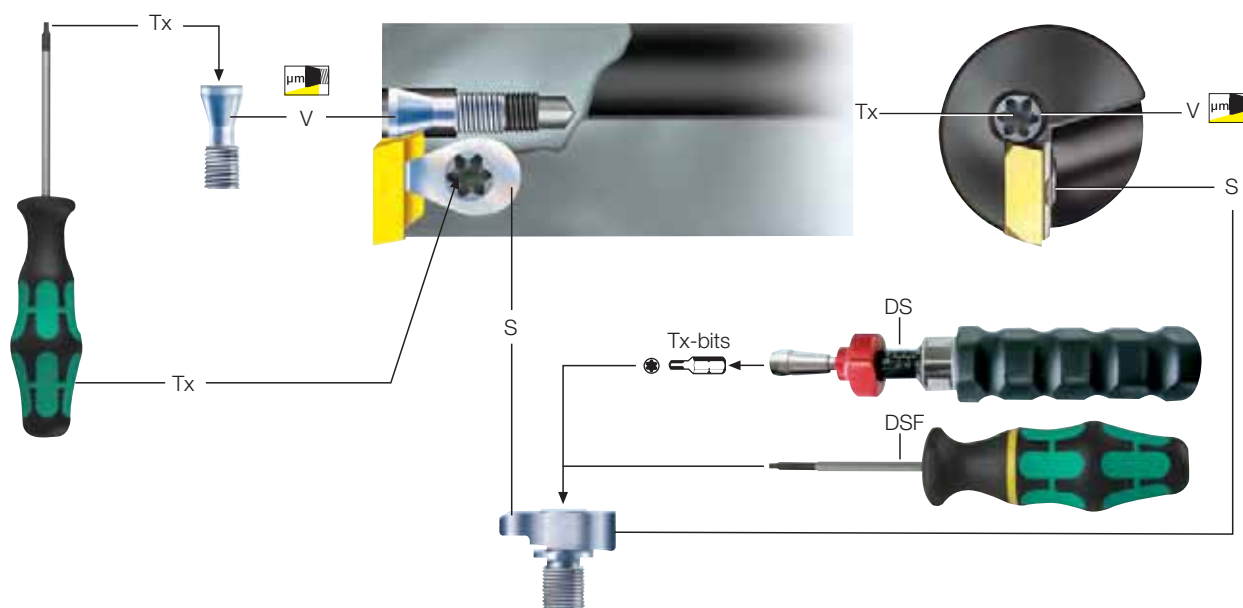




Fineboring tools

Tapered screw adjustment μm -accurate adjustable

Spare parts and handling tools



Tool	S	Tx	DSF	DS	Tx-bits	V
H 1730-..... R	E 3441	Tx 5	E 5400-5	E 5000	Tx 5-bit	E 3383
H 2850-..... R	E 1112	Tx 6	E 5400-6	E 5000	Tx 6-bit	E 2986

Please note: Clamping set S contains:

1 Clamping element, 1 Sealing ring, 1 Clamping screw

S	Clamping set
Tx	Torx-screw driver (for operating clamping and adjustment)
DS	Torque wrench adjustable (E 5000...)
DSF	Torque wrench fixed (E 5400...)
Tx-bits	Torx-bits
V	Adjustment screw (tapered screw)

Ordering numbers for spare parts see pages 127-129



Form „Request for customer specific tools“
page 130

Adjustment system

Tapered screw adjustment μm -accurate adjustable

Adjustment instruction



1. Changing the insert

Disassembly

- Loosen clamping set (1 to 2 turns) and remove the worn insert
- Clean the insert pocket
- Turn out the adjustment element 1 to 2 turns

Assembly

- Put a new insert in the pocket seat
- Press insert into the pocket seat, keep under pressure and slightly tighten the clamp set:

Torx 5 with 40 Ncm	Torx 6 with 60 Ncm
Torx 8 with 100 - 120 Ncm	Torx 15 with 250 - 300 Ncm

2. Insert adjustment

- Clamp the holder in the presetting device
- Adjust the insert in diameter up to 0.05 mm smaller than target measure
- Tighten the clamp set
We recommend to use our torque wrench:

E 5000 adjustable 20 - 120 Ncm	E 5400-5 fixed 45 Ncm for Tx5	E 5400-8 fixed 140 Ncm for Tx8
E 5001 adjustable 100 - 600 Ncm	E 5400-6 fixed 70 Ncm for Tx6	E 5400-15 fixed 345 Ncm for Tx15
- Adjust insert to the required machining diameter (It is not necessary to retighten the clamping set!)

Torque for clamping elements

Tool body Series	Clamping set	Torque (Ncm)	Torx size
H 1035	E 1100	45	Tx 5
H 1730	E 3441	45	Tx 5
H 2850	E 1085 / E 1112	70	Tx 6
H 3570	E 1060	140	Tx 8
H 4090	E 1040	345	Tx 15



Fineboring tools

Radial adjustment, μm -accurate adjustable

... flexible

HOLLFELDER-GÜHRING CUTTING TOOLS

This high-performance tooling system is both suitable for various machining tasks and a wide variety of materials.

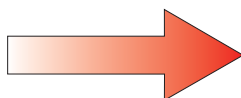


The features:

- Highly precise, special shaped pocket seat for excellent insert guidance
- Precision-ground insert
- Radial screw for μm -accurate adjustment
- Easy adjustment while inserts are clamped
- Easy handling
- Large range of adjustment

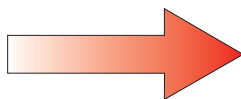
Advantages in the use of these tools:

Cutting forces are absorbed in the pocket seat



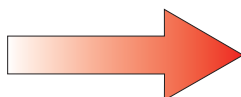
Extremely smooth cut, long-lasting pocket seat

Excellent face run-out and radial run-out accuracy...



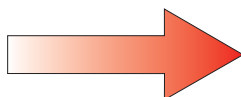
...result in extremely high tool life and superior surface finish

Easy adjustment while inserts are clamped...



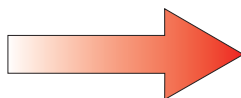
...reduce unproductive handling operations

Avoids change of measurements caused by reclamping of the insert



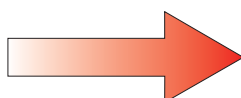
Constant and reliable measurements of the workpiece during machining

The second cutting edge is embedded in the pocket seat



Avoids destruction of the second cutting edge by evacuated chips

Low costs in stock inventory due to large diameter coverage of tools



Low capital requirement

Fineboring tools

Radial adjustment, μm -accurate adjustable

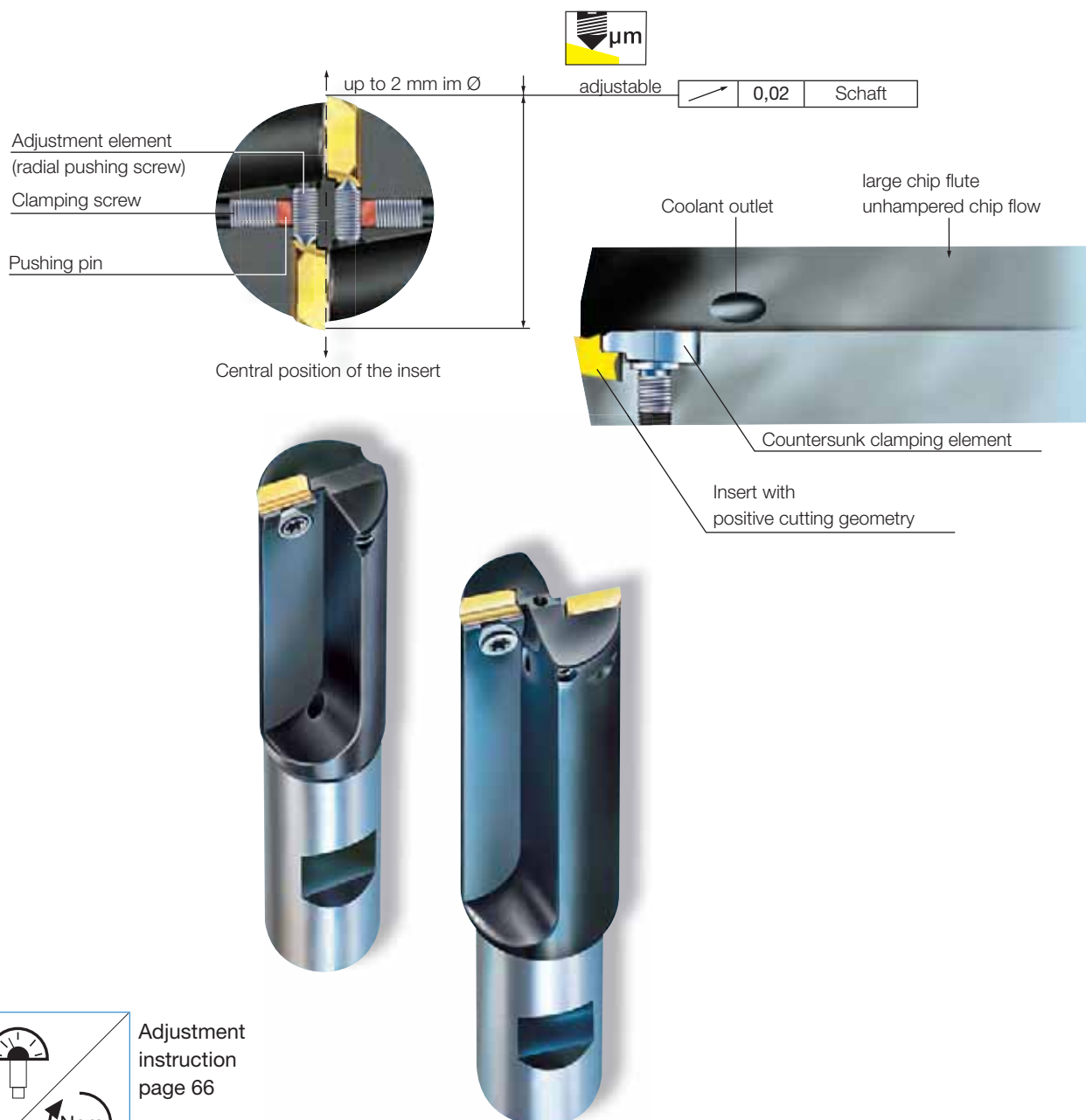
Additional design features:

Similar to the fineboring tools with tapered screw adjustment are the robust clamping element located in the chip flute, the large chip flutes and an internal coolant supply. These aforementioned design elements are responsible for an excellent chip evacuation even when long-chipping material is machined.

Based on our standard tools we also design and manufacture customer specific solutions for your individual machining requirements.

Please use our special tool inquiry sheet on page 130 for your convenience.

The radial fine adjustment with radial screw

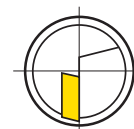
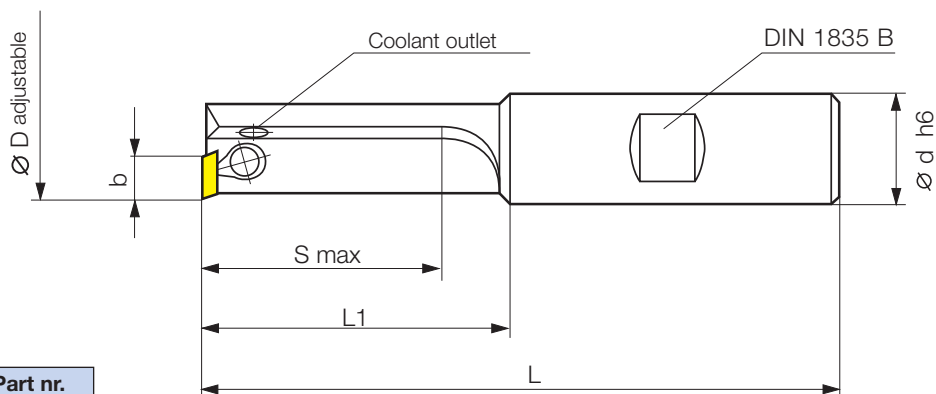




Fineboring tools

Radial adjustment, μm -accurate adjustable

1 cutting edges $\varnothing 7 - 20 \text{ mm}$
internal coolant



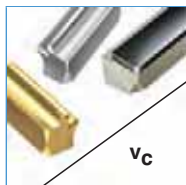
Part nr. 20021									
Code	Drawing nr.		b	$\varnothing D$	$\varnothing d$	S	L ₁	L	Inserts
7,000	H 1035-0700 2016 R	●	3.9	7 - 8	16	20	28	76	W 1035-... L
8,000	H 1035-0800 2016 R	●	3.9	8 - 9	16	20	28	76	↓
9,000	H 1035-0900 2016 R	●	3.9	9 - 10	16	20	28	76	↓
10,000	H 2850-1000 2516 R	●	5	10 - 11	16	25	35	83	W 2850-... L
11,000	H 2850-1100 2516 R	●	5	11 - 12	16	25	35	83	↓
12,000	H 2850-1200 3016 R	●	5	12 - 13	16	30	40	88	↓
13,000	H 2850-1300 3016 R	●	5	13 - 14	16	30	40	88	↓
14,000	H 3570-1400 3516 R	●	7	14 - 16	16	35	45	93	W 357-...L
16,000	H 3570-1600 4016 R	●	7	16 - 18	16	40	50	98	↓
18,000	H 3570-1800 4516 R	●	7	18 - 20	16	45	55	103	↓

● ex stock

Ordering example: 1 piece H 1035-0700 2016 R = Ordering number: 20021 7,000



Spare parts
pages 64-65



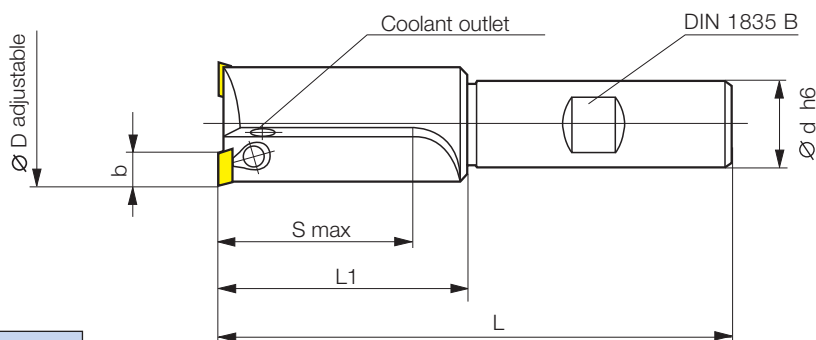
Geometry and
grade selection
pages 75-76

Fineboring tools

Radial adjustment, μm -accurate adjustable



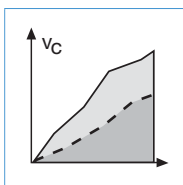
2 cutting edges $\varnothing 10 - 40 \text{ mm}$
internal coolant



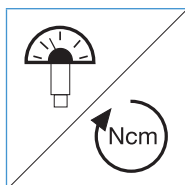
Part nr. 20022									
Code	Drawing nr.		b	Ø D	Ø d	S	L ₁	L	Inserts
10,000	H 1035-1000 2516 R	•	3.9	10 - 11	16	25	35	83	W 1035-... L
11,000	H 1035-1100 2516 R	•	3.9	11 - 12	16	25	35	83	↓
12,000	H 1035-1200 3016 R	•	3.9	12 - 13	16	30	40	88	
13,000	H 1035-1300 3016 R	•	3.9	13 - 14	16	30	40	88	
14,000	H 2850-1400 3516 R	•	5	14 - 15	16	35	45	93	W 2850-... L
15,000	H 2850-1500 3516 R	•	5	15 - 16	16	35	45	93	↓
16,000	H 2850-1600 4016 R	•	5	16 - 17	16	40	50	98	
17,000	H 2850-1700 4016 R	•	5	17 - 18	16	40	50	98	
18,000	H 2850-1800 4516 R	•	5	18 - 19	16	45	55	103	
19,000	H 2850-1900 4516 R	•	5	19 - 20	16	45	55	103	
20,000	H 3570-2000 5020 R	•	7	20 - 22	20	50	65	115	W 357-...L
22,000	H 3570-2200 5520 R	•	7	22 - 24	20	55	70	120	↓
24,000	H 3570-2400 6020 R	•	7	24 - 26	20	60	75	125	
26,000	H 4090-2600 6520 R	•	9	26 - 28	20	65	80	130	W 409-...L
28,000	H 4090-2800 7020 R	•	9	28 - 30	20	70	85	135	↓
30,000	H 4090-3000 7520 R	•	9	30 - 32	20	75	90	140	
32,000	H 4090-3200 8020 R	•	9	32 - 34	20	80	95	145	
34,000	H 4090-3400 8525 R	•	9	34 - 36	25	85	105	161	
36,000	H 4090-3600 9025 R	•	9	36 - 38	25	90	110	166	
38,000	H 4090-3800 9525 R	•	9	38 - 40	25	95	115	171	

● ex stock

Ordering example: 1 piece H 1035-1000 2516 R = Ordering number: 20022 10,000



Applications
recommendations
page 77



Adjustment
instruction
page 66



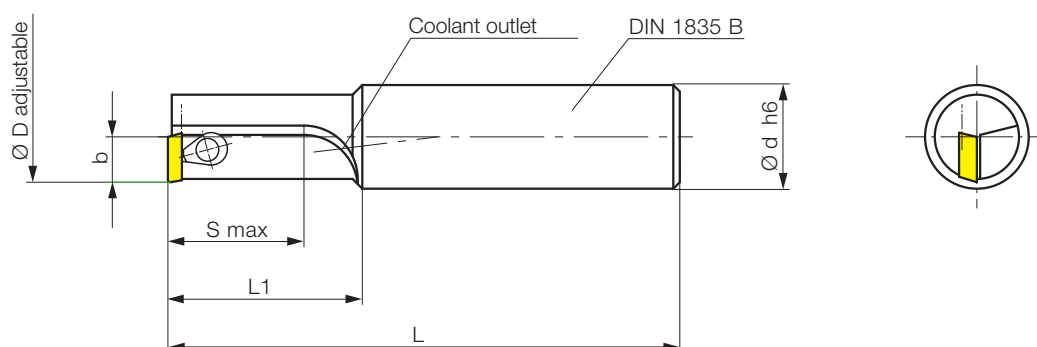
Form „Request for
customer specific
tools“
page 130



Fineboring tools

Radial adjustment short version (1,5xD)

1 cutting edges Ø 7 - 20 mm
internal coolant, Shank DIN 1835 A



Part nr. 20023									
Code	Drawing nr.		b	Ø D	Ø d	S	L ₁	L	Inserts
7,000	H 1035-0700 1116 R	●	3,9	7 - 8	16	11	19	67	W 1035-... L
8,000	H 1035-0800 1216 R	●	3,9	8 - 9	16	12	20	68	↓
9,000	H 1035-0900 1416 R	●	3,9	9 - 10	16	14	22	70	↓
10,000	H 2850-1000 1516 R	●	5	10 - 11	16	15	25	73	W 2850-... L
11,000	H 2850-1100 1716 R	●	5	11 - 12	16	17	27	75	↓
12,000	H 2850-1200 1816 R	●	5	12 - 13	16	18	28	76	↓
13,000	H 2850-1300 2016 R	●	5	13 - 14	16	20	30	78	↓
14,000	H 3570-1400 2116 R	●	7	14 - 16	16	21	31	79	W 3570-... L
16,000	H 3570-1600 2416 R	●	7	16 - 18	16	24	34	82	↓
18,000	H 3570-1800 2716 R	●	7	18 - 20	16	27	37	85	↓

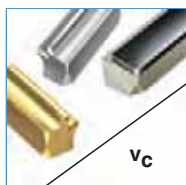
Tools in this series (1,5 x D) are optimal for the production of index bores and as a pilot tools for multi-flute reamers → see Guhring catalog HR reamers.

● ex stock

Ordering example: 1 piece H 1035-0700 2016 R = Ordering number: 20023 7,000



Spare parts
pages 64-65



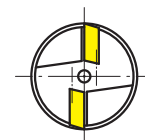
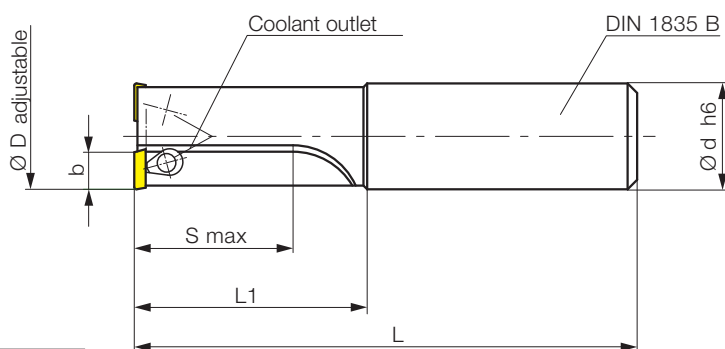
Geometry and
grade selection
pages 75-76

Fineboring tools

Radial adjustment short version (1,5xD)



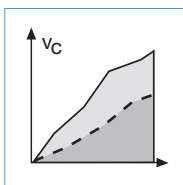
2 cutting edges Ø 10 - 40 mm
internal coolant, Shank DIN 1835 A



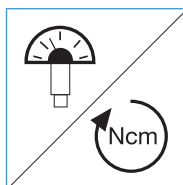
Part nr. 20024									
Code	Drawing nr.		b	Ø D	Ø d	S	L ₁	L	Inserts
10,000	H 1035-1000 1516 R	●	3,9	10 - 11	16	15	25	73	W 1035-... L
11,000	H 1035-1100 1716 R	●	3,9	11 - 12	16	17	27	75	↓
12,000	H 1035-1200 1816 R	●	3,9	12 - 13	16	18	28	76	
13,000	H 1035-1300 2016 R	●	3,9	13 - 14	16	20	30	78	
14,000	H 2850-1400 2116 R	●	5	14 - 15	16	21	31	79	W 2850-... L
15,000	H 2850-1500 2316 R	●	5	15 - 16	16	23	33	81	↓
16,000	H 2850-1600 2416 R	●	5	16 - 17	16	24	34	82	
17,000	H 2850-1700 2616 R	●	5	17 - 18	16	26	36	84	
18,000	H 2850-1800 2716 R	●	5	18 - 19	16	27	37	85	
19,000	H 2850-1900 2916 R	●	5	19 - 20	16	29	39	87	
20,000	H 3570-2000 3020 R	●	7	20 - 22	20	30	45	95	W 3570-... L
22,000	H 3570-2200 3320 R	●	7	22 - 24	20	33	48	98	↓
24,000	H 3570-2400 3620 R	●	7	24 - 26	20	36	51	101	
26,000	H 4090-2600 3925 R	●	9	26 - 28	25	39	54	110	W 4090-... L
28,000	H 4090-2800 4225 R	●	9	28 - 30	25	42	57	113	↓
30,000	H 4090-3000 4532 R	●	9	30 - 32	32	45	63	123	
32,000	H 4090-3200 4832 R	●	9	32 - 34	32	48	66	126	
34,000	H 4090-3400 5132 R	●	9	34 - 36	32	51	69	129	
36,000	H 4090-3600 5432 R	●	9	36 - 38	32	54	72	132	
38,000	H 4090-3800 5732 R	●	9	38 - 40	32	57	75	135	

● ex stock

Ordering example: 1 piece H 1035-1000 1516 R = Ordering number: 20024 10,000



Applications
recommendations
page 77



Adjustment
instruction
page 66



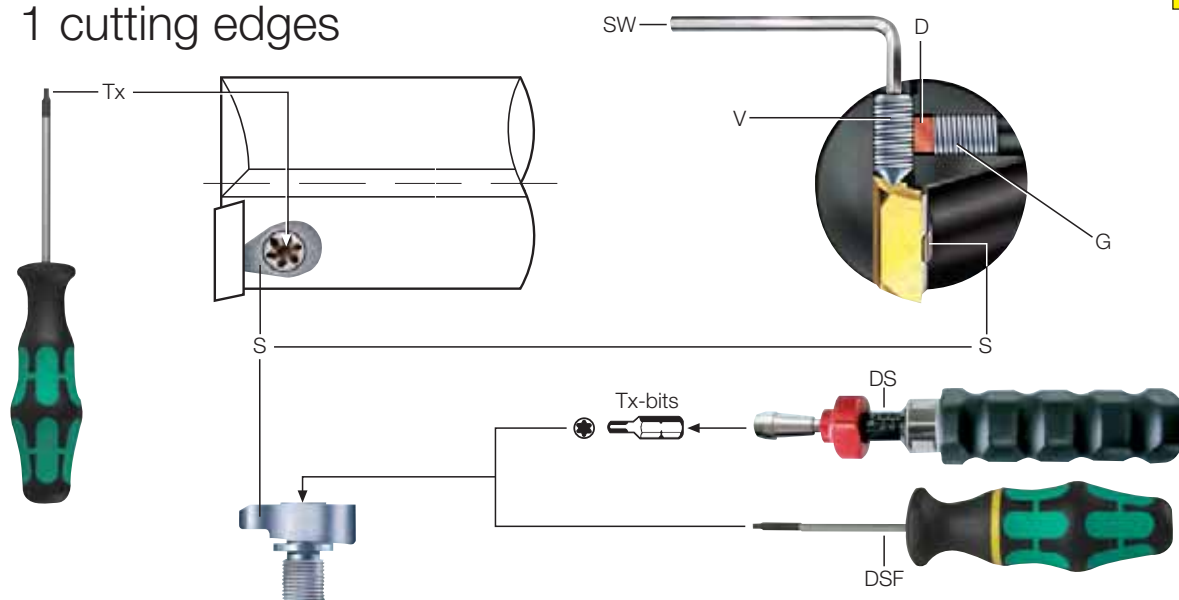
Form „Request for
customer specific
tools“
page 130

Fineboring tools

Radial adjustment, μm -accurate adjustable

Spare parts

1 cutting edges



Tool	S	Tx	DSF	DS	Tx-bits	V	SW	G	D
H 1035-0700 R	E 1100	Tx 5	E 5400-5	E 5000	Tx 5-bit	E 2450-1	0,7	E 2608-1	E 2649-1
H 1035-0800 R	E 1100	Tx 5	E 5400-5	E 5000	Tx 5-bit	E 2450-2	0,7	E 2608-2	E 2649-1
H 1035-0900 R	E 1100	Tx 5	E 5400-5	E 5000	Tx 5-bit	E 2450-3	0,7	E 2608-3	E 2649-1
H 2850-1000 R	E 1085	Tx 6	E 5400-6	E 5000	Tx 6-bit	E 2323-1	0,9	E 2610-2	E 2649-2
H 2850-1100 R	E 1085	Tx 6	E 5400-6	E 5000	Tx 6-bit	E 2323-2	0,9	E 2610-2	E 2649-2
H 2850-1200 R	E 1085	Tx 6	E 5400-6	E 5000	Tx 6-bit	E 2323-2	0,9	E 2610-3	E 2649-2
H 2850-1300 R	E 1085	Tx 6	E 5400-6	E 5000	Tx 6-bit	E 2323-3	0,9	E 2610-4	E 2649-2
H 3570-1400 R	E 1060	Tx 8	E 5400-8	E 5001	Tx 8-bit	E 2108-1	1,3	E 2612-1	E 2649-3
H 3570-1600 R	E 1060	Tx 8	E 5400-8	E 5001	Tx 8-bit	E 2108-2	1,3	E 2612-1	E 2649-3
H 3570-1800 R	E 1060	Tx 8	E 5400-8	E 5001	Tx 8-bit	E 2108-2	1,3	E 2612-2	E 2649-3

Please note: Clamping set S contains:

1 Clamping element, 1 Sealing ring, 1 Clamping screw

S	Clamping set
Tx	Torx-screw driver (for operating clamping)
DS	Torque wrench adjustable (E 5000... / E 5001...)
DSF	Torque wrench fix (E 5400...)
Tx-bits	Torx-bits
V	Adjustment screw (taper screw)
SW	Hex key
G	Clamping screw
D	Pushing pin

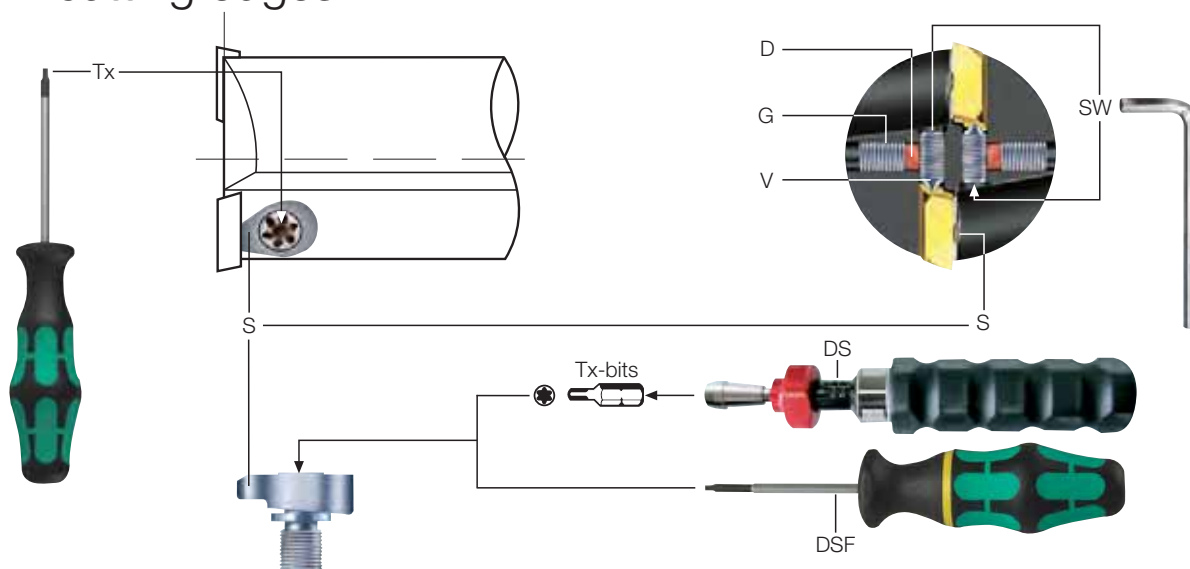
Ordering numbers for spare parts see pages 127-129

Fineboring tools



Radial adjustment, μm -accurate adjustable

Spare parts 2 cutting edges



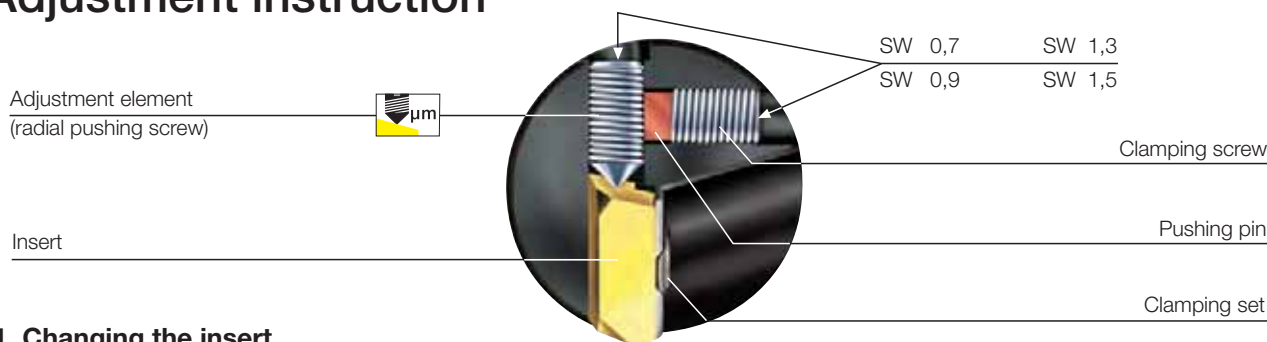
Tool	S	Tx	DSF	DS	Tx-bits	V	SW	G	D
H 1035-1000 R	E 1100	Tx 5	E 5400-5	E 5000	Tx 5-bit	E 2450-2	0,7	E 2608-1	E 2649-1
H 1035-1100 R	E 1100	Tx 5	E 5400-5	E 5000	Tx 5-bit	E 2450-2	0,7	E 2608-2	E 2649-1
H 1035-1200 R	E 1100	Tx 5	E 5400-5	E 5000	Tx 5-bit	E 2450-3	0,7	E 2608-3	E 2649-1
H 1035-1300 R	E 1100	Tx 5	E 5400-5	E 5000	Tx 5-bit	E 2450-3	0,7	E 2608-3	E 2649-1
H 2850-1400 R	E 1085	Tx 6	E 5400-6	E 5000	Tx 6-bit	E 2323-1	0,9	E 2610-1	E 2649-2
H 2850-1500 R	E 1085	Tx 6	E 5400-6	E 5000	Tx 6-bit	E 2323-1	0,9	E 2610-2	E 2649-2
H 2850-1600 R	E 1085	Tx 6	E 5400-6	E 5000	Tx 6-bit	E 2323-2	0,9	E 2610-2	E 2649-2
H 2850-1700 R	E 1085	Tx 6	E 5400-6	E 5000	Tx 6-bit	E 2323-2	0,9	E 2610-3	E 2649-2
H 2850-1800 R	E 1085	Tx 6	E 5400-6	E 5000	Tx 6-bit	E 2323-3	0,9	E 2610-3	E 2649-2
H 2850-1900 R	E 1085	Tx 6	E 5400-6	E 5000	Tx 6-bit	E 2323-4	0,9	E 2610-3	E 2649-2
H 3570-2000 R	E 1060	Tx 8	E 5400-8	E 5001	Tx 8-bit	E 2108-1	1,3	E 2612-1	E 2649-3
H 3570-2200 R	E 1060	Tx 8	E 5400-8	E 5001	Tx 8-bit	E 2108-2	1,3	E 2612-1	E 2649-3
H 3570-2400 R	E 1060	Tx 8	E 5400-8	E 5001	Tx 8-bit	E 2108-2	1,3	E 2612-2	E 2649-3
H 4090-2600 R	E 1040	Tx 15	E 5400-15	E 5001	Tx 15-bit	E 2109-1	1,5	E 2614-1	E 2649-4
H 4090-2800 R	E 1040	Tx 15	E 5400-15	E 5001	Tx 15-bit	E 2109-1	1,5	E 2614-1	E 2649-4
H 4090-3000 R	E 1040	Tx 15	E 5400-15	E 5001	Tx 15-bit	E 2109-2	1,5	E 2614-1	E 2649-4
H 4090-3200 R	E 1040	Tx 15	E 5400-15	E 5001	Tx 15-bit	E 2109-3	1,5	E 2614-2	E 2649-4
H 4090-3400 R	E 1040	Tx 15	E 5400-15	E 5001	Tx 15-bit	E 2109-3	1,5	E 2614-2	E 2649-4
H 4090-3600 R	E 1040	Tx 15	E 5400-15	E 5001	Tx 15-bit	E 2109-5	1,5	E 2614-2	E 2649-4
H 4090-3800 R	E 1040	Tx 15	E 5400-15	E 5001	Tx 15-bit	E 2109-5	1,5	E 2614-2	E 2649-4

Ordering numbers for spare parts see pages 127-129

Adjustment system

Radial adjustment μm -accurate adjustable

Adjustment instruction



1. Changing the insert

Disassembly

- Loosen clamping set (1 to 2 turns) and remove the worn insert
- Clean the insert pocket
- Turn out the adjustment element 1 to 2 turns

Assembly

- Put a new insert in the pocket seat
- Press insert into the pocket seat, keep under pressure and slightly tighten the clamp set:
Torx 5 with 40 Ncm Torx 6 with 60 Ncm
Torx 8 with 100 - 120 Ncm Torx 15 with 250 - 300 Ncm

2. Insert adjustment

- Clamp the holder in the presetting device
- Adjust the insert in diameter up to 0.05 mm smaller than target measure
- Tighten the clamp set
We recommend to use our torque wrench:
E 5000 adjustable 20 - 120 Ncm E 5400-5 fixed 45 Ncm for Tx5 E 5400-8 fixed 140 Ncm for Tx8
E 5001 adjustable 100 - 600 Ncm E 5400-6 fixed 70 Ncm for Tx6 E 5400-15 fixed 345 Ncm for Tx15
- Adjust insert to the required machining diameter (It is not necessary to retighten the clamping set!)

Torque for clamping elements

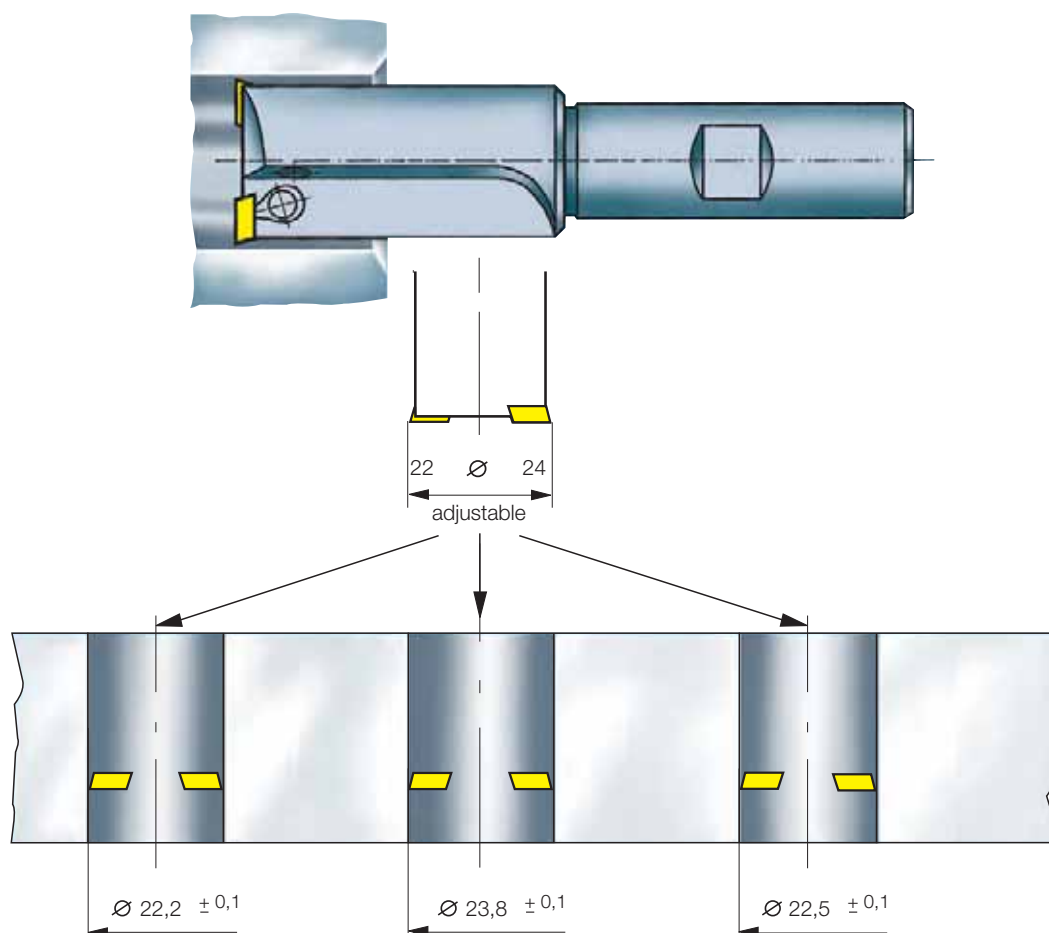
Tool body Series	Clamping set	Torque (Ncm)	Torx size
H 1035	E 1100	45	Tx 5
H 1730	E 3441	45	Tx 5
H 2850	E 1085 / E 1112	70	Tx 6
H 3570	E 1060	140	Tx 8
H 4090	E 1040	345	Tx 15

Application example

Application: Machining of mounting bores

Workpiece	Construction part (bores $\varnothing 22,2 / 22,5 / 23,8$ je 1x)
Material	St 50
Tool	Standard fineboring tool H 3570-2200 5520 R
Insert	W 3570-0418 1000 L (2x)
Cutting grade	G 26
Cutting speed	$V_C = 150$ m/min
Feed rate	$f = 0,25$ mm
Internal coolant	yes

Remark: Due to the wide adjustment range ($\varnothing 22 - 24$), all 3 holes ($\varnothing 18$ pre machined) can be machined with only one tool!



H Cartridges

with tapered screw adjustment, μm -accurate adjustable

...flexible

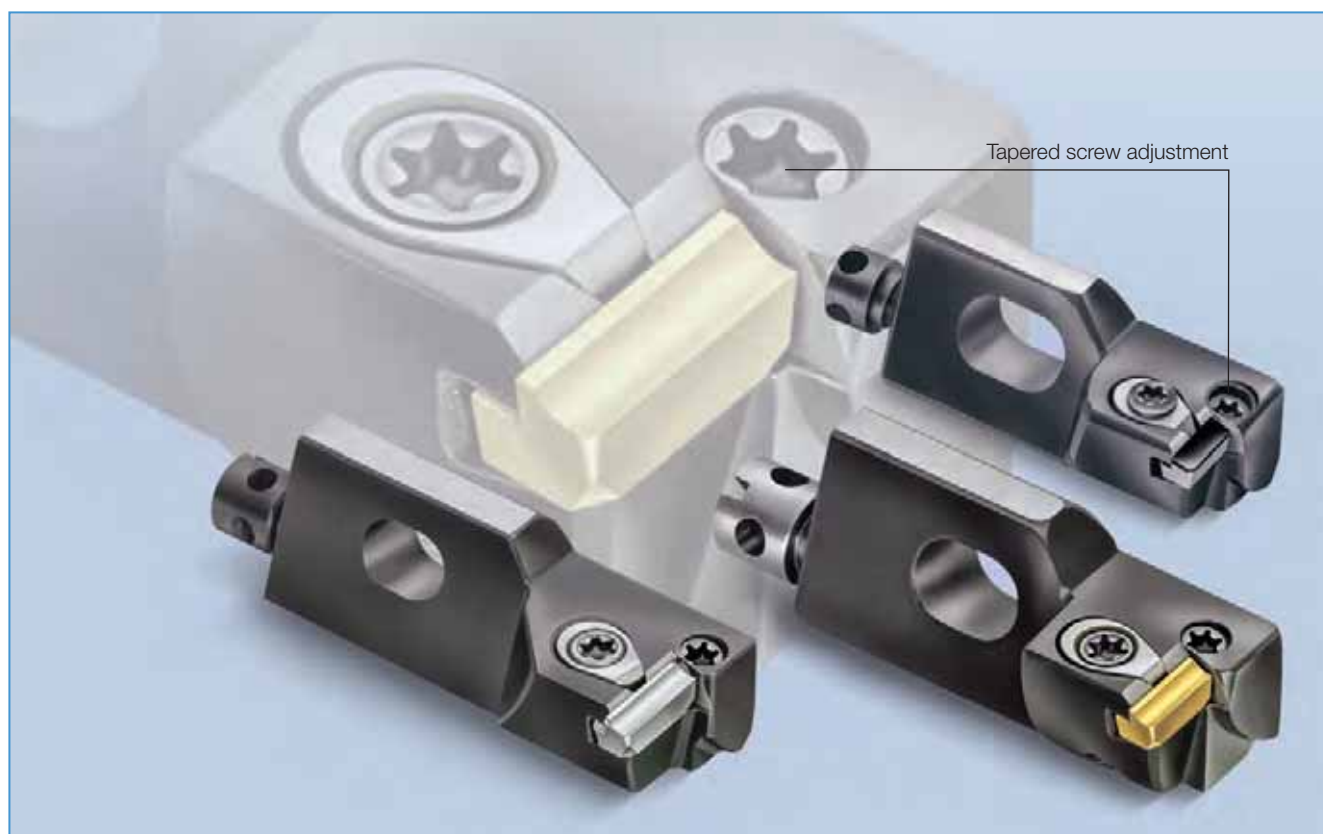
ISO-cartridges offer an utmost degree of flexibility in the design of customer specific tool solutions.

Particularly large tool diameters can be produced pricewise economically due to the relatively easy assembly of cartridges while the basic holders are made of aluminium or untempered steel. This design in many cases reduces weight and primarily costs.

Any inaccuracies that might occur can easily be compensated by means of the radial and axial adjustment of the cartridges.

The HOLLFELDER-GÜHRING cartridges differ from the competition particularly in the way the radial adjustment is achieved whereas dimensions are also according to ISO-DIN.

Contrary to other ISO DIN-cartridges with adjustment by radial screw or by a timeconsuming underlaying procedure, the machining diameter of Hollfelder-Gühring cartridges is adjusted in a convenient and highly precise way by means of a tapered screw.



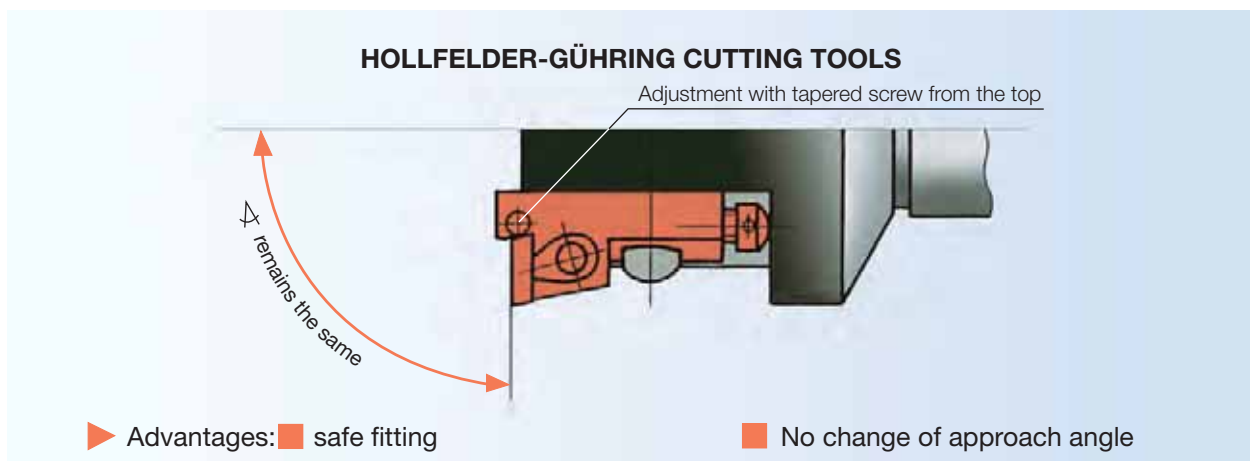
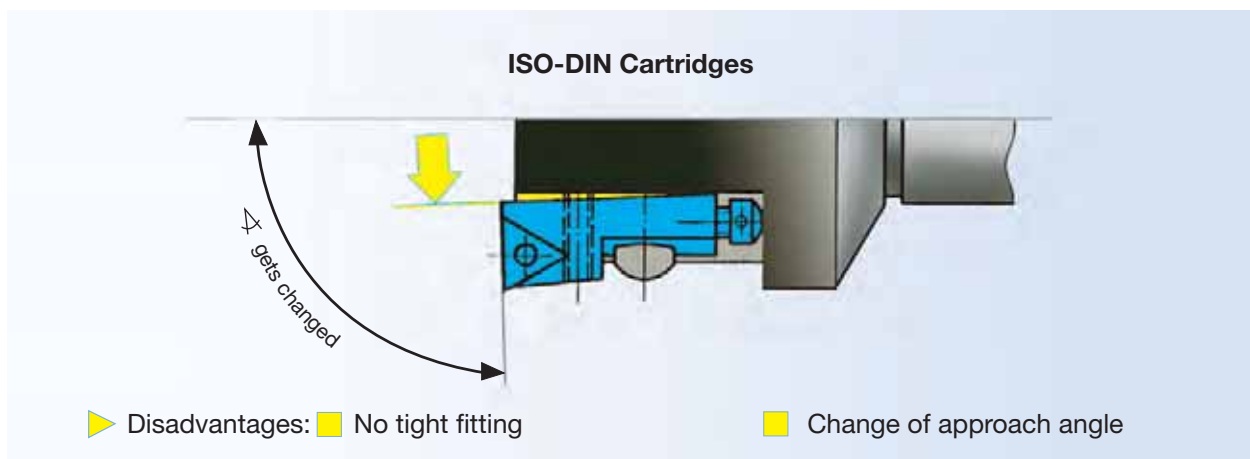
Cartridges

with tapered screw adjustment, μm -accurate adjustable

The advantages of HOLLFELDER-GÜHRING cartridges:

Both cartridge and insert remain solidly fixed in the basic holder respectively in the pocket seat during the adjustment operation, the angle position of the insert remains unchanged, which is particularly of advantage for machining 90° shoulders. This type of assembly guarantees the best possible stability of the connection holder-cartridge.

Internal machining tools satisfying highest requirements in precision and quality can thus be produced with cartridges of HOLLFELDER-GÜHRING CUTTING TOOLS starting at a bore diameter of 20 mm already. For a table showing assembly measures and minimum diameters pls. refer to page 71.

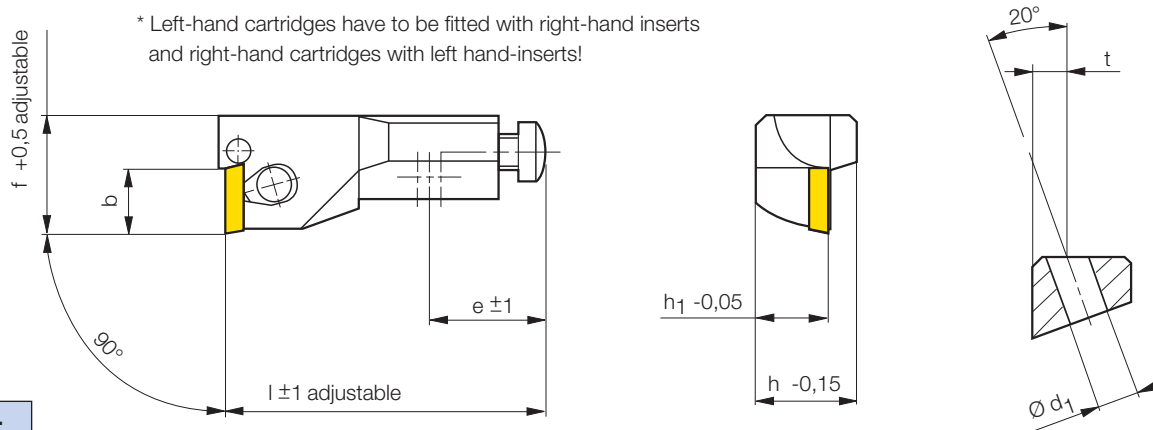




Cartridges

with tapered screw adjustment, μm -accurate adjustable

90° approach angle



Part nr. 20040											
Code	Drawing nr.		b	f	l	e	h ₁	h	t	d ₁	Inserts*
8,000	H 1035-2088 0890 R CBFP R 06 CA-04	●	3.9	8	25	12	6	8.5	3.5	4	W 1035-... L
10,000	H 2850-2588 1090 R CBFP R 08 CA-05	●	5	10	32	17	8	11	4.5	4.5	W 2850-... L
12,000	H 3570-3088 1290 R CBFP R 08 CA-07	●	7	12	40	17	8	11	4.5	4.5	W 357-... L
14,000	H 4090-3588 1490 R CBFP R 10 CA-09	●	9	14	50	20	10	14	5	7	W 409-... L
H 3570-3088 1290 R/L are not included in the ISO-Norm											
Part nr. 20041											
Code	Drawing nr.		b	f	l	e	h ₁	h	t	d ₁	Inserts*
8,000	H 1035-2088 0890 L CBFP L 06 CA-04	○	3.9	8	25	12	6	8.5	3.5	4	W 1035-... R
10,000	H 2850-2588 1090 L CBFP L 08 CA-05	○	5	10	32	17	8	11	4.5	4.5	W 2850-... R
12,000	H 3570-3088 1290 L CBFP L 08 CA-07	○	7	12	40	17	8	11	4.5	4.5	W 357-... R
14,000	H 4090-3588 1490 L CBFP L 10 CA-09	○	9	14	50	20	10	14	5	7	W 409-... R

● ex stock ○ on request

Ordering example: 1 piece H 1035-2088 0890 R = Ordering number: 20040 8,000



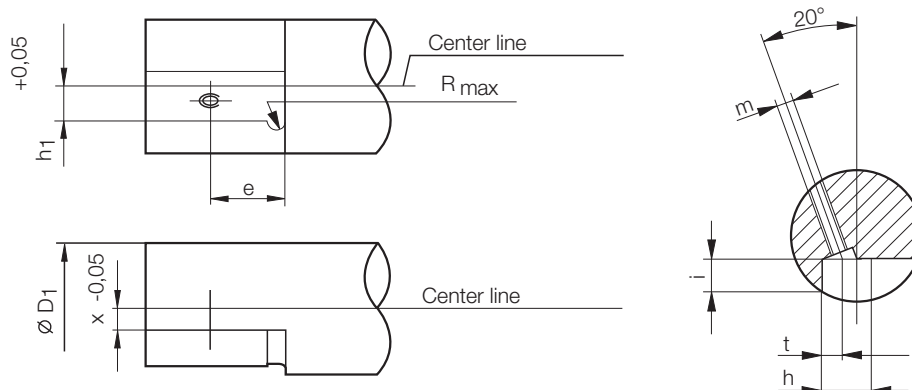
Spare parts
page 72

Cartridges

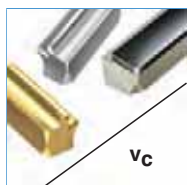


with tapered screw adjustment, μm -accurate adjustable

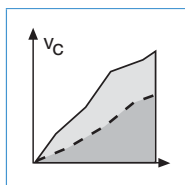
Assembly measures



Assembly measures for:								
Part number	f	h_1	h	t	e	R_{max}	m	l_{max}
H 1035-2088 0890 R/L CBFP R/L 06 CA-04	8	6	8,5	3,5	12	1,5	M 3,5	5
H 2850-2588 1090 R/L CBFP R/L 08 CA-05	10	8	11	4,5	17	2,5	M 4	6
H 3570-3088 1290 R/L CBFP R/L 08 CA-07	12	8	11	4,5	17	4	M 4	8
H 4090-3588 1490 R/L CBFP R/L 10 CA-09	14	10	14	5	20	4	M 6	9
$X = D / 2 - f$ $D_1 = \sqrt{h_1^2 + (x + i)^2} \cdot 2$								
Minimum machining diameters for:								
Part number	1 cutting edges possible at Ø		2 cutting edges possible at Ø		3 cutting edges possible at Ø			
H 1035-2088 0890 R/L CBFP R/L 06 CA-04	20		25		35			
H 2850-2588 1090 R/L CBFP R/L 08 CA-05	25		30		40			
H 3570-3088 1290 R/L CBFP R/L 08 CA-07	30		35		45			
H 4090-3588 1490 R/L CBFP R/L 10 CA-09	35		40		50			



Grade selections and
insert geometries
pages 75-76



Applications
recommendations
page 77

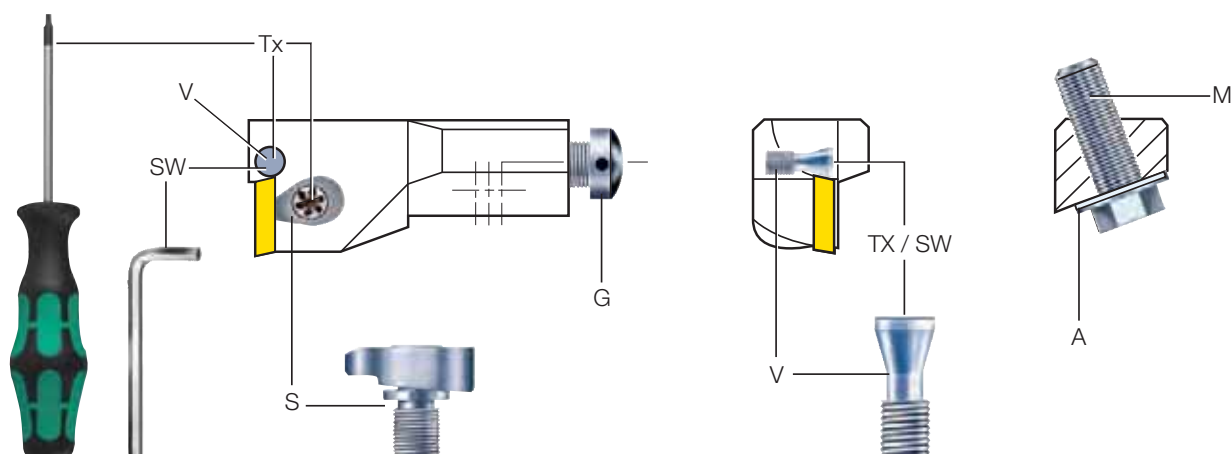


Form „Request for
customer specific
tools“
page 130

H Cartridges

with tapered screw adjustment, μm -accurate adjustable

Spare parts



Tool	S	Tx	V	Tx / SW	G	M	A
H 1035-2088 0890 R	E 1100	Tx 5	E 3007	Tx 5	E 2611-1	E 2613-1	E 2619-2
H 1035-2088 0890 L	E 1120	Tx 5					
CBFP R/L 06 CA-04							
H 2850-2588 1090 R/L	E 1112	Tx 6	E 2986	Tx 6	E 2611-2	E 2613-2	E 2619-2
CBFP R/L 08 CA-05							
H 3570-3088 1290 R/L	E 1060	Tx 8	E 3093	SW 1,3	E 2611-2	E 2613-2	E 2619-2
CBFP R/L 08 CA-07							
H 4090-3588 1490 R/L	E 1040	Tx 15	E 2997	SW 1,5	E 2611-3	E 2613-3	E 2619-3
CBFP R/L 10 CA-09							

Please note: Clamping set S contains:

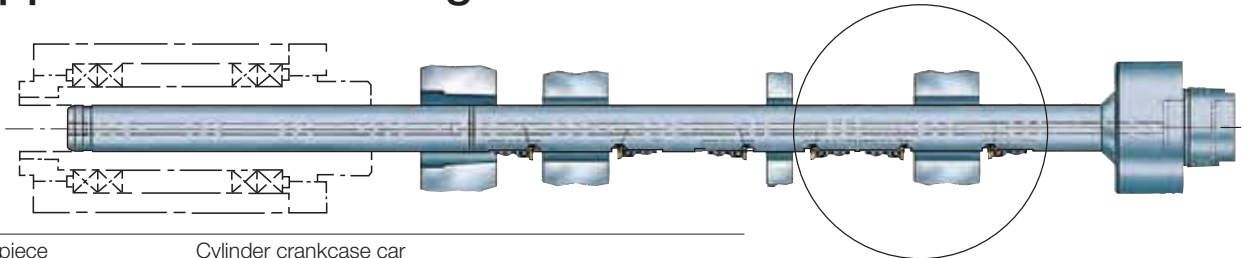
1 clamping element, 1 retainer ring, 1 clamp screw

S	Clamping set
Tx	Torx-screw driver (for operating clamping and adjustment screw)
V	Adjustment screw (tapered screw)
SW	Hexagon socket screw key
M	Fastening screw
G	Axial adjustment screw
A	Disk

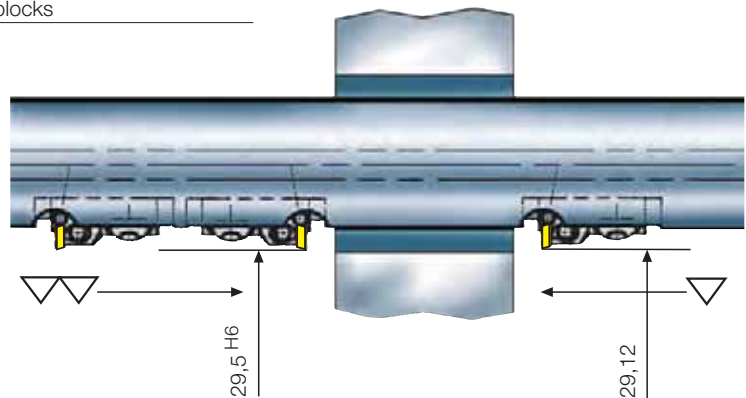
Ordering numbers for spare parts see page 127-129

Application examples

Application: Machining of balancer shaft bores

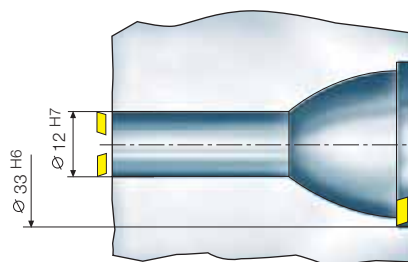
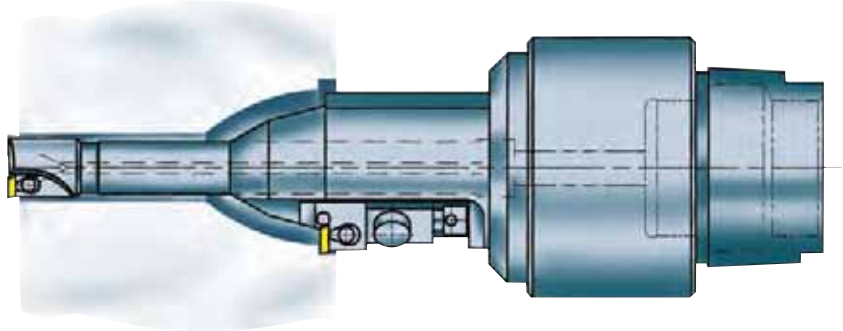


Workpiece	Cylinder crankcase car
Material	Al Si 9 Cu 3
Tool	Line boring bar with cartridges roughing and finishing, 3 pillow blocks
Insert	W 1035-0400 0000 R und L
Cutting grade	PCD
Cutting speed	$V_C = 280 \text{ m/min}$
Feed rate per tooth	$f = 0.08 \text{ mm/rev. (}\nabla\nabla\text{)}$ $f = 0.12 \text{ mm/rev. (}\nabla\text{)}$
Internal cooling	yes



Application: Machining of valve seats

Workpiece	Cylinder head car
Material	Al Si 10
Tool	Multistep fineboring tool with carbide shank
Insert	W 2850-..... L with wiper geometry
Cutting grade	PCD
Cutting speed	$V_C = 300 \text{ m/min}$
Feed rate	$f = 0.1 \text{ mm/U}$
Internal cooling	yes



Inserts precision ground for fineboring tools and cartridges

...efficient

The core part of our tools are the indexable inserts. The applied cutting grades and coatings fulfil the latest requirements from the market and ensure a cutting performance and tool life on the highest level.

The combination of the precise pocket seat, the robust clamping element and the precision ground insert is the optimum basis for a smooth cut, perfect chip control and as a result of this an excellent surface finish on the workpiece. The geometries of our standard inserts are designed for a wide range of applications. By selecting the right chip breaker geometry also difficult to machine materials as well as materials with a tendency to long swarfs can be securely machined. A help for selecting the right combination of cutting grade, coating and cutting edge geometry for your specific application you will find in the table on the opposite side. Our application recommendations on the pages 76 to 77 give additional information for the efficient use of the tooling.

The good availability from stock of our standard inserts supports you in saving costs and reduces your capital investment.

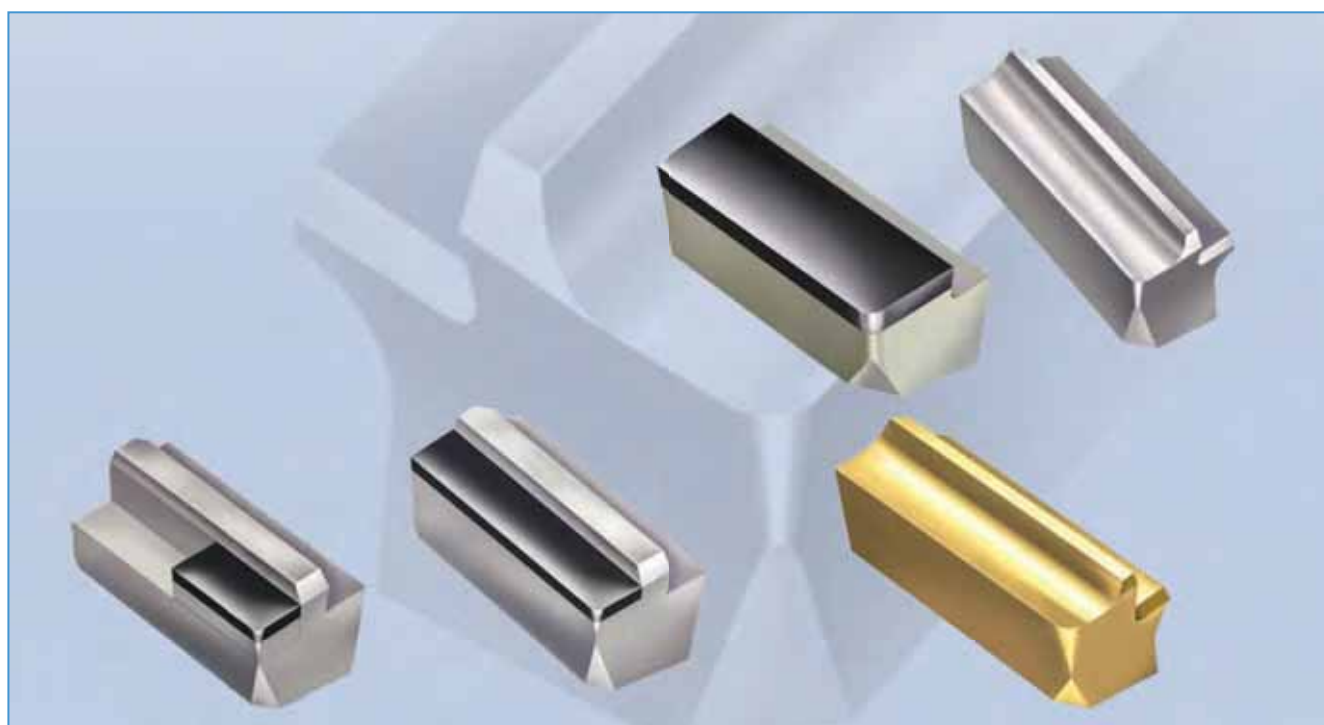
Beside our standard program we also offer you additional cutting grades and geometries on request. Especially tailor made wiper geometries lead in many cases to a better surface finish, higher feed rates along with constant high precision and reduced machining times.

Just another example how we can support our customers increasing their productivity!

An additional possibility to solve difficult machining tasks is the use of form inserts.

Tight workpiece tolerances and complex geometries can be easily integrated in a form insert and grant a perfect machining result.

Some examples for possible applications you will see on page 93.



Inserts precision ground for fineboring tools and cartridges



Grade matrix
Grade selection
Chipbreaker recommendation

Carbide / carbide coated / PCD / PCBN



Cutting material	Grade composition		Workpiece material					
			Steel	Stainless steel	Cast iron	Nonferrous materials	Heavy machinable materials	Hardened steels
Grade code	Substrat	Coating						
P10	P10	uncoated	● n	—	—	—	—	—
Chipbreaker			-1000 -1011					
P40	P40	uncoated	● n	—	—	—	—	—
Chipbreaker			-1000 -1011					
K10	K10	uncoated	—	—	● n	▲ n	● n	—
Chipbreaker					-1000 -1011	-1620 -1611	-1620* -1611	
G12	K10	TiAlN Multilayer PVD	—	● n	t ▲ n	t ● n	—	—
Chipbreaker				-1620 -1611	-1000 -1011	-1620 -1611		
G16	P40	TiAlN Multilayer PVD	▲ n	▲ n	t ▲ n	—	● n	—
Chipbreaker			-1000 -1011		-1000 -1011		-1000 -1011	
G26	P40	TiN PVD	● n	●	—	—	▲ n	—
Chipbreaker			-1000 -1011	-1620 -1611				
PCD	Grain size 10 µm		—	—	—	▲	—	—
Spanleitstufe						-0000 -0011		
PCBN			—	—	t ● n	—	—	t ▲ n
Chipbreaker					-0000 -0011			-0000 -0011

▲ = very good applicable ● = applicable — = not applicable * = for Titanium t = dry n = wet
Further cutting materials, coatings and geometries on request.

Cutting data recommendations

for fineboring tools and cartridges

The cutting data recommendations in the table are guide values and depend to a high degree on the stability of the machine, fixture and workpiece.

Cutting groups	Material group	Composition / structure	Tensile strength	Hardness	Cutting speed	Recom. cutting grade	Feed rate fz mm/z									
							Insert type									
							W 1035-	W 1730-	W 1733-	W 2850-	W 2853-	W 3570-	W 3573-	W 4090-	W 4093-	
1.1		C = 0.1 -0.25 annealed, long cutt.	420	125	100-160	G26/G16	0.02-0.08	0.02-0.08	0.02-0.10	0.04-0.12	0.04-0.12	0.05-0.15	0.05-0.15	0.07-0.20	0.07-0.20	
1.2		C = 0.1 -0.25 annealed, short chip	420	125	100-160											
2.1	Unalloyed steel	C = 0.25-0.55 annealed, long cutt.	620	190	90-150											
2.2	Cast steel	C = 0.25-0.55 annealed, short chip	640	190	100-160											
3	Machining steel	C = 0.25 -0.55 tempered	850	250	90-150											
4		C = 0.25 -0.8 annealed	915	270	80-140											
5		C = 0.25 -0.8 tempered	1020	300	75-125											
6		annealed	610	180	90-140											
7	Low-alloy steel	tempered	930	275	60-110											
8	Cast steel															
8	Machining steel	tempered	1020	300	60-110											
9		tempered	1190	350	60-100											
10	High-alloy steel	annealed	680	200	60-110											
11	Cast steel															
11	High-alloy tool steel	hardened and tempered	1100	325	50-90											
12-13	Stainless steel and cast steel	ferritic/martensitic annealed	680	200	50-90											
		martensitic	810	240	40-80											
14.1	Stainless steel	austenitic quenched	610	180	40-80	G26/G12										
14.2		austenitic/ferritic (duplex)	880	260	40-80											
15	Grey cast iron	perlitic/ferritic		180	110-160	G12/K10										
16		perlitic (martensitic)		260	100-150											
17	Cast iron with nodular cast iron	ferritic		160	80-130	G26/G16/										
18		perlitic		250	70-120	G12										
19	Malleable	ferritic		130	90-150	G26/G16										
20		perlitic		230	80-140											
21	Aluminium	not heat treatable		60	-1000	K10/PKD										
22	forging alloys	heat treatable/heat treated		100	-800											
23	Aluminium	<12% Si not heat treatable		75	-1000											
24	casting alloys	<12% Si heat treatable/heat treated		90	-800											
25		>12% Si not heat treatable		130	-600	PKD										
26	Copper	Machined alloys, Pb >1%		110	70-120	G12/K10										
27	Copper alloys	CuZn, CuSnZn		90	70-120											
28	(bronze, brass)	Cu, lead free copper/electrolyte copper		100	70-120											
29	Non metallic materials	Duroplastic			-200	K10/PKD										
30		Reinforced materials			-200											
31		Fe-based annealed		200	30-50	G26/G16										
32		heat treated		230	30-50											
33	Heat resistant alloys	Ni- or Co-based annealed		250	20-40											
34		heat treated		350	20-40											
35		cast		320	20-40											
36	Titanium alloys	Pure titanium	400		20-40	K10										
37		Alpha-beta alloys	1050		20-30											
38	Hardened steels			50-62	80-150	PCBN										
39																

Application recommendations

for fineboring tools and cartridges

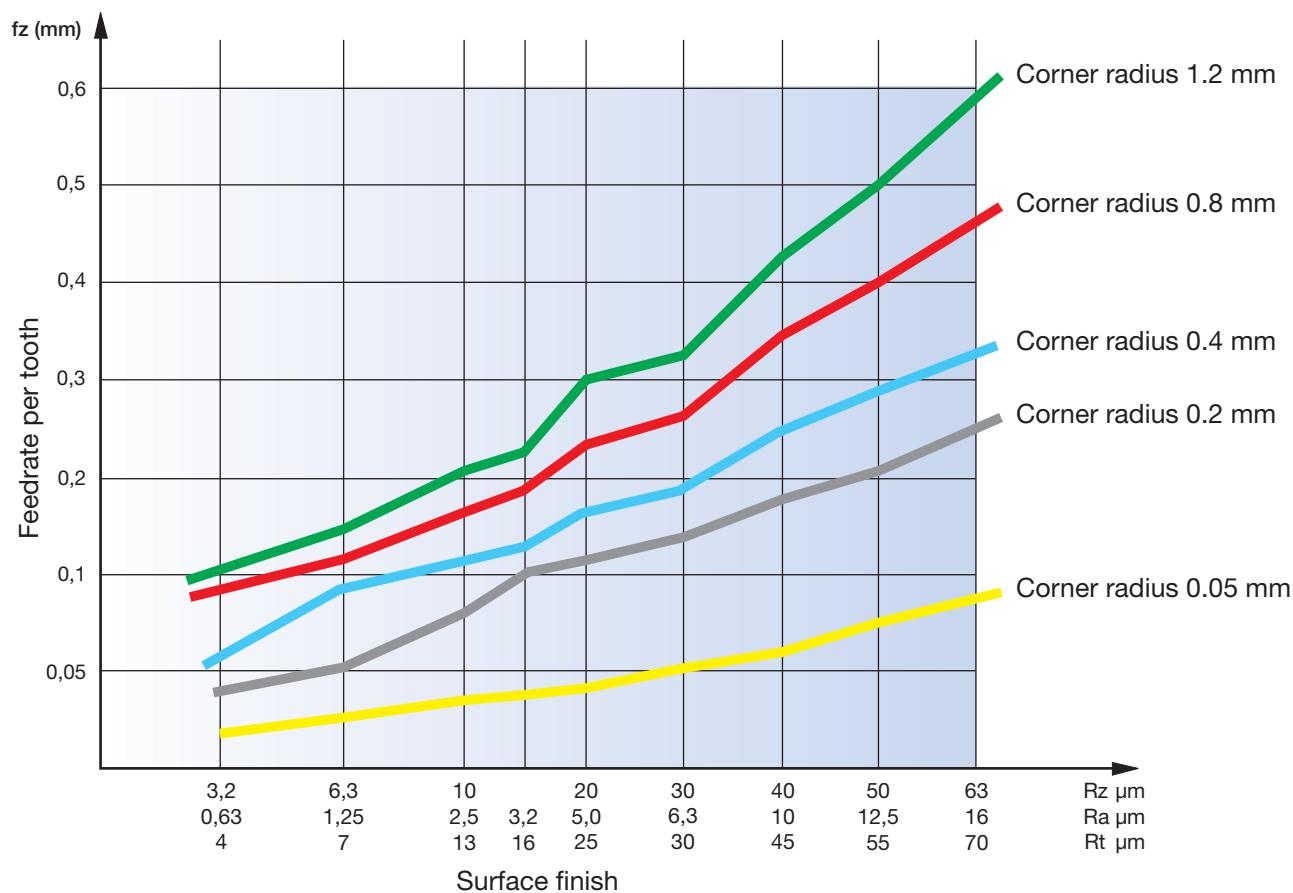


Guide values for surface finish

In order to select the right feedrate per tooth (fz) please pay also attention to the table below „Guide values for surface finish“.

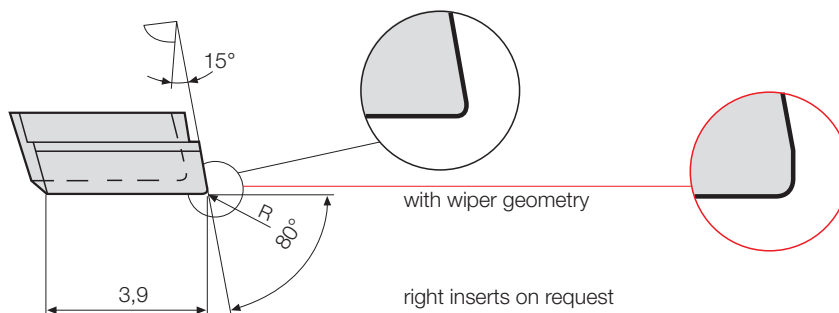
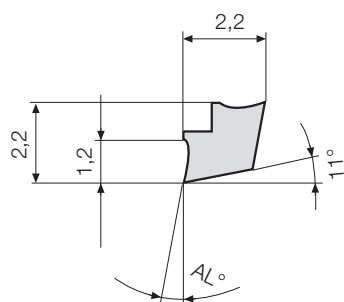
Wiper geometries lead in many cases to a better surface and higher feed rates along with constant high precision.

Guide values for surface finish relative to feedrate and corner radius



Inserts precision ground for fineboring tools and cartridges

Insert W 1035-.... L



				Part nr. 20100	Part nr. 20101 uncoated	Part nr. 20102	Part nr. 20400	Part nr. 20402 coated	Part nr. 20404
Code	Drawing nr.	R	AL°	P10	P40	K10	G12	G16	G26
10,350	W 1035-0012 1000 L	0.05	10	●	●	●	●	●	●
10,351	W 1035-0212 1000 L	0.2	10	●	●	●	●	●	●
10,352	W 1035-0012 1620 L	0.05	16	○	●	●	●	○	●
10,353	W 1035-0212 1620 L	0.2	16	○	●	●	●	○	●

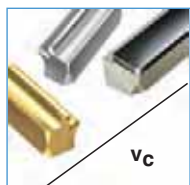
				Part nr. 20106	Part nr. 20107 uncoated	Part nr. 20108	Part nr. 20405	Part nr. 20407 coated	Part nr. 20409
Code	Drawing nr.	R	AL°	P10	P40	K10	G12	G16	G26
10,350	W 1035-0012 1011 L	0.05	10	●	●	●	●	●	●
10,351	W 1035-0212 1011 L	0.2	10	●	●	●	●	●	●
10,352	W 1035-0012 1611 L	0.05	16	○	●	●	●	○	●
10,353	W 1035-0212 1611 L	0.2	16	○	●	●	●	○	●

				Part nr. 20112
Code	Drawing nr.	R	AL°	PCD
10,350	W 1035-0000 0000 L	0.05	0	●
10,351	W 1035-0200 0000 L	0.2	0	●
10,352	W 1035-0400 0000 L	0.4	0	●

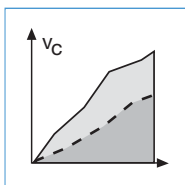
				Part nr. 20113
Code	Drawing nr.	R	AL°	PCD
10,350	W 1035-0000 0011 L	0.05	0	●
10,351	W 1035-0200 0011 L	0.2	0	●
10,352	W 1035-0400 0011 L	0.4	0	●

● ex stock ○ on request

Ordering example: 1 piece W 1035-0012 1000 L G12 = Ordering number: 20400 10,350



Grade selections
and insert
geometries
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Application
recommendations
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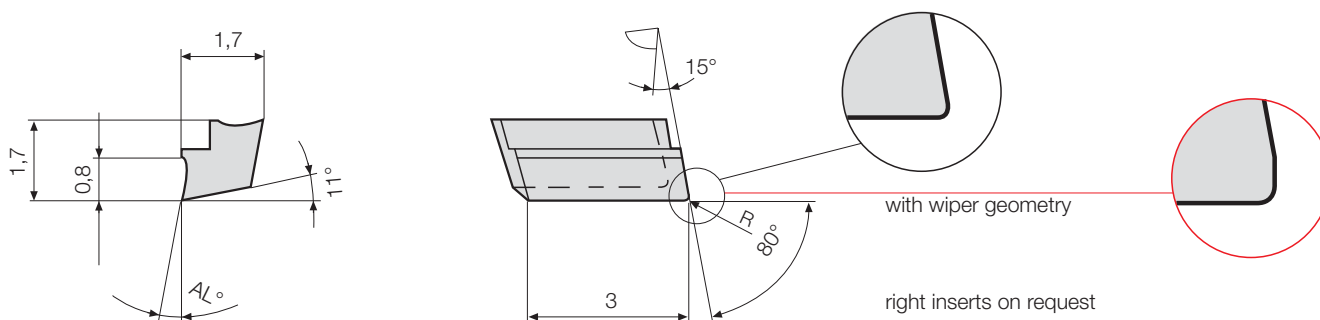


Insert
carbide coated
W 1035-.... L
Insert
PCD-fullface
W 1035-.... L

Inserts precision ground for fineboring tools and cartridges



Insert W 1730-.... L



				Part nr. 20114	Part nr. 20115 uncoated	Part nr. 20116	Part nr. 20410	Part nr. 20412 coated	Part nr. 20414
Code	Drawing nr.	R	AL°	P10	P40	K10	G12	G16	G26
17,300	W 1730-0008 1000 L	0.05	10	●	●	●	●	●	●
17,301	W 1730-0208 1000 L	0.2	10	●	●	●	●	●	●
17,302	W 1730-0008 1620 L	0.05	16	○	●	●	●	○	●
17,303	W 1730-0208 1620 L	0.2	16	○	●	●	●	○	●

				Part nr. 20120	Part nr. 20121 uncoated	Part nr. 20122	Part nr. 20415	Part nr. 20417 coated	Part nr. 20419
Code	Drawing nr.	R	AL°	P10	P40	K10	G12	G16	G26
17,300	W 1730-0008 1011 L	0.05	10	●	●	●	●	●	●
17,301	W 1730-0208 1011 L	0.2	10	●	●	●	●	●	●
17,302	W 1730-0008 1611 L	0.05	16	○	●	●	●	○	●
17,303	W 1730-0208 1611 L	0.2	16	○	●	●	●	○	●

				Part nr. 20126
Code	Drawing nr.	R	AL°	PCD
17,300	W 1730-0000 0000 L	0.05	0	●
17,301	W 1730-0200 0000 L	0.2	0	●
17,302	W 1730-0400 0000 L	0.4	0	●

				Part nr. 20127
Code	Drawing nr.	R	AL°	PCD
17,300	W 1730-0000 0011 L	0.05	0	●
17,301	W 1730-0200 0011 L	0.2	0	●
17,302	W 1730-0400 0011 L	0.4	0	●

● ex stock ○ on request

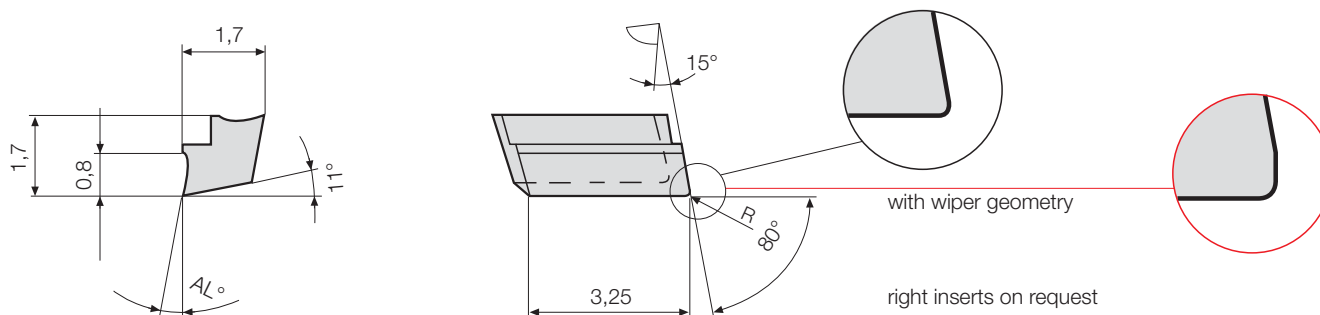
Ordering example: 1 piece W 1730-0008 1000 L G12 = Ordering number: 20410 17,300



Insert
carbide coated
W 1730-.... L

Inserts precision ground for fineboring tools and cartridges

Insert W 1733-.... L



				Part nr. 20128	Part nr. 20129 uncoated	Part nr. 20130	Part nr. 20420	Part nr. 20422 coated	Part nr. 20424
Code	Drawing nr.	R	AL°	P10	P40	K10	G12	G16	G26
17,330	W 1733-0008 1000 L	0.05	10	●	●	●	●	●	●
17,331	W 1733-0208 1000 L	0.2	10	●	●	●	●	●	●
17,332	W 1733-0008 1620 L	0.05	16	○	○	●	●	○	●
17,333	W 1733-0208 1620 L	0.2	16	○	○	●	●	○	●

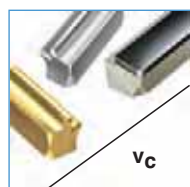
				Part nr. 20134	Part nr. 20135 uncoated	Part nr. 20136	Part nr. 20425	Part nr. 20427 coated	Part nr. 20429
Code	Drawing nr.	R	AL°	P10	P40	K10	G12	G16	G26
17,330	W 1733-0008 1011 L	0.05	10	●	●	●	●	●	●
17,331	W 1733-0208 1011 L	0.2	10	●	●	●	●	●	●
17,332	W 1733-0008 1611 L	0.05	16	○	●	●	●	○	●
17,333	W 1733-0208 1611 L	0.2	16	○	●	●	●	○	●

				Part nr. 20140
Code	Drawing nr.	R	AL°	PCD
17,330	W 1733-0000 0000 L	0.05	0	●
17,331	W 1733-0200 0000 L	0.2	0	●
17,332	W 1733-0400 0000 L	0.4	0	●

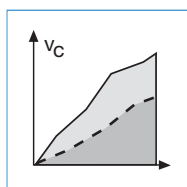
				Part nr. 20141
Code	Drawing nr.	R	AL°	PCD
17,330	W 1733-0000 0011 L	0.05	0	●
17,331	W 1733-0200 0011 L	0.2	0	●
17,332	W 1733-0400 0011 L	0.4	0	●

● ex stock ○ on request

Ordering example: 1 piece W 1733-0008 1000 L G12 = Ordering number: 20420 17,330



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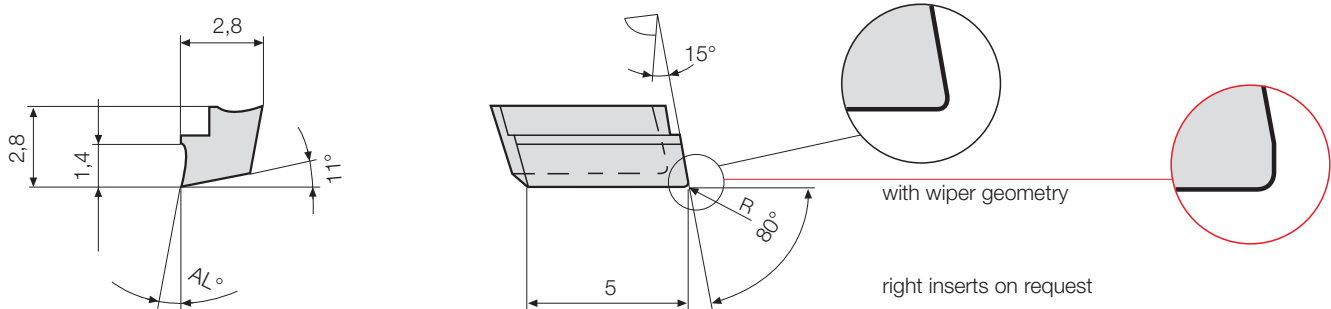


Insert
PCD-fullface
W 1733-.... L

Inserts precision ground for fineboring tools and cartridges



Insert W 2850-.... L



				Part nr. 20143	Part nr. 20144 uncoated	Part nr. 20145	Part nr. 20430	Part nr. 20432 coated	Part nr. 20434
Code	Drawing nr.	R	AL°	P10	P40	K10	G12	G16	G26
28,500	W 2850-0214 1000 L	0,2	10	●	●	●	●	●	●
28,501	W 2850-0414 1000 L	0,4	10	●	●	●	●	●	●
28,502	W 2850-0214 1620 L	0,2	16	○	●	●	●	○	●
28,503	W 2850-0414 1620 L	0,4	16	○	●	●	●	○	●

				Part nr. 20149	Part nr. 20150 uncoated	Part nr. 20151	Part nr. 20435	Part nr. 20437 coated	Part nr. 20439
Code	Drawing nr.	R	AL°	P10	P40	K10	G12	G16	G26
28,500	W 2850-0214 1011 L	0,2	10	●	●	●	●	●	●
28,501	W 2850-0414 1011 L	0,4	10	●	●	●	●	●	●
28,502	W 2850-0214 1611 L	0,2	16	○	●	●	●	○	●
28,503	W 2850-0414 1611 L	0,4	16	○	●	●	●	○	●

				Part nr. 20155	Part nr. 20156
Code	Drawing nr.	R	AL°	PCD	CBN
28,500	W 2850-0000 0000 L	0,05	0	●	
28,501	W 2850- 0200 0000 L	0,2	0	●	●
28,502	W 2850-0400 0000 L	0,4	0	●	●

				Part nr. 20157
Code	Drawing nr.	R	AL°	PCD
28,500	W 2850-0000 0011 L	0,05	0	●
28,501	W 2850-0200 0011 L	0,2	0	●
28,502	W 2850-0400 0011 L	0,4	0	●

● ex stock ○ on request

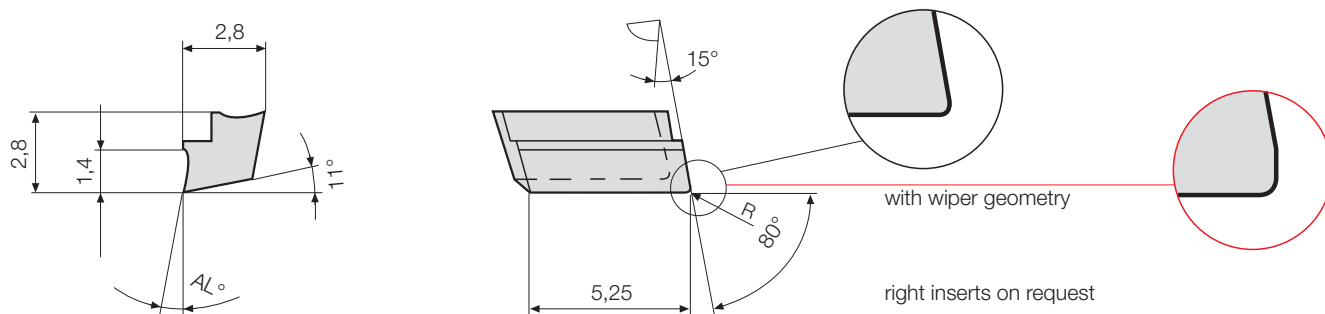
Ordering example: 1 piece W 2850-0214 1000 L G12 = Ordering number: 20430 28,500



Insert
carbide coated
W 2850-.... L

Inserts precision ground for fineboring tools and cartridges

Insert W 2853-.... L



				Part nr. 20160	Part nr. 20161 uncoated	Part nr. 20162	Part nr. 20440	Part nr. 20442 coated	Part nr. 20444
Code	Drawing nr.	R	AL°	P10	P40	K10	G12	G16	G26
28,530	W 2853-0214 1000 L	0,2	10	●	●	●	●	●	●
28,531	W 2853-0414 1000 L	0,4	10	●	●	●	●	●	●
28,532	W 2853-0214 1620 L	0,2	16	○	●	●	●	○	●
28,533	W 2853-0414 1620 L	0,4	16	○	●	●	●	○	●

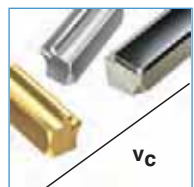
				Part nr. 20166	Part nr. 20167 uncoated	Part nr. 20168	Part nr. 20445	Part nr. 20447 coated	Part nr. 20449
Code	Drawing nr.	R	AL°	P10	P40	K10	G12	G16	G26
28,530	W 2853-0214 1011 L	0,2	10	●	●	●	●	●	●
28,531	W 2853-0414 1011 L	0,4	10	●	●	●	●	●	●
28,532	W 2853-0214 1611 L	0,2	16	○	●	●	●	○	●
28,533	W 2853-0414 1611 L	0,4	16	○	●	●	●	○	●

				Part nr. 20172	Part nr. 20173
Code	Drawing nr.	R	AL°	PKD	CBN
28,530	W 2853-0000 0000 L	0,05	0	●	
28,531	W 2853-0200 0000 L	0,2	0	●	●
28,532	W 2853-0400 0000 L	0,4	0	●	●

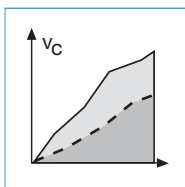
				Part nr. 20174
Code	Drawing nr.	R	AL°	PKD
28,530	W 2853-0000 0011 L	0,05	0	●
28,531	W 2853-0200 0011 L	0,2	0	●
28,532	W 2853-0400 0011 L	0,4	0	●

● ex stock ○ on request

Ordering example: 1 piece W 2853-0214 1000 L G12 = Ordering number: 20440 28,530



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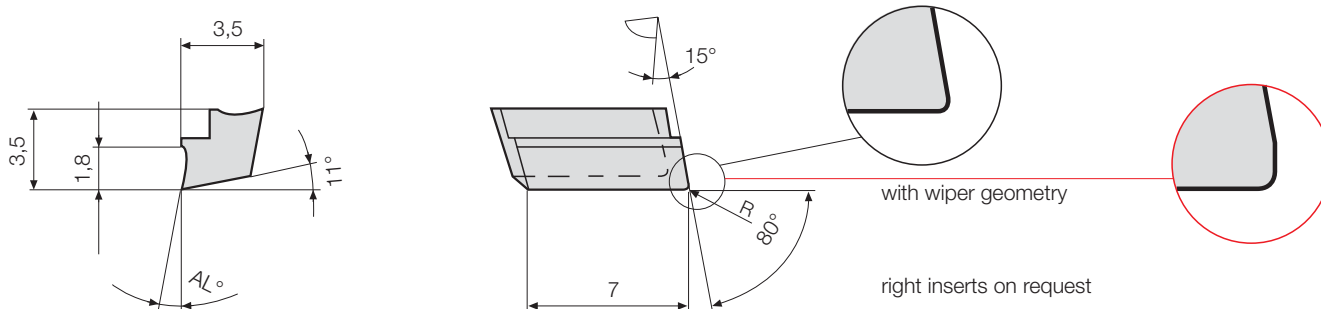


Insert
PCD-fullface
W 2853-.... L

Inserts precision ground for fineboring tools and cartridges



Insert W 3570-.... L



				Part nr. 20176	Part nr. 20177 uncoated	Part nr. 20178	Part nr. 20450	Part nr. 20452 coated	Part nr. 20454
Code	Drawing nr.	R	AL°	P10	P40	K10	G12	G16	G26
35,700	W 3570-0218 1000 L	0.2	10	●	●	●	●	●	●
35,701	W 3570-0418 1000 L	0.4	10	●	●	●	●	●	●
35,702	W 3570-0218 1620 L	0.2	16	○	●	●	●	○	●
35,703	W 3570-0418 1620 L	0.4	16	○	●	●	●	○	●

				Part nr. 20182	Part nr. 20183 uncoated	Part nr. 20184	Part nr. 20455	Part nr. 20457 coated	Part nr. 20459
Code	Drawing nr.	R	AL°	P10	P40	K10	G12	G16	G26
35,700	W 3570-0218 1011 L	0.2	10	●	●	●	●	●	●
35,701	W 3570-0418 1011 L	0.4	10	●	●	●	●	●	●
35,702	W 3570-0218 1611 L	0.2	16	○	●	●	●	○	●
35,703	W 3570-0418 1611 L	0.4	16	○	●	●	●	○	●

				Part nr. 20188
Code	Drawing nr.	R	AL°	PCD
35,700	W 3570-0013 0000 L	0.05	0	●
35,701	W 3570-0213 0000 L	0.2	0	●
35,702	W 3570-0413 0000 L	0.4	0	●

				Part nr. 20190
Code	Drawing nr.	R	AL°	PCD
35,700	W 3570-0013 0011 L	0.05	0	●
35,701	W 3570-0213 0011 L	0.2	0	●
35,702	W 3570-0413 0011 L	0.4	0	●

● ex stock ○ on request

Ordering example: 1 piece W 3570-0218 1000 L G16 = Ordering number: 20452 35,700



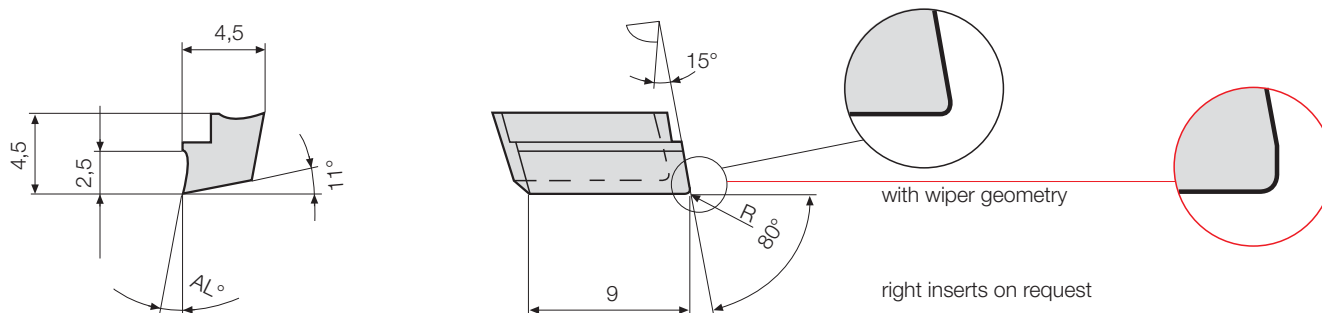
Insert
carbide coated
W 3570-.... L



Insert
PCD-tipped
W 3570-.... L

Inserts precision ground for fineboring tools and cartridges

Insert W 4090-.... L



				Part nr. 20192	Part nr. 20193 uncoated	Part nr. 20194	Part nr. 20460	Part nr. 20462 coated	Part nr. 20464
Code	Drawing nr.	R	AL°	P10	P40	K10	G12	G16	G26
40,900	W 4090-0225 1000 L	0.2	10	●	●	●	●	●	●
40,901	W 4090-0425 1000 L	0.4	10	●	●	●	●	●	●
40,902	W 4090-0225 1620 L	0.2	16	○	●	●	●	○	●
40,903	W 4090-0425 1620 L	0.4	16	○	●	●	●	○	●

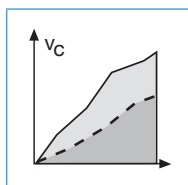
				Part nr. 20198	Part nr. 20199 uncoated	Part nr. 20200	Part nr. 20465	Part nr. 20467 coated	Part nr. 20469
Code	Drawing nr.	R	AL°	P10	P40	K10	G12	G16	G26
40,900	W 4090-0225 1011 L	0.2	10	●	●	●	●	●	●
40,901	W 4090-0425 1011 L	0.4	10	●	●	●	●	●	●
40,902	W 4090-0225 1611 L	0.2	16	○	●	●	●	○	●
40,903	W 4090-0425 1611 L	0.4	16	○	●	●	●	○	●

				Part nr. 20204
Code	Drawing nr.	R	AL°	PCD
40,900	W 4090-0018 0000 L	0.05	0	●
40,901	W 4090-0218 0000 L	0.2	0	●
40,902	W 4090-0418 0000 L	0.4	0	●
40,903	W 4090-0818 0000 L	0.8	0	○

				Part nr. 20206
Code	Drawing nr.	R	AL°	PCD
40,900	W 4090-0018 0011 L	0.05	0	●
40,901	W 4090-0218 0011 L	0.2	0	●
40,902	W 4090-0418 0011 L	0.4	0	●

● ex stock ○ on request

Ordering example: 1 piece W 4090-0225 1000 L G12 = Ordering number: 20460 40,900



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Insert
carbide coated
W 4090-.... L



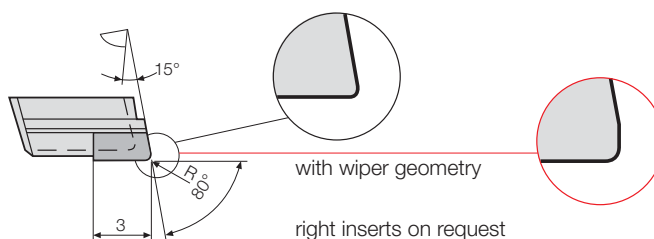
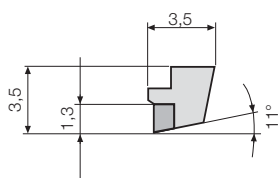
Insert
PCD-tipped
W 4090-.... L

Inserts precision ground for fineboring tools and cartridges



Insert W 3573-.... L

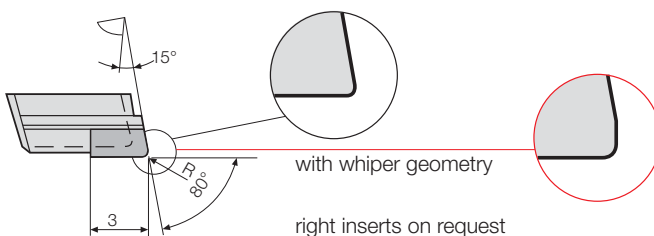
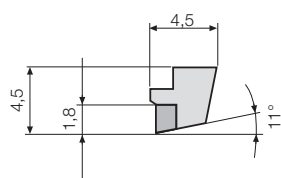
PCD- / PCBN-tipped



				Part nr. 20208	Part nr. 20209
Code	Drawing nr.	R	AL°	PCD	CBN
35,730	W 3573-0013 0000 L	0.05	0	●	
35,731	W 3573-0213 0000 L	0.2	0	●	●
35,732	W 3573-0413 0000 L	0.4	0	○	●
with wiper geometry				Part nr. 20210	
Code	Drawing nr.	R	AL°	PCD	
35,730	W 3573-0013 0011 L	0,05	0	●	
35,731	W 3573-0213 0011 L	0,2	0	●	
35,732	W 3573-0413 0011 L	0,4	0	○	

Insert W 4093-.... L

PCD- / PCBN-tipped



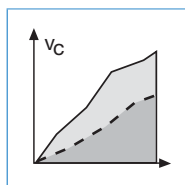
				Part nr. 20212	Part nr. 20213
Code	Drawing nr.	R	AL°	PCD	CBN
40,930	W 4093-0018 0000 L	0.05	0	●	
40,931	W 4093-0218 0000 L	0.2	0	●	●
40,932	W 4093-0418 0000 L	0.4	0	●	●
40,933	W 4093-0818 0000 L	0.8	0	●	
with wiper geometry				Part nr. 20214	
Code	Drawing nr.	R	AL°	PCD	
40,930	W 4093-0018 0011 L	0.05	0	●	
40,931	W 4093-0218 0011 L	0.2	0	●	
40,932	W 4093-0418 0011 L	0.4	0	●	

● ex stock ○ on request

Ordering example: 1 piece W 3573-0013 0000 L PCD = Ordering number: 20208 35,730



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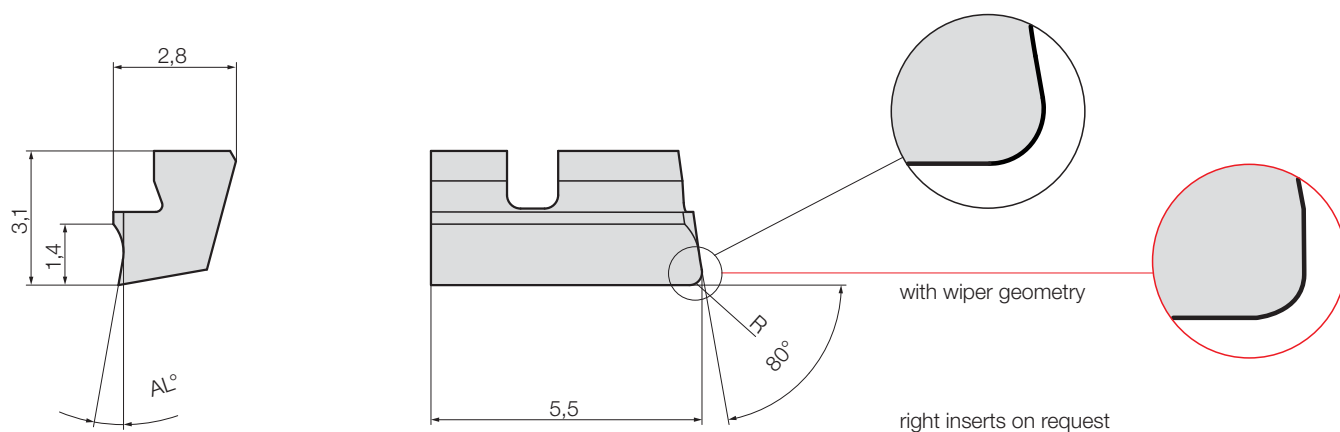
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Insert
PCD-tipped
W 3573-.... L
W 4093-.... L

Inserts precision ground for customer specific fine boring tools

Type W 2006-.... L HM / HM-coated

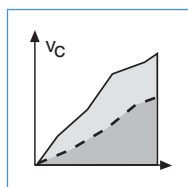


				Part nr. 20334	Part nr. 20335	Part nr. 20477	Part nr. 20479
				uncoated		coated	
Code	Drawing nr.	R	AL°	P40	K10	G12	G16
20,060	W 2006-0214 1000 L	0,2	10	●	●	●	●
20,062	W 2006-0414 1000 L	0,4	10	●	●	●	●
20,061	W 2006-0214 1620 L	0,2	16	●	●	●	●
20,063	W 2006-0414 1620 L	0,4	16	●	●	●	●

				Part nr. 20338	Part nr. 20339	Part nr. 20481	Part nr. 20483
with wiper geometry				uncoated		coated	
Code	Drawing nr.	R	AL°	P40	K10	G12	G16
20,060	W 2006-0214 1011 L	0,2	10	●	●	●	●
20,062	W 2006-0414 1011 L	0,4	10	●	●	●	●
20,061	W 2006-0214 1611 L	0,2	16	●	●	●	●
20,063	W 2006-0414 1611 L	0,4	16	●	●	●	●

● ex stock

Ordering example: 1 piece W 2006-0214 1000 L G12 = Ordering number: 20477 20,060



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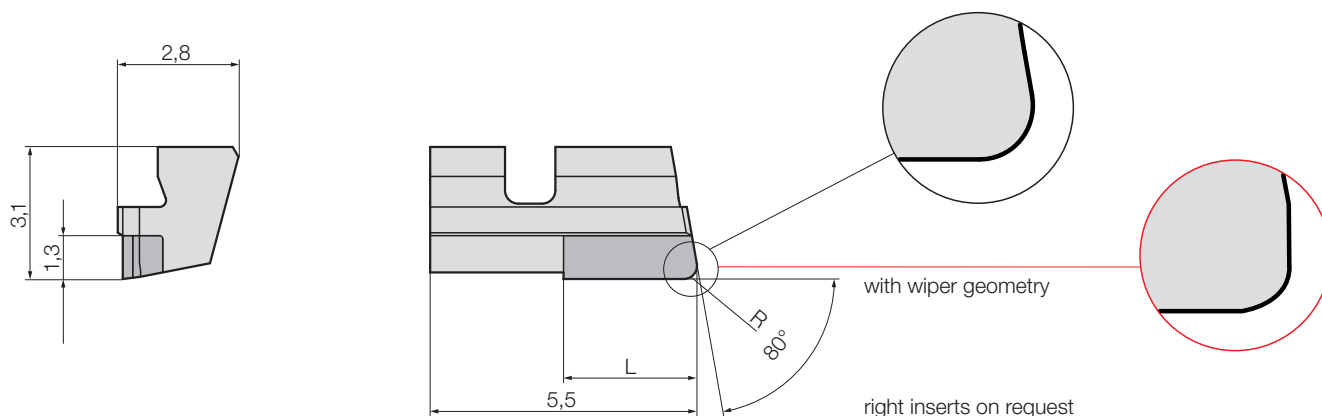


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Inserts precision ground for customer specific fine boring tools



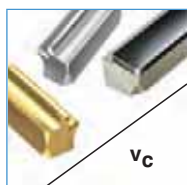
Type W 2006-.... L / W 2063-.... L PCD-tipped



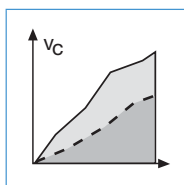
				Part nr. 20342
Code	Drawing nr.	R	L	PCD
20,060	W 2006-0013 0000 L	0,05	5,5	●
20,061	W 2006-0213 0000 L	0,2	5,5	●
20,062	W 2006-0413 0000 L	0,4	5,5	●
with wiper geometry				Part nr. 20343
Code	Drawing nr.	R	L	PCD
20,060	W 2006-0013 0011 L	0,05	5,5	●
20,061	W 2006-0213 0011 L	0,2	5,5	●
20,062	W 2006-0413 0011 L	0,4	5,5	●
				Part nr. 20357
Code	Drawing nr.	R	L	PCD
20,630	W 2063-0013 0000 L	0,05	3	●
20,631	W 2063-0213 0000 L	0,2	3	●
20,632	W 2063-0413 0000 L	0,4	3	●
with wiper geometry				Part nr. 20344
Code	Drawing nr.	R	L	PCD
20,630	W 2063-0013 0011 L	0,05	3	●
20,631	W 2063-0213 0011 L	0,2	3	●
20,632	W 2063-0413 0011 L	0,4	3	●

● ex stock

Ordering piece: 1 Stück W 2006-0213 0000 L PCD = Ordering number: 20342 20,061



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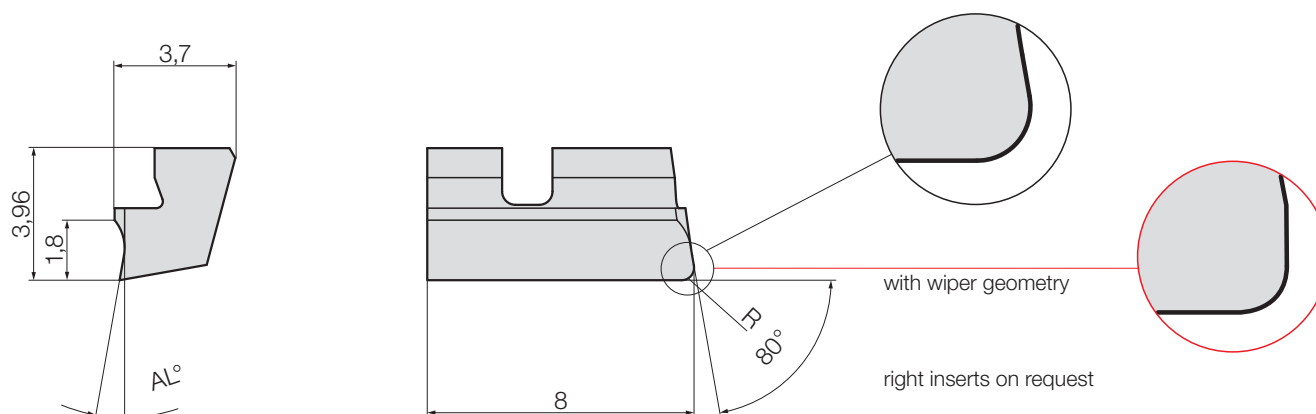


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Inserts precision ground for customer specific fine boring tools

Typ W 3006-.... L

HM / HM-coated

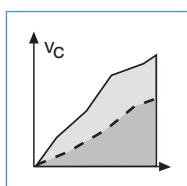


				Part nr. 20358	Part nr. 20359	Part nr. 20485	Part nr. 20487
				uncoated		coated	
Code	Drawing nr.	R	AL°	P40	K10	G12	G16
30,060	W 3006-0218 1000 L	0,2	10	○	●	●	●
30,062	W 3006-0418 1000 L	0,4	10	●	●	●	●
30,061	W 3006-0218 1620 L	0,2	16	○	●	●	●
30,063	W 3006-0418 1620 L	0,4	16	●	●	●	●

				Part nr. 20371	Part nr. 20347	Part nr. 20511	Part nr. 20512
with wiper geometry				uncoated		coated	
Code	Drawing nr.	R	AL°	P40	K10	G12	G16
30,060	W 3006-0218 1011 L	0,2	10	○	●	●	●
30,062	W 3006-0418 1011 L	0,4	10	●	●	●	●
30,061	W 3006-0218 1611 L	0,2	16	○	●	●	●
30,063	W 3006-0418 1611 L	0,4	16	●	●	●	●

● ex stock ○ on request

Ordering example: 1 piece W 3006-0218 1000 L G12 = Ordering number: 20485 30,060



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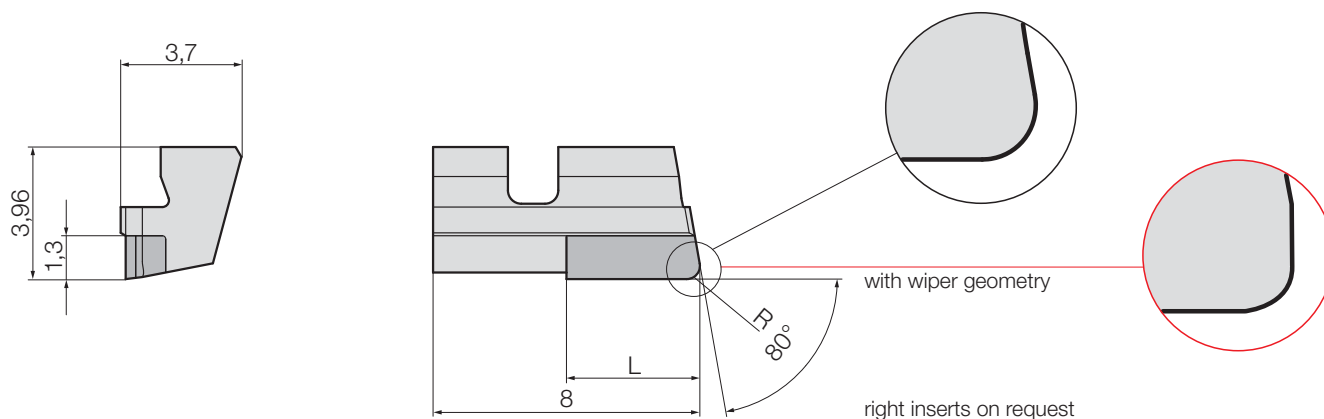


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Inserts precision ground for customer specific fine boring tools



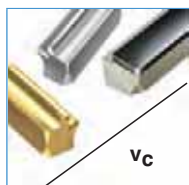
Type W 3006-.... L / W 3064-.... L PKD- / PCBN-tipped



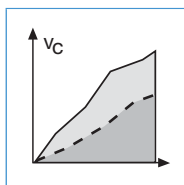
				Part nr. 20348		
Code	Drawing nr.	R	L	PCD		
30,060	W 3006-0013 0000 L	0,05	8	●		
30,061	W 3006-0213 0000 L	0,2	8	●		
30,062	W 3006-0413 0000 L	0,4	8	●		
with wiper geometry				Part nr. 20349		
Code	Drawing nr.	R	L	PCD		
30,060	W 3006-0013 0011 L	0,05	8	●		
30,061	W 3006-0213 0011 L	0,2	8	●		
30,062	W 3006-0413 0011 L	0,4	8	●		
				Part nr. 20350	Part nr. 20307	
Code	Drawing nr.	R	L	PCD	CBN	
30,640	W 3064-0013 0000 L	0,05	4	●	●	
30,641	W 3064-0213 0000 L	0,2	4	●	●	
30,642	W 3064-0413 0000 L	0,4	4	●	●	
with wiper geometry				Part nr. 20351	Part nr. 20352	
Code	Drawing nr.	R	L	PCD	CBN	
30,640	W 3064-0013 0011 L	0,05	4	●	●	
30,641	W 3064-0213 0011 L	0,2	4	●	●	
30,642	W 3064-0413 0011 L	0,4	4	●	●	

● ex stock

Ordering example: 1 piece W 3006-0013 0000 L PCD = Ordering number: 20348 30,060



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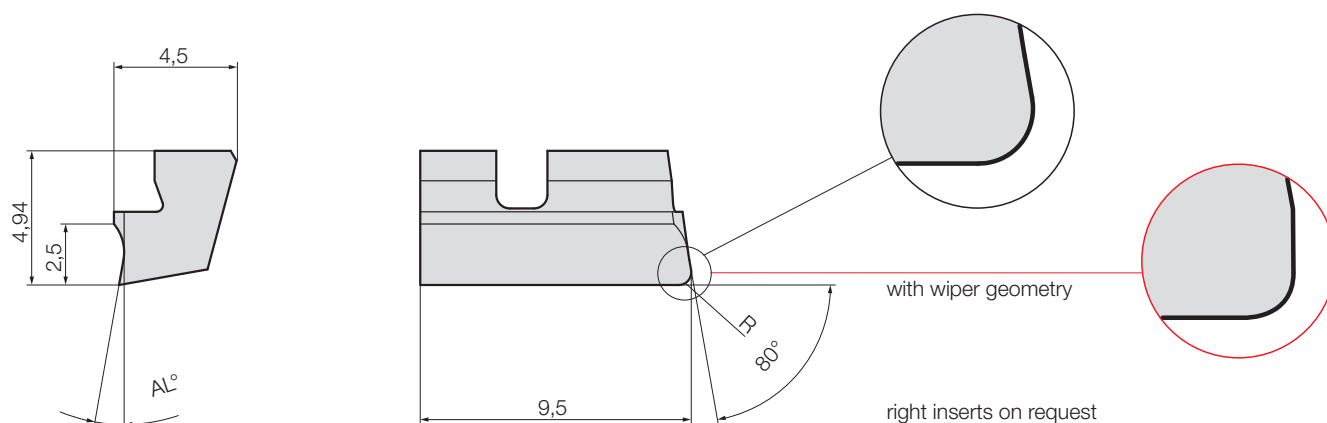


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Inserts precision ground for customer specific fine boring tools

Type W 4006-.... L

HM / HM-coated

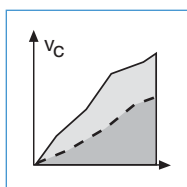


				Part nr. 20353 uncoated	Part nr. 20504 coated	Part nr. 20507 coated
Code	Drawing nr.	R	AL°	K10	G12	G16
40,061	W 4006-0225 1000 L	0,2	10	●	●	●
40,062	W 4006-0425 1000 L	0,4	10	●	●	●
40,063	W 4006-0225 1620 L	0,2	16	●	●	●
40,064	W 4006-0425 1620 L	0,4	16	●	●	●

				Part nr. 20354 uncoated	Part nr. 20505 coated	Part nr. 20508 coated
with wiper geometry				K10	G12	G16
Code	Drawing nr.	R	AL°	K10	G12	G16
40,061	W 4006-0225 1011 L	0,2	10	●	●	●
40,062	W 4006-0425 1011 L	0,4	10	●	●	●
40,063	W 4006-0225 1611 L	0,2	16	●	●	●
40,064	W 4006-0425 1611 L	0,4	16	●	●	●

● ex stock

Ordering example: 1 piece W 4006-0225 1000 L G12 = Ordering number: 20504 40,061



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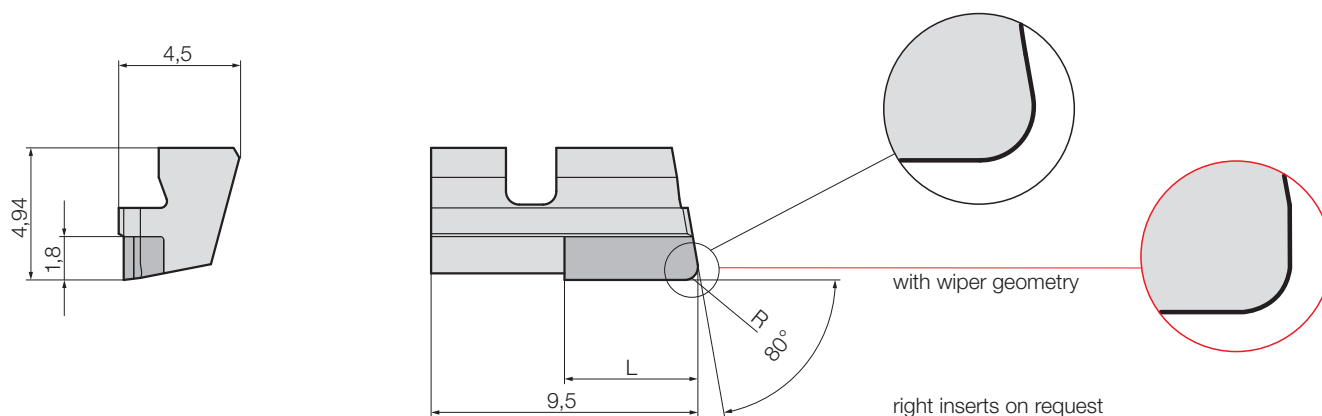


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Inserts precision ground for customer specific fine boring tools



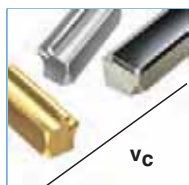
Type W 4006-.... L / W 4065-.... L PKD-tipped



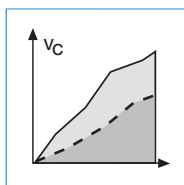
				Part nr. 20355
Code	Drawing nr.	R	L	PCD
40,060	W 4006-0018 0000 L	0,05	9,5	●
40,061	W 4006-0218 0000 L	0,2	9,5	●
40,062	W 4006-0418 0000 L	0,4	9,5	●
with wiper geometry				Part nr. 20356
Code	Drawing nr.	R	L	PCD
40,060	W 4006-0018 0011 L	0,05	9,5	●
40,061	W 4006-0218 0011 L	0,2	9,5	●
40,062	W 4006-0418 0011 L	0,4	9,5	●
				Part nr. 20368
Code	Drawing nr.	R	L	PCD
40,650	W 4065-0018 0000 L	0,05	5	●
40,651	W 4065-0218 0000 L	0,2	5	●
40,652	W 4065-0418 0000 L	0,4	5	●
with wiper geometry				Part nr. 20369
Code	Drawing nr.	R	L	PCD
40,650	W 4065-0018 0011 L	0,05	5	●
40,651	W 4065-0218 0011 L	0,2	5	●
40,652	W 4065-0418 0011 L	0,4	5	●

● ex stock

Ordering example: 1 piece W 4006-0018 0011 L PCD = Ordering number: 20356 40,060



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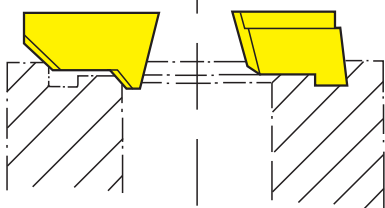


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page 130

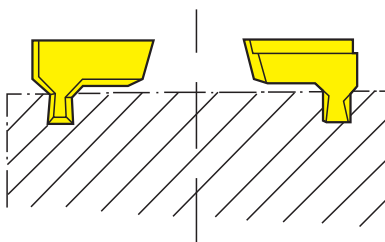
Form inserts for fineboring tools

Our fineboring tools can even be used in the following machining areas, when fitted with special form inserts which are available on request.

Facegrooving

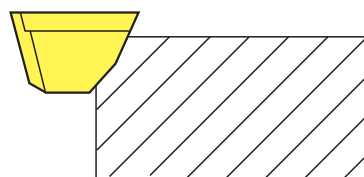


with distribution of cuts

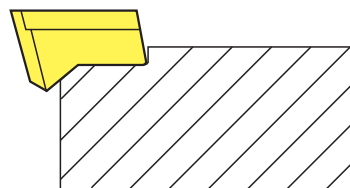


with several inserts

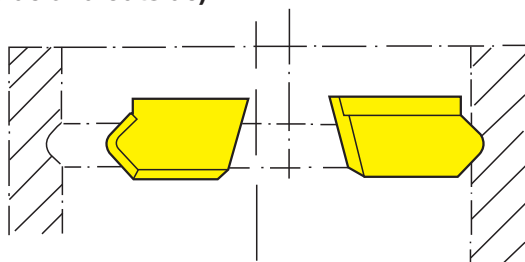
Double chamfer



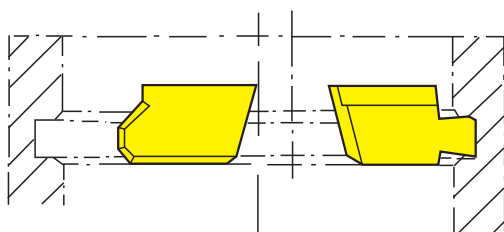
Chamfer / endfacing



Groove milling by circular interpolation (inside and outside)

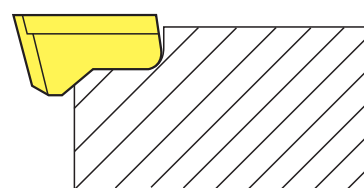


with several inserts

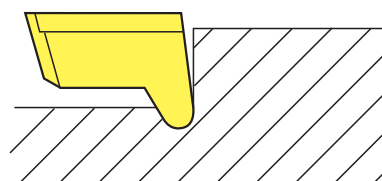


with distribution of cuts

Chamfer / corner radius



Axial undercut



Application example

Fineboring tools for customer specific tools



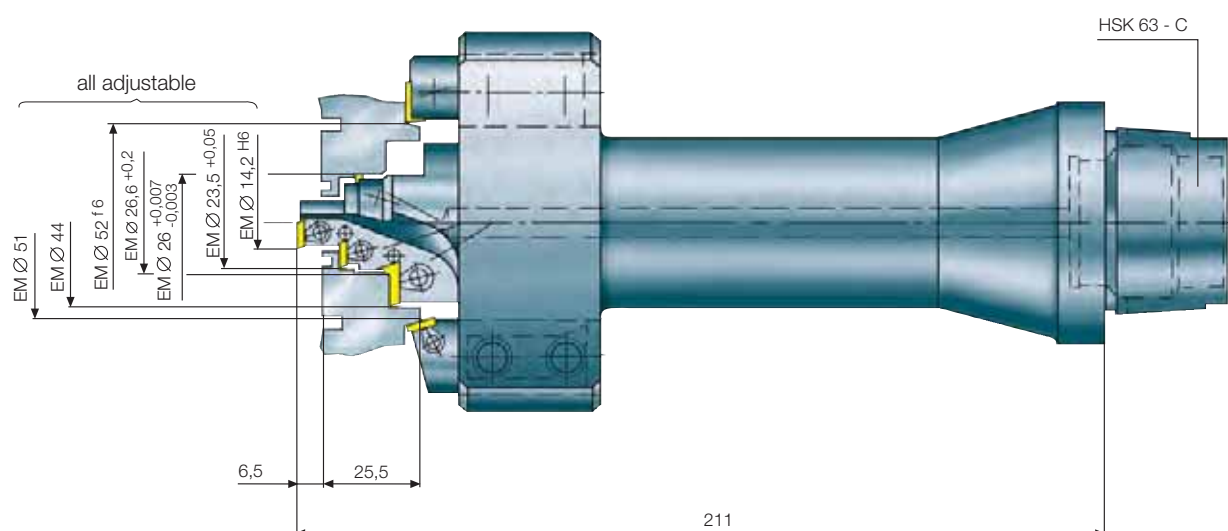
Application: Gearbox case



Combination tool for 6 machining steps.

All inserts adjustable.

Cartridges for different types of housings exchangeable.



Workpiece	Gearbox case for hand drilling machine
Material	GD - Al Si 9 Cu 3 (DIN)
Tool	Fineboring-, chamfering- and face tool
Number of teeth	6 - effective 1 je Ø
Insert	Standard / acc. to customer specification
Cutting grade	PCD / K10
Cutting speed	$V_C = 800 \text{ m/min}$
Number of revolutions	4.900 min^{-1}
Vorschubgeschwindigkeit	735 mm/min
Feed rate per tooth	$f_z = -0.15$
Depth of cut	0.5 mm
Coolant	yes, internal



Drill- & Chamfering tools

Drill / Chamfering tools

...versatile

HOLLFELDER-GÜHRING CUTTING TOOLS

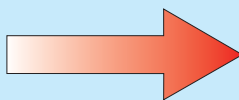
The new Drill / Chamfering tools are applicable for versatile machining tasks and a wide variety of materials.

The features:

- Use in standard hydraulic expansion chucks
- Use of standard solid carbide drills (DIN 6537 L/K)
- 3 different chamfering angles as standard available
- Standard inserts in carbide (uncoated and coated) as well as in PCD available

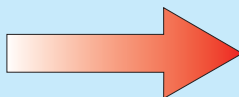
Advantages by use of these tools:

High runout accuracy due to use in hydraulic expansion chucks



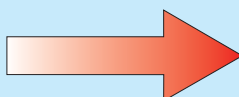
High tool life on drills and inserts

One tool holder for different chamfering angles



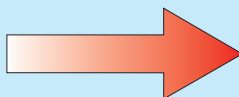
Reduced amount of tool bodies

Easy handling, assembly and setup



Reduced non-productive times

Suitable for all standard hydraulic expansion chucks



No additional costs for special chucks

H Drill / Chamfering tools

Possible drill-adapter combinations

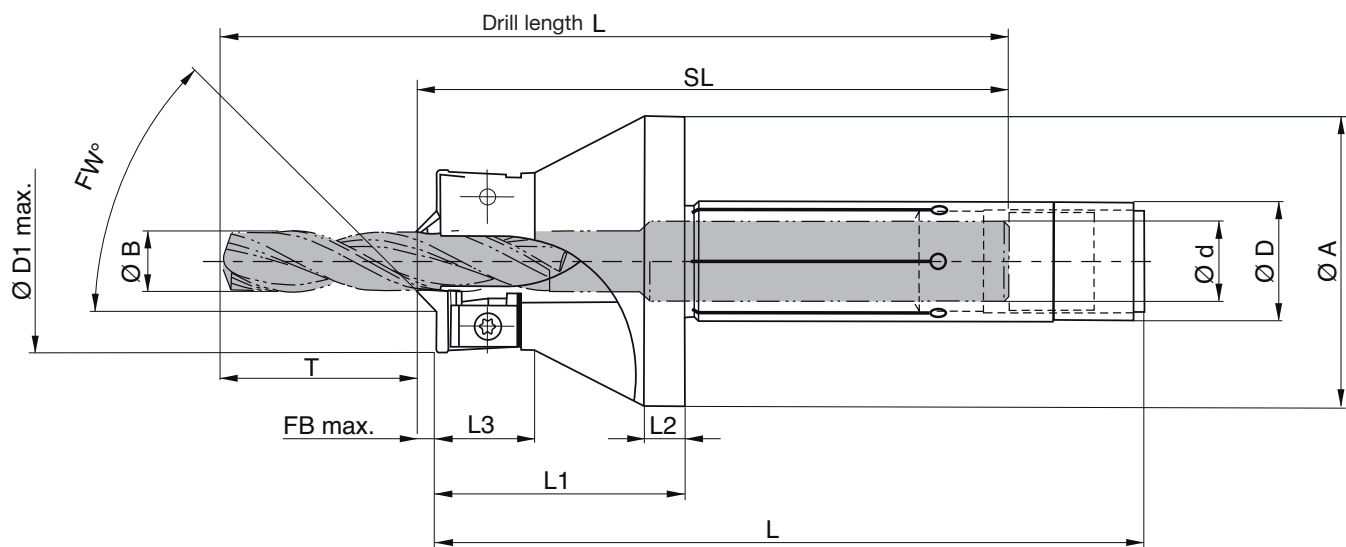


Drawing number	FB	Insert	SL	SL	Ø B	Drill 3xD T DIN 6537 K Twisted	Drill 5xD T DIN 6537 L Twisted	Drill 7xD T Twisted
						from - to	from - to	from - to
H 2006-1206 0000 R	1.8	W 2006-... .. L	59.3	50.3	4.0 - 4.2	6.7 - 15.7	14.7 - 23.7	15.7 - 24.7
					4.3 - 4.7	6.7 - 15.7	14.7 - 23.7	25.7 - 34.7
					4.8 - 5.3	6.7 - 15.7	22.7 - 31.7	30.7 - 39.7
					5.4 - 6.0	6.7 - 15.7	22.7 - 31.7	37.7 - 46.7
H 2006-1208 0000 R	1.8	W 2006-... .. L	59.3	50.3	6.1 - 7.0	19.7 - 24.8	31.7 - 40.7	46.7 - 55.7
					7.1 - 8.0	19.7 - 28.7	31.7 - 40.7	56.7 - 65.7
H 2006-2006 0000 R	1.8	W 2006-... .. L	62.8	52.8	4.0 - 4.2	3.2 - 13.2	11.2 - 21.2	12.2 - 22.2
					4.3 - 4.7	3.2 - 13.2	11.2 - 21.2	22.2 - 32.2
					4.8 - 5.3	3.2 - 13.2	19.2 - 29.2	27.2 - 37.2
					5.4 - 6.0	3.2 - 13.2	19.2 - 29.2	34.2 - 44.2
H 2006-2008 0000 R	1.8	W 2006-... .. L	62.8	52.8	6.1 - 7.0	16.2 - 24.8	28.2 - 38.2	43.2 - 53.2
					7.1 - 8.0	16.2 - 26.2	28.2 - 38.2	53.2 - 63.2
H 2006-2010 0000 R	1.8	W 2006-... .. L	67.8	57.8	8.1 - 9.0	21.2 - 31.2	35.2 - 45.2	63.2 - 73.2
					9.1 - 10.0	21.2 - 31.2	35.2 - 45.2	71.2 - 81.2
H 2006-2012 0000 R	1.8	W 2006-... .. L	72.8	62.8	10.1 - 11.0	29.2 - 39.2	45.2 - 55.2	82.2 - 92.2
					11.1 - 12.0	29.2 - 39.2	45.2 - 55.2	90.2 - 99.5
H 3006-2014 0000 R	2.5	W 3006-... .. L	73.5	63.5	12.1 - 14.0	33.5 - 41.5	50.5 - 58.5	108.5 - 116
H 3006-2016 0000 R	2.5	W 3006-... .. L	73.5	63.5	14.1 - 16.0	41.5 - 43.9	59.5 - 61.9	130.5 - 132.6
H 2006-3206 0000 R	1.8	W 2006-... .. L	64.8	54.8	4.0 - 4.2	1.2 - 11.2	9.2 - 19.2	10.2 - 20.2
					4.3 - 4.7	1.2 - 11.2	9.2 - 19.2	20.2 - 30.2
					4.8 - 5.3	1.2 - 11.2	17.2 - 27.2	25.2 - 35.2
					5.4 - 6.0	1.2 - 11.2	17.2 - 27.2	32.2 - 42.2
H 2006-3208 0000 R	1.8	W 2006-... .. L	64.8	54.8	6.1 - 7.0	14.2 - 24.2	26.2 - 36.2	41.2 - 51.2
					7.1 - 8.0	14.2 - 24.2	26.2 - 36.2	51.2 - 61.2
H 2006-3210 0000 R	1.8	W 2006-... .. L	69.8	59.8	8.1 - 9.0	19.2 - 29.2	33.2 - 43.2	61.2 - 71.2
					9.1 - 10.0	19.2 - 29.2	33.2 - 43.2	69.2 - 79.2
H 2006-3212 0000 R	1.8	W 2006-... .. L	74.8	64.8	10.1 - 11.0	27.2 - 37.2	43.2 - 53.2	80.2 - 90.2
					11.1 - 12.0	27.2 - 37.2	43.2 - 53.2	88.2 - 98.2
H 3006-3214 0000 R	2.5	W 3006-... .. L	75.5	65.5	12.1 - 14.0	31.5 - 41.5	48.5 - 58.5	106.5 - 116
H 3006-3216 0000 R	2.5	W 3006-... .. L	80.5	70.5	14.1 - 16.0	34.5 - 43.9	52.5 - 62.5	123.5 - 132.6
H 3006-3218 0000 R	2.5	W 3006-... .. L	80.5	70.5	16.1 - 18.0	42.5 - 49.3	62.5 - 69.3	142.5 - 149.2
H 3006-3220 0000 R	2.5	W 3006-... .. L	80.5	70.5	18.1 - 20.0	50.5 - 52.6	72.5 - 74.6	163.5 - 165.8

Ordering example:

Drill-Ø = 6.2 mm, Drilling depth = 22 mm, Chamfer = 1x45°, Hydraulic chuck-Ø = 20mm
 reading from the table: Drawing number = H 2006-2008 0000 R, the drawing number reading from
 the table of the right side shows the Ordering number = Part.Nr. + Code 20042 8,020

Drill / Chamfering tools



Part nr. 20042												
Code	Drawing number	Ø B	FB max.	Ø D	Ø d	Ø A	L	L1	L2	L3	Ø D _{1max}	Insert
6,012	H 2006-1206 0000 R	4.0- 6	1.8	12	6	29	70	25	4	10	18.3	W 2006-.... L
8,012	H 2006-1208 0000 R	6.1- 8	1.8	12	8	29	70	25	4	10	20.2	W 2006-.... L
6,020	H 2006-2006 0000 R	4.0- 6	1.8	20	6	35	75	25	4	10	18.5	W 2006-.... L
8,020	H 2006-2008 0000 R	6.1- 8	1.8	20	8	35	75	25	4	10	20.2	W 2006-.... L
10,020	H 2006-2010 0000 R	8.1- 10	1.8	20	10	35	75	25	4	10	22.2	W 2006-.... L
12,020	H 2006-2012 0000 R	10.1- 12	1.8	20	12	35	75	25	4	10	24.4	W 2006-.... L
6,032	H 2006-3206 0000 R	4.0- 6	1.8	32	6	46	90	30	5	10	18.3	W 2006-.... L
8,032	H 2006-3208 0000 R	6.1- 8	1.8	32	8	46	90	30	5	10	20.2	W 2006-.... L
10,032	H 2006-3210 0000 R	8.1- 10	1.8	32	10	46	90	30	5	10	22.4	W 2006-.... L
12,032	H 2006-3212 0000 R	10.1- 12	1.8	32	12	46	90	30	5	10	24.4	W 2006-.... L
14,020	H 3006-2014 0000 R	12.1- 14	2.5	20	14	35	75	25	4	12	31.7	W 3006-.... L
16,020	H 3006-2016 0000 R	14.1- 16	2.5	20	16	35	75	25	4	12	33.6	W 3006-.... L
14,032	H 3006-3214 0000 R	12.1- 14	2.5	32	14	46	90	30	5	12	31.7	W 3006-.... L
16,032	H 3006-3216 0000 R	14.1- 16	2.5	32	16	46	90	30	5	12	33.6	W 3006-.... L
18,032	H 3006-3218 0000 R	16.1- 18	2.5	32	18	46	90	30	5	12	35.5	W 3006-.... L
20,032	H 3006-3220 0000 R	18.1- 20	2.5	32	20	46	90	30	5	12	37.7	W 3006-.... L

Spare parts

Part nr. 20067			
Code	Drawing number	Clamping set for	Tx
2,000	E4890	H 2006-...	6
2,500	E4991	H 3006-...	8

Ordering example:

Part number + Code = Ordering number

e.g. Clamping set for H 2006-... = Ordering number 20067 2,000

Application recommendations

Cutting material		Grade composition		Workpiece material				
				Steel	Stainless steel	Cast iron	Non ferrous materials	Heavy machinable materials
Grade code		Substrate	Coating					
K10		K10	uncoated	—	—	●	▲	●
With chipbreaker								
G12		K10	TiAlN Multilayer PVD	—	—	▲	●	—
With chipbreaker								
G16		P40	TiAlN Multilayer PVD	▲	▲	—	—	●
With chipbreaker								
PCD		Grain size 10 µm		—	—	—	▲	—
Without chipbreaker								

▲ = very good applicable ● = applicable — = not applicable
 Further cutting material, coatings and geometries on request.

Recommended drills and hydraulic chucks

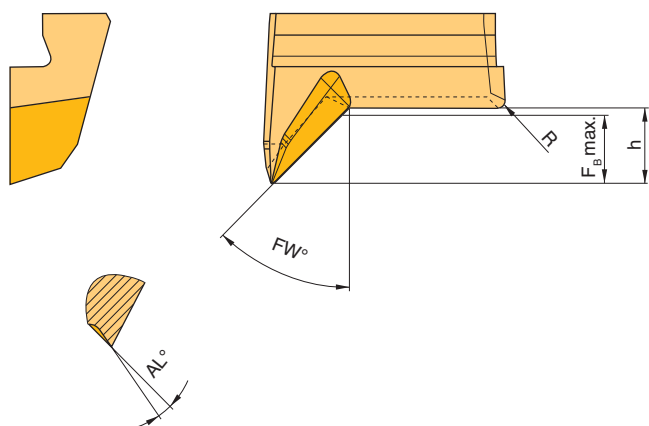
All drill / chamfering adapters are especially designed for the hydraulic chuck line of the GUHRING GM 300 program and the solid carbide drill line RT 100 (DIN 6537 L/K) . More information can be found in the below shown GUHRING catalogs.



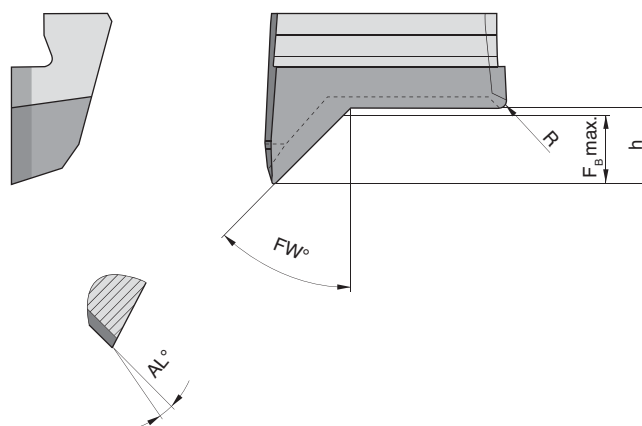
The cutting data recommendations in the table are guide values
and depend to a high degree on the stability of the machine, fixture and workpiece.

Cutting group	Material group	Composition / Structure	Tensile strength RM (MPa)	Hardness HB HRC	Cutting speed vc m/min	Recommended cutting grade	Feed rate fz mm/z	
							W 2006-....	W 3006-....
1.1		C = 0.1 -0.25 annealed, long cut	420	125	100-160	G16	0.05-0.15	0.07-0.15
1.2		C = 0.1 -0.25 annealed, short chip	420	125	110-160			
2.1	Unalloyed steel	C = 0.25 -0.55 annealed, long cut	620	190	90-150			
2.2	Cast steel	C = 0.25 -0.55 annealed, short chip	640	190	100-160			
3	Machining steel	C = 0.25 -0.55 tempered	850	250	90-150			
4		C = 0.25 -0.8 annealed	915	270	80-140			
5		C = 0.25 -0.8 tempered	1020	300	75-125			
6		annealed	610	180	90-140			
7	Low-alloy steel	tempered	930	275	60-110			
8	Cast steel	tempered	1020	300	60-110			
9	Machining steel	tempered	1190	350	60-100			
10	High-alloy steel	annealed	680	250	60-110			
11	Cast steel	annealed	680	250	60-110			
11	High-alloy tool steel	hardened and tempered	1100	325	50-60			
12-13	Stainless steel and cast steel	ferritic/martensitic annealed	680	200	50-90			
		martensitic	810	240	40-80			
14.1	Stainless steel	austenitisch quenched	610	180	40-80	G16		
14.2	Stainless steel	austenitic/ferritisch (duplex)	880	260	40-80			
15	Grey cast iron	perlitic/ferritic		180	110-160	K10/G12		
16		perlitic (martensitic)		260	100-150			
17	Cast iron with	ferritic		160	80-130			
18	nodular cast iron	perlitic		250	70-120			
19	Malleable	ferritisch		130	90-150			
20		perlitic		230	80-140			
21	Aluminium	not heat treatable		60	-1000	K10/PKD		
22	forging alloys	aushärtbar/ausgehärtet		100	-800			
23	Aluminium	<12% Si not heat treatable		75	-1000			
24	casting alloys	<12% Si heat treatable/heat treated		90	-800			
25		>12% Si not heat treatable		130	-600			
26	Copper	Machined alloys, Pb >1%		110	70-120	K10/G12		
27	Copper alloys	CuZn, CuSnZn		90	70-120			
28	(bronze, brass)	Cu, lead free Copper/electrolyte copper		100	70-120			
29	Non metallic	Duroplastic			-200	K10/PKD		
30	materials	Reinforced materials			-200			
31		Fe-based annealed		200	30-50	G16		
32		heat treated		230	30-50			
33	Heat treatable	Ni- or Co-based annealed		250	20-40			
34	alloys	heat treated		350	20-40			
35		cast		320	20-40			
36	Titanium alloys	Pure titanium	400		20-40	K10		
37		Alpha-beta alloys	1050		20-40			

Carbide inserts uncoated / coated



PCD inserts



							Part nr.			
							20362	20363	20364	20365
Code	Drawing nr.	F _B max	FW°	AL°	R	h	Cutting grade			
		max. Chamfer width	Chamfer angle	Rake angle	Radius	Heigth	K10	G12	G16	PKD
20,060	W 2006-1830 1000 L	1.8	30°	10°	0.2	2	●	●	●	
20,060	W 2006-1830 0000 L	1.8	30°	0°	0.2	2				●
20,061	W 2006-1845 1000 L	1.8	45°	10°	0.2	2	●	●	●	
20,061	W 2006-1845 0000 L	1.8	45°	0°	0.2	2				●
20,062	W 2006-1860 1000 L	1.8	60°	10°	0.2	2	●	●	●	
20,062	W 2006-1860 0000 L	1.8	60°	0°	0.2	2				●
30,063	W 3006-2530 1000 L	2.5	30°	10°	0.2	2.7	●	●	●	
30,063	W 3006-2530 0000 L	2.5	30°	0°	0.2	2.7				●
30,064	W 3006-2545 1000 L	2.5	45°	10°	0.2	2.7	●	●	●	
30,064	W 3006-2545 0000 L	2.5	45°	0°	0.2	2.7				●
30,065	W 3006-2560 1000 L	2.5	60°	10°	0.2	2.7	●	●	●	
30,065	W 3006-2560 0000 L	2.5	60°	0°	0.2	2.7				●

● ex stock

Ordering example:

e.g. 30° PCD Chamfering insert for adaptor H 2006-...

reading from the table: Drawing number = H 2006-1830 0000 L PCD,

Ordering number = Part nr. + Code 20365 20,060

Assembly instruction



Changing the insert

Disassembly

- Loosen clamp set (1 to 2 turns) and remove worn insert
- Clean pocket seat

Assembly

- Put new insert into pocket seat
- Press insert into the pocket seat while slightly tightening the clamp set
- Push insert against the drill, therefore place 0.03 mm feeler gauge between insert and drill
- Hold insert in position and tight down clamp set with recommended torque

Clamp set	Clamping set for	Tx	Torque (Ncm)
E4890	H 2006-... ..	6	70
E4991	H 3006-... ..	8	140

Torque wrenches

Drawing number	Version	Tx	Ncm
E5000	adjustable	6	20-120
E5001	adjustable	8	100-600
E5400-6	fixed	6	70
E5400-8	fixed	8	140

Ordering numbers for spare parts see pages 127-129



Turning tools

Boring bars / cartridges
for the internal machining





Mini-boring bars with minimum working diameter from 4 mm

Technical information	page	104
90° / 95° approach angle	page	105
Inserts for Mini-boring bars	page	106
Spare parts Mini-boring bars	page	107
Cutting data recommendations	page	108
	page	109



Boring bars with minimum working diameter from 5 mm

Technical information	page	110
90° / 95° approach angle - shank with clamping flange	page	111
	page	112

90° / 95° approach angle - shank round version with minimum working diameter from 6 mm	page	113-114
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90° / 95° approach angle - with carbide shank, internal coolant supply with minimum working diameter from 6 mm	page	115-116
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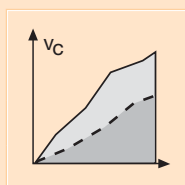
Copying boring bars with minimum working diameter from 12 mm 93° / 107°30' approach angle	page	117
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Spare part boring bars	page	118
Special tooling	page	119



Inserts

Grade selection - carbide, carbide coated, PCD, PCBN	page	120
Insert program	from page	121



Application recommendations	page	125-126
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Form „Request for special tooling“	page	130
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Mini-boring bars starting from 4 mm working diameter, shank with clamping flange

... innovative

HOLLFELDER-GÜHRING CUTTING TOOLS

offers this range of mini-boring bars starting at diameter 4 mm with the possibility to produce precise small borings at economical costs both for stationary and rotating usage.

Due to the use of precisionground carbide inserts the tooling system is highly efficient. The inserts are fitted with a positive rake angle and are locked securely into the precision-made pocket seat thus guaranteeing an exact central position in the tool holder. The clamping of the inserts is achieved by means of the resilient upper-part of the shank. The robust clamping conditions ensure a high cutting performance and a unsurpassed process stability for machining a variety of materials. The unhampered chip-evacuation is due to large chip flutes and the exact central position of the insert and is even further enhanced by an optimised chipforming controlled by a precision-ground chipbreaker.



Mini-boring bars starting from 4 mm working diameter, shank with clamping flange

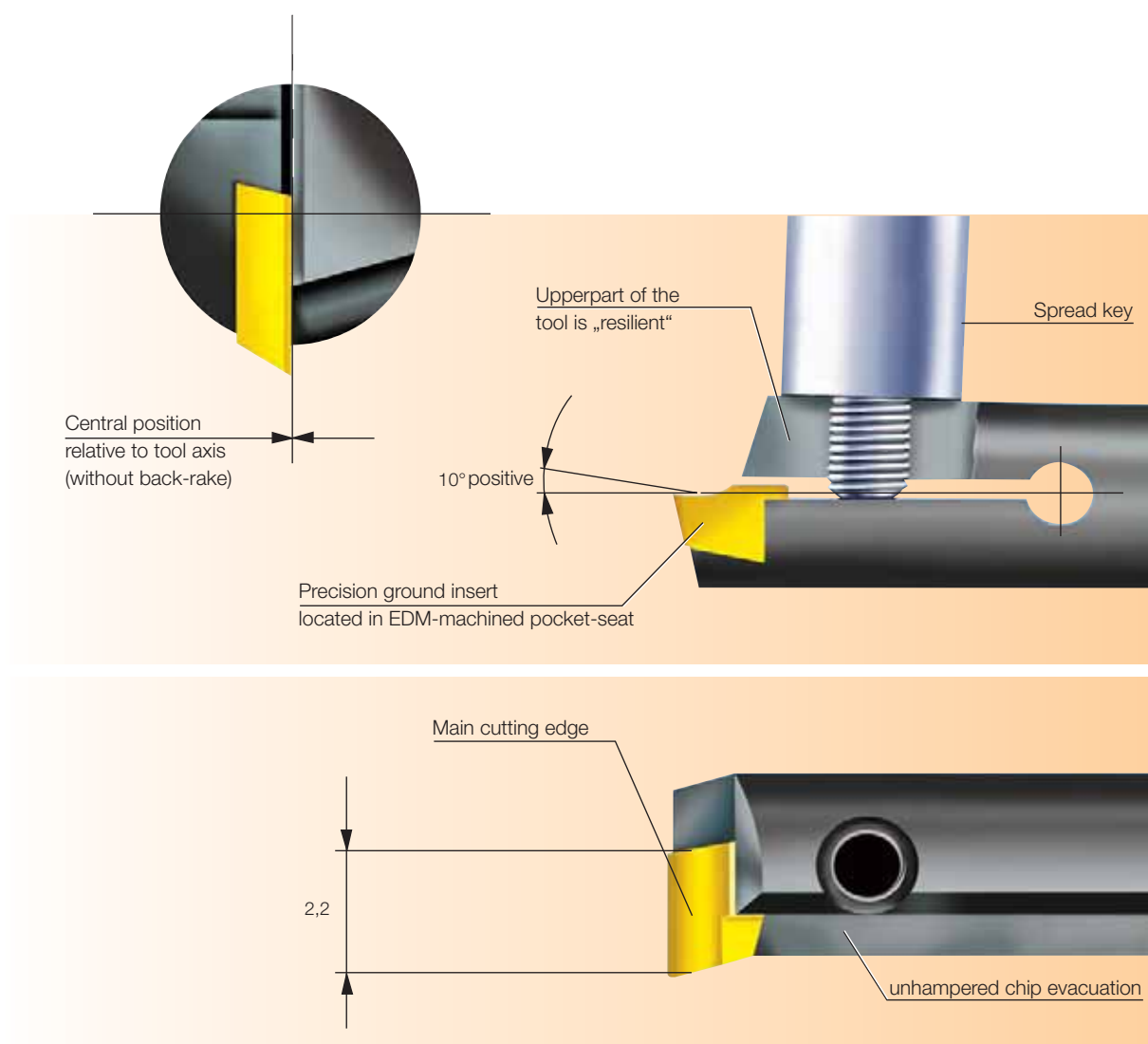


Changing the insert

is done with a spread-key which pushes the resilient upper part off the tool holder thus allowing the easy change of a worn insert respectively the refitting with a new insert. The individual components are exactly fitted to each other and will therefore prevent overstretching of the clamping element (refer to central pict.).

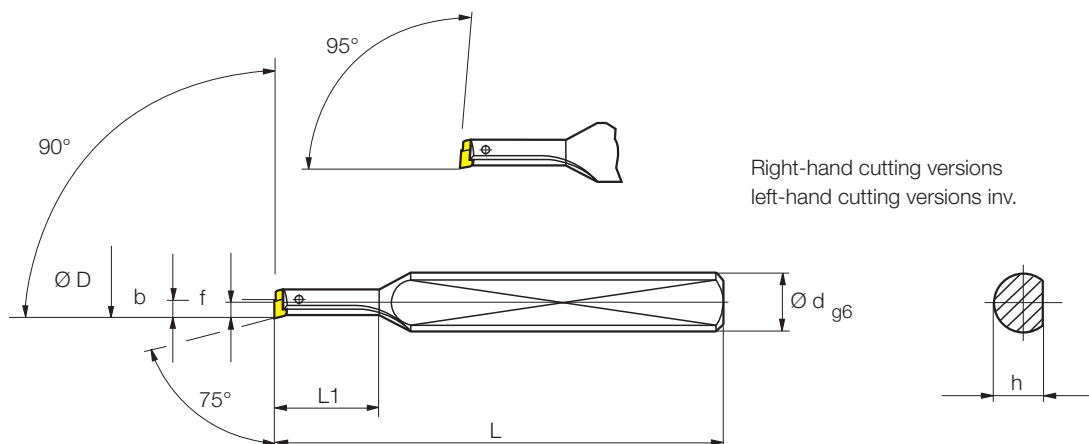
In order to facilitate handling with regard to the small tool dimensions, we additionally offer an auxiliary entry device for changing the insert. Refer to page 108.

Please use our inquiry sheet on page 130 for requests of customer-specific special tooling solutions.



Mini-boring bars starting from 4 mm working diameter, shank with clamping flange

90° / 95° approach angle, 75° corner angle



Part nr. 20030										
Code	Drawing nr.		Ø D	Ø d	f	b	h	L ₁	L	Inserts*
	90° approach angle									
4,000	H 7502-0801 0290 R	●	4	8	2.10	2.20	6.6	14	60	W 7502-... L
	95° approach angle									
4,001	H 7502-0801 0295 R	●	4	8	2.10	2.20	6.6	14	60	W 7502-... L
Part nr. 20031										
Code	Drawing nr.		Ø D	Ø d	f	b	h	L ₁	L	Inserts*
	90° approach angle									
4,000	H 7502-0801 0290 L	●	4	8	2.10	2.20	6.6	14	60	W 7502-... R
	95° approach angle									
4,001	H 7502-0801 0295 L	●	4	8	2.10	2.20	6.6	14	60	W 7502-... R

*Please note: Left-hand boring bars have to be fitted with right-hand inserts and right-hand boring bars with left-hand inserts!

● ex stock

Ordering example: 1 piece H 7502-0801 0290 R = Ordering number: 20030 4,000



Shank with
clamping flange
7502-...



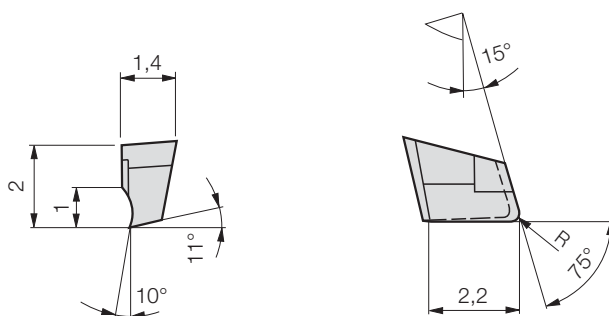
Spare parts
page 108

Mini-boring bars starting from 4 mm working diameter, shank with clamping flange



Insert W 7502-.... L/R*

Carbide / carbide coated



Right-hand cutting versions
left-hand cutting versions inv.

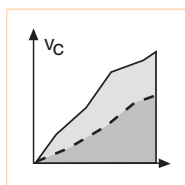
				Part nr. 20216	Part nr. 20217 uncoated	Part nr. 20218	Part nr. 20219 coated	Part nr. 20220 coated
Code	Drawing nr.	R	AI°	P10	P40	K10	H25	H26
75,020	W 7502-0010 1020 L	0.05	10	○	●	●	○	●
75,021	W 7502-0210 1020 L	0.2	10	○	●	●	○	●
				Part nr. 20221	Part nr. 20222 uncoated	Part nr. 20223	Part nr. 20224 coated	Part nr. 20225 coated
Code	Drawing nr.	R	AI°	P10	P40	K10	H25	H26
75,020	W 7502-0010 1020 R	0.05	10	○	●	●	○	●
75,021	W 7502-0210 1020 R	0.2	10	○	●	●	○	●

*Please note: Left-hand boring bars have to be fitted with right-hand inserts and right-hand boring bars with left-hand inserts!

Further cutting material, coatings and geometries on request.

● ex stock ○ on request

Ordering example: 1 piece W 7502-0010 1020 L H26 = Ordering number: 20220 75,020



Application
recommendations
page 109



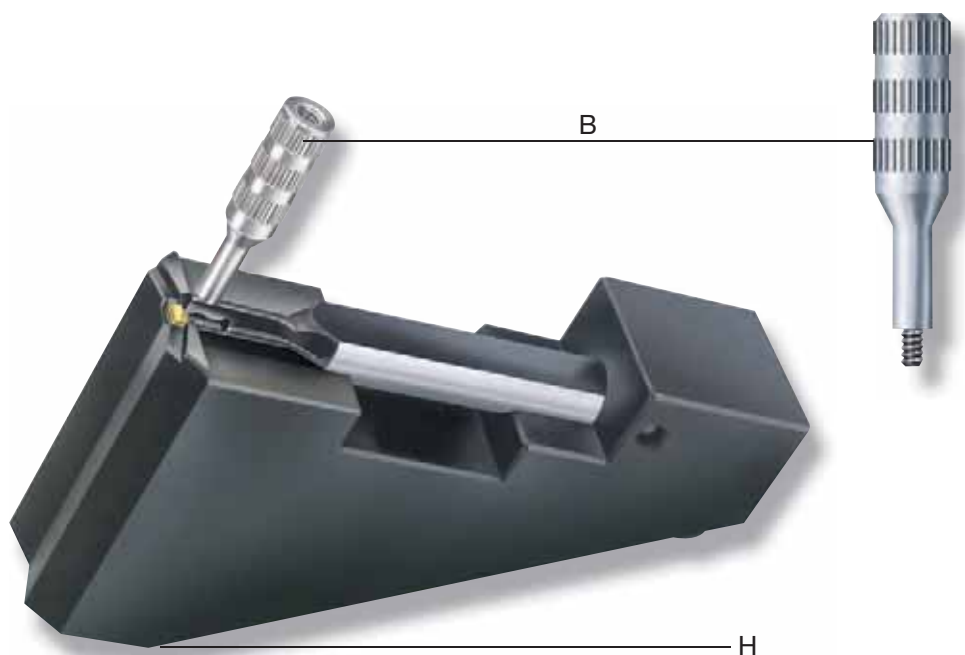
Grade selections and
insert geometries
page 120



Insert
carbide uncoated
W 7502-.... R

Mini-boring bars starting from 4 mm working diameter, shank with clamping flange

Spare parts for Mini-boring bars



for type	H	B
H 7502-.... R/L	X 1150	E 2451

H Entering auxiliary mechanism (for insert change)

B Operating key

Ordering numbers for spare parts see page 127-129

Mini-boring bars starting from 4 mm working diameter, shank with clamping flange



Cutting data recommendations

The cutting data recommendations in the table are guide values and depend to a high degree on the stability of the machine, fixture and workpiece.

Cutting group	Material group	Composition / structure	Tensile strength RM (MPa)	Hardness HB HRC	Cutting speed vc m/min	Recommended cutting grade	feed rate mm/rev. W 7502-....	max. cutting depth ap mm
1.1		C = 0.1 -0.25 annealed, long cutt.	420	125	60-130	P40/H26	0.02-0.03	0.35
1.2		C = 0.1 -0.25 annealed, short chip	420	125	60-130			
2.1	Unalloyed steel	C = 0.25 -0.55 annealed, long cutt.	620	190	50-120			
2.2	Cast steel	C = 0.25 -0.55 annealed, short chip	640	190	60-130			
3	Machining steel	C = 0.25 -0.55 tempered	850	250	50-120			
4		C = 0.25 -0.8 annealed	915	270	40-100			
5		C = 0.25 -0.8 tempered	1020	300	30-90			
6		annealed	610	180	50-110			
7	Low-alloy steel	tempered	930	275	30-80			
8	Cast steel							
8	Machining steel	tempered	1020	300	30-80			
9		tempered	1190	350	30-80			
10	High-alloy steel	annealed	680	200	30-80		0.02	0.25
11	Cast steel							
11	High-alloy tool steel	hardened and tempered	1100	325	30-70			
12-13	Nichtrost. Stahl und Stahlguss	ferritic/martensitic annealed	680	200	30-70			
		martensitic	810	240	30-60			
14.1	Stainless steel	austenitic quenched	610	180	30-60	H26		
14.2		austenitic/ferritic (duplex)	880	260	30-60			
15	Grey cast iron	perlitic/ferritic		180	70-120	K10/H26	0.04	0.5
16		perlitic (martensitic)		260	60-110			
17	Cast iron with	ferritic		160	40-100			0.4
18	nodular cast iron	perlitic		250	30-100			
19	Malleable	ferritic		130	50-120			
20		perlitic		230	40-110			
21	Aluminium	not heat treatable		60	60-180	K10	0.03-0.08	0.5
22	forging alloys	heat treatable/heat treated		100	60-180			
23	Aluminium	<12% Si not heat treatable		75	60-180			
24	casting alloys	<12% Si heat treatable/heat treated		90	60-180			
25		>12% Si not heat treatable		130	60-90			
26	Copper	Machined alloys, Pb >1%		110	60-90		0.03-0.05	
27	Copper alloys	CuZn, CuSnZn		90	60-90			
28	(bronze, brass)	Cu lead free copper/electr. copper		100	60-90			
29	Non metallic materials	Duroplastic	90		-200			
30		Reinforced materials	100		-200			
31	Heat resistant alloys	Fe-based annealed		200	30-50	H26	0.02-0.03	0.35
32		heat treated		230	30-50			
33		Ni- oder Co-based annealed		250	20-40			
34		heat treated		350	20-40			
35		cast		320	20-40			
36	Titanium alloys	Pure titanium	400		20-40	K10	0.03	0.2
37		Alpha-beta alloys	1050		20-40			



Boring bars

starting from 5 mm working diameter

... versatile

HOLLFELDER-GÜHRING CUTTING TOOLS

creates the basis for a versatile production on turning machines (lathes). This range of boring bars starting from 5 mm will satisfy all your requirements.

The various product ranges are fitted to each other in such a way as to offer a wide range of applications to the user. Depending on the individual application you can choose among boring bars with steel- or carbide shanks as well as among different insert geometries and approach angles. The boring bars with carbide shank and internal coolant supply in particular enable the use of large L/D (length-diameter) relations. The precisionground inserts offer the highest degree of precision and cutting performance independent of the geometry of the boring bar. The positive chipbreaker geometries of the inserts are responsible for an advantageous chip forming, reduced machining force on the insert, excellent chip flow and as a result a superior process stability even under difficult machining conditions and at unstable workpieces.



Boring bars

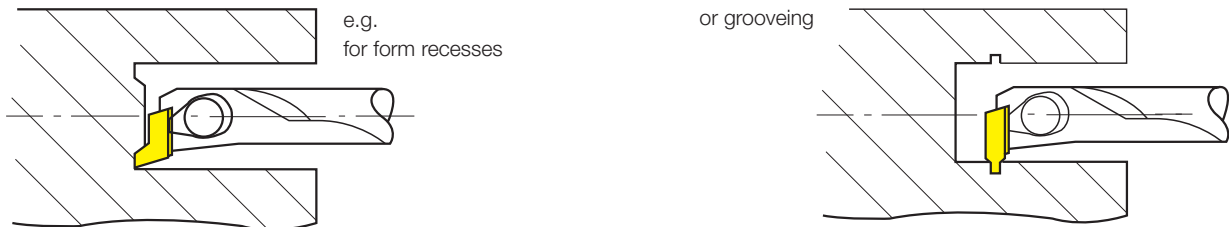
starting from 5 mm working diameter

The insert clamping and the geometry of the pocket seat is designed in a way that it protects the second cutting edge of the insert within the insert pocket and avoids the destruction or damage that might be caused by the impact of evacuated chips.

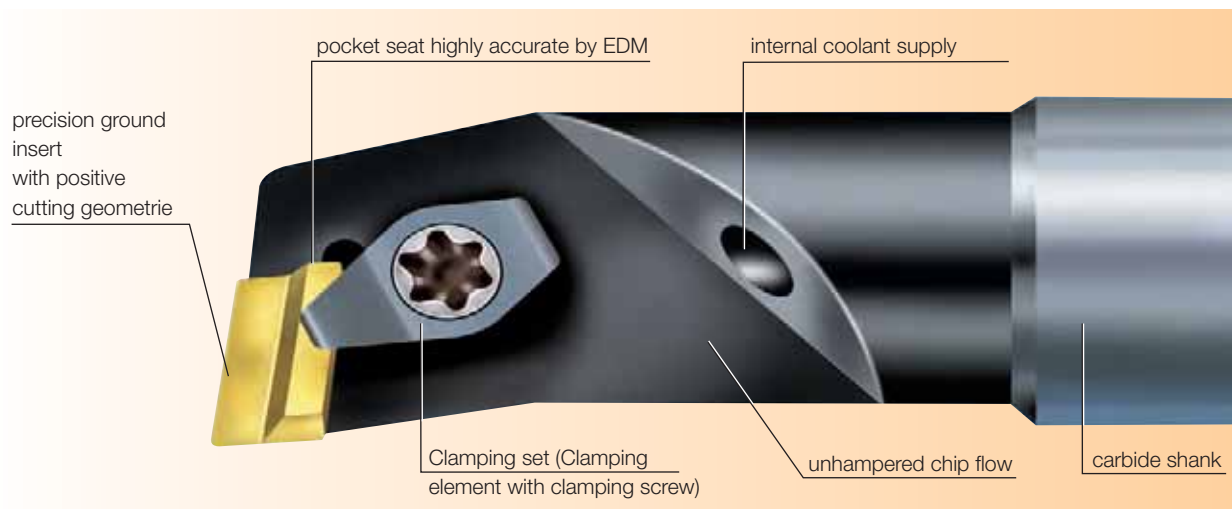
Clamping and releasing the insert is handled by means of a single clamp screw and is therefore very easy; at the same time the requirement for stock-keeping of spare-parts is reduced to a minimum.

Our mini-boring bars are also perfectly suitable for every kind of form recesses.

In customer specific requirements the operational possibilities of our standard boring bars can on request be enormously increased by means of special form inserts.



Please use our inquiry sheet on page 130 for requests of customer-specific special tooling solutions.



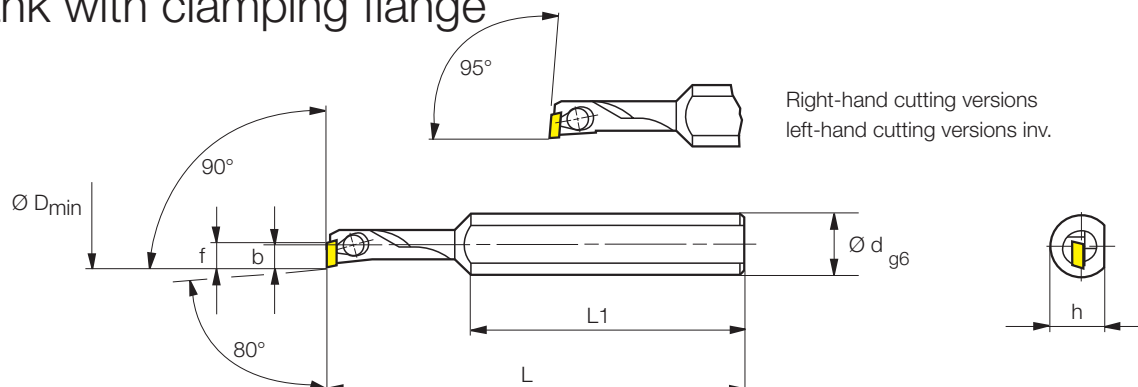


Boring bars

starting from 5 mm working diameter

90° / 95° approach angle, 80° corner angle

Shank with clamping flange



Part nr. 20030										
Code	Drawing nr.		Ø D _{min}	Ø d	f	b	h	L ₁	L	Inserts*
90° approach angle										
5,000	H 1733-0800 2890 R	●	5	8	2.80	3.25	7	36	55	W 1733-... L
6,000	H 1733-0800 3390 R	●	6	8	3.30	3.25	7	36	55	
7,000	H 1733-0800 3890 R	●	7	8	3.80	3.25	7	36	65	
8,000	H 1733-0800 4390 R	●	8	8	4.30	3.25	7	36	65	
95° approach angle										
5,001	H 1733-0800 2895 R	●	5	8	2.80	3.25	7	36	55	
6,001	H 1733-0800 3395 R	●	6	8	3.30	3.25	7	36	55	
7,001	H 1733-0800 3895 R	●	7	8	3.80	3.25	7	36	65	
8,001	H 1733-0800 4395 R	●	8	8	4.30	3.25	7	36	65	
Part nr. 20031										
Code	Drawing nr.		Ø D _{min}	Ø d	f	b	h	L ₁	L	Inserts*
90° approach angle										
5,000	H 1733-0800 2890 L	●	5	8	2.80	3.25	7	36	55	W 1733-... R
6,000	H 1733-0800 3390 L	●	6	8	3.30	3.25	7	36	55	
7,000	H 1733-0800 3890 L	●	7	8	3.80	3.25	7	36	65	
8,000	H 1733-0800 4390 L	●	8	8	4.30	3.25	7	36	65	
95° approach angle										
5,001	H 1733-0800 2895 L	●	5	8	2.80	3.25	7	36	55	
6,001	H 1733-0800 3395 L	●	6	8	3.30	3.25	7	36	55	
7,001	H 1733-0800 3895 L	●	7	8	3.80	3.25	7	36	65	
8,001	H 1733-0800 4395 L	●	8	8	4.30	3.25	7	36	65	

*Please note: Left-hand boring bars have to be fitted with right-hand inserts and right-hand boring bars with left-hand inserts!

● ex stock

Ordering example: 1 piece H 1733-0800 3390 R = Ordering number: 20030 6,000



Shank with clamping flange 1733-...



Spare parts page 118



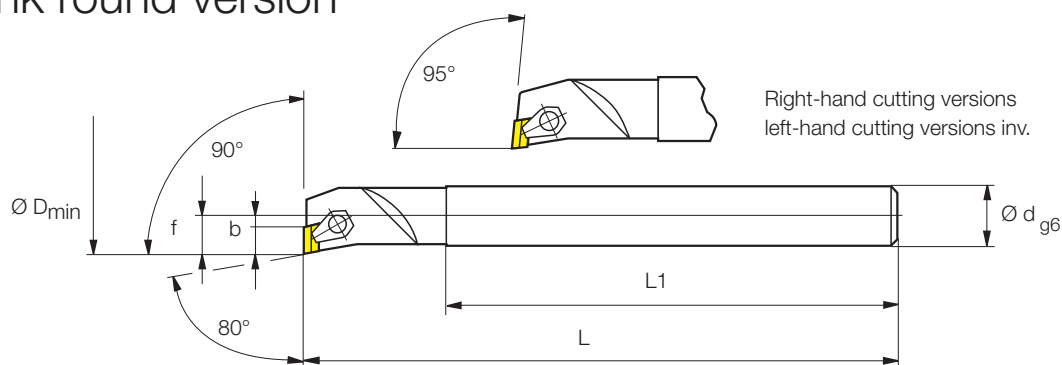
Grade selections and insert geometries page 120

Boring bars

starting from 6 mm working diameter

90° / 95° approach angle, 80° corner angle

Shank round version

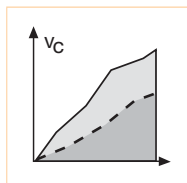


Part nr. 20032									
Code	Drawing nr.		Ø D _{min}	Ø d	f	b	L ₁	L	Inserts*
90° approach angle									
6,000	H 8003-0600 0390 R	●	6	6	3.25	3.00	44	60	W 8003-... L
8,000	H 8005-0600 0490 R	●	8	6	4.50	4.50	44	60	W 8005-... L
10,000	H 8005-0800 0590 R	●	10	8	5.50	4.50	60	80	↓
12,000	H 8005-1000 0690 R	●	12	10	6.50	4.50	76	100	
15,000	H 8008-1200 0890 R	●	15	12	8.50	7.40	95	125	W 8008-... L
20,000	H 8008-1600 1190 R	●	20	16	11.00	7.40	110	150	↓
25,000	H 8008-2000 1290 R	●	25	20	12.50	7.40	130	180	
36,000	H 8012-2500 1690 R	○	36	25	16.00	11.70	135	200	W 8012-... L
40,000	H 8012-3200 2090 R	○	40	32	20.00	11.70	170	250	↓
95° approach angle									
6,001	H 8003-0600 0395 R	●	6	6	3.25	3.00	44	60	W 8003-... L
8,001	H 8005-0600 0495 R	●	8	6	4.50	4.50	44	60	W 8005-... L
10,001	H 8005-0800 0595 R	●	10	8	5.50	4.50	60	80	↓
12,001	H 8005-1000 0695 R	●	12	10	6.50	4.50	76	100	
15,001	H 8008-1200 0895 R	●	15	12	8.50	7.40	95	125	W 8008-... L
20,001	H 8008-1600 1195 R	●	20	16	11.00	7.40	110	150	↓
25,001	H 8008-2000 1295 R	●	25	20	12.50	7.40	130	180	
36,001	H 8012-2500 1695 R	○	36	25	16.00	11.70	135	200	W 8012-... L
40,001	H 8012-3200 2095 R	○	40	32	20.00	11.70	170	250	↓

*Please note: Left-hand boring bars have to be fitted with right-hand inserts and right-hand boring bars with left-hand inserts!

● ex stock ○ on request

Ordering example: 1 piece H 8003-0600 0390 R = Ordering number: 20032 6,000



Application
recommendations
page 126



Form „Request for
customer specific
tools“
page 130



Shank
round version
8003-... / 8005-...
8008-... / 8012-...

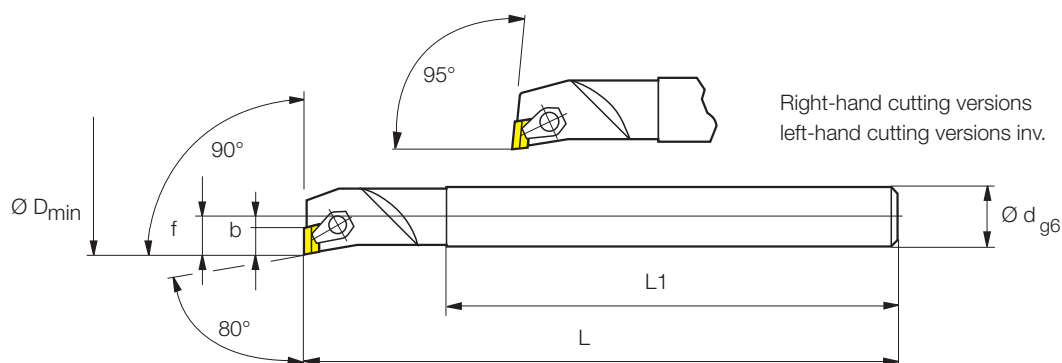


Boring bars

starting from 6 mm working diameter

90° / 95° approach angle, 80° corner angle

Shank round version



Part nr. 20033									
Code	Drawing nr.		Ø D _{min}	Ø d	f	b	L ₁	L	Inserts*
90° approach angle									
6,000	H 8003-0600 0390 L	●	6	6	3.25	3.00	44	60	W 8003-... R
8,000	H 8005-0600 0490 L	●	8	6	4.50	4.50	44	60	W 8005-... R
10,000	H 8005-0800 0590 L	●	10	8	5.50	4.50	60	80	↓
12,000	H 8005-1000 0690 L	●	12	10	6.50	4.50	76	100	↓
15,000	H 8008-1200 0890 L	●	15	12	8.50	7.40	95	125	W 8008-... R
20,000	H 8008-1600 1190 L	●	20	16	11.00	7.40	110	150	↓
25,000	H 8008-2000 1290 L	●	25	20	12.50	7.40	130	180	↓
36,000	H 8012-2500 1690 L	○	36	25	16.00	11.70	135	200	W 8012-... R
40,000	H 8012-3200 2090 L	○	40	32	20.00	11.70	170	250	↓
95° approach angle									
6,001	H 8003-0600 0395 L	●	6	6	3.25	3.00	44	60	W 8003-... R
8,001	H 8005-0600 0495 L	●	8	6	4.50	4.50	44	60	W 8005-... R
10,001	H 8005-0800 0595 L	●	10	8	5.50	4.50	60	80	↓
12,001	H 8005-1000 0695 L	●	12	10	6.50	4.50	76	100	↓
15,001	H 8008-1200 0895 L	●	15	12	8.50	7.40	95	125	W 8008-... R
20,001	H 8008-1600 1195 L	●	20	16	11.00	7.40	110	150	↓
25,001	H 8008-2000 1295 L	●	25	20	12.50	7.40	130	180	↓
36,001	H 8012-2500 1695 L	○	36	25	16.00	11.70	135	200	W 8012-... R
40,001	H 8012-3200 2095 L	○	40	32	20.00	11.70	170	250	↓

*Please note: Left-hand boring bars have to be fitted with right-hand inserts and right-hand boring bars with left-hand inserts!

● ex stock ○ on request

Ordering example: 1 piece H 8003-0600 0390 L = Ordering number: 20033 6,000



Shank
round version
8003-.... / 8005-...
8008-.... / 8012-...



Spare parts
page 118

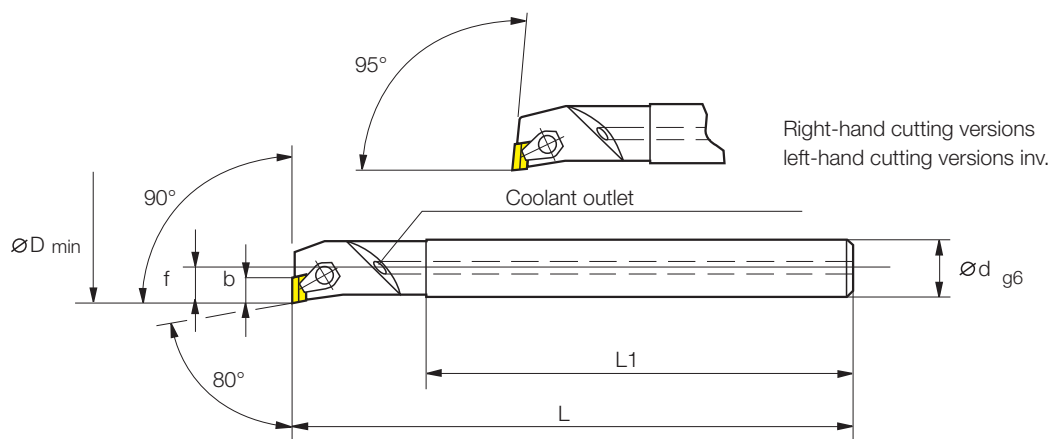


Grade selections and
insert geometries
page 120

Boring bars

starting from 6 mm working diameter

90° / 95° approach angle, 80° corner angle
Carbide shank with internal coolant supply

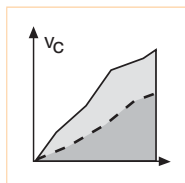


Part nr. 20034									
Code	Drawing nr.		Ø D _{min}	Ø d	f	b	L ₁	L	Inserts*
90° approach angle									
6,000	HH 8003-0600 0390 R	●	6	6	3.25	3.00	70	100	W 8003-... L
8,000	HH 8005-0600 0490 R	●	8	6	4.50	4.50	84	100	W 8005-... L
10,000	HH 8005-0800 0590 R	●	10	8	5.50	4.50	105	125	↓
12,000	HH 8005-1000 0690 R	●	12	10	6.50	4.50	126	150	
15,000	HH 8008-1200 0890 R	●	15	12	8.50	7.40	150	180	W 8008-... L
20,000	HH 8008-1600 1190 R	●	20	16	11.00	7.40	160	200	↓
95° approach angle									
6,001	HH 8003-0600 0395 R	●	6	6	3.25	3.00	70	100	W 8003-... L
8,001	HH 8005-0600 0495 R	●	8	6	4.50	4.50	84	100	W 8005-... L
10,001	HH 8005-0800 0595 R	●	10	8	5.50	4.50	105	125	↓
12,001	HH 8005-1000 0695 R	●	12	10	6.50	4.50	126	150	
15,001	HH 8008-1200 0895 R	●	15	12	8.50	7.40	150	180	W 8008-... L
20,001	HH 8008-1600 1195 R	●	20	16	11.00	7.40	160	200	↓

*Please note: Left-hand boring bars have to be fitted with right-hand inserts and right-hand boring bars with left-hand inserts!

● ex stock

Ordering example: 1 piece HH 8003-0600 0390 R = Ordering number: 20034 6,000



Application
recommendations
page 126



Form „Request for
customer specific
tools“
page 130



Internal
coolant supply
shank
round version
8003-... / 8005-...
8008-...

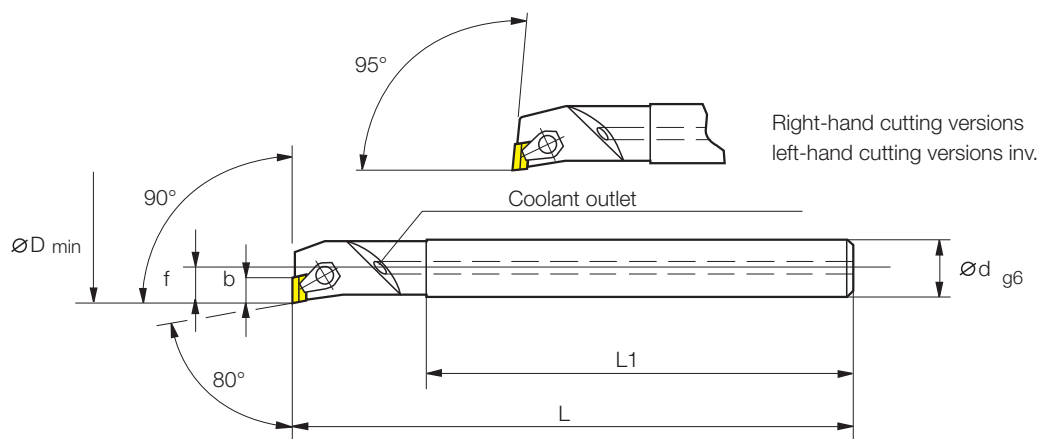


Boring bars

starting from 6 mm working diameter

90° / 95° approach angle, 80° corner angle

Carbide shank with internal coolant supply



Part nr. 20035									
Code	Drawing nr.		Ø D _{min}	Ø d	f	b	L ₁	L	Inserts*
90° approach angle									
6,000	HH 8003-0600 0390 L	●	6	6	3.25	3.00	70	100	W 8003-... R
8,000	HH 8005-0600 0490 L	●	8	6	4.50	4.50	84	100	W 8005-... R
10,000	HH 8005-0800 0590 L	●	10	8	5.50	4.50	105	125	↓
12,000	HH 8005-1000 0690 L	●	12	10	6.50	4.50	126	150	
15,000	HH 8008-1200 0890 L	●	15	12	8.50	7.40	150	180	W 8008-... R
20,000	HH 8008-1600 1190 L	●	20	16	11.00	7.40	160	200	↓
95° approach angle									
6,001	HH 8003-0600 0395 L	●	6	6	3.25	3.00	70	100	W 8003-... R
8,001	HH 8005-0600 0495 L	●	8	6	4.50	4.50	84	100	W 8005-... R
10,001	HH 8005-0800 0595 L	●	10	8	5.50	4.50	105	125	↓
12,001	HH 8005-1000 0695 L	●	12	10	6.50	4.50	126	150	
15,001	HH 8008-1200 0895 L	●	15	12	8.50	7.40	150	180	W 8008-... R
20,001	HH 8008-1600 1195 L	●	20	16	11.00	7.40	160	200	↓

*Please note: Left-hand boring bars have to be fitted with right-hand inserts and right-hand boring bars with left-hand inserts!

● ex stock

Ordering example: 1 piece HH 8003-0600 0390 L = Ordering number: 20035 6,000



internal
coolant supply
shank
round version
8003-... / 8005-...
8008-...



Spare part
page 118



Grade selections and
insert geometries
page 120

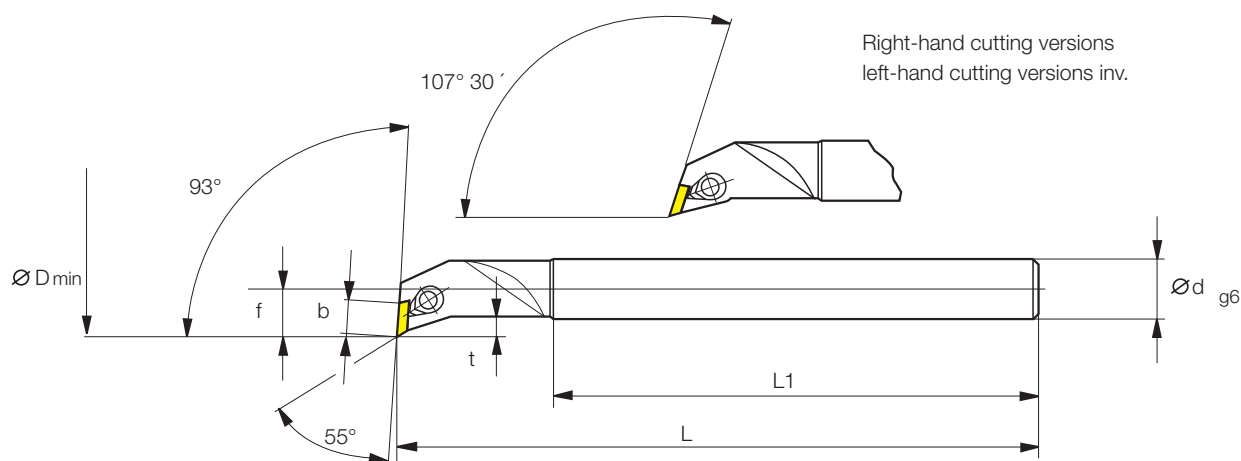
Copying boring bars

starting from 12 mm working diameter



93° / 107°30' approach angle, 55° corner angle

Shank round version

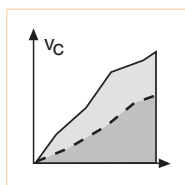


Part nr. 20036										
Code	Drawing nr.		Ø D	Ø d	f	b	t	L ₁	L	Inserts*
93° approach angle										
12,000	H 5506-1000 0793 R	●	12	10	7.00	6.80	2.5	75	100	W 5506-... L
16,000	H 5506-1200 0993 R	●	16	12	9.50	6.80	4	95	125	
20,500	H 5506-1600 1293 R	●	20.5	16	12.50	6.80	5	110	150	
107°30' Einstellwinkel										
12,001	H 5506-1000 0707 R	●	12	10	7.00	6.80	2.5	75	100	
16,001	H 5506-1200 0907 R	●	16	12	9.50	6.80	4	95	125	
20,501	H 5506-1600 1207 R	●	20.5	16	12.50	6.80	5	110	150	
Part nr. 20037										
Code	Drawing nr.		Ø D	Ø d	f	b	t	L ₁	L	Inserts*
93° approach angle										
12,000	H 5506-1000 0793 L	●	12	10	7.00	6.80	2.5	75	100	W 5506-... R
16,000	H 5506-1200 0993 L	●	16	12	9.50	6.80	4	95	125	
20,500	H 5506-1600 1293 L	●	20.5	16	12.50	6.80	5	110	150	
107°30' approach angle										
12,001	H 5506-1000 0707 L	●	12	10	7.00	6.80	2.5	75	100	
16,001	H 5506-1200 0907 L	●	16	12	9.50	6.80	4	95	125	
20,501	H 5506-1600 1207 L	●	20.5	16	12.50	6.80	5	110	150	

*Please note: Left-hand boring bars have to be fitted with right-hand inserts and right-hand boring bars with left-hand inserts!

● ex stock

Ordering example: 1 piece H 5506-1000 0793 R = Ordering number: 20036 12,000



Application recommendations page 126



Form „Request for customer specific tools“ page 130



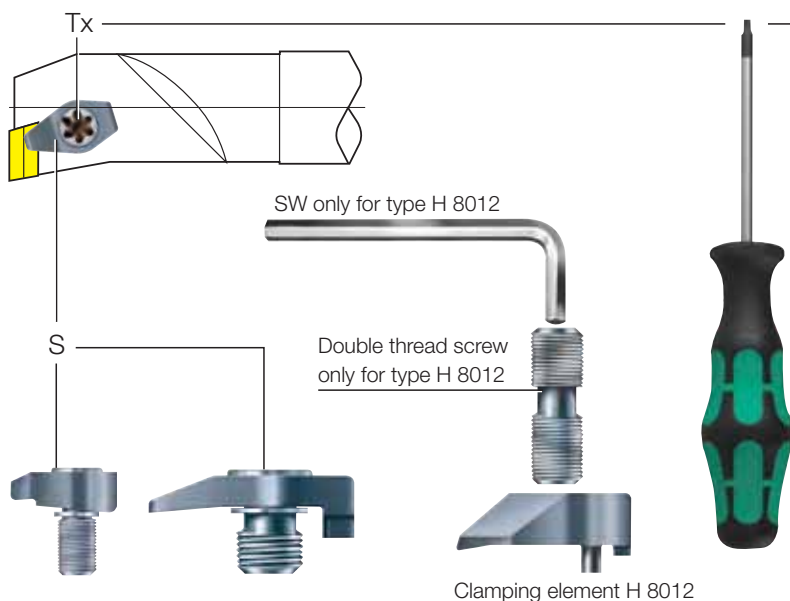
Shank round version 5506-....

H Boring bars

starting from 5 mm working diameter

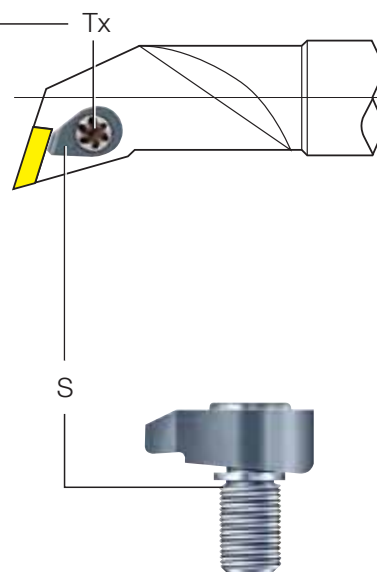
Spare parts for boring bars

Type H1733, H/HH 8003, 8005, 8008, H 8012



for copying bars

Type H 5506



Ordering number for type	S	Tx / SW	Ordering number for type	S	Tx / SW
H 1733-..... R/L	E 3441	Tx 5	H 5506-..... R	E 1092	Tx 8
H 8003-..... R/L	E 1031	Tx 6	H 5506-..... L	E 1114	Tx 8
H 8005-..... R/L	E 1014	Tx 8			
H 8008-..... R/L	E 1010	Tx 8			
HH 8003-..... R/L	E 1031	Tx 6			
HH 8005-..... R/L	E 1014	Tx 8			
HH 8008-..... R/L	E 1010	Tx 8			
H 8012-..... R/L	E 1001 / E 1030	SW 2,5			

Please note: Clamping set S contains:

1 clamping element, 1 retainer ring, 1 clamping screw

S Clamping set
Tx Torx screw driver
SW Hex drive key

Availability according to valid price list

Ordering numbers for spare parts see page 127-129

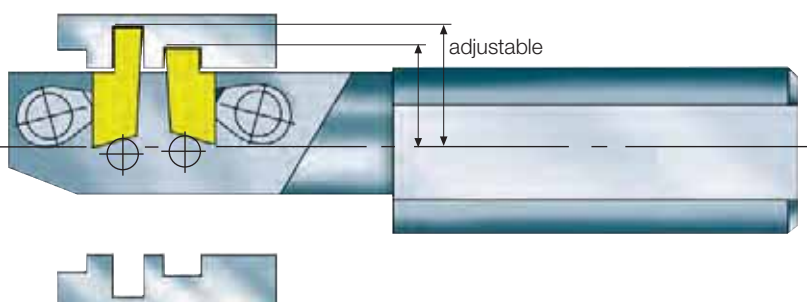
Customer spec. turning tools

Application examples



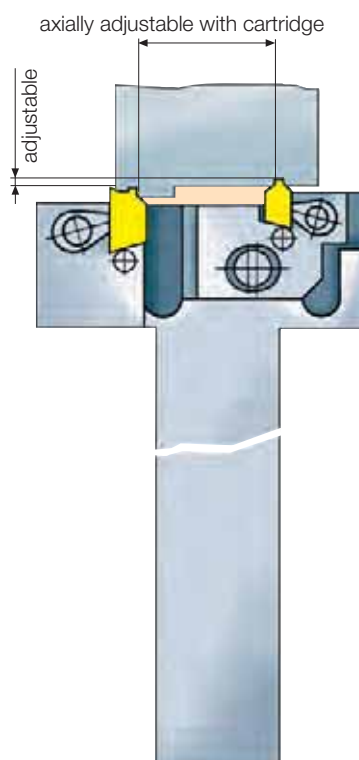
Application: Camshaft regulator

Workpiece	Camshaft regulator
Material	(DIN) Sint D11 (sintersteel metall)
Tool	Plunging tool for turning machines
Number of teeth	$z = 2$ / effective 1
Insert	acc. to customer specific.
Cutting grade	H06 carbide coated
Cutting speed	$V_C = 220 \text{ m/min}$ ($\varnothing 29.1$)
Number of revolutions	$n = 2.408 \text{ min}^{-1}$
Feed rate	$V_f = 241 \text{ mm/min}$
Feed rate per tooth	$f_z = 0.1 \text{ mm}$
Depth of cut	$\sim 4.5 \text{ mm}$
Coolant	yes, internal coolant



Application: plunge turning - profile recess

Workpiece	Profile shaft
Material	(DIN) 9 S Mn 28K
Tool	Plunging tool
Number of teeth	$z = 2$ / effective 1
Insert	acc. to customer specific.
Cutting grade	H06 carbide coated
Cutting speed	$V_C = 120 \text{ m/min}$
Number of revolutions	$n = 764 \text{ min}^{-1}$
Feed rate	$V_f = 76 \text{ mm/min}$
Feed rate per tooth	$f_z = 0.1 \text{ mm}$
Depth of cut	2 mm
Coolant	yes, external



Application recommendations

Inserts precision ground

Grade matrix

Grade selection

Chipbreaker recommendation

Carbide / carbide coated / PCD / PCBN

● ▲ —
Chipbreaker →

for boring bars starting from 5 mm working diameter

Cutting material	Grade composition		Workpiece material					
			Steel	Stainless steel	Cast iron	Nonferrous materials	Heavy machinable materials	Hardened steel
Grade code	Substrat	Coating						
P10	P10	uncoated	● n	—	—	—	—	—
Chipbreaker			-1000 -1020					
P40	P40	uncoated	● n	—	—	—	—	—
Chipbreaker			-1000 -1020	-1011				
K10	K10	uncoated	—	—	● n	▲ n	● n	—
Chipbreaker					-1000 -1020	-1620 -2420	-1620* -2420	
H02	K10	TiAlN PVD	—	● n	t ▲ n	t ● n	—	—
Chipbreaker				-1620 -2420	-1000 -1020	-1620 -2420		
H06	P40	TiAlN PVD	▲ n	▲ n	t ▲ n	—	● n	—
Chipbreaker			-1000 -1020		-1000 -1020		-1000 -1020	
H25	P40	TiN CVD	▲ n	—	—	—	●	—
Chipbreaker			-1000 -1020				-1000 -1020	
H26	P40	TiN PVD	t ● n	●	—	—	▲ n	—
Chipbreaker			-1000 -1020	-1620 -2420				
PCD	Grainsize 10µm		—	—	—	▲	—	—
Chipbreaker						-0000		
PCBN			—	—	t ● n	—	—	t ▲ n
Chipbreaker					-0000			-0000

▲ = very good applicable

● = applicable

— = not applicable

* = for Titanium

t = dry

n = wet

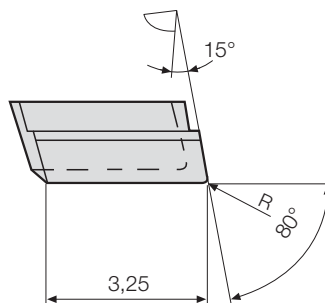
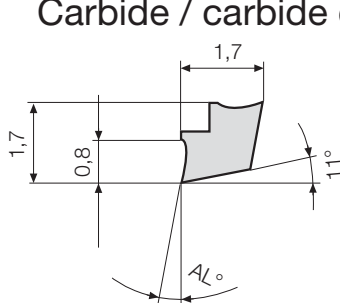
Further cutting material, coatings and geometries on request.

Indexable inserts precision ground for boring bars starting from 5 mm working diameter



Insert W 1733-.... L/R*

Carbide / carbide coated



Left-hand cutting versions
right-hand cutting versions inv.

				Part nr. 20128	Part nr. 20129 uncoated	Part nr. 20130	Part nr. 20131	Part nr. 20132 coated	Artikel Nr. 20133
Code	Drawing nr.	R	AL°	P10	P40	K10	H02	H06	H26
17,330	W 1733-0008 1000 L	0.05	10	●	●	●	●	●	●
17,331	W 1733-0208 1000 L	0.2	10	●	●	●	●	●	●
17,332	W 1733-0008 1620 L	0.05	16	○	○	●	●	○	
17,333	W 1733-0208 1620 L	0.2	16	○	○	●	●	○	

				Part nr. 20226	Part nr. 20227 uncoated	Part nr. 20228	Part nr. 20229	Part nr. 20230 coated	Artikel Nr. 20231
Code	Drawing nr.	R	AL°	P10	P40	K10	H02	H06	H26
17,330	W 1733-0008 1000 R	0.05	10	●	●	●	●	●	●
17,331	W 1733-0208 1000 R	0.2	10	●	●	●	●	●	●
17,332	W 1733-0008 1620 R	0.05	16	○	○	●	●	○	●
17,333	W 1733-0208 1620 R	0.2	16	○	○	●	●	○	●

				Part nr. 20140
Code	Drawing nr.	R	AL°	PCD
17,330	W 1733-0000 0000 L	0.05	0	●
17,331	W 1733-0200 0000 L	0.2	0	●
17,332	W 1733-0400 0000 L	0.4	0	●

				Part nr. 20232
Code	Drawing nr.	R	AL°	PCD
17,330	W 1733-0000 0000 R	0.05	0	●
17,331	W 1733-0200 0000 R	0.2	0	●
17,332	W 1733-0400 0000 R	0.4	0	●

*Please note: Left-hand boring bars have to be fitted with right-hand inserts and right-hand boring bars with left-hand inserts!

● ex stock ○ on request

Ordering example: 1 piece W 1733-0008 1000 L H02 = Ordering number: 20131 17,330



Insert
carbide coated
W 1733-.... L



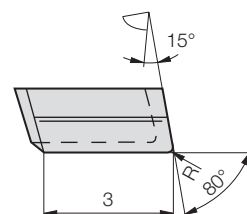
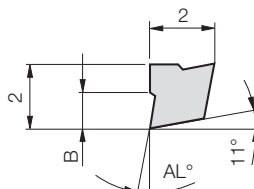
Insert
PCD-fullface
W 1733-.... L

Indexable inserts precision ground for boring bars starting from 6 mm working diameter

Insert W 8003-.... L/R*

Carbide / carbide coated

Left-hand cutting versions
right-hand cutting versions inv.

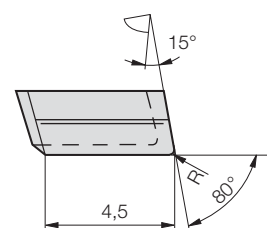
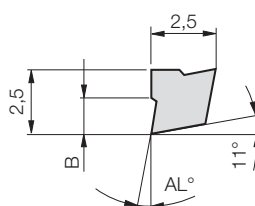


					Part nr. 20233	Part nr. 20234 uncoated	Part nr. 20235	Part nr. 20236 coated	Artikel Nr. 20237
Code	Drawing nr.	R	B	AL°	P10	P40	K10	H25	H26
80,030	W 8003-0014 1020 L	0.05	1.4	10	●	●	●	○	●
80,031	W 8003-0214 1020 L	0.2	1.4	10	●	●	●	○	●
					Part nr. 20238	Part nr. 20239 uncoated	Part nr. 20240	Part nr. 20241 beschichtet	Artikel Nr. 20242
Code	Drawing nr.	R	B	AL°	P10	P40	K10	H25	H26
80,030	W 8003-0014 1020 R	0.05	1.4	10	●	●	●	○	●
80,031	W 8003-0214 1020 R	0.2	1.4	10	●	●	●	○	●

Insert W 8005-.... L/R*

Carbide / carbide coated

Left-hand cutting versions
right-hand cutting versions inv.

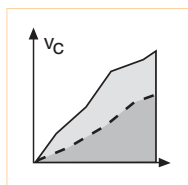


					Part nr. 20243	Part nr. 20244 uncoated	Part nr. 20245	Part nr. 20246 coated	Part nr. 20247
Code	Drawing nr.	R	B	AL°	P10	P40	K10	H25	H26
80,050	W 8005-0012 1020 L	0.05	1.2	10	●	●	●	○	●
80,051	W 8005-0212 1020 L	0.2	1.2	10	●	●	●	●	●
80,052	W 8005-0416 1020 L	0.4	1.6	10	●	●	●	●	●
					Part nr. 20248	Part nr. 20249 uncoated	Part nr. 20450	Part nr. 20251 coated	Part nr. 20252
Code	Drawing nr.	R	B	AL°	P10	P40	K10	H25	H26
80,050	W 8005-0012 1020 R	0.05	1.2	10	●	●	●	○	●
80,051	W 8005-0212 1020 R	0.2	1.2	10	●	●	●	●	●
80,052	W 8005-0416 1020 R	0.4	1.6	10	●	●	●	●	●

*Please note: Left-hand boring bars have to be fitted with right-hand inserts and right-hand boring bars with left-hand inserts!

● ex stock ○ on request

Ordering example: 1 piece W 8003-0014 1020 L H26 = Ordering number: 20237 80,030



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recommendations
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Grade selections and
insert geometries
page 120



Insert
carbide uncoated
W 8003-.... L
W 8005-.... L

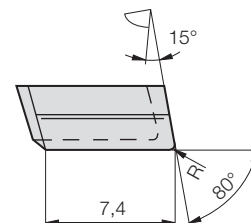
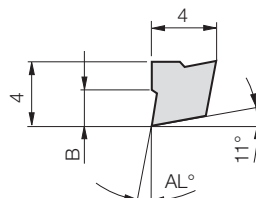
Indexable inserts precision ground for boring bars starting from 6 mm working diameter



Insert W 8008-.... L/R*

Carbide / carbide coated

Left-hand cutting versions
right-hand cutting versions inv.

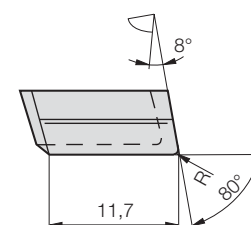
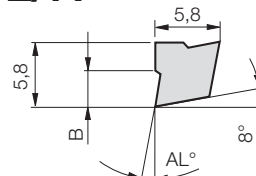


					Part nr. 20253	Part nr. 20254 uncoated	Part nr. 20255	Part nr. 20256 coated	Part nr. 20257
Code	Drawing nr.	R	B	AL°	P10	P40	K10	H25	H26
80,080	W 8008-0218 1000 L	0,2	1,8	10	●	●	●	○	●
80,081	W 8008-0422 1000 L	0,4	2,2	10	●	●	●	●	●
80,082	W 8008-0826 1000 L	0,8	2,6	10	●	●	●	●	●
80,083	W 8008-0226 2420 L	0,2	2,6	24	○	●	●	○	●
80,084	W 8008-0426 2420 L	0,4	2,6	24	○	●	●	○	●
					Part nr. 20258	Part nr. 20259 uncoated	Part nr. 20260	Part nr. 20261 coated	Part nr. 20262
Code	Drawing nr.	R	B	AL°	P10	P40	K10	H25	H26
80,080	W 8008-0218 1000 R	0,2	1,8	10	●	●	●	○	●
80,081	W 8008-0422 1000 R	0,4	2,2	10	●	●	●	●	●
80,082	W 8008-0826 1000 R	0,8	2,6	10	○	●	●	●	●
80,083	W 8008-0226 2420 R	0,2	2,6	24	○	●	●	○	●
80,084	W 8008-0426 2420 R	0,4	2,6	24	○	●	●	○	●

Insert W 8012-.... L/R*

Carbide / carbide coated

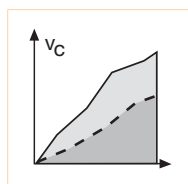
Left-hand cutting versions
right-hand cutting versions inv.



					Part nr. 20263	Part nr. 20264 uncoated	Part nr. 20265	Part nr. 20267 coated	Part nr. 20268
Code	Drawing nr.	R	B	AL°	P10	P40	K10	H25	H26
80,120	W 8012-0422 1000 L	0,4	2,2	10	●	●	●	○	●
80,121	W 8012-0826 1000 L	0,8	2,6	10	●	●	●	●	●
80,122	W 8012-0436 2420 L	0,4	3,6	24	○	●	●	○	●
80,123	W 8012-0836 2420 L	0,8	3,6	24	○	●	●	○	●
					Part nr. 20269	Part nr. 20270 uncoated	Part nr. 20271	Part nr. 20273 coated	Part nr. 20274
Code	Drawing nr.	R	B	AL°	P10	P40	K10	H25	H26
80,120	W 8012-0422 1000 R	0,4	2,2	10	●	●	●	○	●
80,121	W 8012-0826 1000 R	0,8	2,6	10	●	●	●	●	●
80,122	W 8012-0436 2420 R	0,4	3,6	24	○	●	●	○	●
80,123	W 8012-0836 2420 R	0,8	3,6	24	○	●	●	○	●

*Please note: Left-hand boring bars have to be fitted with right-hand inserts and right-hand boring bars with left-hand inserts!

● ex stock ○ on request



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Grade selections and
insert geometries
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Insert
carbide coated
W 8008-.... L
W 8012-.... L

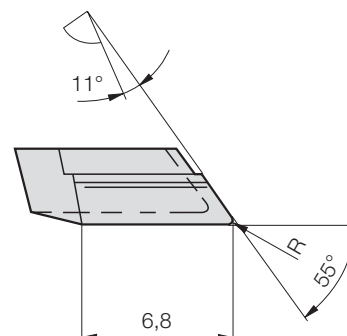
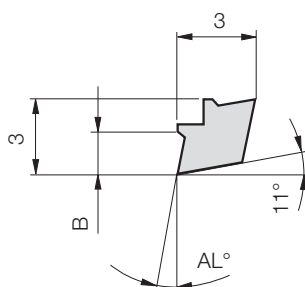
Indexable inserts precision ground

for boring bars starting from 12 mm working diameter

Inserts W 5506-.... L/R*

Carbide / carbide coated

Left-hand cutting versions
right-hand cutting versions inv.



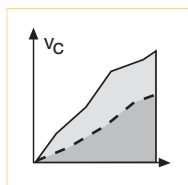
					Part nr. 20275	Part nr. 20276	Part nr. 20277	Part nr. 20278	Part nr. 20279
					uncoated			coated	
Code	Drawing nr.	R	B	AL°	P10	P40	K10	H25	H26
55,060	W 5506-0210 1000 L	0.2	1.0	10	●	●	●	●	○
55,061	W 5506-0414 1000 L	0.4	1.4	10	●	●	●	●	○
55,062	W 5506-0214 1620 L	0.2	1.4	16	○	○	●	○	○
55,063	W 5506-0414 1620 L	0.4	1.4	16	○	○	●	○	○

					Part nr. 20280	Part nr. 20281	Part nr. 20282	Part nr. 20283	Part nr. 20284
					uncoated			coated	
Code	Drawing nr.	R	B	AL°	P10	P40	K10	H25	H26
55,060	W 5506-0210 1000 R	0.2	1.0	10	●	●	●	●	○
55,061	W 5506-0414 1000 R	0.4	1.4	10	●	●	●	●	○
55,062	W 5506-0214 1620 R	0.2	1.4	16	○	○	●	○	○
55,063	W 5506-0414 1620 R	0.4	1.4	16	○	○	●	○	○

*Please note: Left-hand boring bars have to be fitted with right-hand inserts and right-hand boring bars with left-hand inserts!

● ex stock ○ on request

Ordering example: 1 piece W 5506-0210 1000 L H25 = Ordering number: 20278 55,060



Application
recommendations
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Grade selections and
insert geometries
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Insert
carbide coated
W 5506-.... L

Application recommendations

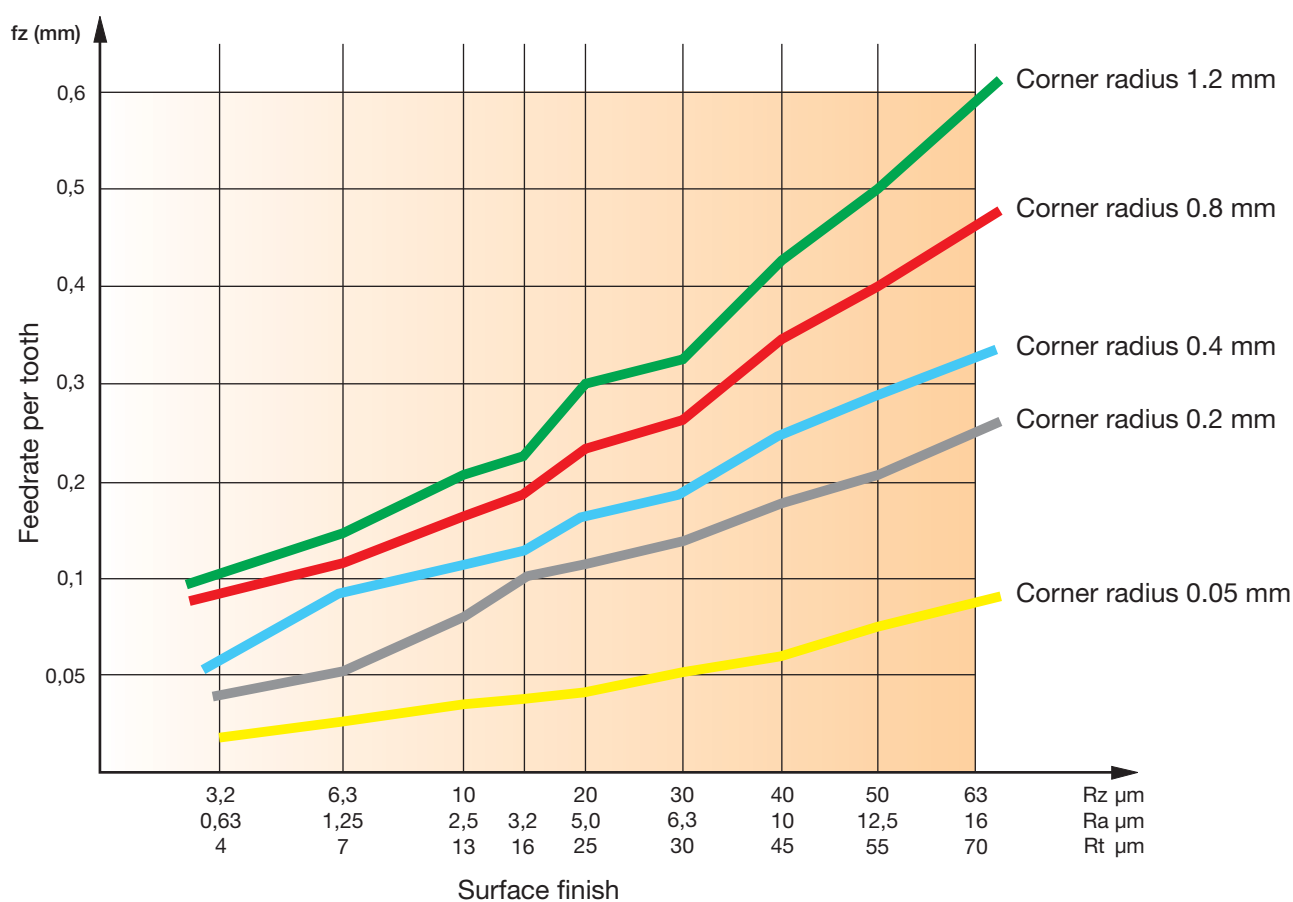
Inserts for boring bars



Guide values for surface finish

In order to select the right feedrate per tooth (fz) please pay also attention to the table below „Guide values for surface finish“.

Guide values for surface finish relative to feedrate and corner radius



Cutting data recommendations

The cutting data recommendations in the table are guide values and depend to a high degree on the stability of the machine, fixture and workpiece.

Cutting groups	Material group	Composition / structure	Tensile strength RM (MPa)	Hardness HB HRC	Cutting speed V _C m/min	recom. Cutting grade	feed rate fz mm/z					
							Insert type					
							W 1733-	W 8003-	W 8005-	W 8008-	W 8012-	W 5506-
1.1		C = 0.1 -0.25 annealed, long cutt.	420	125	100-160	H26/H02	0.02-0.10	0.02-0.08	0.04-0.12	0.05-0.15	0.07-0.25	0.04-0.12
1.2		C = 0.1 -0.25 annealed, short chip	420	125	100-160	↓						
2.1	Unalloyed steel	C = 0.25-0.55 annealed, long cutt.	620	190	90-150							
2.2	Cast steel	C = 0.25-0.55 annealed, short chip	640	190	100-160							
3	Machining steel	C = 0.25 -0.55 tempered	850	250	90-150							
4		C = 0.25 -0.8 annealed	915	270	80-140							
5		C = 0.25 -0.8 tempered	1020	300	75-125							
6		annealed	610	180	90-140							
7	Low-alloy steel	tempered	930	275	60-110							
8	Cast steel											
8	Machining steel	tempered	1020	300	60-110							
9		tempered	1190	350	60-100							
10	High-alloy steel	annealed	680	200	60-110							
	Cast steel											
11	High alloy tool steel	hardened and tempered	1100	325	50-90							
12-13	Stainless steel and cast steel	ferritic/martensitic annealed	680	200	50-90	↓						
		martensitic	810	240	40-80	↓						
14.1	Stainless steel	austenitic quenched	610	180	40-80	H26/H02						
14.2		austenitic/ferritic (duplex)	880	260	40-80	↓						
15	Grey cast iron	perlitic/ferritic		180	110-160	H02/K10						
16		perlitic (martensitic)		260	100-150	↓						
17	Cast iron with nodular cast iron	ferritic		160	80-130	H26/H06/H02						
18		perlitic		250	70-120							
19	Malleable	ferritic		130	90-150	H26/H06						
20		perlitic		230	80-140	↓						
21	Aluminium	not heat treatable		60	-1000	K10/PKD						
22	forging alloys	heat treatable/heat treated		100	-800	↓						
23	Aluminium	<12% Si not heat treatable		75	-800	↓						
24	casting alloys	<12% Si heat treatable/ heat treated		90	-800	↓						
25		>12% Si not heat treatable		130	-1000	PKD						
26	Copper	machined alloys, Pb >1%		110	70-120	H02/K10						
27	copper alloy	CuZn, CuSnZn		90	70-120	↓						
28	(bronze, brass)	Cu, lead free copper/electrolyte copper		100	70-120	↓						
29	Non metallic materials	Duroplastic			-200	K10/PKD						
30		Reinforced materials			-200	↓						
31	Heat resistand alloys	Fe-based annealed		200	30-50	H26/H06						
32		heat treated		230	30-50	↓						
33		Ni- or Co-based annealed		250	20-40	↓						
34		heat treated		350	20-40	↓						
35		cast		320	20-40	↓						
36	Titanium alloys	Pure titanium	400		20-40	K10						
37		Alpha-beta alloys	1050		20-30	↓						
38	Hardened steels			50-62	80-150	PCBN						
39												

Spare parts

Coolant pipes

Drawing nr.	Part nr.	Code
E2807-1	4949	10,032
E2807-2	4949	12,040
E2807-3	4949	16,050
E2807-4	4949	18,063
E2807-5	4949	20,080
E2807-6	4949	24,100

Socket wrenches for coolant pipes

Drawing nr.	Part nr.	Code
E4298	4911	24,000
E4299	4911	30,000
E4300	4911	38,000
E4301	4911	48,000
E4302	4911	60,000
E4303	4911	75,000

Tapered adjustment screws

Drawing nr.	Part nr.	Code
E2927	20056	2,002
E2986	20056	2,000
E2997	20056	2,500
E3007	20056	1,601
E3093	20056	2,001
E3383	20056	1,600

Adjustment screws

Drawing nr.	Part nr.	Code
E2108-1	20057	2,501
E2108-2	20057	2,502
E2109-1	20057	3,001
E2109-2	20057	3,002
E2109-3	20057	3,003
E2109-5	20057	3,005
E2323-1	20057	2,001
E2323-2	20057	2,002

Adjustment screws

Drawing nr.	Part nr.	Code
E2323-3	20057	2,003
E2323-4	20057	2,004
E2450-1	20057	1,401
E2450-2	20057	1,402
E2450-3	20057	1,403

Axial adjustment screws for cartridges

Drawing nr.	Part nr.	Code
E2611-1	20058	3,000
E2611-2	20058	4,000
E2611-3	20058	5,000
E2611-4	20058	6,000
E2611-5	20058	5,001

Pushing pins

Drawing nr.	Part nr.	Code
E2649-1	20059	0,800
E2649-2	20059	1,300
E2649-3	20059	1,500
E2649-4	20059	2,000

Setup fixture for mini boring bars

Drawing nr.	Part nr.	Code
X1150	20060	1,000

Operating key

Drawing nr.	Part nr.	Code
E2451	20061	1,000

Clamp screws for cartridges

Drawing nr.	Part nr.	Code
E2613-1	4920	3,100
E2613-2	4920	4,120
E2613-3	4920	6,160

Ordering example: E2807-1 = Ordering number 4949 10,032 (part nr. + code)

Spare parts

Disk springs for cartridges

Drawing nr.	Part nr.	Code
E2619-1	20064	3,500
E2619-2	20064	4,000
E2619-3	20064	6,000

Threaded pins

Drawing nr.	Part nr.	Code
E2608-1	20062	1,401
E2608-2	20062	1,402
E2608-3	20062	1,403
E2610-1	20062	2,001
E2610-2	20062	2,002
E2610-3	20062	2,003
E2610-4	20062	2,004
E2610-5	20062	2,005
E2610-6	20062	2,006
E2612-1	20062	2,501
E2612-2	20062	2,502
E2612-3	20062	2,503
E2612-4	20062	2,504
E2612-5	20062	2,505
E2614-1	20062	3,001
E2614-2	20062	3,002
E2614-3	20062	3,003
E2614-4	20062	3,004
E2614-5	20062	3,005
E2614-6	20062	3,006
E2614-7	20062	3,007

Torx wrenches

Drawing nr.	Part nr.	Code
Tx5	1612	5,001
Tx6	1612	6,001
Tx8	1612	8,001
Tx15	1612	15,001

Cranked Torx wrench

Drawing nr.	Part nr.	Code
Tx6	1612	6,002

Torque wrenches adjustable

Drawing nr.	Part nr.	Code
E5000	20063	1,200
E5001	20063	6,000
E6000	20063	0,810

Torque wrenches not adjustable

Drawing nr.	Part nr.	Code
E5400-5	20063	0,450
E5400-6	20063	0,700
E5400-8	20063	1,400
E5400-15	20063	3,450
E6001	20063	0,150
E6002	20063	0,800

Torx-bits

Drawing nr.	Part nr.	Code
Tx5-bit	4917	5,000
Tx6-bit	4917	6,000
Tx7-bit	4917	7,000
Tx8-bit	4917	8,000
Tx9-bit	4917	9,000
Tx10-bit	4917	10,000
Tx15-bit	4917	15,000

Allen wrenches

Drawing nr.	Part nr.	Code
SW0,7	4921	0,700
SW0,9	4921	0,900
SW1,3	4921	1,300
SW1,5	4921	1,500
SW2,0	4921	2,000

Ordering example: E2619-1 = Ordering number 20064 3,500 (part nr. + code)

Spare parts

Allen wrenches

Drawing nr.	Part nr.	Code
SW2,5	4921	2,500
SW3,0	4921	3,000
SW4,0	4921	4,000
SW5,0	4921	5,000
SW6,0	4921	6,000

Clamping sets for countersinking tools, cartridges and boring bars

Drawing nr.	Part nr.	Code
E1001	20065	5,000
E1010	20050	3,000
E1014	20050	2,501
E1030	20066	5,000
E1031	20050	2,002
E1040	20050	3,500
E1060	20050	2,500
E1085	20050	2,001
E1092	20050	2,502
E1100	20050	1,601
E1112	20050	2,000
E1120	20050	1,602
E3441	20050	1,600

Clamping sets for milling cutters

Drawing nr.	Part nr.	Code
E4119	20051	2,500
E4265	20051	2,000
E 5032	20051	2,501
E 5482	20051	2,502

Clamping sets for drill and chamfering tools

Drawing nr.	Part nr.	Code
E4890	20067	2,000
E4991	20067	2,500

Ordering example: SW 5,0 = Ordering number 4921 5,000 (part nr. + code)

Eccentric pins

Drawing nr.	Part nr.	Code
E4120	20052	2,501
E4349	20052	2,001

Assembly crease for eccentric pins

Drawing nr.	Part nr.	Code
E5162	20053	1,000

Coolant screws for milling cutters

Drawing nr.	Part nr.	Code
E3805	20054	40,001
E3806	20054	50,001
E4079	20054	80,001
E4121	20054	80,000
E4154	20054	63,000
E4192	20054	40,000
E4193	20054	32,000
E4230	20054	50,000
E4247-1	20054	100,000
E4247-2	20054	100,001
E4275-2	20054	160,000
E4275-1	20054	160,001

Adapter for milling cutters

Drawing nr.	Part nr.	Code
E5005	20055	1,800

HOLLFELDER-GÜHRING CUTTING TOOLS

Wertachstraße 27 • D - 90451 Nürnberg • Germany
 Telefon +49 (0) 911 / 64 19 22-0 • Fax +49 (0) 911 / 64 19 22-10
 E-Mail: info@hollfelder-guehring.de • Internet: www.hollfelder-guehring.de



Inquiry form for special tooling

Customer : _____ Date : _____

Contact person : _____ Phone : _____

Street : _____ Fax : _____

Town/Postal code: _____ E-Mail : _____

Workpiece : _____ Drawingnumber : _____

Material : _____ Hardness/tensile strength: _____

Machining : ☐ Into solid ☐ Pre cast ☐ Pre bored
☐ Blind hole ☐ Through hole
☐ Continous cut ☐ Interrupted cut ☐ Highly interrupted cut
☐ Others _____

Required surface finish : Ra = _____ Rz = _____ Others : _____

Stock : _____ mm ☐ In radius ☐ In diameter a_p = _____ a_e = _____

Fixture : ☐ Stable ☐ Instable ☐ Very instable

Interference : ☐ No ☐ Yes => if yes _____ mm

Machine : ☐ MC ☐ Transferline ☐ Lathe ☐ Turn / milling center ☐ Boring head ☐ Multi-spindle

Spindle : Steep taper DIN _____ Size ☐ 30 ☐ 40 ☐ 45 ☐ 50

HSK DIN _____ Size ☐ 32 ☐ 40 ☐ 50 ☐ 63 ☐ 80 ☐ 100

Others : _____ Internal coolant : ☐ Yes ☐ No

max. Rpm : _____ Power : _____ kW

Tool : ☐ Right-hand cutting ☐ Left-hand cutting ☐ Non rotating ☐ Rotating
☐ Face milling cutter ☐ Groove and end milling cutter ☐ Disc milling cutter Others : _____

Shank style / Form : _____ Size : _____

Tool balanced : ☐ No ☐ Yes => if yes, balancing grade G _____ at _____ 1/min

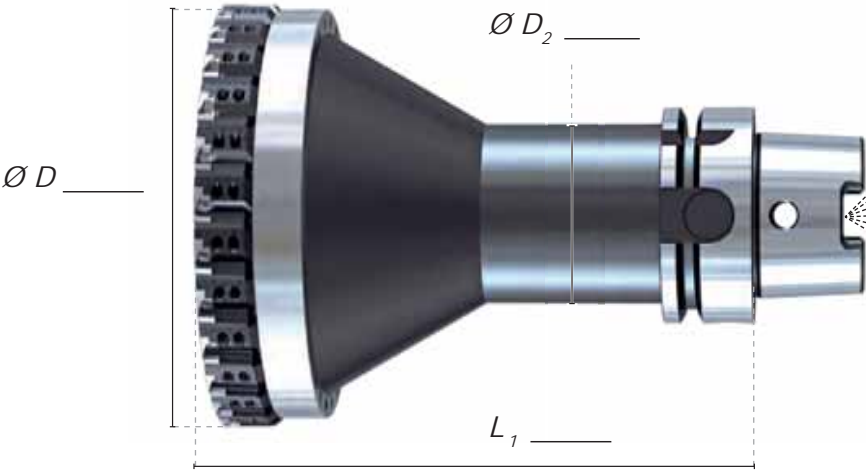
Necessary cutting data: v_c = _____ m/min f = _____ mm/U ☐ mm/Z ☐ mm/min

Coolant : ☐ Internal ☐ External ☐ Without
☐ Emulsion ☐ Oil ☐ Mist Coolant ☐ Dry

Remarks : _____

Inquiry form for HPC special milling cutters

<div style="display: flex; align-items: center;"> <div style="flex: 1; border-bottom: 1px solid black; margin-bottom: 5px;"></div> <div style="text-align: center; margin: 0 10px;">  <p>new customer</p> </div> <div style="flex: 1; border-bottom: 1px solid black; margin-bottom: 5px;"></div> </div>		<div style="border-bottom: 1px solid black; margin-bottom: 5px;"></div>
<div style="display: flex; align-items: center;"> <div style="flex: 1; border-bottom: 1px solid black; margin-bottom: 5px;"></div> </div>		<div style="border-bottom: 1px solid black; margin-bottom: 5px;"></div>
<div style="display: flex; align-items: center;"> <div style="flex: 1; border-bottom: 1px solid black; margin-bottom: 5px;"></div> </div>		<div style="border-bottom: 1px solid black; margin-bottom: 5px;"></div>
<div style="display: flex; align-items: center;"> <div style="flex: 1; border-bottom: 1px solid black; margin-bottom: 5px;"></div> </div>		<div style="border-bottom: 1px solid black; margin-bottom: 5px;"></div>



HSK-A _____

HSK-C _____

HSK- _____

SK DIN69871 _____

BT _____

CAT _____

Semi-standard

$L_1 = 150 \text{ mm}$ ☐

$L_1 = 175 \text{ mm}$ ☐

$L_1 = 200 \text{ mm}$ ☐

Workpiece	Width of cut (ae)	Maximum no. of teeth <input type="radio"/>
Material	IC (bar)	Reduced no. of teeth
Allowance (ap) (max. 2 mm!)	Surface finish (Rz)	Maximum tool weight